

## PRELIMINARY - CANopen ABSOLUTE MULTI-TURN ENCODERS, PHM5 RANGE

PHM5, the new generation of CANopen absolute multi-turn encoders :

- 58mm encoder, extra-flat,
- Ø 6 & Ø 10 mm solid shaft version,
- Robustness and excellent resistance to shocks / vibrations,
- High protection level IP65,
- High performances in temperature -20°C to 85°,
- Universal power supply from 5 to 30 Vdc,
- High resolutions up to 8192 points pre turn (2<sup>13</sup>),
- Turns numerisation up to 65 536 (16 bits).

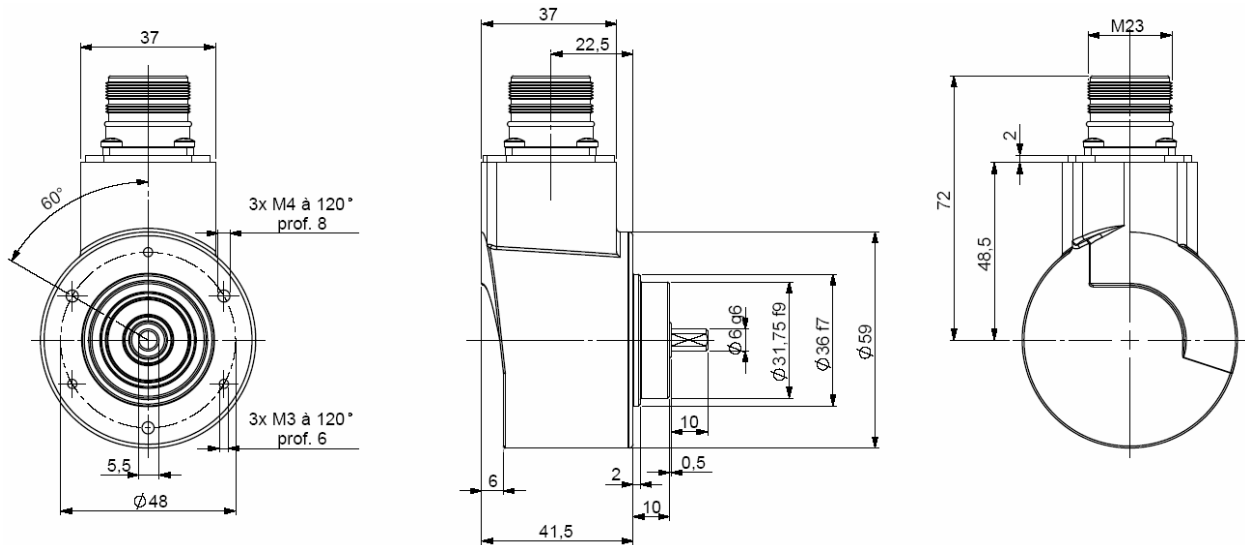
# CANopen

DS 301 V4.02

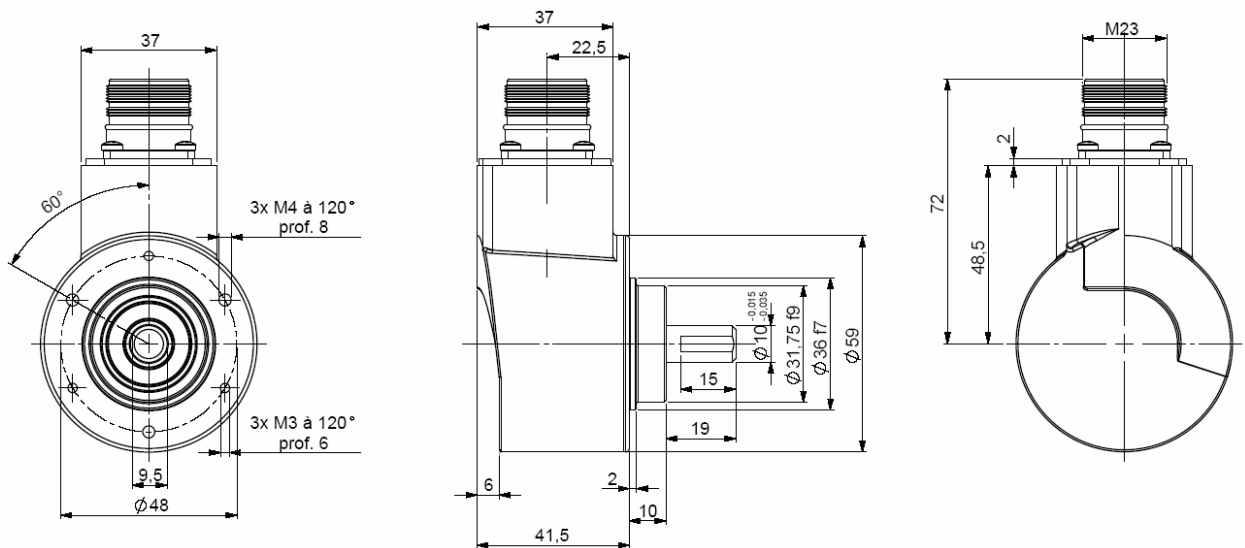
DS 406 V3.1



PHM5\_06 connection BCR (radial M23)



PHM5\_10 connection BCR (radial M23)



Material	Cover : treated steel	Shock (EN60068-2-27)	≤ 500 m.s <sup>-2</sup> (during 6 ms)
	Body: aluminium	Vibration (EN60068-2-6)	≤ 100 m.s <sup>-2</sup> (10... 2 000 Hz)
	Shaft : stainless steel	EMC	EN 61000-6-4, EN 61000-6-2
Bearings	6 000 serie	Isolation	500V (1 min.)
Maximal load	Axial : 50 N	Weight (connector)	0,520 kg
	Radial : 100 N	Operating temperature	- 20 ... + 85 °C (encoder T°)
Shaft inertia	≤ 1.10 <sup>-6</sup> kg.m <sup>2</sup>	Storage temperature	- 20 ... + 85 °C
Torque	≤ 4.10 <sup>-3</sup> N.m	Protection(EN 60529)	IP 65 (IP67 with flange option)
Permissible max. speed	6 000 min <sup>-1</sup>	Theoretical mechanical lifetime 10 <sup>9</sup> turns (F <sub>axial</sub> / F <sub>radial</sub> )	
Continuous max. speed	6 000 min <sup>-1</sup>	25 N / 50 N : 99	50 N / 100 N : 12

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## ELECTRICAL CHARACTERISTICS

Power supply	5 – 30Vdc
Introduction	< 1 s
Consumption (without load)	< 50mA (at 24Vdc)
Accuracy	± ½ LSB (13 bits)

## Programmable parameters

**Resolution:** defines the resolution per revolution (0 to 8 192),

**Global resolution :** total amount of codes for the encoder (2 to 536 870 912),

**Transmission speed :** programmable from 10kbaud (1000m) to 1 Mbaud (40 m) ; value per default: 20 Kbaud,

**Address:** define the software address of the encoder on the bus (1 to 127, value by default: id = 1),

**Direction :** define the direction of count of the encoder ,

**RAX :** defines the value of its preset position (non turning shaft),

**CAM:** Low and High Limits.

## Communication modes

3 modes are available to interrogate the encoder :

**POLLING mode:** (Response to a RTR message): The position value is only given upon request (SDO mode),

**CYCLIC mode:** the encoder transmits its position in an asynchronous manner. The frequency of the transmission is defined by the programmable cyclical timer register from 0 to 65 535 ms,

**SYNCHRO mode:** the encoder transmits its position on a synchronous demand by the master.

## CANOPEN CONNECTION

1	2	3	4	5	6	7	8, 9, 11	10	12
Reserved	CAN LOW	CAN GND	Reserved	Reserved	Reserved	CAN HIGH	Reserved	0V	+ 5/30Vdc

Pinout 3 (CAN GND) and 10 (0V) are connected together (intern the encoder).

Nota : Refer to the bus standards for the maximal derivation length.

## ORDERING CODE (Special versions upon request, for ex. special flanges/electronics/connections...)

	Shaft Ø	Power supply	Output stages	Code	Resolution	Nb of turns	Connection	Connection orientation
PHM5	10 : 10mm  06 : 6mm	P :  5 to 30Vdc	BB :  CANopen	B:  Binary	13 :  8192 points per turn (2 <sup>13</sup> )	B16 :  65 536 turns (2 <sup>16</sup> )	BC:  M23 12 pinouts clockwise	R :  radial
PHM5 _	10 //	P	BB	B //	13	B16 //	BC	R

Made in France