Encoders

magnetic Encoder, digital outputs, 3 channels,
32 - 256 lines per revolution

For combination with
DC-Micromotors

Series HEM3 – 256 – W

		HEM3 – 32 – W	HEM3 – 64 – W	HEM3 – 128 – W	HEM3 – 256 – W	
Lines per revolution	N	32	64	128	256	
Signal output, square wave		3				channels
Supply voltage [1]	U_{DD}	3 … 3,6				V DC
Supply voltage [2]	U_{DD}	4,5 … 5,5				V DC
Current consumption, typical [3]	I_{DD}	16				mA
Output current, max. [4]	I_{OUT}	2 / 4				mA
Pulse width	P	180 ± 45				°e
Phase shift, channel A to B	Φ	90 ± 45				°e
Logic state width	S	90 ± 45				°e
Signal rise/fall time, max. (C_{LOAD} = 50 pF)	tr/tf	0,1 / 0,1				µs
Rotational speed up to	n max.	30 000				rpm
Inertia of code disc	J	0,02				gcm²
Operating temperature range		– 30 ... + 85				°C

[1] U_{DD} = 3,3 V DC: Connect pins 3 and 4 to 3,3 V DC
[2] U_{DD} = 5 V DC: Connect pin 3 to 5 V DC, pin 4 open
[3] U_{DD} = 3,3 or 5 V, with unloaded outputs
[4] U_{DD} = 5 V DC: Low logic level < 0,5 V, high logic level > 4,5 V: CMOS and TTL compatible

For combination with motor	
Dimensional drawing A	L1 [mm]
0816...SR - K2566	23,5
Dimensional drawing B	L1 [mm]
1016...G - K1707	24,2
1024...S - K1707	32,2
Dimensional drawing C	L1 [mm]
1224...SR - K1707	31,1

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 sensors and a low inertia magnetic disc provide two channels with 90° phase shift and one index channel.

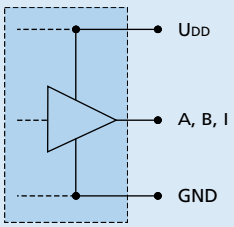
The nominal supply voltage for the encoder is selectable and either 3,3 VDC or 5,0 VDC.

The supply voltage for the encoder and the DC-Micromotor as well as the output signals are interfaced with discrete wires and an 8-pin Molex crimp style connector.

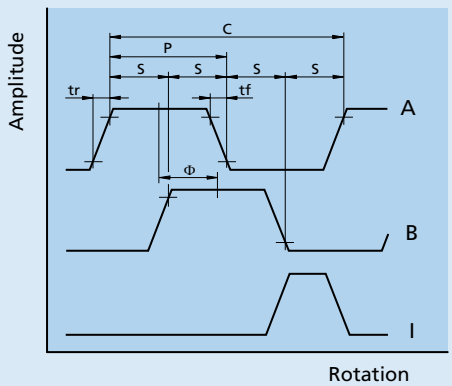
Details for the DC-Micromotors and suitable reduction gearheads are on separate catalog pages.

Output signals / Circuit diagram

Output circuit



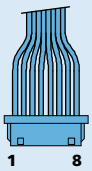
Output signals
with clockwise rotation as seen from the shaft end



Connector information / Variants

No.	Function
1	Motor –
2	GND
3	$U_{DD\ 5V}$
4	$U_{DD\ 3,3V}$
5	Channel A
6	Channel B
7	Channel I (Index)
8	Motor +

Connection Encoder and Motor

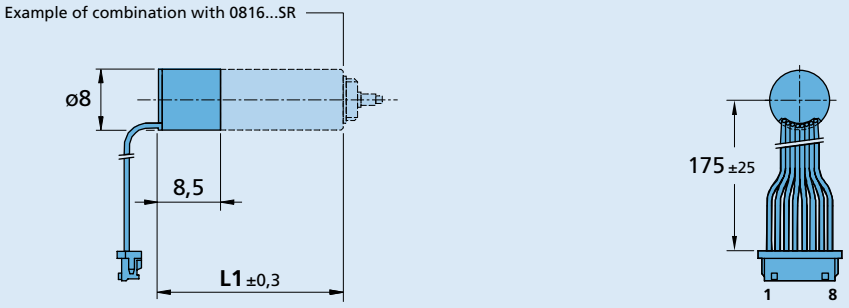


Cable
Wire: Tefzel MIL-W-22759/32, 30AWG

Recommended connector
8 circuits, 1,25 mm pitch, e.g.:
Molex: 51021-0800

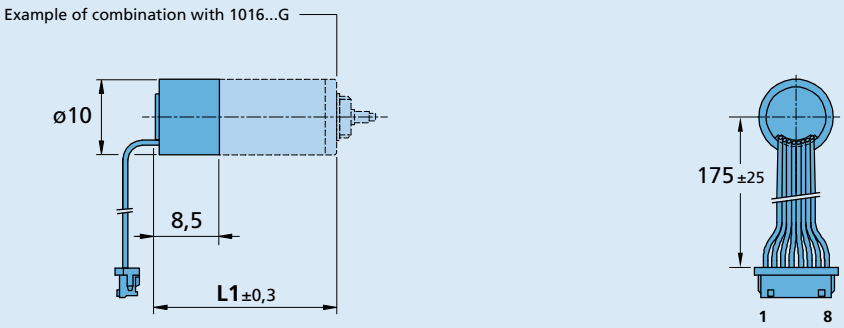
Full product description
- Examples:
  1016N012G HEM3-32
  1224N012SR HEM3-256

Dimensional drawing A



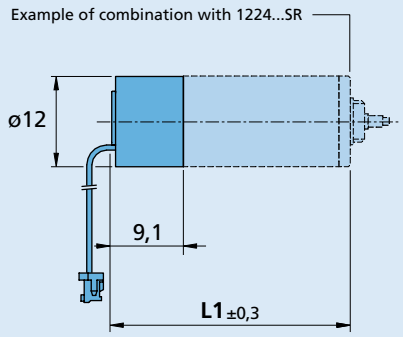
HEM3 – 256 – W

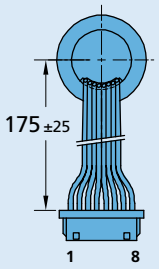
Dimensional drawing B



HEM3 – 256 – W

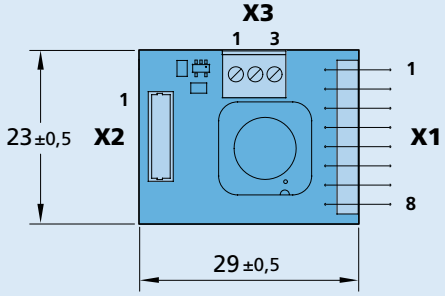
Dimensional drawing C





HEM3 – 256 – W

Interface board for MCDC 3002 S



Interface Board HEM3 – 256 – W
Part. No.: 6501.00146

Connection

Pin	Connection X1
1	4. In
2	Channel A
3	Channel B
4	U_{DD} = 5V
5	SGND
6	Motor +
7	Motor -
8	5 .In

Pin	Connection X2
1	Motor -
2	SGND
3	U_{DD} = 5V
4	N.C.
5	Channel A
6	Channel B
7	Index
8	Motor +

Pin	Connection X3
1	Index
2	5. In
3	4. In

Note:
U_{DD} = 3,3V available on request