

# MAGNETIC SCALES

Links to further documents for this series:

[Installation guide sensor MXW11](#)

[Installation guide sensor MXI11](#)

[Installation guide magnetic tape](#)



## MXW11 & MXI11 SERIES

### Key-Features:

- Measurement ranges up to 30 m
- Linearity up to  $\pm 15 \mu\text{m}$
- Resolution up to  $0.5 \mu\text{m}$
- Output: Sine/Cosine  $1 V_{pp}$  (MXW) or HTL/TTL (MXI)
- Unaffected by dust, debris or liquids
- Protection class IP67
- Operating temperature range from  $-25 \text{ }^\circ\text{C}$  to  $+85 \text{ }^\circ\text{C}$

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## TECHNICAL DATA SENSORS MXW11 AND MXI11

		MXW11	MXI11				
Measurement range	[m]	up to 29.99 (magnetic tape length -10 mm)					
Linearity max.		1 % of the period length	±15 µm				
Repeatability		±1 increment					
Resolution	[µm]	theoretically unlimited	0.5	1	2	5	10
Signal period	[µm]	1000	-				
Counting frequency	[kHz]	18	3333				
Output type		1 V <sub>PP</sub>	Line Driver, Push-Pull				
Output signal		sine/cosine, AB0, /AB0	AB0, /AB0				
Edge distance	[µs]	-	0.3				
Supply	[VDC]	+5 ±5 %	+5 ±5 % (Line Driver) or 10...30 (Push-Pull)				
Current consumption max.	[mA]	70					
Connection		Hi-flex cable with open wires or cable with connector M12, 8 pins					
Protection class		IP67					
Operating temperature	[°C]	-25...+85					
Storage temperature	[°C]	-40...+100					
Storage temperature		250 g, 6 ms according to CEI EN 60068-2-27					
Shock resistance		10 g, 5...2000 Hz according to CEI EN 60068-2-6					
Vibration resistance		-	yes (except 5 VDC version)				
Short-circuit protection		yes					
EMC		according to EN 61000-6-2 level 3					
Gap between sensor and tape	[mm]	0.1...0.5					
Travel speed	[m/s]	16	1.66	3.33	6.66	16	20
Housing		die cast aluminium, UNI EN AC-46100					

## TECHNICAL DATA MAGNETIC TAPE WB10

Length	[m]	max. 30
Accuracy class	[µm/m]	±35 µm/m (up to 30 m) or ±8 µm/m (up to 10 m)
Polar pitch	[mm]	1
Protection class		IP67
Operating temperature	[°C]	-25...+85
Storage temperature	[°C]	-40...+100
Thermal expansion coefficient	[1/K]	0.000016

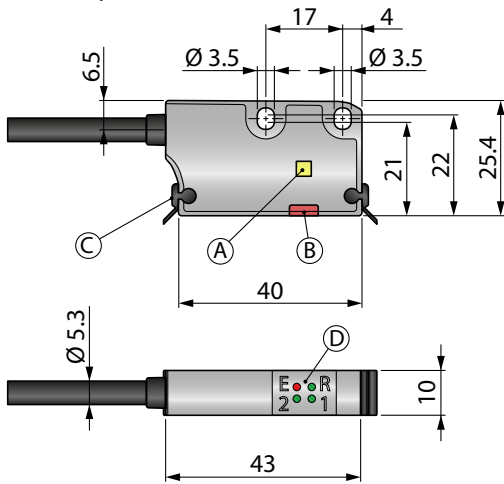
## CHEMICAL RESISTANCE MAGNETIC TAPE WB10

Acetone	••	Kerosene	•	Seawater	••
Acetylene	••	Ketone	•••	Steam heat	•
Antifreeze (Glacial acetic acid)	•	Mineral / Motor oil	•	Thinner	•••
Benzene	•••	Petrol	••	Turpentine	••
Heptane	•••				

• No effect or low effect    •• Low to Medium effect    ••• Strong effect

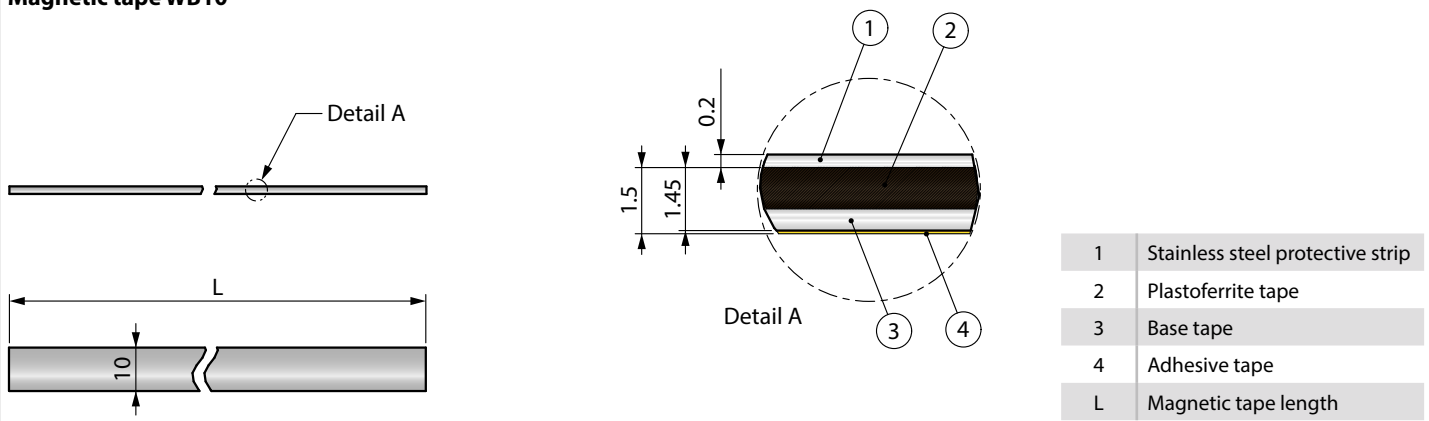
## TECHNICAL DRAWING

### Sensor MXW11, MXI11

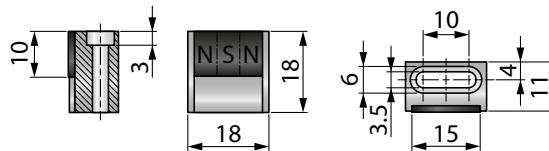


	MXW11	MXI11
<b>A</b>	Reference sensor for versions R and T	
<b>B</b>	Incremental sensor	
<b>C</b>	Dust wipers (not included in delivery)	
<b>D</b>	Diagnostic LEDs	Diagnostic LEDs
	E: Gap/Speed error (red) R: Reference detection (green) 1: Output A (green) 2: Output B (green)	E: Gap/Speed error (red) R: Reference detection (green) 1: Power On (green) 2: No function

### Magnetic tape WB10



### Reference magnet WKM-1309-1

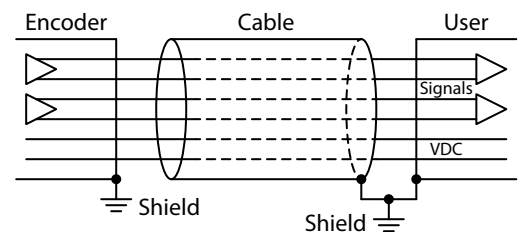
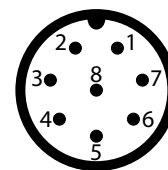


## ELECTRICAL CONNECTION

Function	Cable output	Connector output	Connection cable K8P...
GND <sub>Supply</sub>	BK	Pin 1	WH
+V	RD	Pin 2	BN
A	YE	Pin 3	GN
/A	BU	Pin 4	YE
B	GN	Pin 5	GY
/B	OG	Pin 6	PK
0 <sup>1)</sup>	WH	Pin 7	BU
/0 <sup>1)</sup>	GY	Pin 8	RD
Shield	Shield	Housing	Shield

<sup>1)</sup> only available with reference options I / K (index) and R / T (reference)

### Connector, M12 (male)



## ORDER CODE SENSOR MXW11

MXW11 - [ ] - [ ] - [ ]

<b>Output signal</b> 1 V <sub>pp</sub> Sine/Cosine	V-1
<b>Reference</b> Without	N
Every 1 mm (RS422 Level)	I
1 reference point (RS422 Level) <sup>1)</sup>	R
Every 1 mm (1 V <sub>pp</sub> Level)	K
1 reference point (1 V <sub>pp</sub> Level) <sup>1)</sup>	T

L2	<b>Connection</b> Cable output 2 m Cable output 5 m Cable output 5 m Cable 0.5 m + M12 connector Cable 2 m + M12 connector
L5	
L10	
M0,5	
M2	

<sup>1)</sup> Accessory WKM-1309-1 necessary

## ORDER CODE SENSOR MXI11

MXI11 - [ ] - [ ] - [ ] - [ ] - H

<b>Output signal</b> Push-Pull (AB, /AB) (HTL) Line Driver (AB, /AB) (TTL)	YC-2 L-1
<b>Resolution</b> 0.5 μm	05
1 μm	1
2 μm	2
5 μm	5
10 μm	10

L2	<b>Connection</b> Cable output 2 m Cable output 5 m Cable output 5 m Cable 0.5 m + M12 connector Cable 2 m + M12 connector
L5	
L10	
M0,5	
M2	

N	<b>Reference</b> Without Every 1 mm 1 reference point <sup>1)</sup>
I	
R	

<sup>1)</sup> Accessory WKM-1309-1 necessary

## ORDER CODE MAGNETIC TAPE WB10

WB10 - [ ] - [ ] - [ ]

<b>Length</b> Up to 30 m	X <sup>1)</sup>
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<sup>1)</sup> length in meters  
measurement range = length - 10 mm

1	<b>Stainless steel protective strip</b> Supplied
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50	<b>Accuracy class</b> ±35 μm/m (up to 30 m) ±8 μm/m (up to 10 m)
10	

## ACCESSORIES

### Cable with connector (female) M12, 8 poles, shielded, IP67

K8P2M-S-M12	2 m, straight connector
K8P5M-S-M12	5 m, straight connector
K8P10M-S-M12	10 m, straight connector

### Additional accessories

WKM-1309-1 <sup>1)</sup>	Reference magnet for options R and T
KIT WIPERS <sup>1)</sup>	Dust wipers (10 pcs)

<sup>1)</sup> not included in the scope of delivery of the sensor

### Digital displays for sensors with HTL output, 2 channel

WAY-DX-S	touch screen, supply: 18...30 VDC
WAY-DX-AC	touch screen, supply: 115...230 VAC

For more information and options please refer to the [WAY-DX data sheet](#).

### Mating connector (female) M12, 8 poles, for self assembly

D8-G-M12-S	straight connector
D8-W-M12-S	angular connector

### Digital displays for sensors with HTL or TTL output, 2 channel

WAY-DXM-S	touch screen, supply: 18...30 VDC
WAY-DXM-AC	touch screen, supply: 115...230 VAC

For more information and options please refer to the [WAY-DXM data sheet](#).

Subject to change without prior notice.

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