

Installation guide

CAN - CANopen Interface





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CAN - CANopen Interface

Version 1.00

April 2020

Epic Power Converters S.L.

1. PREFACE

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1.1. ABOUT THIS MANUAL

This manual is copyright of Epic Power Converters S.L. All Rights Reserved.

This manual is subject to change without prior notice.

This manual gives you the necessary information about the installation, commissioning and operation of *CAN - CANopen interface*. We encourage that you read carefully these instructions before the first power-up of the unit.

If you have any doubts regarding any procedure, please contact immediately with the support team of epic power.

1.2. DOCUMENT HISTORY

Version	Date	Comment
v. 1.00	16 th April 2020	• First version

2. SAFETY

This manual contains warning and cautions, which are identified with safety symbols. The warnings and cautions give important information on how to prevent not only injury and damage to the equipment or your system but also personal injuries.

Read the warnings and cautions carefully and obey their instructions.

Safety precautions are classified into the following two categories in this manual.

 WARNING	This symbol indicates information that, if ignored, lead to dangerous conditions, personal injuries or even death due to incorrect handling.
 CAUTION	This symbol indicates information that, if ignored, lead to dangerous conditions, personal injuries or physical damage due to incorrect handling.

2.1. SAFETY PRECAUTIONS

Installation and application

 CAUTION	The system has been designed for pollution level 2. Consult epic power in any other circumstances.
 WARNING	It is essential to strictly follow installation and/or maintenance steps in order. Failure to do so may result in overvoltage or overcurrent occurrence, increasing the risk of shock or causing damage to the drive.
 CAUTION	In case of malfunction, or doubt, contact epic power . NEVER OPEN the CAN - CANopen interface. It is an extremely complex electronic system. Reparation must only be undertaken by epic power .

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3. GENERAL DESCRIPTION

The *CAN - CANopen interface* expands the embedded communication protocols of EPC series with the CANopen functionality (CiA 301 and CiA 453).



Fig. 1 CAN - CANopen interface (SKU: F.1003.1005)

4. EXTERNAL DESCRIPTION

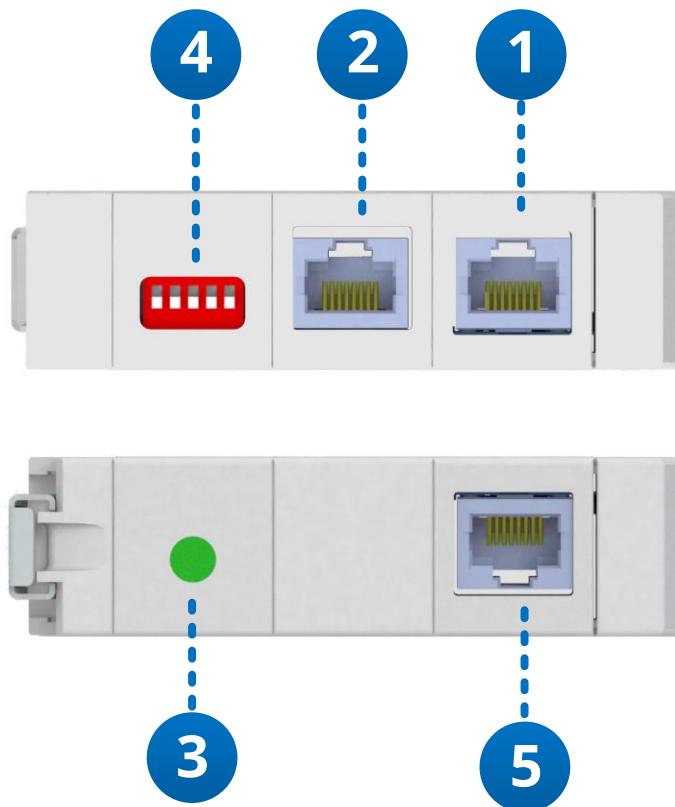


Fig. 2 CAN - CANopen interface top and bottom view

1) CONNECTOR 1: EPC communication cable connector

This connector is used to communicate the DC/DC converter (EPC) and the *CAN - CANopen interface*. It is a standard RJ-45 socket and its pinout can be seen in Fig. 3.

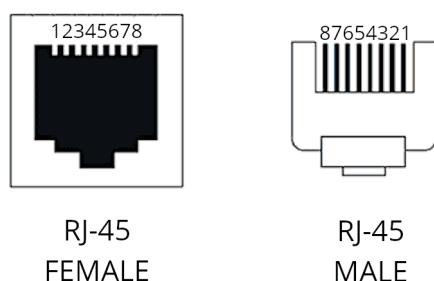


Fig. 3 Connector 1 Pinout

Pin	Signal	Description
1	CAN_H	CAN high bus
2	CAN_L	CAN low bus
3	GND	GND
4	-	No connection
5	-	No connection
6	-	No connection
7	-	No connection
8	VCC	5V supply from EPC

If the installation has more than one EPC external interface module, this cable should be connected to CONNECTOR ② of the upwards interface.

This cable can be provided by epic power (see 4.2), contact with sales@epicpower.es for its purchase.

2) CONNECTOR 2: CAN Bypass connector

This is a CAN Bus bypass connector used where multiple interfaces are available at the installation to create a daisy-chain. In this case, the cable should be connected to the CONNECTOR ① of the downwards interface by a RJ-45 cable, category CAT5e or higher, whose maximum length is 100 meters.

In case that there are no more interfaces, or this is the last one of the daisy chain, a termination resistor must be installed. A terminator (see 4.4) can be purchased to epic power by contacting with sales@epicpower.es.

The pinout of this connector is the same as CONNECTOR ① (See Fig. 3).

3) STATUS LED

An integrated multi-colour LED shows the state of the *CAN - CANopen interface* by means of the light status and colour as indicated below:

Light Status	Description
ON	The LED is permanently on
OFF	The LED is permanently off
Flickering	The LED is alternating between on and off with a frequency of 10 Hz
Blinking	The LED is alternating between on and off with a frequency of 2,5 Hz
Flash	The LED starts with a short on (200 ms) followed by a long off (1000 ms)
Double flash	The LED starts with two short on (200 ms) followed by a short off (200 ms) and finished by a long off (1000 ms)
Triple flash	The LED starts with three short on (200 ms) followed by a short off (200 ms) and finished by a long off (1000 ms)
Quadruple flash	The LED starts with four short on (200 ms) followed by a short off (200 ms) and finished by a long off (1000 ms)

Light Colour	Description
Orange	Communication with EPC Status
Green	CANopen Network State Machine Status
Red	CANopen Bus Physical Layer and errors of CANopen protocol Status

Communication with EPC Status (orange)		
Light Status	Status	Description
ON	Starting	EPC CANopen lift interface Initialization
Blinking	Communication error	Communication with EPC converter could not be established

CANopen Network State Machine Status (green)	
Light Status	State of CANopen
Blinking	PRE-OPERATIONAL
Flash	STOPPED
ON	OPERATIONAL

CANopen Bus Physical Layer and errors of CANopen protocol Status (red)		
Light Status	Status	Description
OFF	No error	CANopen interface is in working condition
Flickering	Auto-bitrate	Auto-bitrate detection is in progress
Blinking	Invalid configuration	General configuration error
Flash	Warning limit has been reached	Error counter of CAN controller has reached or exceeded the warning level
Double flash	Error control event	Heartbeat event has occurred
Triple flash	Sync error	Synchronizing message has not been received within the configured communication cycle period time out
Quadruple flash	Event timer error	An expected PDO has not been received before the event timer elapsed
ON	Bus off	The CANopen bus is off

4) Node ID Configuration Switch

This switch allows to configure the Node ID of CANopen where 1st position is the LSB (Least Significant Bit) and 5th position is the MSB (Most Significant Bit).

Switch ON is a '1' and OFF is a '0'.

If Node ID is configured as 0, ID number 104_d will be used.

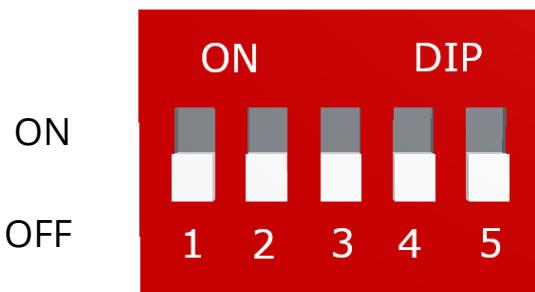


Fig. 4 Node-ID Configuration Switch

5) CANopen connector

This is the CANopen bus dedicated connector in standard RJ-45 socket with pinout as detailed in Fig. 5.

The default bitrate is 125 kbps.

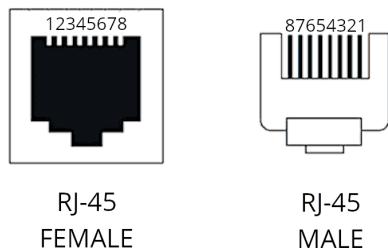


Fig. 5 Connector 5 Pinout

Pin	Signal	Description
1	CAN_H	CAN high
2	CAN_L	CAN low
3	GND	GND
4	N/C	
5	N/C	
6	N/C	
7	N/C	
8	N/C	

4.1. EPC Dual CAN interface Description (Optional)

CONNECTOR 7

CAN Bus #1.

Reserved for custom applications.

Terminal	Description
7A	GND
7B	CAN Low signal
7C	CAN High signal
7D	5V 0.1A Output



CONNECTOR 8

CAN Bus #2.

Connection with external controller.

Terminal	Description
8A	GND
8B	CAN Low signal
8C	CAN High signal
8D	5V 0.1A Output

Fig. 6 EPC Dual CAN interface (SKU: F.1003.1002)

4.2. EPC Connection Cable (optional)

Cable used to connect EPC DC/DC Converter with CAN - CANopen interface.



Fig. 7 EPC to CAN - CANopen interface connection cable (SKU: X.2001.0047)

4.3. RJ-45 cable (Optional)

Cable used to connect diverse EPC interfaces together in a daisy-chain mode.

4.4. CAN Bus line terminator (Optional)

The CAN Bus requires to be terminated by a 120 Ohm resistor; this can be achieved in a confident way by using our terminator (see Fig. 8) in the last *CAN - CANopen interface*.



Fig. 8 RJ-45 CAN Bus terminator (SKU: M.1001.0122)

5. INSTALLATION PROCEDURE

1. Make sure EPC is OFF (HVDC and LVDC connections are voltage-free).
2. Plug Fig. 7 EPC to CAN – CANopen interface connection cable in connector ① of the *CAN - CANopen interface* and connector 8 of the Fig. 6 EPC Dual CAN interface (in the DC/DC converter side).
If your installation consists on more than one EPC External interface, refer to the following schematic (Fig. 9) for connection.

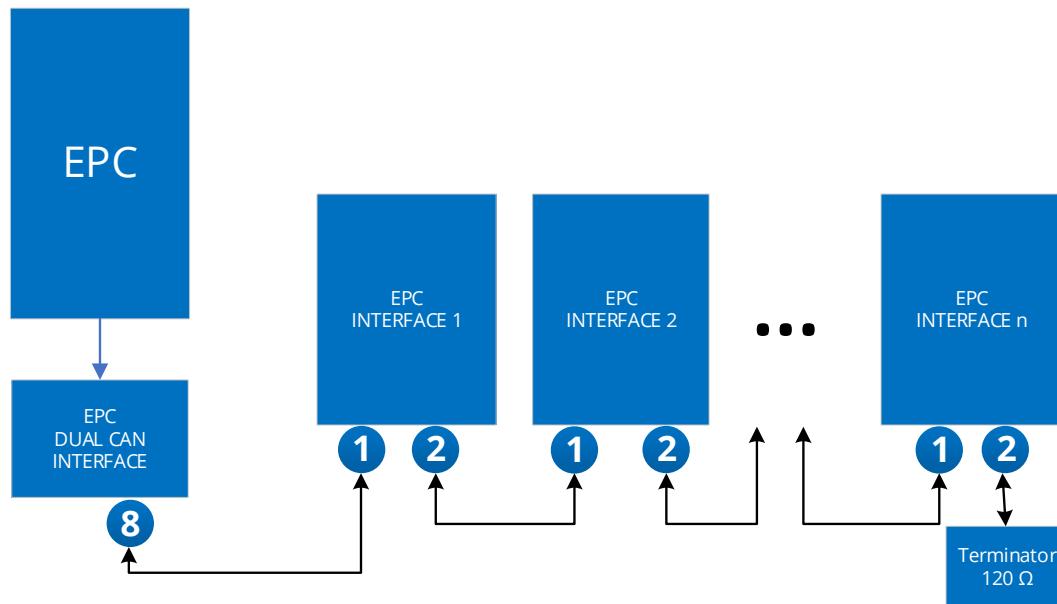


Fig. 9 Connection diagram

3. Use the NODE-ID Configuration Switch ④ to configure the ID node.
4. Plug the CANopen bus into CONNECTOR ⑤
5. Switch ON the EPC DC/DC Converter.

After turning ON the EPC DC/DC Converter, the *CAN - CANopen interface* is initialized with the configuration from the EDS file.

In case that you have not received the EDS file, please check at www.epicpower.es or contact us by email at support@epicpower.es.

6. IMPORTANT NOTICE OF CANopen

- The default bitrate is 125 kbps.
- In order to enable the EPC DC/DC Converter, CANopen device must be in operational state and object 0x6200:02 must be switched ON (value 0xFD).
- Current values are shown in mA, voltage values in mV, time values in ms and power values in W.
- Input objects show information of low side voltage connector.
- Output objects show information of high side voltage connector.
- In control mode, just one target value can be nonzero (i.e., if high side current is desired to be controlled, low side current and high side power must be zero commanded).
- Positive current is defined as charging current (energy goes from HVDC to LVDC side). Negative current is defined as discharging current (energy goes from LVDC to HVDC side).
- In case of an EPC error, the *CAN - CANopen interface* will send an error message to the CANopen bus and change to pre-operational state. It is mandatory reset the error before enabling the EPC again.
- TPDO is transmitted if one of the mapped objects changes its value.

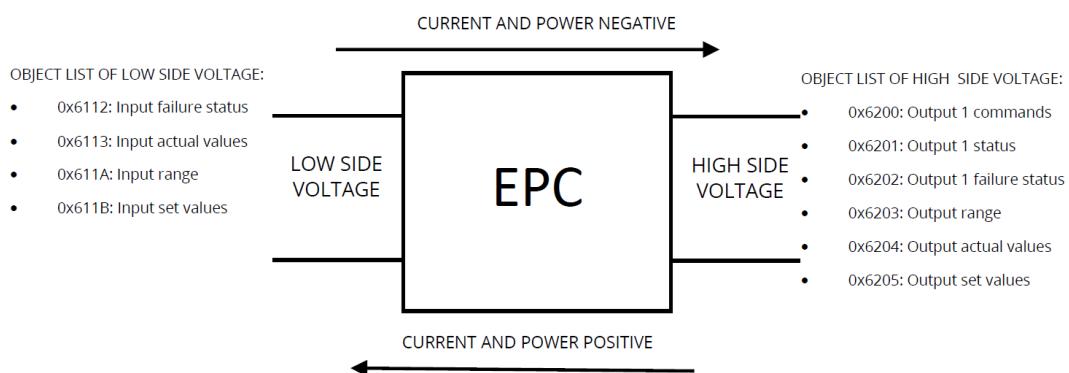


Fig. 10 Struct of CANopen index

7. IMPORTANT OBJECTS OF CANopen

EDS file of this product is defined according to CiA 453. For more information, please check EDS file of *CAN - CANopen interface* and CiA 453 specifications.

The most important objects of the EDS file are explained in this document.

a. Object 0x6113: Input actual value

This object provides the actual values of low voltage side.

Index	6113h
Name	Input actual values
Object code	RECORD

Sub Index	01h
Description	Voltage
Access	R/O
PDO mapping	No
Value range	SIGNED 32
Unit	V
Scaling	1 mV/u
Default value	0

Sub Index	02h
Description	Current
Access	R/O
PDO mapping	No
Value range	SIGNED 32
Unit	A
Scaling	1 mA/u
Default value	0

Sub Index	03h
Description	Power
Access	R/O
PDO mapping	No
Value range	SIGNED 32
Unit	W
Scaling	1 W/u
Default value	0

b. Object 611Bh: Input set values

This object configures low side voltage when EPC is in current control mode. Current control mode can be set with low side current or high side current (object 0x6205).

Sub-index 01h: Set current. If this value is nonzero and control mode (object 6208h) is 1, EPC will set this current in input (low voltage side). Set current and set power of index output 1 set values must be zero to perform low voltage side current control.

Index	611Bh
Name	Input set values
Object code	RECORD

Sub Index	01h
Description	Set current
Access	W/R
PDO mapping	Yes
Value range	SIGNED 32
Unit	A
Scaling	1 mA/u
Default value	0

Sub Index	02h
Description	Maximum low side voltage
Access	W/R
PDO mapping	No
Value range	UNSIGNED 32
Unit	V
Scaling	1 mV/u
Default value	Maximum voltage of low side of EPC

Sub Index	03h
Description	Minimum low side voltage
Access	R/O
PDO mapping	No
Value range	UNSIGNED 32
Unit	V
Scaling	1 mV/u
Default value	Minimum voltage of low side of EPC

c. Object 6200h: Output 1 command

This object can be used to send commands to EPC.

Sub-index 01h allows to enable EPC

Sub-index 02h allows to reset failures of EPC.

ON/OFF		
Bits	Description	Values
0 - 1	ON/OFF	0 = Disable 1 = Enable
2-7	Reserved	0xFC

Reset failure		
Bits	Description	Values
0 - 1	Reset failure	1 = Reset failure 3 = Take no action
2-7	Reserved	0xFC

Index	6200h
Name	Output 1 command
Object code	RECORD

Sub Index	01h
Description	S/d
Access	R/O
PDO mapping	No
Value range	UNSIGNED 8
Unit	
Scaling	
Default value	0xFD

Sub Index	02h
Description	ON/OFF
Access	W/R
PDO mapping	Yes
Value range	UNSIGNED 8
Unit	-
Scaling	-
Default value	0xFD

Sub Index	03h
Description	Quit failure
Access	W/R
PDO mapping	Yes
Value range	UNSIGNED 8
Unit	-
Scaling	-
Default value	0xFD

Sub Index	04h
Description	SS
Access	R/O
PDO mapping	No
Value range	UNSIGNED 8
Unit	-
Scaling	-
Default value	0xFD

d. Object 6201h: Output 1 status

This object provides the high voltage side status and shows the configuration of the output.

The sub-object (sub-index 01h) provides the status flags:

Bits	Description	Values
0 – 1	Output flag	0 = Switch off 1 = Switch on
2 – 3	Voltage control flag	0 = Voltage control off 1 = Voltage control on
4 – 5	Current control flag	0 = Current control off 1 = Current control on
2-3	Power control flag	0 = Power control off 1 = Power control on
10 – 23	Reserved	0x3FFF
24 – 25	ds1: Autonomous mode	0 = Autonomous mode off 1 = Autonomous mode on

The fault indication sub-object (sub-index 05h) shall provide the status of fault flag:

Bits	Description	Values
0 – 1	Output fault indication	0 = No error 1 = Output 1 error
2 – 3	Voltage control fault indication	0 = No error in voltage control 1 = Error in voltage control
4 – 5	Current control fault indication	0 = No error in current control 1 = Error in current control
2 – 3	Power control fault indication	0 = No error in power control 1 = Error in power control
10 – 23	Reserved	0x3FFF
24 – 25	Autonomous mode fault indication	0 = No error in autonomous mode 1 = Error in autonomous mode

See CiA 453 for more information.

Index	6201h
Name	Output 1 status
Object code	RECORD

Sub Index	01h
Description	Condition
Access	R/O
PDO mapping	No
Value range	UNSIGNED 32
Unit	
Scaling	
Default value	0xFCFFFF00

Sub Index	02h
Description	Logic
Access	W/R
PDO mapping	No
Value range	UNSIGNED 32
Unit	-
Scaling	-
Default value	0xFFFF55

Sub Index	03h
Description	Event
Access	R/O
PDO mapping	No
Value range	USIGNED 32
Unit	-
Scaling	-
Default value	0xFFFF00

Sub Index	04h
Description	Fault state
Access	R/O
PDO mapping	No
Value range	UNSIGNED 32
Unit	-
Scaling	-
Default value	0xFFFF55

Sub Index	05h
Description	Fault indication
Access	R/O
PDO mapping	No
Value range	UNSIGNED 32
Unit	-
Scaling	-
Default value	0xFFFF00

e. Object 6203h: Output 1 range

This object provides information about absolute limits of EPC. This object shows the minimum and maximum output ranges of voltage, current and power of high voltage side.

Index	6203h
Name	Output 1 range
Object code	RECORD

Sub Index	01h
Description	Maximum voltage
Access	R/O
PDO mapping	No
Value range	UNSIGNED 32
Unit	V
Scaling	1 mV/u
Default value	Maximum voltage of high side of EPC

Sub Index	02h
Description	Minimum voltage
Access	R/O
PDO mapping	No
Value range	UNSIGNED 32
Unit	V
Scaling	1 mV/u
Default value	Minimum voltage of high side of EPC

Sub Index	03h
Description	Maximum current
Access	R/O
PDO mapping	No
Value range	SIGNED 32
Unit	A
Scaling	1 mA/u
Default value	Maximum current of high side of EPC

Sub Index	04h
Description	Minimum current
Access	R/O
PDO mapping	No
Value range	SIGNED 32
Unit	A
Scaling	1 mA/u
Default value	Minimum current of high side of EPC

Sub Index	05h
Description	Maximum Power
Access	R/O
PDO mapping	No
Value range	SIGNED 32
Unit	W
Scaling	1 W/u
Default value	Maximum power of EPC

Sub Index	06h
Description	Minimum Power
Access	R/O
PDO mapping	No
Value range	SIGNED 32
Unit	W
Scaling	1 W/u
Default value	Minimum power of EPC

f. Object 6204h: Output 1 actual values

This object provides the actual values of high voltage side.

Index	6204h
Name	Output 1 actual values
Object code	RECORD

Sub Index	01h
Description	Voltage
Access	R/O
PDO mapping	Yes
Value range	SIGNED 32
Unit	V
Scaling	1 mV/u
Default value	0

Sub Index	02h
Description	Current
Access	R/O
PDO mapping	Yes
Value range	SIGNED 32
Unit	A
Scaling	1 mA/u
Default value	0

Sub Index	03h
Description	Power
Access	R/O
PDO mapping	Yes
Value range	SIGNED 32
Unit	W
Scaling	1 W/u
Default value	0

g. Object 6205h: Output 1 set values

This object indicates the configured values of high voltage side.

Sub-index 02h: Maximum voltage.

Used with current control and power control.

If HVDC voltage goes above this value, EPC will stop and send an error.

Sub-index 03h: Minimum voltage.

Used with current control and power control.

If HVDC voltage goes below this value, EPC will stop and send an error.

Sub-index 07h: Set current.

If this value is nonzero and control mode (object 6208h) is 1, EPC will set this current in output 1.

Set current of input 1 and set power of output 1 must be zero to perform high voltage side current control.

Sub-index 0Eh: Set power.

If this value is nonzero and control mode (object 6208h) is 1, EPC will set this power in output 1.

Set current of input 1 and set power of output 1 must be zero to perform high voltage side power control.

Sub-index 0Fh: Maximum charge power.

This object is used in all modes (current control, power control and autonomous mode).

This value is the maximum value of power when the current is positive (charging direction).

Sub-index 10h: Maximum discharge power

This object is used in all modes (current control, power control and autonomous mode).

This value is the maximum value of power when the current is negative (discharging direction).

Index	6205h
Name	Output 1 set values
Object code	RECORD

Sub Index	01h
Description	Set voltage
Access	R/O
PDO mapping	No
Value range	UNSIGNED 32
Unit	V
Scaling	1 mV/u
Default value	0

Sub Index	02h
Description	Maximum voltage
Access	W/R
PDO mapping	No
Value range	UNSIGNED 32
Unit	V
Scaling	1 mV/u
Default value	Output 1 range maximum voltage

Sub Index	03h
Description	Minimum voltage
Access	W/R
PDO mapping	No
Value range	UNSIGNED 32
Unit	V
Scaling	1 mV/u
Default value	Output 1 range minimum voltage

Sub-indexes 04h to 06h are reserved.

Sub Index	07h
Description	Set current
Access	W/R
PDO mapping	Yes
Value range	SIGNED 32
Unit	A
Scaling	1 mA/u
Default value	0

Sub Index	08h
Description	Maximum current
Access	R/O
PDO mapping	No
Value range	SIGNED 32
Unit	A
Scaling	1 mA/u
Default value	Output 1 range maximum current

Sub Index	09h
Description	Minimum current
Access	R/O
PDO mapping	No
Value range	SIGNED 32
Unit	A
Scaling	1 mA/u
Default value	Output 1 range minimum current

Sub-indexes 0x0A to 0x0D are reserved.

Sub Index	0Eh
Description	Set power
Access	W/R
PDO mapping	Yes
Value range	SIGNED 32
Unit	W
Scaling	1 W/u
Default value	0

Sub Index	0Fh
Description	Maximum charge power
Access	W/R
PDO mapping	No
Value range	SIGNED 32
Unit	W
Scaling	1 W/u
Default value	Output 1 range maximum power

Sub Index	10h
Description	Maximum discharge power
Access	W/R
PDO mapping	No
Value range	SIGNED 32
Unit	W
Scaling	1 W/u
Default value	Output 1 range minimum power

h. Object 6208h: Control mode

This object configures the control mode of EPC.

Autonomous mode

In this mode, the DCDC converter is able to supply a load in the HVDC link side. An example load is a VVVF (Variable Voltage Variable Frequency motor drive). The EPC converter performs a “Soft Start” with a current-controlled ramp-up from 0V to the HVDC target voltage. If the HVDC side is incorrectly connected (HVDC plus and minus wrongly connected or under short-circuit), current-controlled soft start will provide 1.5 to 2 A and will stop showing an error. When the load/motor consumes energy, the EPC provides power to the DC link. If the motor generates energy and LVDC is within the limits, EPC will charge the LVDC (batteries for example).

In this mode, maximum charge and discharge power (object 6205h) are used.

Current or power control

In this mode, the DCDC converter will follow the current or power command chosen in object 611Bh or 6205h, limiting the voltage (high side and low side) and power configured through their respective objects.

Value	Mode
0	Autonomous mode
1	Current or power control

Index	6208h
Name	Control mode
Object code	VAR
Data type	UNSIGNED 8
Access	R/W
PDO mapping	Possible
Unit	-
Default value	0

i. Object 6209h: Extra values

Index	6209h
Name	Extra values
Object code	RECORD

Sub Index	01h
Description	Optional charger current
Access	R/O
PDO mapping	No
Value range	SIGNED 32
Unit	A
Scaling	1 mA/u
Default value	0

Sub Index	02h
Description	Optional load current
Access	R/O
PDO mapping	No
Value range	SIGNED 32
Unit	A
Scaling	1 mA/u
Default value	0

Sub Index	03h
Description	Optional solar charge controller current
Access	R/O
PDO mapping	No
Value range	SIGNED 32
Unit	A
Scaling	1 mA/u
Default value	0

j. Object 6210h: Measures configuration

This object configures the update rate of actual measures.

Sub-index 01h. If this value is 1, *CAN - CANopen interface* will update actual values using the period defined in Sub-index 02h.

Sub-index 02h. Defines the period for messages to be sent.

Index	6210h
Name	Measures configuration
Object code	RECORD

Sub Index	01h
Description	Enable of actual measures
Access	W/R
PDO mapping	No
Value range	UNSIGNED 8
Unit	-
Scaling	-
Default value	1

Sub Index	02h
Description	Measures period
Access	W/R
PDO mapping	No
Value range	UNSIGNED 8
Unit	s
Scaling	1 ms/u
Default value	250
Range	50 to 1000

8. PDO CONFIGURATION

8.1. PDO mapping

PDO mapping is according to CiA 453.

PDO no	Mapped objects
RPDO 1	Output 1 commands ON/OFF
	Output 1 commands Quit
RPDO 2	
RPDO 3	Output 1 Set values – Set current
RPDO 4	Output 1 Set values – Set power
TPDO 1	Device status – condition
	Device failure status - condition
TPDO 2	Output 1 actual values – Actual voltage
TPDO 3	Output 1 actual values – Actual current
TPDO 4	Output 1 actual values – Actual power

8.2. RPDO configuration

RPDO configuration is according to CiA 453.

Index	1400 _h
Name	RPDO 1 communication parameter
Object code	RECORD
Data type	PDO_COMMUNICATION_PARAMETER
Category	See /CiA453/

Sub-index	00 _h
Description	Highest sub-index supported
Entry category	Mandatory
Access	Const
PDO mapping	No
Value range	02 _h to 05 _h
Default value	05 _h

Sub-index	01 _h
Description	COB-ID used by PDO
Entry category	Mandatory
Access	Rw or const
PDO mapping	No
Value range	0000 0300 _h or 8000 0300 _h
Default value	0000 0300 _h

Sub-index	02 _h
Description	Transmission type
Entry category	Mandatory
Access	Rw or const
PDO mapping	No
Value range	See /CiA301/
Default value	FF _h

Sub-index	03 _h
Description	Inhibit time
Entry category	Mandatory
Access	Rw
PDO mapping	No
Value range	See /CiA301/
Default value	0000 _h

Sub-index	05 _h
Description	Event timer
Entry category	Optional
Access	Rw
PDO mapping	No
Value range	See /CiA301/
Default value	0000 _h

8.3. TPDO configuration

TPDO is according to CiA 453.

TPDO is configured to send PDO when an object value has changed.

Index	1800 _h
Name	TPDO 1 communication parameter
Object code	RECORD
Data type	PDO_COMMUNICATION_PARAMETER
Category	See /CiA453/

Sub-index	00 _h
Description	Highest sub-index supported
Entry category	Mandatory
Access	Const
PDO mapping	No
Value range	02 _h to 05 _h
Default value	05

Sub-index	01 _h
Description	COB-ID used by PDO
Entry category	Mandatory
Access	Rw or const
PDO mapping	No
Value range	0000 0180 _h or 8000 0180 _h
Default value	0000 0180 _h

Sub-index	02 _h
Description	Transmission type
Entry category	Mandatory
Access	Rw or const
PDO mapping	No
Value range	See /CiA301/
Default value	FF _h

Sub-index	03 _h
Description	Inhibit time
Entry category	Mandatory
Access	Rw
PDO mapping	No
Value range	See /CiA301/
Default value	0000 _h

Sub-index	05 _h
Description	Event timer
Entry category	Optional
Access	Rw
PDO mapping	No
Value range	See /CiA301/
Default value	0000 _h

9. EXAMPLES OF APPLICATION

9.1. Typical application

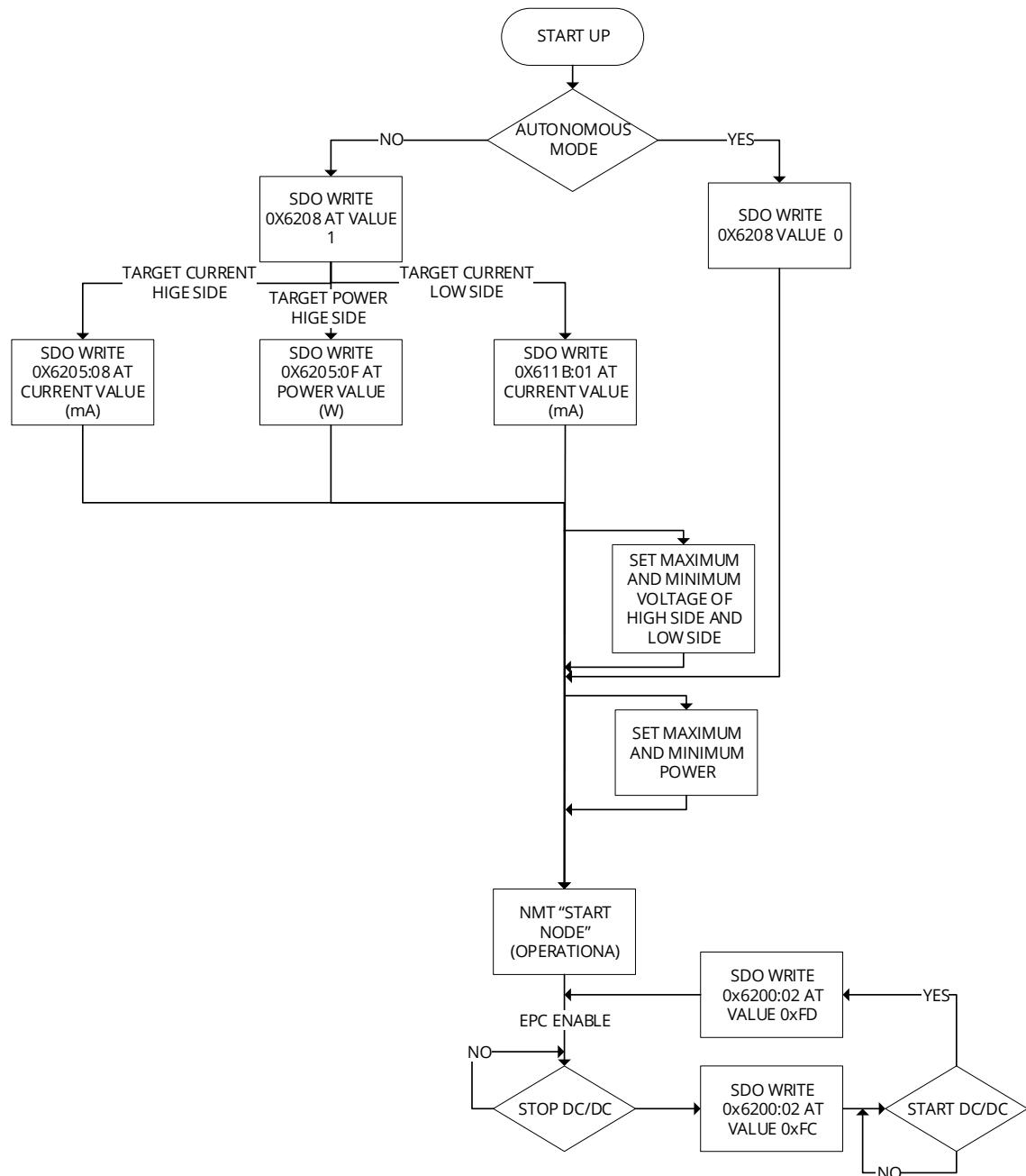


Fig. 11 Flowchart for typical application

9.2. Autonomous mode

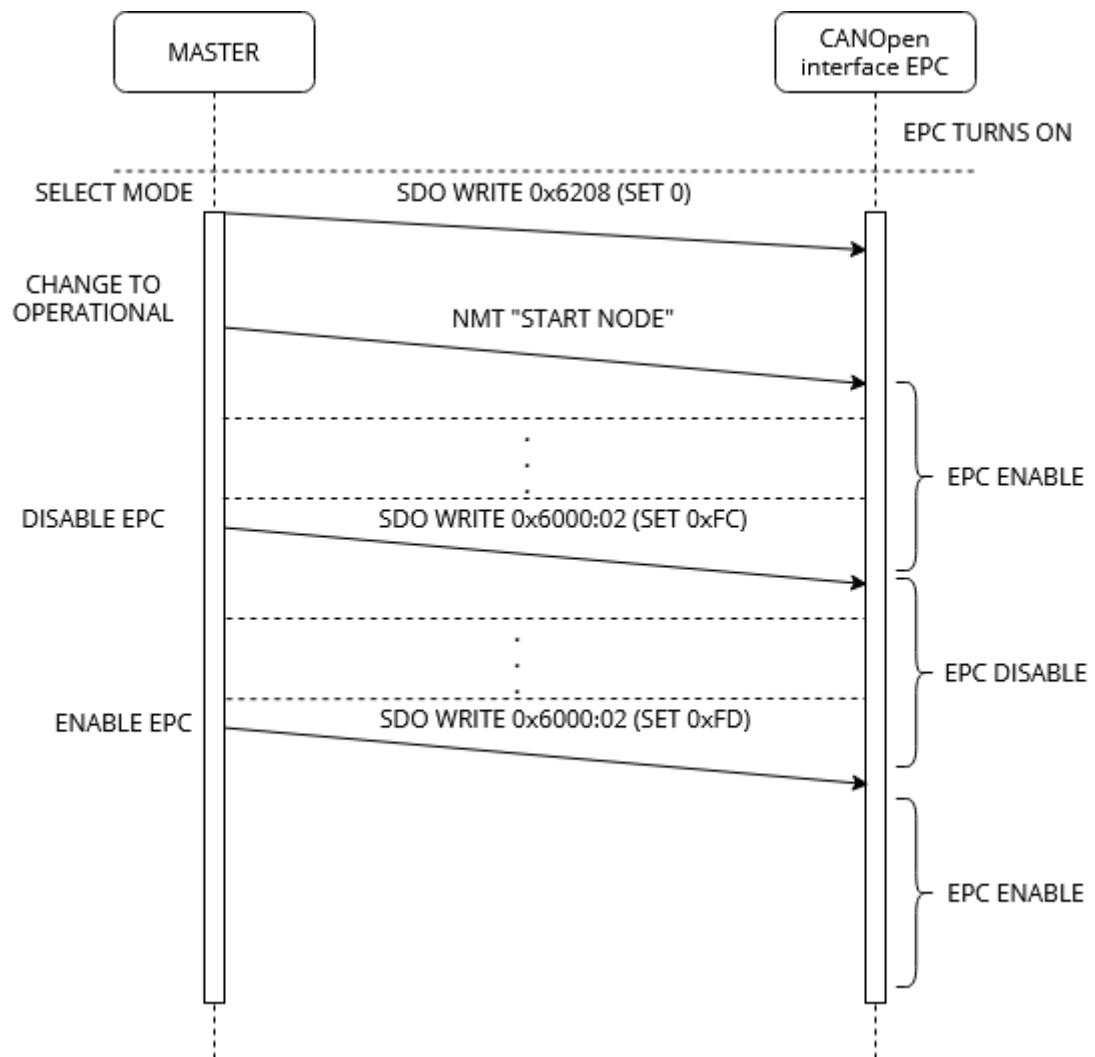


Fig. 12 Autonomous mode example

9.3. Control mode

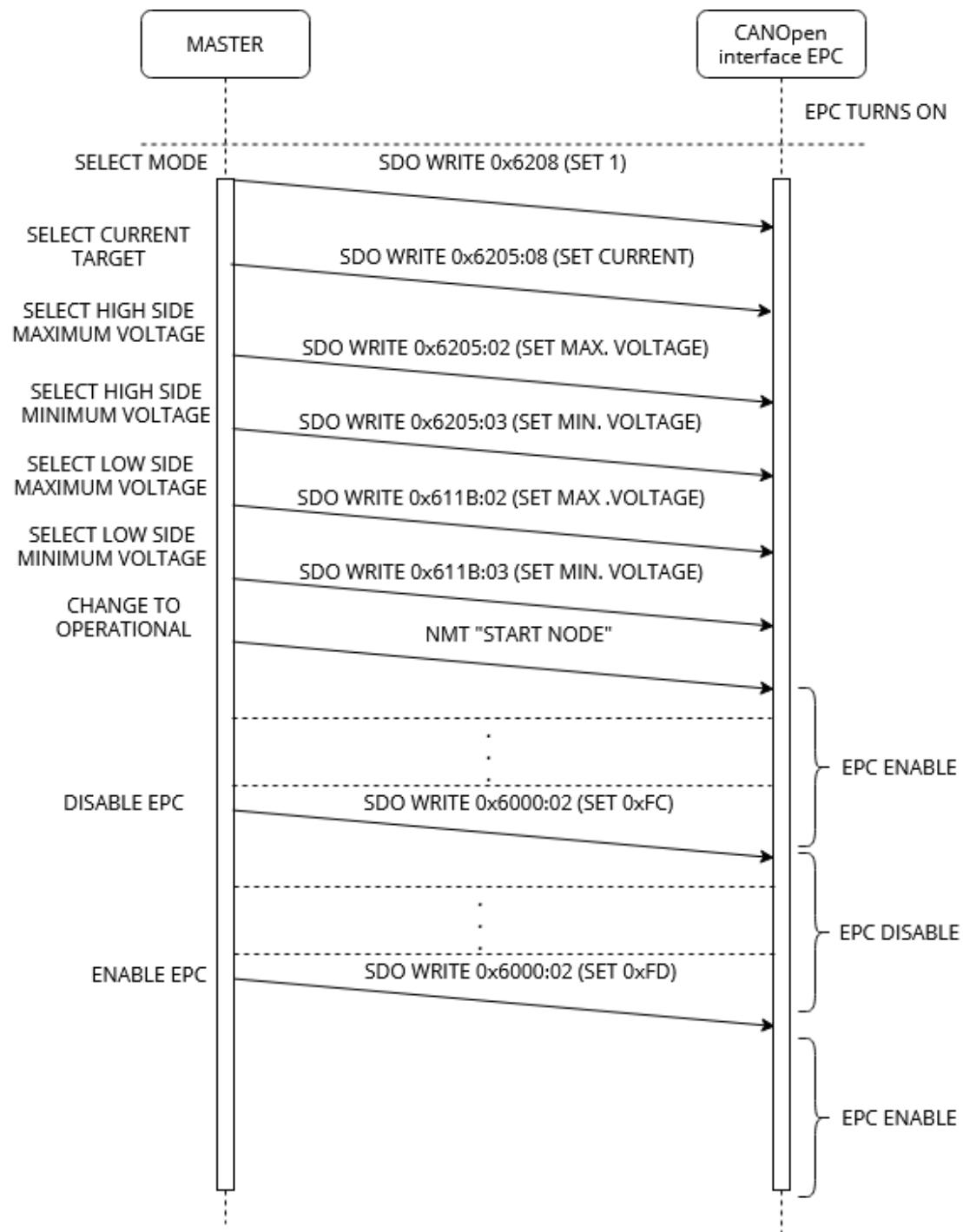


Fig. 13 Control mode example

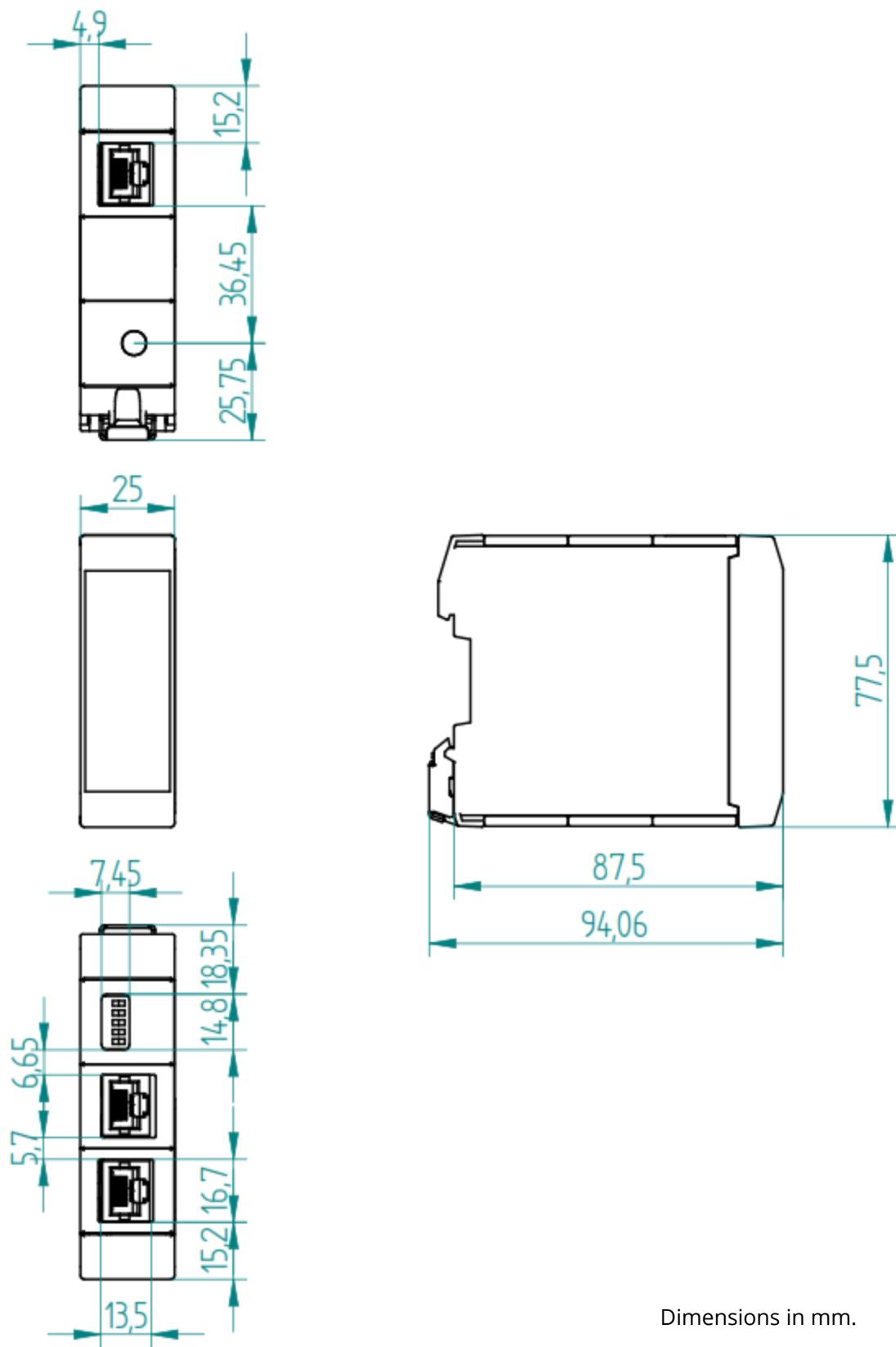
10. TECHNICAL DATA

Microcontroller	32 bit
Dimensions	56 x 56 x 26 mm
Weight	75 gr.
Power supply	Via EPC, 5 V DC / 60 mA
Operating temperature	-20 to +70° C
Storage temperature	-20 to +70° C
Relative humidity	10 to 95% non-condensing
Housing material	Polyamide
Protection class	IP20

11. TROUBLESHOOTING

CAN - CANopen interface does not turn on	1. Make sure that the connector 1 is plugged with the connector 8 of the EPC dual CAN Interface. 2. Make sure that the connector 5 is connected to CANopen bus 3. Make sure that the EPC is turned on
CANopen communication does not work	1. Make sure that termination resistors are connected 2. Make sure that CANopen bus is ON when the EPC starts

12. DIMENSIONS





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