

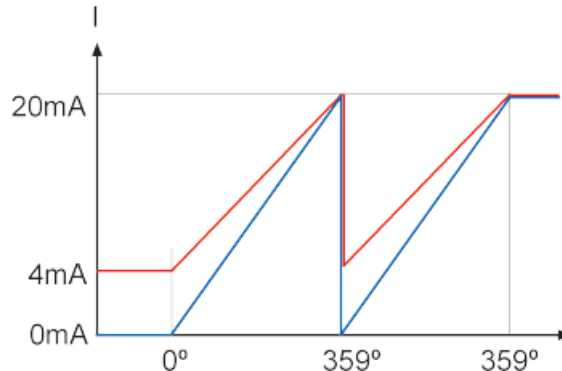
# GENERAL INFORMATION **ANALOG**

## ABSOLUT AND PROGRAMMABLE ABSOLUT ANALOG ENCODERS

### ■ Analog interface

The analog interface has two outputs: one provides the absolute position measurement as a voltage (0/10V), and the other as a current (0/20mA or 4/20mA). Both outputs come from a singleturn absolute encoder with a 12bit resolution, with the 0 absolute position (0 degrees) having a value of 0v at the V+ output and 4 or 0 mA at the I+ output.

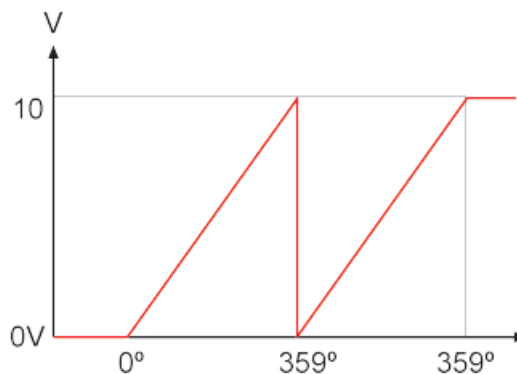
When the absolute position is 4095 (359 degrees) the V+ output will be 10v and the I+ output will be 20mA. These outputs consist of four wires (two per output): I+, I- and V+, V-, being I- and V- referenced internally to negative (GND), and thus forming two measurement loops. Depending on the measurement system implemented by the customer, one or the other output will be used (current or voltage).



### ■ Current output

#### Electrical specifications

Output form	0/20mA o 4/20mA
Resolution	Up to 12 bits (4096 positions) for 360°
Thermal stability	±20 ppm/°C
Update frequency	100KHz
Linearity error	0.07% of the active angle
R <sub>LOAD</sub> máx.	(V <sub>IN</sub> - 2 V)/20mA)
R <sub>LOAD</sub> min.	150Ω



### ■ Voltage output

#### Electrical specifications









Output form	0/10V (Vcc min.=12V)
Resolution	Up to 12 bits (4096 positions) for 360°
Slew Rate	0.7V/us
Update frequency	100KHz
Linearity error	0.05% of the active angle
Load resistance	>5kΩ
Protection against shortcircuit	Yes

# ABSOLUT ENCODERS ANALOG

- Interface analog current loop output 4..20mA, 0..20mA and 0..10 V voltage output
- Resolution 10 or 12 bits
- Solid or blind hollow shaft
- Protection class IP65 or IP67 according to DIN 40050
- Direction and range selectable
- Radial or axial connection, cable or connector output



## OVERVIEW

	Diameter 58 mm		Diameter 90 mm
	Solid shaft	Hollow shaft	Solid shaft
Singleturn	CS10 CS10 IP67 	HS10 	CS30 CS30 IP67 
Multiturn	CM10 CM10 IP67 	HM10 	CM30 CM30 IP67 
Multiturn programmable	CMP10 	HMP10 	

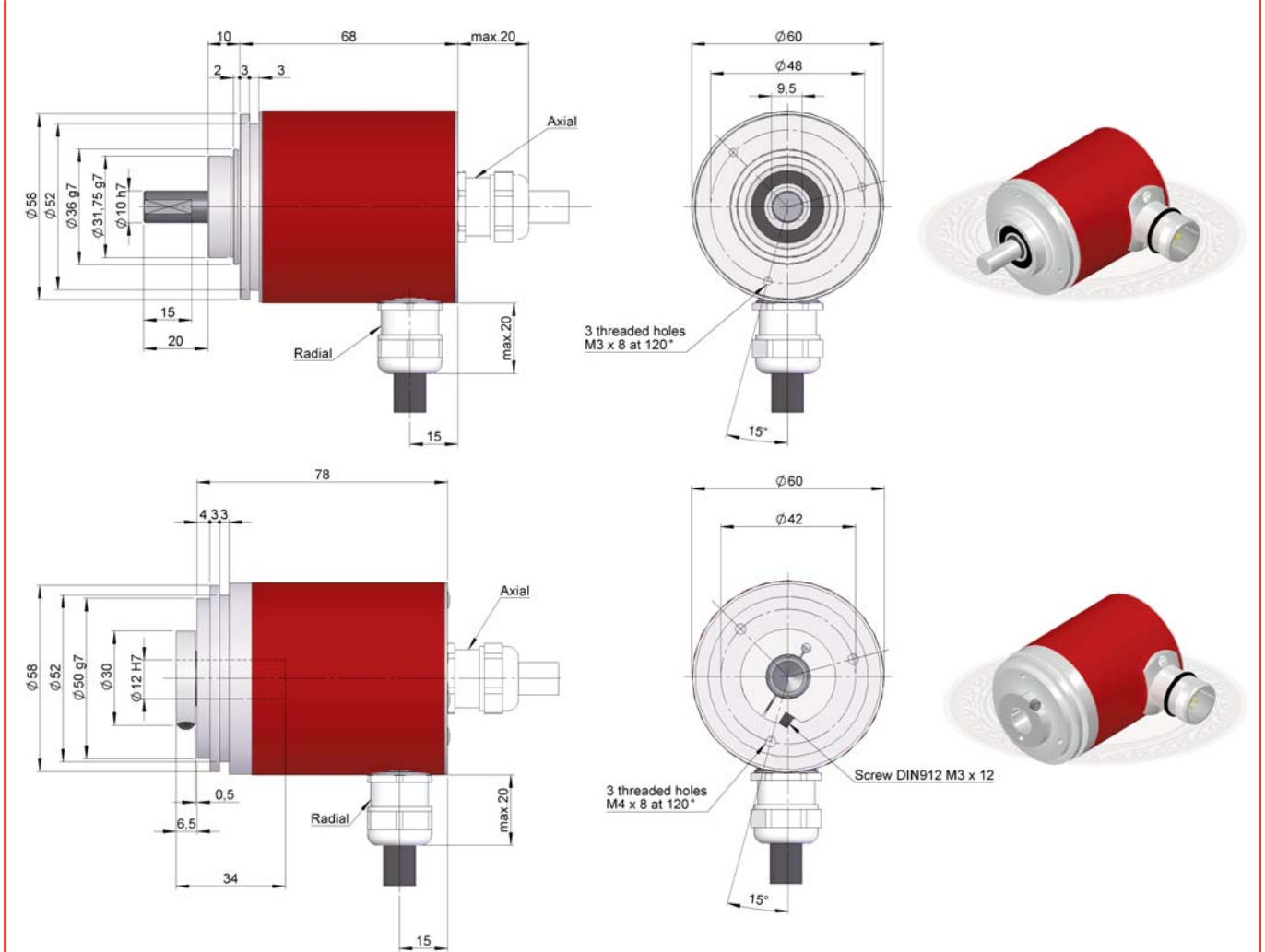
## TECHNICAL SPECIFICATIONS

	Diameter 58 mm	Diameter 90 mm
Housing	Aluminium/Stainless steel	
Shaft	Stainless steel	
Bearings	Ballraces	
Bearings lifetime	1x10 <sup>10</sup> rev.	
Maximum number of revolutions permitted mechanically	6000 rpm.	
Protection against dust and splashes according to DIN 40050	IP65 / IP67.	
Rotor inertia moment	30 gcm <sup>2</sup>	270 gcm <sup>2</sup>
Starting torque 20°C (68°F)	Máx. 2,0 Ncm	Máx. 5,0 Ncm
Maximum load permitted on axial shaft	40 N	80 N
Maximum load permitted on radial shaft	60 N	100 N
Misalignment permitted axial (blind hollow shaft)	±0.5 mm	-
Misalignment permitted radial (blind hollow shaft)	±0.3 mm	-
Weight aprox.	400 g ST, 500 g MT	1,2 kg ST, 1,3 kg MT
Operating temperature range	-10°C a +70°C	
Vibration	100 m/s <sup>2</sup> (10Hz..2000Hz)	
Shock	1000 m/s <sup>2</sup> (6ms)	
Consumption max.	100 mA (CS/HS), 150 mA (CM/HM)	
Power supply	10..30Vdc	
Interface	Analogue	
Electrical output	0..20mA, 0..10v, 4..20mA	
Configurable parameter (programmable series)	Range	
Configurable parameters	Direction	
Resolution	10 or 12 bits	
Maximum range	4096 turns	
Radial and axial connection	2 metres cable or industrial connector	

ST: Singleturn MT: Multiturn

**SINGLETURN ABSOLUT ENCODER**

- Singleturn resolution up to 12 bits
- Protection class IP65 according to DIN 40050
- External diameter 58 mm
- Solid shaft (CS) and blind hollow shaft (HS)



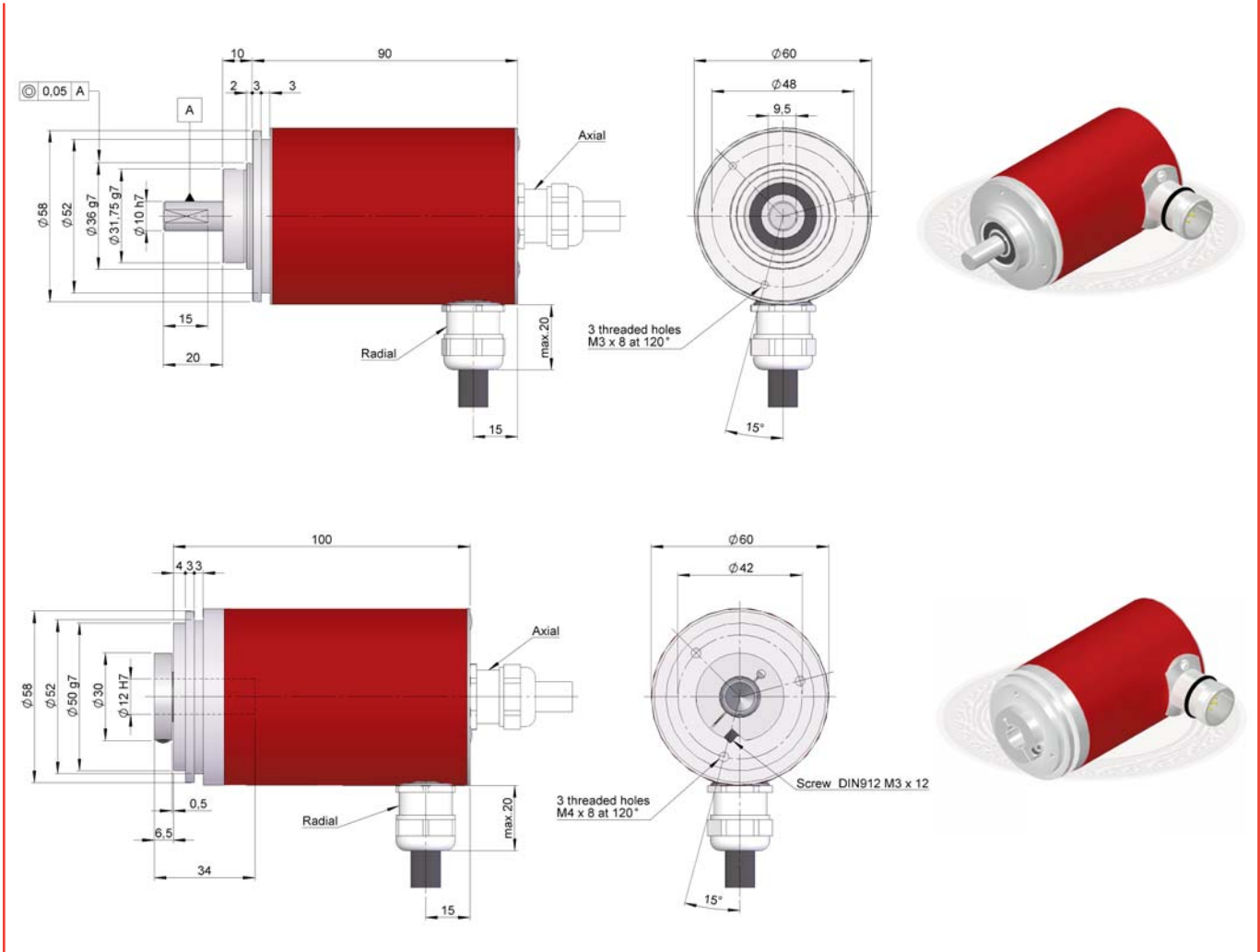
Previous mounting and installation of the encoder is recommended to read the section "TECHNICAL CONSIDERATIONS".

**ORDERING CODE**

TYPE	SERIE	SHAFT	FLANGE	CONNECTION	AXIAL RADIAL	INTERFACE	CODE	IP	POWER SUPPLY OUTPUT	CONFIG PARAMETERS	RESOLUTION	RANGE	SPECIAL CUSTOMER
● ● 10		●	●	●	●	●	●	●	●	●	● ● ● ●	● ● ● ●	● ●
CS- Singleturn Solid shaft		1- Solid Ø6x10 mm 2- Solid Ø10x20 mm 3- Blind hollow Ø12 mm 4- Blind hollow Ø10 mm	1- None 2- 90.1002 3- 90.1003 4- 90.1004 5- 90.1005 6- 90.1006	1- Cable 3- 95.0007131	1- Axial 2- Radial	2- Analog	1- Clockwise 2- Counter clockwise	1- IP65	5- 0...20mA, 15-30V 6- 4...20mA, 15-30V 7- 0...10V, 15-30V	S- Direction	1024- 10 bits 4096- 12 bits	Blank-360 degrees 180- 180 degrees 90- 90 degrees 45- 45 degrees	

**MULTITURN ABSOLUT ENCODER**

- Resolution up to 12 bits
- Protection class IP65 according to DIN 40050
- External diameter 58 mm
- Solid shaft (CM) and blind hollow shaft (HM)



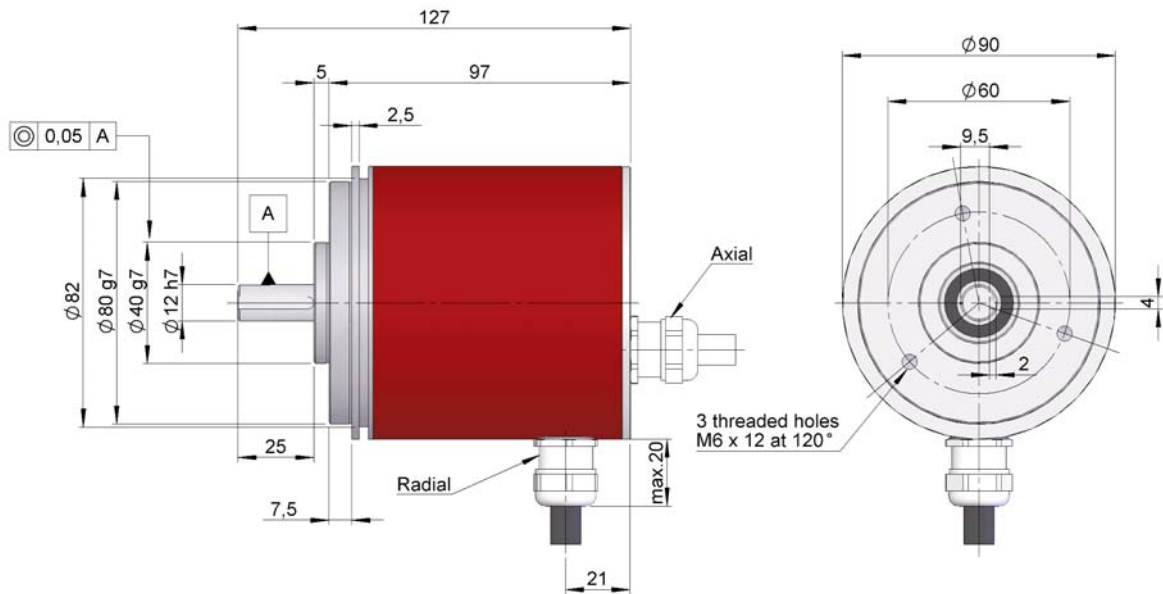
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**ORDERING CODE**

TYPE	SERIE	SHAFT	FLANGE	CONNECTION	AXIAL RADIAL	INTERFACE	CODE	IP	POWER SUPPLY OUTPUT	RESOLUTION	RANGE	SPECIAL CUSTOMER
● ●	10	●	●	●	●	●	●	●	●	● ● ● ●	● ● ● ●	● ● ● ●
CM- Multiturn Solid shaft		1- Solid Ø10x20 mm 2- Solid Ø6x10 mm 3- Blind hollow Ø12 mm 4- Blind hollow Ø10 mm	1- None 2- 90.1002 3- 90.1003 4- 90.1004 5- 90.1005 6- 90.1006	1- Cable 3- 95.0007131	1- Axial 2- Radial	2- Analog	1- Clockwise 2- Counter clockwise	1- IP65	5- 0...20mA, 15-30V 6- 4...20mA, 15-30V 7- 0...10V, 15-30V	1024- 10 bits 4096- 12 bits	2- 2 turns 4- 4 turns 8- 8 turns 16- 16 turns 32- 32 turns 64- 64 turns 128- 128 turns 256- 256 turns 512- 512 turns 1024- 1024 turns 2048- 2048 turns 4096- 4096 turns	

**ABSOLUT ENCODER FOR HEAVY DUTY INDUSTRIAL APPLICATIONS**

- Singleturn resolution (CS) or multiturn (CM) up to 12 bits
- Protection class IP65 according to DIN 40050
- External diameter 90 mm
- Solid shaft



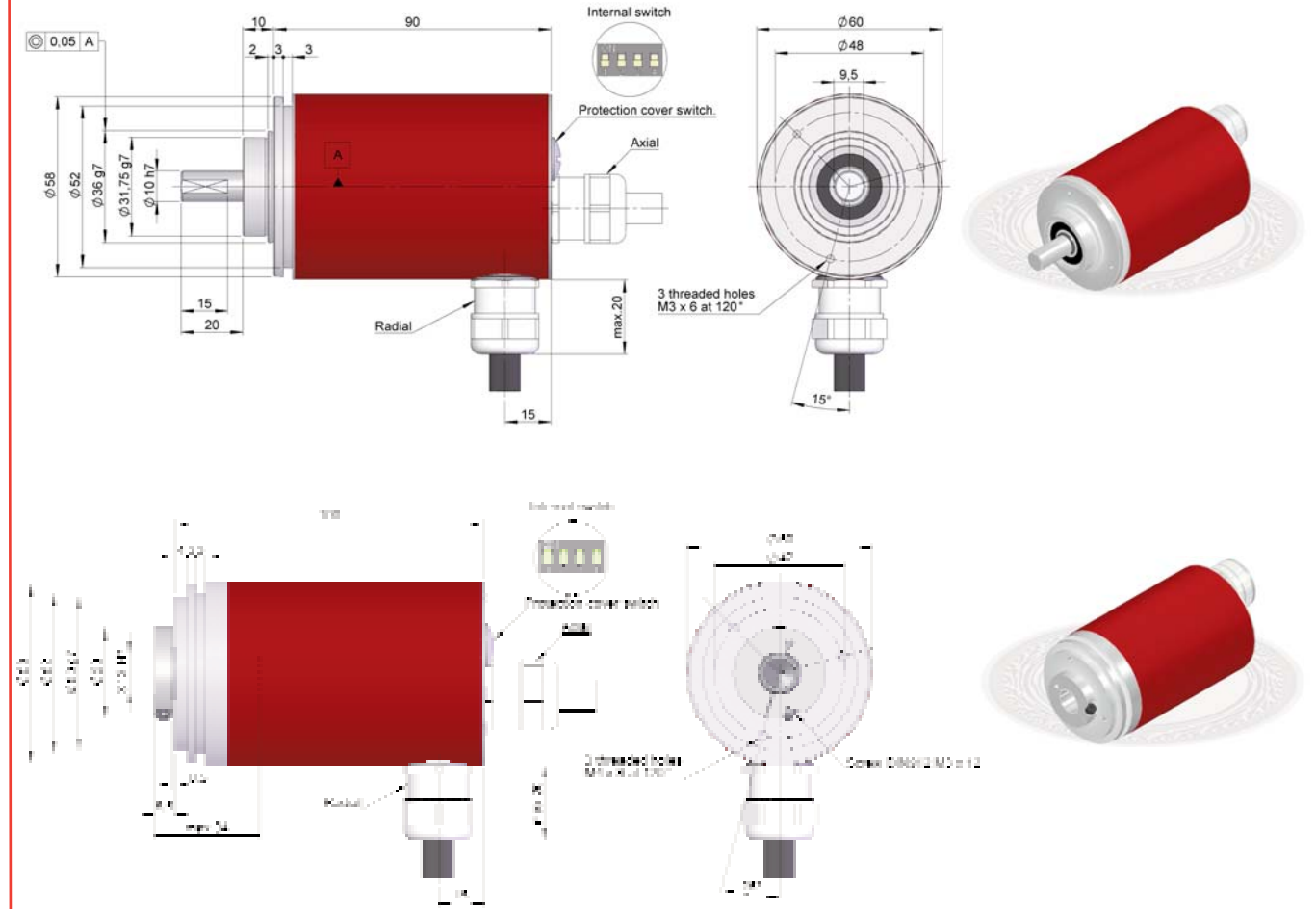
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**ORDERING CODE**

TYPE	SERIE	SHAFT	FLANGE	CONNECTION	AXIAL RADIAL	INTERFACE	CODE	IP	POWER SUPPLY OUTPUT	CONFIG. PARAMETERS	RESOLUTION	RANGE	SPECIAL CUSTOMER
● ● CS- Singleturn ● CM- Multiturn	● 30	● 2- Ø12 x 25 mm	● 1- None ● 3- 90.1008	● 1- Cable ● 3- 95.0007131	● 1- Axial ● 2- Radial	● 2- Analog 1- Clockwise 2- Counter clockwise	● 1- IP65	● 5- 0...20mA, 15-30V ● 6- 4...20mA, 15-30V ● 7- 0...10V, 15-30V	● S- Direction (only singleturn)	● 1024- 10 bits ● 4096- 12 bits	● 45- 1/8 turn ● 90- 1/4 turn ● 180- 1/2 turn ● Blank- 1 turn	● 2- 2 turns ● 4- 4 turns ● 8- 8 turns ● 16- 16 turns ● 32- 32 turns ● 64- 64 turns ● 128- 128 turns ● 256- 256 turns ● 512- 512 turns ● 1024- 1024 turns ● 2048- 2048 turns ● 4096- 4096 turns	● CS-singleturn ● CM-multiturn

CONFIGURABLE ABSOLUT MULTITURN ENCODER

- Resolution up to 12 bits
- Configurable range by switch up to 4096 turns
- Protection class IP65 according to DIN 40050
- External diameter 58 mm
- Solid shaft (CMP) and blind hollow shaft (HMP)



Previous mounting and installation of the encoder is recommended to read the section "TECHNICAL CONSIDERATIONS".

ORDERING CODE

TYPE	SERIE	SHAFT	FLANGE	CONNECTION	AXIAL RADIAL	INTERFACE	CODE	IP	POWER SUPPLY OUTPUT	RESOLUTION	SPECIAL CUSTOMER
● ●	10	●	●	●	●	●	●	●	●	● ● ● ● ● ● ● ●	● ●
CMP- Solid shaft HMP- Blind hollow shaft		1- Solid Ø10x20 mm 2- Solid Ø6x10 mm 3- Blind hollow Ø12 mm 4- Blind hollow Ø10 mm	1- None 2- 90.1002 3- 90.1003 4- 90.1004 5- 90.1005 6- 90.1006	1- Cable 3- 95.0007131	1- Axial 2- Radial	2- Analog	1- Clockwise 2- Counter clockwise	1- IP65	5- 0...20mA, 15-30V 6- 4...20mA, 15-30V 7- 0...10V, 15-30V	1024- 10 bits 4096- 12 bits	

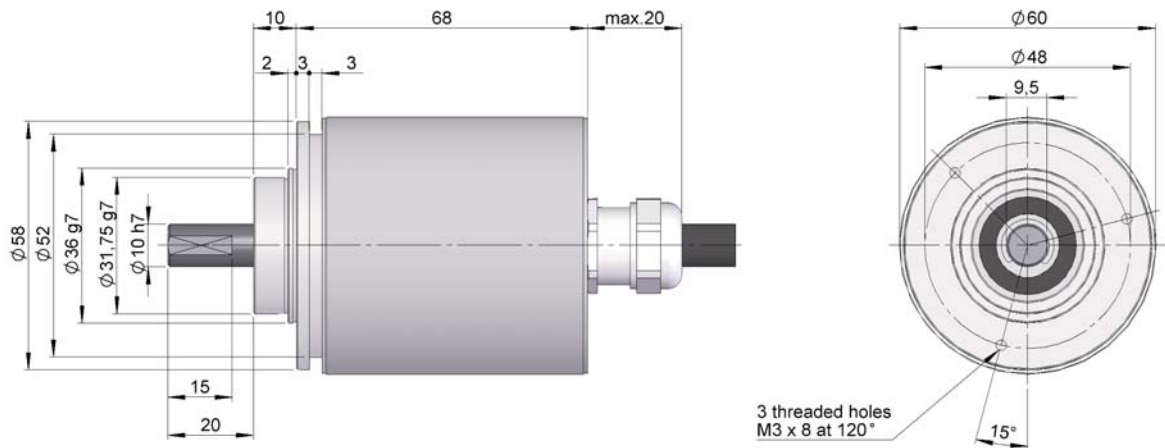
CONFIGURABLE RANGE

Switch 1	Switch 2	Switch 3	Switch 4	Analog output range
ON	ON	ON	ON	1/8 turn
OFF	ON	ON	ON	1/4 turn
ON	OFF	ON	ON	1/2 turn
OFF	OFF	ON	ON	1 turn
ON	ON	OFF	ON	2 turns
OFF	ON	OFF	ON	4 turns
ON	ON	OFF	ON	8 turns
OFF	OFF	OFF	ON	16 turns
ON	ON	OFF	OFF	32 turns
OFF	ON	OFF	OFF	64 turns
ON	OFF	ON	OFF	128 turns
OFF	OFF	ON	OFF	256 turns
ON	ON	OFF	OFF	512 turns
OFF	ON	OFF	OFF	1024 turns
ON	ON	OFF	OFF	2048 turns
OFF	OFF	OFF	OFF	4096 turns



**SINGLETURN ABSOLUT ENCODER FOR SEVERE INDUSTRIAL APPLICATIONS**

- Singleturn resolution up to 12 bits
- Protection class IP67 according to DIN 40050
- External diameter 58 mm
- Solid shaft



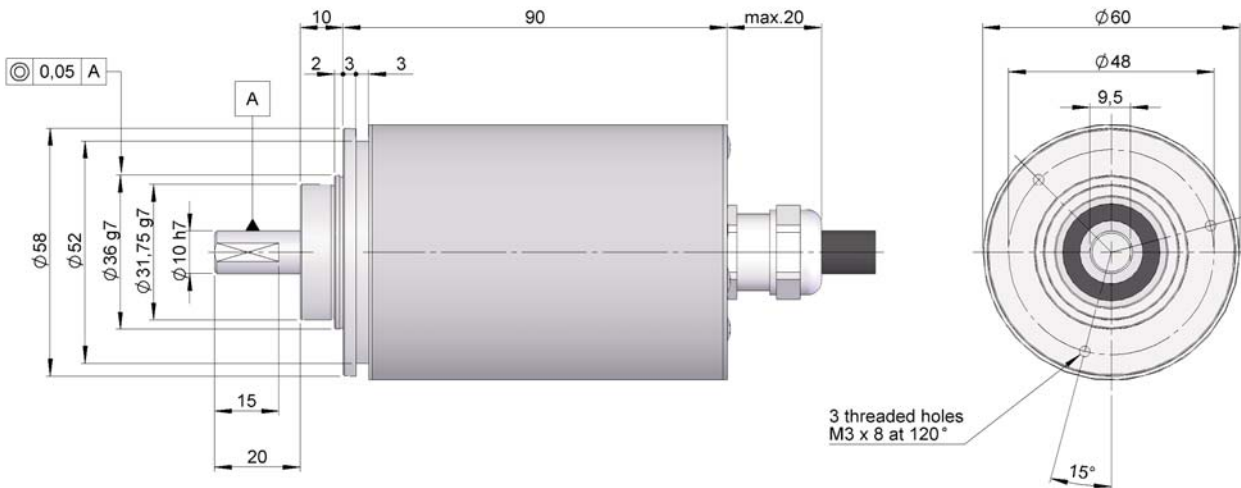
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**ORDERING CODE**

TYPE	SERIE	SHAFT	FLANGE	CONNECTION	AXIAL RADIAL	INTERFACE	DIRECTIO	IP	POWER SUPPLY OUTPUT	CONFIG PARAMETERS	RESOLUTION	RANGE	SPECIAL CUSTOMER
● ● ● CS- Singleturn	10	●	●	●	●	●	●	●	●	●	● ● ● ●	● ● ● ●	● ● ●
		1- Ø6 x 10 mm 2- Ø10 x 20 mm	1- None 2- 90.1002 3- 90.1003 4- 90.1004 5- 90.1005 6- 90.1006	1- Cable	1- Axial	2- Analog	1- Clockwise 2- Counter clockwise	2- Stainless steel IP67 3- IP67	5- 0...20mA, 15-30V 6- 4...20mA, 15-30V 7- 0...10V, 15-30V	S- Direction	1024- 10 bits 4096- 12 bits	Blank- 360 degrees 180- 180 degrees 90- 90 degrees 45- 45 degrees	

**MULTITURN ABSOLUT ENCODER FOR SEVERE INDUSTRIAL APPLICATIONS**

- Multiturn resolution up to 12 bits
- Protection class IP67 according to DIN 40050
- External diameter 58 mm
- Solid shaft



Previous mounting and installation of the encoder is recommended to read the section "TECHNICAL CONSIDERATIONS".

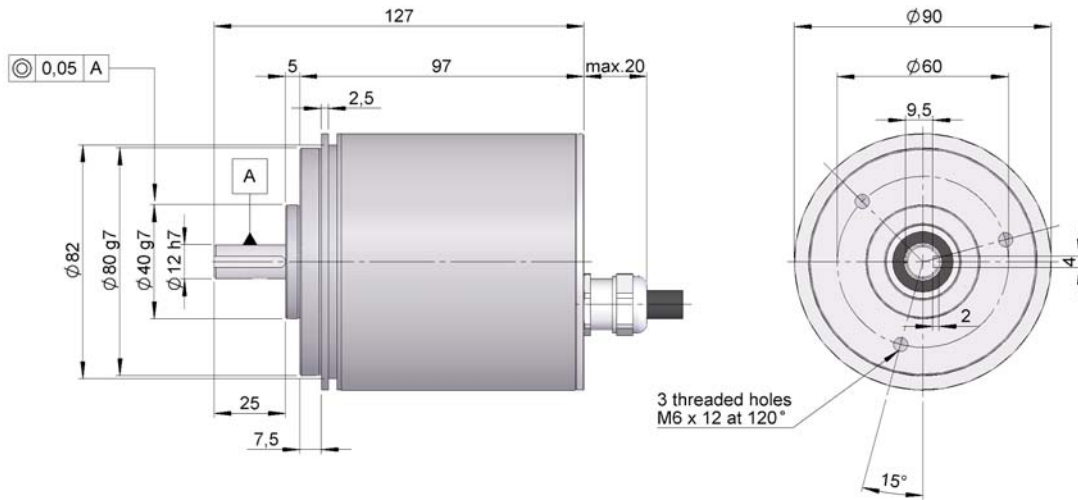
**ORDERING CODE**

TYPE	SERIE	SHAFT	FLANGE	CONNECTION	AXIAL RADIAL	INTERFACE	CODE	IP	POWER SUPPLY OUTPUT	RESOLUTION	RANGE	SPECIAL CUSTOMER
● ● CM- Multiturn	10	●	●	●	●	●	●	●	●	● ● ● ●	● ● ● ●	● ● ● ●
		1- Ø10 x 20 mm	1- None 2- 90.1002 3- 90.1003 4- 90.1004 5- 90.1005 6- 90.1006	1- Cable	1- Axial	2- Analog	1- Clockwise 2- Counter clockwise	2- Stainless steel IP67 3- IP67	5- 0...20mA, 15-30v 6- 4...20mA, 15-30v 7- 0...10v, 15-30v	1024- 10 bits 4096- 12 bits	2- 2 turns 4- 4 turns 8- 8 turns 16- 16 turns 32- 32 turns 64- 64 turns 128- 128 turns 256- 256 turns 512- 512 turns 1024- 1024 turns 2048- 2048 turns 4096- 4096 turns	



**ABSOLUT ENCODER FOR EXTREME AND SEVERE INDUSTRIAL APPLICATIONS**

- Singleturn resolution (CS) or multiturn (CM) up to 12 bits
- Protection class IP67 according to DIN 40050
- External diameter 90 mm
- Solid shaft



Previous mounting and installation of the encoder is recommended to read the section "TECHNICAL CONSIDERATIONS".

**ORDERING CODE**

TYPE	SERIE	SHAFT	FLANGE	CONNECTION	AXIAL RADIAL	INTERFACE	CÓDIGO	IP	POWER SUPPLY OUTPUT	CONFIG. PARAMETERS	RESOLUTION	RANGE	SPECIAL CUSTOMER
● ● CS- Singleturn ● CM- Multiturn	● ● 30	● 2- Ø12 x 25 mm	● 1- None 3- 90.1008	● 1- Cable	● 1- Axial	● 2- Analog	● 1- Clockwise 2- Counter clockwise	● 2- Stainless steel IP67 3- IP67	● 5- 0...20mA, 15-30V 6- 4...20mA, 15-30V 7- 0...10V, 15-30V	● ● ● ● ● S- Direction (only singleturn) 1024- 10 bits 4096- 12 bits	● ● ● ● ● 1024- 10 bits 4096- 12 bits	● ● ● ● ● 45- 1/8 turn 90- 1/4 turn 180- 1/2 turn Blank- 1 turn 2- 2 turns 4- 4 turns 8- 8 turns 16- 16 turns 32- 32 turns 64- 64 turns 128- 128 turns 256- 256 turns 512- 512 turns 1024- 1024 turns 2048- 2048 turns 4096- 4096 turns	● ● ● ● ● CS-singleturn CM-multiturn

# CONNECTION AND CONNECTORS

## ANALOG OUTPUT CONNECTIONS



	Cable 5 x 0.14 Output current	Cable 5 x 0.14 Output voltage	95.0007131 M23 12p
<b>GND</b>	Yellow	Yellow	1
<b>Vcc</b>	White	White	2
<b>I +</b>	Brown	-	3
<b>I -</b>	Green	-	4
<b>V +</b>	-	Brown	5
<b>V -</b>	-	Green	6
<b>DIR</b>	Grey	Grey	7
<b>Screen</b>	Screen	Screen	12