J1939 Monitor & Logger

User Manual

Version 1.0

1. Introduction

The J1939 Monitor & Logger is a portable diagnostic tool for SAE J1939 networks.

The unit can:

- Monitor live J1939 parameters
- Decode PGNs and SPNs
- Log CAN traffic to an SD card
- Inject CAN messages from a CSV file
- Load multiple J1939 databases
- Update firmware from an SD card

2. Controls

The unit is operated using a rotary encoder with an integrated push button.

Action	Function
Rotate clockwise	Move down / increase value
Rotate anti-clockwise	Move up / decrease value
Press button	Select item
Hold during power-up	Enter bootloader mode

3. Status Screen

The status screen displays:

- Firmware version
- CAN baud rate
- Active filter count
- SD card status
- CAN injection status
- Logging status

- Loaded database
- Number of loaded SPNs
- CAN network health

Example:

J1939 LOGGER

SPN:32

CAN:250k FLT:ALL

SD:READY INJ:OFF

STOPPED DB:TRUCK

4. Main Menu

Home Screen

Start Logging

View Filters

CAN Inject

J1939 Monitor

J1939 Database

Settings

5. Logging CAN Messages

Select:

Start Logging

to begin recording CAN traffic to the SD card.

The logger automatically creates a new log file.

To stop logging:

1. Return to the Main Menu.
2. Select Start Logging again.

The status screen displays:

LOGGING

while recording is active.

6. CAN Filters

Select:

View Filters

to view the number of active CAN filters loaded from the SD card.

If no filter file is present:

FLT:ALL

is displayed and all CAN messages are logged.

Filters are loaded from the file:

FILTER.FLT

Format

TYPE,CAN_ID

Where:

- TYPE = STD or EXT
- CAN_ID = hexadecimal CAN identifier

Example

```
# Engine ECU messages
EXT,0x0CF00400

# Transmission ECU messages
EXT,0x18F00500
```

7. CAN Message Injection

The logger can periodically transmit CAN messages from:

MESSAGES.CSV

Example:

TYPE,CAN_ID,DLC,D0,D1,D2,D3,D4,D5,D6,D7,PERIOD

EXT,0x18F00417,7,FF,FF,FF,E0,2E,FF,FF,1000

EXT,0x18FEEE17,1,7A,300

EXT,0x18FEEF17,6,FF,FF,FF,4B,FF,FF,150

EXT,0x18FEF717,5,2C,02,FF,FF,FF,,600

To enable transmission:

1. Select CAN Inject.
2. The status screen displays:

INJ:ON

To disable transmission:

1. Select CAN Inject again.

Note:

Logging and Injection cannot operate simultaneously.

8. J1939 Monitor

Select:

J1939 Monitor

to display live decoded parameters.

Example:

EngineSpeed 1500 rpm

CoolantTemp 82 C

OilPressure 300 kPa

BatteryVolt 27.8 V

Values are updated automatically as messages are received.

9. J1939 Databases

Databases are stored in:

/J1939

Example:

GENERIC.CSV

TRUCK.CSV

ENGINE.CSV

CUMMINS_X15.CSV

The selected database determines which PGNs and SPNs are decoded.

10. Selecting a Database

1. Select J1939 Database.
2. Rotate the encoder to select a file.
3. Press the encoder button.
4. The database loads immediately.

The active database is shown on the status screen.

11. Database File Format

Example:

#PGN,SPN,DisplayName,StartBit,Length,Scale,Offset,Unit

61444,190,EngineSpeed,24,16,0.125,0,rpm

65262,110,CoolantTemp,0,8,1,-40,C

65263,100,OilPressure,24,8,4,0,kPa

Lines beginning with # are comments and ignored.

12. Settings

The Settings menu contains:

Date/Time

CAN Baudrate

Typical J1939 networks use:

250 kbit/s

Some systems may use:

500 kbit/s

13. CAN Status Messages

BUS HEAVY

Indicates increased CAN communication errors.

Possible causes:

- Missing termination resistor
- Incorrect baud rate
- Wiring fault

PASSIVE

The CAN controller has entered the error-passive state.

BUS OFF

The CAN controller has disconnected from the network due to excessive communication errors.

14. Firmware Updates

Update Procedure

1. 1. Copy FIRMWARE.BIN to the root directory of a FAT32-formatted microSD/microSDHC card.
   2. Press and hold the encoder push button.
   3. While holding the button, power-cycle the unit.
   4. Keep the button pressed until the bootloader starts.
   The bootloader will automatically detect and install the firmware update.
2. Insert the SD card.
3. Power-cycle the unit.

The bootloader will:

- Detect the update file
- Program the application
- Verify the firmware
- Start the new application

After a successful update the file is renamed to:

FIRMWARE.OK

15. Bootloader Mode

During power-up the bootloader displays:

Bootloader

Hold button

Press and hold the encoder push button while applying power to enter bootloader mode or perform a firmware update.

16. Troubleshooting

No parameters displayed:

- Check CAN wiring
- Verify CAN baud rate
- Confirm the correct database is loaded
- Ensure the network is active

BUS HEAVY displayed:

- Check termination resistor
- Verify CAN baud rate
- Check CAN_H and CAN_L wiring

Database will not load:

- Verify file is in /J1939
- Verify CSV format

Firmware update fails:

- Verify filename is FIRMWARE.BIN
- Verify file is in SD card root directory
- Retry power cycle

18. Date and Time

Select Settings → Date/Time.
Rotate the encoder to select a field.
Press the encoder to edit the selected field.
Rotate to change the value and press again to accept.
Select SAVE to store the new date and time.
The battery-backed RTC retains the time when power is removed.

19. CAN Baud Rates

The following CAN baud rates are supported:
• 100 kbit/s
• 125 kbit/s
• 250 kbit/s
• 500 kbit/s
• 800 kbit/s
• 1 Mbit/s

The selected baud rate is stored in non-volatile memory and restored automatically at power-up.

20. Log File Format

CSV Header:
Date,Time,CAN_ID,DLC,PGN,SPN,Name,Value,Unit,Raw Data

Example:
13/07/2026,20:50:45,18FEEF17,8,65263,100,OIL,300.00,kPa,00 00 00 4B 00 00 00 00
13/07/2026,20:50:45,18F00417,8,61444,190,RPM,1500.00,rpm,00 00 00 E0 2E 00 00 00
13/07/2026,20:50:45,18FEF617,8,65270,105,INTAKE,25.00,C,41 00 00 00 00 00 00 00
13/07/2026,20:50:45,18FEEE17,8,65262,110,COOLANT,82.00,C,7A 00 00 00 00 00 00 00
13/07/2026,20:50:45,18FEF717,8,65271,168,BATT,27.80,V,2C 02 00 00 00 00 00 00

17. SD Card Compatibility

Supported media:
• microSD and microSDHC cards
• Recommended capacity: 4 GB to 32 GB
• Cards must be formatted as FAT32
• exFAT-formatted cards are not supported
• Many 64 GB cards are supplied formatted as exFAT and must be reformatted to FAT32 before use

• A Class 10 microSDHC card is recommended for best logging performance

Recommendation:
For maximum compatibility, use a 4 GB to 32 GB Class 10 microSDHC card formatted as FAT32.