

HMG10P-B - EtherCAT

Blind hollow shaft or cone shaft (1:10) / EtherCAT / 13 bit ST / 16 bit MT

Speed switch, number of pulses and switching speed freely programmable

Overview

- Interface EtherCAT
- Magnetic sensing method
- Resolution: singleturn 13 bit, multiturn 16 bit
- Function display via LEDs
- Multiturn sensing with Energy Harvesting technology "MicroGen", without gear or battery
- Two-sided bearing system with hybrid bearings
- Special protection against corrosion CX (C5-M)



Picture similar

HUBNER
 BERLIN
 A Baumer Brand

microGen
 Energy Harvesting

Technical data

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	EtherCAT
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 and LEDs link/activity in bus connecting box 4 LEDs in device back side
Approval	CE UL approval / E217823

Technical data - electrical ratings (speed switch)

Switching accuracy	± 2 % (or 1 Digit)
Switching outputs	1 output (Open collector, solid state relay on request)

Technical data - electrical ratings (speed switch)

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 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 ²
Admitted shaft load	≤450 N axial ≤650 N radial
Material	Housing: aluminium alloy Shaft: stainless steel
Corrosion protection	IEC 60068-2-52 Salt mist for ambient conditions CX (C5-M) accord- ing 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

HMG10P-B - EtherCAT

Blind hollow shaft or cone shaft (1:10) / EtherCAT / 13 bit ST / 16 bit MT

Speed switch, number of pulses and switching speed freely programmable

Optional

- Integrated speed switch programmable
- Additional output incremental programmable

HMG10P-B - EtherCAT

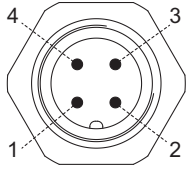
Blind hollow shaft or cone shaft (1:10) / EtherCAT / 13 bit ST / 16 bit MT

Speed switch, number of pulses and switching speed freely programmable

Terminal assignment

View A1 (see dimension)

View into connector bus "voltage supply"

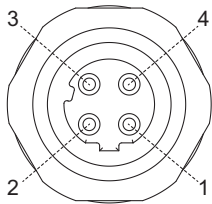


Connector M12 (male)
4-pin, A-coded

Pin	Connection
1	UB
2	dnu
3	GND
4	dnu

View A2 and A3 (see dimension)

View into connector bus „data transmission“



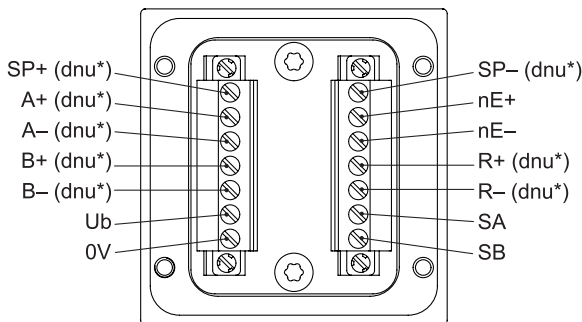
Connector M12 (female)
4-pin, D-coded

Pin	Connection
1	TxD+
2	RxD+
3	TxD-
4	RxD-

View B (see dimension)

Connecting terminal terminal box
Programming interface / speed switch /
additional output II (HTL, TTL)

* Assignment depends on encoder version



Terminal significance

Bus interface

Connection	Description
GND	Ground for UB
UB	Voltage supply 10...30 VDC
TxD+	Transmission data+
TxD-	Transmission data-
RxD+	Receiving data+
RxD-	Receiving data-
dnu	Do not use

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, solid state relay on request)
SP-	DSL_OUT2 / speed switch (0V, solid state relay on request)
SA	RS485+ / programming interface
SB	RS485- / programming interface
dnu	Do not use

EtherCAT features

Bus protocol	EtherCAT
Device profile	CoE (CANopen over EtherCAT) DSP406
Features	<ul style="list-style-type: none"> 100 MBaud Ethernet Automatic address designation Distributed clock for precise synchronization. Optional device configuration as „Reference Clock“ Factory setting 10 byte PDO, configurable 4 byte PDO / 2 byte PDO for shorter cycle times
Process data	Position value, Warnings, System time
Cycle times	Depending on sensor type, enabled scaling functionality and length of PDO. Minimum cycle time: 62,5 µs
Synchronization	<ul style="list-style-type: none"> 0x00 Free Run, not synchronized 0x03 Distributed clocks DC, synchronized with SYNCO/SYNC1 Event

HMG10P-B - EtherCAT

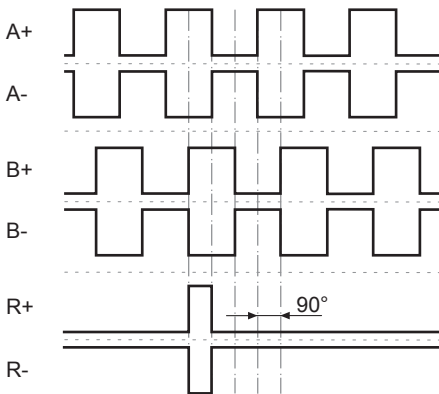
Blind hollow shaft or cone shaft (1:10) / EtherCAT / 13 bit ST / 16 bit MT

Speed switch, number of pulses and switching speed freely programmable

Output signals

Additional output II (HTL/TTL)

At positive rotating direction (see dimension)



Trigger level

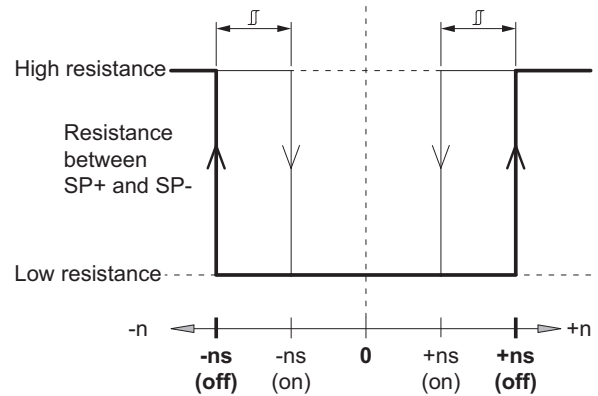
Incremental HTL/TTL

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

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)

Switching characteristics

Speed switch



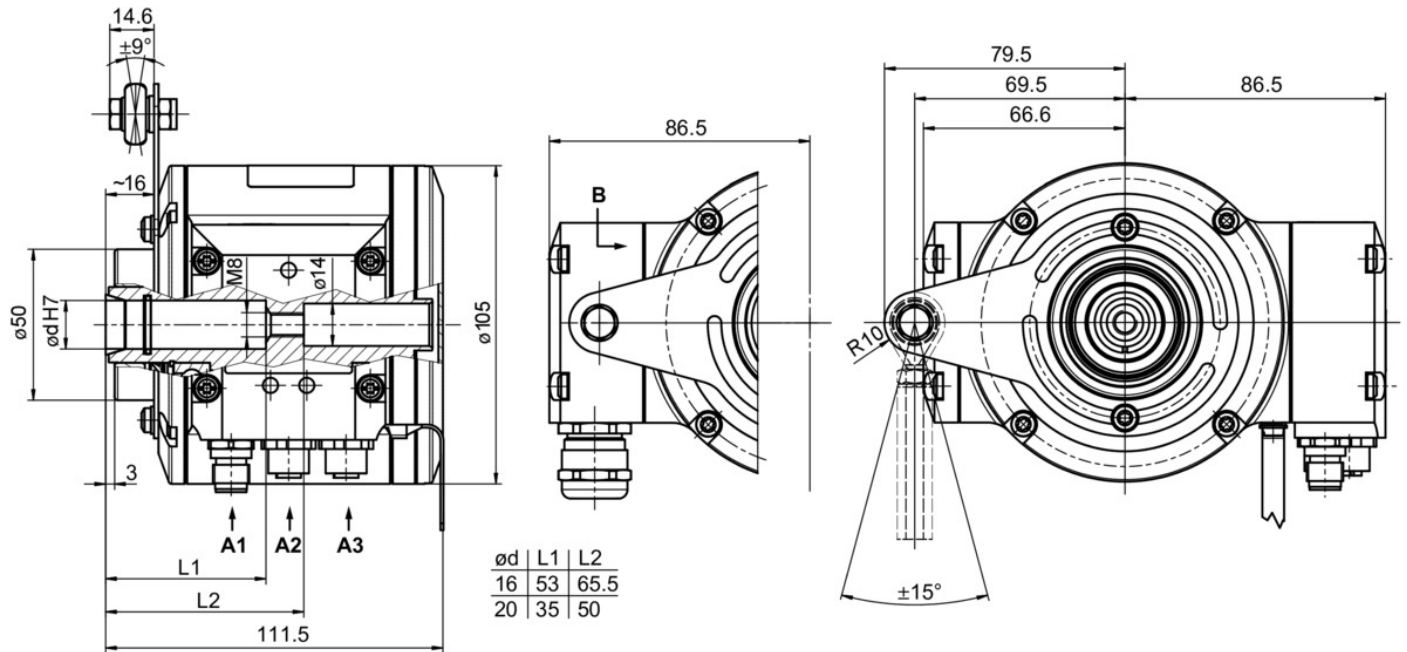
n	Speed
$+n_s$ (off)	Switch-off speed at shaft rotation in positive rotating direction (see dimension).
$-n_s$ (off)	Switch-off speed at shaft rotation in negative rotating direction (see dimension).
	Switching hysteresis Δn : 10...100 % (factory setting = 10 % min. 1 Digit)
$+n_s$ (on)	Switch-on speed at shaft rotation in positive rotating direction (see dimension).
$-n_s$ (on)	Switch-on speed at shaft rotation in negative rotating direction (see dimension).

HMG10P-B - EtherCAT

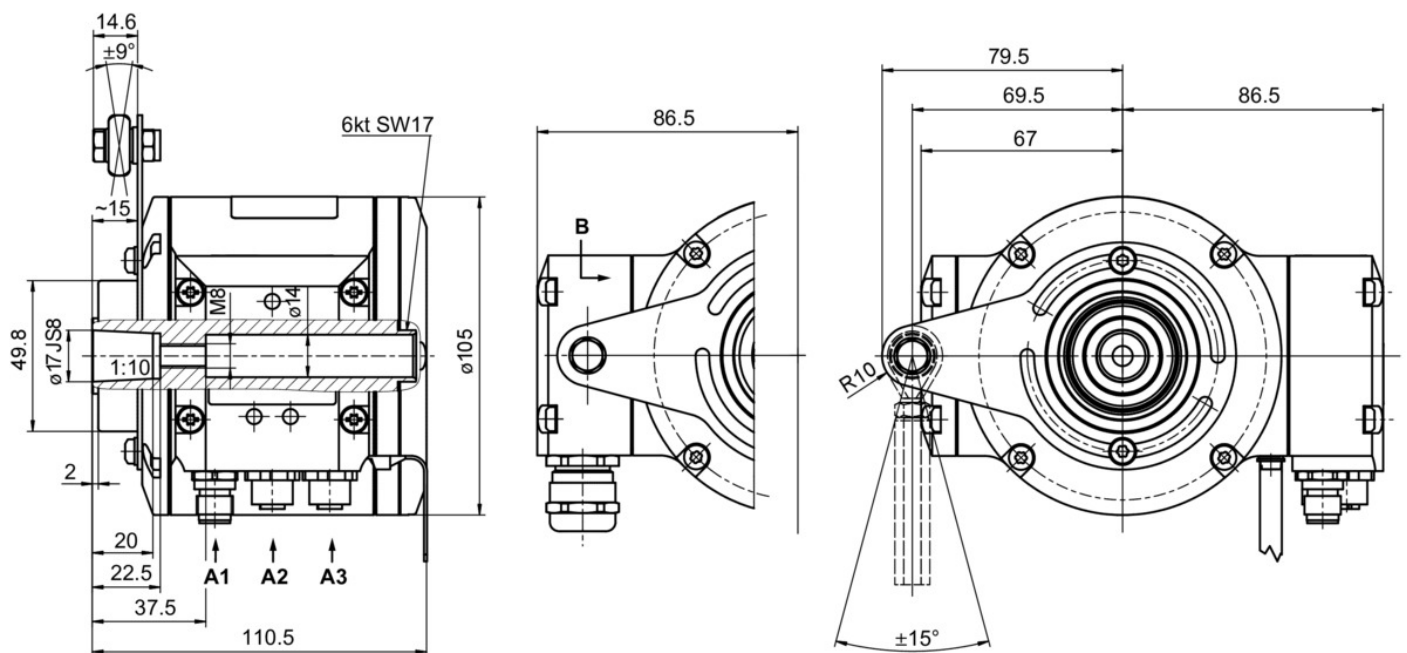
Blind hollow shaft or cone shaft (1:10) / EtherCAT / 13 bit ST / 16 bit MT

Speed switch, number of pulses and switching speed freely programmable

Dimensions



Blind hollow shaft with terminal box



Cone shaft with terminal box

HMG10P-B - EtherCAT

Blind hollow shaft or cone shaft (1:10) / EtherCAT / 13 bit ST / 16 bit MT

Speed switch, number of pulses and switching speed freely programmable

Ordering reference

	HMG10P	#	-	B	H	#	.	#	G	EC	.	3	#	0	0	#	.	A
Product	HMG10P																	
Absolute encoder	HMG10P																	
Digital speed switch																		
Without																		
With																		
Shaft type																		
Blind hollow shaft																		
Flange (Hollow shaft)																		
Support (Support plate) for torque arm, hybrid bearings																		
Protection class																		
IP 66 and IP 67, optimized for dusty, abrasive environment																		
IP 66 and IP 67, optimized for oily, wet environment																		
Blind hollow shaft																		
Ø16 mm, central screw																		
Ø17 mm cone 1:10, central screw																		
Ø20 mm, central screw																		
Connection																		
Bus connecting box with 3 connectors M12, radial + terminal box with 1 cable gland M20, radial																		
Supply voltage (field bus)																		
10...30 VDC, EtherCAT																		
Resolution singleturn position																		
13 Bit																		
Resolution multiturn position																		
No multiturn signal																		
16 Bit																		
Resolution speed																		
No speed signal																		
Resolution supplement I																		
No additional output I																		
Resolution supplement II																		
No additional output II																		
1024 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated																		
1024 ppr TTL (RS422), 6 channels																		
Operating temperature																		
-40...+85 °C																		

- (1) Switching speed 6000 rpm / factory setting, programmable
 (2) Factory setting, programmable

HMG10P-B - EtherCAT

Blind hollow shaft or cone shaft (1:10) / EtherCAT / 13 bit ST / 16 bit MT

Speed switch, number of pulses and switching speed freely programmable

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
11238694	CAM12.WS13-11238694

Programming accessories

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