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PHM9
CE

PARALLEL ABSOLUTE MULTITURN ENCODER – PNP - NPN - PHM9 RANGE

- Solid shaft Ø 12 and Ø 11 mm,
- Robustness and excellent resistance to shocks / vibrations,
- High protection level IP65,
- 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.
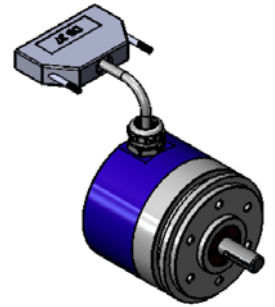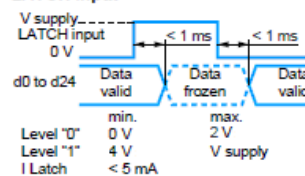
PHM9 PARALLEL DIMENSIONS
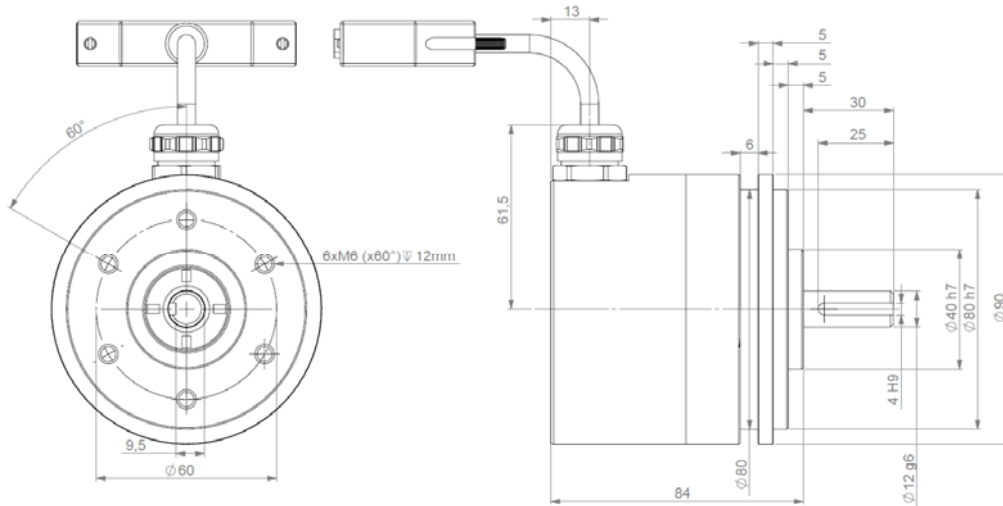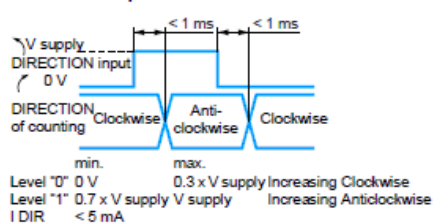

MECHANICAL CHARACTERISTICS

Material	Cover : steel	Shocks (EN60068.2.27)	≤ 500m.s⁻² (during 6 ms)

	Cover : steel	Shocks (EN60068.2.27)	$\leq 500 m.s^{-2}$ (during 6 ms)
Material	Body: aluminium	Vibrations (EN60068.2.6)	$\leq 100 m.s^{-2}$ (10 … 2 000 Hz)
Shaft	Stainless steel	EMC	EN 61000-6-4, EN 61000-6-2
Bearings	6001 serie	Isolation	100V (1 min.)
Maximal loads	Axial : 100 N	Encoder weight (approx.)	1,600 kg
	Radial : 200 N	Operating temperature	- 20 ... + 85 °C (encoder T°)
Shaft inertia	$\leq 15.10^{-6}$ kg.m²	Storage temperature	- 20 ... + 85 °C
Torque	$\leq 10.10^{-3}$ N.m	Protection(EN 60529)	IP 65
Permissible max. speed	6 000 min⁻¹	Theoretical mechanical lifetime 10⁹ turns (F_{axial} / F_{radial})	
Continuous max. speed	6 000 min⁻¹	20 N / 30 N	50 N / 100 N	100 N / 200 N
Shaft seal	Viton double lips	360	18	2,2

SCHEMES

LATCH input

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

DIRECTION input

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		

SELECT input

Level "0"	0 V		2 V
Level "1"	4 V		V supply
I Select	< 5 mA		
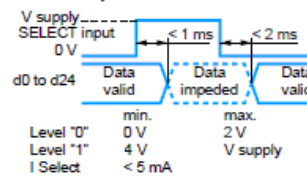
Input stage - Reset to zero

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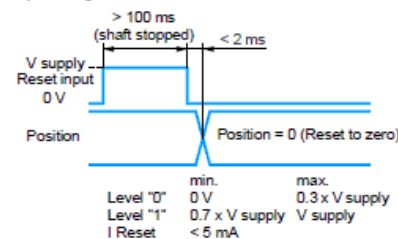
ELECTRONIC

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

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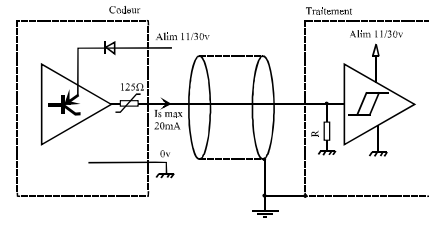## PARALLEL ABSOLUTE MULTITURN ENCODER – PNP - NPN - PHM9 RANGE

ELECTRONIC
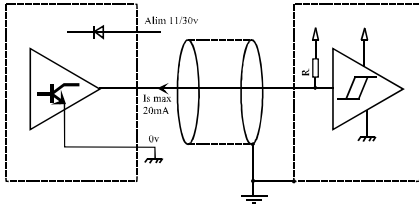
5S0 Electronic: OC NPN
Power supply: 11 to 30Vdc
Current consumption (no load) : <100mA
Max ondulation : 500mV
Level ''0'' max : 1,25Vdc
Protection against polarity inversion
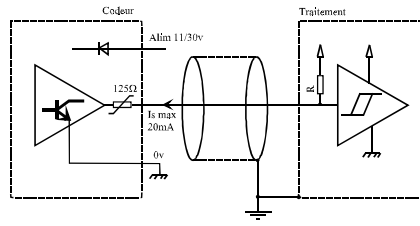
5S1 Electronic: OC NPN + CTP
Power supply: 11 to 30Vdc
Current consumption (no load): <100mA
Max ondulation : 500mV
Level ''0'' max : 3,75V at Is max
Protection against short-circuits
Protection against polarity inversion

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

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)

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

	Shaft Ø	Supply	Output stage	Code	Resolution	Number of turns	Connection	Orientation
PHM9	**12** : 12mm **11** : 11mm	**5** : 11 to 30Vdc	**S0** : NPN OC **S1** : NPN OC + CTP **S6** : PNP OC + CTP	**G**: Gray **B**: Binary	**13** : Standard **13** bits Nota: Available form 0 to 13 bits	**B12** Standard **12** bits Nota: Available form 0 to 16 bits Max: 25 bits (Resolution + Number of turns)	**S3** Cable + SUBD37 pinouts output	**R010** : Radial 1m cable **A020** : Axial 2m cable
PHM9 _	12 //	5	S1	G //	13	B12 //	S3	A010

Made in France

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