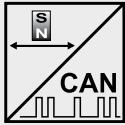


## Description

CANopen interface with process data for position and cam functions, programmable are preset, resolution, filtering and cam switching points.

<b>Interface CANOP</b> 	Communication profile	CANopen CiA 301 V 4.02, Slave
	Device profile	Encoder CiA 406 V 3.2
	Configuration services	Layer Setting Service (LSS), CiA Draft Standard 305 (transmission rate, node id)
	Error Control	Node Guarding, Heartbeat, Emergency Message
	Node ID	Default: 127; programmable via LSS or SDO
	PDO	4 TxPDO, 0 RxPDO, static mapping
	PDO Modes	Event-/Time triggered, Remote-request, Sync cyclic/acyclic
	SDO	1 server, 0 client
	CAM	8 cams
	Certified	Yes
	Transmission rates	50 kBit to 1 MBit, default: 125 kBit; programmable via LSS or SDO
	Bus connection	M12 connector, 5 pins
	Integrated bus terminating resistor	As option
	Bus, galvanic isolated	No

<b>Specifications</b>	Excitation voltage	18 ... 36 V DC
	Excitation current	Typ. 30 mA for 24 V, 100 mA max.
	Resolution	50 µm max.
	No. of position magnets	1 ... 4
	Measuring rate	1 kHz max., depending on the measurement range
	Stability (temperature)	±50 x 10 <sup>-6</sup> / °C f.s.
	Operating temperature	-40 ... +105 °C
	Protection	Reverse polarity, short circuit
	EMC Automation	EN 61326-1:2006-10

When using multiple magnets the distance between two magnets must be min. 70 mm to identify the single magnets definitely.

<b>Measurement rate depending on the measurement range</b>	<b>Measurement range</b>	<b>Measurement rate</b>
	100 ... 500 mm	1 ... 1.4 ms
	500 ... 1000 mm	1.4 ... 2.5 ms
	1000 ... 2000 mm	2.5 ... 4.3 ms
	2000 ... 4000 mm	4.3 ... 8.8 ms
	4000 ... 6000 mm	8.8 ms ... 13 ms

## Setup

Before connecting to the CAN bus make sure that every node has a different node ID and a common bit rate. If necessary set node ID and bit rate by the Layer-Setting-Service (LSS) as defined in Standard CiA DSP-305.

If LSS is not available node ID and bit rate can be changed by writing the new values to objects 2000 and 2010 via Service Data Object (SDO). New node ID and bit rate become effective not before "SAVE" and resetting the device.

After power up the slave will send a boot-up message and will be ready for configuration and start of data exchange. On first power-up the default parameters are effective.

Change parameters and operating mode of process data objects after importing the EDS file by the master software. Changed parameters become effective immediately. Parameters will become non-volatile on writing "SAVE" to object 1010-1.

Note: Setting of some parameters may have influence on the function of other parameters, e.g. changing the resolution may also influence the cam function.



### Warning notice

- Changing the parameters can cause a sudden step of the instantaneous value and can result in unexpected machine (re)actions!
- Precautions to prevent danger for man or machine are necessary!
- Execute parametrizing at standstill of the machine only!

## Device profile

Manufacturer-specific	Index	Default	Value range
Node-ID	2000	127	1...127
Bitrate	2010	4	0..7 (s. table below)
Number of Positions	2080	1	1..4
User Offset	2100	0	0...2 <sup>32</sup> -1
Reload factory defaults	2101	-	
Filter	2102	0	1...255
<b>Angle encoder CiA406</b>			
Operating Parameters	6000	0	0...7
Total Measuring Range	6002		
Position Step Setting	6005-1	50 µm	
Speed Step Setting	6005-2	1mm/s	
Preset Values	6010-1..4	0	
Position Values	6020-1..4	0	
Speed Values	6030-1..4	0	
Cyclic Timer	6200	100	
Profile and SW Version	6507		
Serial Number	650B		
Offset values	650C-1..4		
<b>Cam function CiA406</b>			
Cam state register	6300-1..4	0	
Cam enable register	6301-1..4	0	
Cam polarity register	6302-1..4	0	
Cam 1-8 low limit	6310-6317-1..4	0	
Cam 1-8 high limit	6320-6327-1..4	0	
Cam 1-8 hysteresis	6330-6337-1..4	0	

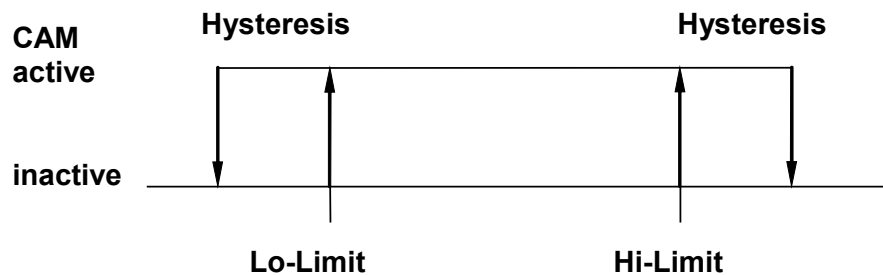
Bit rates	Index	Bit rate
	0	1 MBit/s
1	800 kBit/s	
2	500 kBit/s	
3	250 kBit/s	
4	125 kBit/s	
5	reserved	
6	50 kBit/s	
7	20 kBit/s	

**Process data**

<b>PDO</b>	<b>4 Byte LSB..MSB</b>	<b>2 Byte LSB, MSB</b>	<b>1 Byte</b>	<b>1 Byte</b>
TxPDO-1..4	Position	Speed	CAM Status	Error

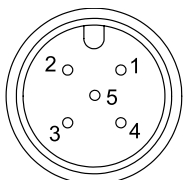
PDO error byte	Error	Meaning
	0	Normal operation
	1 ... n	Malfunction, number of missing position magnets according to index 2080 (number of positions)

**CAM function**



Signal wiring / connection	Signal name	Connector pin	Wire color	Color code 47100
	Screen	1	Braid	Braid
	Excitation +	2	Brown	White
	GND	3	White	Brown
	CAN-H	4	Blue	Green
	CAN-L	5	Black	Yellow

View to sensor connector



**CAN bus wiring**

Connect the device by a T-connector to the CAN trunk line. Total length of stubs should be minimized. Do not use single stub lines longer than 0.5 m. Connect terminating resistors 120 Ohm at both ends of the trunk line.

