Absolute encoders - bus interfaces
Solid shaft ø11 mm with EURO flange B10 or housing foot B3
DeviceNet / 13 bit ST / 16 bit MT / Speed switch

PMG10 - DeviceNet

PMG10 - picture similar

Features

– **Interface DeviceNet**
– **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	DeviceNet
Function	Multiturn
Transmission rate	125...500 kBaud
Device adress	Rotary switches in bus connecting box
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 (bus connecting box) 4 LEDs in device back side
Approval	CE

Technical data - mechanical design

Size (flange)	ø115 mm
Shaft type	ø11 mm solid shaft
Flange	EURO flange B10 Housing foot B3
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	1 kgcm²
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.	2.7 kg (depending on version)
Connection	Bus connecting box Terminal box incremental

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

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PMG10 - DeviceNet

Part number

PMG10	-S				.1		DN	.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
DN 10…30 VDC, DeviceNet

Connection
5 1x bus connecting box with 3 cable glands M16, radial
1 1x bus connecting box with 2 connectors M12, radial
F 1x bus connecting box with 3 cable glands M16, radial +
1x terminal box with 1 cable gland M20, radial
Z 1x bus connecting box with 2 connectors M12, radial +
1x terminal box with 1 cable gland M20, radial

Shaft diameter
1 ø11 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 *)**)
(Standard: Open collector, solid state relay on request)

* Only for connection with 1x bus connecting + 1x terminal box (F or Z)
** Please specify the exact switching speed in addition to the part number (factory setting).

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PMG10 - DeviceNet

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

| K 35	Spring washer coupling for solid shaft ø6...12 mm
K 50	Spring washer coupling for solid shaft ø11...16 mm
K 60	Spring washer coupling for solid shaft ø11...22 mm

Absolute encoders - bus interfaces
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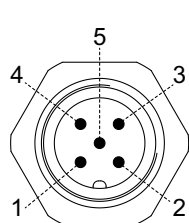## DeviceNet / 13 bit ST / 16 bit MT / Speed switch

PMG10 - DeviceNet

DeviceNet - Terminal assignment
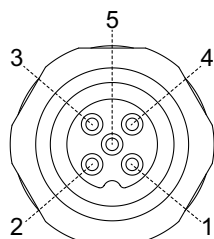
View A [1] - View inside bus connecting box
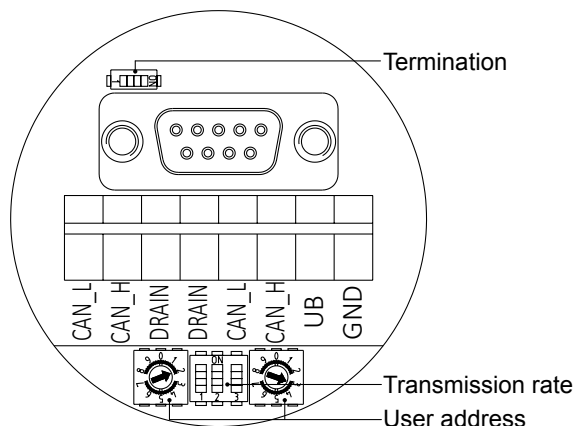
View A^1 [1] **and A^2** [1] - View into connector

male / female	Connection	Description
1	DRAIN	Shield
2	UB	Voltage supply 10...30 VDC
3	GND	Ground for UB
4	CAN_H	CAN Bus signal (dominant HIGH)
5	CAN_L	CAN Bus signal (dominant LOW)

Connector M12
(male, **A^1** [1])
5-pin, A-coded

Connector M12
(female, **A^2** [1])
5-pin, A-coded

Terminals of the same significance are internally connected and identical in their functions. Max. load on the internal terminal connections UB-UB and GND-GND is 1 A each.

DeviceNet - Features

Bus protocol	DeviceNet
Device profile	Device Profil for Encoders V 1.0
Operating modes	I/O-Polling Cyclic Change of State
Preset value	The „Preset" parameter can be used to set the encoder to a pre-defined value that corresponds to a specific axis position of the system. The offset of encoder zero point and mechanical zero point is stored in the encoder.
Parameter functions	Rotating direction: The relationship between the rotating direction and rising or falling output code values can be set in the operating parameter. Scaling: The parameter values set the number of steps per turn and the overall resolution.
Diagnostic	The encoder supports the following error warnings: - Position and parameter error
Factory setting	User address 00

DeviceNet - Termination

ON = final user
OFF = user xx

DeviceNet - User address
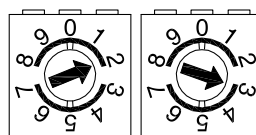
Defined by rotary switch.
Example: User address 23

DeviceNet - Transmission rate

Transmission rat	Dip switch position		
	1	2	3
125 kBaud*	X	OFF	OFF
250 kBaud	X	OFF	ON
500 kBaud	X	ON	OFF
125 kBaud	X	ON	ON

X = Without function
* Factory setting

[1] See dimensions

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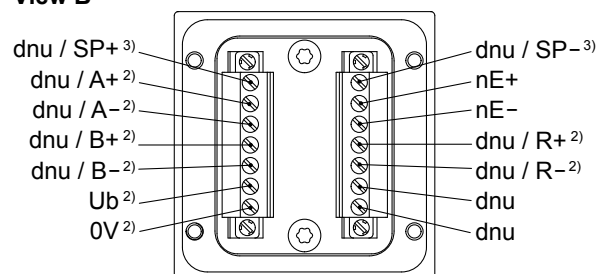## DeviceNet / 13 bit ST / 16 bit MT / Speed switch

PMG10 - DeviceNet

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]

dnu / SP+ [3]
dnu / A+ [2]
dnu / A− [2]
dnu / B+ [2]
dnu / B− [2]
Ub [2]
0V [2]

dnu / SP− [3]
nE+
nE−
dnu / R+ [2]
dnu / R− [2]
dnu
dnu

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.
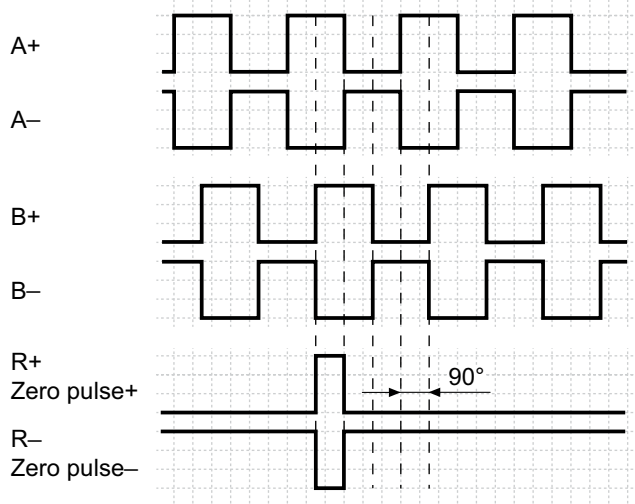
[1] See dimensions

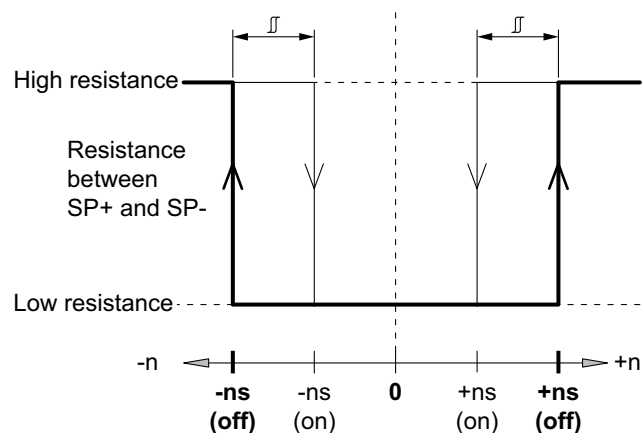[2] Additional output incremental (option)

[3] Speed switch (option)

Additional output incremental - Output signals

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

A+
A−
B+
B−
R+ Zero pulse+
R− Zero pulse−

90°

Speed switch - Switching characteristics

High resistance

Resistance between SP+ and SP-

Low resistance

-n   +n

-ns (off)   -ns (on)   0   +ns (on)   +ns (off)

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)

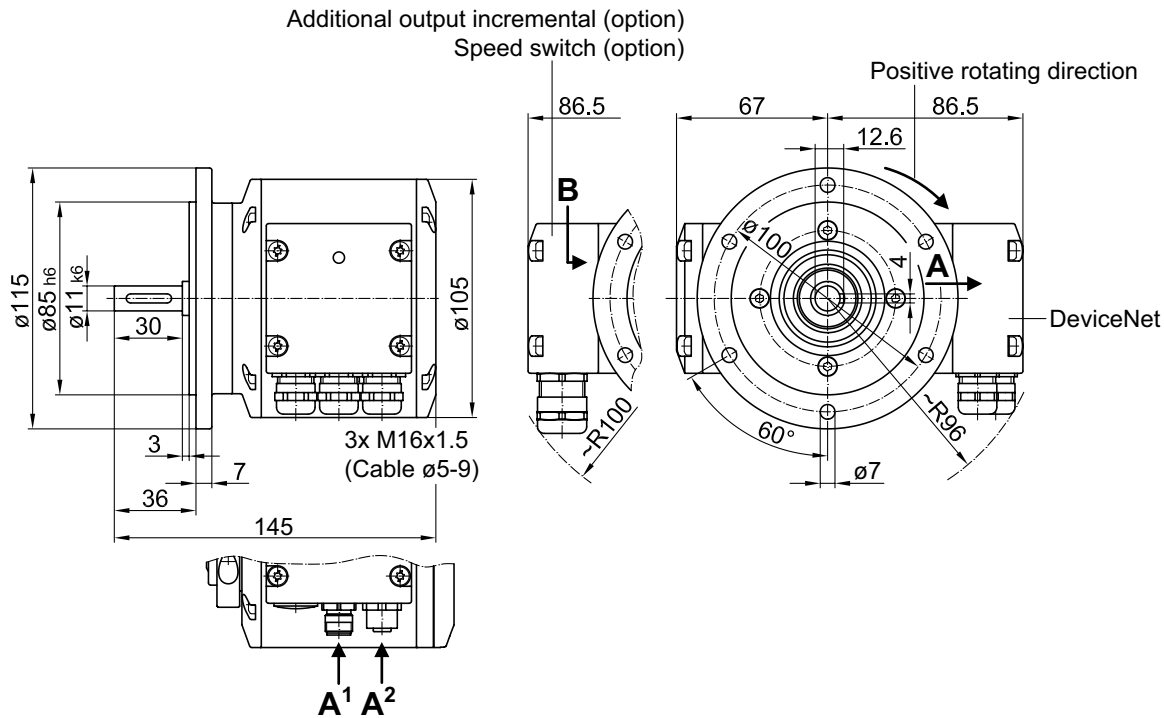|		
+ns (on)	=	Switch-on speed at shaft rotation in positive rotating direction [1].
-ns (on)	=	Switch-on speed at shaft rotation in negative rotating direction [1].

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Solid shaft ø11 mm with EURO flange B10 or housing foot B3
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Dimensions

Version with EURO flange B10

Additional output incremental (option)
Speed switch (option)

Positive rotating direction

DeviceNet

3x M16x1.5
(Cable ø5-9)

Version with housing foot B3

Additional output incremental (option)
Speed switch (option)

Positive rotating direction

DeviceNet

3x M16x1.5
(Cable ø5-9)