

# PMG10 - PROFINET

Solid shaft  $\varnothing 11$  mm with EURO flange B10 or housing foot B3  
PROFINET / 13 bit ST / 16 bit MT / 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          | 10...30 VDC                                                                          |
| Short-circuit proof     | Yes                                                                                  |
| Consumption w/o load    | $\leq 200$ mA                                                                        |
| Initializing time       | $\leq 500$ ms after power on                                                         |
| Interface               | PROFINET                                                                             |
| 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                                                                         |
| Programmable parameters | Steps per revolution<br>Number of revolutions<br>Preset, scaling, rotating direction |
| 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<br>UL approval / E217823<br>EAC                                                   |

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

|                    |                                                         |
|--------------------|---------------------------------------------------------|
| Switching accuracy | $\pm 2$ % (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; $\leq 100$ mA                                                              |
| Switching delay time                      | $\leq 20$ ms                                                                       |
| <b>Technical data - mechanical design</b> |                                                                                    |
| Size (flange)                             | $\varnothing 115$ mm                                                               |
| Shaft type                                | $\varnothing 11$ mm solid shaft                                                    |
| Flange                                    | EURO flange B10<br>Housing foot B3                                                 |
| Protection EN 60529                       | IP 66/IP 67                                                                        |
| Operating speed                           | $\leq 6000$ rpm                                                                    |
| Range of switching speed                  | ns (off) = $\pm 2$ ...6000 rpm                                                     |
| Operating torque typ.                     | 10 Ncm                                                                             |
| Rotor moment of inertia                   | 1 kgcm <sup>2</sup>                                                                |
| Admitted shaft load                       | $\leq 450$ N axial<br>$\leq 650$ N radial                                          |
| Material                                  | Housing: aluminium alloy<br>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...+85 °C                                                                       |
| Relative humidity                         | 95 % non-condensing                                                                |
| Resistance                                | IEC 60068-2-6<br>Vibration 30 g, 10-2000 Hz<br>IEC 60068-2-27<br>Shock 400 g, 1 ms |
| Weight approx.                            | 2.7 kg (depending on version)                                                      |
| Connection                                | Bus connecting box<br>Terminal box incremental                                     |

## Optional

- Integrated speed switch
- Additional output incremental with zero pulse

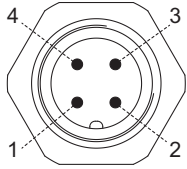
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## Terminal assignment

### View A1 (see dimension)

View into connector bus "voltage supply"

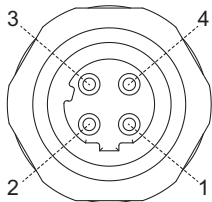


Connector M12 (male)  
4-pin, A-coded

| Pin | Connection |
|-----|------------|
| 1   | UB         |
| 2   | dnu        |
| 3   | GND        |
| 4   | dnu        |

### View A2 and A3 (see dimension)

View into connector bus „data transmission“



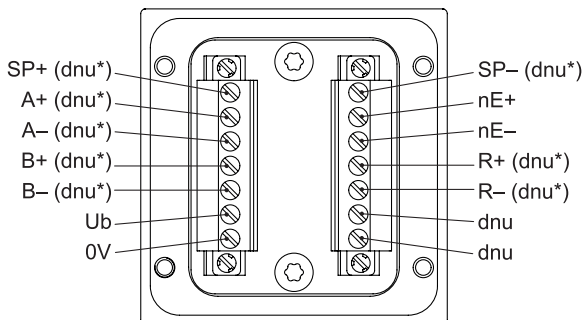
Connector M12 (female)  
4-pin, D-coded

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

### View B (see dimension)

Connecting terminal terminal box  
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<br>(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<br>(open collector, solid state relay on request) |
| SP- | DSL_OUT2 / speed switch<br>(0V, solid state relay on request)             |
| dnu | Do not use                                                                |

## PROFINET features

|                |                                                                                                                                                                           |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bus protocol   | PROFINET                                                                                                                                                                  |
| Device profile | Encoder Profil PNO 3.162                                                                                                                                                  |
| Features       | <ul style="list-style-type: none"> <li>■ 100 MBaud Fast Ethernet</li> <li>■ IP address programmable</li> <li>■ Realtime (RT) Class 1, IRT Class 2, IRT Class 3</li> </ul> |
| Process data   | Position value 32 bit input data                                                                                                                                          |

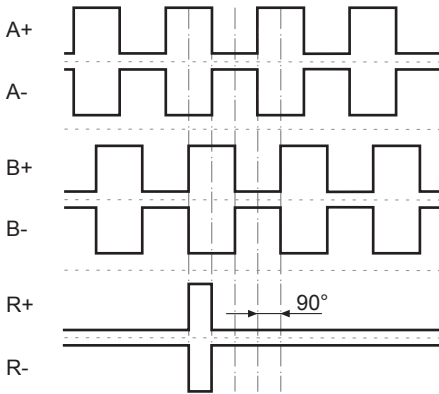
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## Output signals

### Additional output II (HTL/TTL)

At positive rotating direction (see dimension)



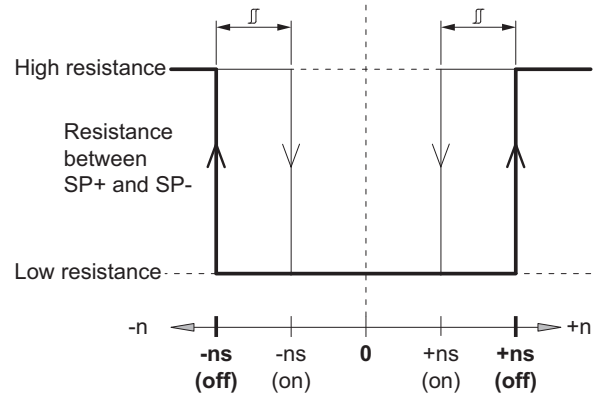
## Trigger level

### 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          | $\geq 2.5$ 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)<br>$\geq U_b - 3$ V / $\leq 1.5$ V (HTL) |
| Transmission length | $\leq 550$ m @ 100 kHz (TTL)<br>$\leq 350$ m @ 100 kHz (HTL)               |
| Output frequency    | $\leq 600$ kHz (TTL); $\leq 350$ kHz (HTL)                                 |

## Switching characteristics speed switch

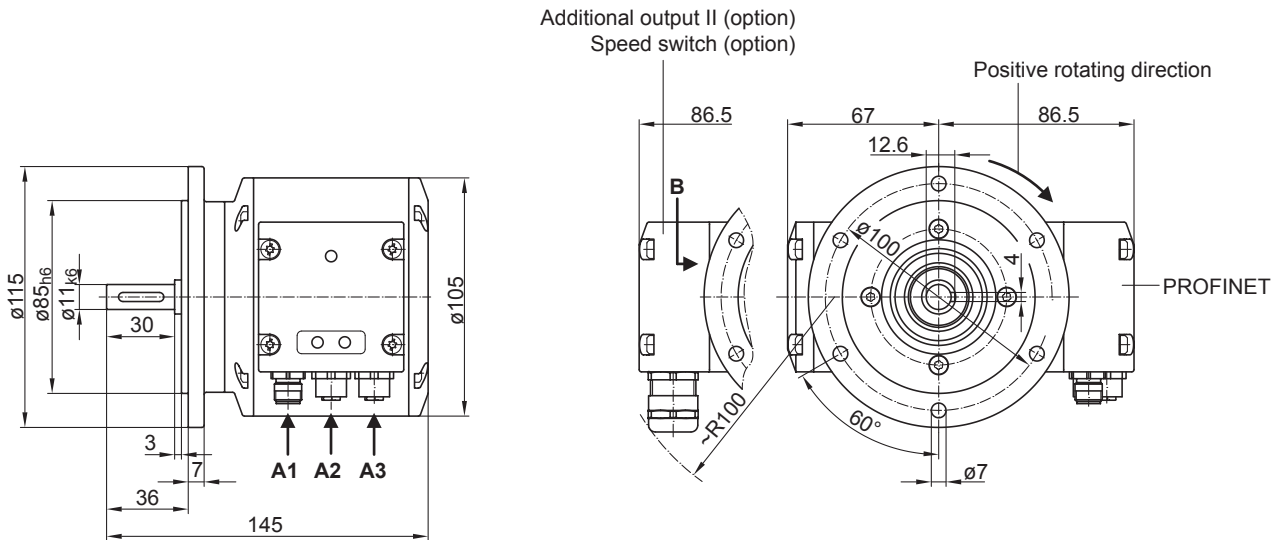


| n                                                                                | Speed                                                                              |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|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

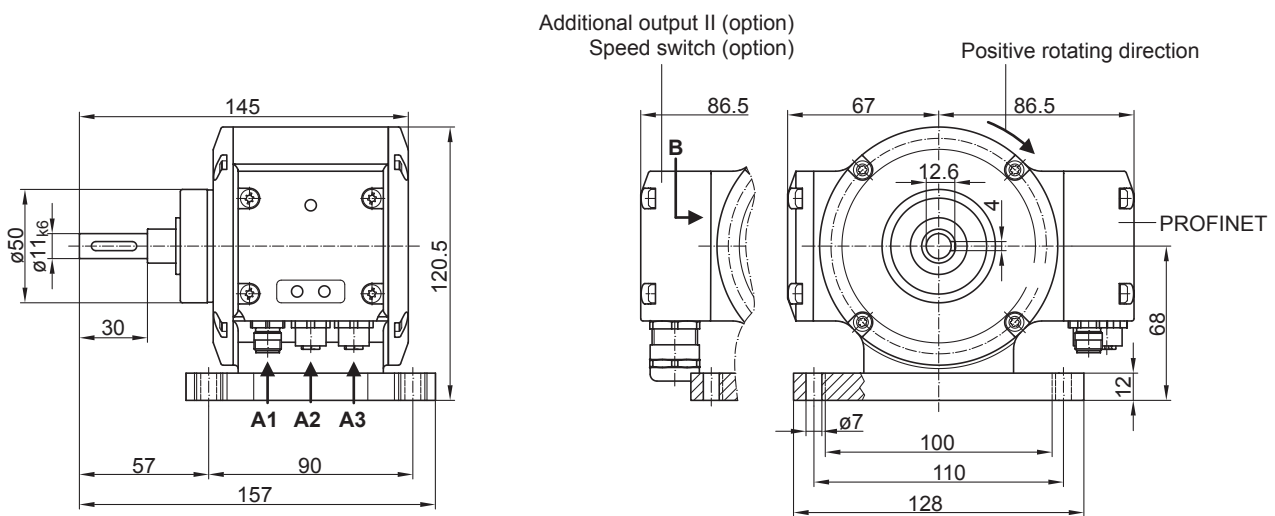
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## Dimensions



Version with Euro flange (B10)



Version with housing foot (B3)

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**Ordering reference**

|                                                                                                | PMG10 | # | - | S | H | # | . | 1 | # | PN | 3 | . | 6 | 0 | 0 | # | A  |
|------------------------------------------------------------------------------------------------|-------|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|----|
| <b>Product</b>                                                                                 | PMG10 |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |    |
| Absolute encoder                                                                               |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |    |
| <b>Digital speed switch</b>                                                                    |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |    |
| Without                                                                                        |       |   | - |   |   |   |   |   |   |    |   |   |   |   |   |   |    |
| With                                                                                           |       |   | D |   |   |   |   |   |   |    |   |   |   |   |   |   |    |
| <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>                                                                              |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |    |
| Bus connecting box with 3 connectors M12, radial                                               |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | 3  |
| Bus connecting box with 3 connectors M12, radial + terminal box with 1 cable gland M20, radial |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | G  |
| <b>Supply voltage (field bus)</b>                                                              |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |    |
| 10...30 VDC, Profinet                                                                          |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | PN |
| <b>Resolution singleturn position</b>                                                          |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |    |
| 13 Bit                                                                                         |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | 3  |
| <b>Resolution multiturn position</b>                                                           |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |    |
| 16 Bit                                                                                         |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | 6  |
| <b>Resolution speed</b>                                                                        |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |    |
| No speed signal                                                                                |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | 0  |
| <b>Resolution supplement I</b>                                                                 |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |    |
| No additional output I                                                                         |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | 0  |
| <b>Resolution supplement II</b>                                                                |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |    |
| No additional output II                                                                        |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | 0  |
| 512 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated                        |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | 1  |
| 512 ppr TTL (RS422), 6 channels                                                                |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | 2  |
| 1024 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated                       |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | 5  |
| 1024 ppr TTL (RS422), 6 channels                                                               |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | 6  |
| 2048 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated                       |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | 9  |
| 2048 ppr TTL (RS422), 6 channels                                                               |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | 4  |
| 3072 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated                       |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | 7  |
| 3072 ppr TTL (RS422), 6 channels                                                               |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | 8  |
| 4096 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated                       |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | K  |
| 4096 ppr TTL (RS422), 6 channels                                                               |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | J  |
| 5000 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated                       |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | G  |
| 5000 ppr TTL (RS422), 6 channels                                                               |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | H  |
| 8192 ppr TTL/HTL push-pull (Vin=Vout), 6 channels, electrically isolated                       |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | Q  |
| 8192 ppr TTL (RS422), 6 channels                                                               |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | P  |
| <b>Operating temperature</b>                                                                   |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |    |
| -40...+85 °C                                                                                   |       |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   | A  |

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

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.

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### Accessories

#### Mounting accessories

|          |                                                            |
|----------|------------------------------------------------------------|
|          | Spring disk coupling K 35 (shaft $\varnothing$ 6...12 mm)  |
|          | Spring disk coupling K 50 (shaft $\varnothing$ 11...16 mm) |
|          | Spring disk coupling K 60 (shaft $\varnothing$ 11...22 mm) |
| 11238694 | CAM12.WS13-11238694                                        |