SAE International™

SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J1939

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(R) Recommended Practice for a Serial Control and Communications Vehicle Network

Foreword

This series of SAE Recommended Practices has been developed by the Truck & Bus Control and Communications Network Subcommittee of the Truck & Bus Electrical & Electronics Committee. The objectives of the subcommittee are to develop information reports, recommended practices and standards concerned with the requirements, design, and usage of ECUs which transmit electrical signals and control information among vehicle components. The usage of these Recommended Practices is not limited to truck and bus applications; other applications may be accommodated with immediate support being provided for construction and agricultural equipment, and stationary power systems.

These SAE Recommended Practices are intended as a guide toward standard practice and are subject to change so as to keep pace with experience and technical advances.

The Controller Area Network (CAN) protocol described in these Recommended Practices is the intellectual property of Robert Bosch GmbH (Bosch). Bosch will grant a license to any company which intends to manufacture or design CAN ECUs. ONLY the manufacturer of the integrated circuit containing the CAN protocol or implementers of the CAN protocol in software must deal with the copyright license process. The user of the CAN protocol does not require a license. Licensing information and applications can be obtained at the following address:

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These Recommended Practices are being generated to continue the work accomplished by the J1708, J1587, and J1922 Recommended Practices. The J1939 series of Recommended Practices will offer a higher performance alternative to these earlier documents.

This document reflects changes and additions approved and balloted through December 2003.

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1. Scope

These Recommended Practices are intended for light, medium, and heavy duty vehicles used on or off road as well as appropriate stationary applications which use vehicle derived components (e.g. generator sets). Vehicles of interest include, but are not limited to: on and off highway trucks and their trailers; construction equipment; and agricultural equipment and implements.

The purpose of these Recommended Practices is to provide an open interconnect system for electronic systems. It is the intention of these Recommended Practices to allow Electronic Control Units to communicate with each other by providing a standard architecture.

1.1 Degree of Openness

A J1939 network is open to the degree that any two ECUs which conform to the same J1939/0*X* document can be connected via the network and communicate with each other without functional interference. The J1939/0X dcouments describe a specific type of application, typically representing a specific industry to which it pertains such as agricultural or heavy duty trucks. ECUs which conform to a different J1939/0*X* document may not be capable of communicating directly with one another and in some cases may cause degradation or complete disruption of the entire network.

1.2 Proof of Compliance

There is no procedure presently in place to test, validate, or provide formal approval for ECUs utilizing the J1939 network. Each developer is expected to design their products to the spirit of, as well as the specific content of, this recommended practice. Provisions are made in J1939/11 and J1939/12 for self certification to these documents. In the future, it is hoped that procedures will be defined and implemented to test new products to ensure full compliance with all appropriate J1939 documents. Until that time, compliance will be honorarily determined. Should questions arise regarding the use or interpretation of any part of these recommended practices they should be directed to the SAE Control and Communications Subcommittee for resolution.

1.3 Rationale

This document reflects changes and additions approved and balloted through December 2003.

2. References

2.1 Publications

ISO 7498	Information Processing Systems - Open Systems Interconnection (OSI) - Basic Reference Model.
ISO 11898	Road Vehicles — Interchange of Digital Information — Controller Area Network (CAN) for High Speed Communication, December 1992
ISO 11992	Road Vehicles - Electrical Connections Between Towing and Towed Vehicles - Interchange of Digital Information (Parts 1, 2, 3)
SAE J1213	Glossary of Automotive Electronic Terms
SAE J1708	Recommended Practice for Serial Data Communication Between Microcomputer Systems in Heavy Duty Vehicle Applications.
SAE J1587	Recommended Practice for Electronic Data Interchange Between Microcomputer Systems in Heavy Duty Vehicle Applications
SAE J1922	Powertrain Control Interface for Electronic Controls Used in Medium and Heavy Duty Diesel On-Highway Vehicle Applications

SAE publications are available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001. ISO publications are available from ANSI, 11 West 42nd Street, New York, NY 10036.

2.2 Definitions and Abbreviations

Definitions provided herein will supersede those contained in SAE J1213. SAE J1213 will otherwise apply throughout.

2.2.1 Definitions

Acknowledgment (ACK) — Confirms that the requested action has been understood and performed.

Address — The 8 bit field (or fields) used to define the source (and destination when applicable) of a message (e.g. engine, transmission, etc.).

Arbitration — The process by which one or more ECUs resolve conflicts in obtaining access to a shared network bus.

Bit Stuffing — A procedure used to assure the transmitted and received messages maintain a minimum number of dominant to recessive edges, and vise versa, to maintain the proper resynchronization within the string of bits in a CAN Data Frame. See CAN specification for a more detailed discussion.

Bridge — A device which stores and forwards messages between two J1939 network segments. This permits changes in the media, the electrical interface, and data rate between segments. The protocol and address space remain the same on both sides of the bridge. Note that a bridge may selectively filter messages going across it so that the bus load is minimized on each segment.

Bus — See Segment.

CAN Data Frame — The ordered bit fields necessary to create a CAN frame used to convey data, beginning with an SOF and ending with an EOF.

Cyclic Redundancy Check (CRC) — An error control mechanism. A 15 bit cyclic redundancy check is performed for detecting transmission errors. Given a *k*-bit frame or message, the transmitter generates an *n*-bit sequence, known as a frame check sequence so that the resulting frame, consisting of $k + n$ bits is exactly divisible by some predefined number. The receiver then divides the incoming frame by the same number and, if there is no remainder, assumes that there was no error.

Data Field — A 0 to 64-bit field normally placed in a CAN data frame which contains the data as defined in the Application Layer (document J1939/7X).

Data Page — One bit in the Identifier portion of the CAN Arbitration Field is used to select one of two pages of Parameter Group Numbers. This provides for the future growth of Parameter Group definitions. It also is one of the fields used to determine the Parameter Group Number which labels the data field of the CAN Data Frame.

Destination Address (DA) — This is a Protocol Data Unit (PDU) specific field in the 29 bit CAN identifier used to indicate the address of the ECU intended to receive the J1939 message.

Device — A physical component with one or more ECUs and network connections.

Electronic Control Unit (ECU) — A computer based electronic assembly from which J1939 messages may be sent or received.

End of Frame (EOF) — A 7 bit field marking the ending of a CAN data frame.

Extended Frame — A CAN data frame using a 29 bit identifier as defined in the CAN 2.0 specification.

Frame — A series of data bits making up a complete message. The frame is subdivided into a number of fields, each field containing a predefined type of data. See CAN Data Frame

Function — A capability of a vehicle system having one or more ECUs that are connected to a J1939 bus segment of a Vehicle System. The function value is used in the 8 bit Function field in the 64 bit NAME entity (See J1939/81, Section 4.1)

Gateway — This device permits data to be transferred between two networks with different protocols or message sets. The gateway provides a means to repackage parameters into new message groups when transferring messages from one segment to another.

Group Extension (GE) — This is a PDU specific field of a J1939 CAN Data Frame that is used as part of the information necessary to determine the Parameter Group Number.

Identifier — The identifier portion of the CAN arbitration field.

Idle — A state on the CAN bus where no node is transmitting or attempting to transmit data.

Implement — A machine consisting of one or more ECUs which may be attached to or detached from the vehicle as a unit.

Media — The physical entity which conveys the electrical transmission (or equivalent means of communication) between ECUs on the network. For J1939/11, the media consists of shielded twisted pair copper wires.

Message — A “message” is equivalent to one or more “CAN Data Frames” that have the same Parameter Group Number. For instance the information related to a single Parameter Group Number to be transferred on the bus may take several CAN data frames.

Multipacket Messages — A type of J1939 message which is used when more than one CAN data frame is required to transmit all data specific to a given Parameter Group Number. Each CAN data frame will have the same identifier but will contain different data in each packet.

NAME - An 8 byte value which uniquely identifies the primary function of an ECU and its instance on the network. A device's NAME must be unique, no two devices may share the same NAME value on a given vehicle network.

Node — A specific hardware connection of an ECU to the physical media. A specific node may have more than one address claimed on the network.

Non-Volatile — Retention of changeable memory values even though power is turned off for any reason. This term is used with respect to data values, such as ECU addresses or NAMEs, that are changed during use. Read Only Memory (ROM) is technically non-volatile, but is not changeable during use and thus not what is referred to in these documents.

Negative-Acknowledgment (NACK) — A response which indicates that a message has not been understood or a requested action could not be performed.

Packet — A single CAN data frame. This can also be a message if the Parameter Group to be transferred can be expressed in one CAN data frame.

Parameter Group (PG) — A collection of parameters that are conveyed in a J1939 message. Parameter Groups include commands, data, requests, acknowledgments, and negative-acknowledgments. The PG identifies the data in a message, regardless of whether it is a single packet or multipacket message. Parameter Groups are not dependent on the source address field thus allowing any source to send any Parameter Group.

Parameter Group Number (PGN) — A three byte, 24 bit, representation of the Reserved Bit, Data Page, PDU Format, and GE fields. The Parameter Group Number uniquely identifies a particular Parameter Group.

PDU Format (PF) — An 8 bit field in the 29 bit identifier that identifies the PDU format and is used in whole or in part to provide a label for a Parameter Group. It also is one of the fields used to determine the Parameter Group Number which labels the data field of the CAN Data Frame.

PDU Specific (PS) — An 8-bit field in the 29 bit identifier whose definition depends upon the value of the PDU Format field. It can be either a destination address (DA) or Group Extension (GE). It also is one of the fields used to determine the Parameter Group Number which labels the data field of the CAN Data Frame.

PDU1 Format — A PDU format used for messages that are to be sent to a destination address (DA). The PS field contains the destination address (specific or global).

PDU2 Format — A PDU format used to send information that has been labeled using the Group Extension technique. This PDU does not contain a destination address. The PS field contains the Group Extension in the case of PDU2 formats.

Preferred Address — The address that an ECU will attempt to use first when claiming an address. Preferred Addresses are assigned by the committee.

Priority — A 3-bit field in an identifier that establishes the arbitration priority of the information communicated. The highest priority is zero and the lowest priority is seven.

Protocol Data Unit (PDU) — A PDU is a J1939 specific CAN Data Frame format.

Remote Transmission Request (RTR) — A feature of the CAN protocol allowing an ECU to request that another ECU or ECUs send a message. This feature of CAN is not used in J1939. An alternate request mechanism is specified for J1939.

Repeater — An ECU which regenerates the bus signal onto another segment of media. This permits the network to connect more electrical loads (ECUs) onto the bus, or to connect to another type of media (Physical Layer Expansion). The speed (data rate), protocol (data link layer), and address space are the same on both sides of the repeater. For J1939, any delays in regenerating the data signal must be kept to a very small fraction of one bit interval.

Reserved Bit —A bit in a J1939 29 bit identifier reserved for future definition by SAE. It also is one of the fields used to determine the Parameter Group Number which labels the data field of the CAN Data Frame.

Router— An ECU which allows segments with independent address spaces, data rates, and media to exchange messages. A router may permit each segment to operate with minimum bus loading yet still obtain critical messages from remote segments. The protocol remains the same across all segments. Note that the router must have look up tables to permit the translation and routing of a message with ID X on segment 1 to ID Y on segment 2.

Segment — The physical media and attached nodes of a network not interconnected by network interconnection ECUs. A single segment of a network is characterized by all of the ECUs “seeing” the signal at the same time (i.e., there is no intermediate ECU between electrical sections of the network). Multiple segments can be connected together by network interconnection ECUs including repeaters, bridges, and routers.

Source Address (SA) — An 8-bit field in the 29 bit identifier which allows for the unique identification of the source of a message. The SA field contains the address of the ECU that is sending the message.

Standard Frame — A CAN data frame using an 11 bit identifier as defined in the CAN 2.0b specification.

Start of Frame (SOF) — The initial bit in a CAN frame serving only to indicate the beginning of the frame.

Subnetwork — This refers to the network activity (message traffic) on a specific J1939 segment when multiple segments are used. Subnetworks may include: Tractor; Trailer, Implement, and Braking System. Note that they may be separated by a bridge or router to minimize total bus loading. Collectively the subnetworks are the J1939 Vehicle Network.

Vehicle — A machine which, in most applications, includes a capability to propel itself and includes one or more J1939 segments. A vehicle may be assembled of one or more Vehicle systems which are connected together to form the whole vehicle.

Vehicle System — A subcomponent of a vehicle, or a component that is analogous to a subcomponent of a vehicle, that includes one or more J1939 segments and may be connected or disconnected from the vehicle. A Vehicle System may be made up of one or more Functions, which have ECU's that are connected to a J1939 segment of the Vehicle System.

2.2.2 Abbreviations

ABS Antilock Braking System
ACK Acknowledgment
AP Accelerator Pedal
ASR Acceleration Slip Regulation (Traction Control)
ASCII American Standard Code for Information Interchange
CAN Controller Area Network
Con-Ag Construction-Agriculture Industry
CRC Cyclic Redundancy Check
DA Destination Address
DLC Data Length Code
DP Data Page
ECU Electronic Control Unit
EOF End of Frame
GE Group Extension
ID Identifier
IDE Identifier Extension Bit
LLC Logical Link Control
LSB Least Significant Byte or Least Significant Bit
MAC Medium Access Control
MID Message Identifier
MSB Most Significant Byte or Most Significant Bit
NA Not Allowed
NA Not Available
NACK Negative-Acknowledgment
OSI Open System Interconnect
P Priority
PDU Protocol Data Unit
PF PDU Format
PG Parameter Group
PGN Parameter Group Number
PID Parameter Identifier
PS PDU Specific
PS_GE PDU Specific - Group Extension
PS_DA PDU Specific - Destination Address
PTO Power Take-Off
R Reserved
RTR Remote Transmission Request
SA Source Address
SID Subsystem Identifier
SLOT Scaling, Limits, Offset, and Transfer Function
SOF Start of Frame
SPN Suspect Parameter Number
SRR Substitute Remote Request
un Undefined

2.3 References to the OSI Model:

The Open System Interconnect (OSI) model was developed by the International Organization for Standardization (ISO) in 1984 as a model of a computer communications architecture. There are seven layers to the OSI model as shown in Figure 1. The intent is that protocols be developed to perform the functions of each layer as needed. J1939 is structured into several parts based on this ISO Model. While there is a J1939 document allocated to each layer, not all of them are explicitly identified by having their own J1939 document.

Some of the layers not having their own documents are supported by functionality included within other documents.

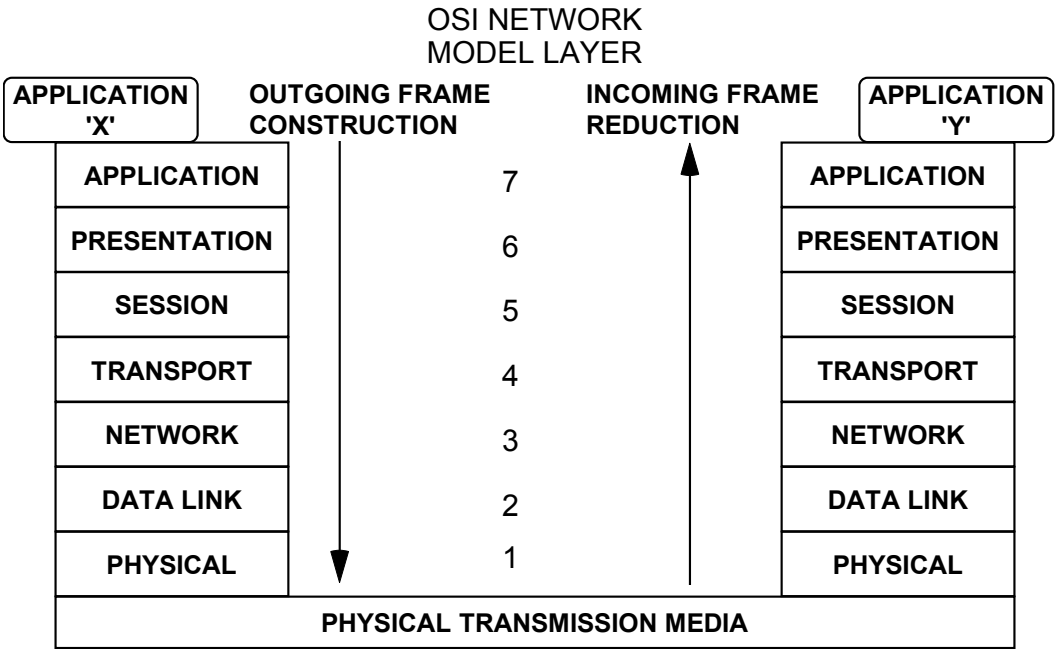

FIGURE 1 - The OSI Seven Layer Model

The functionality of each layer is:

1. Physical — Concerns the transmission of structured bit stream over physical media; deals with the mechanical, electrical, functional, and procedural characteristics to access the physical media
2. Data Link — Provides the reliable transfer of information across the physical layer; sends blocks of data (frames) with the necessary synchronization, error control, sequence control, and flow control;
3. Network — Provides upper layers with independence from the data transmission and switching technologies used to connect systems; responsible for establishing, maintaining, and terminating connections;
4. Transport — Provides reliable, transparent transfer of data between end points; provides end-to-end error recovery and flow control; provides segmentation and reassembly of very large messages;
5. Session — Provides the control structure for communication between applications; establishes, manages, and terminates connections (sessions) between cooperating applications;
6. Presentation — Provide independence to the application process from differences in data representation (syntax); and
7. Application — Provides access to the OSI environment for users and also provides distributed information services.

The purpose of the OSI model is to provide a common basis for coordinating standards development by placing them within the perspective of the overall model. Any resulting standard, such as J1939, is not required to be explicitly partitioned into these seven layers as long as the fundamental functionality is supported. In addition, the hardware and software which perform the functions of each layer need not be rigidly defined such that each layer is recognizable within the system design. The distinction between layers can become totally obscured upon allocating these functions to a specific system design. In reviewing the J1939 layer documents, it can be seen that some J1939 layers include some functions normally associated with other OSI layers. This usually occurs when a layer may not require, or justify having, a standalone document of its own.

Because the J1939 network is a specific communications system, supporting specific sets of applications and a specific industry, rather than being generalized, not all of the OSI layers are required. Only those layers which are required for the anticipated J1939 uses will be defined, with a separate document being used for each of these layers.

2.4 Documentation Structure and Guide

This J1939 document is merely the top level of a hierarchy of related documents. A separate document, identified as J1939/*N*, has been defined for each application of the network and for each of the seven OSI model layers. To accommodate multiple versions of any one layer, a second slash digit (*X*) is used to identify the version of a document. Thus to determine the total network definition for a particular application, such as for North American agricultural equipment, one must obtain the top level application document, J1939/02, which identifies all of the layer versions used, and then obtain each of these individual layer documents. The presently defined documents and numbering system are as follows:

J1939 This top level document describes the network in general, the OSI layering structure, the subordinate document structure, and provides control for all preassigned values and names.

J1939/0*X* An application document, where *X* refers to a specific network/application version of the network. This document will identify the industry or applications for which it pertains and will list the specific versions of each layer that makes up this network.
J1939/01 Truck and Bus Control and Communications Network.
J1939/02 (Draft) Agricultural Equipment Control and Communications Network.

J1939/1*X* A Physical Layer document, where *X* refers to a specific version of the Physical Layer.
J1939/11 Physical Layer, 250K Bits/sec, Shielded Twisted Pair.
J1939/12 (Draft) Physical Layer, 250K Bits/sec, Twisted Quad.
J1939/13 Physical Layer, Diagnostic Connector
J1939/15 (Draft) Reduced Physical Layer, 250K bits/sec, Unshielded Twisted Pair (UTP)
J1939/21 Data Link Layer (no alternative versions permitted)

J1939/3*X* Network Layer document, where *X* refers to a specific version of the Network Layer.
J1939/31 Network Layer,

J1939/4*X* Transport Layer document, where *X* refers to a specific version of the Transport Layer. No Transport Layer documents are presently defined.

J1939/5*X* Session Layer document, where *X* refers to a specific version of the Session Layer. No Session Layer documents are presently defined.

J1939/6*X* Presentation Layer document, where *X* refers to a specific version of the Presentation Layer. No Presentation Layer documents are presently defined.

J1939/7*X* Applications Layer Document, where *X* refers to a specific version of the Application Layer.
J1939/71 Vehicle Application Layer.
J1939/72 (Draft) Virtual Terminal Application Layer.
J1939/73 Application Layer - Diagnostics.

J1939/74 (Draft) Application – Configurable Messaging

J1939/75 Application Layer-Generator Sets and Industrial

J1939/81 J1939 Network Management Protocol (no alternative versions permitted).
J1939/82 (Draft) Compliance

Document numbers have been assigned to all seven of the OSI model layers even though they are not all specifically defined within the present definition of J1939. This was done in part to provide an easily recognizable relationship between the documents and the OSI model and also to provide growth capabilities should it be determined later that such documents are needed. J1939/81, Network Management, is kept

separate as it represents a vertical slice through all of the layers and is thus best explained and understood as an individual subject rather than include a subset of network management within each of the affected layers.

Multiple application layer documents may be utilized simultaneously on the same network and thus must maintain compatibility. An example of such a system is a piece of agricultural equipment that utilizes both J1939/71 for the majority of communications and J1939/72 for the display terminal communications, both sets of messages being carried over the exact same network. A single vehicle/application may also utilize different physical layers within the same system but they need not be compatible if on different segments. An example is on-highway trucks where the physical layer used to connect the tractor to the trailer may be different than that used on the tractor itself.

3. Technical Requirements

Beyond being an introduction to the full set of J1939 documents, this document is meant to aid those unfamiliar with J1939 by answering the most basic questions of:

- How J1939 is intended to work
- How to construct and process messages (transmit and receive)
- How to design an ECU to support J1939
- How typical control sequences are done (application examples)
- How a typical network is wired

3.1 J1939 Tutorial

The following tutorial is for the Truck and Bus Control and Communications Network as specified in J1939/01. J1939/01 is used in this tutorial as a typical example, and not to infer that all applications must follow J1939/01. Other applications may elect to utilize alternative versions of one or more layers resulting in corresponding changes to the following discussion. This section is offered as a means of illustrating and clarifying the network, not as a definition of it. See the individual sub documents, J1939/0*X* to J1939/81 for the correct definition and specification of each aspect of the network.

3.1.1 Introduction

J1939 is a high speed communications network designed to support real-time closed loop control functions between ECUs which may be physically distributed throughout the vehicle. J1708/J1587 is an older, widely used low speed network intended to provide simple information exchange, including diagnostic data, between ECUs. J1939 is capable of performing all of the functions of J1708/J1587 as well as the control system support. Any one application may utilize one or the other or both of these networks.

J1939 uses the CAN protocol which permits any ECU to transmit a message on the network when the bus is idle. Every message includes an identifier which defines the message priority, who sent it, and what data is contained within it. Collisions are avoided due to the arbitration process that occurs while the identifier is transmitted (using a non-destructive arbitration scheme). This permits high priority messages to get through with low latency (delay) times because there is equal access on the network for any ECU, but when multiple ECUs are simultaneously attempting to transmit, the highest priority message prevails.

3.1.2 Message Format and Usage (J1939/21 for 29 Bit Identifier)

J1939 provides a complete network definition using the 29 bit identifier (CAN Extended Frame) defined within the CAN protocol shown in Figure 2. J1939/21 enables 11 bit identifier (CAN Standard Frame) devices to be used within the same network, defining all messages as proprietary, permitting both device types to coexist without interference. The 11 bit identifier definition is not directly a part of J1939 but is included to assure that users of it can coexist on the same network without conflict. J1939 will not provide any further definition of the use of the 11 bit identifier. The CAN Data Frame Bits SOF, SRR, IDE, and RTR bits will not be discussed in the

following description (see J1939/21 and ISO 11898). The first 3 bits of the 29 bit identifier are used for determining message priority during the arbitration process. A value of 000 has the highest priority. Higher priority messages would typically be used for high speed control messages. An example of this is the torque control message from the transmission to the engine (see J1939/71). A lower priority would be used for data which is not time critical. An example of this is the engine configuration message. The priority field may be programmable for each message type so that network tuning can be performed by an OEM if necessary.

CAN EXTENDED FRAME FORMAT	SOF	IDENTIFIER 11 BITS											SRR	IDE	IDENTIFIER EXTENSION 18 BITS																RTR	•••
J1939 FRAME FORMAT	SOF	PRIORITY			R	DP	PDU FORMAT (PF) 6 BITS (MSB)						SRR	IDE	PF (CONT.)		PDU SPECIFIC (PS) (DESTINATION ADDRESS, GROUP EXT. OR PROPRIETARY)								SOURCE ADDRESS								RTR	•••
		3	2	1			8	7	6	5	4	3			2	1	8	7	6	5	4	3	2	1	8	7	6	5	4	3	2	1		
J1939 FRAME BIT POSTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	
CAN 29 BIT ID POSTION		28	27	26	25	24	23	22	21	20	19	18			17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		

FIGURE 2, The J1939 29 Bit Identifier.

The next bit of the identifier (R) is reserved. The bit should be set to 0 for transmitted messages. This default will permit future use of the bit for other purposes as defined by the SAE committee.

The next set of 9 bits in the identifier is the Data Page (DP) bit and PDU Format (PF) field. PDU stands for Protocol Data Unit (i.e. Message Format). The DP bit is used as a page selector. Page 0 contains all the messages which are presently being defined. Page 1 provides additional expansion capacity for the future, to be assigned after page 0 has been completed. The PF field identifies one of two PDU formats able to be transmitted. PDU Formats are described in J1939/21, Section 3.3. The SRR and IDE bits are entirely defined and controlled by CAN and therefore not described or modified by J1939.

The next 8 bits of the identifier are PDU Specific (PS), meaning that they are dependent on the value of the PF. If the PF value is between 0 and 239 (PDU1), this PS field contains a destination address. If the PF field is between 240 and 255 (PDU2), the PS field contains a Group Extension (GE) to the PDU Format. The Group Extension provides a larger set of values to identify messages which can be broadcast to all ECUs on the network.

Most messages on J1939 are intended to be broadcast using the PDU2 format. Data transmitted on the network using PDU2 format cannot be directed to a specific destination. When a message must be directed to a particular ECU, it must have been assigned a PGN in the PDU1 format range of numbers so a specific destination address can be included within the identifier of the message. An example of this is the transmission commanding a specific torque value from the engine or a specific torque value from a retarder. Requiring a destination must be considered when the Parameter Group is first defined and published by the SAE committee (see J1939/21).

Collectively, the Reserved bit,Data Page, PF, and PS values define the PG being transmitted. These PGs have definitions which include the parameter assignments within the 8 byte data field of each message as well as the transmission repetition rate and priority. The term "Parameter Group" is used because they are groups of specific parameters. Parameter Groups are identified by a Parameter Group Number (PGN), which uniquely identifies each Parameter Group. The PGN structure permits a total of up to 8672 different Parameter Groups to be defined per page. Parameter Groups and Parameter Group Numbers are described in J1939/21 and current assignments are listed in Appendix A.

The last 8 bits of the identifier contain the address of the ECU transmitting the message (Source Address). For a given network, every address must be unique (254 available). Two different ECUs cannot use the same address at the same time. The PGNs are independent of the Source Address, thus any ECU can transmit any message.

3.1.3 Addresses and NAME (J1939/81 and Appendix B)

Each ECU on the network will have at least one name and one address associated with it. There are examples, such as an engine and engine retarder residing in a common ECU, wherein multiple names and multiple addresses may coexist within a single electronics unit. The address of an ECU defines a specific communications source or destination for messages, the name includes identification of the primary function performed at that address and adds an indication of the instance of that functionality in the event that multiple ECUs with the same primary function coexist on the same network. As many as 254 different ECUs of the same function can coexist on the network, each identified by their own address and name.

To uniquely name each ECU, J1939 defines a 64 bit NAME consisting of the fields shown in Table 1. The Function Instance, ECU Instance, and Identity Number fields permit multiple ECUs of the same make and model to coexist on the same network but still have unique NAMEs for each. See J1939/81 for a full description of ECU naming and address assignment and Appendix B for current committee assignments.

Table 1. NAME Fields

Arbitrary Address Capable	Industry Group	Vehicle System Instance	Vehicle System	Reserved	Function	Function Instance	ECU Instance	Manufacturer Code	Identity Number
1 bit	3 bit	4 bit	7 bit	1 bit	8 bit	5 bit	3 bit	11 bit	21 bit

NAMEs identify the primary vehicle function or functions which an ECU performs and uniquely identify each ECU, even when there are more than one of the same type on the network. But with a length of 64 bits, a NAME is inconvenient to use in normal communications. Therefore, once the network is fully initialized, each ECU utilizes an 8 bit address as its source identifier or “handle” to provide a way to uniquely access a given ECU on the network. For example, an engine may be assigned address 0, but if a second engine is present, it needs a separate, unique address (e.g. 1) and instance. ECUs that accept destination specific commands may require multiple addresses. This permits distinguishing which action is to occur. For example, if the transmission is commanding a specific torque value from the engine (address 0), this must be differentiated from commanding a specific torque value from the engine brake (retarder)(address 15). As can be seen by this example, a single ECU on the network may have multiple addresses and each address will have an associated NAME. To facilitate the initialization process of determining the address(es) for each ECU on the network, commonly used devices have Preferred Addresses assigned by the committee (Preferred Addresses are listed in Tables B2 - B9). Using the Preferred Addresses minimizes the frequency of multiple devices attempting to claim the same address.

In general, most ECUs will use their Preferred Addresses immediately upon power up. A specific procedure (defined in J1939/81 and elaborated on in J1939/01) for assigning addresses after powerup is used to resolve any conflicts that may occur. Each ECU must be capable of announcing which address(es) it intends to use. This is the address claim feature. Two options are available:

1) Upon power-up and whenever requested, an ECU must send an Address Claimed message to claim an address. When an ECU sends the Address Claimed message, all ECUs record or compare this newly claimed address to their own table of addresses on the network. Not all ECUs are required to maintain such a table, but all must at least compare the newly claimed address with their own. Should multiple ECUs claim the same address, the one having the lowest value NAME uses this address and the other(s) must claim a different address or stop transmitting on the network.

2) An ECU may send a request for Address Claimed message to determine addresses claimed by other ECUs. When an ECU sends a request for Address Claimed, all requested ECUs then send their Address Claimed messages. This permits transitional ECUs (tools, trailers, etc.) or ECUs powering up late to obtain the current address table so that an available address can be found and claimed or to determine which ECUs are currently on the network. This approach permits the option of self-configurable addresses for those ECUs which may need it, but does not make this a requirement for all ECUs. Self-configurable addressing is optional; those ECUs which might be expected to encounter address conflicts are recommended to support this capability.

When an address conflict has been detected, the following four options are available, depending upon the capabilities of the ECU involved:

Self-Configurable ECUs — a self-configurable ECU is capable of dynamically computing and claiming an unused address. Most service tools and bridges will have this capability.

Command Configurable ECUs — A network interconnection ECU, such as a bridge, or a service tool may command another ECU to use a given address. The ECU having the unclaimable address would then issue an Address Claimed message to acknowledge acceptance of this new commanded address. The ECU may be commanded to accept a new address even though it has already claimed a valid address.

Service Configurable ECUs — ECUs which are modifiable by service personnel, usually by the means of DIP switches or a service tool. When "commanded address" messages are used, his option differs from the Command Configurable in that a service tool is required and will often use proprietary techniques.

Non-Configurable ECUs — Those ECUs that are neither self-configurable nor reprogrammable would have to cease transmitting if they fail to claim a valid address.

3.1.4 Communication Methods

Three primary communication methods exist within J1939 and appropriate use of each type allows effective use of the available Parameter Group Numbers. The three communications methods are:

Destination specific communications, using PDU1 (PF values 0 - 239) (includes the use of the global destination address - 255)

Broadcast Communications using PDU2 (PF values 240 - 255)

Proprietary Communications using either PDU1 or PDU2 format

Each of the communications methods has an appropriate use. Destination specific Parameter Group Numbers are needed where the message must be directed to one or another specific destination and not to both. J1939 currently defines a torque control message which may be sent to an engine or retarder. In the case of more than one engine, this message must be sent only to the desired engine and a destination specific Parameter Group Number is needed and has been assigned.

Broadcast Communications apply in several situations, including:

Messages sent from a single or multiple sources to a single destination

Messages sent from a single or multiple sources to multiple destinations

Broadcast Communications cannot be used where a message must be sent to one or another destination and not to both.

The third communications method in J1939, proprietary communications, is provided by the use of two proprietary Parameter Group Numbers. A Parameter Group Number has been assigned for broadcast proprietary communications and a Parameter Group Number has been assigned for destination specific proprietary communications. This allows for two functions. One, a specific source can send its proprietary message in a PDU2 type format (broadcast). Two, it allows for situations where a service tool must direct its communication to a specific destination out of a possible group of ECUs. For instance this case arises when an engine uses more than one controller but the service tool must be able to perform calibration/reprogramming while all ECUs are connected to the same network. In this case the proprietary protocol needs to be destination specific. Note that the destination ECU must be capable of properly interpreting the proprietary data.

Proprietary communications are useful in two situations:

Where it is unnecessary to have standardized communications
Where it is important to communicate proprietary information

3.1.5 Transmitting Messages (Using J1939/21 and J1939/7X)

In addition to the 29 bit identifier shown in Figure 2, a CAN Data Frame includes a 6 bit control field, a data field which is typically 8 bytes, and terminates with CRC, ACK, and EOF fields. To send a particular data item, a message must be constructed by properly filling each of these fields. This is done by first referencing the applicable J1939 documents. This process will define the Parameter Group Number (PGN) to use, the message update (transmission) rate, and default priority. Since multiple data items are typically packed together within a message, it will also define the data field format. Note that when the ECU does not have data available for a given parameter it sets those bits to “not available” so that a receiver knows that the data is not provided.

Parameter Groups which have more than eight bytes of data must be sent as multipacket messages using the Transport Protocol functions defined in J1939/21 Section 3.10.

3.1.6 Receiving Messages (Using J1939/21 and J1939/7X)

There are various techniques (and electronic ICs) available for capturing selected messages off the network. Several general observations can be made however regarding received messages.

1. If it is a destination specific request or command, the ECU must determine if there is an address match between itself and the incoming messages' destination address. If there is, it must process the message and provide some type of acknowledgment.
2. If a message is a global request, every ECU, even the originator, must process it and respond if the data is available.
3. If a message is broadcast, each ECU must determine if it is relevant or not.

3.1.7 ECU Design (Using J1939/11, J1939/21, and J1939/7X)

Although every manufacturer will have different performance requirements for the ECU contained within their product, several observations should be made regarding the resources needed to support J1939. The current data rate of J1939/11 is 250 kbps (400μS/bit). A typical message containing 8 data bytes is 128 bits long (excluding bits used for bit stuffing) which is approximately 0.5 ms. The shortest message is 64 bits long. This means that a new message could be present every 250 microseconds. Even though not every message is relevant, nor is the bus loading likely to be above 50%, the receiving processor must still be able to handle (or buffer) multiple back to back messages. This will require some RAM space as well as processor time for the memory transfers. The requirement is that no messages should be lost due to ECU hardware or software design limitations.

3.1.8 Network Topology — J1939/01 Using Physical Layer J1939/11 and Network Layer J1939/31

The J1939/01 network defines a system containing one or more segments connected by network interconnecting ECUs. Each J1939 segment consists of a single, linear, shielded twisted pair of wires running around a section of the vehicle to each ECU. A short stub is permitted to connect this "bus" to each ECU. This simplifies the routing of the main bus wiring by not requiring it to come in direct proximity with each ECU. The linear bus is necessary at a data rate of 250 Kbps in order to minimize reflections of the electrical signals. The termination resistor at each end of the bus also reduces reflections. To support a tractor pulling one or more trailers, and the frequent removal and addition of new trailers, a separate J1939 segment (subnetwork) is used within the tractor and in each trailer or dolly.

The J1939 network may thus be composed of multiple segments, with a network interconnection ECU (bridge) between them. These segments need not be directly compatible with each other, as they may operate at different data rates or use different physical media. For example, a bridge provides electrical isolation between segments, provides initialization support for the subnetwork connected to it, and can provide message filtering to prevent unnecessary message traffic on the subnetworks. In the event of a bus failure on the wires exposed between the tractor and trailer, the main J1939 subnetwork on the tractor will continue to function.

3.2 Preassigned Values

Application specific parameters and Parameter Groups are defined in the J1939/7*X* documents. Parameter Groups that are used for control and management of the network are defined in J1939/21, J1939/31, and J1939/81. Assignments for Preferred Addresses, NAME elements, and Parameter Group Numbers are maintained in the appendices to this document. Each of these items are described in this section. The actual values that have been assigned are listed in the Appendices. If new values are required that are not already assigned, developers may request new values to be assigned by the SAE Control and Communications Network Subcommittee. See Appendix D for information on making a request. Users of the documents should assure that this base document is newer or has the same revision date as the particular application document they are using to avoid making requests that are obsolete at the time of submittal.

3.2.1 Parameter Group Numbers

Parameter Group Numbers are assigned specifically to use either PDU1 format or PDU2 format (PDU types are described in Section 3.1.2 and in J1939/21, Section 3.3). Once assigned to a format the other PDU type is not available for that Parameter Group. The assignment of a Parameter Group Number should be done keeping in mind the following characteristics: priority, update rate, importance of the data in the packet to other ECUs, and length of the data associated with the Parameter Group. Appendix A includes a template for assigning Parameter Group Numbers and the current assignments.

Parameter Group Numbers are assigned linearly to the various sections of the Parameter Group list in Appendix A based on the criteria provided on the Parameter Group Request form (Appendix D).

Much of the communications between ECUs constructed by a single manufacturer do not require standardization. The information that is communicated is not generally useful to other ECUs on the network. In this situation the proprietary Parameter Groups can be used. The use of standardized communications is preferred and should be used whenever practical, however the proprietary option is offered as a means of solving unique problems and situations.

If proprietary information is being communicated, or the information to be communicated is not of general interest, the proprietary method should be used. If the information is of general interest and does not require direction of the message to a particular ECU, a Parameter Group Number utilizing the PDU2 broadcast format should be sought. Finally, if the information is of general interest but requires direction to one or another ECUs then destination specific addressing is needed and a PDU1 format Parameter Group Number should be sought. Proprietary and PDU1 communications methods should be considered carefully and used sparingly.

3.2.2 Data Field Grouping

Minimizing message overhead with CAN based systems requires full use of the data fields of messages. Except in the case of very time critical messages, parameters should be grouped to fill the 8 byte data field. Following this principle conserves PGNs for future assignment and allows for minimum network loading when all data bytes are known by and sent from the same address. Strong justification is needed to allow definition of Parameter Group Numbers that result in sparsely used data fields.

Parameters should be grouped as follows:

1. By common subsystem (the ECU likely to measure and send the data)
2. With similar update rates (to minimize unnecessary overhead)
3. By function (Oil, Coolant, Fuel, etc.)

It should be recognized that, while these are guidelines, in most cases when parameters are grouped together they will end up violating one or more of the above rules. Since all parameters defined in J1939 have a technique for identifying when they are not available it is not critical that all of the parameters in one Parameter Group come from the same ECU. If a new parameter is defined and there are spare bytes or bits in an existing Parameter Group, then it can be easily added there. When the update rate is fast, it is desirable to make sure that a Parameter Group is as fully utilized as possible (i.e. uses all 8 data bytes) before defining another PG and preferable that all parameters are normally coming from one specific ECU.

For the slower update rate data it is not as critical that all of the parameters in a Parameter Group come from the same ECU. Even though it is desirable to have parameters come from one ECU, the intention of J1939 is to provide a means for communicating the data and not dictating which ECU is to send what data.

3.2.3 NAME Systems and Functions

A Function is a capability of a component or group of components served by one or more ECUs. The Function of each ECU is identified within an 8 bit field of that ECU's NAME. As there may be multiple ECUs which identify themselves with the same Function, the Function Instance field of NAME is used to distinguish between them. The same Function value (upper 128 only) may mean different things for different Industry Groups or Vehicle Systems, therefore the Function (upper 128 only) identification is dependent upon the Industry Group, and the Vehicle System as shown in Figure 3 (see J1939/81 Section 4.1.12).

A Vehicle System is a subcomponent of a vehicle or an analogous component that includes one or more J1939 network segments and may be connected or disconnected from the total vehicle. A Vehicle System may be made up of one or more Functions, which have ECUs that are connected to a J1939 network segment of that Vehicle System. A typical on-highway Vehicle System is a tractor or trailer. Because the definition of Vehicle Systems will vary from one industry to another, the System definition is dependent upon the Industry Group as shown in Figure 3 (see J1939/81 Section 4.1.12).

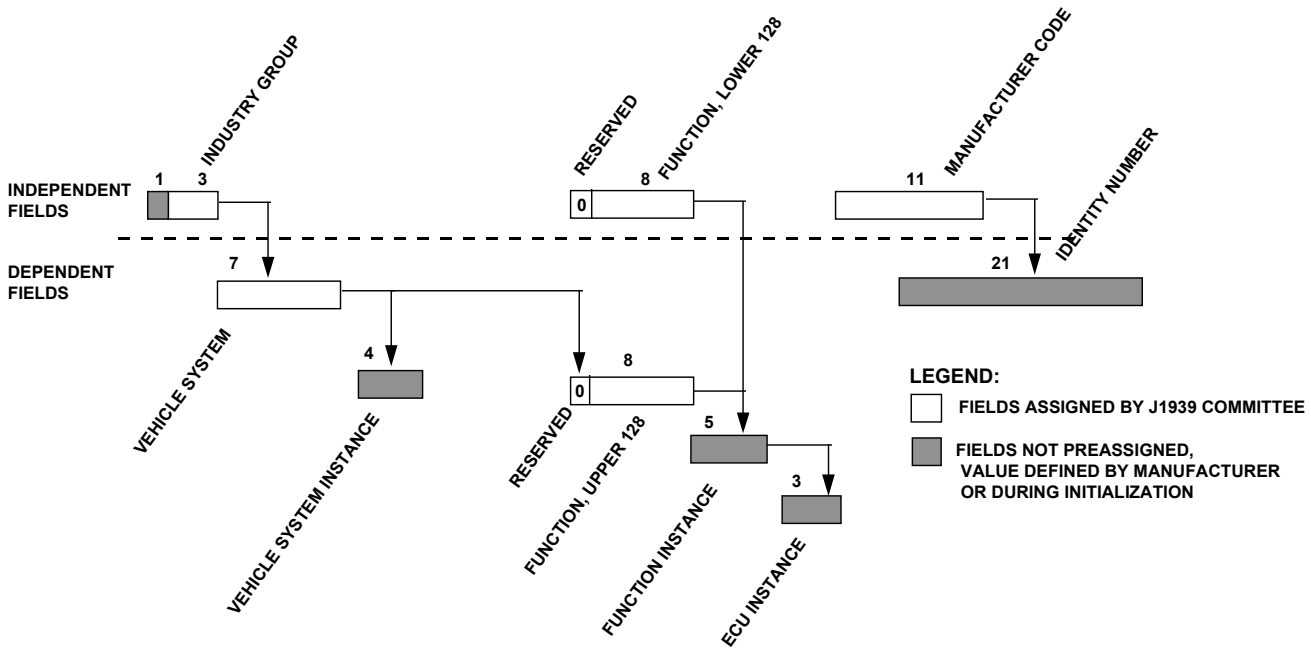

Figure 3. Dependencies in the NAME Fields.

A single ECU on the network may combine multiple Functions, and would then have the option to claim a separate address for each supported function. The assigned Vehicle System and Function values are listed in Appendix B, Tables B11 and B12.

3.2.4 Industry Group

To permit multiple industries to use J1939, an Industry Group code is used to identify the industry to which the ECU is associated. Code 0 is a special category of Industry Group in that it identifies Preferred Addresses and NAMEs that are common to all industries. Any ECU which may be used in more than one industry application, such as diesel engines, should have NAMEs and Preferred Addresses within this global group. It is the responsibility of those requesting new definitions to consider if this may be the case, and to request the new definition in the correct group. To avoid running out of NAME or address values, it is requested that global values be used only when truly applicable, if an ECU may exist in only one group, such as agricultural equipment, it would be preferable to add the definition to the applicable group rather than to use a global value. Industry Group codes are listed in Appendix B, Table B1.

3.2.5 Manufacturer Code

As defined in J1939/81, the NAME convention includes a Manufacturer Code, permitting a unique Identity Number to be a part of the full name. This Identity Number is assigned by the manufacturer and can be an individual ECU's serial number if desired. To enable the Identity Numbers to be unique to a given manufacturer, all manufacturers using J1939 are assigned a code. The Manufacturer's Code numbers are listed in Appendix B, Table B10. A manufacturer is permitted to have multiple codes, such as when there are multiple divisions or major product lines. Having a unique Manufacturer Code for each individual product would be discouraged as this would quickly exhaust the range of available codes. There are 21 bits available in the Identity Number field of NAME, permitting the manufacturer to include a reference to each particular product if desired.

3.2.6 Preferred Address

The number of addresses within a given system cannot exceed 254 (null and global cannot be claimed by devices). Most ECUs that operate on a J1939 network will have an assigned Preferred Address that the ECU may use. If the ECU's Preferred Address has been claimed or is in use by another ECU on the network, the conflict will be resolved using the procedures outlined in Section 3.1.3 and detailed in J1939/81 Sections 4.2 and 5. There may be additional contraints or procedures defined in the applicable J1939/0X document. For instance, on-highway trailer bridges and devices have address claiming constraints that differ from Con-Ag systems. A supplier of a Self Configurable ECU may provide any strategy for selecting an address to attempt to claim. However, if an alternative approach is not defined, it should attempt to claim an address in the range 128 - 247, starting at 128. Individual reserved Preferred Address assignments begin at zero and are assigned in a linear fashion as follows:

0 to 127	Reserved for most conventional ECUs in Industry Group 0 - Global
128 to 247	Reserved for Industry Specific assignments
248 to 253	Reserved for special ECUs
254	Null Address
255	Global Address

The current Preferred Address assignments are provided in Appendix B and information for requesting new assignments can be found in Appendix D. For further information, see J1939/81.

3.2.7 Suspect Parameter Number (SPN)

A Suspect Parameter Number (SPN) is a 19 bit number used to identify a particular element, component, or parameter associated with an ECU. This capability is especially useful for diagnostics, permitting an ECU which has detected a fault associated with a particular component, such as a sensor, to transmit a fault message identifying the faulty component. SPNs are assigned by the Committee and are listed in Appendix C. The first 511 SPNs are reserved and will be assigned, when possible, to the exact same number as the Parameter Identifier (PID) of J1587. For example, J1587 PID 91 is "Percent Accelerator Pedal Position" and an accelerator pedal position parameter fault could be reported in J1939 by using SPN 91. All following SPNs will be assigned in order as they are received.

Due to the very large number of SPNs which may ultimately be assigned, and their assignment in order of request, it will be very difficult for one interested in finding the SPN value of a particular component of interest simply by looking through the table. To facilitate the verification that new SPN requests are not duplications of existing assignments, the committee retains this table as an MS Excel™ spreadsheet, with additional data beyond that shown in Table C1. This permits sorting based upon SPN number, name, description, attribute (actuator, pressure, temperature, solenoid, etc.), J1587 attributes (MID, PID, SID), J1939 document paragraph, source name, and source address. It would be desirable for those developing J1939 applications or wishing to request the assignment of a new SPN to have access to an up-to-date version of this spreadsheet so that they can perform various sorts and searches of the data. At the time of publication, the SAE has not yet determined how this data can best be made available to the users of J1939 who are not committee participants.

3.3 Application Examples

A typical shift sequence consists of a series of commands from the transmission to the engine for controlling engine RPM and torque. Messages from the engine provide status and information which is used to determine when a particular condition has occurred. Other messages may also be sent regularly to disable the engine retarder at the proper time interval, or to inhibit ASR functions which might effect engine demand during portions of the shift sequence.

Parameter Group	Msg. Type	Sender	Using ECU	Action/Function
ETC1	Info	Trans	Eng, ASR	Transmission decision to shift (Shift in progress)
TSC1	Cmd	Trans	Eng.	Override Priority bits set for Trans. (01 priority) Torque control, Torque = 0
TSC1	Cmd	Trans	Retarder (Eng.)	Disable Mode, Torque = 0
EEC1	Info	Eng.	Trans	Torque = 0 (Clutch may be disengaged)
TSC1	Cmd	Trans	Eng	Speed Control Mode, Requested Speed = X
EEC1	Info	Eng	Trans	Speed = X (Clutch may be engaged)
TSC1	Cmd	Trans	Eng	Speed/Torque Limit Mode (11 priority)
ETC1	Info	Trans	ASR	Allow ASR (11 priority)
TSC1	Cmd	Trans	Ret (Eng)	Enable Mode
TSC1	Cmd	Trans	Eng	Override Disable
ETC1	Info	Trans	Eng, ASR	Shift complete

A typical ABS sequence will cause a message to be transmitted which indicates that the engine should reduce torque and the driveline (transmission) to remain in its existing (stable) state. If the ABS condition is "significant" (i.e. not just bouncing tires), it may request that the driveline also be disengaged. Note that this message must be sent at regular intervals to maintain the condition. Once the event is over, the ABS inactive indicates that the transmission and engine may return to "normal" operation

Parameter Group	Msg. Type	Sender	Using ECU	Action/Function
EBC1	Cmd	ABS	Eng, Trans	ABS decision to modulate brakes ABS active
TSC1	Cmd	ABS	Retarder (Eng.)	Disable Mode, Torque = 0 (Prevent engine stall)
TC1	Cmd	ABS	Trans	Disengage Driveline
EBC1	Cmd	ABS	Eng, Trans	ABS event over ABS inactive

A typical ASR sequence will attempt to reduce torque by sending torque limit messages to the engine. Torque can also be reduced by requesting more driveline retardation or permitting some clutch slip. Ultimately an upshift may be requested in order to achieve acceptable torque values. Note that the transmission takes over engine control during the shift.

Parameter Group	Msg. Type	Sender	Using ECU	Action/Function
				ASR Torque Reduction Decision
EBC1	Cmd	ASR	Eng, Trans, Retarder (Drvl)	ASR Torque control active
TSC1	Cmd	ASR	Eng	Torque Limit
TSC1	Cmd	ASR	Retarder (Drvl.)	Request more retardation
TC1	Cmd	ASR	Trans	Request more clutch slip
TC1	Cmd	ASR	Trans	Request new gear selection, No clutch slip request Shift if possible Shift complete, ASR continues torque limit ASR event over
EBC1	Cmd	ASR	Eng, Trans, Retarder (Drvl)	ASR inactive, disable override

4. Notes

4.1 Marginal Indicia

The change bar (l) located in the left margin is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. An (R) symbol to the left of the document title indicates a complete revision of the report.

PREPARED BY THE SAE TRUCK AND BUS CONTROL AND COMMUNICATIONS SUBCOMMITTEE
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APPENDIX A

PARAMETER GROUP ASSIGNMENTS

TABLE A1
J1939 Parameter Group Template

Legend:

DP = Data Page (1 bit)
PF = PDU Format (8 bits)
PS = PDU Specific Field (8 bits) (either DA or GE)
GE = Group Extension (8 bits)
DA = Destination Address (8 bits)
NA = Not Allowed
un = Undefined

PGN = Parameter Group Number (3 bytes) (see J1939-21, Section 4.1.7 for description)

DP	PF	PS	Parameter Group Definition	Multipacket	PGN
0	0	DA	PDU1 Format	NA	
0	1	DA			
			↓	↓	
(Less than or equal to 100ms)					
Boundary x					
(Greater than or equal to 100ms)			↑	↑	
0	238	DA	PDU1 Format	Allowed	
0	239	DA	PDU1 Format Proprietary		
0	240	0	PDU2 Format	NA	
0	240	1			
			↓	↓	
(Less than or equal to 100ms)					
Boundary y					
(Greater than or equal to 100ms)			↑	↑	
0	254	254			
0	254	255	PDU2 Format	Allowed	
0	255	0 - 255*	PDU2 Format - Proprietary		
1	0	DA	PDU1 Format	NA	
1	1	DA			
			↓	↓	
(Less than or equal to 100ms)					
Boundary x1					
(Greater than or equal to 100ms)			↑	↑	
1	238	DA			
1	239	DA	PDU1 Format	Allowed	
1	240	0	PDU2 Format	NA	
1	240	1			
			↓	↓	
(Less than or equal to 100ms)					
Boundary y1					
(Greater than or equal to 100ms)			↑	↑	
1	255	254			
1	255	255	PDU2 Format	Allowed	

* Definition is up to the manufacturer

TABLE A2
Parameter Groups (PGN)

Legend:

DP = Data page (1 bit)
PF = PDU Format (8 bits)
PS = PDU Specific (8 bits) (either DA or GE)
PGN = Parameter Group Number (3 bytes) (see J1939-21 for description)
GE = Group Extension (8 bits)
DA = Destination Address (8 bits)
MP = Multipacket Allowed (Yes or No)

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
	0	0	DA	0	Torque/Speed Control 1		TSC1	No	-71
	0	1	DA	256	Transmission Control 1		TC1	No	-71
	0	2	DA	512	Reserved for ISO 11992		EBS11	No	ISO 11992
	0	3	DA	768	Reserved for ISO 11992		EBS21	No	ISO 11992
(R)	0	4	DA	1024	External Brake Request	Used for brake control by an external device	XBR	No	-71
(R)	0	5	DA	1280	Reserved for CANopen	CANopen Application Message #1/1	CAM11	No	ISO 11992
(R)	0	6	DA	1536	Reserved for CANopen	CANopen Application Message #2/1	CAM21	No	ISO 11992
(R)	0	174	DA	44544	Tire Pressure Reference Setting	For setting the tire pressure reference values.	TPRS	No	-71
(R)	0	175	DA	44800	Parameter Locate Message	This message is designed to cause other CAs to respond with the identity of any message that they send in which the particular parameter (identified by specific SPN) is contained	PLM	No	-74
(R)	0	176	DA	45056	Configuration Identification Message	Message used to identify the data content (by SPN) of one of the configurable messages (identified by PGN).	CIM	No	-74
(R)	0	177	DA	45312	Proprietarily Configurable Message #1	Proprietarily Configuration message for use in J1939-74.	PCM1	Yes	-74
(R)	0	178	DA	45568	Proprietarily Configurable Message #2	Proprietarily Configuration message for use in J1939-74.	PCM2	Yes	-74
(R)	0	179	DA	45824	Proprietarily Configurable Message #3	Proprietarily Configuration message for use in J1939-74.	PCM3	Yes	-74
(R)	0	180	DA	46080	Proprietarily Configurable Message #4	Proprietarily Configuration message for use in J1939-74.	PCM4	Yes	-74
(R)	0	181	DA	46336	Proprietarily Configurable Message #5	Proprietarily Configuration message for use in J1939-74.	PCM5	Yes	-74
(R)	0	182	DA	46592	Proprietarily Configurable Message #6	Proprietarily Configuration message for use in J1939-74.	PCM6	Yes	-74

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
(R)	0	183	DA	46848	Proprietarily Configurable Message #7	Proprietarily Configuration message for use in J1939-74.	PCM7	Yes	-74
(R)	0	184	DA	47104	Proprietarily Configurable Message #8	Proprietarily Configuration message for use in J1939-74.	PCM8	Yes	-74
(R)	0	185	DA	47360	Proprietarily Configurable Message #9	Proprietarily Configuration message for use in J1939-74.	PCM9	Yes	-74
(R)	0	186	DA	47616	Proprietarily Configurable Message #10	Proprietarily Configuration message for use in J1939-74.	PCM10	Yes	-74
(R)	0	187	DA	47872	Proprietarily Configurable Message #11	Proprietarily Configuration message for use in J1939-74.	PCM11	Yes	-74
(R)	0	188	DA	48128	Proprietarily Configurable Message #12	Proprietarily Configuration message for use in J1939-74.	PCM12	Yes	-74
(R)	0	189	DA	48384	Proprietarily Configurable Message #13	Proprietarily Configuration message for use in J1939-74.	PCM13	Yes	-74
(R)	0	190	DA	48640	Proprietarily Configurable Message #14	Proprietarily Configuration message for use in J1939-74.	PCM14	Yes	-74
(R)	0	191	DA	48896	Proprietarily Configurable Message #15	Proprietarily Configuration message for use in J1939-74.	PCM15	Yes	-74
(R)	0	192	DA	49152	Proprietarily Configurable Message #16	Proprietarily Configuration message for use in J1939-74.	PCM16	Yes	-74
(R)	0	193	DA	49408	Diagnostic Readiness 2	Message to convey information relevant to the readiness of the OBD system	DM21	No	-73
(R)	0	194	DA	49664	Reserved for DM20	Reserved for DM20	DM20	Yes	-73
(R)	0	195	DA	49920	Individual Clear/Reset Of Active And Previously Active DTC (DM22)	Individual Clear/Reset Of Active And Previously Active DTC	DM22	No	-73
(R)	0	196	DA	50176	General Purpose Valve Command	This message provides control of the flow through a general purpose valve. Defined in ISO 11783-7.	GPV3	No	ISO 11783-7
(R)	0	197	DA	50432	General Purpose Valve Measured Flow	This message provides the measurement of a general purpose valve. Defined in ISO11783-7.	GPV2	No	ISO 11783-7
(R)	0	198	DA	50688	General Purpose Valve Estimated Flow	This message provides the estimated flow of a general purpose valve. Defined in ISO 11783-7.	GPV1	No	ISO 11783-7
(R)	0	199	DA	50944	Extended Transport Protocol - Data Transfer	Defined in ISO 11783-6 Annex L	ETP.DT	Yes	ISO 11783-6
(R)	0	200	DA	51200	Extended Transport Protocol - Connection Management	Defined in ISO 11783-6 Annex L	ETP.CM	No	ISO 11783-6
	0	201	DA	51456	Request 2	Used to Request a PGN from network device or devices and to specify whether the response should use the Transfer PGN or not. PGN and data set for all devices it is tasked with reporting.	RQST2	No	-21
	0	202	DA	51712	Transfer	The Transfer PGN provides a mechanism for reporting multiple data sets for a given PGN.	XFER	No	-21

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
	0	203	DA	51968	Process Data Message	The Process Data message has been defined as a destination specific message implying that the sender must decide which implement should receive the message.Working Set).	PD	No	ISO 11783-7
	0	204	DA	52224	Request for Repetition Rate	This message allows the system to adapt the bus bandwidth to the needs of the user of messages.	REQRR	No	ISO 11783-7
	0	205	DA	52480	Reserved for ISO 15765	KWP2000 Mixed functional addressing	KWP4	No	ISO 15765
	0	206	DA	52736	Reserved for ISO 15765	KWP2000 Mixed physical addressing	KWP3	No	ISO 15765
	0	207	DA	52992	Continuous Torque & Speed Limit Request		CTL	No	-71
	0	208	DA	53248	Cab Illumination Message	This message contains information that controls illumination devices inside the vehicle's cab.	CL	No	-71
	0	209	DA	53504	Air Suspension Control 6	Used for suspension control	ASC6	No	-71
	0	210	DA	53760	Air Suspension Control 2	Used for suspension control	ASC2	No	-71
	0	211	DA	54016	Calibration Information	Provide information about the calibration to scan tool	DM19	Yes	-73
	0	212	DA	54272	Data Security		DM18	Yes	-73
	0	213	DA	54528	Time/Date Adjust		TDA	No	-71
	0	214	DA	54784	Boot Load Data		DM17	Yes	-73
	0	215	DA	55040	Binary Data Transfer		DM16	Yes	-73
	0	216	DA	55296	Memory Access Response		DM15	No	-73
	0	217	DA	55552	Memory Access Request		DM14	Yes	-73
	0	218	DA	55808	Reserved for ISO 15765		KWP2	No	ISO 15765
	0	219	DA	56064	Reserved for ISO 15765		KWP1	No	ISO 15765
	0	220	DA	56320	Anti-theft Status		ATS	No	-71
	0	221	DA	56576	Anti-theft Request		ATR	Yes	-71
	0	222	DA	56832	Reset		RESET	No	-71
	0	223	DA	57088	Diagnostic Message #13	This message is used to stop or start broadcast messages. These broadcast messages may be on networks other than SAE J1939.	DM13	No	-73
	0	224	DA	57344	Cab Message 1	Message containing parameters originating from the vehicle cab.	CM1	No	-71
	0	225	DA	57600	Reserved for ISO 11992		GPM21	No	ISO 11992
	0	226	DA	57856	Reserved for ISO 11992		GPM11	No	ISO 11992
	0	227	DA	58112	Diagnostic Message #7		DM7	No	-73
	0	228	DA	58368	Reserved for ISO 11992		RGE11	No	ISO 11992
	0	229	DA	58624	Reserved for ISO 11992		RGE21	No	ISO 11992

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
	0	230	DA	58880	Virtual Terminal-to-Node		VT12	Yes	-72
	0	231	DA	59136	Node-to-Virtual Terminal		VT21	Yes	-72
	0	232	DA	59392	Acknowledgment Message	The Acknowledgment PG is used to provide a handshake mechanism between transmitting and receiving devices.	ACKM	No	-21
	0	234	DA	59904	Request	This message type, identified by the PGN, provides the capability to request information globally or from a specific destination.	RQST	No	-21
	0	235	DA	60160	Transport Protocol - Data Transfer	Used for the transfer of data associated with Parameter Groups that have more than 8 bytes of data.	TP.DT	No	-21
	0	236	DA	60416	Transport Protocol - Connection Mgmt	Used for the transfer of Parameter Groups that have 9 or more bytes of data.	TP.CM.xx	No	-21
	0	237	DA	60672	Network Layer		N.xx	Yes	-31
	0	238	DA	60928	Address Claimed	Message used to claim an address for a Controller Application.	AC	No	-81
	0	239	DA	61184	Proprietary A	This proprietary PG uses the Destination Specific PDU Format allowing manufacturers to direct their proprietary communications to a specific destination node.	PropA	Yes	-21
	0	240	0	61440	Electronic Retarder Controller 1	This message will be transmitted by several types of retarding devices.	ERC1	No	-71
	0	240	1	61441	Electronic Brake Controller 1	Used for brake control information.	EBC1	No	-71
	0	240	2	61442	Electronic Transmission Controller 1		ETC1	No	-71
(R)	0	240	3	61443	Electronic Engine Controller 2		EEC2	No	-71
	0	240	4	61444	Electronic Engine Controller 1	Engine related parameters	EEC1	No	-71
	0	240	5	61445	Electronic Transmission Controller 2		ETC2	No	-71
	0	240	6	61446	Electronic Axle Controller 1		EAC1	No	-71
	0	240	7	61447	Forward Lane Image urgent msg		FLI1	No	-71
	0	240	8	61448	Hydraulic Pressure Governor Info	Information to be used for a hydraulic pressure governing control system	HPG	No	-71
	0	240	9	61449	Vehicle Dynamic Stability Control 2	Contains information which relates to the vehicle's movement.	VDC2	No	-71
	0	240	10	61450	Engine Gas Flow Rate	Flow rates of Air and mixed gasses into the engine cylinders.	EGF1	No	-71
(R)	0	240	11	61451	Electronic Steering Control	PGN which indicates the actual angle and the status of a steerable axle	ESC1	No	-71
(R)	0	240	12	61452	Electronic Transmission Controller #8	Electronic Transmission Controller #8	ETC8	No	-71

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
(R)	0	240	13	61453	Land Leveling System Operational Information	Group of operational parameters associated with the Land Leveling System, such as switch states	LOI	No	-71
(R)	0	253	185	64953	Tire Pressure Reference Information	Information on actual tire pressure reference value for monitoring.	TPRI	No	-71
(R)	0	253	186	64954	Farebox Status	Used to report alarms of the fare collection unt.	TR6	No	-71
(R)	0	253	187	64955	Farebox Point of Sale	Used to report stop level point of sale detail.	TR5	No	-71
(R)	0	253	188	64956	Farebox Service Detail	Used to identify service, assignments, and fare preset detail of the fare collection unit.	TR4	Yes	-71
(R)	0	253	189	64957	Signal Preemption	Status and configuration of the device used for intersection preemption.	TR3	No	-71
(R)	0	253	190	64958	Transit Route	The current route assigned to this transit vehicle	TR1	Yes	-71
(R)	0	253	191	64959	Transit Milepost	Identification of a transit route milepost	TR2	Yes	-71
(R)	0	253	192	64960	Passenger Counter	Used to notify the transit link devices of the passenger count.	TR7	No	-71
(R)	0	253	193	64961	Engine Fluid Level/Pressure 3		EFL/P3	No	-71
(R)	0	253	196	64964	Electronic Brake Controller 5	Used for information on brake control.	EBC5	No	-71
(R)	0	253	197	64965	ECU Identification Information	Message for reporting identification and information about the physical ECU and its hardware.	ECUID	Yes	-71
(R)	0	253	198	64966	Cold Start Aids	Cold start aid information and settings.		No	-71
(R)	0	253	199	64967	Off-Highway Engine Control Selection States	Reports the states of off-highway engine control modes, as they apply to different modes of engine operation which may be used to aid particular working environments.	OHCSS	No	-71
(R)	0	253	200	64968	Operator Primary Intermediate Speed Control state	TheOperator Primary Intermediate Speed Control State is used to provide the controller feedback to indicate the controls state achieved.	ISCS	No	-71
(R)	0	253	201	64969	Electronic Control Module Information	Information relating to electronic control modules	CMI	Yes	-71
(R)	0	253	202	64970	Intermediate Speed Control	This message addresses the particular needs of the Industrial Engine operational functionality concerning the Intermediate Speed Control operation	ISC	No	-71
(R)	0	253	203	64971	Off-Highway Engine Control Selection	Allows for the selection of off-highway engine control modes, as they apply to different modes of engine operation which may be used to aid particular working environments.	OHECS	No	-71
(R)	0	253	204	64972	Operators External Light Controls Message	The message containing the information about the position of the operator's external light control switch(s).	OEL	No	-71

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
(R)	0	253	205	64973	Operator Wiper and Washer Controls Message	Message for items related to the operators controls for the window wipers and washers on the front and rear cab windows	OWW	No	-71
(R)	0	253	206	64974	Working Set Member Message	Message sent by the Master of a Working Set to identify an individual member of a specific Working Set.	WSMM	No	-81
(R)	0	253	207	64975	Working Set Master Message	Message sent by the Master of a Working Set to identify how many members there are in said set.	WSM	No	-81
(R)	0	253	208	64976	Inlet/Exhaust Conditions 2	Inlet/Exhaust Conditions 2 is a second PGN conveying this type of engine information. Also see PGN 65270.	IC2	No	-71
	0	253	209	64977	FMS-standard Interface Identity/Capabilities	Information which specifies the capabilities of the Fleet Management System (FMS) - standard interface device.	FMS	No	-71
	0	253	210	64978	ECU Performance	Message used to transfer ECU performance parameters.	EP	No	-71
	0	253	211	64979	Turbocharger Information 6	Turbocharger Compressor Outlet Discharge Temperature	TCI6	No	-71
	0	253	212	64980	Cab Message 3	Provides information from Cab mounted operator inputs.	CM3	No	-71
	0	253	213	64981	Electronic Engine Controller 5	Engine related parameters	EEC5	No	-71
	0	253	214	64982	Basic Joystick Message 1	Used to transfer information about the measured status of the 1st 2 axes and up to 12 buttons of a joystick.	BJM1	No	-71
	0	253	215	64983	Extended Joystick Message 1	Used to transfer information about the measured status of three additional axes of a joystick and switches of the joystick grip or handle.	EJM1	No	-71
	0	253	216	64984	Basic Joystick Message 2	Used to transfer information about the measured status of the 1st 2 axes and up to 12 buttons of a joystick.	BJM2	No	-71
	0	253	217	64985	Extended Joystick Message 2	Used to transfer information about the measured status of three additional axes of a joystick and switches of the joystick grip or handle.	EJM2	No	-71
	0	253	218	64986	Basic Joystick Message 3	Used to transfer information about the measured status of the 1st 2 axes and up to 12 buttons of a joystick.	BJM3	No	-71
	0	253	219	64987	Extended Joystick Message 3	Used to transfer information about the measured status of three additional axes of a joystick and switches of the joystick grip or handle.	EJM3	No	-71
	0	253	220	64988	Marine Control Information	This messages contains marine vessel control information for the engine	MCI	No	-71

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
	0	253	221	64989	ISO 11992 Military Application Tractor - Trailer Message	Tractor to trailer message for military applications using ISO 11992.	MAM11	No	ISO 11992
	0	253	222	64990	ISO 11992 Military Application Trailer - Tractor Feedback Message	Feedback message from trailer to tractor for military applications using ISO 11992.	MAM21	No	ISO 11992
	0	253	223	64991	Front Wheel Drive Status	Front wheel drive ECU information	FWD	No	-71
	0	253	224	64992	Ambient Conditions 2	This message contains measurement and configuration information about the vehicle ambient conditions.	AMB2	No	-71
	0	253	225	64993	Cab A/C Climate System Information	This message contains measurement and condition information from cab air conditioning components.	CACI	No	-71
	0	253	226	64994	Supply Pressure Demand	Used for controlling the supply pressure. Often used to raise the pressure of a supply pressure circuit in situations where more pneumatic energy is needed.	SPR	No	-71
	0	253	227	64995	Equipment Operation and Control	Parameters related to the operation and controls for equipment	EOAC	No	-71
	0	253	228	64996	Equipment Performance Data	Parameters related to the performance characteristics of equipment	EPD	No	-71
	0	253	229	64997	Maximum Vehicle Speed Limit Status	Reports the possible maximum vehicle speed limits, one through seven, and the applied maximum vehicle speed limit.	MVS	No	-71
	0	253	230	64998	Hydraulic Braking System	Used for information on a hydraulic brake system	HBS	No	-71
	0	253	231	64999	Bus #1/Utility Sync Check Status		BUSC	No	-75
	0	253	232	65000	Bus #1/Generator Sync Check Status		BGSC	No	-75
	0	253	233	65001	Bus #1 Phase C Basic AC Quantities		BPCAC	No	-75
	0	253	234	65002	Bus #1 Phase B Basic AC Quantities		BPBAC	No	-75
	0	253	235	65003	Bus #1 Phase A Basic AC Quantities		BPAAC	No	-75
	0	253	236	65004	Bus #1 Average Basic AC Quantities		BAAC	No	-75
	0	253	237	65005	Utility Total AC Energy		UTACE	No	-75
	0	253	238	65006	Utility Phase C AC Reactive Power		UPCACR	No	-75
	0	253	239	65007	Utility Phase C AC Power		UPCACP	No	-75
	0	253	240	65008	Utility Phase C AC Basic Quantities		UPCAC	No	-75
	0	253	241	65009	Utility Phase B AC Reactive Power		UPBACR	No	-75
	0	253	242	65010	Utility Phase B AC Power		UPBACP	No	-75
	0	253	243	65011	Utility Phase B AC Basic Quantities		UPBAC	No	-75

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
	0	253	244	65012	Utility Phase A AC Reactive Power		UPACCR	No	-75
	0	253	245	65013	Utility Phase A AC Power		UPAACP	No	-75
	0	253	246	65014	Utility Phase A Basic AC Quantities		UPAAC	No	-75
	0	253	247	65015	Utility Total AC Reactive Power		UTACR	No	-75
	0	253	248	65016	Utility Total AC Power		UTACP	No	-75
	0	253	249	65017	Utility Average Basic AC Quantities		UAAC	No	-75
	0	253	250	65018	Generator Total AC Energy		GTACE	No	-75
	0	253	251	65019	Generator Phase C AC Reactive Power		GPCACR	No	-75
	0	253	252	65020	Generator Phase C AC Power		GPCACP	No	-75
	0	253	253	65021	Generator Phase C Basic AC Quantities		GPCAC	No	-75
	0	253	254	65022	Generator Phase B AC Reactive Power		GPBACRP	No	-75
	0	253	255	65023	Generator Phase B AC Power		GPBACP	No	-75
	0	254	0	65024	Generator Phase B Basic AC Quantities		GPBAC	No	-75
	0	254	1	65025	Generator Phase A AC Reactive Power		GPAACR	No	-75
	0	254	2	65026	Generator Phase A AC Power		GPAACP	No	-75
	0	254	3	65027	Generator Phase A Basic AC Quantities		GPAAC	No	-75
	0	254	4	65028	Generator Total AC Reactive Power		GTACR	No	-75
	0	254	5	65029	Generator Total AC Power		GTACP	No	-75
	0	254	6	65030	Generator Average Basic AC Quantities		GAAC	No	-75
	0	254	7	65031	Exhaust Temperature		ET	No	-71
	0	254	8	65032	Required Tractor Facilities message	Implement response to task controller or Tractor ECU desired tractor classification and facilities	RTF	No	ISO 11783-7
	0	254	9	65033	Tractor Facilities response message	Tractor response to an implement ECU or task controller tractor classification and facilities request	TFR	No	ISO 11783-7
	0	254	10	65034	Implement Remote Control Command Tractor Response	This command is a task controller or an implement ECU to tractor ECU message.	IRCR	No	ISO 11783-7
	0	254	11	65035	Implement Remote Control Command	This command is a task controller or an implement ECU to tractor ECU message.	IRC	No	ISO 11783-7
	0	254	12	65036	Working Set Member	This message is sent by the Master of a Working Set to identify an individual member of a specific Working Set (Master's Source Address identifies the particular Working Set).	WSMEM	No	-81
	0	254	13	65037	Working Set Master	This message is sent by the Master of a Working Set to identify how many members there are in said set.	WSMSTR	No	-81

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
	0	254	14	65038	Response for Repetition Rate	This global message is the response of the request of a specific user to change the repetition rate.	RESRR	No	ISO 11783-7
	0	254	15	65039	Language Command	The language message has been defined as a global message to inform all ECUs on the 11783 bus the language that the operator wants to use, the date and time format and the units of measure with which the connected system should work.	LC	No	ISO 11783-7
	0	254	16	65040	Auxiliary Valve Number 0 Estimated Flow	This message provides the estimated flow of specified auxiliary valve.	AV00EF	No	ISO 11783-7
	0	254	17	65041	Auxiliary Valve Number 1 Estimated Flow	This message provides the estimated flow of specified auxiliary valve.	AV01EF	No	ISO 11783-7
	0	254	18	65042	Auxiliary Valve Number 2 Estimated Flow	This message provides the estimated flow of specified auxiliary valve.	AV02EF	No	ISO 11783-7
	0	254	19	65043	Auxiliary Valve Number 3 Estimated Flow	This message provides the estimated flow of specified auxiliary valve.	AV03EF	No	ISO 11783-7
	0	254	20	65044	Auxiliary Valve Number 4 Estimated Flow	This message provides the estimated flow of specified auxiliary valve.	AV04EF	No	ISO 11783-7
	0	254	21	65045	Auxiliary Valve Number 5 Estimated Flow	This message provides the estimated flow of specified auxiliary valve.	AV05EF	No	ISO 11783-7
	0	254	22	65046	Auxiliary Valve Number 6 Estimated Flow	This message provides the estimated flow of specified auxiliary valve.	AV06EF	No	ISO 11783-7
	0	254	23	65047	Auxiliary Valve Number 7 Estimated Flow	This message provides the estimated flow of specified auxiliary valve.	AV07EF	No	ISO 11783-7
	0	254	24	65048	Auxiliary Valve Number 8 Estimated Flow	This message provides the estimated flow of specified auxiliary valve.	AV08EF	No	ISO 11783-7
	0	254	25	65049	Auxiliary Valve Number 9 Estimated Flow	This message provides the estimated flow of specified auxiliary valve.	AV09EF	No	ISO 11783-7
	0	254	26	65050	Auxiliary Valve Number 10 Estimated Flow	This message provides the estimated flow of specified auxiliary valve.	AV10EF	No	ISO 11783-7
	0	254	27	65051	Auxiliary Valve Number 11 Estimated Flow	This message provides the estimated flow of specified auxiliary valve.	AV11EF	No	ISO 11783-7
	0	254	28	65052	Auxiliary Valve Number 12 Estimated Flow	This message provides the estimated flow of specified auxiliary valve.	AV12EF	No	ISO 11783-7
	0	254	29	65053	Auxiliary Valve Number 13 Estimated Flow	This message provides the estimated flow of specified auxiliary valve.	AV13EF	No	ISO 11783-7
	0	254	30	65054	Auxiliary Valve Number 14 Estimated Flow	This message provides the estimated flow of specified auxiliary valve.	AV14EF	No	ISO 11783-7
	0	254	31	65055	Auxiliary Valve Number 15 Estimated Flow	This message provides the estimated flow of specified auxiliary valve.	AV15EF	No	ISO 11783-7

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
	0	254	32	65056	Auxiliary Valve Number 0 Measured Flow	This message provides the measurement of specified auxiliary valve.	AV00MF	No	ISO 11783-7
	0	254	33	65057	Auxiliary Valve Number 1 Measured Flow	This message provides the measurement of specified auxiliary valve.	AV01MF	No	ISO 11783-7
	0	254	34	65058	Auxiliary Valve Number 2 Measured Flow	This message provides the measurement of specified auxiliary valve.	AV02MF	No	ISO 11783-7
	0	254	35	65059	Auxiliary Valve Number 3 Measured Flow	This message provides the measurement of specified auxiliary valve.	AV03MF	No	ISO 11783-7
	0	254	36	65060	Auxiliary Valve Number 4 Measured Flow	This message provides the measurement of specified auxiliary valve.	AV04MF	No	ISO 11783-7
	0	254	37	65061	Auxiliary Valve Number 5 Measured Flow	This message provides the measurement of specified auxiliary valve.	AV05MF	No	ISO 11783-7
	0	254	38	65062	Auxiliary Valve Number 6 Measured Flow	This message provides the measurement of specified auxiliary valve.	AV06MF	No	ISO 11783-7
	0	254	39	65063	Auxiliary Valve Number 7 Measured Flow	This message provides the measurement of specified auxiliary valve.	AV07MF	No	ISO 11783-7
	0	254	40	65064	Auxiliary Valve Number 8 Measured Flow	This message provides the measurement of specified auxiliary valve.	AV08MF	No	ISO 11783-7
	0	254	41	65065	Auxiliary Valve Number 9 Measured Flow	This message provides the measurement of specified auxiliary valve.	AV09MF	No	ISO 11783-7
	0	254	42	65066	Auxiliary Valve Number 10 Measured Flow	This message provides the measurement of specified auxiliary valve.	AV10MF	No	ISO 11783-7
	0	254	43	65067	Auxiliary Valve Number 11 Measured Flow	This message provides the measurement of specified auxiliary valve.	AV11MF	No	ISO 11783-7
	0	254	44	65068	Auxiliary Valve Number 12 Measured Flow	This message provides the measurement of specified auxiliary valve.	AV12MF	No	ISO 11783-7
	0	254	45	65069	Auxiliary Valve Number 13 Measured Flow	This message provides the measurement of specified auxiliary valve.	AV13MF	No	ISO 11783-7
	0	254	46	65070	Auxiliary Valve Number 14 Measured Flow	This message provides the measurement of specified auxiliary valve.	AV14MF	No	ISO 11783-7
	0	254	47	65071	Auxiliary Valve Number 15 Measured Flow	This message provides the measurement of specified auxiliary valve.	AV15MF	No	ISO 11783-7
	0	254	48	65072	Auxiliary Valve Number 0 Command	This message provides control of the flow through the auxiliary valves.	AV00C	No	ISO 11783-7
	0	254	49	65073	Auxiliary Valve Number 1 Command	This message provides control of the flow through the auxiliary valves.	AV01C	No	ISO 11783-7
	0	254	50	65074	Auxiliary Valve Number 2 Command	This message provides control of the flow through the auxiliary valves.	AV02C	No	ISO 11783-7
	0	254	51	65075	Auxiliary Valve Number 3 Command	This message provides control of the flow through the auxiliary valves.	AV03C	No	ISO 11783-7

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
	0	254	52	65076	Auxiliary Valve Number 4 Command	This message provides control of the flow through the auxiliary valves.	AV04C	No	ISO 11783-7
	0	254	53	65077	Auxiliary Valve Number 5 Command	This message provides control of the flow through the auxiliary valves.	AV05C	No	ISO 11783-7
	0	254	54	65078	Auxiliary Valve Number 6 Command	This message provides control of the flow through the auxiliary valves.	AV06C	No	ISO 11783-7
	0	254	55	65079	Auxiliary Valve Number 7 Command	This message provides control of the flow through the auxiliary valves.	AV07C	No	ISO 11783-7
	0	254	56	65080	Auxiliary Valve Number 8 Command	This message provides control of the flow through the auxiliary valves.	AV08C	No	ISO 11783-7
	0	254	57	65081	Auxiliary Valve Number 9 Command	This message provides control of the flow through the auxiliary valves.	AV09C	No	ISO 11783-7
	0	254	58	65082	Auxiliary Valve Number 10 Command	This message provides control of the flow through the auxiliary valves.	AV10C	No	ISO 11783-7
	0	254	59	65083	Auxiliary Valve Number 11 Command	This message provides control of the flow through the auxiliary valves.	AV11C	No	ISO 11783-7
	0	254	60	65084	Auxiliary Valve Number 12 Command	This message provides control of the flow through the auxiliary valves.	AV12C	No	ISO 11783-7
	0	254	61	65085	Auxiliary Valve Number 13 Command	This message provides control of the flow through the auxiliary valves.	AV13C	No	ISO 11783-7
	0	254	62	65086	Auxiliary Valve Number 14 Command	This message provides control of the flow through the auxiliary valves.	AV14C	No	ISO 11783-7
	0	254	63	65087	Auxiliary Valve Number 15 Command	This message provides control of the flow through the auxiliary valves.	AV15C	No	ISO 11783-7
	0	254	64	65088	Lighting Data	This lighting message is a response to the request for lighting data in the lighting command message. lighting controllers on the tractor and attached implements.	LD	No	-71
	0	254	65	65089	Lighting Command	The lighting command message has been defined as a global message from the tractor to all lighting controllers on the tractor and attached implements.	LC	No	-71
	0	254	66	65090	Hitch and PTO Commands	This message provides control of the hitch position, PTO shaft set point speed and PTO engagement.	HPTOC	No	ISO 11783-7
	0	254	67	65091	Primary or Rear Power Take off Output Shaft	This message provides the measurement of the current primary or rear PTO output shaft parameters.	RPTO	No	ISO 11783-7
	0	254	68	65092	Secondary or Front Power Take off Output Shaft	This message provides the measurement of the current secondary or front PTO output shaft parameters.	FPTO	No	ISO 11783-7

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
	0	254	69	65093	Primary or Rear Hitch Status	This message provides the measurement of the current rear hitch parameters.	RHS	No	ISO 11783-7
	0	254	70	65094	Secondary or Front Hitch Status	This message provides the measurement of the current front hitch parameters.	FHS	No	ISO 11783-7
	0	254	71	65095	Maintain Power	This message is sent by any ECU connected to the implement bus requesting that the Tractor ECU not switch off the power for the next 2 seconds.	MP	No	ISO 11783-7
	0	254	72	65096	Wheel-based Speed and Distance	This message is sent by the Tractor ECU on the implement bus on construction and agricultural implements and provides to connected systems, the current measured wheel-based speed.	WBSD	No	ISO 11783-7
	0	254	73	65097	Ground-based Speed and Distance	This message is normally sent by the Tractor ECU on the implement bus on construction and agricultural implements and provides to connected systems, the current measured ground speed.	GBSD	No	ISO 11783-7
(R)	0	254	74	65098	Electronic Transmission Controller 7	Transmission State Information	ETC7	No	-71
	0	254	75	65099	Transmission Configuration 2	Contains transmission configuration information.	TCFG2	Yes	-71
	0	254	76	65100	Military Lighting Command	The message contains parameters that control military specific lights.	ML	No	-71
	0	254	77	65101	Total Averaged Information	Averages of information accumulated over the life of the engine	TAVG	No	-71
	0	254	78	65102	Door Control	Used for door information.	DC	No	-71
	0	254	79	65103	Vehicle Dynamic Stability Control 1	Contains information which relates to the VDC system status.	VDC1	No	-71
	0	254	80	65104	Battery Temperature	Contains battery temperature information.	BT1	No	-71
	0	254	81	65105	Adaptive Cruise Control, Operator Input	The operator requested characteristics for the ACC systems operation.	ACC2	No	-71
	0	254	82	65106	Vehicle Electrical Power 3	Vehicle Electrical Power 3	VP3	No	-71
	0	254	83	65107	Retarder Continuous Torque & Speed Limit		RTC1	No	-71
	0	254	84	65108	Engine Continuous Torque & Speed Limit		ECT1	No	-71
	0	254	85	65109	Gaseous Fuel Properties	Properties of the gaseous fuel	GFD	No	-71
	0	254	86	65110	Tank Information 1	Contains information on various tank levels	TI1	No	-71
	0	254	87	65111	Air Suspension Control 5	Used for damper stiffness information	ASC5	No	-71
	0	254	88	65112	Air Suspension Control 4	Used for bellow pressure information	ASC4	No	-71
	0	254	89	65113	Air Suspension Control 3	Used for height information	ASC3	No	-71
	0	254	90	65114	Air Suspension Control 1	Used for suspension control control information	ASC1	No	-71
	0	254	91	65115	Forward Lane Image		FLI2	No	-71

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
	0	254	92	65116	ISO 11992 (even) - Running Gear Equipment #2/2	Used for suspension information, direction from towed vehicle to towing vehicle.	RGE22	No	ISO 11992
	0	254	93	65117	ISO 11992 (odd) - General Purpose Message #1/2	Used for powertrain information, direction from towing vehicle to towed vehicle	GPM12	No	ISO 11992
	0	254	94	65118	ISO 11992 (even) - Running Gear Equipment #2/3	Used for tire monitoring, direction from towed vehicle to towing vehicle.	RGE23	No	ISO 11992
	0	254	95	65119	ISO 11992 (odd) - General Purpose Message #1/3	Used for powertrain information, direction from towing vehicle to towed vehicle	GPM13	No	ISO 11992
	0	254	96	65120	ISO 11992 (even) - General Purpose Message #2/3	Used for powertrain control,direction from towed vehicle to towing vehicle	GPM23	No	ISO 11992
	0	254	97	65121	ISO 11992 (odd) - General Purpose Message #1/4	Used for powertrain information, direction from towing vehicle to towed vehicle	GPM14	No	ISO 11992
	0	254	98	65122	ISO 11992 (even) - General Purpose Message #2/4	Used for powertrain control, direction from towed vehicle to towing vehicle	GPM24	No	ISO 11992
	0	254	99	65123	ISO 11992 (odd) - General Purpose Message #1/5	Used for powertrain information, direction from towing vehicle to towed vehicle	GPM15	No	ISO 11992
	0	254	100	65124	ISO 11992 (even) - General Purpose Message #2/5	Used for lights information, direction from towed vehicle to towing vehicle	GPM25	No	ISO 11992
	0	254	101	65125	ISO 11992 (odd) - General Purpose Message #1/6	Used for general information direction from towing vehicle to towed vehicle	GPM16	No	ISO 11992
	0	254	102	65126	Battery Main Switch Information		BM	No	-71
	0	254	103	65127	Climate Control Configuration		CCC	No	-71
	0	254	104	65128	Vehicle Fluids	This parameter group transfers vehicle fluid information.	VF	No	-71
	0	254	105	65129	Engine Temperature 3	This parameter group is used to transit high resolution engine temperatures for control purposes.	ET3	No	-71
	0	254	106	65130	Engine Fuel/lube systems		EFS	No	-71
	0	254	107	65131	Driver's Identification		DI	Yes	-71
	0	254	108	65132	Tachograph		TCO1	No	-71
	0	254	109	65133	Heater Information		HTR	No	-71
	0	254	110	65134	High Resolution Wheel Speed		HRW	No	-71
	0	254	111	65135	Adaptive Cruise Control		ACC1	No	-71
	0	254	112	65136	Combination Vehicle Weight		CVW	Yes	-71
	0	254	113	65137	Laser Tracer Position		LTP	No	-71
	0	254	114	65138	Laser Leveling System Blade Control		LBC	No	-71
	0	254	115	65139	Laser Receiver Mast Position		LMP	No	-71
	0	254	116	65140	Modify Leveling System Control Set Point		LSP	No	-71

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
	0	254	117	65141	Laser Leveling System Vertical Deviation		LVD	No	-71
	0	254	118	65142	Laser Leveling System Vertical Position Display Data		LVDD	No	-71
	0	254	119	65143	Auxiliary Pressures		AP	No	-71
	0	254	120	65144	Tire Pressure Control Unit Mode and Status		TP1	No	-71
	0	254	121	65145	Tire Pressure Control Unit Target Pressures		TP2	No	-71
	0	254	122	65146	Tire Pressure Control Unit Current Pressures		TP3	No	-71
	0	254	123	65147	Combustion Time 1		CT1	No	-71
	0	254	124	65148	Combustion Time 2		CT2	No	-71
	0	254	125	65149	Combustion Time 3		CT3	No	-71
	0	254	126	65150	Combustion Time 4		CT4	No	-71
	0	254	127	65151	Combustion Time 5		CT5	No	-71
	0	254	128	65152	Combustion Time 6		CT6	No	-71
	0	254	129	65153	Fuel Information 2 (Gaseous)		GFI2	No	-71
	0	254	130	65154	Ignition Timing 1		IT1	No	-71
	0	254	131	65155	Ignition Timing 2		IT2	No	-71
	0	254	132	65156	Ignition Timing 3		IT3	No	-71
	0	254	133	65157	Ignition Timing 4		IT4	No	-71
	0	254	134	65158	Ignition Timing 5		IT5	No	-71
	0	254	135	65159	Ignition Timing 6		IT6	No	-71
	0	254	136	65160	Ignition Transformer Secondary Output 1		ISO1	No	-71
	0	254	137	65161	Ignition Transformer Secondary Output 2		ISO2	No	-71
	0	254	138	65162	Ignition Transformer Secondary Output 3		ISO3	No	-71
	0	254	139	65163	Gaseous Fuel Pressure		GFP	No	-71
(R)	0	254	140	65164	Auxiliary Analog Information	Auxiliary Analog Information	AAI	No	-71
	0	254	141	65165	Vehicle Electrical Power 2		VP2	No	-71
	0	254	142	65166	Service 2		S2	Yes	-71
	0	254	143	65167	Supply Pressure 2		SP2	No	-71
	0	254	144	65168	Engine Torque History		ETH	Yes	-71
	0	254	145	65169	Fuel Leakage		FL	No	-71
	0	254	146	65170	Engine Information		EI	No	-71

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
	0	254	147	65171	Engine Electrical System/Module Information		EES	No	-71
	0	254	148	65172	Engine Auxiliary Coolant		EAC	No	-71
	0	254	149	65173	Rebuild Information		RBI	No	-71
	0	254	150	65174	Turbocharger Wastegate		TCW	No	-71
	0	254	151	65175	Turbocharger Information 5		TCI5	No	-71
	0	254	152	65176	Turbocharger Information 4		TCI4	No	-71
	0	254	153	65177	Turbocharger Information 3		TCI3	No	-71
	0	254	154	65178	Turbocharger Information 2		TCI2	No	-71
	0	254	155	65179	Turbocharger Information 1		TCI1	No	-71
	0	254	156	65180	Main Bearing Temperature 3		MBT3	No	-71
	0	254	157	65181	Main Bearing Temperature 2		MBT2	No	-71
	0	254	158	65182	Main Bearing Temperature 1		MBT1	No	-71
	0	254	159	65183	Exhaust Port Temperature 5		EPT5	No	-71
	0	254	160	65184	Exhaust Port Temperature 4		EPT4	No	-71
	0	254	161	65185	Exhaust Port Temperature 3		EPT3	No	-71
	0	254	162	65186	Exhaust Port Temperature 2		EPT2	No	-71
	0	254	163	65187	Exhaust Port Temperature 1		EPT1	No	-71
	0	254	164	65188	Engine Temperature 2		ET2	No	-71
	0	254	165	65189	Intake Manifold Information 2		IMT2	No	-71
	0	254	166	65190	Intake Manifold Information 1		IMT1	No	-71
	0	254	167	65191	Alternator Temperature		AT	No	-71
	0	254	168	65192	Articulation Control		AC	No	-71
	0	254	169	65193	Exhaust Oxygen 1		EO1	No	-71
	0	254	170	65194	Alternate Fuel 2		AF2	No	-71
	0	254	171	65195	Electronic Transmission Controller 6		ETC6	No	-71
	0	254	172	65196	Wheel Brake Lining Remaining Information		EBC4	No	-71
	0	254	173	65197	Wheel Application Pressure High Range Information		EBC3	No	-71
	0	254	174	65198	Air Supply Pressure	Air Supply Pressure	AIR1	No	-71
	0	254	175	65199	Fuel Consumption (Gaseous)		GFC	No	-71
	0	254	176	65200	Trip Time Information 2		TTI2	No	-71
	0	254	177	65201	ECU History		EH	No	-71

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
	0	254	178	65202	Fuel Information 1 (Gaseous)		GFI1	No	-71
	0	254	179	65203	Fuel Information (Liquid)		LFI	No	-71
	0	254	180	65204	Trip Time Information 1		TTI1	No	-71
	0	254	181	65205	Trip Shutdown Information		TSI	No	-71
	0	254	182	65206	Trip Vehicle Speed/Cruise Distance Information		TVI	No	-71
	0	254	183	65207	Engine Speed/Load Factor Information		LF	No	-71
	0	254	184	65208	Trip Fuel Information (Gaseous)		GTFI	No	-71
	0	254	185	65209	Trip Fuel Information (Liquid)		LTFI	No	-71
	0	254	186	65210	Trip Distance Information		TDI	No	-71
	0	254	187	65211	Trip Fan Information		TFI	No	-71
	0	254	188	65212	Compression/Service Brake Information		CBI	No	-71
	0	254	189	65213	Fan Drive	This parameter group transfers status and measured information on the engine coolant fan.	FD	No	-71
	0	254	190	65214	Electronic Engine Controller 4		EEC4	No	-71
	0	254	191	65215	Wheel Speed Information		EBC2	No	-71
	0	254	192	65216	Service Information		SERV	Yes	-71
	0	254	193	65217	High Resolution Vehicle Distance		VDHR	No	-71
	0	254	194	65218	Electronic Retarder Controller 2		ERC2	No	-71
	0	254	195	65219	Electronic Transmission Controller 5		ETC5	No	-71
	0	254	196	65220	ISO 11992		EBS22	No	ISO 11992
	0	254	197	65221	Electronic Transmission Controller 4		ETC4	No	-71
	0	254	198	65222	ISO 11992		EBS23	No	ISO 11992
	0	254	199	65223	Electronic Transmission Controller 3		ETC3	No	-71
	0	254	200	65224	ISO 11992		GPM22	No	ISO 11992
	0	254	201	65225	ISO 11992		EBS12	No	ISO 11992
(R)	0	254	202	65226	Diagnostic Message #1	Active Diagnostic Trouble Codes	DM1	Yes	-73
	0	254	203	65227	Diagnostic Message #2		DM2	Yes	-73
	0	254	204	65228	Diagnostic Message #3		DM3	No	-73
	0	254	205	65229	Diagnostic Message #4		DM4	Yes	-73
	0	254	206	65230	Diagnostic Message #5		DM5	Yes	-73
	0	254	207	65231	Diagnostic Message #6		DM6	Yes	-73
	0	254	208	65232	Diagnostic Message #8		DM8	Yes	-73

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
	0	254	209	65233	Oxygen Sensor Test Results		DM9	No	-73
	0	254	210	65234	Diagnostic Message #10		DM10	No	-73
	0	254	211	65235	Diagnostic Message #11		DM11	No	-73
	0	254	212	65236	Diagnostic Message #12		DM12	Yes	-73
	0	254	213	65237	Alternator Speed		AS	No	-71
	0	254	214	65238	Reserved for Network Management		RESV1	No	-81
	0	254	215	65239	Reserved		RESV2	No	-81
	0	254	216	65240	Commanded Address	Message that is used to assign a source address to a specific Controller Application Name.	CA	Yes	-81
	0	254	217	65241	Auxiliary Input/Output Status		AUXIO	No	-71
	0	254	218	65242	Software Identification		SOFT	Yes	-71
	0	254	219	65243	Engine Fluid Level/Pressure 2		EFL/P2	No	-71
	0	254	220	65244	Idle Operation		IO	Yes	-71
	0	254	221	65245	Turbocharger		TC	No	-71
	0	254	222	65246	Air Start Pressure		AIR2	No	-71
(R)	0	254	223	65247	Electronic Engine Controller 3		EEC3	No	-71
	0	254	224	65248	Vehicle Distance		VD	No	-71
	0	254	225	65249	Retarder Configuration		RC	Yes	-71
(R)	0	254	226	65250	Transmission Configuration	Total message length depends on total number of forward and reverse gear ratios.	TCFG	Yes	-71
	0	254	227	65251	Engine Configuration	Engine configuration information	EC	Yes	-71
(R)	0	254	228	65252	Shutdown		SHUTDOWN	No	-71
	0	254	229	65253	Engine Hours, Revolutions		HOURS	No	-71
	0	254	230	65254	Time/Date		TD	No	-71
	0	254	231	65255	Vehicle Hours		VH	No	-71
	0	254	232	65256	Vehicle Direction/Speed		VDS	No	-71
	0	254	233	65257	Fuel Consumption (Liquid)		LFC	No	-71
	0	254	234	65258	Vehicle Weight		VW	No	-71
	0	254	235	65259	Component Identification		CI	Yes	-71
	0	254	236	65260	Vehicle Identification		VI	Yes	-71
	0	254	237	65261	Cruise Control/Vehicle Speed Setup		CCSS	No	-71
	0	254	238	65262	Engine Temperature 1		ET1	No	-71
	0	254	239	65263	Engine Fluid Level/Pressure 1		EFL/P1	No	-71

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
(R)	0	254	240	65264	Power Takeoff Information		PTO	No	-71
	0	254	241	65265	Cruise Control/Vehicle Speed		CCVS	No	-71
	0	254	242	65266	Fuel Economy (Liquid)		LFE	No	-71
	0	254	243	65267	Vehicle Position		VP	No	-71
	0	254	244	65268	Tire Condition	Tire Condition Message	TIRE	No	-71
	0	254	245	65269	Ambient Conditions		AMB	No	-71
	0	254	246	65270	Inlet/Exhaust Conditions 1		IC1	No	-71
	0	254	247	65271	Vehicle Electrical Power		VEP	No	-71
(R)	0	254	248	65272	Transmission Fluids		TF	No	-71
	0	254	249	65273	Axle Information	Axle information message	AI	No	-71
	0	254	250	65274	Brakes		B	No	-71
	0	254	251	65275	Retarder fluids		RF	No	-71
	0	254	252	65276	Dash Display		DD	No	-71
	0	254	253	65277	Alternate Fuel 1		A1	No	-71
	0	254	254	65278	Auxiliary Water Pump Pressure		AWPP	No	-71
	0	254	255	65279	Water in Fuel Indicator		WFI	No	-71
	0	255	0	65280	Proprietary B (first entry)		PropB_00	Yes	-21
	0	255	255	65535	Proprietary B (last entry)		PropB_FF	Yes	-21
(R)	1	237	DA	126208	NMEA - Request/Command/Acknowledge group function	The Request / Command / Acknowledge Group type of function is defined by first field.		No	NMEA 2000
(R)	1	238	DA	126464	PGN List - Transmit/Receive PGN's group function	The Transmit / Receive PGN List Group type of function is defined by first field.		No	NMEA 2000
(R)	1	240	16	126992	System Time	The purpose of this PGN is to provide a regular transmission of UTC time and date.		No	NMEA 2000
(R)	1	240	20	126996	Product Information	Provides product information onto the network that could be important for determining quality of data coming from this product.		No	NMEA 2000
(R)	1	240	22	126998	Configuration Information	Free-form alphanumeric fields describing the installation (e.g., starboard engine room location) of the device.		No	NMEA 2000
(R)	1	241	5	127237	Heading/Track Control	Sends Commands to, and receives data from, heading control systems.		No	NMEA 2000
(R)	1	241	13	127245	Rudder	Rudder order command in direction or angle with current rudder angle reading.		No	NMEA 2000
(R)	1	241	18	127250	Vessel Heading	Heading sensor value with a flag for True or Magnetic.		No	NMEA 2000

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
(R)	1	241	19	127251	Rate of Turn	Rate of Turn PGN added in version 1.004 of this standard.		No	NMEA 2000
(R)	1	241	25	127257	Attitude	This PGN provides a single transmission that describes the position of a vessel relative to both horizontal and vertical planes.		No	NMEA 2000
(R)	1	242	0	127488	Engine Parameters, Rapid Update	Provides data with a high update rate for a specific engine in a single frame message.		No	NMEA 2000
(R)	1	242	1	127489	Engine Parameters, Dynamic	Used to provide real-time operational data and status relevant to a specific engine, indicated by the engine instance field.		No	NMEA 2000
(R)	1	242	5	127493	Transmission Parameters, Dynamic	Used to provide the operational state and internal operating parameters of a specific transmission.		No	NMEA 2000
(R)	1	242	9	127497	Trip Parameters, Small Craft	Trip engine hours and fuel consumption.		No	NMEA 2000
(R)	1	242	10	127498	Engine Parameters, Static	Provides identification information and rated engine speed for the engine indicated by the engine instance field.		No	NMEA 2000
(R)	1	242	13	127501	Binary Switch Bank Status	Universal status report for multiple banks of two-state indicators.		No	NMEA 2000
(R)	1	242	14	127502	Switch Bank Control	Universal commands to multiple banks of two-state devices.		No	NMEA 2000
(R)	1	242	17	127505	Fluid Level	Fluid Level contains an instance number, level of fluid, and type of fluid.		No	NMEA 2000
(R)	1	242	20	127508	Battery Status	Provides parametric data for a specific battery, indicated by the battery instance field.		No	NMEA 2000
(R)	1	245	3	128259	Speed	The purpose of this PGN is to provide a single transmission that describes the motion of a vessel.		No	NMEA 2000
(R)	1	245	11	128267	Water Depth	Water depth relative to the transducer and offset of the measuring transducer.		No	NMEA 2000
(R)	1	245	19	128275	Distance Log	This PGN provides the cumulative voyage distance traveled since the last reset.		No	NMEA 2000
(R)	1	246	8	128520	Tracked Target Data	Message for reporting status and target data from tracking radar external devices.		No	NMEA 2000
(R)	1	248	1	129025	Position, Rapid Update	This PGN provides latitude and longitude referenced to WGS84.		No	NMEA 2000
(R)	1	248	2	129026	COG & SOG, Rapid Update	This PGN is a single frame PGN that provides Course Over Ground (COG) and Speed Over Ground (SOG).		No	NMEA 2000
(R)	1	248	5	129029	GNSS Position Data	This PGN conveys a comprehensive set of Global Navigation Satellite System (GNSS) parameters, including position information.		No	NMEA 2000

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
(R)	1	248	9	129033	Time & Date	This PGN has a single transmission that provides: UTC Time, UTC Date, and Local offset.		No	NMEA 2000
(R)	1	248	20	129044	Datum	Local geodetic datum and datum offsets from a reference datum.		No	NMEA 2000
(R)	1	248	21	129045	User Datum Settings	Transformation parameters for converting from WGS-84 to other Datums.		No	NMEA 2000
(R)	1	249	3	129283	Cross Track Error	This PGN provides the magnitude of position error perpendicular to the desired course.		No	NMEA 2000
(R)	1	249	4	129284	Navigation Data	This PGN provides essential navigation data for a route following.		No	NMEA 2000
(R)	1	249	11	129291	Set & Drift, Rapid Update	The Set and Drift effect on the Vessel is the direction and the speed of a current.		No	NMEA 2000
(R)	1	249	21	129301	Time to/from Mark	Time to go to or elapsed from a generic mark, that may be non-fixed.		No	NMEA 2000
(R)	1	249	22	129302	Bearing and Distance between two Marks	Bearing and distance from the origin mark to the destination mark, calculated at the origin mark, for any two arbitrary generic marks.		No	NMEA 2000
(R)	1	250	2	129538	GNSS Control Status	GNSS common satellite receiver parameter status		No	NMEA 2000
(R)	1	250	3	129539	GNSS DOPs	This PGN provides a single transmission containing GNSS status and dilution of precision components (DOP).		No	NMEA 2000
(R)	1	250	4	129540	GNSS Sats in View	GNSS information on current satellites in view tagged by sequence ID. Information includes PRN, elevation, azimuth, and SNR.		No	NMEA 2000
(R)	1	250	5	129541	GPS Almanac Data	This PGN provides a single transmission that contains relevant almanac data for GPS products.		No	NMEA 2000
(R)	1	250	6	129542	GNSS Pseudorange Noise Statistics	GNSS pseudorange measurement noise statistics can be translated in the position domain.		No	NMEA 2000
(R)	1	250	9	129545	GNSS RAIM Output	This PGN is used to provide the output from a GNSS Receiver's Receiver Autonomous Integrity Monitoring (RAIM) process.		No	NMEA 2000
(R)	1	250	10	129546	GNSS RAIM Settings	This PGN is used to report the control parameters for a GNSS Receiver Autonomous Integrity Monitoring (RAIM) process.		No	NMEA 2000
(R)	1	250	11	129547	GNSS Pseudorange Error Statistics	This PGN is used to support Receiver Autononmous Integrity Monitoring (RAIM).		No	NMEA 2000
(R)	1	250	13	129549	DGNSS Corrections	This PGN provides a means to pass differential GNSS corrections between NMEA 2000 devices.		No	NMEA 2000
(R)	1	250	14	129550	GNSS Differential Correction Receiver Interface	GNSS common differential correction receiver parameter status.		No	NMEA 2000

Rev	DP	PF	PS	PGN	Parameter Group Label	Description	Acronym	MP	PGN Doc
(R)	1	250	15	129551	GNSS Differential Correction Receiver Signal	GNSS differential correction receiver status tagged by sequence ID.		No	NMEA 2000
(R)	1	250	20	129556	GLONASS Almanac Data	This PGN provides a single transmission that contains relevant almanac data for Glonass products.		No	NMEA 2000
(R)	1	251	7	129799	Radio Frequency/Mode/Power	This PGN provides status and control for a Radiotelephone, connected to a NMEA 2000 network.		No	NMEA 2000
(R)	1	251	16	129808	DSC Call Information	This PGN provides Digital Selective Calling (DSC) data according to ITU M.493-9 with optional expansion according to ITU M.821-		No	NMEA 2000
(R)	1	252	4	130052	Loran-C TD Data	This provides Time Difference (TD) lines of position of Loran-C signals relative to a single Group Repetition Interval.		No	NMEA 2000
(R)	1	252	5	130053	Loran-C Range Data	This provides Propagation times (Ranges) of Loran-C signals relative to a single Group Repetition Interval.		No	NMEA 2000
(R)	1	253	2	130306	Wind Data	Direction and speed of Wind.		No	NMEA 2000
(R)	1	253	6	130054	Loran-C Signal Data	SNR, ECD, and ASF values of Loran-C signals.		No	NMEA 2000
(R)	1	253	6	130310	Environmental Parameters	Local atmospheric environmental conditions		No	NMEA 2000
(R)	1	253	16	130320	Tide Station Data	Tide station measurement data including station location, numeric identifier, and name.		No	NMEA 2000
(R)	1	253	17	130321	Salinity Station Data	Salinity station measurement data including station location, numeric identifier, and name.		No	NMEA 2000
(R)	1	253	18	130322	Current Station Data	Current station measurement data including station location, numeric identifier, and name.		No	NMEA 2000
(R)	1	253	19	130323	Meteorological Station Data	Meteorological station measurement data including station location, numeric identifier, and name.		No	NMEA 2000
(R)	1	253	20	130324	Moored Buoy Station Data	Moored buoy measurement data including station location and numeric identifier.		No	NMEA 2000
(R)	1	254	16	130576	Small Craft Status	Provides data on various small craft control surfaces and speed through the water.		No	NMEA 2000
(R)	1	254	17	130577	Direction Data	The purpose of this PGN is to group three fundamental vectors related to vessel motion.		No	NMEA 2000
(R)	1	254	18	130578	Vessel Speed Components	This PGN provides a single transmission that accurately describes the speed of a vessel by component vectors.		No	NMEA 2000

APPENDIX B

ADDRESS AND IDENTITY ASSIGNMENTS

Table B1
J1939 Industry Groups

Rev	Industry Group	Industry	Description
	0	Global, applies to all	
	1	On-Highway Equipment	
	2	Agricultural and Forestry Equipment	
	3	Construction Equipment	
	4	Marine	
	5	Industrial-Process Control-Stationary (Gen-Sets)	
	6	Reserved for future assignment by SAE	
	7	Reserved for future assignment by SAE	

Table B2
J1939 Preferred Addresses
Industry Group #0 – Global

Note: Preferred Addresses 128 thru 247 are Industry Group specific. See Tables B3 thru B9.

Rev	SA	Controller Application	Comments	Associated NAME Function
	0	Engine #1	The #1 on the Engine CA is to identify that this is the first PA being used for the particular function, Engine. It may only be used for the NAME Function of 0, Function Instance 0, and an ecu instance of 0, which is commonly know as the “first engine”.	0
	1	Engine #2	The #2 on the Engine CA is to identify that this is the second PA available for use for the function, Engine. It may be used by the “second” engine (Function 0, Function Instance 1, ECU Instance 0), but it may also be used by the second ecu on the first engine (Function 0, Function Instance 0, ECU Instance 1), if there is no second engine.	0
	3	Transmission #1	The first transmission - may only be used for the NAME Function of 3, Function Instance 0, and an ecu instance of 0.	3
	4	Transmission #2	The second PA available for use for the function, Transmission. It may be used by the “second” transmission (Function 3, Function Instance 1, ECU Instance 0), but it may also be used by the second ecu on the first transmission (Function 3, Function Instance 0, ECU Instance 1), if there is no second transmission.	3
	5	Shift Console - Primary	The shift console mounted in the normal drivers position	5
	6	Shift Console - Secondary	A shift console mounted remotely from the normal drivers position (May not be used for any ecu instances of the primary shift console)	5

Rev	SA	Controller Application	Comments	Associated NAME Function
	7	Power TakeOff - (Main or Rear)		6
	8	Axle - Steering		7
	9	Axle - Drive #1	The first drive axle - may only be used for the NAME Function of 8, Function Instance 0, and an ecu instance of 0.	8
	10	Axle - Drive #2	The second PA available for use for the function, Axle, Drive. It may be used by the “second” drive axle (Function 8, Function Instance 1, ECU Instance 0), but it may also be used by the second ecu on the first drive axle (Function 8, Function Instance 0, ECU Instance 1), if there is no second drive axle.	8
	11	Brakes - System Controller		9
	12	Brakes - Steer Axle		10
	13	Brakes - Drive axle #1	The brakes on the first drive axle - may only be used for the NAME Function of 11, Function Instance 0, and an ecu instance of 0.	11
	14	Brakes - Drive Axle #2	The second PA available for use for the function, Brakes on a Drive Axle. It may be used by the “second” drive axle brakes (Function 11, Function Instance 1, ECU Instance 0), but it may also be used by the second ecu on the first drive axle brakes (Function 11, Function Instance 0, ECU Instance 1), if there is no second drive axle brakes.	11
	15	Retarder - Engine	Engine Compression Braking	12
	16	Retarder - Driveline		13
	17	Cruise Control	Speed-based control	14
	18	Fuel System		15
	19	Steering Controller		16
	20	Suspension - Steer Axle		17
	21	Suspension - Drive Axle #1	The suspension on the first drive axle - may only be used for the NAME Function of 18, Function Instance 0, and an ecu instance of 0.	18
	22	Suspension - Drive Axle #2	The second PA available for use for the function, suspension on drive axle. It may be used by the “second” drive axle’s suspension system (Function 18, Function Instance 1, ECU Instance 0), but when there is no second drive axle it may be used by the second ecu on the first drive axle’s suspension (Function 18, Function Instance 0, ECU Instance 1).	18
	23	Instrument Cluster #1	The first instrument cluster - may only be used for the NAME Function of 19, Function Instance 0, and an ecu instance of 0.	19
	24	Trip Recorder		20
	25	Passenger-Operator Climate Control #1	The first climate control - may only be used for the NAME Function of 21, Function Instance 0, and an ecu instance of 0, and must be associated with the driver (operator) climate control, when there are multiple climate control systems.	21
	26	Alternator/Electrical Charging System	Vehicle's primary charging controller	53
	27	Aerodynamic Control		22

Rev	SA	Controller Application	Comments	Associated NAME Function
	28	Vehicle Navigation		23
	29	Vehicle Security		24
(R)	30	Electrical System	This may include Load Centers, Fuseboxes, & Power Distribution boards	67
	31	Starter System		59
	32	Tractor-Trailer Bridge #1	The first Tractor mounted bridge leading to trailer(s) - may only be used for the NAME Function of , Function Instance 0, and an ecu instance of 0.	
	33	Body Controller		26
	34	Auxiliary Valve Control		
	35	Hitch Control	Straight truck hitch (NOT Ag hitch – it is in IG 2)	
	36	Power TakeOff (Front or Secondary)		27
	37	Off Vehicle Gateway		28
	38	Virtual Terminal (in cab)		29
	39	Management Computer #1	The first Management Computer - may only be used for the NAME Function of 30, Function Instance 0, and an ecu instance of 0.	30
	40	Cab Display #1	The first Cab Display - may only be used for the NAME Function of 60, Function Instance 0, and an ecu instance of 0.	60
	41	Retarder, Exhaust, Engine #1	The first engine exhaust retarder - may only be used for the NAME Function of 12, Function Instance 0, and an ecu instance of 0.	12
	42	Headway Controller	Forward-looking collision warning, collision avoidance, speed controller, or speed matching	32
	43	On-Board Diagnostic Unit		62
	44	Retarder, Exhaust, Engine #2	The second PA available for use for the function, engine exhaust retarder. It may be used by the “second” engine’s exhaust retarder (Function 12, Function Instance 1, ECU Instance 0), but in cases without a second engine it may also be used by the second exhaust retarder on the first engine or by the second ecu on the first exhaust retarder on the first engine (Function 12, Function Instance 0, ECU Instance 1).	12
	45	Endurance Braking System		64
	46	Hydraulic Pump Controller		34
	47	Suspension - System Controller #1	The first Suspension - System Controller - may only be used for the NAME Function of 35, Function Instance 0, and an ecu instance of 0.	35
	48	Pneumatic - System Controller		36
	49	Cab Controller - Primary		37
	50	Cab Controller - Secondary		37
	51	Tire Pressure Controller		38
	52	Ignition Control Module #1	The first Ignition Control Module - may only be used for the NAME Function of 39, Function Instance 0, and an ecu instance of 0.	39

Rev	SA	Controller Application	Comments	Associated NAME Function
	53	Ignition Control Module #2	The second PA available for use for the function, Ignition Control Module. It may be used by the "second" engine's Ignition Control Module (Function 39, Function Instance 1, ECU Instance 0), but in cases without a second engine it may also be used by the second Ignition Control Module on the first engine or even by the second ecu on the first Ignition Control Module on the first engine (Function 39, Function Instance 0, ECU Instance 1) when there is only one Ignition Control Module Instance.	39
	54	Seat Control #1	The first seat control module - may only be used for the NAME Function of 40, Function Instance 0, and an ecu instance of 0, and must be associated with the driver seat, when there are multiple seats with separate controls.	40
	55	Lighting - Operator Controls		41
	56	Rear Axle Steering Controller #1		
	57	Water Pump Controller		42
	58	Passenger-Operator Climate Control #2	The second PA available for climate control - must be associated with the passenger climate control (NAME Function of 21, function instance 1, and an ecu instance of 0), when there are multiple climate control systems. If only one climate control system then may be used for the second ecu of the climate control (Function 21, Function Instance 0, ECU Instance of 1).	21
	59	Transmission Display - Primary	Display to operate specifically in conjunction with the transmission control mounted in the normal drivers position	43
	60	Transmission Display - Secondary	Secondary display to operate specifically in conjunction with the transmission control mounted remotely from the normal drivers position (May not be used for any ecu instances of the primary transmission display)	43
	61	Exhaust Emission Controller		44
	62	Vehicle Dynamic Stability Controller		45
	63	Oil Sensor		46
	64	Suspension - System Controller #2		35
	65	Information System Controller #1	The first Information System Controller - may only be used for the NAME Function of 47, Function Instance 0, and an ecu instance of 0.	47
	66	Ramp Control	Control of ramps, lifts, or tailgates	48
	67	Clutch/Converter Unit	Control of either the clutch and/or converter	49
	68	Auxiliary Heater #1	The first Auxiliary Heater - may only be used for the NAME Function of 50, Function Instance 0, and an ecu instance of 0.	50
	69	Auxiliary Heater #2	The second PA available for auxiliary heater - must be associated with the second auxiliary heater control (NAME Function of 50, Function Instance 1, and an ecu instance of 0), when there are multiple auxiliary heaters. If only one auxiliary heater control on the vehicle then may be used for the second ecu of the first auxiliary heater (Function 50, Function Instance 0, ECU Instance of 1).	50

Rev	SA	Controller Application	Comments	Associated NAME Function
	70	Engine Valve Controller	Electronic control used to control actuation of engine intake and/or exhaust valves	63
	71	Chassis Controller #1	The first Chassis Controller - may only be used for the NAME Function of 52, Function Instance 0, and an ecu instance of 0.	52
	72	Chassis Controller #2	The second PA available for chassis control - must be associated with the second chassis (NAME Function of 52, Function Instance 1, and an ecu instance of 0), when there are multiple chassis. If only one chassis on the vehicle then may be used for the second ecu of the first chassis (Function 52, Function Instance 0, ECU Instance of 1).	52
	73	Propulsion Battery Charger	A device used to charge propulsion batteries in an electric vehicle from an off-board source of electrical energy.	31
	74	Communications Unit, Cellular	Cellular communications device	54
	75	Communications Unit, Satellite	Satellite communications device	55
	76	Communications Unit, Radio	Radio communications device, either receiver only, transmitter only or transceiver	56
	77	Steering Column Unit	Device that gathers the operator inputs from switches/levers/etc located in and/or around the steering wheel/column	57
	78	Fan Drive Controller	Controls the main cooling fan operation	58
	79	Seat Control #2	The second PA available for seat controls - must be associated with the passenger seat (NAME Function of 40, Function Instance 1, and an ecu instance of 0), when there are multiple seats with separate controls. If only one seat then may be used for the second ecu of the seat control (Function 40, Function Instance 0, ECU Instance of 1).	40
(R)	80	Parking brake controller	Module controlling the parking brake	9
	81	thru 127 are reserved for future assignment by SAE		
	248	File Server / Printer	On-board file and/or print server	61
	249	Off Board Diagnostic-Service Tool #1	The address for the first off board diagnostic service tool - may only be used for the NAME Function of 129, Function Instance 0, and an ecu instance of 0.	129
	250	Off Board Diagnostic-Service Tool #2	The second PA available for use for the function, Off Board Diagnostic-Service Tool. It should only be used by the “second” Off Board Diagnostic-Service Tool (Function 129, Function Instance 1, ECU Instance 0).	129
	251	On-Board Data Logger		130
	252	Reserved for Experimental Use		
	253	Reserved for OEM		
	254	Null Address		
	255	GLOBAL (All-Any Node)		

Table B3
J1939 Preferred Addresses
Industry Group #1 – On-Highway Equipment

Rev	SA	ECU-Module	Definition
	128	thru 163 are reserved for future assignment by SAE but available for use by self configurable ECUs	Used for dynamic address assignment
(R)	164	On Board Diagnostic Unit #2	Controller used to report On Board Diagnostics
(R)	165	Rear Steering Axle Controller #2	Rear steering controller 2 for axle group
(R)	166	Rear Steering Axle Controller #3	Rear steering controller 3 for axle group
	167	Instrument Cluster #2	A second optional, or auxiliary, gauge display for a vehicle
	168	Trailer #5 Bridge	Bridge for fifth towed Vehicle System (e.g. trailer or dolly)
	169	Trailer #5 Lighting-electrical	
	170	Trailer #5 Brakes (ABS-EBS)	
	171	Trailer #5 Reefer	
	172	Trailer #5 Cargo	
	173	Trailer #5 Chassis-Suspension	
	174	Other Trailer #5 Devices	Recommended address space for subnetwork devices
	175	Other Trailer #5 Devices	Recommended address space for subnetwork devices
	176	Trailer #4 Bridge	Bridge for fourth towed Vehicle System (e.g. trailer or dolly)
	177	Trailer #4 Lighting-electrical	
	178	Trailer #4 Brakes (ABS-EBS)	
	179	Trailer #4 Reefer	
	180	Trailer #4 Cargo	
	181	Trailer #4 Chassis-Suspension	
	182	Other Trailer #4 Devices	Recommended address space for subnetwork devices
	183	Other Trailer #4 Devices	Recommended address space for subnetwork devices
	184	Trailer #3 Bridge	Bridge for third towed Vehicle System (e.g. trailer or dolly)
	185	Trailer #3 Lighting-electrical	
	186	Trailer #3 Brakes (ABS-EBS)	
	187	Trailer #3 Reefer	
	188	Trailer #3 Cargo	
	189	Trailer #3 Chassis-Suspension	
	190	Other Trailer #3 Devices	Recommended address space for subnetwork devices
	191	Other Trailer #3 Devices	Recommended address space for subnetwork devices
	192	Trailer #2 Bridge	Bridge for second towed Vehicle System (e.g. trailer or dolly)
	193	Trailer #2 Lighting-electrical	
	194	Trailer #2 Brakes (ABS-EBS)	
	195	Trailer #2 Reefer	
	196	Trailer #2 Cargo	
	197	Trailer #2 Chassis-Suspension	
	198	Other Trailer #2 Devices	Recommended address space for subnetwork devices
	199	Other Trailer #2 Devices	Recommended address space for subnetwork devices
	200	Trailer #1 Bridge	Bridge for first towed Vehicle System (e.g. trailer or dolly)

Rev	SA	ECU-Module	Definition
	201	Trailer #1 Lighting-electrical	
	202	Trailer #1 Brakes (ABS-EBS)	
	203	Trailer #1 Reefer	
	204	Trailer #1 Cargo	
	205	Trailer #1 Chassis-Suspension	
	206	Other Trailer #1 Devices	Recommended address space for subnetwork devices
	207	Other Trailer #1 Devices	Recommended address space for subnetwork devices
	208	thru 229 are reserved for future assignment by SAE	To be used for individual preassigned addresses
	230	Body-to-Vehicle Interface Control	Interface controller managing interaction of vehicle functions and body functions. May be a combination of body signals and gateway functionalities.
	231	Articulation Turntable Control	Controller managing the articulation turntable for joined body buses.
	232	Forward Road Image Processor	Views the road ahead for electronic recognition of several items
	233	Door Controller #3	
	234	Door Controller #4	
	235	Tractor/Trailer Bridge #2	Second tractor mounted bridge leading to trailer(s)
	236	Door Controller #1	cab drivers side or first door
	237	Door Controller #2	cab codrivers side or second door
	238	Tachograph	
	239	Electric Propulsion Control Unit #1	First or only on-board device converting torque commands to current commands in an electric vehicle system
	240	Electric Propulsion Control Unit #2	Second on-board device converting torque commands to current commands in an electric vehicle system
	241	Electric Propulsion Control Unit #3	Third on-board device converting torque commands to current commands in an electric vehicle system
	242	Electric Propulsion Control Unit #4	Fourth on-board device converting torque commands to current commands in an electric vehicle system
	243	Battery Pack Monitor #1	Device to monitor battery pack #1
	244	Battery Pack Monitor #2	Device to monitor battery pack #2
	245	Battery Pack Monitor #3	Device to monitor battery pack #3
	246	Battery Pack Monitor #4	Device to monitor battery pack #4
	247	Auxiliary Power Unit (APU)	Device used to provide auxiliary power, such as electrical, hydraulic, pneumatic, or rotary

Table B4
J1939 Preferred Addresses
Industry Group #2 – Agricultural and Forestry Equipment

Rev	SA	DC	DC Instance	Function	Description	Function Instance	ECU Instance
					All devices in IG2 using preferred addresses shall be self-configurable. IG2 devices shall include the value of the first full 32 bits of NAME field.		
	128			thru 207 are reserved for dynamic address assignment	Used for dynamic address assignment (self-configurable)		
	208			thru 238 are reserved for future assignment by SAE	Used for individual preassigned addresses		
	239	0	0	Depth Control		0	0
	240	0	0	Tractor ECU	Gateway between the power train and the implement bus	0	0
	241	7	0	Tailings Monitoring		0	0
	242	7	0	Header Control		0	0
	243	7	0	Product Loss Monitoring		0	0
	244	7	0	Product Moisture Sensing		0	0
	245	0	0	Non Virtual Terminal Display (Implement Bus)	A non Virtual Terminal cab display connected to the implement bus	0	0
	246	0	0	Operator Controls - Machine Specific		0	0
	247	0	0	Task Control (Mapping Computer)		0	0

Table B5
J1939 Preferred Addresses
Industry Group #3 – Construction Equipment

Rev	SA	ECU-Module	Definition
	128	thru 207 are reserved for future assignment by SAE	Used for dynamic address assignment (self-configurable)
	208	thru 224 are reserved for future assignment	Used for individual preassigned addresses
	225	Lift Arm Controller	Controls the lift arms and tilt functions on a construction loader, skid steer loader, or similar machine. Refers to the main elevation and tilt functions of the machine's lift arms but may not include the control of the attachment itself.
	226	Slope Sensor	A device that measures the slope along an axis.
	227	Main Controller - Skid Steer Loader	Primary system controller for skid steer loader
	228	Loader Control	Controls the hydraulic system of the loader attachment of a loader/backhoe, wheel loader, skid steer, or similar vehicle
	229	Laser Tracer	A device that receives a laser strike and reports the vertical and horizontal position.
	230	Land Leveling System Display	This device displays position information at a remote location.
	231	Single Land Leveling System Supervisor	This device is the Land Leveling System Supervisor for a single control loop.
	232	Land Leveling Electric Mast	A device that moves a Sensor to maintain a specific position.
	233	Single Land Leveling System Operator Interface	A component that allows the user to control the Land Leveling System and display information about the operation of the system.
	234	Laser Receiver	A device that receives a laser strike, and reports the specific position.
	235	Supplemental Sensor Processing Unit #1	
	236	Supplemental Sensor Processing Unit #2	
	237	Supplemental Sensor Processing Unit #3	
	238	Supplemental Sensor Processing Unit #4	
	239	Supplemental Sensor Processing Unit #5	
	240	Supplemental Sensor Processing Unit #6	
	241	Engine Monitor #1	
	242	Engine Monitor #2	
	243	Engine Monitor #3	
	244	Engine Monitor #4	
	245	Engine Monitor #5	
	246	Engine Monitor #6	
	247	Engine Monitor #7	

Table B6
J1939 Preferred Addresses
Industry Group #4 – Marine Equipment

Rev	SA	ECU-Module	Definition
	128	thru 207 are reserved for future assignment by SAE	Used for dynamic address assignment (self-configurable)
	208	thru 235 are reserved for future assignment	Used for individual preassigned addresses
	236	Display #1 for Protection System for Marine Engines	The first ecu that provides the display of information and/or indicators associated specifically with the protection system on the first engine of a Marine System.
	237	Protection System for Marine Engines	The first ecu that controls the Protection functions on the first engine of a Marine System.
	238	Alarm System Control #1 for Marine Engines	The first ecu that controls the Alarm functions on the first engine of a Marine System.
	239	Engine #3	The Engine ECU for the third engine within a system.
	240	Engine #4	The Engine ECU for the fourth engine within a system.
	241	Engine #5	The Engine ECU for the fourth engine within a system.
	242	Marine Display #1	The first Marine Display for an engine.
	243	Marine Display #2	The second Marine Display for an engine.
	244	Marine Display #3	The third Marine Display for an engine.
	245	Marine Display #4	The fourth Marine Display for an engine.
	246	Marine Display #5	The fifth Marine Display for an engine.
	247	Marine Display #6	The sixth Marine Display for an engine.

Table B7
J1939 Preferred Addresses
Industry Group #5 – Industrial, Process Control, Stationary Equipment

Rev	SA	ECU-Module	Definition
(R)	128	thru 207 are reserved for future assignment by SAE	Used for dynamic address assignment (self-configurable)
	208	thru 230 are reserved for future assignment	Used for individual preassigned addresses
	231	Engine #3	The Engine ECU for the third engine within a system.
	232	Engine #4	The Engine ECU for the fourth engine within a system.
	233	Engine #5	The Engine ECU for the fourth engine within a system.
	234	Generator Set Controller	Used for data collection and control of a generator system
	235	Supplemental Sensor Processing Unit #1	
	236	Supplemental Sensor Processing Unit #2	
	237	Supplemental Sensor Processing Unit #3	
	238	Supplemental Sensor Processing Unit #4	
	239	Supplemental Sensor Processing Unit #5	
	240	Supplemental Sensor Processing Unit #6	
	241	Engine Monitor #1	
	242	Engine Monitor #2	
	243	Engine Monitor #3	
	244	Engine Monitor #4	
	245	Engine Monitor #5	
	246	Engine Monitor #6	
	247	Engine Monitor #7	

Tables B8 through B9
J1939 PREFERRED ADDRESSES
(Industry Groups 6 to 7)
Reserved for future assignment

Table B10
J1939 Manufacturer Codes

Rev	Code	Manufacturer	Location
	0	Reserved	
	1	Allied Signal Inc.	Elyria, OH USA
	2	Allison Transmission, GMC	Indianapolis, IN USA
	3	Ametek, US Gauge Division	Sellersville, PA USA
	4	Ametek-Dixson	Grand Junction, CO USA
	5	AMP Inc.	Harrisburg, PA USA
	6	Berifors Electronics AB	Stockholm, Sweden
	7	Case Corp.	Burr Ridge, IL USA
	8	Caterpillar Inc.	Peoria, IL USA
	9	Chrysler Corp.	Auburn Hills, MI USA
	10	Cummins Engine Co	Columbus, IN USA
	11	Dearborn Group Inc.	Indianapolis, IN & Farmington Hills, MI USA
	12	Deere & Company, Precision Farming	East Moline, IL USA
	13	Delco Electronics	Kokomo, IN USA
	14	Detroit Diesel Corporation	Detroit, MI USA
	15	Dickey-john Corp.	Auburn, IL USA
	16	Eaton Corp	Southfield, MI USA
	17	Eaton Corp, Corp Res & Dev	Milwaukee, WI USA
	18	Eaton Corp, Transmission Div.	Kalamazoo, MI USA
	19	Eaton Corp. Trucking Info Services	Clemmons, NC USA
	20	Eaton Ltd	Worsley, England
	21	Echlin Inc., Midland Brake Inc.	Kansas City, MO USA
	22	Ford Motor Co., Electronic Concepts & Systems	Dearborn, MI USA
	23	Ford Motor Co., Heavy Truck	Dearborn, MI USA
	24	Ford Motor Co., Vehicle Controls	Dearborn, MI USA
	25	Freightliner Corp.	Portland, OR USA
	26	General Motors Corp, Service Technology Grp	Romulus, MI USA
	27	GMC	Troy, MI USA
	28	Grote Ind. Inc.	Madison, IN USA
	29	Hino Motors Ltd.	Tokyo, Japan
	30	Isuzu Motors Ltd	Kawasaki, Japan
	31	J Pollak Corp	Boston, MA USA
	32	Jacobs Vehicle Systems	Bloomfield, CT USA
	33	John Deere	Waterloo, IA USA
	34	Kelsey Hayes Co.	Livonia, MI USA
	35	Kenworth Truck Co.	Kirkland, WA USA
	36	Lucas Ind.	Solihull WMidlnd, England
	37	Mack Trucks Inc.	Hagerstown, MD USA
	38	Micro Processor Systems Inc.	Sterling Hts, MI USA
	39	Microfirm Inc.	Stillwater, OK USA

Rev	Code	Manufacturer	Location
	40	Motorola AIEG Inc.	Northbrook, IL USA
	41	Motorola Inc.	Schaumburg, IL USA
(R)	42	International Truck and Engine Corporation - Engine Electronics (formerly Navistar Intl Trans Co., Engine Electronics)	Warrenville, IL USA
(R)	43	International Truck and Engine Corporation - Vehicle Electronics (formerly Navistar Intl Trans Corp.)	Warrenville, IL USA
	44	Nippondenso Co. Ltd.	Kariya Aichi, Japan
	45	PACCAR	Mount Vernon, WA USA
	46	Parasoft Computing Solutions	Winston Salem, NC USA
	47	Phillips Semiconductor	Sunnyvale, CA USA
	48	Pollak Alphabet	El Paso, TX USA
	49	RE America Inc.	Cleveland, OH USA
	50	Robert Bosch Corp	Broadview, IL USA
	51	Robert Bosch GmbH	Stuttgart, Germany
	52	Meritor Automotive, Inc. (formerly Rockwell Automotive)	Troy, MI USA
	53	Rockwell Land Transportation	Cedar Rapids, IA USA
	54	Meritor Wabco	Troy, MI USA
	55	Ryder System Inc.	Miami, FL USA
	56	SAIC	San Diego, CA USA
	57	Sauer-Danfoss Co (formerly Sauer Sundstrand Co.)	Minneapolis, MN USA
	58	SPX Corporation, OTC Div	Owatonna, MN USA
	59	VES Inc.	Rock Hill, SC USA
	60	Volvo Trucks North America Inc.	Greensboro, NC USA
	61	Volvo Truck Corp.	Gothenburg, Sweden
	62	Wabco	Hanover, Germany
	63	ZF Industries Inc.	Vernon Hills, IL USA
	64	unused (formerly SpectraPrecision Laserplane, then SpectraPhysics)	
	65	MAN Nutzfahrzeuge AG	Munich, Germany
	66	John Deere Construction Equipment Division	Dubuque, IA USA
	67	Funk Manufacturing Company	Coffeyville, KS USA
	68	Scania	Södertälje, Sweden
	69	Trimble Navigation	
	70	Flex-coil Limited	Saskatoon, SK Canada
	71	Vansco Electronics Ltd.	Winnipeg, MAN Canada
	72	Sisu Corporation	ESPOO, Finland
	73	LeTourneau, Inc.	Longview, TX USA
	74	Eaton Axle-Brake Division	Kalamazoo, MI USA
	75	Deere & Co, Agricultural Division	
	76	unused (formerly Deere & Co, Construction Division)	
	77	Deere Power Systems Group	
	78	Frank W. Murphy Manufacturing, Inc	Tulsa, OK USA
	79	Daimler Benz AG - Engine Division (PBM)	Stuttgart, Germany
	80	Twin Disc, Inc.	Racine, WI USA

Rev	Code	Manufacturer	Location
	81	Fire Research Corp.	Nesconset, NY USA
	82	Bobcat/Ingersoll-Rand (formerly Melroe/Ingersoll-Rand)	Fargo, ND USA
	83	Eaton VORAD Technologies	San Diego, CA USA
	84	New Holland UK Limited	Basildon, Essex, UK
	85	Kohler Co	Kohler, WI USA
	86	C. E. Niehoff & Company	Evanston, IL USA
	87	J.C. Bamford Excavators Ltd (JCB)	Rocester, Staffordshire, UK
	88	Satloc Precision GPS	Scottsdale, AZ USA
	89	Kverneland Group, Electronics Division	Nieuw-Vennep, Netherlands
	90	Knorr-Bremse SfN GmbH	Munich, Germany
	91	BSG Bodensee Steuergeraete GmbH	Immenstaad, Germany
	92	Ag-Chem Equipment Co., Inc.	Minnetonka, MN USA
	93	Perkins Engines Company Ltd.	Peterborough, UK
	94	CNH Global N.V.	Racine, WI USA
	95	Pacific Insight Electronics Corp.	Nelson, BC Canada
	96	Mech@tronic IT GmbH	Hetzenhausen, Germany
	97	Ag Leader Technology, Inc.	Ames, IA USA
	98	Mueller-Elektronik GmbH & Co	Salzkotten, Germany
	99	International Transmissions Ltd (ITL)	Wrexham, North Wales, UK
	100	VDO Technik AG	Rüthi, Switzerland
	101	Sensoria	San Diego, CA USA
	102	AGCO GmbH & Co.	Marktoberdorf, Germany
	103	Agrocom GmbH & Co. Agrarsystem KG	Bielefeld, Germany
	104	Claas Selbstfahrende Erntemaschinen GmbH	Harsewinkel, Germany
	105	Kiepe Elektrik GmbH & Co. KG	Duesseldorf, Germany
	106	BAE Systems Controls, Inc.	Johnson City, NY USA
	107	Grimme Landmaschinen GmbH & Co. KG	Damme, Germany
	108	WTK-Elecktronik GmbH	Neustadt, Germany
	109	LH Technologies ApS	Aabybro, Denmark
	110	EPIQ Sensor-Nite	Fenton, MI USA
	111	Maschinenfabrik Bernhard Krone GmbH	Spelle, Germany
	112	MECALAC	Annecy le Vieux, France
(R)	113	Stress-Tek, Inc.	Kent, WA USA
(R)	114	EControls, Inc.	San Antonio, TX USA
(R)	115	NACCO Materials Handling Group, Inc.	Portland, OR USA
(R)	116	BEELINE Technologies	Brisbane, QLD Australia
(R)	117	HUSCO International	Waukesha, WI USA
(R)	118	Intron GmbH	Schwaebisch Hall, Germany
(R)	119	IntegriNautics	Menlo Park, CA USA
(R)	120	RDS Technology Ltd	Minchinhampton, Stroud, UK
(R)	121	HED (Hydro Electronic Devices, Inc.)	Hartford, WI USA
(R)	122	FG Wilson (Engineering) Limited	Larne, County Antrim, UK
(R)	123	Basler Electric	Highland, IL USA

Rev	Code	Manufacturer	Location
(R)	124	Hydac Electronic	Saarbruecken, Germany
(R)	125	Nevada Automotive Test Center	Carson City, NV USA
(R)	126	Driver Tech	Salt Lake City, UT USA
(R)	127	Holland USA	Holland, MI USA
(R)	128	Gerhard Duecker GmbH & Co. KG	Stadtlohn, Germany
(R)	129	OMNEX Control Systems Inc.	Port Coquitlam, BC, Canada
(R)	130	Nido - Universal Machines B.V.	Holten, Netherlands
(R)	131	ITT Industries	Eden Prarie, MN USA
(R)	132	Mulag-Fahrzeugwerk	Oppenau, Germany
(R)	133	Bucher Schoerling GmbH	Hannover, Germany
(R)	134	Iris Technology Ltd	Lancaster, Lancs, UK
(R)	135	Airmar Technology Corporation	Milford, NH USA
(R)	136	Komatsu Ltd	Hiratsuka, Kanagawa, Japan
(R)	137	Maretron	Phoenix AZ USA
(R)	138	Georg Fritzmeier GmbH & Co. KG	Grosshelfendorf, Germany
(R)	139	Caterpillar Trimble Control Technologies (CTCT), LLC	Dayton, OH USA
(R)	140	Lowrance Electronics, Inc.	Tulsa, OK USA
(R)	141	Thales Navigation Ltd.	Surrey, UK
(R)	142	TRW Automotive (Commercial Steering Systems)	Lafayette, IN USA
(R)	143	W. Gmeiner GmbH & Co.	Kummersbruck, Germany
(R)	144	Mercury Marine	Fond du Lac, WI USA
(R)	145	MurCal Controls	Palmdale, CA USA
(R)	1850	Teleflex	Limerick, PA USA
(R)	1851	RayMarine	Portsmouth, Hampshire, UK
(R)	1852	Navionics	Wareham, MA USA
(R)	1853	Japan Radio Co	Seattle, WA USA
(R)	1854	Northstar Technologies	Acton, MA USA
(R)	1855	Furuno USA	Camas, WA USA
(R)	1856	Trimble	Sunnyvale, CA USA
(R)	1857	Simrad	Egersund, Norway
(R)	1858	Litton	Charlottesville, VA USA
(R)	1859	Kvasar AB	Kinnahult, Sweden
(R)	1860	MMP	Fircrest, WA USA
(R)	1861	Vector Cantech	Novi, MI USA
(R)	1862	Sanshin	Shizuoka, Japan
(R)	1863	Thomas G. Faria Co.	Uncasville, CT USA

Table B11
J1939 All Industry Inclusive Names

The NAME fields are described in Section 3.1.3 and in J1939-81, Section 4.1. This table defines the Lower 128 Functions which are independent of the Vehicle System or Industry Group. These functions are used with all 8 Industry Groups, which is a distinction from Industry Group 0 which is an Industry Group itself but applicable to all industries.

Rev	Value	NAME Function	Description
	0	Engine	While the function identifies what is typically the mechanical power source of the machine, the reference tends to be to the management system that controls the torque vs speed vs command (typically throttle) of said power source.
	1	Auxiliary Power Unit (APU)	Power source for operating systems without the use of the prime 'drive' engine.
	2	Electric Propulsion Control	Control system which operates the drive mechanism when it is electrically powered, such as battery-motor, or engine-generator-motor hybrids
	3	Transmission	A mechanical system for alter the speed vs torque output of the engine to a level usable by another system on the machine. Although again the network reference is actually to the system which controls the operation of said transmission.
	4	Battery Pack Monitor	Monitors the condition - charge, temperature, power remaining, etc. for an internal battery pack - typically used with electric propulsion
	5	Shift Control/Console	The device which determines and transmit onto the network the gear, the range, the operating mode or any or all of these that the operator desires for the transmission. (Not to be confused with transmission control which is Transmission)
	6	Power TakeOff - (Main or Rear)	The system which controls the mechanical power derived from a prime engine and used to operate auxiliary items such as compressors in on highway vehicles and such as implements in ag applications. This being the main or rear unit.
	7	Axle - Steering	Adjust attack angle as function of steering
	8	Axle - Drive	
	9	Brakes - System Controller	Controls service braking system electronically – might be any of a number of schemes – may also control (at least partly) the endurance braking system in the sense of an integrated control (application phased in with the service braking system).
	10	Brakes - Steer Axle	Control for actuating the service brakes on a steered axle
	11	Brakes - Drive axle	Control for actuating the service brakes on a drive axle
	12	Retarder - Engine	The control for the retarder capabilities of the engine. There are several types of retarders possible and these are defined within the parameter - Retarder Type, (SPN 901).
	13	Retarder - Driveline	The control for the retarder capabilities of the driveline. There are several types of retarders possible and these are defined within the parameter - Retarder Type, (SPN 901).
	14	Cruise Control	Control system for maintaining the vehicle's speed at a fixed operator selectable value with various over-rides linked to other systems
	15	Fuel System	Controls fuel flow from the tank to the filter to the water-removal/separator to the engine and then back to the tank.
	16	Steering Controller	Controls steering in steer-by-wire
	17	Suspension - Steer Axle	Control system for the suspension of a steered axle
	18	Suspension - Drive Axle	Control system for the suspension of a driven axle

Rev	Value	NAME Function	Description
	19	Instrument Cluster	A gauge display for a vehicle. Typically mounted in the cab within the driver's field of view and generally a somewhat limited display such as: dedicated dials or a small digit 7 segment display. See Cab Display for larger more elaborate display.
	20	Trip Recorder	A system for accumulating data versus travel of the vehicle (machine), since a specific starting point sometimes expressed in terms of distance or time traveled.
	21	Cab Climate Control	A system for controlling the climate within the cab of the vehicle (machine). Note: The operator controls (message) for this system should be designed to allow any source to transmit them.
	22	Aerodynamic Control	Modify drag by altering Body panels – lower air ferrings when dead heading, extend side panels when on interstate
	23	Vehicle Navigation	System associated with the vehicles physical location – may be as simple as display of current location, driving instructions from current to desired location, (do we need a separate guidance?).
	24	Vehicle Security	System for comparing operator provided data sequences against reference to verify that operation or certain operations should be allowed for the particular operator. Also may include functions to prevent unauthorized operations. Examples: unlocking doors, starting engine, …
	25	Network Interconnect ECU	ECU for connecting different network segments together – may be bridge or gateway - see J1939 –31 for details For any vehicle system (tractor or trailer)
	26	Body Controller	May handle suspension control for the body sections independent from the axle sections - Controls the body (not chassis or cab) components
	27	Power TakeOff (Secondary or Front)	The system which controls the mechanical power derived from a prime engine and used to operate auxiliary items such as compressors in on highway vehicles and such as implements in ag applications. This being the secondary or front unit.
	28	Off Vehicle Gateway	ECU for connecting between vehicle network(s) and an off-vehicle system or network, such as fleet management. Connection may be wireless. Performs Gateway functions, i.e., filters messages, translates between protocols...
	29	Virtual Terminal (in cab)	A general purpose 'intelligent' display with a specific message set (J1939-72 or ISO 11783 –6) specifically mounted in cab for the operators use, which may be connected to the drive train segment of the network or to the implement bus segment which exists in an ag application
	30	Management Computer	Manages vehicle systems, i.e. powertrain.
	31	Propulsion Battery Charger	A device used to charge propulsion batteries in an electric vehicle from an off-board source of electrical energy.
	32	Headway Controller	Forward-looking collision avoidance, collision warning, speed controller, or speed matching
	33	System Monitor	
	34	Hydraulic Pump Controller	Pump which provides hydraulic power to operate installed equipment, such as: Man buckets, cranes, augers, shredders Example vehicles: Digger Derrick – plants telephone poles, Bucket Truck - - thus this is the controller for said pump
	35	Suspension - System Controller	A controller responsible for co-ordinating the over-all suspension of a vehicle. It may cause inter action between the axle suspension controls and the body controller
	36	Pneumatic - System Controller	

Rev	Value	NAME Function	Description
	37	Cab Controller	A controller located in/near vehicle cab to perform functions that are grouped together for convenience and proximity. May handle any number of vehicle specific items but not other specifically NAMEd functions, such as: Instrument Cluster. A prime use would be to read cab mounted operator controls (not handled by any other specific device) and to then transmit the associated messages onto the network.
	38	Tire Pressure Control	The device providing centralised tire inflation
	39	Ignition Control Module	A device for altering the ignition of an engine and with which an engine controller may communicate.
	40	Seat Control	A system for controlling the seats (operator and passenger) within the cab of the vehicle (machine). May include position and suspension of seat. Note: The operator controls (message) for the seat system should be designed to allow any source to transmit them.
	41	Lighting - Operator Controls	The controller for sending the operator lighting controls messages when they are coming from a device dedicated to transmitting these specific messages on the network.
	42	Water Pump Control	Controller for a water pump mounted on the vehicle/machine. For Instance – Emergency equipment with pump for pumping water onto fire. A Utilities delivery truck for delivery fluids, such as water to remote areas.
	43	Transmission Display	Display designed specifically to display transmission information, such as the transmission gear.
	44	Exhaust Emission Control	
	45	Vehicle Dynamic Stability Control	
	46	Oil Sensor Unit	
	47	Information System Controller	Information management for the vehicle's application, such as transit passenger/fare monitoring, truck cargo management, etc. Handles grouping and processing data into information displays to be presented to driver. It also enforces the DI rules for interfacing with driver.
	48	Ramp Control	Loading unloading – chairlift, ramps, lifts, or tailgates
	49	Clutch/Converter Control	When transmission is distributed this handles torque converter lock-up or engine - transmission connection
	50	Auxiliary Heater	Primary heat is typically taken from the engine coolant. This is the heater for use without the prime ‘drive’ engine operating or when it is unable to supply sufficient heat. Can be fuel fired, electrical or other type of heating source and may use air, water, or other transfer media.
	51	Forward-Looking Collision Warning System	A system which detects and warns of impending collision with object in path of present forward travel - Not to be confused with #32, Headway Controller
	52	Chassis Controller	Controls the chassis (not body or cab) components - See web site for RLs definitions of Body, chassis, drivetrain to add – but still do not know what this is ???
	53	Alternator/Charging System	Vehicle's primary on-board charging controller - Alternator used to generate electrical power for vehicle electrical system and storage battery.
	54	Communications Unit, Cellular	Radio communications device designed specifically to communicate via the ‘Cellular telephone system’. May be either receiver only, transmitter only or transceiver.
	55	Communications Unit, Satellite	Radio communications device designed specifically to communicate via some satellite system. May be either receiver only, transmitter only or transceiver.

Rev	Value	NAME Function	Description
	56	Communications Unit, Radio	Radio communications device designed specifically to communicate via a terrestrial point to point system. May be either receiver only, transmitter only or transceiver.
	57	Steering Column Unit	Device that gathers the operator inputs from switches/levers/etc located in and/or around the steering wheel/column and transmits the associated messages on the network., when a separate NAME is needed for this device (i.e. other devices might be sending the messages and this device not exist on the network).
	58	Fan Drive Control	Primary control system affecting the operation of the main cooling fan on the engine coolant. Other systems may send commands or requests to this device.
	59	Starter	A mechanical system for initiating rotation in an engine that is stopped. Although here the reference is more to the system that controls the starter than the starter itself.
	60	Cab Display	Cab Display is for a fairly elaborate in cab display, typically capable of greater than 30 'ascii' characters and differentiated from the Instrument Cluster and Virtual Terminal.
	61	File Server / Printer	A printing or file storage unit on the network - A permanent connection may exist and the unit is expected to be able to print (paper type output) or store data (as in magnetic or eerom devices).
	62	On-Board Diagnostic Unit	A tool which may be permanently mounted on the vehicle and that may not support all of the J1939-73 messages (services).
	63	Engine Valve Controller	Control system used to manipulate the actuation of engine intake and/or exhaust valves in response to other factors
	64	Endurance Braking	Sum of all devices in a vehicle which enable the driver with virtually no friction brake wear / tear to reduce the speed or to maintain the speed on a long descent. May contain energy supplying device(s), control device(s), transmission(s), retarder(s) and energy dissipation device(s). The control may be independent of the service brake system or may be integrated with the service brake control such that both are applied simultaneously or in a phased fashion. An integrated system may also have a control to prevent linking of operation.
(R)	65	Gas Flow Measurement	Provides measurement of gas flow rates and associated parameters.
(R)	66	I/O Controller	Reporting and/or control device for external input and output channels
(R)	67	Electrical System Controller	This may include Load Centers, Fuseboxes, & Power Distribution boards
(R)	68		thru 127 are reserved
	129	Off-board diagnostic-service tool	A tool which is normally not permanently mounted on the vehicle and that supports the full set of J1939-73 messages (services).
	130	On-board data logger	A function for collection and storage of data from the vehicle network which may or may not be permanently mounted on the vehicle. The data to be collected will have in some fashion been identified to the unit.

Table B12
J1939 Names

The NAME fields are described in Section 3.1.3 and in J1939-81, Section 4.1. This table defines the Upper 128 Functions which are dependent on the Industry Group and Vehicle System. Due to the dependencies of Vehicle System on Industry Group, and of Function on Vehicle System, the following table is used to define both Vehicle System and Function.

Rev	IG	Veh Sys	Veh Sys Desc	Func	Func Desc	Notes
	0	0	Non-specific System	128	Reserved	
	0	0	Non-specific System	129	Off-board diagnostic-service tool	MOVED TO Table B11
	0	0	Non-specific System	130	On-board data logger	MOVED TO Table B11
	0	0	Non-specific System	255	Not Available	This assignment can be used until an explicit function has been assigned.
	0	127	Not Available	255	Not Available	This assignment can be used until an explicit function has been assigned.
	1	0	Non-specific System	128	Tachograph	
	1	0	Non-specific System	129	Door Controller	
	1	0	Non-specific System	130	Articulation Turntable Control	Control of the articulation turntable for joined body buses.
	1	0	Non-specific System	131	Body-to-Vehicle Interface Control	Interface controller managing interaction of vehicle functions and body functions.May be combination of body signals and gateway functionalities.
	1	0	Non-specific System	255	Not Available	This assignment can be used until an explicit function has been assigned.
	1	1	Tractor	128	Forward Road Image Processing	Determine vehicle position from lane markings. Performance, Advisory & Warning only
	1	1	Tractor	255	Not Available	This assignment can be used until an explicit function has been assigned.
	1	2	Trailer	255	Not Available	This assignment can be used until an explicit function has been assigned.
	1	127	Not Available	255	Not Available	This assignment can be used until an explicit function has been assigned.
	2	0	Non-specific System	128	Non Virtual Terminal Display	Implement Bus
	2	0	Non-specific System	129	Operator Controls - Machine Specific	
	2	0	Non-specific System	130	Task Controller (Mapping Computer)	
	2	0	Non-specific System	131	Position Control	
	2	0	Non-specific System	132	Machine Control	
	2	0	Non-specific System	133	Foreign Object Detection	Detection of undesireable objects in the product flow
	2	0	Non-specific System	134	Tractor ECU	

Rev	IG	Veh Sys	Veh Sys Desc	Func	Func Desc	Notes
	2	0	Non-specific System	255	Not Available	This assignment can be used until an explicit function has been assigned.
	2	1	Tractor	129	Auxiliary Valve Control	The unit knows the parsing and security for the tractor mounted auxiliary valves
	2	1	Tractor	130	Rear Hitch Control	The control of the rear hitch of an agricultural tractor
	2	1	Tractor	131	Front Hitch Control	The control of the front hitch of an agricultural tractor
	2	1	Tractor	255	Not Available	This assignment can be used until an explicit function has been assigned.
	2	2	Tillage	132	Tillage Machine Control	
	2	2	Tillage	255	Not Available	This assignment can be used until an explicit function has been assigned.
	2	3	Secondary Tillage	132	Secondary Tillage Machine Control	
	2	3	Secondary Tillage	255	Not Available	This assignment can be used until an explicit function has been assigned.
	2	4	Planters/ Seeders	128	Seed Rate Control	
	2	4	Planters/ Seeders	129	Section On/ Off Control	
	2	4	Planters/ Seeders	132	Planters/ Seeders Machine Control	
(R)	2	4	Planters/ Seeders	133	Product Flow	Controlling and or monitoring the flow of product.
(R)	2	4	Planters/Seeders	134	Product Level	Controlling and or monitoring the product level.
	2	4	Planters/ Seeders	255	Not Available	This assignment can be used until an explicit function has been assigned.
	2	5	Fertilizers	128	Fertilize Rate Control	
	2	5	Fertilizers	129	Section On/ Off Control	
	2	5	Fertilizers	132	Fertilizers Machine Control	
(R)	2	5	Fertilizers	133	Product Flow	Controlling and or monitoring the flow of product.
(R)	2	5	Fertilizers	134	Product Level	Controlling and or monitoring the product level.
	2	5	Fertilizers	255	Not Available	This assignment can be used until an explicit function has been assigned.
	2	6	Sprayers	128	Spray Rate Control	
	2	6	Sprayers	129	Section On/ Off Control	
(R)	2	6	Sprayers	130	Product Pressure	Control and or monitoring of product pressure.
	2	6	Sprayers	132	Sprayers Machine Control	
(R)	2	6	Sprayers	133	Product Flow	Controlling and or monitoring the flow of product.
(R)	2	6	Sprayers	134	Product Level	Controlling and or monitoring the product level.

Rev	IG	Veh Sys	Veh Sys Desc	Func	Func Desc	Notes
	2	6	Sprayers	255	Not Available	This assignment can be used until an explicit function has been assigned.
	2	7	Harvesters	128	Tailing Monitor	
	2	7	Harvesters	129	Header Control	
	2	7	Harvesters	130	Product Loss Monitor	
	2	7	Harvesters	131	Product Moisture Sensor	
	2	7	Harvesters	132	Harvester Machine Control	
(R)	2	7	Harvesters	133	Product Flow	Controlling and or monitoring the flow of product.
(R)	2	7	Harvesters	134	Product Level	Controlling and or monitoring the product level.
	2	7	Harvesters	255	Not Available	This assignment can be used until an explicit function has been assigned.
	2	8	Root Harvesters	132	Root Harvesters Machine Control	
(R)	2	8	Root Harvesters	133	Product Flow	Controlling and or monitoring the flow of product.
(R)	2	8	Root Harvesters	134	Product Level	Controlling and or monitoring the product level.
	2	8	Root Harvesters	255	Not Available	This assignment can be used until an explicit function has been assigned.
(R)	2	9	Forage	128	Twine Wrapper Control	Controls such items on a baler such as the twine wrap controls and actuators
	2	9	Forage	132	Forage Machine Control	
(R)	2	9	Forage	133	Product Flow	Controlling and or monitoring the flow of product.
	2	9	Forage	255	Not Available	This assignment can be used until an explicit function has been assigned.
	2	10	Irrigation	255	Not Available	This assignment can be used until an explicit function has been assigned.
	2	11	Transport/Trailer	255	Not Available	This assignment can be used until an explicit function has been assigned.
	2	12	Farm Yard Operations	255	Not Available	This assignment can be used until an explicit function has been assigned.
	2	13	Powered Auxiliary Devices	255	Not Available	This assignment can be used until an explicit function has been assigned.
	2	14	Special Crops	255	Not Available	This assignment can be used until an explicit function has been assigned.
	2	15	Earth Work	255	Not Available	This assignment can be used until an explicit function has been assigned.
(R)	2	16	Skidder	255	Not Available	This assignment can be used until an explicit function has been assigned.

Rev	IG	Veh Sys	Veh Sys Desc	Func	Func Desc	Notes
	2	127	Not Available	255	Not Available	This assignment can be used until an explicit function has been assigned.
	3	0	Non-specific system	128	Supplemental Engine Control Sensing	
	3	0	Non-specific system	129	Laser Receiver	
	3	0	Non-specific system	131	Land Leveling Electric Mast	
	3	0	Non-specific system	132	Single Land Leveling System Supervisor	
	3	0	Non-specific system	133	Land Leveling System Display	
	3	0	Non-specific system	134	Laser Tracer	
	3	0	Non-specific system	135	Loader Control	
	3	0	Non-specific system	136	Slope Sensor	Measures the slope along a axis.
	3	0	Non-specific system	137	Liftarm Control	Controller whose primary purpose is to control the lift arms and tilt functions on a construction loader, skid steer loader, or similar machine. Not a loader attachment.
(R)	3	0	Non-specific system	138	Supplemental Sensor Processing Units	An ECU functioning as an I/O module connected to the bus with the designed purpose of data collection (input or output) and not necessarily containing any control algorithms or processing intelligence.
(R)	3	0	Non-specific system	139	Hydraulic System Planner	Coordinates the functions of a number of valve controllers.
(R)	3	0	Non-specific system	140	Hydraulic Valve Controller	The valve controller will typically control the flow of oil to a specific cylinder.
(R)	3	0	Non-specific system	141	Joystick Control	Joystick Control
	3	0	Non-specific system	255	Not Available	This assignment can be used until an explicit function has been assigned.
	3	1	Skid Steer Loader	128	Main Controller	
	3	1	Skid Steer Loader	255	Not Available	This assignment can be used until an explicit function has been assigned.
	3	2	Articulated Dump Truck	255	Not Available	This assignment can be used until an explicit function has been assigned.
	3	3	Backhoe	255	Not Available	This assignment can be used until an explicit function has been assigned.
	3	4	Crawler	255	Not Available	This assignment can be used until an explicit function has been assigned.
	3	5	Excavator	255	Not Available	This assignment can be used until an explicit function has been assigned.
	3	6	Forklift	255	Not Available	This assignment can be used until an explicit function has been assigned.

Rev	IG	Veh Sys	Veh Sys Desc	Func	Func Desc	Notes
	3	7	Four Wheel Drive Loader	255	Not Available	This assignment can be used until an explicit function has been assigned.
	3	8	Grader	128	HFWD Controller	Hydraulic front wheel drive controller
	3	8	Grader	255	Not Available	This assignment can be used until an explicit function has been assigned.
	3	127	Not Available	255	Not Available	This assignment can be used until an explicit function has been assigned.
	4	0	Non-specific System	128	Alarm System Control for Marine Engines	The ECU that controls the Alarm functions on an engine of a Marine System.
	4	0	Non-specific System	129	Protection System for Marine Engines	The first ECU that controls the Protection functions on the first engine of a Marine System.
	4	0	Non-specific System	130	Display for Protection System for Marine Engines	The ECU that provides the display of information and/or indicators associated specifically with the protection system on an engine of a Marine System.
	4	0	Non-specific System	255	Not Available	This assignment can be used until an explicit function has been assigned.
(R)	4	10	System tools	255	Not Available	
(R)	4	20	Safety systems	255	Not Available	
(R)	4	25	Gateway	10		
(R)	4	30	Power management and lighting systems	130	Switch	
(R)	4	30	Power management and lighting systems	140	Load	
(R)	4	40	Steering systems	130	Follow-up Controller	
(R)	4	40	Steering systems	140	Mode Controller	
(R)	4	40	Steering systems	150	Automatic Steering Controller	
(R)	4	40	Steering systems	160	Heading Sensors	
(R)	4	50	Propulsion systems	130	Engineroom monitoring	
(R)	4	50	Propulsion systems	140	Engine Interface	
(R)	4	50	Propulsion systems	150	Engine Controller	
(R)	4	50	Propulsion systems	160	Engine Gateway	
(R)	4	50	Propulsion systems	170	Control Head	
(R)	4	50	Propulsion systems	180	Actuator	
(R)	4	50	Propulsion systems	190	Gauge Interface	
(R)	4	50	Propulsion systems	200	Gauge Large	
(R)	4	50	Propulsion systems	210	Gauge Small	
(R)	4	60	Navigation systems	130	Sounder, depth	
(R)	4	60	Navigation systems	140		
(R)	4	60	Navigation systems	145	Global Navigation Satellite System (GNSS)	
(R)	4	60	Navigation systems	150	Loran C	

Rev	IG	Veh Sys	Veh Sys Desc	Func	Func Desc	Notes
(R)	4	60	Navigation systems	155	Speed Sensors	
(R)	4	60	Navigation systems	160	Turn Rate Indicator	
(R)	4	60	Navigation systems	170	Integrated Navigation	
(R)	4	60	Navigation systems	200	Radar and/or Radar Plotting	
(R)	4	60	Navigation systems	205	Electronic Chart Display & Information System (ECDIS)	
(R)	4	60	Navigation systems	210	Electronic Chart System (ECS)	
(R)	4	60	Navigation systems	220	Direction Finder	
(R)	4	70	Communications systems	130	Emergency Position Indicating Beacon (EPIRB)	
(R)	4	70	Communications systems	140	Automatic Identification System	
(R)	4	70	Communications systems	150	Digital Selective Calling (DSC)	
(R)	4	70	Communications systems	160	Data Receiver	
(R)	4	70	Communications systems	170	Satellite	
(R)	4	70	Communications systems	180	Radio-Telephone (MF/HF)	
(R)	4	70	Communications systems	190	Radio-Telephone (VHF)	
(R)	4	80	Instrumentation/general systems	130	Time/Date systems	
(R)	4	80	Instrumentation/general systems	140	Voyage Data Recorder	
(R)	4	80	Instrumentation/general systems	150	Integrated Instrumentation	
(R)	4	80	Instrumentation/general systems	160	General Purpose Displays	
(R)	4	80	Instrumentation/general systems	170	General Sensor Box	
(R)	4	80	Instrumentation/general systems	180	Weather Instruments	
(R)	4	80	Instrumentation/general systems	190	Transducer/general	
(R)	4	80	Instrumentation/general systems	200	NMEA 0183 Converter	
(R)	4	90	Environmental (HVAC) systems	255	Not Available	
(R)	4	100	Deck, cargo, and fishing equipment systems	255	Not Available	
	4	127	Not Available	255	Not Available	This assignment can be used until an explicit function has been assigned.
	5	0	Industrial-Process Control-Stationary (Gen-Sets)	128	Supplemental Engine Control Sensing	
	5	0	Industrial-Process Control-Stationary (Gen-Sets)	129	Generator Set Controller	Generator set controller used to collect data and control.
	5	0	Industrial-Process Control-Stationary (Gen-Sets)	255	Not Available	This assignment can be used until an explicit function has been assigned.
	5	127	Not Available	255	Not Available	This assignment can be used until an explicit function has been assigned.

APPENDIX C

FAULT REPORTING PARAMETERS

TABLE C1
Suspect Parameter Numbers (SPN)

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	16	Engine Fuel Filter (Suction Side) Differential Pressure (see also SPN 1382)	-71			8	Differential pressure measured across the fuel filter located between the fuel tank and the supply pump.	16		
(R)	18	Engine Extended Range Fuel Pressure	Top Level					18		
(R)	19	Engine Extended Range Engine Oil Pressure	Top Level					19		
(R)	20	Engine Extended Range Engine Coolant Pressure	Top Level					20		
	21	Engine ECU Temperature (use SPN 1136)	-71			16	Temperature of the engine electronic control unit.	21		
(R)	22	Engine Extended Crankcase Blow-by Pressure	-71	65263	2	8	Differential crankcase blow-by pressure as measured through a tube with a venturi.	22		
	23	Generator Oil Pressure	Top Level					23		
	24	Generator Coolant Temperature	Top Level					24		
(R)	27	Engine Exhaust Gas Recirculation Valve Position	Top Level				The position of the exhaust gas recirculation valve expressed as a percentage of full travel.	27		
(R)	28	Accelerator Pedal Position 3	Top Level			8	The ratio of actual position of the third analog engine speed/torque request input device (such as an accelerator pedal or throttle lever) to the maximum position of the input device.	28		
(R)	29	Accelerator Pedal Position 2	-71	61443	5	8	The ratio of actual position of the second analog engine speed/torque request input device (such as an accelerator pedal or throttle lever) to the maximum position of the input device.	29		
(R)	30	Engine Crankcase Blowby Pressure	Top Level					30		
	31	Transmission Range Position	Top Level					31		
(R)	32	Transmission Splitter Position	Top Level				The current position of the splitter cylinder.	32		
	33	Clutch Cylinder Position	Top Level					33		
	36	Clutch Plates	Top Level					36		

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	37	Transmission Air Tank Pressure	Top Level				The pressure of the air in the tank supplying the automatically shifting transmission.	37		
	38	Second Fuel Level (Right Side)	Top Level					38		
	39	Tire Pressure Check Interval	-71	65144	1	8	The interval at which the system will check the tire pressures (e.g., 5, 10, 15 min.).	39		
	46	Pneumatic Supply Pressure	-71	65198	1	8	The pneumatic pressure in the main reservoir, sometimes referred to as the wet tank.	46		
	48	Extended Range Barometric Pressure	Top Level					48		
(R)	51	Engine Throttle Position	-71	65266	7	8	The position of the valve used to regulate the supply of a fluid, usually air or fuel/air mixture, to an engine.	51		
	52	Engine Intercooler Temperature	-71	65262	7	8	Temperature of liquid found in the intercooler located after the turbocharger.	52		
	53	Transmission Synchronizer Clutch Value	-71	65221	1	8	The current modulated value for the air supply to the synchronizer clutch.	53		
	54	Transmission Synchronizer Brake Value	-71	65221	2	8	The current modulated value for the air supply to the synchronizer brake.	54		
	59	Transmission Shift Finger Gear Position	-71	65223	1	8	The current position of the shift finger in the gear direction.	59		
	60	Transmission Shift Finger Rail Position	-71	65223	2	8	The current position of the shift finger in the rail direction.	60		
(R)	64	Transmission #2 Oil Temperature	Top Level				Temperature of transmission #2 lubricant.	64		
	69	Two Speed Axle Switch	-71	65265	1.1	2	Switch signal which indicates the current axle range.	69		
	70	Parking Brake Switch	-71	65265	1.3	2	Switch signal which indicates when the parking brake is set. In general the switch actuated by the operator's park brake control, whether a pedal, lever or other control mechanism.	70		
(R)	72	Engine Blower Bypass Valve Position	-71	65277	1	8	Relative position of the blower bypass valve.	72		
	73	Auxiliary Pump Pressure	-71	65278	1	8	Gage pressure of auxiliary water pump driven as a PTO device.	73		
	74	Maximum Vehicle Speed Limit	-71	65261	1	8	Maximum vehicle velocity allowed.	74		
	75	Steering Axle Temperature	-71	65273	1	8	Temperature of lubricant in steering axle.	75		

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	76	Axle Lift Air Pressure	Top Level					76		
	77	Forward Rear Drive Axle Temperature	Top Level					77		
	78	Rear Rear Drive Axle Temperature	Top Level					78		
	79	Road Surface Temperature	-71	65269	7-8	16	Indicated temperature of road surface over which vehicle is operating.	79		
	80	Washer Fluid Level	-71	65276	1	8	Ratio of volume of liquid to total container volume of fluid reservoir in windshield wash system.	80		
(R)	81	Engine Particulate Trap Inlet Pressure	-71	65270	1	8	Exhaust back pressure as a result of particle accumulation on filter media placed in the exhaust stream.	81		
(R)	82	Engine Air Start Pressure	-71	65246	1	8	Gage pressure of air in an engine starting system that utilizes compressed air to provide the force required to rotate the crankshaft.	82		
	84	Wheel-Based Vehicle Speed	-71	65265	2-3	16	Speed of the vehicle as calculated from wheel or tailshaft speed.	84		
	86	Cruise Control Set Speed	-71	65265	6	8	Value of set (chosen) velocity of velocity control system.	86		
	87	Cruise Control High Set Limit Speed	-71	65261	2	8	Maximum vehicle velocity at which cruise can be set.	87		
	88	Cruise Control Low Set Limit Speed	-71	65261	3	8	Minimum vehicle velocity at which cruise can be set or minimum vehicle velocity for cruise operation before it will exit cruise control operation.	88		
	90	Power Takeoff Oil Temperature	-71	65264	1	8	Temperature of lubricant in device used to transmit engine power to auxiliary equipment.	90		
(R)	91	Accelerator Pedal Position 1	-71	61443	2	8	The ratio of actual position of the analog engine speed/torque request input device (such as an accelerator pedal or throttle lever) to the maximum position of the input device.	91		
(R)	92	Engine Percent Load At Current Speed	-71	61443	3	8	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.	92		

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	93	Engine Net Brake Torque	Top Level					93		
(R)	94	Engine Fuel Delivery Pressure	-71	65263	1	8	Gage pressure of fuel in system as delivered from supply pump to the injection pump.	94		
(R)	95	Engine Fuel Filter Differential Pressure	-71	65276	3	8	Change in fuel delivery pressure, measured across the filter, due to accumulation of solid or semisolid matter on the filter element.	95		
	96	Fuel Level	-71	65276	2	8	Ratio of volume of fuel to the total volume of fuel storage container.	96		
	97	Water In Fuel Indicator	-71	65279	1.1	2	Signal which indicates the presence of water in the fuel.	97		
	98	Engine Oil Level	-71	65263	3	8	Ratio of current volume of engine sump oil to maximum required volume	98		
	99	Engine Oil Filter Differential Pressure	-71	65276	4	8	Change in engine oil pressure, measured across the filter, due to the filter and any accumulation of solid or semisolid material on or in the filter.	99		
	100	Engine Oil Pressure	-71	65263	4	8	Gage pressure of oil in engine lubrication system as provided by oil pump.	100		
(R)	101	Engine Crankcase Pressure	-71	65263	5-6	16	Gage pressure inside engine crankcase.	101		
(R)	102	Engine Turbocharger Boost Pressure	-71	65270	2	8	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.	102		
(R)	103	Engine Turbocharger 1 Speed	-71	65245	2-3	16	Rotational velocity of rotor in the turbocharger.	103		
(R)	104	Engine Turbocharger Lube Oil Pressure 1	-71	65245	1	8	Gage pressure of oil in turbocharger lubrication system.	104		
(R)	105	Engine Intake Manifold 1 Temperature	-71	65270	3	8	Temperature of pre-combustion air found in intake manifold number 1 of engine air supply system.	105		
(R)	106	Engine Air Inlet Pressure	-71	65270	4	8	Absolute air pressure at inlet to intake manifold or air box.	106		
(R)	107	Engine Air Filter 1 Differential Pressure	-71	65270	5	8	Change in engine air system pressure, measured across the filter, due to the filter and any accumulation of solid foreign matter on or in the filter.	107		
	108	Barometric Pressure	-71	65269	1	8	Absolute air pressure of the atmosphere.	108		

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	109	Engine Coolant Pressure	-71	65263	7	8	Gage pressure of liquid found in engine cooling system.	109		
(R)	110	Engine Coolant Temperature	-71	65262	1	8	Temperature of liquid found in engine cooling system.	110		
(R)	111	Engine Coolant Level	-71	65263	8	8	Ratio of volume of liquid found in engine cooling system to total cooling system volume	111		
(R)	112	Engine Coolant Filter Differential Pressure	-71	65270	8	8	Change in coolant pressure, measured across the filter, due to the filter and any accumulation of solid or semisolid matter on or in the filter.	112		
(R)	113	Engine Governor Droop	Top Level					113		
	114	Net Battery Current	-71	65271	1	8	Net flow of electrical current into/out of the battery or batteries.	114		
	115	Alternator Current	-71	65271	2	8	Measured output current from Alternator	115		
	116	Brake Application Pressure	-71	65274	1	8	Gage Pressure of compressed air or fluid in vehicle braking system.	116		
	117	Brake Primary Pressure	-71	65274	2	8	Gage pressure of air in the primary, or supply side, of the air brake system	117		
	118	Brake Secondary Pressure	-71	65274	3	8	Gage pressure of air in the secondary, or service side, of the air brake system.	118		
	119	Hydraulic Retarder Pressure	-71	65275	1	8	Gage pressure of oil in hydraulic retarder system.	119		
	120	Hydraulic Retarder Oil Temperature	-71	65275	2	8	Temperature of oil found in a hydraulic retarder.	120		
	122	Engine Retarder Percent	Top Level					122		
	123	Clutch Pressure	-71	65272	1	8	Gage pressure of oil within a wet clutch.	123		
	124	Transmission Oil Level	-71	65272	2	8	Ratio of volume of transmission sump oil to recommended volume	124		
	126	Transmission Filter Differential Pressure	-71	65272	3	8	Change in transmission fluid pressure, measured after the filter, due to accumulation of solid or semisolid material on or in the filter.	126		
	127	Transmission Oil Pressure	-71	65272	4	8	Gage pressure of lubrication fluid in transmission, measured after pump.	127		

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	129	Engine Injector Metering Rail 2 Pressure (duplicate, use SPN 1349)	-71			16	The gage pressure of fuel in the metering rail #2 as delivered from the supply pump to the injector metering inlet.	129		
(R)	130	Engine Power Specific Fuel Economy	Top Level					130		
(R)	131	Engine Exhaust Back Pressure	Top Level					131		
(R)	132	Engine Inlet Air Mass Flow Rate	-71	61450	3-4	16	Mass flow rate of fresh air entering the engine air intake, before any EGR mixer, if used.	132		
(R)	133	Engine Average Fuel Rate	Top Level					133		
(R)	135	Engine Fuel Delivery Pressure (Absolute)	Top Level					135		
	136	Auxiliary Vacuum Pressure Reading	-71	65143	1-2	16	Identifies the current vacuum pressure (relative to atmosphere) that is configured uniquely per application. Not to be used in place of defined parameters.	136		
	137	Auxiliary Gage Pressure Reading 1	-71	65143	3-4	16	Identifies the current gage pressure (relative to atmosphere) that is configured uniquely per application.	137		
	138	Auxiliary Absolute Pressure Reading	-71	65143	5-6	16	Identifies the current absolute pressure (relative to 0 pressure) that is configured uniquely per application.	138		
	141	Trailer, Tag Or Push Channel Tire Pressure Target	-71	65145	1-2	16	The tire pressure control system's target gage pressure for the trailer, tag, or push group of tires.	141		
	142	Drive Channel Tire Pressure Target	-71	65145	3-4	16	The tire pressure control system's target gage pressure for the drive group of tires.	142		
	143	Steer Channel Tire Pressure Target	-71	65145	5-6	16	The tire pressure control system's target gage pressure for the steer group of tires.	143		
	144	Trailer, Tag Or Push Channel Tire Pressure	-71	65146	1-2	16	The latest gage pressure reading of the trailer, tag, or push group of tires, as opposed to the pressure in each tire.	144		
	145	Drive Channel Tire Pressure	-71	65146	3-4	16	The latest gage pressure reading of the drive group of tires, as opposed to the pressure in each tire.	145		
	146	Steer Channel Tire Pressure	-71	65146	5-6	16	The latest gage pressure reading of the steer group of tires, as opposed to the pressure in each tire.	146		
(R)	147	Engine Average Fuel Economy (Gaseous)	Top Level					147		

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	148	Engine Instantaneous Fuel Economy (Gaseous)	Top Level					148		
(R)	149	Engine Mass Flow Rate (Gaseous)	Top Level					149		
	152	Number Of ECU Resets	Top Level					152		
(R)	153	Engine High Resolution Crankcase Pressure	Top Level					153		
(R)	156	Engine Injector Timing Rail 1 Pressure	-71	65243	5-6	16	The gage pressure of fuel in the timing rail delivered from the supply pump to the injector timing inlet.	156		
(R)	157	Engine Injector Metering Rail 1 Pressure	-71	65243	3-4	16	The gage pressure of fuel in the primary, or first, metering rail as delivered from the supply pump to the injector metering inlet.	157		
	158	Battery Potential (Voltage), Switched	-71	65271	7-8	16	Electrical potential measured at the input of the electronic control unit supplied through a switching device	158		
(R)	159	Engine Gas Supply Pressure	-71	65277	2-3	16	Gage pressure of gas supply to fuel metering device.	159		
	160	Main Shaft Speed	-71			16	Rotational velocity of the first intermediate shaft of the transmission.	160		
	161	Transmission Input Shaft Speed	-71	61442	6-7	16	Rotational velocity of the primary shaft transferring power into the transmission. When a torque converter is present, it is the output of the torque converter.	161		
	162	Transmission Requested Range	-71	61445	5-6	16	Range selected by the operator.	162		
	163	Transmission Current Range	-71	61445	7-8	16	Range currently being commanded by the transmission control system.	163		
(R)	164	Engine Injection Control Pressure	-71	65243	1-2	16	The gage pressure of the engine oil in the hydraulic accumulator that powers an intensifier used for fuel injection.	164		
	165	Compass Bearing	-71	65256	1-2	16	Present compass bearing of vehicle.	165		
(R)	166	Engine Rated Power	-71	65214	1-2	16	Net brake power that the engine will deliver continuously, specified for a given application at a rated speed.	166		
	167	Alternator Potential (Voltage)	-71	65271	3-4	16	Electrical potential measured at the alternator output.	167		
	168	Electrical Potential (Voltage)	-71	65271	5-6	16	Measured electrical potential of the battery.	168		
	169	Cargo Ambient Temperature	-71	65276	5-6	16	Temperature of air inside vehicle container used to accommodate cargo.	169		

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	170	Cab Interior Temperature	-71	65269	2-3	16	Temperature of air inside the part of the vehicle that encloses the driver and vehicle operating controls.	170		
	171	Ambient Air Temperature	-71	65269	4-5	16	Temperature of air surrounding vehicle.	171		
(R)	172	Engine Air Inlet Temperature	-71	65269	6	8	Temperature of air entering vehicle air induction system.	172		
(R)	173	Engine Exhaust Gas Temperature	-71	65270	6-7	16	Temperature of combustion byproducts leaving the engine.	173		
(R)	174	Engine Fuel Temperature	-71	65262	2	8	Temperature of fuel entering injectors.	174		
	175	Engine Oil Temperature 1	-71	65262	3-4	16	Temperature of the engine lubricant.	175		
(R)	176	Engine Turbocharger Oil Temperature	-71	65262	5-6	16	Temperature of the turbocharger lubricant.	176		
	177	Transmission Oil Temperature	-71	65272	5-6	16	Temperature of the transmission lubricant.	177		
	178	Front Axle Weight	Top Level					178		
	179	Rear Axle Weight	Top Level					179		
	180	Trailer Weight	-71	65258	4-5	16	Total mass of freight-carrying vehicle designed to be pulled by truck, including the weight of the contents.	180		
	181	Cargo Weight	-71	65258	6-7	16	The mass of freight carried.	181		
(R)	182	Engine Trip Fuel	-71	65257	1-4	32	Fuel consumed during all or part of a journey.	182		
(R)	183	Engine Fuel Rate	-71	65266	1-2	16	Amount of fuel consumed by engine per unit of time.	183		
(R)	184	Engine Instantaneous Fuel Economy	-71	65266	3-4	16	Current fuel economy at current vehicle velocity	184		
(R)	185	Engine Average Fuel Economy	-71	65266	5-6	16	Average of instantaneous fuel economy for that segment of vehicle operation of interest.	185		
	186	Power Takeoff Speed	-71	65264	2-3	16	Rotational velocity of device used to transmit engine power to auxiliary equipment.	186		
	187	Power Takeoff Set Speed	-71	65264	4-5	16	Rotational velocity selected by operator for device used to transmit engine power to auxiliary equipment.	187		

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	188	Engine Speed At Idle, Point 1 (Engine Configuration)	-71	65251	01-02	16	Stationary low idle speed of engine which includes influences due to engine temperature (after power up) and other stationary changes (calibration offsets, sensor failures, etc).	188		
	189	Engine Rated Speed	-71	65214	3-4	16	The maximum governed rotational velocity of the engine crankshaft under full load conditions.	189		
	190	Engine Speed	-71	61444	4-5	16	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.	190		
	191	Transmission Output Shaft Speed	-71	61442	2-3	16	Calculated speed of the transmission output shaft.	191		
	228	Speed Sensor Calibration	Top Level					228		
(R)	229	Total Fuel Used (Gaseous) (duplicate, use SPN 1040)	Top Level					229		
(R)	230	Total Idle Fuel Used (Gaseous) (duplicate, use SPN 1010)	Top Level					230		
(R)	231	Trip Fuel (Gaseous) (duplicate, use SPN 1039)	Top Level					231		
	232	DGPS Differential Correction	Top Level					232		
	233	Unit Number (Power Unit)	-71	65259	d	1600	Owner assigned unit number for the power unit of the vehicle	233		
	234	Software Identification	-71	65242	2-N	1600	Software identification of an electronic module. As an example, this parameter may be represented with ASCII characters MMDDYYaa where MM is the month, DD is the day, YY is the year, and aa is the revision number.	234		
(R)	235	Engine Total Idle Hours	-71	65244	5-8	32	Accumulated time of operation of the engine while under idle conditions.	235		
(R)	236	Engine Total Idle Fuel Used	-71	65244	1-4	32	Accumulated amount of fuel used during vehicle operation while under idle conditions.	236		
	237	Vehicle Identification Number	-71	65260	1	1600	Vehicle Identification Number (VIN) as assigned by the vehicle manufacturer.	237		
	238	Velocity Vector	Top Level					238		

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	241	Tire Pressure	-71	65268	2	8	Pressure at which air is contained in cavity formed by tire and rim.	241		
	242	Tire Temperature	-71	65268	3-4	16	Temperature at the surface of the tire sidewall.	242		
	244	Trip Distance	-71	65248	1-4	32	Distance traveled during all or part of a journey.	244		
	245	Total Vehicle Distance	-71	65248	5-8	32	Accumulated distance traveled by vehicle during its operation.	245		
	246	Total Vehicle Hours	-71	65255	1-4	32	Accumulated time of operation of vehicle.	246		
(R)	247	Engine Total Hours of Operation	-71	65253	1-4	32	Accumulated time of operation of engine.	247		
	248	Total Power Takeoff Hours	-71	65255	5-8	32	Accumulated time of operation of power takeoff device.	248		
(R)	249	Engine Total Revolutions	-71	65253	5-8	32	Accumulated number of revolutions of engine crankshaft during its operation.	249		
(R)	250	Engine Total Fuel Used	-71	65257	5-8	32	Accumulated amount of fuel used during vehicle operation.	250		
	251	Time	Top Level					251		
	252	Date	Top Level					252		
	257	Cold Restart Of Specific Component	Top Level					257		
	258	Warm Restart Of Specific Component	Top Level					258		
	259	Acknowledgement Of Warm Or Cold Restart	Top Level					259		
	354	Relative Humidity	Top Level				Measures humidity of combustion air prior to entry into turbocharger	354		
	355	Engine Oil Life	Top Level				Measures the condition of the engine lubricating oil	355		
	378	Fare Collection Unit Status	Top Level					378		
	380	Articulation Angle	Top Level					380		
	383	Vehicle Acceleration	Top Level					383		
(R)	411	Engine Exhaust Gas Recirculation Differential Pressure	-71	65188	5-6	16	Differential pressure across the Exhaust Gas Recirculation (EGR) system	411		
(R)	412	Engine Exhaust Gas Recirculation Temperature	-71	65188	7-8	16	Temperature of Recirculated Exhaust Gas	412		
	441	Auxiliary Temperature 1	-71	65164	1	8	Temperature measured by auxiliary temperature sensor #1.	441		

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	442	Auxiliary Temperature 2	-71	65164	2	8	Temperature measured by auxiliary temperature sensor #2.	442		
	443	Auxiliary Gage Pressure Reading 2	Top Level					443		
	444	Battery 2 Potential (Voltage)	-71	65165	1-2	16	The voltage for isolated battery #2.	444		
(R)	445	Engine Cylinder Head Temperature Bank B (right bank)	Top Level					445		
(R)	446	Engine Cylinder Head Temperature Bank A (left bank)	Top Level					446		
	447	Passenger Counter	Top Level					447		
	501	Signage Message	Top Level					501		
	502	Fare Collection Unit - Point Of Sale	Top Level					502		
	503	Fare Collection Unit - Service Detail	Top Level					503		
	504	Annunciator Voice Message	Top Level					504		
	505	Vehicle Control Head Keyboard Message	Top Level					505		
	506	Vehicle Control Head Display Message	Top Level					506		
	507	Driver Identification	Top Level					507		
	508	Transit Route Identification	Top Level					508		
(R)	509	Milepost Identification	-71	64959	2 to n	800	Used to identify the milepost as detected by a milepost sensor	509		
	512	Driver's Demand Engine - Percent Torque	-71	61444	2	8	The requested torque output of the engine by the driver.			
	513	Actual Engine - Percent Torque	-71	61444	3	8	The calculated output torque of the engine.			
(R)	514	Nominal Friction - Percent Torque	-71	65247	1	8	The calculated torque that indicates the amount of torque required by the basic engine itself added by the loss torque of accessories.			
	515	Engine's Desired Operating Speed	-71	65247	2-3	16	An indication by the engine of the optimal operating speed of the engine for the current existing conditions.			
	516	Ground-Based Vehicle Speed	Top Level			16	Actual ground speed of the vehicle, measured by a device such as RADAR. (1 km/h = 0.621 mph)			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	517	Navigation-Based Vehicle Speed	-71	65256	3-4	16	Speed of the vehicle as calculated from a device such as a Global Positioning System (GPS).			
(R)	518	Engine Requested Torque/Torque Limit	-71	0	4	8	Parameter provided to the engine or retarder in the torque/speed control message for controlling or limiting the output torque.			
	519	Engine's Desired Operating Speed Asymmetry Adjustment	-71	65247	4	8	This byte is utilized in transmission gear selection routines and indicates the engine's preference of lower versus higher engine speeds should its desired speed not be achievable.			
	520	Actual Retarder - Percent Torque	-71	61440	2	8	Actual braking torque of the retarder as a percent of retarder configuration reference torque SPN 556.			
(R)	521	Brake Pedal Position	-71	61441	2	8	Ratio of brake pedal position to maximum pedal position. Used for electric brake applications.			
	522	Percent Clutch Slip	-71	61442	4	8	Parameter which represents the ratio of input shaft speed to current engine speed (in percent).			
(R)	523	Transmission Current Gear	-71	61445	4	8	The gear currently engaged in the transmission or the last gear engaged while the transmission is in the process of shifting to the new or selected gear.			
	524	Transmission Selected Gear	-71	61445	1	8	The gear that the transmission will attempt to achieve during the current shift if a shift is in progress, or the next shift if one is pending (i.e., waiting for torque reduction to initiate the shift).			
(R)	525	Transmission Requested Gear	-71	256	3	8	Gear requested by the operator, ABS, or engine.			
	526	Transmission Actual Gear Ratio	-71	61445	2-3	16	Actual ratio of input shaft speed to output shaft speed.			
	527	Cruise Control States	-71	65265	7.6	3	This parameter is used to indicate the current state, or mode, of operation by the cruise control device.			
	528	Engine Speed At Point 2 (Engine Configuration)	-71	65251	04-05	16	Engine speed of point 2 of the engine torque map (see PGN 65251 and supporting document).			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	529	Engine Speed At Point 3 (Engine Configuration)	-71	65251	07-08	16	Engine speed at point 3 of the engine torque map			
	530	Engine Speed At Point 4 (Engine Configuration)	-71	65251	10-11	16	Engine speed at point 4 of the engine torque map			
	531	Engine Speed At Point 5 (Engine Configuration)	-71	65251	13-14	16	Engine speed at point 5 of the engine torque map			
(R)	532	Engine Speed At High Idle, Point 6 (Engine Configuration)	-71	65251	16-17	16	Engine speed of high idle (point 6) of the engine torque map.			
(R)	533	Engine Maximum Momentary Override Speed, Point 7 (Engine Configuration)	-71	65251	22-23	16	The maximum engine speed above high idle allowed by the engine control during a momentary high idle override.			
(R)	534	Engine Maximum Momentary Override Time Limit (Engine Configuration)	-71	65251	24	8	The maximum time limit allowed to override the engine's high idle speed.			
(R)	535	Engine Requested Speed Control Range Lower Limit (Engine Configuration)	-71	65251	25	8	The minimum engine speed that the engine will allow when operating in a speed control/limit mode.			
(R)	536	Engine Requested Speed Control Range Upper Limit (Engine Configuration)	-71	65251	26	8	The maximum engine speed regardless of load that the engine will allow when operating in a speed control/limit mode, excluding any maximum momentary engine override speed, if supported.			
(R)	537	Engine Requested Torque Control Range Lower Limit (Engine Configuration)	-71	65251	27	8	The minimum engine torque that the engine will allow when operating in a torque control/limit mode.			
(R)	538	Engine Requested Torque Control Range Upper Limit (Engine Configuration)	-71	65251	28	8	The maximum engine torque that the engine will allow when operating in a torque control/limit mode.			
(R)	539	Engine Percent Torque At Idle, Point 1 (Engine Configuration)	-71	65251	03	8	The torque limit that indicates the available engine torque which can be provided by the engine at idle speed.			
(R)	540	Engine Percent Torque At Point 2 (Engine Configuration)	-71	65251	06	8	The torque limit that indicates the available engine torque which can be provided by the engine at point 2 of the engine map			
(R)	541	Engine Percent Torque At Point 3 (Engine Configuration)	-71	65251	09	8	The torque limit that indicates the available engine torque which can be provided by the engine at point 3 of the engine map			
(R)	542	Engine Percent Torque At Point 4 (Engine Configuration)	-71	65251	12	8	The torque limit that indicates the available engine torque which can be provided by the engine at point 4 of the engine map			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	543	Engine Percent Torque At Point 5 (Engine Configuration)	-71	65251	15	8	The torque limit that indicates the available engine torque which can be provided by the engine at point 5 of the engine map.			
(R)	544	Engine Reference Torque (Engine Configuration)	-71	65251	20-21	16	This parameter is the 100% reference value for all defined indicated engine torque parameters.			
(R)	545	Engine Gain (Kp) Of The Endspeed Governor (Engine Configuration)	-71	65251	18-19	16	The endspeed governor is defined as a linear line			
	546	Retarder Speed At Idle, Point 1 (Retarder Configuration)	-71	65249	03-04	16				
	547	Retarder Speed At Peak Torque, Point 5 (Retarder Configuration)	-71	65249	15-16	16				
	548	Maximum Retarder Speed, Point 2 (Retarder Configuration)	-71	65249	06-07	16	Maximum speed of retarder			
	549	Retarder Speed At Point 3 (Retarder Configuration)	-71	65249	09-10	16	Retarder speed of point 3 of the engine retarder torque map (see 5.2.4.3).			
	550	Retarder Speed At Point 4 (Retarder Configuration)	-71	65249	12-13	16	Retarder speed of point 4 of the engine retarder torque map (see 5.2.4.3).			
	551	Percent Torque At Idle, Point 1 (Retarder Configuration)	-71	65249	05	8	The torque limit that indicates the available retarder torque which can be provided by the retarder at idle speed.			
	552	Percent Torque At Maximum Speed, Point 2 (Retarder Configuration)	-71	65249	08	8	The torque limit that indicates the available retarder torque which can be provided by the retarder at its maximum speed			
	553	Percent Torque At Point 3 (Retarder Configuration)	-71	65249	11	8	The torque limit that indicates the available retarder torque which can be provided by the retarder at point 3 of the retarder torque map			
	554	Percent Torque At Point 4 (Retarder Configuration)	-71	65249	14	8	The torque limit that indicates the available retarder torque which can be provided by the retarder at point 4 of the retarder torque map			
	555	Percent Torque At Peak Torque, Point 5 (Retarder Configuration)	-71	65249	19	8	The torque limit that indicates the available retarder torque which can be provided by the retarder at point 5 of the retarder torque map			
	556	Reference Retarder Torque (Retarder Configuration)	-71	65249	17-18	16	This parameter is the 100% reference value for all defined indicated retarder torque parameters.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	557	Retarder Control Method (Retarder Configuration)	-71	65249	02	8	This parameter identifies the number of steps used by the retarder.			
(R)	558	Accelerator Pedal 1 Low Idle Switch	-71	61443	1.1	2	Switch signal which indicates the state of the accelerator pedal 1 low idle switch.			
	559	Accelerator Pedal Kickdown Switch	-71	61443	1.3	2	Switch signal which indicates whether the accelerator pedal kickdown switch is opened or closed.			
(R)	560	Transmission Driveline Engaged	-71	61442	1.1	2	Driveline engaged indicates the transmission controlled portion of the driveline is engaged sufficiently to allow a transfer of torque through the transmission.			
	561	ASR Engine Control Active	-71	61441	1.1	2	State signal which indicates that ASR engine control has been commanded to be active.			
	562	ASR Brake Control Active	-71	61441	1.3	2	State signal which indicates that ASR brake control is active.			
	563	Anti-Lock Braking (ABS) Active	-71	61441	1.5	2	State signal which indicates that the ABS is active.			
	564	Differential Lock State - Central	-71	61446	3.1	2	State used which indicates the condition of the central differential lock			
	565	Differential Lock State - Central Front	-71	61446	3.3	2	State used which indicates the condition of the central front differential lock.			
	566	Differential Lock State - Central Rear	-71	61446	3.5	2	State used which indicates the condition of the central rear differential lock.			
	567	Differential Lock State - Front Axle 1	-71	61446	2.1	2	State used which indicates the condition of the front axle 1 differential lock.			
	568	Differential Lock State - Front Axle 2	-71	61446	2.3	2	State used which indicates the condition of the front axle 2 differential lock.			
	569	Differential Lock State - Rear Axle 1	-71	61446	2.5	2	State used which indicates the condition of the rear axle 1 differential lock.			
	570	Differential Lock State - Rear Axle 2	-71	61446	2.7	2	State used which indicates the condition of the rear axle 2 differential lock.			
	571	Retarder Enable - Brake Assist Switch	-71	61440	1.5	2	Switch signal which indicates whether the operator wishes the retarder to be enabled for vehicle braking assist.			
	572	Retarder Enable - Shift Assist Switch	-71	61440	1.7	2	Switch signal which indicates whether the operator wishes the retarder to be enabled for transmission shift assist.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	573	Torque Converter Lockup Engaged	-71	61442	1.3	2	State signal which indicates whether the torque converter lockup is engaged.			
(R)	574	Transmission Shift In Process	-71	61442	1.5	2	Indicates that the transmission is in process of shifting from the current gear to the selected gear.			
	575	ABS Off-road Switch	-71	61441	3.1	2	Switch signal which indicates the position of the ABS off-road switch.			
	576	ASR Off-road Switch	-71	61441	3.3	2	Switch signal which indicates the position of the ASR off-road switch.			
	577	ASR "Hill Holder" Switch	-71	61441	3.5	2	Switch signal which indicates the position of the ASR “hill holder” switch.			
	578	Drive Axle Temperature	-71	65273	4	8	Temperature of axle lubricant in drive axle.			
	579	Drive Axle Lift Air Pressure	-71	65273	3	8	Gage pressure of air in system that utilizes compressed air to provide force between axle and frame.			
	580	Altitude	-71	65256	7-8	16	Altitude of the vehicle referenced to sea level at standard atmospheric pressure and temperature.			
	581	Transmission Gear Ratio	-71	65250	3-4	16	The transmission configuration describes the number of forward gears, the number of reverse gears, and the ratio of each gear with the following resolution.			
	582	Axle Weight	-71	65258	2-3	16	Total mass imposed by the tires on the road surface at the specified axle.			
	583	Pitch	-71	65256	5-6	16	Pitch of the vehicle as calculated by the navigation device(s).			
	584	Latitude	-71	65267	1-4	32	Latitude position of the vehicle.			
	585	Longitude	-71	65267	5-8	32	Longitude position of the vehicle			
	586	Make	-71	65259	a	40	Make of the component.			
	587	Model	-71	65259	b	1600	Model of the component			
	588	Serial Number	-71	65259	c	1600	Serial number of the component			
	589	Alternator Speed	-71	65237	1-2	16	Actual rotation speed of the alternator.			
(R)	590	Engine Idle Shutdown Timer State	-71	65252	1.7	2	Status signal which indicates the current mode of operation of the idle shutdown timer system.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	591	Engine Idle Shutdown Timer Function	-71	65252	2.7	2	Parameter which indicates the configuration of the idle shutdown timer system.			
(R)	592	Engine Idle Shutdown Timer Override	-71	65252	1.5	2	Status signal which indicates the status of the override feature of the idle shutdown timer system.			
(R)	593	Engine Idle Shutdown has Shutdown Engine	-71	65252	1.1	2	Status signal which identifies whether or not the engine has been shutdown by the idle shutdown timer system.			
(R)	594	Engine Idle Shutdown Driver Alert Mode	-71	65252	1.3	2	Status signal which indicates the status of the driver alert mode of the idle shutdown timer system.			
	595	Cruise Control Active	-71	65265	4.1	2	Cruise control is switched on.			
	596	Cruise Control Enable Switch	-71	65265	4.3	2	Switch signal which indicates that it is possible to manage the cruise control function.			
	597	Brake Switch	-71	65265	4.5	2	Switch signal which indicates that the driver operated brake foot pedal is being pressed.		0	246
	598	Clutch Switch	-71	65265	4.7	2	Switch signal which indicates that the clutch pedal is being pressed.		0	245
	599	Cruise Control Set Switch	-71	65265	5.1	2	Switch signal of the cruise control activator which indicates that the activator is in the position “set.”			
	600	Cruise Control Coast (Decelerate) Switch	-71	65265	5.3	2	Switch signal of the cruise control activator which indicates that the activator is in the position “coast (decelerate).”			
	601	Cruise Control Resume Switch	-71	65265	5.5	2	Switch signal of the cruise control activator which indicates that the activator is in the position “resume.”			
	602	Cruise Control Accelerate Switch	-71	65265	5.7	2	Switch signal of the cruise control activator which indicates that the activator is in the position “accelerate.”			
	603	Brake Pedal Switch #2	Top Level						0	247
	604	Transmission Neutral Switch	-71	65219	2.3	2	Identifies the status of the switch that indicates neutral.		0	226
	605	Refrigerant High Pressure Switch	-71	65252	3.5	2	Switch signal which indicates the position of the high pressure switch in the coolant circuit of an air conditioning system.		0	228

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	606	Engine Momentary Overspeed Enable	-71	61442	5.1	2	Command signal used to indicate that the engine speed may be boosted up to the maximum engine overspeed value to accommodate transmission downshifts.			
	607	Progressive Shift Disable	-71	61442	5.3	2	Command signal used to indicate that progressive shifting by the engine should be disallowed.			
	608	J1587 (previously SAE J1708 (J1587) Data Link)	-73	57088	1.5	2	Identifies the action to be performed on the J1587 communications port.		0	250
	609	Controller #2	Top Level						0	233
	610	Power Connect Device	Top Level						0	236
	611	System Diagnostic Code #1	Top Level						0	151
	612	System Diagnostic Code #2	Top Level						0	152
	613	System Diagnostic Code #3	Top Level						0	153
	614	System Diagnostic Code #4	Top Level						0	154
	615	System Diagnostic Code #5	Top Level						0	155
	616	Auxiliary Analog Input #1	Top Level						0	227
	617	Parking Brake On Actuator	Top Level						0	234
	618	Parking Brake Off Actuator	Top Level						0	235
	619	Parking Brake Actuator	-71	65274	4.1	2	Signal which indicates the current state of the actuator(s) that control the parking brake			
	620	5 Volts DC Supply	Top Level						0	232
	621	Antenna Electronics	Top Level						219	2
	622	J1922 (previously SAE J1922 Data Link)	-73	57088	1.3	2	Identifies the action to be performed on the J1922 communications port.		0	249
	623	Red Stop Lamp	-73	65226	1.5				0	238
	624	Amber Warning Lamp	-73	65226	1.3				0	239
	625	Proprietary Data Link	Top Level						0	248
(R)	626	Engine Start Enable Device 1	-71	64966	1.1	2	Devices that assist an Engine in starting, e.g. intake heaters and ether. Primary starting aid.		0	237

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	627	Power Supply	Top Level						0	251
	628	Program Memory	Top Level						0	240
	629	Controller #1	Top Level						0	254
	630	Calibration Memory	Top Level						0	253
	631	Calibration Module	Top Level						0	252
(R)	632	Engine Fuel Shutoff Valve #1	Top Level				First instance of engine fuel shutoff valve. Second instance is SPN 2807		128	17
(R)	633	Engine Fuel Control Valve #1	Top Level						128	18
(R)	634	Engine Throttle Bypass Valve	Top Level						128	19
(R)	635	Engine Timing Actuator #1	Top Level						128	20
(R)	636	Engine Position Sensor	Top Level						128	21
(R)	637	Engine Timing Sensor	Top Level						128	22
(R)	638	Engine Fuel Rack Actuator	Top Level				Actuator that positions the fuel rack on a diesel fuel injection pump.		128	23
	639	J1939 Network #1, Primary Vehicle Network (previously SAE J1939 Data Link)	-73	57088	1.1	2	Identifies the action to be performed on the J1939 Network #1, Primary Vehicle Network" communications port.		0	231
(R)	640	Engine External Protection Input	Top Level						128	25
(R)	641	Engine Turbocharger Variable Geometry Actuator #1	Top Level						128	27
(R)	642	Engine Turbocharger Variable Geometry Actuator #2	Top Level						128	28
(R)	643	Engine External Fuel Command Input	Top Level						128	29
(R)	644	Engine External Speed Command Input	Top Level						128	30
(R)	645	Engine Tachometer Signal Output	Top Level						128	31
(R)	646	Engine Turbocharger 1 Wastegate Drive	Top Level				Do not use - Use SPN 1188 for Turbocharger 1 Wastegate Drive data.		128	32
(R)	647	Engine Fan Clutch Output Device Driver	Top Level						128	33
(R)	648	Engine Exhaust Back Pressure Sensor	Top Level						128	34
(R)	649	Engine Exhaust Back Pressure Regulator Solenoid	Top Level						128	35
	650	Electronic Drive Unit Power Relay	Top Level						128	37

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	651	Engine Injector Cylinder #01	Top Level						128	1
(R)	652	Engine Injector Cylinder #02	Top Level						128	2
(R)	653	Engine Injector Cylinder #03	Top Level						128	3
(R)	654	Engine Injector Cylinder #04	Top Level						128	4
(R)	655	Engine Injector Cylinder #05	Top Level						128	5
(R)	656	Engine Injector Cylinder #06	Top Level						128	6
(R)	657	Engine Injector Cylinder #07	Top Level						128	7
(R)	658	Engine Injector Cylinder #08	Top Level						128	8
(R)	659	Engine Injector Cylinder #09	Top Level						128	9
(R)	660	Engine Injector Cylinder #10	Top Level						128	10
(R)	661	Engine Injector Cylinder #11	Top Level						128	11
(R)	662	Engine Injector Cylinder #12	Top Level						128	12
(R)	663	Engine Injector Cylinder #13	Top Level						128	13
(R)	664	Engine Injector Cylinder #14	Top Level						128	14
(R)	665	Engine Injector Cylinder #15	Top Level						128	15
(R)	666	Engine Injector Cylinder #16	Top Level						128	16
(R)	667	Engine Injector Cylinder #17	Top Level						128	47
(R)	668	Engine Injector Cylinder #18	Top Level						128	48
(R)	669	Engine Injector Cylinder #19	Top Level						128	49
(R)	670	Engine Injector Cylinder #20	Top Level						128	50
(R)	671	Engine Injector Cylinder #21	Top Level						128	72
(R)	672	Engine Injector Cylinder #22	Top Level						128	73
(R)	673	Engine Injector Cylinder #23	Top Level						128	74
(R)	674	Engine Injector Cylinder #24	Top Level						128	75
(R)	675	Engine Glow Plug Lamp	Top Level						128	36
(R)	676	Engine Glow Plug Relay	Top Level						128	38
(R)	677	Engine Starter Motor Relay	Top Level				Activates the starter		128	39

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	678	ECU 8 Volts DC Supply	Top Level						128	41
(R)	679	Engine Injection Control Pressure Regulator	Top Level						128	42
(R)	680	Engine Valve Variable Swirl System	Top Level						128	61
(R)	681	Transmission Gear Shift Inhibit Request	-71	256	1.1	2	Command signal to inhibit gear shifts.			
	682	Torque Converter Lockup Disable Request	-71	256	1.3	2	Command signal to prevent torque converter lockup, which may cause problems in certain circumstances for ASR.			
	683	Disengage Driveline Request	-71	256	1.5	2	Command signal used to simply disengage the driveline, e.g., to prevent engine drag torque from causing high wheel slip on slippery surfaces.			
	684	Requested Percent Clutch Slip	-71	256	2	8	Parameter which represents the percent clutch slip requested by a device.			
	685	Disengage Differential Lock Request - Front Axle 1	-71	256	4.1	2	Command signal used to disengage the various differential locks, e.g., to allow an undistributed individual wheel control by ABS.			
	686	Disengage Differential Lock Request - Front Axle 2	-71	256	4.3	2	Command signal used to disengage the various differential locks, e.g., to allow an undistributed individual wheel control by ABS.			
	687	Disengage Differential Lock Request - Rear Axle 1	-71	256	4.5	2	Command signal used to disengage the various differential locks, e.g., to allow an undistributed individual wheel control by ABS.			
	688	Disengage Differential Lock Request - Rear Axle 2	-71	256	4.7	2	Command signal used to disengage the various differential locks, e.g., to allow an undistributed individual wheel control by ABS.			
	689	Disengage Differential Lock Request - Central	-71	256	5.1	2	Command signal used to disengage the various differential locks, e.g., to allow an undistributed individual wheel control by ABS.			
	690	Disengage Differential Lock Request - Central Front	-71	256	5.3	2	Command signal used to disengage the various differential locks, e.g., to allow an undistributed individual wheel control by ABS.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	691	Disengage Differential Lock Request - Central Rear	-71	256	5.5	2	Command signal used to disengage the various differential locks, e.g., to allow an undistributed individual wheel control by ABS.			
	692	ABS Offroad Switch Request	Top Level			2	Command signal used by the driver via a dashboard switch to choose the ABS offroad function.			
	693	ASR Offroad Switch Request	Top Level			2	Command signal used by the driver via a dashboard switch to choose the ASR offroad function.			
	694	ASR "Hill Holder" Switch Request	Top Level			2	Command signal used by the driver via a dashboard switch to choose a special ASR function.			
(R)	695	Engine Override Control Mode	-71	0	1.1	2	The override control mode defines which sort of command is used:			
(R)	696	Engine Requested Speed Control Conditions	-71	0	1.3	2	This mode tells the engine control system the governor characteristics that are desired during speed control.			
	697	Auxiliary PWM Driver #1	Top Level						128	57
	698	Auxiliary PWM Driver #2	Top Level						128	58
	699	Auxiliary PWM Driver #3	Top Level						128	59
	700	Auxiliary PWM Driver #4	Top Level						128	60
	701	Auxiliary I/O #01	-71	65241	1.7	2	Identifies the current status of auxiliary input/output functions that are configured uniquely per application.		128	26
	702	Auxiliary I/O #02	-71	65241	1.5	2	Identifies the current status of auxiliary input/output functions that are configured uniquely per application.		128	40
	703	Auxiliary I/O #03	-71	65241	1.3	2	Identifies the current status of auxiliary input/output functions that are configured uniquely per application.		128	51
	704	Auxiliary I/O #04	-71	65241	1.1	2	Identifies the current status of auxiliary input/output functions that are configured uniquely per application.		128	52
	705	Auxiliary I/O #05	-71	65241	2.7	2	Identifies the current status of auxiliary input/output functions that are configured uniquely per application.		128	53

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	706	Auxiliary I/O #06	-71	65241	2.5	2	Identifies the current status of auxiliary input/output functions that are configured uniquely per application.		128	54
	707	Auxiliary I/O #07	-71	65241	2.3	2	Identifies the current status of auxiliary input/output functions that are configured uniquely per application.		128	55
	708	Auxiliary I/O #08	-71	65241	2.1	2	Identifies the current status of auxiliary input/output functions that are configured uniquely per application.			
	709	Auxiliary I/O #09	-71	65241	3.7	2	Identifies the current status of auxiliary input/output functions that are configured uniquely per application.			
	710	Auxiliary I/O #10	-71	65241	3.5	2	Identifies the current status of auxiliary input/output functions that are configured uniquely per application.			
	711	Auxiliary I/O #11	-71	65241	3.3	2	Identifies the current status of auxiliary input/output functions that are configured uniquely per application.			
	712	Auxiliary I/O #12	-71	65241	3.1	2	Identifies the current status of auxiliary input/output functions that are configured uniquely per application.			
	713	Auxiliary I/O #13	-71	65241	4.7	2	Identifies the current status of auxiliary input/output functions that are configured uniquely per application.			
	714	Auxiliary I/O #14	-71	65241	4.5	2	Identifies the current status of auxiliary input/output functions that are configured uniquely per application.			
	715	Auxiliary I/O #15	-71	65241	4.3	2	Identifies the current status of auxiliary input/output functions that are configured uniquely per application.			
	716	Auxiliary I/O #16	-71	65241	4.1	2	Identifies the current status of auxiliary input/output functions that are configured uniquely per application.			
	717	Autoshift High Gear Actuator	Top Level						128	43
	718	Autoshift Low Gear Actuator	Top Level						128	44
	719	Autoshift Neutral Actuator	Top Level						128	45
	720	Autoshift Common Low Side (Return)	Top Level						128	46

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	721	Prestroke Sensor	Top Level						128	62
	722	Prestroke Actuator	Top Level						128	63
(R)	723	Engine Speed Sensor #2	Top Level						128	64
(R)	724	Engine Oxygen Sensor Heated	Top Level						128	65
(R)	725	Engine Ignition Control Mode Signal	Top Level						128	66
(R)	726	Engine Ignition Control Timing Signal	Top Level						128	67
(R)	727	Engine Turbocharger Secondary Inlet Pressure	Top Level						128	68
(R)	728	Engine After Cooler-Oil Cooler Coolant Temperature	Top Level						128	69
(R)	729	Engine Inlet Air Heater Driver #1	Top Level						128	70
(R)	730	Engine Inlet Air Heater Driver #2	Top Level						128	71
(R)	731	Engine Knock Sensor	Top Level						128	76
(R)	732	Engine Gas Metering Valve	Top Level						128	77
(R)	733	Engine Rack Position Sensor	Top Level				Obsolete - Use SPN 1210		128	24
(R)	734	Transmission Range Clutch C1 Solenoid	Top Level						130	1
(R)	735	Transmission Range Clutch C2 Solenoid	Top Level						130	2
(R)	736	Transmission Range Clutch C3 Solenoid	Top Level						130	3
(R)	737	Transmission Range Clutch C4 Solenoid	Top Level						130	4
(R)	738	Transmission Range Clutch C5 Solenoid	Top Level						130	5
(R)	739	Transmission Range Clutch C6 Solenoid	Top Level						130	6
	740	Transmission Lockup Clutch Actuator	-71	65223	6.3	2	Identifies the status of the actuator that controls the lockup clutch.		130	7
	741	Transmission Forward Solenoid Valve	Top Level						130	8
	742	Transmission Low Signal Solenoid Valve	Top Level						130	9
	743	Retarder Enable Solenoid Valve	Top Level						130	10
	744	Retarder Modulation Solenoid Valve	Top Level						130	11
	745	Retarder Response Solenoid Valve	Top Level						130	12
	746	Differential Lock Solenoid Valve #1	Top Level				Operates the first differential lock.		130	13

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	747	Engine/Transmission Match	Top Level						130	14
	748	Transmission Output Retarder	-71	65218	1.1	2	Identifies the status of the transmission output retarder.		130	15
	749	Transmission Neutral Start Output	Top Level						130	16
	750	Transmission Turbine Speed Sensor	Top Level						130	17
	751	Transmission Primary Shift Selector	Top Level						130	18
	752	Transmission Secondary Shift Selector	Top Level						130	19
	753	Transmission Special Function Inputs	Top Level						130	20
(R)	754	Transmission Range C1 Clutch Pressure Indicator	Top Level						130	21
(R)	755	Transmission Range C2 Clutch Pressure Indicator	Top Level						130	22
(R)	756	Transmission Range C3 Clutch Pressure Indicator	Top Level						130	23
(R)	757	Transmission Range C4 Clutch Pressure Indicator	Top Level						130	24
(R)	758	Transmission Range C5 Clutch Pressure Indicator	Top Level						130	25
(R)	759	Transmission Range C6 Clutch Pressure Indicator	Top Level						130	26
(R)	760	Transmission Lockup Clutch Pressure Indicator (Obsolete - use 740)	Top Level						130	27
	761	Transmission Forward Range Pressure Indicator	Top Level						130	28
	762	Transmission Neutral Range Pressure Indicator	Top Level						130	29
	763	Transmission Reverse Range Pressure Indicator	Top Level						130	30
	764	Retarder Response System Pressure Indicator	Top Level						130	31
	765	Differential Lock Clutch Pressure Indicator	Top Level						130	32
	766	Transmission Multiple Pressure Indicators	Top Level						130	33
	767	Transmission Reverse Direction Switch	-71	65219	2.1	2	Identifies the status of the switch that indicates reverse direction.		130	34

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	768	Transmission Range High Actuator	-71	65223	5.1	2	Identifies the status of the range high actuator in the auxiliary unit.		130	35
	769	Transmission Range Low Actuator	-71	65223	5.3	2	Identifies the status of the range low actuator in the auxiliary unit.		130	36
	770	Transmission Splitter Direct Actuator	-71	65223	5.5	2	Identifies the status of the splitter direct actuator in the auxiliary unit.		130	37
	771	Transmission Splitter Indirect Actuator	-71	65223	5.7	2	Identifies the status of the splitter indirect actuator in the auxiliary unit.		130	38
	772	Transmission Shift Finger Rail Actuator 1	-71	65223	4.1	2	Identifies the status of the actuator that moves the shift finger identified as rail actuator #1.		130	39
	773	Transmission Shift Finger Gear Actuator 1	-71	65223	4.3	2	Identifies the status of the actuator that moves the shift finger identified as gear actuator #1.		130	40
	774	Transmission Upshift Request Switch	Top Level						130	41
	775	Transmission Downshift Request Switch	Top Level						130	42
	776	Torque Converter Interrupt Actuator	Top Level						130	43
	777	Torque Converter Lockup Actuator	Top Level						130	44
	778	Transmission High Range Sense Switch	-71	65219	1.1	2	Identifies the status of the switch that represents high range.		130	45
	779	Transmission Low Range Sense Switch	-71	65219	1.3	2	Identifies the status of the switch that represents low range.		130	46
	780	Transmission Shift Finger Neutral Indicator	-71	65223	3.1	2	Indicates the status of the shift finger in the neutral position.		130	47
	781	Transmission Shift Finger Engagement Indicator	-71	65223	3.3	2	Identifies the status of the shift finger in the engagement position.		130	48
	782	Transmission Shift Finger Center Rail Indicator	-71	65223	3.5	2	Identifies the status of the shift finger in the center rail position.		130	49
	783	Transmission Shift Finger Rail Actuator 2	-71	65223	4.5	2	Identifies the status of the actuator that moves the shift finger identified as rail actuator #2.		130	50
	784	Transmission Shift Finger Gear Actuator 2	-71	65223	4.7	2	Identifies the status of the actuator that moves the shift finger identified as gear actuator #2.		130	51
	785	Transmission Hydraulic System	Top Level						130	52
	786	Transmission Defuel Actuator	-71	65223	6.5	2	Identifies the status of the actuator that controls the engine defuel mechanism.		130	53

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	787	Transmission Inertia Brake Actuator	-71	65223	6.7	2	Identifies the status of the actuator that controls the inertia brake.		130	54
	788	Transmission Clutch Actuator	-71	65223	6.1	2	Identifies the status of the actuator that controls the clutch.		130	55
	789	Wheel Sensor ABS Axle 1 Left	Top Level						136	1
	790	Wheel Sensor ABS Axle 1 Right	Top Level						136	2
	791	Wheel Sensor ABS Axle 2 Left	Top Level						136	3
	792	Wheel Sensor ABS Axle 2 Right	Top Level						136	4
	793	Wheel Sensor ABS Axle 3 Left	Top Level						136	5
	794	Wheel Sensor ABS Axle 3 Right	Top Level						136	6
	795	Pressure Modulation Valve ABS Axle 1 Left	Top Level						136	7
	796	Pressure Modulation Valve ABS Axle 1 Right	Top Level						136	8
	797	Pressure Modulation Valve ABS Axle 2 Left	Top Level						136	9
	798	Pressure Modulation Valve ABS Axle 2 Right	Top Level						136	10
	799	Pressure Modulation Valve ABS Axle 3 Left	Top Level						136	11
	800	Pressure Modulation Valve ABS Axle 3 Right	Top Level						136	12
	801	Retarder Control Relay	Top Level						136	13
	802	Relay Diagonal 1	Top Level						136	14
	803	Relay Diagonal 2	Top Level						136	15
	804	Mode Switch ABS	Top Level						136	16
	805	Mode Switch ASR	Top Level						136	17
	806	Dif 1 - ASR Valve	Top Level						136	18
	807	Dif 2 - ASR Valve	Top Level						136	19
	808	Pneumatic Engine Control	Top Level						136	20
	809	Electronic Engine Control (Servomotor)	Top Level						136	21
	810	Speed Signal Input	Top Level						136	22
	811	Warning Light Bulb	Top Level						136	23
	812	ASR Light Bulb	Top Level						136	24

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	813	Wheel Sensor ABS Axle 1 Average	Top Level						136	25
	814	Wheel Sensor ABS Axle 2 Average	Top Level						136	26
	815	Wheel Sensor ABS Axle 3 Average	Top Level						136	27
	816	Pressure Modulator, Drive Axle Relay Valve	Top Level						136	28
	817	Pressure Transducer, Drive Axle Relay Valve	Top Level						136	29
	818	Master Control Relay	Top Level						136	30
	819	Trailer Brake Slack Out Of Adjustment Forward Axle Left	Top Level						136	31
	820	Trailer Brake Slack Out Of Adjustment Forward Axle Right	Top Level						136	32
	821	Trailer Brake Slack Out Of Adjustment Rear Axle Left	Top Level						136	33
	822	Trailer Brake Slack Out Of Adjustment Rear Axle Right	Top Level						136	34
	823	Tractor Brake Slack Out Of Adjustment Axle 1 Left	Top Level						136	35
	824	Tractor Brake Slack Out Of Adjustment Axle 1 Right	Top Level						136	36
	825	Tractor Brake Slack Out Of Adjustment Axle 2 Left	Top Level						136	37
	826	Tractor Brake Slack Out Of Adjustment Axle 2 Right	Top Level						136	38
	827	Tractor Brake Slack Out Of Adjustment Axle 3 Left	Top Level						136	39
	828	Tractor Brake Slack Out Of Adjustment Axle 3 Right	Top Level						136	40
	829	Left Fuel Level Sensor	Top Level						140	1
	830	Right Fuel Level Sensor	Top Level						140	2
(R)	831	Engine Fuel Feed Rate Sensor	Top Level						140	3
(R)	832	Engine Fuel Return Rate Sensor	Top Level						140	4
(R)	833	Fuel Rack Position Sensor	Top Level				Obsolete - Use SPN 1210		142	3
(R)	834	Fuel Rack Actuator	Top Level				Obsolete - Use SPN 638		142	4

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	835	Oil Level Indicator Output	Top Level						142	5
	836	Tachometer Drive Output	Top Level						142	6
	837	Speedometer Drive Output	Top Level						142	7
	838	PWM Input (ABS/ASR)	Top Level						142	8
	839	Dead Reckoning Unit	Top Level						162	1
	840	Loran Receiver	Top Level						162	2
	841	Global Positioning System (GPS)	Top Level						162	3
	842	Integrated Navigation Unit	Top Level						162	4
	843	Operator Control Panel (OCP)	Top Level						166	1
	844	Pneumatic Control Unit (PCU)	Top Level						166	2
	845	PCU Steer Solenoid	Top Level						166	3
	846	PCU Drive Solenoid	Top Level						166	4
	847	PCU Trailer, Tag, Or Push Solenoid	Top Level						166	5
	848	PCU Supply Solenoid	Top Level						166	6
	849	PCU Control Solenoid	Top Level						166	7
	850	PCU Deflate Solenoid	Top Level						166	8
	851	Pneumatic - Steer Channel	Top Level						166	9
	852	Pneumatic - Drive Channel	Top Level						166	10
	853	Pneumatic - Trailer, Tag Or Push Channel	Top Level						166	11
	854	Heater Circuit #01	Top Level						177	1
	855	Heater Circuit #02	Top Level						177	2
	856	Heater Circuit #03	Top Level						177	3
	857	Heater Circuit #04	Top Level						177	4
	858	Heater Circuit #05	Top Level						177	5
	859	Heater Circuit #06	Top Level						177	6
	860	Heater Circuit #07	Top Level						177	7
	861	Heater Circuit #08	Top Level						177	8

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	862	Heater Circuit #09	Top Level						177	9
	863	Heater Circuit #10	Top Level						177	10
	864	Heater Circuit #11	Top Level						177	11
	865	Heater Circuit #12	Top Level						177	12
	866	Heater Circuit #13	Top Level						177	13
	867	Heater Circuit #14	Top Level						177	14
	868	Heater Circuit #15	Top Level						177	15
	869	Heater Circuit #16	Top Level						177	16
	870	Heater Regeneration System	Top Level						177	17
	871	Refrigerant Charge	Top Level						190	1
	872	Refrigerant Moisture Level	Top Level						190	2
	873	Non-Condensable Gas In Refrigerant	Top Level						190	3
	874	Refrigerant Flow Control Solenoid	Top Level						190	4
	875	Refrigerant Low Pressure Switch	-71	65252	3.3	2	Switch signal which indicates the position of the low pressure switch in the coolant circuit of an air conditioning system.		190	5
	876	Compressor Clutch Circuit	Top Level						190	6
	877	Evaporator Thermostat Circuit	Top Level						190	7
	878	Clearance, Side Marker, Identification Lamp Circuit (Black)	Top Level						217	9
	879	Left Turn Lamp Circuit (Yellow)	Top Level						217	10
	880	Stop Lamp Circuit (Red)	Top Level						217	11
	881	Right Turn Lamp Circuit (Green)	Top Level						217	12
	882	Tail Lamp/License Plate Lamp Circuit (Brown)	Top Level						217	13
	883	Auxiliary Lamp Circuit (Blue)	Top Level						217	14
	884	Tractor Mounted Rear Axle Slider Control Unit	Top Level						217	15
	885	Trailer Mounted Rear Axle Slider Control Unit	Top Level						217	16
	886	Headway Controller Forward Antenna	Top Level						219	1

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	887	Headway Controller Brake Input Monitor	Top Level						219	3
	888	Headway Controller Speaker Monitor	Top Level						219	4
	889	Headway Controller Steering Sensor Monitor	Top Level						219	5
	890	Headway Controller Speedometer Monitor	Top Level						219	6
	891	Headway Controller Right Turn Signal Monitor	Top Level						219	7
	892	Headway Controller Left Turn Signal Monitor	Top Level						219	8
	893	Headway Controller Control Display Unit	Top Level						219	9
	894	Headway Controller Right Side Sensor	Top Level						219	10
	895	Headway Controller Left Side Sensor	Top Level						219	11
	896	Headway Controller Rear Sensor	Top Level						219	12
	897	Override Control Mode Priority	-71	0	1.5	2	This field is used as an input to the engine or retarder to determine the priority of the Override Control Mode received in the Torque/Speed Control message (see PGN 0).			
(R)	898	Engine Requested Speed/Speed Limit	-71	0	2-3	16	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.			
(R)	899	Engine Torque Mode	-71	61444	1.1	4	State signal which indicates which engine torque mode is currently generating, limiting, or controlling the torque.			
	900	Retarder Torque Mode	-71	61440	1.1	4	State signal which indicates which retarder torque mode is currently generating, limiting, or controlling the torque.			
	901	Retarder Type	-71	65249	01.1	4	This parameter provides some indication of the retarder dynamics.			
	902	Retarder Location	-71	65249	01.5	4	This parameter defines whether the “torque/speed curve” defined by the retarder configuration message.			
	903	Transmission Forward Direction Switch	-71	65219	2.5	2	Identifies the status of the switch that indicates forward direction.			
	904	Front Axle Speed	-71	65215	1-2	16	The average speed of the two front wheels.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	905	Relative Speed; Front Axle, Left Wheel	-71	65215	3	8	The speed of the front axle, left wheel relative to the front axle speed, SPN 904.			
	906	Relative Speed; Front Axle, Right Wheel	-71	65215	4	8	The speed of the front axle, right wheel relative to the front axle speed, SPN 904.			
	907	Relative Speed; Rear Axle #1, Left Wheel	-71	65215	5	8	The speed of the rear axle #1, left wheel relative to the front axle speed, SPN 904.			
	908	Relative Speed; Rear Axle #1, Right Wheel	-71	65215	6	8	The speed of the rear axle #1, right wheel relative to the front axle			
	909	Relative Speed; Rear Axle #2, Left Wheel	-71	65215	7	8	The speed of the rear axle #2, left wheel relative to the front axle.			
	910	Relative Speed; Rear Axle #2, Right Wheel	-71	65215	8	8	The speed of the rear axle #2, right wheel relative to the front axle			
(R)	911	Service Component Identification	-71	65216	1	8	Identification of component needing service.			
	912	Service Component Identification	-71	65216	4	8	Identification of component needing service.			
	913	Service Component Identification	-71	65216	6	8	Identification of component needing service.			
	914	Service Distance	-71	65216	2-3	16	The distance which can be traveled by the vehicle before the next service inspection is required.			
	915	Service Delay/Calendar Time Based	-71	65216	5	8	The time in weeks until the next vehicle service inspection is required.			
	916	Service Delay/Operational Time Based	-71	65216	7-8	16	The time in vehicle operational time until the next vehicle service inspection is required.			
	917	High Resolution Total Vehicle Distance	-71	65217	1-4	32	Accumulated distance traveled by the vehicle during its operation.			
	918	High Resolution Trip Distance	-71	65217	5-8	32	Distance traveled during all or part of a journey.			
	919	Ambient Light Sensor	Top Level						0	223
	920	Audible Alarm	Top Level						0	224
	921	Green Lamp	Top Level						0	225
	922	Ride Height Relay	Top Level						136	41
	923	PWM Output	Top Level						142	9
	924	Auxiliary Output #1	Top Level						142	10

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	925	Auxiliary Output #2	Top Level						142	11
	926	Auxiliary Output #3	Top Level						142	12
	927	Location	-71	61446	1	8	To identify to which of several similar devices (such as tires or fuel tanks) the information applies.			
	928	Axle Location	-71	65258	1	8	To identify to which of several similar devices (such as tires or fuel tanks) the information applies.			
(R)	929	Tire Location	-71	65268	1	8	Identifies which tire is associated with the parametric data in this PGN.			
	930	Drive Axle Location	-71	65273	2	8	To identify to which of several similar devices (such as tires or fuel tanks) the information applies.			
(R)	931	Engine Fuel Supply Pump Actuator	Top Level						128	78
	932	Brake System Hold Modulator Valve Solenoid Axle 1 Left	Top Level						136	42
	933	Brake System Hold Modulator Valve Solenoid Axle 1 Right	Top Level						136	43
	934	Brake System Hold Modulator Valve Solenoid Axle 2 Left	Top Level						136	44
	935	Brake System Hold Modulator Valve Solenoid Axle 2 Right	Top Level						136	45
	936	Brake System Hold Modulator Valve Solenoid Axle 3 Left	Top Level						136	46
	937	Brake System Hold Modulator Valve Solenoid Axle 3 Right	Top Level						136	47
	938	Brake System Dump Modulator Valve Solenoid Axle 1 Left	Top Level						136	48
	939	Brake System Dump Modulator Valve Solenoid Axle 1 Right	Top Level						136	49
	940	Brake System Dump Modulator Valve Solenoid Axle 2 Left	Top Level						136	50
	941	Brake System Dump Modulator Valve Solenoid Axle 2 Right	Top Level						136	51
	942	Brake System Dump Modulator Valve Solenoid Axle 3 Left	Top Level						136	52

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	943	Brake System Dump Modulator Valve Solenoid Axle 3 Right	Top Level						136	53
	944	Driver Air Bag Ignitor Loop	Top Level						232	1
	945	Passenger Air Bag Ignitor Loop	Top Level						232	2
	946	Left Belt Tensioner Ignitor Loop	Top Level						232	3
	947	Right Belt Tensioner Ignitor Loop	Top Level						232	4
	948	Safety Restraint System Lamp	Top Level						232	5
	949	Automotive Seat Occupancy Sensor - passenger side	Top Level						232	6
	950	Side Collision Detector - Left	Top Level						232	7
	951	Side Bag Ignitor Loop 1 - Left	Top Level						232	8
	952	Side Bag Ignitor Loop 2 - Left	Top Level						232	9
	953	Side Collision Detector - Right	Top Level						232	10
	954	Side Bag Ignitor Loop 1 - Right	Top Level						232	11
	955	Side Bag Ignitor Loop 2 - Right	Top Level						232	12
	956	Rollover Sensor	Top Level						232	13
	957	Number of Forward Gear Ratios	-71	65250	2	8	Number of forward gear ratios in the transmission, provided as part of the configuration.			
	958	Number of Reverse Gear Ratios	-71	65250	1	8	Number of reverse gear ratios in the transmission, provided as part of the transmission configuration.			
	959	Seconds	-71	65254	1	8	Part of a parameter used to represent time.			
	960	Minutes	-71	65254	2	8	Part of a parameter used to represent time.			
	961	Hours	-71	65254	3	8	Part of a parameter used to represent time.			
	962	Day	-71	65254	5	8	Part of a parameter used to represent a calendar date.			
	963	Month	-71	65254	4	8	Part of a parameter used to represent a calendar date.			
	964	Year	-71	65254	6	8	Part of a parameter used to represent a calendar date.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	965	Number of Software Identification Fields	-71	65242	1	8	Number of software identification designators represented in the software identification parameter group.			
	966	Engine Test Mode Switch	-71	65265	8.5	2	Switch signal which indicates the position of the engine test mode switch.			
(R)	967	Engine Idle Decrement Switch	-71	65265	8.3	2	Switch signal which indicates the position of the idle decrement switch.			
(R)	968	Engine Idle Increment Switch	-71	65265	8.1	2	Switch signal which indicates the position of the idle increment switch.			
	969	Remote Accelerator Enable Switch	-71	61441	4.7	2	Switch signal which indicates that the remote accelerator has been enabled and controls the engine.			
(R)	970	Engine Auxiliary Engine Shutdown Switch	-71	61441	4.5	2	Switch signal which requests that all engine fueling stop.			
	971	Engine Derate Switch	-71	61441	4.3	2	Switch signal used to activate the torque limiting feature of the engine.			
	972	Accelerator Interlock Switch	-71	61441	4.1	2	Switch signal used to disable the accelerator and remote accelerator inputs, causing the engine to return to idle.			
	973	Engine Retarder Selection	-71	61441	5	8	The position of the operator controlled selector, expressed as a percentage and determined by the ratio of the current position of the selector to its maximum possible position.			
(R)	974	Remote Accelerator Pedal Position	-71	61443	4	8	The ratio of actual position of the remote analog engine speed/torque request input device (such as an accelerator pedal or throttle lever) to the maximum position of the input device.			
	975	Estimated Percent Fan Speed	-71	65213	1	8	Estimated fan speed as a ratio of the fan drive (current speed) to the fully engaged fan drive (maximum fan speed).	26		
(R)	976	PTO State	-71	65265	7.1	5	This parameter is used to indicate the current state or mode of operation by the power takeoff (PTO) device.			
	977	Fan Drive State	-71	65213	2.1	4	This parameter is used to indicate the current state or mode of operation by the fan drive.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	978	Engine Remote PTO Variable Speed Control Switch	-71	65264	6.5	2	Switch signal which indicates that the remote PTO toggle switch is in the enabled (ON) position.			
(R)	979	Engine Remote PTO Preprogrammed Speed Control Switch	-71	65264	6.3	2	Switch signal which indicates that the remote PTO toggle switch is in the enabled (ON) position.			
(R)	980	Engine PTO Enable Switch	-71	65264	6.1	2	Switch signal which indicates that the PTO toggle switch is in the enabled (ON) position and therefore it is possible to manage the PTO control function.			
(R)	981	Engine PTO Accelerate Switch	-71	65264	7.7	2	Switch signal of the PTO control activator which indicates that the activator is in the position "accelerate".			
(R)	982	Engine PTO Resume Switch	-71	65264	7.5	2	Switch signal of the PTO control activator which indicates that the activator is in the position "resume".			
(R)	983	Engine PTO Coast/Decelerate Switch	-71	65264	7.3	2	Switch signal of the PTO control activator which indicates that the activator is in the position "coast/decelerate".			
(R)	984	Engine PTO Set Switch	-71	65264	7.1	2	Switch signal of the PTO control activator which indicates that the activator is in the position "set".			
	985	A/C High Pressure Fan Switch	-71	65252	3.1	2	Switch signal which indicates that the pressure in the coolant circuit of an air conditioning system is high and the fan may be engaged.			
	986	Requested Percent Fan Speed	-71	57344	1	8	Fan speed as a ratio of the actual fan drive (current speed) to the fully engaged fan drive (maximum fan speed).			
	987	Protect Lamp	-73	65226	1.1				0	222
	988	Trip Group 1	-71	56832	1.1	2	Command signal used to reset the PGNs and parameters as defined in Table SPN988_A.			
	989	Trip Group 2 - Proprietary	-71	56832	1.3	2	Command signal used to reset proprietary parameters associated with a trip but not defined within this document.			
	990	Total Compression Brake Distance	-71	65212	01-04	32	Total distance over which the compression brakes have been active for the life of the engine.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	991	Trip Compression Brake Distance	-71	65212	05-08	32	Total distance over which the compression brakes have been active since the last trip reset.			
	992	Trip Service Brake Distance	-71	65212	09-12	32	Total distance over which the service brakes have been active since the last trip reset.			
	993	Trip Service Brake Applications	-71	65212	13-16	32	Total number of times the service brakes have been activated since the last trip reset.			
	994	Trip Fan On Time	-71	65211	01-04	32	Total time the fan has been on (due to an automatic trigger or manual trigger) since the last trip reset.			
	995	Trip Fan On Time Due to the Engine System	-71	65211	05-08	32	Total time the fan has been on due to engine triggers (i.e., excluding time on due to an operator manual switch or A/C system) since the last trip reset.			
	996	Trip Fan On Time Due to a Manual Switch	-71	65211	09-12	32	Total time the fan has been on due to manual activation by the operator			
	997	Trip Fan On Time Due to the A/C System	-71	65211	13-16	32	Total time the fan has been on due to the A/C system since the last trip reset.			
	998	Trip Distance on VSL	-71	65210	1-4	32	Total distance accumulated while the engine torque mode is road speed governing since the last trip reset.			
	999	Trip Gear Down Distance	-71	65210	5-8	32	Total distance accumulated while the vehicle has operated in the gear which is one gear down from top gear			
	1000	Trip Distance in Top Gear	-71	65210	9-12	32	Total distance accumulated while the vehicle has operated in top gear for a calibrated minimum time since the last trip reset.			
	1001	Trip Drive Fuel Used	-71	65209	01-04	32	Total fuel consumed while the engine speed is greater than zero, vehicle speed is greater than or equal to 2 km/h, and neither the PTO or the remote PTO is controlling the engine power output, since the last trip reset.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1002	Trip PTO Moving Fuel Used	-71	65209	05-08	32	Total fuel consumed while the PTO or remote PTO is in the hold state, the engine speed is greater than zero, and vehicle speed is greater than or equal to 2 km/h, since the last trip reset.			
	1003	Trip PTO Non-moving Fuel Used	-71	65209	09-12	32	Total fuel consumed while the PTO or remote PTO is in the hold state, the engine speed is greater than zero, and vehicle speed is less than 2 km/h, since the last trip reset.			
	1004	Trip Vehicle Idle Fuel Used	-71	65209	13-16	32	Total fuel consumed while neither the PTO or remote PTO is in the hold state, the engine speed is greater than zero, and vehicle speed is less than 2 km/h, since the last trip reset.			
	1005	Trip Cruise Fuel Used	-71	65209	17-20	32	Total fuel consumed while the engine is in the cruise hold state since the last trip reset.			
	1006	Trip Drive Fuel Economy	-71	65209	21-22	16	Trip drive fuel economy is equal to the distance traveled by vehicle in the drive state			
	1007	Trip Drive Fuel Used (Gaseous)	-71	65208	01-04	32	Total fuel consumed while the engine speed is greater than zero			
	1008	Trip PTO Moving Fuel Used (Gaseous)	-71	65208	05-08	32	Total fuel consumed while the PTO or remote PTO is in the hold state, the engine speed is greater than zero, and vehicle speed is greater than or equal to 2 km/h, since the last trip reset.			
	1009	Trip PTO Non-moving Fuel Used (Gaseous)	-71	65208	09-12	32	Total fuel consumed while the PTO or remote PTO is in the hold state, the engine speed is greater than zero, and vehicle speed is less than to 2 km/h, since the last trip reset.			
	1010	Trip Vehicle Idle Fuel Used (Gaseous)	-71	65208	13-16	32	Total fuel consumed while neither the PTO or remote PTO is active, the engine speed is greater than zero, and vehicle speed is less than to 2 km/h, since the last trip reset.			
	1011	Trip Cruise Fuel Used (Gaseous)	-71	65208	17-20	32	Total fuel consumed while the engine is in the cruise hold state since the last trip reset.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1012	Trip Drive Fuel Economy (Gaseous)	-71	65208	21-22	16	Trip drive fuel economy is equal to the distance traveled by vehicle in the drive state			
	1013	Trip Maximum Engine Speed	-71	65207	1-2	16	Maximum engine speed achieved since the last trip reset.			
	1014	Trip Average Engine Speed	-71	65207	3-4	16	Average speed of the engine since the last trip reset.			
	1015	Trip Drive Average Load Factor	-71	65207	5	8	Average engine load factor while engine speed is greater than zero,			
	1016	Total Drive Average Load Factor	-71	65207	6	8	Average engine load factor while engine speed is greater than zero.			
	1017	Total Engine Cruise Time	-71	65207	7-10	32	Total time that the engine has operated in the cruise hold state, excluding time in accelerator override, over the life of the engine.			
	1018	Trip Maximum Vehicle Speed	-71	65206	1-2	16	Maximum vehicle speed achieved while the engine speed is greater than zero and the accelerator pedal position (APS) is at a value greater than 0%, since the last trip reset.			
	1019	Trip Cruise Distance	-71	65206	3-6	32	Total distance that the engine has operated in the cruise hold state, excluding time in accelerator override, since the last trip reset.			
	1020	Trip Number of Hot Shutdowns	-71	65205	1-2	16	Total number of hot shutdowns since the last trip reset. A hot shutdown is based on operation at high load or high engine speed or for long operating periods without allowing the engine to cool sufficiently.			
	1021	Trip Number of Idle Shutdowns	-71	65205	3-4	16	Total number of times the engine has been shutdown due to idling too long (at normal idle or fast idle) since the last trip reset.			
	1022	Trip Number of Idle Shutdown Overrides	-71	65205	5-6	16	Total number of times an operator disables idle shutdown to prevent an engine shutdown, since the last trip reset.			
	1023	Trip Sudden Decelerations	-71	65205	7-8	16	Total number of decelerations whenever the vehicle deceleration is more than XYZ km/h/sec (where XYZ is a calibratible threshold), since the last trip reset.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1024	Trip Time in VSL	-71	65204	01-04	32	Total time accumulated when the engine has operated on the vehicle speed limiter (VSL) while not in the cruise hold state, since the last trip reset.			
	1025	Trip Time in Top Gear	-71	65204	05-08	32	Total time accumulated when the vehicle has operated in top gear for a calibrated minimum time, since the last trip reset.			
	1026	Trip Time in Gear Down	-71	65204	09-12	32	Total time accumulated when the vehicle has operated in one gear down from the top gear for a calibrated minimum time, since the last trip reset.			
	1027	Trip Time in Derate by Engine	-71	65204	13-16	32	Total time accumulated when the engine final fueling has been derated due to an engine protection algorithm, since the last reset.			
	1028	Total Engine PTO Fuel Used	-71	65203	1-4	32	Total fuel used while the PTO or remote PTO is in the hold state and engine speed is above zero, over the life of the engine.			
	1029	Trip Average Fuel Rate	-71	65203	5-6	16	Average fuel rate, equal to trip fuel divided by trip time while the engine speed is above zero, since the last trip reset.			
	1030	Total Engine PTO Fuel Used (Gaseous)	-71	65202	1-4	32	Total fuel used while the PTO or remote PTO is in the hold state and engine speed is above zero, over the life of the engine.			
	1031	Trip Average Fuel Rate (Gaseous)	-71	65202	5-6	16	Average fuel rate, equal to trip fuel divided by trip time while the engine speed is above zero, since the last trip reset.			
	1032	Total ECU Distance	-71	65201	1-4	32	Total distance accumulated over the life of the ECU. When the ECU is replaced this value shall be reset.			
	1033	Total ECU Run Time	-71	65201	5-8	32	Total time accumulated over the life of the ECU, from ignition switch ON to ignition switch OFF. When the ECU is replaced this value shall be reset.			
	1034	Trip Cruise Time	-71	65200	01-04	32	Total time accumulated while the engine is in the cruise hold state, excluding time in accelerator override, since the last trip reset.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1035	Trip PTO Time	-71	65200	05-08	32	Total time accumulated while the engine is in the PTO or remote PTO hold state since the last trip reset.			
	1036	Trip Engine Running Time	-71	65200	09-12	32	Total time accumulated while the engine speed is greater than zero since the last trip reset.			
	1037	Trip Idle Time	-71	65200	13-16	32	Total time accumulated while the engine speed is greater than zero, both the PTO and remote PTO is inactive, and the vehicle speed is less than 2 km/h, since the last trip reset.			
	1038	Trip Air Compressor On Time	-71	65200	17-20	32	Total time that the air compressor is on and compressing air since the last trip reset.			
	1039	Trip Fuel (Gaseous)	-71	65199	1-4	32	Total fuel consumed (trip drive fuel + trip PTO moving fuel + trip PTO non-moving fuel + trip idle fuel) since the last trip reset.			
	1040	Total Fuel Used (Gaseous)	-71	65199	5-8	32	Total fuel consumed (trip drive fuel + trip PTO moving fuel + trip PTO non-moving fuel + trip idle fuel) over the life of the engine.			
	1041	Start Signal Indicator	Top Level						0	219
	1042	Electronic Tractor/Trailer Interface (ISO 11992)	Top Level						0	220
	1043	Internal Sensor Voltage Supply	Top Level						0	221
	1044	Hydraulic Pump Motor	Top Level						136	54
	1045	Brake Light Switch 1	Top Level						136	55
	1046	Brake Light Switch 2	Top Level						136	56
	1047	Electronic Pressure Control Axle 1	Top Level						136	57
	1048	Pneumatic Back-up Pressure Control Axle 1	Top Level						136	58
	1049	Brake Pressure Sensing Axle 1	Top Level						136	59
	1050	Electronic Pressure Control Axle 2	Top Level						136	60
	1051	Pneumatic Back-up Pressure Control Axle 2	Top Level						136	61
	1052	Brake Pressure Sensing Axle 2	Top Level						136	62
	1053	Electronic Pressure Control Axle 3	Top Level						136	63

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1054	Pneumatic Back-up Pressure Control Axle 3	Top Level						136	64
	1055	Brake Pressure Sensing Axle 3	Top Level						136	65
	1056	Electronic Pressure Control, Trailer Control	Top Level						136	66
	1057	Pneumatic Back-up Pressure Control, Trailer Control	Top Level						136	67
	1058	Brake Pressure Sensing, Trailer Control	Top Level						136	68
	1059	Axle Load Sensor	Top Level						136	69
	1060	Lining Wear Sensor Axle 1 Left	Top Level						136	70
	1061	Lining Wear Sensor Axle 1 Right	Top Level						136	71
	1062	Lining Wear Sensor Axle 2 Left	Top Level						136	72
	1063	Lining Wear Sensor Axle 2 Right	Top Level						136	73
	1064	Lining Wear Sensor Axle 3 Left	Top Level						136	74
	1065	Lining Wear Sensor Axle 3 Right	Top Level						136	75
	1066	Brake Signal Transmitter	Top Level						136	76
	1067	Brake Signal Sensor 1	Top Level						136	77
	1068	Brake Signal Sensor 2	Top Level						136	78
	1069	Tire Dimension Supervision	Top Level						136	79
	1070	Vehicle Deceleration Control	Top Level						136	80
	1071	Cooling Fan Drive Output	Top Level						143	27
	1072	Engine (Compression) Brake Output #1	Top Level				Engine Compression Brake driver circuit (includes the ECM driver and solenoid coil).		143	28
	1073	Engine (Compression) Brake Output #2	Top Level				Engine Compression Brake driver circuit (includes the ECM driver and solenoid coil).		143	29
	1074	Engine (Exhaust) Brake Output	Top Level						143	30
(R)	1075	Engine Electric Lift Pump for Engine Fuel Supply	Top Level							
(R)	1076	Engine Fuel Injection Pump Fuel Control Valve	Top Level							
(R)	1077	Engine Fuel Injection Pump Controller	Top Level							
(R)	1078	Engine Fuel Injection Pump Speed/Position Sensor	Top Level							

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1079	Sensor Supply Voltage 1 (+5V DC)	Top Level							
	1080	Sensor Supply Voltage 2 (+5V DC)	Top Level							
(R)	1081	Engine Wait to Start Lamp	-71	65252	4.1	2	Lamp signal which indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).			
	1082	Engine Coolant Load Increase	-71	61440	4.1	2	Status of an event, external to the engine, that may increase the nominal temperature of the engine coolant liquid.			
	1083	Auxiliary I/O Channel #1	-71	65241	5-6	16	Auxiliary channel of data (16 bit) read by the ECU. This data is in A/D counts and is manufacturer specific.			
	1084	Auxiliary I/O Channel #2	-71	65241	7-8	16	Auxiliary channel of data (16 bit) read by the ECU. This data is in A/D counts and is manufacturer specific.			
	1085	Intended Retarder Percent Torque	-71	61440	3	8	Braking torque of retarder that the retarder is currently trying to achieve.			
	1086	Parking and/or Trailer Air Pressure	-71	65198	2	8	The pneumatic pressure in the circuit or reservoir for the parking brake and/or the trailer supply.			
	1087	Service Brake Air Pressure Circuit #1	-71	65198	3	8	The pneumatic pressure in the service brake circuit or reservoir #1.			
	1088	Service Brake Air Pressure Circuit #2	-71	65198	4	8	The pneumatic pressure in the service brake circuit or reservoir #2.			
	1089	Auxiliary Equipment Supply Pressure	-71	65198	5	8	The pneumatic pressure in the auxiliary circuit.			
	1090	Air Suspension Supply Pressure	-71	65198	6	8	The pneumatic pressure in the circuit for the electronically controlled air suspension system.			
	1091	Brake Application Pressure High Range, Front Axle, Left Wheel	-71	65197	1	8	The brake application pressure for the left wheel on the front axle.			
	1092	Brake Application Pressure High Range, Front Axle, Right Wheel	-71	65197	2	8	The brake application pressure for the right wheel on the front axle.			
	1093	Brake Application Pressure High Range, Rear Axle #1, Left Wheel	-71	65197	3	8	The brake application pressure for the left wheel on the rear axle #1.			
	1094	Brake Application Pressure High Range, Rear Axle #1, Right Wheel	-71	65197	4	8	The brake application pressure for the right wheel on the rear axle #1.			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1095	Brake Application Pressure High Range, Rear Axle #2, Left Wheel	-71	65197	5	8	The brake application pressure for the left wheel on the rear axle #2.			
	1096	Brake Application Pressure High Range, Rear Axle #2, Right Wheel	-71	65197	6	8	The brake application pressure for the right wheel on the rear axle #2.			
	1097	Brake Application Pressure High Range, Rear Axle #3, Left Wheel	-71	65197	7	8	The brake application pressure for the left wheel on the rear axle #3.			
	1098	Brake Application Pressure High Range, Rear Axle #3, Right Wheel	-71	65197	8	8	The brake application pressure for the right wheel on the rear axle #3.			
	1099	Brake Lining Remaining, Front Axle, Left Wheel	-71	65196	1	8	The percentage of brake lining which can still be measured for the left wheel on the front axle.			
	1100	Brake Lining Remaining, Front Axle, Right Wheel	-71	65196	2	8	The percentage of brake lining which can still be measured for the right wheel on the front axle.			
	1101	Brake Lining Remaining, Rear Axle #1, Left Wheel	-71	65196	3	8	The percentage of brake lining which can still be measured for the left wheel on the rear axle #1.			
	1102	Brake Lining Remaining, Rear Axle #1, Right Wheel	-71	65196	4	8	The percentage of brake lining which can still be measured for the right wheel on the rear axle #1.			
	1103	Brake Lining Remaining, Rear Axle #2, Left Wheel	-71	65196	5	8	The percentage of brake lining which can still be measured for the left wheel on the rear axle #2.			
	1104	Brake Lining Remaining, Rear Axle #2, Right Wheel	-71	65196	6	8	The percentage of brake lining which can still be measured for the right wheel on the rear axle #2.			
	1105	Brake Lining Remaining, Rear Axle #3, Left Wheel	-71	65196	7	8	The percentage of brake lining which can still be measured for the left wheel on the rear axle #3.			
	1106	Brake Lining Remaining, Rear Axle #3, Right Wheel	-71	65196	8	8	The percentage of brake lining which can still be measured for the right wheel on the rear axle #3.			
	1107	Engine Protection System Timer State	-71	65252	5.7	2	Status signal which indicates the current mode of the engine protection system timer system. See Figure SPN1107_A.			
	1108	Engine Protection System Timer Override	-71	65252	5.5	2	Status signal which indicates the status of the override feature of the engine protection system timer.			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1109	Engine Protection System Approaching Shutdown	-71	65252	5.3	2	Status signal which indicates that engine shutdown is imminent.			
	1110	Engine Protection System has Shutdown Engine	-71	65252	5.1	2	Status signal which indicates whether or not the engine protection system has shutdown the engine.			
	1111	Engine Protection System Configuration	-71	65252	6.7	2	Parameter which indicates the configuration of the engine shutdown system.			
	1112	Engine (Compression) Brake Output #3	Top Level				Engine Compression Brake driver circuit (includes the ECM driver and solenoid coil).		128	82
	1113	Recommended Gear	-71	65195	1	8	The transmission calculates this gear continuously.			
	1114	Lowest Possible Gear	-71	65195	3	8	The transmission calculates this gear continuously. Together with the highest possible gear (see SPN 1115), it enables a management computer to know the exact range of available gears.			
	1115	Highest Possible Gear	-71	65195	2	8	The transmission calculates this gear continuously. Together with the lowest possible gear (see SPN 1114), it enables a management computer to know the exact range of available gears.			
(R)	1116	Engine Gaseous Fuel Correction Factor	-71	65194	1	8	A correction to a predefined gaseous fuel energy (expressed in energy per unit volume) represented as a percentage.			
(R)	1117	Engine Desired Rated Exhaust Oxygen	-71	65193	1-2	16	The desired amount of oxygen in the exhaust at rated conditions represented as a percentage by volume with respect to the total volume of exhaust gases leaving the engine.			
(R)	1118	Engine Desired Exhaust Oxygen	-71	65193	3-4	16	The desired amount of oxygen in the exhaust represented as a percentage by volume with respect to the total volume of exhaust gases leaving the engine.			
(R)	1119	Engine Actual Exhaust Oxygen	-71	65193	5-6	16	The actual amount of oxygen in the exhaust represented as a percentage by volume with respect to the total volume of exhaust gases leaving the engine.			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1120	Articulation Angle	-71	65192	1	8	Angle of deflection of an articulated transit vehicle. A right turn is indicated with a positive angle and a left turn is indicated with a negative angle.			
	1121	EBS Brake Switch	-71	61441	1.7	2	Switch signal which indicates that the brake pedal is being pressed. The EBS brake switch is independent of the brake light switch and has no provisions for external connections.			
(R)	1122	Alternator Bearing 1 Temperature	-71	65191	1	8	Temperature of the bearing inside the alternator. Bearing 1 is the left or rear bearing.			
(R)	1123	Alternator Bearing 2 Temperature	-71	65191	2	8	Temperature of the bearing inside the alternator. Bearing 2 is the right or front bearing.			
(R)	1124	Alternator Winding 1 Temperature	-71	65191	3	8	Temperature of the windings inside the alternator.			
(R)	1125	Alternator Winding 2 Temperature	-71	65191	4	8	Temperature of the windings inside the alternator.			
(R)	1126	Alternator Winding 3 Temperature	-71	65191	5	8	Temperature of the windings inside the alternator.			
(R)	1127	Engine Turbocharger 1 Boost Pressure	-71	65190	1-2	16	Gage pressure of air measured downstream of the compressor discharge side of the turbocharger.			
(R)	1128	Engine Turbocharger 2 Boost Pressure	-71	65190	3-4	16	Gage pressure of air measured downstream of the compressor discharge side of the turbocharger.			
(R)	1129	Engine Turbocharger 3 Boost Pressure	-71	65190	5-6	16	Gage pressure of air measured downstream of the compressor discharge side of the turbocharger.			
(R)	1130	Engine Turbocharger 4 Boost Pressure	-71	65190	7-8	16	Gage pressure of air measured downstream of the compressor discharge side of the turbocharger.			
(R)	1131	Engine Intake Manifold 2 Temperature	-71	65189	1	8	Temperature of pre-combustion air found in intake manifold number 2 of engine air supply system.			
(R)	1132	Engine Intake Manifold 3 Temperature	-71	65189	2	8	Temperature of pre-combustion air found in intake manifold number 3 of engine air supply system.			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	1133	Engine Intake Manifold 4 Temperature	-71	65189	3	8	Temperature of pre-combustion air found in intake manifold number 4 of engine air supply system.			
	1134	Engine Intercooler Thermostat Opening	-71	65262	8	8	The current position of the thermostat used to regulate the temperature of the engine intercooler.			
	1135	Engine Oil Temperature 2	-71	65188	1-2	16	Temperature of the engine lubricant.			
	1136	Engine ECU Temperature	-71	65188	3-4	16	Temperature of the engine electronic control unit.			
(R)	1137	Engine Exhaust Gas Port 1 Temperature	-71	65187	1-2	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1138	Engine Exhaust Gas Port 2 Temperature	-71	65187	3-4	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1139	Engine Exhaust Gas Port 3 Temperature	-71	65187	5-6	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1140	Engine Exhaust Gas Port 4 Temperature	-71	65187	7-8	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1141	Engine Exhaust Gas Port 5 Temperature	-71	65186	1-2	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1142	Engine Exhaust Gas Port 6 Temperature	-71	65186	3-4	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1143	Engine Exhaust Gas Port 7 Temperature	-71	65186	5-6	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1144	Engine Exhaust Gas Port 8 Temperature	-71	65186	7-8	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1145	Engine Exhaust Gas Port 9 Temperature	-71	65185	1-2	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1146	Engine Exhaust Gas Port 10 Temperature	-71	65185	3-4	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1147	Engine Exhaust Gas Port 11 Temperature	-71	65185	5-6	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1148	Engine Exhaust Gas Port 12 Temperature	-71	65185	7-8	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1149	Engine Exhaust Gas Port 13 Temperature	-71	65184	1-2	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1150	Engine Exhaust Gas Port 14 Temperature	-71	65184	3-4	16	Temperature at the cylinder exhaust port of the engine.			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	1151	Engine Exhaust Gas Port 15 Temperature	-71	65184	5-6	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1152	Engine Exhaust Gas Port 16 Temperature	-71	65184	7-8	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1153	Engine Exhaust Gas Port 17 Temperature	-71	65183	1-2	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1154	Engine Exhaust Gas Port 18 Temperature	-71	65183	3-4	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1155	Engine Exhaust Gas Port 19 Temperature	-71	65183	5-6	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1156	Engine Exhaust Gas Port 20 Temperature	-71	65183	7-8	16	Temperature at the cylinder exhaust port of the engine.			
(R)	1157	Engine Main Bearing 1 Temperature	-71	65182	1-2	16	Temperature of the main bearing which supports the crankshaft of the engine.			
(R)	1158	Engine Main Bearing 2 Temperature	-71	65182	3-4	16	Temperature of the main bearing which supports the crankshaft of the engine.			
(R)	1159	Engine Main Bearing 3 Temperature	-71	65182	5-6	16	Temperature of the main bearing which supports the crankshaft of the engine.			
(R)	1160	Engine Main Bearing 4 Temperature	-71	65182	7-8	16	Temperature of the main bearing which supports the crankshaft of the engine.			
(R)	1161	Engine Main Bearing 5 Temperature	-71	65181	1-2	16	Temperature of the main bearing which supports the crankshaft of the engine.			
(R)	1162	Engine Main Bearing 6 Temperature	-71	65181	3-4	16	Temperature of the main bearing which supports the crankshaft of the engine.			
(R)	1163	Engine Main Bearing 7 Temperature	-71	65181	5-6	16	Temperature of the main bearing which supports the crankshaft of the engine.			
(R)	1164	Engine Main Bearing 8 Temperature	-71	65181	7-8	16	Temperature of the main bearing which supports the crankshaft of the engine.			
(R)	1165	Engine Main Bearing 9 Temperature	-71	65180	1-2	16	Temperature of the main bearing which supports the crankshaft of the engine.			
(R)	1166	Engine Main Bearing 10 Temperature	-71	65180	3-4	16	Temperature of the main bearing which supports the crankshaft of the engine.			
(R)	1167	Engine Main Bearing 11 Temperature	-71	65180	5-6	16	Temperature of the main bearing which supports the crankshaft of the engine.			
(R)	1168	Engine Turbocharger Lube Oil Pressure 2	-71	65179	1	8	Gage pressure of oil in turbocharger lubrication system.			
(R)	1169	Engine Turbocharger 2 Speed	-71	65179	2-3	16	Rotational velocity of rotor in the turbocharger.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	1170	Engine Turbocharger 3 Speed	-71	65179	4-5	16	Rotational velocity of rotor in the turbocharger.			
(R)	1171	Engine Turbocharger 4 Speed	-71	65179	6-7	16	Rotational velocity of rotor in the turbocharger.			
(R)	1172	Engine Turbocharger 1 Compressor Inlet Temperature	-71	65178	1	16	Temperature of the air entering the compressor side of the turbocharger.			
(R)	1173	Engine Turbocharger 2 Compressor Inlet Temperature	-71	65178	2	16	Temperature of the air entering the compressor side of the turbocharger.			
(R)	1174	Engine Turbocharger 3 Compressor Inlet Temperature	-71	65178	3	16	Temperature of the air entering the compressor side of the turbocharger.			
(R)	1175	Engine Turbocharger 4 Compressor Inlet Temperature	-71	65178	4	16	Temperature of the air entering the compressor side of the turbocharger.			
(R)	1176	Engine Turbocharger 1 Compressor Inlet Pressure	-71	65177	1-2	16	Gage pressure of the air entering the compressor side of the turbocharger.			
(R)	1177	Engine Turbocharger 2 Compressor Inlet Pressure	-71	65177	3-4	16	Gage pressure of the air entering the compressor side of the turbocharger.			
(R)	1178	Engine Turbocharger 3 Compressor Inlet Pressure	-71	65177	5-6	16	Gage pressure of the air entering the compressor side of the turbocharger.			
(R)	1179	Engine Turbocharger 4 Compressor Inlet Pressure	-71	65177	7-8	16	Gage pressure of the air entering the compressor side of the turbocharger.			
(R)	1180	Engine Turbocharger 1 Turbine Inlet Temperature	-71	65176	1-2	16	Temperature of the combustion by-products entering the turbine side of the turbocharger.			
(R)	1181	Engine Turbocharger 2 Turbine Inlet Temperature	-71	65176	3-4	16	Temperature of the combustion by-products entering the turbine side of the turbocharger.			
(R)	1182	Engine Turbocharger 3 Turbine Inlet Temperature	-71	65176	5-6	16	Temperature of the combustion by-products entering the turbine side of the turbocharger.			
(R)	1183	Engine Turbocharger 4 Turbine Inlet Temperature	-71	65176	7-8	16	Temperature of the combustion by-products entering the turbine side of the turbocharger.			
(R)	1184	Engine Turbocharger 1 Turbine Outlet Temperature	-71	65175	1-2	16	Temperature of the combustion by-products exiting the turbine side of the turbocharger.			
(R)	1185	Engine Turbocharger 2 Turbine Outlet Temperature	-71	65175	3-4	16	Temperature of the combustion by-products exiting the turbine side of the turbocharger.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	1186	Engine Turbocharger 3 Turbine Outlet Temperature	-71	65175	5-6	16	Temperature of the combustion by-products exiting the turbine side of the turbocharger.			
(R)	1187	Engine Turbocharger 4 Turbine Outlet Temperature	-71	65175	7-8	16	Temperature of the combustion by-products exiting the turbine side of the turbocharger.			
(R)	1188	Engine Turbocharger 1 Wastegate Drive	-71	65174	1	8	Position of the wastegate drive.		128	32
(R)	1189	Engine Turbocharger 2 Wastegate Drive	-71	65174	2	8	Position of the wastegate drive.		128	88
(R)	1190	Engine Turbocharger 3 Wastegate Drive	-71	65174	3	8	Position of the wastegate drive.			
(R)	1191	Engine Turbocharger 4 Wastegate Drive	-71	65174	4	8	Position of the wastegate drive.			
(R)	1192	Engine Turbocharger Wastegate Actuator Control Air Pressure	-71	65174	5	8	Gage pressure of the air used to control the actuator which opens and closes the wastegate valve.			
	1193	Engine Operation Time Since Rebuild	-71	65173	1-4	32	The time in engine operation since the last engine rebuild.			
	1194	Anti-theft Encryption Seed Present Indicator	-71	56320	1.1	2	Indicates the presence of the encryption seed random number.			
	1195	Anti-theft Password Valid Indicator	-71	56320	1.3	2	Indicates the presence of a validated password.			217
	1196	Anti-theft Component Status States	-71	56320	1.5	2	Indicates whether or not the component can be started.			
	1197	Anti-theft Modify Password States	-71	56320	1.7	2	This parameter is used to indicate whether a password request was successfully performed, or if the request could not be perform due to system constraints or if the request was not a valid request.			
	1198	Anti-theft Random Number	-71	56320	2-8	56	A seven byte random numeric code provided by the component in response to an anti-theft request.			
	1199	Anti-theft Encryption Indicator States	-71	56576	1.2	2	This parameter is used to indicate if a random number seed is being requested, or if an encrypted password is being provided to the component.			
	1200	Anti-theft Desired Exit Mode States	-71	56576	1.4	2	This parameter is used to specify the desired triggers that are to be used by the component in deciding when to transition to the Locked state.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1201	Anti-theft Command States	-71	56576	1.6	3	This parameter is used to identify the specific requests being sent to the component.			
	1202	Anti-theft Password Representation	-71	56576	2	56	This parameter is the seven byte numeric code (i.e., 'encrypted password' or 'key') that is generated based on the encryption algorithm, the password supplied by the end user, and the random number seed given by the component.			
	1203	Engine Auxiliary Coolant Pressure	-71	65172	1	8	Gage pressure of coolant found in the intercooler which is located after the turbocharger.			
	1204	Electrical Load	-71	65171	1-2	16	Electrical power delivered by the engine to the electrical system connected to the generator.			
	1205	Safety Wire Status	-71	65171	3.1	2	Status signal which indicates that the safety wire has been activated. When the safety wire is activated, the engine will not operate. This is used for maintenance purposes.			
	1206	Turning Gear Engaged	-71	65171	3.3	2	Status signal which indicates that the turning gear is engaged. The turning gear is used to turn the flywheel/crankshaft, for maintenance purposes, while the engine is not running.			
	1207	Engine ECU Temperature (OBSOLETE use SPN 1136)	-71			16	Temperature of the engine electronic control unit.			
(R)	1208	Engine Pre-filter Oil Pressure	-71	65170	1	8	Gage pressure of the engine oil before the oil reaches the oil filter.			
(R)	1209	Engine Exhaust Gas Pressure	-71	65170	2-3	16	Gage pressure of the exhaust gasses as measured at the turbine inlet of the turbocharger.			
(R)	1210	Engine Fuel Rack Position	-71	65170	4	8	Measured position of the engine fuel rack.			
	1211	Engine Build Hours Reset	-71	56832	3.1	2	Command signal used to reset the engine rebuild hours.			
	1212	Engine Auxiliary Coolant Temperature	-71	65172	2	8	Temperature of coolant found in the intercooler which is located after the turbocharger.			
	1213	Malfunction Indicator Lamp	-73	65226	1.7					

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1214	Suspect Parameter Number	-73	65226	3-4, 5.5					
	1215	Failure Mode Identifier	-73	65226	5.1					
	1216	Occurrence Count	-73	65226	6.1					
	1217	Freeze Frame Length	-73	65229	1					
	1218	Active Trouble Codes	-73	65230	1					
	1219	Previously Active Trouble Codes	-73	65230	2					
	1220	OBD Compliance	-73	65230	3					
	1221	Continuously Monitored Systems Support/Status	-73	65230	4					
	1222	Non-continuously Monitored Systems Support	-73	65230	5					
	1223	Non-continuously Monitored Systems Status	-73	65230	7					
	1224	Test Identifier	-73	58112	1					
	1225	Test Type/Component Identifier	-73	65232	2					
	1226	Test Value	-73	65232	3-4					
	1227	Test Limit Maximum	-73	65232	5-6					
	1228	Test Limit Minimum	-73	65232	7-8					
	1229	Test Identifiers Supported	-73	65234	1					
	1230	Current Data Link	-73	57088	1.7	2	Identifies the action to be performed on the communications port that this parameter was received on.			
	1231	J1939 Network #2	-73	57088	2.7	2	Identifies the action to be performed on the J1939 Network #2 communications port.			
	1232	ISO 9141	-73	57088	2.5	2	Identifies the action to be performed on the ISO 9141 communications port.			
	1233	J1850	-73	57088	2.3	2	Identifies the action to be performed on the J1850 communications port.			
	1234	Other, Manufacturer Specified Port	-73	57088	2.1	2	Identifies the action to be performed on the “Other, Manufacture Specified Port” communications port.			
	1235	J1939 Network #3	-73	57088	3.7	2	Identifies the action to be performed on the J1939 Network #3 communications port.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1236	Hold Signal	-73	57088	4.5	4	Indicator to all nodes that the communication ports that have been acted upon by the Stop Start Broadcast PGN are remaining in the modified state.			
	1237	Engine Shutdown Override Switch	-71	65265	8.7	2	Switch signal which indicates the position of the engine shutdown override switch. This switch function allows the operator to override an impending engine shutdown.			
	1238	Traction Control Override Switch	-71	61441	3.7	2	Switch signal which indicates the position of the traction control override switch.			
(R)	1239	Engine Fuel Leakage 1	-71	65169	1.1	2	Status signal which indicates fuel leakage in the fuel rail of the engine. The location can be either before or after the fuel pump.			
(R)	1240	Engine Fuel Leakage 2	-71	65169	1.3	2	Status signal which indicates fuel leakage in the fuel rail of the engine. The location can be either before or after the fuel pump.			
(R)	1241	Engine Mass Flow (Gaseous)	-71	65170	5-6	16	Mass flow of natural gas to the engine.			
	1242	Instantaneous Estimated Brake Power	-71	65170	7-8	16	Estimate of the power developed by the engine.			
	1243	ABS Fully Operational	-71	61441	6.1	2	Signal which indicates whether an ABS system is fully operational or whether its functionality is reduced by a defect or by an intended action			
(R)	1244	Engine Fuel Control Valve #2	Top Level				Control valve for rear fueling actuator.			83
(R)	1245	Engine Timing Actuator #2	Top Level				Timing actuator for rear time actuator.			84
(R)	1246	Number of Engine Torque History Records	-71	65168	01	8	Number of torque history records contained in the engine torque history PGN.			
	1247	Engine Power	-71	65168	02-03	16	Advertised engine power capability. Advertised power is what a customer will find on a sales sheet for an engine with a certain calibration.			
(R)	1248	Engine Peak Torque 1	-71	65168	04-05	16	Maximum torque output of the current ECU calibration when the engine operates on torque curve 1.			
(R)	1249	Engine Peak Torque 2	-71	65168	06-07	16	Maximum torque output of the current ECU calibration when the engine operates on torque curve 2.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1250	Calibration Record Start Month	-71	65168	08	8	Calendar month timestamp when an ECU record was established.			
	1251	Calibration Record Start Day	-71	65168	09	8	Calendar day timestamp when an ECU record was established.			
	1252	Calibration Record Start Year	-71	65168	10	8	Calendar year timestamp when an ECU record was established.			
	1253	Calibration Record Duration Time	-71	65168	11-14	32	Duration in hours for which the engine operated in the conditions captured in the current record.			
	1254	Torque Limiting Feature Status	-71	65168	15.1	2	Status of an ECU feature which limits the torque output of the engine.			
	1255	Transmission Gear Ratio 1	-71	65168	16-17	16	Gear ratio value stored in the ECU that is used to define a range of transmission gears for which a limit is applied to the engine output torque.			
	1256	Engine Torque Limit 1, Transmission	-71	65168	18-19	16	Limit applied to the engine output torque during vehicle operation in transmission gear ratios numerically greater than transmission gear ratio 1			
	1257	Transmission Gear Ratio 2	-71	65168	20-21	16	Gear ratio value stored in the ECU that is used to define a range of transmission gears for which a limit is applied to the engine output torque.			
	1258	Engine Torque Limit 2, Transmission	-71	65168	22-23	16	Limit applied to the engine output torque during vehicle operation in transmission gear ratios numerically less than or equal to transmission gear ratio 1 and numerically greater than transmission gear ratio 2.			
	1259	Transmission Gear Ratio 3	-71	65168	24-25	16	Gear ratio value stored in the ECU that is used to define a range of transmission gears for which a limit is applied to the engine output torque.			
	1260	Engine Torque Limit 3, Transmission	-71	65168	26-27	16	Limit applied to the engine output torque during vehicle operation in transmission gear ratios numerically less than or equal to transmission gear ratio 2 and numerically greater than transmission gear ratio 3			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1261	Engine Torque Limit 4, Transmission	-71	65168	28-29	16	Limit applied to the engine output torque during vehicle operation in transmission gear ratios numerically less than or equal to transmission gear ratio 3			
	1262	Engine Torque Limit 5, Switch	-71	65168	30-31	16	Limit applied to the engine output torque based on activation of an ECU switch input.			
	1263	Engine Torque Limit 6, Axle Input	-71	65168	32-33	16	Limit applied to the engine output torque based on the maximum allowable axle input torque.			
(R)	1264	Engine Extended Crankcase Blow-by Pressure - duplicate (see SPN 22)	-71			8	Differential crankcase blow-by pressure as measured through a tube with a venturi.	22		
	1265	Engine Oil Burn Valve	Top Level				Valve to control the folow of oil to be burned off in the engine.			85
	1266	Engine Oil Replacement Valve	Top Level				Valve to control the replacement oil to the engine.			86
	1267	Idle Shutdown Vehicle Accessories Relay Driver Circuit	Top Level				When Idle Shutdown System is activated, the relay will shutdown off accessories.			87
(R)	1268	Engine Ignition Coil #1	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1269	Engine Ignition Coil #2	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1270	Engine Ignition Coil #3	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1271	Engine Ignition Coil #4	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1272	Engine Ignition Coil #5	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1273	Engine Ignition Coil #6	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1274	Engine Ignition Coil #7	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1275	Engine Ignition Coil #8	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1276	Engine Ignition Coil #9	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1277	Engine Ignition Coil #10	Top Level				Coil for high voltage spark plug in gas engines.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	1278	Engine Ignition Coil #11	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1279	Engine Ignition Coil #12	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1280	Engine Ignition Coil #13	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1281	Engine Ignition Coil #14	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1282	Engine Ignition Coil #15	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1283	Engine Ignition Coil #16	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1284	Engine Ignition Coil #17	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1285	Engine Ignition Coil #18	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1286	Engine Ignition Coil #19	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1287	Engine Ignition Coil #20	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1288	Engine Ignition Coil #21	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1289	Engine Ignition Coil #22	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1290	Engine Ignition Coil #23	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1291	Engine Ignition Coil #24	Top Level				Coil for high voltage spark plug in gas engines.			
(R)	1292	Engine Ignition Control Module #1	Top Level				Electronic control unit for an ignition system.			
(R)	1293	Engine Ignition Control Module #2	Top Level				Electronic control unit for an ignition system.			
(R)	1294	Engine Spark Plug #1	Top Level				Ignition device for gas engines.			
(R)	1295	Engine Spark Plug #2	Top Level				Ignition device for gas engines.			
(R)	1296	Engine Spark Plug #3	Top Level				Ignition device for gas engines.			
(R)	1297	Engine Spark Plug #4	Top Level				Ignition device for gas engines.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	1298	Engine Spark Plug #5	Top Level				Ignition device for gas engines.			
(R)	1299	Engine Spark Plug #6	Top Level				Ignition device for gas engines.			
(R)	1300	Engine Spark Plug #7	Top Level				Ignition device for gas engines.			
(R)	1301	Engine Spark Plug #8	Top Level				Ignition device for gas engines.			
(R)	1302	Engine Spark Plug #9	Top Level				Ignition device for gas engines.			
(R)	1303	Engine Spark Plug #10	Top Level				Ignition device for gas engines.			
(R)	1304	Engine Spark Plug #11	Top Level				Ignition device for gas engines.			
(R)	1305	Engine Spark Plug #12	Top Level				Ignition device for gas engines.			
(R)	1306	Engine Spark Plug #13	Top Level				Ignition device for gas engines.			
(R)	1307	Engine Spark Plug #14	Top Level				Ignition device for gas engines.			
(R)	1308	Engine Spark Plug #15	Top Level				Ignition device for gas engines.			
(R)	1309	Engine Spark Plug #16	Top Level				Ignition device for gas engines.			
(R)	1310	Engine Spark Plug #17	Top Level				Ignition device for gas engines.			
(R)	1311	Engine Spark Plug #18	Top Level				Ignition device for gas engines.			
(R)	1312	Engine Spark Plug #19	Top Level				Ignition device for gas engines.			
(R)	1313	Engine Spark Plug #20	Top Level				Ignition device for gas engines.			
(R)	1314	Engine Spark Plug #21	Top Level				Ignition device for gas engines.			
(R)	1315	Engine Spark Plug #22	Top Level				Ignition device for gas engines.			
(R)	1316	Engine Spark Plug #23	Top Level				Ignition device for gas engines.			
(R)	1317	Engine Spark Plug #24	Top Level				Ignition device for gas engines.			
(R)	1318	Engine Exhaust Temperature Bank Imbalance	Top Level				The imbalance between two banks of of exhaust port temperatures.			
(R)	1319	Engine Intake Manifold Pressure Bank Imbalance	Top Level				Imbalance between two banks of intake pressure manifolds			
(R)	1320	Engine External Shutdown Air Supply Pressure	-71	65167	1-2	16	Pressure of the air used to shut off the fuel supply to the engine.			
(R)	1321	Engine Starter Solenoid Lockout Relay Driver Circuit	Top Level				This relay is in series with the engine starter moto relay and controled by engine ECM to prevent starter engagement			
	1322	Engine Misfire for Multiple Cylinders	Top Level				When a misfire occurs in any one of the cylinders			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1323	Engine Misfire Cylinder #1	Top Level				Engine misfire detected in cylinder			
	1324	Engine Misfire Cylinder #2	Top Level				Engine misfire detected in cylinder			
	1325	Engine Misfire Cylinder #3	Top Level				Engine misfire detected in cylinder			
	1326	Engine Misfire Cylinder #4	Top Level				Engine misfire detected in cylinder			
	1327	Engine Misfire Cylinder #5	Top Level				Engine misfire detected in cylinder			
	1328	Engine Misfire Cylinder #6	Top Level				Engine misfire detected in cylinder			
	1329	Engine Misfire Cylinder #7	Top Level				Engine misfire detected in cylinder			
	1330	Engine Misfire Cylinder #8	Top Level				Engine misfire detected in cylinder			
	1331	Engine Misfire Cylinder #9	Top Level				Engine misfire detected in cylinder			
	1332	Engine Misfire Cylinder #10	Top Level				Engine misfire detected in cylinder			
	1333	Engine Misfire Cylinder #11	Top Level				Engine misfire detected in cylinder			
	1334	Engine Misfire Cylinder #12	Top Level				Engine misfire detected in cylinder			
	1335	Engine Misfire Cylinder #13	Top Level				Engine misfire detected in cylinder			
	1336	Engine Misfire Cylinder #14	Top Level				Engine misfire detected in cylinder			
	1337	Engine Misfire Cylinder #15	Top Level				Engine misfire detected in cylinder			
	1338	Engine Misfire Cylinder #16	Top Level				Engine misfire detected in cylinder			
	1339	Engine Misfire Cylinder #17	Top Level				Engine misfire detected in cylinder			
	1340	Engine Misfire Cylinder #18	Top Level				Engine misfire detected in cylinder			
	1341	Engine Misfire Cylinder #19	Top Level				Engine misfire detected in cylinder			
	1342	Engine Misfire Cylinder #20	Top Level				Engine misfire detected in cylinder			
	1343	Engine Misfire Cylinder #21	Top Level				Engine misfire detected in cylinder			
	1344	Engine Misfire Cylinder #22	Top Level				Engine misfire detected in cylinder			
	1345	Engine Misfire Cylinder #23	Top Level				Engine misfire detected in cylinder			
	1346	Engine Misfire Cylinder #24	Top Level				Engine misfire detected in cylinder			
(R)	1347	Engine Fuel Pump Pressurizing Assembly #1	Top Level				The pumping assembly of the fuel system			
(R)	1348	Engine Fuel Pump Pressurizing Assembly #2	Top Level				The pumping assembly of the fuel system			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	1349	Engine Injector Metering Rail 2 Pressure	-71	65243	7-8	16	The gage pressure of fuel in the metering rail #2 as delivered from the supply pump to the injector metering inlet.	129		
	1350	Time Since Last Service	-71	65166	2-3	16	The vehicle operation time since the last service was performed.			
	1351	Air Compressor Actuator Circuit	Top Level				Air compressor system for pumping air to the accessories, e.g. service and parking brake		128	89
	1352	Engine Cylinder #1 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	90
	1353	Engine Cylinder #2 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	91
	1354	Engine Cylinder #3 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	92
	1355	Engine Cylinder #4 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	93
	1356	Engine Cylinder #5 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	94
	1357	Engine Cylinder #6 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	95
	1358	Engine Cylinder #7 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	96
	1359	Engine Cylinder #8 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	97
	1360	Engine Cylinder #9 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	98
	1361	Engine Cylinder #10 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	99
	1362	Engine Cylinder #11 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	100
	1363	Engine Cylinder #12 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	101
	1364	Engine Cylinder #13 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	102
	1365	Engine Cylinder #14 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	103
	1366	Engine Cylinder #15 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	104

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1367	Engine Cylinder #16 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	105
	1368	Engine Cylinder #17 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	106
	1369	Engine Cylinder #18 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	107
	1370	Engine Cylinder #19 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	108
	1371	Engine Cylinder #20 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	109
	1372	Engine Cylinder #21 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	110
	1373	Engine Cylinder #22 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	111
	1374	Engine Cylinder #23 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	112
	1375	Engine Cylinder #24 Knock Sensor	Top Level				When either knock or pre-detonation has occurred		128	113
	1376	Battery 2 Potential (Voltage) (duplicate - see also SPN 444)	-71			16	The voltage for isolated battery #2.			
(R)	1377	Engine Synchronization Switch	-71	64971	1.3	2	This is the On/Off operation of the Multiple Unit Synchronization functionality. When it is enabled (i.e. On) the master engine will synchronize one or more slave engines to operate at the same speed.			
	1378	Engine Oil Change Interval	Top Level				The engine oil change interval time has expired		128	115
	1379	Service Component Identification	-71	65166	1	8	Identification of component needing service.			
	1380	Engine Oil Level Remote Reservoir	-71	65130	1	8	Ratio of current volume of engine oil in a remote reservoir to the maximum required volume.	17		
(R)	1381	Engine Fuel Supply Pump Inlet Pressure	-71	65130	2	8	Absolute pressure of fuel at the fuel supply pump inlet.			
(R)	1382	Engine Fuel Filter (suction side) Differential Pressure	-71	65130	3	8	Differential pressure measured across the fuel filter located between the fuel tank and the supply pump.	16		
	1383	Engine was Shut Down Hot	Top Level				Abrupt engine shutdown when hot		128	116

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1384	Engine has Been Shut Down from Data Link Information	Top Level				Engine commanded to shutdown via the datalink		128	117
	1385	Auxiliary Temperature #1 (duplicate see also SPN 441)	-71			8	Temperature measured by auxiliary temperature sensor #1 or #2. Not to be used in place of existing SPNs.			
	1386	Auxiliary Temperature #2 (duplicate see also SPN 442)	-71			8	Temperature measured by auxiliary temperature sensor #1 or #2. Not to be used in place of existing SPNs.			
	1387	Auxiliary Pressure #1	-71	65164	3	8	Pressure measured by auxiliary pressure sensor #1. Not to be used in place of existing SPNs.			
	1388	Auxiliary Pressure #2	-71	65164	4	8	Pressure measured by auxiliary pressure sensor #2. Not to be used in place of existing SPNs.			
(R)	1389	Engine Fuel Specific Gravity	-71	65202	7-8	16	This parameter conveys the specific gravity of the gaseous fuel being used by the engine.			
(R)	1390	Engine Fuel Valve Inlet Absolute Pressure	-71	65163	1-2	16	The absolute pressure at the inlet of the gaseous fuel valve.			
(R)	1391	Engine Fuel Valve Differential Pressure	-71	65163	3-4	16	The differential pressure between the inlet and the outlet of a gaseous fuel valve.			
(R)	1392	Engine Air to Fuel Differential Pressure	-71	65163	5-6	16	The differential pressure between the gaseous fuel and the air intake manifold.			
(R)	1393	Engine Cylinder #1 Ignition Transformer Secondary Output	-71	65160	1	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1394	Engine Cylinder #2 Ignition Transformer Secondary Output	-71	65160	2	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1395	Engine Cylinder #3 Ignition Transformer Secondary Output	-71	65160	3	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1396	Engine Cylinder #4 Ignition Transformer Secondary Output	-71	65160	4	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1397	Engine Cylinder #5 Ignition Transformer Secondary Output	-71	65160	5	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	1398	Engine Cylinder #6 Ignition Transformer Secondary Output	-71	65160	6	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1399	Engine Cylinder #7 Ignition Transformer Secondary Output	-71	65160	7	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1400	Engine Cylinder #8 Ignition Transformer Secondary Output	-71	65160	8	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1401	Engine Cylinder #9 Ignition Transformer Secondary Output	-71	65161	1	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1402	Engine Cylinder #10 Ignition Transformer Secondary Output	-71	65161	2	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1403	Engine Cylinder #11 Ignition Transformer Secondary Output	-71	65161	3	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1404	Engine Cylinder #12 Ignition Transformer Secondary Output	-71	65161	4	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1405	Engine Cylinder #13 Ignition Transformer Secondary Output	-71	65161	5	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1406	Engine Cylinder #14 Ignition Transformer Secondary Output	-71	65161	6	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1407	Engine Cylinder #15 Ignition Transformer Secondary Output	-71	65161	7	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1408	Engine Cylinder #16 Ignition Transformer Secondary Output	-71	65161	8	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1409	Engine Cylinder #17 Ignition Transformer Secondary Output	-71	65162	1	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1410	Engine Cylinder #18 Ignition Transformer Secondary Output	-71	65162	2	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	1411	Engine Cylinder #19 Ignition Transformer Secondary Output	-71	65162	3	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1412	Engine Cylinder #20 Ignition Transformer Secondary Output	-71	65162	4	8	This parameter indicates the relative intensity of the secondary output voltage of the ignition transformer.			
(R)	1413	Engine Cylinder #1 Ignition Timing	-71	65154	1-2	16	The ignition timing of the cylinder.			
(R)	1414	Engine Cylinder #2 Ignition Timing	-71	65154	3-4	16	The ignition timing of the cylinder.			
(R)	1415	Engine Cylinder #3 Ignition Timing	-71	65154	5-6	16	The ignition timing of the cylinder.			
(R)	1416	Engine Cylinder #4 Ignition Timing	-71	65154	7-8	16	The ignition timing of the cylinder.			
(R)	1417	Engine Cylinder #5 Ignition Timing	-71	65155	1-2	16	The ignition timing of the cylinder.			
(R)	1418	Engine Cylinder #6 Ignition Timing	-71	65155	3-4	16	The ignition timing of the cylinder.			
(R)	1419	Engine Cylinder #7 Ignition Timing	-71	65155	5-6	16	The ignition timing of the cylinder.			
(R)	1420	Engine Cylinder #8 Ignition Timing	-71	65155	7-8	16	The ignition timing of the cylinder.			
(R)	1421	Engine Cylinder #9 Ignition Timing	-71	65156	1-2	16	The ignition timing of the cylinder.			
(R)	1422	Engine Cylinder #10 Ignition Timing	-71	65156	3-4	16	The ignition timing of the cylinder.			
(R)	1423	Engine Cylinder #11 Ignition Timing	-71	65156	5-6	16	The ignition timing of the cylinder.			
(R)	1424	Engine Cylinder #12 Ignition Timing	-71	65156	7-8	16	The ignition timing of the cylinder.			
(R)	1425	Engine Cylinder #13 Ignition Timing	-71	65157	1-2	16	The ignition timing of the cylinder.			
(R)	1426	Engine Cylinder #14 Ignition Timing	-71	65157	3-4	16	The ignition timing of the cylinder.			
(R)	1427	Engine Cylinder #15 Ignition Timing	-71	65157	5-6	16	The ignition timing of the cylinder.			
(R)	1428	Engine Cylinder #16 Ignition Timing	-71	65157	7-8	16	The ignition timing of the cylinder.			
(R)	1429	Engine Cylinder #17 Ignition Timing	-71	65158	1-2	16	The ignition timing of the cylinder.			
(R)	1430	Engine Cylinder #18 Ignition Timing	-71	65158	3-4	16	The ignition timing of the cylinder.			
(R)	1431	Engine Cylinder #19 Ignition Timing	-71	65158	5-6	16	The ignition timing of the cylinder.			
(R)	1432	Engine Cylinder #20 Ignition Timing	-71	65158	7-8	16	The ignition timing of the cylinder.			
(R)	1433	Engine Desired Ignition Timing #1	-71	65159	1-2	16	A programmable timing value specific to the engine's application. Factors affecting this value include both fuel type and the nature of the load being driven.			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	1434	Engine Desired Ignition Timing #2	-71	65159	3-4	16	A programmable timing value specific to the engine's application. Factors affecting this value include both fuel type and the nature of the load being driven.			
(R)	1435	Engine Desired Ignition Timing #3	-71	65159	5-6	16	A programmable timing value specific to the engine's application. Factors affecting this value include both fuel type and the nature of the load being driven.			
(R)	1436	Engine Actual Ignition Timing	-71	65159	7-8	16	The actual ignition timing at the current engine conditions. This parameter may or may not be equal to one of the desired timing parameters (see SPNs 1433-1435), depending on the status of the engine.			
(R)	1437	Road Speed Limit Status	-71	61443	1.5	2	Status (active or not active) of the system used to limit maximum vehicle velocity.			
	1438	ABS/EBS Amber Warning Signal (Powered Vehicle)	-71	61441	6.5	2	This parameter commands the ABS/EBS amber/yellow optical warning signal	sin		
	1439	EBS Red Warning Signal	-71	61441	6.3	2	This parameter commands the EBS red optical warning signal			
(R)	1440	Engine Fuel Flow Rate 1	-71	65153	1-2	16	The rate at which the fuel is flowing through a fuel valve.			
(R)	1441	Engine Fuel Flow Rate 2	-71	65153	3-4	16	The rate at which the fuel is flowing through a fuel valve.			
(R)	1442	Engine Fuel Valve 1 Position	-71	65153	5	8	The position of a gaseous fuel valve that is metering the fuel flow to the engine.			
(R)	1443	Engine Fuel Valve 2 Position	-71	65153	6	8	The position of a gaseous fuel valve that is metering the fuel flow to the engine.			
(R)	1444	Engine Cylinder #1 Combustion Time	-71	65147	1-2	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1445	Engine Cylinder #2 Combustion Time	-71	65147	3-4	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1446	Engine Cylinder #3 Combustion Time	-71	65147	5-6	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1447	Engine Cylinder #4 Combustion Time	-71	65147	7-8	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	1448	Engine Cylinder #5 Combustion Time	-71	65148	1-2	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1449	Engine Cylinder #6 Combustion Time	-71	65148	3-4	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1450	Engine Cylinder #7 Combustion Time	-71	65148	5-6	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1451	Engine Cylinder #8 Combustion Time	-71	65148	7-8	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1452	Engine Cylinder #9 Combustion Time	-71	65149	1-2	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1453	Engine Cylinder #10 Combustion Time	-71	65149	3-4	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1454	Engine Cylinder #11 Combustion Time	-71	65149	5-6	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1455	Engine Cylinder #12 Combustion Time	-71	65149	7-8	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1456	Engine Cylinder #13 Combustion Time	-71	65150	1-2	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1457	Engine Cylinder #14 Combustion Time	-71	65150	3-4	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1458	Engine Cylinder #15 Combustion Time	-71	65150	5-6	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1459	Engine Cylinder #16 Combustion Time	-71	65150	7-8	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1460	Engine Cylinder #17 Combustion Time	-71	65151	1-2	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	1461	Engine Cylinder #18 Combustion Time	-71	65151	3-4	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1462	Engine Cylinder #19 Combustion Time	-71	65151	5-6	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1463	Engine Cylinder #20 Combustion Time	-71	65151	7-8	16	The amount of time from when the ignition of the fuel is initiated to when the fuel is completely ignited.			
(R)	1464	Engine Desired Combustion Time	-71	65152	1-2	16	The desired combustion time based upon engine load and speed lookup maps.			
(R)	1465	Engine Average Combustion Time	-71	65152	3-4	16	The average combustion time of all cylinders of an engine.			
	1466	Steer Channel Mode	-71	65144	2.1	4	Indicates the functional mode of steer channel of the tire pressure control system.			
	1467	Trailer/tag Channel Mode	-71	65144	3.1	4	Indicates the functional mode of trailer/tag channel of the tire pressure control system.			
	1468	Drive Channel Mode	-71	65144	3.5	4	Indicates the functional mode of trailer/tag channel of the tire pressure control system.			
	1469	PCU Drive Solenoid Status	-71	65144	4.1	2	Current state of the drive solenoid used to implement a tire pressure control system in its pneumatic control unit (PCU).			
	1470	PCU Steer Solenoid Status	-71	65144	4.3	2	Current state of the steer solenoid used to implement a tire pressure control system in its pneumatic control unit (PCU).			
	1471	Tire Pressure Supply Switch Status	-71	65144	4.5	2	Current state of an open/closed type switch used to determine if adequate pressure exists for system implementation.			
	1472	PCU Deflate Solenoid Status	-71	65144	5.1	2	Current state of the deflate solenoid used to implement a tire pressure control system in its pneumatic control unit (PCU).			
	1473	PCU Control Solenoid Status	-71	65144	5.3	2	Current state of the control solenoid used to implement a tire pressure control system in its pneumatic control unit (PCU).			
	1474	PCU Supply Solenoid Status	-71	65144	5.5	2	Current state of the supply solenoid used to implement a tire pressure control system in its pneumatic control unit (PCU).			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1475	PCU Trailer, Tag or Push Solenoid Status	-71	65144	5.7	2	Current state of the trailer, tag, or push solenoid used to implement a tire pressure control system in its pneumatic control unit (PCU).			
	1476	Engine Oil Specific Resistance	Top Level			8	Engine oil specific resistance used to describe the engine oil quality.			
	1477	Engine Oil Kinematic Viscosity	Top Level			8	Engine oil kinematic viscosity used to describe the engine oil quality.			
	1478	Engine Oil Relative Dielectricity	Top Level			8	Engine oil relative dielectricity used to describe the engine oil quality.			
	1479	Security Entity Type	-73	54272	2.5					
	1480	Source Address of Controlling Device for Retarder Control	-71	61440	5	8	The source address of the SAE J1939 device currently controlling the retarder.			
	1481	Source Address of Controlling Device for Brake Control	-71	61441	7	8	The source address of the SAE J1939 device currently controlling the brake system.			
	1482	Source Address of Controlling Device for Transmission Control	-71	61442	8	8	The source address of the SAE J1939 device currently controlling the transmission.			
	1483	Source Address of Controlling Device for Engine Control	-71	61444	6	8	The source address of the SAE J1939 device currently controlling the engine.			
	1484	Other ECUs Have Reported Fault Codes Affecting Operation	Top Level				Indication of fault codes for other devices		0	216
	1485	ECM Main Relay	Top Level						0	218
	1486	Concave Position	Top Level				Combine Concave Clearance Measurement			
	1487	Illumination Brightness Percent	-71	53248	1	8	Commanded Backlight Brightness Level			
	1488	Thresher Speed	Top Level				Threshing or cylinder speed measurement			
	1489	Cleaning Fan Speed	Top Level				Cleaning fan speed measurement			
	1490	Header Backshaft Speed	Top Level				Header drive speed measurement			
	1491	Instrument Panel #1 Backlighting Driver	Top Level				Output drive circuit for first instrument panel backlight			
	1492	Instrument Panel #2 Backlighting Driver	Top Level				Output drive circuit for first instrument panel backlight			
	1493	Tailings System	Top Level				Tailings measurement system			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1494	Tailings Sensor #1	Top Level				First Tailings Sensor circuit			
	1495	Tailings Sensor #2	Top Level				Second Tailings Sensor circuit			
	1496	Tailings Elevator Paddles	Top Level				Tailings Elevator Paddles (e.g., missing)			
	1497	Unloading Auger Drive	Top Level				Drive circuit which engages the unloading auger system			
	1498	Header Drive	Top Level				Drive circuit which engages the unloading header system			
	1499	Separator Drive	Top Level				Drive circuit which engages the unloading separator system			
	1500	Tachometer Module Switch Matrix	Top Level				Switch input matrix that controls monitoring functions of the tachometer module			
	1501	Grain Loss Module Switch Matrix	Top Level				Switch input matrix that controls monitoring functions of the grain loss module			
	1502	Automatic Header Control Switch Matrix	Top Level				Switch input matrix that controls monitoring functions of the automatic header module			
	1503	Arm Rest Switch Matrix	Top Level				Switch input matrix for the module located in the arm rest			
	1504	Operator Seat Switch	Top Level			2	This switch senses the presence of the operator in the seat.			
	1505	Automatic Header Sensitivity Adjustment	Top Level				Input to adjust the reaction sensitivity of the automatic header system			
	1506	Automatic Header Rate Adjustment	Top Level				Input to adjust the reaction rate of the automatic header system			
	1507	Discharge Beater Speed Disable Adjustment -	Top Level				Input to adjust the discharge beater speed			
	1508	Hydraulic Reservoir Temperature	Top Level				Temperature of common reservoir for drive and machine operation			
	1509	Thresher Separator Hydraulic Drive #1 Temperature	Top Level				Temperature of first thresher separator hydraulic drive			
	1510	Chopper Vane Angle Adjustment	Top Level				Operator input to adjust chopper vane angle			
	1511	Rightmost Cleaning Shoe Grain Loss	Top Level				Circuit and sensor associated with providing the rightmost cleaning shoe grain loss parameter			
	1512	Leftmost Cleaning Shoe Grain Loss	Top Level				Circuit and sensor associated with providing the leftmost cleaning shoe grain loss parameter			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1513	Rightmost Separator Grain Loss	Top Level				Circuit and sensor associated with providing the rightmost separator grain loss parameter			
	1514	Leftmost Separator Grain Loss	Top Level				Circuit and sensor associated with providing the rightmost separator grain loss parameter			
	1515	Header Height System	Top Level				General fault in the system that controls the header			
	1516	Header	Top Level				Mechanical problem with the header system			
	1517	Header Lift Cylinder Pressure	Top Level				Circuit and sensor associated with providing the header lift cylinder pressure parameter			
	1518	Header Identification	Top Level				Method of identifying which header is attached			
	1519	Header Raise Valve	Top Level				Output circuit that drives the header raise valve			
	1520	Header Lower Valve	Top Level				Output circuit that drives the header lower valve			
	1521	Header Tilt Left Valve	Top Level				Output circuit that drives the header tilt left valve			
	1522	Header Tilt Right Valve	Top Level				Output circuit that drives the header tilt right valve			
	1523	Header Lift Cylinder Pressure Diverter Valve	Top Level				Output circuit that drives the header lift cylinder pressure diverter valve			
	1524	Reel Position Forward Actuator	Top Level				Output circuit that drives the reel position forward actuator			
	1525	Reel Position Aft Actuator	Top Level				Output circuit that drives the reel position aft actuator			
	1526	Reel Position Raise Actuator	Top Level				Output circuit that drives the reel position raise actuator			
	1527	Reel Position Lower Actuator	Top Level				Output circuit that drives the reel position lower actuator			
	1528	Header Drop Rate Control Valve	Top Level				Output circuit that drives the header drop rate control valve			
	1529	Header Lift Cylinder Accumulator Shutoff Valve Drive	Top Level				Output circuit that drives this valve			
	1530	Unloading Auger Flow Bypass Valve Drive	Top Level				Output circuit that drives this valve			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1531	Reel Drive Motor Speed Increase Valve Drive	Top Level				Output circuit that drives this valve			
	1532	Reel Drive Motor Speed Decrease Valve ElectrDrive	Top Level				Output circuit that drives this valve			
	1533	Feederhouse Angle	Top Level				Circuit and sensor for measuring the feederhouse angle parameter			
	1534	Leftmost Header Height	Top Level				Circuit and sensor for measuring the leftmost header height parameter			
	1535	Rightmost Header Height	Top Level				Circuit and sensor for measuring the rightmost header height parameter			
	1536	Center Header Height	Top Level				Circuit and sensor for measuring the center header height parameter			
	1537	Reel Fore-Aft Position	Top Level				Circuit and sensor for measuring the reel fore-aft parameter			
	1538	Reel Up-Down Position	Top Level				Circuit and sensor for measuring the reel up-down parameter			
	1539	Header Lateral Tilt Angle	Top Level				Circuit and sensor for measuring the header lateral tilt angle parameter			
	1540	Reel Speed Actuator Position	Top Level				Circuit and sensor for measuring the reel speed actuator position parameter			
	1541	Reel Speed	Top Level				Circuit and sensor for measuring the reel speed parameter			
	1542	ECU Power Supply Voltage #2	Top Level				Second supply voltage in the module			
	1543	ECU Power Supply Voltage #3	Top Level				Third supply voltage in the module			
	1544	Hydro Handle Matrix Switch	Top Level				Multi-function handle circuit			
	1545	Not used - reserved								
	1546	HVAC Coolant Valve Position	Top Level				Circuit and sensor associated with providing the HVAC coolant valve position parameter			
	1547	A/C Evaporator Temperature	Top Level				Circuit and sensor associated with providing the HVAC coolant valve position parameter			
	1548	HVAC Duct Temperature	Top Level				Circuit and sensor associated with providing the HVAC duct temperature parameter			
	1549	HVAC Water Valve Drive	Top Level				Output circuit that drives this valve			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1550	Not used - reserved								
	1551	HVAC Pressurizer Drive	Top Level				Output circuit that drives this valve			
	1552	HVAC Temperature Setpoint Adjustment	Top Level				Circuit and sensor for measuring the HVAC temperature setpoint parameter			
	1553	HVAC Blower Motor Speed Adjustment	Top Level				Circuit and sensor for measuring the HVAC blower motor speed adjustment parameter			
	1554	Clean Grain Elevator Speed	Top Level				Circuit and sensor associated with providing the clean grain elevator speed parameter			
	1555	Moisture Sensor Cell Frequency	Top Level				Critical parameter of moisture sensor			
	1556	Datalog Memory Card	Top Level				Removable memory pack			
	1557	Not used - reserved								
	1558	Programming Error, Device Refused to Enter Programming Mode	Top Level				Device to be programmed is reporting that it cannot be programmed			
	1559	Programming Error, Device Timed Out While Entering the Programming Mode	Top Level				Tool timed out waiting for device to enter program mode			
	1560	Programming Error, Device Timed Out While Erasing	Top Level				Tool timed out waiting for device to erase			
	1561	Programming Error, Device Timed Out While Programming	Top Level				Tool timed out waiting for device to program			
	1562	Programming Error, Device did not Accept Program Line	Top Level				Device to be programmed reporting that it cannot accept program block			
	1563	Incompatible Monitor/Controller	Top Level				An incompatible device has been detected on the network			
	1564	CCD Data Link	Top Level							
	1565	Armrest Status	Top Level				Parameter associated with the armrest module status			
	1566	Armrest Rotary Inputs	Top Level				Parameter associated with the armrest module rotary inputs			
	1567	Header Height Control Mode Selector Switches	Top Level				Parameter associated with the header height control mode selector switches			
(R)	1568	Engine Torque Curve Selection	Top Level				The mechanism used to select different torque curves. This SPN would be used to indicate a problem has been encountered with the device that indicates the desired torque curve			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1569	Engine Protection Torque Derate	Top Level				Torque has been derated for protection of the engine			
	1570	Implement Disconnected	Top Level				A previously connected implement is no longer connected			
	1571	Display Conflict	Top Level				Multiple controllers contending for a display resource (region)			
	1572	Display Overload	Top Level				Display not able to keep up with display commands			
	1573	LED Display Data #1	-71	65142	1	8	Informs display devices how to display the current vertical position			
	1574	Laser Strike Vertical Deviation	-71	65141	1-2	16	The calculated distance from the laser strike position to the current land leveling system reference point			
	1575	Modify Set Point	-71	65140	1-2	16	Used to control and coordinate the set point for the leveling system			
	1576	Mast Position	-71	65139	1-2	16	Used to monitor the position of the sensor attached to the land leveling mast			
	1577	Blade Duration and Direction	-71	65138	1-2	16	Used to indicate the duration and direction that the land leveling system blade moves			
	1578	Blade Control Mode	-71	65138	3	8	Allows the user to select the type of blade control for the land leveling system			
	1579	Laser Tracer Target Deviation	-71	65137	1-2	16	The calculated distance for the laser target to the current laser tracer reference point			
	1580	Laser Tracer Vertical Distance	-71	65137	3-4	16	The elevation of the laser tracer sensor in a laser leveling system			
	1581	Laser Tracer Horizontal Deviation	-71	65137	5	8	The calculated percent deviation between the target distance and the center of the laser tracer			
	1582	LED Display Data #2	-71	65137	6	8	Informs display devices how to display the current position of the laser tracer			
	1583	Laser Tracer Information	-71	65137	7	8	Provides the status of the laser tracer to the operator			
	1584	Service Component Identification	-71	56832	2	8	Identification of component needing service			
	1585	Powered Vehicle Weight	-71	65136	1-2	16	Total mass imposed by the tires of the powered vehicle on the road surface. Does not include the trailer			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1586	Speed of forward vehicle	-71	65135	1	8	Absolute velocity of the preceding vehicle situated within 250 m in the same lane and moving in the same direction.			
	1587	Distance to forward vehicle	-71	65135	2	8	Distance to the preceding vehicle situated within 250 m in the same lane and moving in the same direction.			
	1588	Adaptive Cruise Control Set Speed	-71	65135	3	8	Value of the desired (chosen) velocity of the adaptive cruise control system.			
	1589	Adaptive cruise control set distance mode	-71	65135	4.4	3	Selected distance mode for adaptive cruise control.			
	1590	Adaptive Cruise Control Mode	-71	65135	4.1	3	This parameter is used to indicate the current state, or mode, of operation by the Adaptive Cruise Control (ACC) device.			
	1591	Road curvature	-71	65135	5-6	16	Estimated value of the current road curvature for use by the adaptive cruise control system. Positive values are used for left curves. Curvature is the inverse of the radius and is zero for straight roads.			
	1592	Front Axle, Left Wheel Speed	-71	65134	1-2	16	High resolution measurement of the speed of the left wheel on the front axle.			
	1593	Front axle, right wheel speed	-71	65134	3-4	16	High resolution measurement of the speed of the right wheel on the front axle.			
	1594	Rear axle, left wheel speed	-71	65134	5-6	16	High resolution measurement of the speed of the left wheel on the rear axle.			
	1595	Rear axle, right wheel speed	-71	65134	7-8	16	High resolution measurement of the speed of the right wheel on the rear axle.			
	1596	Security Entity Length	-73	54272	1-2.1					
	1597	Data Security Parameter	-73	54272	3					
	1598	PGN of message to be authenticated	-73							
	1599	Seed	-73	55296	7-8					
	1600	Authentication message data parameter	-73							
	1601	Local minute offset	-71	65254	7	8	Local offset in minutes from a reference time.			
(R)	1602	Local hour offset	-71	65254	8	8	Local offset in hours from a reference time			
	1603	Adjust seconds	-71	54528	1	8	Part of the parameter used to set the time.			
	1604	Adjust minutes	-71	54528	2	8	Part of the parameter used to set the time.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1605	Adjust hours	-71	54528	3	8	Part of the parameter used to set the time.			
	1606	Adjust month	-71	54528	4	8	Part of a parameter used to set a calendar date.			
	1607	Adjust day	-71	54528	5	8	Part of a parameter used to set a calendar date.			
	1608	Adjust year	-71	54528	6	8	Part of a parameter used to set a calendar date.			
	1609	Adjust local minute offset	-71	54528	7	8	Used to set the local offset in minutes from a reference time.			
	1610	Adjust local hour offset	-71	54528	8	8	Used to set the local offset in hours from a reference time			
	1611	Drive recognize	-71	65132	1.7	2	Indicates whether motion of the vehicle is detected or not.			
	1612	Driver 1 working state	-71	65132	1.1	3	State of work of the driver.			
	1613	Driver 2 working state	-71	65132	1.4	3	State of work of the driver.			
	1614	Overspeed	-71	65132	2.7	2	Indicates whether the vehicle is exceeding the legal speed limit set in the tachograph.			
	1615	Driver card, driver 1	-71	65132	2.5	2	Indicates the presence of a driver card			
	1616	Driver card, driver 2	-71	65132	3.5	2	Indicates the presence of a driver card			
	1617	Driver 1 Time Related States	-71	65132	2.1	4	Indicates if the driver approaches or exceeds working time limits (or other limits).			
	1618	Driver 2 Time Related States	-71	65132	3.1	4	Indicates if the driver approaches or exceeds working time limits (or other limits).			
	1619	Direction indicator	-71	65132	4.7	2	Indicates the direction of the vehicle.			
	1620	Tachograph performance	-71	65132	4.5	2	Indicates the tachograph performance; including electronic or mechanical analysis, instrument analysis, speed sensor analysis, mass storage analysis, and printer analysis.			
	1621	Handling information	-71	65132	4.3	2	Indicates that handling information is present.			
	1622	System event	-71	65132	4.1	2	Indicates that a tachograph event has occurred.			
	1623	Tachograph output shaft speed	-71	65132	5-6	16	Calculated speed of the transmission output shaft.			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1624	Tachograph vehicle speed	-71	65132	7-8	16	Speed of the vehicle registered by the tachograph.			
	1625	Driver 1 identification	-71	65131	1-2	13824	Used to obtain the driver identity.			
	1626	Driver 2 identification	-71	65131	3-4	13824	Used to obtain the driver identity.			
	1627	Reserved for Certification agency ID	-73							
	1628	Reserved for Certification seed/key length	-73							
	1629	Reserved for Certification signature	-73							
	1630	Reserved for Certification public key	-73							
	1631	Reserved for Certification vehicle identification number	-73							
(R)	1632	Engine Torque Limit Feature	-71	65168	15.3	3	Torque limit rating described in the current record			
	1633	Cruise Control Pause Switch	-71	65265	1.5	2	Switch signal which indicates the position of the Cruise Control Pause Switch used on Remote Cruise Control applications			
	1634	Calibration Verification Number	-73	54016	1-4		Checksum of entire calibration, including code and data. Excludes RAM parameters, nonvolatile parameters that change during the life cycle of the module (hours of operation, freeze frame data, etc), or non emissions related parameters that may be changed			
	1635	Calibration Identification	-73	54016	5-20					
(R)	1636	Engine Intake Manifold 1 Air Temperature (High Resolution)	-71	65129	1-2	16	Temperature of pre-combustion air found in intake manifold of engine air supply system. The higher resolution is required for control purposes.			
	1637	Engine Coolant Temperature (High Resolution)	-71	65129	3-4	16	Temperature of liquid found in engine cooling system. The higher resolution is required for control purposes.			
	1638	Hydraulic Temperature	-71	65128	1	8	Temperature of the hydraulic fluid.			
	1639	Fan Speed	-71	65213	3-4	16	The speed of the fan associated with engine coolant system.			
	1640	Length/Number Requested	-73	55552	1-2.1					
	1641	Pointer Type	-73	55552	2.8					

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1642	Command	-73	55552	2.5					
	1643	Pointer Extension	-73	55552	6					
	1644	Pointer	-73	55552	3-5					
	1645	Key/User_Level	-73	55552	7-8					
	1646	Status (for DM 17)	-73	55296	2.5					
	1647	EDCP Extension	-73							
	1648	Error Indicator/EDC Parameter	-73	55296	3-5					
	1649	Length/Number Allowed [1]	-73	55296	6					
	1649	Length/Number Allowed [1]	-73	55296	1-2.1					
	1650	Number of Occurrences of Raw Binary Data	-73	55040	1					
	1651	Raw Binary Data	-73	55040	2					
	1652	Boot Load Data	-73	54784	1-8					
	1653	Vehicle Limiting Speed Governor Enable Switch	-71	57344	5.7	2	Switch signal which enables the Vehicle Limiting Speed Governor (VLSG) such that the vehicle speed may be either increased or decreased when the engine is off idle.			
	1654	Vehicle Limiting Speed Governor Increment Switch	-71	57344	5.5	2	Switch signal which increases the Vehicle Limiting Speed Governor (VLSG).			
	1655	Vehicle Limiting Speed Governor Decrement Switch	-71	57344	5.3	2	Switch signal which decreases the Vehicle Limiting Speed Governor (VLSG).			
	1656	Engine Automatic Start Enable Switch	-71	57344	6.7	2	Switch signal which enables the idle management system to be enabled. When this system is enabled with the engine in an idle mode and safe operating conditions existing, then the engine may be started or stopped automatically.			
(R)	1657	Engine Injector Needle Lift Sensor #1	Top Level				The injector needle lift sensor used to detect the initial movement of the injector component which correlates the start of fuel injection #1			
(R)	1658	Engine Injector Needle Lift Sensor #2	Top Level				The injector needle lift sensor used to detect the initial movement of the injector component which correlates the start of fuel injection #2			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	1659	Engine Coolant System Thermostat	Top Level				Electronic thermostat that will divert the coolant to the radiator at the preset temperature.			
	1660	Engine Automatic Start Alarm	Top Level				An audio alarm which is activated just before the Engine Automatic Start Feature is engaged			
	1661	Engine Automatic Start Lamp	Top Level				A visible indication to the driver/operator that the Engine Automatic Start Feature is engaged			
	1662	Cab Interior Temperature Thermostat	Top Level				Thermostat for driver/operator to set the desired cab temperature			
	1663	Engine Automatic Start Safety Interlock Circuit	Top Level				Multiple inputs, e.g. hood and parking brake positions and neutral transmission switch, which determins whether Engine Automatic feature may be activated or not			
	1664	Engine Automatic Start Failed (Engine)	Top Level				Conditions that prevent the engine from starting.e.g. Engine Automatic Start Safety Interlock Circuit			
(R)	1665	Engine Turbocharger Oil Level Switch	-71	65245	4.7	2	Switch signal which indicates the presence of oil at the turbocharger			
	1666	Automatic Gear Shifting Enable Switch	-71	57344	6.5	2				
	1667	Retarder Requesting Brake Light	-71	61440	4.3	2	Indicates that whether the retarder is requesting that the brake lights are illuminated.			
	1668	J1939 Network #4	Top Level							
	1669	J1939 Network #5	Top Level							
	1670	J1939 Network #6	Top Level							
	1671	J1939 Network #7	Top Level							
	1672	J1939 Network #8	Top Level							
	1673	J1939 Network #9	Top Level							
	1674	J1939 Network #10	Top Level							
	1675	Engine Starter Mode	-71	61444	7.1	4	There are several phases in a starting action and different reasons, why a start cannot take place.			
	1676	Auxilary Heater Water Pump Status	-71	65133	5.1	2	Parameter indicating whether the auxilary heater water pump is running			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1677	Auxiliary Heater Mode	-71	65133	4.1	4	State of the auxiliary heater			
	1678	Cab Ventilation	-71	65133	5.3	2	Indicates whether the cab is being ventilated or not.			
	1679	Engine Heating Zone	-71	65133	5.5	2	Parameter indicating whether the engine zone is being heated			
	1680	Cab Heating Zone	-71	65133	5.7	2	Parameter indicating whether the cab zone is being heated.			
	1681	Battery Main Switch Hold State	-71	65126	1.1	2	Indicating whether the battery main switch is held due to an external request or not			
	1682	Battery Main Switch Hold Request	-71	57344	4.3	2	Request to hold the battery main switch			
	1683	Auxiliary Heater Mode Request	-71	57344	7.1	4	Request to activate the auxiliary heater.			
	1684	Auxiliary Heater Coolant Pump Request	-71	57344	4.1	2	Indicates whether to activate the auxiliary heater coolant water pump.			
	1685	Request Engine Zone Heating	-71	57344	7.5	2	Request to activate engine zone heating			
	1686	Request Cab Zone Heating	-71	57344	7.7	2	Request to activate cab zone heating			
	1687	Auxiliary Heater Output Coolant Temperature	-71	65133	1	8	Temperature of the auxiliary heater output coolant (I.e. water in a water heater system.)			
	1688	Auxiliary Heater Input Air Temperature	-71	65133	2	8	Temperature of the input air in an auxiliary heater system.			
	1689	Auxiliary Heater Output Power Percent	-71	65133	3	8	Current auxiliary heater output power, relative to the auxiliary heater maximum output power.			
	1690	Auxiliary Heater Maximum Output Power	-71	65127	1-2	16	The maximum output power of the auxiliary heater.			
	1691	Cab Interior Temperature Command	-71	57344	2-3	16	Parameter used to command a certain cab interior temperature.			
(R)	1692	Engine Desired Absolute Intake Manifold Pressure (Turbo Boost Limit)	-71	65194	2-3	16	The desired absolute intake manifold pressure of the engine.			
(R)	1693	Engine Turbocharger Wastegate Valve Position	-71	65194	4	8	The position of the turbocharger wastegate valve (not the electronic wastegate control valve).			
(R)	1694	Engine Gas Mass Flow Sensor Fueling Correction	-71	65194	5	8	The amount of fuel the Gas Mass Flow Sensor is sensing should be added or subtracted compared to the maximum amount of fuel the control system allows the sensor to add or subtract.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	1695	Engine Exhaust Gas Oxygen Sensor Fueling Correction	-71	65193	7	8	The amount of fueling change required by the system based on the measured Exhaust Oxygen value			
(R)	1696	Engine Exhaust Gas Oxygen Sensor Closed Loop Operation	-71	65193	8.7	2	Indicates whether the engine is using the Exhaust Gas Oxygen sensor to control the air/fuel ratio.			
	1697	CTI Wheel End Electrical Fault	-71	65268	5.5	2	Indicates the status of electrical fault on CTI wheel interface			
	1698	CTI Tire Status	-71	65268	5.3	2	Indicates the status of the tire			
	1699	CTI Wheel Sensor Status	-71	65268	5.1	2	Indicates whether the wheel is being monitored by the CTI controller.			
	1700	Lane Departure Imminent, Left Side	-71	61447	1.7	2	Indicates departure imminent on left side of lane.			
	1701	Lane Departure Imminent, Right Side	-71	61447	1.5	2	Indicates departure imminent on right side of lane			
	1702	Lane Departure Indication Enable Status	-71	65115	1.7	2	Indicates whether Lane departure indication is active			
	1703	Lane Tracking Speaker - Right Side	Top Level				Lane tracking right side output diagnostic object			
	1704	Lane Tracking Speaker - Left Side	Top Level				Lane tracking left side output diagnostic object			
	1705	Forward View Imager System	Top Level				Forward Imager system condition			
	1706	SPN Conversion Method	-73	65226	6.8					
	1709	Transmission Controller Power Relay	Top Level							
	1710	Lane Tracking Status Left Side	-71	65115	1.5	2	Indicates whether left side is tracking lane			
	1711	Lane Tracking Status Right Side	-71	65115	1.3	2	Indicates whether right side is tracking lane.			
(R)	1712	Engine Extended Range Requested Speed Control Range Upper Limit (Engine configuration)	-71	65251	29-30	16	The maximum engine speed regardless of load that the engine will allow when operating in a speed control/limit mode, excluding any maximum momentary engine override speed, if supported.			
	1713	Hydraulic Oil Filter Restriction Switch	-71	65128	2.1	2	This switch indicates whether hydraulic oil filter is clogged.			
	1714	Operator Seat Direction Switch	-71	57344	4.5	2	Senses whether the operator seat is in the forward driving position.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1715	Drivers Demand Retarder - Percent Torque	-71	61440	6	8	The Drivers demand retarder – percent torque is the maximum torque selected by the driver when one or more modes are selected by the driver			
	1716	Retarder Selection, non-engine	-71	61440	7	8	The “Retarder Selection, non-engine” is the position of the driver’s selector for retarders that are not part of the engine system, expressed as percent and determined by the ratio of current position to the maximum possible position.			
	1717	Actual Maximum Available Retarder - Percent Torque	-71	61440	8	8	This is the maximum amount of torque that the retarder can immediately deliver.			
	1718	Damper Stiffness Request Front Axle	-71	53760	4	8	Demand value for the shock absorber control at the front axle.			
	1719	Damper Stiffness Request Rear Axle	-71	53760	5	8	Demand value for the shock absorber control at the rear axle.			
	1720	Damper Stiffness Request Lift / Tag Axle	-71	53760	6	8	Demand value for the shock absorber control at the lift or tag axle			
	1721	Relative Level Front Axle Left	-71	65113	1-2	16	Information of the height at the left side of the front axle referred to normal level 1			
	1722	Relative Level Front Axle Right	-71	65113	3-4	16	Information of the height at the right side of the front axle referred to normal level 1			
	1723	Relative Level Rear Axle Right	-71	65113	7-8	16	Information of the height at the left side of the rear axle referred to normal level 1			
	1724	Relative Level Rear Axle Left	-71	65113	5-6	16	Information of the height at the left side of the rear axle referred to normal level 1			
	1725	Bellow Pressure Front Axle Left	-71	65112	1-2	16	Information of the pressure of the air suspension bellow at the left side of the front axle			
	1726	Bellow Pressure Front Axle Right	-71	65112	3-4	16	Information of the pressure of the air suspension bellow at the right side of the front axle			
	1727	Bellow Pressure Rear Axle Left	-71	65112	5-6	16	Information of the pressure of the air suspension bellow at the left side of the rear axle			
	1728	Bellow Pressure Rear Axle Right	-71	65112	7-8	16	Information of the pressure of the air suspension bellow at the right side of the rear axle			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1729	Damper Stiffness Front Axle	-71	65111	1	8	Damper stiffness information of the shock absorber control at the front axle			
	1730	Damper Stiffness Rear Axle	-71	65111	2	8	Damper stiffness information of the shock absorber control at the rear axle			
	1731	Damper Stiffness Lift / Tag Axle	-71	65111	3	8	Damper stiffness information of the shock absorber control at the lift of tag axle			
	1732	Level Preset Front Axle Left	-71	53504	1-2	16	Set value for nominal level 'preset level' at the left side of the front axle. This value is referred to 'Normal level 1'.			
	1733	Nominal Level Rear Axle	-71	65114	1.5	4	Signal which indicates the nominal (desired) height of the rear axle to be controlled by the suspension system.			
	1734	Nominal Level Front Axle	-71	65114	1.1	4	Signal which indicates the nominal (desired) height of the front axle to be controlled by the suspension system.			
	1735	Level Preset Rear Axle Right	-71	53504	7-8	16	Set value for nominal level 'preset level' at the right side of the rear axle. This value is referred to 'Normal level 1'.			
	1736	Above Nominal Level Rear Axle	-71	65114	2.7	2	Signal which indicates whether the actual height of the rear axle is above the nominal (desired) level of the rear axle.			
	1737	Above Nominal Level Front Axle	-71	65114	2.5	2	Signal which indicates whether the actual height of the front axle is above the nominal (desired) level of the front axle.			
	1738	Below Nominal Level Front Axle	-71	65114	2.1	2	Signal which indicates whether the actual height of the front axle is below the nominal (desired) level for the front axle.			
	1739	Lifting Control Mode Front Axle	-71	65114	3.5	2	Signal which indicates the actual lifting level change at the front axle			
	1740	Lowering Control Mode Front Axle	-71	65114	3.1	2	Signal which indicates the actual lowering level change at the front axle			
(R)	1741	Level Control Mode	-71	65114	4.5	4	Signal which indicates the actual control mode of the air suspension system			
	1742	Kneeling Information	-71	65114	4.1	4	Signal which indicates the actual level change in case of kneeling function			
	1743	Lift Axle 1 Position	-71	65114	5.7	2	Signal which indicates the position / load condition of lift axle / tag axle #1.			
	1744	Door Release	-71	65114	5.5	2	Signal which indicates that the doors may be opened.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1745	Vehicle Motion Inhibit	-71	65114	5.3	2	Signal which indicates whether vehicle motion is inhibited.			
	1746	Security Device	-71	65114	5.1	2	The signal which indicates the status of the security device. An example of a security device is a curbstone feeler installed beneath the doors of a bus.			
	1747	Kneeling Control Mode Request	-71	53760	1.7	2	Command signal to select the kneeling functionality			
	1748	Kneeling Request Right Side	-71	53760	1.5	2	Command signal to activate the kneeling functionality on the right side of the vehicle			
	1749	Kneeling Request Left Side	-71	53760	1.3	2	Command signal to activate the kneeling functionality on the left side of the vehicle			
	1750	Nominal Level Request Rear Axle	-71	53760	2.5	4	Command signal to activate a level of the rear axle programmed and/or memorised in the ECU			
	1751	Nominal Level Request Front Axle	-71	53760	2.1	4	Command signal to activate a level of the front axle programmed and/or memorised in the ECU			
	1752	Lift Axle 1 Position Command	-71	53760	3.5	2	Signal to command the position/load condition of lift/tag axle #1.			
(R)	1753	Level Control Mode Request	-71	53760	3.1	4	Command signal to activate a level control mode			
	1754	Below Nominal Level Rear Axle	-71	65114	2.3	2	Signal which indicates whether the actual height of the rear axle is below the nominal (desired) level for the rear axle.			
	1755	Lowering Control Mode Rear Axle	-71	65114	3.3	2	Signal which indicates the actual lowering level change at the rear axle			
	1756	Lifting Control Mode Rear Axle	-71	65114	3.7	2	Signal which indicates the actual lifting level change at the rear axle			
	1757	Level Preset Front Axle Right	-71	53504	3-4	16	Set value for nominal level 'preset level' at the right side of the front axle. This value is referred to 'Normal level 1'.			
	1758	Level Preset Rear Axle Left	-71	53504	5-6	16	Set value for nominal level 'preset level' at the left side of the rear axle. This value is referred to 'Normal level 1'.			
	1759	Blade Height Set Point - High Resolution	-71	65140	3-6	32	High resolution for the laser guided blade set point. The high resolution required for more accurate control and 'accurate' unit conversions.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1760	Gross Combination Vehicle Weight	-71	65136	3-4	16	The total weight of the truck and all attached trailers.			
	1761	Catalyst Tank Level	-71	65110	1	8	A special catalyst uses chemical substance to reach legal requirement for NOX emissions. Currently Indicates the level of the chemical substance within the catalyst tank. This substance is used to reduce NOX emissions.			
	1762	Hydraulic Pressure	-71	61448	1-2	16	Hydraulic pressure measured at the output of the hydraulic pump.			
(R)	1763	Engine Hydraulic Pressure Governor Mode Indicator	-71	61448	3.1	2	Mode for governor operation is hydraulic pressure control			
(R)	1764	Engine Hydraulic Pressure Governor Switch	-71	61448	3.3	2	Switch that sets the mode of hydraulic governor			
(R)	1765	Engine Requested Fuel Valve 1 Position	-71	65153	7	8	The requested position of the fuel valve 1 that is metering the gaseous fuel flow.			
(R)	1766	Engine Requested Fuel Valve 2 Position	-71	65153	8	8	The requested position of the fuel valve 2 that is metering the gaseous fuel flow as requested by the Engine Control Unit.			
	1767	Specific Heat Ratio	-71	65109	1-2	16	The specific heat ratio of the fuel.			
(R)	1768	Engine Low Limit Threshhold for Maximum RPM from Engine	-71	65108	1	8	Minimum allowable value for maximum continuous RPM from engine			
(R)	1769	Engine High Limit Threshhold for Minimum Continuous Engine RPM	-71	65108	2	8	Maximum allowable value for minimum continuous RPM from engine			
(R)	1770	Engine Low Limit Threshold for Maximum Torque from Engine	-71	65108	3	8	Minimum allowable value for maximum continuous torque. From engine			
(R)	1771	Engine High Limit Threshhold for Minimum Continuous Torque from Engine	-71	65108	4	8	Maximum allowable value for minimum continuous torque. From engine			
(R)	1772	Engine Maximum Continuous RPM	-71	65108	5	8	Applied limit for maximum continuous engine RPM			
(R)	1773	Engine Minimum Continuous RPM	-71	65108	6	8	Applied limit for minimum continuous engine RPM			
(R)	1774	Engine Maximum Continuous Torque	-71	65108	7	8	Applied limit for maximum continuous engine torque.			
(R)	1775	Engine Minimum Continuous Torque	-71	65108	8	8	Applied limit for minimum continuous engine torque			
	1776	Low Limit Threshhold for Maximum RPM from Retarder	-71	65107	1	8	Minimum allowable value for maximum continuous retarder speed			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1777	High Limit Threshhold for Minimum Continuous RPM from Retarder	-71	65107	2	8	Maximum allowable value for minimum continuous retarder speed			
	1778	Low Limit Threshhold for Maximum Torque from Retarder	-71	65107	3	8	Minimum allowable value for maximum continuous retarder torque.			
	1779	High Limit Threshhold for Minimum Continuous Torque from Retarder	-71	65107	4	8	Maximum allowable value for minimum continuous retarder torque.			
	1780	Maximum Continuous Retarder Speed	-71	65107	5	8	Applied limit for maximum continuous retarder RPM			
	1781	Minimum Continuous Retarder Speed	-71	65107	6	8	Applied limit for minimum continuous retarder RPM			
	1782	Maximum Continuous Retarder Torque	-71	65107	7	8	Applied limit for maximum continuous retarder torque.			
	1783	Minimum Continuous Retarder Torque	-71	65107	8	8	Applied limit for minimum continuous retarder torque			
(R)	1784	Engine Speed Limit Request - Minimum Continuous	-71	52992	1	8	Requested minimum continuous engine speed			
(R)	1785	Engine Speed Limit Request - Maximum Continuous	-71	52992	2	8	Requested maximum continuous engine speed			
(R)	1786	Engine Torque Limit Request - Minimum Continuous	-71	52992	3	8	Requested minimum continuous engine torque (operating range: 0 to 125%)			
(R)	1787	Engine Torque Limit Request - Maximum Continuous	-71	52992	4	8	Requested maximum continuous engine torque (operating range: 0 to 125%)			
	1788	Minimum Continuous Retarder Speed Limit Request	-71	52992	5	8	Requested minimum continuous retarder speed			
	1789	Maximum Continuous Retarder Speed Limit Request	-71	52992	6	8	Requested maximum continuous retarder speed			
	1790	Minimum Continuous Retarder Torque Limit Request	-71	52992	7	8	Requested minimum continuous retarder torque (operating range: -125 to 0%)			
	1791	Maximum Continuous Retarder Torque Limit Request	-71	52992	8	8	Requested maximum continuous retarder torque (operating range: -125 to 0%)			
	1792	Tractor-Mounted Trailer ABS Warning Signal	-71	61441	8.7	2	This parameter commands the tractor-mounted trailer ABS optical warning signal.		137-139	23
	1793	ATC/ASR Information Signal	-71	61441	6.7	2	This parameter commands the ATC/ASR driver information signal, for example a dash lamp.			
	1794	Engine Moment of Inertia	-71	65251	31-32	16	Moment of inertia for the engine, including items driven full-time by the engine such as fuel, oil and cooling pumps.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1795	Alternator Current (High Range/Resolution)	-71	65106	1-2	16	This parameter indicates the amount of electrical current output from the alternator of the main vehicle.			
	1796	ACC Distance Alert Signal	-71	65135	7.5	2	Signal to indicate to the operator that the ACC system is not able to maintain the distance to the target.			
	1797	ACC System Shutoff Warning	-71	65135	7.3	2	Signal to warn the driver of system deactivation due to non-driver actions. Example: Attempting to control vehicle speed below or above limits of ACC. This signal may be used to activate warning sounds or indicators.			
	1798	ACC Target Detected	-71	65135	7.1	2	Signal to indicate to the driver that the ACC system has detected a target.			
	1799	Requested ACC Distance Mode	-71	65105	1.6	3	The Requested Distance Control Mode to the ACC system from the operators interface.			
	1800	Battery 1 Temperature	-71	65104	1	8	Temperature of the battery 1.			
	1801	Battery 2 Temperature	-71	65104	2	8	Temperature of the battery 2.			
(R)	1802	Engine Intake Manifold 5 Temperature	-71	65189	4	8	Temperature of pre-combustion air found in intake manifold number 5 of engine air supply system.			
(R)	1803	Engine Intake Manifold 6 Temperature	-71	65189	5	8	Temperature of pre-combustion air found in intake manifold number 6 of engine air supply system.			
(R)	1804	Engine Start Enable Device 2	-71	64966	1.3	2	Devices that assist an engine in starting, e.g. intake heaters, ether, or an alternate/secondary starting aid.			
	1805	LED Display Mode Control	-71	65142	2.1	4	This parameter informs the system what the selected Display mode will be.			
	1806	LED Display Deadband Control	-71	65142	2.5	4	This parameter informs the system what the selected Display deadband will be.			
	1807	Steering Wheel Angle	-71	61449	1-2	16	The main operator`s steering wheel angle (on the steering column, not the actual wheel angle).			
	1808	Yaw Rate	-71	61449	4-5	16	Indicates the rotation about the vertical axis.			
	1809	Lateral Acceleration	-71	61449	6-7	16	Indicates a lateral acceleration of the vehicle.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1810	Longitudinal Acceleration	-71	61449	8	8	Indicates the longitudinal acceleration of the vehicle.			
	1811	Steering Wheel Turn Counter	-71	61449	3.1	6	Indicates number of steering wheel turns, absolute position or relative position at ignition on. Positive values indicate left turns.			
	1812	Steering Wheel Angle Sensor Type	-71	61449	3.7	2	Indicates whether the steering wheel angle sensor is capable of absolute measuring of the number of steering wheel turns or not (relative measuring to position at ignition on).			
	1813	VDC Information Signal	-71	65103	1.1	2	This parameter commands the VDC information signal, for example a dash lamp.			
	1814	VDC Fully Operational	-71	65103	1.3	2	Signal that indicates whether VDC is fully operational or whether its functionality is reduced by a permanent or temporary (e.g. low voltage) defect			
	1815	VDC brake light request	-71	65103	1.5	2	Indicates whether VDC requests to turn the vehicle brake lights on			
	1816	ROP Engine Control active	-71	65103	2.1	2	State Signal which indicates that the Roll Over Prevention (ROP) has commanded engine control to be active.			
	1817	YC Engine Control active	-71	65103	2.5	2	State Signal which indicates that the Yaw Control (YC) has commanded engine control to be active.			
	1818	ROP Brake Control active	-71	65103	2.3	2	State signal which indicates that Roll over Prevention (ROP) has activated brake control.			
	1819	YC Brake Control active	-71	65103	2.7	2	State signal which indicates that Yaw Control (YC) has activated brake control.			
	1820	Ramp / Wheel Chair Lift Position	-71	65102	1.5	2	Signal which indicates the actual position of the ramp / wheel chair lift			
	1821	Position of doors	-71	65102	1.1	4	Signal which indicates the actual position of the doors			
	1822	Lift Axle 2 Position	-71	65114	6.7	2	Signal which indicates the position / load condition of lift axle / tag axle #2.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1823	Rear Axle in Bumper Range	-71	65114	6.3	2	Signal which indicates that the vehicle height at the rear axle is within the bumper range			
	1824	Front Axle in Bumper Range	-71	65114	6.1	2	Signal which indicates that the vehicle height at the front axle is within the bumper range.			
	1825	Suspension Remote control 2	-71	65114	7.3	2	Signal which indicates that the suspension system is controlled by remote control #2. Remote control is an external unit to operate the suspension system.			
	1826	Suspension Remote Control 1	-71	65114	7.1	2	Signal which indicates that the suspension system is controlled by remote control #1. Remote control is an external unit to operate the suspension system.			
	1827	Suspension Control Refusal Information	-71	65114	8.1	4	Signal which indicates that the air suspension control cannot perform a request due to the operating conditions. It also provides a reason for the refusal.			
	1828	Lift Axle 2 Position Command	-71	53760	3.7	2	Signal to command the position / load condition of lift / tag axle #2.			
	1829	Kneeling Command - Rear Axle	-71	53760	7.3	2	Command signal to activate the kneeling functionality at the rear axle of the vehicle			
	1830	Kneeling Command - Front Axle	-71	53760	7.1	2	Command signal to activate the kneeling functionality at the front axle of the vehicle			
	1831	Electronic Shock Absorber Control Mode - Lift/Tag Axle	-71	65111	4.5	2	Signal which indicates the current mode of operation of the electronic shock absorber control at the lift/tag axle			
	1832	Electronic Shock Absorber Control Mode - Rear Axle	-71	65111	4.3	2	Signal which indicates the current mode of operation of the electronic shock absorber control at the rear axle			
	1833	Electronic Shock Absorber Control Mode - Front Axle	-71	65111	4.1	2	Signal which indicates the current mode of operation of the electronic shock absorber control at the front axle			
(R)	1834	Engine Total Average Fuel Rate	-71	65101	1-2	16	Average fuel rate, equal to total fuel used divided by total engine hours, over the life of the engine			
(R)	1835	Engine Total Average Fuel Economy	-71	65101	3-4	16	Average fuel economy, equal to total vehicle distance divided by total fuel used, over the life of the engine			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1836	Trailer ABS Status	-71	61441	8.5	2	State signal which indicates that ABS in the trailer is actively controlling the brakes.	209		
	1837	Convoy Driving Lamp Select	-71	65100	1.7	2	Black Out Convoy Driving Lamp Selection			
	1838	Convoy Lamp Select	-71	65100	1.5	2	Black Out Convoy Lamp Selection			
	1839	Front Black Out Marker Lamp Select	-71	65100	1.3	2	Front Black Out Marker Lamp Selection			
	1840	Rear Black Out Marker Select	-71	65100	1.1	2	Rear Black Out Marker Selection			
	1841	Black Out Brake/Stop Lamp Select	-71	65100	3.7	2	Black Out Brake/Stop Lamp Selection			
	1842	Black Out Work Lamp Select	-71	65100	4.7	2	Black Out Work Lamp Selection			
	1843	Night Vision Illuminator Select	-71	65100	4.1	2	Night Vision Illuminator Selection			
	1844	Operators Black Out Intensity Selection	-71	65100	8	8	Operators Selection of lamp intensity in black out mode			
	1845	Transmission Torque Limit	-71	65099	1-2	16	Parameter provided to the engine from the transmission as a torque limit to be invoked by the engine in the event that J1939 communication with the transmission is lost.			
(R)	1846	Engine Default Torque Limit	-71	65251	33-34	16	This parameter is broadcast by the engine to verify reception of the Transmission Torque Limit parameter (SPN 1845).			
	1849	Transmission Requested Range Display Flash State	-71	65098	1.7	2	State signal indicating a transmission request for the display of the Transmission Requested Range parameter (SPN 162) to flash or not to flash.			
	1850	Transmission Requested Range Display Blank State	-71	65098	1.5	2	State signal indicating a transmission request for the display of the Transmission Requested Range parameter (SPN162) to be blanked or not blanked.			
(R)	1851	Transmission Shift Inhibit Indicator	-71	65098	2.7	2	State signal indicating a transmission request for the Shift Inhibit Indicator to be active or inactive.			
	1852	Transmission Mode 1	-71	256	6.1	2	Indicates whether transmission mode 1 is enabled.			
	1853	Transmission Mode 2	-71	256	6.3	2	Indicates whether transmission mode 2 is enabled.			
	1854	Transmission Mode 3	-71	256	6.5	2	Indicates whether transmission mode 3 is enabled.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1855	Transmission Mode 4	-71	256	6.7	2	Indicates whether transmission mode 4 is enabled.			
	1856	Seat Belt Switch	-71	57344	4.7	2	State of switch used to determine if Seat Belt is buckled			
	1857	Winch Oil Pressure Switch	-71	65128	2.3	2	State of switch used to determine if Winch Oil Pressure is above desired minimum			
	1858	Intermittent Wiper Control	Top Level				Output driver for an intermittent windshield wiper motor			
	1859	Ground Based Implement Speed	ISO 11783-7	65097	1-2	16	Actual ground speed of a machine, measured by a sensor such as RADAR.			
	1860	Ground Based Implement Distance	ISO 11783-7	65097	3-6	32	Actual distance travelled by a machine based on measurements from a sensor such as RADAR			
	1861	Ground Based Direction	ISO 11783-7	65097	8.1	2	A measured signal indicating either forward or reverse as the direction of travel. When speed is zero, indicate the last travel direction until a different direction is detected.			
	1862	Wheel Based Speed	ISO 11783-7	65096	1-2	16	A value of the speed of a machine as calculated from the measured wheel or tail shaft speed.			
	1863	Wheel Based Distance	ISO 11783-7	65096	3-6	32	The distance travelled by a machine as calculated from wheel or tail shaft speed.			
	1864	Wheel Based Direction	ISO 11783-7	65096	8.1	2	A measured signal indicating either forward or reverse as the direction of travel.			
	1865	Key Switch NOT OFF	ISO 11783-7	65096	8.3	2	Indicates the Key Switch of the tractor or power unit is NOT in the Off position.			
	1866	Maximum Time of Tractor Power	ISO 11783-7	65096	7	8	The maximum time of remaining tractor or power unit supplied electrical power at the current load.			
	1867	Maintain ECU Power	ISO 11783-7	65095	1.7	2	Request to the Tractor ECU to maintain ECU_PWR power for the next 2 seconds.			
	1868	Maintain Acuator Power	ISO 11783-7	65095	1.5	2	Request to the Tractor ECU to maintain PWR power for the next 2 seconds.			
	1869	Implement Transport State	ISO 11783-7	65095	2.7	2	Indicates the transport state of an implement connected to a tractor or power unit.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1870	Implement Park State	ISO 11783-7	65095	2.5	2	Indicates the state of an implement where it may be disconnected from a tractor or power unit.			
	1871	Implement Work State	ISO 11783-7	65095	2.3	2	Indicates that an implement is connected to a tractor or power unit and is ready for work			
	1872	Front Hitch Position	ISO 11783-7	65094	1	8	The measured position of the front three-point-hitch.			
	1873	Rear Hitch Position	ISO 11783-7	65093	1	8	The measured position of the rear three-point-hitch.			
	1874	Front Hitch Position Command	ISO 11783-7	65090	1	8	Command to allow the position of the front three-point-hitch to be set.			
	1875	Rear Hitch Position Command	ISO 11783-7	65090	2	8	Command to allow the position of the rear three-point-hitch to be set.			
	1876	Front Hitch In-work Indication	ISO 11783-7	65094	2.7	2	A measured signal indicating that the front hitch is positioned below (in-work) or above (out-of-work) an adjustable switching threshold.			
	1877	Rear Hitch In-work Indication	ISO 11783-7	65093	2.7	2	A measured signal indicating that the rear hitch is positioned below (in-work) or above (out-of-work) an adjustable switching threshold.			
	1878	Front Draft	ISO 11783-7	65094	4-5	16	The apparent horizontal force applied to the front hitch by an implement.			
	1879	Rear Draft	ISO 11783-7	65093	4-5	16	The apparent horizontal force applied to the rear hitch by an implement.			
	1880	Front Nominal Lower Link Force	ISO 11783-7	65094	3	8	This measurement provides an indication of draft at the lower links of the front three point hitch.			
	1881	Rear Nominal Lower Link Force	ISO 11783-7	65093	3	8	This measurement provides an indication of draft at the lower links of the front three point hitch.			
	1882	Front PTO output shaft speed	ISO 11783-7	65092	1-2	16	The measured rotational speed of the front power take off (PTO) output shaft.			
	1883	Rear PTO output shaft speed	ISO 11783-7	65091	1-2	16	The measured rotational speed of the rear power take off (PTO) output shaft.			
	1884	Front PTO Output Shaft Speed Set Point	ISO 11783-7	65092	3-4	16	The measured value of the set point of the rotational speed of the front power take off (PTO) output shaft.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1885	Rear PTO Output Shaft Speed Set Point	ISO 11783-7	65091	3-4	16	The measured value of the set point of the rotational speed of the rear power take off (PTO) output shaft.			
	1886	Front PTO Output Shaft Speed Set Point Command	ISO 11783-7	65090	3-4	16	The command to set the rotational speed of the front power take off (PTO) output shaft.			
	1887	Rear PTO Output Shaft Speed Set Point Command [1]	ISO 11783-7	65090	5-6	16	The command to set the rotational speed of the rear power take off (PTO) output shaft.			
	1887	Rear PTO Output Shaft Speed Set Point Command [1]	ISO 11783-7	65090	7.5	16	The command to set the rotational speed of the rear power take off (PTO) output shaft.			
	1888	Front Power Take Off Engagement	ISO 11783-7	65092	5.7	2	A measured signal indicating that the front power take off is engaged or disengage.			
	1889	Front Power Take Off Mode	ISO 11783-7	65092	5.5	2	A measured signal indicating that the front power take off mode is either 540 or 1000 rpm.			
	1890	Rear Power Take Off Mode	ISO 11783-7	65091	5.5	2	A measured signal indicating that the rear power take off mode is either 540 or 1000 rpm.			
	1891	Front Power Take Off Economy Mode	ISO 11783-7	65092	5.3	2	A measured signal indicating that the front power take off economy mode is engaged or disengaged.			
	1892	Rear Power Take Off Economy Mode	ISO 11783-7	65091	5.3	2	A measured signal indicating that the rear power take off economy mode is engaged or disengaged.			
	1893	Front Power Take Off Engagement Command	ISO 11783-7	65090	7.7	2	The command to engage or disengage the front power take off .			
	1894	Rear Power Take Off Engagement Command	ISO 11783-7			2	The command to engage or disengage the rear power take off .			
	1895	Front Power Take Off Mode Command	ISO 11783-7	65090	8.7	2	The command to select the mode of the front power take off .			
	1896	Rear Power Take Off Mode Command	ISO 11783-7	65090	8.5	2	The command to select the mode of the rear power take off .			
	1897	Front Power Take Off Economy Mode Command	ISO 11783-7	65090	8.3	2	The command to engage or disengage the front power take off's economy mode.			
	1898	Rear Power Take Off Economy Mode Command	ISO 11783-7	65090	8.1	2	The command to engage or disengage the rear power take off's economy mode.			
	1899	Aux Valve 0 Extend Port Measured Flow	ISO 11783-7	65056	1	8	The measured flow through the extend port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1900	Aux Valve 0 Retract Port Measured Flow	ISO 11783-7	65056	2	8	The measured flow through the retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1901	Aux Valve 0 Extend Port Estimated Flow	ISO 11783-7	65040	1	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	1902	Aux Valve 0 Retract Port Estimated Flow	ISO 11783-7	65040	2	8	The value reported by the controller of flow through the retract port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	1903	Aux Valve 0 State	ISO 11783-7	65040	3.1	4	The measured state of the auxiliary valve. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			
	1904	Aux Valve 0 Extend Port Pressure	ISO 11783-7	65056	3-4	16	The measured nominal pressure at the extend port of an auxiliary valve of a tractor.			
	1905	Aux Valve 0 Retract Port Pressure	ISO 11783-7	65056	5-6	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor.			
	1906	Aux Valve 0 Return Port Pressure	ISO 11783-7	65056	7	8	The measured nominal pressure at the return port of an auxiliary valve of a tractor.			
	1907	Aux Valve 0 Port Flow Command	ISO 11783-7	65072	1	8	The command to set the flow through the extend or retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1908	Aux Valve 0 State command	ISO 11783-7	65072	3.1	4	Command for setting the auxiliary valve state.			
	1909	Aux Valve 0 Fail Safe Mode Command	ISO 11783-7	65072	3.7	2	Command for setting the fail safe mode of an auxiliary valve.			
	1910	Aux Valve 0 Fail Safe Mode	ISO 11783-7	65040	3.7	2	The measured state the fail safe mode of an auxiliary valve.			
	1911	Aux Valve 1 Extend Port Measured Flow	ISO 11783-7	65057	1	8	The measured flow through the extend port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1912	Aux Valve 1 Retract Port Measured Flow	ISO 11783-7	65057	2	8	The measured flow through the retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1913	Aux Valve 1 Extend Port Estimated Flow	ISO 11783-7	65041	1	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	1914	Aux Valve 1 Retract Port Estimated Flow	ISO 11783-7	65041	2	8	The value reported by the controller of flow through the retract port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	1915	Aux Valve 1 State	ISO 11783-7	65041	3.1	4	The measured state of the auxiliary valve. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			
	1916	Aux Valve 1 Extend Port Pressure	ISO 11783-7	65057	3-4	16	The measured nominal pressure at the extend port of an auxiliary valve of a tractor.			
	1917	Aux Valve 1 Retract Port Pressure	ISO 11783-7	65057	5-6	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor.			
	1918	Aux Valve 1 Return Port Pressure	ISO 11783-7	65057	7	8	The measured nominal pressure at the return port of an auxiliary valve of a tractor.			
	1919	Aux Valve 1 Port Flow Command	ISO 11783-7	65073	1	8	The command to set the flow through the extend or retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1920	Aux Valve 1 State Command	ISO 11783-7	65073	3.1	4	Command for setting the auxiliary valve state.			
	1921	Aux Valve 1 Fail Safe Mode Command	ISO 11783-7	65073	3.7	2	Command for setting the fail safe mode of an auxiliary valve.			
	1922	Aux Valve 1 Fail Safe Mode	ISO 11783-7	65041	3.7	2	The measured state the fail safe mode of an auxiliary valve.			
	1923	Aux Valve 2 Extend Port Measured Flow	ISO 11783-7	65058	1	8	The measured flow through the extend port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1924	Aux Valve 2 Retract Port Measured Flow	ISO 11783-7	65058	2	8	The measured flow through the retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1925	Aux Valve 2 Extend Port Estimated Flow	ISO 11783-7	65042	1	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1926	Aux Valve 2 Retract Port Estimated Flow	ISO 11783-7	65042	2	8	The value reported by the controller of flow through the retract port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	1927	Aux Valve 2 State	ISO 11783-7	65042	3.1	4	The measured state of the auxiliary valve. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			
	1928	Aux Valve 2 Extend Port Pressure	ISO 11783-7	65058	3-4	16	The measured nominal pressure at the extend port of an auxiliary valve of a tractor.			
	1929	Aux Valve 2 Retract Port Pressure	ISO 11783-7	65058	5-6	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor.			
	1930	Aux Valve 2 Return Port Pressure	ISO 11783-7	65058	7	8	The measured nominal pressure at the return port of an auxiliary valve of a tractor.			
	1931	Aux Valve 2 Port Flow Command	ISO 11783-7	65074	1	8	The command to set the flow through the extend or retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1932	Aux Valve 2 State Command	ISO 11783-7	65074	3.1	4	Command for setting the auxiliary valve state.			
	1933	Aux Valve 2 Fail Safe Mode Command	ISO 11783-7	65074	3.7	2	Command for setting the fail safe mode of an auxiliary valve.			
	1934	Aux Valve 2 Fail Safe Mode	ISO 11783-7	65042	3.7	2	The measured state the fail safe mode of an auxiliary valve.			
	1935	Aux Valve 3 Extend Port Measured Flow	ISO 11783-7	65059	1	8	The measured flow through the extend port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1936	Aux Valve 3 Retract Port Measured Flow	ISO 11783-7	65059	2	8	The measured flow through the retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1937	Aux Valve 3 Extend Port Estimated Flow	ISO 11783-7	65043	1	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	1938	Aux Valve 3 Retract Port Estimated Flow	ISO 11783-7	65043	2	8	The value reported by the controller of flow through the retract port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1939	Aux Valve 3 State	ISO 11783-7	65043	3.1	4	The measured state of the auxiliary valve. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			
	1940	Aux Valve 3 Extend Port Pressure	ISO 11783-7	65059	3-4	16	The measured nominal pressure at the extend port of an auxiliary valve of a tractor.			
	1941	Aux Valve 3 Retract Port Pressure [1]	ISO 11783-7	65059	7	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor.			
	1941	Aux Valve 3 Retract Port Pressure [1]	ISO 11783-7	65059	5-6	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor.			
	1942	Aux Valve 3 Return Port Pressure	ISO 11783-7			8	The measured nominal pressure at the return port of an auxiliary valve of a tractor.			
	1943	Aux Valve 3 Port Flow Command	ISO 11783-7	65075	1	8	The command to set the flow through the extend or retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1944	Aux Valve 3 State Command	ISO 11783-7	65075	3.1	4	Command for setting the auxiliary valve state.			
	1945	Aux Valve 3 Fail Safe Mode Command	ISO 11783-7	65075	3.7	2	Command for setting the fail safe mode of an auxiliary valve.			
	1946	Aux Valve 3 Fail Safe Mode	ISO 11783-7	65043	3.7	2	The measured state the fail safe mode of an auxiliary valve.			
	1947	Aux Valve 4 Extend Port Measured Flow	ISO 11783-7	65060	1	8	The measured flow through the extend port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1948	Aux Valve 4 Retract Port Measured Flow	ISO 11783-7	65060	2	8	The measured flow through the retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1949	Aux Valve 4 Extend Port Estimated Flow	ISO 11783-7	65044	1	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	1950	Aux Valve 4 Retract Port Estimated Flow	ISO 11783-7	65044	2	8	The value reported by the controller of flow through the retract port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1951	Aux Valve 4 State	ISO 11783-7	65044	3.1	4	The measured state of the auxiliary valve. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			
	1952	Aux Valve 4 Extend Port Pressure	ISO 11783-7	65060	3-4	16	The measured nominal pressure at the extend port of an auxiliary valve of a tractor.			
	1953	Aux Valve 4 Retract Port Pressure	ISO 11783-7	65060	5-6	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor.			
	1954	Aux Valve 4 Return Port Pressure	ISO 11783-7	65060	7	8	The measured nominal pressure at the return port of an auxiliary valve of a tractor.			
	1955	Aux Valve 4 Port Flow Command	ISO 11783-7	65076	1	8	The command to set the flow through the extend or retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1956	Aux Valve 4 State Command	ISO 11783-7	65076	3.1	4	Command for setting the auxiliary valve state.			
	1957	Aux Valve 4 Fail Safe Mode Command	ISO 11783-7	65076	3.7	2	Command for setting the fail safe mode of an auxiliary valve.			
	1958	Aux Valve 4 Fail Safe Mode	ISO 11783-7	65044	3.7	2	The measured state the fail safe mode of an auxiliary valve.			
	1959	Aux Valve 5 Extend Port Measured Flow	ISO 11783-7	65061	1	8	The measured flow through the extend port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1960	Aux Valve 5 Retract Port Measured Flow	ISO 11783-7	65061	2	8	The measured flow through the retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1961	Aux Valve 5 Extend Port Estimated Flow	ISO 11783-7	65045	1	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	1962	Aux Valve 5 Retract Port Estimated Flow	ISO 11783-7	65045	2	8	The value reported by the controller of flow through the retract port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	1963	Aux Valve 5 State	ISO 11783-7	65045	3.1	4	The measured state of the auxiliary valve. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1964	Aux Valve 5 Extend Port Pressure	ISO 11783-7	65061	3-4	16	The measured nominal pressure at the extend port of an auxiliary valve of a tractor.			
	1965	Aux Valve 5 Retract Port Pressure	ISO 11783-7	65061	5-6	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor.			
	1966	Aux Valve 5 Return Port Pressure	ISO 11783-7	65061	7	8	The measured nominal pressure at the return port of an auxiliary valve of a tractor.			
	1967	Aux Valve 5 Port Flow Command	ISO 11783-7	65077	1	8	The command to set the flow through the extend or retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1968	Aux Valve 5 State Command	ISO 11783-7	65077	3.1	4	Command for setting the auxiliary valve state.			
	1969	Aux Valve 5 Fail Safe Mode Command	ISO 11783-7	65077	3.7	2	Command for setting the fail safe mode of an auxiliary valve.			
	1970	Aux Valve 5 Fail Safe Mode	ISO 11783-7	65045	3.7	2	The measured state the fail safe mode of an auxiliary valve.			
	1971	Aux Valve 6 Extend Port Measured Flow	ISO 11783-7	65062	1	8	The measured flow through the extend port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1972	Aux Valve 6 Retract Port Measured Flow	ISO 11783-7	65062	2	8	The measured flow through the retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1973	Aux Valve 6 Extend Port Estimated Flow	ISO 11783-7	65046	1	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	1974	Aux Valve 6 Retract Port Estimated Flow	ISO 11783-7	65046	2	8	The value reported by the controller of flow through the retract port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	1975	Aux Valve 6 State	ISO 11783-7	65046	3.1	4	The measured state of the auxiliary valve. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			
	1976	Aux Valve 6 Extend Port Pressure	ISO 11783-7	65062	3-4	16	The measured nominal pressure at the extend port of an auxiliary valve of a tractor.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1977	Aux Valve 6 Retract Port Pressure	ISO 11783-7	65062	5-6	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor.			
	1978	Aux Valve 6 Return Port Pressure	ISO 11783-7	65062	7	8	The measured nominal pressure at the return port of an auxiliary valve of a tractor.			
	1979	Aux Valve 6 Port Flow Command	ISO 11783-7	65078	1	8	The command to set the flow through the extend or retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1980	Aux Valve 6 State Command	ISO 11783-7	65078	3.1	4	Command for setting the auxiliary valve state.			
	1981	Aux Valve 6 Fail Safe Mode Command	ISO 11783-7	65078	3.7	2	Command for setting the fail safe mode of an auxiliary valve.			
	1982	Aux Valve 6 Fail Safe Mode	ISO 11783-7	65046	3.7	2	The measured state the fail safe mode of an auxiliary valve.			
	1983	Aux Valve 7 Extend Port Measured Flow	ISO 11783-7	65063	1	8	The measured flow through the extend port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1984	Aux Valve 7 Retract Port Measured Flow	ISO 11783-7	65063	2	8	The measured flow through the retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1985	Aux Valve 7 Extend Port Estimated Flow	ISO 11783-7	65047	1	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	1986	Aux Valve 7 Retract Port Estimated Flow	ISO 11783-7	65047	2	8	The value reported by the controller of flow through the retract port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	1987	Aux Valve 7 State	ISO 11783-7	65047	3.1	4	The measured state of the auxiliary valve. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			
	1988	Aux Valve 7 Extend Port Pressure	ISO 11783-7	65063	3-4	16	The measured nominal pressure at the extend port of an auxiliary valve of a tractor.			
	1989	Aux Valve 7 Retract Port Pressure	ISO 11783-7	65063	5-6	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor.			
	1990	Aux Valve 7 Return Port Pressure	ISO 11783-7	65063	7	8	The measured nominal pressure at the return port of an auxiliary valve of a tractor.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	1991	Aux Valve 7 Port Flow Command	ISO 11783-7	65079	1	8	The command to set the flow through the extend or retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1992	Aux Valve 7 State command	ISO 11783-7	65079	3.1	4	Command for setting the auxiliary valve state.			
	1993	Aux Valve 7 Fail Safe Mode Command	ISO 11783-7	65079	3.7	2	Command for setting the fail safe mode of an auxiliary valve.			
	1994	Aux Valve 7 Fail Safe Mode	ISO 11783-7	65047	3.7	2	The measured state the fail safe mode of an auxiliary valve.			
	1995	Aux Valve 8 Extend Port Measured Flow	ISO 11783-7	65064	1	8	The measured flow through the extend port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1996	Aux Valve 8 Retract Port Measured Flow	ISO 11783-7	65064	2	8	The measured flow through the retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	1997	Aux Valve 8 Extend Port Estimated Flow	ISO 11783-7	65048	1	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	1998	Aux Valve 8 Retract Port Estimated Flow	ISO 11783-7	65048	2	8	The value reported by the controller of flow through the retract port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	1999	Aux Valve 8 State	ISO 11783-7	65048	3.1	4	The measured state of the auxiliary valve. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			
	2000	Source Address 0	-21			8				
	2001	Source Address 1	-21			8				
	2002	Source Address 2	-21			8				
	2003	Source Address 3	-21			8				
	2004	Source Address 4	-21			8				
	2005	Source Address 5	-21			8				
	2006	Source Address 6	-21			8				
	2007	Source Address 7	-21			8				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2008	Source Address 8	-21			8				
	2009	Source Address 9	-21			8				
	2010	Source Address 10	-21			8				
	2011	Source Address 11	-21			8				
	2012	Source Address 12	-21			8				
	2013	Source Address 13	-21			8				
	2014	Source Address 14	-21			8				
	2015	Source Address 15	-21			8				
	2016	Source Address 16	-21			8				
	2017	Source Address 17	-21			8				
	2018	Source Address 18	-21			8				
	2019	Source Address 19	-21			8				
	2020	Source Address 20	-21			8				
	2021	Source Address 21	-21			8				
	2022	Source Address 22	-21			8				
	2023	Source Address 23	-21			8				
	2024	Source Address 24	-21			8				
	2025	Source Address 25	-21			8				
	2026	Source Address 26	-21			8				
	2027	Source Address 27	-21			8				
	2028	Source Address 28	-21			8				
	2029	Source Address 29	-21			8				
	2030	Source Address 30	-21			8				
	2031	Source Address 31	-21			8				
	2032	Source Address 32	-21			8				
	2033	Source Address 33	-21			8				
	2034	Source Address 34	-21			8				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2035	Source Address 35	-21			8				
	2036	Source Address 36	-21			8				
	2037	Source Address 37	-21			8				
	2038	Source Address 38	-21			8				
	2039	Source Address 39	-21			8				
	2040	Source Address 40	-21			8				
	2041	Source Address 41	-21			8				
	2042	Source Address 42	-21			8				
	2043	Source Address 43	-21			8				
	2044	Source Address 44	-21			8				
	2045	Source Address 45	-21			8				
	2046	Source Address 46	-21			8				
	2047	Source Address 47	-21			8				
	2048	Source Address 48	-21			8				
	2049	Source Address 49	-21			8				
	2050	Source Address 50	-21			8				
	2051	Source Address 51	-21			8				
	2052	Source Address 52	-21			8				
	2053	Source Address 53	-21			8				
	2054	Source Address 54	-21			8				
	2055	Source Address 55	-21			8				
	2056	Source Address 56	-21			8				
	2057	Source Address 57	-21			8				
	2058	Source Address 58	-21			8				
	2059	Source Address 59	-21			8				
	2060	Source Address 60	-21			8				
	2061	Source Address 61	-21			8				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2062	Source Address 62	-21			8				
	2063	Source Address 63	-21			8				
	2064	Source Address 64	-21			8				
	2065	Source Address 65	-21			8				
	2066	Source Address 66	-21			8				
	2067	Source Address 67	-21			8				
	2068	Source Address 68	-21			8				
	2069	Source Address 69	-21			8				
	2070	Source Address 70	-21			8				
	2071	Source Address 71	-21			8				
	2072	Source Address 72	-21			8				
	2073	Source Address 73	-21			8				
	2074	Source Address 74	-21			8				
	2075	Source Address 75	-21			8				
	2076	Source Address 76	-21			8				
	2077	Source Address 77	-21			8				
	2078	Source Address 78	-21			8				
	2079	Source Address 79	-21			8				
	2080	Source Address 80	-21			8				
	2081	Source Address 81	-21			8				
	2082	Source Address 82	-21			8				
	2083	Source Address 83	-21			8				
	2084	Source Address 84	-21			8				
	2085	Source Address 85	-21			8				
	2086	Source Address 86	-21			8				
	2087	Source Address 87	-21			8				
	2088	Source Address 88	-21			8				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2089	Source Address 89	-21			8				
	2090	Source Address 90	-21			8				
	2091	Source Address 91	-21			8				
	2092	Source Address 92	-21			8				
	2093	Source Address 93	-21			8				
	2094	Source Address 94	-21			8				
	2095	Source Address 95	-21			8				
	2096	Source Address 96	-21			8				
	2097	Source Address 97	-21			8				
	2098	Source Address 98	-21			8				
	2099	Source Address 99	-21			8				
	2100	Source Address 100	-21			8				
	2101	Source Address 101	-21			8				
	2102	Source Address 102	-21			8				
	2103	Source Address 103	-21			8				
	2104	Source Address 104	-21			8				
	2105	Source Address 105	-21			8				
	2106	Source Address 106	-21			8				
	2107	Source Address 107	-21			8				
	2108	Source Address 108	-21			8				
	2109	Source Address 109	-21			8				
	2110	Source Address 110	-21			8				
	2111	Source Address 111	-21			8				
	2112	Source Address 112	-21			8				
	2113	Source Address 113	-21			8				
	2114	Source Address 114	-21			8				
	2115	Source Address 115	-21			8				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2116	Source Address 116	-21			8				
	2117	Source Address 117	-21			8				
	2118	Source Address 118	-21			8				
	2119	Source Address 119	-21			8				
	2120	Source Address 120	-21			8				
	2121	Source Address 121	-21			8				
	2122	Source Address 122	-21			8				
	2123	Source Address 123	-21			8				
	2124	Source Address 124	-21			8				
	2125	Source Address 125	-21			8				
	2126	Source Address 126	-21			8				
	2127	Source Address 127	-21			8				
	2128	Source Address 128	-21			8				
	2129	Source Address 129	-21			8				
	2130	Source Address 130	-21			8				
	2131	Source Address 131	-21			8				
	2132	Source Address 132	-21			8				
	2133	Source Address 133	-21			8				
	2134	Source Address 134	-21			8				
	2135	Source Address 135	-21			8				
	2136	Source Address 136	-21			8				
	2137	Source Address 137	-21			8				
	2138	Source Address 138	-21			8				
	2139	Source Address 139	-21			8				
	2140	Source Address 140	-21			8				
	2141	Source Address 141	-21			8				
	2142	Source Address 142	-21			8				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2143	Source Address 143	-21			8				
	2144	Source Address 144	-21			8				
	2145	Source Address 145	-21			8				
	2146	Source Address 146	-21			8				
	2147	Source Address 147	-21			8				
	2148	Source Address 148	-21			8				
	2149	Source Address 149	-21			8				
	2150	Source Address 150	-21			8				
	2151	Source Address 151	-21			8				
	2152	Source Address 152	-21			8				
	2153	Source Address 153	-21			8				
	2154	Source Address 154	-21			8				
	2155	Source Address 155	-21			8				
	2156	Source Address 156	-21			8				
	2157	Source Address 157	-21			8				
	2158	Source Address 158	-21			8				
	2159	Source Address 159	-21			8				
	2160	Source Address 160	-21			8				
	2161	Source Address 161	-21			8				
	2162	Source Address 162	-21			8				
	2163	Source Address 163	-21			8				
	2164	Source Address 164	-21			8				
	2165	Source Address 165	-21			8				
	2166	Source Address 166	-21			8				
	2167	Source Address 167	-21			8				
	2168	Source Address 168	-21			8				
	2169	Source Address 169	-21			8				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2170	Source Address 170	-21			8				
	2171	Source Address 171	-21			8				
	2172	Source Address 172	-21			8				
	2173	Source Address 173	-21			8				
	2174	Source Address 174	-21			8				
	2175	Source Address 175	-21			8				
	2176	Source Address 176	-21			8				
	2177	Source Address 177	-21			8				
	2178	Source Address 178	-21			8				
	2179	Source Address 179	-21			8				
	2180	Source Address 180	-21			8				
	2181	Source Address 181	-21			8				
	2182	Source Address 182	-21			8				
	2183	Source Address 183	-21			8				
	2184	Source Address 184	-21			8				
	2185	Source Address 185	-21			8				
	2186	Source Address 186	-21			8				
	2187	Source Address 187	-21			8				
	2188	Source Address 188	-21			8				
	2189	Source Address 189	-21			8				
	2190	Source Address 190	-21			8				
	2191	Source Address 191	-21			8				
	2192	Source Address 192	-21			8				
	2193	Source Address 193	-21			8				
	2194	Source Address 194	-21			8				
	2195	Source Address 195	-21			8				
	2196	Source Address 196	-21			8				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2197	Source Address 197	-21			8				
	2198	Source Address 198	-21			8				
	2199	Source Address 199	-21			8				
	2200	Source Address 200	-21			8				
	2201	Source Address 201	-21			8				
	2202	Source Address 202	-21			8				
	2203	Source Address 203	-21			8				
	2204	Source Address 204	-21			8				
	2205	Source Address 205	-21			8				
	2206	Source Address 206	-21			8				
	2207	Source Address 207	-21			8				
	2208	Source Address 208	-21			8				
	2209	Source Address 209	-21			8				
	2210	Source Address 210	-21			8				
	2211	Source Address 211	-21			8				
	2212	Source Address 212	-21			8				
	2213	Source Address 213	-21			8				
	2214	Source Address 214	-21			8				
	2215	Source Address 215	-21			8				
	2216	Source Address 216	-21			8				
	2217	Source Address 217	-21			8				
	2218	Source Address 218	-21			8				
	2219	Source Address 219	-21			8				
	2220	Source Address 220	-21			8				
	2221	Source Address 221	-21			8				
	2222	Source Address 222	-21			8				
	2223	Source Address 223	-21			8				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2224	Source Address 224	-21			8				
	2225	Source Address 225	-21			8				
	2226	Source Address 226	-21			8				
	2227	Source Address 227	-21			8				
	2228	Source Address 228	-21			8				
	2229	Source Address 229	-21			8				
	2230	Source Address 230	-21			8				
	2231	Source Address 231	-21			8				
	2232	Source Address 232	-21			8				
	2233	Source Address 233	-21			8				
	2234	Source Address 234	-21			8				
	2235	Source Address 235	-21			8				
	2236	Source Address 236	-21			8				
	2237	Source Address 237	-21			8				
	2238	Source Address 238	-21			8				
	2239	Source Address 239	-21			8				
	2240	Source Address 240	-21			8				
	2241	Source Address 241	-21			8				
	2242	Source Address 242	-21			8				
	2243	Source Address 243	-21			8				
	2244	Source Address 244	-21			8				
	2245	Source Address 245	-21			8				
	2246	Source Address 246	-21			8				
	2247	Source Address 247	-21			8				
	2248	Source Address 248	-21			8				
	2249	Source Address 249	-21			8				
	2250	Source Address 250	-21			8				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2251	Source Address 251	-21			8				
	2252	Source Address 252	-21			8				
	2253	Source Address 253	-21			8				
	2254	Source Address 254	-21			8				
	2255	Source Address 255	-21			8				
	2256	Aux Valve 8 Extend Port Pressure	ISO 11783-7	65064	3-4	16	The measured nominal pressure at the extend port of an auxiliary valve of a tractor.			
	2257	Aux Valve 8 Retract Port Pressure	ISO 11783-7	65064	5-6	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor.			
	2258	Aux Valve 8 Return Port Pressure	ISO 11783-7	65064	7	8	The measured nominal pressure at the return port of an auxiliary valve of a tractor.			
	2259	Aux Valve 8 Port Flow Command	ISO 11783-7	65080	1	8	The command to set the flow through the extend or retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2260	Aux Valve 8 State Command	ISO 11783-7	65080	3.1	4	Command for setting the auxiliary valve state.			
	2261	Aux Valve 8 Fail Safe Mode Command	ISO 11783-7	65080	3.7	2	Command for setting the fail safe mode of an auxiliary valve.			
	2262	Aux Valve 8 Fail Safe Mode	ISO 11783-7	65048	3.7	2	The measured state the fail safe mode of an auxiliary valve.			
	2263	Aux Valve 9 Extend Port Measured Flow	ISO 11783-7	65065	1	8	The measured flow through the extend port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2264	Aux Valve 9 Retract Port Measured Flow	ISO 11783-7	65065	2	8	The measured flow through the retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2265	Aux Valve 9 Extend Port Estimated Flow	ISO 11783-7	65049	1	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	2266	Aux Valve 9 Retract Port Estimated Flow	ISO 11783-7	65049	2	8	The value reported by the controller of flow through the retract port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2267	Aux Valve 9 State	ISO 11783-7	65049	3.1	4	The measured state of the auxiliary valve. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			
	2268	Aux Valve 9 Extend Port Pressure	ISO 11783-7	65065	3-4	16	The measured nominal pressure at the extend port of an auxiliary valve of a tractor.			
	2269	Aux Valve 9 Retract Port Pressure	ISO 11783-7	65065	5-6	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor.			
	2270	Aux Valve 9 Return Port Pressure	ISO 11783-7	65065	7	8	The measured nominal pressure at the return port of an auxiliary valve of a tractor.			
	2271	Aux Valve 9 Port Flow Command	ISO 11783-7	65081	1	8	The command to set the flow through the extend or retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2272	Aux Valve 9 State Command	ISO 11783-7	65081	3.1	4	Command for setting the auxiliary valve state.			
	2273	Aux Valve 9 Fail Safe Mode Command	ISO 11783-7	65081	3.7	2	Command for setting the fail safe mode of an auxiliary valve.			
	2274	Aux Valve 9 Fail Safe Mode	ISO 11783-7	65049	3.7	2	The measured state the fail safe mode of an auxiliary valve.			
	2275	Aux Valve 10 Extend Port Measured Flow	ISO 11783-7	65066	1	8	The measured flow through the extend port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2276	Aux Valve 10 Retract Port Measured Flow	ISO 11783-7	65066	2	8	The measured flow through the retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2277	Aux Valve 10 Extend Port Estimated Flow	ISO 11783-7	65050	1	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	2278	Aux Valve 10 Retract Port Estimated Flow	ISO 11783-7	65050	2	8	The value reported by the controller of flow through the retract port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	2279	Aux Valve 10 State	ISO 11783-7	65050	3.1	4	The measured state of the auxiliary valve. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2280	Aux Valve 10 Extend Port Pressure	ISO 11783-7	65066	3-4	16	The measured nominal pressure at the extend port of an auxiliary valve of a tractor.			
	2281	Aux Valve 10 Retract Port Pressure	ISO 11783-7	65066	5-6	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor.			
	2282	Aux Valve 10 Return Port Pressure	ISO 11783-7	65066	7	8	The measured nominal pressure at the return port of an auxiliary valve of a tractor.			
	2283	Aux Valve 10 Port Flow Command	ISO 11783-7	65082	1	8	The command to set the flow through the extend or retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2284	Aux Valve 10 State Command	ISO 11783-7	65082	3.1	4	Command for setting the auxiliary valve state.			
	2285	Aux Valve 10 Fail Safe Mode Command	ISO 11783-7	65082	3.7	2	Command for setting the fail safe mode of an auxiliary valve.			
	2286	Aux Valve 10 Fail Safe Mode	ISO 11783-7	65050	3.7	2	The measured state the fail safe mode of an auxiliary valve.			
	2287	Aux Valve 11 Extend Port Measured Flow	ISO 11783-7	65067	1	8	The measured flow through the extend port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2288	Aux Valve 11 Retract Port Measured Flow	ISO 11783-7	65067	2	8	The measured flow through the retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2289	Aux Valve 11 Extend Port Estimated Flow	ISO 11783-7	65051	1	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	2290	Aux Valve 11 Retract Port Estimated Flow	ISO 11783-7	65051	2	8	The value reported by the controller of flow through the retract port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	2291	Aux Valve 11 State	ISO 11783-7	65051	3.1	4	The measured state of the auxiliary valve. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			
	2292	Aux Valve 11 Extend Port Pressure	ISO 11783-7	65067	3-4	16	The measured nominal pressure at the extend port of an auxiliary valve of a tractor.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2293	Aux Valve 11 Retract Port Pressure	ISO 11783-7	65067	5-6	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor.			
	2294	Aux Valve 11 Return Port Pressure	ISO 11783-7	65067	7	8	The measured nominal pressure at the return port of an auxiliary valve of a tractor.			
	2295	Aux Valve 11 Port Flow Command	ISO 11783-7	65083	1	8	The command to set the flow through the extend or retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2296	Aux Valve 11 State Command	ISO 11783-7	65083	3.1	4	Command for setting the auxiliary valve state.			
	2297	Aux Valve 11 Fail Safe Mode Command	ISO 11783-7	65083	3.7	2	Command for setting the fail safe mode of an auxiliary valve.			
	2298	Aux Valve 11 Fail Safe Mode	ISO 11783-7	65051	3.7	2	The measured state the fail safe mode of an auxiliary valve.			
	2299	Aux Valve 12 Extend Port Measured Flow	ISO 11783-7	65068	1	8	The measured flow through the extend port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2300	Aux Valve 12 Retract Port Measured Flow	ISO 11783-7	65068	2	8	The measured flow through the retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2301	Aux Valve 12 Extend Port Estimated Flow	ISO 11783-7	65052	1	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	2302	Aux Valve 12 Retract Port Estimated Flow	ISO 11783-7	65052	2	8	The value reported by the controller of flow through the retract port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	2303	Aux Valve 12 State	ISO 11783-7	65052	3.1	4	The measured state of the auxiliary valve. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			
	2304	Aux Valve 12 Extend Port Pressure	ISO 11783-7	65068	3-4	16	The measured nominal pressure at the extend port of an auxiliary valve of a tractor.			
	2305	Aux Valve 12 Retract Port Pressure	ISO 11783-7	65068	5-6	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor.			
	2306	Aux Valve 12 Return Port Pressure	ISO 11783-7	65068	7	8	The measured nominal pressure at the return port of an auxiliary valve of a tractor.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2307	Aux Valve 12 Port Flow Command	ISO 11783-7	65084	1	8	The command to set the flow through the extend or retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2308	Aux Valve 12 State Command	ISO 11783-7	65084	3.1	4	Command for setting the auxiliary valve state.			
	2309	Aux Valve 12 Fail Safe Mode Command	ISO 11783-7	65084	3.7	2	Command for setting the fail safe mode of an auxiliary valve.			
	2310	Aux Valve 12 Fail Safe Mode	ISO 11783-7	65052	3.7	2	The measured state the fail safe mode of an auxiliary valve.			
	2311	Aux Valve 13 Extend Port Measured Flow	ISO 11783-7	65069	1	8	The measured flow through the extend port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2312	Aux Valve 13 Retract Port Measured Flow	ISO 11783-7	65069	2	8	The measured flow through the retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2313	Aux Valve 13 Extend Port Estimated Flow	ISO 11783-7	65053	1	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	2314	Aux Valve 13 Retract Port Estimated Flow	ISO 11783-7	65053	2	8	The value reported by the controller of flow through the retract port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	2315	Aux Valve 13 State	ISO 11783-7	65053	3.1	4	The measured state of the auxiliary valve. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			
	2316	Aux Valve 13 Extend Port Pressure	ISO 11783-7	65069	3-4	16	The measured nominal pressure at the extend port of an auxiliary valve of a tractor.			
	2317	Aux Valve 13 Retract Port Pressure	ISO 11783-7	65069	5-6	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor.			
	2318	Aux Valve 13 Return Port Pressure	ISO 11783-7	65069	7	8	The measured nominal pressure at the return port of an auxiliary valve of a tractor.			
	2319	Aux Valve 13 Port Flow Command	ISO 11783-7	65085	1	8	The command to set the flow through the extend or retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2320	Aux Valve 13 State Command	ISO 11783-7	65085	3.1	4	Command for setting the auxiliary valve state.			
	2321	Aux Valve 13 Fail Safe Mode Command	ISO 11783-7	65085	3.7	2	Command for setting the fail safe mode of an auxiliary valve.			
	2322	Aux Valve 13 Fail Safe Mode	ISO 11783-7	65053	3.7	2	The measured state the fail safe mode of an auxiliary valve.			
	2323	Aux Valve 14 Extend Port Measured Flow	ISO 11783-7	65070	1	8	The measured flow through the extend port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2324	Aux Valve 14 Retract Port Measured Flow	ISO 11783-7	65070	2	8	The measured flow through the retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2325	Aux Valve 14 Extend Port Estimated Flow	ISO 11783-7	65054	1	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	2326	Aux Valve 14 Retract Port Estimated Flow	ISO 11783-7	65054	2	8	The value reported by the controller of flow through the retract port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	2327	Aux Valve 14 State	ISO 11783-7	65054	3.1	4	The measured state of the auxiliary valve. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			
	2328	Aux Valve 14 Extend Port Pressure	ISO 11783-7	65070	3-4	16	The measured nominal pressure at the extend port of an auxiliary valve of a tractor.			
	2329	Aux Valve 14 Retract Port Pressure	ISO 11783-7	65070	5-6	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor.			
	2330	Aux Valve 14 Return Port Pressure	ISO 11783-7	65070	7	8	The measured nominal pressure at the return port of an auxiliary valve of a tractor.			
	2331	Aux Valve 14 Port Flow Command	ISO 11783-7	65086	1	8	The command to set the flow through the extend or retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2332	Aux Valve 14 State Command	ISO 11783-7	65086	3.1	4	Command for setting the auxiliary valve state.			
	2333	Aux Valve 14 Fail Safe Mode Command	ISO 11783-7	65086	3.7	2	Command for setting the fail safe mode of an auxiliary valve.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2334	Aux Valve 14 Fail Safe Mode	ISO 11783-7	65054	3.7	2	The measured state the fail safe mode of an auxiliary valve.			
	2335	Aux Valve 15 Extend Port Measured Flow	ISO 11783-7	65071	1	8	The measured flow through the extend port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2336	Aux Valve 15 Retract Port Measured Flow	ISO 11783-7	65071	2	8	The measured flow through the retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2337	Aux Valve 15 Extend Port Estimated Flow	ISO 11783-7	65055	1	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	2338	Aux Valve 15 Retract Port Estimated Flow	ISO 11783-7	65055	2	8	The value reported by the controller of flow through the retract port of an auxiliary valve of a tractor which could be based on the commanded position of the valve.			
	2339	Aux Valve 15 State	ISO 11783-7	65055	3.1	4	The measured state of the auxiliary valve. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			
	2340	Aux Valve 15 Extend Port Pressure	ISO 11783-7	65071	3-4	16	The measured nominal pressure at the extend port of an auxiliary valve of a tractor.			
	2341	Aux Valve 15 Retract Port Pressure	ISO 11783-7	65071	5-6	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor.			
	2342	Aux Valve 15 Return Port Pressure	ISO 11783-7	65071	7	8	The measured nominal pressure at the return port of an auxiliary valve of a tractor.			
	2343	Aux Valve 15 Port Flow Command	ISO 11783-7	65087	1	8	The command to set the flow through the extend or retract port of an auxiliary valve of a tractor, expressed as a percentage of full flow.			
	2344	Aux Valve 15 State Command	ISO 11783-7	65087	3.1	4	Command for setting the auxiliary valve state.			
	2345	Aux Valve 15 Fail Safe Mode Command	ISO 11783-7	65087	3.7	2	Command for setting the fail safe mode of an auxiliary valve.			
	2346	Aux Valve 15 Fail Safe Mode	ISO 11783-7	65055	3.7	2	The measured state the fail safe mode of an auxiliary valve.			
	2347	High Beam Head Light Command	-71	65089	1.7	2	Command to activate or de-activate the tractor high beam head light lamps.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2348	High Beam Head Light Data	-71	65088	1.7	2	This parameter provides measured data from the tractor high beam head light lamps.			
	2349	Low Beam Head Light Command	-71	65089	1.5	2	Command to activate or de-activate the tractor low beam head light lamps.			
	2350	Low Beam Head Light Data	-71	65088	1.5	2	This parameter provides measured data from the tractor low beam head light lamps.			
	2351	Alternate Beam Head Light Command	-71	65089	1.3	2	Command to activate or de-activate the tractor alternate head lights (only low beam is available on alternate head lights).			
	2352	Alternate Beam Head Light Data	-71	65088	1.3	2	This parameter provides measured data from the tractor alternate beam head light lamps.			
	2353	Tractor Front Low Mounted Work Lights Command	-71	65089	6.5	2	Command to activate or de-activate the tractor front low mounted work lights.			
	2354	Tractor Front Low Mounted Work Lights	-71	65088	6.5	2	This parameter provides measured data from the tractor front low mounted work lights.			
	2355	Tractor Front High Mounted Work Lights Command	-71	65089	6.7	2	Command to activate or de-activate the tractor front high mounted work lights.			
	2356	Tractor Front High Mounted Work Lights	-71	65088	6.7	2	This parameter provides measured data from the tractor front high mounted work lights.			
	2357	Tractor Underside Mounted Work Lights Command	-71	65089	5.3	2	Command to activate or de-activate the tractor underside mounted work lights.			
	2358	Tractor Underside Mounted Work Lights	-71	65088	5.3	2	This parameter provides measured data from the tractor underside mounted work lights.			
	2359	Tractor Rear Low Mounted Work Lights Command	-71	65089	5.5	2	Command to activate or de-activate the tractor rear low mounted work lights.			
	2360	Tractor Rear Low Mounted Work Lights	-71	65088	5.5	2	This parameter provides measured data from the tractor rear low mounted work lights.			
	2361	Tractor Rear High Mounted Work Lights Command	-71	65089	5.7	2	Command to activate or de-activate the tractor rear high mounted work lights.			
	2362	Tractor Rear High Mounted Work Lights	-71	65088	5.7	2	This parameter provides measured data from the tractor rear high mounted work lights.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2363	Tractor Side Low Mounted Work Lights Command	-71	65089	6.1	2	Command to activate or de-activate the tractor side low mounted work lights.			
	2364	Tractor Side Low Mounted Work Lights	-71	65088	6.1	2	This parameter provides measured data from the tractor side low mounted work lights.			
	2365	Tractor Side High Mounted Work Lights Command	-71	65089	6.3	2	Command to activate or de-activate the tractor side high mounted work lights.			
	2366	Tractor Side High Mounted Work Lights	-71	65088	6.3	2	This parameter provides measured data from the tractor side high mounted work lights.			
	2367	Left Turn Signal Lights Command	-71	65089	2.7	2	Command to activate or de-activate left turn signal lights on the tractor and all connected implements			
	2368	Left Turn Signal Lights	-71	65088	2.7	2	This parameter provides measured data from the tractor and attached implement left turn signal lights.			
	2369	Right Turn Signal Lights Command	-71	65089	2.5	2	Command to activate or de-activate right turn signal lights on the tractor and all connected implements			
	2370	Right Turn Signal Lights	-71	65088	2.5	2	This parameter provides measured data from the tractor and attached implement right turn signal lights.			
	2371	Left Stop Light Command	-71	65089	3.7	2	Command to activate or de-activate the tractor and implement left stop lights			
	2372	Left Stop Light	-71	65088	3.7	2	This parameter provides measured data from the tractor and attached implement left stop lights.			
	2373	Right Stop Light Command	-71	65089	3.5	2	Command to activate or de-activate the tractor and implement right stop light			
	2374	Right Stop Light	-71	65088	3.5	2	This parameter provides measured data from the tractor and attached implement right stop lights.			
	2375	Center Stop Light Command	-71	65089	3.3	2	Command to activate or de-activate the tractor and implement center stop light			
	2376	Center Stop Light	-71	65088	3.3	2	This parameter provides measured data from the tractor and attached implement center stop lights.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2377	Tractor Marker Light Command	-71	65089	4.7	2	Command to activate or de-activate tractor and implement front position lights, rear red tail lights, side amber running lights, license plate lights and instrument and switch back lights.			
	2378	Tractor Marker Light	-71	65088	4.7	2	This parameter provides measured data from the tractor and attached implement marker lights, including front position lights, rear tail lights, side running lights, license plate lights and instruments and switch back lights.			
	2379	Implement Marker Light Command	-71	65089	4.5	2	Command to activate or de-activate implement front position lights, rear red tail lights, side amber running lights, license plate lights and instrument and switch back lights.			
	2380	Implement Marker Light	-71	65088	4.5	2	This parameter provides measured data from an attached implement marker lights, including front position lights, rear tail lights, side running lights, license plate lights and instruments and switch back lights.			
	2381	Tractor Clearance Light Command	-71	65089	4.3	2	Command to activate or de-activate the tractor high mounted clearance and center ID lights			
	2382	Tractor Clearance Light	-71	65088	4.3	2	This parameter provides measured data from the tractor high mounted clearance and center ID lights.			
	2383	Implement Clearance Light Command	-71	65089	4.1	2	Command to activate or de-activate the implement high mounted clearance and lights.			
	2384	Implement Clearance Light	-71	65088	4.1	2	This parameter provides measured data from an attached implement high mounted clearance lights.			
	2385	Rotating Beacon Light Command	-71	65089	2.3	2	Command to activate or de-activate slow moving vehicle indicator lights on tractor and/or implements.			
	2386	Rotating Beacon Light	-71	65088	2.3	2	This parameter provides measured data from the beacon light on tractor or attached implements.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2387	Tractor Front Fog Lights Command	-71	65089	2.1	2	Command to activate or de-activate tractor front fog lights			
	2388	Tractor Front Fog Lights	-71	65088	2.1	2	This parameter provides measured data from the tractor front fog lights.			
	2389	Rear Fog Light Command	-71	65089	5.1	2	Command to activate or de-activate tractor or implement rear fog lights.			
	2390	Rear Fog Lights	-71	65088	5.1	2	This parameter provides measured data from the tractor and/or implement rear fog lights.			
	2391	Back Up Light and Alarm Horn Command	-71	65089	3.1	2	Command to activate or de-activate the back up lights and/ or associated alarm if required.			
	2392	Back Up Light and Alarm Horn	-71	65088	3.1	2	This parameter provides measured data from the back up lights and/ or associated alarm.			
	2393	Lighting Data Request Command	-71	65089	8.1	2	Command to provide a response of the light state			
	2394	Implement Rear Work Light	-71	65088	8.7	2	This parameter provides measured data from the implement rear work lamps.			
	2395	Implement OEM Option 1 Light Command	-71	65089	7.3	2	Command to activate or de-activate an implement OEM option 1 light. This is provided to meet special needs on implements, such as tank inspection or filling lights.			
	2396	Implement OEM Option 1 Light	-71	65088	7.3	2	This parameter provides measured data from the implement OEM option 1 light.			
	2397	Implement OEM Option 2 Light Command	-71	65089	7.1	2	Command to activate or de-activate an implement OEM option 2 light. This is provided to meet special needs on implements, such as tank inspection or filling lights.			
	2398	Implement OEM Option 2 Light	-71	65088	7.1	2	This parameter provides measured data from the implement OEM option 2 light.			
	2399	Implement Left Forward Work Light Command	-71	65089	8.5	2	Command to activate or de-activate the forward facing work lights toward the left end of the implement.			
	2400	Implement Left Forward Work Light	-71	65088	8.5	2	This parameter provides measured data from the forward facing work lights toward the left end of the implement.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2401	Implement Right Forward Work Light Command	-71	65089	8.3	2	Command to activate or de-activate the forward facing work lights toward the right end of the implement.			
	2402	Implement Right Forward Work Light	-71	65088	8.3	2	This parameter provides measured data from the forward facing work lights toward the right end of the implement.			
	2403	Running Light Command	-71	65089	1.1	2	Command to activate or de-activate the tractor or powered vehicle running lights. Usually only used for on road vehicles.			
	2404	Running Light	-71	65088	1.1	2	This parameter provides measured data from the vehicle's running lights.			
	2405	Implement Rear Work Light Command	-71	65089	8.7	2	Command to activate or de-activate implement rear work lights. (This is also the same as Reversing Lights for truck applications.)			
	2406	Implement Right Facing Work Light Command	-71	65089	7.5	2	Command to activate or de-activate work lights mounted on an implement to illuminate beyond right end of the implement.			
	2407	Implement Right Facing Work Light	-71	65088	7.5	2	This parameter provides measured data from the work lights mounted on an implement to illuminate beyond right end of the implement.			
	2408	Rear Power Take Off Engagement	ISO 11783-7	65091	5.7	2	A measured signal indicating that the rear power take off is engaged or disengage.			
	2409	Number of Members in Working Set [1]	-81	64975	1	8	The number of members in a particular Working Set.			
	2409	Number of Members in Working Set [1]	-81	65037	1	8	The number of members in a particular Working Set.			
	2410	Language Code Command	ISO 11783-7	65039	1-2	16	Command sent to all ECUs which specifies the operator's desired language of information. ISO 11783 shall use the 2-character string country codes in ISO 639.			
	2411	Decimal Symbol Command	ISO 11783-7	65039	3.7	2	Command sent to all ECUs which specifies that a decimal point or Comma should be displayed.			
	2412	Date Command	ISO 11783-7	65039	4	8	Command sent to all ECUs which specifies the displayed order of the date.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2413	Time Command	ISO 11783-7	65039	3.5	2	Command sent to all ECUs which specifies the displayed format of the time			
	2414	Distance Unit Command	ISO 11783-7	65039	5.7	2	Command to specify the distance units			
	2415	Area Unit Command	ISO 11783-7	65039	5.5	2	Command to specify the area units			
	2416	Volume Unit Command	ISO 11783-7	65039	5.3	2	Command to specify the volume units			
	2417	Mass Unit Command	ISO 11783-7	65039	5.1	2	Command to specify the mass units			
	2418	Repetition Rate Parameter [1]	ISO 11783-7	52224	4-5	16	This parameter defines the repetition rate of the specified PGN.			
	2418	Repetition Rate Parameter [1]	ISO 11783-7	65038	4-5	16	This parameter defines the repetition rate of the specified PGN.			
	2419	Data Format/Error Condition [1]	ISO 11783-7	51968	1.6	2	This 2 bit parameter that indicates the format or availability of the data in the following Process Data Parameter.			
	2419	Data Format/Error Condition [1]	ISO 11783-7	52224	6.6	2	This 2 bit parameter that indicates the format or availability of the data in the following Process Data Parameter.			
	2419	Data Format/Error Condition [1]	ISO 11783-7	65038	6.6	2	This 2 bit parameter that indicates the format or availability of the data in the following Process Data Parameter.			
	2420	Process Data Type [1]	ISO 11783-7	51968	1.4	2	This 2 bit parameter indicates what the data in the following Process Data Parameters is to be used for.			
	2420	Process Data Type [1]	ISO 11783-7	52224	6.4	2	This 2 bit parameter indicates what the data in the following Process Data Parameters is to be used for.			
	2420	Process Data Type [1]	ISO 11783-7	65038	6.4	2	This 2 bit parameter indicates what the data in the following Process Data Parameters is to be used for.			
	2421	Process Data Modifier [1]	ISO 11783-7	51968	1.1	3	This 3 bit parameter that indicates how the data in the following Process Data Parameters is to be used when combined with the Process Data Type parameter.			
	2421	Process Data Modifier [1]	ISO 11783-7	52224	6.1	3	This 3 bit parameter that indicates how the data in the following Process Data Parameters is to be used when combined with the Process Data Type parameter.			

J1939 Reference								J1587 Reference		
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	2421	Process Data Modifier [1]	ISO 11783-7	65038	6.1	3	This 3 bit parameter that indicates how the data in the following Process Data Parameters is to be used when combined with the Process Data Type parameter.			
	2422	Count Number	ISO 11783-7	51968	2	8	This parameter indicates which member of the set of possible entities is being referenced. The means of generating this Count Number is explained in the following clause.			
	2423	Group Number	ISO 11783-7			8	This parameter is used by software within the Management Computer, in combination with Element Number, to produce a unique Count Number for each member of a particular set of entities that are on an Implement. Refer to ISO 11783-10[3].			
	2424	Element Number	ISO 11783-7			8	This parameter is used by software within the Management Computer, in combination with Group Number, to produce a unique Count Number for each member of a particular set of entities that are on an Implement. Refer to ISO 11783-10[3].			
	2425	Implement Type [1]	ISO 11783-7	51968	3.5	4	This 4 bit parameter indicates which data dictionary page is to be used to locate the identity of the following data.			
	2425	Implement Type [1]	ISO 11783-7	52224	7.5	4	This 4 bit parameter indicates which data dictionary page is to be used to locate the identity of the following data.			
	2425	Implement Type [1]	ISO 11783-7	65038	7.5	4	This 4 bit parameter indicates which data dictionary page is to be used to locate the identity of the following data.			
	2426	Implement Position [1]	ISO 11783-7	51968	3.1	4	This 4 bit parameter of this message will indicate which Implement is referenced within a set of identical Implements.			
	2426	Implement Position [1]	ISO 11783-7	52224	7.1	4	This 4 bit parameter of this message will indicate which Implement is referenced within a set of identical Implements.			
	2426	Implement Position [1]	ISO 11783-7	65038	7.1	4	This 4 bit parameter of this message will indicate which Implement is referenced within a set of identical Implements.			

J1939 Reference								J1587 Reference		
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	2427	Data Dictionary Row [1]	ISO 11783-7	51968	4.5	4	This 4 bit parameter indicates the Row that is to be used within the specific Data Dictionary Table identified by the Implement Type. This is the Group (GRUP) in LBS documents.			
	2427	Data Dictionary Row [1]	ISO 11783-7	52224	8.5	4	This 4 bit parameter indicates the Row that is to be used within the specific Data Dictionary Table identified by the Implement Type. This is the Group (GRUP) in LBS documents.			
	2427	Data Dictionary Row [1]	ISO 11783-7	65038	8.5	4	This 4 bit parameter indicates the Row that is to be used within the specific Data Dictionary Table identified by the Implement Type. This is the Group (GRUP) in LBS documents.			
	2428	Data Dictionary Column [1]	ISO 11783-7	51968	4.1	4	This 4 bit parameter indicates the Column that is to be used within the specific Data Dictionary Table identified by the Implement Type. This is the Instance (INST) in LBS documents.			
	2428	Data Dictionary Column [1]	ISO 11783-7	52224	8.1	4	This 4 bit parameter indicates the Column that is to be used within the specific Data Dictionary Table identified by the Implement Type. This is the Instance (INST) in LBS documents.			
	2428	Data Dictionary Column [1]	ISO 11783-7	65038	8.1	4	This 4 bit parameter indicates the Column that is to be used within the specific Data Dictionary Table identified by the Implement Type. This is the Instance (INST) in LBS documents.			
	2429	Process Variable Value	ISO 11783-7	51968	5-8	32	This 4 byte parameter contains the actual data for the Process Data Message.			
(R)	2430	Engine Coolant Level - Main Radiator	-71				Indicator of coolant level in main radiator or engine.			
(R)	2431	Engine Oil Rail High Pressure Leakage	-73				Indicates oil leakage in the high pressure oil rail of the engine.			
	2432	Engine Demand – Percent Torque	-71	61444	8	8	The requested torque output of the engine by all dynamic internal inputs, including smoke control, noise control and low and high speed governing.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	2433	Engine Exhaust Exhaust Gas Temperature - Right Manifold	-71	65031	1-2	16	Temperature of combustion byproducts within the right engine exhaust manifold.			
(R)	2434	Engine Exhaust Exhaust Gas Temperature - Left Manifold	-71	65031	3-4	16	Temperature of combustion byproducts within the left engine exhaust manifold.			
	2435	Sea Water Pump Outlet Pressure	-71	65172	3	8	Gauge pressure of liquid found at outlet of sea water pump in sea water cooling system.			
	2436	Generator Average AC Frequency	-75	65030	5-6	16	Average AC frequency measured at the generator output.			
	2437	Generator Phase A AC Frequency	-75	65027	5-6	16	AC frequency measured at the generator phase A output.			
	2438	Generator Phase B AC Frequency	-75	65024	5-6	16	AC frequency measured at the generator phase B output.			
	2439	Generator Phase C AC Frequency	-75	65021	5-6	16	AC frequency measured at the generator phase C output.			
	2440	Generator Average Line-Line AC RMS Voltage	-75	65030	1-2	16	Average Line to Line RMS voltage measured at the generator output.			
	2441	Generator Phase AB Line-Line AC RMS Voltage	-75	65027	1-2	16	Line to Line RMS voltage measured at the generator phase AB output.			
	2442	Generator Phase BC Line-Line AC RMS Voltage	-75	65024	1-2	16	Line to Line RMS voltage measured at the generator phase BC output.			
	2443	Generator Phase CA Line-Line AC RMS Voltage	-75	65021	1-2	16	Line to Line RMS voltage measured at the generator phase CA output.			
	2444	Generator Average Line-Neutral AC RMS Voltage	-75	65030	3-4	16	The average Line to Neutral AC RMS voltage measured at the Generator output.			
	2445	Generator Phase A Line-Neutral AC RMS Voltage	-75	65027	3-4	16	Line to Neutral RMS voltage measured at the generator phase A output.			
	2446	Generator Phase B Line-Neutral AC RMS Voltage	-75	65024	3-4	16	Line to Neutral RMS voltage measured at the generator phase B output.			
	2447	Generator Phase C Line-Neutral AC RMS Voltage	-75	65021	3-4	16	Line to Neutral RMS voltage measured at the generator phase C output.			
	2448	Generator Average AC RMS Current	-75	65030	7-8	16	Average RMS current measured at the generator output.			
	2449	Generator Phase A AC RMS Current	-75	65027	7-8	16	RMS current measured at the generator phase A output.			
	2450	Generator Phase B AC RMS Current	-75	65024	7-8	16	RMS current measured at the generator phase B output.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2451	Generator Phase C AC RMS Current	-75	65021	7-8	16	RMS current measured at the generator phase C output.			
	2452	Generator Total Real Power	-75	65029	1-4	32	Total real power delivered by the generator.			
	2453	Generator Phase A Real Power	-75	65026	1-4	32	The real power delivered by phase A of the generator.			
	2454	Generator Phase B Real Power	-75	65023	1-4	32	The real power delivered by phase B of the generator.			
	2455	Generator Phase C Real Power	-75	65020	1-4	32	The real power delivered by phase C of the generator.			
	2456	Generator Total Reactive Power	-75	65028	1-4	32	The total reactive power delivered by the generator			
	2457	Generator Phase A Reactive Power	-75	65025	1-4	32	The reactive power delivered by phase A of the generator			
	2458	Generator Phase B Reactive Power	-75	65022	1-4	32	The reactive power delivered by phase B of the generator			
	2459	Generator Phase C Reactive Power	-75	65019	1-4	32	The reactive power delivered by phase C of the generator			
	2460	Generator Total Apparent Power	-75	65029	5-8	32	The total apparent power delivered by the generator.			
	2461	Generator Phase A Apparent Power	-75	65026	5-8	32	The apparent power delivered by phase A of the generator.			
	2462	Generator Phase B Apparent Power	-75	65023	5-8	32	The apparent power delivered by phase B of the generator.			
	2463	Generator Phase C Apparent Power	-75	65020	5-8	32	The apparent power delivered by phase C of the generator.			
	2464	Generator Overall Power Factor	-75	65028	5-6	16	The average power factor of the generator.			
	2465	Generator Phase A Power Factor	-75	65025	5-6	16	The power factor of phase A of the generator.			
	2466	Generator Phase B Power Factor	-75	65022	5-6	16	The power factor of phases B of the generator.			
	2467	Generator Phase C Power Factor	-75	65019	5-6	16	The power factor of phases C of the generator.			
	2468	Generator Total kW Hours Export	-75	65018	1-4	32	The total kilowatt-hours that have been exported by the generator.			
	2469	Generator Total kW Hours Import	-75	65018	5-8	32	The total kilowatt-hours that have been imported by the generator.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2470	Utility Average AC Frequency	-75	65017	5-6	16	Average AC frequency measured at the utility incomer.			
	2471	Utility Phase A AC Frequency	-75	65014	5-6	16	AC frequency measured at the utility incomer phase A.			
	2472	Utility Phase B AC Frequency	-75	65011	5-6	16	AC frequency measured at the utility incomer phase B.			
	2473	Utility Phase C AC Frequency	-75	65008	5-6	16	AC frequency measured at the utility incomer phase C.			
	2474	Utility Average Line-Line AC RMS Voltage	-75	65017	1-2	16	Average Line to Line RMS voltage measured at the utility incomer .			
	2475	Utility Phase AB Line-Line AC RMS Voltage	-75	65014	1-2	16	Line to Line RMS voltage measured at the utility incomer phase AB.			
	2476	Utility Phase BC Line-Line AC RMS Voltage	-75	65011	1-2	16	Line to Line RMS voltage measured at the utility incomer phase BC.			
	2477	Utility Phase CA Line-Line AC RMS Voltage	-75	65008	1-2	16	Line to Line RMS voltage measured at the utility incomer phase CA.			
	2478	Utility Average Line-Neutral AC RMS Voltage	-75	65017	3-4	16	The average Line to Neutral AC RMS voltage measured at the utility incomer .			
	2479	Utility Phase A Line-Neutral AC RMS Voltage	-75	65014	3-4	16	Line to Neutral RMS voltage measured at the utility incomer phase A.			
	2480	Utility Phase B Line-Neutral AC RMS Voltage	-75	65011	3-4	16	Line to Neutral RMS voltage measured at the utility incomer phase B.			
	2481	Utility Phase C Line-Neutral AC RMS Voltage	-75	65008	3-4	16	Line to Neutral RMS voltage measured at the utility incomer phase C.			
	2482	Utility Average AC RMS Current	-75	65017	7-8	16	Average RMS current measured at the utility incomer.			
	2483	Utility Phase A AC RMS Current	-75	65014	7-8	16	RMS current measured at the utility incomer phase A.			
	2484	Utility Phase B AC RMS Current	-75	65011	7-8	16	RMS current measured at the utility incomer phase B.			
	2485	Utility Phase C AC RMS Current	-75	65008	7-8	16	RMS current measured at the utility incomer phase C.			
	2486	Utility Total Real Power	-75	65016	1-4	32	Total real power delivered by the utility incomer.			
	2487	Utility Phase A Real Power	-75	65013	1-4	32	The real power delivered by phase A of the utility incomer.			
	2488	Utility Phase B Real Power	-75	65010	1-4	32	The real power delivered by phase B of the utility incomer.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2489	Utility Phase C Real Power	-75	65007	1-4	32	The real power delivered by phase C of the utility incomer.			
	2490	Utility Total Reactive Power	-75	65015	1-4	32	The total reactive power delivered by the utility incomer			
	2491	Utility Phase A Reactive Power	-75	65012	1-4	32	The reactive power delivered by phase A of the utility incomer			
	2492	Utility Phase B Reactive Power	-75	65009	1-4	32	The reactive power delivered by phase B of the utility incomer			
	2493	Utility Phase C Reactive Power	-75	65006	1-4	32	The reactive power delivered by phase C of the utility incomer			
	2494	Utility Total Apparent Power	-75	65016	5-8	32	The total apparent power delivered by the utility incomer.			
	2495	Utility Phase A Apparent Power	-75	65013	5-8	32	The apparent power delivered by phase A of the utility incomer.			
	2496	Utility Phase B Apparent Power	-75	65010	5-8	32	The apparent power delivered by phase B of the utility incomer.			
	2497	Utility Phase C Apparent Power	-75	65007	5-8	32	The apparent power delivered by phase C of the utility incomer.			
	2498	Utility Overall Power Factor	-75	65015	5-6	16	The average power factor of the utility incomer.			
	2499	Utility Phase A Power Factor	-75	65012	5-6	16	The power factor of phase A of the utility incomer.			
	2500	Utility Phase B Power Factor	-75	65009	5-6	16	The power factor of phases B of the utility incomer.			
	2501	Utility Phase C Power Factor	-75	65006	5-6	16	The power factor of phases C of the utility incomer.			
	2502	Utility Total kW Hours Export	-75	65005	1-4	32	The total kilowatt-hours that have been exported by the utility incomer.			
	2503	Utility Total kW Hours Import	-75	65005	5-8	32	The total kilowatt-hours that have been imported by the utility incomer.			
	2504	Bus #1 Average AC Frequency	-75	65004	5-6	16	Average AC frequency measured at bus #1.			
	2505	Bus #1 Phase A AC Frequency	-75	65003	5-6	16	AC frequency measured at bus #1 phase A.			
	2506	Bus #1 Phase B AC Frequency	-75	65002	5-6	16	AC frequency measured at bus #1 phase B.			
	2507	Bus #1 Phase C AC Frequency	-75	65001	5-6	16	AC frequency measured at bus #1 phase C.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2508	Bus #1 Average Line-Line AC RMS Voltage	-75	65004	1-2	16	Average Line to Line RMS voltage measured at bus #1 .			
	2509	Bus #1 Phase AB Line-Line AC RMS Voltage	-75	65003	1-2	16	Line to Line RMS voltage measured at bus #1 phase AB.			
	2510	Bus #1 Phase BC Line-Line AC RMS Voltage	-75	65002	1-2	16	Line to Line RMS voltage measured at bus #1 phase BC.			
	2511	Bus #1 Phase CA Line-Line AC RMS Voltage	-75	65001	1-2	16	Line to Line RMS voltage measured at bus #1 phase CA.			
	2512	Bus #1 Average Line-Neutral AC RMS Voltage	-75	65004	3-4	16	The average Line to Neutral AC RMS voltage measured at bus #1 .			
	2513	Bus #1 Phase A Line-Neutral AC RMS Voltage	-75	65003	3-4	16	Line to Neutral RMS voltage measured at bus #1 phase A.			
	2514	Bus #1 Phase B Line-Neutral AC RMS Voltage	-75	65002	3-4	16	Line to Neutral RMS voltage measured at bus #1 phase B.			
	2515	Bus #1 Phase C Line-Neutral AC RMS Voltage	-75	65001	3-4	16	Line to Neutral RMS voltage measured at bus #1 phase C.			
	2516	Bus #1/Generator AC Phase Difference	-75	65000	3-4	16	The phase difference between the Bus #1 voltage and Generator voltage.			
	2517	Bus #1/Utility AC Phase Difference	-75	64999	3-4	16	The phase difference between the Bus #1 voltage and Utility voltage.			
	2518	Generator Overall Power Factor Lagging	-75	65028	7.1	2	Lead/lag status for generator average power factor.			
	2519	Generator Phase A Power Factor Lagging	-75	65025	7.1	2	Lead/lag status for generator phase A power factor.			
	2520	Generator Phase B Power Factor Lagging	-75	65022	7.1	2	Lead/lag status for generator phase B power factor.			
	2521	Generator Phase C Power Factor Lagging	-75	65019	7.1	2	Lead/lag status for generator phase C power factor.			
	2522	Utility Overall Power Factor Lagging	-75	65015	7.1	2	Lead/lag status for utility incomer average power factor.			
	2523	Utility Phase A Power Factor Lagging	-75	65012	7.1	2	Lead/lag status for utility incomer phase A power factor.			
	2524	Utility Phase B Power Factor Lagging	-75	65009	7.1	2	Lead/lag status for utility incomer phase B power factor.			
	2525	Utility Phase C Power Factor Lagging	-75	65006	7.1	2	Lead/lag status for utility incomer phase C power factor.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2526	Bus #1/Generator Phase Match	-75	65000	1.3	2	Indicator of whether phase difference between Bus #1 and Generator is adequate for paralleling. This indicator will be based on the measured AC phase difference qualified using parameters such as Phase Tolerance and Dwell Time.			
	2527	Bus #1/Generator Voltage Match	-75	65000	1.7	2	Indicator of whether voltage difference between Bus #1 and Generator is adequate for paralleling. This indicator will be based on the measured AC voltages qualified using parameters such as Voltage Tolerance.			
	2528	Bus #1/Generator Frequency Match	-75	65000	1.5	2	Indicator of whether frequency difference between Bus #1 and Generator is adequate for paralleling. This indicator will be based on the measured AC frequencies qualified using parameters such as Frequency Tolerance, Phase Tolerance, and Dwell Time.			
	2529	Bus #1/Generator In Sync	-75	65000	2.1	2	Indicator of whether Bus #1 and Generator are properly synchronized for paralleling. This indicator will be based on parameters such as Voltage Match, Frequency Match, and Phase Match.			
	2530	Bus #1/Generator Dead Bus	-75	65000	1.1	2	Indicator of whether Bus #1 is considered dead for closing to the generator. This indicator will be based on parameters such as Bus #1 Voltage and dead bus threshold values.			
	2531	Bus #1/Utility Phase Match	-75	64999	1.3	2	Indicator of whether phase difference between Bus #1 and Utility is adequate for paralleling. This indicator will be based on the measured AC phase difference qualified using parameters such as Phase Tolerance and Dwell Time.			
	2532	Bus #1/Utility Voltage Match	-75	64999	1.7	2	Indicator of whether voltage difference between Bus #1 and Utility is adequate for paralleling. This indicator will be based on the measured AC voltages qualified using parameters such as Voltage Tolerance.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2533	Bus #1/Utility Frequency Match	-75	64999	1.5	2	Indicator of whether frequency difference between Bus #1 and Utility is adequate for paralleling. This indicator will be based on the measured AC frequencies qualified using parameters such as Frequency Tolerance, Phase Tolerance, and Dwell Time.			
	2534	Bus #1/Utility In Sync	-75	64999	2.1	2	Indicator of whether Bus #1 and Utility are properly synchronized for paralleling. This indicator will be based on parameters such as Voltage Match, Frequency Match, and Phase Match.			
	2535	Bus #1/Utility Dead Bus	-75	64999	1.1	2	Indicator of whether Bus #1 is considered dead for closing to the utility. This indicator will be based on parameters such as Bus #1 Voltage and dead bus threshold values.			
	2536	Transmission Mode 1 Indicator	-71	65098	3.7	2	This state signal is the transmission's indication that it is operating under transmission mode 1			
	2537	Transmission Mode 2 Indicator	-71	65098	3.5	2	This state signal is the transmission's indication that it is operating under transmission mode 2			
	2538	Transmission Mode 3 Indicator	-71	65098	3.3	2	This state signal is the transmission's indication that it is operating under transmission mode 3			
	2539	Transmission Mode 4 Indicator	-71	65098	3.1	2	This state signal is the transmission's indication that it is operating under transmission mode 4			
	2540	Parameter Group Number (RQST)	-21	59904	1-3	24	Whenever it is necessary to identify a Parameter Group Number in the data field of a CAN data frame, it will be expressed in 24 bits.			
	2541	Control Byte (ACKM)	-21	59392	1	8	Indicates the acknowledgement response.			
	2542	Group Function Value (ACK)	-21	59392	0x00;2	8	Positive Acknowledgement Group Function value			
	2543	Parameter Group Number (ACK)	-21	59392	0x00;6-8	24	Parameter Group Number associated with positive acknowledgement.			
	2544	Group Function Value (NACK)	-21	59392	0x01;2	8	Negative Acknowledgement Group Function value			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2545	Parameter Group Number (NACK)	-21	59392	0x01;6-8	24	Parameter Group Number associated with negative acknowledgement.			
	2546	Group Function Value (NACK_AD)	-21	59392	0x02;2	8	Indicates the acknowledgement response.			
	2547	Parameter Group Number (NACK_AD)	-21	59392	0x02;6-8	24	Parameter Group Number associated with PGN supported but security is denying access.			
	2548	Group Function Value (NACK_Busy)	-21	59392	0x03;2	8	Indicates the acknowledgement response.			
	2549	Parameter Group Number (NACK_Busy)	-21	59392	0x03;6-8	24	Parameter Group Number associated with PGN supported, but ECU can not currently respond to request.			
	2550	Manufacturer Specific Information (PropA_PDU1)	-21	61184	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2)[1]	-21	65280	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2)[1]	-21	65281	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2)[1]	-21	65282	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2)[1]	-21	65283	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2)[1]	-21	65284	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2)[1]	-21	65285	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2)[1]	-21	65286	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2)[1]	-21	65287	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2)[1]	-21	65288	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2)[1]	-21	65289	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2)[1]	-21	65290	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2)[1]	-21	65291	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2)[1]	-21	65292	1-8	14280				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65293	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65294	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65295	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65296	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65297	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65298	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65299	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65300	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65301	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65302	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65303	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65304	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65305	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65306	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65307	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65308	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65309	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65310	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65311	1-8	14280				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65312	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65313	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65314	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65315	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65316	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65317	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65318	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65319	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65320	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65321	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65322	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65323	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65324	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65325	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65326	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65327	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65328	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65329	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65330	1-8	14280				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65331	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65332	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65333	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65334	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65335	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65336	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65337	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65338	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65339	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65340	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65341	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65342	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65343	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65344	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65345	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65346	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65347	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65348	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65349	1-8	14280				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65350	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65351	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65352	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65353	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65354	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65355	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65356	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65357	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65358	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65359	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65360	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65361	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65362	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65363	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65364	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65365	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65366	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65367	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65368	1-8	14280				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65369	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65370	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65371	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65372	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65373	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65374	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65375	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65376	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65377	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65378	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65379	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65380	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65381	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65382	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65383	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65384	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65385	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65386	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65387	1-8	14280				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65388	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65389	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65390	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65391	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65392	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65393	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65394	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65395	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65396	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65397	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65398	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65399	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65400	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65401	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65402	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65403	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65404	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65405	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65406	1-8	14280				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65407	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65408	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65409	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65410	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65411	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65412	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65413	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65414	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65415	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65416	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65417	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65418	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65419	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65420	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65421	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65422	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65423	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65424	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65425	1-8	14280				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65426	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65427	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65428	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65429	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65430	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65431	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65432	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65433	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65434	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65435	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65436	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65437	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65438	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65439	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65440	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65441	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65442	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65443	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65444	1-8	14280				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65445	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65446	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65447	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65448	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65449	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65450	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65451	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65452	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65453	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65454	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65455	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65456	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65457	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65458	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65459	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65460	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65461	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65462	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65463	1-8	14280				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65464	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65465	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65466	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65467	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65468	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65469	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65470	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65471	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65472	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65473	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65474	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65475	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65476	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65477	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65478	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65479	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65480	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65481	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65482	1-8	14280				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65483	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65484	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65485	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65486	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65487	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65488	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65489	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65490	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65491	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65492	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65493	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65494	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65495	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65496	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65497	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65498	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65499	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65500	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65501	1-8	14280				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65502	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65503	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65504	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65505	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65506	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65507	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65508	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65509	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65510	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65511	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65512	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65513	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65514	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65515	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65516	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65517	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65518	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65519	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65520	1-8	14280				

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65521	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65522	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65523	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65524	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65525	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65526	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65527	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65528	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65529	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65530	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65531	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65532	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65533	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65534	1-8	14280				
	2551	Manufacturer Defined Usage (PropB_PDU2) 1	-21	65535	1-8	14280				
	2552	Parameter Group Number of Requested Information (XFER)	-21	51712	1-3	24	PGN associated with this transfer message			
	2553	Length of data for the reported PGN (XFER)	-21	51712	4	8	Length of data reported with the associated PGN via the Transfer PGN.			
	2554	Short Name of Actual Reporting Device	-21	51712	5-8	32	Short name of reporting device of the requested PGN via the Transfer PGN.			
	2555	Transfer Data	-21	51712	9-x	14216	Relevant data for this PGNs unique use.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2556	Control Byte (TP.CM)	-21	60416	1	8	Control byte (I.e. Group Function) associated with the Transport Protocol - Connection Management (PGN 60,416)			
	2557	Total Message Size (TP.CM_RTS) [1]	-21	60416	0x10;2-3	16	Total message size (in bytes) for RTS/CTS message.			
	2557	Total Message Size (TP.CM_RTS) [1]	-21	60416	0x13;2-3	16	Total message size (in bytes) for RTS/CTS message.			
	2558	Total Number of Packets (TP.CM_RTS)	-21	60416	0x10;4	8	Total number of packets for RTS/CTS message.			
	2559	Maximum Number of Packets (TP.CM_RTS)	-21	60416	0x10;5	8	Maximum number of packets for RTS/CTS message.			
	2560	Parameter Group Number of the packeted message (TP.CM_RTS)	-21	60416	0x10;6-8	24	Requested PGN in the TP.CM_RTS message			
	2561	Number of Packets that can be sent (TP.CM_CTS)	-21	60416	0x11;2	8	Number of Packets that can be sent (TP.CM_CTS)			
	2562	Next Packet Number to be sent (TP.CM_CTS)	-21	60416	0x11;3	8	Next Packet Number to be sent (TP.CM_CTS)			
	2563	Parameter Group Number of the packeted message (TP.CM_CTS)	-21	60416	0x11;6-8	24	PGN of requested information in the TP.CM_CTS message			
	2564	Total Message Size (TP.CM_EndofMsgACK)	-21			16	Total message size (in bytes) received for RTS/CTS message.			
	2565	Total Number of Packets (TP.CM_EndofMsgACK)	-21	60416	0x13;4	8	Total number of packets received for RTS/CTS message.			
	2566	Parameter Group Number of the packeted message (TP.CM_EndofMsgACK)	-21	60416	0x13;6-8	24	Requested PGN in the TP.CM_RTS message			
	2567	Total Message Size (TP.CM_BAM)	-21	60416	0x20;2-3	16	Total message size (in bytes) for BAM message.			
	2568	Total Number of Packets (TP.CM_BAM)	-21	60416	0x20;4	8	Total number of packets for BAM message.			
	2569	Parameter Group Number of the packeted message (TP.CM_BAM)	-21	60416	0x20;6-8	24	Requested PGN in the TP.CM_BAM message			
	2570	Connection Abort Reason	-21	60416	0xFF;2	8	Reason for connection abort message.			
	2571	Parameter Group Number of packeted message (TP.CM_Conn_Abort)	-21	60416	0xFF;6-8	24	Requested PGN in the TP.CM_Conn_Abort message			
	2572	Sequence Number (TP.DT)	-21	60160	1	8	Sequence Number (TP.DT)			
	2573	Packetized Data (TP.DT)	-21	60160	2-x	14272	Relevant data for this PGNs unique use.			
	2574	Parameter Group Number (RQST2)	-21	51456	1-3	24	PGN which is requested by Request2 message			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2575	Use Transfer Mode	-21	51456	4.1	2	Requester is to respond via the Transfer PGN			
	2576	Laser Receiver Type	-71	65141	3	8	Identifies which type of Laser Receiver transmitted the message.			
	2577	Display Deadbands	-71	65142	3.5	4	Sets Display Deadbands mode.			
	2578	LED Pattern Control	-71	65142	3.1	4	Sets LED Pattern control mode on laser leveling systems.			
	2579	Net Battery Current (High Range/Resolution)	-71	65106	3-4	16	Net flow of electrical current into/out-of the battery or batteries.			
	2580	Hydraulic Brake Pressure Circuit 1	-71	64998	1	8	Gage hydraulic pressure in circuit 1 of the hydraulic brake system			
	2581	Hydraulic Brake Pressure Circuit 2	-71	64998	2	8	Gage hydraulic pressure in circuit 2 of the hydraulic brake system			
	2582	Hydraulic Brake Pressure Supply State Circuit 1	-71	64998	3.5	2	Signal which indicates whether the hydraulic brake pressure supply of circuit 1 is reliable.			
	2583	Hydraulic Brake Pressure Supply State Circuit 2	-71	64998	3.7	2	Signal which indicates whether the hydraulic brake pressure supply of circuit 2 is reliable.			
	2584	Hydraulic Brake Pressure Warning State Circuit 1	-71	64998	3.1	2	Signal which indicates whether the hydraulic brake pressure of circuit 1 is below the warning level			
	2585	Hydraulic Brake Pressure Warning State Circuit 2	-71	64998	3.3	2	Signal which indicates whether the hydraulic brake pressure of circuit 2 is below the warning level			
	2586	Tire Air Leakage Rate	-71	65268	6-7	16	The pressure loss rate of a tire.			
	2587	Tire Pressure Threshold Detection	-71	65268	8.6	3	Signal indicating the pressure level of the tire.			
	2588	Maximum Vehicle Speed Limit 1	-71	64997	1	8	The lowest Maximum Vehicle Speed Limit.			
	2589	Maximum Vehicle Speed Limit 2	-71	64997	2	8	The highest of the two lowest vehicle speed limits			
	2590	Maximum Vehicle Speed Limit 3	-71	64997	3	8	The highest of the three lowest vehicle speed limits			
	2591	Maximum Vehicle Speed Limit 4	-71	64997	4	8	The highest of the four lowest vehicle speed limits			
	2592	Maximum Vehicle Speed Limit 5	-71	64997	5	8	The highest of the five lowest vehicle speed limits			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2593	Maximum Vehicle Speed Limit 6	-71	64997	6	8	The highest of the six lowest vehicle speed limits			
	2594	Maximum Vehicle Speed Limit 7	-71	64997	7	8	The highest of the seven lowest vehicle speed limits			
	2595	Applied Vehicle Speed Limit	-71	64997	8	8	The vehicle speed limit in effect.			
	2596	Selected Maximum Vehicle Speed Limit	-71	57344	8	8	User selected maximum vehicle speed			
	2597	Implement Left Facing Work Light Command	-71	65089	7.7	2	Command to activate or de-activate work lights mounted on an implement to illuminate beyond left end of the implement.			
	2598	Implement Left Facing Work Light	-71	65088	7.7	2	This parameter provides measured data from the work lights mounted on an implement to illuminate beyond left end of the implement.			
	2599	Fire Apparatus Pump Engagement	-71	61448	3.5	2	The measured status of the pump used to provide water in fire fighting apparatus.			
	2600	Payload Percentage	-71	64996	1	8	The current payload of the equipment, reported as a percentage of the equipment's rated payload limit.			
	2601	Travel Velocity Control Position	-71	64995	1	8	The position of the travel velocity control component reported as a percentage of the control's full displacement in each direction respectively			
	2602	Hydraulic Oil Level	-71	65128	3	8	This parameter indicates the level of the hydraulic fluid in tank as a ratio of current volume to total tank volume.			
	2603	Pneumatic Supply Pressure Request	-71	64994	1	8	Command signal to influence the pneumatic pressure in the main reservoir.			
	2604	Parking and/or Trailer Air Pressure Request	-71	64994	2	8	Command signal to influence the pneumatic pressure in the circuit or reservoir for the parking brake and/or the trailer supply.			
	2605	Service Brake Air Pressure Request, Circuit #1	-71	64994	3	8	Command signal to influence the pneumatic pressure in the service brake circuit or reservoir #1.			
	2606	Service Brake Air Pressure Request, Circuit #2	-71	64994	4	8	Command signal to influence the pneumatic pressure in the service brake circuit or reservoir #2.			
	2607	Auxiliary Equipment Supply Pressure Request	-71	64994	5	8	Command signal to influence the pneumatic pressure in the auxiliary circuit.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2608	Air Suspension Supply Pressure Request	-71	64994	6	8	Command signal to influence the pneumatic pressure in the circuit for the electronically controlled air suspension system.			
	2609	Cab A/C Refrigerant Compressor Outlet Pressure	-71	64993	1	8	This is the gage pressure at the compressor outlet in the cab air conditioning system.			
	2610	Solar Intensity Percent	-71	64992	1	8	This is the solar radiation (power density) falling on the vehicle in percent of the maximum sensor value. Currently this is in the infra-red spectrum.			
	2611	Solar Sensor Maximum	-71	64992	2	8	This is the maximum value which can be reported by the sensor for the solar intensity. (This is a configuration parameter)			
	2612	Front Wheel Drive Actuator Status	-71	64991	1.1	2	Feedback on the front wheel drive actuator.			
	2613	Drive Axle Lube Pressure	-71	65273	5	8	The drive axle lubricant pressure with location determined by Drive Axle Location (SPN 930).			
	2614	Steering Axle Lube Pressure	-71	65273	8	8	The steering axle lubricant pressure.			
(R)	2615	Engine Throttle Synchronization Mode Status	-71	64988	1.1	4	The status of the Throttle Synchronization Mode.			
	2616	Trolling Mode Status	-71	64988	1.5	2	The status of the Trolling Mode.			
	2617	Slow Vessel Mode Status	-71	64988	1.7	2	The status of the Slow Vessel Mode.			
	2618	Suspend Signal	-73	57088	4.1	4	Indicator to all nodes that the current communication port broadcast messages are being suspended			
	2619	Suspend Duration	-73	57088	5-6	16	Indicates the duration of a suspension of broadcast messages when that duration is known by the transmitting device.			
	2620	Brake Lining Display	Top Level				Driver/operator information device for brake lining wear			
	2621	Pneumatic Brake Pressure Limitation Valve Front Axle	Top Level				Pneumatic valve limiting the maximum brake pressure at the front axle			
	2622	Hillholder system	Top Level				System for short time substitute of parking brake by activation of service brake.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2623	Accelerator Pedal #1 Channel 2	Top Level				Sensor output 2 for the accelerator pedal #1 position when using a redundant-style sensor.			
	2624	Accelerator Pedal #1 Channel 3	Top Level				Sensor output 3 for the accelerator pedal #1 position when using a redundant-style sensor.			
	2625	Accelerator Pedal #2 Channel 2	Top Level				Sensor output 2 for the accelerator pedal #2 position when using a redundant-style sensor.			
	2626	Accelerator Pedal #2 Channel 3	Top Level				Sensor output 3 for the accelerator pedal #2 position when using a redundant-style sensor.			
(R)	2627	Engine Gaseous Fuel Shutoff Valve - High Pressure	Top Level				The gaseous fuel shutoff valve located at the tank. This valve blocks the flow of fuel away from the tank.			
(R)	2628	Engine Gaseous Fuel Shutoff Valve - Low Pressure	Top Level				The gaseous fuel shutoff valve located after the pressure regulator. This valve blocks the flow of the pressure regulated fuel.			
(R)	2629	Engine Turbocharger 1 Compressor Outlet Temperature	-71	64979	1-2	16	Temperature of the air exiting the turbocharger 1 compressor outlet			
	2630	Engine Charge Air Cooler Outlet Temperature	Top Level				Measures temperature of air at outlet from charge air cooler			
(R)	2631	Engine Charge Air Cooler Outlet Pressure	Top Level				Measures pressure. of air at outlet from charge air cooler			
(R)	2632	Engine Charge Air Cooler Bypass	Top Level				Controls whether combustion air passes through the charge air cooler			
(R)	2633	Engine Variable Geometry Turbocharger (VGT) 1 Nozzle Position	Top Level				Measures the position of the nozzles or vanes in variable geometry turbocharger #1		0	216
	2634	Power Relay	Top Level				Used to control power to other devices on the vehicle		0	216
	2635	"Neutral Only" Power Relay	Top Level				Provides power to accessories ONLY when transmission is in neutral			
	2636	Windshield Wiper Motor ON/OFF	Top Level				Activates the windshield wipers			
	2637	Windshield Wiper Motor Speed	Top Level				Selects the windshield wiper speed			
	2638	Differential Lock Control Valve #2	Top Level				Operates the second Differential Lock			
	2639	Cab Door "Lock" Control	Top Level				Commands the door mechanism to Lock			
	2640	Cab Door "Unlock" Control	Top Level				Commands the door mechanism to Unlock			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2641	Horn	Top Level				Activates the vehicle horn			
	2642	Mirror Heater	Top Level				Controls the heater that defrosts the outside mirror			
	2643	Battery Monitor Load #1	Top Level				Activates the #1 electrical load to monitor battery condition			
	2644	Battery Monitor Load #2	Top Level				Activates the #2 electrical load to monitor battery condition			
	2645	ECU "Wake Up" Control	Top Level				Sends a signal to cause other ECUs to begin operation			
	2646	Auxiliary Output #4	Top Level				Dynamically configurable, no permanent name			
	2647	Auxiliary Output #5	Top Level				Dynamically configurable, no permanent name			
	2648	Maintenance Lamp	Top Level				Indicates that vehicle maintenance is due			
	2649	Low Air Pressure	Top Level				Activates the Low Air Pressure warning			
	2650	Fan Override Indicator	Top Level				Indicates that the driver has requested manual fan operation			
	2651	Interior Lamps	Top Level				Activates the cab interior lights			
	2652	Switch Diagnostic Enable	Top Level				Provides power to diagnose dashboard switch problems			
	2653	Headlamp Low Beam Left #1	Top Level				Activates the left headlamp low beam filament (driver #1)			
	2654	Headlamp Low Beam Left #2	Top Level				Activates the left headlamp low beam filament (driver #2)			
	2655	Headlamp Low Beam Right #1	Top Level				Activates the right headlamp low beam filament (driver #1)			
	2656	Headlamp Low Beam Right #2	Top Level				Activates the right headlamp low beam filament (driver #2)			
	2657	Engine Auxiliary Cooling System	Top Level				Activates a secondary engine cooling system			
(R)	2658	Engine Inlet Air Precleaner	Top Level				Activates a pre-cleaning system for the engine inlet air			
(R)	2659	Engine Exhaust Gas Recirculation (EGR) Mass Flow Rate	-71	61450	1-2	16	Flow rate of gas through the EGR system			
	2660	Joystick 1 X-Axis Position	-71	64982	1.7-2	10	The position of the joystick in the relative motion of travel from the neutral position.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2661	Joystick 1 Y-Axis Position	-71	64982	3.7-4	10	The position of the joystick in the relative motion of travel from the neutral position.			
	2662	Joystick 1 Grip X-Axis Position	-71	64983	1.7-2	10	The position of the joystick grip in the relative motion of travel from the neutral position.			
	2663	Joystick 1 Grip Y-Axis Position	-71	64983	3.7-4	10	The position of the joystick grip in the relative motion of travel from the neutral position.			
	2664	Joystick 1 Theta-Axis Position	-71	64983	5.7-6	10	The position of the joystick in the relative motion of travel from the neutral position.			
	2665	Joystick 1 X-Axis Lever Right Positive Position Status	-71	64982	1.5	2	Reports when the current joystick position is on the positive travel side (forward, right, clockwise, up)			
	2666	Joystick 1 Y-Axis Lever Forward Positive Position Status	-71	64982	3.5	2	Reports when the current joystick position is on the positive travel side (forward, right, clockwise, up)			
	2667	Joystick 1 Grip X-Axis Lever Right Positive Position Status	-71	64983	1.5	2	Reports when the current joystick grip position is on the positive travel side (forward, right, clockwise, up)			
	2668	Joystick 1 Grip Y-Axis Lever Forward Positive Position Status	-71	64983	3.5	2	Reports when the current joystick grip position is on the positive travel side (forward, right, clockwise, up)			
	2669	Joystick 1 Theta-Axis Clockwise Positive Position Status	-71	64983	5.5	2	Reports when the current joystick position is on the positive travel side (forward, right, clockwise, up)			
	2670	Joystick 1 X-Axis Lever Left Negative Position Status	-71	64982	1.3	2	Reports when the current joystick position is on the negative travel side (back, left, counterclockwise, down)			
	2671	Joystick 1 Y-Axis Lever Back Negative Position Status	-71	64982	3.3	2	Reports when the current joystick position is on the negative travel side (back, left, counterclockwise, down)			
	2672	Joystick 1 Grip X-Axis Lever Left Negative Position Status	-71	64983	1.3	2	Reports when the current joystick grip position is on the negative travel side (back, left, counterclockwise, down)			
	2673	Joystick 1 Grip Y-Axis Lever Back Negative Position Status	-71	64983	3.3	2	Reports when the current joystick grip position is on the negative travel side (back, left, counterclockwise, down)			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2674	Joystick 1 Theta-Axis Counter Clockwise Negative Position Status	-71	64983	5.3	2	Reports when the current joystick position is on the negative travel side (back, left, counterclockwise, down)			
	2675	Joystick 1 X-Axis Neutral Position Status	-71	64982	1.1	2	Reports when the current joystick position is in the neutral position for that axis of travel.			
	2676	Joystick 1 Y-Axis Neutral Position Status	-71	64982	3.1	2	Reports when the current joystick position is in the neutral position for that axis of travel.			
	2677	Joystick 1 Grip X-Axis Neutral Position Status	-71	64983	1.1	2	Reports when the current joystick grip position is in the neutral position for that axis of travel.			
	2678	Joystick 1 Grip Y-Axis Neutral Position Status	-71	64983	3.1	2	Reports when the current joystick grip position is in the neutral position for that axis of travel.			
	2679	Joystick 1 Theta-Axis Neutral Position Status	-71	64983	5.1	2	Reports when the current joystick position is in the neutral position for that axis of travel.			
	2680	Joystick 1 X-Axis Detent Position Status	-71	64982	5.7	2	Reports when the current joystick position is in the detent position for that axis of travel.			
	2681	Joystick 1 Y-Axis Detent Position Status	-71	64982	5.5	2	Reports when the current joystick position is in the detent position for that axis of travel.			
	2682	Joystick 1 Grip X-Axis Detent Position Status	-71	64983	7.7	2	Reports when the current joystick grip position is in the detent position for that axis of travel.			
	2683	Joystick 1 Grip Y-Axis Detent Position Status	-71	64983	7.5	2	Reports when the current joystick grip position is in the detent position for that axis of travel.			
	2684	Joystick 1 Theta-Axis Detent Position Status	-71	64983	7.3	2	Reports when the current joystick position is in the detent position for that axis of travel.			
	2685	Joystick 1 Button 1 Pressed Status	-71	64982	6.7	2	Reports when the joystick button has been pressed.			
	2686	Joystick 1 Button 2 Pressed Status	-71	64982	6.5	2	Reports when the joystick button has been pressed.			
	2687	Joystick 1 Button 3 Pressed Status	-71	64982	6.3	2	Reports when the joystick button has been pressed.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2688	Joystick 1 Button 4 Pressed Status	-71	64982	6.1	2	Reports when the joystick button has been pressed.			
	2689	Joystick 1 Button 5 Pressed Status	-71	64982	7.7	2	Reports when the joystick button has been pressed.			
	2690	Joystick 1 Button 6 Pressed Status	-71	64982	7.5	2	Reports when the joystick button has been pressed.			
	2691	Joystick 1 Button 7 Pressed Status	-71	64982	7.3	2	Reports when the joystick button has been pressed.			
	2692	Joystick 1 Button 8 Pressed Status	-71	64982	7.1	2	Reports when the joystick button has been pressed.			
	2693	Joystick 1 Button 9 Pressed Status	-71	64982	8.7	2	Reports when the joystick button has been pressed.			
	2694	Joystick 1 Button 10 Pressed Status	-71	64982	8.5	2	Reports when the joystick button has been pressed.			
	2695	Joystick 1 Button 11 Pressed Status	-71	64982	8.3	2	Reports when the joystick button has been pressed.			
	2696	Joystick 1 Button 12 Pressed Status	-71	64982	8.1	2	Reports when the joystick button has been pressed.			
	2697	Joystick 2 X-Axis Position	-71	64984	1.7-2	10	The position of the joystick in the relative motion of travel from the neutral position.			
	2698	Joystick 2 Y-Axis Position	-71	64984	3.7-4	10	The position of the joystick in the relative motion of travel from the neutral position.			
	2699	Joystick 2 Grip X-Axis Position	-71	64985	1.7-2	10	The position of the joystick grip in the relative motion of travel from the neutral position.			
	2700	Joystick 2 Grip Y-Axis Position	-71	64985	3.7-4	10	The position of the joystick grip in the relative motion of travel from the neutral position.			
	2701	Joystick 2 Theta-Axis Position	-71	64985	5.7-6	10	The position of the joystick in the relative motion of travel from the neutral position.			
	2702	Joystick 2 X-Axis Lever Right Positive Position Status	-71	64984	1.5	2	Reports when the current joystick position is on the positive travel side (forward, right, clockwise, up)			
	2703	Joystick 2 Y-Axis Lever Forward Positive Position Status	-71	64984	3.5	2	Reports when the current joystick position is on the positive travel side (forward, right, clockwise, up)			
	2704	Joystick 2 Grip X-Axis Lever Right Positive Position Status	-71	64985	1.5	2	Reports when the current joystick grip position is on the positive travel side (forward, right, clockwise, up)			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2705	Joystick 2 Grip Y-Axis Lever Forward Positive Position Status	-71	64985	3.5	2	Reports when the current joystick grip position is on the positive travel side (forward, right, clockwise, up)			
	2706	Joystick 2 Theta-Axis Clockwise Positive Position Status	-71	64985	5.5	2	Reports when the current joystick position is on the positive travel side (forward, right, clockwise, up)			
	2707	Joystick 2 X-Axis Lever Left Negative Position Status	-71	64984	1.3	2	Reports when the current joystick position is on the negative travel side (back, left, counterclockwise, down)			
	2708	Joystick 2 Y-Axis Lever Back Negative Position Status	-71	64984	3.3	2	Reports when the current joystick position is on the negative travel side (back, left, counterclockwise, down)			
	2709	Joystick 2 Grip X-Axis Lever Left Negative Position Status	-71	64985	1.3	2	Reports when the current joystick grip position is on the negative travel side (back, left, counterclockwise, down)			
	2710	Joystick 2 Grip Y-Axis Lever Back Negative Position Status	-71	64985	3.3	2	Reports when the current joystick grip position is on the negative travel side (back, left, counterclockwise, down)			
	2711	Joystick 2 Theta-Axis Counter Clockwise Negative Position Status	-71	64985	5.3	2	Reports when the current joystick position is on the negative travel side (back, left, counterclockwise, down)			
	2712	Joystick 2 X-Axis Neutral Position Status	-71	64984	1.1	2	Reports when the current joystick position is in the neutral position for that axis of travel.			
	2713	Joystick 2 Y-Axis Neutral Position Status	-71	64984	3.1	2	Reports when the current joystick position is in the neutral position for that axis of travel.			
	2714	Joystick 2 Grip X-Axis Neutral Position Status	-71	64985	1.1	2	Reports when the current joystick grip position is in the neutral position for that axis of travel.			
	2715	Joystick 2 Grip Y-Axis Neutral Position Status	-71	64985	3.1	2	Reports when the current joystick grip position is in the neutral position for that axis of travel.			
	2716	Joystick 2 Theta-Axis Neutral Position Status	-71	64985	5.1	2	Reports when the current joystick position is in the neutral position for that axis of travel.			
	2717	Joystick 2 X-Axis Detent Position Status	-71	64984	5.7	2	Reports when the current joystick position is in the detent position for that axis of travel.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2718	Joystick 2 Y-Axis Detent Position Status	-71	64984	5.5	2	Reports when the current joystick position is in the detent position for that axis of travel.			
	2719	Joystick 2 Grip X-Axis Detent Position Status	-71	64985	7.7	2	Reports when the current joystick grip position is in the detent position for that axis of travel.			
	2720	Joystick 2 Grip Y-Axis Detent Position Status	-71	64985	7.5	2	Reports when the current joystick grip position is in the detent position for that axis of travel.			
	2721	Joystick 2 Theta-Axis Detent Position Status	-71	64985	7.3	2	Reports when the current joystick position is in the detent position for that axis of travel.			
	2722	Joystick 2 Button 1 Pressed Status	-71	64984	6.7	2	Reports when the joystick button has been pressed.			
	2723	Joystick 2 Button 2 Pressed Status	-71	64984	6.5	2	Reports when the joystick button has been pressed.			
	2724	Joystick 2 Button 3 Pressed Status	-71	64984	6.3	2	Reports when the joystick button has been pressed.			
	2725	Joystick 2 Button 4 Pressed Status	-71	64984	6.1	2	Reports when the joystick button has been pressed.			
	2726	Joystick 2 Button 5 Pressed Status	-71	64984	7.7	2	Reports when the joystick button has been pressed.			
	2727	Joystick 2 Button 6 Pressed Status	-71	64984	7.5	2	Reports when the joystick button has been pressed.			
	2728	Joystick 2 Button 7 Pressed Status	-71	64984	7.3	2	Reports when the joystick button has been pressed.			
	2729	Joystick 2 Button 8 Pressed Status	-71	64984	7.1	2	Reports when the joystick button has been pressed.			
	2730	Joystick 2 Button 9 Pressed Status	-71	64984	8.7	2	Reports when the joystick button has been pressed.			
	2731	Joystick 2 Button 10 Pressed Status	-71	64984	8.5	2	Reports when the joystick button has been pressed.			
	2732	Joystick 2 Button 11 Pressed Status	-71	64984	8.3	2	Reports when the joystick button has been pressed.			
	2733	Joystick 2 Button 12 Pressed Status	-71	64984	8.1	2	Reports when the joystick button has been pressed.			
	2734	Joystick 3 X-Axis Position	-71	64986	1.7-2	10	The position of the joystick in the relative motion of travel from the neutral position.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2735	Joystick 3 Y-Axis Position	-71	64986	3.7-4	10	The position of the joystick in the relative motion of travel from the neutral position.			
	2736	Joystick 3 Grip X-Axis Position	-71	64987	1.7-2	10	The position of the joystick grip in the relative motion of travel from the neutral position.			
	2737	Joystick 3 Grip Y-Axis Position	-71	64987	3.7-4	10	The position of the joystick grip in the relative motion of travel from the neutral position.			
	2738	Joystick 3 Theta-Axis Position	-71	64987	5.7-6	10	The position of the joystick in the relative motion of travel from the neutral position.			
	2739	Joystick 3 X-Axis Lever Right Positive Position Status	-71	64986	1.5	2	Reports when the current joystick position is on the positive travel side (forward, right, clockwise, up)			
	2740	Joystick 3 Y-Axis Lever Forward Positive Position Status	-71	64986	3.5	2	Reports when the current joystick position is on the positive travel side (forward, right, clockwise, up)			
	2741	Joystick 3 Grip X-Axis Lever Right Positive Position Status	-71	64987	1.5	2	Reports when the current joystick grip position is on the positive travel side (forward, right, clockwise, up)			
	2742	Joystick 3 Grip Y-Axis Lever Forward Positive Position Status	-71	64987	3.5	2	Reports when the current joystick grip position is on the positive travel side (forward, right, clockwise, up)			
	2743	Joystick 3 Theta-Axis Clockwise Positive Position Status	-71	64987	5.5	2	Reports when the current joystick position is on the positive travel side (forward, right, clockwise, up)			
	2744	Joystick 3 X-Axis Lever Left Negative Position Status	-71	64986	1.3	2	Reports when the current joystick position is on the negative travel side (back, left, counterclockwise, down)			
	2745	Joystick 3 Y-Axis Lever Back Negative Position Status	-71	64986	3.3	2	Reports when the current joystick position is on the negative travel side (back, left, counterclockwise, down)			
	2746	Joystick 3 Grip X-Axis Lever Left Negative Position Status	-71	64987	1.3	2	Reports when the current joystick grip position is on the negative travel side (back, left, counterclockwise, down)			
	2747	Joystick 3 Grip Y-Axis Lever Back Negative Position Status	-71	64987	3.3	2	Reports when the current joystick grip position is on the negative travel side (back, left, counterclockwise, down)			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2748	Joystick 3 Theta-Axis Counter Clockwise Negative Position Status	-71	64987	5.3	2	Reports when the current joystick position is on the negative travel side (back, left, counterclockwise, down)			
	2749	Joystick 3 X-Axis Neutral Position Status	-71	64986	1.1	2	Reports when the current joystick position is in the neutral position for that axis of travel.			
	2750	Joystick 3 Y-Axis Neutral Position Status	-71	64986	3.1	2	Reports when the current joystick position is in the neutral position for that axis of travel.			
	2751	Joystick 3 Grip X-Axis Neutral Position Status	-71	64987	1.1	2	Reports when the current joystick grip position is in the neutral position for that axis of travel.			
	2752	Joystick 3 Grip Y-Axis Neutral Position Status	-71	64987	3.1	2	Reports when the current joystick grip position is in the neutral position for that axis of travel.			
	2753	Joystick 3 Theta-Axis Neutral Position Status	-71	64987	5.1	2	Reports when the current joystick position is in the neutral position for that axis of travel.			
	2754	Joystick 3 X-Axis Detent Position Status	-71	64986	5.7	2	Reports when the current joystick position is in the detent position for that axis of travel.			
	2755	Joystick 3 Y-Axis Detent Position Status	-71	64986	5.5	2	Reports when the current joystick position is in the detent position for that axis of travel.			
	2756	Joystick 3 Grip X-Axis Detent Position Status	-71	64987	7.7	2	Reports when the current joystick grip position is in the detent position for that axis of travel.			
	2757	Joystick 3 Grip Y-Axis Detent Position Status	-71	64987	7.5	2	Reports when the current joystick grip position is in the detent position for that axis of travel.			
	2758	Joystick 3 Theta-Axis Detent Position Status	-71	64987	7.3	2	Reports when the current joystick position is in the detent position for that axis of travel.			
	2759	Joystick 3 Button 1 Pressed Status	-71	64986	6.7	2	Reports when the joystick button has been pressed.			
	2760	Joystick 3 Button 2 Pressed Status	-71	64986	6.5	2	Reports when the joystick button has been pressed.			
	2761	Joystick 3 Button 3 Pressed Status	-71	64986	6.3	2	Reports when the joystick button has been pressed.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2762	Joystick 3 Button 4 Pressed Status	-71	64986	6.1	2	Reports when the joystick button has been pressed.			
	2763	Joystick 3 Button 5 Pressed Status	-71	64986	7.7	2	Reports when the joystick button has been pressed.			
	2764	Joystick 3 Button 6 Pressed Status	-71	64986	7.5	2	Reports when the joystick button has been pressed.			
	2765	Joystick 3 Button 7 Pressed Status	-71	64986	7.3	2	Reports when the joystick button has been pressed.			
	2766	Joystick 3 Button 8 Pressed Status	-71	64986	7.1	2	Reports when the joystick button has been pressed.			
	2767	Joystick 3 Button 9 Pressed Status	-71	64986	8.7	2	Reports when the joystick button has been pressed.			
	2768	Joystick 3 Button 10 Pressed Status	-71	64986	8.5	2	Reports when the joystick button has been pressed.			
	2769	Joystick 3 Button 11 Pressed Status	-71	64986	8.3	2	Reports when the joystick button has been pressed.			
	2770	Joystick 3 Button 12 Pressed Status	-71	64986	8.1	2	Reports when the joystick button has been pressed.			
	2771	Reserved for assignment								
	2772	Reserved for assignment								
	2773	Reserved for assignment								
	2774	Reserved for assignment								
	2775	Reserved for assignment								
	2776	Reserved for assignment								
	2777	Reserved for assignment								
	2778	Reserved for assignment								
	2779	Reserved for assignment								
	2780	Reserved for assignment								
	2781	Reserved for assignment								
	2782	Reserved for assignment								
	2783	Reserved for assignment								
	2784	Reserved for assignment								

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2785	Reserved for assignment								
	2786	Reserved for assignment								
	2787	Reserved for assignment								
	2788	Reserved for assignment								
(R)	2789	Engine Turbocharger 1 Calculated Turbine Inlet Temperature	-71	64981	1-2	16	Calculated value of turbine inlet temperature based on engine operating conditions			
(R)	2790	Engine Turbocharger 1 Calculated Turbine Outlet Temperature	-71	64981	3-4	16	Calculated value of turbocharger compressor outlet air temperature.			
(R)	2791	Engine Exhaust Gas Recirculation (EGR) Valve Control	-71	64981	5-6	16	Desired percentage of maximum Exhaust Gas Recirculation (EGR) valve opening.			
(R)	2792	Engine Variable Geometry Turbocharger (VGT) Air Control Shutoff Valve	-71	64981	7.1	2	This valve prevents vehicle air from bleeding off through the VGT Control Valve when engine is not in use.			
	2793	Laser Strike Data Latency	-71	65141	4-5	16	Time from laser strike to CAN message transmission.			
	2794	Absolute Laser Strike Position	-71	65141	6-7	16	Laser Strike location on the survey type laser receiver.			
(R)	2795	Engine Variable Geometry Turbocharger (VGT) 1 Actuator Position	-71	64981	8	8	Sensor that measures the position of the variable geometry turbocharger actuator.			
	2796	Transfer Case Selector Switch	-71	64980	1.1	3	Operator switch to select the condition of the transfer case.			
(R)	2797	Engine Injector Bank 1	Top Level				A collection of fuel injectors circuits that are grouped together as bank 1.			
(R)	2798	Engine Injector Bank 2	Top Level				A collection of fuel injectors circuits that are grouped together as bank 2.			
(R)	2799	Engine Turbocharger 2 Compressor Outlet Temperature	-71	64979	3-4	16	Temperature of the air exiting the turbocharger 2 compressor outlet			
(R)	2800	Engine Turbocharger 3 Compressor Outlet Temperature	-71	64979	5-6	16	Temperature of the air exiting the turbocharger 3 compressor outlet			
(R)	2801	Engine Turbocharger 4 Compressor Outlet Temperature	-71	64979	7-8	16	Temperature of the air exiting the turbocharger 4 compressor outlet			
	2802	Data Memory Usage	-71	64978	3	8	The used storage capacity of the data buffer memory internal to an ECU, such as a data logger.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
	2803	Keep-Alive Battery Consumption	-71	64978	1-2	16	The capacity consumed from the direct battery connection since the key was last turned off.			
	2804	FMS-standard Diagnostics Supported	-71	64977	1.1	2	Status signal which indicates if the FMS Vehicle Interface (FMS Gateway) supports the handling of diagnostic messages from the vehicle network onto the FMS network.			
	2805	FMS-standard Requests Supported	-71	64977	1.3	2	Status signal which indicates if the FMS Vehicle Interface (FMS Gateway) will respond to requests from the FMS device for the PGNs listed in the FMS Interface Specification.			
	2806	FMS-standard SW-version supported.	-71	64977	2-5	32	Information that identifies which issue level of the FMS-standard document the software included in the FMS gateway supports.			
	2807	Engine Fuel Shutoff Valve #2	Top Level				Second instance of engine fuel shutoff valve. First instance is SPN 632		128	17
(R)	2808	Keypad	Top Level				Keypad associated with controller application.			
(R)	2809	Engine Air Filter 2 Differential Pressure	-71	64976	1	8	Change in engine air system pressure, measured across the second air filter, due to the filter and any accumulation of solid foreign matter on or in the filter.			
(R)	2810	Engine Air Filter 3 Differential Pressure	-71	64976	2	8	Change in engine air system pressure, measured across the third air filter, due to the filter and any accumulation of solid foreign matter on or in the filter.			
(R)	2811	Engine Air Filter 4 Differential Pressure	-71	64976	3	8	Change in engine air system pressure, measured across the fourth air filter, due to the filter and any accumulation of solid foreign matter on or in the filter.			
(R)	2812	Engine Overspeed Test	-71	65252	7.7	2	The engine overspeed test signal as measured by the reporting ECM. Engine Overspeed Test is a mechanism to simulate engine overspeed situations, while operating the engine within the engine's safe operating range.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	2813	Engine Air Shutoff Command Status	-71	65252	7.5	2	State signal which indicates when the Air Shutoff driver output is being driven. Disabled means controller wants air flowing to the engine. Status of the airflow shutoff as being commanded by the ECU.			
(R)	2814	Engine Alarm Output Command Status	-71	65252	7.3	2	State signal which indicates when the Alarm driver output is being driven. Not active means the Controller has no alarm level conditions.			
(R)	2815	Engine Alarm Acknowledge	-71	65252	7.1	2	The Engine Alarm Acknowledge input signal as measured by the reporting ECM. The Engine Alarm Acknowledge is a mechanism for external acknowledgement of the SPN 2814, Engine Alarm Output Command.			
(R)	2816	Simultaneous Upshift and Downshift	Top Level				Simultaneous upshift and downshift request being indicated.			
(R)	2817	Operator Using Clutch Pedal During Non-Recoverable Clutch Fault	Top Level				The operator is still trying to use the clutch pedal even though a fault with the clutch system was already reported.			
(R)	2818	Operators Rear PTO Switch On with Operator Not Present	Top Level				The operators Rear PTO ON/OFF switch is on with the operator presence detection indicating the operator is NOT present.			
(R)	2819	Park Interlock Error	Top Level				A park interlock is not as expected by a controlling system.			
(R)	2820	Operator Not Present During Reverser Command	Top Level				The operators reverser control has changed with the operator presence detection indicating the operator is NOT present.			
(R)	2821	Reverser Lever Neutral and Power Signals Conflict	Top Level				There is a conflict between the Neutral and Neutral Power Interlock switches within the reverser lever.			
(R)	2822	Reverser Lever Neither Forward or Reverse	Top Level				Neither Forward or Reverse Switch indicated by Reverser Lever.			
(R)	2823	Reverser Lever Simultaneous Forward and Reverse	Top Level				Forward and Reverse Switches are indicated concurrently by the reverser lever.			
(R)	2824	Reverser Lever Motion Interlock Conflict	Top Level				Two Interlocking switches within the reverser lever are conflicting while the lever is moving.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	2825	Reverser Lever	Top Level				Reverser Lever is an operator direction control lever that is mounted separately from the shift lever/controls but still operable from the normal operators station. This may contain park and/or neutral as well as direction.			
(R)	2826	Reverser Lever Multiple Switch Conflicts	Top Level				Multiple switches within the reverser lever are conflicting.			
(R)	2827	Power Up Without Neutral	Top Level				Controller has powered-up to find shift lever/control not in either park or neutral.			
(R)	2828	Reverser Lever In Power Zero/Direction Transition Too Long	Top Level				The transition time between the Neutral Power Interlock and the Direction switches on a Reverser Lever was too long.			
(R)	2829	Reverser Lever in Neutral/Park Transition Too Long	Top Level				The transition time between Neutral and Park on a Reverser Lever was too long.			
(R)	2830	Reversing Ratio Rationality Fault	Top Level				The ratio between the operator entered speed set point values for forward and reverse is incorrect/not possible.			
(R)	2831	No Carrier Speed at Start-up	Top Level				The speed of the first identified carrier within a transmission was not detected following engine start.			
(R)	2832	Operator Not in Operating Station	Top Level				The Operator Presence Detection System indicates the operator is not in the correct operating station.			
(R)	2833	Motion with Park Brake Engaged	Top Level				Unexpected motion with Park Brake engaged.			
(R)	2834	No Hydrostatic Unit Speed at Start-up	Top Level				Rotation of the hydrostatic unit was not detected following engine start.			
(R)	2835	Neutral to Gear Command Conflict	Top Level				During neutral to Gear movement of the shift controls,improper switch transitions were detected.			
(R)	2836	Battery 1 Potential 2 (Voltage), Switched	Top Level				Electrical potential of the second circuit powered by the primary battery (battery 1) as measured at the input of the electronic control unit supplied through a switching device.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	2837	Identity Number	-81			21	This field should be unique and non-varying with removal of power. This field is necessary to resolve any address contention. The manufacturer must provide this uniqueness among products.			
(R)	2838	Manufacturer Code	-81			11	The Manufacturer Code is an 11-bit field that indicates which company was responsible for the production of the electronic control module for which this NAME is being referenced.			
(R)	2839	Function Instance	-81			5	The Function Instance is a 5-bit field that identifies the particular occurrence of a Function on the same Vehicle System on a given network.			
(R)	2840	ECU Instance	-81			3	The ECU Instance is a 3-bit field that indicates which one of a group of electronic control modules associated with a given Function is being referenced.			
(R)	2841	Function	-81			8	A capability of a vehicle system having one or more ECUs that are connected to a SAE J1939 bus segment of a Vehicle System. The function value is used in the 8-bit Function field in the 64-bit NAME entity.			
(R)	2842	Vehicle System	-81			3	A subcomponent of a vehicle that includes one or more SAE J1939 segments. A Vehicle System may be made up of one or more Functions, which have ECU's that are connected to a SAE J1939 segment of the Vehicle System.			
(R)	2843	Vehicle System Instance	-81			4	Vehicle System Instance is a 4-bit field that is used to identify a particular occurrence of a particular Vehicle System within a connected network.			
(R)	2844	Arbitrary Address Capable	-81			1	Indicates whether a CA is both self-configurable and can use an arbitrary source address to resolve an address claim conflict.			
(R)	2845	NAME of Working Set Member	-81	64974	1-8	64	The identifier of the particular CA that is a member of the Working Set identified by the source address of this message.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	2846	Industry Group	-81			3	The Industry Group field identifies NAMEs associated with a particular industry that uses SAE J1939, for example: On-Highway Equipment, or Agricultural Equipment.			
(R)	2847	Address Assignment (new source address)	-81	65240	9	8	The source address that is to be assigned to the CA that has the NAME corresponding to the one conveyed in the first eight bytes of this Commanded Address message.			
(R)	2848	NAME of Controller Application (for address claimed)	-81	60928	1-8	64	Identifies a particular communications function within the ECU.			
(R)	2849	NAME of Commanded Address Target	-81	65240	1-8	64	NAME used to identify Controller Application in a Commanded Address Message to associate the Controller application with an address.			
(R)	2850	Communications Antenna	Top Level				A failure in the antenna system of a communications unit.			
(R)	2851	Communications Service Personal Identification Number	Top Level				The Personal Identification Number (PIN) is incorrect or has been blocked.			
(R)	2852	Communications Service Subscriber Identification Module	Top Level				The hardware key, know as a Subscriber Identification Module (SIM), is either missing or incorrect.			
(R)	2853	Communications Connection	Top Level				A communications unit has established connection but no data exchanged has occurred (no other knowledge of why).			
(R)	2854	Communications Carrier	Top Level				The communications unit has suffered carrier loss.			
(R)	2855	Communications Bit Error Rate	Top Level				The data failure rate is too high for communications to keep working at the specified error rate within the specific communications unit in use.			
(R)	2856	Communications Data Upload	Top Level				A failure has occurred while sending data using a communications unit from the mobile machine to the fixed base.			
(R)	2857	Communications Data Download	Top Level				A failure has occurred while sending data using a communications unit from the fixed base to the mobile machine.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	2858	Machine Data Configuration 1	Top Level				There is a problem involving the parameter list (along with the parameter locating information) for the data structure for configuring operations within the Controller Application being communicated with.			
(R)	2859	Machine Data Configuration 2	Top Level				There is a problem involving one (or more) of the PGN(s) within the parameter list for the data structure for configuring operations within the Controller Application being communicated with.			
(R)	2860	Machine Data Configuration 3	Top Level				There is a problem involving the first output control list for the data structure for configuring operations within the Controller Application being communicated with.			
(R)	2861	Machine Data Configuration 4	Top Level				There is a problem involving the second output control list for the data structure for configuring operations within the Controller Application being communicated with.			
(R)	2862	Machine Data Configuration 5	Top Level				There is a problem involving the third output control list for the data structure for configuring operations within the Controller Application being communicated with.			
(R)	2863	Front Operator Wiper Switch	-71	64973	1.5	4	State of operation selected by operator switch for the Wiper in front of the operator position.			
(R)	2864	Front Non-operator Wiper Switch	-71	64973	1.1	4	State of operation selected by operator switch for the front wiper not in front of the operator position.			
(R)	2865	Rear Wiper Switch	-71	64973	2.5	4	State of operation selected by operator switch for the rear wiper.			
(R)	2866	Front Operator Washer Switch	-71	64973	6.6	3	State of operation selected by operator switch for the washer in front of the operator position.			
(R)	2867	Front Non-operator Washer Switch	-71	64973	6.3	3	State of operation selected by operator switch for the front washer not in front of the operator position.			
(R)	2868	Rear Washer Function	-71	64973	7.6	3	State of operation selected by operator switch for the rear washer.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	2869	Front Operator Wiper Delay Control	-71	64973	3	8	Time between cycles of the front operator side wiper (i.e. from end of cycle 'n' to start of cycle 'n+1') as selected by the operator control (switch, etc.) in percentage of position with maximum position corresponding to maximum delay selectable.			
(R)	2870	Front Non-operator Wiper Delay Control	-71	64973	4	8	Time between cycles of the front non-operator side wiper (i.e. from end of cycle 'n' to start of cycle 'n+1') as selected by the operator control (switch, etc.) in percentage of position with maximum position corresponding to maximum delay selectable.			
(R)	2871	Rear Wiper Delay Control	-71	64973	5	8	Time between cycles of the rear wiper (i.e. from end of cycle 'n' to start of cycle 'n+1') as selected by the operator control (switch, etc.) in percentage of position with maximum position corresponding to maximum delay selectable.			
(R)	2872	Main Light Switch	-71	64972	1.5	4	A 4 bit parameter to indicate the selected position of the operator's main light switch.			
(R)	2873	Work Light Switch	-71	64972	1.1	4	A 4 bit parameter to indicate the selected position of the operator's work light switch.			
(R)	2874	High-Low Beam Switch	-71	64972	2.7	2	A 2 bit parameter to indicate the selected position of the operator's high/low beam select switch.			
(R)	2875	Hazard Light Switch	-71	64972	2.5	2	A 2 bit parameter to indicate the selected position of the operator's hazard light switch.			
(R)	2876	Turn Signal Switch	-71	64972	2.1	4	A 4 bit parameter to indicate the selected position of the operator's turn signal switch.			
(R)	2877	Operators Desired - Delayed Lamp Off Time	-71	64972	4-5	16	This parameter indicates the time the operator wishes to have elapse following the Main Light switch being placed in Delayed Off position before the defined lights turn back off.			
(R)	2878	Operators Desired Back-light	-71	64972	3	8	A 8 bit parameter to indicate the level of back lighting the operator has selected for displays.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	2879	Engine Alternate Droop Accelerator 2 Select	-71	64971	3.5	4	In many applications, it is desirable that more than one droop setting be available across the range of operation. This parameter allows the selection of one to 13 droop selections.			
(R)	2880	Engine Operator Primary Intermediate Speed Select	-71	64970	1.1	4	Allows the operator to select one of 13 preprogrammed Intermediate Speed Control settings. If no speed setting is requested, the engine operates normally.			
(R)	2881	Engine Alternate Droop Accelerator 1 Select	-71	64971	3.1	4	In some applications, it may be desirable to have multiple droop settings across the range of engine operation. This parameter allows the selection of one to 13 droop selections.			
(R)	2882	Engine Alternate Rating Select	-71	64971	2	8	In some off-highway applications it may be desirable to have multiple engine ratings available for selection by the operator.			
(R)	2883	Engine Alternate Low Idle Switch	-71	64971	1.5	2	Operator switch which selects between two low idle speeds, default and alternate.			
(R)	2884	Engine Auxiliary Governor Switch	-71	64971	1.1	2	This is the On/Off operation of the Auxiliary Governor feature switch. This feature is used to allow engine speed to be controlled by an auxiliary input such as pressure or tailshaft speed.			
(R)	2885	Engine Alternate Droop Auxiliary Input Select	-71	64971	4.5	4	In some applications, it may be desirable to have multiple droop settings across the range of engine operation. This parameter allows the selection of one to 13 droop selections.			
(R)	2886	Engine Alternate Droop Remote Accelerator Select	-71	64971	4.1	4	In some applications, it may be desirable to have multiple droop settings across the range of engine operation. This parameter allows the selection of one to 13 droop selections.			
(R)	2887	Total Count of Configuration Changes Made	-71	64969	1-2	16	Total number of times changes have been made to any of the configurable parameters.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	2888	Engine Alternate Rating Select State	-71	64967	2	8	This parameter reflects the control state that has been achieved based on the input from the SPN xxx. In some off-highway applications it may be desirable to have multiple engine ratings available for selection by the operator.			
(R)	2889	Engine Alternate Droop Accelerator 1 Select State	-71	64967	3.1	4	This parameter indicates which state has been selected by the controlling ECM, one to 13 droop selection states. In some off-highway applications it may be desirable to have multiple droop settings available across the range of engine operation.			
(R)	2890	Engine Multi-Unit Sync State	-71	64967	1.3	2	A master engine will “synchronize” one or more slave engines to operate at the same speed. This feature is requested by an operator switch, this parameter indictes the state of the feature as determined by the controlling ECM.			
(R)	2891	Engine Alternate Low Idle Select State	-71	64967	1.5	2	Feedback from controller on the alternate low idle select state, default and alternate.			
(R)	2892	Engine Operator Primary Intermediate Speed Select State	-71	64968	1.1	4	Allows the operator to select one of 13 preprogrammed Intermediate Speed Control settings. This parameter indicates which state has been selected by the controlling ECM, one to 13 ISC setting states.			
(R)	2893	Engine Alternate Droop Accelerator 2 Select State	-71	64967	3.5	4	This parameter indicates which state has been selected by the controlling ECM, one to 13 droop selection states. In some off-highway applications it may be desirable to have multiple droop settings available across the range of engine operation.			
(R)	2894	Engine Alternate Droop Remote Accelerator Select State	-71	64967	4.1	4	This parameter indicates which state has been selected by the controlling ECM, one to 13 droop selection states. In some off-highway applications it may be desirable to have multiple droop settings available across the range of engine operation.			

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(R)	2895	Engine Alternate Droop Auxiliary Input Select State	-71	64967	4.5	4	This parameter indicates which state has been selected by the controlling ECM, one to 13 droop selection states. In some off-highway applications it may be desirable to have multiple droop settings available across the range of engine operation.			
(R)	2896	Engine Auxiliary Governor State	-71	64967	1.1	2	This is the Engine Auxiliary Governor feature. This feature is requested by an operator switch, this parameter indicates the state of the feature as determined by the controlling ECM.			
(R)	2897	Operator PTO Memory Select Switch	-71	65264	8.1	2	The mesured switch state of the Operator PTO memory select switch.			
(R)	2898	Engine Start Enable Device 2 Configuration	-71	64966	2.5	4	This parameter indicates the start enable device type installed for start enable device 2.			
(R)	2899	Engine Start Enable Device 1 Configuration	-71	64966	2.1	4	This parameter indicates the start enable device type installed for start enable device 1.			
(R)	2900	Transmission Engine Crank Enable	-71	65098	2.5	2	State signal from the transmission indicating if the transmission's status is such that engine cranking is allowed.			
(R)	2901	ECU Part Number	-71	64965	a	1600	The part number of the physical ECU.			
(R)	2902	ECU Serial Number	-71	64965	b	1600	The serial number of the physical ECU.			
(R)	2903	ECU Location	-71	64965	c	1600	The location of the ECU within a network.			
(R)	2904	ECU Type	-71	64965	d	1600	The type of ECU. One example of a use of the ECU type could be for classifying ECU capabilities, such as I/O.			
(R)	2905	Transmission Range Clutch #C7 Solenoid	Top Level				Transmission range clutch #C7 solenoid			
(R)	2906	Transmission Range Clutch #C8 Solenoid	Top Level				Transmission range clutch #C8 solenoid			
(R)	2907	Transmission Axle Disconnect Clutch Valve Actuator	Top Level				The axle disconnect clutch disconnects the front axle from the transmission. It is located within the transmission housing.			
(R)	2908	Transmission Boost Pressure Valve Actuator	Top Level				Transmission boost pressure valve actuator.			

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(R)	2909	Torque Converter Modulating Clutch Valve Actuator	Top Level				The torque converter modulating clutch limits torque to converter circuit and transmission. It is located between the engine and transmission.			
(R)	2910	Transmission PTO Clutch Valve Actuator	Top Level				Transmission PTO clutch valve actuator controls the on/off condition of PTO Clutch Valve.			
(R)	2911	Halt brake switch	-71	61441	8.3	2	Switch signal which indicates the position of the halt brake switch.			
(R)	2912	Hill holder mode	-71	64964	1.6	3	Signal which indicates the current mode of the hill holder function.			
(R)	2913	Halt brake mode	-71	64964	1.3	3	Signal which indicates the current mode of the halt brake function.			
(R)	2914	XBR EBI Mode	-71	1024	3.1	2	The XBR EBI (Endurance Brake Integration) Mode is used as an input for the brake system to prescribe the use of endurance brakes like retarders or engine brakes.			
(R)	2915	XBR Priority	-71	1024	3.3	2	The XBR Priority is used as an input to the brake system to manage the priority of overlapping external and internal requests.			
(R)	2916	XBR Control Mode	-71	1024	3.5	2	The XBR Control Mode is used as an input to the brake system and defines how the external acceleration demand has to be realized.			
(R)	2917	XBR System State	-71	64964	2.3	2	This parameter indicates which external brake control is allowed.			
(R)	2918	XBR Active Control Mode	-71	64964	2.5	4	This parameter indicates which XBR Control Mode is executed by the brake system.			
(R)	2919	Foundation Brake Use	-71	64964	2.1	2	This parameter indicates if the brake system presently uses the foundation brakes.			
(R)	2920	External Acceleration Demand	-71	1024	1-2	16	The acceleration which the brake system is expected to realize. It is specified as an absolute acceleration in reference to the road.			
(R)	2921	XBR Acceleration Limit	-71	64964	3	8	The brake system may temporarily or generally limit the maximum brake performance available for external systems.			

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(R)	2922	Steerable Lift Axle Lowering Inhibit	-71	61451	4.5	2	A signal which indicates if lowering of lifted axle is allowed or inhibited.			
(R)	2923	Status of Steering Axle	-71	61451	4.1	4	A signal which indicates different states of the steering axle			
(R)	2924	Steering Type	-71	61451	5.1	4	Indicates the different types of steering systems (ref. ECE Regulation 79 paragraph 2.5)			
(R)	2925	Type of Steering Forces	-71	61451	5.5	4	Type of Steering Forces (Ref. ECE Regulation 79 paragraph 2.5)			
(R)	2926	Type of Steering Transmission	-71	61451	6.1	4	Type of Steering Transmission (Ref. ECE Regulation 79 paragraph 2.6)			
(R)	2927	Actual Inner wheel steering angle	-71	61451	1-2	16	Signal which indicates the actual inner wheel steering angle.			
(R)	2928	Axle Location	-71	61451	3	8	To identify to which of several similar devices (such as tires or fuel tanks) the information applies.			
(R)	2930	Hydraulic Brake System Audible Warning Command	-71	64998	4.1	2	Signal which commands an audible warning by the hydraulic braking system.			
(R)	2931	Hydraulic Brake Fluid Level Switch	-71	64998	4.3	2	Signal which indicates whether the hydraulic fluid level in the reservoir(s) is sufficient.			
(R)	2932	Valve State	ISO 11783-7	50688	3.1	4	The measured state of the general purpose valve. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			
(R)	2933	Valve State Command	ISO 11783-7			4	Command for setting the general purpose valve state. With float enabled, hydraulic fluid may flow to or from the tractor as driven by the implement.			
(R)	2934	Valve Fail Safe Mode	ISO 11783-7	50688	3.7	2	Command for setting the fail safe mode of a general purpose valve.			
(R)	2935	Valve Fail Safe Mode Command	ISO 11783-7			1	The measured state the fail safe mode of a general purpose valve.			
(R)	2936	General Purpose Valve Number	ISO 11783-7			4	A numeric identification of general hydraulic valve instance within a Device identified by a NAME			
(R)	2937	Extend Port Measured Flow	ISO 11783-7	50432	1	8	The measured flow through the extend port of an auxiliary valve of a tractor			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	2938	Retract Port Measured Flow	ISO 11783-7	50432	2	8	The measured flow through the retract port of an auxiliary valve of a tractor			
(R)	2939	Extend Port Estimated Flow	ISO 11783-7	50688	1	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor			
(R)	2940	Retract Port Estimated Flow	ISO 11783-7	50688	2	8	The value reported by the controller of flow through the extend port of an auxiliary valve of a tractor			
(R)	2941	Extend Port Pressure	ISO 11783-7	50432	3-4	16	The measured nominal pressure at the extend port of an auxiliary valve of a tractor			
(R)	2942	Retract Port Pressure	ISO 11783-7	50432	5-6	16	The measured nominal pressure at the retract port of an auxiliary valve of a tractor			
(R)	2943	Return Port Pressure	ISO 11783-7	50432	7	8	The measured nominal pressure at the return port of an auxiliary valve of a tractor			
(R)	2944	Port Flow Command	ISO 11783-7	50176	1	8	The command to set the flow through the extend or retract port of an auxiliary valve of a tractor			
(R)	2945	Active Shift Console Indicator	-71	65098	2.3	2	Signal from transmission control unit indicating which shift console (primary or secondary) it currently considers as the active shift selector input.			
(R)	2946	Engine Mixer Inlet Relative Humidity	Top Level				Measurement of the relative humidity of air after the aftercooler and before the mixer.		128	307
(R)	2947	Engine Fuel Rack Position #2	Top Level				Position of the fuel rack #2.		128	308
(R)	2948	Engine Intake Valve Actuation System Oil Pressure	-71	64961	1-2	16	The gage pressure of the oil in the hydraulic system that powers the engine intake valve actuation system			
(R)	2949	Engine Intake Valve Actuation System Oil Pressure Control Valve	Top Level				The valve that controls the pressure of the oil being supplied to the engine intake valve actuation system.			
(R)	2950	Engine Intake Valve Actuator #1	Top Level				The first instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2951	Engine Intake Valve Actuator #2	Top Level				The second instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2952	Engine Intake Valve Actuator #3	Top Level				The third instance of an actuator that controls or alters the control of the engine intake valve(s).			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	2953	Engine Intake Valve Actuator #4	Top Level				The fourth instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2954	Engine Intake Valve Actuator #5	Top Level				The fifth instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2955	Engine Intake Valve Actuator #6	Top Level				The sixth instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2956	Engine Intake Valve Actuator #7	Top Level				The seventh instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2957	Engine Intake Valve Actuator #8	Top Level				The eighth instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2958	Engine Intake Valve Actuator #9	Top Level				The ninth instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2959	Engine Intake Valve Actuator #10	Top Level				The tenth instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2960	Engine Intake Valve Actuator #11	Top Level				The eleventh instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2961	Engine Intake Valve Actuator #12	Top Level				The twelveth instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2962	Engine Intake Valve Actuator #13	Top Level				The thirteenth instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2963	Engine Intake Valve Actuator #14	Top Level				The fourteenth instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2964	Engine Intake Valve Actuator #15	Top Level				The fifteenth instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2965	Engine Intake Valve Actuator #16	Top Level				The sixteenth instance of an actuator that controls or alters the control of the engine intake valve(s).			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	2966	Engine Intake Valve Actuator #17	Top Level				The seventeenth instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2967	Engine Intake Valve Actuator #18	Top Level				The eighteenth instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2968	Engine Intake Valve Actuator #19	Top Level				The nineteenth instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2969	Engine Intake Valve Actuator #20	Top Level				The twentieth instance of an actuator that controls or alters the control of the engine intake valve(s).			
(R)	2970	Accelerator Pedal 2 Low Idle Switch	-71	61443	1.7	2	Switch signal which indicates the state of the accelerator pedal 2 low idle switch.			
(R)	2971	Accelerator Pedal 3 Low Idle Switch	Top Level			2	Switch signal which indicates the state of the accelerator pedal 3 low idle switch.			
(R)	2972	Accelerator Pedal Position 1 Output 2	Top Level				Second output for accelerator pedal position 1			
(R)	2973	Accelerator Pedal Position 1 Output 3	Top Level				Third output for accelerator pedal position 1			
(R)	2974	Accelerator Pedal Position 2 Output 2	Top Level				Second output for accelerator pedal position 2			
(R)	2975	Accelerator Pedal Position 2 Output 3	Top Level				Third output for accelerator pedal position 2			
(R)	2976	Accelerator Pedal Position 3 Output 2	Top Level				Second output for accelerator pedal position 3			
(R)	2977	Accelerator Pedal Position 3 Output 3	Top Level				Third output for accelerator pedal position 3			
(R)	2978	Estimated Engine Parasitic Losses - Percent Torque	-71	65247	5	8	The calculated torque that indicates the estimated amount of torque loss due to engine parasitics, such as cooling fan, air compressor, air conditioning, etc.			
(R)	2979	Vehicle Acceleration Rate Limit Status	-71	61443	6.1	2	Status (active or not active) of the system used to limit maximum forward vehicle acceleration.			
(R)	2980	Gas Control Valve 1 Outlet Pressure	Top Level				Gas pressure sensor located at the Gas Control Valve 1 outlet.			
(R)	2981	Engine Coolant Loop 2 Pressure	Top Level				This is the pressure of the low temp (secondary circuit) coolant loop.			
(R)	2982	Engine Coolant Loop 2 Temperature	Top Level				This is the temperature of the low temp (secondary circuit) coolant loop.			

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(R)	2983	Clutch Life Remaining	-71	65195	4	8	Signal which indicates the actual clutch life remaining in percent. One hundred percent means the clutch is brand new and zero percent means the clutch is at the end of its life.			
(R)	2984	Automatic traction help (load transfer)	-71	53760	1.1	2	This signal enables the traction help (load transfer) in case of an active ASR function			
(R)	2985	Transmission Shift Selector Display Mode Switch	-71	256	7.7	2	Status of the operator's switch used to 'toggle' through multiple display modes of a shift selector display.			
(R)	2986	Engine Intake Valve Actuation System Oil Temperature	-71	65129	5-6	16	The temperature of the oil in the hydraulic system that powers the intake valve actuation system.			
(R)	2987	Engine will not start, pre-lube system issue	Top Level				The engine is not allowed to start due to pre-lube system issues.			
(R)	2988	Engine Coolant Diverter Valve	Top Level				A valve other than the engine coolant thermostat that changes the flow of coolant in an engine.			
(R)	2989	Combine separator speed	-74			16	Speed of the Combine separator.			
(R)	2990	Combine thresher speed	-74			16	Speed of the Combine thresher.			
(R)	2991	Tailings volume	-74			8	Tailings Elevator Volume measurement (as a percent of full).			
(R)	2992	Move reel forward	-74			2	Move the platform reel toward the forward part of the machine.			
(R)	2993	Move reel aft	-74			2	Move the platform reel toward the back part of the machine			
(R)	2994	Reel raise	-74			2	Raise the platform reel.			
(R)	2995	Reel lower	-74			2	Lower the platform reel.			
(R)	2996	Header raise slow	-74			2	Raise the header (slow speed mode).			
(R)	2997	Header lower slow	-74			2	Lower the header (slow speed mode).			
(R)	2998	Header raise fast	-74			2	Raise the header (fast speed mode).			
(R)	2999	Header lower fast	-74			2	Lower the header (fast speed mode).			
(R)	3000	Tilt header left	-74			2	Tilt the header down to the left.			
(R)	3001	Tilt header right	-74			2	Tilt the header down to the right.			
(R)	3002	Header fold	-74			2	Fold the header in.			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	3003	Header unfold	-74			2	Unfold the header			
(R)	3004	Draper speed increment	-74			2	Increase speed of the draper.			
(R)	3005	Draper speed decrement	-74			2	Decrease speed of the draper.			
(R)	3006	Reel speed increment	-74			2	Increase the platform reel speed.			
(R)	3007	Reel speed decrement	-74			2	Decrease the platform reel speed.			
(R)	3008	Threshing clearance increment	-74			2	Increase threshing clearance.			
(R)	3009	Threshing clearance decrement	-74			2	Decrease threshing clearance.			
(R)	3010	Threshing speed increment	-74			2	Increase threshing speed.			
(R)	3011	Threshing speed decrement	-74			2	Decrease threshing speed.			
(R)	3012	Product fan speed increment	-74			2	Increase Product fan speed.The Product may be either the harvested crop material or the material being applied or handled.			
(R)	3013	Product fan speed decrement	-74			2	Decrease Product fan speed. The Product may be either the harvested crop material or the material being applied or handled.			
(R)	3015	Implement fold down	-74			2	Move the implement down from travel to work position			
(R)	3016	Implement fold up	-74			2	Move the implement up from work to travel position.			
(R)	3017	RH header raise	-74			2	Raise the right hand header of the system.			
(R)	3018	LH header raise	-74			2	Raise the left hand header of the system.			
(R)	3019	Product fan engage mode	-74			2	Engage/disengage the (harvested or applied) Product fan. The Product may be either the harvested crop material or the material being applied or handled.			
(R)	3020	Augers engage mode	-74			2	Engage/disengage all the augers.			
(R)	3021	Product basket fill state	-74			2	The state of the capacity of the Product storage basket.			
(R)	3022	Augers enable mode	-74			2	Enable/disable all the augers.			
(R)	3023	Header height control mode	-74			2	Header height controller engaged/disengaged.			
(R)	3024	Header remote tether control mode	-74			2	Tether control mode of the Product Handling system. Used for remote operator control of the headers.			

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(R)	3025	Lubrication control mode	-74			2	Lubrication control of the Product Handling system.			
(R)	3026	Transmission Oil Level Measurement Status	-71	65272	8.5	4	Indicates if conditions are acceptable to obtain a valid transmission oil level measurement as conveyed in SPN 124 Transmission Oil Level or SPN new Transmission Oil Level High / Low.			
(R)	3027	Transmission Oil Level High / Low	-71	65272	7	8	Amount of current volume of transmission sump oil compared to recommended volume.			
(R)	3028	Transmission Oil Level Countdown Timer	-71	65272	8.1	4	This parameter indicates how much of the required settling time remains.			
(R)	3029	Engine start inhibited, pre-lube system issue	Top Level				The engine oil pre-lube system will not allow the engine to start.			
(R)	3030	Transmission Torque Converter Ratio	-71	61452	1-2	16	Ratio of the transmission torque converter output torque to torque converter input torque at current speed.			
(R)	3031	Catalyst Tank Temperature	-71	65110	2	8	Temperature of the reagent in the storage tank.			
(R)	3032	Right Brake Pedal Position	-74			8	Ratio of the right brake pedal position to maximum right brake pedal position. For applications with only one brake pedal use SPN 521.			
(R)	3033	Left Brake Pedal Position	-74			8	Ratio of the left brake pedal position to maximum left brake pedal position. For applications with only one brake pedal use SPN 521.			
(R)	3034	DM22 Control Byte - Individual DTC Clear/Reset Control Byte	-73	49920	1	8	DM22 Control byte is used to identify the function being performed by this message.			
(R)	3035	DM22 - Negative Acknowledge Indicator For Individual DTC Clear	-73	49920	2	8	DM22 parameter which is the Negative Acknowledge Indicator For Individual DTC Clear.			
(R)	3036	DM22 - DTC SPN Clear	-73	49920	6-8.6	19	DM22 the SPN of the DTC to Clear.			
(R)	3037	DM22 - DTC FMI to Clear	-73	49920	8.1	5	DM22 the FMI of the DTC to Clear.			
(R)	3038	Flash Engine Malfunction Indicator Lamp (MIL)	-73	65226	2.7	2	This parameter provides the capability to flash the MIL			
(R)	3039	Flash Engine Red Stop Lamp (RSL)	-73	65226	2.5	2	This parameter provides the capability to flash the RSL			

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(R)	3040	Flash Engine Amber Warning Lamp (AWL)	-73	65226	2.3	2	This parameter provides the capability to flash the AWL			
(R)	3041	Flash Engine Protect Lamp	-73	65226	2.1	2	This parameter provides the capability to flash the engine protect lamp			
(R)	3042	Requested Wheel Speed	-74			16	When at rated engine speed, this is the wheel speed that the transmission will attempt to attain.			
(R)	3043	Type of Passenger Count	-71	64960	1	8	Used to notify transit link devices of the type of passenger counting system used in the vehicle.			
(R)	3044	Silent Alarm Status	-71	64960	3.1	2	Used to report silent alarm push button status.			
(R)	3045	Vehicle Use Status	-71	64960	3.3	2	Used to indicate the proper or unauthorized use of the vehicle.			
(R)	3046	Transit Run Status	-71	64960	3.5	2	Status of the run switch for the vehicle			
(R)	3047	Patron Count	-71	64960	2	8	Count of the number of passengers on a transit vehicle.			
(R)	3070	Number of bytes in the Milepost Identification	-71	64959	1	8	Number of bytes in the Milepost Identification			
(R)	3071	Number of bytes in the Transit Assigned Route Identity	-71	64958	2	8	Number of bytes in the Transit Assigned Route Identity			
(R)	3072	Number of bytes in the Transit Assigned Run Identity	-71	64958	3	8	Number of bytes in the Transit Assigned Run Identity			
(R)	3073	Number of bytes in the Transit Assigned Block Identity	-71	64958	4	8	Number of bytes in the Transit Assigned Block Identity			
(R)	3074	Transit Assigned Route Identity	-71	64958	5 to A	800	Identifies the transit route assigned to a specific vehicle			
(R)	3075	Transit Assigned Run Identity	-71	64958	A+1 to B	800	Identifies the transit run assigned to a specific vehicle			
(R)	3076	Transit Assigned Block Identity	-71	64958	B+1 to C	800	Identifies the transit block assigned to a specific vehicle			
(R)	3078	Agency	-71	64958	1	8	The identity of the agency involved in this transaction			
(R)	3079	Intersection Preemption Request/Response	-71	64957	1.7	2	Status of the intersection signal preemption			
(R)	3080	Transit Route ID Usage	-71	64957	1.5	2	Transit route ID usage			
(R)	3081	Range Code Enable	-71	64957	1.3	2	Range code enable			

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Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	3082	Strobe Activation Control Status	-71	64957	2.7	2	Strobe activation control status			
(R)	3083	Transit Door Enable	-71	64957	2.5	2	Transit door enable			
(R)	3084	Priority of Response Sent by Emitter	-71	64957	2.1	4	Priority of response sent by emitter			
(R)	3085	Vehicle ID	-71	64957	3,4	16	Numerical designation of the vehicle			
(R)	3086	Transmission Ready for Brake Release	-71	65098	2.1	2	This parameter indicates that enough torque / motive force is available at the transmission output shaft to release all the brakes without a risk of unintentional movement in the opposite direction.			
(R)	3087	Auxiliary Level	-71	65164	5-6	16	Level measured by a sensor.			
(R)	3088	Header height vertical rate control	-74			8	Setting for the header height raise/lower control speed rate			
(R)	3089	Header height sensitivity control	-74			8	Control setting for the header height system's sensitivity to ground contour changes			
(R)	3090	Header height setpoint change	-74			8	Number of clicks of the encoder used for header height setting since last transmitted CAN message			
(R)	3091	Header height setpoint change sequence number	-74			8	Sequence number of the Header Height Setpoint Change			
(R)	3092	Header platform height	-74			16	Height of the cutting platform			
(R)	3093	Header platform height maximum	-74			16	Maximum height of the cutting platform.			
(R)	3094	Header tilt angle	-74			8	Tilt angle of the lateral tilting feederhouse			
(R)	3095	Header tilt angle maximum	-74			8	Maximum tilt angle of the lateral tilting feederhouse			
(R)	3096	Header float pressure	-74			8	Pressure of the header height system lift cylinders,.			
(R)	3097	Header float pressure maximum	-74			8	Maximum pressure of the header height system lift cylinders			
(R)	3098	Header position percent	-74			8	Header height position, as a percent of maximum			
(R)	3099	Header position percent maximum	-74			8	Maximum mechanically allowable header height as a percentage of the allowed display height.			
(R)	3100	CTS rotor speed increment	-74			2	Increase Cylinder Tine Separator (CTS) rotor speed			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	3101	CTS rotor speed decrement	-74			2	Decrease Cylinder Tine Separator (CTS) rotor speed			
(R)	3102	Auger swing out	-74			2	Swing the auger out, away from vehicle			
(R)	3103	Auger swing in	-74			2	Swing the auger in, toward the vehicle			
(R)	3104	Auger swing out-auto	-74			2	Swing the auger out, away from the vehicle, auto mode			
(R)	3105	Auger swing in-auto	-74			2	Swing the auger in, toward the vehicle, auto mode			
(R)	3106	Side hill left tilt	-74			2	Tilt the machine chassis down to the left			
(R)	3107	Side hill right tilt	-74			2	Tilt the machine chassis down to the right			
(R)	3108	Spreader speed increment	-74			2	Increase the speed of the spreader			
(R)	3109	Spreader speed decrement	-74			2	Decrease the speed of the spreader			
(R)	3110	Precleaner open	-74			2	Open the precleaner			
(R)	3111	Precleaner close	-74			2	Close the precleaner			
(R)	3112	Open chaffer	-74			2	Open the chaffer			
(R)	3113	Close chaffer	-74			2	Close the chaffer			
(R)	3114	Open sieve	-74			2	Open the sieve			
(R)	3115	Close sieve	-74			2	Close the sieve			
(R)	3116	Move chopper vane left	-74			2	Move the chopper vane towards the left side of the machine			
(R)	3117	Move chopper vane right	-74			2	Move the chopper vane towards the right side of the vehicle			
(R)	3118	Quick stop switch	-74			2	Master quick stop switch for stopping the product related systems on the vehicle.			
(R)	3119	Auger engage/disengage	-74			2	Engage or disengage the (single) auger			
(R)	3120	Auger fold	-74			2	Fold the auger			
(R)	3121	Auger unfold	-74			2	Unfold the auger			
(R)	3122	Max cleaning shoe travel	-74			16	Max cleaning shoe travel allowed			
(R)	3123	Right hand header height setpoint	-74			16	Setpoint for the machine to control to.			
(R)	3124	Left hand header height setpoint	-74			16	Setpoint for the machine to control to.			
(R)	3125	Left hand header height	-74			16	Height of the Left hand header.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	3126	Right hand header height	-74			16	Height of the Right hand header.			
(R)	3127	Header control response rate setpoint	-74			16	Setpoint for the machine to control to. Rate of response to header control command changes			
(R)	3128	Header control response rate maximum setpoint	-74			16	Header control response rate maximum setpoint. Limits are usually determined by calibration process.			
(R)	3129	Header control response rate minimum setpoint	-74			16	Header control response rate minimum setpoint. Limits are usually determined by calibration process.			
(R)	3130	Product system tank water level	-74			16	Product system tank water level			
(R)	3131	Product fan speed	-74			16	Product fan speed			
(R)	3132	Product system manifold pressure	-74			8	Pressure of the liquid in the product system as measured at the manifold or main distribution point.			
(R)	3133	Product system pump discharge pressure	-74			16	Pressure of the liquid in the product system as measured at the pump discharge			
(R)	3134	Product fan hours	-74			16	Total Product fan running hours			
(R)	3135	Right hand header height max setpoint	-74			16	Maximum setpoint measured during calibration. Used to set max limit of control range.			
(R)	3136	Right hand header height min setpoint	-74			16	Minimum setpoint measured during calibration. Used to set min limit of control range.			
(R)	3137	Left hand header height min setpoint	-74			16	Minimum setpoint measured during calibration. Used to set min limit of control range.			
(R)	3138	Left hand header height max setpoint	-74			16	Maximum setpoint measured during calibration. Used to set max limit of control range.			
(R)	3139	Right hand header unit speed	-74			16	Right hand header unit speed			
(R)	3140	Left hand header unit speed	-74			16	Left hand header unit speed			
(R)	3141	GPS differential corrections license	NMEA 2000				The license bought for use by a differential correction GPS device (from the signal supplier).			
(R)	3142	Method, GNSS	NMEA 2000				The "Method" or "Quality" of the GPS signal.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	3143	Differential source	NMEA 2000				The source of a differential correction signal used by the GPS system used to calculate ECU position			
(R)	3144	Differential source, Secondary	NMEA 2000				The secondary source of a differential correction signal used by the GPS system used to calculate ECU position			
(R)	3145	DGNSS fix	NMEA 2000				This represents the point in the GPS signal flow process at which the GPS signal is determined after differential correction has been applied			
(R)	3146	PGN of message being configured	-74				The PGN of the Proprietarily Configurable Message (PCM) whose configuration is being identified by this Configuration Identification Message.			
(R)	3147	Parameter being included	-74				The SPN of the parameter whose location is presently being identified for grouping into the message whose PGN is in this Configuration Identification Message.			
(R)	3148	Position of configured parameter	-74				The number identifying a particular parameter's position within a configured message			
(R)	3149	Message will be used proprietarily	-74				Flag used to indicate that the message being configured is a member of the set of destination specific proprietarily configurable messages			
(R)	3150	Message will use transport protocol [1]	-74				Flag used to indicate whether the message being configured is one that will use transport protocol.			
(R)	3151	First parameter only being identified	-74				Flag which is used to identify whether only the first parameter that will be sent within one of the Configurable Messages is being identified with a Configuration Identification Message			
(R)	3152	Number of parameters included	-74				The number of parameters, which will be grouped into the message whose PGN is in this Configuration Identification Message.			
(R)	3153	Starting bit for this parameter	-74				The bit position that the LSB of the data for the parameter is to occupy within the configurable message being identified by the PGN.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	3154	Parameter to be located	-74				The parameter, identified by SPN, that it is desired to locate or to initiate the transmission			
(R)	3155	Parameter locate command	-74				Used to identify the particular command that the Parameter Locate message is presently being used for.			
(R)	3156	Blade Control Mode Switch	-71	61453	1.1	4	Indicates the blade control mode switch state the user has set for the land leveling system.			
(R)	3157	Desired Grade Offset Switch	-71	61453	1.5	4	Indicates the grade offset switch state the user has set for the land leveling system			
(R)	3158	Blade Auto Mode Command	-71	61453	2.1	4	Allows other controllers to command to the primary control system what they think is the appropriate auto control mode to be engaged in, based on the information they have available to them.			
(R)	3159	Trip Number	-71	64956	04-05	16	The identity number assigned to this trip.			
(R)	3160	Assigned Route	-71	64956	08-09	16	The identity number assigned to this route.			
(R)	3161	Pattern Number	-71	64956	06-07	16	The agency defined pattern number for this trip			
(R)	3162	Assigned Run	-71	64956	10-11	16	The agency defined run number for this trip			
(R)	3163	Assigned Block	-71	64956	12-13	16	The agency defined block number for this trip			
(R)	3164	Driver's farebox security code	-71	64956	14-15	16	Security code for the farebox, numerical only.			
(R)	3165	Fare Validity	-71	64955	3.1	4	Agency defined value indicating validity of this fare			
(R)	3166	Pass Category	-71	64955	3.5	4	Agency defined value indicating the category of the passenger associated with this fare			
(R)	3167	Initial Fare Agency	-71	64955	4.1	5	Identifies where the initial fare is paid			
(R)	3168	Transfer Sold	-71	64955	8	8	Indicates that a transfer was sold or issued on this transaction including its type and/or restrictions.			
(R)	3169	Route Number	-71	64955	6, 7.1	12	The route number issuing the transfer			
(R)	3170	Transaction Type	-71	64955	1.1	4	Enumerated value representing the type of transaction completed			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	3171	Passenger Type	-71	64955	1.5	4	Enumerated value representing the type/class of passenger			
(R)	3172	Type of Service	-71	64955	5.1	3	The type of service provided			
(R)	3173	Transfer Type	-71	64955	5.4	5	The kind of transfer used			
(R)	3174	Trip Direction	-71	64956	02.1	4	The general direction of travel for this trip.			
(R)	3175	Fare Presets	-71	64956	03	8	Fare Presets			
(R)	3176	Type of Fare	-71	64955	2.1	4	Type of Fare			
(R)	3177	Payment Details	-71	64955	2.5	4	Payment details.			
(R)	3178	Farebox Service Status	-71	64956	01.1	2	Indicates if the farebox is in or out of service.			
(R)	3179	Farebox Emergency Status	-71	64954	1.1	2	Indicates if a farebox emergency condition exists.			
(R)	3180	Trip Status	-71	64956	01.3	3	Trip Status			
(R)	3181	Farebox Alarm Identifier	-71	64954	2.1	7	Indicates the nature of the farebox alarm condition.			
(R)	3182	Transmission Retarder Enable Solenoid Valve	Top Level				Valve that makes hydraulic fluid available for retarder use.			
(R)	3183	Transmission Retarder Modulation Solenoid Valve	Top Level				Valve used to control hydraulic retarder application.			
(R)	3184	Transmission Lockup Clutch Pressure Indicator	Top Level				Pressure being applied to the torque converter lockup clutch.			
(R)	3185	Transmission Differential Lock Solenoid Valve	Top Level				Valve used to apply pressure to differential lock.			
(R)	3186	Transmission Differential Lock Clutch Pressure Indicator	Top Level				Indicates pressure applied to differential lock clutch.			
(R)	3187	Transmission Shift Console Data Link	Top Level				Communication link between transmission and shift selector.			
(R)	3188	XBR Message Checksum	-71	1024	8.5	4	The XBR message checksum is used to verify the signal path from the demanding device to the brake controller on electronic brake systems.			
(R)	3189	XBR Message Counter	-71	1024	8.1	4	The XBR message counter is to verify the signal path from the demanding device to the brake controller on electronic brake systems.			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	3190	Tire Location	-71	64953	1	8	Identifies which tire is associated with the parametric data in this PGN.			
(R)	3191	Reference Tire Pressure	-71	64953	2	8	Reference value of the tire pressure as basis for the tire pressure monitoring			
(R)	3192	Tire Location	-71	44544	1	8	Identifies which tire is associated with the parametric data in this PGN.			
(R)	3193	Reference Tire Pressure Setting	-71	44544	2	8	Reference value of the tire pressure setting as basis for the tire pressure monitoring			
(R)	3194	Control Byte	-31				Control byte used to identify the type of request or response for the Network message.			
(R)	3195	Number of Ports	-31				Number of ports in this NIECU			
(R)	3196	Uptime since last power-on reset	-31				Uptime (in seconds) since last power on reset.			
(R)	3197	Average Messages Filtered per Second	-31				Average number of messages filtered per second			
(R)	3198	Average Messages Forwarded per Second	-31				Average number of messages forwarded per second			
(R)	3199	Average Messages Received per Second	-31				Average number of messages received per second			
(R)	3200	Number of Messages with Excessive Transit Delay Time	-31				Number of messages with an excessive transit delay time			
(R)	3201	Number of Messages lost due to Buffer Overflow	-31				Number of message lost due to buffer overflow			
(R)	3202	Average Transit Delay Time	-31				Average transit delay time (in milliseconds).			
(R)	3203	Maximum Transit Delay Time	-31				Maximum transit delay time (in milliseconds).			
(R)	3204	Maximum Messages Filtered per Second	-31				Maximum number of messages filtered per second			
(R)	3205	Maximum Messages Forwarded per Second	-31				Maximum number of messages forwarded per second			
(R)	3206	Maximum Messages Received per Second	-31				Maximum number of messages received per second			
(R)	3207	Number of Filter Database Entries	-31				Number of filter database entries			
(R)	3208	Maximum Filter Database Size	-31				Maximum filter database size (in bytes)			
(R)	3209	Buffer Size	-31				Buffer size (in bytes)			

J1939 Reference								J1587 Reference		
Rev	SPN	SPN Name	J1939 Doc	PGN Number	Pos in PG	Bit Size	SPN Description	PID	MID	SID
(R)	3210	Parameter Number	-31				The ordinal number of a filter database parameter			
(R)	3211	SA_List	-31				A list of source addresses of ECUs that an NIECU "sees" in the segment beyond a port			
(R)	3212	PGN_List	-31				A list of parameter group numbers for filtering			
(R)	3213	Filter_Mode	-31				The method of filtering for a particular Port_pair: Pass (list) or Block (list)			
(R)	3214	Port_Pair	-31				An ordered pair of ports.			
(R)	3270	Number of bytes in the Milepost Identification	-71			8	Number of bytes in the Milepost Identification			
(R)	3289	Transmission Requested Gear Feedback	-71	65098	4	8	Feedback of the SPN 525 Transmission Requested Gear input as received from the shift selector, ABS or engine via PGN 256, Transmission Control #1 (TC1)			
(R)	520192	Manufacturer Assignable SPN (first entry)	-73			19				
(R)	524287	Manufacturer Assignable SPN (last entry)	-73			19				

Note: While most SPNs can only be found in at most one PGN, there are exceptions. SPNs marked with a superscript 1 (^{1}) (for example, SPN 2419) are used in multiple PGNs.