

## PRELIMINARY - CANopen ABSOLUTE MULTI-TURN ENCODERS, PHU9 RANGE

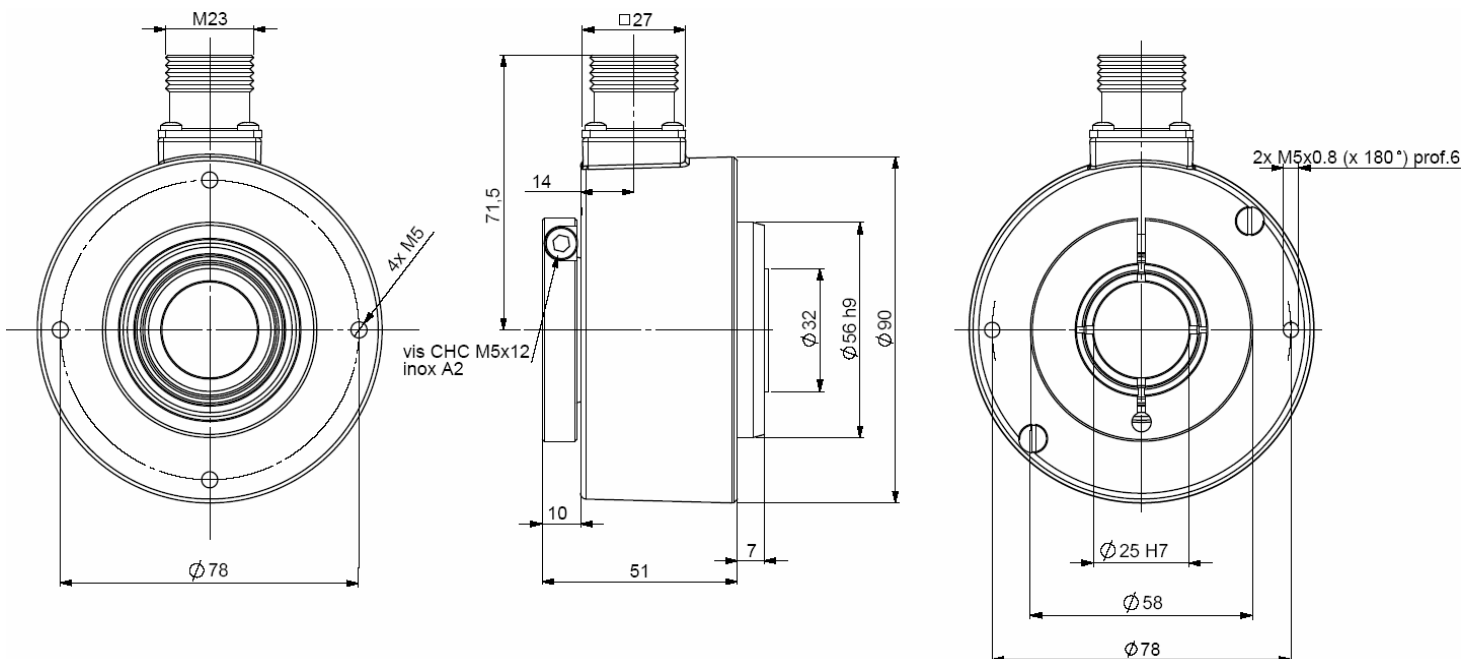
PHU9, the new generation of CANopen absolute multi-turn encoders :

- 90mm encoder, extra-flat,
- Ø30mm through shaft version, reduction hubs available,
- 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 per turn (2<sup>13</sup>),
- Turns numerisation up to 65 536 (16 bits).

**CANopen**  
DS 301 V4.02  
DS 406 V3.1



### PHU9\_25 connection BCR (radial M23), with reduction hub 9418/I25 (25mm) mounted on the shaft



### MECHANICAL CHARACTERISTICS

Material	Cover : steel	Shocks (EN60068-2-27)	$\leq 500 \text{ m.s}^{-2}$ (during 6 ms)
	Body : aluminium	Vibrations (EN60068-2-6)	$\leq 100 \text{ m.s}^{-2}$ (10 ... 2 000 Hz)
	Shaft : stainless steel	EMC	EN 61000-6-4, EN 61000-6-2
Bearings	6 807 serial	Isolation	100V (1 min)
Maximum loads	Axial : 50 N	Encoder weight (approx)	0,700 kg
	Radial : 80 N	Operating temperature	- 20... + 80 °C (encoder T°)
Shaft inertia	$\leq 55.10^{-6} \text{ kg.m}^2$	Storage temperature	- 20... + 80 °C
Torque	$\leq 25.10^{-3} \text{ N.m}$	Protection(EN 60529)	IP 65
Permissible max. speed	$6\ 000 \text{ min}^{-1}$	Torque (ring pressure screw)	nominal: 3N.m, break: 4N.m
Continuous max. speed	$3\ 600 \text{ min}^{-1}$	Theoretical mechanical lifetime $10^9$ turns ( $F_{\text{axial}} / F_{\text{radial}}$ )	
Shaft seal	Viton	25 N / 40 N : 140	50 N / 80 N : 17

# CANopen

## 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
PHU9	30 : 30mm  Reduction hubs available	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
PHU9 _	30 //	P	BB	B //	13	B16 //	BC	R

Made in France