

Absolute encoders - SSI

Solid shaft $\varnothing 11$ mm with EURO flange B10

ST and MT 20 bit each / Speed switch

PMG10 - SSI



PMG 10 - picture similar

Technical data - electrical ratings

Voltage supply	4.75...30 VDC
Short-circuit proof	Yes
Consumption w/o load	≤ 100 mA (SSI)
Initializing time	≤ 500 ms after power on
Interface	SSI
Function	Multiturn
Steps per turn	1048576 / 20 bit
Number of turns	1048576 / 20 bit
Additional outputs	Square-wave HTL/TTL (RS422)
Sensing method	Magnetic
Code	Gray (default) or binary
Code sequence	CW/CCW programmable CW default
Input signals	SSI clock, PRESET, rotating direction
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3
Diagnostic function	Self-diagnosis
Status indicator	4 LEDs in device back side
Approval	CE

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 SSI
- Magnetic sensing method
- Resolution: singleturn 20 bit, multiturn 20 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, programmable
- 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
Protection DIN EN 60529	IP 66/IP 67
Operating speed	≤ 12000 rpm
Range of switching speed	$\pm 2 \dots 12000$ rpm, default 12000 rpm
Operating torque typ.	10 Ncm
Rotor moment of inertia	1 kgcm ²
Admitted shaft load	≤ 450 N axial ≤ 650 N radial
Materials	Housing: aluminium alloy Shaft: stainless steel
Operating temperature	$-40 \dots +85$ °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
Corrosion protection	IEC 60068-2-52 Salt mist Complies to ISO 12944-5:1998 Protective paint systems (C5-M)
Weight approx.	1.9 kg (depending on version)
Connection	Terminal box (2x with additional output) Flange connector M23 (2x with additional output)

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Part number - tables

Resolution singleturn

0 (Without)	2 (12 bit)	5 (15 bit)	8 (18 bit)
A (10 bit)	3 (13 bit)	6 (16 bit)	9 (19 bit)
1 (11 bit)	4 (14 bit)	7 (17 bit)	B (20 bit)

Resolution multiturn

0 (Without)	2 (12 bit)	5 (15 bit)	8 (18 bit)
A (10 bit)	3 (13 bit)	6 (16 bit)	9 (19 bit)
1 (11 bit)	4 (14 bit)	7 (17 bit)	B (20 bit)

Resolution speed

0 (Without)	5 (15 bit, \pm 6000 rpm)
A (10 bit, \pm 6000 rpm)	6 (16 bit, \pm 6000 rpm)
1 (11 bit, \pm 6000 rpm)	7 (17 bit, \pm 6000 rpm)
2 (12 bit, \pm 6000 rpm)	8 (18 bit, \pm 6000 rpm)
3 (13 bit, \pm 6000 rpm)	9 (19 bit, \pm 6000 rpm)
4 (14 bit, \pm 6000 rpm)	B (20 bit, \pm 6000 rpm)

Additional output 1

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

Additional output 2*

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

* Only for connection M or S

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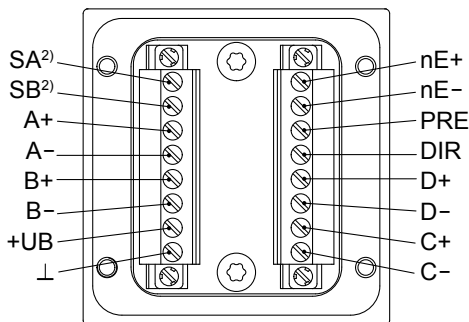
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Terminal significance

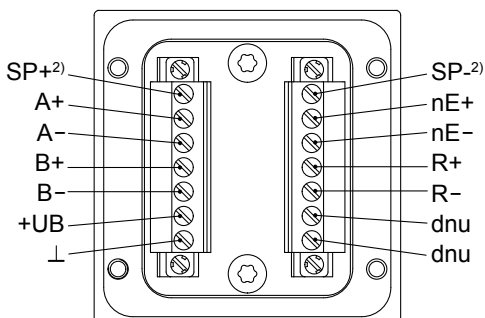
+UB	Voltage supply
⊥	Ground
A+	Channel A+
A-	Channel A- (channel A+ inverted)
B+	Channel B+
B-	Channel B- (channel B+ inverted)
R+	Zero pulse (reference signal)
R-	Zero pulse inverted
nE+	System OK+ / error output
nE-	System OK- / error output inverted
PRE	PRESET/RESET
DIR	Rotating direction
SP+ ²⁾	DSL_OUT1 / 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
D+	SSI DATA+
D-	SSI DATA-
C+	SSI CLOCK+
C-	SSI CLOCK-
dnu	Do not use

Terminal assignment terminal box

View A¹⁾ - SSI



View B¹⁾ - Speed switch/incremental



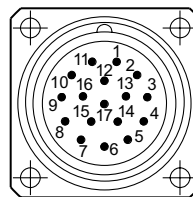
¹⁾ See dimensions

²⁾ Do not use at version without speed switch

Terminal assignment flange connectors

View C¹⁾ - SSI, flange connector M23 (male, 17-pin)

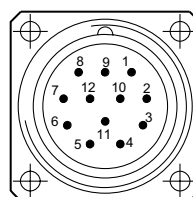
1	nE-
2	DIR
3	SB ²⁾
4	nE+
5	PRE
6	SA ²⁾
7	+UB
8	C+
9	C-
10	⊥
11	Internal shield
12	B+
13	B-
14	D+
15	A+
16	A-
17	D-



Clockwise (CW)

View C¹⁾ - Speed switch/incremental, flange connector M23 (male, 12-pin)

1	B-
2	nE-
3	R+
4	R-
5	A+
6	A-
7	SP+ ²⁾
8	B+
9	SP- ²⁾
10	⊥
11	nE+
12	+UB



Clockwise (CW)

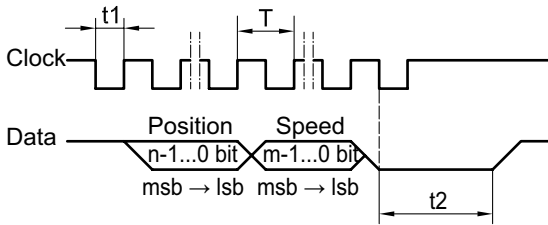
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Data transfer

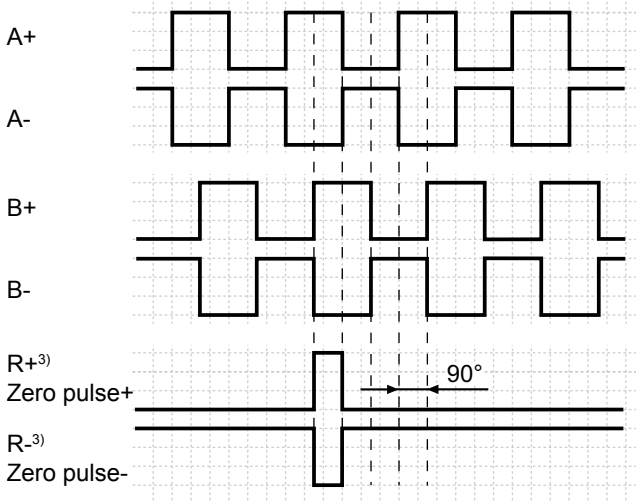


Clock frequency	100 kHz...2 MHz
Period (T)	0,5...10 μ s
Time lag (t1)	0,25...5 μ s
Monoflop time (t2)	20 μ s (internal)
n, m	Number of bits

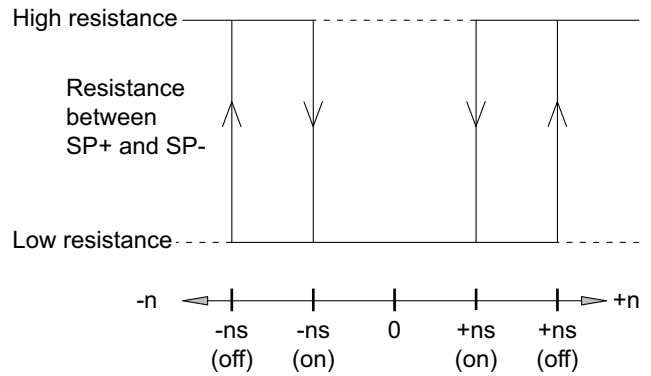
For continuous clocking, the SSI word is transmitted only once followed by zero values (no ring register operation).

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
³⁾ Only additional output 2

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Accessories

Connectors and cables

11068577	Mating connector M23, solder version, 12-pin, CCW
11068551	Mating connector M23, solder version, 17-pin, CCW

Mounting accessories

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

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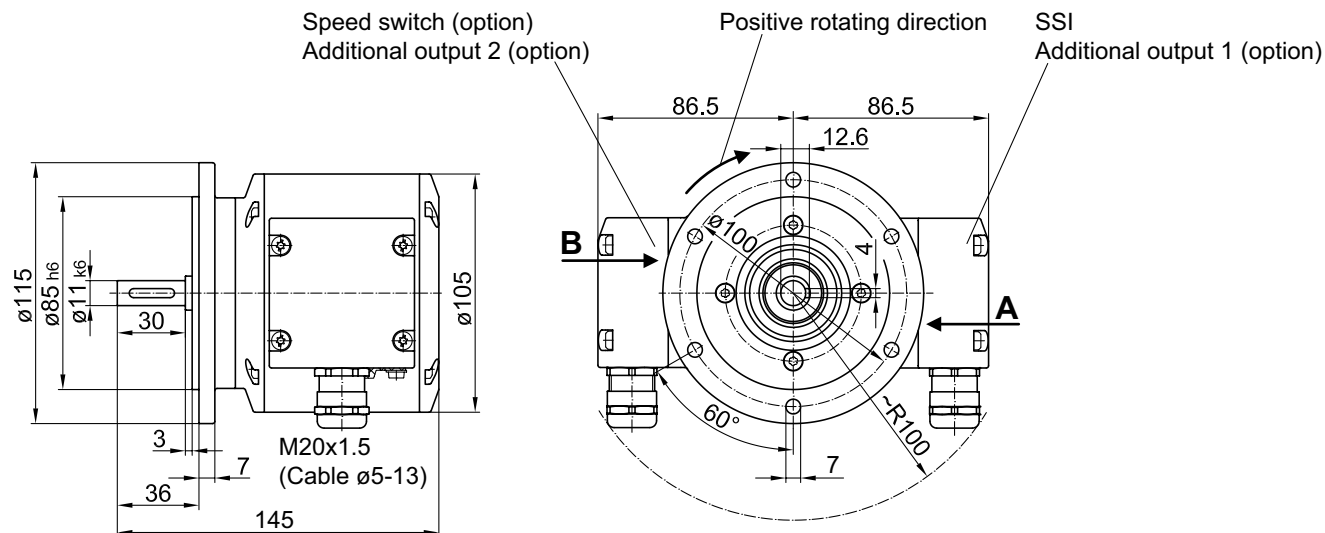
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Dimensions

Version with radial terminal boxes



Version with radial flange connectors M23

