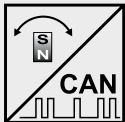


**Description**      Magnetic angle sensor with CANopen interface according to CiA 406.

<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	3 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 kBaud to 1 MBaud, default: 125 kBaud; programmable via LSS or SDO
	Bus connection	M12 connector, 5 pins
	Integrated bus terminating resistor	No
Bus, galvanic isolated	No	
<b>Specifications</b>	Excitation voltage	11 ... 36 V DC
	Excitation current	Typ. 15/30 mA for 24/12 V, 100 mA max.
	Resolution	0.05° max.
	Linearity	1° (0.25° as option)
	Measuring rate	1 kHz (asynchronous)
	Stability (temperature)	$\pm 50 \times 10^{-6}$ / °C f.s.
	Repeatability	1 LSB
	Operating temperature	-40 ... +105 °C
	Protection	Reverse polarity, short circuit
	Dielectric strength	1 kV (V AC, 50 Hz, 1 min.)
EMC Automation	EN 61326:2004, table A1	

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## 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**

	<b>Index</b>	<b>Default</b>	<b>Value range</b>
SAVE	1010-1	„save“	MSB...LSB 73h,61h,76h,65h
LOAD	1011-1	„load“	MSB...LSB 6Ch,6Fh,61h,64h
<b>Manufacturer-specific</b>			
Node ID	2000	127	1...127
Bitrate	2010	4	0...7 (s. table below)
User Offset	2100	0	-2 <sup>31</sup> ... 2 <sup>31</sup> -1
Filter	2102	1	1...255
<b>Angle encoder CiA406</b>			
Operating Parameters	6000-0	0	0...7
Measuring Units per Rev.	6001-0	16383	
Preset Value	6003-0	0	
Position Value	6004-0		
Cyclic Timer	6200-0	100	
Number of revolutions	6502-0	1	
Profile and SW Version	6507-0		
Serial Number	650B-0		
<b>Cam function CiA406</b>			
Cam state register	6300-1	0	
Cam enable register	6301-1	0	
Cam polarity register	6302-1	0	
Cam 1-8 low limit	6310-1...6317-1	0	
Cam 1-8 high limit	6320-1...6327-1	0	
Cam 1-8 hysteresis	6330-1...6337-1	0	

**Operating Parameters Bit Code**

15	...	...	...	4	3	2	1	0
						sfc		cs
MSB								LSB

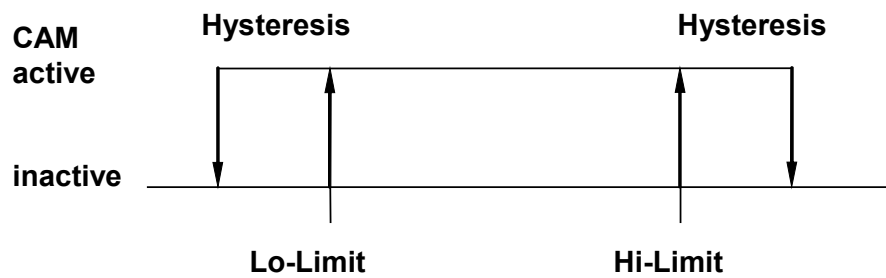
cs = 0 Code sequence CW  
cs = 1 Code sequence CCW  
sfc = 0 Scaling function disabled  
sfc = 1 Scaling function disabled

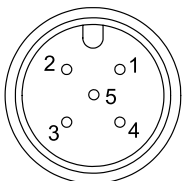
<b>Bit rates</b>	<b>Index</b>	<b>Bit rate</b>
	0	1 MBit/s
	1	800 kBit/s
	2	500 kBit/s
	3	250 kBit/s
	4	125 kBit/s
	5	reserved
	6	50 kBit/s
	7	20 kBit/s

**Process data**

PDO	Content	Preselected transmission mode
TxPDO-01	Position value (4 Byte)	Asynchronous 100 ms
TxPDO-02	Position value (4 Byte)	Sync Mode
TxPDO-04	CAM Status (1 Byte)	Change of State Mode

**CAM function**



Signal wiring / connection	Signal name	Connector pin	Wire color	View to sensor connector
	Shield	1	Braid	
	Excitation +	2	White	
	GND	3	Brown	
	CAN-H	4	Blue	
	CAN-L	5	Black	

**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.

