

# Encoders

optical Encoder, digital outputs,  
1000 lines per revolution, 3 channels, Line Driver

For combination with  
Brushless DC-Motors

## Series 40B

		40B	
Lines per revolution	N	1000	
Frequency range <sup>1)</sup>	f	up to 200	kHz
Signal output, square wave		2 + 1 index and complementary signals	channels
Supply voltage	U <sub>DD</sub>	4,5 ... 5,5	V DC
Current consumption, max. <sup>2)</sup>	I <sub>DD</sub>	100	mA
Pulse width	P	180 ± 18	°e
Index pulse width	P <sub>0</sub>	180 ± 36	°e
Phase shift, channel A to B	Φ	90 ± 18	°e
Signal rise/fall time, typical	tr/tf	0,25 / 0,25	µs
Inertia of code disc	J	4,7	gcm <sup>2</sup>
Operating temperature range		- 40 ... + 120	°C
EMC radiated emission		EN 50081-2	
Protection classification		IP54	

<sup>1)</sup> speed (rpm) = f(Hz) x 60/N

<sup>2)</sup> U<sub>DD</sub> = 5V: with unloaded outputs

### For combination with motor

Dimensional drawing A	<L1 [mm]		
4490...B - K1300	120,8		
4490...B5 - K1300	120,8		

### Features

Designed for industrial environments, this high-performance incremental shaft encoder in combination with the Brushless DC-Servomotors is for the indication and control of both shaft velocity and direction of rotation as well as for positioning.

A LED source and lens system transmits collimated light through a low inertia disc to give two channels with 90° phase shift.

The index pulse is synchronized with the channel B. Each encoder channel provides complementary output signals.

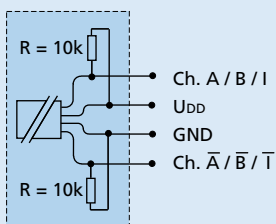
The single 5 volt supply and the digital output signals are interfaced with a shielded cable.

The line driver offers enhanced performance when the encoder is used in noisy environment, or when it is required to operate over long cables.

Details for the Brushless DC-Servomotors and suitable reduction gear-heads are on separate catalogue pages.

### Circuit diagram / Output signals

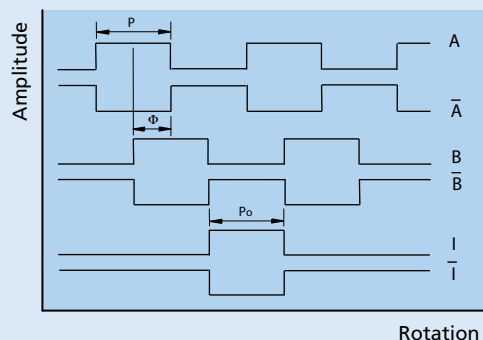
#### Output circuit



**Recommendation:**  
Please use a latch to capture the outputs.

#### Output signals

with clockwise rotation as seen from the shaft end



Rotation

### Connector information / Variants

#### Motor logic

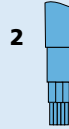
5 conductors, AWG 26



Function	Colour
Hall sensor A	green
Hall sensor B	blue
Hall sensor C	grey
Logical supply +5V	red
GND Logical	black

#### Encoder signals

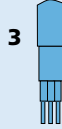
8 conductors, AWG 28



Function	Colour
Vcc	red
GND	black
A	green
A	red / black
B	orange
B	white / black
I	white
I	blue

#### Motor power

3 conductors, AWG 16



Function	Colour
Phase A	brown
Phase B	orange
Phase C	yellow

#### Cable

Shielded cables, PVC insulation, black  
Length 300 mm ± 15mm

#### Full product description

■ Example:

4490H024B-K1300 40B

### Dimensional drawing A

Scale reduced 