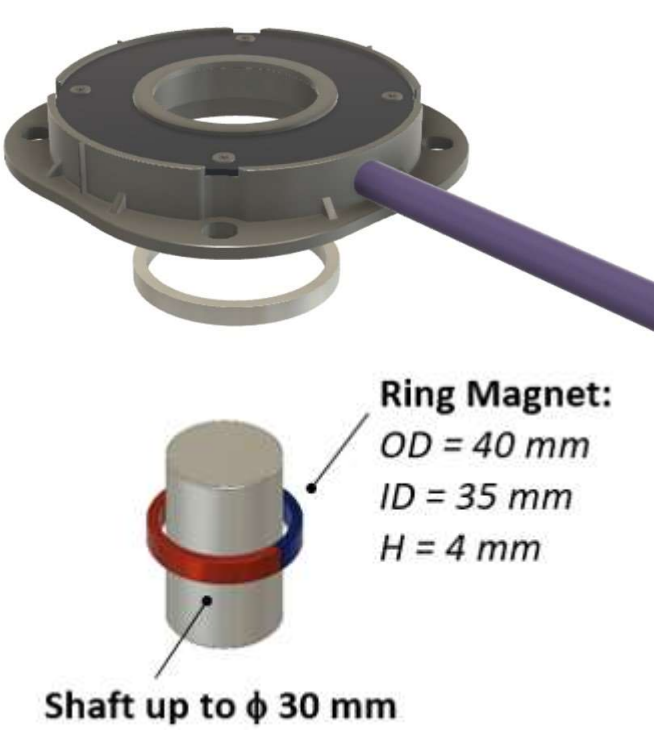
FTS1
“THROUGH-SHAFT” MAGNETIC ANGLE ENCODER
Patent N° 102021000013553

Wear- and maintenance-free unit with analog, SIN/COS, ABZ and UVW output

The **FTS1** sensor is a compact solution for “through-shaft” angular position sensing. The **FTS1** senses the angular position of a ring permanent magnet placed on a rotating shaft. The magnetic ring must be diametrically polarized. The **FTS1** uses a patented combination of state-of-the-art Hall sensor technology and sophisticated digital signal processing algorithms to detect and compute the magnetic flux density distribution at the surface of the silicon. The sine and cosine voltage outputs from the sensor array vary with magnet position. The relative changes of the angle position are output through analog (0.5 … 4.5 Vdc), incremental A QUAD B encoder, U,V,W or analog SIN/COS signals with 12 bit resolution. The resolution of incremental output is 1024 counts per turn. With its compact size the **FTS1** angular magnetic encoder is especially suitable for different applications, including motor motion control, flow measurement, robotics, camera positioning, front panel switches, workshop equipment, mobility aids etc.

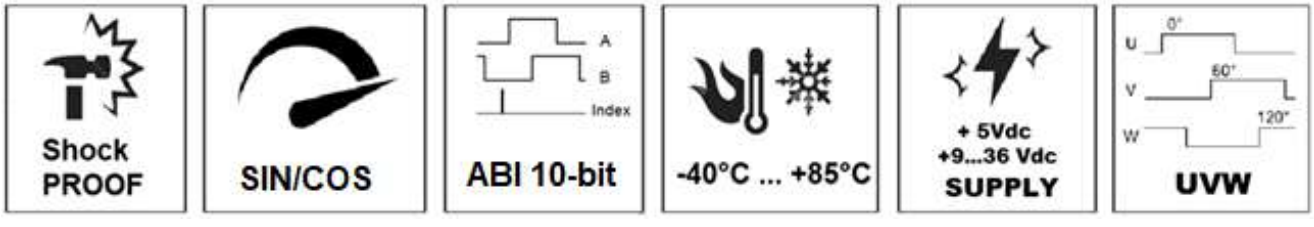


MAIN FEATURES

Contactless angular position sensor.
Ideal for harsh environment.
Complete system in one solution.
High immunity against interferences.
10-bit absolute encoder.
+5 Vor 9…36 Vdc.

APPLICATIONS

AC,DC and AC brushless motors.
Agricultural machinery.
AGV.
Material handling.
Electric vehicles.
Automotive.



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TECHNICAL DATA

Latency and tracking delay
Typ. 12 µs (high bandwidth) or 0.43° @100 Hz;
Typ. 75 µs (low bandwidth) or 2.7° @100 Hz

Outputs
Analog output: 0.5 … 4.5 Vdc, simultaneous single-ended output for ABZ and UVW, 12-bit angle data available on SPI or SIN/COS analog output 1.0, 1.1, 2.2 or 4 Vpp (programmable).

Calibration and programming
Input for AUTOCALIBRATION for initial offset and gain setting. ZERO function available via digital pin. Up to 16 poles emulated SIN/COS output.

ABS/UVW output
Driver for driving 120 Ω terminated cable.

Integral non-linearity
± 0.6° calibrated in case of ideal magnet. See installation manual for further details.

Rotational speed
Up to 25000 rpm. A degradation of the metrological performances is expected for speeds higher than 10000 rpm (ask for further details).

Operating voltage
5 Vdc or 9 … 36 Vdc

Working temperature
-40°C ... +125°C (SIN/COS, SPI, ABZ and UVW) @ 5 Vdc; otherwise -40°C ... +85°C;

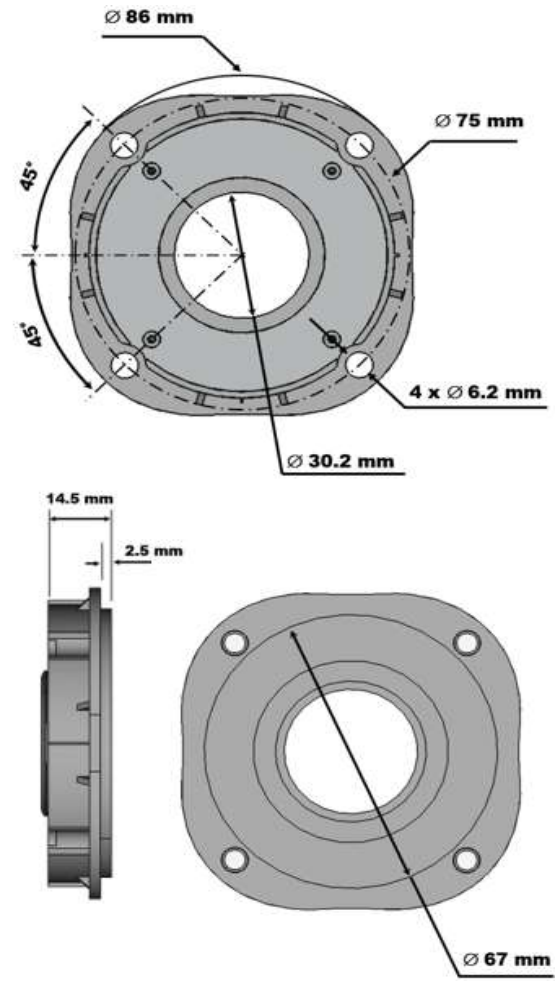
Vibrations
20g between 10 Hz ... 2000 Hz IEC 60068-2-6.

Shock
Pulse on 3 axes; 50g 11 ms IEC 60068-2-27.

Electromagnetic compatibility
2014/30/EU Electromagnetic Compatibility (EMC).

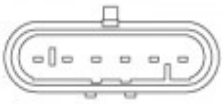
IP Protection Level
Cable output (IP67).

Housing body
PBT.



A 3D FTS1.STEP file is available with the aim to design the anchoring support

ELECTRICAL CONNECTIONS

AMP-SUPERSEAL 5p		Cable-5p	
			
PIN - 1	+ Vs	**Brown**	+ Vs
PIN - 2	Gnd	**Gray**	Gnd
PIN - 3	COS out (or analog output)	**Green**	COS out (or analog output)
PIN - 4	SIN out	**Yellow**	SIN out
PIN - 5	ZERO and CALIBRATION	**White**	ZERO and CALIBRATION

Note: for pinout in case of U,V,W and A,B,Z output please refer to installation manual

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ORDERING CODE: FTS1.A.B.C.DD.E.F

A	ELECTRICAL CONNECTIONS	
	Cable output 5 poles	C
	AMP – 5 PINs connector	A
	Other on request	x

B	SUPPLY VOLTAGE	
	+5 Vdc	L
	+9...+36 Vdc	H

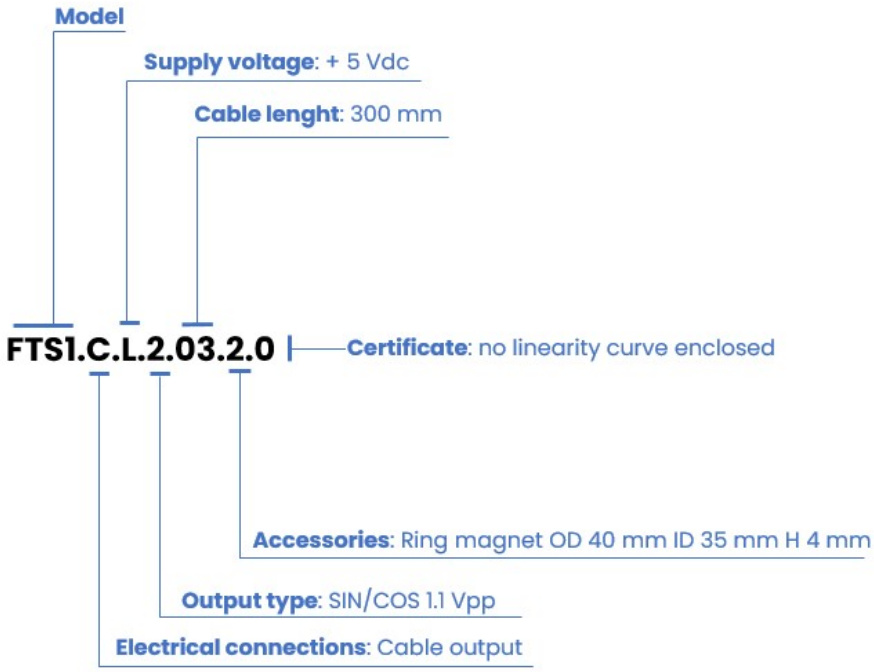
C	OUTPUT TYPE	
	SIN/COS analog 1.0 Vpp	1
	SIN/COS analog 1.1 Vpp	2
	SIN/COS analog 2.0 Vpp	3
	SIN/COS analog 2.2 Vpp	4
	In case of ABZ, UVW or SPI output please contact BTS	...

D	CABLE LENGHT	
	100 mm cable	01
	200 mm cable	02
	500 mm cable	05
	1m cable	10
	2m cable	20
	other lengths on request	...

E	ACCESSORIES	
	Dust cover	1
	Ring magnet OD 40 mm, ID 35 mm and H 0 4 mm	2
	DN25 mm magnet holder	3

F	CERTIFICATES	
	No certificate enclosed	0
	Linearity curve enclosed	L

EXAMPLE OF DESCRIPTION



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COBO Spa	
Telephone:	+39 030 90451
E-mail:	info@cobogroup.net
WEB:	www.cobogroup.net

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