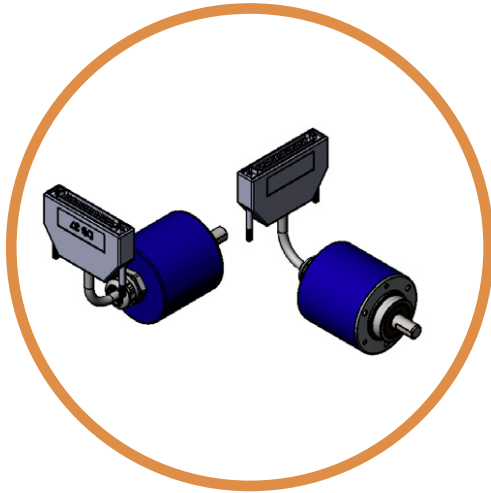# | PHM5
PARALLEL ABSOLUTE MULTITURN ENCODER – PNP- NPN

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, PNP or NPN,
- Universal electronic circuits from 11 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.
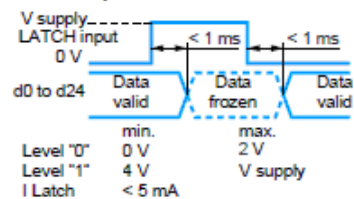
SPECIFICATIONS

Mechanical

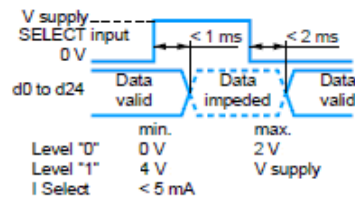| Material	Cover : steel
	Body : aluminum
	Shaft : stainless steel
Bearings	6 000 serie
Maximum loads	Axial : 50 N
	Radial : 100 N
Shaft inertia	$\leq 1.10^{-6}$ kg.m^2
Torque	$\leq 6.10^{-3}$ N.m
Permissible max. speed	$\leq 4.10^{-3}$ N.m
Continuous max. speed	6 000 min^{-1}
Shaft seal	6 000 min^{-1}
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

www.sensata.com

Electrical

Power supply	11 – 30Vdc
Introduction	< 1 s
Cons. without load	< 100mA (typically 50-60mA at 24Vdc)
Position refresh	< 200µs

SCHEMES

LATCH input

Level "0" min. 0 V max. 2 V
Level "1" 4 V V supply
I Latch < 5 mA

SELECT input

Level "0" min. 0 V max. 2 V
Level "1" 4 V V supply
I Select < 5 mA

DIRECTION input

Level "0" min. 0 V max. 0.3 x V supply Increasing Clockwise
Level "1" 0.7 x V supply V supply Increasing Anticlockwise
I DIR < 5 mA
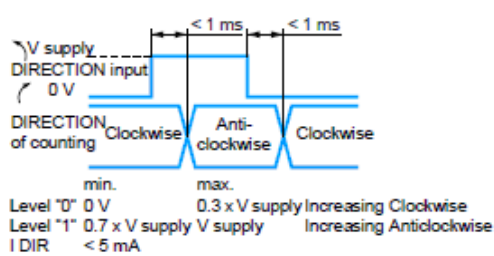
Input stage - Reset to zero

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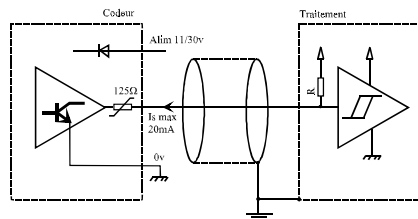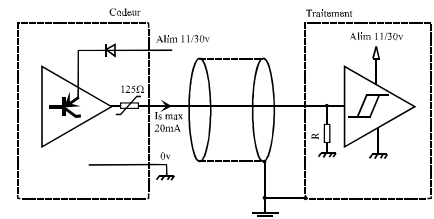Level "1" 0.7 x V supply V supply
I Reset < 5 mA
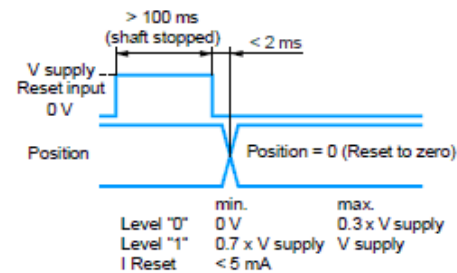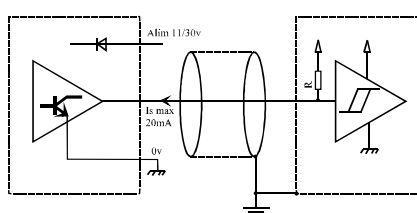
ELECTRONIC

5S0 Electronic: OC NPN
Power supply: 11 to 30Vdc
Current consumption (no load) : <100mA
Max ondulation : 500mV
Level "0" max : 1,25Vdc
Protection against polarity inversion

5S1 Electronic: OC NPN + CTP
Power supply: 11 to 30Vdc
Current consumption (no load): <100mA
Max ondulation : 500mV
Level "0" max : 3,75V at Is max
Protection against short-circuits
Protection against polarity inversion

5S6 Electronic : OC PNP + CTP
Power supply: 11 to 30Vdc
Current consumption (no load): <100mA
Max ondulation : 500mV
Level "1" mini : Vcc- 4,5Vdc at Is max
Protection against short circuits
Protection against polarity inversion

www.sensata.com

BEIsensors

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	11 to 30Vdc
18	BN/YE brown/yellow	Output Bit 17		37	WH white	0 Vdc
19	BN/GY brown/grey	Output Bit 18				

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

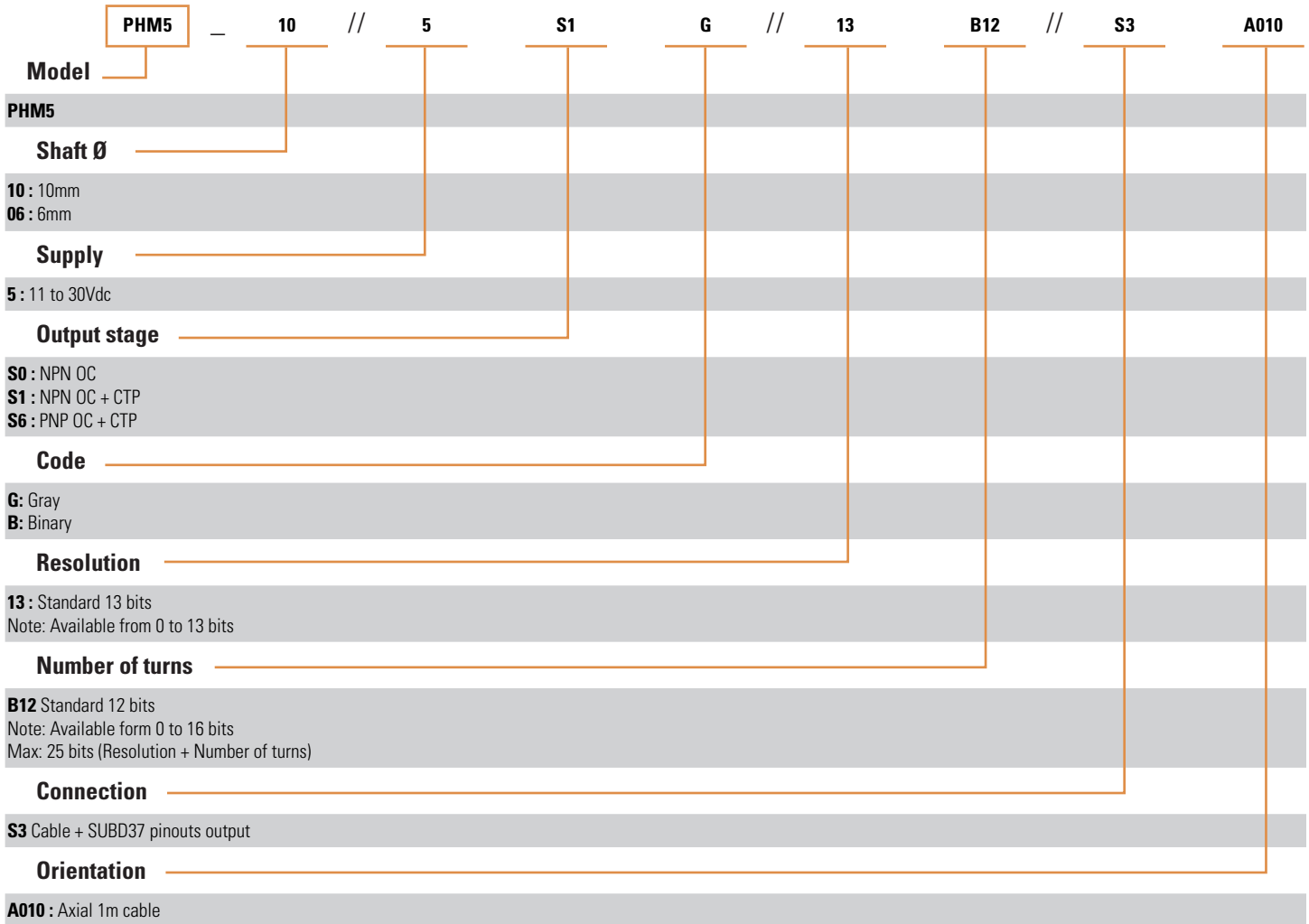PHM5 PARALLEL
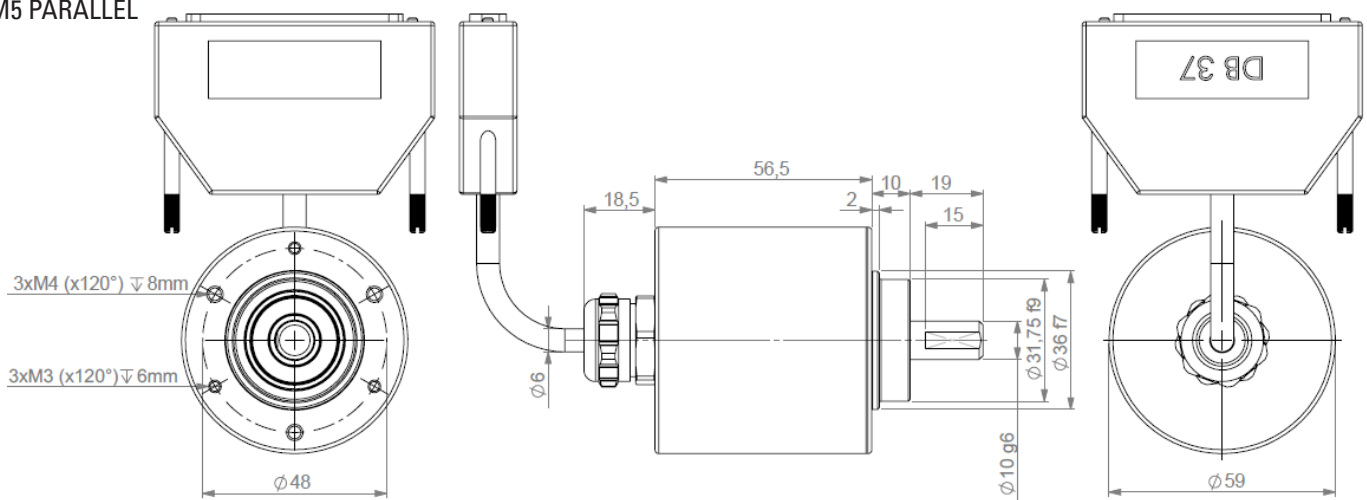
Example : PHM5 _10 //5S1G //13B12 //S3A010

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

| PHM5 | _ | 10 | // | 5 | S1 | G | // | 13 | B12 | // | S3 | A010 |

Model

| PHM5 |

Shaft Ø

| **10 :** 10mm |
| **06 :** 6mm |

Supply

| **5 :** 11 to 30Vdc |

Output stage

| **S0 :** NPN OC |
| **S1 :** NPN OC + CTP |
| **S6 :** PNP OC + CTP |

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

Made In France

CONTACT US

Americas
+1 (800) 350 2727
sales.beisensors@sensata.com

Europe, Middle East & Africa
+33 (3) 88 20 8080
position-info.eu@sensata.com

Asia Pacific
sales.isasia@list.sensata.com
China +86 (21) 2306 1500
Japan +81 (45) 277 7117
Korea +82 (31) 601 2004
India +91 (80) 67920890
Rest of Asia +886 (2) 27602006 ext 2808

Revised 03/27/2018

www.sensata.com