

# HMG10-T - Incremental

Through hollow shaft

Integrated speed switch - Magnetic sensing - Number of pulses and switching speed freely programmable (option)

## Overview

- Incremental encoder (optionally programmable)
- HTL/TTL output driver for cable length up to 350 m
- Very high resistance to shock and vibrations
- Two-sided insulated bearing system with hybrid bearings
- Special protection against corrosion CX (C5-M)
- Large terminal box, turn by 180°
- Support plate for torque arm 360° freely positionable
- Mounting compatible with HOG10 encoders
- Function display via LEDs



Picture similar

## Technical data

### Technical data - electrical ratings

Voltage supply	4.75...30 VDC
Short-circuit proof	Yes
Consumption w/o load	≤100 mA
Initializing time	≤ 500 ms after power on
Pulses per revolution	1 ... 131072
Phase shift	90 ° ±20°
Duty cycle	40...60 %
Reference signal	Zero pulse, width 90°
Sensing method	Magnetic
Output signals	A+, B+, R+, A-, B-, R- Error output nE+, nE-
Output stages	TTL/HTL (Vin = Vout)
Programming interface	RS485 (≤600 m)
Programmable parameters	Pulse number Switch-off and switch-on speeds Switching delay time
Diagnostic function	Function control
Status indicator	4 LEDs in device back side
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3
Approval	CE UL approval / E217823 EAC

### Technical data - electrical ratings (speed switch)

Switching accuracy	± 2 % (or 1 Digit)
Switching outputs	1 output (Open collector)
Output switching capacity	30 VDC; ≤100 mA

### Technical data - electrical ratings (speed switch)

Switching hysteresis	10 ... 100 % adjustable
Switching delay time	≤20 ms

### Technical data - mechanical design

Size (flange)	ø105 mm
Shaft type	ø16...20 mm (through hollow shaft)
Admitted shaft load	≤450 N axial ≤650 N radial
Flange	Support plate for torque arm, 360° freely positionable
Protection EN 60529	IP 66/IP 67
Operating speed	≤12000 rpm
Range of switching speed	ns (off) = ±2...12000 rpm, factory setting 6000 rpm
Operating torque typ.	10 Ncm
Rotor moment of inertia	950 gcm <sup>2</sup>
Material	Housing: aluminium alloy Shaft: stainless steel
Operating temperature	-40...+95 °C
Relative humidity	95 % non-condensing
Resistance	IEC 60068-2-6 Vibration 30 g, 10-2000 Hz IEC 60068-2-27 Shock 400 g, 1 ms
Corrosion protection	IEC 60068-2-52 Salt mist for ambient conditions CX (C5-M) according to ISO 12944-2
Connection	Terminal box Flange connector M23
Weight approx.	1.6 kg

## Optional

- Incremental output and speed switch freely programmable or fixed ex works
- Integrated speed switch
- Second incremental output, not galvanic isolated

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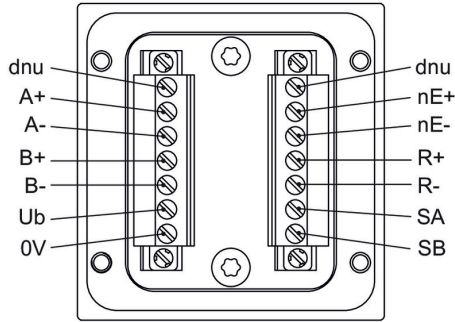
Integrated speed switch - Magnetic sensing - Number of pulses and switching speed freely programmable (option)

## Terminal assignment

**1x terminal box - View B** (see dimensions)

**Incremental output II**

Connection reference -P

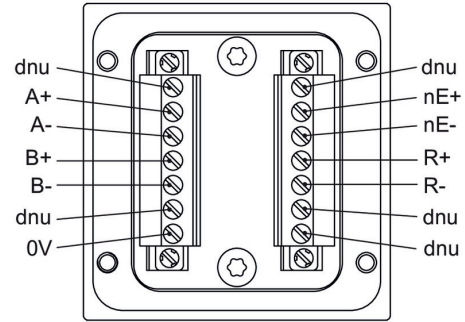


## Terminal assignment

**2x terminal box - View B** (see dimensions)

**Incremental output II**

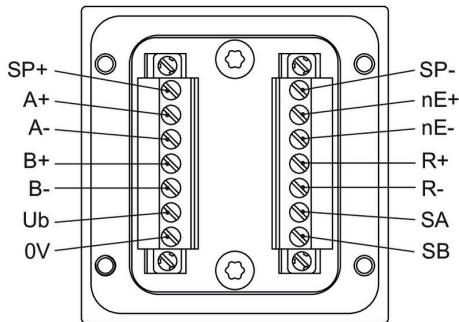
Connection reference -M



**1x terminal box - View B** (see dimensions)

**Incremental output II + speed switch**

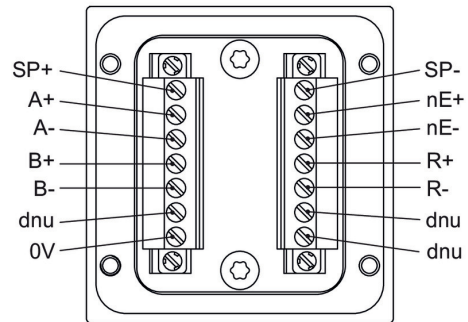
Connection reference -P



**2x terminal box - View B** (see dimensions)

**Incremental output II + speed switch**

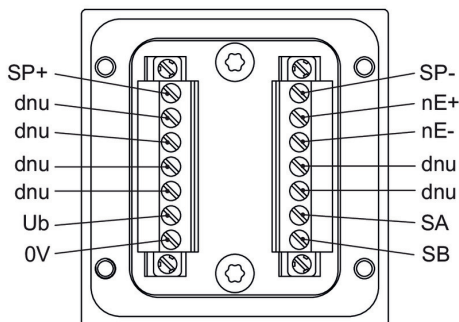
Connection reference -M



**1x terminal box - View B** (see dimensions)

**Speed switch**

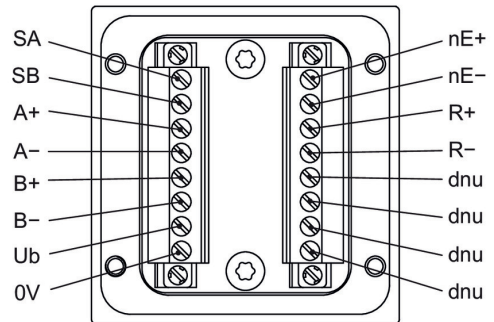
Connection reference -P



**2x terminal box - View A** (see dimensions)

**Incremental output I**

Connection reference -M



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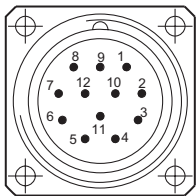
## Terminal assignment

**1x flange connector M23 - View B** (see dimensions)

**Incremental output II**

Connection reference -H

Pin	Assignment
1	B-
2	SB
3	R+
4	R-
5	A+
6	A-
7	dnu
8	B+
9	dnu
10	0 V
11	SA
12	Ub



Flange socket M23  
(male, 12-pin),  
CW

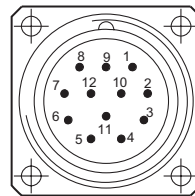
## Terminal assignment

**1x flange connector M23 - View B** (see dimensions)

**Speed switch**

Connection reference -H

Pin	Assignment
1	dnu
2	SB
3	dnu
4	dnu
5	dnu
6	dnu
7	SP+
8	dnu
9	SP-
10	0 V
11	SA
12	Ub



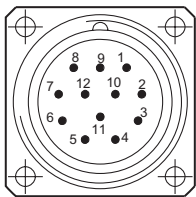
Flange socket M23  
(male, 12-pin),  
CW

**1x flange connector M23 - View B** (see dimensions)

**Incremental output II + speed switch**

Connection reference -H

Pin	Assignment
1	B-
2	SB
3	R+
4	R-
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Flange socket M23  
(male, 12-pin),  
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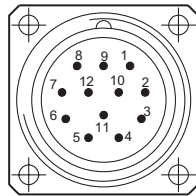
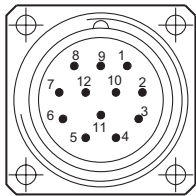
## Terminal assignment

**2x flange connector M23 - View B / A (see dimensions)**

**Incremental output II / incremental output I**

Connection reference -L

Pin	View B/Inc. outp. II	View A/Inc. outp. I
1	B-	B-
2	dnu	dnu
3	R+	R+
4	R-	R-
5	A+	A+
6	A-	A-
7	dnu	SA
8	B+	B+
9	dnu	SB
10	0 V	0 V
11	dnu	dnu
12	dnu	Ub



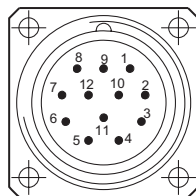
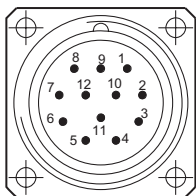
Flange socket M23 (male, 12-pin), CW

**2x flange connector M23 - View B / A (see dimensions)**

**Incremental output II + speed switch / incremental output I**

Connection reference -L

Pin	View B/Inc. outp. II + DSL	View A/Inc. outp. I
1	B-	B-
2	dnu	dnu
3	R+	R+
4	R-	R-
5	A+	A+
6	A-	A-
7	SP+	SA
8	B+	B+
9	SP-	SB
10	0 V	0 V
11	dnu	dnu
12	dnu	Ub



Flange socket M23 (male, 12-pin), CW

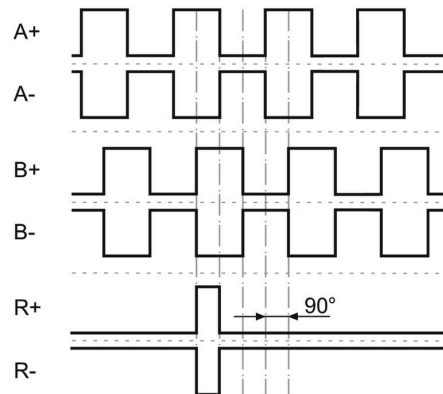
## Terminal significance

Ub	Voltage supply
0V	Ground
A+	Output signal channel 1
A-	Output signal channel 1 inverted
B+	Output signal channel 2 (offset by 90° to channel 1)
B-	Output signal channel 2 inverted
R+	Zero pulse (reference signal)
R-	Zero pulse inverted
nE+	System OK+ / error output
nE-	System OK_ / error output inverted
SP+	DSL_OUT1 / speed switch (Open collector)
SP-	DSL_OUT2 / speed switch (0V)
SA	RS485+ / programming interface
SB	RS485- / programming interface
dnu	Do not use

## Output signals

### HTL/TTL

Positive rotating direction when looking at the flange (see dimensions)

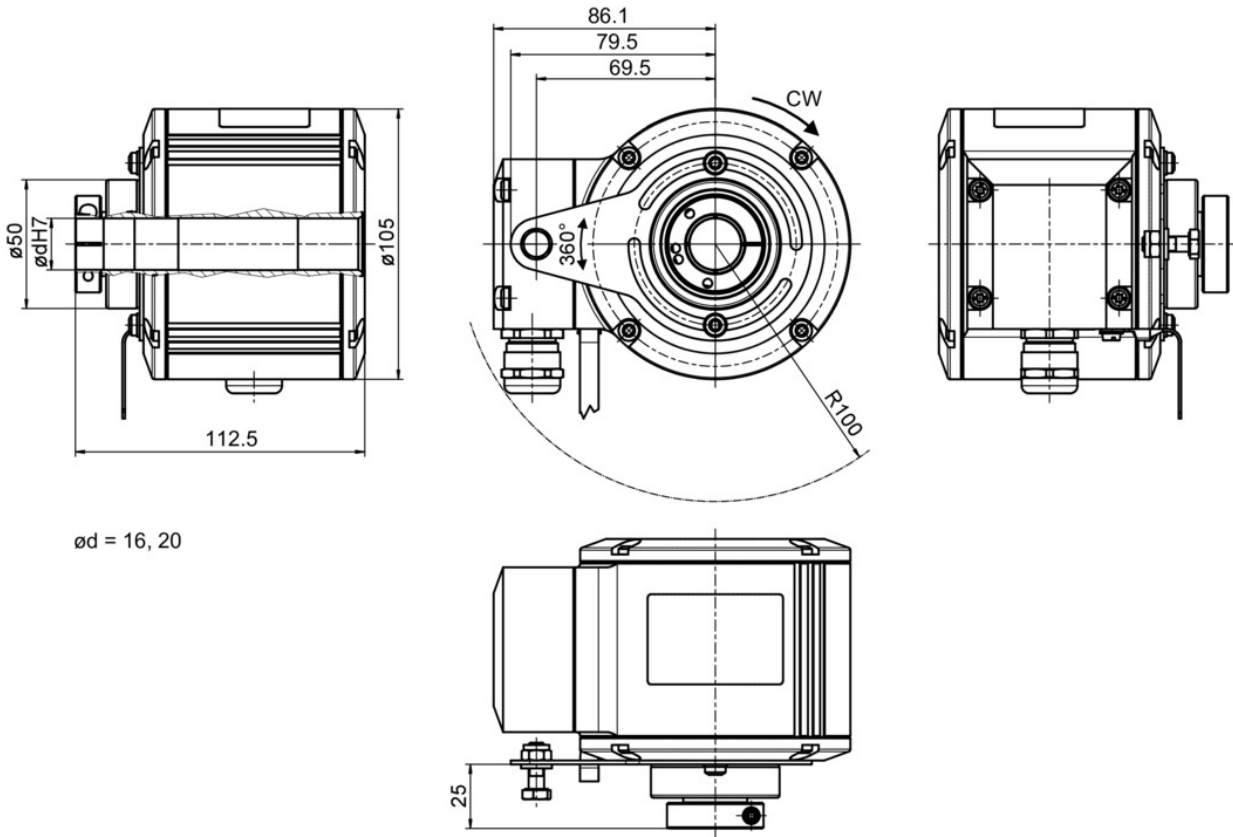


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### Dimensions



$\varnothing d = 16, 20$

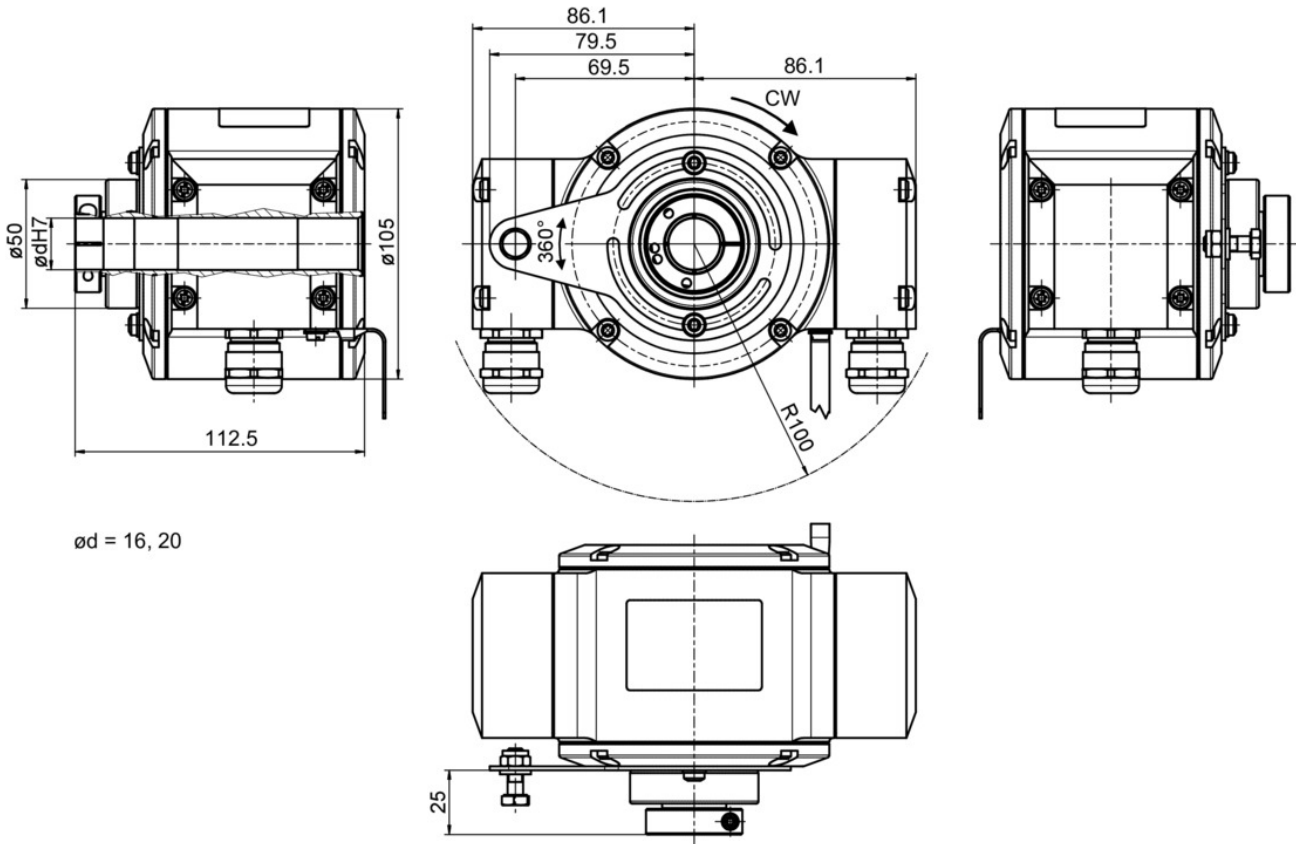
Through hollow shaft with 1x terminal box (connection reference -P)

# HMG10-T - Incremental

Through hollow shaft

Integrated speed switch - Magnetic sensing - Number of pulses and switching speed freely programmable (option)

## Dimensions



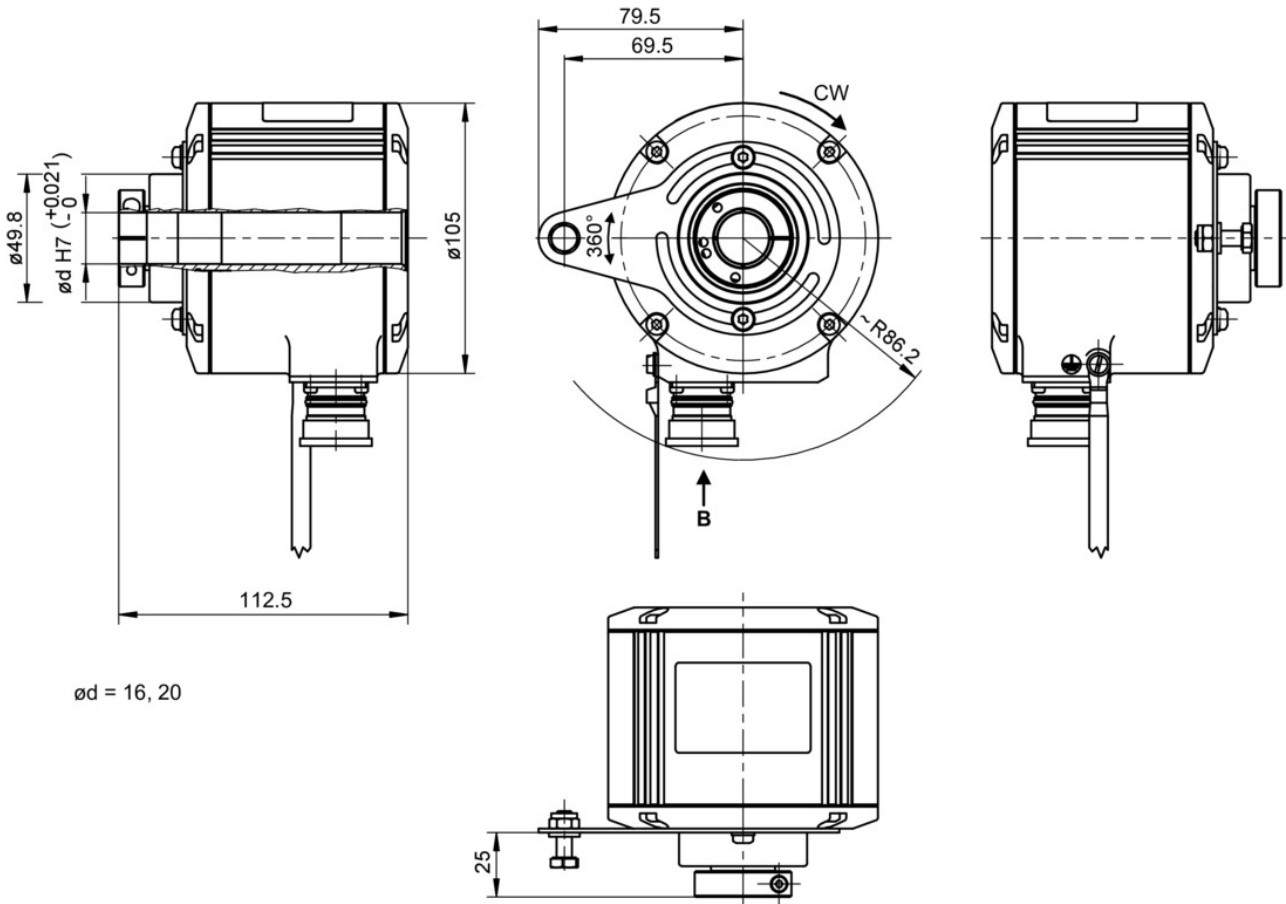
Through hollow shaft with 2x terminal box (connection reference -M)

# HMG10-T - Incremental

Through hollow shaft

Integrated speed switch - Magnetic sensing - Number of pulses and switching speed freely programmable (option)

## Dimensions



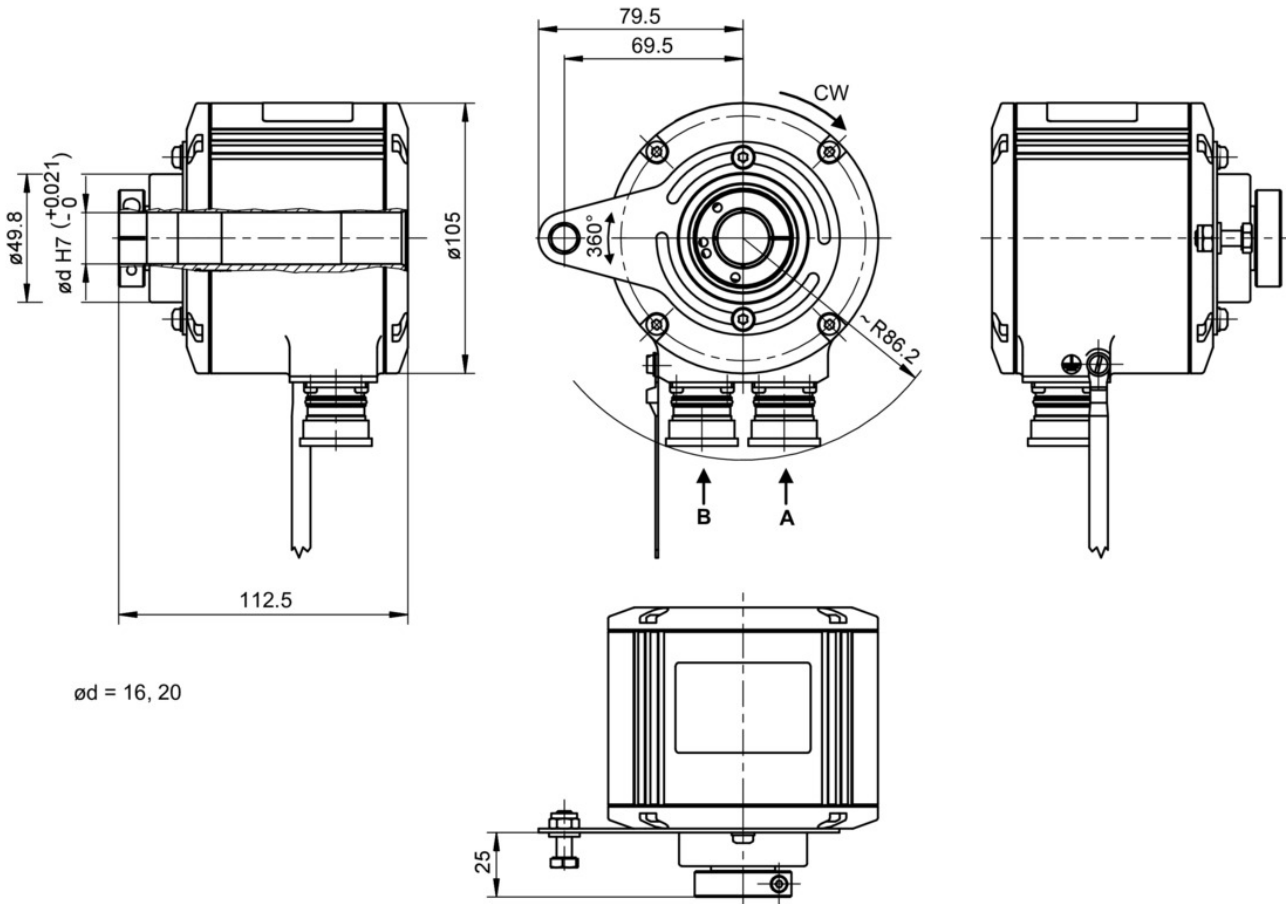
Through hollow shaft with 1x flange connector M23 (connection reference -H)

# HMG10-T - Incremental

Through hollow shaft

Integrated speed switch - Magnetic sensing - Number of pulses and switching speed freely programmable (option)

## Dimensions



Through hollow shaft with 2x flange connector M23 (connection reference -L)



# HMG10-T - Incremental

Through hollow shaft

Integrated speed switch - Magnetic sensing - Number of pulses and switching speed freely programmable (option)

**Ordering reference**

	HMG10	#	#	-	T	H	#	.	#	#	U0	.	0	0	0	#	#	.	G
<b>Product</b>	HMG10																		
<b>Programmable</b>																			
Non programmable																			
Programmable																			
<b>Digital speed switch</b>																			
Without																			
With																			
<b>Shaft type</b>																			
Through hollow shaft																			
<b>Flange (Hollow shaft)</b>																			
Support (Support plate) for torque arm, hybrid bearings																			
<b>Protection class</b>																			
IP 66 and IP 67, optimized for dusty, abrasive environment																			
IP 66 and IP 67, optimized for oily, wet environment																			
IP 66 and IP 67, optimized for tropical environment																			
<b>Through hollow shaft</b>																			
Ø16 mm, clamping ring, A end																			
Ø20 mm, clamping ring, A end																			
Ø16 mm, keyway																			
<b>Connection</b>																			
Terminal box radial, cable gland M20 (assignment incremental / speed switch)																			
Terminal box 2x radial, cable gland M20																			
Flange socket radial, M23, 12 pin, male, CW (assignment incremental / speed switch)																			
Flange socket radial, 2x M23, 12 pin, male, CW (assignment incremental / speed switch)																			
<b>Supply voltage</b>																			
4,75...30 VDC																			
<b>Resolution singleturn position</b>																			
No position signal																			
<b>Resolution multiturn position</b>																			
No multiturn signal																			
<b>Resolution speed</b>																			
No speed signal																			
<b>Resolution supplement I</b>																			
No additional output I																			
512 ppr TTL/HTL push-pull (Vin=Vout), 6 channels																			
1024 ppr TTL/HTL push-pull (Vin=Vout), 6 channels																			
2048 ppr TTL/HTL push-pull (Vin=Vout), 6 channels																			
3072 ppr TTL/HTL push-pull (Vin=Vout), 6 channels																			
4096 ppr TTL/HTL push-pull (Vin=Vout), 6 channels																			
5000 ppr TTL/HTL push-pull (Vin=Vout), 6 channels																			
8192 ppr TTL/HTL push-pull (Vin=Vout), 6 channels																			

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## Ordering reference

**HMG10 # # - T H # . # # U0 . 0 0 0 # # . G**

### Resolution supplement II

No additional output II	0
512 ppr TTL/HTL push-pull (Vin=Vout), 6 channels	F
1024 ppr TTL/HTL push-pull (Vin=Vout), 6 channels	A
2048 ppr TTL/HTL push-pull (Vin=Vout), 6 channels	B
3072 ppr TTL/HTL push-pull (Vin=Vout), 6 channels	U
4096 ppr TTL/HTL push-pull (Vin=Vout), 6 channels	T
5000 ppr TTL/HTL push-pull (Vin=Vout), 6 channels	M
8192 ppr TTL/HTL push-pull (Vin=Vout), 6 channels	R

### Operating temperature

-40...+95 °C

G

## Accessories

### Mounting accessories

11043628	Torque arm M6, length 67...70 mm
11004078	Torque arm M6, length 120...130 mm (≥71 mm)
11002915	Torque arm M6, length 425...460 mm (≥131 mm)
11054917	Torque arm M6 insulated, length 67...70 mm
11072795	Torque arm M6 insulated, length 120...130 mm (≥71 mm)
11082677	Torque arm M6 insulated, length 425...460 mm (≥131 mm)
11077197	Mounting kit for torque arm size M6 and earthing strap
11077087	Mounting and dismounting set

### Connectors and cables

	Sensor cable for encoders HEK 8
	Sensor cable for encoders HEK 17
11191144	Programming cable for HMG10P/PMG10P (SSI) with terminal box

### Programming accessories

11190106	Z-PA.SDL.1 - WLAN-Adapter
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