

## PRELIMINARY - CANopen ABSOLUTE MULTI-TURN ENCODERS, THM5 RANGE

THM5, the new generation of CANopen absolute multi-turn encoders :

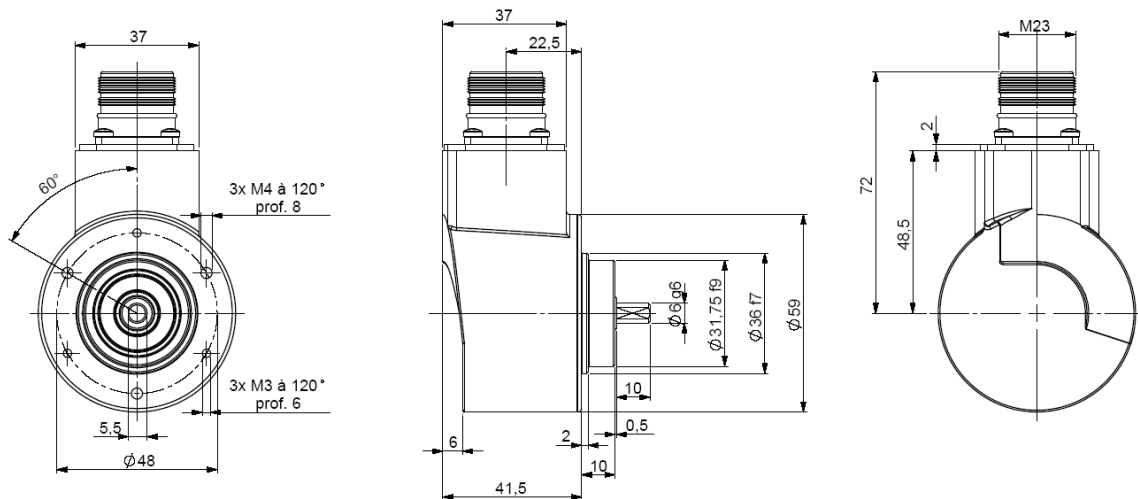
- Magnetic technology,
- 58mm encoder, extra-flat,
- Ø 6 & Ø 10 mm solid shaft version,
- Robustness and excellent resistance to shocks / vibrations,
- High protection level IP65,
- High performances in temperature -20°C to 85° (-30°C option)
- Universal power supply from 5 to 30 Vdc,
- High resolutions up to 4 096 points per turn (2<sup>12</sup>),
- Turns numerisation up to 65 536 (16 bits).

# CANopen

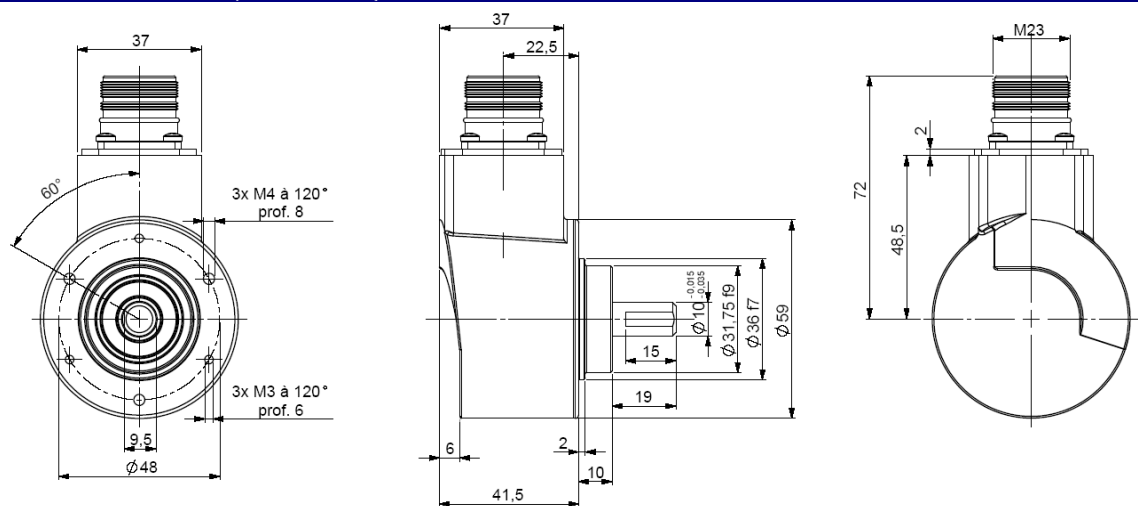
DS 301 V4.02  
DS 406 V3.1



### THM5\_06 connection BCR (radial M23)



### THM5\_10 connection BCR (radial M23)



## MECHANICAL DATA

Material	Cover : steel	Shock (EN60068-2-27)	≤ 2000 m.s <sup>-2</sup> (during 6 ms)
	Body: aluminium	Vibration (EN60068-2-6)	≤ 200 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 DATA

Power supply	5-30Vdc	Sampling rate*	1 kHz
Consumption without load	< 40mA (at 24Vdc)	Accuracy	± 0.3 %
Resolution in the turn	12 bits	Repeatability	± 0.1 %
Number of turns	16 bits max.	Introduction	< 1s
Total resolution	Up to 28 bits	Refresh rate	< 400µs

\* Nota : Internal data refresh rate

### PROGRAMMABLE PARAMETERS

**Resolution:** defines the resolution per revolution (0 à 4 096).

**Transmission speed :** programmable from 10kbaud (1 000m) to 1 Mbaud (25 m) ; value per default : 20 Kbaud.

**Address :** defines the software address of the encoder on the bus (1 à 127, Value per default : id = 1).

**Direction :** defines the direction of count of the encoder.

**RAX :** define the value of the current position (stationary shaft).

**Comes :** high and low limits.

### COMMUNICATION MODES

Encoder configuration : Reading/Writing of the encoder objects dictionary (SDO mode).

3 modes are available to interrogate the encoder position/speed :

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

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

**POOLING mode (Answer to a RTR signal) :** the encoder only answers to a request.

### 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
THM5	10 : 10mm  06 : 6mm	P :  5 to 30Vdc	BB :  CANopen	B:  Binary	12 :  4096 points per turn (2 <sup>12</sup> )	B16 :  65 536 turns (2 <sup>16</sup> )	BC:  M23 12 pinouts clockwise	R :  radial
THM5	_ 10 //	P	BB	B //	12	B16 //	BC	R

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