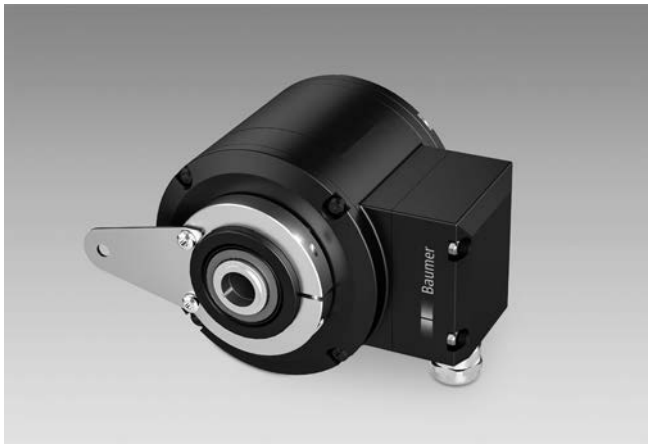
Absolute encoders - bus interfaces

Through hollow shaft

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

Number of pulses and switching speed freely programmable

HMG10P-T - PROFINET



HMG10P-T - 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 adress	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 (through hollow shaft)
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 gcm²
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		-T	H		.		G	PN	.3		00		.A

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
- C ø16 mm, clamping ring on drive side
- F ø20 mm, clamping ring on drive side
- P ø16 mm, clamping ring on drive side with keyway

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

Absolute encoders - bus interfaces

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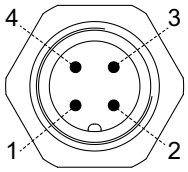
PROFINET - Terminal assignment

View A1 [1] - View onto connector „Voltage supply“

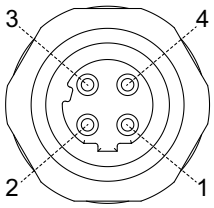
male	Connection	Description
1	UB	Voltage supply 10...30 VDC
2	-	Do not use
3	GND	Ground for UB
4	-	Do not use



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

View A2 [1] **and A3** [1] - 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

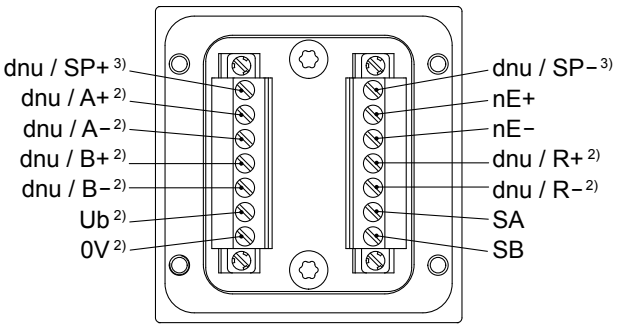
Bus protocol	PROFINET
Device profile	Encoder profile PNO 3.162
Features	100 MBaud Fast Ethernet IP address programmable Realtime (RT) Class 1, IRT Class 2, IRT Class 3
Process data	Position value 32 bit input data

Speed switch / additional output incremental - Terminal significance

Ub [2]	Voltage supply
0V [2]	Ground
A+ [2]	Output signal channel 1
A− [2]	Output signal channel 1 inverted
B+ [2]	Output signal channel 2 (offset by 90° to channel 1)
B− [2]	Output signal channel 2 inverted
R+ [2]	Zero pulse (reference signal)
R− [2]	Zero pulse inverted
nE+	System OK+ / error output
nE−	System OK− / error output inverted
SP+ [3]	DSL_OUT1 / speed switch (Open collector, solid state relay on request)
SP− [3]	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 [1]

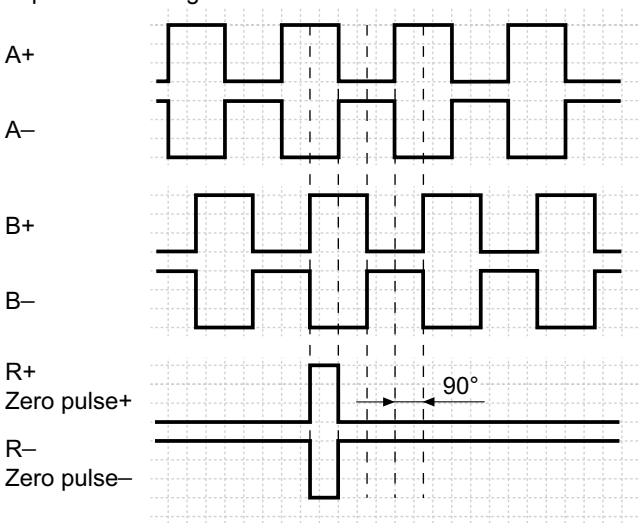


[1] See dimensions
[2] Additonal output incremental (option)
[3] Speed switch (option)

HMG10P-T - PROFINET

Additional output incremental - Output signals

Version with additional output incremental
at positive rotating direction [1)]

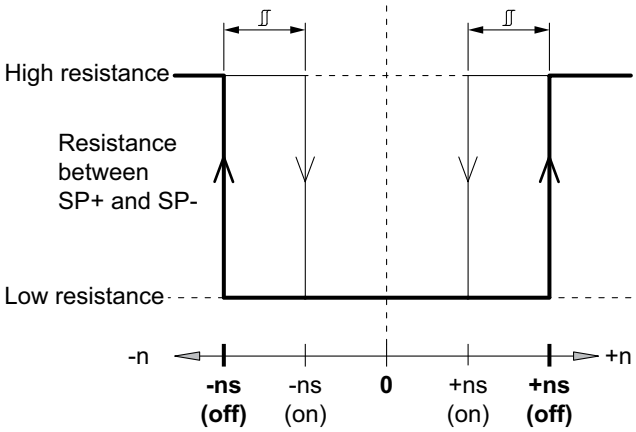


Additional output incremental - Trigger level

Trigger level	**TTL/RS422**
High / Low	≥2.5 V / ≤0.5 V
Transmission length	≤550 m @ 100 kHz
Output frequency	≤600 kHz
Trigger level	**TTL/HTL (Vin = Vout)**
High / Low	≥2.5 V / ≤0.5 V (TTL) ≥Ub -3 V / ≤1.5 V (HTL)
Transmission length	≤550 m @ 100 kHz (TTL) ≤350 m @ 100 kHz (HTL)
Output frequency	≤600 kHz (TTL) ≤350 kHz (HTL)

Electrically isolated:
The output TTL/HTL (Vin = Vout) at the additional output incremental is electrically isolated and requires a separate power supply.

Speed switch - Switching characteristics



n = Speed

+ns (off) = Switch-off speed at shaft rotation in positive rotating direction [1)].

-ns (off) = Switch-off speed at shaft rotation in negative rotating direction [1)].

Switching hysteresis ∫∫:
5...100 % (factory setting = 10 % min. 1 Digit)

+ns (on) = Switch-on speed at shaft rotation in positive rotating direction [1)].

-ns (on) = Switch-on speed at shaft rotation in negative rotating direction [1)].

[1)] 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
Mounting accessories	
11043628	Torque arm M6, length 67-70 mm
11004078	Torque arm M6, length 120-130 mm (shortenable ≥71 mm)
11002915	Torque arm M6, length 425-460 mm (shortenable ≥131 mm)
11054917	Torque arm M6 insulated, length 67-70 mm
11072795	Torque arm M6 insulated, length 120-130 mm (shortenable ≥71 mm)
11082677	Torque arm M6 insulated, length 425-460 mm (shortenable ≥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