

## PMG10 - SSI

Solid shaft  $\varnothing 11$  mm with EURO flange B10 or housing foot B3  
ST and MT 20 bit each / Speed switch

### Overview

- Magnetic sensing method
- 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	4.75...30 VDC
Short-circuit proof	Yes
Consumption w/o load	$\leq 100$ mA (SSI)
Initializing time	$\leq 500$ ms after power on
Interface	SSI
Function	Multiturn
Steps per revolution	1048576 / 20 bit
Number of revolutions	1048576 / 20 bit
Additional outputs	Square-wave TTL/HTL, TTL/RS422
Sensing method	Magnetic
Code	Gray or binary
Code sequence	CW (factory setting)
Input signals	SSI clock, PRESET, rotating direction
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3
Diagnostic function	Function control
Status indicator	4 LEDs in device back side
Approval	CE UL approval / E217823

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

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

### Optional

- Integrated speed switch
- Additional outputs incremental with zero pulse

#### Technical data - mechanical design

Size (flange)	$\varnothing 115$ mm
Shaft type	$\varnothing 11$ mm solid shaft
Flange	EURO flange B10 Housing foot B3
Protection EN 60529	IP 66 / IP 67
Operating speed	$\leq 12000$ rpm
Range of switching speed	ns (off) = $\pm 2$ ...12000 rpm
Operating torque typ.	10 Ncm
Rotor moment of inertia	1 kgcm <sup>2</sup>
Admitted shaft load	$\leq 450$ N axial $\leq 650$ N radial
Material	Housing: aluminium alloy Shaft: stainless steel
Corrosion protection	IEC 60068-2-52 Salt mist for ambient conditions CX (C5-M) according to ISO 12944-2
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
Weight approx.	1.9 kg (depending on version)
Connection	Terminal box Flange connector M23

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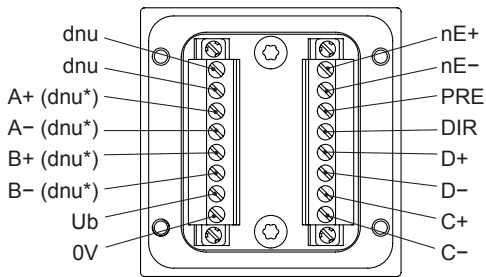
Solid shaft  $\varnothing 11$  mm with EURO flange B10 or housing foot B3  
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## Terminal assignment

### View A (see dimension)

Connecting terminal terminal box  
SSI /  
additional output I (HTL, TTL)

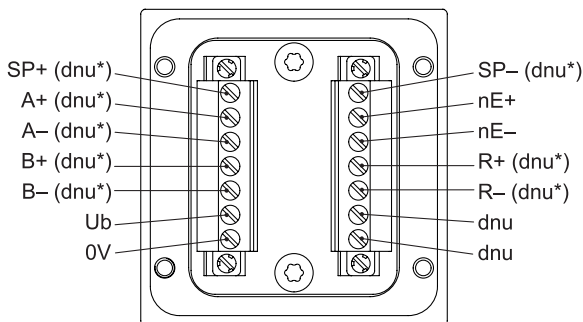
\* Assignment depends on encoder version



### View B (see dimension)

Connecting terminal terminal box  
Speed switch /  
additional output II (HTL, TTL)

\* Assignment depends on encoder version

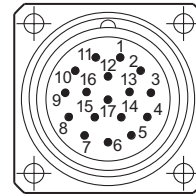


## Terminal assignment

### View C (see dimension)

Assignment flange connector  
SSI / additional output I (HTL, TTL)

\* Assignment depends on encoder version



Flange socket M23  
(male, 17-pin),  
CW

Pin	Assignment
1	nE-
2	DIR
3	dnu
4	nE+
5	PRE
6	dnu
7	Ub
8	C+
9	C-
10	0V
11	Internal shield
12	B+ (dnu*)
13	B- (dnu*)
14	D+
15	A+ (dnu*)
16	A- (dnu*)
17	D-

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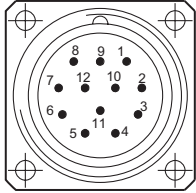
## Terminal assignment

**View D** (see dimension)

Assignment flange connector

Speed switch / additional output II (HTL, TTL)

\* Assignment depends on encoder version



Flange socket M23  
(male, 12-pin),  
CW

Pin	Assignment
1	B- (dnu*)
2	nE-
3	R+ (dnu*)
4	R- (dnu*)
5	A+ (dnu*)
6	A- (dnu*)
7	SP+ (dnu*)
8	B+ (dnu*)
9	SP- (dnu*)
10	0V
11	nE+
12	Ub

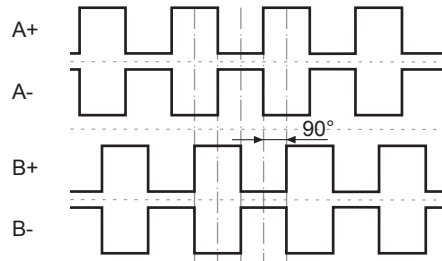
## Terminal significance

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
PRE	PRESET/RESET
DIR	Rotating direction
SP+	DSL_OUT1 / speed switch (Open collector, solid state relay on request)
SP-	DSL_OUT2 / speed switch (0V, solid state relay on request)
D+	SSI data+
D-	SSI data-
C+	SSI clock+
C-	SSI clock-
dnu	Do not use

## Output signals

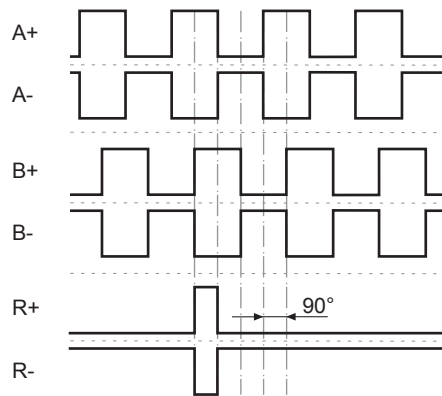
### Additional output I (HTL/TTL)

At positive rotating direction (see dimension)



### Additional output II (HTL/TTL)

At positive rotating direction (see dimension)



## Trigger level

### Incremental HTL/TTL

Electrically isolated:

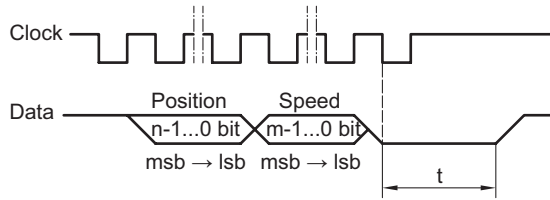
The output TTL/HTL ( $V_{in} = V_{out}$ ) at the additional output II is electrically isolated and requires a separate power supply.

Trigger level	TTL/RS422
High / Low	$\geq 2.5$ V / $\leq 0.5$ V
Transmission length	$\leq 550$ m @ 100 kHz
Output frequency	$\leq 600$ kHz
Trigger level	TTL/HTL ( $V_{in} = V_{out}$ )
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)

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## Data transfer



Clock frequency 100 kHz...2 MHz

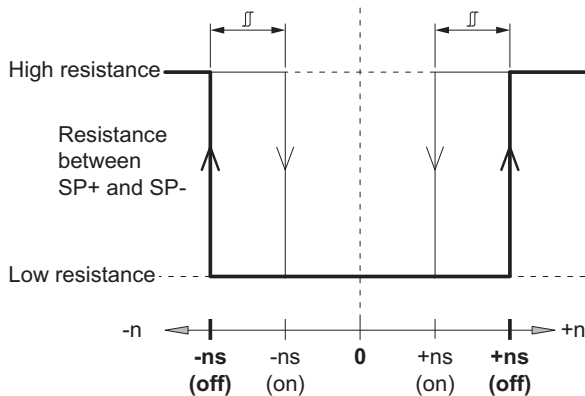
Monoflop time (t) 20  $\mu$ s (internal)

n, m Number of bits

For continuous clocking, the SSI word is transmitted only once followed by zero values (no ring register operation).

## Switching characteristics

### Speed switch

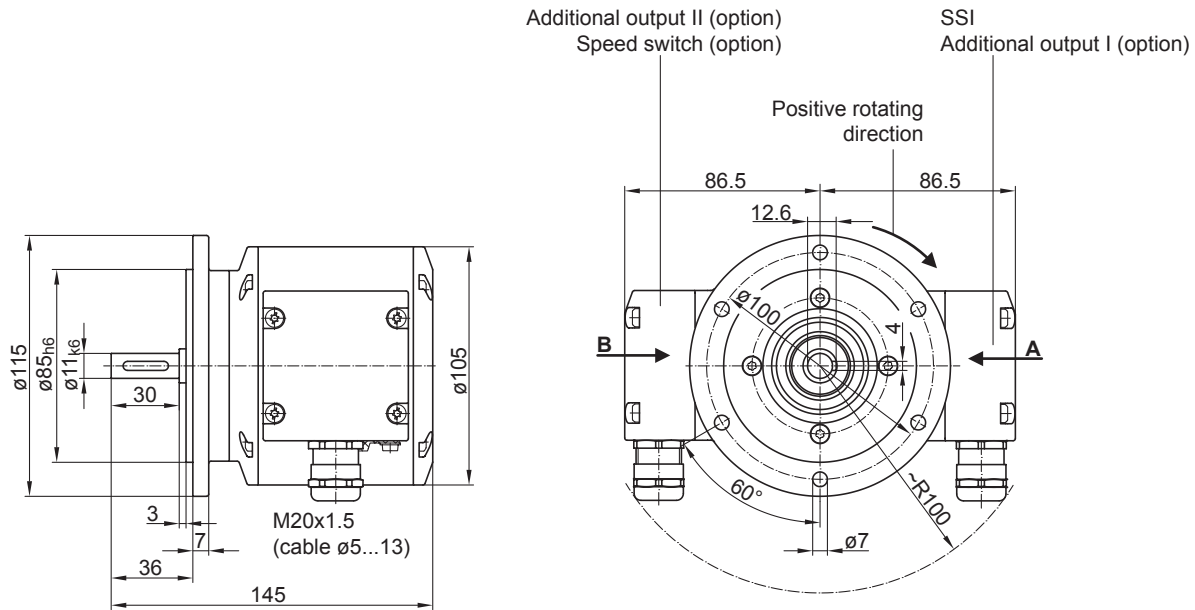


n	Speed
<b>+ns (off)</b>	Switch-off speed at shaft rotation in positive rotating direction ( <i>see dimension</i> ).
<b>-ns (off)</b>	Switch-off speed at shaft rotation in negative rotating direction ( <i>see dimension</i> ).
	Switching hysteresis $\Delta$ : 10...100 % (factory setting = 10 % min. 1 Digit)
<b>+ns (on)</b>	Switch-on speed at shaft rotation in positive rotating direction ( <i>see dimension</i> ).
<b>-ns (on)</b>	Switch-on speed at shaft rotation in negative rotating direction ( <i>see dimension</i> ).

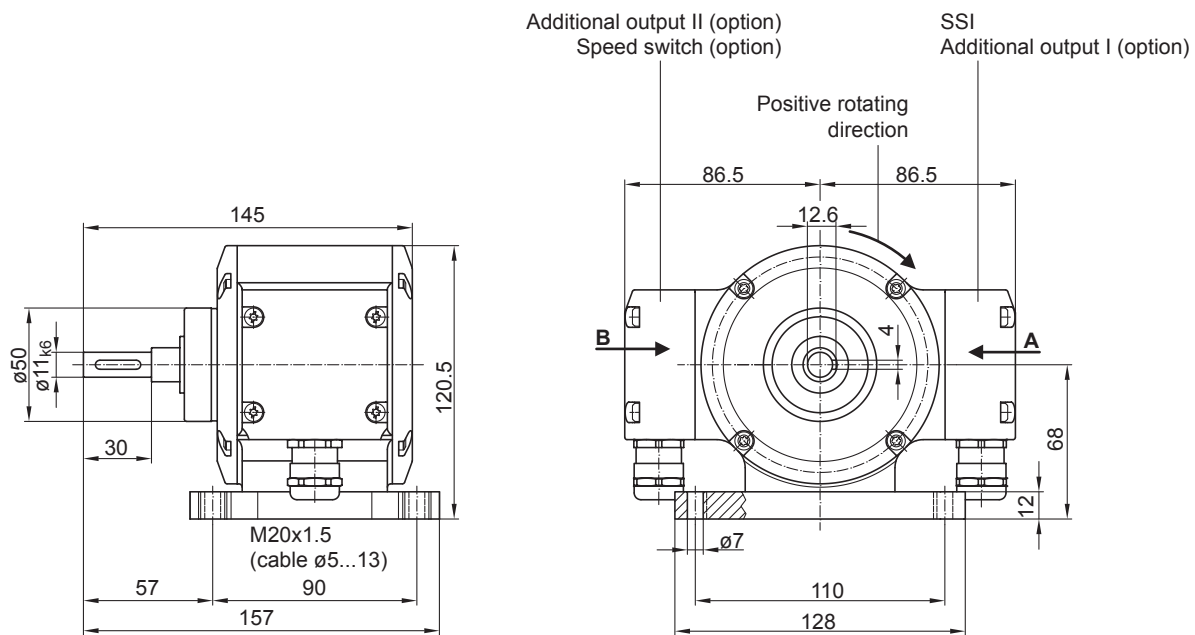
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## Dimensions



Version with radial terminal boxes with EURO flange (B10)

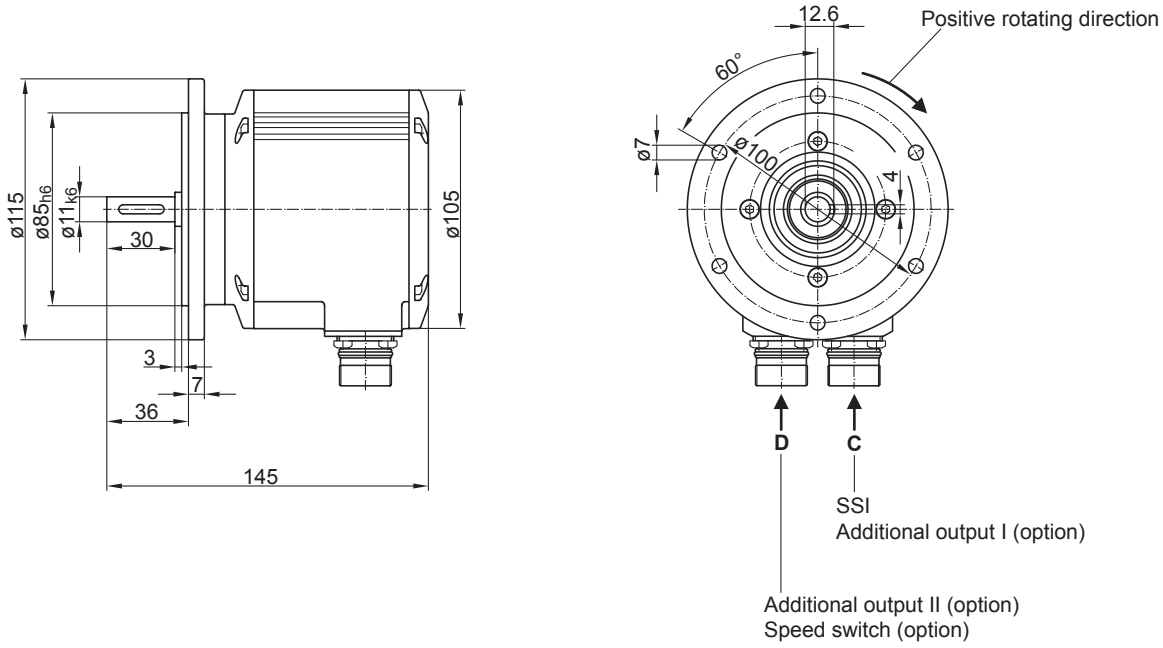


Version with radial terminal boxes with housing foot (B3)

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## Dimensions



Version with radial flange connectors M23 with EURO flange (B10)

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## Ordering reference

	PMG10	#	-	S	H	#	.	1	#	##	.	#	#	#	#	#	.	#
<b>Product</b>	Absolute encoder	PMG10																
<b>Digital speed switch</b>	With <sup>(1)</sup>			D														
	Without			-														
<b>Shaft type</b>	Solid shaft				S													
<b>Flange (Solid shaft)</b>	EURO flange B10, hybrid bearings					H												
<b>Protection class</b>	IP 66 and IP 67, optimized for dusty, abrasive environment																	D
	IP 66 and IP 67, optimized for oily, wet environment																	L
<b>Solid shaft</b>	ø11 mm, featherkey 4 mm																	1
<b>Connection</b>	Terminal box radial, cable gland M20																	2
	Terminal box 2x radial, cable gland M20																	M
	Flange socket radial, M23, 17 pin, male, CW																	G
	Flange socket radial, 1x M23, 17 pin, male, CW + 1x M23, 12 pin, male, CW																	S
	Flange socket radial, 1x M23, 17 pin, male, CW + 1x M23, 12 pin, male, CCW																	V
<b>Supply voltage</b>	4,75...30 VDC, SSI binary																	UB
	4,75...30 VDC, SSI Gray																	UG
<b>Resolution singleturn position</b>	No position signal																	0
	10 Bit																	A
	11 Bit																	1
	12 Bit																	2
	13 Bit																	3
	14 Bit																	4
	15 Bit																	5
	16 Bit																	6
	17 Bit																	7
	18 Bit																	8
	19 Bit																	9
	20 Bit																	B
<b>Resolution multiturn position</b>	No multiturn signal																	0
	10 Bit																	A
	11 Bit																	1
	12 Bit																	2
	13 Bit																	3
	14 Bit																	4
	15 Bit																	5
	16 Bit																	6
	17 Bit																	7
	18 Bit																	8
	19 Bit																	9
	20 Bit																	B

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## Ordering reference

	PMG10	#	-	S	H	#	.	1	#	##	.	#	#	#	#	#	.	#	
<b>Resolution speed</b>																			
No speed signal																			0
10 Bit, ±6000 rpm																			A
11 Bit, ±6000 rpm																			1
12 Bit, ±6000 rpm																			2
13 Bit, ±6000 rpm																			3
14 Bit, ±6000 rpm																			4
15 Bit, ±6000 rpm																			5
16 Bit, ±6000 rpm																			6
17 Bit, ±6000 rpm																			7
18 Bit, ±6000 rpm																			8
19 Bit, ±6000 rpm																			9
20 Bit, ±6000 rpm																			B
<b>Resolution supplement I</b>																			
No additional output I																			0
8192 ppr TTL/HTL push-pull (Vin=Vout), 4 channels																			Q
8192 ppr TTL (RS422), 4 channels																			P
5000 ppr TTL/HTL push-pull (Vin=Vout), 4 channels																			G
5000 ppr TTL (RS422), 4 channels																			H
4096 ppr TTL/HTL push-pull (Vin=Vout), 4 channels																			K
4096 ppr TTL (RS422), 4 channels																			J
3072 ppr TTL/HTL push-pull (Vin=Vout), 4 channels																			7
3072 ppr TTL (RS422), 4 channels																			8
2048 ppr TTL/HTL push-pull (Vin=Vout), 4 channels																			9
2048 ppr TTL (RS422), 4 channels																			4
1024 ppr TTL/HTL push-pull (Vin=Vout), 4 channels																			5
1024 ppr TTL (RS422), 4 channels																			6
512 ppr TTL/HTL push-pull (Vin=Vout), 4 channels																			1
512 ppr TTL (RS422), 4 channels																			2
<b>Resolution supplement II</b>																			
No additional output II																			0
8192 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated																			Q
8192 ppr TTL (RS422), 6 channels																			P
5000 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated																			G
5000 ppr TTL (RS422), 6 channels																			H
4096 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated																			K
4096 ppr TTL (RS422), 6 channels																			J
3072 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated																			7
3072 ppr TTL (RS422), 6 channels																			8
2048 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated																			9
2048 ppr TTL (RS422), 6 channels																			4
1024 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated																			5
1024 ppr TTL (RS422), 6 channels																			6
512 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated																			1
512 ppr TTL (RS422), 6 channels																			2
<b>Operating temperature</b>																			
-40...+85 °C																			A
-40...+95 °C																			G

(1) Please specify the exact switching speed in addition to the part number (factory setting).



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It may happen that not all variants of the type code can be combined. Any restrictions can be found in the web configurator at [www.baumer.com](http://www.baumer.com) or on request.

### Accessories

#### Mounting accessories

	Spring disk coupling K35 (shaft $\varnothing 6...12$ mm)
	Spring disk coupling K 50 (shaft $\varnothing 11...16$ mm)
11064874	Spring disk coupling K60 WD 11PF4 + 12PF4