

Absolute encoders - bus interfaces

Blind / through hollow shaft or cone shaft (1:10)

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

HMG10 - PROFINET



HMG 10 - picture similar

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 turn	8192 / 13 bit
Number of turns	65536 / 16 bit
Additional outputs	Square-wave HTL/TTL (RS422)
Sensing method	Magnetic
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3
Programmable parameters	Steps per revolution Number of revolutions Preset, scaling, rotating direction
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)

Interface	RS485
Switching accuracy	±2 % (or Digit)
Switching outputs	1 output (Open-Collector or Solid State Relay)
Output switching capacity	30 VDC; ≤100 mA
Switching delay time	≤20 ms

Features

- Interface PROFINET
- Magnetic sensing method
- Resolution: singleturn 13 bit, multiturn 16 bit
- Function display via LEDs
- Multiturn sensing with Energy Harvesting technologie, without gear or battery
- Two hybrid bearings, one at each end
- Special protection against corrosion C5-M

Optional

- Integrated speed switch
- Additional output incremental with zero pulse

Technical data - mechanical design

Size (flange)	ø105 mm
Flange	Support plate, 360° freely positionable
Protection DIN EN 60529	IP 66/IP 67
Operating speed	≤6000 rpm
Range of switching speed	±2...6000 rpm, default 6000 rpm
Operating torque typ.	10 Ncm
Rotor moment of inertia	950 gcm ²
Admitted shaft load	≤450 N axial ≤650 N radial
Materials	Housing: aluminium alloy Shaft: stainless steel
Corrosion protection	IEC 60068-2-52 Salt mist Complies to ISO 12944-5:1998 Protective paint systems (C5-M)
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

HMG10-B PROFINET

Shaft type	ø16...20 mm (blind hollow shaft) ø17 mm (cone shaft 1:10)
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HMG10-T PROFINET

Shaft type	ø16...20 mm (through hollow shaft)
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HMG10 - PROFINET

Part number

Encoder with blind hollow shaft / cone shaft

HMG10

	-B	H	.			PN	.3		00		.A
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Additional output *

- 0 Without
 - 5 1024 ppr TTL/HTL push-pull (Vin=Vout, electrically isolated), 6 channels
 - 6 1024 ppr TTL (RS422), 6 channels
- See also table "Additional output **"

Resolution multiturm

- 0 Without
- 6 16 bit

Voltage supply / interface

PN 10...30 VDC, PROFINET

Connection

- 3 1x bus connecting box with 3 connectors M12, radial
- 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 / Programming

Without

- D With speed switch (***)
(Standard: Open Collector, Solid State Relais on request)

* Only for connection with 1x bus connecting + 1x terminal box (G)

** Please specify the exact switching speed in addition to the part number (factory setted threshold).

Absolute encoders - bus interfaces

Blind / through hollow shaft or cone shaft (1:10)

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Part number

Encoder with through hollow shaft

HMG10

	-T	H	.			PN	.3		00		.A
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Additional output *

- 0 Without
 - 5 1024 ppr TTL/HTL push-pull (Vin=Vout, electrically isolated), 6 channels
 - 6 1024 ppr TTL (RS422), 6 channels
- See also table "Additional output **"

Resolution multiturm

- 0 Without
- 6 16 bit

Voltage supply / interface

PN 10...30 VDC, PROFINET

Connection

- 3 1x bus connecting box with 3 connectors M12, radial
- 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 / Programming

Without

- D With speed switch ***)
(Standard: Open Collector, Solid State Relais on request)

* Only for connection with 1x bus connecting + 1x terminal box (G)

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Part number - tables

Additional output *

0	(Without)
Q	(8192 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated)
P	(8192 ppr TTL (RS422), 6 channels)
G	(5000 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated)
H	(5000 ppr TTL (RS422), 6 channels)
K	(4096 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated)
J	(4096 ppr TTL (RS422), 6 channels)
7	(3072 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated)
8	(3072 ppr TTL (RS422), 6 channels)
9	(2048 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated)
4	(2048 ppr TTL (RS422), 6 channels)
5	(1024 ppr TTL/HTL push-pull (Vin=Vout, electrically isolated), 6 channels)
6	(1024 ppr TTL (RS422), 6 channels)
1	(512 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated)
2	(512 ppr TTL (RS422), 6 channels)

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	Insulated torque arm M6, length 67-70 mm
11072795	Insulated torque arm M6, length 120-130 mm (≥ 71 mm)
11082677	Insulated torque arm M6, length 425-460 mm (≥ 131 mm)
11077197	Mounting kit for torque arm size M6 and earthing strap
11077087	Mounting and dismounting set

Absolute encoders - bus interfaces

Blind / through hollow shaft or cone shaft (1:10)

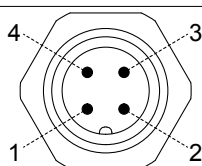
PROFINET / 13 bit ST / 16 bit MT / Speed switch

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PROFINET - Terminal assignment

View C¹⁾ - View onto connector „Voltage supply“

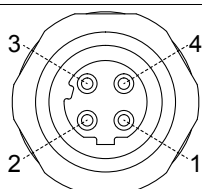
male	Connection	Description
1	UB	Voltage supply 10...30 VDC
2	-	Do not use
3	GND	Ground for UB
4	-	Do not use



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

View D¹⁾ and E¹⁾ - 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

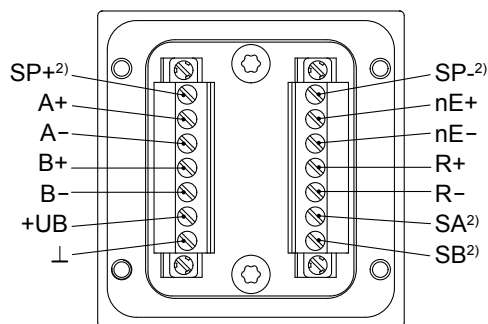
Bus protocol	PROFINET
Device profile	Encoder profile PNO 3.162
Features	100 MBaud Fast Ethernet IP address programmable Realtime (RT) Class 1, IRT Class 2, IRT Class 3
Process data	Position value 32 bit input data

Speed switch/incremental - Terminal significance

+UB	Voltage supply
⊥	Ground
A+	Channel A+
A-	Channel A- (channel A+ inverted)
B+	Channel B+
B-	Channel B- (channel B+ inverted)
R+	Zero pulse (reference signal)
R-	Zero pulse inverted
nE+	System OK+ / error output
nE-	System OK- / error output inverted
SP+ ²⁾	DSL_OUT1 / speed switch (Open-Collector or Solid State Relay)
SP- ²⁾	DSL_OUT2 / speed switch (0 V or Solid State Relay)
SA ²⁾	RS485+ / programming interface
SB ²⁾	RS485- / programming interface

Speed switch/incremental - Terminal assignment terminal box

View B¹⁾



¹⁾ See dimensions

²⁾ Do not use at version without speed switch

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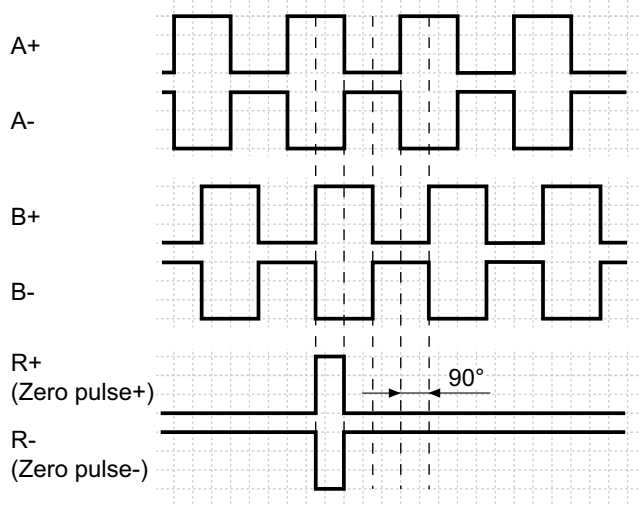
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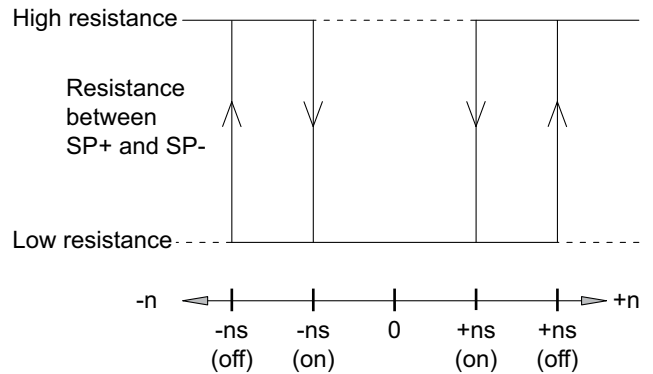
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Incremental - Output signals

Version with additional incremental output at positive rotating direction



Speed switch - Switching characteristics



- n = Speed
- +ns (on) = Activation speed at shaft rotation in positive rotating direction¹⁾.
- +ns (off) = Deactivation speed at shaft rotation in positive rotating direction¹⁾.
- ns (on) = Activation speed at shaft rotation in negative rotating direction¹⁾.
- ns (off) = Deactivation at shaft rotation in negative rotating direction¹⁾.

¹⁾ See dimensions

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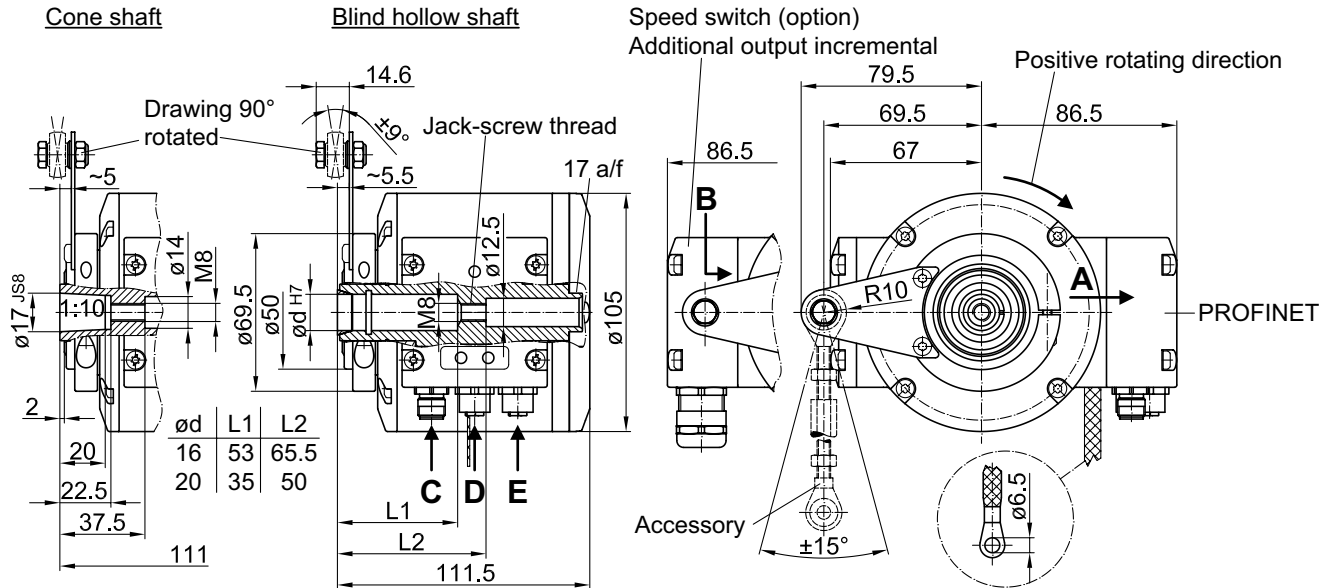
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Dimensions

Blind hollow shaft and cone shaft with radial terminal boxes



Through hollow shaft with radial terminal boxes

