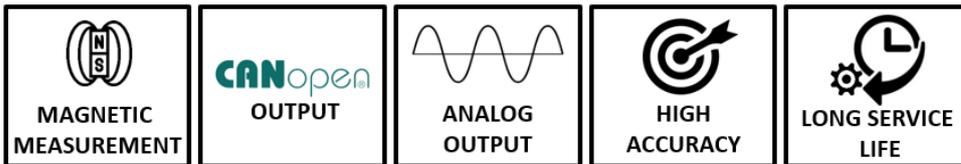


MAS Series

“50mm or 58mm Body Diameter, Shaft or Semi-Hollow Shaft, CANopen or Programmable Analog Output, IP64 Protection”



- Absolute measurement with magnetic principle
- 50 mm or 58 mm body diameter options
- Shaft or semi hollow shaft options
- Analog or CANopen output options
- Programmable analog output
- 0.02 ° accuracy in multiple turns of the desired number
- For Analog output : 16 bit,
For CANopen output : single turn 1...14 bit, multiturn 1...32 bit resolution
- IP64 protection class

The MAS series encoders operate absolute. In other words, unlike the incremental systems, they do not lose their positions in power outages and continue to measure from where they left off.

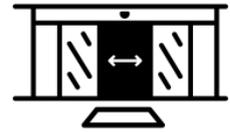
The MAS series multi-turn absolute rotary encoders offer highly flexible solutions in use, with different analog output signals, shaft and flange types.

The MAS multi-turn absolute rotary encoder with integrated reference provides high quality feedback.

APPLICATION FIELDS

Speed and position accuracy in one application; If it is more important than fault tolerance and system simplicity, absolute encoders should be used. Absolute encoders provide precise operation in applications.

- Identifying multi-axis orientation in CNC machines used in component manufacturing
- Automatically determine the height of the scissor bearings used in hospitals
- Correct placement of multiple stabilizers for large vehicles such as cranes or air lifts
- Automatic doors or slots to move without limiting key
- Continue robotic movement even after a power failure



MECHANICAL SPECIFICATIONS

	MAS S 50	MAS S 58	MAS B 50	MAS B 58
Body Diameter	50 mm	58 mm	50 mm	58 mm
Shaft Type	Shaft	Semi hollow shaft	Shaft	Semi hollow shaft
Shaft Diameter	6 or 8 mm	6, 8, 10 mm	6, 8, 10, 12, 14, 15 mm	6, 8, 10, 12, 14, 15 mm
Maximum Speed	3000 rpm			
Weight	≈290 gr			
Protection	IP 64			
Operating Temp.	-20°C ... +70°C			
Relative Humidity	%10 and %90			
Material	Shaft: Stainless Steel			
	Body: Aluminium			

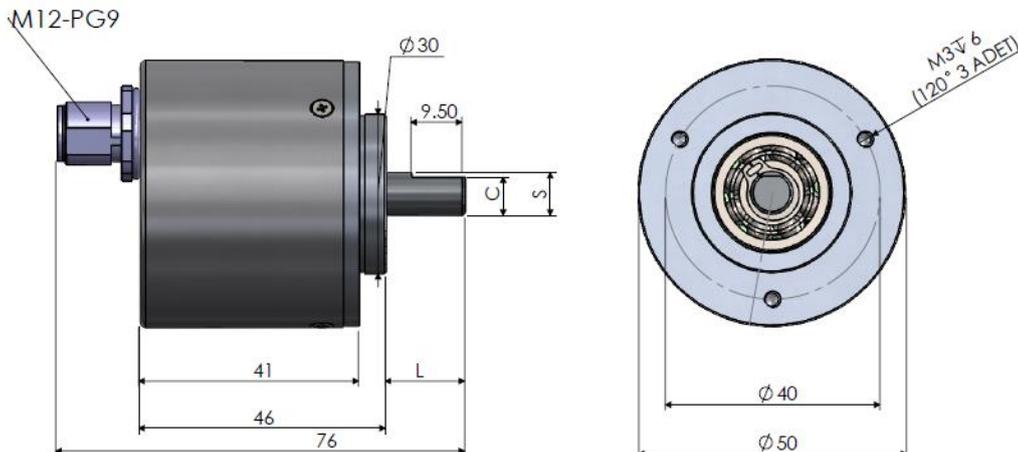
Note: The product is mechanically non-stop.

MECHANICAL DIMENSIONS (mm)

ANALOG VERSION

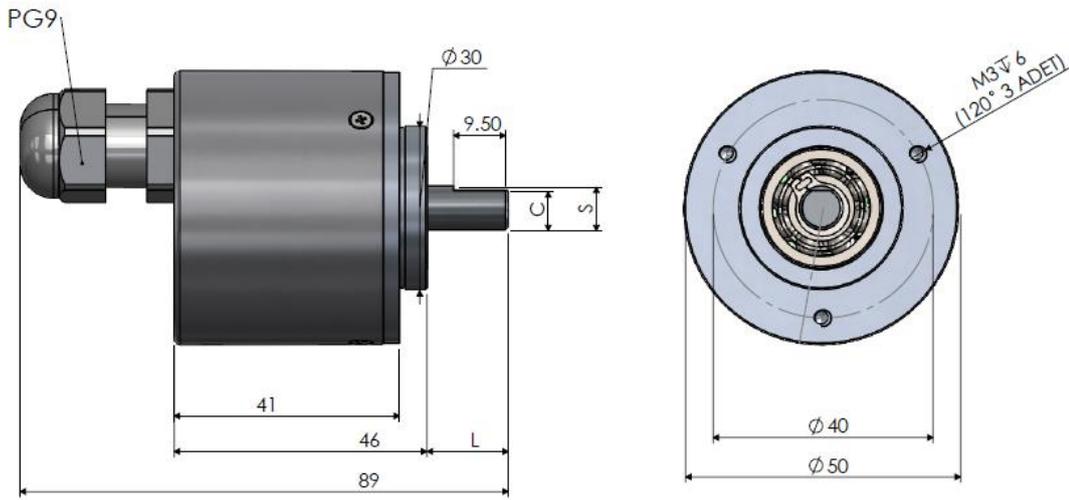
MAS-S 50 (SHAFT)

Clamping Flange, M12 Socket



C	S	L
5.5	6	14.8
7.17	8	14.8

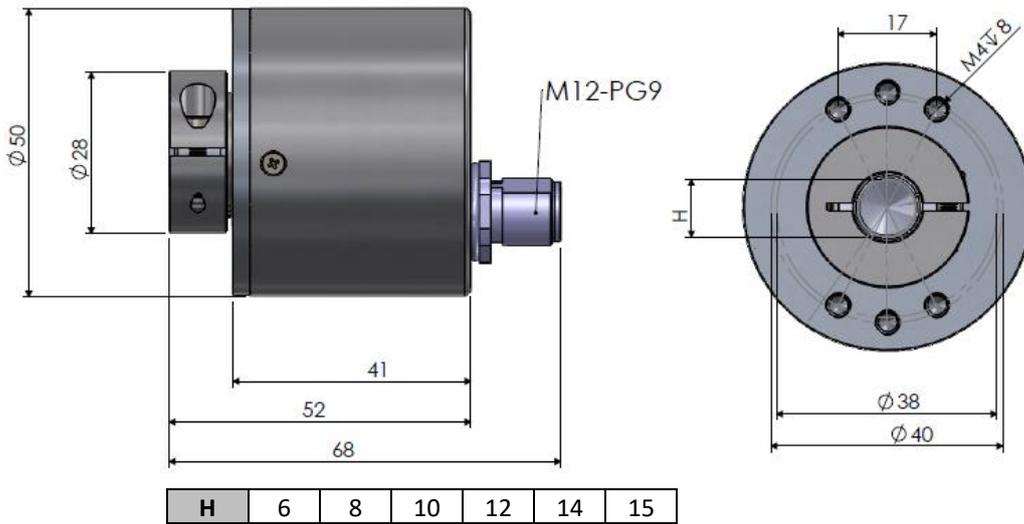
Clamping Flange, PG9 Gland and 5 x 0,14 mm² cable



C	S	L
5.5	6	14.8
7.17	8	14.8

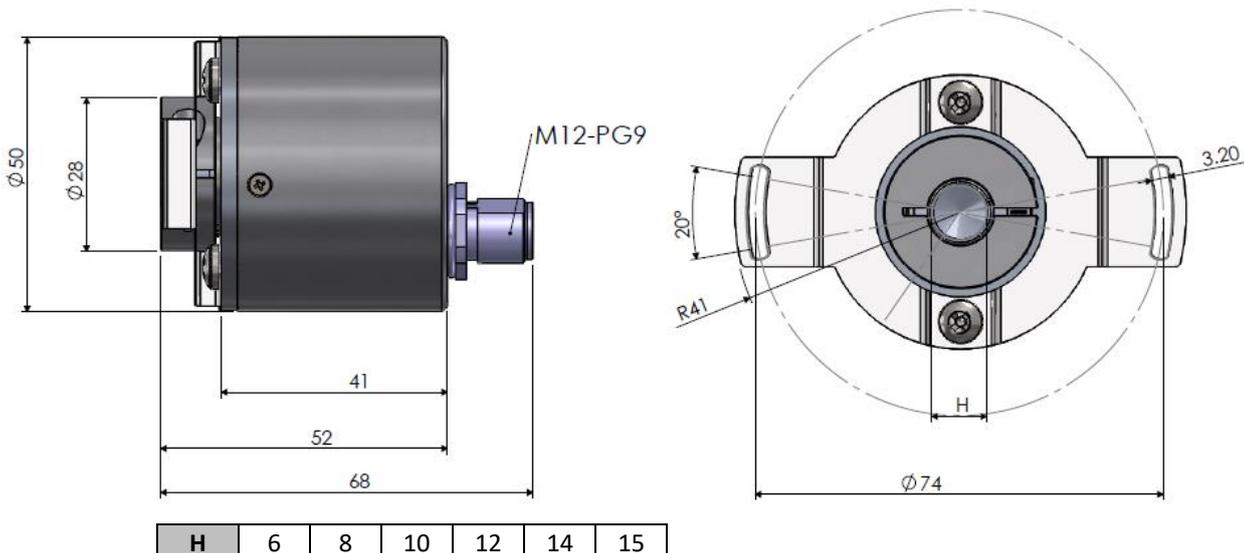
MAS-B 50 (SEMI HOLLOW SHAFT)

No Flange, M12 Socket



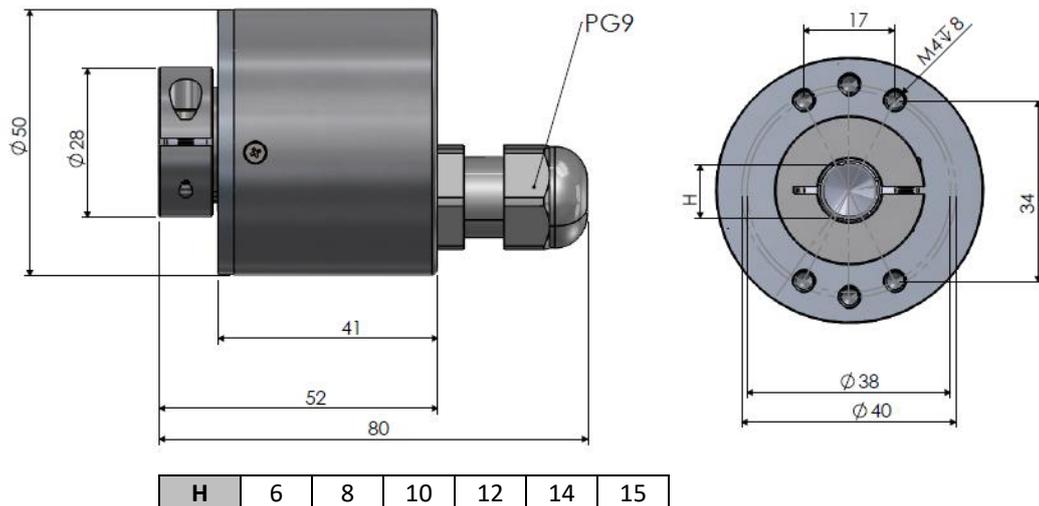
H	6	8	10	12	14	15

FC Flange, M12 Socket

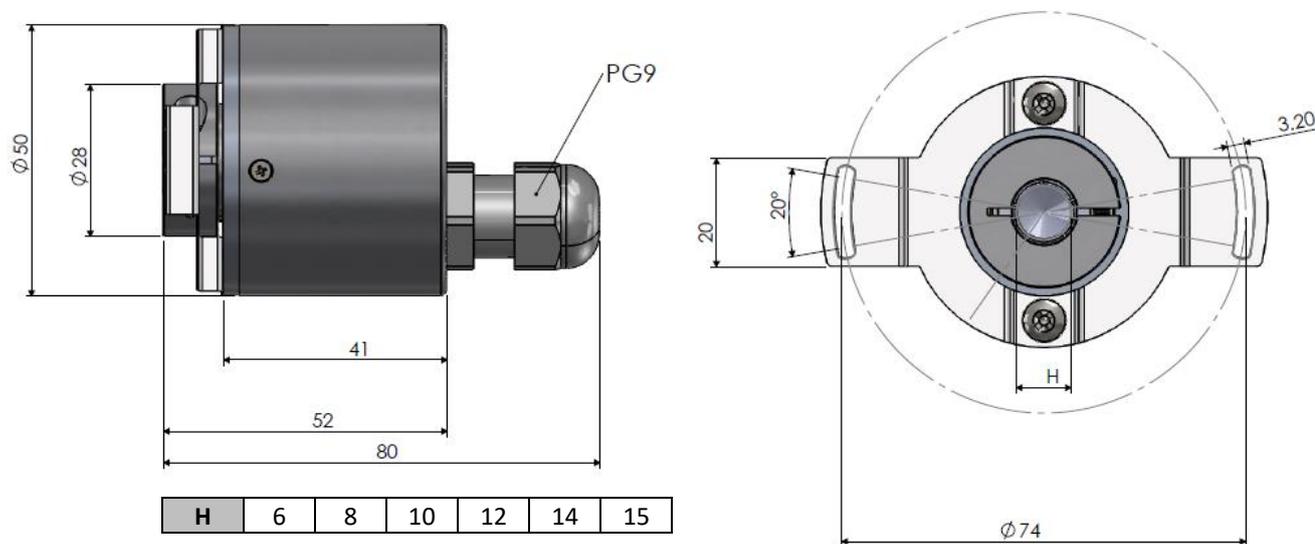


H	6	8	10	12	14	15

No Flange, PG9 Gland and 5 x 0,14 mm² Cable

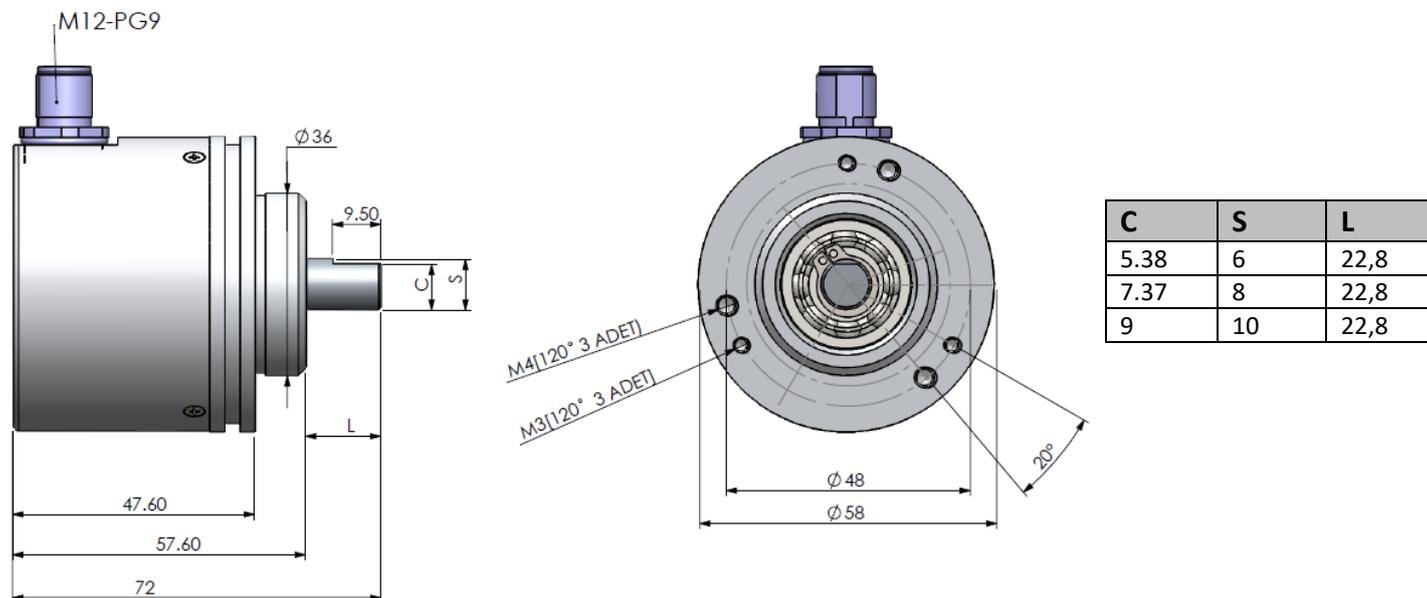


FC Flange, PG9 Gland and 5 x 0,14 mm² Cable

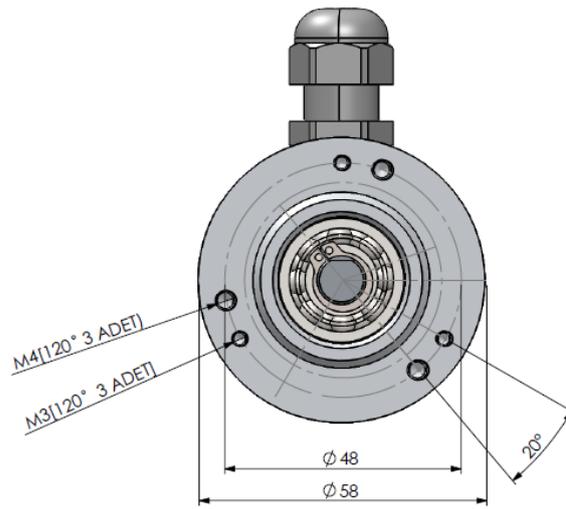
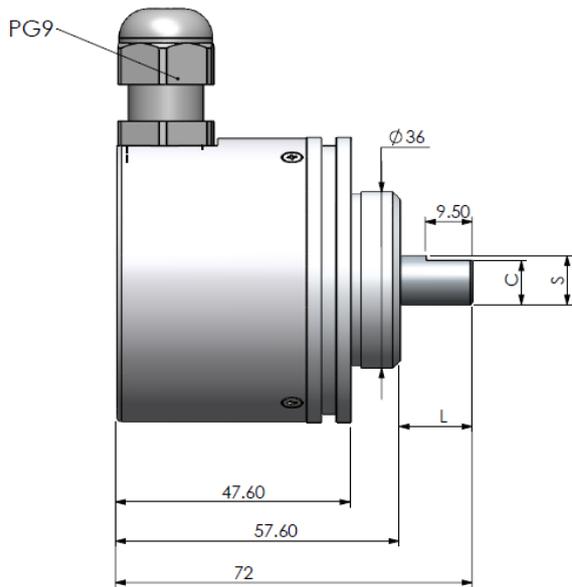


MAS- S 58 (SHAFT)

Clamping Flange, M12 Socket



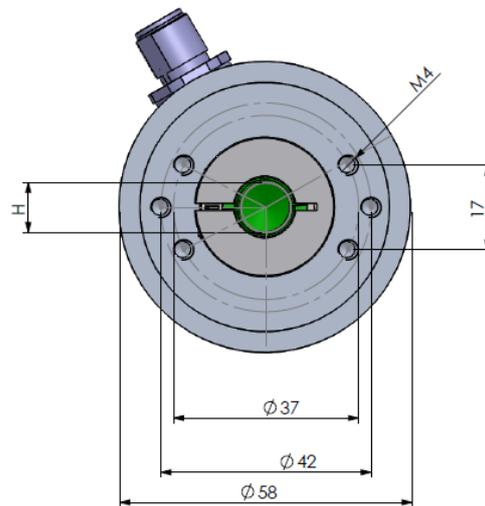
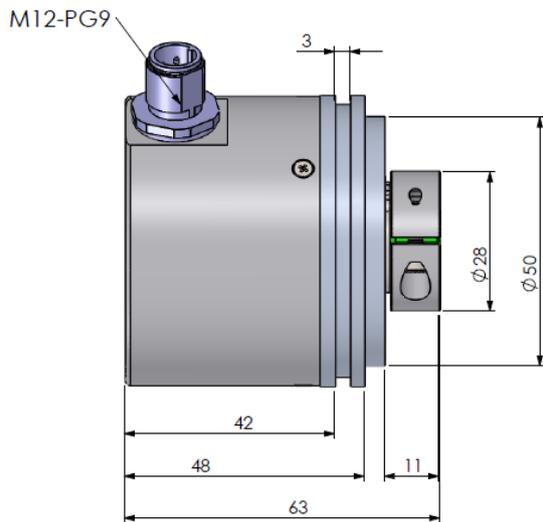
Clamping Flange, PG9 Gland and 5 x 0,14 mm² Cable



C	S	L
5.38	6	22,8
7.37	8	22,8
9	10	22,8

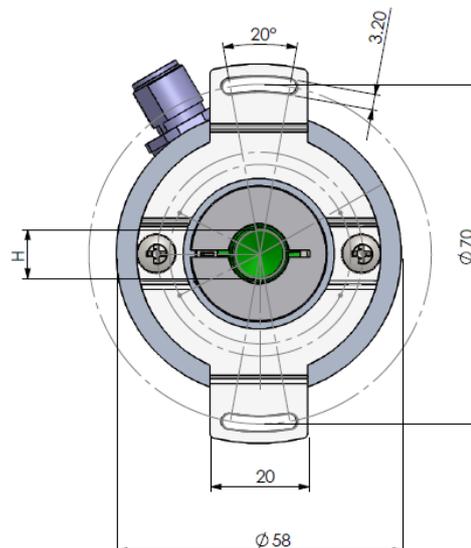
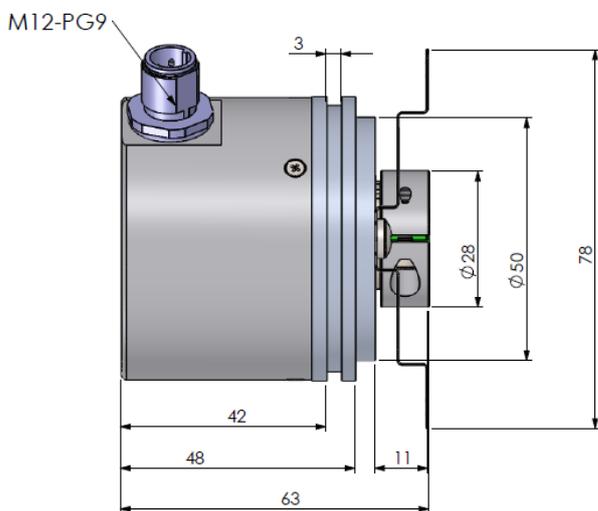
MAS- B 58 (SEMI HOLLOW SHAFT)

No Flange, M12 Socket



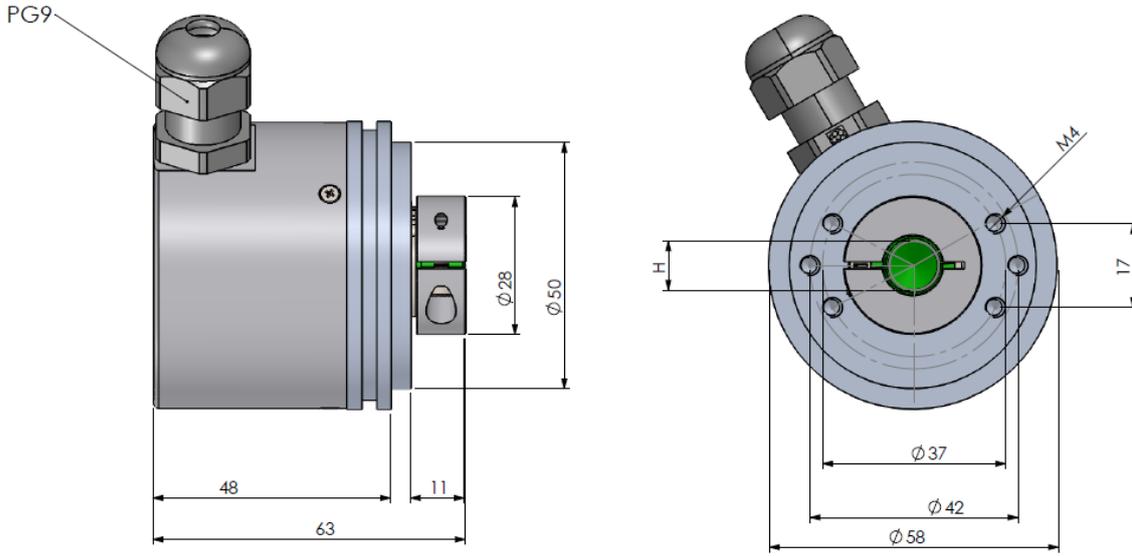
H	6	8	10	12	14	15
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FC Flange, M12 Socket



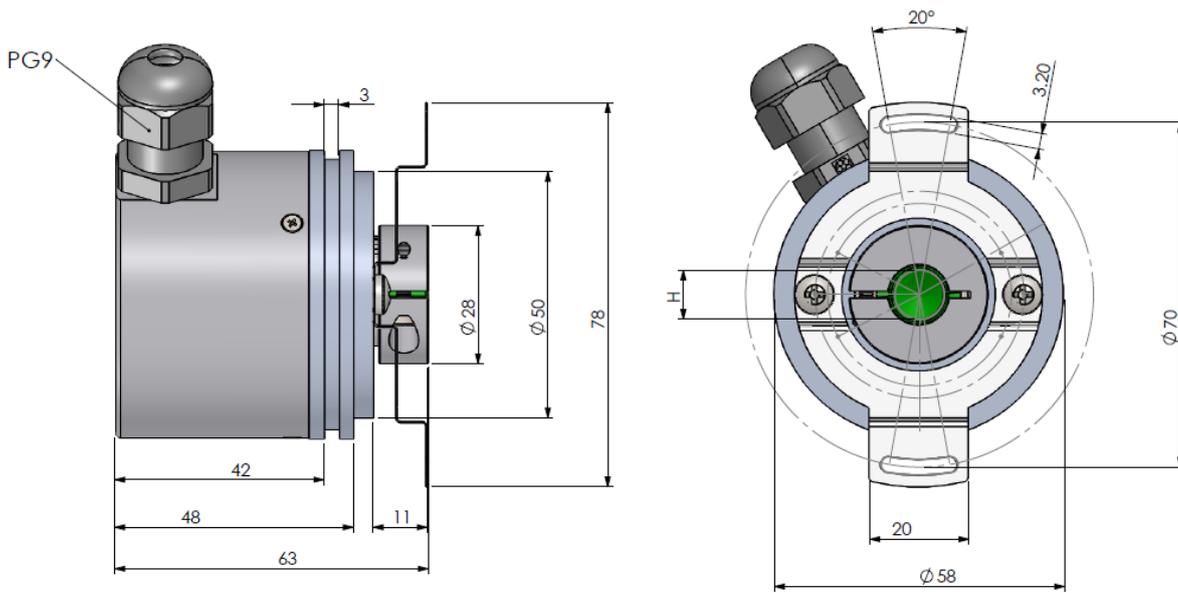
H	6	8	10	12	14	15
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No Flange, PG9 Gland and 5 x 0,14 mm² Cable



H	6	8	10	12	14	15
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FC Flange, PG9 Gland and 5 x 0,14 mm² Cable

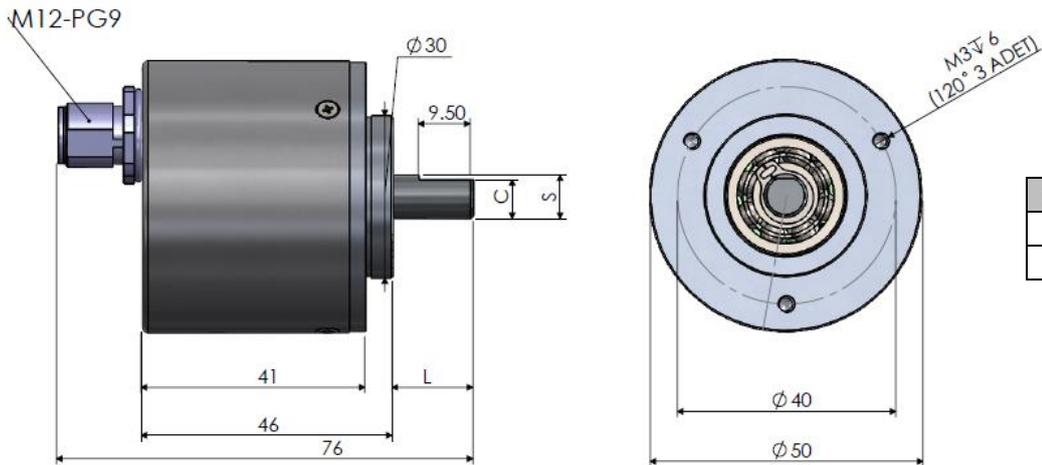


H	6	8	10	12	14	15
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CANOPEN VERSION

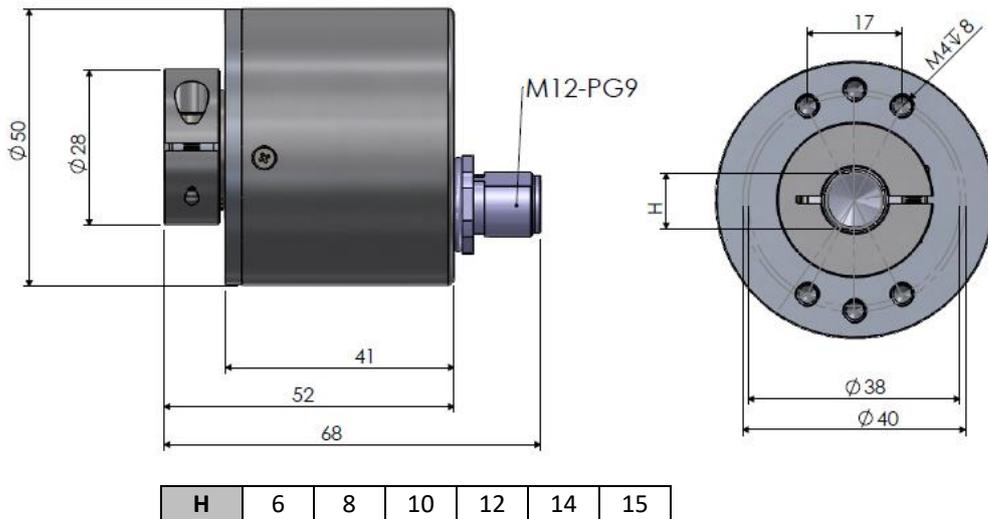
MAS-S 50 (SHAFT)

Clamping Flange, M12 Socket

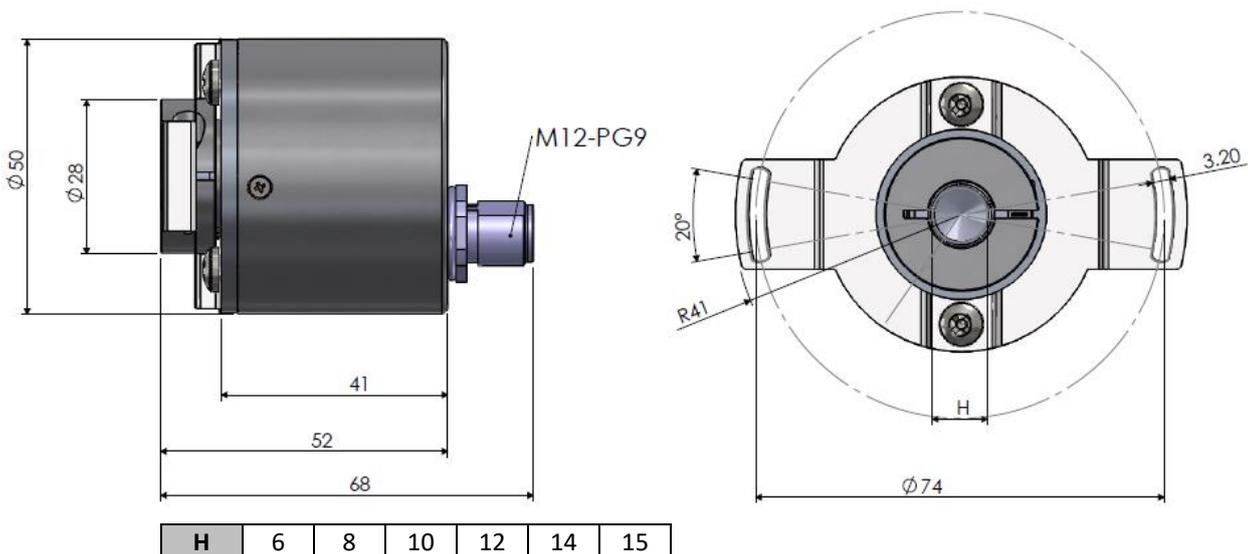


MAS-B 50 (SEMI HOLLOW SHAFT)

No Flange, M12 Socket

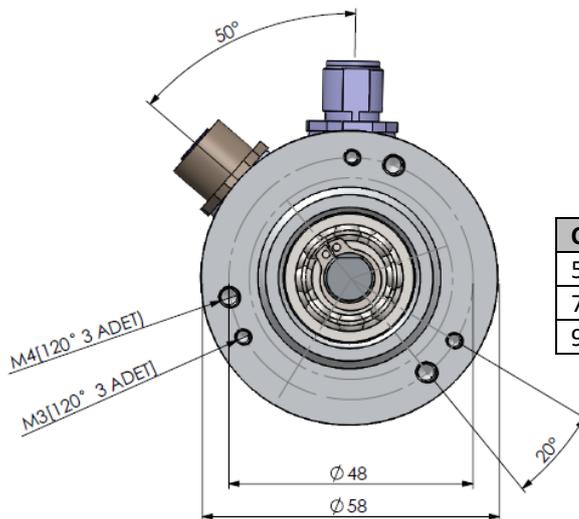
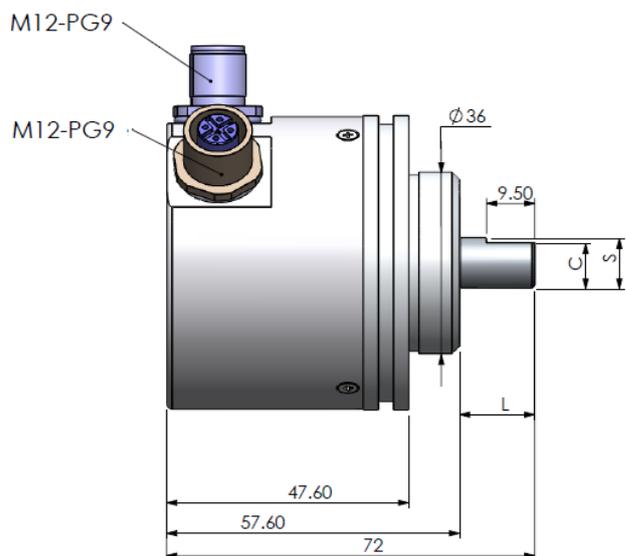


FC Flange, M12 Socket



MAS- S 58 (SHAFT)

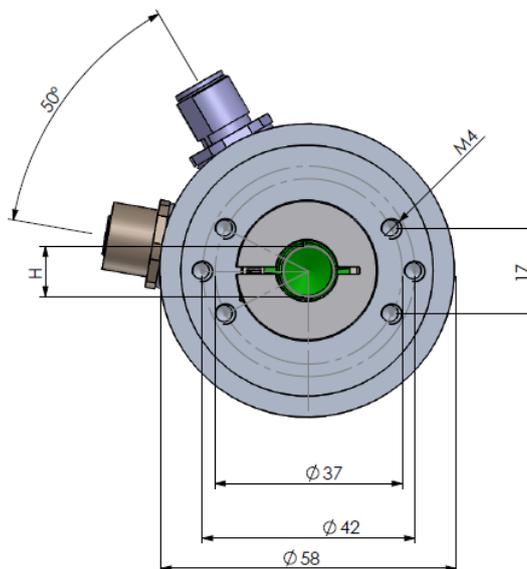
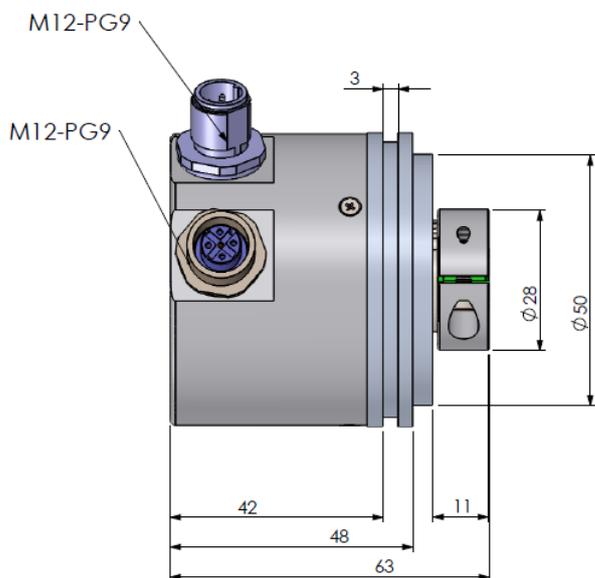
Clamping Flange, M12 Socket



C	S	L
5.38	6	22,8
7.37	8	22,8
9	10	22,8

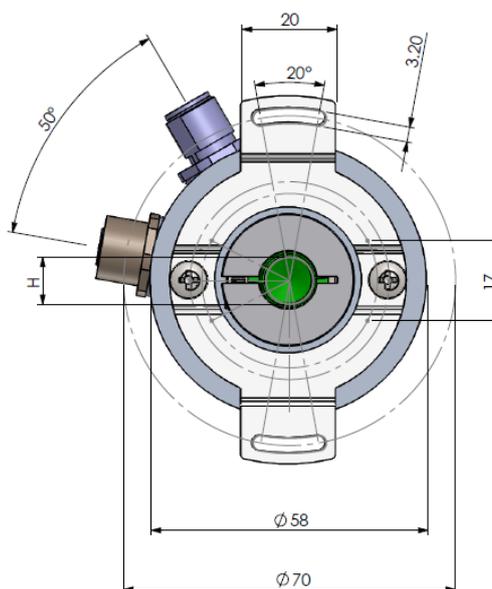
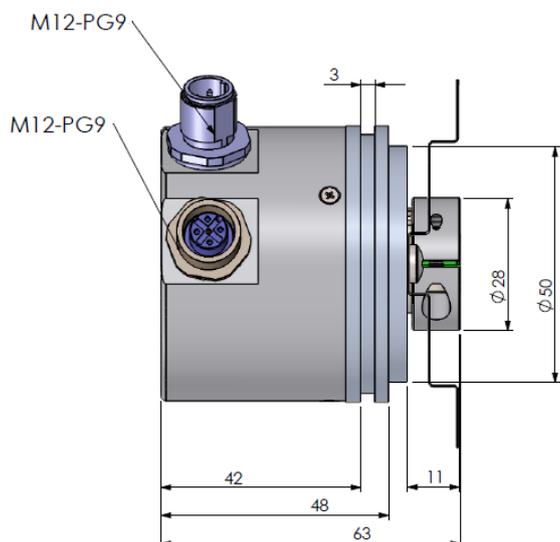
MAS- B 58 (SEMI HOLLOW SHAFT)

No Flange, M12 Socket



H	6	8	10	12	14	15
---	---	---	----	----	----	----

FC Flange, M12 Socket

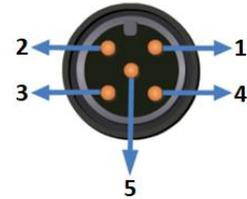


Electrical Specifications

Working Principle	Hall Effect
Measuring Range	2...2 ¹⁷ turns
Supply Voltage	15 ... 26 VDC
Current Consumption	≤60 mA
Reverse Polarity Protection	Yes
Short Circuit Protection	Yes (only supply)
Accuracy	±0,5°
Repeatability	0,1°
Angular Resolution	16 Bit
Response Frequency	500 Hz
Electrical Interface	4-20 mA, 0-10 V, 0.5- 4.5 V, 0-5 V 20-4 mA, 10-0 V, 4.5-0.5 V, 5-0 V
Output Load	For current output model; min 250 Ω For voltage output model; min 1 KΩ
Electrical Connection	M12 5 pin male socket or 5 x 0,14 mm ² shielded cable

Electrical Connection

Signal	Cable	M12 / 5 pin male connector
V+ (15...26 VDC)	Red	Pin 1
Analog output	Yellow	Pin 2
GND	Black	Pin 3
Direction Change	Green	Pin 4
Reset	Pink	Pin 5

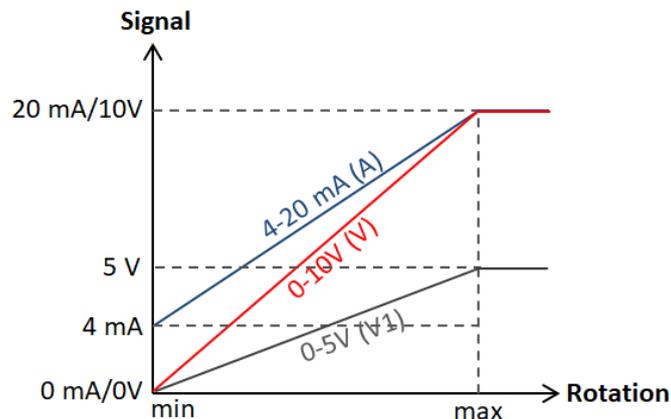


RESET: With the reset function you can set the desired location to 0. The reset terminal and GND are short-circuited for about 5 seconds and then disconnected. The sensor then accepts the current position as zero.

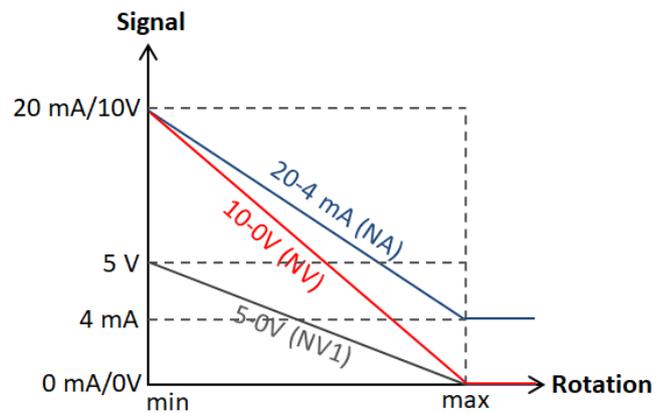
DIRECTION CHANGE: You can change the angle increase direction with the direction change function. The direction changing terminal and GND are short-circuited for about 5 seconds and then disconnected. Thus, the sensor reverses the angle direction (CW is CCW and CCW is CW).

Sample Output Signal

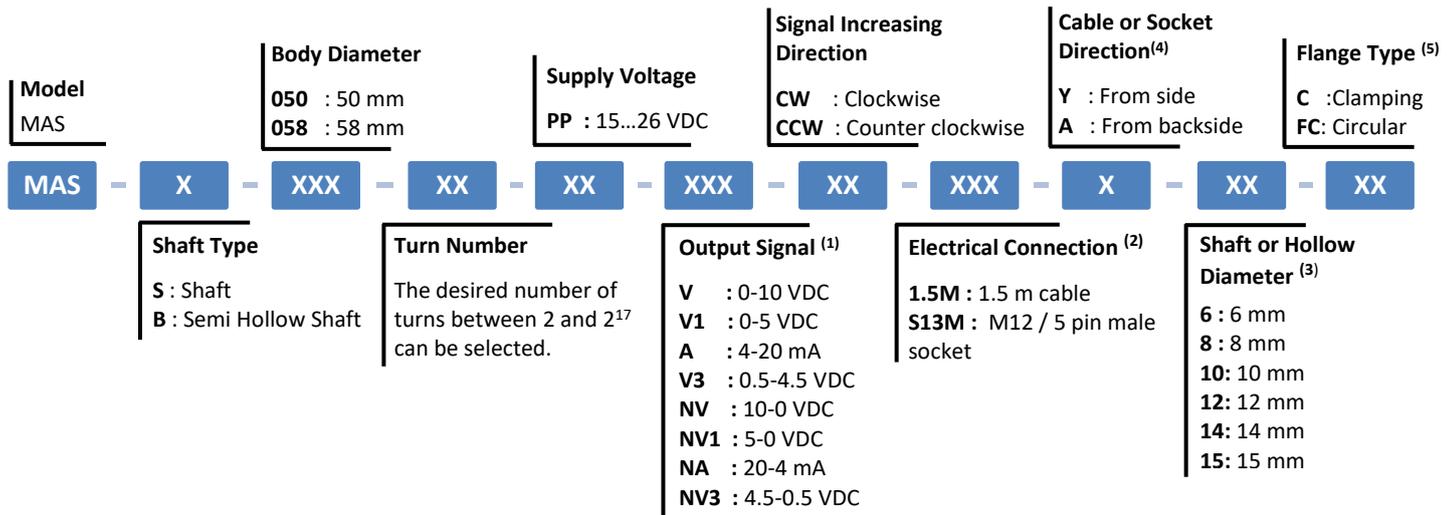
Output Signal (V, V1, A, V3)



Reverse of Output Signal (NV, NV1, NA, NV3)



Order Code



(1) The direction of the output signals can be changed optionally. In the coding, when 'N' is placed at the beginning of the normal signal, it refers to the opposite. For example; in case of **V**: 0-10 VDC, then **NV**: 10-0 VDC

(2) Cable length can be requested to a minimum of 1.5 m.

(3) Shaft or hollow diameter can be selected;

6 mm or 8 mm for MAS S 50,

6 mm, 8 mm or 10 mm for MAS S 58,

6 mm, 8 mm, 10 mm, 12 mm, 14 mm or 15 mm for MAS B 50 and MAS B 58.

(4) For products with a body diameter of 50 mm, the cable or socket outlet can be from backside; For products with a body diameter of 58 mm, it can be from side.

(5) Clamping flange can be used with MAS S 50 and MAS S 58 models,

FC flange can be used with MAS B 50 ve MAS B 58 models.

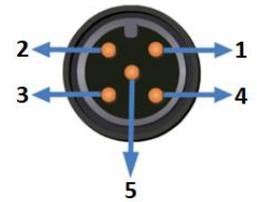
* Please contact us for your non-standard (special production) product requests.

Electrical Specifications

Working Principle	Hall Effect
Measuring Range	2...2 ¹⁷ turns
Supply Voltage	15 ... 26 VDC
Current Consumption	≤60 mA
Reverse Polarity Protection	Yes
Short Circuit Protection	Yes (only supply)
Accuracy	±0,5°
Repeatability	0,1°
Angular Resolution	16 Bit
Response Frequency	500 Hz
Electrical Interface	4-20 mA, 0-10 V, 0.5- 4.5 V, 0-5 V (programmable) 20-4 mA, 10-0 V, 4.5-0.5 V, 5-0 V (programmable)
Output Load	For current output model; min 250 Ω For voltage output model; min 1 KΩ
Electrical Connection	M12 5 pin male socket or 5 x 0,14 mm ² shielded cable

Electrical Connection

Signal	Cable	M12 / 5 pin male connector
V+ (15...26 VDC)	Red	Pin 1
Analog output	Yellow	Pin 2
GND	Black	Pin 3
N/C	Green	Pin 4
SPAN/ZERO	Pink	Pin 5



SETTING THE MEASUREMENT RANGE

With this feature, you can adjust the analog output scale according to the start and end points you have determined.

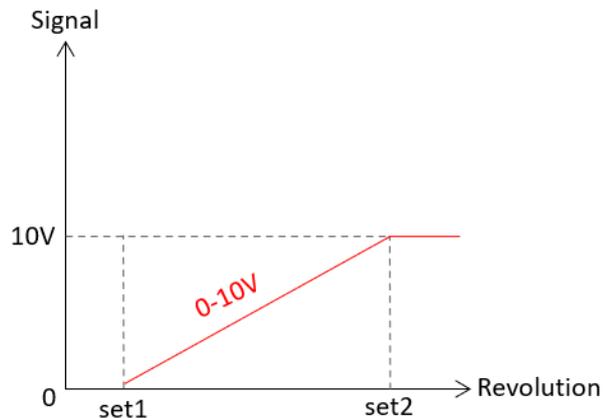
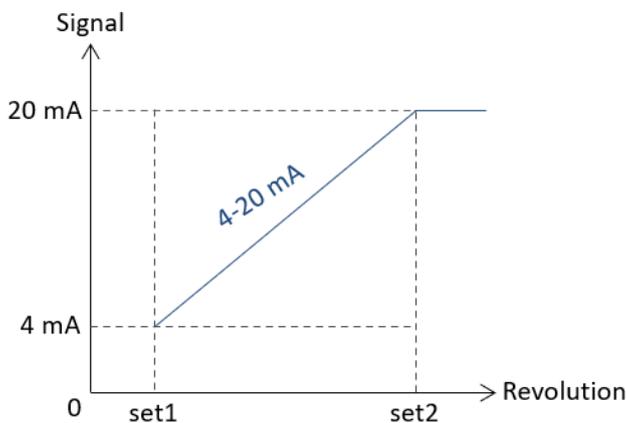
To determine the **start point (set1)**, when the shaft is at the start point, the SPAN/ZERO and GND terminals are short-circuited for at least 3 seconds and released.

Then the shaft is turned in CW (clockwise) or CCW (counterclockwise) direction to the end point and SPAN/ZERO and GND tip are short-circuited for at least 6 seconds and released to determine the **end point (set2)**.

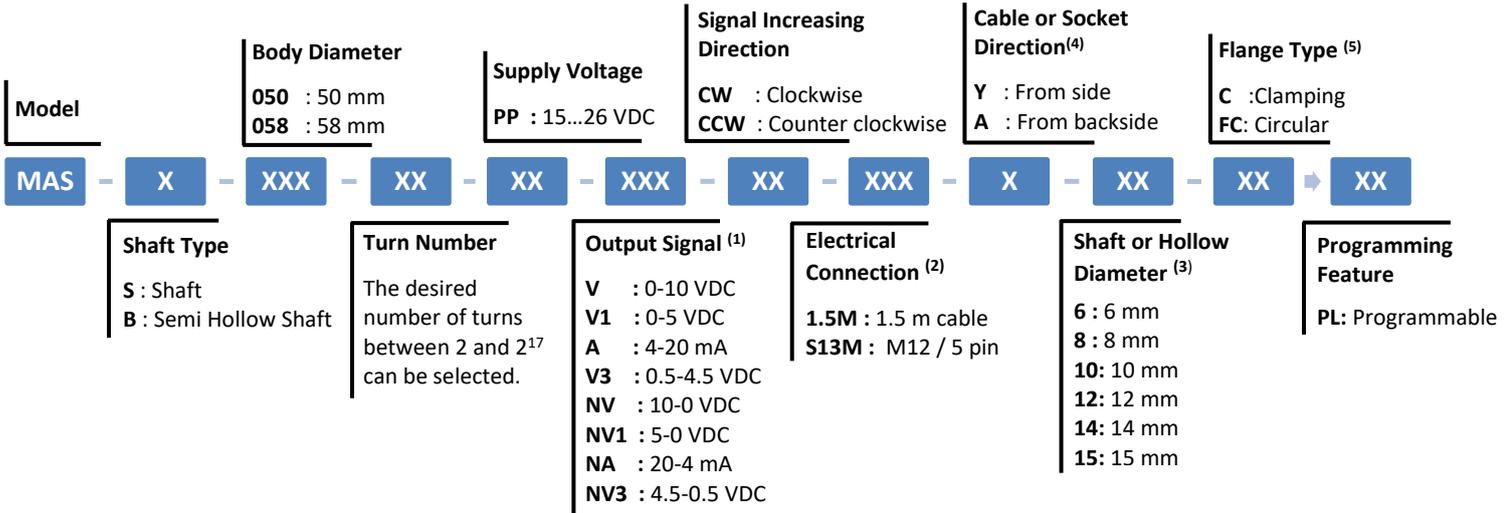
Thus, the measuring range will be permanently stored. To **return to the factory settings**, the SPAN/ZERO and GND terminal are short-circuited for at least 10 seconds.

Note: If the zero point is to be changed again after the programming is finished, the set2 point must be defined.

SAMPLE SIGNAL OUTPUT GRAPHICS



Order Code



(1) The direction of the output signals can be changed optionally. In the coding, when 'N' is placed at the beginning of the normal signal, it refers to the opposite. For example; in case of V: 0-10 VDC, then NV: 10-0 VDC

(2) Cable length can be requested to a minimum of 1.5 m.

(3) Shaft or hollow diameter can be selected;

6 mm or 8 mm for MAS S 50,

6 mm, 8 mm or 10 mm for MAS S 58,

6 mm, 8 mm, 10 mm, 12 mm, 14 mm or 15 mm for MAS B 50 and MAS B 58.

(4) For products with a body diameter of 50 mm, the cable or socket outlet can be from backside; For products with a body diameter of 58 mm, it can be from side.

(5) Clamping flange can be used with MAS S 50 and MAS S 58 models,
FC flange can be used with MAS B 50 ve MAS B 58 models.

* Please contact us for your non-standard (special production) product requests.

Electrical Specifications

Working Principle	Hall Effect
Measuring Range	2...2 ¹⁷ turns
Supply Voltage	8 ... 32 VDC
Current Consumption	≤60 mA
Reverse Polarity Protection	Yes
Short-circuit Protection	Yes (only supply)
Accuracy	±0,5°
Repeatability	0,1°
Response Frequency	500 Hz
Resolution	1...14 bits can be selected in singleturn. 1...31 bit can be selected in multiturn. singleturn + multiturn ≤= 31 bits.
Linearity	±%0.3 FS
Electrical Connection	M12 5 pin male and M12 5 pin female connector

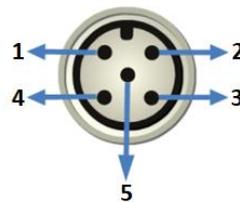
CANopen Specifications

Communication Profile	CiA 301
Device Type	CANopen, CiA DS406
ID (Node ID)	It can be set from 1 to 127 with LSS or SDO.
Baud Rate	10 kBit/s, 20 kBit/s, 50 kBit/s, 100 kBit/s, 125 kBit/s, 250 kBit/s, 500 kBit/s, 800 kBit/s, 1 Mbit/s
PDO Data Rate	100 ms
Error Control	Heartbeat, Emergency Message
PDO	3 Tx PDO
PDO Modes	Event/Time triggered, Synch/Asynch
SDO	1 server
Position Information	Object Dictionary 0x6020
Termination Resistance	Optional 120Ω

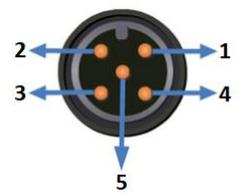
Electrical Connection

Signal	M12 / 5 Pin Connector	Cable
CAN_SHIELD	Pin 1	CAN SHIELD
V+ (8...32VDC)	Pin 2	Red
GND	Pin 3	Black
CAN_H	Pin 4	Yellow
CAN_L	Pin 5	Green

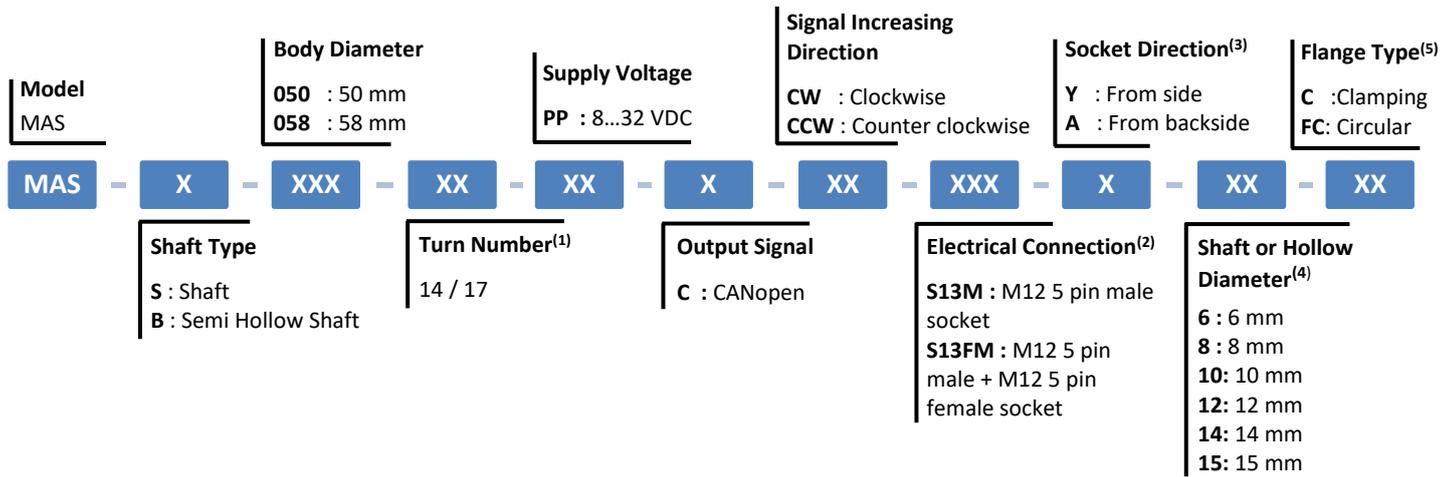
M12 5 PIN FEMALE CONN.



M12 5 IN MALE CONN.



Order Code



(1) 14: 1 bit number of turn
17: Number of turn (2¹⁷)

(2) S13M is used for products with a body diameter of 50 mm and S13FM is used for products with a body diameter of 58 mm.

(3) For products with a body diameter of 50 mm, the socket direction can only be selected from the backside,
For products with a body diameter of 58 mm, the socket direction can only be selected from the side.

(4) Shaft or hollow diameter can be selected;
6 mm or 8 mm for MAS S 50,
6 mm, 8 mm or 10 mm for MAS S 58,
6 mm, 8 mm, 10 mm, 12 mm, 14 mm or 15 mm for MAS B 50 and MAS B 58.

(5) Clamping flange can be used with MAS S 50 and MAS S 58 models,
FC flange can be used with MAS B 50 ve MAS B 58 models.

* Please contact us for your non-standard (special production) product requests.