



## **WST85**

Combined displacement and inclination sensor with measurement ranges up to 6,000 mm /  $\pm 180^\circ$



- Protection class up to IP67/IP69
- With magnetic absolute encoder
- With inclination sensor in MEMS technology
- High-performance PBT/stainless steel housing
- Redundant version available

### Product version



Digital output CANopen



## WST85 - Combined displacement and inclination sensor Version with digital output CANopen

### Specifications

|                                          |                                                            | Order options |                    |
|------------------------------------------|------------------------------------------------------------|---------------|--------------------|
| Measurement range (position)             | 4000 / 5000 / 6000 mm                                      | <b>1</b>      | 4000 / 5000 / 6000 |
| Measurement range (inclination)          | ±180° with 1 axis                                          |               |                    |
| Inclination axis                         | Inclination in X axis ≤±180°                               |               |                    |
| Resolution                               | setting via CAN Bus                                        |               |                    |
| Output                                   | Digital output CANopen<br>Digital output CANopen redundant | <b>2</b>      | MCANOP<br>MCANOPR  |
| Linearity of position measurement        | ±0.10% f.s. (standard)<br>±0.05% f.s. (optional)           | <b>3</b>      | L10<br>L05         |
| Linearity of inclination measurement     | 0.05° (±30°)<br>0.1° (±60°)<br>0.2° (±180°)                |               |                    |
| Sensing device (position measurement)    | Magnetic absolute encoder                                  |               |                    |
| Sensing device (inclination measurement) | MEMS device                                                |               |                    |
| Material                                 | PBT, stainless steel<br>measuring cable: stainless steel   |               |                    |
| Protection class                         | IP67/IP69                                                  |               |                    |
| Cable fixing                             | M4 cable fixing<br>Cable clip                              | <b>4</b>      | M4<br>SB0          |
| Connection                               | Connector M12, 5 pin                                       | <b>5</b>      | M12/CAN            |
| Shock                                    | DIN EN 60068-2-27:2010, 100 g/11 ms, 100 shocks            |               |                    |
| Vibration                                | DIN EN 60068-2-6:2008, 20 g 10 Hz-2 kHz, 10 cycles         |               |                    |
| Temperature range                        | -40 ... +85 °C                                             |               |                    |
| Weight                                   | approx. 1250 g                                             |               |                    |
| EMV                                      | DIN EN 61326-1:2013                                        |               |                    |

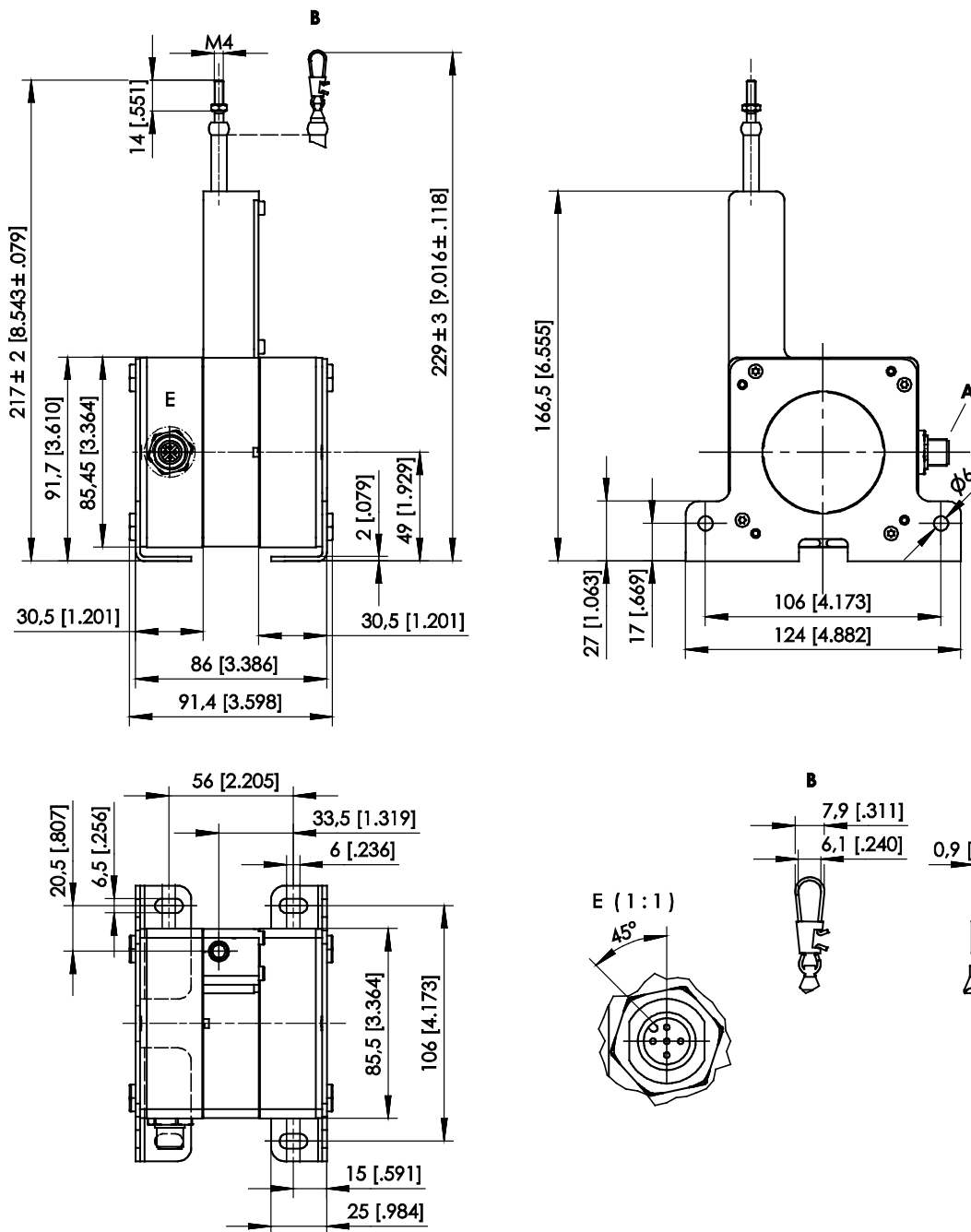
### Order code

|       |   |          |   |          |   |          |   |          |   |          |
|-------|---|----------|---|----------|---|----------|---|----------|---|----------|
| WST85 | – | <b>1</b> | – | <b>2</b> | – | <b>3</b> | – | <b>4</b> | – | <b>5</b> |
|-------|---|----------|---|----------|---|----------|---|----------|---|----------|

Order example: WST85 – 6000 – MCANOP – L10 – M4 – M12/CAN

## Dimensions

### WST85



A – Connector M12

B – Option SB0

Dimensions in mm [inch]

Dimensions informative only.

For guaranteed dimensions consult factory.

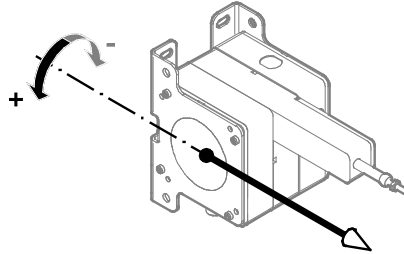
## Mounting options for inclination measurement for WST61 / WST85 sensors

For CAN output, the mounting option can be set by the user via software.

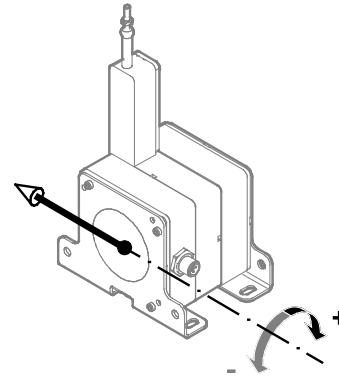
Sensor position as shown equals 0°.

### WST61 / WST85

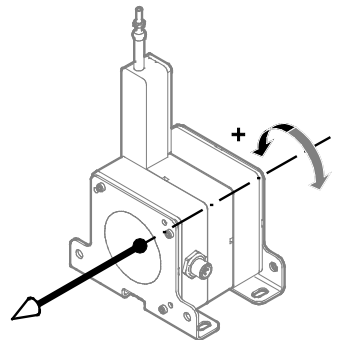
#### Mounting option 1



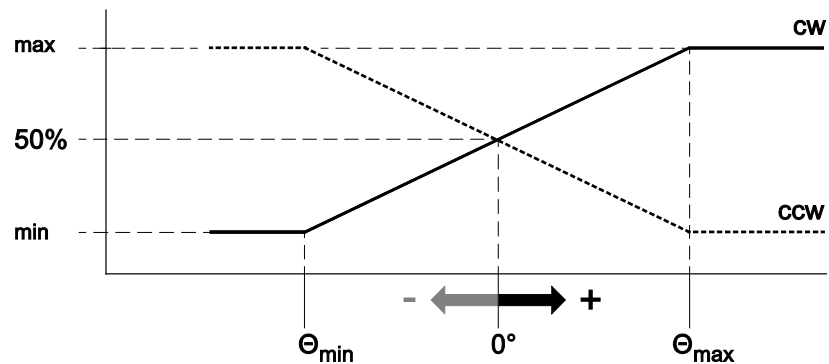
#### Mounting option 2



#### Mounting option 3



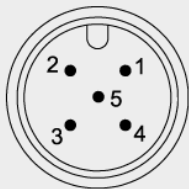
#### Output signal



## Digital interface CANopen

|                                                                                                            |                                     |                                                                  |
|------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------------------|
| <b>MCANOP, CANOPR</b><br> | CAN specification                   | ISO 11898, Basic and Full CAN 2.0 B                              |
|                                                                                                            | Communication profile               | CANopen CiA 301 V 4.02, Slave                                    |
|                                                                                                            | Encoder profile                     | Encoder CiA 406 V 3.2                                            |
|                                                                                                            | Error Control                       | Node Guarding, Heartbeat, Emergency Message                      |
|                                                                                                            | Node ID                             | Adjustable via LSS or SDO, default: 127                          |
|                                                                                                            | PDO                                 | 3 TxPDO, 0 RxPDO, no linking, static mapping                     |
|                                                                                                            | PDO Modes                           | Event-/Time triggered, Remote-request, Sync cyclic/acyclic       |
|                                                                                                            | SDO                                 | 1 Server, 0 Client                                               |
|                                                                                                            | CAM                                 | 8 cams                                                           |
|                                                                                                            | Certified                           | Yes                                                              |
|                                                                                                            | Transmission rate                   | 50 kBit bis 1 Mbit, adjustable via LSS or SDO, default: 125 kBit |
|                                                                                                            | Bus connection                      | M12 connector, 5 pin                                             |
|                                                                                                            | Integrated bus terminating resistor | 120Ω adjustable by the customer                                  |
|                                                                                                            | Bus, galvanic isolated              | no                                                               |

|                       |                         |                                                                    |
|-----------------------|-------------------------|--------------------------------------------------------------------|
| <b>Specifications</b> | Excitation voltage      | 8 ... 36 V DC                                                      |
|                       | Excitation current      | 20 mA typical at 24 V DC<br>40 mA typical at 12 V DC<br>80 mA max. |
|                       | Measuring rate          | 0.5 kHz                                                            |
|                       | Stability (temperature) | ±50 x 10 <sup>-6</sup> /°C f.s. (typical)                          |
|                       | Repeatability           | 1 LSB                                                              |
|                       | Operating temperature   | See specification of the respective sensor                         |
|                       | Protection              | Reverse polarity, short circuit                                    |
|                       | Dielectric strength     | 1 kV (V AC, 50 Hz, 1 min.)                                         |
|                       | EMC                     | EN 61326-1:2013                                                    |

| Signal wiring                                                                                                                                      | Output signals | Connector pin no. |
|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------|
| <b>Connector M12, 5 pin</b><br><br>View to the sensor connector | Shield         | 1                 |
|                                                                                                                                                    | Excitation +   | 2                 |
|                                                                                                                                                    | GND            | 3                 |
|                                                                                                                                                    | CAN-H          | 4                 |
|                                                                                                                                                    | CAN-L          | 5                 |
|                                                                                                                                                    |                |                   |

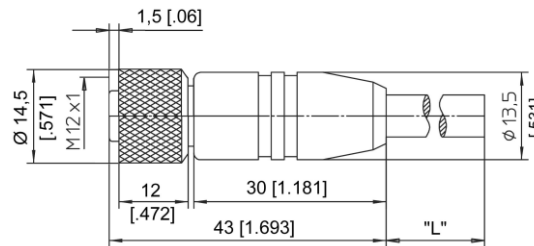
## Accessories

### Connector/bus cable M12, 5 pin CAN-Bus

The 5-lead shielded cable is supplied with a female 5 pin M12 connector at one end and a male 5 pin M12 connector at the other end.

Available lengths are 0.3 m, 2 m, 5 and 10 m.

Cable diameter: 6.7 ±0.2 mm



#### Order code

|                  |                                                     |
|------------------|-----------------------------------------------------|
|                  | <b>KAB - xM - M12/5F/G - M12/5M/G - CAN</b>         |
| IP69:            | <b>KAB - xM - M12/5F/G/69K - M12/5M/G/69K - CAN</b> |
| xM = length in m |                                                     |

### T-connector for bus cable M12, 5 pin CAN-Bus

#### Order code

**KAB - TCONN - M12/5M - 2M12/5F - CAN**



### Terminating resistor M12, 5 pin CAN-Bus

#### Order code

**KAB - RTERM - M12/5M/G - CAN**



### Applicable for cable carriers

|                        |                     |
|------------------------|---------------------|
| Maximum movement speed | 3 m/s               |
| Maximum acceleration   | 5 m/s <sup>2</sup>  |
| Minimum bending radius | 10 x cable diameter |