EthernetIP EDS and Explicit msg

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## Introduction

The communication protocol between the controller and the Valve Island system is established based on Ethernet/IP protocol. This document serves as a comprehensive guide to understanding the communication process, focusing specifically on Implicit and Explicit messages exchanged within this framework. Whether interpreting data sent to or received from the Valve Island, this document provides insights into the intricacies of both message types, facilitating a deeper understanding of their significance.

## Purpose

This document focuses on interpreting messages exchanged between the controller and the Valve Island system. It emphasizes the importance of understanding the type of data exchanged in both incoming and outgoing messages. Detailed information on message interpretation is provided within this document.

## Scope

This document will cover only Implicit messages covered by the EDS file and Explicit messages. It is limited to the MVP release/configuration of Valve Island.

MVP modules considered in this document are as follows:

1. Bus Node
2. IO-module – DIO (Digital Input 4 channels and Output 4 channels)
3. Eight Valve Stations
4. One ISEM Diagnostic module
5. Eight Diagnostic Valve (Sandwich Plate)
6. One Proportional Valve

Below content is valid till Version V1.0.6\_ of Mainbus node.

## Implicit messages / EDS File

An Ethernet/IP Electronic Data Sheet (EDS) file is a configuration file used in Valve Island devices. The EDS file contains information about the device's identity, capabilities, and communication parameters of Implicit messages.

Brief details that are focused on:

1. Device Identification: This section provides basic information about the device, such as its manufacturer, model number, and product name.
2. Features and Functionality: The EDS file outlines the device's capabilities, data types, input/output sizes.
3. Assembly Objects: Assembly objects define the structure of data exchanged between the device and the controller. They specify which data elements are accessible and how they are organized.

This EDS file is created based on the Valve Island physical modules that are assembled for MVP configuration.

Note: The content of this EDS file will change based on the configuration of the modules that are assembled as part of the product formation. Need to have a matching EDS file for each of the configuration that is built.

In this section, will detail the configurations for each of the module that is required.

## IO-Module – DIO

DIO module has 4 channels of Input and 4 Channels of Output. Each of the channels should have the configuration into EDS.

## DIO – output channel:

In the EDS file as part of assembly object, DIO - output channels parameter should be defined.

The structure of the Output channels for using in the controller (PLC) will be as follows:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
| X | X | X | X | Channel 4 | Channel 3 | Channel 2 | Channel 1 |

## DIO – Input channel:

In the EDS file as part of assembly object, DIO - Input channels parameter should be defined.

There are two parameters that will be sent to PLC that is Input channel data and Error data.

The structure of the Input channels for using in the controller (PLC) will be as follows:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
| X | X | X | X | Channel 4 | Channel 3 | Channel 2 | Channel 1 |

The structure of Error Byte is

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
| X | X | X | X | VB over/under Voltage | VA  over/under Voltage | Output Error | Input Error |

## Stations/Valves

## EDS file configuration from Controller to Valve Station

#### Station/Standard Valve **–** ON/OFF**:**

In the EDS file as part of assembly object, Standard Valve **–** ON/OFF parameter should be defined as output that is data flow is from controller to Valve station.

The Bit configuration of the Standard Valve **–** ON/OFF for using in the controller (PLC) will be as follows:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
| Station 4 Coil B | Station 4 Coil A | Station 3 Coil B | Station 3 Coil A | Station 2 Coil B | Station 2 Coil A | Station 1 Coil B | Station 1 Coil A |

Above Bit configuration of the Standard Valve **–** ON/OFF for using in the controller (PLC) is for 4 stations. To extend to more stations, additional parameter should be added to EDS file as part of assembly object.

#### Proportional Valve:

In the EDS file as part of assembly object, Proportional Valve parameter should be defined as output that is data flow is from controller to Valve station.

The data length will be Two Bytes or data type Uint.

Need to set the pressure on the Proportional valve real time and that is done by this parameter.

## EDS file configuration from Valve Station to Controller

#### ISEM Diagnostic Status:

In the EDS file as part of assembly object, ISEM Diagnostic information parameter should be defined as input that is data flow is from Valve station to Controller.

The data length will be Two Bytes or data type Uint.



#### Station/Standard Valve Status:

In the EDS file as part of assembly object, Standard Valve **–** Status parameter should be defined as input that is data flow is from Valve station to Controller.

The data length will be Two Bytes or data type UINT.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
| Station 8 | Station 7 | Station 6 | Station 5 | Station 4 | Station 3 | Station 2 | Station 1 |

#### Station Diagnostic Valve Status:

In the EDS file as part of assembly object, Station Diagnostic Valve **–** Status parameter should be defined as input that is data flow is from Valve station to Controller. This is for one Diagnostic Valve.

Note: If more than one Diagnostic Valve is installed then that many parameter should be defined in assembly object of EDS.

The data length for each Diagnostic Valve will be Two Bytes or data type Uint.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
| PDI STATUS (IOPS – Input Output Producer Status) | PDO STATUS (IOCS – I/O Consumer Status) | PENDING FAULT EVENT | PENDING WARNING EVENT | PILOT12 SIGNAL | PILOT14 SIGNAL | OPERATNG STATUS | |

#### Proportional Valve Status:

In the EDS file as part of assembly object, Proportional Valve information parameter should be defined as input that is data flow is from Valve station to Controller.

The data length will be Two Bytes or data type Uint.

#### Proportional Valve Output port Pressure:

In the EDS file as part of assembly object, Proportional Valve information parameter should be defined as input that is data flow is from Valve station to Controller.

The data length will be Two Bytes or data type Uint.

## Explicit Messages

The Ethernet/IP protocol supports Explicit Messages, also referred to as acyclic data. These messages are non-time critical and are requested by the controller from the Valve Island system as needed. Explicit Messages typically include static or non-time critical data, such as device identification information or various parameters required for system configuration and operation.

Unlike Implicit Messages, which are cyclically exchanged between devices, Explicit Messages are initiated by the controller based on specific requirements. This on-demand nature allows for efficient utilization of network bandwidth and ensures that critical data is transmitted promptly when needed.

An example of Explicit Message usage could involve retrieving device identification information or accessing configuration parameters essential for system functionality. By facilitating the exchange of non-time critical data, Explicit Messages play a crucial role in enabling flexible and responsive communication between the controller and the Valve Island system within the Ethernet/IP network architecture.

Below Table provide comprehensive Explicit data request from PLC means.

## IO-Module – DIO, DI and DO

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter Name** | **Class** | **Instance** | **Attribute (Hex)** | **Access** | **Data Type** |
| ENABLE\_IMPLICIT | 1e | 1 | 6 | RO | UINT |
| DI1\_DEBOUNCEDUR | 80 | 1 | 301 | RW | UINT |
| DI2\_DEBOUNCEDUR | 80 | 1 | 302 | RW | UINT |
| DI3\_DEBOUNCEDUR | 80 | 1 | 303 | RW | UINT |
| DI4\_DEBOUNCEDUR | 80 | 1 | 304 | RW | UINT |
| DI5\_DEBOUNCEDUR | 80 | 1 | 305 | RW | UINT |
| DI6\_DEBOUNCEDUR | 80 | 1 | 306 | RW | UINT |
| DI7\_DEBOUNCEDUR | 80 | 1 | 307 | RW | UINT |
| DI8\_DEBOUNCEDUR | 80 | 1 | 308 | RW | UINT |
| DI1\_HOLDDUR | 80 | 1 | 309 | RW | UINT |
| DI2\_HOLDDUR | 80 | 1 | 30a | RW | UINT |
| DI3\_HOLDDUR | 80 | 1 | 30b | RW | UINT |
| DI4\_HOLDDUR | 80 | 1 | 30c | RW | UINT |
| DI5\_HOLDDUR | 80 | 1 | 30d | RW | UINT |
| DI6\_HOLDDUR | 80 | 1 | 30e | RW | UINT |
| DI7\_HOLDDUR | 80 | 1 | 30f | RW | UINT |
| DI8\_HOLDDUR | 80 | 1 | 310 | RW | UINT |
| DO\_IDLEMODEENABLE | 80 | 1 | 31a | RW | UINT |
| DIO\_FAULTRECOVERYENABLE | 80 | 1 | 31b | RW | UINT |
| DI1\_4\_INPUTTYPE | 80 | 1 | 31d | RW | UINT |
| DI5\_8\_INPUTTYPE | 80 | 1 | 31e | RW | UINT |
| SENSUPL\_SHRTCKTDIAGEN | 80 | 1 | 31f | RW | UINT |
|  |  |  |  |  |  |
| DI1\_CHNLERRSTS | 80 | 1 | 320 | RO | UINT |
| DI2\_CHNLERRSTS | 80 | 1 | 321 | RO | UINT |
| DI3\_CHNLERRSTS | 80 | 1 | 322 | RO | UINT |
| DI4\_CHNLERRSTS | 80 | 1 | 323 | RO | UINT |
| DI5\_CHNLERRSTS | 80 | 1 | 324 | RO | UINT |
| DI6\_CHNLERRSTS | 80 | 1 | 325 | RO | UINT |
| DI7\_CHNLERRSTS | 80 | 1 | 326 | RO | UINT |
| DI8\_CHNLERRSTS | 80 | 1 | 327 | RO | UINT |
| DO1\_CHNLERRSTS | 80 | 1 | 328 | RO | UINT |
| DO2\_CHNLERRSTS | 80 | 1 | 329 | RO | UINT |
| DO3\_CHNLERRSTS | 80 | 1 | 32a | RO | UINT |
| DO4\_CHNLERRSTS | 80 | 1 | 32b | RO | UINT |
| DO5\_CHNLERRSTS | 80 | 1 | 32c | RO | UINT |
| DO6\_CHNLERRSTS | 80 | 1 | 32d | RO | UINT |
| DO7\_CHNLERRSTS | 80 | 1 | 32e | RO | UINT |
| DO8\_CHNLERRSTS | 80 | 1 | 32f | RO | UINT |
| VA\_VOLTAGE | 80 | 1 | 330 | RO | UDINT |
| VB\_VOLTAGE | 80 | 1 | 331 | RO | UDINT |
| POST\_ERRSTS | 80 | 1 | 332 | RO | UDINT |
| DIO\_IDENT\_DEVICETYPE | 80 | 1 | 333 | RO | UDINT |
| DIO\_IDENT\_VENDORNAME | 80 | 1 | 334 | RO | STRING |
| DIO\_IDENT\_VENDORID | 80 | 1 | 335 | RO | UDINT |
| DIO\_IDENT\_DEVICENAME | 80 | 1 | 336 | RO | STRING |
| DIO\_IDENT\_DEVICEID | 80 | 1 | 337 | RO | UDINT |
| DIO\_IDENT\_VARIANTID | 80 | 1 | 338 | RO | STRING |
| DIO\_IDENT\_HWREV | 80 | 1 | 339 | RO | STRING |
| DIO\_IDENT\_SERIALNO | 80 | 1 | 33a | RO | STRING |
| DIO\_IDENT\_SWPARTNO | 80 | 1 | 33b | RO | STRING |
| DIO\_IDENT\_SWREV | 80 | 1 | 33c | RO | STRING |
| DIO\_OPERATIONTIME\_HR | 80 | 1 | 33d | RO | UDINT |
| DIO\_OPERATIONTIME\_MIN | 80 | 1 | 33e | RO | UDINT |
| DIO\_MEMORYLIFECYCLE | 80 | 1 | 33f | RO | UDINT |

Below Parameters are bit controlled. That is each bit is a channel starting with bit 0 is Channel 1.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| DI1\_8\_LOGICINVERT | 80 | 1 | 311 | RW | UINT |
| DI1\_8\_FORCEENABLE | 80 | 1 | 312 | RW | UINT |
| DI1\_8\_FORCESTATE | 80 | 1 | 313 | RW | UINT |
| DO1\_8\_BUSFAULTENABLE | 80 | 1 | 314 | RW | UINT |
| DO1\_8\_BUSFAULTSTATE | 80 | 1 | 315 | RW | UINT |
| DO1\_8\_FORCEENABLE | 80 | 1 | 316 | RW | UINT |
| DO1\_8\_FORCESTATE | 80 | 1 | 317 | RW | UINT |
| DO1\_8\_IDLEMODEENABLE | 80 | 1 | 318 | RW | UINT |
| DO1\_8\_IDLEMODESTATE | 80 | 1 | 319 | RW | UINT |
| SENSORSUPPLY\_ENABLE | 80 | 1 | 31c | RW | UINT |
| DI\_BOTHEDGE\_INT | 80 | 1 | 340 | RW | UINT |
| DI\_LOTOHIEDGE\_INT | 80 | 1 | 341 | RW | UINT |
| DI\_HITOLOEDGE\_INT | 80 | 1 | 342 | RW | UINT |
| DIO\_CHNLPOS\_ERRSTATUS | 80 | 1 | 34D | RO | UINT |

## Valves/Stations configurations

## PRESSURE ZONE Information

ISEM diagnostics, Stations and Diagnostic valves are grouped together as pressure zones. Start of each pressure zone is identified by ISEM Backplane board.

First Pressure Zone will start with Class 0x81

Second Pressure Zone will start with Class 0x82 and so on.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter Name** | **Class** | **Instance** | **Attribute (Hex)** | **Access** | **Data Type** |
| PZ\_ID | 81 | 100 | 301 | RO | UINT |
| PZ\_IISEMDIAG\_PRESENT | 81 | 100 | 302 | RO | UINT |
| PZ\_NOOFSTATIONS | 81 | 100 | 303 | RO | UINT |
| PZ\_PROP\_EXTERNAL\_PORT | 81 | 100 | 304 | RO | UINT |

Below Parameters are bit controlled. That is each bit is a station starting with bit 0 is Station 1.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PZ\_DIAGVALVE\_POSITION | 81 | 100 | 305 | RO | UINT |

## ISEM Diagnostic Parameters

Under each pressure zone there may be a ISEM Diagnostic module and if it is present then the following will the details to Access the data.

Note: Below table is for Pressure Zone 1 where the Class is 0x81. If you need to get ISEM Diagnostic information of Pressure zone n then the Class will be 0x80+n. Instance and Attribute will be as below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter Name** | **Class** | **Instance** | **Attribute (Hex)** | **Access** | **Data Type** |
| ISEMDIAG\_WARNEVNTBITS | 81 | 101 | 301 | RO | UDINT |
| ISEMDIAG\_WARNSTSBITS | 81 | 101 | 302 | RO | UDINT |
| ISEMDIAG\_WARNEVNTCOUNT | 81 | 101 | 303 | RO | UINT |
| ISEMDIAG\_FAULTEVNTBITS | 81 | 101 | 304 | RO | UDINT |
| ISEMDIAG\_FAULTEVNTCOUNT | 81 | 101 | 305 | RO | UINT |
| ISEMDIAG\_MinRatedPressure | 81 | 101 | 306 | RO | UINT |
| ISEMDIAG\_MinApplPressure | 81 | 101 | 309 | RW | INT |
| ISEMDIAG\_MaxApplPressure | 81 | 101 | 30a | RW | INT |
| ISEMDIAG\_ApplPresHysteresis | 81 | 101 | 30b | RW | INT |
| ISEMDIAG\_MeasuredPressure | 81 | 101 | 30c | RO | INT |
| ISEMDIAG\_RatedAuxVoltHyst | 81 | 101 | 30f | RW | INT |
| ISEMDIAG\_MeasuredAuxVolt | 81 | 101 | 310 | RO | INT |
| ISEMDIAG\_RatedAuxCurHyst | 81 | 101 | 312 | RW | INT |
| ISEMDIAG\_MeasuredAuxCur | 81 | 101 | 313 | RO | INT |
| ISEMDIAG\_POST\_ERRSTS | 81 | 101 | 314 | RO | UDINT |
| ISEMDIAG\_IDENT\_DEVICETYPE | 81 | 101 | 315 | RO | UDINT |
| ISEMDIAG\_IDENT\_VENDORNAME | 81 | 101 | 316 | RO | STRING |
| ISEMDIAG\_IDENT\_VENDORID | 81 | 101 | 317 | RO | UDINT |
| ISEMDIAG\_IDENT\_DEVICENAME | 81 | 101 | 318 | RO | STRING |
| ISEMDIAG\_IDENT\_DEVICEID | 81 | 101 | 319 | RO | UDINT |
| ISEMDIAG\_IDENT\_VARIANTID | 81 | 101 | 31a | RO | STRING |
| ISEMDIAG\_IDENT\_HWREV | 81 | 101 | 31b | RO | STRING |
| ISEMDIAG\_IDENT\_SERIALNO | 81 | 101 | 31c | RO | STRING |
| ISEMDIAG\_IDENT\_SWPARTNO | 81 | 101 | 31d | RO | STRING |
| ISEMDIAG\_IDENT\_SWREV | 81 | 101 | 31e | RO | STRING |
| ISEMDIAG\_PWRONTIME\_HR | 81 | 101 | 31f | RO | UDINT |
| ISEMDIAG\_PWRONTIME\_MIN | 81 | 101 | 320 | RO | UINT |
| ISEMDIAG\_OPERATIONTIME\_HR | 81 | 101 | 321 | RO | UDINT |
| ISEMDIAG\_OPERATIONTIME\_MIN | 81 | 101 | 322 | RO | UINT |
| ISEM\_BCKPLANE\_IDENT\_DEVICETYPE | 81 | 101 | 323 | RO | UDINT |
| ISEM\_BCKPLANE\_IDENT\_VENDORNAME | 81 | 101 | 324 | RO | STRING |
| ISEM\_BCKPLANE\_IDENT\_VENDORID | 81 | 101 | 325 | RO | UDINT |
| ISEM\_BCKPLANE\_IDENT\_DEVICENAME | 81 | 101 | 326 | RO | STRING |
| ISEM\_BCKPLANE\_IDENT\_DEVICEID | 81 | 101 | 327 | RO | UDINT |
| ISEM\_BCKPLANE\_IDENT\_VARIANTID | 81 | 101 | 328 | RO | STRING |
| ISEM\_BCKPLANE\_IDENT\_HWREV | 81 | 101 | 329 | RO | STRING |
| ISEM\_BCKPLANE\_IDENT\_SERIALNO | 81 | 101 | 32a | RO | STRING |
| ISEM\_BCKPLANE\_IDENT\_SWPARTNO | 81 | 101 | 32b | RO | STRING |
| ISEM\_BCKPLANE\_IDENT\_SWREV | 81 | 101 | 32c | RO | STRING |

## Diagnostic Valve Parameters

Under each pressure zone there will be stations with Valve they are know as standard Valves. These Valve may have Diagnostic Valve module and if it is present then the following will the details to Access the data.

Note: Below table is for Pressure Zone 1 where the Class is 0x81. ISEM Diagnostic information of Pressure zone ‘n’ will be the Class with 0x80+n. Instance number will be same as station number to which Diagnostic Valve is attached. Attribute remained as below for all Diagnostic valve attached to a station.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter Name** | **Class** | **Instance** | **Attribute (Hex)** | **Access** | **Data Type** |
| ISEM STATION PARAMETERS | Replace **Y** with station Number - starting with 1 | | | | |
| STA\_WARNEVNTBITS | 81 | Y | 301 | RO | UDINT |
| STA\_WARNSTSBITS | 81 | Y | 302 | RO | UDINT |
| STA\_WARNEVNTCOUNT | 81 | Y | 303 | RO | UINT |
| STA\_FAULTEVNTBITS | 81 | Y | 304 | RO | UDINT |
| STA\_FAULTEVNTCOUNT | 81 | Y | 305 | RO | UINT |
| STA\_RatedAuxVoltHyst | 81 | Y | 308 | RW | INT |
| STA\_MeasuredAuxVolt | 81 | Y | 309 | RO | INT |
| STA\_Port2MesrdPressure | 81 | Y | 30a | RO | INT |
| STA\_Port2PressMonitorDly | 81 | Y | 30b | RW | UINT |
| STA\_Port4MesrdPressure | 81 | Y | 30c | RO | INT |
| STA\_Port4PressMonitorDly | 81 | Y | 30d | RW | UINT |
| STA\_MinApplPressure | 81 | Y | 30e | RW | INT |
| STA\_MaxApplPressure | 81 | Y | 30f | RW | INT |
| STA\_ApplPresHysteresis | 81 | Y | 310 | RW | INT |
| STA\_ExhaustPresHysteresis | 81 | Y | 311 | RW | INT |
| STA\_Port2PressCycleCounter | 81 | Y | 312 | RO | UDINT |
| STA\_Port2ApplPressCyclRating | 81 | Y | 313 | RW | UDINT |
| STA\_Port4PressCycleCounter | 81 | Y | 314 | RO | UDINT |
| STA\_Port4ApplPressCyclRating | 81 | Y | 315 | RW | UDINT |
| STA\_Valve12CycleCounter | 81 | Y | 316 | RO | UDINT |
| STA\_Valve12ApplCyclRating | 81 | Y | 317 | RW | UDINT |
| STA\_Valve14CycleCounter | 81 | Y | 318 | RO | UDINT |
| STA\_Valve14ApplCyclRating | 81 | Y | 319 | RW | UDINT |
| STA\_ValveSliceFunction | 81 | Y | 31a | RW | UINT |
| STA\_ValveSlice12Side | 81 | Y | 31b | RW | UINT |
| STA\_Coil12HitCurrent | 81 | Y | 31c | RO | INT |
| STA\_Coil12HitPower | 81 | Y | 31d | RO | INT |
| STA\_Coil12HoldCurrent | 81 | Y | 31e | RO | INT |
| STA\_Coil12HoldVolage | 81 | Y | 31f | RW | INT |
| STA\_Coil12HoldPower | 81 | Y | 320 | RW | INT |
| STA\_Coil12HitCurHysteresis | 81 | Y | 321 | RW | INT |
| STA\_Coil14HitCurrent | 81 | Y | 322 | RO | INT |
| STA\_Coil14HitPower | 81 | Y | 323 | RO | INT |
| STA\_Coil14HoldCurrent | 81 | Y | 324 | RO | INT |
| STA\_Coil14HoldVolage | 81 | Y | 325 | RW | INT |
| STA\_Coil14HoldPower | 81 | Y | 326 | RW | INT |
| STA\_Coil14HitCurHysteresis | 81 | Y | 327 | RW | INT |
| STA\_IDENT\_DEVICETYPE | 81 | Y | 328 | RO | UDINT |
| STA\_INTR\_IDENT\_VENDORNAME | 81 | Y | 329 | RO | STRING |
| STA\_INTR\_IDENT\_VENDORID | 81 | Y | 32a | RO | UDINT |
| STA\_INTR\_IDENT\_DEVICENAME | 81 | Y | 32b | RO | STRING |
| STA\_INTR\_IDENT\_DEVICEID | 81 | Y | 32c | RO | UDINT |
| STA\_INTR\_IDENT\_VARIANTID | 81 | Y | 32d | RO | STRING |
| STA\_INTR\_IDENT\_HWREV | 81 | Y | 32e | RO | STRING |
| STA\_INTR\_IDENT\_SERIALNO | 81 | Y | 32f | RO | STRING |
| STA\_INTR\_IDENT\_SWPARTNO | 81 | Y | 330 | RO | STRING |
| STA\_INTR\_IDENT\_SWREV | 81 | Y | 331 | RO | STRING |
| STA\_PWRONTIME\_HR | 81 | Y | 332 | RO | UDINT |
| STA\_PWRONTIME\_MIN | 81 | Y | 333 | RO | UINT |
| STA\_OPERATIONTIME\_HR | 81 | Y | 334 | RO | UDINT |
| STA\_OPERATIONTIME\_MIN | 81 | Y | 335 | RO | UINT |

Below Parameters are bit controlled. That is each bit is a station starting with bit 0 is Station 1.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| STA\_DV\_ERROR\_STATUS | 81 | Y | 336 | RO | UINT |

## Proportional Valve

Proportional valve may be part of the pressure Zone or external to Pressure Zone. Depending on the configuration the

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter Name** | **Class** | **Instance** | **Attribute (Hex)** | **Access** | **Data Type** |
| PROP\_INTR\_TEMPERATURE | 81 | 102 | 301 | RO | UINT |
| PROP\_INTR\_OPRMIN | 81 | 102 | 302 | RO | UINT |
| PROP\_INTR\_OPRHR | 81 | 102 | 303 | RO | UDINT |
| PROP\_INTR\_CYCLECOUNTER | 81 | 102 | 304 | RO | UDINT |
| PROP\_INTR\_CONTROL\_KP | 81 | 102 | 305 | RW | UINT |
| PROP\_INTR\_CONTROL\_KI | 81 | 102 | 306 | RW | UINT |
| PROP\_INTR\_CONTROL\_KD | 81 | 102 | 307 | RW | UINT |
| PROP\_INTR\_CONTROL\_SPANADJST | 81 | 102 | 308 | RW | INT |
| PROP\_INTR\_CONTROL\_ZEROADJST | 81 | 102 | 309 | RW | INT |
| PROP\_INTR\_CONTROL\_LCDBRIGHT | 81 | 102 | 30a | RW | UINT |
| PROP\_INTR\_POST\_ERRSTS | 81 | 102 | 30b | RO | UDINT |
| PROP\_INTR\_IDENT\_DEVICETYPE | 81 | 102 | 30c | RO | UDINT |
| PROP\_INTR\_IDENT\_VENDORNAME | 81 | 102 | 30d | RO | STRING |
| PROP\_INTR\_IDENT\_VENDORID | 81 | 102 | 30e | RO | UDINT |
| PROP\_INTR\_IDENT\_DEVICENAME | 81 | 102 | 30f | RO | STRING |
| PROP\_INTR\_IDENT\_DEVICEID | 81 | 102 | 310 | RO | UDINT |
| PROP\_INTR\_IDENT\_VARIANTID | 81 | 102 | 311 | RO | STRING |
| PROP\_INTR\_IDENT\_HWREV | 81 | 102 | 312 | RO | STRING |
| PROP\_INTR\_IDENT\_SERIALNO | 81 | 102 | 313 | RO | STRING |
| PROP\_INTR\_IDENT\_SWPARTNO | 81 | 102 | 314 | RO | STRING |
| PROP\_INTR\_IDENT\_SWREV | 81 | 102 | 315 | RO | STRING |
| PROP\_BCKPLANE\_IDENT\_DEVICETYPE | 81 | 102 | 316 | RO | UDINT |
| PROP\_BCKPLANE\_IDENT\_VENDORNAME | 81 | 102 | 317 | RO | STRING |
| PROP\_BCKPLANE\_IDENT\_VENDORID | 81 | 102 | 318 | RO | UDINT |
| PROP\_BCKPLANE\_IDENT\_DEVICENAME | 81 | 102 | 319 | RO | STRING |
| PROP\_BCKPLANE\_IDENT\_DEVICEID | 81 | 102 | 31a | RO | UDINT |
| PROP\_BCKPLANE\_IDENT\_VARIANTID | 81 | 102 | 31b | RO | STRING |
| PROP\_BCKPLANE\_IDENT\_HWREV | 81 | 102 | 31c | RO | STRING |
| PROP\_BCKPLANE\_IDENT\_SERIALNO | 81 | 102 | 31d | RO | STRING |
| PROP\_BCKPLANE\_IDENT\_SWPARTNO | 81 | 102 | 31e | RO | STRING |
| PROP\_BCKPLANE\_IDENT\_SWREV | 81 | 102 | 31f | RO | STRING |

## Eds Files Example

In this section, assembly object part of EDS file will be covered for different configurations of the Valve Island.

## Example 1

Valve Island with following configuration

1. MBN
2. DIO
3. Station 1
4. Station 2
5. Proportional Valve

The assembly object will be as follows

[Assembly]

Object\_Name = "Assembly Object";

Object\_Class\_Code = 0x04;

MaxInst = 3;

Number\_Of\_Static\_Instances = 3;

Max\_Number\_Of\_Dynamic\_Instances = 0;

Assem1 =

"Producing Assembly (Input Data)",

,

,

0x0001,

,,

8,Param5, $ DIO Input Data from Digital Input channel

8,Param5, $ DIO Error status

16,Param6, $ Station/Standard Valve Status

16,Param6, $ Proportional Valve Status

16,Param6; $ Proportional Valve Output port Pressure

Assem2 =

"Consuming Assembly (Output Data)",

,

,

0x0001,

,,

8,Param2, $ DIO – output channel

8,Param3, $ Station/Standard Valve ON/OFF for station1 and Station 2.

16,Param7; $ Proportional Valve Pressure set point.

Valve Island with following configuration

1. MBN
2. DIO
3. ISEM Diagnostic
4. Station 1
5. Station 2
6. Proportional Valve

The assembly object will be as follows

[Assembly]

Object\_Name = "Assembly Object";

Object\_Class\_Code = 0x04;

MaxInst = 3;

Number\_Of\_Static\_Instances = 3;

Max\_Number\_Of\_Dynamic\_Instances = 0;

Assem1 =

"Producing Assembly (Input Data)",

,

,

0x0001,

,,

8,Param5, $ DIO Input Data from Digital Input channel

8,Param5, $ DIO Error status

16,Param6, $ ISEM Diagnostic Status

16,Param6, $ Station/Standard Valve Status

16,Param6, $ Proportional Valve Status

16,Param6; $ Proportional Valve Output port Pressure

Assem2 =

"Consuming Assembly (Output Data)",

,

,

0x0001,

,,

8,Param2, $ DIO – output channel

8,Param3, $ Station/Standard Valve ON/OFF for station1 and Station 2.

16,Param7; $ Proportional Valve Pressure set point.

Valve Island with following configuration

1. MBN
2. DIO
3. ISEM Diagnostic
4. Station 1
5. Diagnostic Valve – Station1
6. Station 2
7. Diagnostic Valve – Station 2
8. Proportional Valve

The assembly object will be as follows

[Assembly]

Object\_Name = "Assembly Object";

Object\_Class\_Code = 0x04;

MaxInst = 3;

Number\_Of\_Static\_Instances = 3;

Max\_Number\_Of\_Dynamic\_Instances = 0;

Assem1 =

"Producing Assembly (Input Data)",

,

,

0x0001,

,,

8,Param5, $ DIO Input Data from Digital Input channel

8,Param5, $ DIO Error status

16,Param6, $ ISEM Diagnostic Status

16,Param6, $ Station/Standard Valve Status

16,Param6, $ Diagnostic Valve Status for Station 1

16,Param6, $ Diagnostic Valve Status for Station 2

16,Param6, $ Proportional Valve Status

16,Param6; $ Proportional Valve Output port Pressure

Assem2 =

"Consuming Assembly (Output Data)",

,

,

0x0001,

,,

8,Param2, $ DIO – output channel

8,Param3, $ Station/Standard Valve ON/OFF for station1 and Station 2.

16,Param7; $ Proportional Valve Pressure set point.

Valve Island with following configuration

1. MBN
2. DIO
3. ISEM Diagnostic
4. Station 1
5. Diagnostic Valve – Station1
6. Station 2
7. Station 3
8. Diagnostic Valve – Station 3 - In this case need to read using Explicit message position of DV
9. Proportional Valve

The assembly object will be as follows

[Assembly]

Object\_Name = "Assembly Object";

Object\_Class\_Code = 0x04;

MaxInst = 3;

Number\_Of\_Static\_Instances = 3;

Max\_Number\_Of\_Dynamic\_Instances = 0;

Assem1 =

"Producing Assembly (Input Data)",

,

,

0x0001,

,,

8,Param5, $ DIO Input Data from Digital Input channel

8,Param5, $ DIO Error status

16,Param6, $ ISEM Diagnostic Status

16,Param6, $ Station/Standard Valve Status

16,Param6, $ Diagnostic Valve Status for Station 1

16,Param6, $ Diagnostic Valve Status for Station 3

16,Param6, $ Proportional Valve Status

16,Param6; $ Proportional Valve Output port Pressure

Assem2 =

"Consuming Assembly (Output Data)",

,

,

0x0001,

,,

8,Param2, $ DIO – output channel

8,Param3, $ Station/Standard Valve ON/OFF for station1, Station 2 and Station3.

16,Param7; $ Proportional Valve Pressure set point.

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Software Quality Assurance

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