

## Encoder

Optical Encoder, digital outputs,  
 2 channel, 100 / 500 lines per revolution  
 3 channel, 500 / 1000 lines per revolution, Line Driver

### Series HE

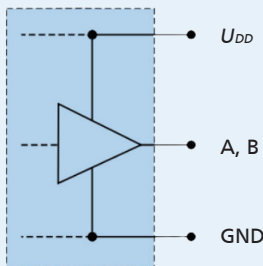
	HE	100-2	200-2	500-2	500-3L	1000-3L	
Compatible with			HEDS 5500		HEDL 5540		
Lines per revolution	$N$	100	200	500	500	1000	
Frequency range, up to <sup>1)</sup>	$f$	100					kHz
Signal output, square wave					2+1 Index and complementary outputs		Channels
Supply voltage	$U_{DD}$	4.5 ... 5.5					V
Current consumption, typical <sup>2)</sup>	$I_{DD}$	17			57		mA
Pulse width	$P$	180 ± 45			180 ± 35		°e
Index Pulse width	$P_0$	-			90 ± 35		°e
Phase shift, channels A to B	$\Phi$	90 ± 20			90 ± 15		°e
Logic state width	$S$	90 ± 45			90 ± 35		°e
Cycle	$C$	360 ± 5.5					°e
Signal rise/fall time, max. ( $C_{LOAD} = pF$ )	$t_r/t_f$	0.25 / 0.25					µs
Interia of code disc	$J$	0.6					gcm <sup>2</sup>
Operating temperature range		-40 ... +100					°C

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

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

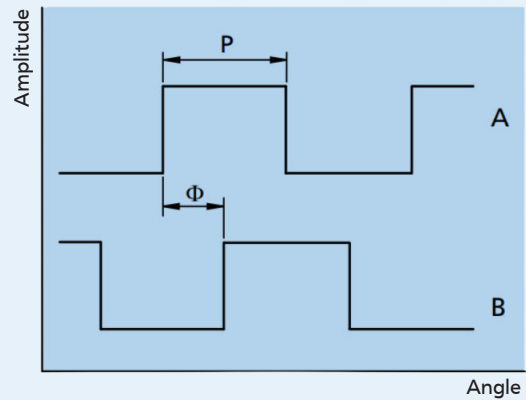
#### HE100-2 / 200-2 / 500-2 Circuit diagram / Output signals

##### Output Circuit



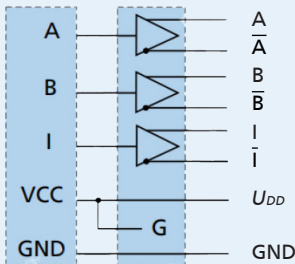
##### Output signals

with clockwise rotation as seen from the shaft end



#### HE500-3L / 1000-3L Circuit diagram / Output signals

##### Output Circuit

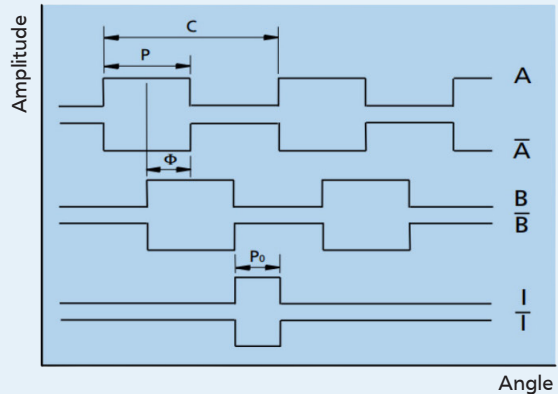


##### Recommendation:

Suggested Line Receivers:  
 AM26LS32, SN75175, MC3486

##### Output signals

with clockwise rotation as seen from the shaft end



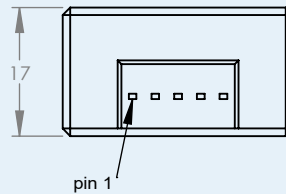
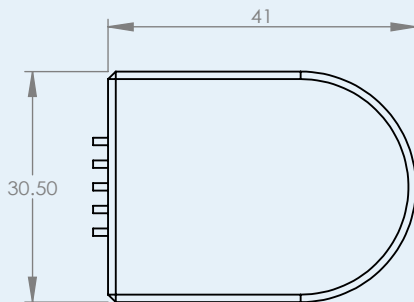
### Characteristics

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  $\bar{B}$ . 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.

### Dimensions / Pin-out Description - HE100-2 / 200-2 / 500-2



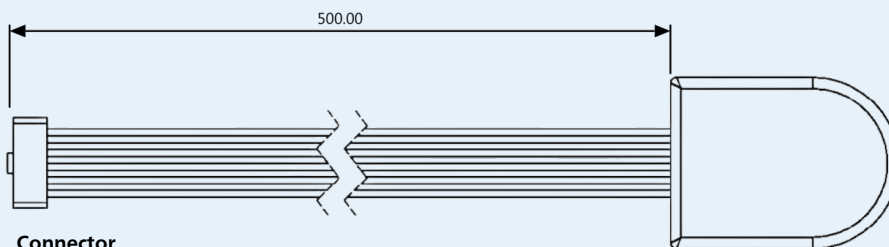
**Connector**  
AMP 103686-4/640442-5,  
Molex 2695/2759  
FCI 65039-032/4825X-000

#### Voltage (5 pin)

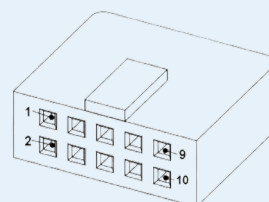
PIN	Color	Description
1	black	Ground
2	yellow	Index
3	white	Channel A
4	red	DC +5V
5	green	Channel B

### Dimensions / Pin-out Description - HE500-3L / HE1000-3L Line driver

Scale reduced (mm)



**Connector**  
EN 60603-13 / DIN-41651,  
gird 2.54 mm



#### Line driver (10 pin)

PIN	Description
1	N.C.
2	DC +5V
3	Ground
4	N.C.
5	Channel $\bar{A}$
6	Channel A
7	Channel $\bar{B}$
8	Channel B
9	Index $\bar{I}$
10	Index I