Encoders

magnetic Encoder, digital outputs,
3 channels, 1 - 1024 lines per revolution

For combination with
Brushless DC-Motors
DC-Micromotors
Stepper Motors

Series IE3-1024

		IE3-32	IE3-64	IE3-128	IE3-256	IE3-512	IE3-1024	
Lines per revolution	*N*	32	64	128	256	512	1 024	
Frequency range, up to[1]	*f*	15	30	60	120	240	430	kHz
Signal output, square wave		2+1 Index						Channels
Supply voltage[2]	U_{DD}	4,5 ... 5,5						V
Current consumption, typical[3]	I_{DD}	typ. 20, max. 30						mA
Output current, max.[4]	I_{OUT}	4						mA
Index Pulse width[5]	P_0	90 ± 45						°e
Phase shift, channel A to B[5]	Φ	90 ± 45						°e
Signal rise/fall time, max. (C_{LOAD} = 50 pF)	*tr*/*tf*	0,1 / 0,1						µs
Inertia of sensor magnet	*J*	0,08						gcm²
Operating temperature range		-40 ... +100						°C
Accuracy, typ.		0,5						°m
Repeatability, typ.		0,1						°m
Hysteresis		0,17						°m
Edge spacing, min.		421						ns
Mass, typ.		13,5						g

[1] Velocity (min⁻¹) = *f* (Hz) x 60/*N*
[2] 3,0 ... 3,6 V optional available on request
[3] U_{DD} = 5 V: with unloaded outputs
[4] U_{DD} = 5 V: low logic level < 0,4 V, high logic level > 4,5 V: CMOS- and TTL compatible
[5] At 5 000 min⁻¹

For combination with Motor

Dimensional drawing A	<L1 [mm]
2214 ... BXT H	26,8
3216 ... BXT H	28,7
4221 ... BXT H	34,0

Dimensional drawing B	<L1 [mm]
2237 ... CXR	52,5
2264 ... BP4	79,1
3274 ... BP4	90,8

Dimensional drawing C	<L1 [mm]
2342 ... CR	60,5
2642 ... CXR	60,5
2642 ... CR	60,5
2657 ... CXR	75,5
2657 ... CR	75,5
2668 ... CR	86,5
3242 ... CR	60,5
3257 ... CR	75,5
3272 ... CR	90,5

Dimensional drawing D	<L1 [mm]
2444 ... B - K1838	55,3
3056 ... B - K1838	67,3
3564 ... B - K1838	75,3
4490 ... B - K1838	100,3
4490 ... BS - K1838	100,3

Dimensional drawing E	<L1 [mm]
2232 ... BX4	50,2
2250 ... BX4	68,2

Dimensional drawing F	<L1 [mm]
3242 ... BX4	60,0
3268 ... BX4	86,0

Dimensional drawing G	<L1 [mm]
3863 ... CR - 2016	82,6
3890 ... CR - 2016	108,6

Dimensional drawing H	<L1 [mm]
AM3248	56,4

Dimensional drawing I	<L1 [mm]
DM40100R	38,9
DM52100N	45,9
DM52100R	45,9

Characteristics

These incremental encoders with 3 output channels, in combination with the FAULHABER Motors, are used for the indication and control of both shaft velocity and direction of rotation as well as for positioning.

A permanent magnet on the shaft creates a moving magnetic field which is captured using an angular sensor and further processed. At the encoder outputs, two 90° phase-shifted square wave signals are available with up to 1024 impulses and an index impulse per motor revolution.

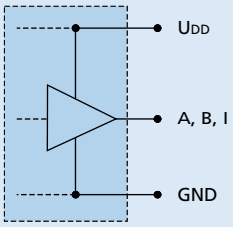
The encoder is available in a variety of different resolutions.

The encoder is connected with a ribbon cable.

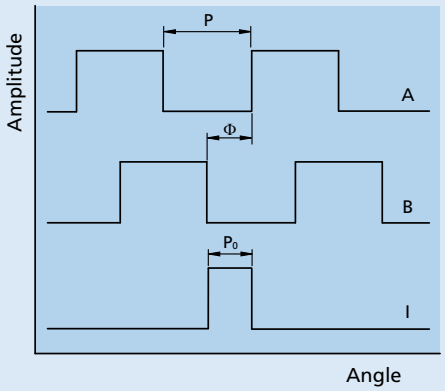
To view our large range of accessory parts, please refer to the "Accessories" chapter.

Circuit diagram / Output signals

Output circuit



Output signals
with clockwise rotation as seen from the shaft end



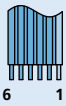
Connector information / Variants

Example product designation: **2444S024B-K1838 IE3-1024**

Option	Type	Description
3807	Connector  6 1	for combination with DC-Motors series CR, CXR and with Brushless DC-Motor series B(S), BP4 and BXT H. Connector variants AWG 28 / PVC ribbon cable with connector MOLEX Picoblade 51021-0600, recommended mating connector 53047-0610.
3592	Connector  6 1	for combination with Brushless DC-Motors series BX4. Connector variants AWG 28 / PVC ribbon cable with connector MOLEX Picoblade 51021-0600, recommended mating connector 53047-0610.  Inclusive motor connector 3830
	Resolutions	Resolutions from 1 - 1024 lines per revolution are available by request.

Connection Encoder

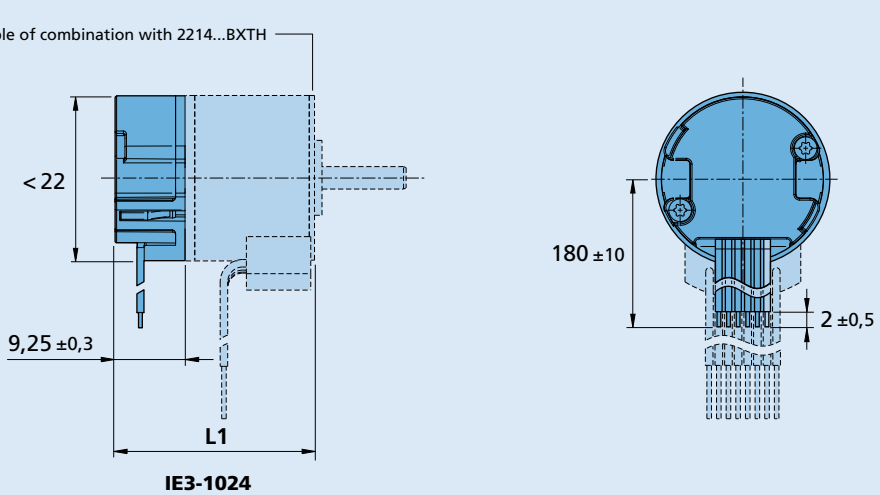
No.	Function
1	N.C.
2	Channel I
3	GND
4	UDD
5	Channel B
6	Channel A



Standard cable
PVC-ribbon cable, 6-AWG 28, 1,27 mm

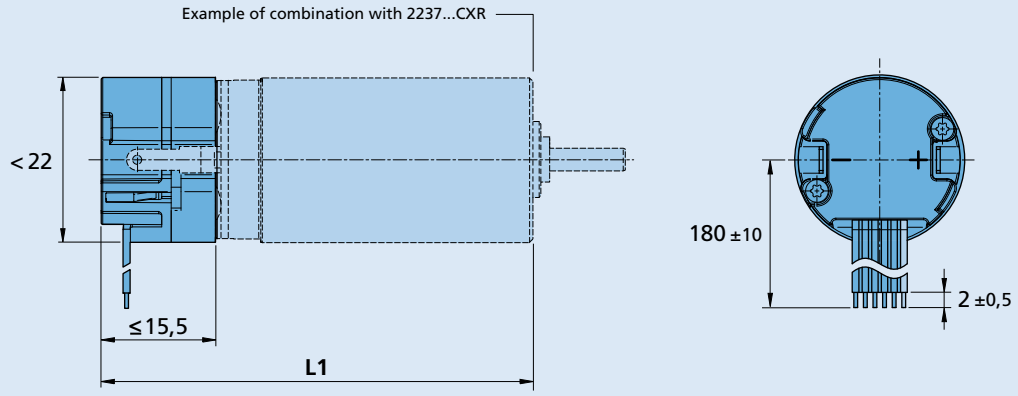
Caution:
Incorrect lead connection will damage the motor electronics!
In combination with the BX4 brushless DC-servomotors with digital Hall sensors, the sensor supply connections of encoder and motor are connected to each other.

Dimensional drawing A



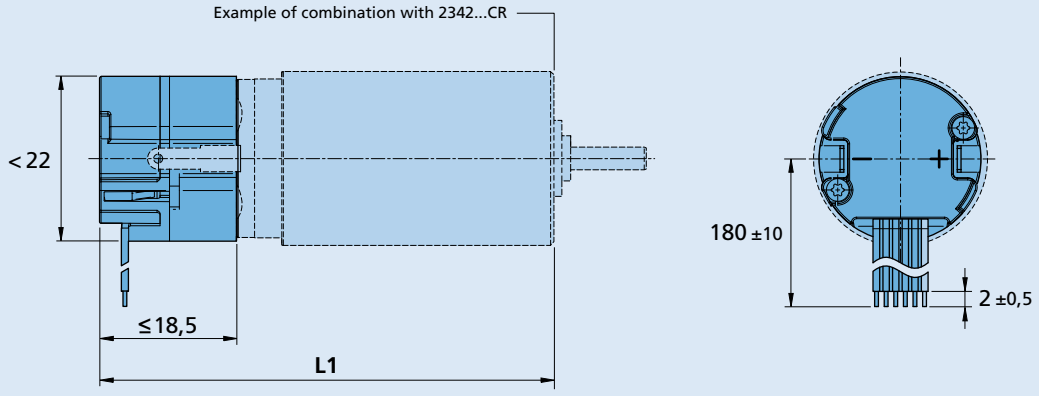
IE3-1024

Dimensional drawing B



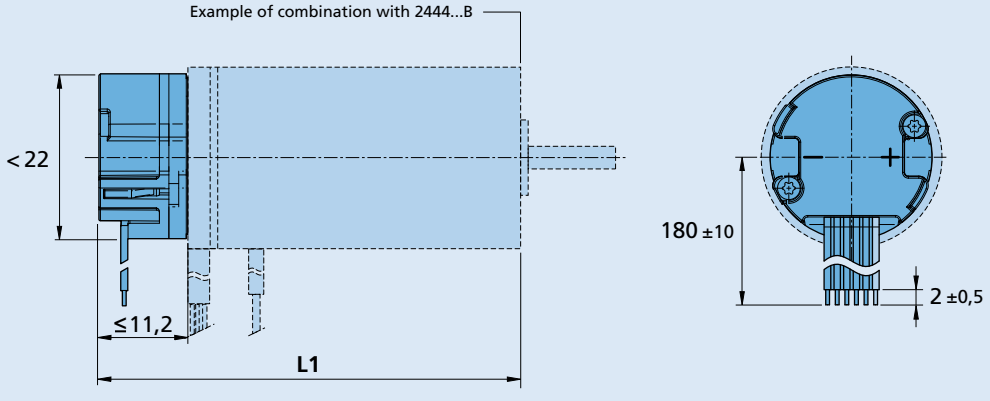
IE3-1024

Dimensional drawing C



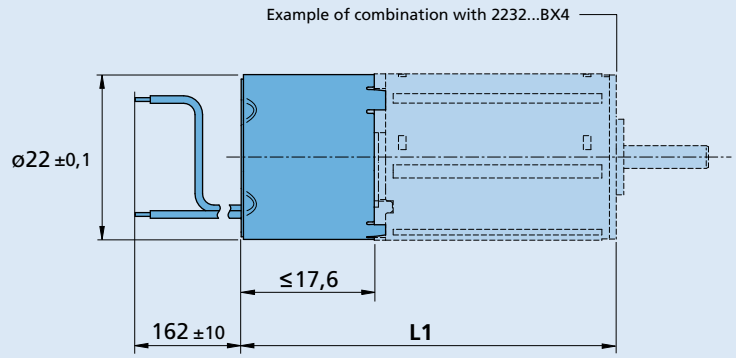
IE3-1024

Dimensional drawing D



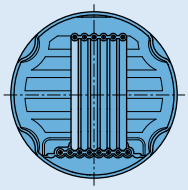
IE3-1024

Dimensional drawing E



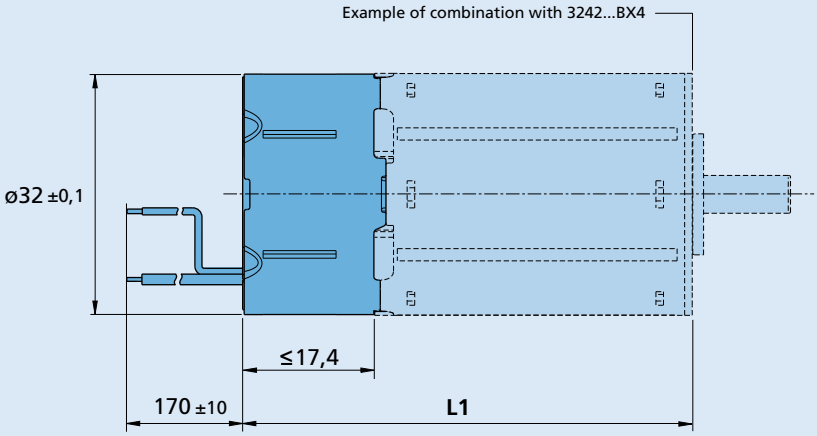
IE3-1024

Connection Encoder



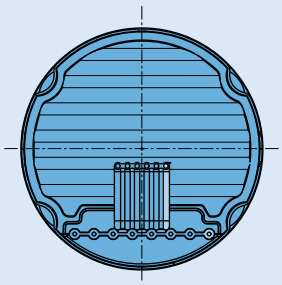
Connection Motor

Dimensional drawing F



IE3-1024

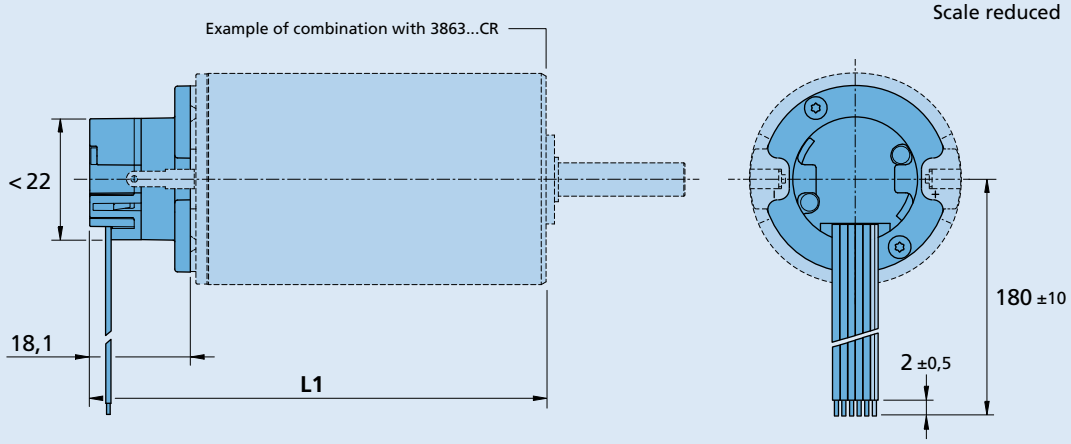
Connection Encoder



Connection Motor

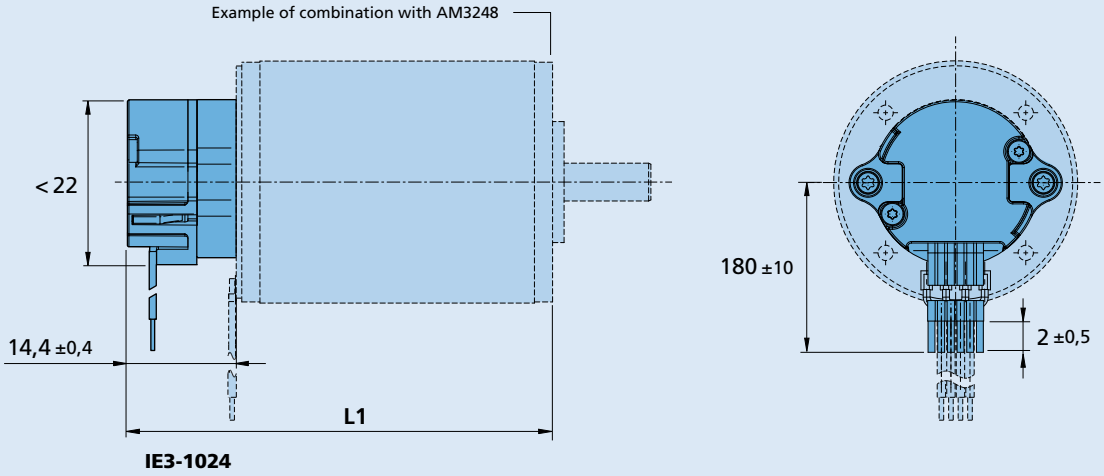
Dimensional drawing G

Scale reduced



IE3-1024

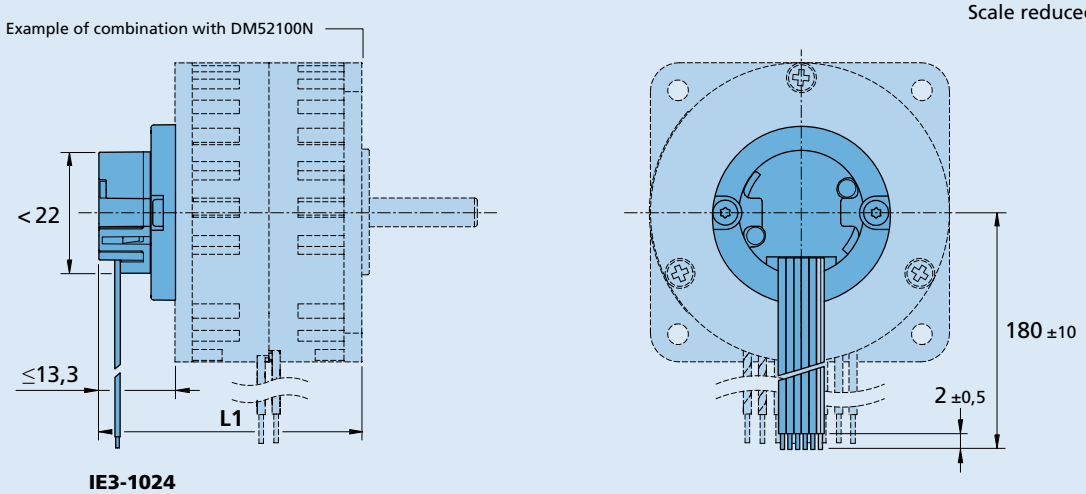
Dimensional drawing H



IE3-1024

Dimensional drawing I

Scale reduced



IE3-1024