

Encoder

optical Encoder, digital outputs,
3 channels, 250 - 500 lines per revolution

For combination with
DC-Micromotors
Brushless DC-Motors

Series IERS3-500

		IERS3-250	IERS3-500	
Lines per revolution	N	250	500	
Frequency range, up to ¹⁾	f	55	110	kHz
Signal output, square wave		2+1 Index		Channels
Supply voltage	U_{DD}	4,5 ... 5,5		V
Current consumption ²⁾	I_{DD}	typ. 17, max. 25		mA
Output current, max. ³⁾	I_{OUT}	4		mA
Index Pulse width	P_0	90 ± 15		°e
Phase shift, channel A to B	Φ	90 ± 20		°e
Signal rise/fall time ($C_{LOAD} = 25$ pF)	tr/tf	typ. < 0,1 / typ. < 0,1		µs
Inertia of code disc	J	typ. 0,14		gcm ²
Operating temperature range		- 20 ... + 85		°C
Accuracy		typ. 0,3		°m
Repeatability		typ. 0,05		°m
Hysteresis		< 0,05		°m
Edge spacing, min.		600		ns
Mass		typ. 8		g

¹⁾ Velocity (min⁻¹) = f (Hz) x 60/ N

²⁾ $U_{DD} = 5$ V: with unloaded outputs

³⁾ $U_{DD} = 5$ V: low logic level < 0,4V, high logic level > 2,4V: TTL compatible

Product combination

Dimensional drawing A	<L1 [mm]		
2237 ... CXR	52,5		
3274 ... BP4	90,5		
Dimensional drawing B	<L1 [mm]		
2342 ... CR	60,5		
2642 ... CXR	60,5		
2642 ... CR	60,5		
2657 ... CXR	75,5		
2657 ... CR	75,5		
2668 ... CR	86,5		
3242 ... CR	60,5		
3257 ... CR	75,5		
3272 ... CR	90,5		
Dimensional drawing C	<L1 [mm]		
3863 ... CR - 2016	82,6		
3890 ... CR - 2016	108,6		

Characteristics

These incremental encoders with 3 output channels, in combination with the FAULHABER Motors, are used for the indication and control of both shaft velocity and direction of rotation as well as for positioning.

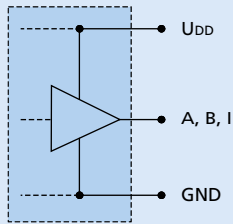
With a reflective code disc two quadrature signal with 90° phase shift with up to 500 lines per revolution and one index impulse per motor revolution are generated.

The optical measurement principle allows high accuracy and repeatability for positioning applications.

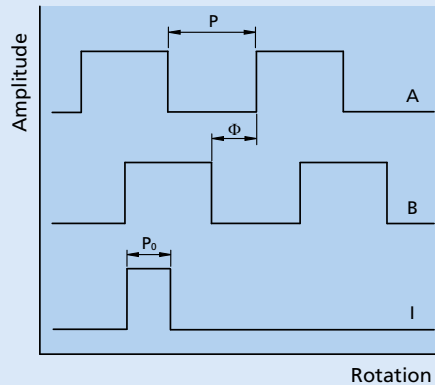
The encoder is connected via a ribbon cable. The pins are compatible to the FAULHABER Encoder IE3.

Circuit diagram / Output signals

Output circuit



Output signals with clockwise rotation as seen from the shaft end



Admissible deviation of phase shift:

$$\Delta\Phi = \left| 90^\circ - \frac{\Phi}{P} * 180^\circ \right| \leq 20^\circ$$

Admissible deviation of Index pulse:

$$\Delta P_0 = \left| 90^\circ - \frac{P_0}{P} * 180^\circ \right| \leq 15^\circ$$

Connector information / Variants

No.	Function
1	N.C.
2	Channel I
3	GND
4	U _{DD}
5	Channel B
6	Channel A

Connection Encoder



Option

- Connector variants AWG 28 / PVC ribbon cable with connector MOLEX Picoblade 51021-0600, recommended mating connector 53047-0610.



Cable
PVC-ribbon cable
6-AWG 28, 1,27 mm

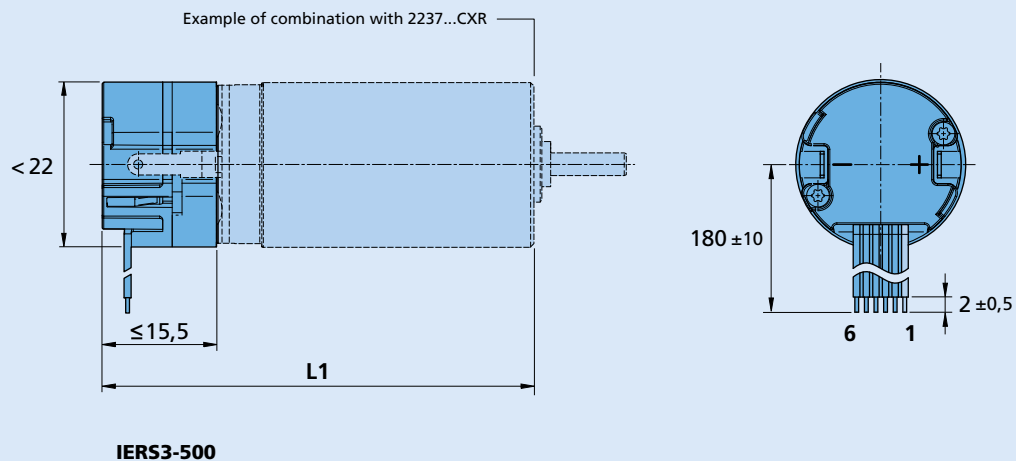
- Option no.: 3807 for combination with DC-Micromotors series CXR, CR and for Brushless DC-Servomotors series 3274...BP4.

Full product description

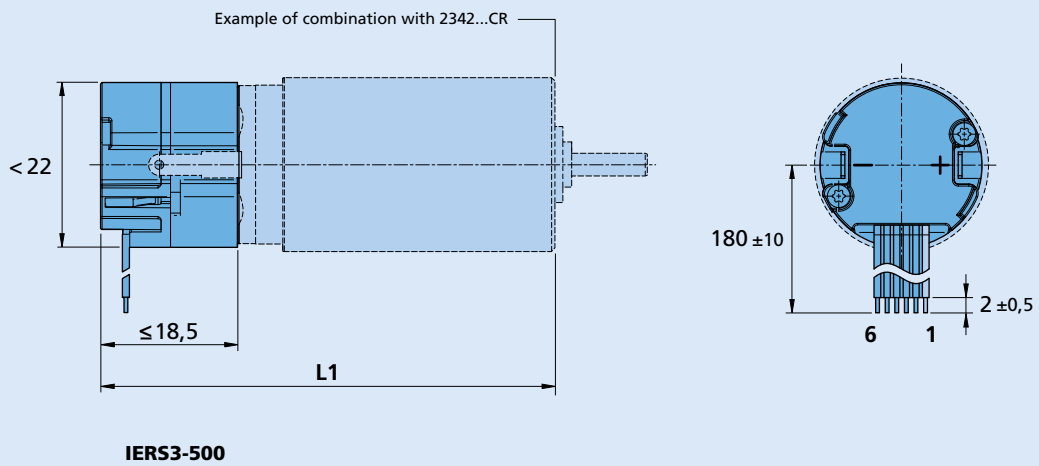
- Example:
2237S012CXR IERS3-500
3863H024CR IERS3-250 3807

Caution:
Incorrect lead connection will damage the motor electronics!

Dimensional drawing A



Dimensional drawing B



Dimensional drawing C

