

# MAGNETOSTRICTIVE TRANSDUCER



## MAZ Series

### Key-Features:

- Available measurement ranges 50 to 4000 mm
- Distance and speed (with CANopen) measurement
- Displacement speed up to 10 m/s
- Linearity up to  $\pm 0.02\%$
- Working pressure up to 350 bar
- Working temperature  $-30...+75\text{ }^{\circ}\text{C}$
- Magnetic cursor, or floating cursor for liquids
- Protection class IP67
- Output signals: Analog, SSI, CANopen

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## TECHNICAL DATA

Model		MAZ-A	MAZ-C	MAZ-S
Measurement range	[mm]	50/ 100/ 130/ 150/ 200/ 225/ 300/ 400/ 450/ 500/ 600/ 700/ 750/ 800/ 900 1000/ 1250/ 1500/ 1750/ 2000/ 2250/ 2500/ 2750/ 3000/ 3250/ 3500/ 3750/ 4000		
Measured dimension		position	position / speed	position
Measurement range speed	[m/s]	-	depending on the scale	-
Accuracy of the speed output	[%]	-	<2	-
Protection class		IP67		
Displacement speed	[m/s]	≤10		
Displacement force	[N]	<1		
Maximum acceleration	[m/s <sup>2</sup> ]	≤100		
Working pressure	[bar]	350 (peek max. 500)		
Linearity	[%]	±0,02 (min. ±0,06 mm)	±0,02 (max. 0,04)	±0,02 (min. ±0,06 mm)
Resolution		16 bit (max. noise 5 mVpp)	5 µm (2 µm on request)	5 µm (2 µm on request)
Repeatability	[mm]	<0,01		
Hysteresis		<0,01 mm		<±0,005 % MR
Shock test DIN IEC68T2-27		100 g, 11 ms		
Vibrations DIN IEC68T2-6		12 g, 10...2000 Hz		
Position sampling time (see table below)	[ms]	0,5 to 3	1 to 4	1
Max. output value		12 V (at 0...10 V), 30 mA (at 4...20 mA)		
Max. current consumption	[mA]	70 (at 0...10 V), 90 (at 4...20 mA)	100	50
Coefficient of temperature	[ppm/°C]	100	20	20
Max. output load	[kOhm]	5 (at 0...10 V), <0,5 (at 4...20 mA)	RS422/485 Standard	
Protection against polarity inversion		yes		
Protection against overvoltage		yes		
Working temperature	[°C]	-30...+75	-30...+75	-30...+90
Storage temperature	[°C]	-40...+100	-40...+100	-40...+100
Power supply	[V]	24, ±20 %		
Output signal		0...10V, 4...20 mA	CANopen DS 301	SSI: Binär, Gray, 24 bit, 25 bit
Electrical connection		M12-, M16-connector, cable output	M12-, M16-connector, cable output	M16-connector, cable output
Housing material		high grade steel AISI 316		

## DIMENSIONS AND SAMPLING TIME

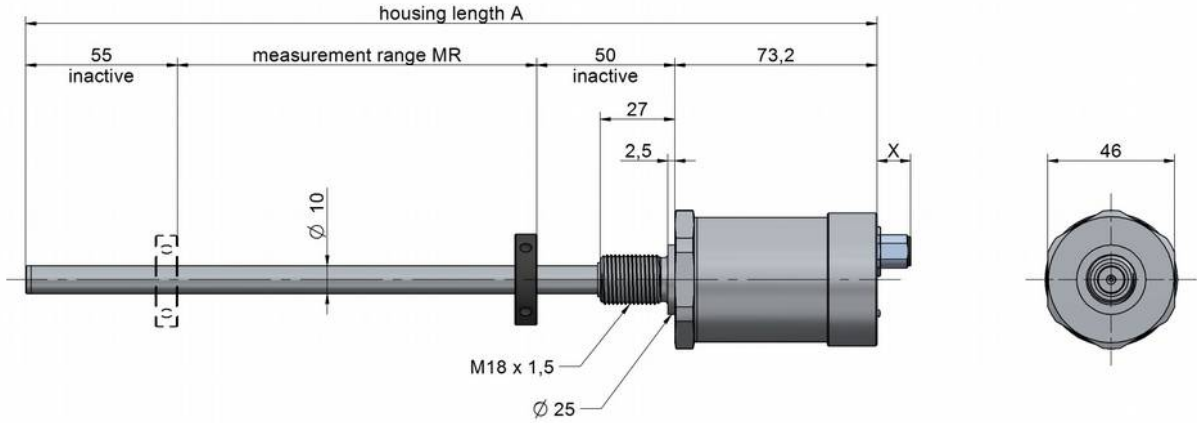
Sampling time MAZ-A	[ms]	0.5, MR 50...300 mm	1, MR 350...1100 mm	1.5, MR 1200...2000 mm	2, MR 2250...3000 mm	3, MR 3250...4000 mm
Sampling time MAZ-S	[ms]	1, MR 50...1000 mm	2, MR 1100...2000 mm	4, MR >2000 mm		
Sampling time MAZ-C	[ms]	1, MR 50...1200 mm	2, MR 1200...2400 mm	4, MR >2400 mm		
Dimension MAZ-A	[mm]	Measurement range + 178.2		Measurement range + 183.2		
Dimension MAZ-S	[mm]	Measurement range + 178.2		Measurement range + 183.2		
Dimension MAZ-C	[mm]	Measurement range + 187.2				

# TECHNICAL DRAWING MAZ-A

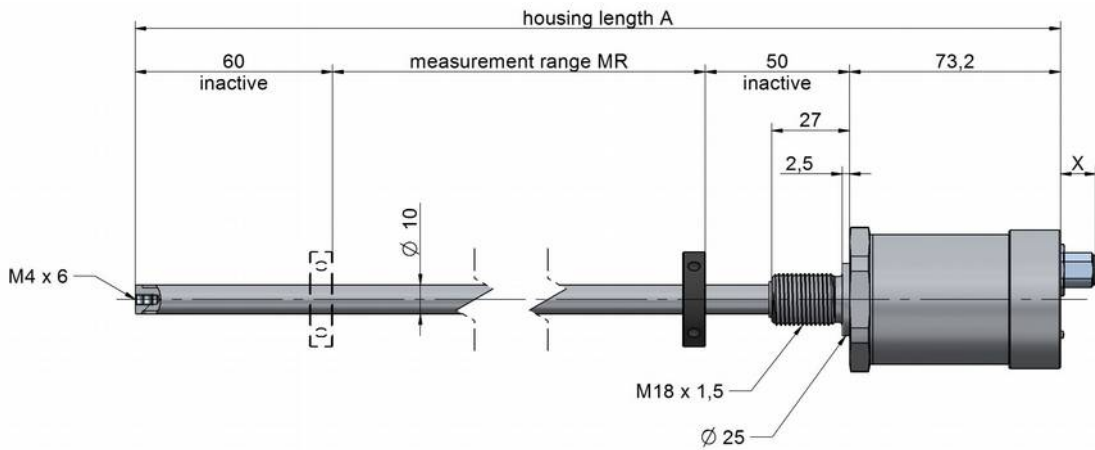
## Dimension MAZ-A, MAZ-S

Version	X
MAZ-A/S-A	12.2 mm
MAZ-A/S-B	9.5 mm

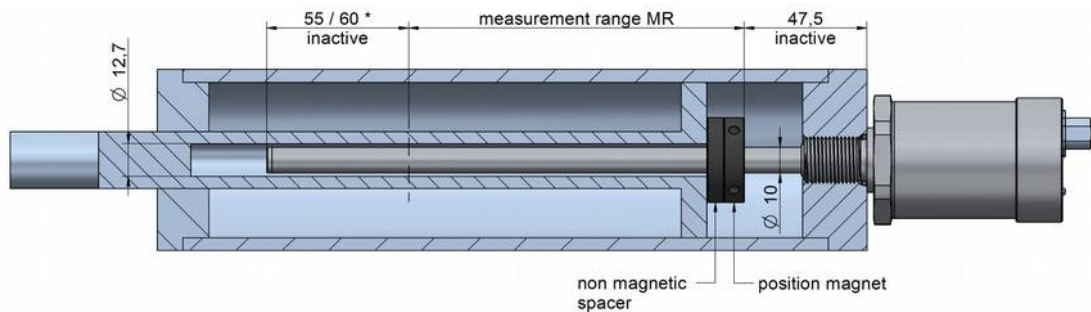
Measurement range 50 to 1000 mm



Measurement range 1250 to 4000 mm



## MAZ-A, MAZ-S: mounting inside a cylinder

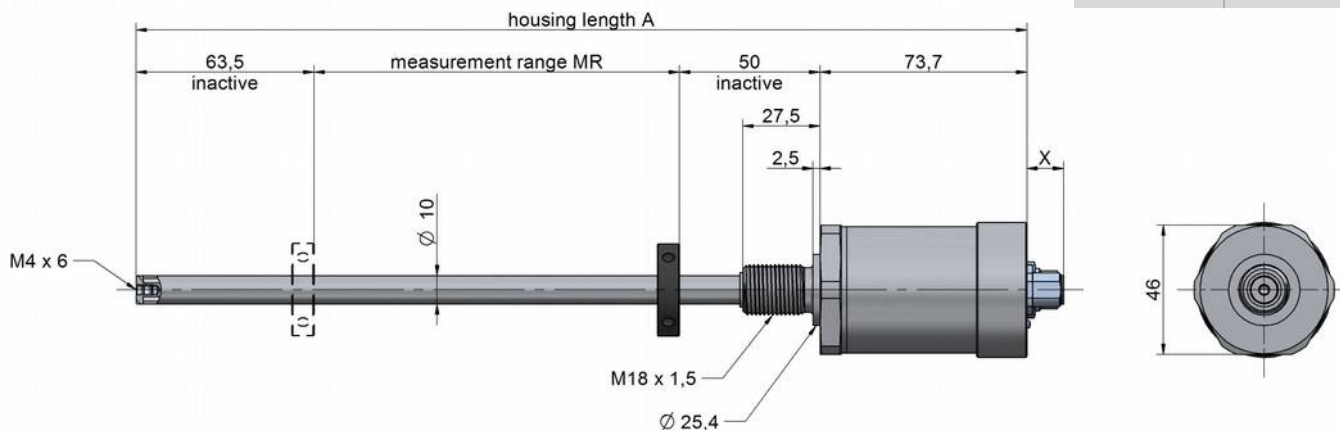


\*for strokes over 1000 mm, the non-active zone (55 mm) becomes 60 mm because the tip includes a M4 threaded hole.

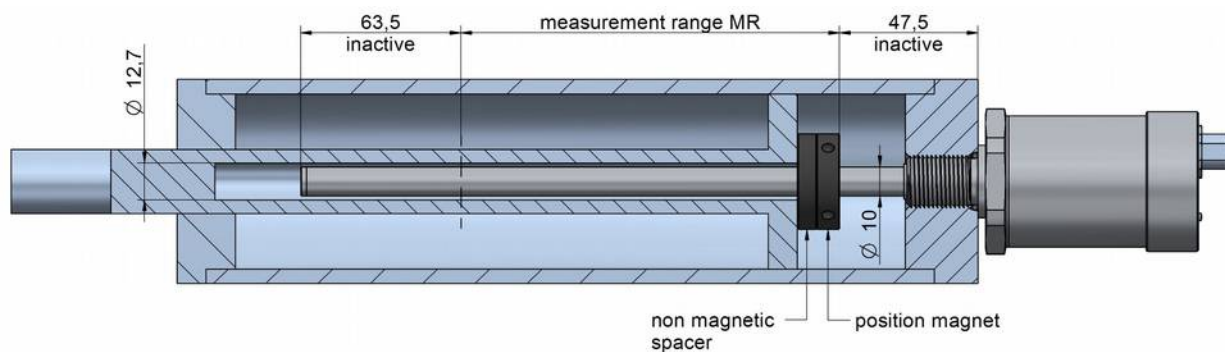
# TECHNICAL DRAWING MAZ-C, MAZ-S

## Dimension MAZ-C

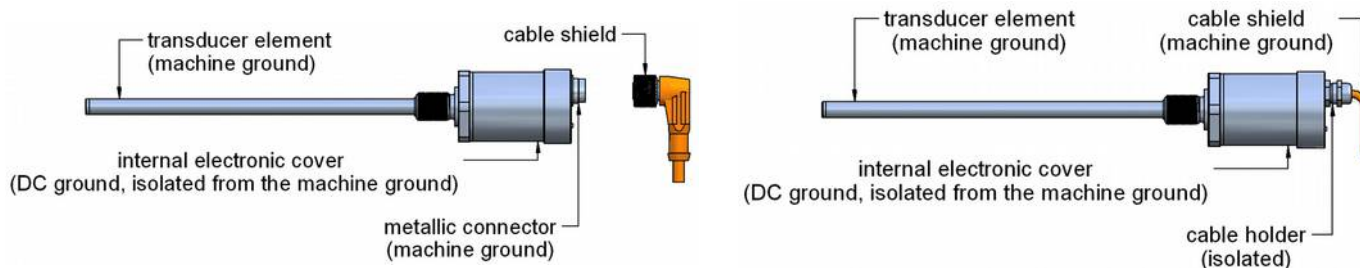
Version	X
MAZ-C-A	12.2 mm
MAZ-C-B	9.5 mm



## MAZ-C: mounting inside a cylinder



## MAZ GROUNDING

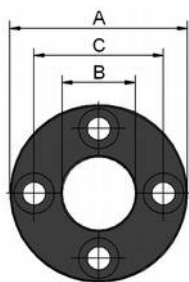


## MAGNETIC CURSOR

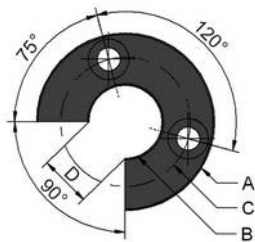
Magnetic cursor	A	B	C	D
PCUR022	32.8	13.5	23.9	-
PCUR023	32.8	13.5	23.9	11.0
PCUR024	25.4	13.5	-	-
PCUR026 (for liquids)	52.4	12.0	44.0	-
PCUR027 (for liquids)	52.4	15.0	44.0	-

**Note:**

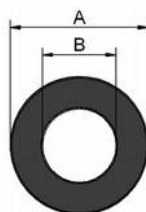
PCUR026 and PCUR027 is supplied with kit PKIT036 for floating cursor for liquids.  
Material PCUR026, PCUR027: high grade steel AISI 316



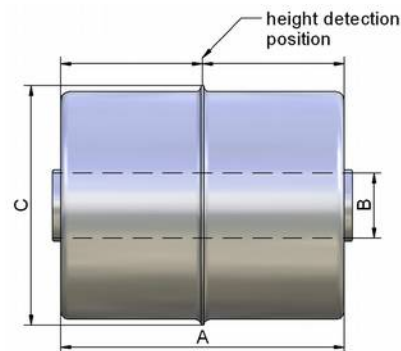
PCUR022



PCUR023



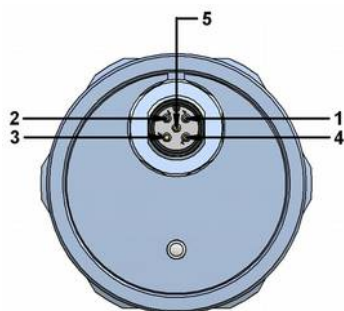
PCUR024



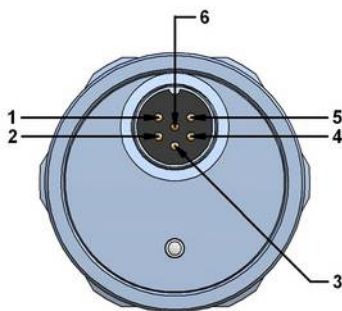
PCUR026/027

## ELECTRICAL CONNECTION ANALOG OUTPUT

### Wiring diagram analog output



connector output M12  
MAZ-A-A

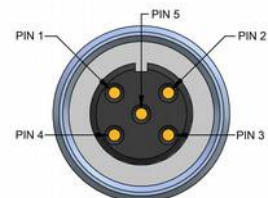


connector output M16  
MAZ-A-B



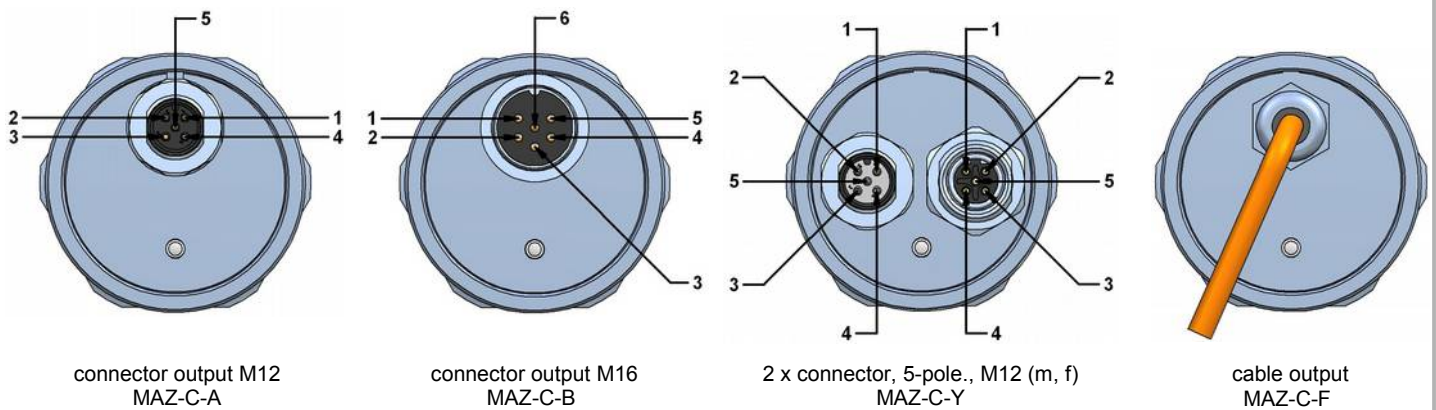
cable output  
MAZ-A-F

Function	MAZ-A-A 5-pole, M12	MAZ-A-B 6-pole, M16	MAZ-F cable, 7-pole	connection cable with M12 connector 5 pole, for MAZ-A-A: K5P..
Output 1 (position): 0..10 V, 4..20 mA	1	1	grey	brown
GND output 1 (0 V)	2	2	pink	white
Output 2 (inverse position): 10..0 V, 20..4mA	3	3	yellow	blue
GND output 2 (0 V)	2	4	green	white
Supply +	5	5	blue	grey
Supply GND	4	6	white	black



## ELECTRICAL CONNECTION OUTPUT CANopen

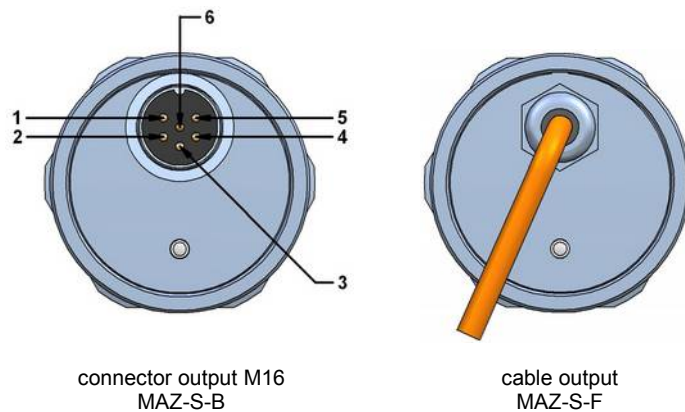
### Wiring diagram output CANopen



Function	MAZ-C-A connector, 5-pole, M12	MAZ-C-B connector, 6-pole, M16	MAZ-C-Y 2 x connector, 5-pole, M12 (male, female)		MAZ-C-F cable, 4-pole
CAN L	5	1	5	5	blue
CAN H	4	2	4	4	white
CAN GND (n.c.)	1	3	1	1	-
n.c.	-	4	-	-	-
Supply +	2	5	2	2	red
Supply GND	3	6	3	3	black

## ELECTRICAL CONNECTION OUTPUT SSI

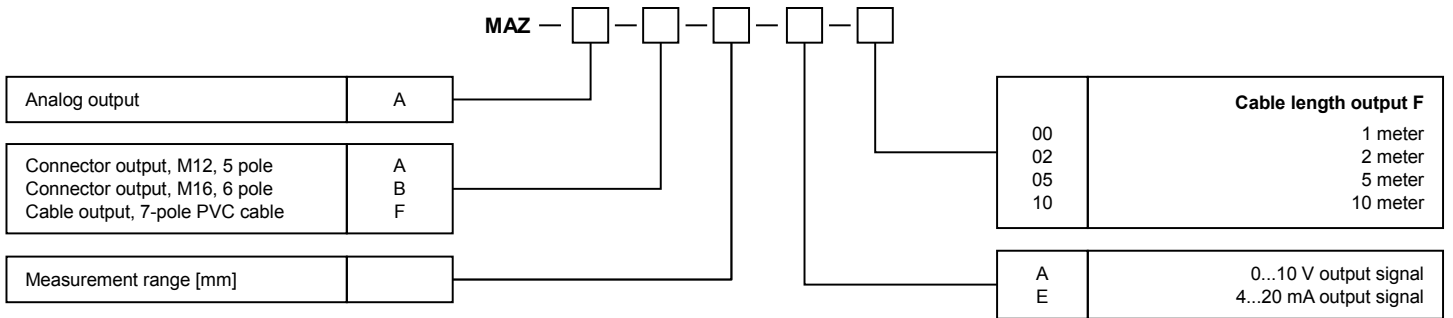
### Wiring diagram output SSI



Function	MAZ-S-B connector, 6-pole, M16	MAZ-S-F PVC-cable, 6-pole
Data -	1	orange
Data +	2	orange / white
Clock +	3	green / white
Clock -	4	green / white
Supply +	5	dark blue / white
Supply GND	6	dark blue / white



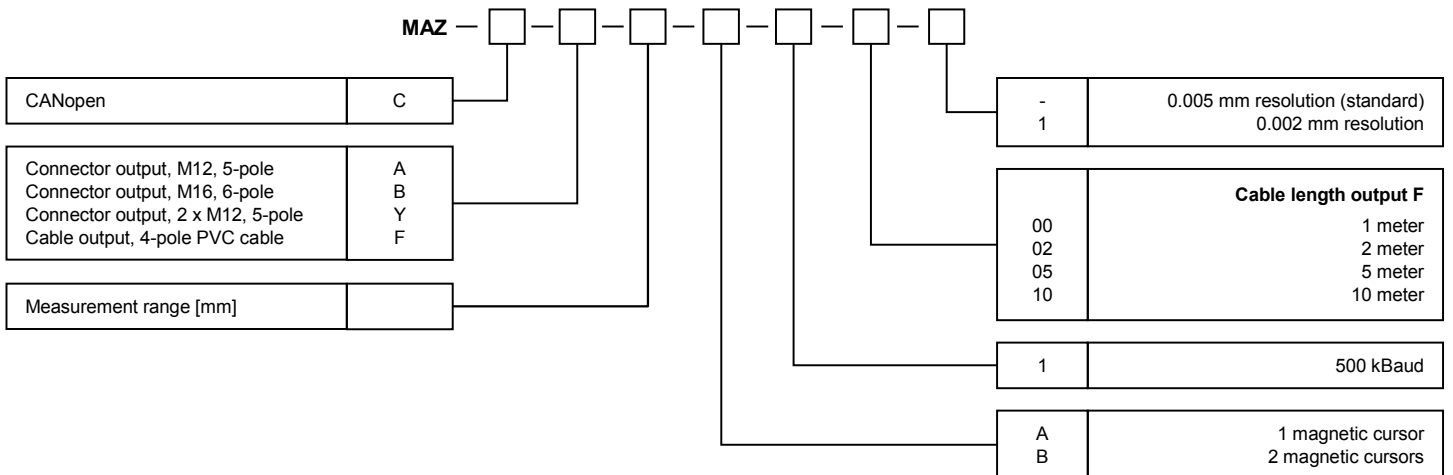
## ORDER CODE ANALOG OUTPUT



**Note:**

- Magnetic cursors must be ordered separately (see accessories).
- Analog output 0...20 mA is available on request.

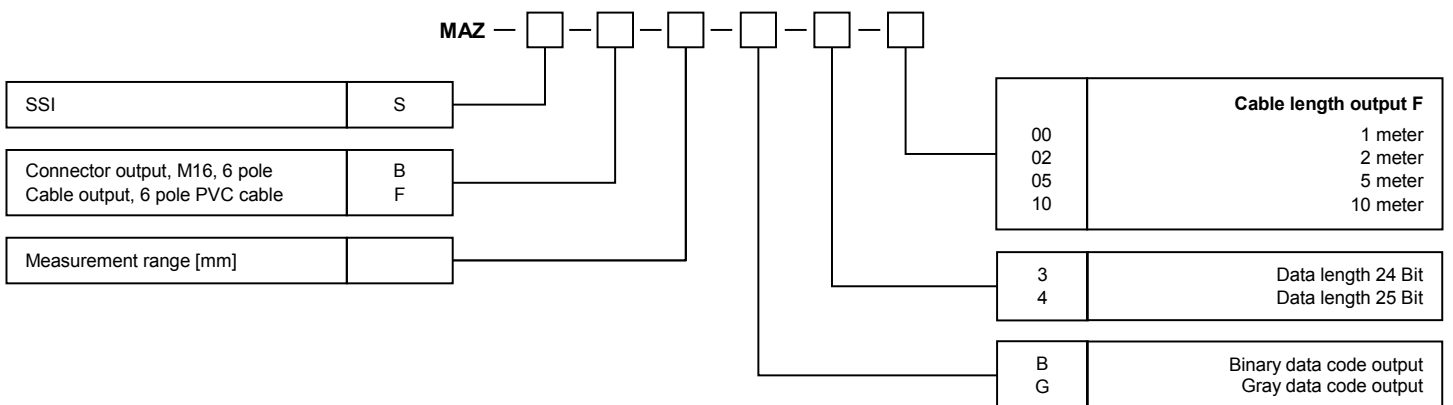
## ORDER CODE CANopen OUTPUT



**Note:**

- Magnetic cursors must be ordered separately (see accessories).
- Other Baud rates and resolutions are available on request
- Additional information, like CANopen Data Protocol available on request

## ORDER CODE SSI OUTPUT



**Note:**

- Magnetic cursors must be ordered separately (see accessories).
- Other resolutions are available on request

## OVERVIEW

### Base model, 0...10 V analog output, M12 connector output

MAZ-AA-50-A	50 mm	MAZ-AA-900-A	900 mm
MAZ-AA-100-A	100 mm	MAZ-AA-1000-A	1000 mm
MAZ-AA-130-A	130 mm	MAZ-AA-1250-A	1250 mm
MAZ-AA-150-A	150 mm	MAZ-AA-1500-A	1500 mm
MAZ-AA-200-A	200 mm	MAZ-AA-1750-A	1750 mm
MAZ-AA-225-A	225 mm	MAZ-AA-2000-A	2000 mm
MAZ-AA-300-A	300 mm	MAZ-AA-2250-A	2250 mm
MAZ-AA-400-A	400 mm	MAZ-AA-2500-A	2500 mm
MAZ-AA-450-A	450 mm	MAZ-AA-2750-A	2750 mm
MAZ-AA-500-A	500 mm	MAZ-AA-3000-A	3000 mm
MAZ-AA-600-A	600 mm	MAZ-AA-3250-A	3250 mm
MAZ-AA-700-A	700 mm	MAZ-AA-3500-A	3500 mm
MAZ-AA-750-A	750 mm	MAZ-AA-3750-A	3750 mm
MAZ-AA-800-A	800 mm	MAZ-AA-4000-A	4000 mm

### Options with additional charge on base model

#### Analog output:

F	cable output, 7-pole PVC cable, 1 meter
E	4...20 mA output signal
02	cable length 2 meter
05	cable length 5 meter
10	cable length 10 meter

#### CANopen:

C	measurement range: 50 to 550 mm
C	measurement range: 600 to 2000 mm
C	measurement range: 2250 to 4000 mm
Y	connector output, 2 x M12, 5-pole
F	cable output, 4-pole PVC cable, 1 meter
02	cable length 2 meter
05	cable length 5 meter
10	cable length 10 meter

#### SSI:

S	measurement range: 50 to 550 mm
S	measurement range: 600 to 2000 mm
S	measurement range: 2250 to 4000 mm
F	cable output, 6-pole PVC cable, 1 meter
02	cable length 2 meter
05	cable length 5 meter
10	cable length 10 meter

### Accessories

PCUR022	magnetic cursor, $\varnothing$ 32.8
PCUR023	magnetic cursor, $\varnothing$ 32.8 with 90° slit
PCUR024	magnetic cursor, $\varnothing$ 25.4
PCUR026	floating cursor for liquids with hole $\varnothing$ 12
PCUR027	floating cursor for liquids with hole $\varnothing$ 15
CUR022	non-magnetic spacer for mounting PCUR022 cursor

### Connection cable analog output, 5-pole, shielded, connector M12

K5P2M-S-M12	2 m, connector, straight
K5P5M-S-M12	5 m, connector, straight
K5P10M-S-M12	10 m, connector, straight
K5P2M-SW-M12	2 m, connector, angular
K5P5M-SW-M12	5 m, connector, angular
K5P10M-SW-M12	10 m, connector, angular

### Cable for CANopen output, 5-pole, shielded, PUR

K5P2M-SB-M12-CAN	connector M12, straight, to coupling M12
K5P2M-S-M12-CAN	connector M12, straight, open cable head
K5P2M-B-M12-CAN	female connector M12, straight, open cable head

### Connector

CON022	connector M16, 6-pole, straight, IP67
CON023	connector M16, 6-pole, angular, IP67
D5-G-M12-S	connector M12, 5-pole, straight, IP67
D5-W-M12-S	connector M12, 5-pole, angular, IP67

Subject to change without prior notice.

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