

# Encoders

## Optical Encoders with Line Driver

**Features:**  
 500 Pulses per revolution  
 3 Channels + complementary outputs  
 Digital output  
 Line driver

### Series 5540

See beginning of the Encoder Section for Ordering Information

HEDL 5540			
Pulses per revolution	N	500	
Signal output, (quadrature)		2+1 index and complementary outputs	channels
Supply voltage	V <sub>CC</sub>	4.5 to 5.5	V DC
Current consumption, typical (V <sub>CC</sub> = 5 V DC)	I <sub>CC</sub>	57	mA
Pulse width	P	180 ± 35	°e
Index pulse width	P <sub>0</sub>	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, typical	tr/tf	0.25 / 0.25	µs
Frequency range <sup>1)</sup>	f	up to 100	kHz
Inertia of code disc	J	8.497 · 10 <sup>-6</sup>	oz-in-sec <sup>2</sup>
Operating temperature range		0 to 70 (32 to 158)	°C (°F)

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

### Ordering information

Encoder type	number of channels	pulses per revolution	For combination with:
HEDL 5540 A	2+1	500	DC-Micromotors and DC-Motor-Tachos Series 2230, 2233, 2251 2338, 2342 2642, 2657, 2842 3042, 3557, 3863 brushless DC-Servomotors Series 2036, 2444, 3564

The housing dimensions of the HEDL encoder are the same as the HEDS/HEDM encoders, but there is a ribbon cable instead of plain connector pins

Suggested Line Receivers: LT-1

### Features

These incremental shaft encoders in combination with the FAULHABER DC-Micromotors and brushless DC-Servomotors are designed for 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 B.  
 Each encoder channel provides complementary output signals.

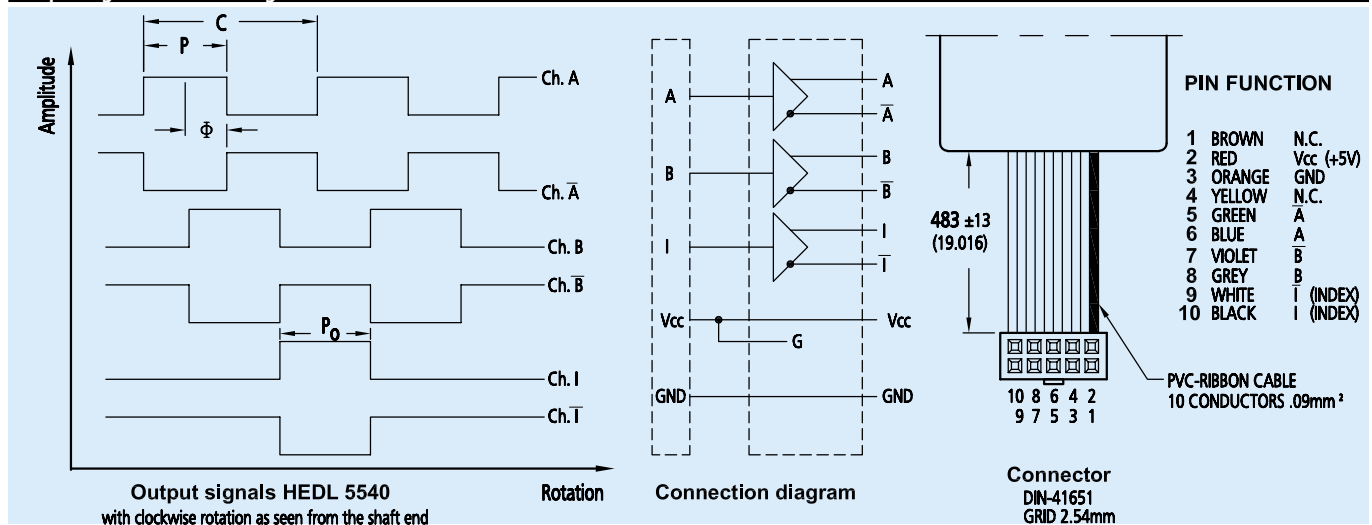
The single 5 volt supply and the digital output signals are interfaced with a connector.

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

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 catalog pages.

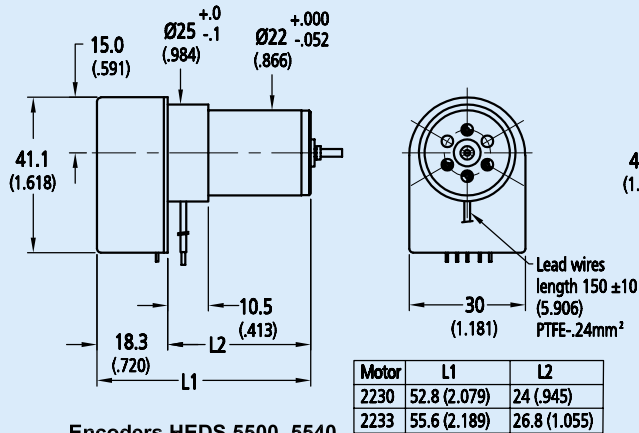
### Output signals / Circuit diagram / Connector information



For notes on technical data refer to "Technical Information". Specifications subject to change without notice. MIME0402

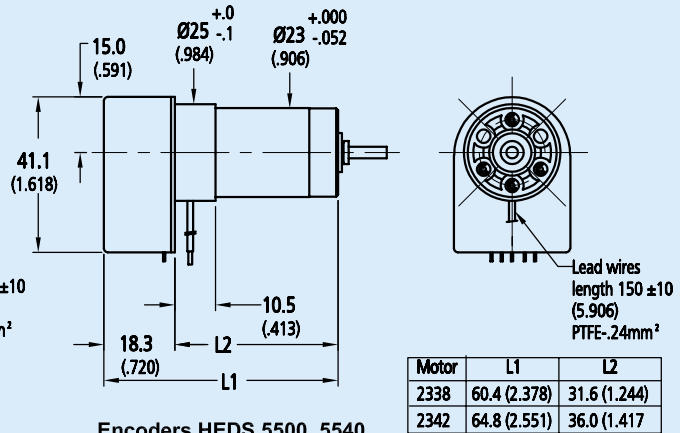
## Series 5500, 5540

HEDS 5500, 5540 with motors 2230, 2233



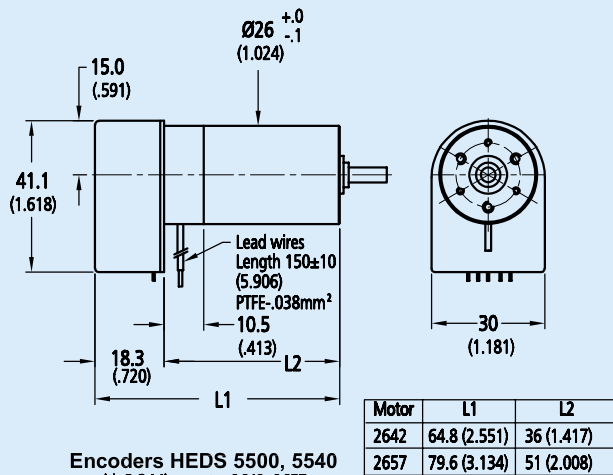
Encoders HEDS 5500, 5540  
DC-MICROMOTORS 2230, 2233

HEDS 5500, 5540 with motors 2338, 2342



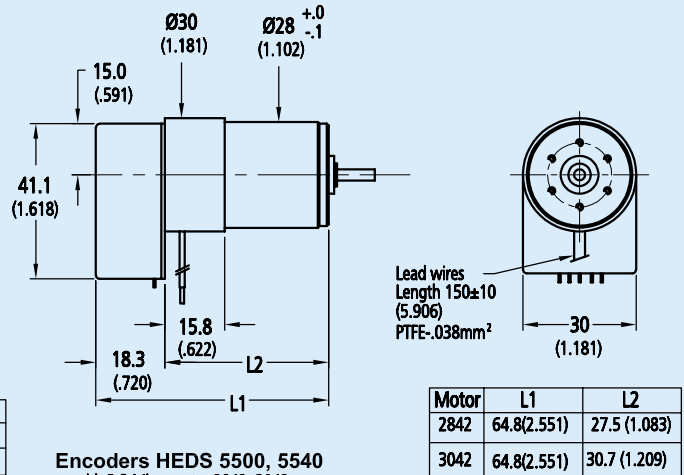
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DC-MICROMOTORS 2338, 2342

HEDS 5500, 5540 with motors 2642, 2657



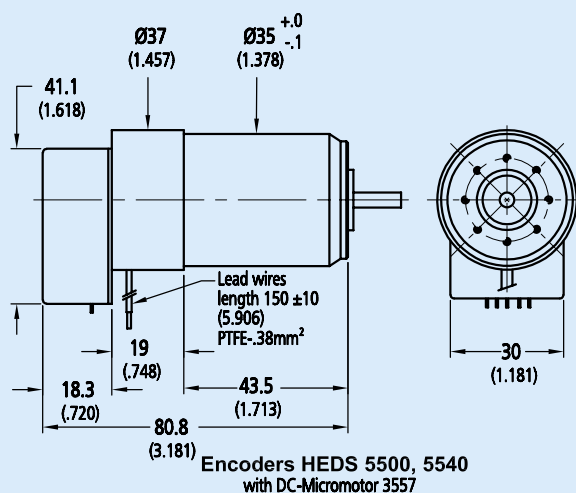
Encoders HEDS 5500, 5540  
with DC-Micromotor 2642, 2657

HEDS 5500, 5540 with motors 2842, 3042



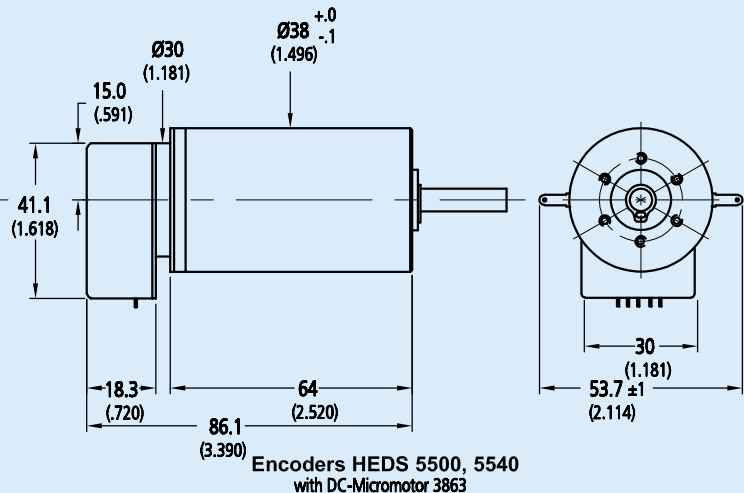
Encoders HEDS 5500, 5540  
with DC-Micromotor 2842, 3042

HEDS 5500, 5540 with motor 3557



Encoders HEDS 5500, 5540  
with DC-Micromotor 3557

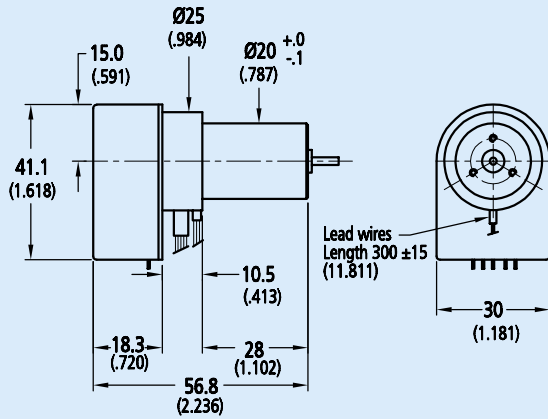
HEDS 5500, 5540 with motor 3863



Encoders HEDS 5500, 5540  
with DC-Micromotor 3863

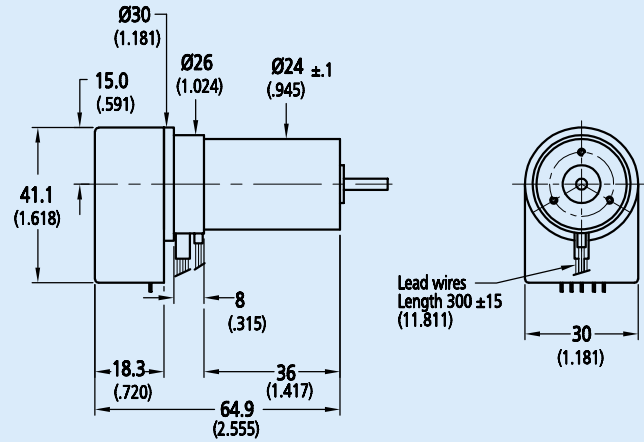
## Series 5500, 5540

HEDS 5500, 5540 with Brushless Servomotor 2036 U ... B K312



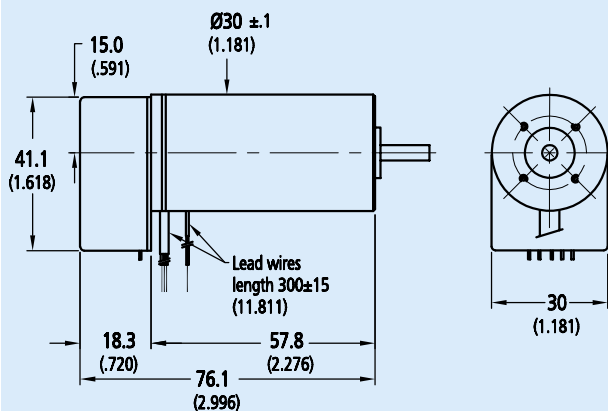
Encoders HEDS 5500, 5540  
with Brushless DC-Servomotor- 2036 U ... B K312

HEDS 5500, 5540 with Brushless Servomotor 2444S ... B K312



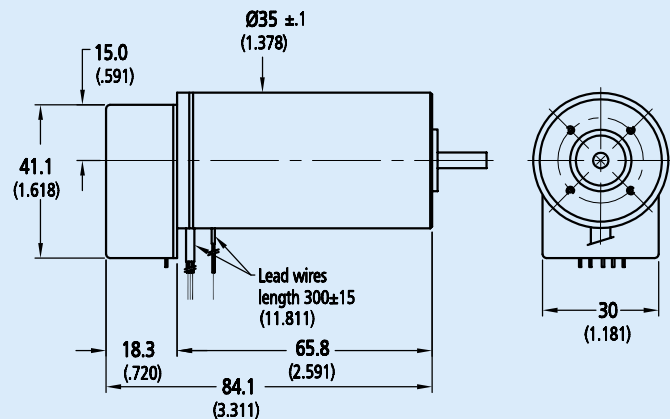
Encoders HEDS 5500, 5540  
with Brushless DC-Servomotor 2444 S ... B K312

HEDS 5500, 5540 with Brushless Servomotor 3056 K ... B K312



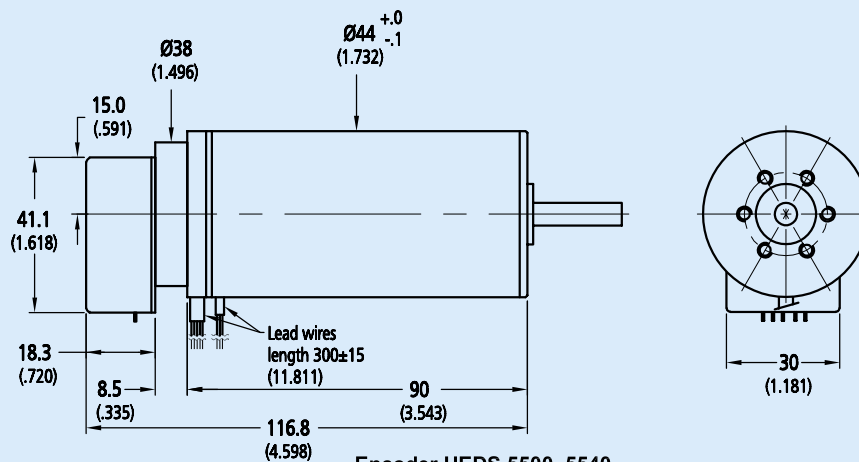
Encoders HEDS 5500, 5540  
with Brushless DC-Servomotor 3056 K ... B K312

HEDS 5500, 5540 with Brushless Servomotor 3564 K ... B K312



Encoders HEDS 5500, 5540  
with Brushless DC-Servomotor 3564 K ... B K312

HEDS 5500, 5540 with Brushless Servomotor 4490 K ... B K312



Encoder HEDS 5500, 5540  
with Brushless DC-Servomotor 4490K ... B K312