

# Incremental encoders

Solid shaft  $\varnothing 11$  mm with EURO flange B10 or housing foot B3

Integrated speed switch - Magnetic sensing

Number of pulses and switching speed freely programmable

## PMG10P - Incremental



PMG10P - picture similar

### Technical data - electrical ratings

Voltage supply	4.75...30 VDC
Short-circuit proof	Yes
Consumption w/o load	$\leq 100$ mA
Initializing time	$\leq 500$ ms after power on
Pulses per revolution	1...131072
Phase shift	$90^\circ \pm 20^\circ$
Duty cycle	40...60 %
Reference signal	Zero pulse, width $90^\circ$
Sensing method	Magnetic
Output signals	A+, B+, R+, A-, B-, R- Error output nE+, nE-
Output stages	TTL/HTL (Vin = Vout) TTL/RS422
Programming interface	RS485 ( $\leq 600$ m)
Programmable parameters	Pulse number Deactivation and activation switching speeds
Diagnostic function	Function control
Status indicator	4 LEDs in device back side
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3
Approval	CE

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

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

### Features

- Programmable incremental encoder
- TTL output driver for cable length up to 550 m
- Function display via LEDs
- High resistance to shock and vibrations
- Insulated bearing
- Two-sided bearing system with hybrid bearings
- Special protection against corrosion C5-M
- Large terminal box, turn by  $180^\circ$

### Optional

- Integrated speed switch programmable
- Second incremental output, programmable

### Technical data - mechanical design

Size (flange)	$\varnothing 115$ mm
Shaft type	$\varnothing 11$ mm solid shaft
Admitted shaft load	$\leq 450$ N axial $\leq 650$ N radial
Flange	EURO flange B10 Housing foot B3
Protection DIN EN 60529	IP 66/IP 67
Operating speed	$\leq 12000$ rpm
Range of switching speed	ns (off) = $\pm 2$ ...12000 rpm, factory setting 12000 rpm
Operating torque typ.	10 Ncm
Rotor moment of inertia	1 kgcm <sup>2</sup>
Materials	Housing: aluminium alloy Shaft: stainless steel
Operating temperature	$-40$ ... $+95$ °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
Corrosion protection	IEC 60068-2-52 Salt mist Complies to ISO 12944-5:1998 Protective paint systems (C5-M)
Connection	Terminal box
Weight approx.	1.9 kg (depending on version)

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### Part number

PMG10P 

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Incremental output 2\*

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

Incremental output 1

- 5 1024 ppr\*\* TTL/HTL (Vin=Vout), 6 channels
- 6 1024 ppr\*\* TTL/RS422, 6 channels

Voltage supply / interface

U0 4.75...30 VDC

Connection

- 2 1x terminal box with cable gland M20, radial
- M 2x terminal box with cable gland M20, radial

Shaft diameter

1  $\varnothing$ 11 mm with key 4 mm

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 EURO flange B10, shaft insulation hybrid bearing
- A Housing foot B3, shaft insulation hybrid bearing\*

Speed switch\*

- Without
- D With speed switch / switching speed 12000 rpm\*\*  
(Standard: Open collector, solid state relay on request)

\* Only for connection 2x terminal box (M)

\*\* Factory setting, programmable

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Integrated speed switch - Magnetic sensing

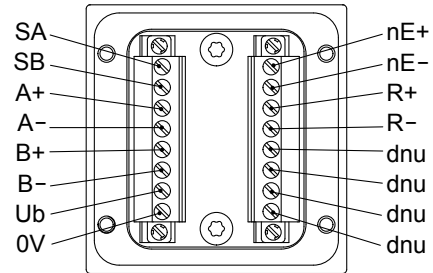
Number of pulses and switching speed freely programmable

## PMG10P - Incremental

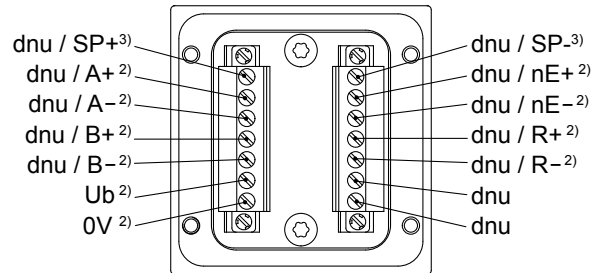
Terminal significance	
Ub	Voltage supply
0V	Ground
A+	Output signal channel 1
A-	Output signal channel 1 inverted
B+	Output signal channel 2 (offset by 90° to channel 1)
B-	Output signal channel 2 inverted
R+	Zero pulse (reference signal)
R-	Zero pulse inverted
nE+	System OK+ / error output
nE-	System OK- / error output inverted
SP+ <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

### Terminal assignment terminal box

**View A**<sup>1)</sup> - Programming interface, incremental output 1



**View B**<sup>1)</sup> - Incremental output 2 (option), speed switch (option)



<sup>1)</sup> See dimensions

<sup>2)</sup> Incremental output 2 (option)

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

# Incremental encoders

## Solid shaft $\varnothing 11$ mm with EURO flange B10 or housing foot B3

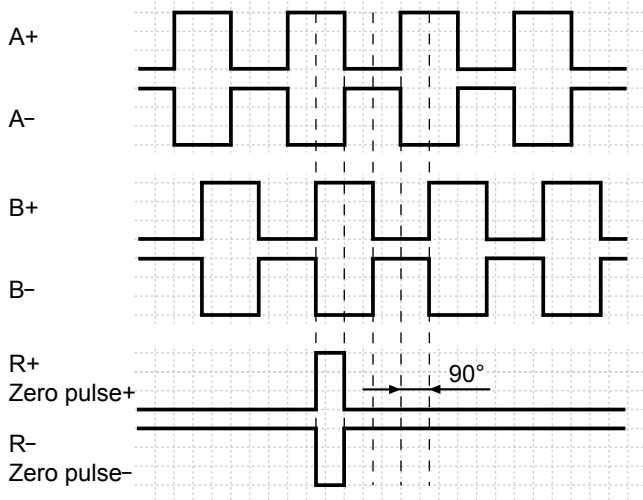
### Integrated speed switch - Magnetic sensing

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#### Output signals incremental

At positive rotating direction <sup>1)</sup>



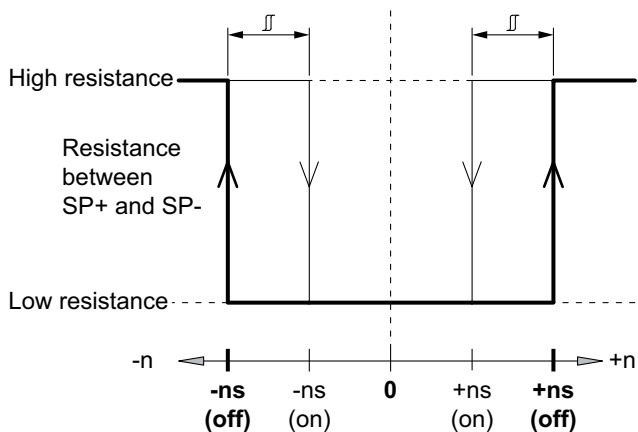
#### Trigger level incremental

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

Electrically isolated:

The output TTL/HTL (Vin = Vout) at the incremental output 2 is electrically isolated and requires a separate power supply.

#### Speed switch - Switching characteristics



n = Speed

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

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

Switching hysteresis  $\Delta$ :

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

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

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

<sup>1)</sup> See dimensions

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### Accessories

#### Connectors and cables

HEK 8	Sensor cable for encoders
HEK 17	Sensor cable for encoders
11191144	Adapter cable for programming the HMG10P/PMG10P SSI series with terminal box D-SUB connector (male) 15-pin with connecting cable and 8-pin connecting terminal

#### Mounting accessories

K 35	Spring washer coupling for solid shaft $\varnothing 6 \dots 12$ mm
K 50	Spring washer coupling for solid shaft $\varnothing 11 \dots 16$ mm
K 60	Spring washer coupling for solid shaft $\varnothing 11 \dots 22$ mm

#### Programming accessories

11190106	Z-PA.SDL.1 - <i>WLAN-Adapter</i> Programming unit for HMG10P/PMG10P series
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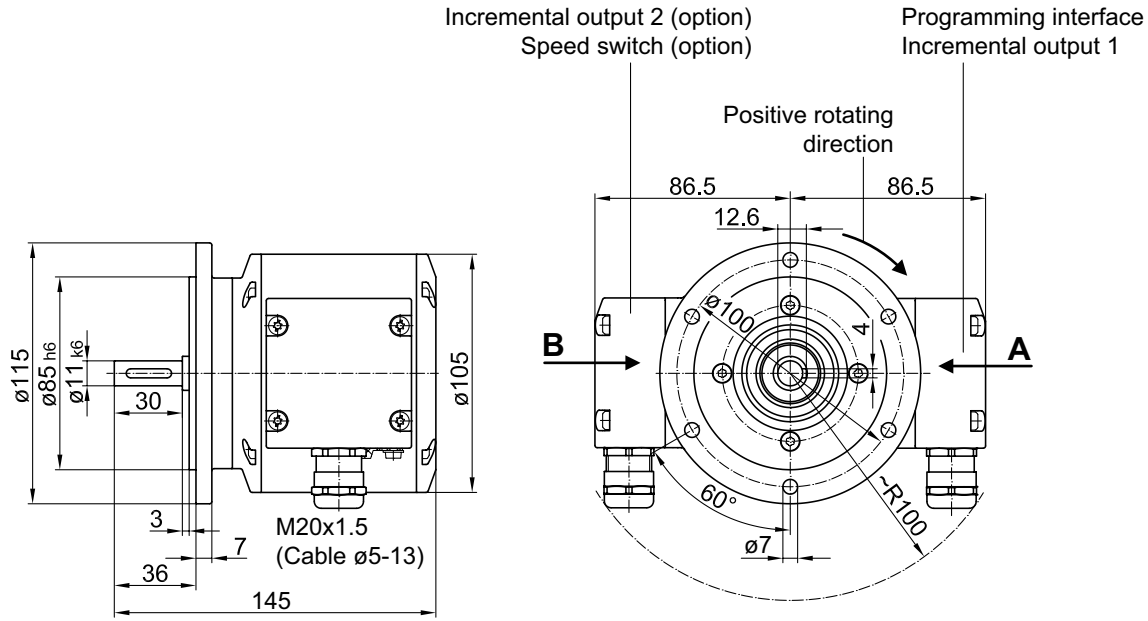
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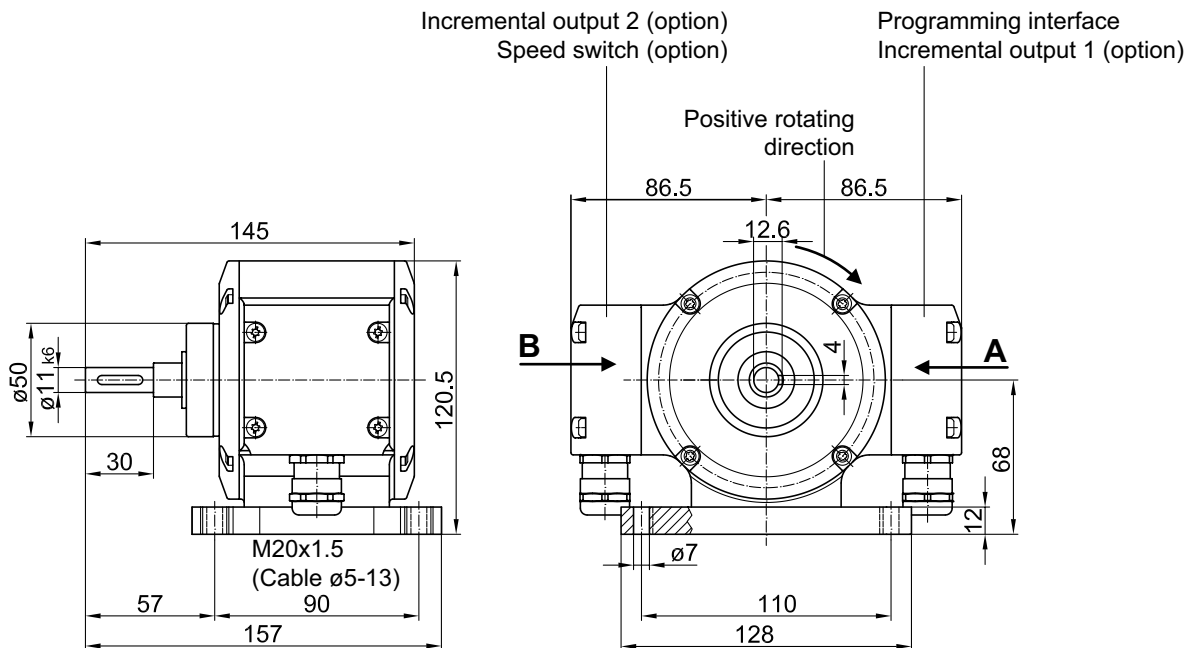
PMG10P - Incremental

## Dimensions

### Version with Euro flange (B10)



### Version with housing foot (B3)



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