EC/BLDC Motors

- 3 Phase EC/BLDC Motor
- IP-Rating: 40
- electrical connection by cables
- Optional with Encoder

part number (not configurable, only for illustration)

MOT – EC – 42 – C – H – A

Specifics	
A	Standard

Options	
H	Hall
I	Hall & Encoder
K	Hall & Encoder & Break

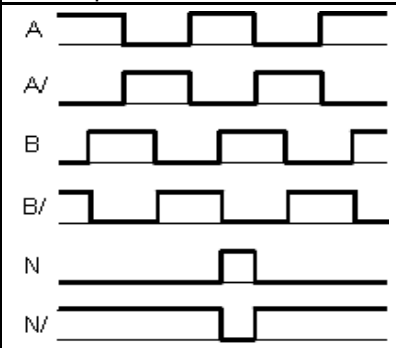
Motor connection	
C	Cable

Flange dimension	
42	42mm (NEMA17)
56	56mm (NEMA23)
60	60mm (NEMA24)
86	86mm (NEMA34)

Type	
EC	EC/BLDC Motor

Product group	
MOT	Motor

Technical data						
Flange dimension		**42(NEMA17)**	**56(NEMA23)**	**60(NEMA24)**	**86(NEMA34)**	
Motor						
Number of phases		3	3	3	3	
Poles (Pole pairs)		8 (4)	8 (4)	8 (4)	8 (4)	
Nominal voltage	[VDC]	48	48	48	48	
Nominal current	[A]	2,6	5,0	7,5	8,7	
Peak current	[A]	7,8	15,0	22,5	26,1	
Nominal torque	[Nm]	0,3	0,6	0,8	1,0	
Maximum torque	[Nm]	0,5	1,8	2,4	3,0	
Rated speed	[rpm]	3.000	3.000	3.000	3.000	
Nominal power	[W]	90	188	250	314	
Resistance/Phase	[Ω]	1,65	0,5	0,47	1,08	
Inductivity/Phase	[mH]	1,00	0,7	0,65	1,27	
Torque constant	[Nm/A]	0,115	0,12	0,11	0,11	
Voltage constant	[V/krpm]	12	12	11	11	
Moment of inertia / rotor	[kgcm²]	0,052	0,91	0,95	1,20	
max. shaft load axial	[N]	10	15	20	60	
Shaft load, radial (20 mm)	[N]	28	70	80	220	

Encoder		Only for MOT-EC-XX-C-I-A
operating voltage	[VDC]	5
impulse / turn		1000
zero impulse / index		yes
line-driver		RS422 protocol
signal sequence (motor rotation clockwise)	CW	

brake (Power off Break)						
operating voltage	[VDC]	24 ±10%	24 ±10%	24 ±10%	24 ±10%	
wattage	[W]	11	11	11	11	
holding torque	[Nm]	0,5	1,5	1,5	1,5	
A **brake-grinding-process** is necessary for the initial start-up or if the brake was inactive for a long time.		Let the motor run at 200 rpm with the brake open, then apply the brake five times for 0.5 s.				
moment of inertia	[kgcm²]	0,01	0,07	0,07	0,07	
operating condition		The brake may closed not till then the motor idleness.				

Weight Motor						
Hall	[kg]	0,75	1,30	1,35	2,30	
Hall & Encoder	[kg]	0,80	1,40	1,40	2,50	
Hall & Encoder & Break	[kg]	0,95	1,70	1,50	3,10	

Operating Data		
ambient temperature	[°C]	-10 …+50
max temperature rise	[°C]	80
insulation class	[°C]	B 130
humidity (not condensing)	[%]	85
protection class engine case		IP65 (shaft seal IP52), motor with stranded wires IP40
CE		EMC guideline

Motor-Connection MOT-EC-XX-C-H-A			
Motor			**motor wires**
Molex 39012040			Molex 46993-0411
pin	color	signal	Color/Number
1	yellow	U	1
2	green	V	2
3	blue	W	3
4	/	shielding	shielding
* Cable length approx.300mm			

Hall			**motor wires**
Molex 39012060			Molex 46993-0611
pin	color	signal	Cable-color
1	red	5V DC	brown
2	black	0V	white
3	yellow	Hall1	green
4	green	Hall2	yellow
5	blue	Hall3	grey
6	/	shielding	shielding

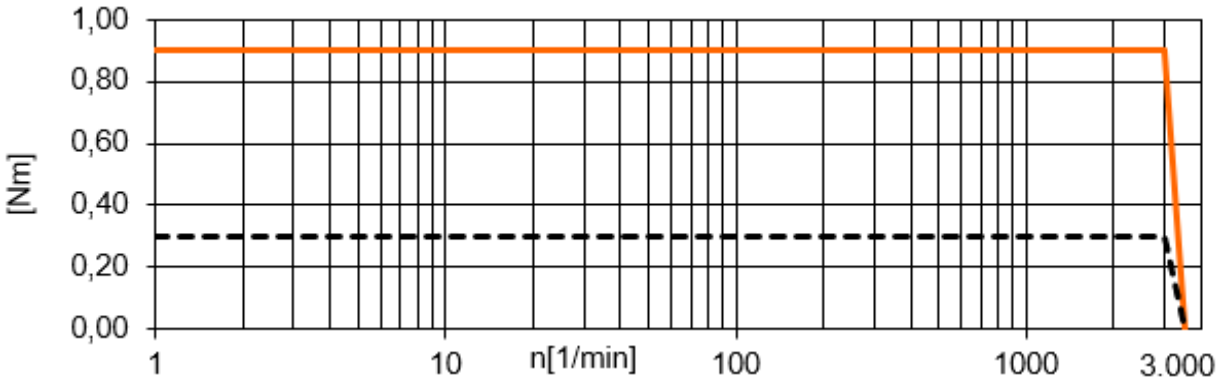
Motor-Connection MOT-EC-XX-C-I-A			
Motor			**motor wires**
Molex 39012040			Molex 46993-0411
pin	color	signal	Color/Number
1	yellow	U	1
2	green	V	2
3	blue	W	3
4	/	shielding	shielding
* Cable length approx.300mm			

Hall & Encoder			**motor wires**
Molex 39012120			Molex 46993-1211
pin	color	signal	Cable-color
1	red	5V DC	red
2	black	0V	blue
3	green	A	white
4	green-black	A/	brown
5	white	B	green
6	white-black	B/	yellow
7	yellow	N	grey
8	yellow-black	N/	pink
9	brown	Hall1	black
10	grey	Hall2	purple
11	orange	Hall3	grey-pink
12	/	shielding	shielding

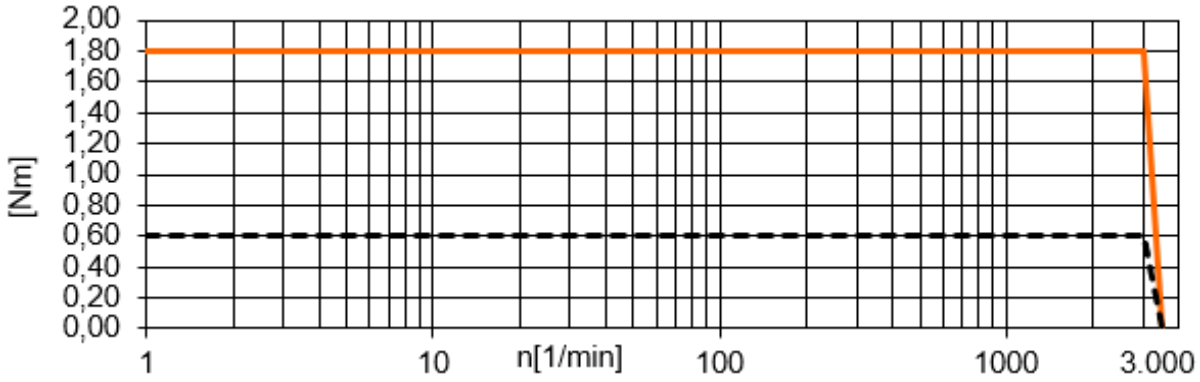
Motor-Comnnection MOT-EC-XX-C-K-A			
Motor & Break			**motor wires**
Molex 39012060			Molex 46993-0611
pin	color	signal	Color/Number
1	yellow	U	1
2	green	V	2
3	blue	W	3
4	/	shielding	shielding
5	black	Break (0V)	5
6	red	Break (24V)	6
* Cable length approx.300mm			

Hall & Encoder			**motor wires**
Molex 39012120			Molex 46993-1211
pin	color	signal	Cable-color
1	red	5V DC	red
2	black	0V	blue
3	green	A	white
4	green-black	A/	brown
5	white	B	green
6	white-black	B/	yellow
7	yellow	N	grey
8	yellow-black	N/	pink
9	brown	Hall1	black
10	grey	Hall2	purple
11	orange	Hall3	grey-pink
12	/	shielding	shielding

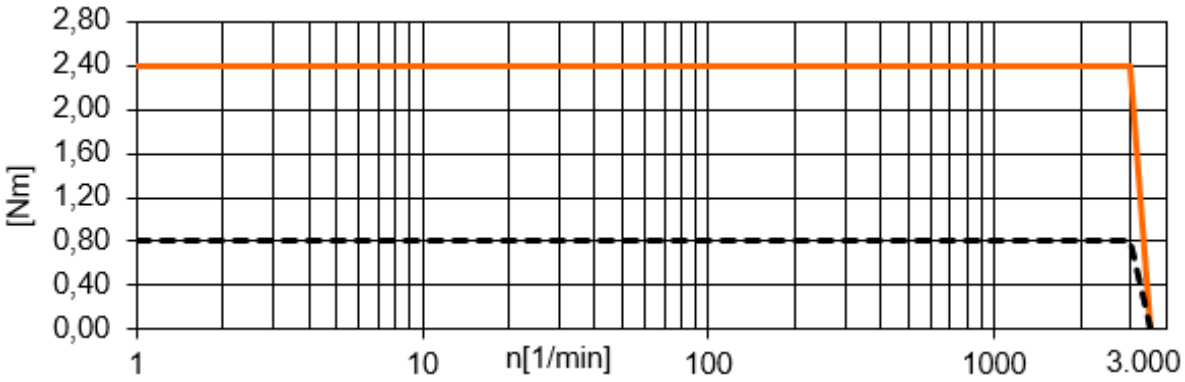
Characteristic curve
Flange Dimension 42 (NEMA17)



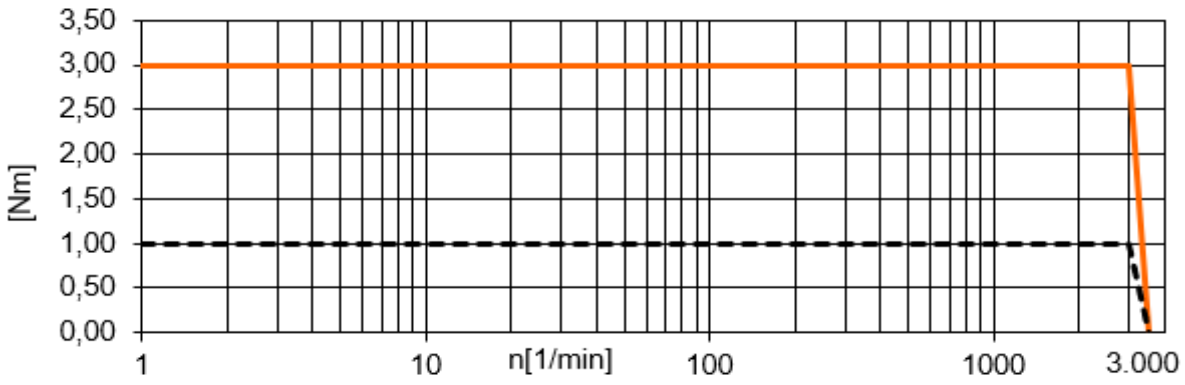
Flange Dimension 56 (NEMA23)



Flange Dimension 60 (NEMA24)

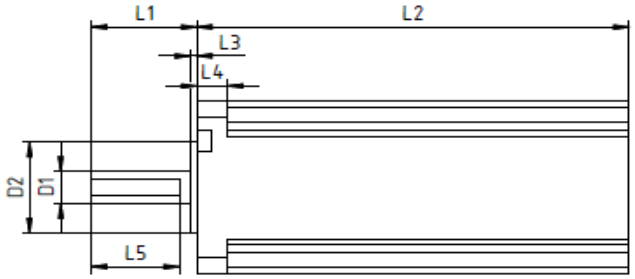


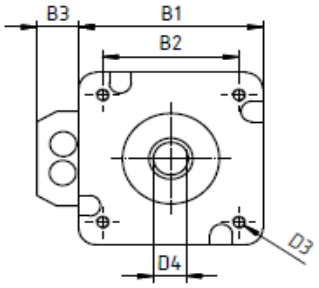
Flange Dimension 86 (NEMA34)



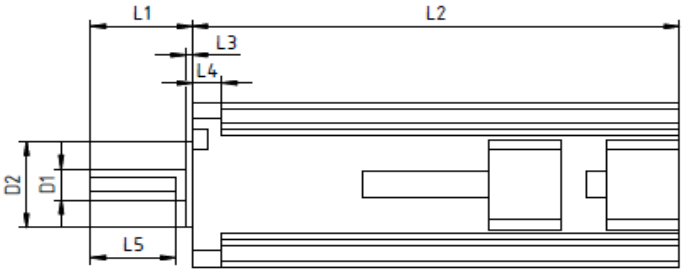
- - - - - Mn 48VDC ——— Mpeak 48VDC

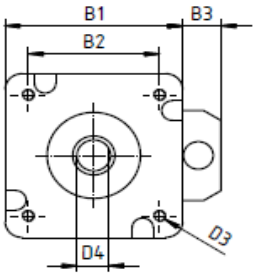
Dimensions
MOT-EC-XX-C-H-A





MOT-EC-XX-C-I-A





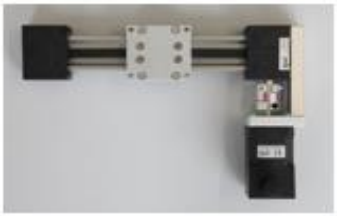
Type	B1 [mm] ±1	B2 [mm] ±1	B3 [mm] ±1	D1 Ø [mm] -0,015	D2 Ø [mm] ±0,25	D3 Ø [mm]	D4 [mm] ±0,15	L1 [mm] ±1	L2 [mm] ±1,5	L3 [mm] ±0,25	L4 [mm] ±0,5	L5 [mm] ±1
MOT-EC-42-C-H-A	42,0	31,00	9	8,00	22,00	M3	7,5	24,0	99	1,5	7	20,0
MOT-EC-56-C-H-A	56,4	47,14	9	8,00	38,10	5	7,5	21,0	98	1,6	5	20,0
MOT-EC-60-C-H-A	60,5	47,15	9	8,00	38,10	5,5	7,5	21,0	87,7	2,0	8	15,0
MOT-EC-86-C-H-A	86,0	69,60	9	14,00	73,00	6,5	13,0	35,0	80,5	1,6	10	25,0
MOT-EC-42-C-I-A	42,0	31,00	9	8,00	22,00	M3	7,5	24,0	115	1,5	7	20,0
MOT-EC-56-C-I-A	56,4	47,14	9	8,00	38,10	5	7,5	21,0	115	1,6	5	20,0
MOT-EC-60-C-I-A	60,5	47,15	9	8,00	38,10	5,5	7,5	21,0	97	2,0	8	15,0
MOT-EC-86-C-I-A	86,0	69,60	9	14,00	73,00	6,5	13,0	35,0	110,5	1,6	10	25,0
MOT-EC-42-C-K-A	42,0	31,00	9	8,00	22,00	M3	7,5	24,0	149	1,5	7	20,0
MOT-EC-56-C-K-A	56,4	47,14	9	8,00	38,10	5	7,5	21,0	149	1,6	7,0	20,0
MOT-EC-60-C-K-A	60,5	47,15	9	8,00	38,10	5,5	7,5	21,0	130	2,0	7,0	15,0
MOT-EC-86-C-K-A	86,0	69,60	9	14,00	73,00	6,5	13,0	35,0	151	1,6	10,0	25,0

cable wire motor part number	outer jacket	type	cable length	plug
flange dimension 42(NEMA17), 56(NEMA23), 60(NEMA24), 86(NEMA34)				
Motor	**cable Ø: 7,5 mm / bending radius moved < 10m travel distance: min. 12.5 x d**			
DLE904172362-3	PVC	CF881.07.04	3	straight
DLE904172362-5	PVC	CF881.07.04	5	straight
DLE904172362-10	PVC	CF881.07.04	10	straight
Motor & Break	**cable Ø: 9 mm / bending radius moved < 10m travel distance: min. 12.5 x d**			
DLE904172363-3	PVC	CF881.07.07	3	straight
DLE904172363-5	PVC	CF881.07.07	5	straight
DLE904172363-10	PVC	CF881.07.07	10	straight
Hall	**cable Ø: 7 mm / bending radius moved < 10m travel distance: min. 7.5 x d**			
DLE904172364-3	PVC	CF211.02.03.02	3	straight
DLE904172364-5	PVC	CF211.02.03.02	5	straight
DLE904172364-10	PVC	CF211.02.03.02	10	straight
Encoder & Hall	**cable Ø: 9 mm / bending radius moved < 10m travel distance: min.7, 5 x d**			
DLE904172365-3	PVC	CF211.02.06.02	3	straight
DLE904172365-5	PVC	CF211.02.06.02	5	straight
DLE904172365-10	PVC	CF211.02.06.02	10	straight

Accessories

You can find further accessories at: www.igus.eu

Motor flanges



Spacer

Couplings

Limit and reference switches