| Signals in TSP Agreement | Signal Measurements, Reported to Server | Hino Engine Measurement Signal Name From Bosch v7r2_J_DEC | Cummins Engine Measurement Signal Name from Bosch BLv2r3 | 6/16/2022 Data Sample Rate in VMS BLScaledv7-J_Enginev2 | Value sent from Bosch | Sample Value | Description of Data | Signal Information Notes |
|---|---|---|---|---|---|---|---|---|
| VIN | 10 Secs., every 2 mins | | | | ASCII (Text) | 5PVNA6JF062S50022 | 17 character vehicle identification Number | Signal is not included in Hino or Cummins measurement stream but should be sent to TSP to identify vehicle |
| Hi Resolution Vehicle Distance | 10 Secs., every 2 mins | | Hi_Res_Vehicle_Distance | 10s | Decimal | Min 0 Max 42949667295 | ECU Total Accumulated Mileage in km | Decimal Number sent from vehicle read in km |
| | | Hi_Res_Vehicle_Distance | | 10s | Decimal | Min 0 Max 42949667295 | ECU Total Accumulated Mileage in km | Decimal Number sent from vehicle read in km |
| Total Fuel Used | 10 Secs., every 2 mins | | Total_Fuel_Used | 30s | Decimal | Min 0 Max 42949667295 | Lifetime Total amount of Fuel used as calculated by the Engine ECU in liters | Decimal Number sent from vehicle read in Liters |
| | | Total_Fuel_Used | | 10s | Decimal | Min 0 Max 42949667295 | Lifetime Total amount of Fuel used as calculated by the Engine ECU in liters | Decimal Number sent from vehicle read in Liters |
| Total Engine Hours | 10 Secs., every 2 mins | | Total_Engine_Hours | 10s | Decimal | Min 0 Max 210554000 | Lifetime accumulation of engine running hours | Decimal Number sent from vehicle read in hours |
| | | Total_Engine_Hours | | 10s | Decimal | Min 0 Max 210554000 | Lifetime accumulation of engine running hours | Decimal Number sent from vehicle read in hours |
| Total Idle Fuel Used | 10 Secs., every 2 mins | | Total_Idle_Fuel_Used | 30s | Decimal | Min 0 Max 42949667295 | Lifetime calculation of the total amount of fuel used at Idle in Liters | Decimal Number sent from vehicle read in Liters |
| | | Total_Idle_Fuel_Used | | 10s | Decimal | Min 0 Max 42949667295 | Lifetime calculation of the total amount of fuel used at Idle in Liters | Decimal Number sent from vehicle read in Liters |
| Total Idle Hours | 10 Secs., every 2 mins | | Total_Idle_Hours | 30s | Decimal | Min 0 Max 210554060.75 | Lifetime Calculation of the total amount of hours engine is idled in hours | Decimal Number sent from vehicle read in hours |
| | | Total_Idle_Hours | | 10s | Decimal | Min 0 Max 210554060.75 | Lifetime Calculation of the total amount of hours engine is idled in hours | Decimal Number sent from vehicle read in hours |
| Coolant Temp | 10 Secs., every 2 mins | | Engine_Coolant_Temp | 10s | Decimal | Min -40 Max 250 | Engine Coolant Temperature in Degrees Celcius | Decimal number sent from vehicle read in Celcius |
| | | Engine_Coolant_Temp | | 10s | Decimal | Min -40 Max 250 | Engine Coolant Temperature in Degrees Celcius | Decimal number sent from vehicle read in Celcius |
| Engine RPM | 10 Secs., every 2 mins | | Engine_RPM | 10s | Decimal | Min 0 Max 16383.75 | Engine Speed in Revolutions per Minute | Decimal number send from vehicle in RPM |
| | | Engine_RPM | | 10s | Decimal | Min 0 Max 16383.75 | Engine Speed in Revolutions per Minute | Decimal number send from vehicle in RPM |
| Park Brake Switch | 10 Secs., every 2 mins | | Parking_Brake_Switch | 10s | Decimal | 1 On 0 Off | Parking Brake Switch status On or Off | Decimal number sent from vehicle On/Off signal |
| | | Parking_Brake_Switch | | 10s | Decimal | 1 On 0 Off | Parking Brake Switch status On or Off | Decimal number sent from vehicle On/Off signal |
| Brake Switch | 1 Sec., every 2 mins | | Brake_Switch | 1s | Decimal | 1 On 0 Off | Service Brake Switch status On or Off | Decimal number sent from vehicle On/Off signal |
| | | Brake_Switch | | 1s | Decimal | 1 On 0 Off | Service Brake Switch status On or Off | Decimal number sent from vehicle On/Off signal |
| Cruise Set Switch | 10 Secs., every 2 mins | | Cruise_Set_Switch | 10s | Decimal | 1 On 0 Off | Cruise Control "set" switch status On or Off | Decimal number sent from vehicle On/Off signal |
| | | Cruise_Set_Switch | | 10s | Decimal | 1 On 0 Off | Cruise Control "set" switch status On or Off | Decimal number sent from vehicle On/Off signal |
| Cruise Resume Switch | 10 Secs., every 2 mins | | Cruise_Resume_Switch | 10s | Decimal | 1 On 0 Off | Cruise Control "Resume" switch status On or Off | Decimal number sent from vehicle On/Off signal |
| | | Cruise_Resume_Switch | | 10s | Decimal | 1 On 0 Off | Cruise Control "Resume" switch status On or Off | Decimal number sent from vehicle On/Off signal |
| Wheel-based Vehicle Speed | 1 Sec., every 2 mins | | Vehicle_Speed | 1s | Decimal | Min 0 Max 251 | Wheel Based vehicle speed read in km/hr | Decimal number sent from vehicle km/hr |
| | | Vehicle_Speed | | 1s | Decimal | Min 0 Max 251 | Wheel Based vehicle speed read in km/hr | Decimal number sent from vehicle km/hr |
| PTO state | 10 Secs., every 2 mins | | TBD | | | | | |
| | | PTO_State | | 10s | Decimal | 1 On 0 Off | Power Take Off status On or Off | Decimal number sent from vehicle On/Off Signal |
| Intake Air Pressure | 10 Secs., every 2 mins | | No Signal | | | | | |
| | | Intake_Air_Pressure | | 10s | Decimal | Min 0 Max 500 | Intake Air Pressure measured in kpa | Decimal value sent from vehicle read in kpa "Turbo Boost Pressure" |
| Common Rail Pressure | 10 Secs., every 2 mins | | No Signal | | | | | |
| | | Common_Rail_Pressure | | 10s | Decimal | Min 0 Max 250 | Fuel Pressure at the Common Rail measured in Mpa | Decimal value sent from vehicle Fuel pressure in Megapascals |
| Total Fuel with PTO | 10 Secs., every 2 mins | | Total_Fuel_with_PTO | 30s | Decimal | Min 0 Max 42949667295 | Lifetime calculation of the total amount of fuel used with PTO engaged in L | Decimal value sent from vehicle read in Liters |
| | | Total_Fuel_with_PTO | | 10s | Decimal | Min 0 Max 42949667295 | Lifetime calculation of the total amount of fuel used with PTO engaged in L | Decimal value sent from vehicle read in Liters |
| Total PTO time | 10 Secs., every 2 mins | | Total_PTO_Time | 30s | Decimal | Min 0 Max 210554060.75 | Lifetime calculation of total Power Take engaged time in hours | Decimal value sent from vehicle in hours |
| | | Total_PTO_Time | | 10s | Decimal | Min 0 Max 210554060.75 | Lifetime calculation of total Power Take of engaged time in hours | Decimal value sent from vehicle in hours |
| DEF Level Dash Display | 10 Secs., every 2 mins | | No Signal | | | | | |
| | | DEF_Level_Dash | | 10s | Decimal | Min 1 Max 9 | Dash Risplay of DEF level read in percentage, relates to # of "bars" on dash display | Decimal value sent from vehicle representing DEF level seen by driver on dashboard display |
| DEF Tank Level Warning | 10 Secs., every 2 mins | | Aftrtrtmnt1DEFTnkLwLveIndicator | 10s | Decimal | 1 On 0 Off | DEF Tank level low warning On or Off | Decimal value sent from vehicle indicating DEF low status On/Off signal |
| | | DEF_Tank_Level_ Warning | | 10s | Decimal | 0,1,2,7 | DEF tank level warning status Dash Message | Decimal value representing Dash DEF low level status messages, signal chart shows possible messages |
| SCR System Warning | 10 Secs., every 2 mins | | AftrtrtmntSCROprtrIndcmntSverity | 10s | Decimal | 0,1,2,3,4,5,6,7 | Aftertreatment SCR fault Operation Inducement severity - torque reduction in levels | Decimal value sent from vehicle showing SCR torque reduction indecement level, chart shows possible levels |
| | | SCR_System_Warning | | 10s | Decimal | 0,1,2,3 | SCR system warning torque reduction mode On/Off | Decimal value sent from vehicle showing SCR torque reduction indecement level, chart shows possible levels |
| DEF Quality warning Flag | 10 Secs., every 2 mins | | DEF_Quality_Warning_Flag | 10s | Decimal | 1 On 0 Off | Diesel Exhaust Fluid Quality warning message on Dash 0 Off 1 On | Decimal number sent from vehicle On/Off Signal |
| | | DEF_Quality_Warning_Flag | | 10s | Decimal | 1 On 0 Off | Diesel Exhaust Fluid Quality warning message on Dash 0 Off 1 On | Decimal number sent from vehicle On/Off Signal |
| DPR PM Soot Level | 10 Secs., every 2 mins | | DslPrtclteFilter1SootLoadPercent | 10s | Decimal | 0-100 | DPF percentage of soot load 0-100 % | Decimal number sent from vehicle equalling percentage of DPR particulate matter |
| | | DPR_PM | | 10s | Decimal | 0-10 | DPR Filter Particulate Matter 0-100% matches 10 "bars" on DPF gage | Decimal number sent from vehicle equalling percentage of DPR particulate matter |
| Fuel Level | 10 Secs., every 2 mins | | FuelLevel1 | 10s | Decimal | 0-100 | Engine ECU reading of fuel level in percentage 0-100 Unbuffered signal | Decimal value from vehicle showing fuel level from 0-100% Signal is unbuffered and will fluctuate significantly |
| | | Fuel_Level | | 10s | Decimal | 0-100 | Engine ECU reading of fuel level in percentage 0-100 Unbuffered signal | Decimal value from vehicle showing fuel level from 0-100% Signal is unbuffered and will fluctuate significantly |
| Instant Fuel Consumption | 10 Secs., every 2 mins | | Instant_Fuel_Consumption | 10s | Decimal | 0-1966 | Engine ECU calculated instant fuel consumption measured in cc/min | Decimal value sent from vehicle calculated instant fuel use in cc/min |
| | | Instant_Fuel_Consumption | | 10s | Decimal | 0-1966 | Engine ECU calculated instant fuel consumption measured in cc/min | Decimal value sent from vehicle calculated instant fuel use in cc/min |
| Accelerator Pedal Position | 10 Secs., every 2 mins | | APP | 10s | Decimal | 0-100 | Accelerator Position read in percentage 0-100% | Decimal value sent from vehicle indicating Accelerator position |
| | | APP | | 10s | Decimal | 0-100 | Accelerator Position read in percentage 0-100% | Decimal value sent from vehicle indicating Accelerator position |
| Intake Air Temp (Airflow) | 10 Secs., every 2 mins | | No Signal | | | | | |
| | | Intake_Air_Temp | | 10s | Decimal | Min -40 Max 250 | Engine Intake Air Temperature read in degrees C | Decimal value sent from vehicle indicating Intake Air temperature in Celcius |
| DEF Level Actual % | 10 Secs., every 2 mins | | Aftrtrtmnt1DslExhstFlidTankLevel | 10s | Decimal | Min 0 Max 100 | Engine ECU reading of DEF level in percentage 0-100 Unbuffered signal | Decimal value from vehicle showing DEF level from 0-100% Signal is unbuffered and will fluctuate significantly |
| | | DEF_Level_Actual | | 10s | Decimal | Min 0 Max 100 | Engine ECU reading of DEF level in percentage 0-100 Unbuffered signal | Decimal value from vehicle showing DEF level from 0-100% Signal is unbuffered and will fluctuate significantly |
| MIL Status | 10 Secs., every 2 mins | | OBDMalfunctionIndicatorLampCmd | 10s | Decimal | 1 On 0 Off | OBD Malfunction Lamp 0 Off 1 On | Decimal Value from vehicle indicating OBD malfunction lamp status 0 Off 1 On |
| | | MIL_Status | | 10s | Decimal | 0 On 1 Off | Malfunction Indicator Lamp Status 0 On 1 Off | Decimal value from vehicle indicating MIL status 0 On 1 Off |
| SVS Light | 10 Secs., every 2 mins | | EngAmberWarningLampCmd | 10s | Decimal | 1 On 0 Off | Engine Amber Malfunction Lamp 0 Off 1 On | Decimal Value from vehicle indicating Engine Amber Malfunction lamp status 0 Off 1 On |
| | | SVS_Status | | 10s | Decimal | 0 On 1 Off | Service Vehicle Soon Lamp Status 0 On 1 Off | Decimal value from vehicle indicating SVS Lamp status 0 On 1 Off |
| WIF Light | 10 Secs., every 2 mins | | WaterInFuelIndicator | 30s | Decimal | 1 On 0 Off | Water in Fuel indicator lamp status 0 Off 1 On | Decimal Value from vehicle indicating Water in Fuel lamp status 0 Off 1 On |
| | | WIF_Light | | 10s | Decimal | 0 On 1 Off | Water in Fuel Indicator lamp status 1 Off 0 On | Decimal value from vehicle indicating Water in Fuel Lamp status 0 On 1 Off |
| DTC Engine Transmitted | Upon Event | | DTC_Error_Code | Upon Event | Text | Cummins DTC Payload | Fault code, Severity, Time stamp, Description, etc. | |
| | | DTC_Error_Code | | Upon Event | Text | Hino DTC Payload | Fault code, Severity, Time stamp, Description, etc. | |
| Ignition State | 10 Secs., every 2 mins | | TBD | 10s | TBD | TBD | TBD | |
| | | Ignition_State | | 10s | | | | |
| Harsh Braking events | 10 Secs., every 2 mins | | Harsh_breaking_events | Upon Event | Decimal | 1 On 0 Off | TBD | Calculated by Back End using vehicle speed |
| | | Harsh_breaking_events | | Upon Event | Decimal | 1 On 0 Off | | Calculated by Back End using vehicle speed |
| Harsh Acceleration events | 10 Secs., every 2 mins | | Harsh_acceleration_events | Upon Event | Decimal | 1 On 0 Off | TBD | Calculated by Back End using vehicle speed |
| | | Harsh_acceleration_events | | Upon Event | Decimal | 1 On 0 Off | | Calculated by Back End using vehicle speed |
| Trip Mileage | 10 Secs., every 2 mins | | TBD | 10s | TBD | TBD | TBD | Calculated by Back end using start and stop odometer value |
| | | TBD | | 10s | | | | Calculated by Back end using start and stop odometer value |
| Fault Code Source | 10 Secs., every 2 mins | | TBD | 10s | Text | | | |
| | | TBD | | 10s | Text | | | |
| GPS Location | 10 Secs., every 2 mins | | GPS | 10s | Text | GPS Payload | Latitude, Elevation, Direction, Speed, etc. | |
| | | GPS | | 10s | Text | GPS Payload | Latitude, Elevation, Direction, Speed, etc. | |
| 5MPH Alert after Stopped at 0 for 3+ seconds | Upon Event | | TBD | Upon Event | TBD | TBD | TBD | Calculated by Back End using vehicle speed |
| | | TBD2 | | Upon Event | | | | Calculated by Back End using vehicle speed |

**DEF_Level_Dash**

| Decimal Value | Description |
|---|---|
| 1 | 0% |
| 2 | 5% |
| 3 | 10% |
| 4 | 25% |
| 5 | 40% |
| 6 | 55% |
| 7 | 70% |
| 8 | 85% |
| 9 | 100% |

**DEF_Tank_Level__Warning**

| Decimal Value | Description |
|---|---|
| 0 | Off |
| 1 | Flashing |
| 2 | Low DEF |
| 7 | Off |

**Aftrtrtmnt1DEFTnkLwLvelIndicator**

| Decimal Value | Description |
|---|---|
| 1 | On |
| 0 | Off |

**AftrtrtmntSCROprtrIndcmntSverity**

| Decimal Value | Description |
|---|---|
| 0 | Off |
| 1 | Inducement Level 1 |
| 2 | Inducement Level 2 |
| 3 | Inducement Level 3 |
| 4 | Inducement Level 4 |
| 5 | Inducement Level 5 |
| 6 | reserved |
| 7 | N/A |

**SCR_System_Warning**

| Decimal Value | Description |
|---|---|
| 0 | Off |
| 1 | On |
| 2 | Off |
| 3 | Off |

**DPR_PM**

| Decimal Value | Description |
|---|---|
| 0 | 0% |
| 1 | 10% |
| 2 | 20% |
| 3 | 30% |
| 4 | 40% |
| 5 | 50% |
| 6 | 60% |
| 7 | 70% |
| 8 | 80% |
| 9 | 90% |
| 10 | 100% |

**HINO DTC ERROR CODE**

"series":{
 "uid": "8e780ae3-5c3f-430e-9df2-dc9ec317ccbe",
 "seriesName": "DTC_Error_Code",
 "valueType": "DOUBLE",
 "description": "7TH INJECTOR FCV FUNCTIONAL ERROR",
 "severity": "High",
 "signalCollectionId": "aa2e2d28-15d9-43cd-acb3-1f10721a5f63",
 "sourceId": "84f5fbea-61c8-4d0b-9897-e18cd351f2ea",
 "sourceName": "v4r2",
 "unit": "",
 "protocol": "CAN_RAW",
 "type": "SIGNAL",
 "samplingRate": 10000
},"dataPoints": [
        {
            "uniqueId": "0fada7ac-39ed-44fd-b1a2-2bf230e6e18d",
            "timeStamp": "2021-02-19T10:10:00.023Z",
            "value": "P0006"
        },
        {
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            "timeStamp": "2021-02-19T10:10:10.023Z",
            "value": "P0006"
        },]

**CUMMINS DTC ERROR CODE**

"series": {
 "uid": "8e780ae3-5c3f-430e-9df2-dc9ec317ccbe",
 "seriesName": "DTC_Error_Code",
 "valueType": "DOUBLE",
 "description": "Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Data Erratic, Intermittent, or Incorrect",
 "severity": "Moderate",
 "signalCollectionId": "aa2e2d28-15d9-43cd-acb3-1f10721a5f63",
 "sourceId": "84f5fbea-61c8-4d0b-9897-e18cd351f2ea",
 "sourceName": "v4r2",
 "unit": "",
 "protocol": "CAN_RAW",
 "type": "SIGNAL",
 "samplingRate": 10000
},"dataPoints": [
        {
            "uniqueId": "0fada7ac-39ed-44fd-b1a2-2bf230e6e18d",
            "timeStamp": "2021-02-19T10:10:00.023Z",
            "value": "1679"
        },
        {
            "uniqueId": "04abd73a-167f-4000-968d-479f5c7c603a",
            "timeStamp": "2021-02-19T10:10:10.023Z",
            "value": "1679"
        },]

**GPS**

latitude: 42.878356,
 "elevation": 241.8520050048828,
 "gpsTime": 1607948434000,
 "direction": 358.3778381347656,
 "gpsSpeed": 11.59,
 "lastReadingTime": 0
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