# Truck Component *Order Sheet* Breakdown for Cybersecurity Matrix

The first level are categories that match truck order sheets and they are the 'anchor' to what the fleets will understand when creating their RFP/RFQs. The next level are the individual *components* to which we will apply security requirements.

Each component may or may not be present on a particular truck being spec'd for quote. Furthermore, each component being spec'd may be implemented by a portion of a device, one whole device or multiple devices provided by the OEM. Because of this order-centric view (for the benefit of the fleets), OEMs receiving RFPs may view duplication of requirements in questionnaires.

Each component below has been assigned to a ‘class’ of cybersecurity requirements 0-5. The classes are generally defined as captured in the table below. Each assignment of a component to a class was determined by performing a risk analysis of modern truck topologies in cooperation with OEMs and fleets. The OEMs shared enough detail to form estimates of attack likelihood and the fleets shared enough information to form estimates of attack impact, which yielded risk estimates for each component. For more detail on this process, please see the *Component Class Assignment* workbook sheet *Simplified Risk Analysis and Classification.*

|  |  |  |
| --- | --- | --- |
| Class | Characteristics | Examples |
| 0 Telematics | Truck modules that connect to cellular, satellite or other Wide Area Networks (WANs) or wireless networks, or the internet | ELDs, Trailer Trackers, Trailer Telematics, Brake Telematics, Engine Telematics, Transmission Telematics, Tire Telematics, Reefer Telematics, Remote Diagnostics, Remote Emissions Monitoring Engine Telematics (J1939 SA 249), Transmission Telematics, Exterior Camera Telematics, Interior Camera Telematics, OEM Telematics (aka Telematics GateWay (TGW) / Off Vehicle Gateway / Communications Unit / Communications Telematics (CTP-FB)) (J1939 SA 249, 251), Brake Telematics |
| 1 Vehicle Gateway | Truck modules intended to transport, translate, transform, filter or encapsulate data between two or more vehicle network segments | Telematics Interface Gateways, Diagnostics Interface Gateways Onboard Diagnostics Connector Gateway (aka Gateway (CGW)) (J1939 SA 39, 17, 44, 49, 50, 77), 3rd Party Equipment Gateway (J1939 SA 249), Telematics Interface Gateway |
| 2 Multi Segment | Truck modules that are not intended to be *Vehicle Gateways* but nonetheless are connected to one or more vehicle network segments | Ignition Control Module #2 (J1939 SA 57), Low-Voltage Disconnect (J1939 SA 49), Oil Sensor (J1939 SA 00), Starter System (J1939 SA 00, 03), Thermal Management System Controller (J1939 SA 49), Water Pump Controller (J1939 SA 57), Fuel Heater, In-Tank (J1939 SA 72), Steering Input Unit (aka Steering Angle Sensor (SAS)), Differential Lock Controller (J1939 SA 138, 72, 39 ), Antilock Brake System (ABS) (J1939 SA 11), Traction Control (J1939 SA 138, 39), Suspension - Drive Axle #1 (J1939 SA 138, 72, 39), Suspension - Drive Axle #2 (J1939 SA 22), Tractor/Trailer Bridge #2 (J1939 SA 138, 39), Tractor-Trailer Bridge #1 (J1939 SA 32), Tire Pressure Controller (aka Tire Pressure Monitoring System (TPMS)) (J1939 SA 51), Wheel End Monitoring, Body-to-Vehicle Interface Control (aka VECU - Vehicle ECU) (J1939 SA 33), Fifth Wheel Smart System (J1939 SA 138, 39), Forward Road Image Processor (J1939 SA 232), ADAS Lane Keep (aka LCS Side Sensor (blind spot only) / Lane Warning / Lane Departure Warning System / Bendix Fusion / Exterior Camera for Lane Departune Warning / Driver Assistance Camera (MPC)) (J1939 SA 232, 19), Cab Controller - Primary (aka SAM CAB) (J1939 SA 49), Cab Controller - Secondary (J1939 SA 50), Cruise Control (J1939 SA 17), Object Detection Display (aka Active Safety Components / Bendix Fusion (Display)), ADAS Adaptive Cruise Control (aka Bendix Fusion) (J1939 SA 42), Ammeter (J1939 SA 23, 39), On Board Diagnostic Unit (aka OEM Factory & Service tool) (J1939 SA 250), Predictive Cruise Control (aka E-Horizon / Intelligent Predictive Powertrain Control (IPPC)) (J1939 SA 75), Brakes - System Controller (J1939 SA 11), Parking Brake Controller (J1939 SA 80) |
| Class 3 | Truck modules found to have a 'high' overall fleet risk | Engine #1 (aka Motor Control Module (MCM) / Engine Management System (EMS) / Engine Control Module (ECM)) (J1939 SA 00, 01), Engine Cylinder Pressure Monitoring System, Aftertreatment #1 system gas intake (J1939 SA 81), Aftertreatment #2 system gas intake (J1939 SA 86), Diesel Particulate Filter Controller (aka Aftertreatment Control Module (ACM) / Exhaust Emission Controller) (J1939 SA 211), Engine Exhaust Backpressure (J1939 SA 34), Engine Valve Controller (J1939 SA 0), Fan Drive Controller (aka Fan Hub) (J1939 SA 78), Idle Control System (J1939 SA 68), Powertrain Control Module (aka Common Powertrain Controller Module (CPC)) (J1939 SA 90), Propulsion Battery Charger (J1939 SA 73), Retarder - Engine (J1939 SA 15), Retarder, Exhaust, Engine #1, Retarder, Exhaust, Engine #2, Radiator (aka Radiator Fan Control) (J1939 SA 78, 00, 255), Oil Pan Heater (J1939 SA 00), Clutch/Converter Unit (J1939 SA 78), Power TakeOff - (Main or Rear) (J1939 SA 07), Power TakeOff (Front or Secondary) (J1939 SA 07), Retarder - Driveline (J1939 SA 16), Transmission #1 (aka Transmission Control Module (TCM)) (J1939 SA 03), Transmission #2 (aka Auxiliary Transmission) (J1939 SA 16), Electronic Clutch Actuator (J1939 SA 03), Steering Controller (aka Front Axle Steering (FAS) / VDS / MCS) (J1939 SA 19), Suspension - Steer Axle (aka Electronically Controlled Suspension (ECS) / Electronically Controlled Air Suspension (ECAS)) (J1939 SA 20), Suspension - System Controller #1 (J1939 SA 47), Lift Axle (J1939 SA 138, 71), Vehicle Dynamic Stability Controller (J1939 SA 62), Automated Driving (L0-L2) (aka Bendix FLR and FLC (Forward looking Camera / Radar)), Collision Avoidance (J1939 SA 42), Fuel Actuator (J1939 SA 15), Body Controller (aka Key-Lock Options), Safety Restraint System (SRS) (J1939 SA 83), Throttle (J1939 SA 0), Vehicle Navigation (J1939 SA 84), Power TakeOff (PTO) Switches (J1939 SA 07), Headway Controller (J1939 SA 42), On-Board Data Logger (J1939 SA 251), Adaptive Front Lighting System (J1939 SA 71), Chassis Controller #2 (J1939 SA 72), Pneumatic - System Controller (J1939 SA 48) |
| Class 4 | Truck modules found to have a 'medium' overall fleet risk | Engine Injection Control Module (J1939 SA 00), Axle - Drive #1 (J1939 SA 09), Axle - Drive #2 (J1939 SA 10), Mirrors (J1939 SA 40), Lighting - Operator Controls (J1939 SA 71), Transmission Display - Primary (J1939 SA 59), Trip Recorder (J1939 SA 24), Switch Field (aka Additional Switches / Modular Switch Field (MSF)) (J1939 SA 138), Instrument Cluster #1 (aka Gauges) (J1939 SA 23), Engine Display |
| Class 5 | Truck modules found to have a 'low' overall fleet risk | Aftertreatment #1 system gas outlet (aka NoX Sensors ) (J1939 SA 82), Aftertreatment #2 system gas outlet (J1939 SA 87), Alternator/Electrical Charging System, Battery Charger, Battery Pack Monitor #1 (J1939 SA 243), Catalyst Fluid Sensor (aka DEF Quality Sensor) (J1939 SA 211), Engine Exhaust Gas Recirculation (J1939 SA 70), Ignition Control Module #1 (J1939 SA 52), Turbocharger (J1939 SA 02), Turbocharger Compressor Bypass (J1939 SA 02), Turbocharger Wastegate (J1939 SA 02), Air Intake System (J1939 SA 70), Filtration Control, Axle - Steering (J1939 SA 08), Brakes - Drive axle #1 (J1939 SA 13), Brakes - Drive Axle #2 (J1939 SA 14), Electric Propulsion Control Unit #1, Personnel Detection Device (aka Pedestrian Detection), Slope Sensor (aka Hill Start Assist), Body Controller #2, Door Controller (J1939 SA 236), Door Controller #1 (J1939 SA 237), Door Controller #2, Door Controller #3, Door Controller #4, Roadway Information, Vehicle Security (J1939 SA 29), Cab Display #1, Passenger-Operator Climate Control #1 (aka LECM (Living Environment Control Module) / HVAC / HVAC FCU) (J1939 SA 25), Passenger-Operator Climate Control #2 (aka HVAC #2 / HVAC ACU), Retarder Display (J1939 SA 23), Seat Control #1, Shift Console - Primary (aka Gearshift ECU) (J1939 SA 05), Shift Console - Secondary (J1939 SA 06), Steering Column Unit (aka Turn Signal Control), Transmission Display - Secondary (J1939 SA 60), Radio (aka Head Unit / Infotainment) (J1939 SA 76, 84), Steering Wheel Switches (J1939 SA 77), Pyrometer, Chassis Controller #1 (aka SAM Chassis) (J1939 SA 71), Auxiliary Valve Control or Engine Air System Valve Control (J1939 SA 34) |

The component names are taken from J1939 (specifically J1939DA\_201910 ‘Global Source Addresses', 'Global NAME Functions', and 'IG Specific NAME Function' for IG0 and IG1) whenever possible. Exceptions to this are collected in Appendix A.

ENGINE

|  |  |  |
| --- | --- | --- |
| **Component Reference Name** | **Cybersecurity Requirements Class** | **Class Assignment Rationale** |
| Engine Telematics (J1939 SA 249) | **0** | telematics device |
| Engine #1 (aka Motor Control Module (MCM) / Engine Management System (EMS) / Engine Control Module (ECM)) (J1939 SA 00, 01) | **3** | medium total risk |
| Engine Cylinder Pressure Monitoring System | **3** | medium total risk |
| Engine #2 | **None Specified** | no responses / not common component |

ENGINE EQUIPMENT

|  |  |  |
| --- | --- | --- |
| Ignition Control Module #2 (J1939 SA 57) | **2** | large scope change risk |
| Low-Voltage Disconnect (J1939 SA 49) | **2** | large scope change risk |
| Starter System (J1939 SA 00, 03) | **2** | large scope change risk |
| Thermal Management System Controller (J1939 SA 49) | **2** | large scope change risk |
| Water Pump Controller (J1939 SA 57) | **2** | large scope change risk |
| Fuel Heater, In-Tank (J1939 SA 72) | **2** | large scope change risk |
| Oil Sensor (J1939 SA 00) | **2** | large scope change, safety, financial and operational risks |
| Engine Valve Controller (J1939 SA 0) | **3** | medium operational risk |
| Propulsion Battery Charger (J1939 SA 73) | **3** | medium operational risk |
| Retarder, Exhaust, Engine #1 | **3** | medium operational and safety risks |
| Retarder, Exhaust, Engine #2 | **3** | medium operational and safety risks |
| Aftertreatment #1 system gas intake (J1939 SA 81) | **3** | medium total risk |
| Aftertreatment #2 system gas intake (J1939 SA 86) | **3** | medium total risk |
| Diesel Particulate Filter Controller (aka Aftertreatment Control Module (ACM) / Exhaust Emission Controller) (J1939 SA 211) | **3** | medium total risk |
| Engine Exhaust Backpressure (J1939 SA 34) | **3** | medium total risk |
| Fan Drive Controller (aka Fan Hub) (J1939 SA 78) | **3** | medium total risk |
| Idle Control System (J1939 SA 68) | **3** | medium total risk |
| Powertrain Control Module (aka Common Powertrain Controller Module (CPC)) (J1939 SA 90) | **3** | medium total risk |
| Retarder - Engine (J1939 SA 15) | **3** | medium total risk |
| Radiator (aka Radiator Fan Control) (J1939 SA 78, 00, 255) | **3** | medium total risk |
| Oil Pan Heater (J1939 SA 00) | **3** | medium total risk |
| Engine Injection Control Module (J1939 SA 00) | **4** | low total risk |
| Aftertreatment #1 system gas outlet (aka NoX Sensors ) (J1939 SA 82) | **5** | min total risk |
| Aftertreatment #2 system gas outlet (J1939 SA 87) | **5** | min total risk |
| Alternator/Electrical Charging System | **5** | min total risk |
| Battery Charger | **5** | min total risk |
| Battery Pack Monitor #1 (J1939 SA 243) | **5** | min total risk |
| Catalyst Fluid Sensor (aka DEF Quality Sensor) (J1939 SA 211) | **5** | min total risk |
| Engine Exhaust Gas Recirculation (J1939 SA 70) | **5** | min total risk |
| Ignition Control Module #1 (J1939 SA 52) | **5** | min total risk |
| Turbocharger (J1939 SA 02) | **5** | min total risk |
| Turbocharger Compressor Bypass (J1939 SA 02) | **5** | min total risk |
| Turbocharger Wastegate (J1939 SA 02) | **5** | min total risk |
| Air Intake System (J1939 SA 70) | **5** | min total risk |
| Filtration Control | **5** | min total risk |
| Exhaust Emission Controller (J1939 SA 61) | **None Specified** | no responses / not common component |
| Air Compressor | **None Specified** | no responses / not common component |

TRANSMISSION

|  |  |  |
| --- | --- | --- |
| Transmission Telematics | **0** | telematics device |
| Clutch/Converter Unit (J1939 SA 78) | **3** | high enough severy independent of low overal risk |
| Power TakeOff - (Main or Rear) (J1939 SA 07) | **3** | medium total risk |
| Power TakeOff (Front or Secondary) (J1939 SA 07) | **3** | large operational risk and directly connected to several ports |
| Retarder - Driveline (J1939 SA 16) | **3** | medium total risk |
| Transmission #1 (aka Transmission Control Module (TCM)) (J1939 SA 03) | **3** | medium total risk |
| Transmission #2 (aka Auxiliary Transmission) (J1939 SA 16) | **3** | high enough severy independent of low overal risk |
| Electronic Clutch Actuator (J1939 SA 03) | **3** | medium total risk |

FRONT AXLE & EQUIPMENT

|  |  |  |
| --- | --- | --- |
| Steering Input Unit (aka Steering Angle Sensor (SAS)) | **2** | large operational risk |
| Steering Controller (aka Front Axle Steering (FAS) / VDS / MCS) (J1939 SA 19) | **3** | medium safety risk |
| Suspension - Steer Axle (aka Electronically Controlled Suspension (ECS) / Electronically Controlled Air Suspension (ECAS)) (J1939 SA 20) | **3** | medium total risk |
| Suspension - System Controller #1 (J1939 SA 47) | **3** | medium total risk |
| Axle - Steering (J1939 SA 08) | **5** | min total risk |
| Brakes - Steer Axle (J1939 SA 13) | **None Specified** | no responses / not common component |
| Suspension - System Controller #2 (J1939 SA 64) | **None Specified** | no responses / not common component |

REAR AXLE & EQUIPMENT

|  |  |  |
| --- | --- | --- |
| Differential Lock Controller (J1939 SA 138, 72, 39 ) | **2** | large scope change risk |
| Antilock Brake System (ABS) (J1939 SA 11) | **2** | large scope change risk |
| Traction Control (J1939 SA 138, 39) | **2** | large scope change risk |
| Axle - Drive #1 (J1939 SA 09) | **4** | low total risk |
| Axle - Drive #2 (J1939 SA 10) | **4** | low total risk |
| Brakes - Drive axle #1 (J1939 SA 13) | **5** | min total risk |
| Brakes - Drive Axle #2 (J1939 SA 14) | **5** | min total risk |
| Electric Propulsion Control Unit #1 | **5** | min total risk |
| Electric Propulsion Control Unit #2 | **None Specified** | no responses / not common component |
| Electric Propulsion Control Unit #4 | **None Specified** | no responses / not common component |
| Endurance Braking System | **None Specified** | no responses / not common component |

ADDITIONAL AXLES

|  |  |  |
| --- | --- | --- |
| Lift Axle (J1939 SA 138, 71) | **3** | medium safety risk |

REAR SUSPENSION

|  |  |  |
| --- | --- | --- |
| Suspension - Drive Axle #1 (J1939 SA 138, 72, 39) | **2** | large scope change risk |
| Suspension - Drive Axle #2 (J1939 SA 22) | **2** | large scope change risk |
| Vehicle Dynamic Stability Controller (J1939 SA 62) | **3** | medium total risk |

TRAILER CONNECTIONS

|  |  |  |
| --- | --- | --- |
| Tractor/Trailer Bridge #2 (J1939 SA 138, 39) | **2** | large scope change risk |
| Tractor-Trailer Bridge #1 (J1939 SA 32) | **2** | large scope change risk |

TIRES & WHEELS

|  |  |  |
| --- | --- | --- |
| Tire Pressure Controller (aka Tire Pressure Monitoring System (TPMS)) (J1939 SA 51) | **2** | large scope change risk |
| Wheel End Monitoring | **2** | large scope change risk |

FRAME & EQUIPMENT

|  |  |  |
| --- | --- | --- |
| Body-to-Vehicle Interface Control (aka VECU - Vehicle ECU) (J1939 SA 33) | **2** | large scope change risk |
| Fifth Wheel Smart System (J1939 SA 138, 39) | **2** | large scope change risk |
| Forward Road Image Processor (J1939 SA 232) | **2** | large scope change risk |
| ADAS Lane Keep (aka LCS Side Sensor (blind spot only) / Lane Warning / Lane Departure Warning System / Bendix Fusion / Exterior Camera for Lane Departune Warning / Driver Assistance Camera (MPC)) (J1939 SA 232, 19) | **2** | large scope change risk |
| Automated Driving (L0-L2) (aka Bendix FLR and FLC (Forward looking Camera / Radar)) | **3** | medium safety risk |
| Collision Avoidance (J1939 SA 42) | **3** | medium total risk |
| Personnel Detection Device (aka Pedestrian Detection) | **5** | min total risk |
| Slope Sensor (aka Hill Start Assist) | **5** | min total risk |
| Aerodynamic Control (J1939 SA 27) | **None Specified** | no responses / not common component |
| Electrical System (J1939 SA 30) | **None Specified** | no responses / not common component |
| Hitch Control (J1939 SA 35) | **None Specified** | no responses / not common component |
| Power Systems Manager (J1939 SA 91) | **None Specified** | no responses / not common component |

FUEL TANK & EQUIPMENT

|  |  |  |
| --- | --- | --- |
| Fuel Actuator (J1939 SA 15) | **3** | scope change high independent of low overal risk |
| Fuel System (J1939 SA 18) | **None Specified** | no responses / not common component |

CAB EXTERIOR

|  |  |  |
| --- | --- | --- |
| Exterior Camera Telematics | **0** | telematics device |
| Body Controller (aka Key-Lock Options) | **3** | high enough severy independent of low overal risk |
| Mirrors (J1939 SA 40) | **4** | medium scope change risk |
| Body Controller #2 | **5** | min total risk |
| Door Controller (J1939 SA 236) | **5** | min total risk |
| Door Controller #1 (J1939 SA 237) | **5** | min total risk |
| Door Controller #2 | **5** | min total risk |
| Door Controller #3 | **5** | min total risk |
| Door Controller #4 | **5** | min total risk |
| Roadway Information | **5** | min total risk |
| Vehicle Security (J1939 SA 29) | **5** | min total risk |
| Forensic Exterior Cameras (J1939 SA 232) | **None Specified** | no responses / not common component |

CAB INTERIOR

|  |  |  |
| --- | --- | --- |
| Interior Camera Telematics | **0** | telematics device |
| Cab Controller - Primary (aka SAM CAB) (J1939 SA 49) | **2** | large scope change risk |
| Cab Controller - Secondary (J1939 SA 50) | **2** | large scope change risk |
| Cruise Control (J1939 SA 17) | **2** | large scope change risk |
| Object Detection Display (aka Active Safety Components / Bendix Fusion (Display)) | **2** | large scope change risk |
| Safety Restraint System (SRS) (J1939 SA 83) | **3** | medium safety risk |
| Throttle (J1939 SA 0) | **3** | medium safety risk |
| Vehicle Navigation (J1939 SA 84) | **3** | medium safety risk |
| Power TakeOff (PTO) Switches (J1939 SA 07) | **3** | medium total risk |
| Lighting - Operator Controls (J1939 SA 71) | **4** | medium scope change risk |
| Transmission Display - Primary (J1939 SA 59) | **4** | low total risk |
| Trip Recorder (J1939 SA 24) | **4** | low total risk |
| Switch Field (aka Additional Switches / Modular Switch Field (MSF)) (J1939 SA 138) | **4** | medium scope change risk |
| Cab Display #1 | **5** | min total risk |
| Passenger-Operator Climate Control #1 (aka LECM (Living Environment Control Module) / HVAC / HVAC FCU) (J1939 SA 25) | **5** | min total risk |
| Passenger-Operator Climate Control #2 (aka HVAC #2 / HVAC ACU) | **5** | min total risk |
| Retarder Display (J1939 SA 23) | **5** | low total risk |
| Seat Control #1 | **5** | min total risk |
| Shift Console - Primary (aka Gearshift ECU) (J1939 SA 05) | **5** | low total risk |
| Shift Console - Secondary (J1939 SA 06) | **5** | min total risk |
| Steering Column Unit (aka Turn Signal Control) | **5** | min total risk |
| Transmission Display - Secondary (J1939 SA 60) | **5** | min total risk |
| Radio (aka Head Unit / Infotainment) (J1939 SA 76, 84) | **5** | low total risk |
| Steering Wheel Switches (J1939 SA 77) | **5** | low total risk |
| Cab Display #2 | **None Specified** | no responses / not common component |
| Driver Impairment Device (J1939 SA 94) | **None Specified** | no responses / not common component |
| On-board axle group display | **None Specified** | no responses / not common component |
| On-board axle group scale | **None Specified** | no responses / not common component |
| Safety Restraint System #2 (aka Seat SRS) | **None Specified** | no responses / not common component |
| Seat Control #2 | **None Specified** | no responses / not common component |
| Tachograph | **None Specified** | no responses / not common component |
| User Interface System | **None Specified** | no responses / not common component |
| Virtual Terminal | **None Specified** | no responses / not common component |
| Interior Cameras | **None Specified** | no responses / not common component |

INSTRUMENTS & CONTROLS

|  |  |  |
| --- | --- | --- |
| ADAS Adaptive Cruise Control (aka Bendix Fusion) (J1939 SA 42) | **2** | large scope change risk |
| Ammeter (J1939 SA 23, 39) | **2** | large scope change risk |
| Headway Controller (J1939 SA 42) | **3** | medium safety risk |
| Instrument Cluster #1 (aka Gauges) (J1939 SA 23) | **4** | medium scope change risk |
| Engine Display | **4** | low total risk |
| Pyrometer | **5** | low total risk |
| Instrument Cluster #2 (aka Auxiliary Gauges) | **None Specified** | no responses / not common component |

INFORMATION & COMMUNICATION SYSTEMS

|  |  |  |
| --- | --- | --- |
| OEM Telematics (aka Telematics GateWay (TGW) / Off Vehicle Gateway / Communications Unit / Communications Telematics (CTP-FB)) (J1939 SA 249, 251) | **0** | telematics device |
| Onboard Diagnostics Connector Gateway (aka Gateway (CGW)) (J1939 SA 39, 17, 44, 49, 50, 77) | **1** | gateway device |
| 3rd Party Equipment Gateway (J1939 SA 249) | **1** | gateway device |
| Telematics Interface Gateway | **1** | gateway device |
| On Board Diagnostic Unit (aka OEM Factory & Service tool) (J1939 SA 250) | **2** | large scope change risk |
| Predictive Cruise Control (aka E-Horizon / Intelligent Predictive Powertrain Control (IPPC)) (J1939 SA 75) | **2** | large scope change risk |
| On-Board Data Logger (J1939 SA 251) | **3** | medium total risk |
| Information System Controller #1 | **None Specified** | no responses / not common component |
| On Board Diagnostic Unit #2 | **None Specified** | no responses / not common component |

CYBERSECURITY SYSTEMS

|  |  |  |
| --- | --- | --- |
| Intrusion Detection System | **3** | multi-homed and a security component |
| Intrusion Prevention System | **3** | multi-homed and a security component |

LIGHTS & SIGNALS

|  |  |  |
| --- | --- | --- |
| Adaptive Front Lighting System (J1939 SA 71) | **3** | medium safety risk |
| Chassis Controller #2 (J1939 SA 72) | **3** | scope change high independent of low overal risk |
| Chassis Controller #1 (aka SAM Chassis) (J1939 SA 71) | **5** | min total risk |

AIR EQUIPMENT

|  |  |  |
| --- | --- | --- |
| Brake Telematics | **0** | telematics device |
| Brakes - System Controller (J1939 SA 11) | **2** | large scope change risk |
| Parking Brake Controller (J1939 SA 80) | **2** | large scope change risk |
| Pneumatic - System Controller (J1939 SA 48) | **3** | medium safety risk |
| Auxiliary Valve Control or Engine Air System Valve Control (J1939 SA 34) | **5** | min total risk |
| Brake Stroke Alert | **None Specified** | no responses / not common component |

# Appendix A: J1939 Source Address Controller Application (CA) Deviations

## Duplicate J1939 CA

The following were determined to be duplicates of other J1939 CAs and were omitted.

|  |  |  |
| --- | --- | --- |
| Name in Origin | Origin | (optional) Duplicate Of? |
| Body-to-Vehicle Interface Control | IG Names IG0, IG1 | Body-to-Vehicle Interface Control |
| Brake Telematics | Truck Matrix Component Breakdown v0 | Brake Telematics |
| Catalyst Fluid Sensor | IG Names IG0, IG1 | Catalyst Fluid Sensor |
| Communications Unit, Cellular | Global SA | OEM Telematics |
| Communications Unit, Radio | Global SA | OEM Telematics |
| Communications Unit, Satellite | Global SA | OEM Telematics |
| Forward Road Image Processing | IG Names IG0, IG1 | Forward Road Image Processor |
| On-board data logger | IG Names IG0, IG1 | On-Board Data Logger |
| Slope Sensor | IG Names IG0, IG1 | Slope Sensor |
| Tachograph | IG Names IG0, IG1 | Tachograph |
| Turbocharger | IG Names IG0, IG1 | Turbocharger |

## No J1939 CA

The following were introduced above in the component breakdown and do not have a corresponding J1939 CA to which we could refer for traceability.

|  |  |  |
| --- | --- | --- |
| Matrix Component Name | Matrix Order Sheet Line | Origin |
| 3rd Party Equipment Gateway | INFORMATION & COMMUNICATION SYSTEMS | Industry Trajectory |
| ADAS Adaptive Cruise Control | INSTRUMENTS & CONTROLS | Example Truck Topology |
| ADAS Lane Keep | FRAME & EQUIPMENT | Example Truck Topology |
| Brake Telematics | AIR EQUIPMENT | Industry Trajectory |
| Electronic Clutch Actuator | TRANSMISSION | Example Truck Topology |
| Engine Display | INSTRUMENTS & CONTROLS | Example Truck Topology |
| Engine Telematics | ENGINE | Industry Trajectory |
| Exterior Camera Telematics | CAB EXTERIOR | Industry Trajectory |
| Exterior Cameras | CAB EXTERIOR | Example Truck Topology |
| Interior Camera Telematics | CAB INTERIOR | Industry Trajectory |
| Interior Cameras | CAB INTERIOR | Example Truck Topology |
| OEM Telematics | INFORMATION & COMMUNICATION SYSTEMS | Industry Trajectory |
| Onboard Diagnostics Connector Gateway | INFORMATION & COMMUNICATION SYSTEMS | Industry Trajectory |
| Switch Field | CAB INTERIOR | Example Truck Topology |
| Telematics Interface Gateway | INFORMATION & COMMUNICATION SYSTEMS | Industry Trajectory |
| Transmission Telematics | TRANSMISSION | Industry Trajectory |
| Wheel End Monitoring | TIRES & WHEELS | Example Truck Topology |

## Out of Scope J1939 CA

The following were determined to not be applicable to the intended scope of the Truck Cybersecurity Requirements Matrix.

|  |  |
| --- | --- |
| Name in Origin | Origin |
| Articulation Turntable Control | IG1 SA |
| Articulation Turntable Control | IG Names IG0, IG1 |
| Atmospheric Sensor | Global SA |
| Auxiliary Heater #1 | Global SA |
| Auxiliary Heater #2 | Global SA |
| Auxiliary Power Unit (APU) #1 | IG1 SA |
| Battery Pack Monitor #2 / APU #4 | IG1 SA |
| Battery Pack Monitor #3 / APU #3 | IG1 SA |
| Battery Pack Monitor #4 / APU #2 | IG1 SA |
| File Server / Printer | Global SA |
| Fire Protection System | Global SA |
| GLOBAL (All-Any Node) | Global SA |
| Ground based speed sensor | IG Names IG0, IG1 |
| Humidity sensor | IG Names IG0, IG1 |
| Hydraulic Pump Controller | Global SA |
| Inertial Sensor | IG Names IG0, IG1 |
| Keypad | IG Names IG0, IG1 |
| Management Computer #1 | Global SA |
| Not Available | IG Names IG0, IG1 |
| Not Available | IG Names IG0, IG1 |
| Not Available | IG Names IG0, IG1 |
| Not Available | IG Names IG0, IG1 |
| Not Available | IG Names IG0, IG1 |
| Not Available | IG Names IG0, IG1 |
| Null Address | Global SA |
| Object Detection | IG Names IG0, IG1 |
| Object Detection Sensor | IG Names IG0, IG1 |
| Off Board Diagnostic-Service Tool #1 | Global SA |
| Off Board Diagnostic-Service Tool #2 | Global SA |
| Off-board diagnostic-service tool | IG Names IG0, IG1 |
| On-board bin weighing scale | IG Names IG0, IG1 |
| On-board bin weighing scale display | IG Names IG0, IG1 |
| Other Trailer #1 Devices | IG1 SA |
| Other Trailer #1 Devices | IG1 SA |
| Other Trailer #2 Devices | IG1 SA |
| Other Trailer #2 Devices | IG1 SA |
| Other Trailer #3 Devices | IG1 SA |
| Other Trailer #3 Devices | IG1 SA |
| Other Trailer #4 Devices | IG1 SA |
| Other Trailer #4 Devices | IG1 SA |
| Other Trailer #5 Devices | IG1 SA |
| Other Trailer #5 Devices | IG1 SA |
| PC Keyboard | IG Names IG0, IG1 |
| Ramp Control | Global SA |
| Rear Axle Steering Controller #1 | Global SA |
| Rear Steering Axle Controller #2 | IG1 SA |
| Rear Steering Axle Controller #3 | IG1 SA |
| Reserved | IG Names IG0, IG1 |
| Reserved for Experimental Use | Global SA |
| Reserved for OEM | Global SA |
| thru 127 are reserved for future assignment by SAE | Global SA |
| thru 227 are reserved for future assignment by SAE | IG1 SA |
| thru 247 | Global SA |
| Trailer #1 Brakes (ABS-EBS) | IG1 SA |
| Trailer #1 Bridge | IG1 SA |
| Trailer #1 Cargo | IG1 SA |
| Trailer #1 Chassis-Suspension | IG1 SA |
| Trailer #1 Lighting-electrical | IG1 SA |
| Trailer #1 Reefer | IG1 SA |
| Trailer #2 Brakes (ABS-EBS) | IG1 SA |
| Trailer #2 Bridge | IG1 SA |
| Trailer #2 Cargo | IG1 SA |
| Trailer #2 Chassis-Suspension | IG1 SA |
| Trailer #2 Lighting-electrical | IG1 SA |
| Trailer #2 Reefer | IG1 SA |
| Trailer #3 Brakes (ABS-EBS) | IG1 SA |
| Trailer #3 Bridge | IG1 SA |
| Trailer #3 Cargo | IG1 SA |
| Trailer #3 Chassis-Suspension | IG1 SA |
| Trailer #3 Lighting-electrical | IG1 SA |
| Trailer #3 Reefer | IG1 SA |
| Trailer #4 Brakes (ABS-EBS) | IG1 SA |
| Trailer #4 Bridge | IG1 SA |
| Trailer #4 Cargo | IG1 SA |
| Trailer #4 Chassis-Suspension | IG1 SA |
| Trailer #4 Lighting-electrical | IG1 SA |
| Trailer #4 Reefer | IG1 SA |
| Trailer #5 Brakes (ABS-EBS) | IG1 SA |
| Trailer #5 Bridge | IG1 SA |
| Trailer #5 Cargo | IG1 SA |
| Trailer #5 Chassis-Suspension | IG1 SA |
| Trailer #5 Lighting-electrical | IG1 SA |
| Trailer #5 Reefer | IG1 SA |
| WWH-OBD Tester | IG1 SA |