

## Encoders

magnetic Encoder, digital outputs,  
2 channels, 16 lines per revolution

For combination with  
DC-Micromotors

### Series IE2-16

IE2-16			
Lines per revolution	$N$	16	
Frequency range, up to <sup>1)</sup>	$f$	7	kHz
Signal output, square wave		2	Channels
Supply voltage	$U_{DD}$	4 ... 18	V
Current consumption, typical <sup>2)</sup>	$I_{DD}$	typ. 6, max. 12	mA
Output current, max. <sup>3)</sup>	$I_{OUT}$	15	mA
Phase shift, channel A to B	$\Phi$	90 ± 45	°e
Signal rise/fall time, max. ( $C_{LOAD} = 100$ pF)	$tr/tf$	2,5 / 0,3	µs
Inertia of sensor magnet	$J$	0,11	gcm <sup>2</sup>
Operating temperature range		-25 ... +85	°C

<sup>1)</sup> Velocity (min<sup>-1</sup>) =  $f$  (Hz) x 60/ $N$

<sup>2)</sup>  $U_{DD} = 5$  V: with unloaded outputs

<sup>3)</sup> Tested at 2 kHz

#### For combination with Motor

<b>Dimensional drawing A</b>	<b>&lt;L1 [mm]</b>		
1336 ... CXR - 123	47,5		
<b>Dimensional drawing B</b>	<b>&lt;L1 [mm]</b>		
1516 ... SR	18,2		
1524 ... SR	26,2		
1717 ... SR	19,4		
1724 ... SR	26,4		
2224 ... SR	26,6		
2232 ... SR	34,6		
<b>Dimensional drawing C</b>	<b>&lt;L1 [mm]</b>		
1727 ... CXR - 123	38,2		
1741 ... CXR - 123	52,2		

#### Characteristics

These incremental shaft encoders in combination with the FAULHABER DC-Micromotors are used for the indication and control of both shaft velocity and direction of rotation as well as for positioning.

The encoder is integrated in the DC-Micromotors SR-Series and extends the overall length by only 1,4 mm!

Solid state Hall sensors and a low inertia magnetic disc provide two channels with 90° phase shift.

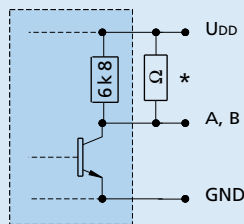
The supply voltage for the encoder and the DC-Micromotor as well as the two channel output signals are interfaced through a ribbon cable with connector.

Details for the DC-Micromotors and suitable reduction gearheads are on separate catalogue pages.

To view our large range of accessory parts, please refer to the "Accessories" chapter.

## Circuit diagram / Output signals

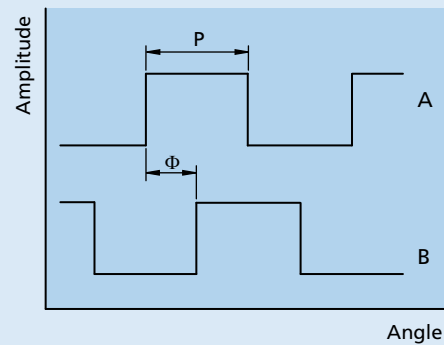
### Output circuit



\* An additional external pull-up resistor can be added to improve the rise time.  
Caution:  $I_{OUT}$  max. 15 mA must not be exceeded!

### Output signals

with clockwise rotation as seen from the shaft end

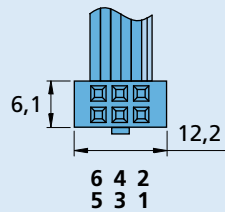


## Connector information / Variants

No.	Function
1	Motor – *
2	Motor + *
3	GND
4	UDD
5	Channel B
6	Channel A

\* Note: DC-Micromotors series CXR have separate motor leads.

### Connection Encoder



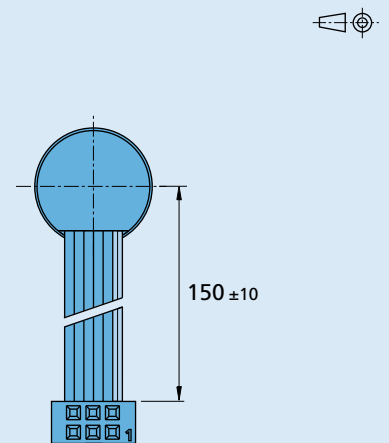
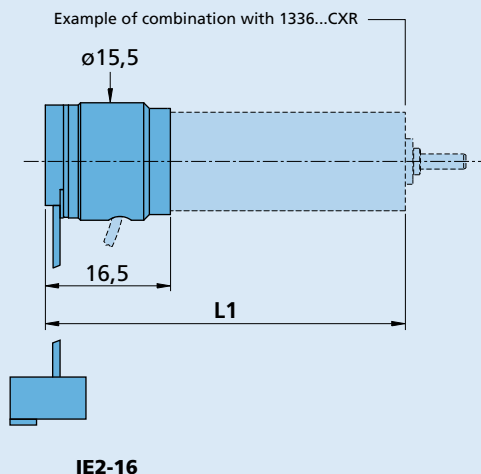
**Cable**  
PVC-ribbon cable  
6-conductors, 0,09 mm<sup>2</sup>

**Connector**  
EN 60603-13 / DIN-41651,  
grid 2,54 mm

### Full product description

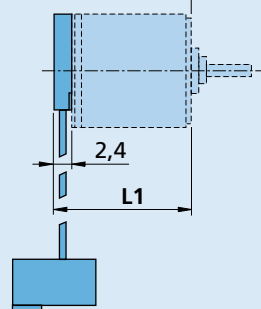
■ Example:  
**1336U012CXR-123 IE2-16**  
**1516T006SR IE2-16**

## Dimensional drawing A

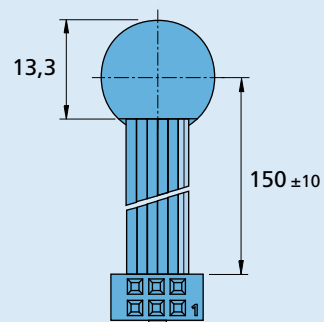


# Dimensional drawing B

Example of combination with 1516...SR

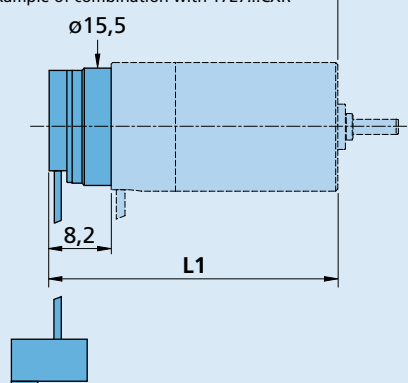


IE2-16



# Dimensional drawing C

Example of combination with 1727...CXR



IE2-16

