



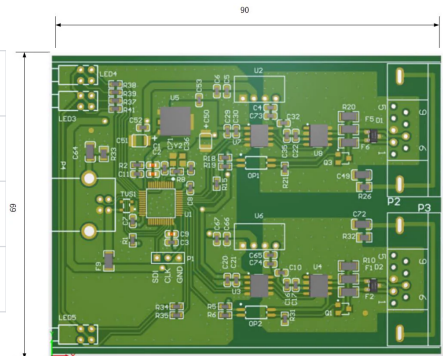
BM-CANFD-F2

Dual-channel CAN FD Development Board

An isolated board-level platform for embedded integration, secondary development, and custom firmware

RELEASE · REV A

Model	BM-CANFD-F2
Document	Product Datasheet
Source revision	2023-09-15
Release revision	REV A · 2026-07-27



Product position	F2 is a dual-channel CAN FD bare board and development platform for integration into customer equipment, customer-developed firmware, or BUSMUST customization. It is not a finished USB-connected CAN FD analyzer.
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1 Product overview

BM-CANFD-F2 integrates two independent CAN/CAN FD channels, isolated transceivers, software-controlled termination, hardware filters, timed transmission, and routing resources on a 69 × 90 mm board. Its 120 MHz Cortex-M4 MCU and exposed SWD/pin resources let customers deploy communications, gateway, signal-processing, or proprietary protocol logic directly on the device.

**Important
operating
boundary**

The USB Type-A connector is a 5 V power input only. The standard product does not provide BMAPI SDK or BUSMASTER real-time control over USB. Choose a BUSMUST USB CAN FD analyzer for PC-connected analysis, or use the F2 SWD/custom-firmware workflow for device-side logic.

Key capabilities

- Two independently configurable CAN Classic 2.0 / CAN FD channels
- Two hardware receive filters per channel, including payload filtering
- Up to four standalone routing rules per channel
- Isolated CAN front ends, bus ESD protection, and USB overcurrent protection
- CAN FD data-phase rates up to 5 Mbps, supporting ISO and Bosch formats
- Up to 16 hardware-timed transmit tasks per channel
- Software-controlled 120-ohm termination on each channel
- Exposed SWD and MCU resources for customer or BUSMUST firmware development

Typical applications

- Embedded CAN FD interface
- Standalone message transmission
- Controllers and test benches
- Medical and special-purpose equipment
- Proprietary protocol gateway
- Signal encoding and decoding
- Robotics and industrial equipment
- Custom communications terminals

2 Technical specifications

Parameter	Specification	Notes
CAN channels	2 independent CAN/CAN FD	Each channel may use different bit rates and tasks
Protocols	CAN Classic 2.0; CAN FD ISO / Bosch	BRS and payloads up to 64 bytes
Bit rate	5 kbps - 5 Mbps	CAN FD data phase up to 5 Mbps
Receive throughput	16,000 fps per channel	Rated in the source specification
Transmit throughput	16,000 fps per channel	Rated in the source specification
Hardware filters	2 per channel	Identifier and payload-content filtering
Timed transmission	Up to 16 tasks per channel	Incrementing, random, and related task modes
Standalone routing	Up to 4 rules per channel	Cross-channel forwarding with identifier changes
Termination	120 ohm / disabled, software controlled	Independent for each channel
Main controller	GD32E103CBT6, 120 MHz Cortex-M4	LQFP48 with floating-point support
Power input	USB Type-A, 5 V / 500 mA	Power only; standard firmware exposes no USB host link
CAN connectors	2 × DB9	Pin 2 CAN-L; Pin 3 GND; Pin 7 CAN-H
Debug connector	2.54 mm 3-pin SWD, 3.3 V logic	SWDIO / SWCLK / GND
Protection	Isolated CAN front end, ESD, USB overcurrent	Isolation withstand voltage is not rated in the source
Bare-board size	69 × 90 × 17 mm	PCB 69 × 90 mm; PCBA height 17 mm
Optional enclosure	90 × 74 × 29 mm	Aluminum enclosure; custom label available
Weight	< 100 g	Bare board

3 Operating capability and wiring guidance

- Supports CAN FD bit-rate switching (BRS) and payloads up to 64 bytes.
- Source validation case: 64-byte frames at 2,000 frames/s transmit and receive without frame loss.
- Factory testing uses a representative 500 kbps arbitration phase and 2 Mbps data phase.
- For data-phase rates above 2 Mbps, keep the bus within 1.5 m and use low-capacitance shielded twisted pair.
- Terminate both ends of the bus with 120 ohm; the F2 onboard termination can be enabled per channel.
- At high data rates, a CAN FD sample point around 75% is recommended, followed by validation on the actual network.

Customization and secondary development

- Customer development: MCU receive/forward examples, pin assignments, and peripheral mapping are available.
- BUSMUST customization: project-specific message/signal parsing, encoding, checksums, encryption, gateway, and control logic.
- Delivery options: bare board, optional aluminum enclosure, custom label, and preprogrammed customer firmware.

Important operating boundary	The USB Type-A connector is a 5 V power input only. The standard product does not provide BMAPI SDK or BUSMASTER real-time control over USB. Choose a BUSMUST USB CAN FD analyzer for PC-connected analysis, or use the F2 SWD/custom-firmware workflow for device-side logic.
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4 Mechanical dimensions

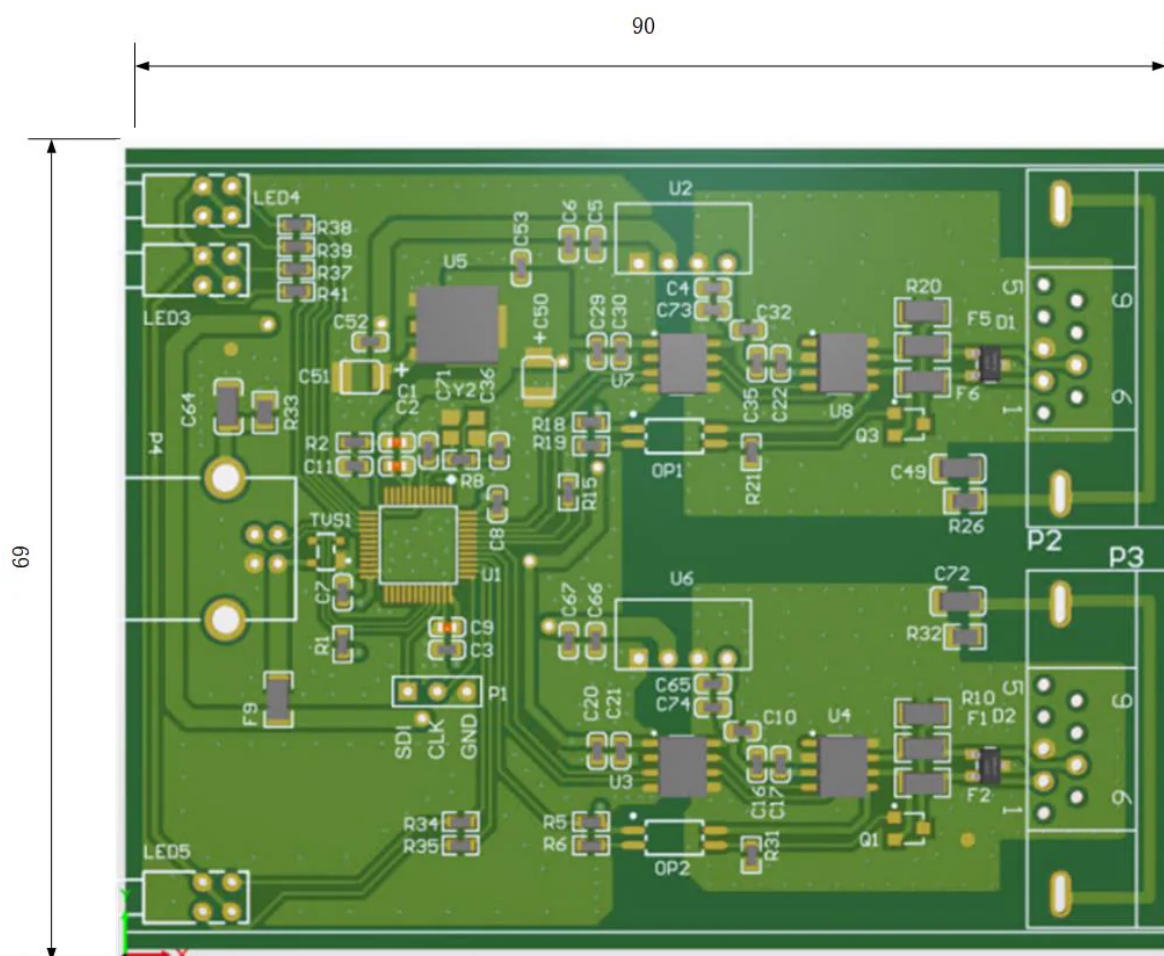


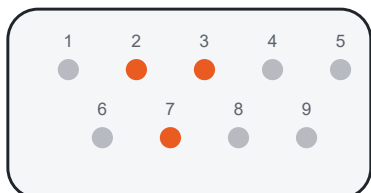
Figure 4-1 BM-CANFD-F2 PCB outline and mounting dimensions (mm)

Dimension basis

The bare PCB outline is 69 × 90 mm with a maximum PCBA height of 17 mm. The optional enclosure is 90 × 74 × 29 mm.

5 Connector definitions

5.1 CAN FD DB9 (same definition for both channels)



Pin	Signal	Description
2	CAN-L	CAN bus low
3	GND	Bus reference ground
7	CAN-H	CAN bus high

5.2 SWD debug connector (P1)



Marking	Signal	Description
SDI	SWDIO	Serial-wire debug data
CLK	SWCLK	Serial-wire debug clock
GND	GND	3.3 V debug reference ground

Compatibility note

The DB9 connectors use the common CAN pin assignment, and both channels share the same definition.

6 Secondary-development resources

6.1 MCU pin assignments

Pin	Function	Notes
PB9	CAN0_TX	
PB8	CAN0_RX	
PB7	CAN0_TRES	Channel 1 termination control
PB6	CAN1_TX	
PB5	CAN1_RX	
PB4	CAN1_TRES	Channel 2 termination control
PB3	LED10	
PA15	LED9	
PA14	SWCLK	
PA13	SWDIO	
PA12	USB DP	Reserved for custom firmware
PA11	USB DM	Reserved for custom firmware
PA3	LED7	
PA4	LED8	
PA5	LED5	
PA6	LED6	

6.2 On-chip peripheral mapping

Board function	MCU peripheral	
CAN channel 1	FDCAN1	
CAN channel 2	FDCAN0	
Channel-status LEDs	GPIO	
Channel termination	GPIO	
USB resource	USBHS	For custom firmware; standard product USB is power-only

6.3 PCB silkscreen index

Board function	Silkscreen	
SWD connector	P1	
CAN FD DB9 channel 1	P3	
CAN FD DB9 channel 2	P2	
USB power connector	P4	
Power / user LED	LED5	
CAN FD channel 1 status	LED4	
CAN FD channel 2 status	LED3	

7 Selection and project support

Choose BUSMUST USB or PCIe CAN FD analysis hardware when the project requires PC-connected analysis, BUSMASTER, or BMAPI real-time control. Choose BM-CANFD-F2 when the project requires board-level integration, standalone tasks, a proprietary gateway, or custom device firmware developed by the customer or BUSMUST.

Project services	Available services include hardware-integration review, firmware requirements, prototype development, production programming, and label/enclosure customization.
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Technical and sales enquiries: sales@busmust.com · support@busmust.com · www.busmust.com

Specifications may change as the design evolves. Project deliverables are governed by the formal quotation, samples, and mutually approved agreement.