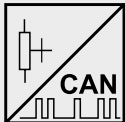


Description

Cable extension position sensor with CANopen interface according to CiA 406.

<p>Interface ADCANOP</p> 	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
	Transmission rates	50 kBaud to 1 MBaud, default: 125 kBaud; programmable via LSS or SDO
	Bus connection	M12 connector, 5 pins
	Integrated termination resistor	$R_T = 120 \Omega$, user programmable
	Bus, galvanic isolated	No

<p>Specifications</p>	Excitation voltage	8 ... 36 V DC
	Excitation current	Typ. 15/30 mA for 24/12 V, max. 100 mA
	Resolution	0.05 mm
	Linearity	$\pm 0.05 \%$ f.s.
	Measuring rate	1 kHz (asynchronous)
	Stability (temperature)	$\pm 50 \times 10^{-6} / ^\circ\text{C}$ f.s.
	Repeatability	1 LSB
	Operating temperature	-40 ... +85 °C
	Protection	Reverse polarity, short circuit
	Dielectric strength	1 kV (V AC, 50 Hz, 1 min.)
	EMC Automation	EN 61326-1:2006

Setup

Before connecting to the CAN bus make sure that all nodes have a different node ID and the same 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

	Index	Default	Value range
SAVE	1010-1	„save“	MSB...LSB 73h, 61h, 76h, 65h
LOAD	1011-1	„load“ *)	MSB...LSB 6Ch, 6Fh, 61h, 64h
Manufacturer-specific			
Node ID	2000	127	1...127
Bitrate	2010	4	0...6 (s. table below)
Termination resistor	2020	0	0 (off) / 1 (on)
Hysteresis (change of state)	2040	10	0 ... 1000
User Offset	2100	0	$-2^{31} \dots 2^{31}-1$
Filter	2102	1	1...255
Linear encoder CiA406			
Operating Parameters	6000-0	0	0...7
Total Measuring Range	6002-0	f.s. in mm	Model specific
Preset Value	6003-0	0	
Position Value	6004-0		
Measuring step	6005-1	10 µm	$10 \times 10^3 \dots 10 \times 10^6$ nm
Cyclic Timer	6200-0	100	10 ... 30000
Profile and SW Version	6507-0		
Serial Number	650B-0		
Cam function CiA406			
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	

*) Restore factory configuration except bitrate and node ID

Operating Parameters Bit Code

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

cs = 0/1 Code sequence CW/CCW

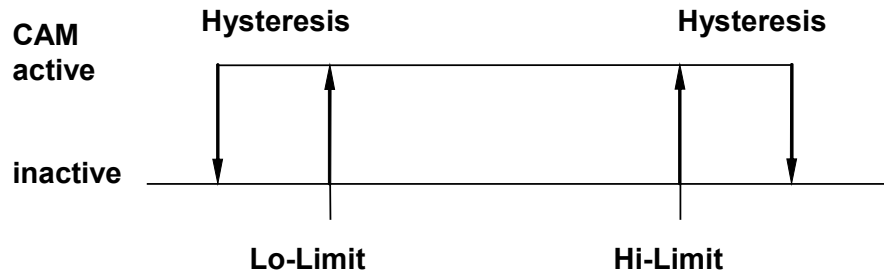
sfc = 0/1 Scaling function disabled/enabled

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

Process data

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

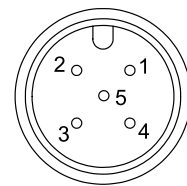
CAM function



Signal wiring / connection

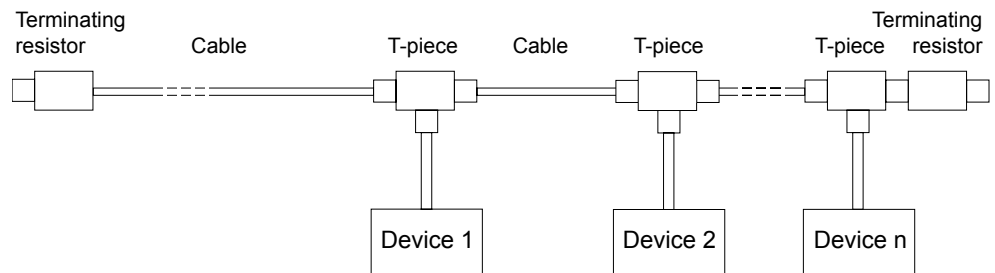
Signal name	Connector pin	Wire color
Shield	1	Braid
Excitation +	2	Brown
GND	3	White
CAN-H	4	Blue
CAN-L	5	Black

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.



Description

Cable extension position sensor with CANopen interface according to CiA 406.

<p>Interface PCANOP</p> 	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
	Transmission rates	50 kBaud to 1 MBaud, default: 125 kBaud; programmable via LSS or SDO
	Bus connection	M12 connector, 5 pins
	Integrated terminating resistor	$R_T = 120 \Omega$, user programmable
	Bus, galvanic isolated	No

Specifications	Excitation voltage	8 ... 36 V DC
	Excitation current	Typ. 15/30 mA for 24/12 V, max. 100 mA
	Resolution	0.05 mm
	Linearity	$\pm 0.05\%$ f.s.
	Measuring rate	1 kHz (asynchronous)
	Stability (temperature)	$\pm 50 \times 10^{-6}$ / °C f.s.
	Repeatability	1 LSB
	Operating temperature	-40 ... +85 °C
	Protection	Reverse polarity, short circuit
	Dielectric strength	1 kV (V AC, 50 Hz, 1 min.)
	EMC Automation	EN 61326-1:2006

Setup

Before connecting to the CAN bus make sure that all nodes have a different node ID and the same 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.



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Manufacturer-specific			
Node ID	2000	127	1...127
Bitrate	2010	4	0...6 (s. table below)
Termination resistor	2020	0	0 (off) / 1 (on)
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User Offset	2100	0	-2 ³¹ ... 2 ³¹ -1
Filter	2102	1	1...255
Linear encoder CiA406			
Operating Parameters	6000	0	0...7
Total Measuring Range	6002		Model specific
Preset Value	6003	0	
Position Value	6004		
Cyclic Timer	6200	100	10 ... 30000
Measuring Step	6505	10 µm	
Profile and SW Version	6507		
Serial Number	650B		
Cam function CiA406			
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	

*) Restore factory configuration except bitrate and node ID

Operating Parameters Bit Code

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

cs = 0/1 Code sequence CW/CCW

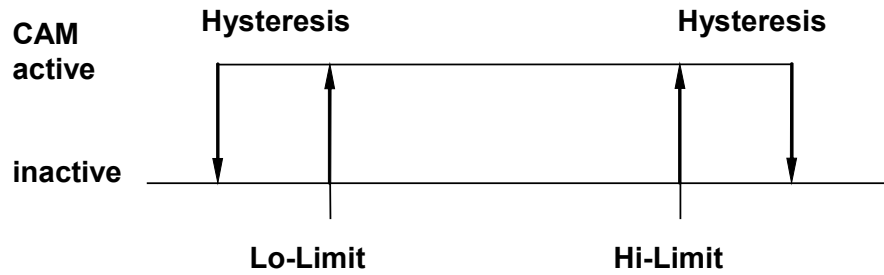
sfc = 0/1 Scaling function disabled/enabled

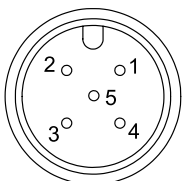
Bit rates	Index	Bit rate
	0	1 MBit/s
	1	800 kBit/s
	2	500 kBit/s
	3	250 kBit/s
	4	125 kBit/s
	5	reserved
	6	50 kBit/s

Process data

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

CAM function



Signal wiring / connection	Signal name	Connector pin	Wire color	View to sensor connector
	Shield	1	Braid	
	Excitation +	2	Brown	
	GND	3	White	
	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.

