![Sensata Technologies logo]

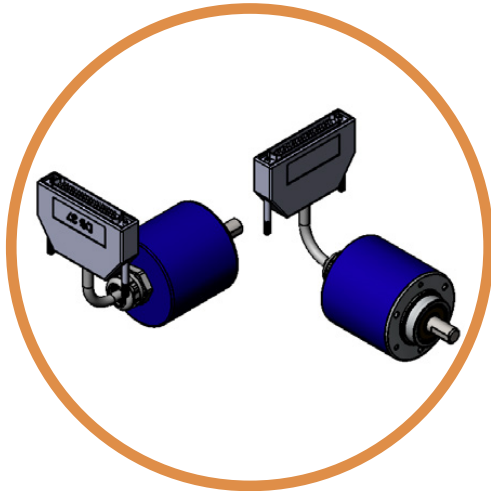# | PHM5
PARALLEL ABSOLUTE MULTITURN ENCODER - PUSH PULL

Features

- Solid shaft Ø 6 and Ø 10 mm
- Robustness and excellent resistance to shocks / vibrations
- High protection level IP65, IP67 option with a sealing flange
- High performances in temperature −20°C to +85°C
- Parallel output – push pull electronic
- Universal electronic circuits from 5 to 30Vdc
- Protection against short-circuits and inversion of polarity
- High resolutions available: 8192 (13 bits) per turn
- Turn counting up to 65 536 (16 bits)
- Reset, Select, Latch, Direction functions
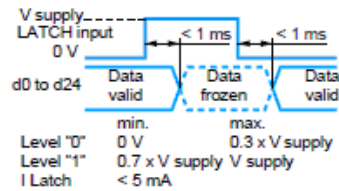- Option: push-button on the cover for an encoder reset to a value X
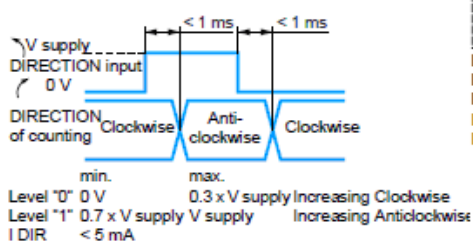
SPECIFICATIONS

Mechanical

Material	Cover : steel
	Body : aluminum
	Shaft : stainless steel
Bearings	6 000 serie
Maximum load	Axial : 50 N
	Radial : 100 N
Shaft inertia	$\leq 1.10^{-6}$ kg.m^2
Torque	$\leq 4.10^{-3}$ N.m
Permissible max. speed	6 000 min^{-1}
Continuous max. speed	6 000 min^{-1}
Shock (EN60068-2-27)	≤ 500 m.s^{-2} (during 6 ms)
Vibration (EN60068-2-6)	≤ 100 m.s^{-2} (10 … 2 000 Hz)
EMC	EN 61000-6-4, EN 61000-6-2
Isolation	100V (1 min.)
Weight (connector)	0,750 kg
Operating temperature	- 20 … + 85 °C (encoder T°)
Storage temperature	- 20 … + 85 °C
Protection(EN 60529)	IP 65 (IP67 with flange option)
Theoretical mechanical lifetime 10^9 turns (Faxial / Fradial)	25 N / 50 N : 99
	50 N / 100 N : 12

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BEISENSORS

SCHEMES

LATCH input

V supply
LATCH input
0 V

< 1 ms   < 1 ms

d0 to d24   Data valid   Data frozen   Data valid

		min.	max.
Level "0"	0 V		0.3 x V supply
Level "1"	0.7 x V supply	V supply	
I Latch	< 5 mA		

DIRECTION input

V supply
DIRECTION input
0 V

< 1 ms   < 1 ms

DIRECTION of counting   Clockwise   Anti-clockwise   Clockwise

		min.	max.
Level "0"	0 V		0.3 x V supply Increasing Clockwise
Level "1"	0.7 x V supply	V supply	Increasing Anticlockwise
I DIR	< 5 mA		

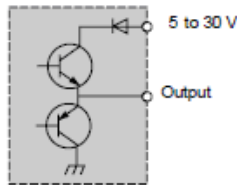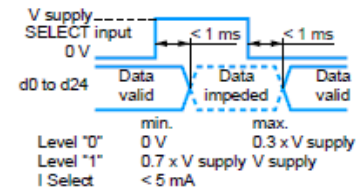**PUSH-PULL**

Supply: 5 to 30 V ⎓
Max. ripple: 500 mV
Protection against reverse polarity
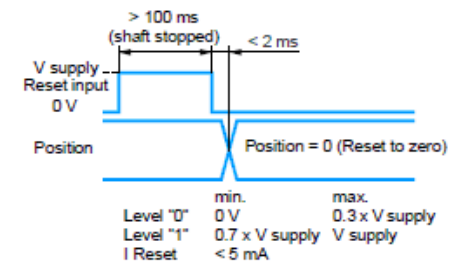Max. no-load consumption: 100 mA (50 mA typical on 24 V)

5 to 30 V
Output

Max. current: 20 mA
Level "0" max.: 0.5 V
Level "1" min.: V supply - 2.5 V
Protection against short-circuits
NPN/PNP compatible

SELECT input

V supply
SELECT input
0 V

< 1 ms   < 1 ms

d0 to d24   Data valid   Data impeded   Data valid

		min.	max.
Level "0"	0 V		0.3 x V supply
Level "1"	0.7 x V supply	V supply	
I Select	< 5 mA		

Input stage - Reset to zero

> 100 ms (shaft stopped)   < 2 ms

V supply
Reset input
0 V

Position   Position = 0 (Reset to zero)

		min.	max.
Level "0"	0 V		0.3 x V supply
Level "1"	0.7 x V supply	V supply	
I Reset	< 5 mA		

ELECTRONIC

Power supply	5 – 30Vdc
Introduction	< 1 s
Cons. without load	< 100mA (typically 50-60mA at 24Vdc)
Position refresh	< 200µs

PARALLEL CONNECTION

1	GN green	Output Bit 0		20	BN/PK brown/pink	Output Bit 19
2	YE yellow	Output Bit 1		21	BN/BU brown/blue	Output Bit 20
3	GY grey	Output Bit 2		22	BN/RD brown/red	Output Bit 21
4	PK pink	Output Bit 3		23	BN/BK brown/black	Output Bit 22
5	BU blue	Output Bit 4		24	GN/GY green/grey	Output Bit 23
6	RD red	Output Bit 5		25	GN/PK green/pink	Output Bit 24
7	BK black	Output Bit 6		26	GN/BU green/blue	Reserved
8	VT violet	Output Bit 7		27	GN/RD green/red	RESET
9	WH/BN white/brown	Output Bit 8		28	GN/BK green/black	SELECT
10	WH/GN white/green	Output Bit 9		29	YE/GY yellow/grey	LATCH
11	WH/YE white/yellow	Output Bit 10		30	YE/PK yellow/pink	DIRECTION
12	WH/GY white/grey	Output Bit 11		31	YE/BU yellow/blue	Reserved
13	WH/PK white/pink	Output Bit 12		32	YE/RD yellow/red	Reserved
14	WH/BU white/blue	Output Bit 13		33	NC	Reserved
15	WH/RD white/red	Output Bit 14		34	YE/BK yellow/black	Reserved
16	WH/BK white/black	Output Bit 15		35	RD/BK red/black	Reserved
17	BN/GN brown/green	Output Bit 16		36	BN brown	5 to 30Vdc
18	BN/YE brown/yellow	Output Bit 17		37	WH white	0 Vdc
19	BN/GY brown/grey	Output Bit 18				

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BEISENSORS

SELECT
Active data output, pin SELECT at 0Vdc
Non active data output: pin select to +Vcc

LATCH
Active data: pin LATCH to 0Vdc
Data frozen: pin LATCH to +Vcc

DIRECTION
Increasing code clockwise: pin DIRECTION at 0Vdc
Increasing code counter clockwise: Pin DIRECTION at +Vcc

RAX (PRESET to X):
For an electrical RAX (or push-button option) : pin RAX to +Vcc during minimum 100ms.

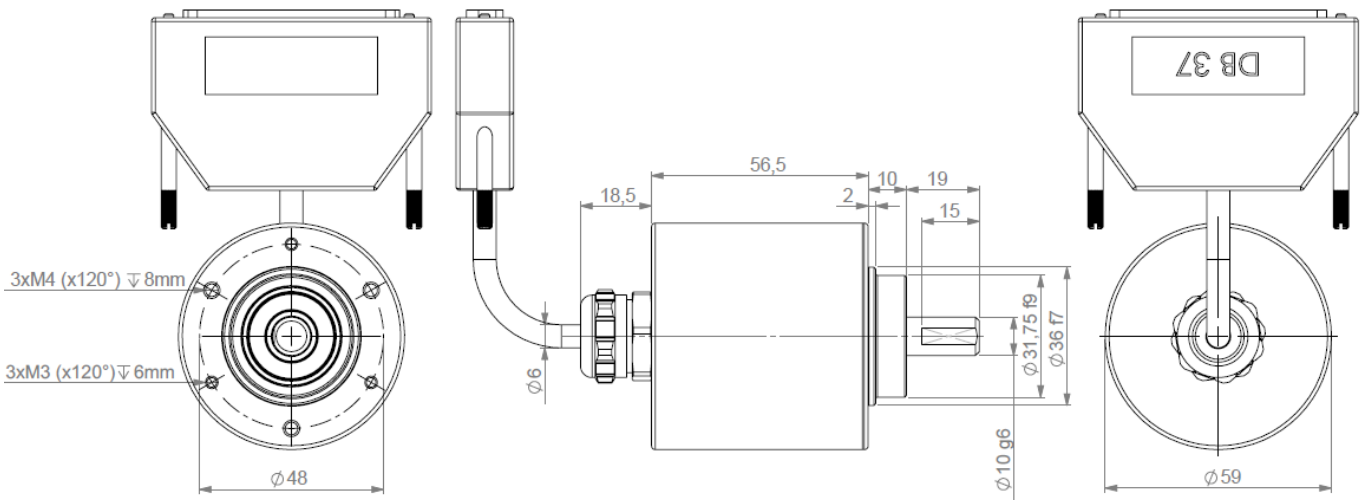DIRECTION, LATCH, RAX and SELECT inputs have to be connected to 0Vdc or +Vcc (LATCH, SELECT and RAX at 0V if not used)
Reserved: Do not connect !
Example of pin assignment for configuration 10x7 bits : data available on pin 1 to 17 - Max: 25 bits (Resolution + Number of turns)

DIMENSIONS

All dimensions are in: mm

PHM5 PARALLEL

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BEISENSORS

(Contact the factory for special versions, ex: special flanges, connections, electronics…)

| PHM5 | _ | 10 | // | P | S5 | G | // | 13 | B12 | // | S3 | A010 |

Model

PHM5

Shaft Ø

10 : 10mm
06 : 6mm

Supply

P : 5 to 30Vdc

Output stage

S5 : parallel push-pull output

Code

G: Gray
B: Binary

Resolution

13 : Standard 13 bits
Note: Available from 0 to 13 bits

Number of turns

B12 Standard 12 bits
Note: Available form 0 to 16 bits
Max: 25 bits (Resolution + Number of turns)

Connection

S3 Cable + SUBD37 pinouts output

Orientation

A010 : Axial 1m cable

AGENCY APPROVALS & CERTIFICATIONS

CE

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