



CANopen Card Model FBC0232-01 User's Manual

Description – Installation – Technical Data

Hardware Revision: 1.0.0

Software Revision: 2.0.0

Manual Revision: 1.0.0

Technical specifications of the CANOpen card

General	
Model	FBC0232-01
Dimensions	10 cm (length) × 5.6 cm (height) × 18.5 cm (depth)
Weight	0.2 Kg
Operating Temperature	-10°C to 45°C
Storage Temperature	-20°C to 60°C
Operating Humidity	0% to 60%
Warranty	2 years
Hardware	
Communication Type	CAN-BUS
Number of Input Channels	64
Minimum Data Transmission Interval	500 ms
Data Logging Intervals	500ms to 65500ms (configurable using sending SDO messages)
API Data Interchange Formats	CAN
Architecture	ARM 32-bit
CPU Speed	32 MHz

SAFETY PRECAUTIONS

(Before using this product, read the precautions)

Please carefully read this manual before using the product and pay full attention to the mentioned points to use the product correctly. In this guide, safety measures are classified into two levels: " ⚠ Warning" and " ⚠ Caution"

 Warning	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
 Caution	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage

Follow the safety measures at both levels as they are crucial for personal and system safety. Ensure that users read this manual and then keep it in a safe place for future reference.

(Installation precautions)

Warning

- If you install or remove the CANOpen card from the FIDAQUIRE data logger, be sure to disconnect the device's power supply. Failure to do so may result in electric shock or damage to the card and data logger.
- Before starting the FIDAQUIRE data logger, make sure to verify the quality of the incoming power voltage. Failure to do so may cause damage to the CANOpen card.

Caution

- If additional CANOpen cards need to be installed, fully insert the card into the card slot. After installation, check to ensure it is properly seated. Failure to do so may lead to poor contact and result in malfunction of the card.

- Use the CANOpen card in an environment that complies with the general specifications provided in this manual. Using the CANOpen card in any other operating environment may result in electric shock, fire, malfunction, or damage, and degrade the quality of the module.
- Never directly touch the conductive parts or electronic components of the CANOpen card. Doing so may cause malfunction or failure of the data logger.

Note: Never insert or remove cards while the device is powered on.

(Wiring precautions)

Warning

- Before wiring, be sure to check the integrity and quality of all input and output cables. Failure to do so may result in damage to the product.

Caution

- The network cable or RJ45 connected to the CANOpen card of the FIDAQUIRE data logger must be properly installed. An incomplete connection may result in a short circuit, fire, or malfunction.
- When disconnecting the network cable or RJ45 from the CANOpen card of the FIDAQUIRE data logger, do not pull the cable forcefully. Pulling the cable connected to the card may cause device malfunction or damage to the CANOpen card or the cable.

Note: The manufacturer assumes no responsibility for the consequences of improper installation, incorrect equipment, or negligence during installation.

(Disposal precautions)



Caution

- Dispose of the CANOpen card as industrial waste.
- When discarding the card, separate it from other waste in accordance with local regulations and properly dispose of it at the local waste collection/recycling center.

1. Introduction

CANopen data card model FBC0232-01 is one of the cards to receive data from CANopen sensors. Data received from sensors can be analog or digital. The CANopen card has the ability to simultaneously receive data from all the sensors connected to it. This card has two MAIN and AUX outputs and has the ability to be placed in the middle of the network. The user can change the settings of the sensors using the CANopen card and through the user interface.

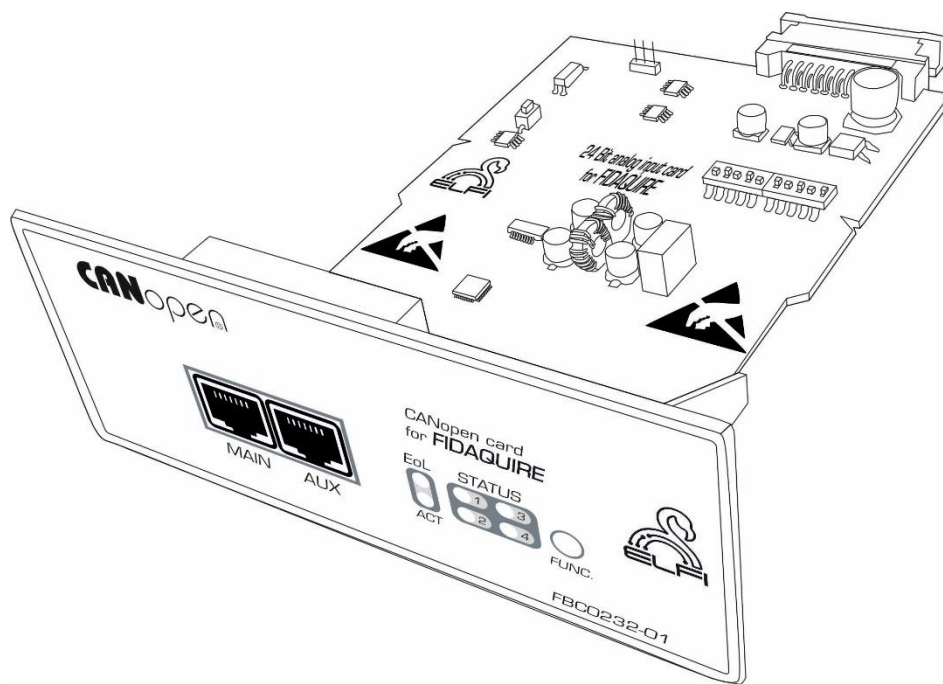


Figure 1: The CANopen data card

2. Indicators on the card

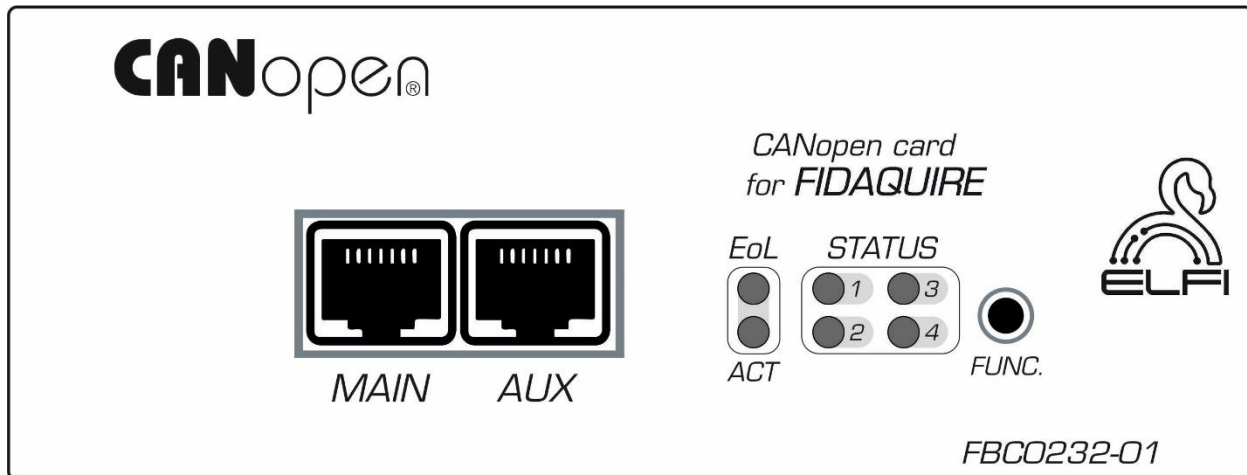


Figure 2 : Image related to the card surface

Item	color	Description
LED1	Blinking orange	It shows receiving data from nodes. Since many sensors are sending data simultaneously, this light is always on and constantly blinking.
LED2	Blinking green	It shows the health status of the sensors. In other words, if this light is off for a certain period of time, it means that one of the sensors is disconnected and does not send data.
LED3	Orange	It turns on when one of the sensors is disconnected.
LED4	Green	It is related to the card settings and this light turns on when the user changes the card settings through her user panel.
EoL	Orange	It shows the detection of the resistance of the end of the line.
ACT	Green	This light turns on when data is transferred on the bus.

3- Installing the CANOpen card on the FIDAQUIRE data logger

The process of identifying and initializing the CANOpen card is fully automated, and after installing and starting up the data logger, the card will appear on the "Cards list" page. For initial setup, refer to the FCD6455-01 product manual. After initializing the card, the input channel information (input sensors) will also be displayed on the same page (Figure 3). Channels labeled with "Error" indicate a data transmission issue. If a channel is disconnected from the device, the label "Offline" will be displayed on the channel.

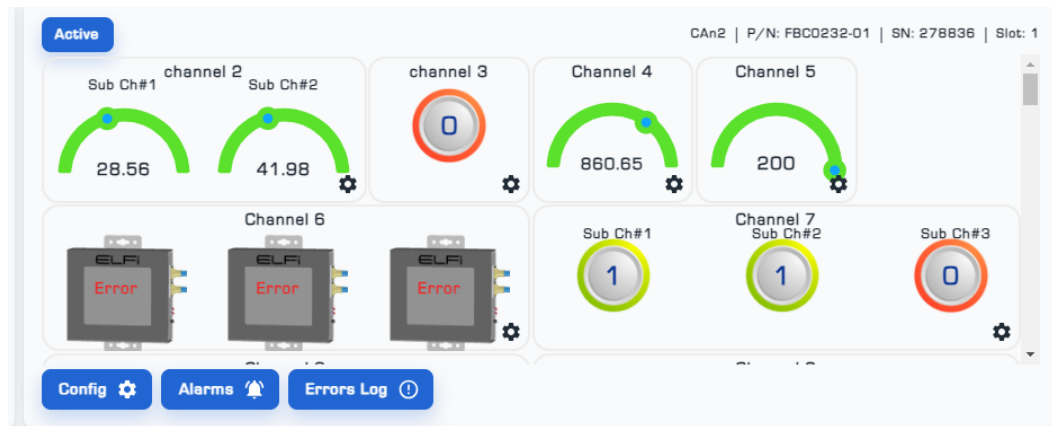


Figure 3: A view of the page related to displaying the CANopen card in the user interface of the device

Attention: If you remove the card from the device, the card will go offline. When the card is reconnected to the datalogger, the Nodes will also reconnect and start transmitting data. However, if you delete the card from the datalogger, all data stored by the Nodes will be erased, and you will need to re-identify and reconnect the Nodes from the beginning.

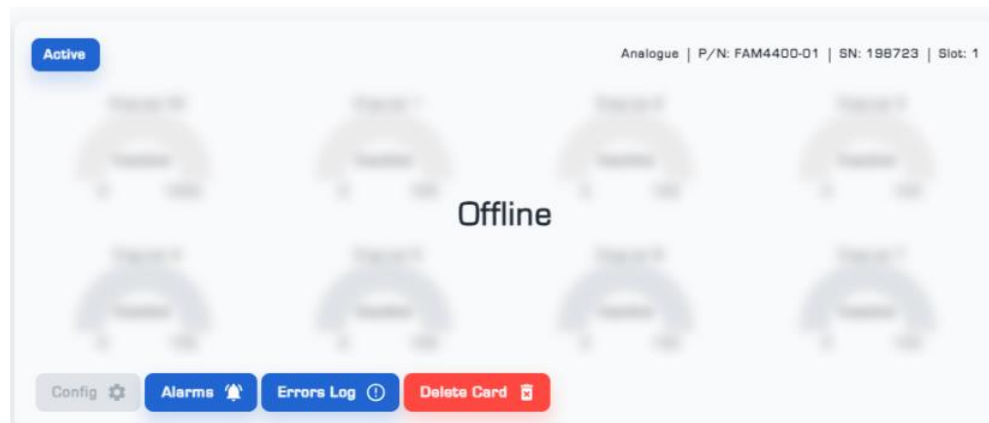


Figure 4: Image showing the removal of the card from the datalogger.

4- Card and Nodes settings

- To configure the CANOpen card, follow the steps below:

(1) Select the "Config" menu and enter the settings page (Figure 5).

(2) Fill in the fields "Card Name" and "Card Description¹," then select the "Baud Rate²" based on your cable length and the number of nodes. Click "Send Command."

(3) Choose "Save Config" to save and apply the settings (Figure 5).

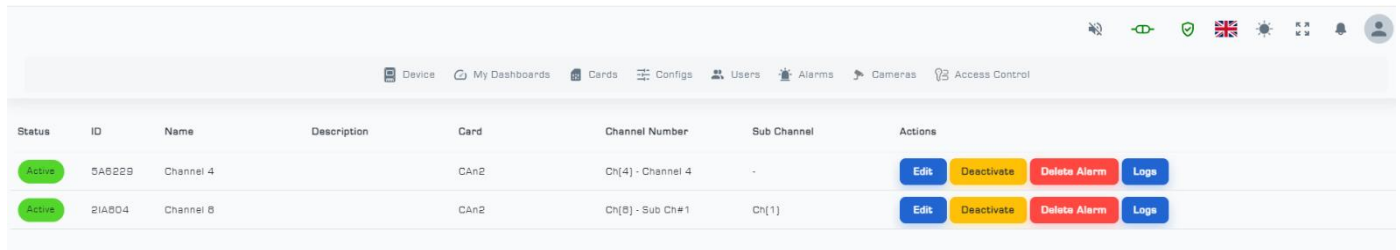
The screenshot shows a web application interface for configuring a CANOpen card. At the top, there is a navigation bar with icons for Device, My Dashboards, Cards (selected), Configs, Users, Alarms, Cameras, and Access Control. Below the navigation bar, the main content area is titled "General" with a blue information icon. The settings are organized into four sections: 1. "Card Info" with input fields for "Card Name" (containing "CAn2") and "Card Description". 2. "Limit data Count" with a slider and a "Limit data" toggle switch. 3. "Enable Cloud Synchronization" with a toggle switch and "Activate Card" with a toggle switch. 4. "Baud rate change" with a dropdown menu for "Baud Rate" (showing "20") and a "Send Command" button. At the bottom, there are two buttons: "Go Back" and "Save Config".

Figure 5: Card Settings Page

¹ Filling out this field is optional.

² in kb / s

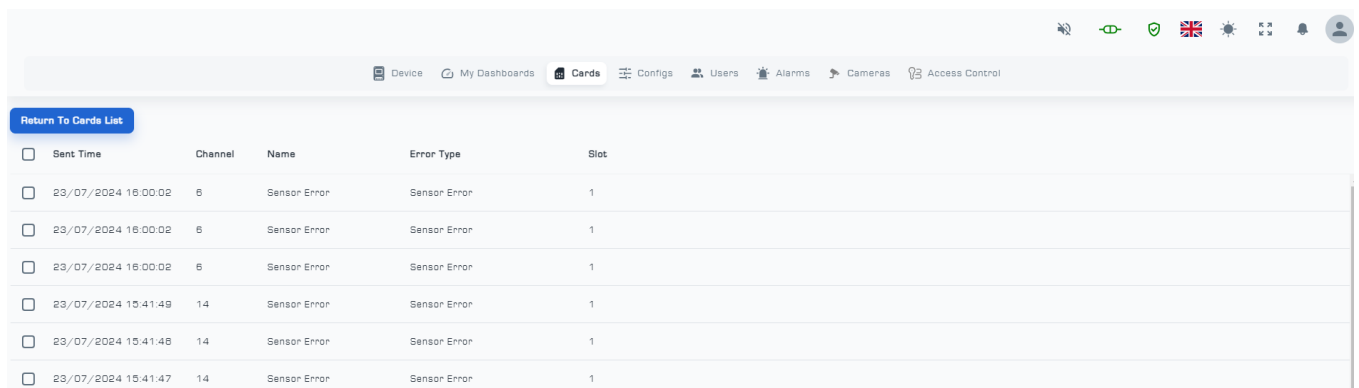
- The "Alarms" menu displays the list of alarms defined for each channel or subchannel. It allows for editing alarms, enabling or disabling them, and deleting alarm alerts. Additionally, the "Logs" menu provides a detailed list of alarm information and the time of occurrence (Figure 6).



Status	ID	Name	Description	Card	Channel Number	Sub Channel	Actions
Active	5A822B	Channel 4		CAn2	Ch(4) - Channel 4	-	Edit Deactivate Delete Alarm Logs
Active	21A504	Channel 5		CAn2	Ch(5) - Sub Ch#1	Ch(1)	Edit Deactivate Delete Alarm Logs

Figure 6: View page of alarms defined for the card

- The "Errors Log" menu displays a list of channels that have encountered data transmission errors (Figure 7).



☐	Sent Time	Channel	Name	Error Type	Slot
☐	23/07/2024 16:00:02	6	Sensor Error	Sensor Error	1
☐	23/07/2024 16:00:02	6	Sensor Error	Sensor Error	1
☐	23/07/2024 16:00:02	6	Sensor Error	Sensor Error	1
☐	23/07/2024 15:41:49	14	Sensor Error	Sensor Error	1
☐	23/07/2024 15:41:48	14	Sensor Error	Sensor Error	1
☐	23/07/2024 15:41:47	14	Sensor Error	Sensor Error	1

Figure 7: Errors Log Page for the Card

To apply further settings to each Node, click on any of them to display the Node settings page (Figure 8).

- The "General" menu includes information about the Node's status, model, serial number, input data type, and Node number. You can also choose a custom name for the Node and, if needed, deactivate it (Figure 8).

Nodes Config

General Config-1 Config-2 SDO

Status: **operational**
 Part Number: **1001 (FTA3070-01)**
 Serial Number: **1125466400**
 Data Type: **analog**
 Node Id: **2**

Name:

☒ Active

Figure 8: General Menu of the Node Settings Page

The "Config" menu varies in number depending on whether the Node is single-channel or multi-channel, and you can add additional configuration settings for the Node on the "Config" page ¹ (Figure 9).

Nodes Config

General **Config-1** Config-2 SDO

Sub Channel Name:

Ref Value Low: Ref Value High: Unit:

☒ High range Alarm High Pre Alarm Value: High Alarm Value:

☒ Low range Alarm Low Pre Alarm Value: Low Alarm Value:

Figure 9: Config Menu of the Node Settings Page

¹ For instructions on configuring each Node, refer to its specific manual.

- The "SDO" menu is used to modify the parameters of Interval¹, Baud Rate², and Heart Beat³ (Figure 10).

The "Write" sub-menu is used for changing settings, and the "Read" sub-menu is used for reading settings.

Note: The Baud Rate of the card and the Node must be the same. For precise values, refer to Table 1.

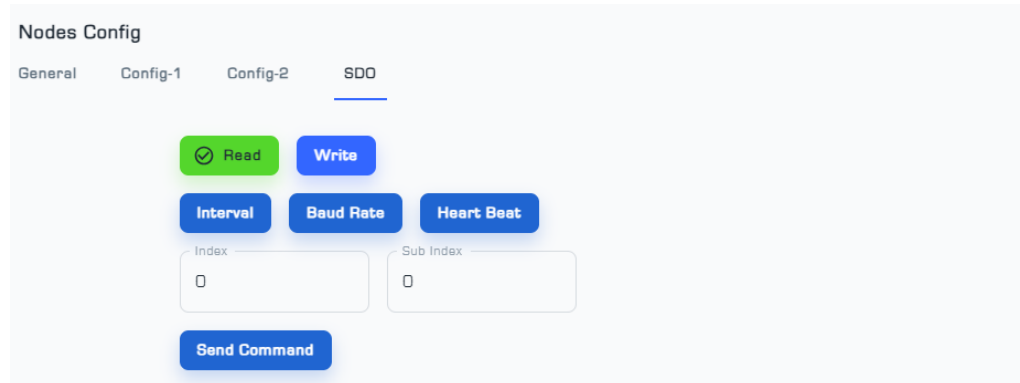


Figure 10: SDO Menu of the Node Settings Page

Note: The images provided in this manual of the channel settings menu are examples from a sample Node. For instructions on configuring each specific Node, refer to its dedicated manual.

- To read each of the parameters: Interval, Baud Rate, and Heart Beat:
 - (1) Click on "Read".
 - (2) Select the desired parameter.
 - (3) By selecting "Send Command", you can view the information related to that parameter.

¹ In milliseconds

² Data Transmission Rate

³ Node Health Status

- To change each of the parameters: Interval, Baud Rate, and Heart Beat:

- (1) Click on "Write".
- (2) Select the desired parameter.
- (3) Enter the desired value in the "Data" field.
- (4) By selecting "Send Command", the information related to that parameter will be saved.

- To change the Baud Rate, you can follow two methods:

Method 1:

Connect each Node individually to the card and change its Baud Rate. After updating all Nodes, set the Baud Rate of the card to match the Baud Rate of the Nodes.

Method 2:

- (1) First, change the Baud Rate of the first Node, then change the Baud Rate of the card, and disconnect the Node from the card.
- (2) Reset the Baud Rate of the card to its original value.
- (3) Connect the next Node to the card and change its Baud Rate.
- (4) Update the card's Baud Rate to match the setting for the Node.

Method 2 is generally more effective as it allows for testing after each Baud Rate change for both the card and the Nodes.

5. The relationship between the number of sensors, wire length and data baud rate from each sensor

Table 1: Baud Rate selection guide

<i>Cable length</i>						
<i>Number of Nodes</i>		20 m	40 m	100 m	250 m	500 m
	64	20 kbps 50 kbps 125 kbps 250 kbps 500 kbps	20 kbps 50 kbps 125 kbps 250 kbps	20 kbps 50 kbps 125 kbps	20 kbps	20 kbps
	32	20 kbps 50 kbps 125 kbps 250 kbps 500 kbps	20 kbps 50 kbps 125 kbps 250 kbps	20 kbps 50 kbps 125 kbps	10 kbps 20 kbps	10 kbps 20 kbps
	16	20 kbps 50 kbps 125 kbps 250 kbps 500 kbps	20 kbps 50 kbps 125 kbps 250 kbps	10 kbps 20 kbps 50 kbps 125 kbps	10 kbps 20 kbps	10 kbps 20 kbps
	8	20 kbps 50 kbps 125 kbps 250 kbps 500 kbps	20 kbps 50 kbps 125 kbps 250 kbps	10 kbps 20 kbps 50 kbps 125 kbps	10 kbps 20 kbps	10 kbps 20 kbps
	2	20 kbps 50 kbps 125 kbps 250 kbps 500 kbps	20 kbps 50 kbps 125 kbps 250 kbps	10 kbps 20 kbps 50 kbps 125 kbps	10 kbps 20 kbps	10 kbps 20 kbps

Note: Refer to the FCD6455-01 product manual to set up the card and sensors.

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