

Encoders

Magnetic Encoders

- Features:**
 1 to 16 Lines per revolution
 2 Channels
 Digital output

Series HEM

		Encoder Ø 10 ... 12 mm	Encoder Ø 16 ... 17 mm	
Lines per resolution	N	10 ... 12	1 ... 16	
Signal output, square wave		2	2	channels
Supply voltage	V _{CC}	3,0 ... 15,0	3,0 ... 15,0	V DC
Current consumption, typical (V _{CC} = 5 V DC)	I _{CC}	5	5 ¹⁾	mA
Pulse width	P	180 ± 45	180 ± 45	°e
Phase shift, channel A to B	Φ	90 ± 45	90 ± 45	°e
Logic state width	S	90 ± 45	90 ± 45	°e
Cycle	C	360 ± 30	360 ± 30	°e
Signal rise/fall time, typical	tr/tf	5 / 0,2	5 / 0,2	µs
Frequency range up to	f	7,2	7,2	khz
Inertia of code disc	J	0,019	0,040	gcm ²
Operating temperature range		-20 ... +85	-20 ... +85	°C

¹⁾ current consumption for 1 ppr encoder = 11mA (typical at V_{CC} = 5 V DC) HEM-Q

Ordering information

Encoder type	number of channels	lines per revolution Ø 10 ... 12 mm	lines per revolution Ø 16 ... 17 mm	in combination with DC-Micromotors
HEM-10	2	10		series 0816...S, 0816...SR
HEM-12	2	12		series 1016...G, 1024...S
				series 1219...G, 1224...SR
HEM-Q ²⁾	2		1 ¹⁾	series 1331...S, 1336...CXR
HEM-10 ²⁾	2		10	series 1516...S
HEM-12 ²⁾	2		12	series 1624...S
HEM-15 ²⁾	2		15	series 1727...C, 1741...CXR
HEM-16 ²⁾	2		16	series 2230...S, 2233...S
				series 3557, 3557...CS, 3557...CR

²⁾ channel B leads channel A

Features

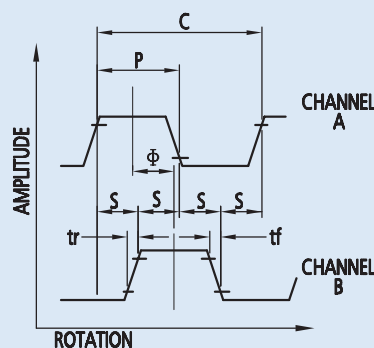
These incremental shaft encoders in combination with the FAULHABER® DC-Micromotors are designed for indication and control of both shaft velocity and direction of rotation as well as for positioning.

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

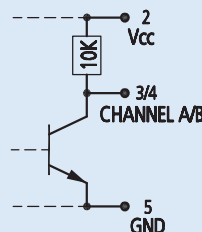
The supply voltage for the encoder and the DC-Micromotor as well as the two channel output signals are interfaced with a ribbon cable to a 6-pin connector on motors ≤ 22mm in diameter for motors ≥ 23mm in diameter the motor voltage is supplied separately.

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

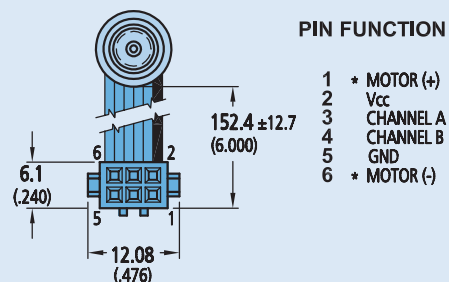
Please note: Velocity (rpm) = f (Hz) x 60/N



OUTPUT SIGNALS
 with clockwise rotation as seen from the shaft end
 exceptions indicated by note 2



OUTPUT CIRCUIT
 * Motors 2342 and larger have separate motor connections



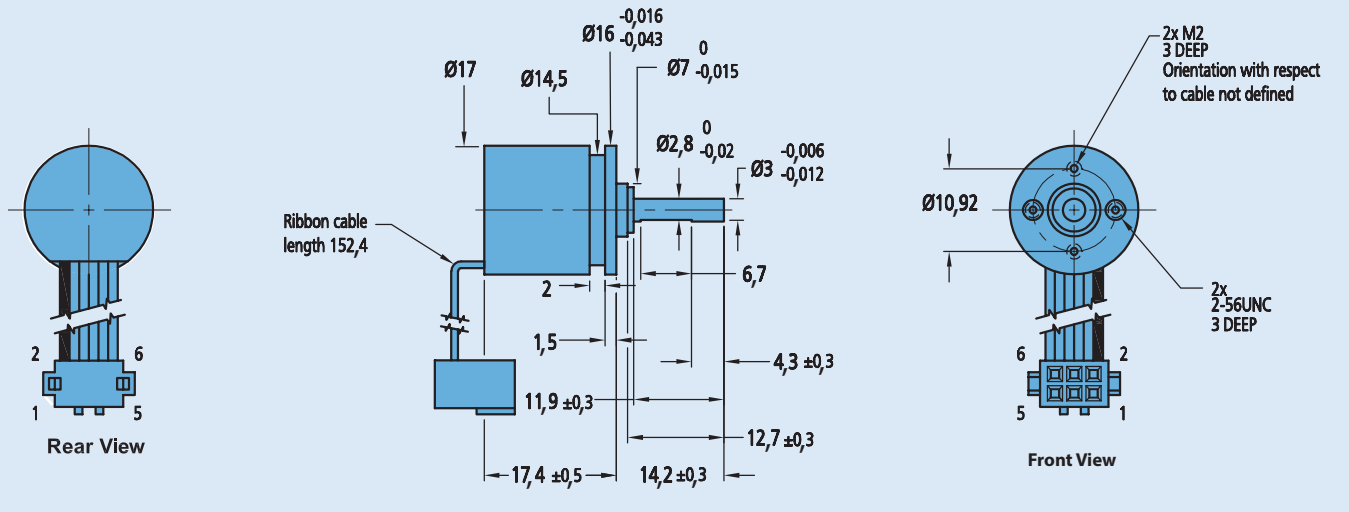
Shown with optional CONNECTOR (-6P)
 (Berg / FCI 71601-106)
 Polarized
 .050" Ribbon cable - PVC
 6 conductors - 28 AWG
 Mating connector:
 Header / FCI 75869-131

PIN FUNCTION

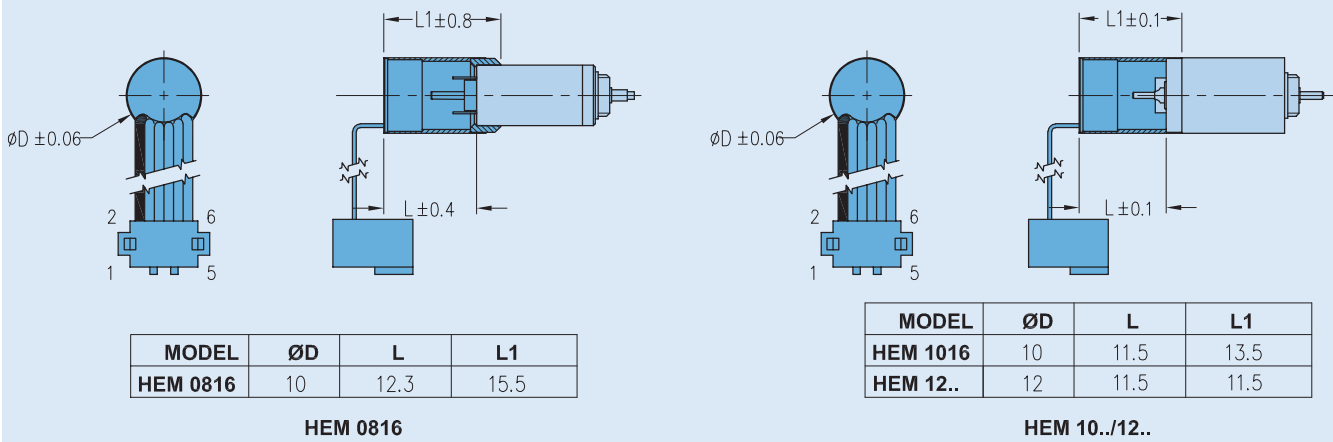
- 1 * MOTOR (+)
- 2 V_{CC}
- 3 CHANNEL A
- 4 CHANNEL B
- 5 GND
- 6 * MOTOR (-)

HEM

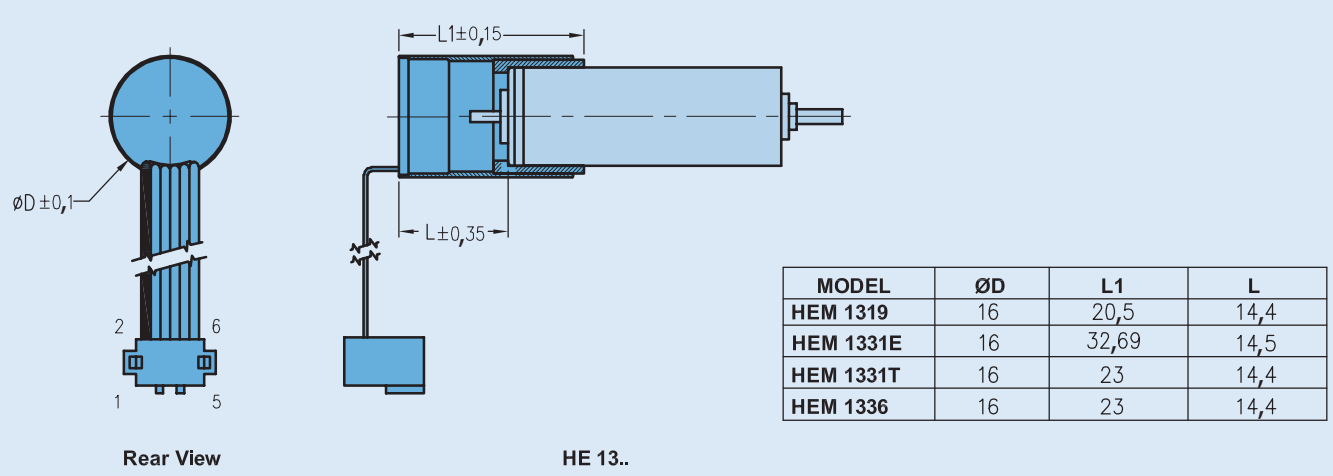
Encoder HEF Free standing



DC-Micromotor 10mm, 12mm diameter series with HEM encoder

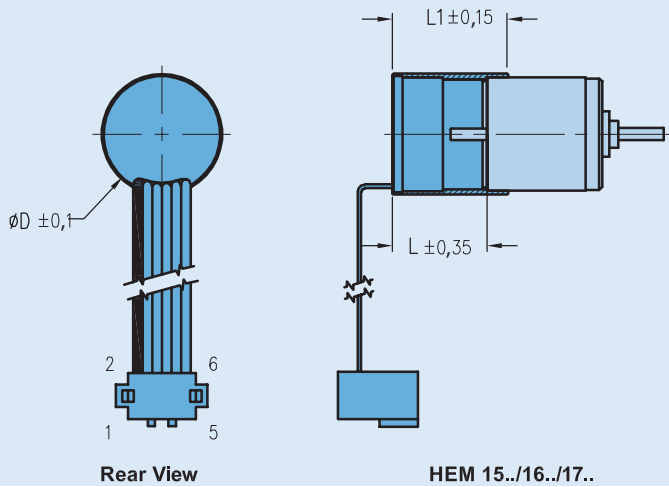


DC-Micromotor 13mm diameter series with HEM encoder



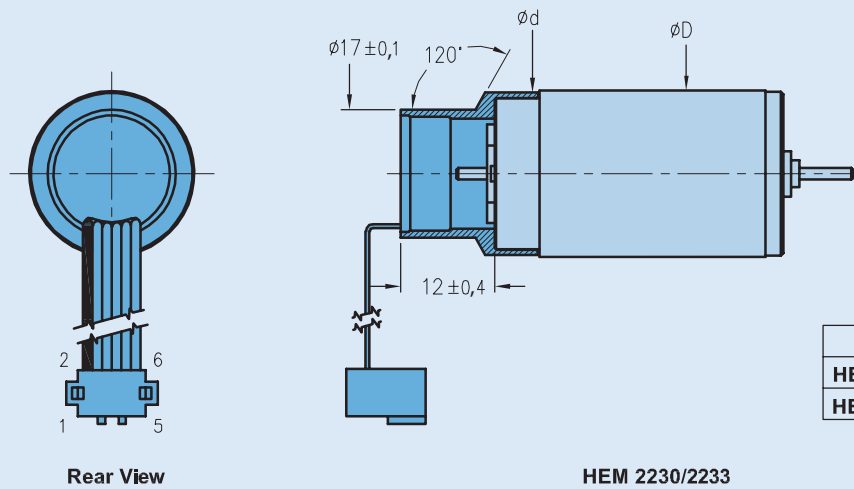
HEM

DC-Micromotor 15, 16, 17mm diameter series with HEM encoder



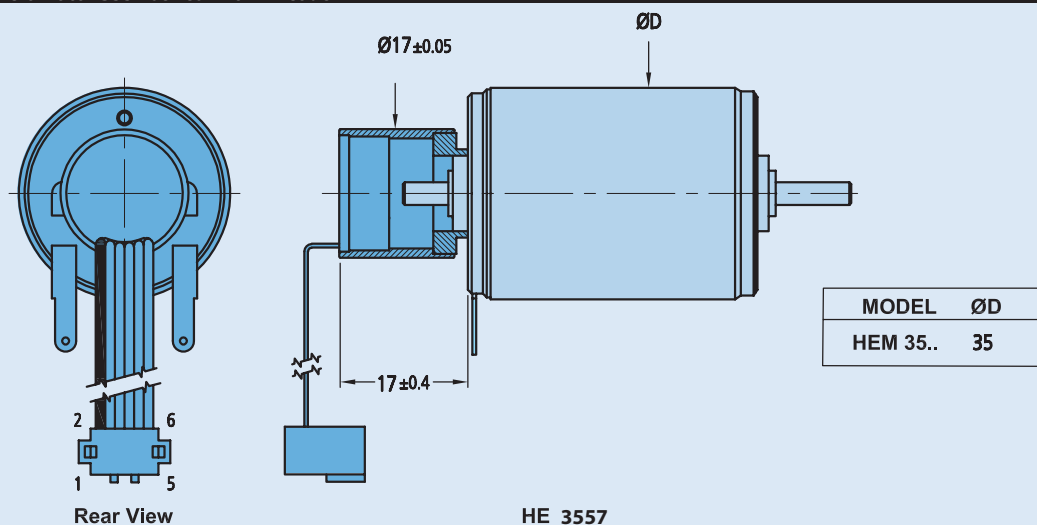
MODEL	$\varnothing D$	L1	L
HEM 1516	16	15,25	12,45
HEM 1616	17	15,25	12,45
HEM 1524	16	23,00	12,40
HEM 1624	17	23,00	12,50
HEM 1717	17	19,10	13,10
HEM 1724	17	19,10	13,10
HEM 1727	17	19,10	13,60

DC-Micromotor 22mm diameter series with Emcoder HEM



MODEL	$\varnothing d$	$\varnothing D$
HEM 2230	21,5 $\pm 0,1$	22
HEM 2233	21,5 $\pm 0,1$	22

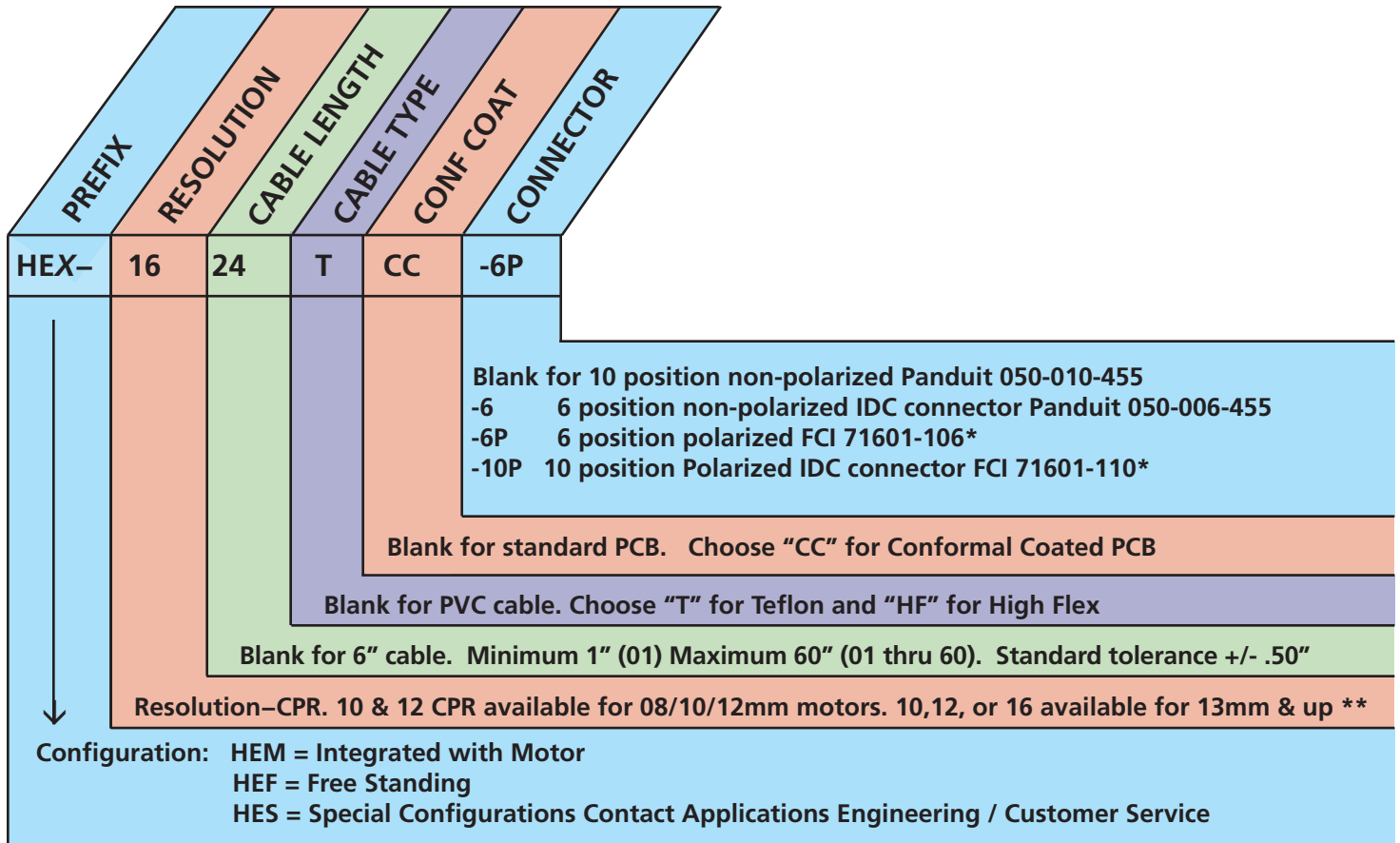
DC-Micromotor 3557 series with Emcoder HEM



MODEL	$\varnothing D$
HEM 35..	35

HEM ORDERING GUIDE

Encoder Magnetic
Ordering information



* Mating connectors available for Polarized Receptacles

** A "Q" in this position indicates 1 ppr quadrature technology