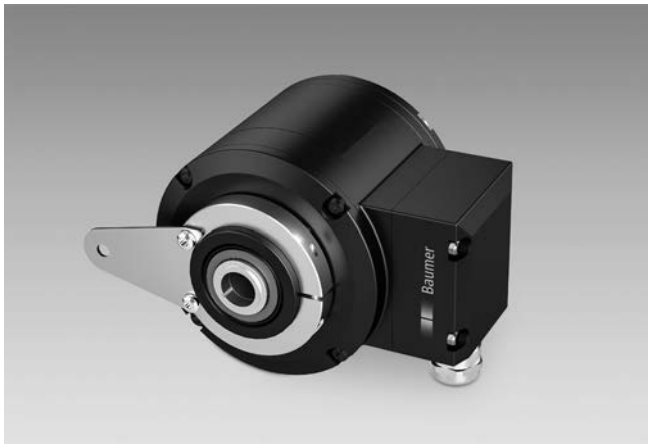
Absolute encoders - bus interfaces

Blind hollow shaft or cone shaft (1:10)

EtherNet/IP / 13 bit ST / 16 bit MT / Speed switch

HMG10-B - EtherNet/IP



HMG10-B - picture similar

Features

- **Interface EtherNet/IP**
- **Magnetic sensing method**
- **Resolution: singleturn 13 bit, multiturn 16 bit**
- **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**
- **Additional output incremental with zero pulse**

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	EtherNet/IP
Function	Multiturn
Transmission rate	100 MBaud
Device adress	HEX rotary switches in box or with "BOOTP/DHCP tool"
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
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)

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 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

HMG10-B - EtherNet/IP

Part number

HMG10		-B	H		.			EN	.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

See also table “Additional output*”

Resolution multiturn
- 0 Without
- 6 16 bit

Voltage supply / interface
- EN 10…30 VDC, EtherNet/IP

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*
- Without
- D With speed switch *)** (Standard: Open collector, solid state relay 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 setting).

Absolute encoders - bus interfaces

Blind hollow shaft or cone shaft (1:10)

EtherNet/IP / 13 bit ST / 16 bit MT / Speed switch

HMG10-B - EtherNet/IP

Part number - tables

Additional output*

0 (Without)

Q (8192 ppr TTL/HTL (Vin=Vout), 6 channels, electrically isolated)

P (8192 ppr TTL/RS422, 6 channels)

G (5000 ppr TTL/HTL (Vin=Vout), 6 channels, electrically isolated)

H (5000 ppr TTL/RS422, 6 channels)

K (4096 ppr TTL/HTL (Vin=Vout), 6 channels, electrically isolated)

J (4096 ppr TTL/RS422, 6 channels)

7 (3072 ppr TTL/HTL (Vin=Vout), 6 channels, electrically isolated)

8 (3072 ppr TTL/RS422, 6 channels)

9 (2048 ppr TTL/HTL (Vin=Vout), 6 channels, electrically isolated)

4 (2048 ppr TTL/RS422, 6 channels)

5 (1024 ppr TTL/HTL (Vin=Vout), 6 channels, electrically isolated)

6 (1024 ppr TTL/RS422, 6 channels)

1 (512 ppr TTL/HTL (Vin=Vout), 6 channels, electrically isolated)

2 (512 ppr TTL/RS422, 6 channels)

Accessories

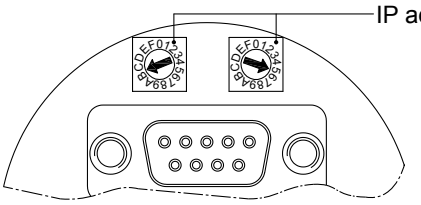
Mounting accessories

11043628	Torque arm M6, length 67-70 mm
11004078	Torque arm M6, length 120-130 mm (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

HMG10-B - EtherNet/IP

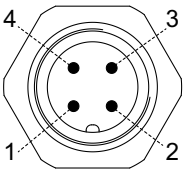
EtherNet/IP - Terminal assignment

View A [1] - View inside bus connecting box



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

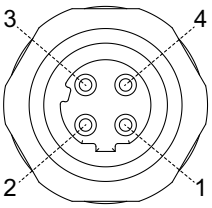
male	Connection	Description
1	UB	Voltage supply 10...30 VDC
2	-	Do not use
3	GND	Ground for UB
4	-	Do not use



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-

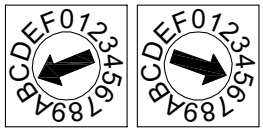


Connector M12 (female)
4-pin, D-coded

EtherNet/IP - Features

Bus protocol	EtherNet/IP
Device profile	Encoder Device, type 22hex, according to CIP specification
Features	100 MBaud Fast Ethernet IP address programmable Automatic IP address designation (DHCP) Rotating direction, resolution, total resolution and preset are programmable according to CIP specification
Process data	Position value, warning flag, error flag. Assembly Instances 1 and 2 according to CIP spezification

EtherNet/IP - IP adress



Defined by HEX rotary switch.
Example: IP address $B5_{hex}$
Configuration via DHCP: 00_{hex}

[1] See dimensions

Absolute encoders - bus interfaces

Blind hollow shaft or cone shaft (1:10)

EtherNet/IP / 13 bit ST / 16 bit MT / Speed switch

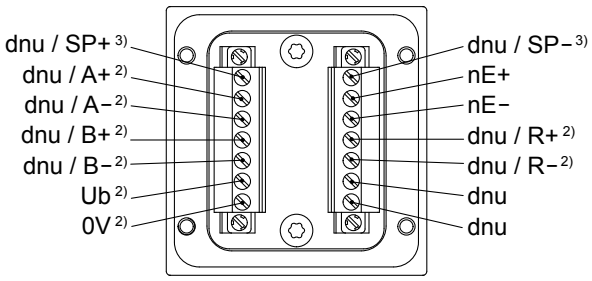
HMG10-B - EtherNet/IP

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)
dnu	Do not use

Speed switch / additional output incremental - Terminal assignment terminal box

View B [1]



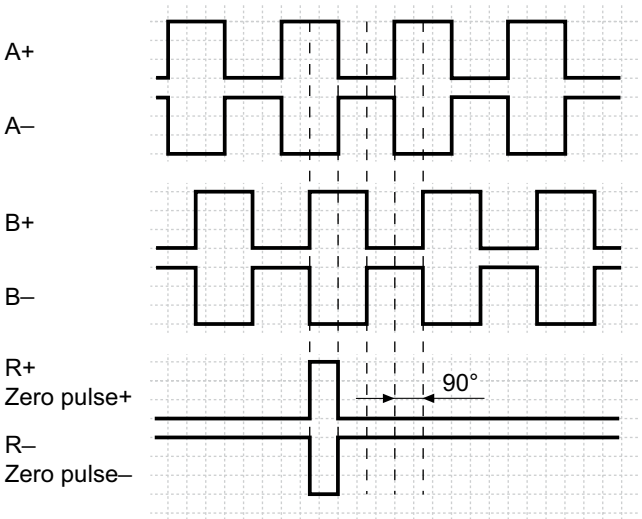
Additional output incremental - Trigger level

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.	

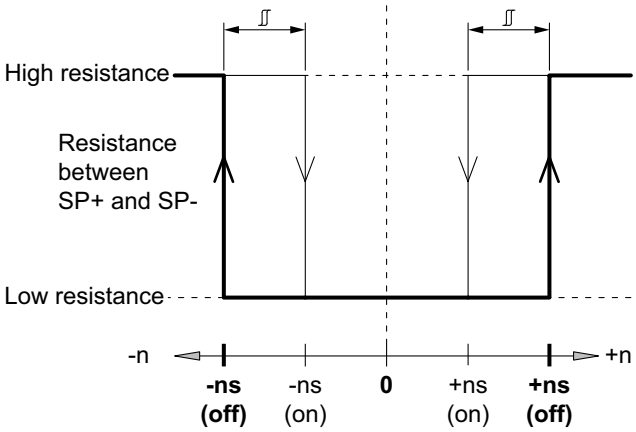
[1] See dimensions
[2] Additional output incremental (option)
[3] Speed switch (option)

Additional output incremental - Output signals

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



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].

HMG10-B - EtherNet/IP

Dimensions