FAULHABER

Encoders

optical Encoder, digital outputs,
3 channels, 500 lines per revolution, Line Driver

For combination with
Brushless DC-Motors

Series HEDL 5540

		HEDL 5540 A	
Lines per revolution	N	500	
Frequency range, up to[1]	f	100	kHz
Signal output, square wave		2+1 Index and complementary outputs	Channels
Supply voltage	U_{DD}	4,5 ... 5,5	V
Current consumption, typical[2]	I_{DD}	57	mA
Pulse width	P	180 ± 35	°e
Index Pulse width	P_0	90 ± 35	°e
Phase shift, channel A to B	Φ	90 ± 15	°e
Logic state width	S	90 ± 35	°e
Cycle	C	360 ± 5,5	°e
Signal rise/fall time, max. (C_{LOAD} = pF)	tr/tf	0,25 / 0,25	µs
Inertia of code disc	J	0,6	gcm²
Operating temperature range		-40 ... +100	°C

[1] Velocity (min⁻¹) = f (Hz) x 60/N
[2] U_{DD} = 5 V: with unloaded outputs

For combination with Motor

Dimensional drawing A	<L1 [mm]
2036 ... B - K312	56,8
2057 ... B - K312	78,3
2444 ... B - K312	64,9
3056 ... B - K312	76,1
3564 ... B - K312	84,1
4490 ... B - K312	116,3
4490 ... BS - K312	116,3

Characteristics

These incremental shaft encoders in combination with the DC-Motors are designed 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 metal disc to give two channels with 90° phase shift. The index pulse is synchronized with the channel B̄. Each encoder channel provides complementary output signals. The single 5 volt supply and the digital output signals are interfaced with a connector.

The Line Driver offers enhanced performance when the encoder is used in noisy environments, or when it is required to drive long distances.

Motor with ball bearings are recommended for continuous operation at low and high speeds and for elevated radial shaft load.

Details for the motors 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

A
Ā
B
B̄
I
Ī

VCC → U_DD
GND

G

GND
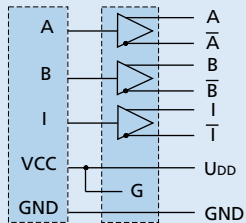
Recommendation:
Suggested Line Receivers:
AM26LS32, SN75175, MC3486

Output signals
with clockwise rotation as seen
from the shaft end

Amplitude

C
P
Φ
P_0

A
Ā
B
B̄
I
Ī

Angle
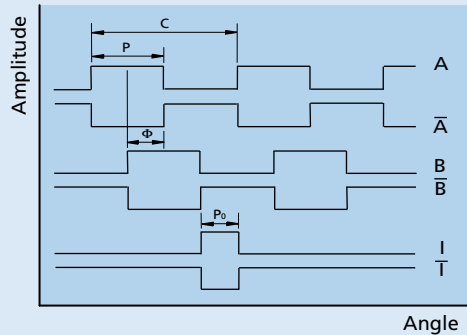
Connector information / Variants

Example product designation: **2444S024B-K312 HEDL5540A**

Option	Type	Description

Connection Encoder

No.	Function
1	N.C.
2	U_DD (+5V)
3	GND
4	N.C.
5	Channel Ā
6	Channel A
7	Channel B̄
8	Channel B
9	Channel Ī
10	Channel I

10
9
2
1

Cable
PVC-ribbon cable, 10-AWG 28, 0,09 mm²
Recommended connector
EN 60603-13 / DIN-41651, grid 2,54 mm

Dimensional drawing A

Example of combination with 2444...B

Lead wires
length 300 ±10

18,3

L1

HEDL 5540

41,1

30

483±13