MobileView

MobileView® J1939 to RS232 Converter Quick Reference

Introduction

The MSS-1939-00-07 Converter is a high-performance, low-latency vehicle network adapter that enables compatible MobileView recorders to monitor and respond to data traffic on a SAE J1939 vehicle network.

The converter supports the full SAE J1939 protocol according to J1939/81 network management (address claiming) and J1939/21 transport protocol (TP). It employs an extensive programming interface for Windows and Linux allowing quick development and deployment on existing and new devices.

Dynamic filtering customizes the set of messages monitored by the device and a special Listen-Only mode ensures the device remains silent on sensitive networks.

Features

- One SAE J1939 CAN channel at 250 and 500 kilobits per second, auto selectable
- RS232 at 115,200 baud
- Internal message buffering
- 100 message filters or pass all mode
- Collision detection with automatic retries
- Field programmable
- Extended temperature range (-40 to +85C°)
- Plastic enclosure
- Active and Listen-Only operational modes

SAE J1939 Capabilities

- Full on chip SAE J1939 protocol support
- Full support of the SAE J1939/21 transport protocol
- Full support of the SAE J1939/81 network management (address claiming)

Functionality

The MSS-1939-00-07 converts data on the SAE J1939 vehicle bus to RS-232 and is readable by a compatible MobileView recorder.

Operating Modes

The MSS-1939-00-07 implements two operating modes set by the recorder.

- Listen-Only Mode: The device can transmit and receive information over the RS-232 connection and may receive information from the J1939 network but is prohibited from transmitting on the J1939 network.
- Active Mode: The device is allowed to independently transmit data onto and respond to queries from the J1939 network.

Message Filtering

The MSS-1939-00-07 supports J1939 message filtering which limits information forwarded to the attached recorder. Filtering is set as part of recorder configuration and the filter list is transmitted to the converter as part of the recorder boot process.

Notes: By default, all J1939 message traffic is filtered. If the MSS-1939-00-07 is not connected prior to recorder boot, the filter list will not be downloaded and no information will be transmitted to the recorder. If this happens, reboot the recorder with the MSS-1939-00-07 attached to correct the situation.

Communication Setup

The MSS-1939-00-07 requires J1939 and RS-232 network connections adhere to specific transmission rates. The J1939 transmission rate is defined by SAE as 250 and 500Kbps, auto selectable. The device uses the set parameters for RS232 communications as described below. The recorder serial port must be set to these values.

- Baud Rate: 115,000
- Data Bits: 8
- Stop Bits: 1
- Parity: None

Status LEDs

The MSS-1939-00-07 converter has three status LED lights:

- Power/Status: LED is ON if power is present and internal system checks have passed. If the LED is OFF, then power is not present or internal checks have failed.
- J1939 Activity: LED is ON when J1939 data is present, otherwise it is OFF. The LED will normally blink when data is

transmitted. Blink frequency varies depending on amount of data traffic.

- RS232 Activity: LED is ON when RS232 data is present, otherwise it is OFF. The LED will normally blink when data is transmitted. Blink frequency varies depending on amount of data traffic.

The converter sends a heartbeat message to the recorder every second. The RS232 LED will blink once for each heartbeat message even when if RS232 information is not sent.

Physical Connections

The MSS-1939-00-07 implements the physical features shown in the following image and as described in the table.

RS232

PIN	CONNECT
2	TX
3	RX
5	GND

9 PIN D-SHELL. FEMALE

CAN/J1939 POWER

PIN	CONNECT
6	GND
8	VDC
12	CAN L
13	CAN H

15 PIN D-SHELL. FEMALE

Feature	Type	Use/Comment
Power/Status	LED Indicator	Indicates device power state Red = Power ON / Off = No Power
J1939 Activity	LED Indicator	Indicates transmission of J1939 data Red = Transmitting / Off = No transmit
RS232 Activity	LED Indicator	Indicates transmission of RS232 data Red = Transmitting / Off = No transmit
RS232	DB9 Connector	DSUB connection between converter and recorder
CAN/J1939 Power	DB15 Connector	DSUB connection to J1939 CAN bus (MobileView standard)
CAN/J1939	Screw Terminal	Direct wire connection to J1939 CAN bus (not normally used)

Power

The MSS-1939-00-07 must be powered from a 9-35 VDC source. MobileView recommends this be obtained from the recorder to ensure the converter is running when the recorder is operating. If a different source is used, power must be applied to the converter at the same moment it is applied to the recorder. Solutions with a delay may have intermittent operation or missing data.

Caution: Do not connect power to both CAN/J1939 connectors. Connecting to multiple sources may result in damage to the device or power source.

CAN/J1939 & RS232 Connections

The MSS-1939-00-07 supports J1939 network connection via direct wired connection on a screw down terminal block or through a 15-pin DSUB (DB15) connector. Termination points and designations are provided in the previous figure. The recommended wiring type for each termination point is provided in the following table.

Termination	Use	Use/Comment
VCD	18 AWG Stranded	Power In 9-35VDC (+)
GND	18 AWG Stranded	Power Return (-)
CAN H	18-22 AWG Stranded	*J1939 communication network (+)
CAN L	DB9 Connector	*J1939 communication network (-)

* For long runs or in electrically noisy environments, these wires should be part of a shielded twisted pair.

Harness Connections

MobileView implements standard harnesses attaching to DSUB connectors. Each harness is terminated with Molex Mini Fit Jr. Plug Housings as shown in the following figure and table.
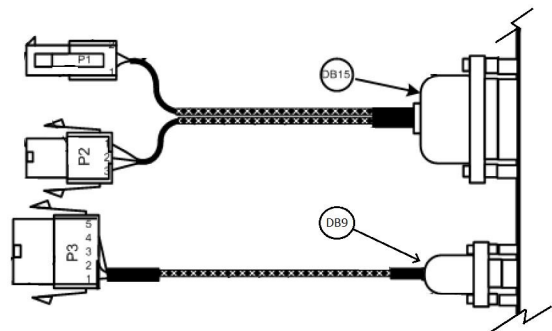
Internal Termination Resistor

Molex > DSUB	Color	Use/Comment
P1.1 > DB15.8	Red	Power In 9-35VDC (+)
P1.2 > DB15.6	Black	GND
P2.1 > DB15.13	Orange	CAN H
P2.2 > DB15.7	Brown	CAN Shield
P2.3 > DB15.12	Violet	CAN L
P3.1 > DB9.2	Orange	TX
P3.2 > DB9.3	Violet	RX
P3.3 > –		
P3.4 > DB9.5	Black	GND
P3.5 > –		

The J1939 network implements an electrical interface that requires a 120-Ohm resistor at each end of the communication circuit. This is called a termination resistor. The MSS-1939-00-07 is designed to be installed at the end of the communications circuit and comes with an internal 120-Ohm termination resistor built in.

If the device is not installed at the end of the communications circuit, please contact MobileView Technical support for instructions on how to disengage the resistor.

Specifications

Physical

- LED Indicator:Power, (2x) Data Transmission
- Serial Connection:DB9 Female
- Vehicle Connection:DB15 Female, 5-Position Screw Terminal
- Temperature Rating:-40 to +85°C
- IP Rating:IP53

Electrical

- Input Voltage:9 to 35 VDC Input @ 100 mA
- Over voltage Protection:8KV or higher IEC ESD protection
- CAN Transceiver:ISO 11898 standard
- CAN Baud Rate:250 Kbps (according to SAE J1939 standard)
- RS232 Baud Rate:115,200 baud, 8 bits, No Parity, 1 Stop Bit

Technical Support

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