# Script.CAN.J1939_SPTRANS.250KBPS.ACK_ENBL.v1.0.0.0_MG

## 250 KBPS J1939 SPTRANS CAN Script

SPTrans

**Overview**

SPTRANS (São Paulo Transport Authority defined an ITS solution to be installed in all metropolitan buses in São Paulo.

Solution includes an Onboard OBC with a lcd display that is used to manage all onboard devices (Passenger information displays, external itinerary displays, ticketing machines, Wi-Fi routers, passenger counting cameras, etc.)

The solution also must collect vehicle telemetry data and send it to SPTRANS Control Center MiX 4000 are currently installed in vehicles in São Paulo and customers required an integration between the MiX 400 and the SPTRANS OBC.

A set of telemetry parameters was defined by SPTRANS including parameters not available in the MiX 4000 standard J1939 script

**The devised solution comprises two scripts:**

- CAN script which reads data from the CAN including new parameters (this script)
- Serial Script (Script.SERIAL.SPTRANS.v1.0.0.0) which reads the collected CAN data and writes them in the RS232 Interface

**This is not a vehicle specific script.**

**The compatibility if this script can only be guaranteed for:**

1. The script supports SAE J1939 Protocol

This script can be used with the following devices:

1. MiX 4000
2. MiX 6000
3. FM3316 and FM3306 Communicators
4. FM3517i and FM3507i Communicators
5. FM3617i and FM3607i Communicators
6. FM3717i and FM3707i Communicators
7. FM3817i and FM3807i Communicators

## Version History

| Reference | Version | Changes |
|---|---|---|
| ESCR-136 | v1.0.0.0 | Supports the following parameters:<br>Speed, Engine Speed,<br>Odometer, Engine Hours,<br>Brake Pedal Position, Accelerator Pedal Position,<br>Active Diagnostic Trouble Code,<br>Brake Switch, Parking Brake Switch,<br>Clutch Switch, Engine torque,<br>Retarder Torque,<br>Aftertreatment 1 SCR Catalyst Tank Level,<br>Service Brake Air Pressure Circuit 1,<br>Service Brake Air Pressure Circuit 2,<br>Vehicle Weight Axle 0,<br>Vehicle Weight Axle 1,<br>Vehicle Weight Axle 2,<br>Vehicle Weight Axle 3,<br>Vehicle Weight Axle 4,<br>Engine Coolant Temperature,<br>Engine Oil Temperature,<br>Engine Oil Level, Coolant Level,<br>Engine Oil Pressure,<br>Transmission Oil Temperature,<br>Seat Belt State, Battery Voltage,<br>Fuel Level, Fuel Consumption,<br>Engine fault Indicator,<br>Bus Door Position Status,<br>Engine Emission Filter Regeneration Alarm,<br>Wipers, Cab Interior Temperature,<br>Ambient Air Temperature,<br>Specific Humidity,<br>Soot 1 Load, Ash 1 Load,<br>Soot 2 Load, Ash 2 Load,<br>Vehicle Weight Axle Total,<br>Tire Location,<br>Tire Temperature,<br>Tire Pressure.<br><br>*Based on Script.CAN.J1939.250KBPS.ACK_ENBL.v1.28.0.6_MG |
| ESCR-136 | v1.0.0.0 | Converted Script to Production. |

## Supported Parameters

| ACRONYM | PARAMETER NAME | PARAMETER DESCRIPTION | **Return values/states** (if applicable) |
|---|---|---|---|
| FMSTQ | FMS.FMSTQ | FMS Engine torque | |
| DM1DA | FMS.DM1DA | FMS Active Diagnostic Trouble Codes | |
| FMSRT | FMS.FMSRT | FMS Retarder Torque | |
| FMSPP | FMS.FMSPP | FMS Brake Pedal Position | |
| FMSA1 | FMS.FMSA1 | FMS Aftertreatment 1 SCR Catalyst Tank Level | |
| SBAP1 | FMS.SBAP1 | FMS Service Brake Air Pressure Circuit 1 | |
| SBAP2 | FMS.SBAP2 | FMS Service Brake Air Pressure Circuit 2 | |
| FMTEH | FMS.FMTEH | FMS DM Total Engine Hours | |
| AXLW0 | FMS.AXLW0 | FMS Vehicle Weight Axle 0 | |
| AXLW1 | FMS.AXLW1 | FMS Vehicle Weight Axle 1 | |
| AXLW2 | FMS.AXLW2 | FMS Vehicle Weight Axle 2 | |
| AXLW3 | FMS.AXLW3 | FMS Vehicle Weight Axle 3 | |
| AXLW4 | FMS.AXLW4 | FMS Vehicle Weight Axle 4 | |
| FMSCT | FMS.FMSCT | FMS Engine Coolant Temperature | |
| FMSET | FMS.FMSET | FMS DM Engine Oil Temperature | |
| FMSCL | FMS.FMSCL | FMS Coolant Level | |
| FMSEO | FMS.FMSEO | FMS Engine Oil Level | |
| FMSOP | FMS.FMSOP | FMS DM Engine Oil Pressure | |
| FMSBV | FMS.FMSBV | FMS Battery Voltage | |
| FMBPS | FMS.FMBPS | FMS Brake Pedal Switch | 0 = Brake released<br>1 = Brake depressed<br>2 = Error<br>3 = Not Available |
| FMSCS | FMS.FMSCS | FMS Clutch Switch | 0 = Clutch released<br>1 = Clutch depressed<br>2 = Error<br>3 = Not available |

| | | | |
|---|---|---|---|
| TTDW1 | CAN.TELLTALE.TTDW1 | TT: DWORD 1 | |
| TTDW2 | CAN.TELLTALE.TTDW2 | TT: DWORD 2 | |
| B#S## | CAN.TELLTALE.B#S## | TT: Block # Status ## (Block 0-4, Status 1-15) | |
| SBLTS | System.FM.CAN.SBLTS | FM CAN: Seat Belt State | 0 = Not present<br>1 = Engaged<br>2 = Disengaged<br>3 = Reserved |
| FMMIL | FMS.FMMIL | FMS Engine fault | |
| FMAPP | FMS.FMAPP | FMS AcceleratorPedalPosition | |
| HRESD | FMS.HRESD | FMS High resolution odometer | |
| FMSFL | FMS.FMSFL | FMS Fuel level | |
| FMSPB | FMS.FMSPB | FMS Park Brake Switch | 0 = Parking brake not set<br>1 = Parking brake set |
| RAWFL | System.CAN.RAWFL | Raw FEE9 Life Fuel | |
| FMSTT | FMS.FMSTT | FMS Transmission Oil Temperature | |
| EEFRA | System.CAN.EEFRA | Engine Emission Filter Regeneration Alarm | |
| DOORS | CAN.DOORS | Bus Door Position Status | 0 = at least 1 door is open<br>1 = closing last door<br>2 = all doors closed<br>3-13 =not defined<br>14 = Error<br>15 = not available |
| W_FMS | FMS.W_FMS | FMS Wipers | 0=Off<br>1=On |
| FMSCI | FMS.FMSCI | FMS Cab Interior Temperature | |
| FMAAT | FMS.FMAAT | FMS Ambient Air Temperature" | |
| SPHMD | FMS.SPHMD | FMS Specific Humidity | |
| SOOT1 | FMS.SOOT1 | FMS Soot 1 Load | |
| ASHL1 | FMS.ASHL1 | FMS Ash 1 Load | |
| SOOT2 | FMS.SOOT2 | FMS Soot 2 Load | |
| ASHL2 | FMS.ASHL2 | FMS Ash 2 Load | |
| AXLWT | CAN.AXLWT | FM Vehicle Weight Axle Total | |
| TIREL | FMS.TIREL | FMS Tire Location | |

| | | | |
|---|---|---|---|
| TIRET | FMS.TIRET | FMS Tire Temperature | |
| TIREP | FMS.TIREP | FMS Tire Pressure | |

## Installation Notes

1. Industry standard for heavy vehicles with a physical layer running - CAN 250kb/s, 29bit IDs.
2. This script supports SAE J1939 via an FMS gateway or contact less CAN sensor and should not be directly connected to the hot-bus of a vehicle.
3. The CAN jumpers must be in a position to allow ONLY allow Read actions on the CAN bus (Passive Mode). The only exception is when the FMS gateway requires ACK messages to broadcast the data.
4. ODO Synchronization will only take place if the MIX OBC ODO setting, and the value read from the CAN bus is within 20 km distance from each other or when the MiX OBC ODO is set to zero.
5. Torque fuel is dependent on Engine type - Therefore manual calibration of Fuel must be done if scripts select Torque Fuel.