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USER MANUAL

Ecumaster Data Logger EDL-1

Document version: 2.6

Firmware version: 1.21 or later

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ECUMASTER

Contents

1. Device description

The data logger module is designed to work with **EMU Classic** and **EMU Black** using serial communication and allows saving data streams on an SDHC card.

Note:
This device is NOT compatible with EMU PRO. EMU PRO uses a different logging system and logs data directly to a USB drive.

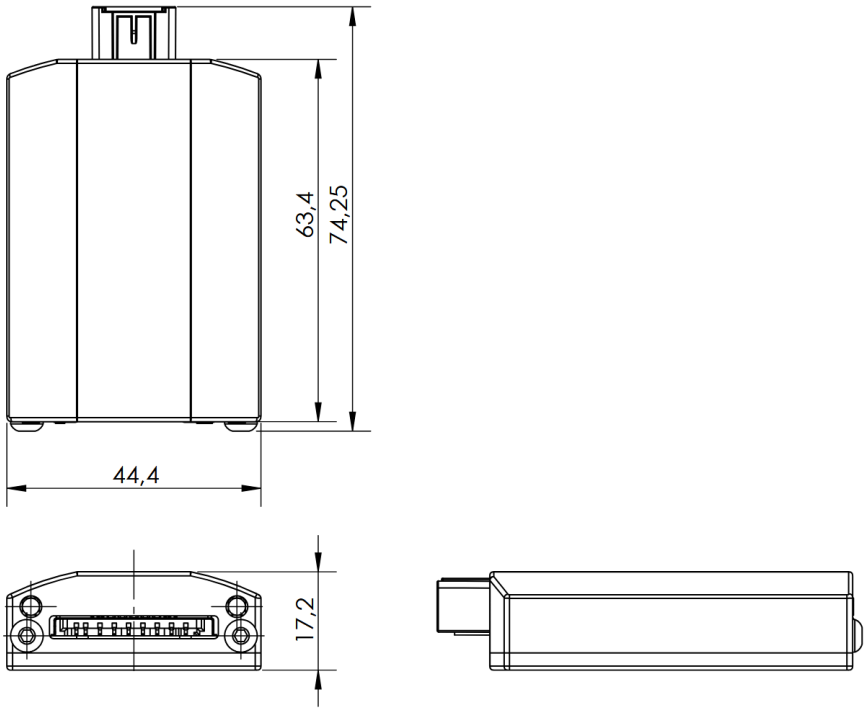
When using EMU Classic and EMU Black, all channels available when logging to a PC are also recorded by the EDL-1 device. Additionally, the EDL-1 features a Bluetooth module, enabling live data streaming to Android devices.

An SDHC card of 4 GB or larger should be used (logging time is approximately 11 hours per 1 GB). The file format is FAT32.

2. Specification

	Specification
Dimensions	64 x 45 x 18 mm
Weight	50 g
Connector	Molex 34793-0040
Status indicator	2 LEDs
Temperature range	-40 to +85 °C
Operating supply voltage	5-20 V
SDHC memory cards format	FAT32
Supported SDHC memory card size	Maximum 32 GB, 4GB recommended
Bluetooth communication	Yes, live data transmission
Real-time clock	Yes, battery powered

All dimensions in mm



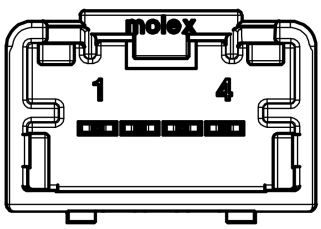
3. Installation

The EDL-1 device requires power in the range of 5-20V and a connection to the serial outputs of EMU Classic or EMU Black.

The EDL-1 can be powered with a +12V supply and chassis ground or with 5V supply and sensor ground of the ECU as in the following examples.

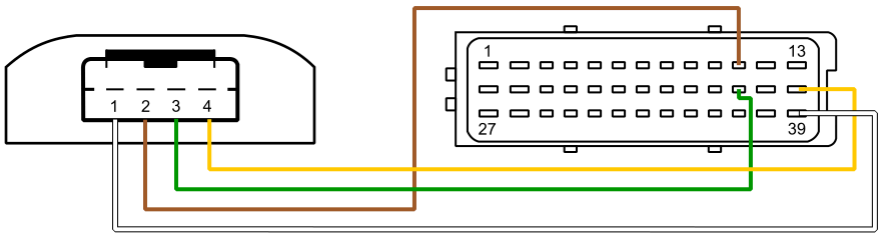
Important:
A shielded cable should be used for the RXD and TXD signals.

Pinout

	1 Ground
	2 RXD
	3 TXD
	4 Power supply

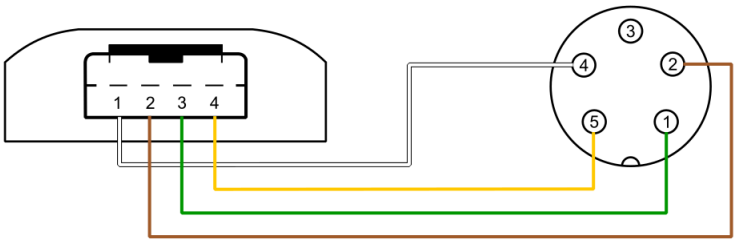
Connection to EMU Black

EDL-1	EMU Black
1 Ground	**B39** Sensor Ground
2 RXD	**B11** RS232 TXD
3 TXD	**B24** RS232 RXD
4 Power supply	**B26** +5V supply



Connection to EMU Classic

EDL-1	EMU Classic
1 Ground	**4** Ground
2 RXD	**2** TXD
3 TXD	**1** RXD
4 Power supply	**5** +5V supply



4. Data logging

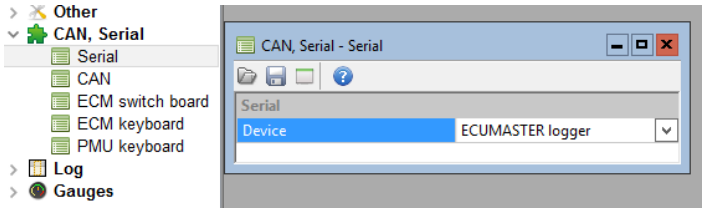
The EDL-1 creates a new log file each time it is power cycled or the ECU is power cycled. In other words, both the ECU and the EDL-1 must be powered on in order to start logging. It organizes these logs by creating folders for each date, which contain the logs for that specific day. This method provides a convenient way to access logged data without needing to carry a laptop.

The SD card is the only method available for transferring logged data from the EDL-1 to a PC; (alternative connection methods, such as direct PC connection or Bluetooth, are not supported for data transfer.)

To save data on the SD card, the Ecumaster logger data stream must be selected in the EMU Classic or EMU Black ECU.

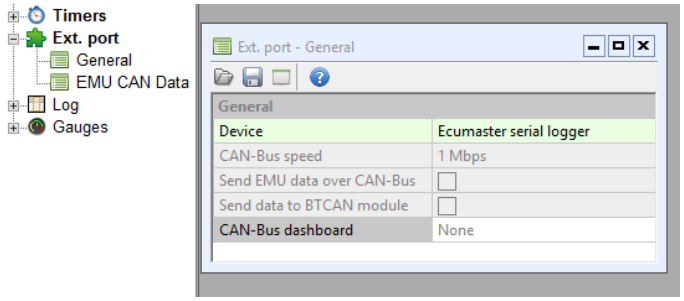
EMU Black

In **CAN, Serial/Serial**, for **Device** set ***Ecumaster logger***



EMU Classic

In **Configuration/Ext. port**, for **Device** set ***Ecumaster serial logger***



To open a log file, use the ***Graph log*** window and load the log via the ***Open log*** icon, as you would with a normal log file. In EMU Classic and EMU Black V2, it is also possible to import logs via the **Files/Import log/Ecumaster log** function.

For logging, an SDHC card of 4 GB or larger should be used. The file format must be FAT32. The logging time per 1 GB varies depending on the version of the EMU:

- **EMU Classic:** 40 hours per 1 GB
- **EMU Black V2:** 35 hours per 1 GB
- **EMU Black V3:** 20 hours per 1 GB

For more informations about the SD cards, go to Appendix A - EDL-1 Supported SD Cards *(on page 9)*

5. LED status

LED	Description
	**Red LED** flashing fast – bootloader mode **Red LED** double flash - SDHC card error
	**Orange LED** on – no SDHC card inserted
	**Blue LED** on – date and time set
	**Green LED** on – SDHC card inside, device ready to work **Green LED** flashing fast – saving to SDHC card
	**Blue LED** off – no communication with BT module **Blue LED** on – communication with BT module **Blue LED** flashing – waiting for pairing / BT communication error

6. Firmware upgrade

When a new version of firmware is released, the device firmware can be upgraded. The firmware can be found at https://www.ecumaster.com/products/data-logger-dl-1/.

To upgrade the firmware, unpack and save the ***firmware.bin*** file to the root directory of an SDHC card and insert the card into the slot. The upgrade process will start automatically. During the upgrade procedure, the LED will flash. After the firmware upgrade is completed, the device must be restarted by power cycling to complete the update process.

7. Time and date setup

The EDL-1 device has a built-in real-time clock and a backup battery to maintain the time and date when the main power is off.

To set a new time and date, the device must be connected to the EMU Classic or EMU Black and powered on. In the EMU Client application's **Tools** menu, select the **Set datalogger time** function. The current system date from the PC will be set (the status LED will blink blue).

8. Bluetooth support

The EDL-1 device is equipped with a Bluetooth module that allows one-way communication with Android devices. One of the applications that supports this communication is RealDash, which can be downloaded from: https://realdash.net/support.php.

> **Warning:**
> Only Android systems are supported.

The **EDL-1** communicates via RS232 in one direction only, as does its Bluetooth module (receive-only), allowing users to view parameters but not modify them. This one-way communication means that, regardless of the app used, it is not possible to change settings in the EMU Black or EMU Classic through a Bluetooth app on the EDL-1.

9. Document history

Version	Date	Changes
Preliminary	2016.11.08	Initial release
2.0	2024.10.14	Document layout changed to the Ecumaster standard format The text has been refined and improved for better readability and clarity
2.1	2024.11.14	Added information about one-way communication in Device description chapter Added clarification on power supply in Installation chapter Added details on log file creation and data transfer method in Data logging chapter
2.2	2025.04.01	Updated the *Data logging* section with information on log import for EMU Black V3
2.3	2025.06.09	The connection description for EMU Black and EMU Classic includes both RX and TX lines
2.4	2025.08.01	Added *Appendix A - EDL-1 Supported SD Cards*
2.5	2026.03.30	Updated wire colors in the schematics in the *Installation* chapter
2.6	2026.05.12	Updated firmware upgrade procedure description.

10. Appendix A - EDL-1 Supported SD Cards

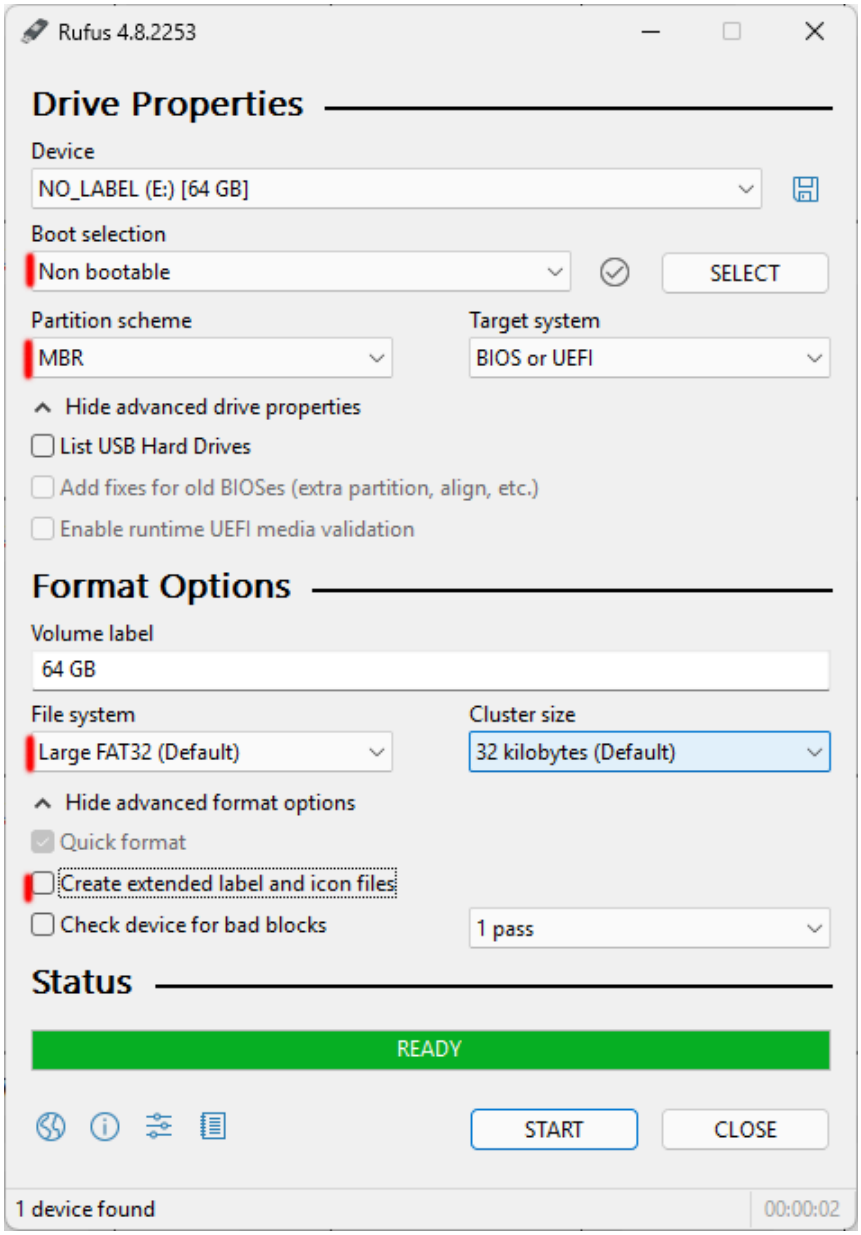
10.1. Description

Important:

If your SD card has a capacity larger than 32 GB, you must reformat it to the **FAT32** file system. You can do this using free tools such as Rufus (https://rufus.ie/).

How to format your card with Rufus:

Set Rufus to format the SD card as FAT32, which is required for compatibility with the EDL-1 device.



Test Results Overview

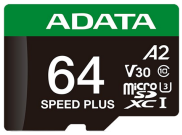
All SD card tests were performed using EDL firmware version 1.21.

Based on our tests:

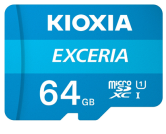
- Lexar cards do not work with EDL-1
- One ADATA card model also failed
- We recommend choosing a card rated as having **Excellent** performance.

This list does not include all compatible cards — it only reflects the ones we tested.

ADATA

Card	Size	Requires formatting	Performance	Picture
HC I Class 10	32GB	No	**Excellent**	
XC I Class 10	64 GB	Yes	**Excellent**	
XC I Class 10	128 GB	Yes	Very good	
Speed plus	64 GB	Yes	Doesn't work	
High endurance	64 GB	Yes	Very good	

KIOXIA

Card	Size	Requires formatting	Performance	Picture
Exceria	32 GB	No	**Excellent**	
Exceria	64 GB	Yes	**Excellent**	

SAMSUNG

Card	Size	Requires formatting	Performance	Picture
PRO Endurance	32 GB	No	Very good	
PRO Endurance	64 GB	Yes	Very good	
EVO Plus	64 GB	Yes	**Excellent**	
EVO Plus	64 GB	Yes	Very good	
EVO Plus A2	128 GB	Yes	Very good	
EVO Plus For Creators	64 GB	Yes	Very good	
Pro ultimate	64 GB	Yes	**Excellent**	

SANDISK

Card	Size	Requires formatting	Performance	Picture
Ultra A1	32 GB	No	**Excellent**	
Ultra A1	64 GB	Yes	**Excellent**	

Card	Size	Requires formatting	Performance	Picture
Ultra	32 GB	No	Very good	
Ultra	64 GB	Yes	Very good	
Max endurance	32 GB	No	**Excellent**	
High endurance	32 GB	No	**Excellent**	
High endurance	128 GB	Yes	**Excellent**	
High endurance	128 GB	Yes	**Excellent**	
Nintendo Switch	128 GB	Yes	**Excellent**	
Extreme A1	32 GB	No	Very good	
Extreme A2	64 GB	Yes	**Excellent**	
Extreme A2	128 GB	Yes	**Excellent**	
Extreme Pro A1	32 GB	No	**Excellent**	
Extreme Pro A2	64 GB	Yes	**Excellent**	

Card	Size	Requires formatting	Performance	Picture
Extreme	32 GB	No	**Excellent**	
Extreme Pro	32 GB	No	**Excellent**	
SDHC	32 GB	No	**Excellent**	
Ultra SDXC	64 GB	Yes	Very good	
Ultra SDHC	32 GB	No	**Excellent**	
Ultra SDHC	32 GB	No	**Excellent**	
Ultra SDXC	64 GB	Yes	**Excellent**	

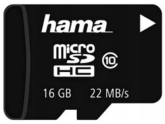
KINGSTON

Card	Size	Requires formatting	Performance	Picture
CANVAS Go! Plus SDCG4	64 GB	Yes	Very good	
High Endurance SDCE	32 GB	No	Very good	
CANVAS Select Plus SDCS2	64 GB	Yes	**Excellent**	
CANVAS Select Plus SDCS2	32 GB	No	**Excellent**	
CANVAS Select Plus	64 GB	Yes	**Excellent**	

LEXAR

Card	Size	Requires formatting	Performance	Picture
Silver Plus	64 GB	Yes	Doesn't work	
633x	32 GB	No	Doesn't work	
633x	64 GB	Yes	Doesn't work	
Silver Plus	64GB	No	Doesn't work	

Other

Card	Size	Requires formatting	Performance	Picture
HAMA	16 GB	No	**Excellent**	
Patriot LX series	16 GB	No	Very good	
Patriot LX series	32 GB	No	Very good	
Goodram CLASS 10 UHS-1	128GB	Yes	**Excellent**	
Goodram CLASS 10 UHS-1	256GB	Yes	Very good	
GOODRAM Industrial MLC	4 GB	No	Very good