

Mectric

Motorsport Electronics

MCAN-FD



The MCAN-FD is a powerful USB to CAN interface designed for the automotive aftermarket industry.

Designed in collaboration with PEAK-System Technik GmbH to give maximum compatibility and a rich feature set. MCAN-FD is compatible with all PEAK-System software, drivers and API, with additional features available when connected to Mectric software.

Overview

- USB-C Connector (High Speed USB 2.0 Interface)
- CAN 2.0A/2.0B/FD Compatible (up to 5 Mbps)
- Galvanic isolation of CAN from USB/PC
- Software switchable CAN bus termination
- Silent/Listen Only mode
- Bus load and status monitoring
- Automotive Deutsch DTM connector
- USB Powered

Mectric Motorsport
Electronics

PO Box 3007
Aberfoyle Park SA 5159
Australia

mectricmse.com

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Wiring Pinout



Mating Connector: Deutsch DTM06-3S

Pin	Function
1	CAN Bus Ground Reference ¹
2	CAN Bus Low
3	CAN Bus High

(1) *MCAN-DF features Galvanic Isolation. The ground reference pin must be connected to the CAN bus ground plane. Without the ground connection, CAN bus communications will fail.*

Features

- PEAK-System CAN to USB hardware
- Compatible with all Mectric MSE software and CAN devices
- 100% compatible with the USB device drivers and software from PEAK-System
- Compatible with any software that uses the PCAN-Basic API
- Galvanic Isolation of CAN bus (no electrical connection of vehicle to USB or PC)
- Onboard CAN Bus termination, software switchable with Mectric software or PCAN API
- Silent/Listen Only mode, software switchable with Mectric software or PCAN API
- High-speed USB 2.0 (compatible to USB 1.1 & 3.0)
- FPGA implementation of the CAN FD controller
- Complies with CAN specifications 2.0 A/B and FD
- CAN FD support for ISO and Non-ISO standard switchable
- CAN Bitrates of to 5.0 Mbps
- Measurement of bus load including error frames on the physical bus
- Induced error generation for incoming and outgoing CAN messages
- USB powered with internal buck/boost regulators to ensure guaranteed internal 5.0V and 3.3V supplies
- 5V supply voltage monitoring (available to Mectric software)
- Firmware update via USB
- Extended operating temperature range from -40 to +85 °C (-40 to +185 °F)

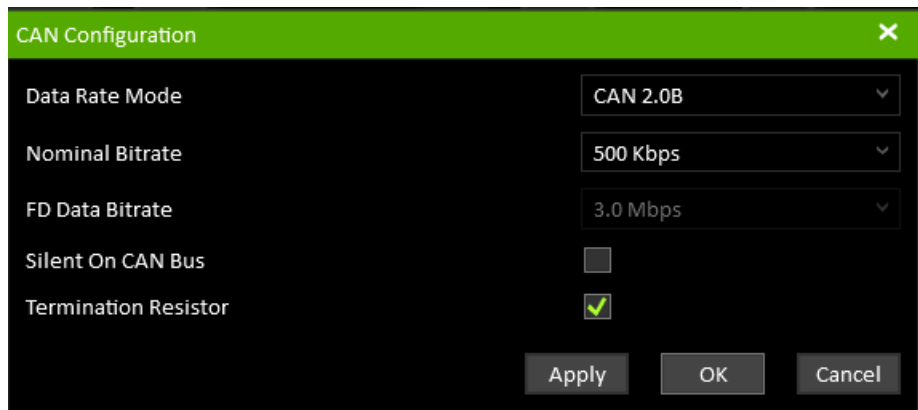
Galvanic Isolation

The CAN bus is electrically isolated from the USB/PC interface. This safeguards the USB device and connected PC from electrical damage that might be caused by the vehicle or vehicle wiring and visa-versa. In order for CAN communications to work in an isolated system, the CAN bus facing side of the MCAN-FD device must have its ground reference connected to the vehicle/CAN ground plane via pin 1 on the 3 pin DTM connector.

CAN Bus Termination

In situations where the connected CAN bus is under-terminated or the MCAN-FD is connected directly to a CAN node, the internal 120R bus termination circuit can be enabled.

In MectriCal, simply enable “Termination Resistor” in the CAN Interface Config window:

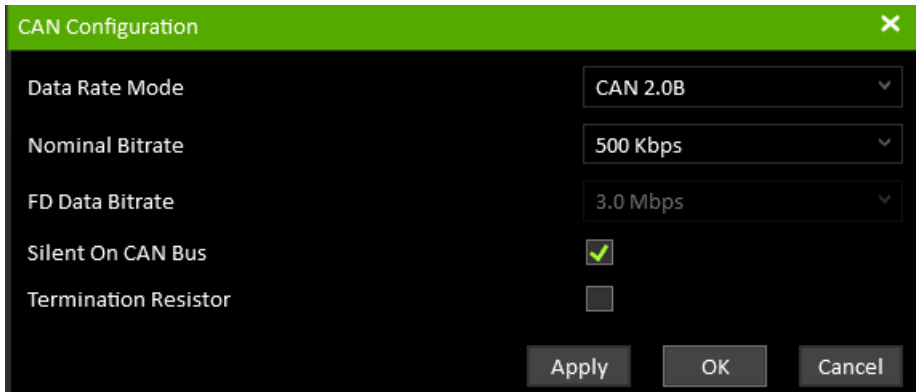


Alternatively, the termination circuit can be enabled by setting PCAN GPIO Pin 4 to High using the PCAN-Basic API.

Silent Mode

The device can be placed in silent or listen only mode. In this mode, the CAN PHY does not set ACK bits and does not transmit messages. It will appear invisible to other nodes.

In MectriCal, simply enable “Silent On CAN Bus” in the CAN Interface Config window:



Alternatively, the termination circuit can be enabled by setting PCAN GPIO Pin 2 to High using the PCAN-Basic API.

USB Drivers

MCAN-FD uses PEAK-System USB drivers available here:
<https://www.peak-system.com/Drivers.523.0.html?&L=1>

Document History

21/11/2023 - Initial Release.