



FRE52, FRE54, FRE62

Single-turn Absolute Encoder Series

- High resolution
- Wide mechanical range
- Strong and reliable



Available with a wide array of mechanical solutions, absolute encoders series FRE52, FRE54 and FRE62 grant high resolutions (8, 9, 10, 12 or 13 bits). The different output signals (serial or parallel) and voltage supplies allow to couple them to any counting system or PLC.

Typical applications

- Detection of displacements on operating machines (packing machines, sheet, marble, wood-working, textile machinery etc.)
- Camme operation on presses
- Revolving turrets on machine tools

Mechanical and Environmental specifications

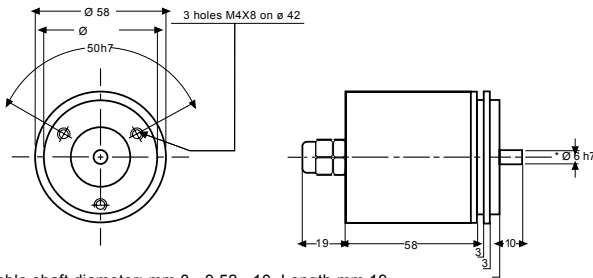
Type	FRE52	FRE54	FRE62
	servo coupling Ø 58 mm SIZE 23	round flange Ø 58 mm centering mask Ø 36 mm	square flange mm 63.5x63.5 SIZE 25
Weight	320 g	350 g	440 g
Materials: case		Aluminium	
shaft		Stainless Steel	
Shaft diameter		6, 8, 9.52, 10 mm	
Revolutions/minute		6000	
Starting torque		≥0,2 Ncm	
Inertia		≥5 g cm ²	
Max load		20N axial / 40N radial	
Shock resistance (11 ms)		30 G	
Vibrations resistance (10÷2000 Hz)		10 G	
Protection degree		IP64	
Operating temperature		0÷60° C	
Stocking temperature		-15 ÷ 70° C	

Electrical and operating specifications

Encoder with resolution	8 bits	9 bits	10 bits	12 bits	13 bits
Pulse code			Binary or Gray		
Resolution	8 bits	9 bits	10 bits	12 bits	13 bits
Positions/revolutions	256	512	1024	4096	8192
Output signals	SSI Serial output (RS422), NPN or PNP open collector or push-pull parallel output				
Supply	10 ÷ 24 Vdc or 5 Vdc ± 5%				
Current consumption (unconnected ch.)	50 mA ÷ 175 mA				
Parallel outputs I max	50 mA				
Clock SSI max. frequency	1 MHz				
Accuracy	± 1 LSB		± 1/2 LSB		
Max frequency	100 KHz				
Connection outlet	axial cable 1 m long				

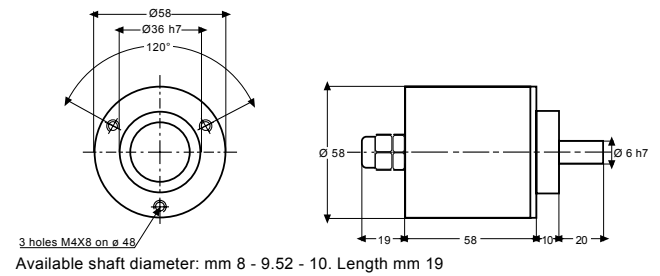
■ Dimensions

TYPE FRE 52



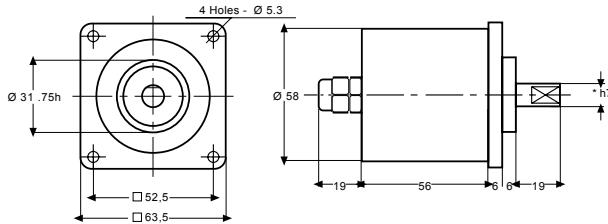
Available shaft diameter: mm 8 - 9.52 - 10. Length mm 19

TYPE FRE 54



Available shaft diameter: mm 8 - 9.52 - 10. Length mm 19

TYPE FRE 62



Available shaft diameter: mm 8 - 9.52 - 10.

■ Input and Output signals

8/9-bit encoder parallel output	8/9-bit encoder parallel output	10/12/13-bit encoder parallel output	10/12/13-bit encoder serial output
BIT 1 (LSB)	DATO	BIT 1 (LSB)	DATO
BIT 2	DATO	BIT 2	DATO
BIT 3	CLOCK	BIT 3	CLOCK
BIT 4	CLOCK	BIT 4	CLOCK
BIT 5	0 V	BIT 5	UP/DOWN
BIT 6	+ Vcc	BIT 6	0 V
BIT 7		BIT 7	+ Vcc
BIT 8		BIT 8	
BIT 9 (MSB)		BIT 9	
LATCH		BIT 10	
0 V		BIT 11	
+ Vcc		BIT 12	
		BIT 13 (MSB)	
		LATCH	
		UP/DOWN	
		0 V	

LATCH INPUT

Activating the LATCH signal allows to keep the output data unchanged even with rotating shaft (the option is only available for versions with parallel outputs)

LATCH input configuration:

NPN for NPN outputs

PNP for PNP outputs

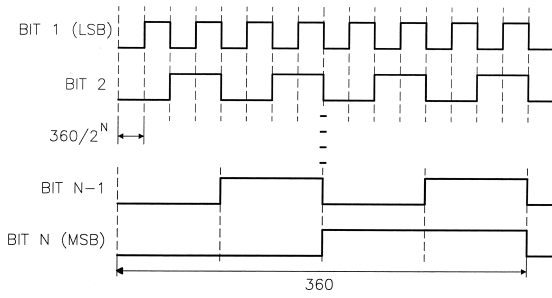
UP/DOWN INPUT (U/D)

Connecting input U/D with 0V allows to invert the absolute code: this would be the same as rotating the shaft in the opposite direction.

Remark: the absolute code cannot be inverted on 8/9-bit binary magnetic encoders. If necessary the inversion can be done by the receiver. The operation consists in complementing all bits of the received code (via hardware or via software).

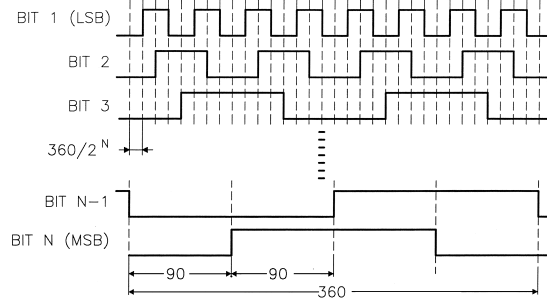
Input and Output signals

Parallel binary output signals



N = 8 for 8-bit encoders
 N = 9 for 9-bit encoders
 N = 10 for 10-bit encoders
 N = 12 for 12-bit encoders
 N = 13 for 13-bit encoders

Parallel Gray output signals



N = 8 for 8-bit encoders
 N = 9 for 9-bit encoders
 N = 10 for 10-bit encoders
 N = 12 for 12-bit encoders
 N = 13 for 13-bit encoders

SSI output signals



N = 8 for 8-bit encoders
 N = 9 for 9-bit encoders
 N = 10 for 10-bit encoders
 N = 12 for 12-bit encoders
 N = 13 for 13-bit encoders

Ordering information

FRE52	12B	10/24	NPN	10	K
					MMECHANICAL FEATURES (Optional)
					- standard K with O-ring
					SHAFT DIAMETER
					10 mm 9.52 mm 8 mm 6 mm
					OUTPUT SIGNALS
					SSI serial output NPN parallel output PNP parallel output PP push-pull parallel output
					VOLTAGE SUPPLY
					10±24 Vdc 5 Vcc +5%
					RESOLUTION AND CODE
					8B 8 bit Binary code 10G 10 bit Gray code 8G 8 bit Gray code 12B 12 bit Binary code 9B 9 bit Binary code 12G 12 bit Gray code 9G 9 bit Gray code 13B 13 bit Binary code 10B10 bit Binary code13G 13 bit Gray code
TYPE					
FRE52 servo coupling diameter 58 mm					
FRE54 round flange diameter 58 mm mask diameter 36 mm					
FRE62 square flange 63.5x63.5 mm					

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