



Strada Panealba, 2 - 10040 Volvera (TORINO) ITALY
Tel. 0039.011. 990.60.60 - (4 linee r.a.) FAX. 0039.011.985.90.73
www.logansrl.it e-mail info@logansrl.it

OPTICAL

INCREMENTAL ENCODER

EN53



TECHNICAL DATASHEET



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OPTICAL ENCODER EN53

GENERAL FEATURES

- Optical rotary encoder.
- Bidirectional signals with zero pulse.
- Aluminium flange and housing.
- Radial output by cable.
- Compact design.
- Suitable for motor feedback.



MECHANICAL AND ELECTRICAL CHARACTERISTICS

MECHANICAL

- Flange and housing made of aluminium.
- Stainless steel shaft.
- Ball bearings with special high-sealed screens.
- High protection even in harsh environmental conditions.

ELECTRICAL

- Protection against short circuits.
- Protection against inversion of polarity.
- High stability of output signals.
- Reading device with infra-red light emitter and receiving photodiodes.
- SinCos A and B output signals, with phase displacement of 90° electrical.

Cod. EN53

Pulses per revolution	2048 ppr
Max. rotating speed	continuous 12000 rpm momentary 15000 rpm
Max. shaft load	20 N (axial) - 90 N (radial)
Shaft diameter (mm)	tapered solid shaft Ø 10 (10/1)
Operating temperature	-15 °C + 120 °C
Storage temperature	-20 °C + 80 °C
Vibration resistance (EN 60068-2-6)	≤ 100 m/s ² (10 + 2000 Hz)
Shock resistance (EN 60068-2-27)	≤ 1000 m/s ² (6 ms)
Protection class (EN 60529)	IP 40
Torque	≤ 1 Ncm
Output	SinCos 1 Vpp
Power supply	5 V ± 10%
Max. frequency	500 kHz
Max. current consumption (no load)	120 mA
Standard cable length	1 m
Electrical connections	see related table
Protections	inversion of polarity and short circuits
Weight	450 g

ORDERING CODE

MODEL	CABLE OUTPUT	PPR	POWER SUPPLY	Ø SHAFT	CABLE	OUTPUT	CONNECTION	OPTIONS
EN53	HR	2048	05V	D10	M01	SW	C	
HR = radial 2048 = 2048 ppr 05V = 5 V D10 = ø10 mm tapered 10/1 M.5 = 0.5 m M01 = 1 m SW = 1 Vpp C = cable No cod.= standard								

Example OPTICAL ENCODER EN53 HR 2048 05V D10 M01 SW C



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CABLE AND ELECTRICAL CONNECTIONS

Cable 8 wires $\varnothing = 6.0$ mm, PVC external sheath

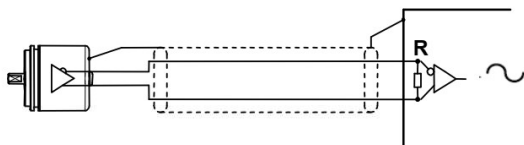
Conductors section:
- power supply: 0.35 mm^2
- signals: 0.14 mm^2

NOTE

The cable's bending radius should not be lower than 60 mm.

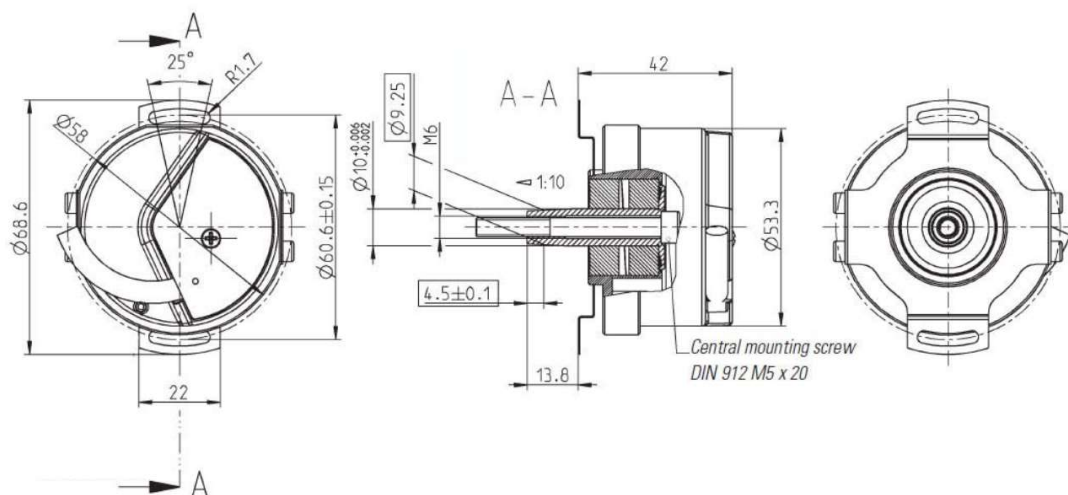
SINE WAVE (1 Vpp)		
PIN No. ON TERMINAL BLOCK	CONDUCTOR COLOR	SIGNAL
Row a - 1		n.c.
Row a - 2	Orange	$\bar{A}$
Row a - 3	Blue	0 V
Row a - 4	Yellow	$\bar{Z}$
Row a - 5	Light blue	$\bar{B}$
Row a - 6		n.c.
Row a - 7	Red	+5 V
Row b - 1		n.c.
Row b - 2		n.c.
Row b - 3	White	B
Row b - 4	Brown	Z
Row b - 5	Shield	GND
Row b - 6	Green	A
Row b - 7		n.c.

SHIELDED CABLE



POWER SUPPLY	R
5 V 1 Vpp	120 Ω

DIMENSIONS AND RECOMMENDED FIXING



WHAT TO AVOID

- Any mechanical working (cutting, drilling, milling, etc.).
- Any modification of the encoder body or shaft.
- Any improper use, not complying with the technical instructions provided by the Manufacturer.
- External shocks or stresses.

