

# POSIWIRE<sup>®</sup>

Cable Extension Position Sensors

**WS10**  
**Position Sensor**

Datasheet



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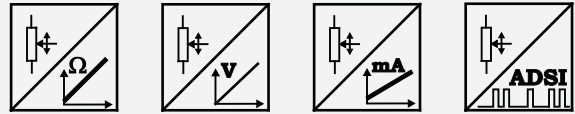
|  |    |
|--|----|
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## Analog output, SSI output



### Sensor features

- Measurement range up to 1250 mm
- Protection class IP65 (with mating connector only)
- Analog output, SSI output



### Specifications

|                          |  |
|--------------------------|--|
| <b>Output</b>            | <b>R1K</b> = Potentiometer 1 kΩ<br><b>10V</b> = Voltage 0 ... 10 V<br><b>420A</b> = Current 4 ... 20 mA, 2 wire<br><b>420T</b> = Current 4 ... 20 mA, 3 wire<br><b>PMUI</b> = Current output, programmable<br><b>PMUV</b> = Voltage output, programmable<br><b>ADSI</b> = Signal conditioner SSI 12 bit, replaced by MSS12<br><b>ADSI14</b> = Signal conditioner SSI 14 bit, replaced by MSS14<br><b>ADSI16</b> = Signal conditioner SSI 16 bit, replaced by MSS16 |
| <b>Resolution</b>        | Analog: quasi infinite   |
| <b>Linearity</b>         | ±0.10% f.s. (standard)<br>±0.05% f.s. (optional)   |
| <b>Sensing device</b>    | Precision potentiometer  |
| <b>Housing material</b>  | Aluminium, stainless steel and plastic<br>measuring cable: stainless steel   |
| <b>Protection class</b>  | IP65 (with mating connector only)  |
| <b>Connection</b>        | Connector M12, 8 pin   |
| <b>Temperature range</b> | -20 ... +85 °C   |
| <b>Weight</b>            | approx. 550 g  |
| <b>EMC</b>               | DIN EN 61326-1:2013  |

**Order code**

**WS10** – 1 – 2 – 3 – 4 – 5

**1 Measurement range (in mm)**

100 / 125 / 375 / 500 / 750 / 1000 / 1250

**2 Output**

- R1K** = Potentiometer 1 kΩ
- 10V** = Voltage 0 ... 10 V
- 420A** = Current 4 ... 20 mA, 2 wire
- 420T** = Current 4 ... 20 mA, 3 wire
- PMUI** = Current output, programmable
- PMUV** = Voltage output, programmable
  
- ADSI** = Signal conditioner SSI 12 bit, replaced by MSS112
- ADSI14** = Signal conditioner SSI 14 bit, replaced by MSS114
- ADSI16** = Signal conditioner SSI 16 bit, replaced by MSS116

**3 Linearity**

- L10** = ±0.10% f.s. (standard)
- L05** = ±0.05% f.s. (optional)

**4 Cable fixing**

- M4** = M4 cable fixing
- SB0** = cable clip

**5 Connection**

- M12** = Connector M12, 8 pin

**Order example**

**WS10 – 1250 – 10V – L10 – M4 – M12**

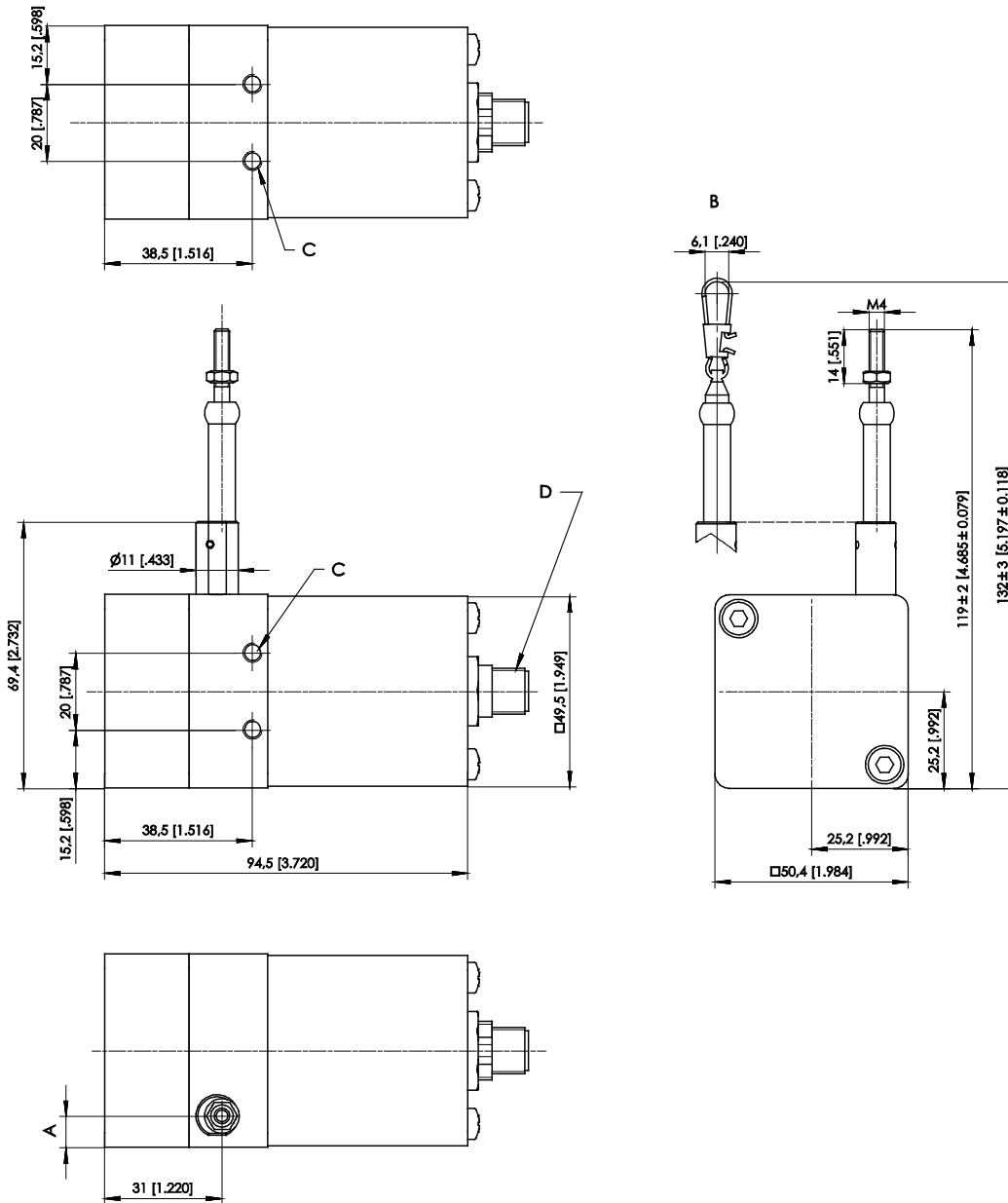
**Accessories:**

**Connector cable (see page 44)**

| <b>Cable forces</b><br>typical at = 20 °C | <b>Measurement range</b> | <b>Maximum pull-out force</b> | <b>Minimum pull-in force</b> |
|---|--------------------------|-------------------------------|------------------------------|
|   | [mm]                     | [N]                           | [N]                          |
|   | 100                      | 4,7                           | 3,0                          |
|   | 125                      | 4,6                           | 2,4                          |
|   | 375                      | 7,4                           | 3,9                          |
|   | 500                      | 5,5                           | 2,8                          |
|   | 750                      | 7,6                           | 3,8                          |
|   | 1000                     | 5,3                           | 2,9                          |
|   | 1250                     | 4,6                           | 2,4                          |

## Dimensions

Measurement range 100 ... 1250 mm, analog output, SSI output



| Dimensions in mm | Measurement range         | A    |
|------------------|---------------------------|------|
|                  | 375; 750                  | 12.7 |
|                  | 100; 125; 500; 1000; 1250 | 8.2  |

B – Option SB0  
C – M5 - 8 [0.315] deep  
D – Connector M12

Dimensions in mm [inch]  
Dimensions informative only.  
For guaranteed dimensions consult factory.

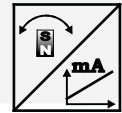
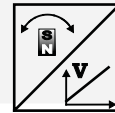


## Magnetic encoder, analog output



### Sensor features

- With magnetic absolute encoder
- Measurement range up to 2000 mm
- Protection class IP65 (with mating connector only)
- Analog output
- Absolute measurement



### Specifications

|                          |  |
|--------------------------|--|
| <b>Output</b>            | <b>U2</b> = Voltage 0.5 ... 10 V<br><b>U8</b> = Voltage 0.5 ... 4.5 V<br><b>I1</b> = Current 4 ... 20 mA, 3 wire |
| <b>Resolution</b>        | <0.002% f.s.   |
| <b>Linearity</b>         | ±0.10% f.s. (standard)<br>±0.05% f.s. (optional)   |
| <b>Sensing device</b>    | Magnetic absolute encoder  |
| <b>Housing material</b>  | Aluminium, stainless steel and plastic<br>measuring cable: stainless steel                                       |
| <b>Protection class</b>  | IP65 (with mating connector only)  |
| <b>Connection</b>        | Connector M12, 5 pin (standard)<br>Connector M12, 8 pin ( optional)  |
| <b>Shock</b>             | DIN EN 60068-2-27:2010, 100 g/11 ms, 100 shocks  |
| <b>Vibration</b>         | DIN EN 60068-2-6:2008, 20 g 10 Hz-2 kHz, 10 cycles   |
| <b>Temperature range</b> | -20 ... +85 °C   |
| <b>Weight</b>            | approx. 550 g  |
| <b>EMC</b>               | DIN EN 61326-1:2013  |

**Order code**

WS10 – 1 – 2 – 3 – 4 – 5 – 6

**1 Measurement range (in mm)**

250 / 375 / 500 / 750 / 1000 / 1250 / 1500 / 2000

**2 Output**

U2 = Voltage 0.5 ... 10 V  
 U8 = Voltage 0.5 ... 4.5 V  
 I1 = Current 4 ... 20 mA, 3 wire

**3 Signal characteristics**

A = increasing signal (e.g. 4 ... 20 mA)  
 D = decreasing signal (e.g. 20 ... 4 mA)

**4 Linearity**

L10 = ±0.10% f.s. (standard)  
 L05 = ±0.05% f.s. (optional)

**5 Cable fixing**

M4 = M4 cable fixing  
 SB0 = cable clip

**6 Connection**

M12A5 = Connector M12, 5 pin (standard)  
 M12A8 = Connector M12, 8 pin (optional)

**Order example**

WS10 – 1250 – U2 – A – L10 – M4 – M12A5

**Accessories:**

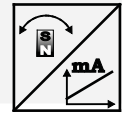
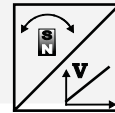
Connector cable (see page 42)

## Magnetic encoder, analog output, programmable



### Sensor features

- With magnetic absolute encoder
- Measurement range up to 2000 mm
- Protection class IP65 (with mating connector only)
- Analog output, programmable
- Absolute measurement



### Specifications

|                          |  |
|--------------------------|--|
| <b>Output</b>            | <b>U2/PMU</b> = Voltage 0.5 ... 10 V, programmable<br><b>U8/PMU</b> = Voltage 0.5 ... 4.5 V, programmable<br><b>I1/PMU</b> = Current 4 ... 20 mA, 3 wire, programmable |
| <b>Resolution</b>        | <0.002% f.s.   |
| <b>Linearity</b>         | ±0.10% f.s. (standard)<br>±0.05% f.s. (optional)   |
| <b>Sensing device</b>    | Magnetic absolute encoder  |
| <b>Housing material</b>  | Aluminium, stainless steel and plastic<br>measuring cable: stainless steel   |
| <b>Protection class</b>  | IP65 (with mating connector only)  |
| <b>Connection</b>        | Connector M12, 5 pin   |
| <b>Shock</b>             | DIN EN 60068-2-27:2010, 100 g/11 ms, 100 shocks  |
| <b>Vibration</b>         | DIN EN 60068-2-6:2008, 20 g 10 Hz-2 kHz, 10 cycles   |
| <b>Temperature range</b> | -20 ... +85 °C   |
| <b>Weight</b>            | approx. 550 g  |
| <b>EMC</b>               | DIN EN 61326-1:2013  |

**Order code**

**WS10** – 1 – 2 – 3 – 4 – 5 – 6

**1 Measurement range (in mm)**

250 / 375 / 500 / 750 / 1000 / 1250 / 1500 / 2000

**2 Output**

**U2/PMU** = Voltage 0.5 ... 10 V, programmable  
**U8/PMU** = Voltage 0.5 ... 4.5 V, programmable  
**I1/PMU** = Current 4 ... 20 mA, 3 wire, programmable

**3 Signal characteristics**

**A** = increasing signal (e.g. 4 ... 20 mA)  
**D** = decreasing signal (e.g. 20 ... 4 mA)

**4 Linearity**

**L10** = ±0.10% f.s. (standard)  
**L05** = ±0.05% f.s. (optional)

**5 Cable fixing**

**M4** = M4 cable fixing  
**SB0** = cable clip

**6 Connection**

**M12A5** = Connector M12, 5 pin

**Order example**

**WS10 – 1250 – U2/PMU – A – L10 – M4 – M12A5**

**Accessories:**

**Connector cable (see page 43)**

## Magnetic encoder, digital output SSI



### Sensor features

- With magnetic absolute encoder
- Measurement range up to 2000 mm
- Protection class IP65 (with mating connector only)
- Digital output SSI
- Absolute measurement



### Specifications

|                          |  |
|--------------------------|--|
| <b>Output</b>            | <b>MSSI</b> = SSI synchronous serial interface                             |
| <b>Resolution</b>        | 10 / 50 / 100  |
| <b>Linearity</b>         | ±0.10% f.s. (standard)<br>±0.05% f.s. (optional)                           |
| <b>Sensing device</b>    | Magnetic absolute encoder  |
| <b>Housing material</b>  | Aluminium, stainless steel and plastic<br>measuring cable: stainless steel |
| <b>Protection class</b>  | IP65 (with mating connector only)  |
| <b>Connection</b>        | Connector M12, 8 pin   |
| <b>Shock</b>             | DIN EN 60068-2-27:2010, 100 g/11 ms, 100 shocks                            |
| <b>Vibration</b>         | DIN EN 60068-2-6:2008, 20 g 10 Hz-2 kHz, 10 cycles                         |
| <b>Temperature range</b> | -20 ... +85 °C   |
| <b>Weight</b>            | approx. 550 g  |
| <b>EMC</b>               | DIN EN 61326-1:2013  |

**Order code**

**WS10** – 1 – 2 – 3 – 4 – 5 – 6

**1 Measurement range (in mm)**

250 / 375 / 500 / 750 / 1000 / 1250 / 1500 / 2000

**2 Resolution (in µm)**

10 / 50 / 100

**3 Output**

**MSSI** = SSI synchronous serial interface

**4 Linearity**

**L10** = ±0.10% f.s. (standard)  
**L05** = ±0.05% f.s. (optional)

**5 Cable fixing**

**M4** = M4 cable fixing  
**SB0** = cable clip

**6 Connection**

**M12A8** = Connector M12, 8 pin

**Order example**

**WS10 – 1250 – 50 – MSSI – L10 – M4 – M12A8**

**Accessories:**

**Connector cable (see page 44)**

## Magnetic encoder, digital output CAN Bus



### Sensor features

- With magnetic absolute encoder
- Measurement range up to 2000 mm
- Protection class IP65 (with mating connector only)
- Digital output CAN Bus
- Absolute measurement
- Optional redundant CAN Bus



### Specifications

|                          |  |
|--------------------------|--|
| <b>Output</b>            | <b>MCANOP</b> = CANopen<br><b>MCANJ1939</b> = CAN SAE J1939                |
| <b>Resolution</b>        | setting via CAN Bus  |
| <b>Linearity</b>         | ±0.10% f.s. (standard)<br>±0.05% f.s. (optional)                           |
| <b>Sensing device</b>    | Magnetic absolute encoder  |
| <b>Housing material</b>  | Aluminium, stainless steel and plastic<br>measuring cable: stainless steel |
| <b>Protection class</b>  | IP65 (with mating connector only)  |
| <b>Connection</b>        | Connector M12, 5 pin   |
| <b>Temperature range</b> | -20 ... +85 °C   |
| <b>Weight</b>            | approx. 550 g  |
| <b>EMC</b>               | DIN EN 61326-1:2013  |

**Order code**WS10 – 1 – 2 – 3 – 4 – 5**1 Measurement range (in mm)**

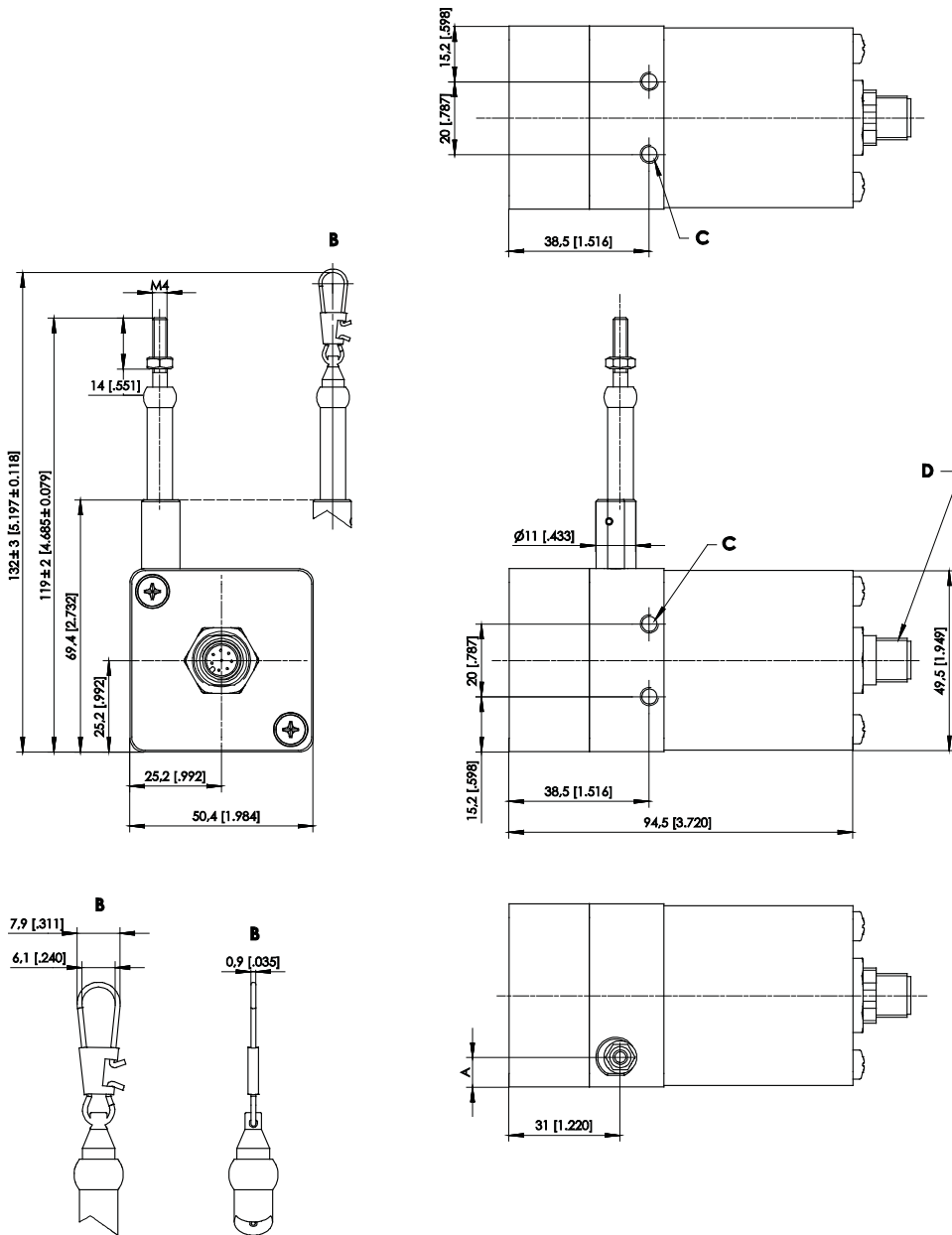
250 / 375 / 500 / 750 / 1000 / 1250 / 1500 / 2000

**2 Output****MCANOP** = CANopen  
**MCANJ1939** = CAN SAE J1939**3 Linearity****L10** = ±0.10% f.s. (standard)  
**L05** = ±0.05% f.s. (optional)**4 Cable fixing****M4** = M4 cable fixing  
**SB0** = cable clip**5 Connection****M12/CAN** = Connector M12, 5 pin**Order example****WS10 – 1250 – MCANOP – L10 – M4 – M12/CAN****Accessories:****Connector cable (see page 45)**



## Dimensions

Measurement range 250 ... 1250 mm, magnetic encoder output



| Dimensions in mm | Measurement range | A    |
|------------------|-------------------|------|
|                  | 250               | 16.7 |
|                  | 375; 750          | 12.7 |
|                  | 500; 1000; 1250   | 8.2  |

A – Option SB0  
B – Mounting drillings 4 x M5 - 8 [.315] deep  
C – Connector M12

Dimensions in mm [inch]  
Dimensions informative only.  
For guaranteed dimensions consult factory.

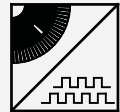


## Incremental encoder output



### Sensor features

- Measurement range up to 1250 mm
- Protection class IP65 (with mating connector only)
- Incremental encoder output



## Specifications

|                          |  |
|--------------------------|--|
| <b>Output</b>            | <b>PP530</b> = Incremental output 5 ... 30 V<br><b>IE41LI</b> = Incremental encoder TTL compatible<br><b>IE41HI</b> = Incremental encoder HTL compatible |
| <b>Resolution</b>        | 10 or 25 pulses / mm<br>(40 or 100 edges / mm)   |
| <b>Linearity</b>         | ±0.05% f.s.  |
| <b>Sensing device</b>    | Incremental encoder  |
| <b>Housing material</b>  | Aluminium, stainless steel and plastic<br>measuring cable: stainless steel   |
| <b>Protection class</b>  | IP65 (with mating connector only)  |
| <b>Connection</b>        | Connector M12, 8 pin   |
| <b>Temperature range</b> | -20 ... +85 °C   |
| <b>Weight</b>            | approx. 550 g  |
| <b>EMC</b>               | DIN EN 61326-1:2013  |

| Cable forces       | Measurement range | Maximum pull-out force | Minimum pull-in force |
|--------------------|-------------------|------------------------|-----------------------|
| Typical at = 20 °C | [mm]              | [N]                    | [N]                   |
|                    | 1250              | 5,8                    | 3,0                   |

**Order code**

**WS10** – 1 – 2 – 3 – 4 – 5

**1 Measurement range (in mm)**

1250

**2 Resolution**

**10** = 10 pulses / mm  
**25** = 25 pulses / mm  
 other number of pulses on request

**3 Output**

**PP530** = Incremental output 5 ... 30 V  
**IE41LI** = Incremental encoder TTL compatible  
**IE41HI** = Incremental encoder HTL compatible

**4 Cable fixing**

**M4** = M4 cable fixing  
**SB0** = cable clip

**5 Connection**

**M12** = Connector M12, 8 pin

**Order example**

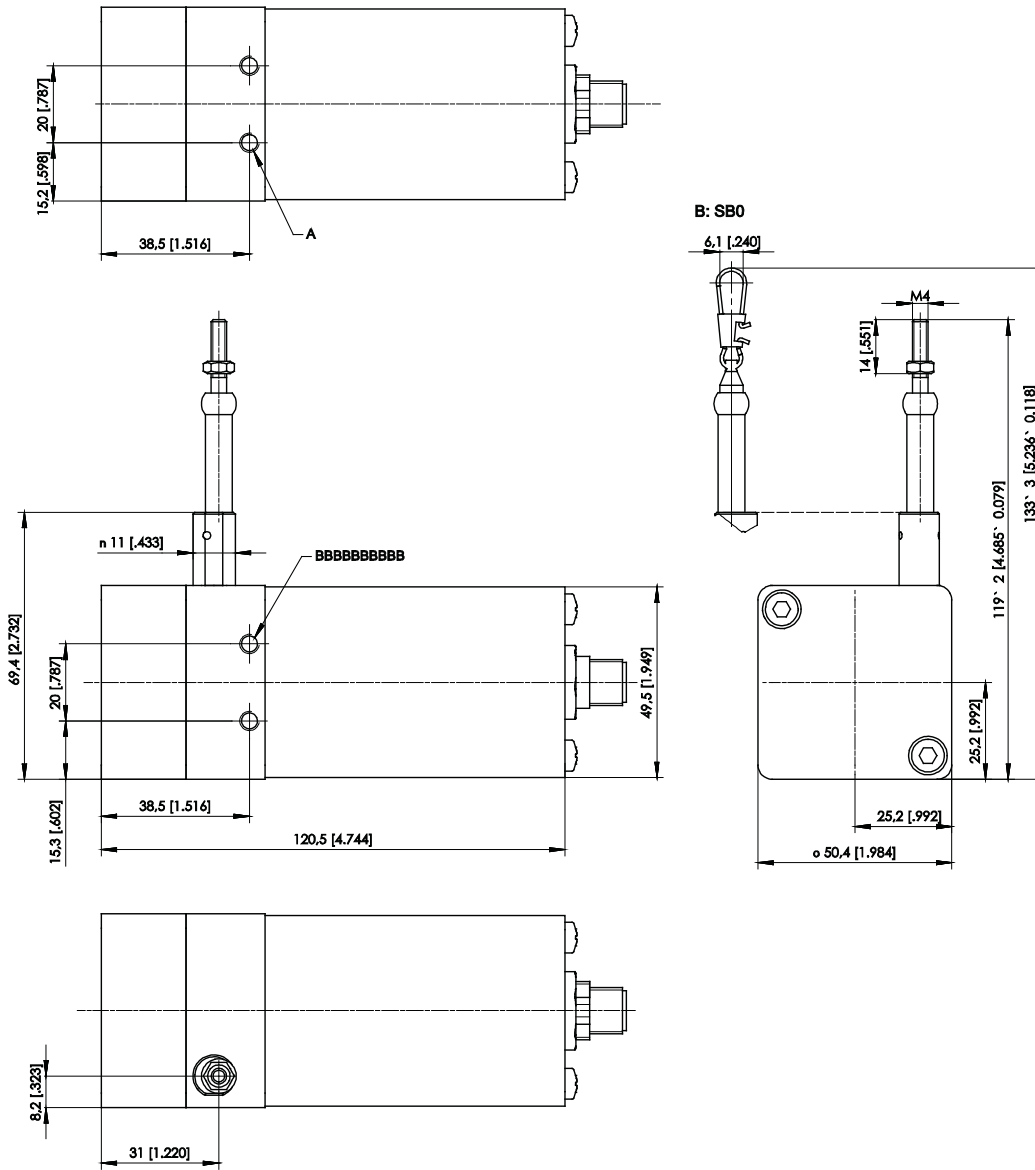
**WS10 – 1250 – 10 – PP530 – M4 – M12**

**Accessories:**

**Connector cable (see page 44)**

## Dimensions

Measurement range 1250 mm, incremental encoder output



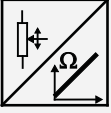
A – M5 - 8 [0.315] deep  
B – Option SB0

Dimensions in mm [inch]  
Dimensions informative only.  
For guaranteed dimensions consult factory.

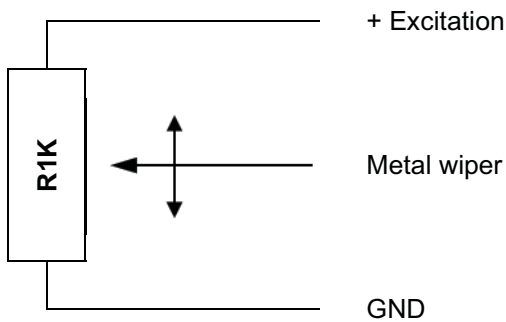
## Output specifications

### Analog outputs

#### Voltage divider R1K

|  |                                   |  |
|--|-----------------------------------|--|
| Potentiometer<br><br> | Excitation voltage                | 32 V DC max. at 1 kΩ (max. power 1 W)  |
|  | Potentiometer impedance           | 1 kΩ ±10 %   |
|  | Thermal coefficient               | ±25 x 10 <sup>-6</sup> / °C f.s.   |
|  | Sensitivity                       | Depends on the measuring range, individual sensitivity of the sensor is specified on the label |
|  | Voltage divider utilization range | approx. 3 % ... 97 %   |
|  | Operating temperature             | Refer to output specification  |
|  | EMC                               | DIN EN 61326-1:2013  |

### Output signals



**Note:**

**The metal wiper of the potentiometer must be protected against current load!**

Electrical current flow impact on the wiper causes linearity errors and shortens the lifetime of the potentiometer.

Additional information:

[http://www.asm-sensor.com/asm/pdf/pro/ws\\_poti\\_technote\\_en.pdf](http://www.asm-sensor.com/asm/pdf/pro/ws_poti_technote_en.pdf)

### Signal wiring

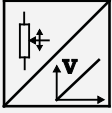
| Signal      | Connector pin no. | Cable color | Cable color |
|-------------|-------------------|-------------|-------------|
| Poti +      | 1                 | white       | brown       |
| Poti GND    | 2                 | brown       | white       |
| Poti slider | 3                 | green       | blue        |
| -           | 4                 | yellow      | black       |
| -           | 5                 | grey        | -           |
| -           | 6                 | pink        | -           |
| -           | 7                 | blue        | -           |
| -           | 8                 | red         | -           |

View to sensor connector

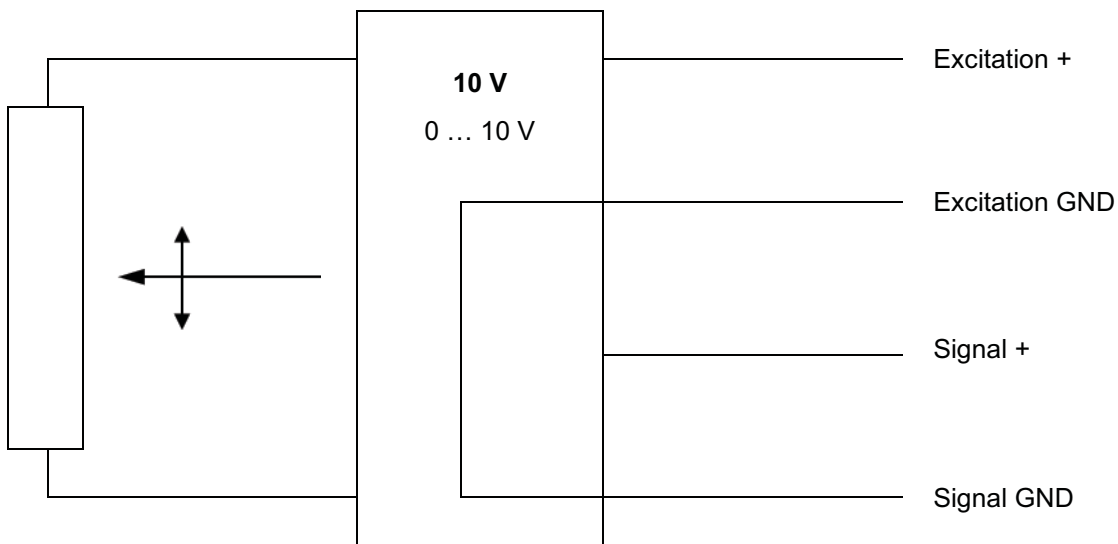


CONN-M12-8F


**Signal conditioner 10V and 10V5**

|   |                         |   |
|---|-------------------------|---|
| Voltage output<br> | Excitation voltage      | 18 ... 27 V DC non stabilized                           |
|   | Excitation current      | 20 mA max.  |
|   | Output voltage          | <b>10V:</b> 0 ... 10 V DC; <b>10V5:</b> 0.5 ... 10 V DC |
|   | Output current          | 2 mA max.   |
|   | Output load             | > 5 kΩ  |
|   | Stability (temperature) | $\pm 50 \times 10^{-6} / ^\circ\text{C}$ f.s.           |
|   | Protection              | Reverse polarity, short circuit                         |
|   | Output noise            | 0.5 mV <sub>RMS</sub>                                   |
|   | Operating temperature   | Refer to output specification                           |
|   | EMC                     | DIN EN 61326-1:2013                                     |

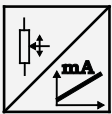
**Output signals**



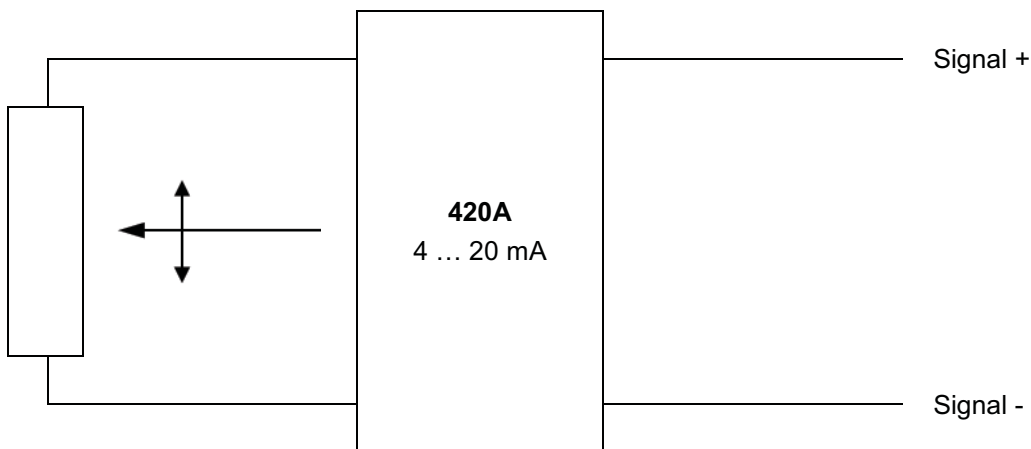
**Signal wiring**

| Signal         | Connector pin no. | Cable color | View to sensor connector   |
|----------------|-------------------|-------------|--|
| Excitation +   | 1                 | white       | <br>CONN-M12-8F |
| Excitation GND | 2                 | brown       |  |
| Signal +       | 3                 | green       |  |
| Signal GND     | 4                 | yellow      |  |
| Not connected  | 5                 | grey        |  |
| Not connected  | 6                 | pink        |  |
| Not connected  | 7                 | blue        |  |
| Not connected  | 8                 | red         |  |

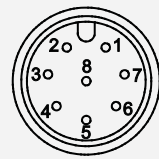
**Signal conditioner 420A**

|  |                         |   |
|--|-------------------------|---|
| Current output (2 wire)<br><br> | Excitation voltage      | 12 ... 27 V DC non stabilized, measured at the sensor terminals |
|  | Excitation current      | 35 mA max.  |
|  | Output current          | 4 ... 20 mA equivalent for 0 ... 100 % range                    |
|  | Stability (temperature) | $\pm 100 \times 10^{-6} / ^\circ\text{C}$ f.s.                  |
|  | Protection              | Reversed polarity, short circuit                                |
|  | Output noise            | 0.5 mV <sub>eff</sub>   |
|  | Operating temperature   | Refer to output specification                                   |
|  | EMC                     | DIN EN 61326-1:2013   |

**Output signals**

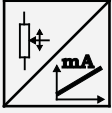


**Signal wiring**

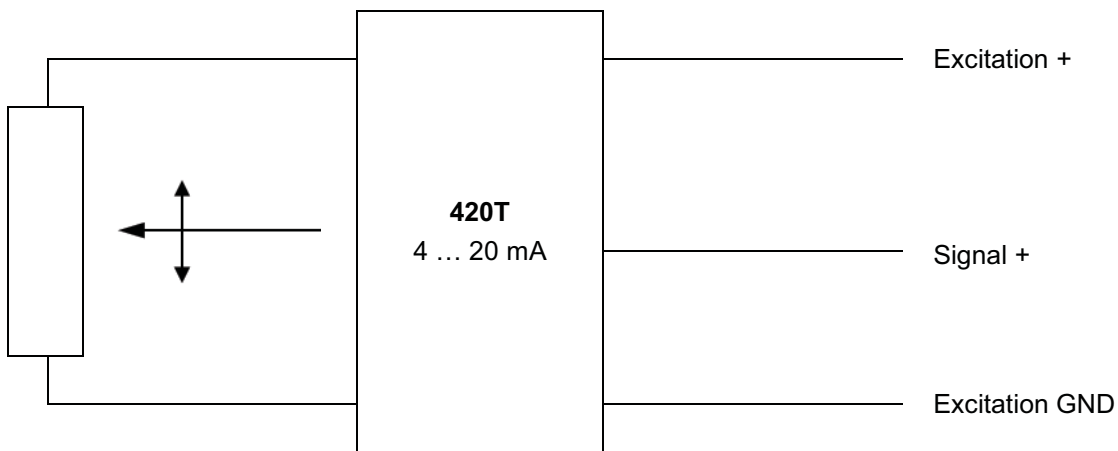
| Signal        | Connector pin no. | Cable color | View to sensor connector   |
|---------------|-------------------|-------------|--|
| Signal +      | 1                 | white       | <br>CONN-M12-8F |
| Signal -      | 2                 | brown       |  |
| Not connected | 3                 | green       |  |
| Not connected | 4                 | yellow      |  |
| Not connected | 5                 | grey        |  |
| Not connected | 6                 | pink        |  |
| Not connected | 7                 | blue        |  |
| Not connected | 8                 | red         |  |




**Signal conditioner 420T**

|  |                         |   |
|--|-------------------------|---|
| Current output (3 wire)<br> | Excitation voltage      | 18 ... 27 V DC non stabilized                 |
|  | Excitation curren       | 40 mA max.                                    |
|  | Load resistor           | 350 Ω max.                                    |
|  | Output current          | 4 ... 20 mA equivalent for 0 ... 100 % range  |
|  | Stability (temperature) | $\pm 50 \times 10^{-6} / ^\circ\text{C}$ f.s. |
|  | Protection              | Reverse polarity, short circuit               |
|  | Output noise            | 0.5 mV <sub>RMS</sub>                         |
|  | Operating temperature   | Refer to output specification                 |
|  | EMC                     | DIN EN 61326-1:2013                           |

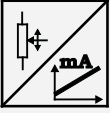
**Output signals**



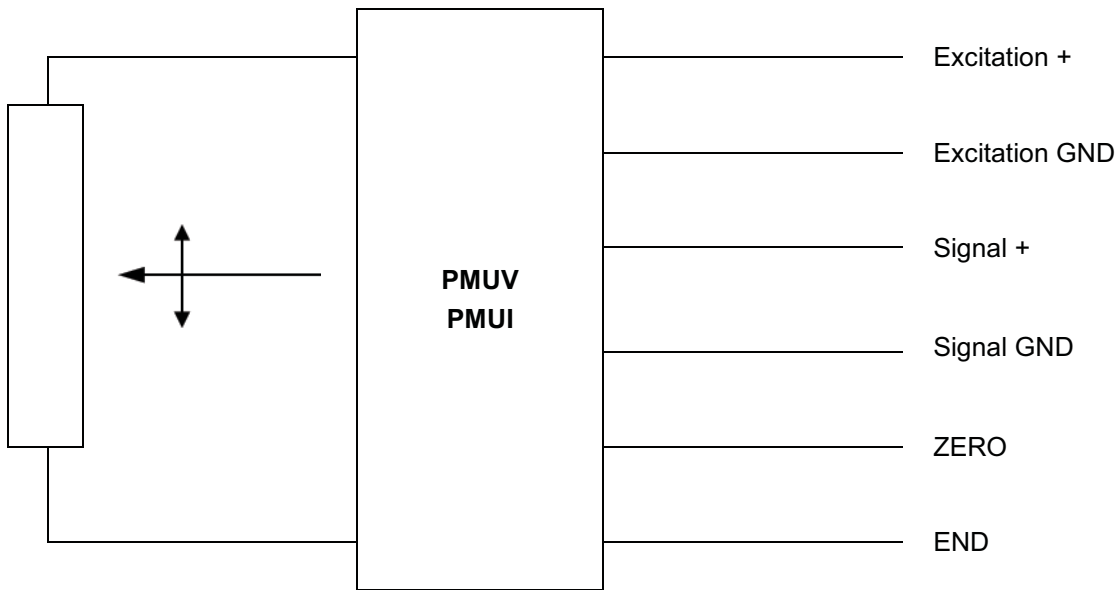
**Signal wiring**

| Signal         | Connector pin no. | Cable color | View to sensor connector  |
|----------------|-------------------|-------------|---|
| Excitation +   | 1                 | white       |  |
| Excitation GND | 2                 | brown       |   |
| Signal +       | 3                 | green       |   |
| Not connected  | 4                 | yellow      |   |
| Not connected  | 5                 | grey        |   |
| Not connected  | 6                 | pink        |   |
| Not connected  | 7                 | blue        |   |
| Not connected  | 8                 | red         |   |


**Signal conditioner PMUI / PMUV**

|  |                                      |                                   |
|--|--------------------------------------|-----------------------------------|
| Voltage or current output<br>(3 wire)<br><br> | Excitation voltage                   | 18 ... 27 V DC                    |
|  | Excitation current                   | 50 mA max.                        |
|  | Voltage output <b>PMUV</b>           | 0 ... 10 V                        |
|  | Output current                       | 10 mA max.                        |
|  | Output load                          | 1 kΩ min.                         |
|  | Current output <b>PMUI</b>           | 4 ... 20 mA (3 wire)              |
|  | Working resistance                   | 500 Ω max.                        |
|  | Scaling                              |                                   |
|  | Activation of offset and gain adjust | Connect with excitation GND (0 V) |
|  | Scalable range                       | 90 % max. f.s.                    |
|  | Stability (temperature)              | ±50 x 10 <sup>-6</sup> / °C f.s.  |
|  | Operating temperature                | Refer to output specification     |
|  | Protection                           | Reversed polarity, short circuit  |
|  | EMC                                  | DIN EN 61326-1:2013               |


**Output signals**



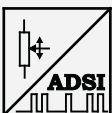
**Signal wiring PMUV / PMUI**

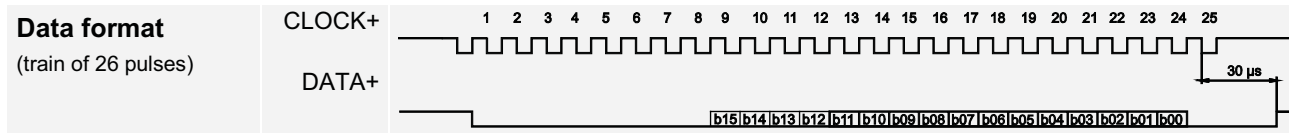
| Signal         | Connector pin no. | Cable color | View to sensor connector   |
|----------------|-------------------|-------------|--|
| Excitation +   | 1                 | white       |  <p>CONN-M12-8F</p> |
| Excitation GND | 2                 | brown       |  |
| Signal +       | 3                 | green       |  |
| Signal GND     | 4                 | yellow      |  |
| Not connected  | 5                 | grey        |  |
| Not connected  | 6                 | pink        |  |
| ZERO           | 7                 | blue        |  |
| END            | 8                 | red         |  |

**Signal wiring PMUI2**

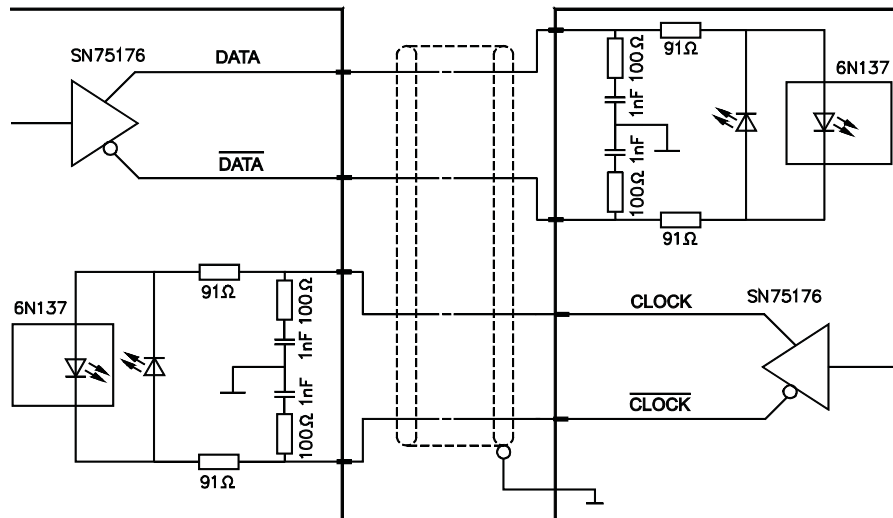
| Signal         | Connector pin no. | Cable color | View to sensor connector   |
|----------------|-------------------|-------------|--|
| Excitation +   | 1                 | white       |  <p>CONN-M12-8F</p> |
| Excitation GND | 2                 | brown       |  |
| Not connected  | 3                 | green       |  |
| Not connected  | 4                 | yellow      |  |
| Signal +       | 5                 | grey        |  |
| Signal GND     | 6                 | pink        |  |
| ZERO           | 7                 | blue        |  |
| END            | 8                 | red         |  |

**Signal conditioner ADSI**

|  |                            |   |
|--|----------------------------|---|
| A/D converted<br>synchronous serial<br> | Excitation volatge         | 11 ... 27 V DC  |
|  | Excitation current         | 200 mA max.   |
|  | Interface                  | EIA RS422, RS485, short-circuit proof   |
|  | Clock frequency            | 70 ... 500 kHz  |
|  | Code                       | Gray-Code, continuous progression   |
|  | Delay between pulse trains | 30 µs min.  |
|  | Resolution                 | ADSI16: 16 bit (65536 counts) f.s.<br>ADSI14: 14 bit (16384 counts) f.s.<br>ADSI: 12 bit (4096 counts) f.s. |
|  | Stability (temperature)    | $\pm 50 \times 10^{-6} / ^\circ\text{C}$ f.s.   |
|  | Operating temperature      | -20 ... +85 °C  |
|  | EMC                        | DIN EN 61326-1:2013   |



**Recommended processing circuit**



| Transmission rate | Cable length | Baud rate |
|-------------------|--------------|-----------|
|                   | < 50 m       | < 300 kHz |
|                   | < 100 m      | < 100 kHz |

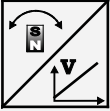
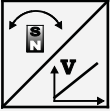
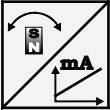
**Note:**  
Extension of the cable length will reduce the maximum transmission rate.

**Signal wiring**

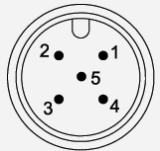
| Signal                    | Connector pin no. | Cable color | View to sensor connector  |
|---------------------------|-------------------|-------------|---|
| Excitation +              | 1                 | white       |  |
| Excitation GND (0 V)      | 2                 | brown       |   |
| CLOCK                     | 3                 | green       |   |
| $\overline{\text{CLOCK}}$ | 4                 | yellow      |   |
| DATA                      | 5                 | grey        |   |
| $\overline{\text{DATA}}$  | 6                 | pink        |   |
| Shield, not connected     | 7                 | blue        |   |
| Not connected             | 8                 | red         |   |

CONN-M12-8F

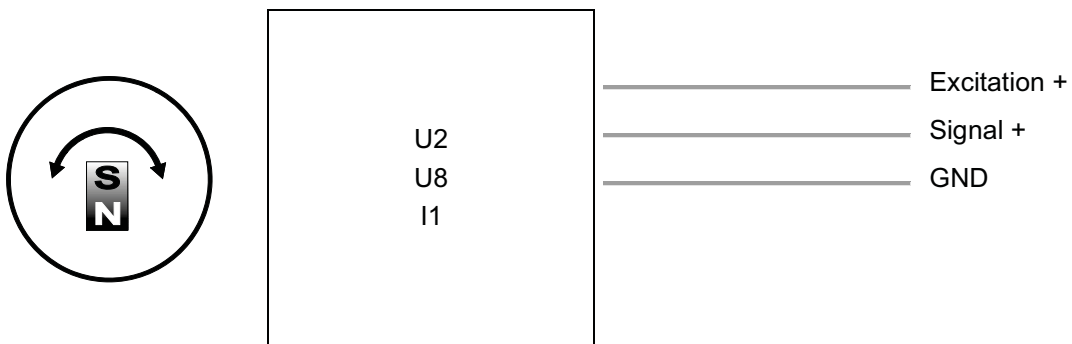
## Magnetic encoder, analog output

|  |                         |   |
|--|-------------------------|---|
| <b>U2</b><br>Voltage output<br>0.5 ... 10 V<br>           | Excitation voltage      | 8 ... 36 V DC   |
|  | Excitation current      | 20 mA typical at 24 V DC<br>38 mA typical at 12 V DC<br>max. 50 mA  |
|  | Output voltage          | 0.5 ... 10 V DC   |
|  | Output current          | 2 mA max.   |
|  | Measuring rate          | 1 kHz standard  |
|  | Stability (temperature) | $\pm 50 \times 10^{-6} / ^\circ\text{C}$ f.s. (typical)             |
|  | Protection              | Reverse polarity, short circuit                                     |
|  | Operating temperature   | See specification of the respective sensor                          |
|  | EMC                     | DIN EN 61326-1:2013   |
| <b>U8</b><br>Voltage output<br>0.5 ... 4.5 V<br>          | Excitation voltage      | 8 ... 36 V DC   |
|  | Excitation current      | 17 mA typical at 24 V DC<br>32 mA typical at 12 V DC<br>50 mA max.  |
|  | Output voltage          | 0.5 ... 4.5 V DC  |
|  | Output current          | 2 mA max.   |
|  | Measuring rate          | 1 kHz standard  |
|  | Stability (temperature) | $\pm 50 \times 10^{-6} / ^\circ\text{C}$ f.s. (typical)             |
|  | Protection              | Reverse polarity, short circuit                                     |
|  | Operating temperature   | See specification of the respective sensor                          |
|  | EMC                     | DIN EN 61326-1:2013   |
| <b>I1</b><br>Current output<br>4 ... 20 mA, 3 wires<br> | Excitation voltage      | 8 ... 36 V DC   |
|  | Excitation current      | typical 36 mA at 24 V DC<br>typical 70 mA at 12 V DC<br>120 mA max. |
|  | Load $R_L$              | 500 $\Omega$ max.   |
|  | Output current          | 4 ... 20 mA   |
|  | Measuring rate          | 1 kHz standard  |
|  | Stability (temperature) | $\pm 50 \times 10^{-6} / ^\circ\text{C}$ f.s. (typical)             |
|  | Protection              | Reverse polarity, short circuit                                     |
|  | Operating temperature   | See specification of the respective sensor                          |
|  | EMC                     | DIN EN 61326-1:2013   |

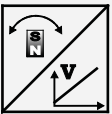
**Signal wiring**

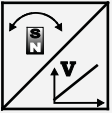
| Signal          | Connector pin no. | Cable connection | View to the sensor connector  |
|-----------------|-------------------|------------------|---|
| Excitation +    | 1                 | brown            |  |
| Signal          | 2                 | white            |   |
| GND             | 3                 | blue             |   |
| Do not connect! | 4                 | black            |   |
| Do not connect! | 5                 | (grey)           |   |

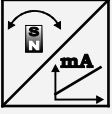
**Signal diagram**



**Magnetic encoder, analog output, programmable**

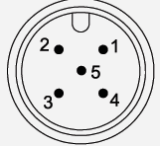
|   |                         |  |
|---|-------------------------|--|
| <p><b>U2/PMU</b></p> <p>Voltage output<br/>0.5 ... 10 V</p>  | Excitation voltage      | 8 ... 36 V DC  |
|   | Excitation current      | 20 mA typical at 24 V DC<br>38 mA typical at 12 V DC<br>max. 50 mA |
|   | Output voltage          | 0,5 ... 10 V DC  |
|   | Output current          | 2 mA max.  |
|   | Measuring rate          | 1 kHz standard   |
|   | Stability (temperature) | $\pm 50 \times 10^{-6} / ^\circ\text{C}$ f.s. (typical)            |
|   | Protection              | Reverse polarity, short circuit                                    |
|   | Operating temperature   | See specification of the respective sensor                         |
|   | EMC                     | EN 61326-1:2013  |

|  |                         |  |
|--|-------------------------|--|
| <p><b>U8/PMU</b></p> <p>Voltage output<br/>0.5 ... 4.5 V</p>  | Excitation voltage      | 8 ... 36 V DC  |
|  | Excitation current      | 17 mA typical at 24 V DC<br>32 mA typical at 12 V DC<br>max. 50 mA |
|  | Output voltage          | 0.5 ... 4.5 V DC   |
|  | Output current          | 2 mA max.  |
|  | Measuring rate          | 1 kHz standard   |
|  | Stabilität (Temperatur) | $\pm 50 \times 10^{-6} / ^\circ\text{C}$ f.s. (typical)            |
|  | Protection              | Reverse polarity, short circuit                                    |
|  | Operating temperature   | See specification of the respective sensor                         |
|  | EMC                     | DIN EN 61326-1:2013  |

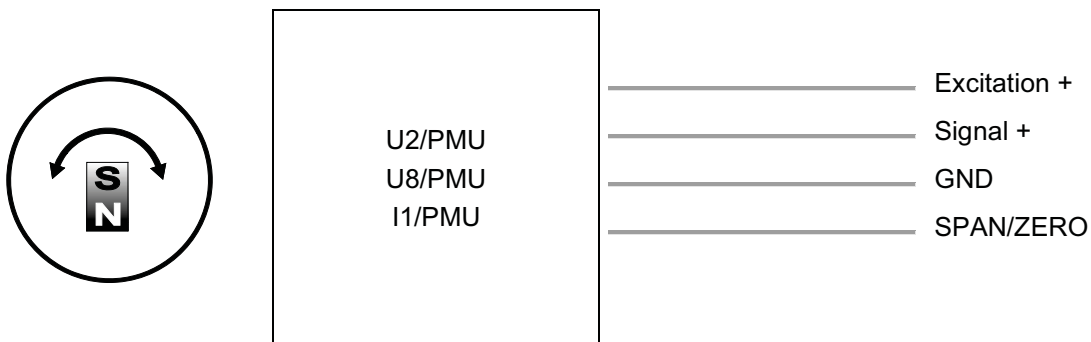
|   |                         |   |
|---|-------------------------|---|
| <p><b>I1/PMU</b></p> <p>Current output<br/>4 ... 20 mA, 3 wires</p>  | Excitation voltage      | 8 ... 36 V DC   |
|   | Excitation current      | typical 36 mA at 24 V DC<br>typical 70 mA at 12 V DC<br>max. 120 mA |
|   | Load $R_L$              | 500 $\Omega$ max.   |
|   | Output current          | 4 ... 20 mA   |
|   | Measuring rate          | 1 kHz standard  |
|   | Stability (temperature) | $\pm 50 \times 10^{-6} / ^\circ\text{C}$ f.s. (typical)             |
|   | Protection              | Reverse polarity, short circuit                                     |
|   | Operating temperature   | See specification of the respective sensor                          |
|   | EMC                     | DIN EN 61326-1:2013   |



**Signal wiring**

| Signal          | Connector pin no. | Cable color | View to sensor connector  |
|-----------------|-------------------|-------------|---|
| Excitation +    | 1                 | brown       |  |
| Signal          | 2                 | white       |   |
| GND             | 3                 | blue        |   |
| Do not connect! | 4                 | black       |   |
| SPAN/ZERO       | 5                 | grey        |   |

**Signal diagram**



**Option -PMU**

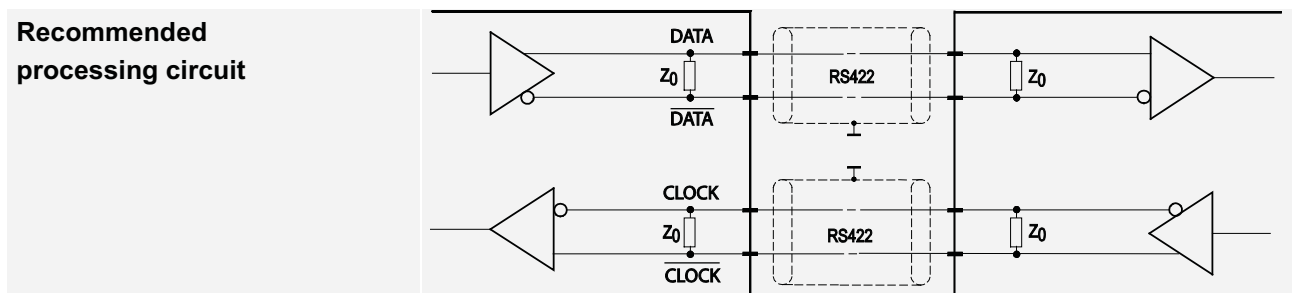
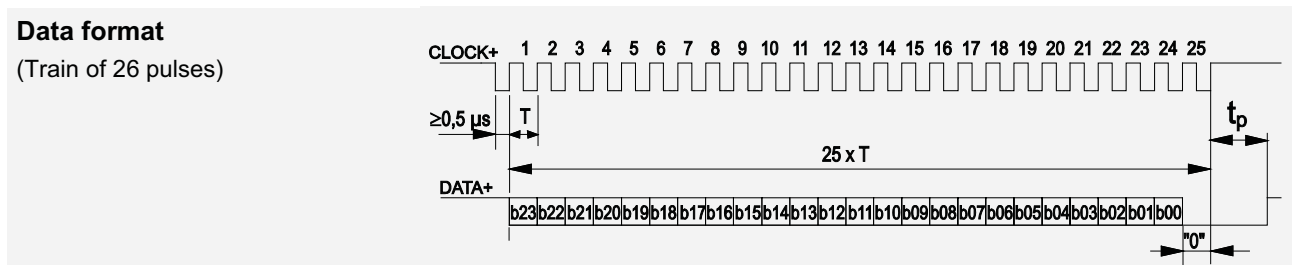
**Programming of the start and end value by the customer**

Teach-In of start and end value for the options U2/PMU, I1/PMU, U8/PMU is provided by a binary signal SPAN/ZERO. At the start position connect signal SPAN/ZERO for a period of 2 ... 3 seconds to GND via push button. At the end position connect signal SPAN/ZERO for a period of 5 ... 6 seconds to GND via a push button. The scaling taught in that way will be stored non-volatile.

To reset the sensor to factory default signal ZERO/END must be connected to ground while powering up the sensor for 2 ... 3 seconds. For the option PMZ only teach-in of ZERO position is possible.

### Magnetic encoder, digital output SSI


|   |                                      |  |
|---|--------------------------------------|--|
| <b>MSSI</b><br>Synchronous serial SSI<br> | Interface                            | EIA RS-422   |
|   | Excitation voltage                   | 8 ... 36 V DC  |
|   | Excitation current                   | 19 mA typical at 24 V DC<br>35 mA typical at 12 V DC<br>max. 80 mA |
|   | Clock frequency                      | 100 kHz ... 500 kHz  |
|   | Code                                 | Gray-Code, continuous progression                                  |
|   | Delay between pulse trains ( $t_p$ ) | 30 $\mu$ s min.  |
|   | Stability (temperature)              | $\pm 50 \times 10^{-6}$ / °C f.s. (typical)                        |
|   | Operating temperature                | See specification of the respective sensor                         |
|   | Protection                           | Reverse polarity, short circuit                                    |
|   | EMC                                  | DIN EN 61326-1:2013  |




| Transmission rate | Cable length | Baud rate   |
|-------------------|--------------|-------------|
|                   | 50 m         | 100-400 kHz |
|                   | 100 m        | 100-300 kHz |

**Note:**  
Extension of the cable length will reduce the maximum transmission rate.

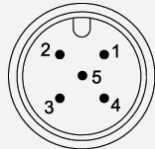
**Signal wiring**

| Signal                    | Connector pin no. | Cable color | View to sensor connector  |
|---------------------------|-------------------|-------------|---|
| Excitation +              | 1                 | white       |  |
| Excitation GND            | 2                 | brown       |   |
| CLOCK                     | 3                 | green       |   |
| $\overline{\text{CLOCK}}$ | 4                 | yellow      |   |
| DATA                      | 5                 | grey        |   |
| $\overline{\text{DATA}}$  | 6                 | pink        |   |
| -                         | 7                 | blue        |   |
| -                         | 8                 | red         |   |


## Magnetic encoder, digital output CANopen

|   |                                     |  |
|---|-------------------------------------|--|
| <b>MCANOP, CANOPR</b><br>CANopen<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          | 1 kHz (asynchronous)   |
|                       | 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 | Signal       | Connector pin no. | View to the sensor connector  |
|---------------|--------------|-------------------|---|
|               | Shield       | 1                 |  |
|               | Excitation + | 2                 |   |
|               | GND          | 3                 |   |
|               | CAN-H        | 4                 |   |
|               | CAN-L        | 5                 |   |

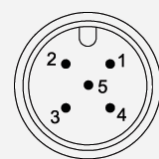
## Magnetic encoder, digital output CAN SAE J1939

|  |                               |                                     |
|--|-------------------------------|-------------------------------------|
| <b>MCANJ1939/R</b><br>CAN SAE J1939<br> | CAN Specification             | ISO 11898, Basic and Full CAN 2.0 B |
|  | Transceiver                   | 24V-compliant, not isolated         |
|  | Communication profile         | SAE J1939                           |
|  | Baud Rate                     | 250 kbit/s                          |
|  | Internal termination resistor | 120 Ω adjustable by the customer    |
|  | Address                       | Default 247d, configurable          |

|                    |                           |             |                      |
|--------------------|---------------------------|-------------|----------------------|
| <b>NAME Fields</b> | Arbitrary address capable | 1           | Yes                  |
|                    | Industry group            | 0           | Global               |
|                    | Vehicle system            | 7Fh (127d)  | Non specific         |
|                    | Vehicle system instance   | 0           |                      |
|                    | Function                  | FFh (255d)  | Non specific         |
|                    | Function instance         | 0           |                      |
|                    | ECU instance              | 0           |                      |
|                    | Manufacturer              | 145h (325d) | Manufacturer ID      |
|                    | Identity number           | 0nnn        | Serial number 21 bit |

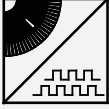
|                                      |                    |           |   |
|--------------------------------------|--------------------|-----------|---|
| <b>Parameter Group Numbers (PGN)</b> | Configuration data | PGN EF00h | Proprietary-A (PDU1 peer-to-peer)                                       |
|                                      | Process data       | PGN FFnnh | Proprietary-B (PDU2 broadcast);<br>nn Group Extension (PS) configurable |

|                       |                         |  |
|-----------------------|-------------------------|--|
| <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, max. 80 mA |
|                       | Measuring rate          | 1 kHz (asynchronous)   |
|                       | 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.)                                       |
| EMV                   | EN 61326-1:2013         |  |

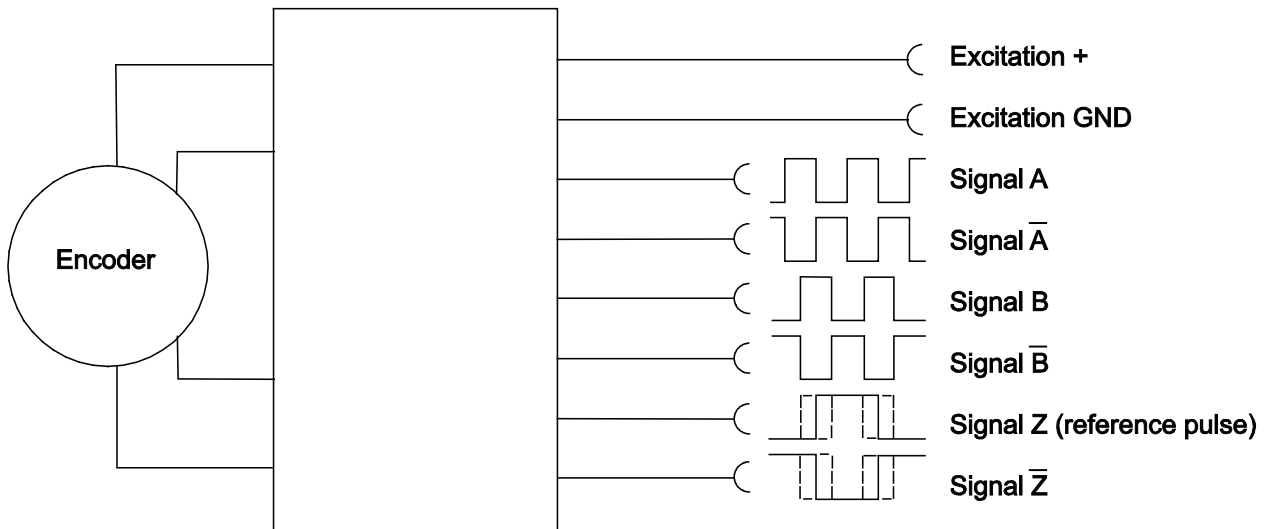
| Signal wiring | Signal       | Connector pin no. | View to the sensor connector  |
|---------------|--------------|-------------------|---|
|               | Shield       | 1                 |  |
|               | Excitation + | 2                 |   |
|               | GND          | 3                 |   |
|               | CAN-H        | 4                 |   |
|               | CAN-L        | 5                 |   |

## Incremental outputs

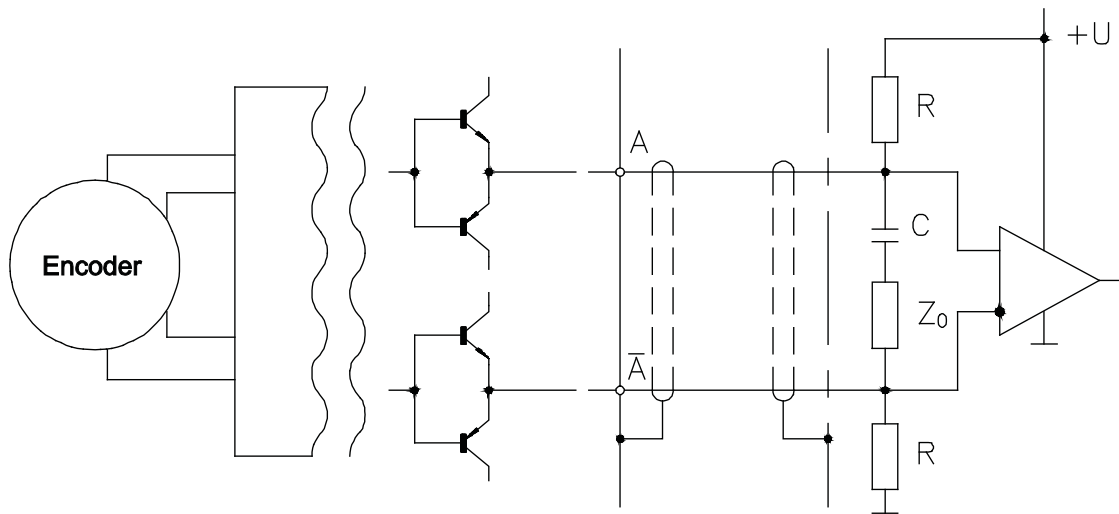
### Signal conditioner PP530

|  |                               |  |
|--|-------------------------------|--|
| Incremental<br> | Excitation voltage            | 5 ... 30 V DC  |
|  | Excitation current            | 25 mA typ. (w/o load), 200 mA max.   |
|  | Output frequency              | 200 kHz max.   |
|  | Output                        | Linedriver, Push-Pull, CMOS, TTL and HTL compatible  |
|  | Output current                | 30 mA max.   |
|  | Output voltage                | Depends on the excitation voltage  |
|  | Saturation voltage high/low   | $I_a < 10 \text{ mA}, U_b 5 \text{ V}/24 \text{ V}: < 0,5 \text{ V}$<br>$I_a < 30 \text{ mA}, U_b 5 \text{ V}/24 \text{ V}: < 1 \text{ V}$ |
|  | Stability (temperature)       | $\pm 20 \times 10^{-6} / ^\circ\text{C}$ f.s. (sensor mechanism)   |
|  | Operation temperature         | -10 ... +70 °C   |
|  | Storage temperature           | -30 ... +80 °C   |
|  | Transition time positive edge | < 200 ns   |
|  | Transition time negative edge | < 200 ns   |
|  | Protection                    | Reverse polarity, short circuit  |
|  | EMC                           | DIN EN 61326-1:2013  |

### Output signals




Recommended processing circuit



Signal wiring

| Signal                     | Connector pin no. | Cable color | View to sensor connector   |
|----------------------------|-------------------|-------------|--|
| Excitation +               | 1                 | white       |  <p>CONN-M12-8F</p> |
| Excitation GND             | 2                 | brown       |  |
| Signal A                   | 4                 | yellow      |  |
| Signal $\bar{A}$           | 6                 | pink        |  |
| Signal B (A + 90°)         | 3                 | green       |  |
| Signal $\bar{B}$           | 5                 | grey        |  |
| Signal Z (reference pulse) | 7                 | blue        |  |
| Signal $\bar{Z}$           | 8                 | red         |  |

**Signal conditioner IE41LI and IE41HI**

|  |                                  |   |                      |
|--|----------------------------------|---|----------------------|
| Incremental<br> |                                  | <b>IE41LI</b>                                       | <b>IE41HI</b>        |
|  | Excitation voltage               | 5 V DC ±10 %  | 10 ... 30 V DC       |
|  | Excitation current               | 150 mA max. (w/o load)                              |                      |
|  | Output frequency                 | 300 kHz max.  | 200 kHz max.         |
|  | Output                           | RS422   | Push-pull antivalent |
|  | Output current                   | ±30 mA max.   | 30 mA                |
|  | Output voltage                   | Depending on the excitation voltage                 |                      |
|  | Stability (temperature)          | ±20 x 10 <sup>-6</sup> / °C f.s. (sensor mechanism) |                      |
|  | Operating temperature            | -10 ... +70 °C                                      |                      |
|  | Protection against short circuit | One channel for 1 s                                 | yes                  |
| EMC  | DIN EN 61326-1:2013              |   |                      |

**Signal wiring WS10**

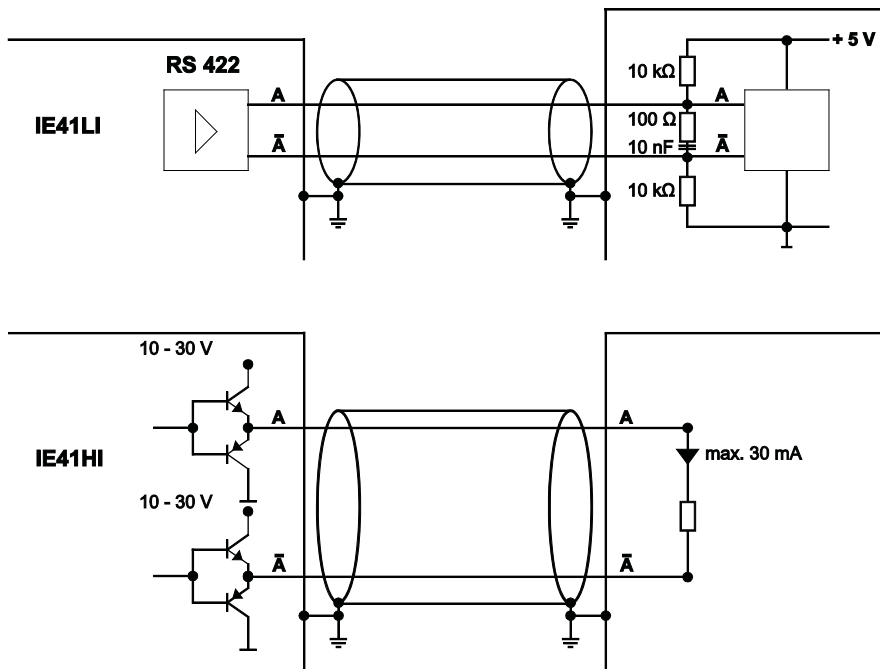
| Signal                     | Connector pin no. | Cable color | View to sensor connector  |
|----------------------------|-------------------|-------------|---|
| Excitation +               | 1                 | white       | <br>CONN-M12-8F |
| Excitation GND             | 2                 | brown       |   |
| Signal A                   | 4                 | yellow      |   |
| Signal $\bar{A}$           | 6                 | pink        |   |
| Signal B (A + 90°)         | 3                 | green       |   |
| Signal $\bar{B}$           | 5                 | grey        |   |
| Signal Z (reference pulse) | 7                 | blue        |   |
| Signal $\bar{Z}$           | 8                 | red         |   |

**Signal wiring WS12**

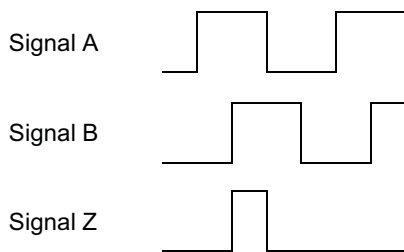
| Signal                     | Connector pin no. | Cable color | View to sensor connector   |
|----------------------------|-------------------|-------------|--|
| Excitation +               | 1                 | white       | <br>CONN-M12-8F |
| Excitation GND             | 2                 | brown       |  |
| Signal A                   | 3                 | green       |  |
| Signal $\bar{A}$           | 5                 | grey        |  |
| Signal B (A + 90°)         | 4                 | yellow      |  |
| Signal $\bar{B}$           | 6                 | pink        |  |
| Signal Z (reference pulse) | 7                 | blue        |  |
| Signal $\bar{Z}$           | 8                 | red         |  |



**Recommended processing circuit**



**Output signals**



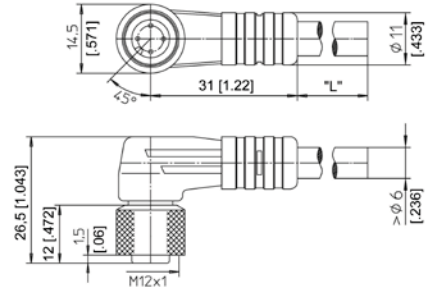
## Accessories

### Connector cable M12, 4 pin (angular coupling)

shielded connector

Suitable for 5-pin  
sensor connectors

The 4-core screened cable is supplied with a mating 4-pin 90° M12 connector at one end and 4 wires at the other end. Available lengths are 2 m, 5 m and 10 m. Wire: cross sectional area 0.34 mm<sup>2</sup>  
Cable diameter: 5.6 ±0.2 mm



#### Order code

|       |  |
|-------|--|
|       | <b>KAB - xM - M12/4F/W - LITZE</b>     |
| IP69: | <b>KAB - xM - M12/4F/W/69K - LITZE</b> |

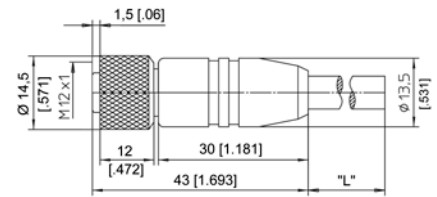
xM = length in m

### Connector cable M12, 4 pin (straight coupling)

shielded connector

Suitable for 5-pin  
sensor connectors

The 4-core screened cable is supplied with a mating 4-pin M12 connector at one end and 4 wires at the other end. Available lengths are 2 m, 5 m and 10 m. Wire: cross sectional area 0.34 mm<sup>2</sup>  
Cable diameter: 5.6 ±0.2 mm



#### Order code

|       |  |
|-------|--|
|       | <b>KAB - xM - M12/4F/G - LITZE</b>     |
| IP69: | <b>KAB - xM - M12/4F/G/69K - LITZE</b> |

xM = length in m

| Signal wiring | Plug connection / cable color |       |      |       |
|---------------|-------------------------------|-------|------|-------|
|               | M12, 4 pin                    | 1     | 2    | 3     |
|               | brown                         | white | blue | black |

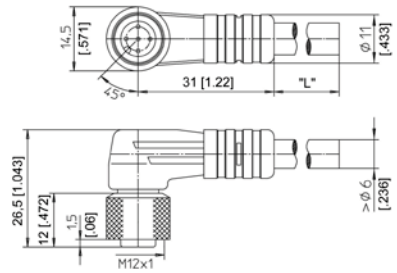
### Applicable for cable carriers

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

**Connector cable M12, 5 pin  
(angular coupling)**

shielded connector

The 5-core screened cable is supplied with a mating 5-pin 90° M12 connector at one end and 4 wires at the other end. Available lengths are 2 m, 5 m and 10 m.  
Wire: cross sectional area 0.34 mm<sup>2</sup>  
Cable diameter: 5.6 ±0.2 mm



**Order code**

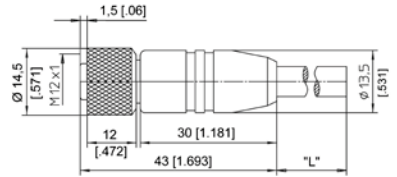
|       |  |
|-------|--|
|       | <b>KAB - xM - M12/5F/W - LITZE</b>     |
| IP69: | <b>KAB - xM - M12/5F/W/69K - LITZE</b> |

xM = length in m

**Connector cable M12, 5 pin  
(straight coupling)**

shielded connector

The 5-core screened cable is supplied with a mating 5-pin M12 connector at one end and 4 wires at the other end. Available lengths are 2 m, 5 m and 10 m.  
Wire: cross sectional area 0.34 mm<sup>2</sup>  
Cable diameter: 5.6 ±0.2 mm



**Order code**

|       |  |
|-------|--|
|       | <b>KAB - xM - M12/5F/G - LITZE</b>     |
| IP69: | <b>KAB - xM - M12/5F/G/69K - LITZE</b> |

xM = length in m

| Signal wiring<br>M12, 5 pin | Plug connection / Cable color |       |      |       |      |
|-----------------------------|-------------------------------|-------|------|-------|------|
|                             | 1                             | 2     | 3    | 4     | 5    |
|                             | brown                         | white | blue | black | grey |

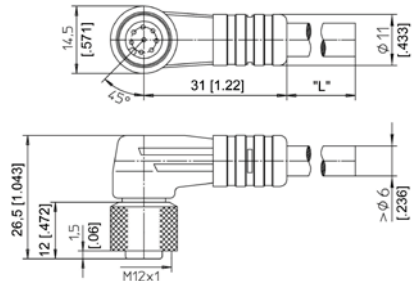
**Applicable for cable carriers**

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

**Connector cable M12, 8 pin  
(angular coupling)**

shielded connector

The 8-lead shielded cable is supplied with a mating 8-pin 90° M12 connector at one end and 8 wires at the other end. Available lengths are 2 m, 5 m and 10 m. Wire: cross sectional area 0.25 mm<sup>2</sup> Cable diameter: 6.3 ±0.2 mm



**Order code**

**KAB - xM - M12/8F/W - LITZE**

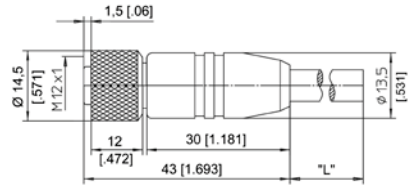
IP69: **KAB - xM - M12/8F/W/69K - LITZE**

xM = length in m

**Connector cable M12, 8 pin  
(straight coupling)**

shielded connector

The 8-lead shielded cable is supplied with a mating 8-pin M12 connector at one end and 8 wires at the other end. Available lengths are 2 m, 5 m and 10 m. Wire: cross sectional area 0.25 mm<sup>2</sup> Cable diameter: 6.3 ±0.2 mm



**Order code**

**KAB - xM - M12/8F/G - LITZE**

IP69: **KAB - xM - M12/8F/G/69K - LITZE**

xM = length in m

| Signal wiring | Plug connection / cable color |       |       |        |      |      |      |     |
|---------------|-------------------------------|-------|-------|--------|------|------|------|-----|
|               | 1                             | 2     | 3     | 4      | 5    | 6    | 7    | 8   |
| M12, 8 pin    | white                         | brown | green | yellow | grey | pink | blue | red |

**Applicable for cable carriers**

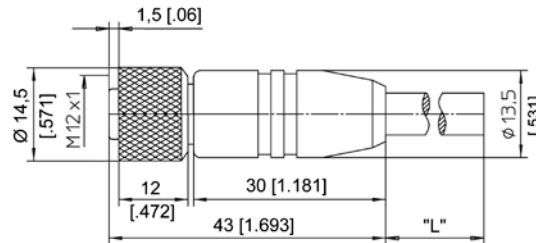
|                        |                     |
|------------------------|---------------------|
| Maximum movement speed | 3 m/s               |
| Maximum acceleration   | 5 m/s <sup>2</sup>  |
| Minimum bending radius | 10 x cable diameter |

**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**

**KAB - xM - M12/5F/G - M12/5M/G - CAN**

IP69: **KAB - xM - M12/5F/G/69K - M12/5M/G/69K - CAN**

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 |

**Plug-in connector M12, 8 pin (straight coupling)**

Order code:

**CONN-M12-8F-G**

Cable diameter  
max. 6 ... 8 mm

