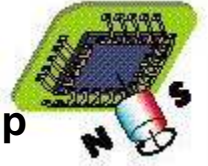


elap **RM22 ROTARY MAGNETIC ENCODERS**
 Binary Absolute, Incremental and Sin/Cos
 modular shaft encoders with magnetic pick-up



OPERATING PRINCIPLE

One single diametraly polarised magnet activates the Hall sensors integrated in the ASIC. Absolute-Binary Parallel or Synchro Serial, Incremental-Quadrature or Sin/Cos signals are available on the encoder outputs. Electronics is incorporated in aluminium housing with high IP ratings. Stainless steel magnet carrier is mounted on 6 mm shaft diameter.

Features

- heavy duty
- shock resistant
- easy mounting
- contactless encoding
- high IP rating
- different outputs
- modular, without ballbearings

Applications

- industrial automation
- motor comutation
- automotive



RM22 Models

- RM22-P** Absolute 9 bit binary encoder parallel output
- RM22-S** Absolute 9 bit binary encoder serial output
- RM22-I** Incremental, 128 Impulses per turn
- RM22-A** Analog Sine - Cosine output



CHARACTERISTICS

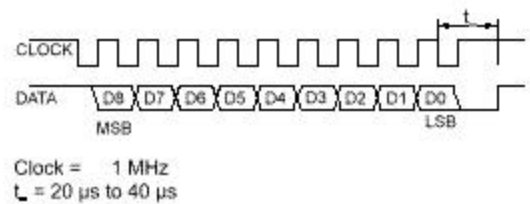
- Max. rotating speed 30000 RPM
- Encoder weight 36 g (without cable)
- Operating temperature 0°C to +70°C
- Hollow shaft diameter 6 mm
- Vibration 50 g, (10 to 2000 Hz)
- Shock 200 g, 11ms
- Protection factor IP 65

elap RM22 ROTARY MAGNETIC ENCODERS

RM22-S Binary Synchro-Serial Outputs

Power supply: 5V DC / 20 mA
 Resolution: max. 9bit (512 state / rev.)
 Hysteresis: 0.5 bit at 9 bit resolution
 Accuracy: +/- 1bit at 9 bit resolution
 Repeatability: < 0.1bit
 Data outputs: Serial data (RS422)
 Data inputs: Clock (RS422)
 Cable length: up to 100 m (at 1MHz)

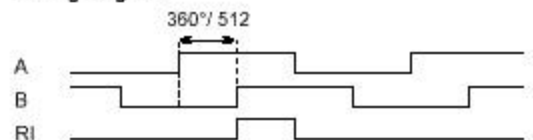
Timing diagram:



RM22-I Incremental Outputs

Power supply: 5V DC / 30 mA
 Output TTL signals: A, B, RI, , , (RS 422)
 Max. cable length: 50 m

Timing diagram:



RM22-A Analogue Sinusoidal Outputs

Power supply: $V_{dd} = 5 \text{ VDC} / 30 \text{ mA}$
 Outputs: Buffered Sine & Cosine signals
 Signals amplitude $1V_{pp} \pm 0,1 \text{ mV}$
 Signals offset $V_{dd} / 2 \pm 5 \text{ mV}$

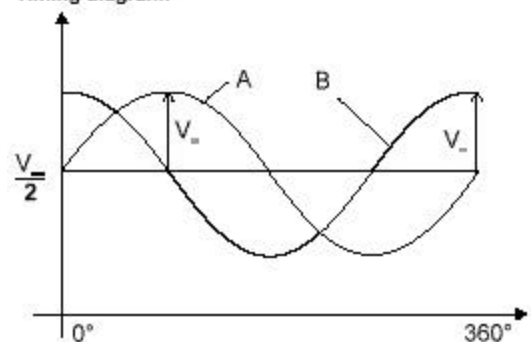
Signal characteristic:

$$\begin{array}{ll} V_A - V_B & 5\text{mV} \\ V_{0A} - V_{0B} & 5\text{mV} \\ A-B & 0,1^\circ \end{array}$$

V_A = Sine amplitude
 V_B = Cosine amplitude
 V_{A0} = Sine offset
 V_{B0} = Cosine offset

Max output frequency: 500 Hz
 Max cable length: 3m

Timing diagram:



RM22-P Binary Parallel Outputs

Power supply: 5V DC / 20 mA

Output voltage: $V_H > 4V$ per $-I_H < 3mA$

$V_L < 1V$ per $I_L < 3mA$

Resolution: max. 9bit (512 state / rev.)

Hysteresis: 0.5 bit at 9 bit resolution

Accuracy: +/- 1bit at 9 bit resolution

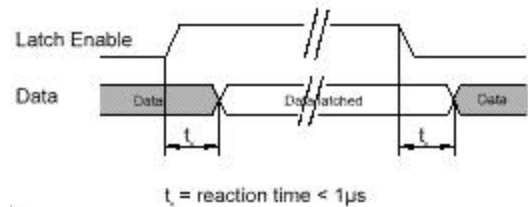
Repeatability: < 0.1bit

Output signals: D0 (LSB) ÷ D8 (MSB)

Data inputs: LE - latch enable input signal, active high

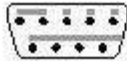
Cable length: 30m (max.)

Timing diagram:



Pin Assignment / Wire Color

DB9M connector



Nr. Pin	RM22-S		RM22-I		RM22-A	
	DB9M	Wire Colour	DB9M	Wire Colour	DB9M	Wire Colour
1	Shield		Shield		Shield	
2	Clock	White	Ri	White	V _A	White
3	Clock	Brown	B	Green	V _B	Brown
4	NC	-	A	Gray	NC	-
5	V _{dd}	Red	V _{dd}	Red	V _{dd}	Red
6	Data	Green	Ri	Brown	NC	-
7	Data	Yellow	B	Yellow	NC	-
8	NC	-	A	Pink	NC	-
9	GND	Blue	GND	Blue	GND	Blue

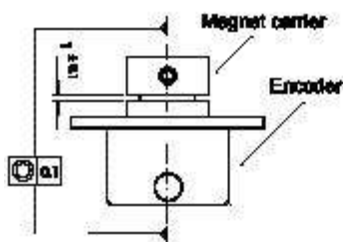
DB15M connector



RM22-P

Pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Signals	Shield	D8	D7	D6	D5	D4	D3	+5V	D2	D1	D0	NC	NC	LE	GND
Wire Colour	-	White	Brown	Green	Yellow	Gray	Pink	Red	Black	Violet	Gray/Pink	-	-	Red/Blue	Blue

MOUNTING RM22x



DIMENSIONS RM22x

