

# Absolute encoders - bus interfaces

Blind hollow shaft or cone shaft (1:10)

PROFINET / 13 bit ST / 16 bit MT / Speed switch

Number of pulses and switching speed freely programmable

## HMG10P-B - PROFINET



HMG10P-B - picture similar

### Features

- Magnetic sensing method
- Function display via LEDs
- Multiturn sensing with Energy Harvesting technology, without gear or battery
- Two-sided bearing system with hybrid bearings
- Special protection against corrosion C5-M

### Optional

- Integrated speed switch programmable
- Additional output incremental programmable

### Technical data - electrical ratings

Voltage supply	10...30 VDC
Short-circuit proof	Yes
Consumption w/o load	≤200 mA
Initializing time	≤500 ms after power on
Interface	PROFINET
Function	Multiturn
Transmission rate	100 MBaud
Device address	Automatic address designation
Steps per revolution	8192 / 13 bit
Number of revolutions	65536 / 16 bit
Additional outputs	Square-wave TTL/HTL, TTL/ RS422
Sensing method	Magnetic
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3
Programming interface	RS485 (≤600 m)
Programmable parameters	Bus system: see bus features Additional output (number of pulses), switch-off and switch-on speeds
Diagnostic function	Position or parameter error
Status indicator	DUO-LED und LEDs link/activity in bus connecting box 4 LEDs in device back side
Approvals	CE, UL approval / E256710

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

Switching accuracy	±2 % (or 1 Digit)
Switching outputs	1 output (Open collector, solid state relay on request)
Output switching capacity	30 VDC; ≤100 mA
Switching delay time	≤20 ms

### Technical data - mechanical design

Size (flange)	ø105 mm
Shaft type	ø16...20 mm (blind hollow shaft) ø17 mm (cone shaft 1:10)
Flange	Support plate, 360° freely positionable
Protection DIN EN 60529	IP 66/IP 67
Operating speed	≤6000 rpm
Range of switching speed	ns (off) = ±2...6000 rpm, factory setting 6000 rpm
Operating torque typ.	10 Ncm
Rotor moment of inertia	950 gcm <sup>2</sup>
Admitted shaft load	≤450 N axial ≤650 N radial
Materials	Housing: aluminium alloy Shaft: stainless steel
Corrosion protection	IEC 60068-2-52 Salt mist for ambient conditions C5-M (CX) according to ISO 12944-2
Operating temperature	-40...+85 °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
Weight approx.	2.2 kg (depending on version)
Connection	Bus connecting box Terminal box incremental

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### Part number

HMG10P 

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Additional output

- 0 Without
- 5 1024 ppr\* TTL/HTL (Vin=Vout), 6 channels, electrically isolated
- 6 1024 ppr\* TTL/RS422, 6 channels

Resolution multiturn

- 0 Without
- 6 16 bit

Voltage supply / interface

PN 10...30 VDC, PROFINET

Connection

- G 1x bus connecting box with 3 connectors M12, radial + 1x terminal box with 1 cable gland M20, radial

Shaft diameter

- 6 ø16 mm, central screw
- 7 ø17 mm cone 1:10, central screw
- Z ø20 mm, central screw

Protection

- D IP 66 and IP 67, optimized for dusty environments
- L IP 66 and IP 67, optimized for oily and wet environments

Flange

- H Support for torque arm, shaft insulation hybrid bearing

Speed switch

- Without
- D With speed switch / switching speed 6000 rpm\* (Standard: Open collector, solid state relay on request)

\* Factory setting, programmable

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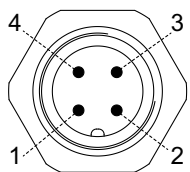
Number of pulses and switching speed freely programmable

## HMG10P-B - PROFINET

### PROFINET - Terminal assignment

View A<sup>1)</sup> - View onto connector „Voltage supply“

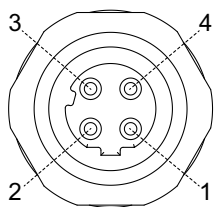
male	Connection	Description
1	UB	Voltage supply 10...30 VDC
2	-	Do not use
3	GND	Ground for UB
4	-	Do not use



Connector M12 (male)  
4-pin, A-coded

View A<sup>2)</sup> and A<sup>3)</sup> - View into connector „Data transmission“

female	Connection	Description
1	TxD+	Transmission data+
2	RxD+	Receiving data+
3	TxD-	Transmission data-
4	RxD-	Receiving data-



Connector M12 (female)  
4-pin, D-coded

### PROFINET - Features

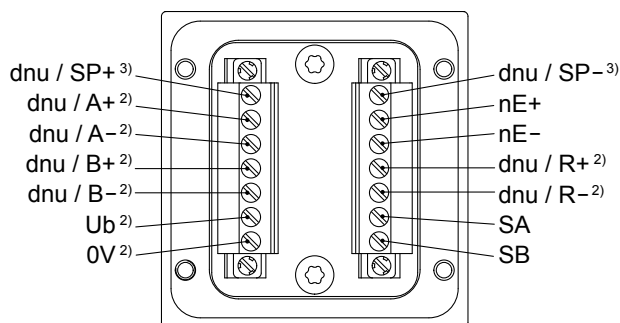
Bus protocol	PROFINET
Device profile	Encoder profile PNO 3.162
Features	100 MBaud Fast Ethernet IP address programmable Realtime (RT) Class 1, IRT Class 2, IRT Class 3
Process data	Position value 32 bit input data

### Speed switch / additional output incremental - Terminal significance

Ub <sup>2)</sup>	Voltage supply
0V <sup>2)</sup>	Ground
A+ <sup>2)</sup>	Output signal channel 1
A- <sup>2)</sup>	Output signal channel 1 inverted
B+ <sup>2)</sup>	Output signal channel 2 (offset by 90° to channel 1)
B- <sup>2)</sup>	Output signal channel 2 inverted
R+ <sup>2)</sup>	Zero pulse (reference signal)
R- <sup>2)</sup>	Zero pulse inverted
nE+	System OK+ / error output
nE-	System OK- / error output inverted
SP+ <sup>3)</sup>	DSL_OUT1 / speed switch (Open collector, solid state relay on request)
SP- <sup>3)</sup>	DSL_OUT2 / speed switch (0V, solid state relay on request)
SA	RS485+ / programming interface
SB	RS485- / programming interface
dnu	Do not use

### Speed switch / additional output incremental - Terminal assignment terminal box

View B<sup>1)</sup>



<sup>1)</sup> See dimensions

<sup>2)</sup> Additional output incremental (option)

<sup>3)</sup> Speed switch (option)

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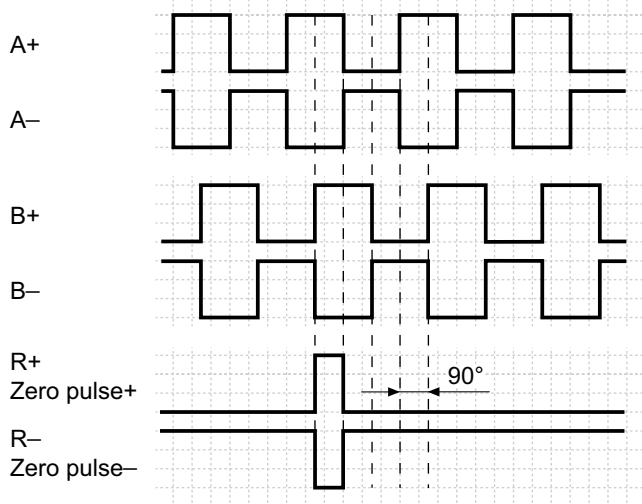
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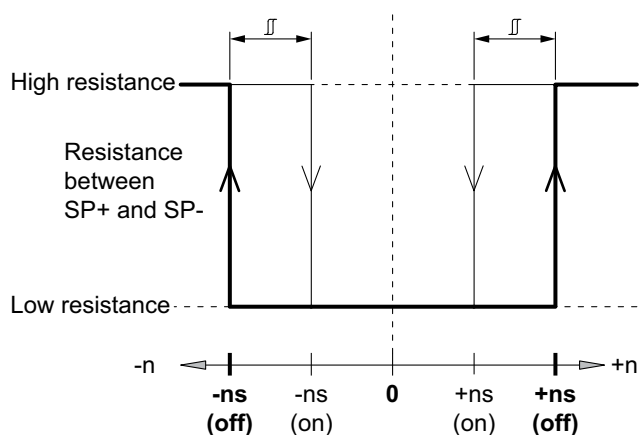
## HMG10P-B - PROFINET

### Additional output incremental - Output signals

Version with additional output incremental at positive rotating direction<sup>1)</sup>



### Speed switch - Switching characteristics



$n$  = Speed

**+ns (off)** = Switch-off speed at shaft rotation in positive rotating direction<sup>1)</sup>.

**-ns (off)** = Switch-off speed at shaft rotation in negative rotating direction<sup>1)</sup>.

Switching hysteresis  $\Delta$ :

5...100 % (factory setting = 10 % min. 1 Digit)

**+ns (on)** = Switch-on speed at shaft rotation in positive rotating direction<sup>1)</sup>.

**-ns (on)** = Switch-on speed at shaft rotation in negative rotating direction<sup>1)</sup>.

### Additional output incremental - Trigger level

Trigger level	TTL/RS422
High / Low	$\geq 2.5 \text{ V} / \leq 0.5 \text{ V}$
Transmission length	$\leq 550 \text{ m @ } 100 \text{ kHz}$
Output frequency	$\leq 600 \text{ kHz}$
Trigger level	TTL/HTL ( $V_{in} = V_{out}$ )
High / Low	$\geq 2.5 \text{ V} / \leq 0.5 \text{ V (TTL)}$ $\geq U_b - 3 \text{ V} / \leq 1.5 \text{ V (HTL)}$
Transmission length	$\leq 550 \text{ m @ } 100 \text{ kHz (TTL)}$ $\leq 350 \text{ m @ } 100 \text{ kHz (HTL)}$
Output frequency	$\leq 600 \text{ kHz (TTL)}$ $\leq 350 \text{ kHz (HTL)}$

Electrically isolated:

The output TTL/HTL ( $V_{in} = V_{out}$ ) at the additional output incremental is electrically isolated and requires a separate power supply.

<sup>1)</sup> See dimensions

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### Accessories

#### Connectors and cables

11191145	Adapter cable for programming the HMG10P/PMG10P bus interfaces series D-SUB connector (male) 15-pin with connecting cable, D-SUB connector (male) 9-pin and 7-pin connecting terminal
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#### Mounting accessories

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

#### Programming accessories

11190106	Z-PA.SDL.1 - WLAN-Adapter Programming unit for xMG10P series
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## Dimensions

