

CAN DATA LOGGER

User Manual

Version 1.0

1. Introduction

The CAN Data Logger is a standalone device for monitoring, recording and replaying CAN bus traffic.

Features

- CAN bus logging to microSD card
- Standard (11-bit) and Extended (29-bit) CAN identifiers
- Configurable CAN baud rates
- Real Time Clock (RTC) timestamping
- CAN message filtering
- CAN message injection/playback
- OLED display
- Rotary encoder with integrated push button
- Firmware updates from SD card

2. User Controls

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

Rotate Encoder

- Scroll through menus
- Select menu items
- Change parameter values

Press Encoder Knob

- Enter menus
- Select menu items
- Enter edit mode
- Save settings

3. Status Screen

The Status Screen is displayed after power-up.

Information Displayed

- Software version
- CAN baud rate
- Filter status
- SD card status
- CAN injection status
- Logging status
- Received message count

Press the encoder knob to enter the Main Menu.

4. Main Menu

Menu Items

- Home Screen
- Start Logging
- View Filters
- CAN Inject
- Set Date/Time
- CAN Baudrate

Rotate the encoder to highlight a menu item and press the encoder knob to select it.

5. CAN Logging

Select **Start Logging** from the Main Menu.

The logger creates a new log file on the SD card and records CAN traffic matching the configured filters.

During logging the status screen displays:

Status: LOGGING

To stop logging, select **Start Logging** again.

6. CAN Filters

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
```

```
# Dashboard messages  
STD,0x695
```

```
# Diagnostics  
STD,0x7E8
```

Notes

- Lines beginning with '#' are treated as comments.
- Blank lines are ignored.
- Only matching messages are logged.

If FILTER.FLT is not present, all CAN messages are logged.

7. CAN Message Injection

Messages are loaded from:

MESSAGES.CSV

Format

TYPE,CAN_ID,DLC,DATA...,REPEAT_TIME_MS

Example

```
# Engine speed simulator  
EXT,0x0CF00400,4,0x00,0x80,0x12,0x34,100
```

```
# Dashboard status  
STD,0x695,4,0x00,0x01,0x02,0x03,250
```

```
# Heartbeat  
STD,0x123,1,0x55,1000
```

Notes

- Lines beginning with ‘#’ are treated as comments.
- Blank lines are ignored.
- The final value specifies the repeat period.
- Messages are transmitted continuously while injection is enabled.

CAN Injection cannot be enabled while logging is active.

8. Setting Date and Time

Procedure

1. Rotate the encoder to select a field.
2. Press the encoder knob to edit the field.
3. Rotate the encoder to change the value.
4. Press the encoder knob to accept the value.
5. Select **SAVE**.
6. Press the encoder knob to store the new date and time.

The RTC is battery-backed and retains time when power is removed.

9. CAN Baud Rate

Available Baud Rates

- 50 kbit/s
- 100 kbit/s
- 125 kbit/s
- 250 kbit/s
- 500 kbit/s
- 800 kbit/s
- 1 Mbit/s

The selected baud rate is automatically stored and restored at power-up.

10. Firmware Updates

Update Procedure

1. Copy FIRMWARE.BIN to the root directory of a FAT32-formatted microSD/microSDHC card.
2. Insert the SD card.
3. Power-cycle the logger.

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

11. Bootloader Mode

During power-up the bootloader displays:

Bootloader
Hold button

Press and hold the encoder push button during startup to force the logger to remain in bootloader mode.

12. Troubleshooting

SD:ERROR

The SD card could not be detected or mounted.

No Msg File

MESSAGES.CSV could not be found.

No Filters

FILTER.FLT could not be found.

All CAN traffic will be logged.

Verify Failed

Firmware update verification failed.

Copy FIRMWARE.BIN to the SD card again and repeat the update process.

Stop Logging

Logging must be stopped before changing certain settings.

13. Specifications

CAN Interface

- CAN 2.0A (11-bit)
- CAN 2.0B (29-bit)

Data Logging

- microSD / microSDHC card storage (4 GB to 32 GB recommended)
- FAT32 file system (exFAT not supported)

Display

- 128 × 64 OLED display

User Interface

- Rotary encoder with integrated push button

Timekeeping

- Battery-backed RTC

Firmware

- SD card firmware update capability

14. SD Card Compatibility

- Supports 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 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.