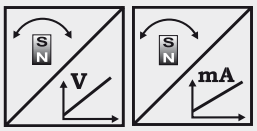
POSITAPE®
WB10ZG
Analog Output

Position sensor with measuring tape

- **Measurement range up to 2000 mm**
- **Protection class IP65**
- **Stainless steel measuring tape**
- **Analog output**



Specifications

Outputs	U2 U8 I1	Voltage 0.5 ... 10 V Voltage 0.5 ... 4.5 V Current 4 ... 20 mA, 3 wire
Resolution		<0,05 mm
Linearity		±0.10 % f. s. (standard); optional ±0.05 %
Sensing device		Magnetic absolute encoder
Material		Zinc diecast, aluminium, plastic and stainless steel; Tape: stainless steel, 10 mm wide, 0.08 mm thick
Protection class		IP65 (with mating connector)
Connection		Connector M12, 5 pin
Shock		EN 60068-2-27:2010, 100 g/11 ms, 100 shocks
Vibration		EN 60068-2-6:2008, 20 g 10 Hz-2 kHz, 10 cycles
Temperature range		-20 ... +85 °C

Order code WB10ZG

WB10ZG – □ – □ – □ – □ – □ – **BAB1**

Model name

Measurement range (in mm)
250 / 375 / 500 / 750 / 1000 / 1250 / 1500 / 2000

Output
U2 = 0.5 ... 10 V signal conditioner
U8 = 0.5 ... 4.5 V signal conditioner
I1 = 4 ... 20 mA signal conditioner

Signal characteristics
A = increasing (eg. 4 ... 20 mA)
D = decreasing (eg. 20 ... 4 mA)

Linearity
L10 = ±0.10 % (standard)
L05 = ±0.05 % (optional, only for measurement ranges ≥1000 mm)

Connection
M12A5 = connector M12, 5 pin

Dust wiper
BAB1

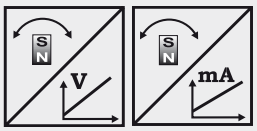
Order code connector cable see page 12

Order example: WB10ZG - 1250 - U2 - A - L10 - M12A5 - BAB1

POSITAPE®
WB10ZG
Analog output, programmable

Position sensor with measuring tape

- **Measurement range up to 2000 mm**
- **Protection class IP65**
- **Stainless steel measuring tape**
- **Analog output, programmable**



Specifications

Output	U2/PMU U8/PMU I1/PMU	Voltage 0.5 ... 10 V, programmable Voltage 0.5 ... 4.5 V, programmable Current 4 ... 20 mA, 3 wire, programmable
Resolution		<0,05 mm
Linearity		±0.10 % f. s. (standard); optional ±0.05 %
Sensing device		Magnetic absolute encoder
Material		Zinc diecast, aluminium, plastic and stainless steel; Tape: stainless steel, 10 mm wide, 0.08 mm thick
Protection class		IP65 (with mating connector only)
Connection		Connector M12, 5 pin
Shock		EN 60068-2-27:2010, 100 g/11 ms, 100 shocks
Vibration		EN 60068-2-6:2008, 20 g 10 Hz-2 kHz, 10 cycles
Temperature range		-20 ... +85 °C

Order code WB10ZG

WB10ZG – □ – □ – □ – □ – □ – **BAB1**

Model name

Measurement range (in mm)
250 / 375 / 500 / 750 / 1000 / 1250 / 1500 / 2000

Output

U2/PMU	= 0.5 ... 10 V signal conditioner, programmable
U8/PMU	= 0.5 ... 4.5 V signal conditioner, programmable
I1/PMU	= 4 ... 20 mA signal conditioner, programmable

Signal characteristics

A	= increasing (eg. 4 ... 20 mA)
D	= decreasing (eg. 20 ... 4 mA)

Linearity

L10	= ±0.10 % (standard)
L05	= ±0.05 % (optional, only for measurement ranges ≥1000 mm)

Connection

M12A5	= Connector M12, 5 pin

Dust wiper
BAB1

Order code connector cable see page 13

Order example: WB10ZG - 2000 - U2/PMU - A - L10 - M12A5 - BAB1

POSITAPE®
WB10ZG
Digital Output SSI

Position sensor with measuring tape

- **Measurement range up to 2000 mm**
- **Protection class IP65**
- **Stainless steel measuring tape**
- **Digital output SSI**

Specifications		
	Outputs	Synchronous serial interface (SSI)
	Resolution	up to 10 µm
	Linearity	±0.10 % f. s. (standard); optional ±0.05 %
	Sensing device	Magnetic absolute encoder
	Material	Zinc diecast, aluminium and plastic Tape: stainless steel, 10 mm wide, 0.08 mm thick
	Protection class	IP65 (with mating connector only)
	Connection	Connector M12, 8 pin
	Shock	EN 60068-2-27:2010, 100 g/11 ms, 100 shocks
	Vibration	EN 60068-2-6:2008, 20 g 10 Hz-2 kHz, 10 cycles
	Temperature range	-20 ... +85 °C

Order code WB10ZG

WB10ZG – □ – □ – □ – □ – □ – **BAB1**

Model name

Measurement range (in mm)
1000 / 2000

Resolution (in µm)
10 / 50 / 100

Outputs
MSSI = SSI synchronous serial interface

Linearity
L10 = ±0.10% (standard)
L05 = ±0.05% (optional)

Connection
M12A8 = Connector M12, 8 pin

Dust wiper
BAB1

Order code connector cable see page 14

Order example: WB10ZG - 2000 - 100 - MSSI - L10 - M12A8 - BAB1

POSITAPE®
WB10ZG
Digital output CANopen

Position sensor with measuring tape

- **Measurement range up to 2000 mm**
- **Protection class IP65**
- **Stainless steel measuring tape**
- **Digital output CANopen or CAN SAE J1939**

Specifications		
	Outputs	CANopen or CAN SAE J1939
	Resolution	setting via CAN Bus
	Linearity	±0.10 % f. s. (standard); optional ±0.05 %
	Sensing device	Magnetic absolute encoder
	Material	Zinc diecast, aluminium, plastic and stainless steel; Tape: stainless steel, 10 mm wide, 0.08 mm thick
	Protection class	IP65 (with mating connector only)
	Connection	Connector M12, 5 pin
	Shock	EN 60068-2-27:2010, 100 g/11 ms, 100 shocks
	Vibration	EN 60068-2-6:2008, 20 g 10 Hz-2 kHz, 10 cycles
	Temperature range	-20 ... +85 °C

Order code WB10ZG

WB10ZG – □ – □ – □ – □ – BAB1

Model name

Measurement range (in mm)
1000 / 2000

Output
MCANOP = CANopen
MCANJ1939 = CAN SAE J1939

Linearity
L10 = 0.10% (standard)
L05 = 0.05% (optional)

Connection
M12/CAN = Connector M12, 5 pin

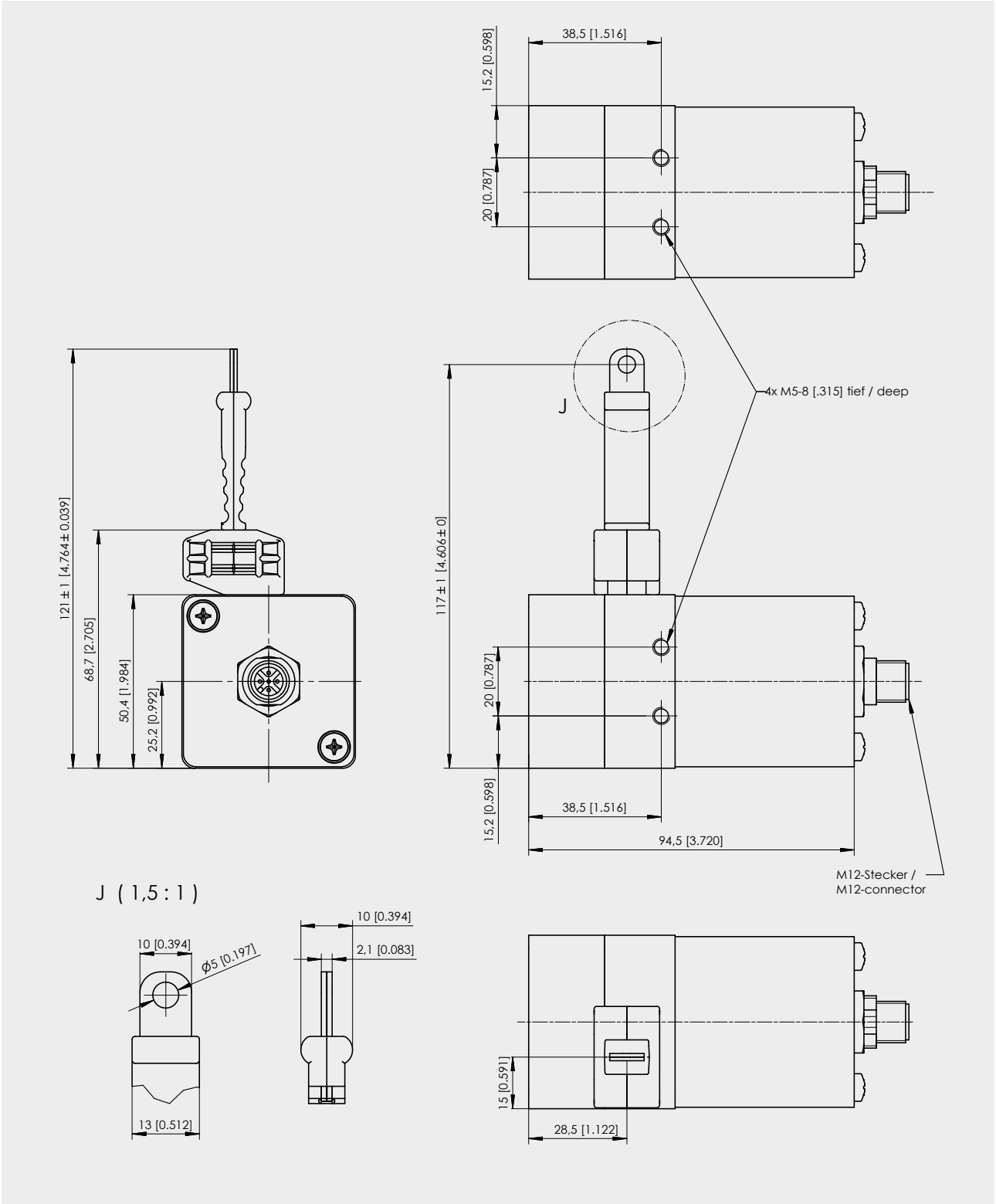
Dust wiper
BAB1

Order code connector cable see page 15

Order example: WB10ZG - 2000 - MCANOP - L10 - M12/CAN - BAB1

POSITAPE®
WB10ZG
Dimensions

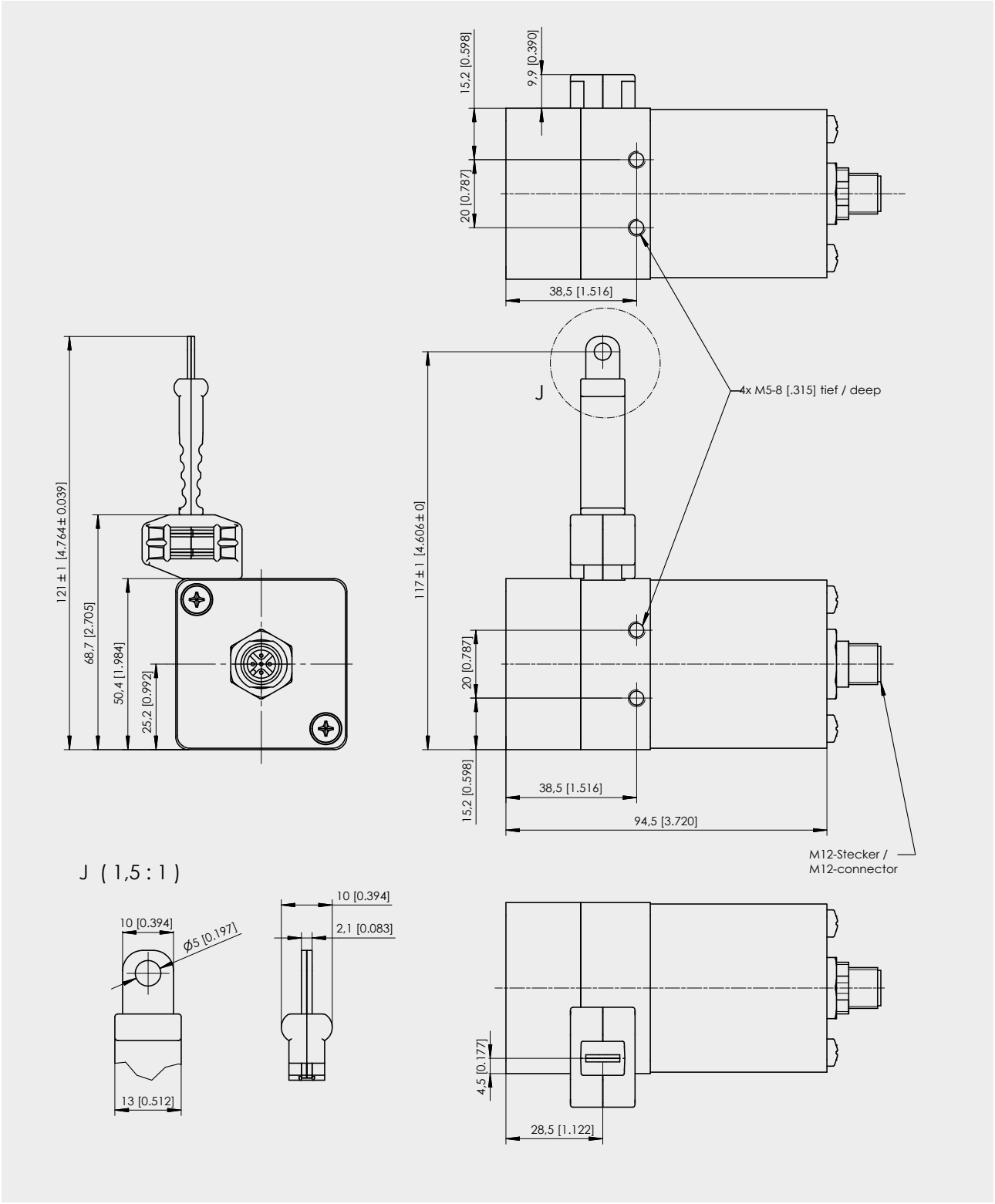
Outline drawing WB10ZG
up to 1000 mm



Dimensions in mm [inch]

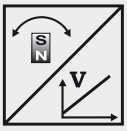
Dimensions informative only.
For guaranteed dimensions consult factory.

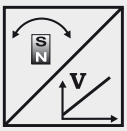
Outline drawing WB10ZG
1250 / 1500 / 2000 mm

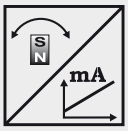


Dimensions in mm [inch]

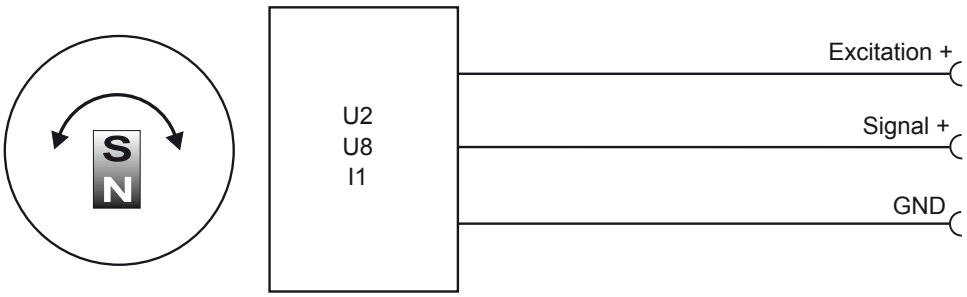
Dimensions informative only.
For guaranteed dimensions consult factory.

U2 Voltage output 0.5 ... 10 V 	Excitation voltage	10 ... 36 V DC
	Excitation current	typ. 20 mA at 24 V DC typ. 20 mA at 24 V DC max. 60 mA
	Output voltage	0,5 ... 10 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6}/°C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	EN 61326-1:2013

U8 Voltage output 0.5 ... 4.5 V 	Excitation voltage	10 ... 36 V DC
	Excitation current	typ. 17 mA at 24 V DC typ. 32mA at 12 V DC max. 60 mA
	Output voltage	0,5 ... 4,5 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6}/°C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	EN 61326-1:2013

I1 Current output 4 ... 20 mA, 3 wire 	Excitation voltage	10 ... 36 V DC
	Excitation current	typ. 36 mA at 24 V DC typ. 70 mA at 12 V DC max. 100 mA
	Load R_L	500 Ω max.
	Output current	4 ... 20 mA
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6}/°C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	EN 61326-1:2013

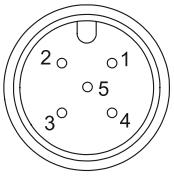
Output signals



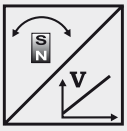
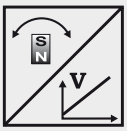
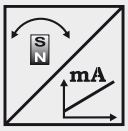
Signal wiring/ connection

Output signal	Connector pin	Cable wire color
Excitation +	1	brown
Signal	2	white
GND	3	blue
Do not connect!	4	black
Do not connect!	5	(grey)

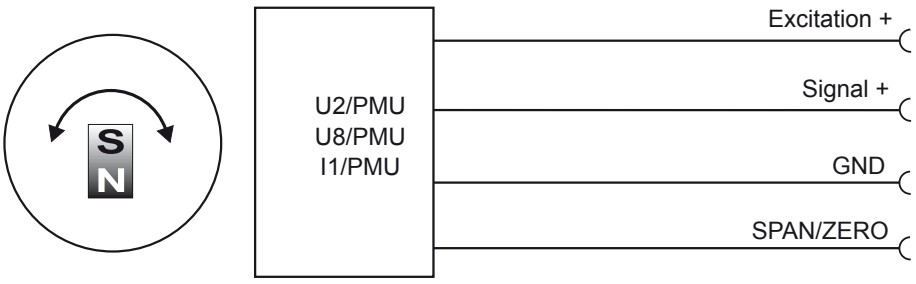
View to sensor connector



POSITAPE®
U2/PMU, U8/PMU and I1/PMU
Analog output, programmable

U2/PMU Voltage output 0.5 ... 10 V 	Excitation voltage	10 ... 36 V DC
	Excitation current	typ. 20 mA at 24 V DC, typ. 38 mA at 12 V DC, max. 60 mA
	Output voltage	0,5 ... 10 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6}/°C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	EN 61326-1:2013
U8/PMU Voltage output 0.5 ... 4,5 V 	Excitation voltage	10 ... 36 V DC
	Excitation current	typ. 17 mA at 24 V DC, typ. 32 mA at 12 V DC, max. 60 mA
	Output voltage	0,5 ... 4,5 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6}/°C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	EN 61326-1:2013
I1/PMU Current output 4 ... 20 mA, 3 wire 	Excitation voltage	10 ... 36 V DC
	Excitation current	typ. 36 mA at 24 V DC, typ. 70 mA at 12 V DC, max. 100 mA
	Load R_L	500 Ω max.
	Output current	4 ... 20 mA
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6}/°C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	EN 61326-1:2013

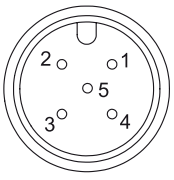
Output signals



Signal wiring/ connection

Signal	Connector pin	Cable wire color
Excitation +	1	brown
Signal	2	white
GND	3	blue
Do not connect!	4	black
SPAN/ZERO	5	grey

View to sensor connector



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 teached positions will be stored non-volatile.

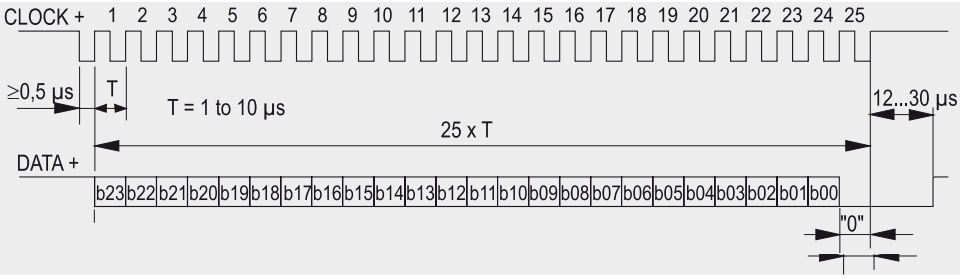
To reset the sensor to factory default signal ZERO/END must be connected to ground while powering up the sensor for 2 … 3 seconds.

POSITAPE®
MSSI
SSI Output

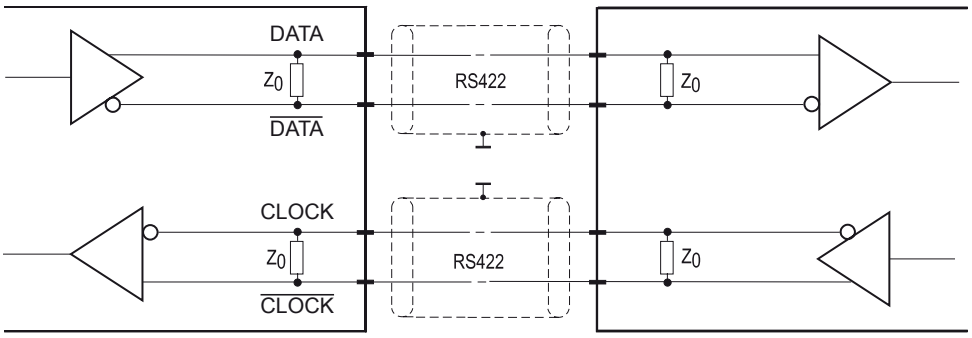
MSSI
Synchronous serial SSI

Interface	EIA RS-422
Excitation voltage	8 ... 36 V DC
Excitation current	typ. 19 mA at 24 V DC, typ. 35 mA at 12 V DC, 80 mA max.
Clock frequency	100 kHz ... 500 kHz
Code	Gray-Code, continuous progression, 24 bit
Delay between pulse trains	20 µs min.
Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical)
Operating temperature	See specification of the respective sensor
Protection	Short circuit
EMC	EN 61326-1:2013

Data format
(train of 26 pulses)



Recommended processing circuit



Transmission rate

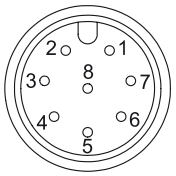
Cable length	Baud rate
50 m	100-400 kHz
100 m	100-300 kHz

Signal wiring/ connection

Signal name	Connector pin
Excitation +	1
Excitation GND	2
CLOCK	3
$\overline{\text{CLOCK}}$	4
DATA	5
$\overline{\text{DATA}}$	6
-	7
-	8

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

View to sensor connector



POSITAPE®
MCANOP
Output CANopen

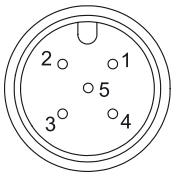
MCANOP CANopen	Communication profile	CANopen CiA 301 V 4.02, Slave
	Encoder profile	Encoder CiA 406 V 3.2
	Error Control	Node Guarding, Heartbeat, Emergency Message
	Node ID	Adjustable via LSS; default: 127
	PDO	3 TxPDO, 0 RxPDO, no linking, static mapping
	PDO Modes	Event-/Time triggered, Remote-request, Sync cyclic/acyclic
	SDO	1 server, 0 client
	CAM	2 cams
	Certified	Yes
	Transmission rates	50 kbit to 1 Mbit, adjustable via LSS; default: 125 kbit
	Bus connection	M12 connector, 5 pins
	Integrated bus terminating resistor	120Ω adjustable by the customer
	Bus, galvanic isolated	No

Specifications	Excitation voltage	8 ... 36 V DC
	Excitation current	typ. 20 mA at 24 V typ. 40 mA at 12 V max. 80 mA
	Measuring rate	1 kHz (asynchronous)
	Stability (temperature)	±50 x 10^{-6} / °C f.s.
	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/ connection

Signal name	Connector pin no.
Shield	1
Excitation +	2
GND	3
CAN-H	4
CAN-L	5

View to sensor connector



POSITAPE®
MMCANJ1939
Output CAN SAE J1939

MCANJ1939 CAN SAE J1939	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 temination resistor	120 Ω adjustable by the customer
	Address	Default 247d, configurable

NAME Fields	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

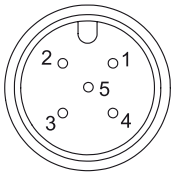
Parameter Group Numbers (PGN)	Configuration data	PGN EF00h	Proprietary-A (PDU1 peer-to-peer)
	Process data	PGN FFnnh	Proprietary-B (PDU2 broadcast); nn Group Extension (PS) configurable

Specifications	Excitation voltage	8 ... 36 V DC
	Excitation current	typ. 20 mA at 24 V typ. 40 mA at 12 V max. 80 mA
	Measuring rate	1 kHz (asynchronous)
	Stability (temperature)	±50 x 10^{-6} / °C f.s.
	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 / connection

Signal name	Connector pin no.
Shield	1
Excitation +	2
GND	3
CAN-H	4
CAN-L	5

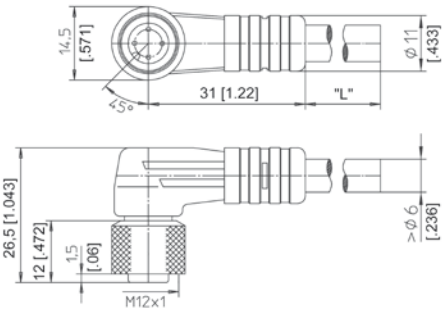
View to sensor connector



Connector cable
M12, 4 pin

Suitable for 5-pin sensor connectors

The 4-lead shielded 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 mm².



Order code:

KAB - XM - M12/4F/W - LITZE

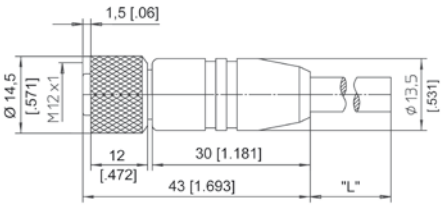
IP69K: **KAB - XM - M12/4F/W/69K - LITZE**

Length in m

Connector cable
M12, 4 pin

Suitable for 5-pin sensor connectors

The 4-lead shielded 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 mm².



Order code:

KAB - XM - M12/4F/G - LITZE

IP69K: **KAB - XM - M12/4F/G/69K - LITZE**

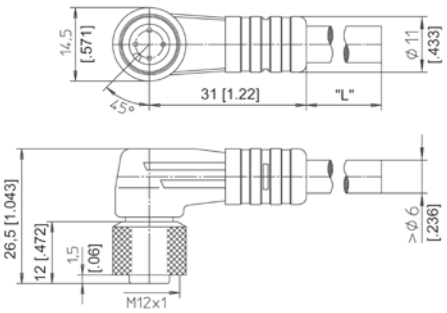
Length in m

Signal wiring M12, 4 pin

Connector pin / cable color			
1	2	3	4
brown	white	blue	black

Connector cable
M12, 5 pin

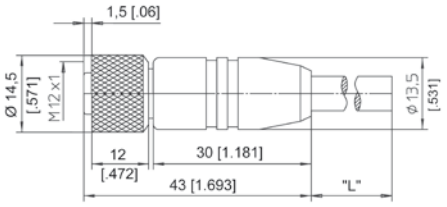
The 5-lead shielded cable is supplied with a mating 5-pin 90° M12 connector at one end and 5 wires at the other end. Available lengths are 2 m, 5 m and 10 m. Wire: cross sectional area 0.34 mm².
Order code:



KAB - XM - M12/5F/W - LITZE
IP69K: **KAB - XM - M12/5F/W/69K - LITZE**
Length in m

Connector cable
M12, 5 pin

The 5-lead shielded cable is supplied with a mating 5-pin M12 connector at one end and 5 wires at the other end. Available lengths are 2 m, 5 m and 10 m. Wire: cross sectional area 0.34 mm².
Order code:



KAB - XM - M12/5F/G - LITZE
IP69K: **KAB - XM - M12/5F/G/69K - LITZE**
Length in m

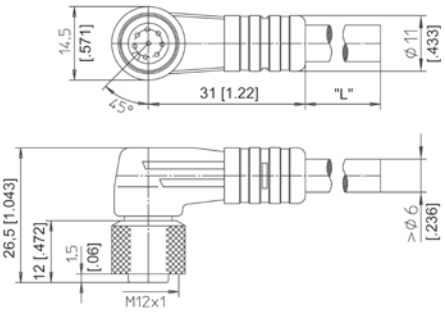
Signal wiring
M12, 5 pin

Connector pin / cable color				
1	2	3	4	5
brown	white	blue	black	grey

Connector cable
M12, 8 pin

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 mm².
Order code:

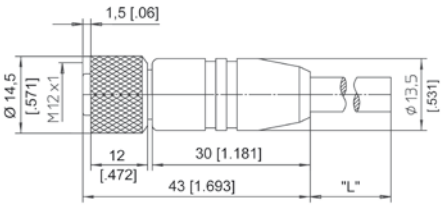
KAB - XM - M12/8F/W - LITZE
IP69K: **KAB - XM - M12/8F/W/69K - LITZE**
Length in m



Connector cable
M12, 8 pin

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 mm².
Order code:

KAB - XM - M12/8F/G - LITZE
IP69K: **KAB - XM - M12/8F/G/69K - LITZE**
Length in m

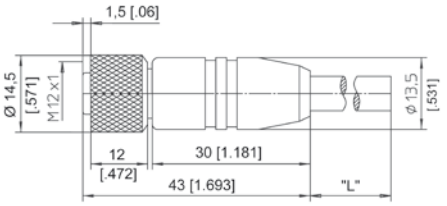


Signal wiring M12, 8 pin

Connector pin / cable color							
1	2	3	4	5	6	7	8
white	brown	green	yellow	grey	pink	blue	red

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, 2, 5 and 10 m.



Order code:

KAB - XM - M12/5F/G - M12/5M/G - CAN

IP69K: **KAB - XM - M12/5F/G/69K - M12/5M/G/69K - CAN**

Length in m

T-piece for bus cable
M12, 5 pin
CAN bus

Order code:

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

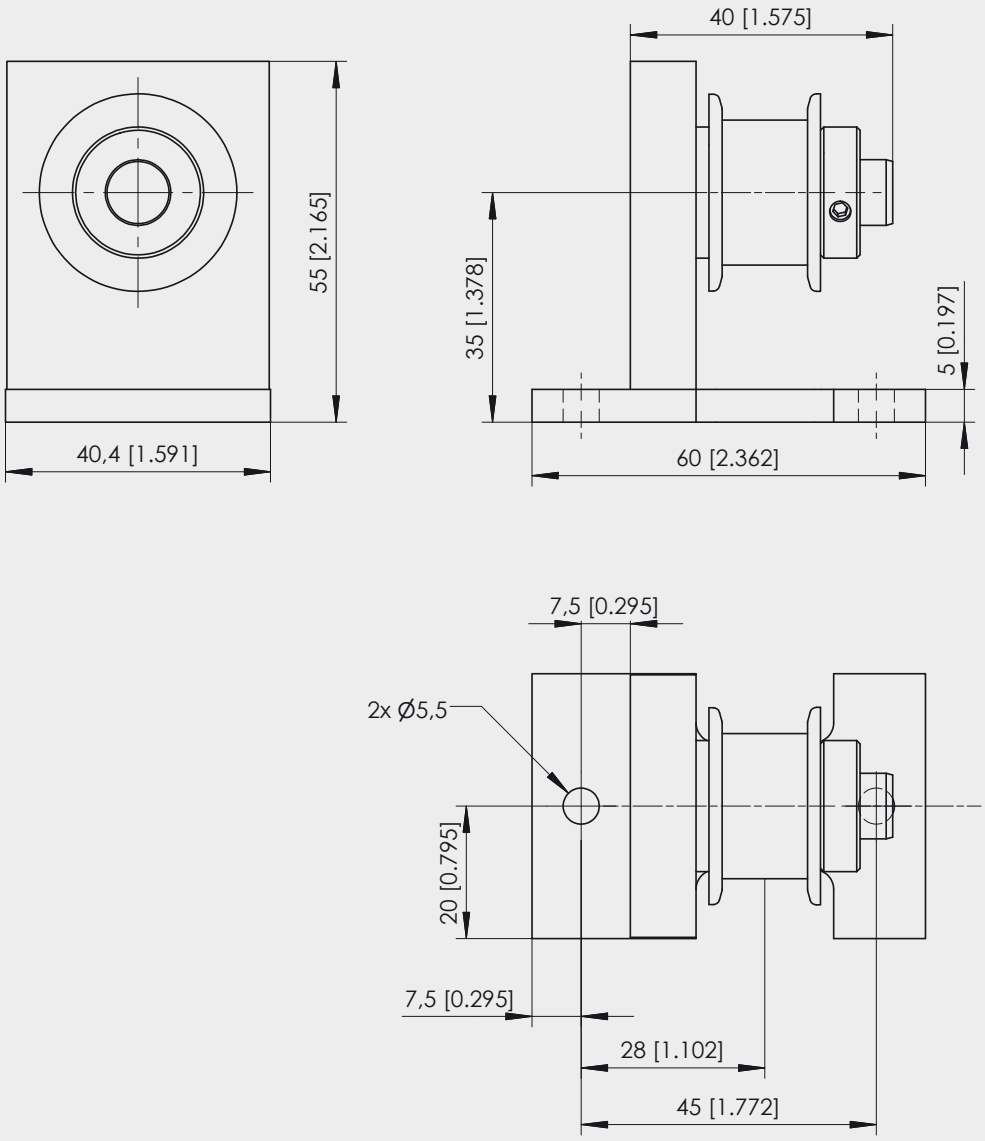
Terminating resistance
5 pin M12
CAN bus

Order code:

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

Tape pulley WBR1

Order code: **WBR1**



Dimensions in mm [inch]

Dimensions informative only.
For guaranteed dimensions consult factory.