

CANopen IO-X3 – Fact sheet

Overview

The CANopen IO-X3 is a very compact and cost effective CANopen IO module featuring a high-density of industrial proven IO's.

The module includes a CPU-core including the pre-programmed firmware for CANopen communication and peripherals for the industrial inputs and outputs. Extensive diagnostic routines are implemented to ensure a most reliable and safe operation.

All inputs and outputs as well as configuration parameters are accessible via the CANopen protocol.

The CANopen IO-X3 is a CANopen slave device according CANopen device profile **CiA 401 DS V2.1** and CANopen communication profile **CiA 301 DS V4.02**.

Two LED indicate the device state according to **CiA 303-3 DR V1.0**.



IO configuration:

- Digital outputs:
24 channels
24VDC / 500mA
high side switches
short circuit protection (max. 4A) and monitoring
overheat protection

CANopen features:

- Communication profile CiA 301 DS V4.02
- Device profile CiA 401 DS V1.2
- State indicator profile CiA 303-3 DR V1.0
- Layer Setting Service (LSS)
CiA 305 DS V1.1
- 2 RPDO
- Dynamic PDO-Linking and -Mapping
- SDO-Server
- Life guarding, Node guarding, Heartbeat Producer
- 5 Heartbeat Consumers
- Emergency Producer
- Minimum Boot-up capability (Slave)
- Minimum NMT boot-up master (Manufacturer extension)

Communication and device configuration:

- Galvanic decoupled CAN-bus driver supports up to 110 CAN-nodes on one bus
- Jumper for CAN-bus termination 120Ω
- Hex-encoding switches for setting node-ID and baud rate
- CAN-bus baud rate: 10kBit/s to 1Mbit/s
- High-quality connectors included in scope of delivery:
Power-Supply: 2-pin plug connector
CAN-bus: 5-pin plug connector
I/O: single 30-pin plug connector, lockable
- Non-volatile memory for storage of configuration data
- Internal monitoring and diagnostics of:
onboard temperature,
power supply,
memory and other controller internals
- Emergency Messages sent out in case of failure

Power Supply, Environmental Conditions:

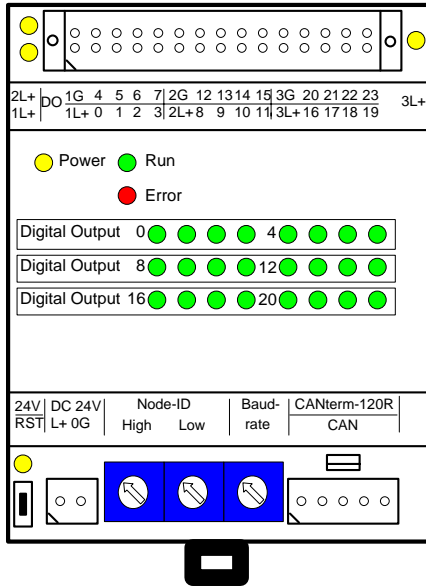
- Operating voltage: 24V ±20%
- Current consumption: <70mA
- Operating temperature: -20°C to +70°C
- Storage temperature: -20°C to +90°C
- Dimensions (LxWxH in mm): 95x70x58
- Installation method: DIN-rail mounting
- Enclosure protection class: IP20
- Weight: ca. 130g

Delivery contents / order number

Assembled and tested module,
Manual and corresponding EDS-file.

Order number:
3001002 CANopen IO-X3,
standard version

Device pinout



Hex-encoding Switches:

Node ID:

Allows for configuration of node ID from 0x1 ... 0x7F (1..127 dec).
When node-ID is set to value 0xFF, the device is reset to factory settings after power-on or reset.
The node-ID is also configurable via LSS.

Baud rate:

Selectable via Hex-switch:
0 = 1 Mbit/s
1 = 800 kbit/s
2 = 500 kbit/s
3 = 250 kbit/s
4 = 125 kbit/s
5 = 100 kbit/s
6 = 50 kbit/s
7 = 20 kbit/s
8 = 10 kbit/s

The baud rate is also configurable via LSS.

PDO Mapping

In standard configuration (factory settings) the digital outputs DO0..23 are mapped as shown in the table below.

	ID	Length	BYTE 0	BYTE 1	BYTE 2
1. RPDO	200H +Node ID	3	DO0_7 6200H/1	DO8_15 6200H/2	DO16_23 6200H/3

The PDO-mapping and linking can be changed dynamically by use of a standard CANopen configuration tool. The configuration can be saved to non-volatile memory and thus is available after restart.

Connector pinout:

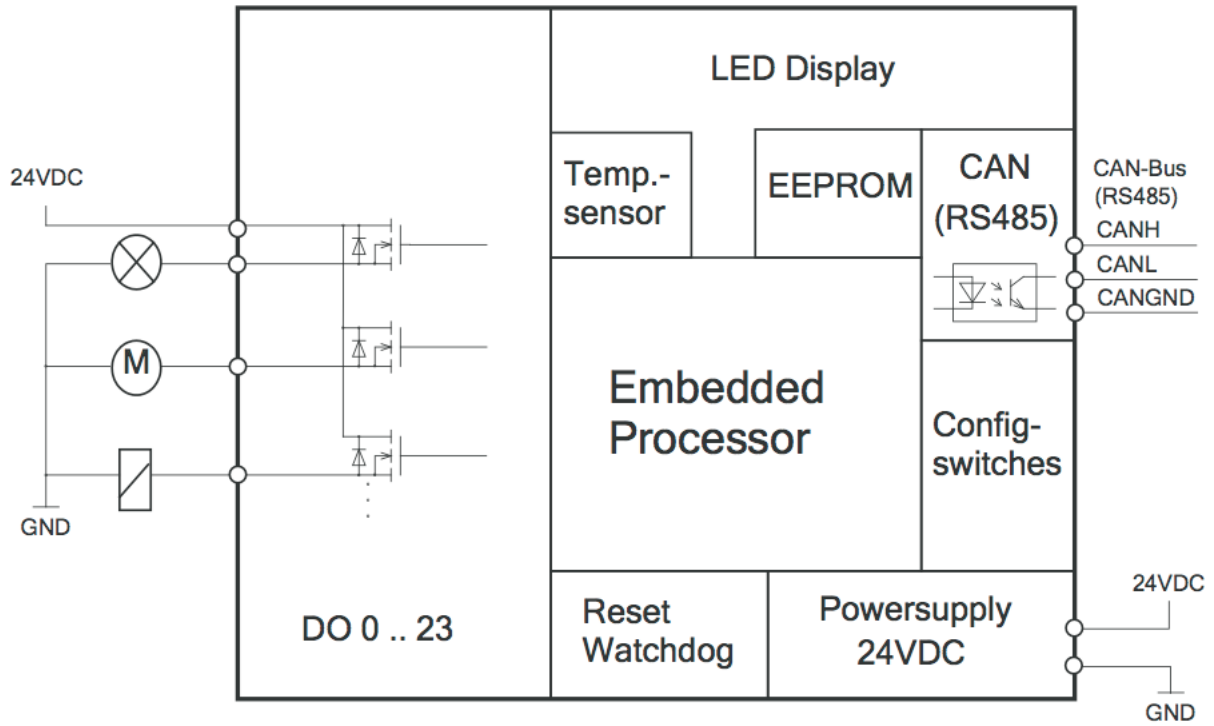
Pin	Name	Description
Power Connector		
1*	L+	+24VDC ±20%
2	0G	Ground 0
CAN Connector		
1*		CAN ground
2		CAN low
3		n.c.
4		CAN high
5		+24VDC (optional used)
IO Connector		
1*	L+	Group 1 +24V supply
2	1G	Group 1 Ground
3	0	Group 1 digital output 0
5	1	Group 1 digital output 1
7	2	Group 1 digital output 2
9	3	Group 1 digital output 3
4	4	Group 1 digital output 4
6	5	Group 1 digital output 5
8	6	Group 1 digital output 6
10	7	Group 1 digital output 7
11	2L+	Group 2 +24V supply
12	2G	Group 2 Ground
13	8	Group 2 digital output 8
15	9	Group 2 digital output 9
17	10	Group 2 digital output 10
19	11	Group 2 digital output 11
14	12	Group 2 digital output 12
16	13	Group 2 digital output 13
18	14	Group 2 digital output 14
20	15	Group 2 digital output 15
21	3L+	Group 3 +24V supply
22	3G	Group 3 Ground
23	16	Group 3 digital output 16
25	17	Group 3 digital output 17
27	18	Group 3 digital output 18
29	19	Group 3 digital output 19
24	20	Group 3 digital output 20
26	21	Group 3 digital output 21
28	22	Group 3 digital output 22
30	23	Group 3 digital output 23

* in picture pin 1 is marked with slash

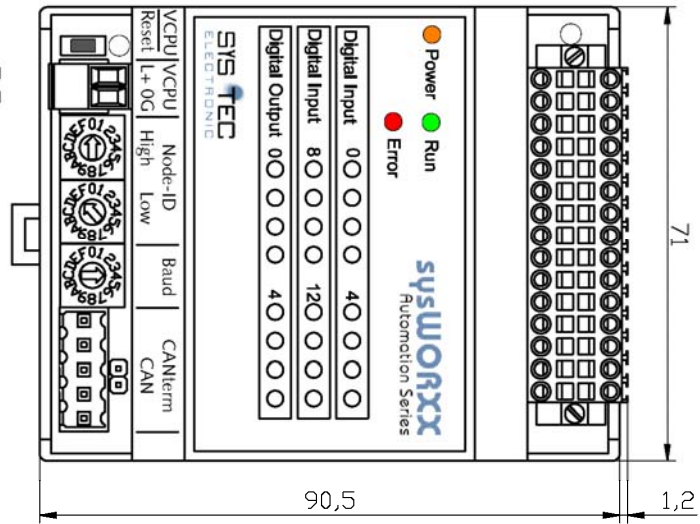
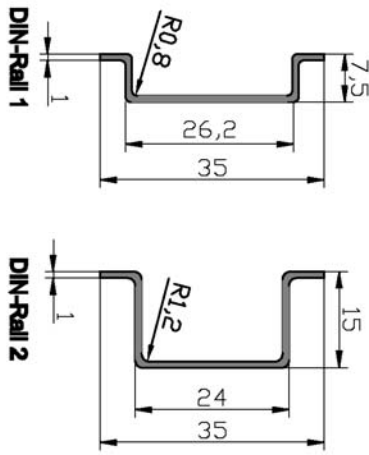
Object Dictionary

Index	Object	Name	Data type	Object is mappable	Object gets saved via 1010H	Object gets Restored via 1011H
1000H	Var	Device type	Unsigned32	-	-	-
1001H	Var	Error register	Unsigned8	-	-	-
1003H	Array	Pre-defined error field	Unsigned32	-	-	-
1005H	Var	COB-ID SYNC message	Unsigned32	-	x	x
1007H	Var	Synchronous window length	Unsigned32	-	x	x
1008H	Var	Manufacturer device name	String	-	-	-
1009H	Var	Manufacturer hardware version	String	-	-	-
100AH	Var	Manufacturer software version	String	-	-	-
100CH	Var	Guard Time	Unsigned16	-	x	x
100DH	Var	Life Time Factor	Unsigned8	-	x	x
1010H	Array	Store parameters	Unsigned32	-	-	-
1011H	Array	Restore default parameters	Unsigned32	-	-	-
1014H	Var	COB-ID EMCY	Unsigned32	-	x	x
1016H	Array	Consumer Heartbeat Time	Unsigned32	-	x	x
1017H	Var	Producer Heartbeat Time	Unsigned16	-	x	x
1018H	Record	Identity object	Identity	-	-	-
1029H	Array	Error behavior object	Unsigned8	-	x	x
1200H	Record	1st SDO Server Parameter	SDO Parameter	-	-	-
1400H	Record	RPDO1 Communication parameter	PDOComPar	-	x	x
1401H	Record	RPDO2 Communication parameter	PDOComPar	-	x	x
1600H	Record	RPDO1 Mapping parameter	PDOMapPar	-	x	x
1601H	Record	RPDO2 Mapping parameter	PDOMapPar	-	x	x
1F51H	Var	ProgramControl	Unsigned8	-	-	-
2000H	Var	NMT Boot Configuration	Unsigned8	-	-	-
2001H	Array	Device Features	Integer16	-	-	-
2002H	Var	Power Fail Configuration	Unsigned8	-	x	x
2500H	Record	for Production only	Production	-	-	-
6200H	Array	Write Output 8Bit	Unsigned8	x	-	-
6206H	Array	Error Mode Output 8Bit	Unsigned8	-	x	x
6207H	Array	Error Value Output 8Bit	Unsigned8	-	x	x
6208H	Array	Filter Mask Output 8Bit	Unsigned8	-	x	x

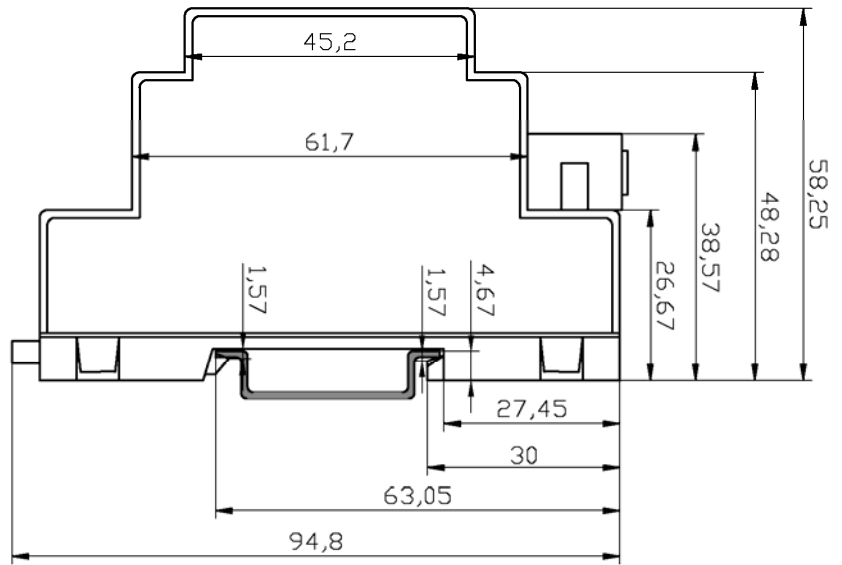
IO circuitry



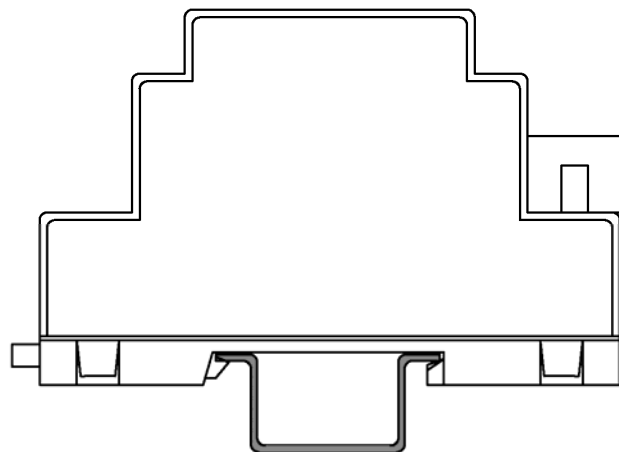
Device dimensions



With DIN-Rail 1



With DIN-Rail 2



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