

ELECTRIC ROTARY ACTUATOR SERIES ELEKTRO RBA

Compact electric rotary actuator providing unlimited rotation angle in both directions.

Motor power is transmitted to the load by a toothed belt drive with a specific gear ratio, thereby ensuring high performance in reduced dimensions. The belt is maintained at the correct tension by an adjustable eccentric tensioner.

The driven pulley features a through-hole that allows pipes and cables to pass through to facilitate integration with other devices.

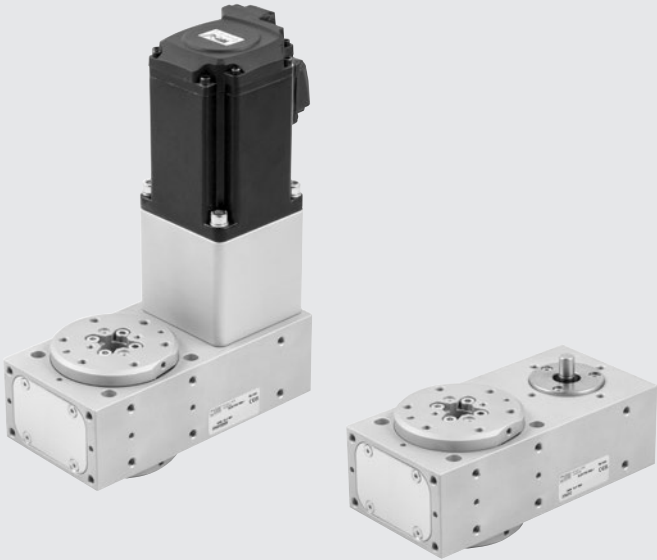
The actuator can be attached onto all the surfaces of the main body by threaded holes, thereby offering multiple installation options.

The rotary flange can be placed on the same side as the motor, either on the opposite side or on both sides, to meet any application requirement.

This actuator can be used either as a fixed rotary table or applied to a moving axis, like the VBK, thereby greatly increasing the range of applications. The RBA is available with or without a motor drive.

The standard drive of the RBA makes it possible to choose between a brushless motor and a stepping motor with encoder.

Both versions are available with a holding brake.



TECHNICAL DATA		RBA-1
Admissible ambient temperature	°C	from 0 to +40
Maximum relative humidity		90% at 40°C; 57% at 50°C (no condensate)
Maximum duty cycle for motor		100%
Rotation angle *	degrees	360°
Positioning accuracy	degrees	± 0.30°
Positioning repeatability with STEPPING motors	degrees	± 0.05°
Positioning repeatability with BRUSHLESS motors	degrees	± 0.03°
Uncontrolled impact		NOT ALLOWED
Homing position sensor		Inductive sensors
Work position		Any
Degree of protection		IP 20
Noise level	dBA	<66
Approximate weight (without motor)	kg	1.2
Maximum size of the applicable motor flange	mm	60

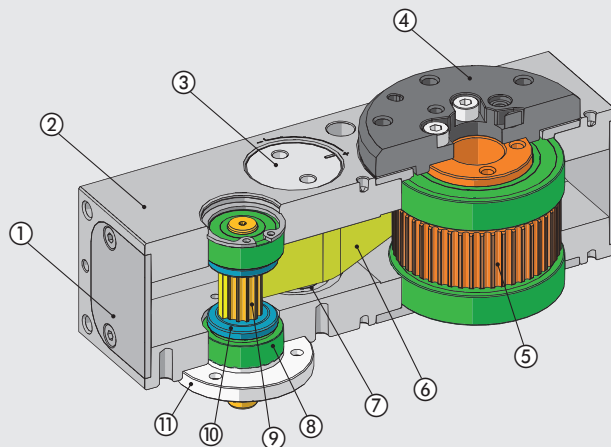
* No limits on the angle of rotation in both directions, even for multi-turn applications.

MECHANICAL FEATURES		RBA-1
Toothed belt pitch		3
Transmission ratio		1:4
Maximum input torque	Nm	1.5
Maximum input revs	rpm	1200
Maximum output torque (actual depending on rotational speed)	Nm	6
Maximum output revs	rpm	300
Moment of inertia of the actuator in the version with single rotary flange **	kgmm²	6.59
Moment of inertia of the actuator in the version with double rotary flange **	kgmm²	7.45

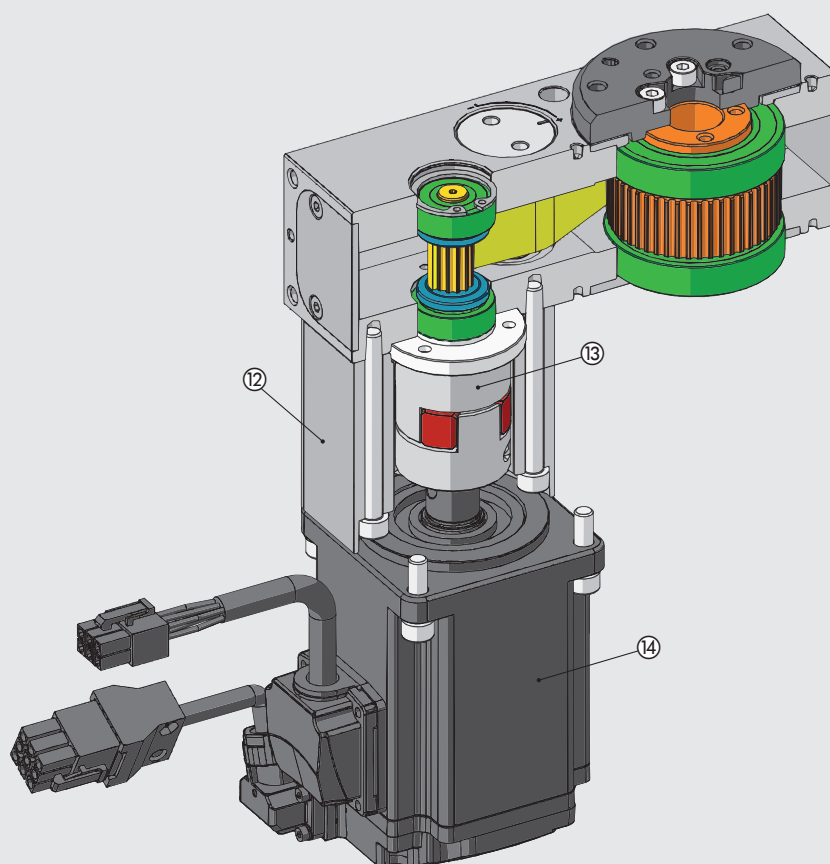
** Seen from the drive shaft

COMPONENTS

VERSION WITHOUT MOTOR

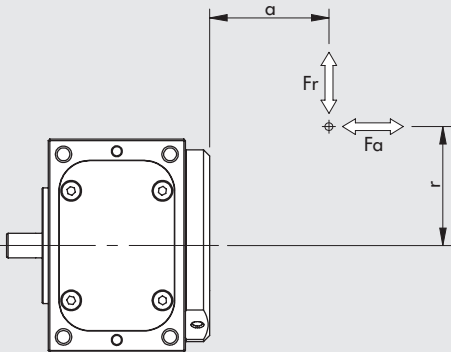


VERSION WITH MOTOR



- | | |
|--|--|
| ① COVER: anodized aluminium | ⑧ SEALED BALL BEARING |
| ② BODY: anodized aluminium | ⑨ PIGNON: stainless steel |
| ③ ECCENTRIC TENSIONER: stainless steel | ⑩ BELT RETAINING FLANGE: anodized aluminium |
| ④ ROTARY FLANGE: anodized aluminium | ⑪ HOLDING BEARING FLANGE: stainless steel |
| ⑤ DRIVEN PULLEY: nickel-plated aluminium | ⑫ MOTOR CONNECTION PLATE: anodized aluminium |
| ⑥ TOOTHED BELT: elastomer with glass fibre strands | ⑬ ELASTIC COUPLING: aluminium / polyurethane |
| ⑦ TENSIONING ROLLER: anodized aluminium | ⑭ MOTOR |

DIAGRAM OF FORCES AND MOMENTS



The following equations must be maintained when several forces act simultaneously on the actuator.

STATIC VERIFICATION

$$\frac{|F_{r0}|}{F_{r0 \max}} + \frac{|F_{a0}|}{F_{a0 \max}} \leq 1$$

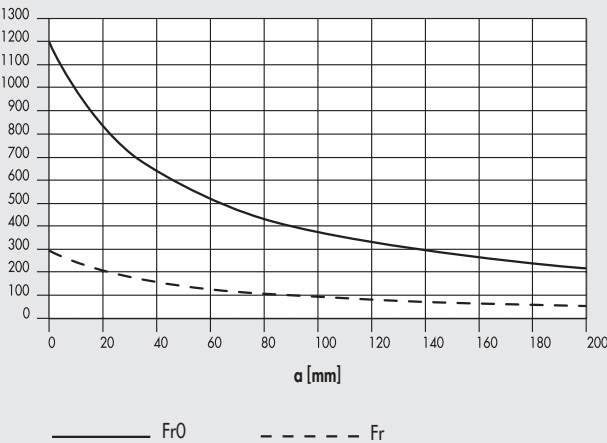
DYNAMIC VERIFICATION

$$\frac{|F_r|}{F_{r \max}} + \frac{|F_a|}{F_{a \max}} \leq 1$$

The maximum force values can be obtained from the graphs shown below, as a function of the distance between the point of application and the rotary flange.

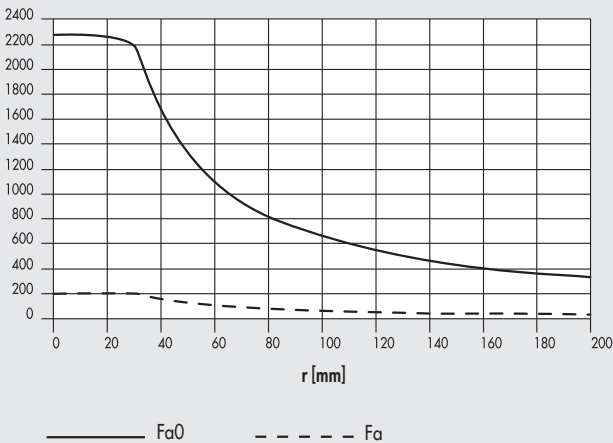
Radial

F_r [N]



Axial

F_a [N]



N.B.: The values given here refer to the maximum applicable bearing loads beyond which serious damage may occur. Refer to the graphs on the following pages to check the actuator load conditions.

LIMIT OPERATING CURVES (ACTUATOR COMPLETE WITH MOTOR AND DRIVE)

N.B.: Check that the following constraints are met for each cycle phase:

- the maximum applicable moment of inertia as a function of angular output acceleration/deceleration;
- the transmissible torque as a function of angular output speed;
- the maximum axial, radial force and moment supported by the bearings.

N.B.: The effective torques already take the efficiency of the system into account.

For STEPPING motors, with the motor off, the drive current is automatically reduced by 50% to prevent overheating.
As a result, the torque available with the motor stopped is reduced by 50%.

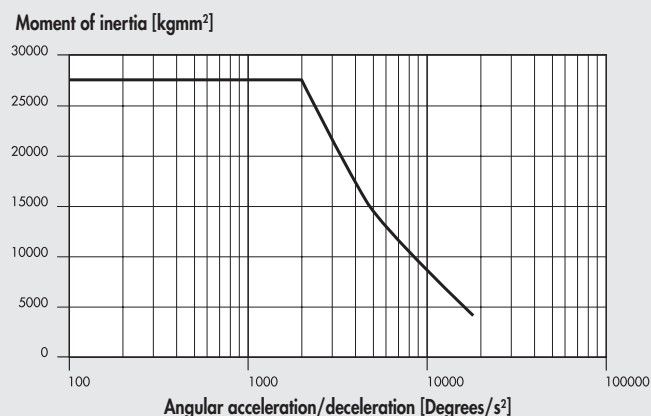
With regard to BRUSHLESS motors, two curves can be identified:

- **NOMINAL TORQUE** curve: the nominal torque delivered by the motor with a duty cycle of 100%
- **MAXIMUM TORQUE** curve: the maximum torque delivered by the motor with a duty cycle of less than 100%.

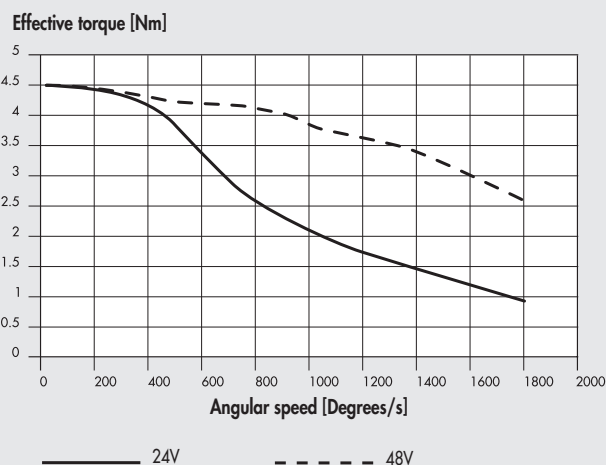
The following graphs refer to the actuator with drive supplied by Metal Work.
The use of different motors and drives may result in different performances.

STEPPING motor with encoder, with and without brake

Moment of inertia - Angular acceleration/deceleration

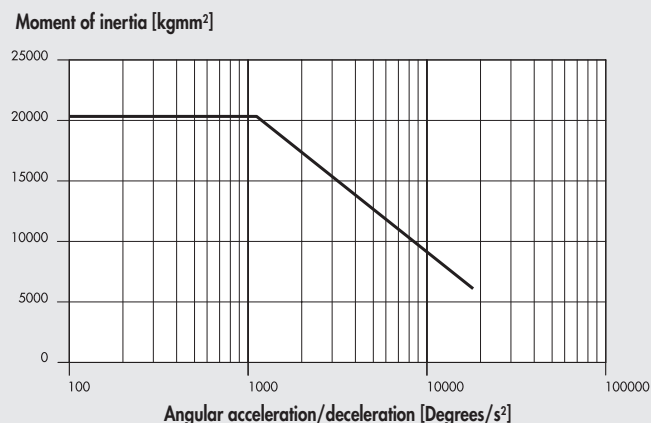


Torque - Angular speed

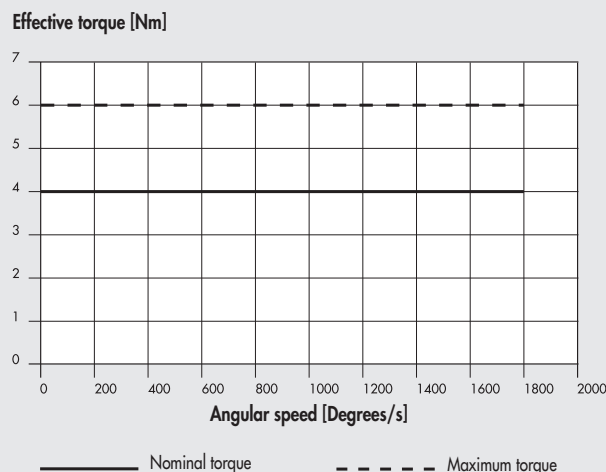


BRUSHLESS motor with and without brake

Moment of inertia - Angular acceleration/deceleration

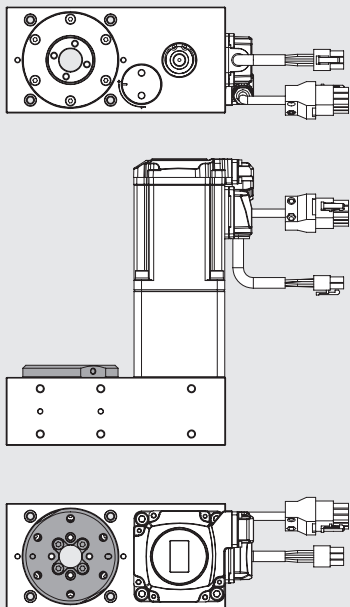


Torque - Angular speed

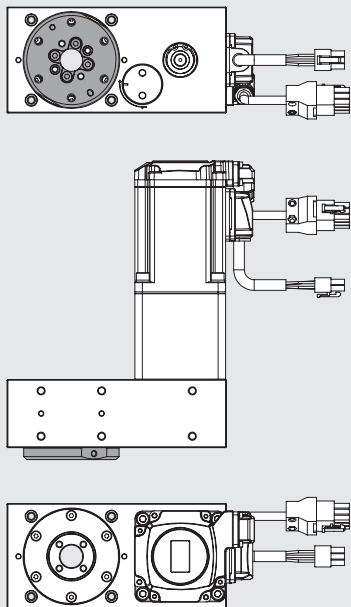


VERSIONS

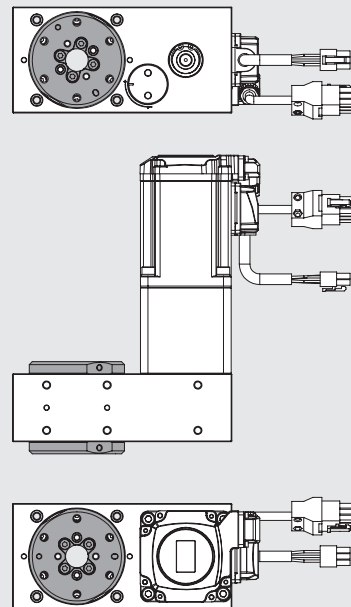
Version 37A010
(rotary flange on the motor side)



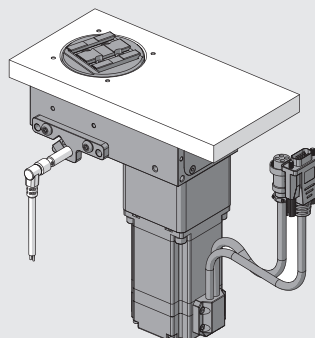
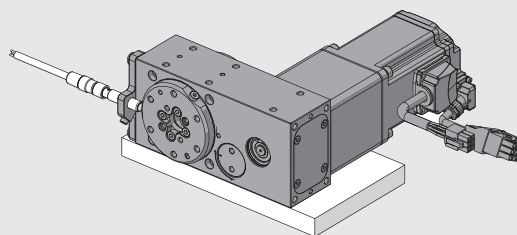
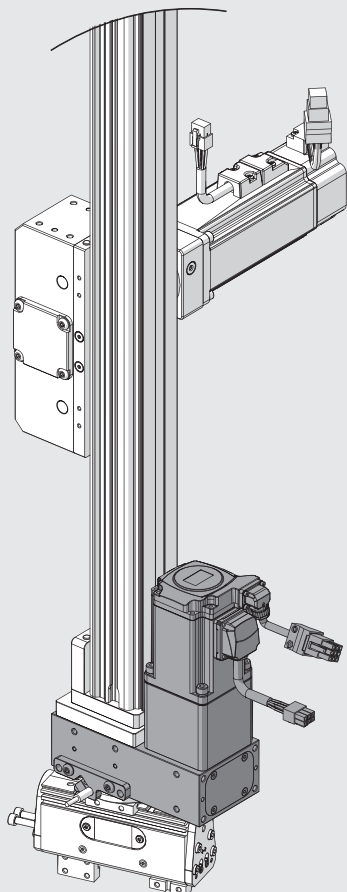
Version 37A011
(rotary flange opposite side of the motor)



Version 37A012
(rotary flange both sides)



EXAMPLES OF APPLICATION



VERSION WITHOUT MOTOR








ELECTRIC ROTARY ACTUATOR SERIES ELEKTRO RBA






STEPPING MOTOR + ENCODER	STEPPING MOTOR + ENCODER + BRAKE	BRUSHLESS MOTOR	BRUSHLESS MOTOR + BRAKE
37A0108120	37A0103120	37A0102220	37A0104220
37A0118120	37A0113120	37A0112220	37A0114220
37A0128120	37A0123120	37A0122220	37A0124220

MOTOR-DRIVE COUPLINGS

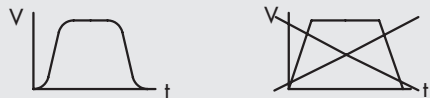


MOTOR CODES		DRIVES CODES	
			
	Metal Work		37D1332000 *
	Manufacturer		RTA NDC 96
Metal Work	Manufacturer		(5A 24÷75 VDC)
STEPPING MOTORS WITH ENCODER			
37M1820000	  STEPPERONLINE 23HS30-5004D-E1000		√ ♦
STEPPING MOTORS WITH ENCODER + BRAKE			
37M1320000	  STEPPERONLINE 23E1KBK20-20		√ ♦

* In all applications requiring motor powered up to 5A / 55VDC, the programmable drive e.drive, code 37D1332002, can be used.
♦ Important! Limit current.

MOTOR CODES		DRIVES CODES	
			
	Metal Work		37D2300002
	Manufacturer		DELTA ASD-B3A-0421-M
Metal Work	Manufacturer		(400W)
BRUSHLESS MOTORS			
37M2220002	  DELTA ECM-B3M-C20604RS1		√
BRUSHLESS MOTORS WITH BRAKE			
37M4220002	  DELTA ECM-B3M-C20604SS1		√

The motor must be controlled in such a way as to avoid sudden changes in speed.



KEY TO CODES ACTUATOR WITHOUT MOTOR

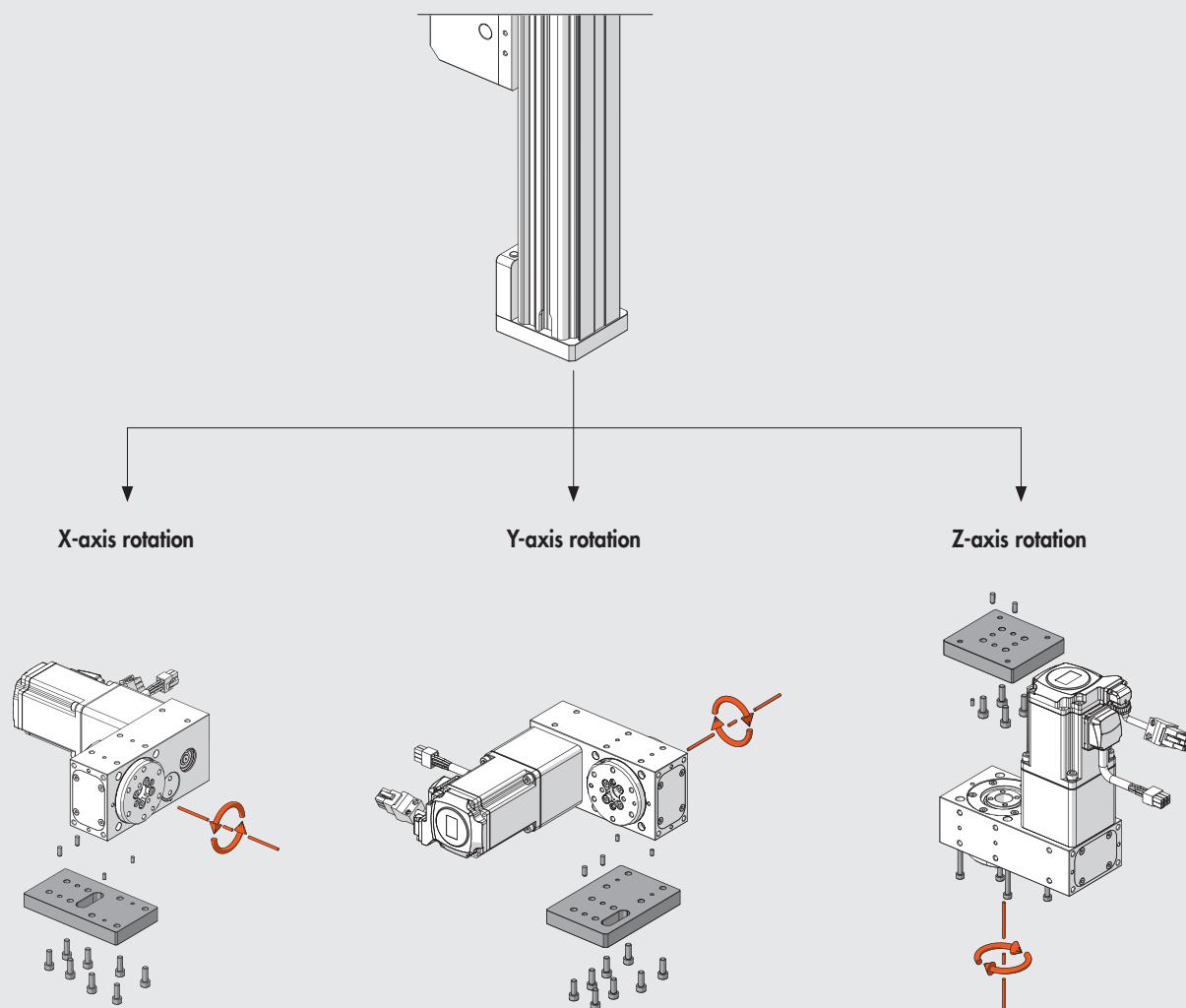
CYL	37	A	0	1	0
	TYPE			SIZE	ROTARY FLANGE POSITION
37	Electric actuators	A Rotary actuator RBA	0 STD	1 Size 1	0 Motor side 1 Opposite side 2 Both sides

KEY TO CODES ACTUATOR MOTOR

CYL	37	A	0	1	0	3	DRIVE	2	0
	TYPE			SIZE	ROTARY FLANGE POSITION	MOTOR	FLANGE	TORQUE	TURNS NO.
37	Electric actuators	A Rotary actuator RBA	0 STD	1 Size 1	0 Motor side 1 Opposite side 2 Both sides	2 BRUSHLESS 3 STEPPING with encoder and brake 4 BRUSHLESS with brake 8 STEPPING with encoder	1 NEMA 23 2 60	2 1.2 - 2.19 Nm	0 Base

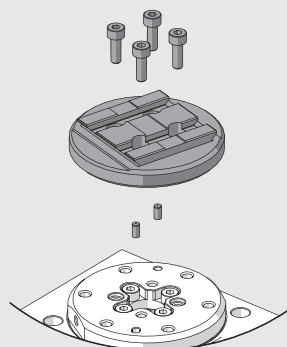
ACCESSORIES

RBA-1 FIXING BRACKETS ON VBK-1

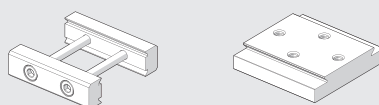


Code	Description	Weight [g]
095RE10004	RBA-1 fixing bracket on VBK, X-axis rotation	265
095RE10005	RBA-1 fixing bracket on VBK, Y-axis rotation	288
095RE10006	RBA-1 fixing bracket on VBK, Z-axis rotation	242

V-LOCK INTERFACE



FIXING ELEMENTS




DRIVES



Code	Description	Weight [g]
095RE10003	V-Lock interface RBA-1	82

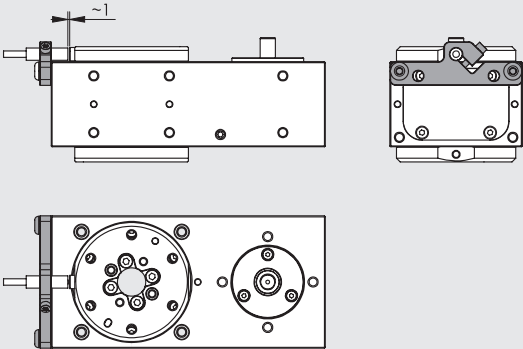
See V-Lock family.

For motor-drive couplings see table on page A5.182 

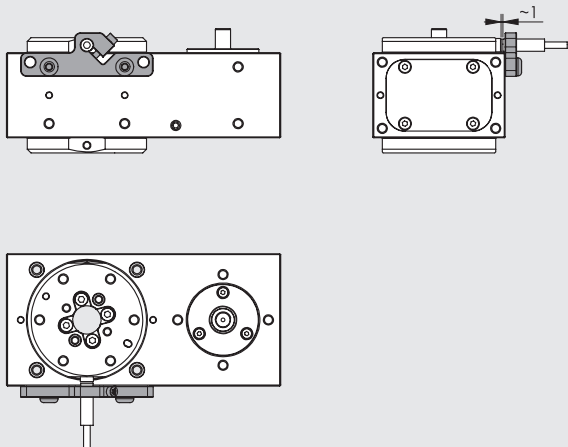
ACCESSORIES: MAGNETIC SENSORS

USE SENSORS

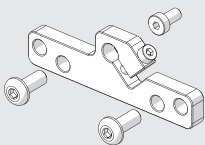
FRONT



LATERAL

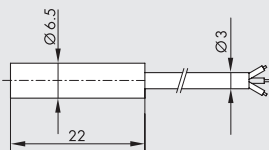


BRACKET FOR INDUCTIVE SENSOR



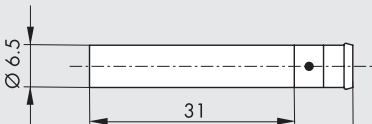
Code	Description	Weight [g]
095RE10001	Bracket for inductive sensor Ø 6.5 RBA-1	22
095RE10002	Bracket for inductive sensor Ø 8 RBA-1	22

INDUCTION SENSOR Ø 6.5



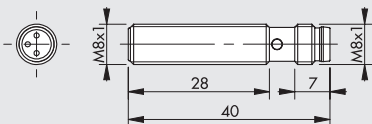
Code	Description
W095K030006	PNP Ø 6.5 PNP inductive sensor with LED 2 m

QUICK-FIT INDUCTIVE SENSOR Ø 6.5



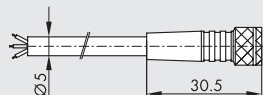
Code	Description
W095K030009	PNP Ø 6.5 inductive sensor with push-in LED

QUICK-FIT INDUCTIVE SENSOR M8



Code	Description
W095K030010	PNP M8 inductive sensor with push-in LED

CABLE WITH STRAIGHT CONNECTOR FOR PUSH-IN INDUCTIVE SENSOR (MOBILE INSTALLATION)

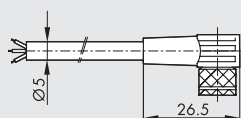


Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400A0100	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 1 m
02400A0250	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 2.5 m
02400A0500	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 5 m
02400A1000	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 10 m

Note: Very flexible cables, class 6 according to IEC 60228

CABLE WITH 90° CONNECTOR FOR PUSH-IN INDUCTIVE SENSOR (MOBILE INSTALLATION)

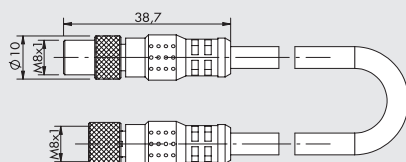


Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400B0100	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 1 m
02400B0250	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 2.5 m
02400B0500	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 5 m
02400B1000	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 10 m

Note: Very flexible cables, class 6 according to IEC 60228

M8 M – M8 F CONNECTOR FOR PUSH-IN INDUCTIVE SENSOR (MOBILE INSTALLATION)




Code	Description
0240009009	M8-M8 3-pin straight connector with cable L = 3 m

Note: Can be used for direct connection to the modules with digital INPUT of the EB 80 and CM valves

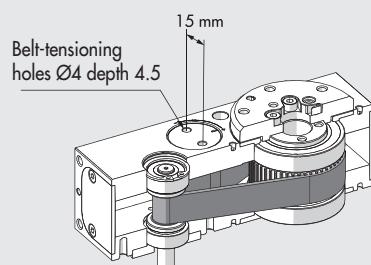
SPARE PARTS

ELECTRIC MOTORS



For motor-drive couplings see table on page **A5.182** 

TOOTHED BELT

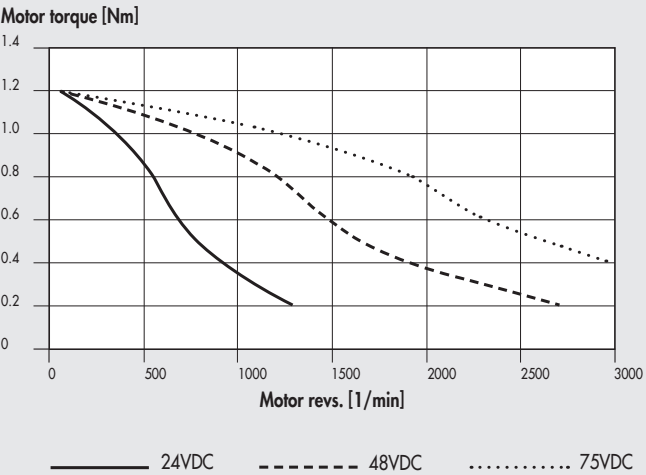
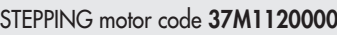


Code	Description
095RE10007	RBA-1 toothed belt kit

NOTES

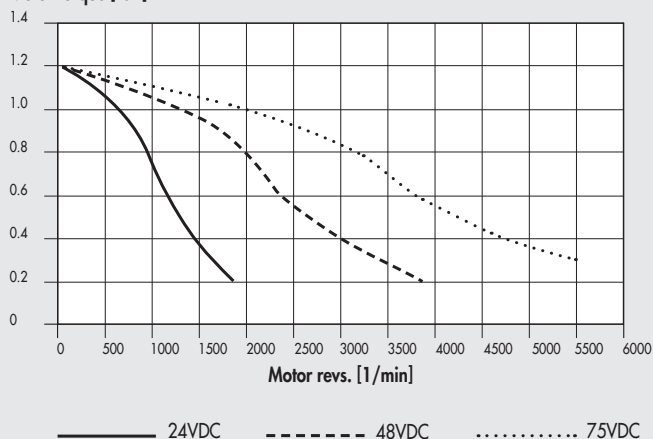
STEPPING MOTORS

STEPPING motor code **37M1110000**

[illegible][illegible]

STEPPING motor code **37M1120001**

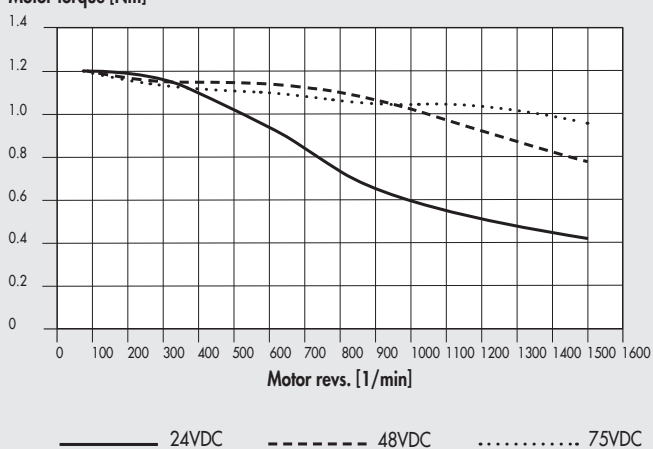
Motor torque [Nm]



TECHNICAL DATA		MOTOR 37M1120001
Motor type		STEPPING
Nominal torque	Nm	1.2
Coupling flange		NEMA 23
Base step angle		1.8°±0.09°
Bipolar current	A	5.6
Resistance	Ω	0.3
Inductance	mH	0.85
Bipolar holding torque	Nm	1.65
Rotor inertia	kgmm ²	36
Theoretical acceleration	rad · s ⁻²	45800
Back E.M.F.	V/krpm	23
Mass	kg	1
Degree of protection		IP43

STEPPING motor code **37M1220000**

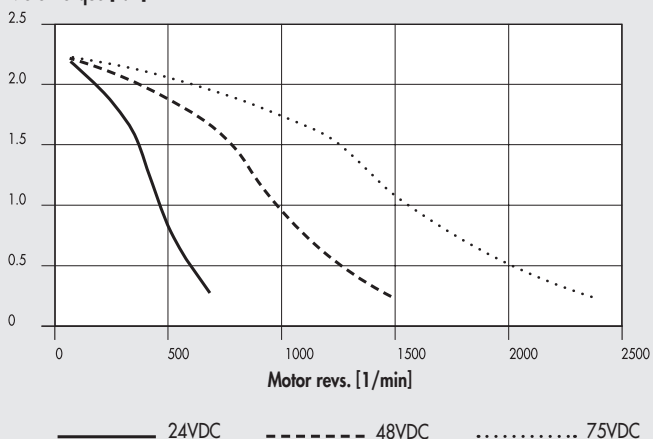
Motor torque [Nm]



TECHNICAL DATA		MOTOR 37M1220000
Motor type		STEPPING
Nominal torque	Nm	1.2
Coupling flange (square)	mm	60
Base step angle		1.8°
Current	A	5
Resistance	Ω	0.38
Inductance	mH	1.4
Bipolar holding torque	Nm	1.7
Rotor inertia	kgmm ²	44
Mass	kg	1.28
Degree of protection		IP65
CABLE		
Power cable for stepping motors with brake, 1 metre		supplied

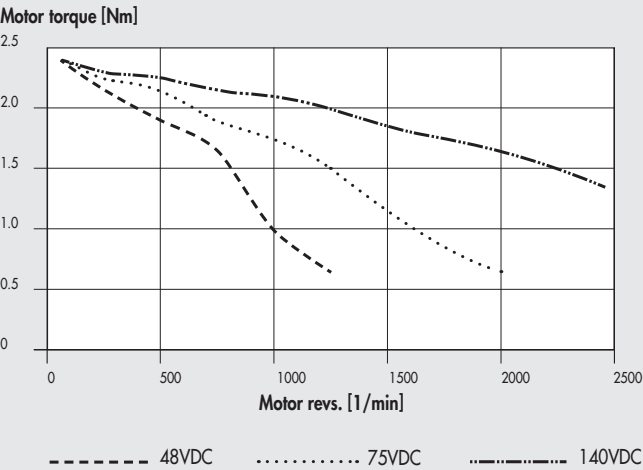
STEPPING motor code **37M1230000**

Motor torque [Nm]

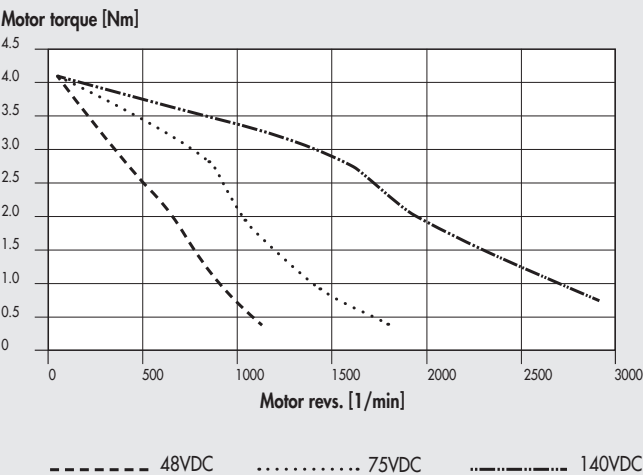


TECHNICAL DATA		MOTOR 37M1230000
Motor type		STEPPING
Nominal torque	Nm	2.2
Coupling flange (square)	mm	60
Base step angle		1.8°±0.09°
Bipolar current	A	4
Resistance	Ω	0.65
Inductance	mH	2.4
Bipolar holding torque	Nm	3
Rotor inertia	kgmm ²	84
Theoretical acceleration	rad · s ⁻²	35700
Back E.M.F.	V/krpm	75
Mass	kg	1.4
Degree of protection		IP40

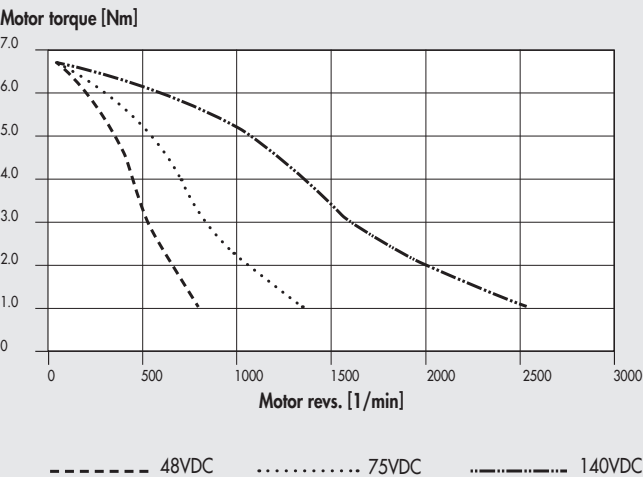
STEPPING motor code **37M1430000**



STEPPING motor code **37M1440000**



STEPPING motor code **37M1450000**



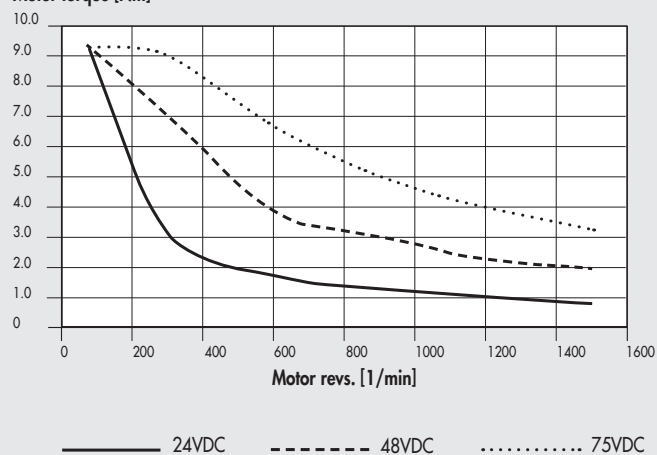
TECHNICAL DATA		MOTOR 37M1430000
Motor type		STEPPING
Nominal torque	Nm	2.4
Coupling flange		NEMA 34
Base step angle		1.8°±0.09°
Bipolar current	A	6
Resistance	Ω	0.3
Inductance	mH	1.65
Bipolar holding torque	Nm	3
Rotor inertia	kgmm ²	145
Theoretical acceleration	rad · s ⁻²	20600
Back E.M.F.	V/krpm	50
Mass	kg	1.5
Degree of protection		IP43

TECHNICAL DATA		MOTOR 37M1440000
Motor type		STEPPING
Nominal torque	Nm	4.2
Coupling flange		NEMA 34
Base step angle		1.8°±0.09°
Bipolar current	A	6
Resistance	Ω	0.35
Inductance	mH	2.7
Bipolar holding torque	Nm	5.6
Rotor inertia	kgmm ²	290
Theoretical acceleration	rad · s ⁻²	19300
Back E.M.F.	V/krpm	93
Mass	kg	2.5
Degree of protection		IP43

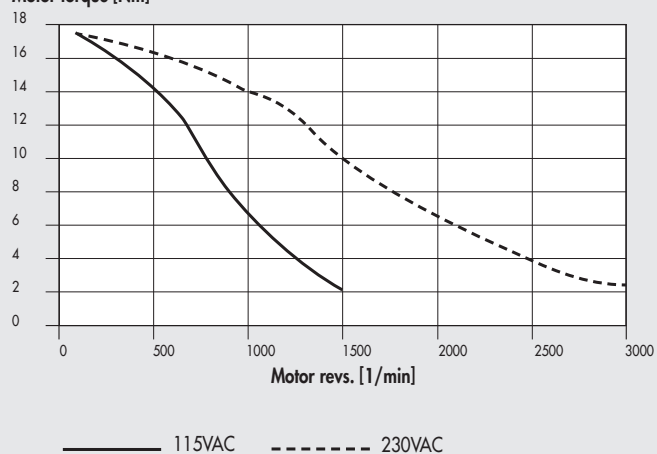
TECHNICAL DATA		MOTOR 37M1450000
Motor type		STEPPING
Nominal torque	Nm	6.7
Coupling flange		NEMA 34
Base step angle		1.8°±0.09°
Bipolar current parallel	A	6
Resistance	Ω	0.46
Inductance	mH	3.8
Bipolar holding torque	Nm	9.2
Rotor inertia	kgmm ²	450
Theoretical acceleration	rad · s ⁻²	20500
Back E.M.F.	V/krpm	161
Mass	kg	4
Certifications		UL, CSA, CE, RoHS
Insulation voltage		250VAC (350VDC)
Degree of protection		IP43 - F

STEPPING motor code **37M1470000**

Motor torque [Nm]

STEPPING motor code **37M1890000**

Motor torque [Nm]



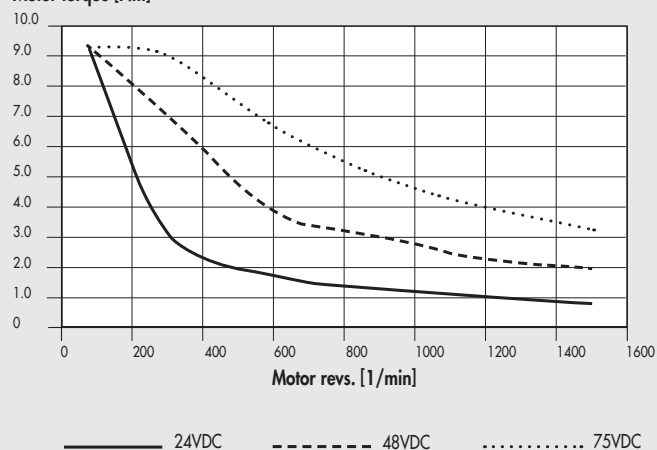
TECHNICAL DATA

		MOTOR 37M1470000
Motor type		STEPPING
Nominal torque	Nm	9.3
Coupling flange		NEMA 34
Base step angle		1.8°
Bipolar current	A	10
Resistance	Ω	0.24
Inductance	mH	1.6
Bipolar holding torque	Nm	13.6
Rotor inertia	kgmm ²	392
Mass	kg	4.2
Degree of protection		IP40

TECHNICAL DATA

		MOTOR 37M1890000
Motor type		STEPPING
Nominal torque	Nm	17.5
Coupling flange		NEMA 42
Base step angle		1.8°±0.09°
Bipolar current	A	6
Resistance	Ω	0.63
Inductance	mH	8
Bipolar holding torque	Nm	24.6
Rotor inertia	kgmm ²	2200
Theoretical acceleration	rad · s ⁻²	11100
Back E.M.F.	V/krpm	410
Mass	kg	10
Degree of protection		IP43

NOTES

STEPPING motor with ENCODER code 37M8470000
Motor torque [Nm]

TECHNICAL DATA

Motor type		STEPPING with ENCODER
Nominal torque	Nm	9.3
Coupling flange		NEMA 34
Base step angle		1.8°
Bipolar current	A	10
Resistance	Ω	0.24
Inductance	mH	1.6
Bipolar holding torque	Nm	13.6
Rotor inertia	kgmm ²	392
Mass	kg	4.3
Degree of protection		IP65

ENCODER

Number of outputs		3 A / B / R
Resolution	positions per rev	1024
Supply voltage	VDC	18 - 30

CABLES

Encoder cable for stepping motors with brake, 3 metres	37C1230000
Power cable for stepping motors with brake, 3 metres	37C1330000
Encoder cable for stepping motors with brake, 5 metres	37C1250000
Power cable for stepping motors with brake, 5 metres	37C1350000

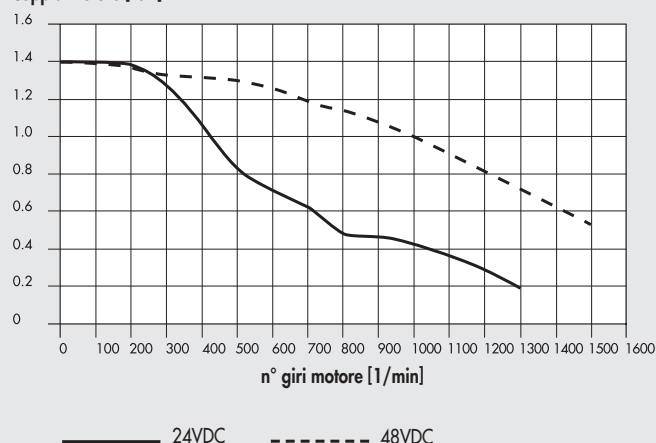
NOTES

STEPPING MOTORS WITH BRAKE + ENCODER

TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC STEPPING MOTORS WITH BRAKE + ENCODER

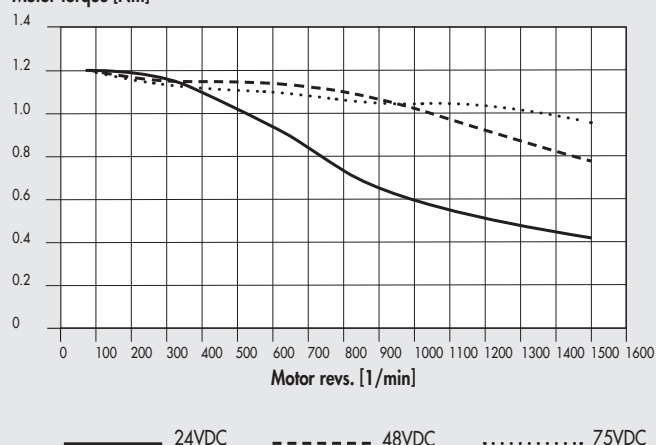
STEPPING motor with BRAKE + ENCODER code **37M1320000**

Coppia motore [Nm]



STEPPING motor with BRAKE + ENCODER code **37M3220000**

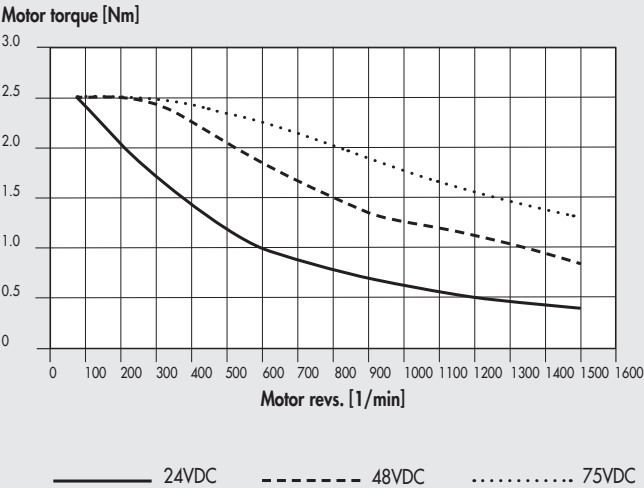
Motor torque [Nm]



TECHNICAL DATA		MOTOR 37M1320000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	1.4
Coupling flange (square)	mm	NEMA 23
Base step angle		1.8°
Current	A	5
Resistance	Ω	0.4
Inductance	mH	1.8
Bipolar holding torque	Nm	2
Rotor inertia	kgmm ²	48
Mass	kg	1.8
Degree of protection		IP40
ENCODER		
Number of outputs		2 A / B (differential)
Resolution	positions per rev	1000
Supply voltage	VDC	5±10%
BRAKE		
Supply voltage	VDC	24±10%
Braking torque	Nm	2
Power consumption	W	11
CABLES		
Encoder cable for stepping motors with brake, 5 metres		37C1250001
Power cable for stepping motors with brake, 5 metres		37C1150000
Encoder cable for stepping motors with brake, 10 metres		37C1200003
Power cable for stepping motors with brake, 10 metres		37C1100000

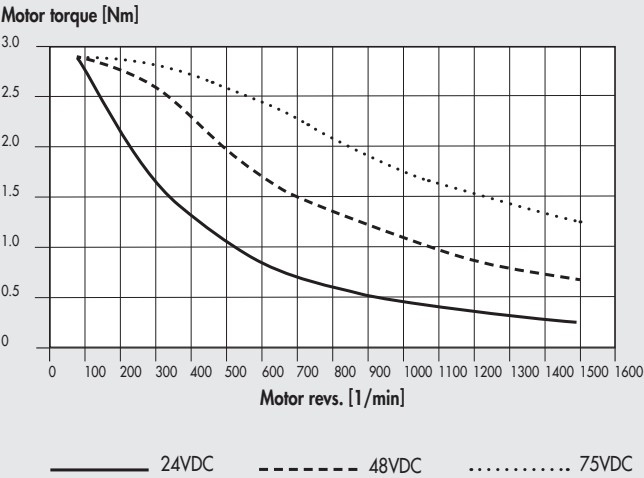
TECHNICAL DATA		MOTOR 37M3220000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	1.2
Coupling flange (square)	mm	60
Base step angle		1.8°
Current	A	5
Resistance	Ω	0.38
Inductance	mH	1.4
Bipolar holding torque	Nm	1.7
Rotor inertia	kgmm ²	44
Mass	kg	1.28
Degree of protection		IP65
ENCODER		
Number of outputs		3 A / B / R
Resolution	positions per rev	1024
Supply voltage	VDC	18 - 30
BRAKE		
Supply voltage	VDC	24 +6% / -10%
Braking torque	Nm	2
Power consumption	W	11
Connecting time	ms	6
Delay time	ms	2
Disconnection time	ms	25
CABLES		
Encoder cable for stepping motors with brake, 3 metres		37C1230000
Power cable for stepping motors with brake, 3 metres		37C1330000
Encoder cable for stepping motors with brake, 5 metres		37C1250000
Power cable for stepping motors with brake, 5 metres		37C1350000

STEPPING motor with BRAKE + ENCODER code **37M3230000**

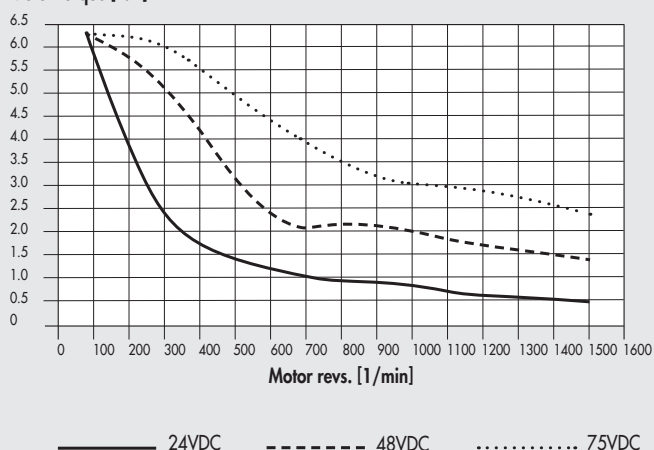


TECHNICAL DATA		MOTOR 37M3230000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	2.5
Coupling flange (square)	mm	60
Base step angle		1.8°
Bipolar current	A	5
Resistance	Ω	0.6
Inductance	mH	2.8
Bipolar holding torque	Nm	3.5
Rotor inertia	kgmm ²	92
Mass	kg	1.8
Degree of protection		IP65
ENCODER		
Number of outputs		3 A / B / R
Resolution	positions per rev	1024
Supply voltage	VDC	18 - 30
BRAKE		
Supply voltage	VDC	24 +6% / -10%
Braking torque	Nm	2
Power consumption	W	11
Connecting time	ms	6
Delay time	ms	2
Disconnection time	ms	25
CABLES		
Encoder cable for stepping motors with brake, 3 metres		37C1230000
Power cable for stepping motors with brake, 3 metres		37C1330000
Encoder cable for stepping motors with brake, 5 metres		37C1250000
Power cable for stepping motors with brake, 5 metres		37C1350000

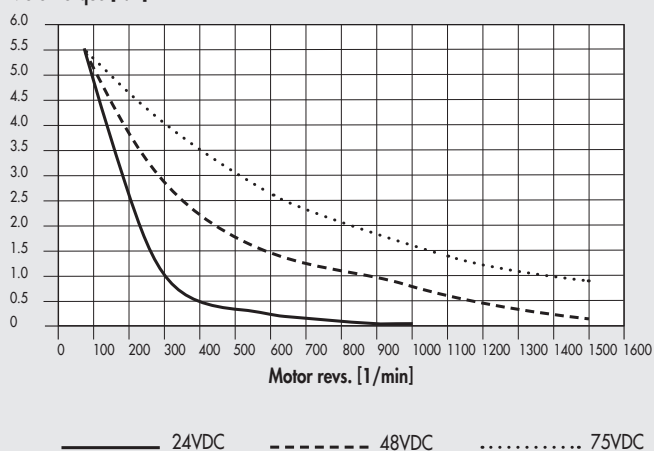
STEPPING motor with BRAKE + ENCODER code **37M3430000**



TECHNICAL DATA		MOTOR 37M3430000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	2.9
Coupling flange		NEMA 34
Base step angle		1.8°
Bipolar current	A	6
Resistance	Ω	0.4
Inductance	mH	3.2
Bipolar holding torque	Nm	4
Rotor inertia	kgmm ²	131
Mass	kg	2.5
Degree of protection		IP65
ENCODER		
Number of outputs		3 A / B / R
Resolution	positions per rev	1024
Supply voltage	VDC	18 - 30
BRAKE		
Supply voltage	VDC	24 +6% / -10%
Braking torque	Nm	9
Power consumption	W	18
Connecting time	ms	7
Delay time	ms	2
Disconnection time	ms	40
CABLES		
Encoder cable for stepping motors with brake, 3 metres		37C1230000
Power cable for stepping motors with brake, 3 metres		37C1330000
Encoder cable for stepping motors with brake, 5 metres		37C1250000
Power cable for stepping motors with brake, 5 metres		37C1350000

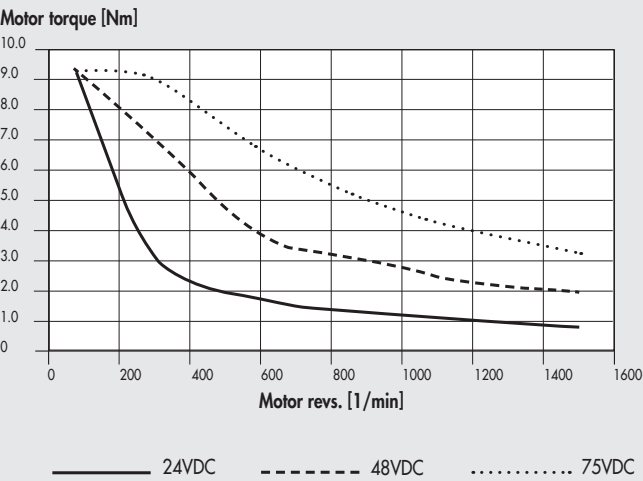
STEPPING motor with BRAKE + ENCODER code 37M3450000
Motor torque [Nm]


TECHNICAL DATA		MOTOR 37M3450000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	6.3
Coupling flange		NEMA 34
Base step angle		1.8°
Bipolar current	A	10
Resistance	Ω	0.2
Inductance	mH	1.4
Bipolar holding torque	Nm	9.5
Rotor inertia	kgmm ²	261
Mass	kg	3.7
Degree of protection		IP65
ENCODER		
Number of outputs		3 A / B / R
Resolution	positions per rev	1024
Supply voltage	VDC	18 - 30
BRAKE		
Supply voltage	VDC	24 +6% / -10%
Braking torque	Nm	9
Power consumption	W	18
Connecting time	ms	7
Delay time	ms	2
Disconnection time	ms	40
CABLES		
Encoder cable for stepping motors with brake, 3 metres		37C1230000
Power cable for stepping motors with brake, 3 metres		37C1330000
Encoder cable for stepping motors with brake, 5 metres		37C1250000
Power cable for stepping motors with brake, 5 metres		37C1350000

STEPPING motor with BRAKE + ENCODER code 37M3460000
Motor torque [Nm]


TECHNICAL DATA		MOTOR 37M3460000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	5.5
Coupling flange		NEMA 34
Base step angle		1.8°
Bipolar current	A	6
Resistance	Ω	0.6
Inductance	mH	4.3
Bipolar holding torque	Nm	7.8
Rotor inertia	kgmm ²	261
Mass	kg	3.7
Degree of protection		IP65
ENCODER		
Number of outputs		3 A / B / R
Resolution	positions per rev	1024
Supply voltage	VDC	18 - 30
BRAKE		
Supply voltage	VDC	24 +6% / -10%
Braking torque	Nm	9
Power consumption	W	18
Connecting time	ms	7
Delay time	ms	2
Disconnection time	ms	40
CABLES		
Encoder cable for stepping motors with brake, 3 metres		37C1230000
Power cable for stepping motors with brake, 3 metres		37C1330000
Encoder cable for stepping motors with brake, 5 metres		37C1250000
Power cable for stepping motors with brake, 5 metres		37C1350000

STEPPING motor with BRAKE + ENCODER code **37M3470000**



TECHNICAL DATA		MOTOR 37M3470000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	9.3
Coupling flange		NEMA 34
Base step angle		1.8°
Bipolar current	A	10
Resistance	Ω	0.24
Inductance	mH	1.6
Bipolar holding torque	Nm	13.6
Rotor inertia	kgmm²	392
Mass	kg	4.9
Degree of protection		IP65
ENCODER		
Number of outputs		3 A / B / R
Resolution	positions per rev	1024
Supply voltage	VDC	18 - 30
BRAKE		
Supply voltage	VDC	24 +6% / -10%
Braking torque	Nm	9
Power consumption	W	18
Connecting time	ms	7
Delay time	ms	2
Disconnection time	ms	40
CABLES		
Encoder cable for stepping motors with brake, 3 metres		37C1230000
Power cable for stepping motors with brake, 3 metres		37C1330000
Encoder cable for stepping motors with brake, 5 metres		37C1250000
Power cable for stepping motors with brake, 5 metres		37C1350000

NOTES

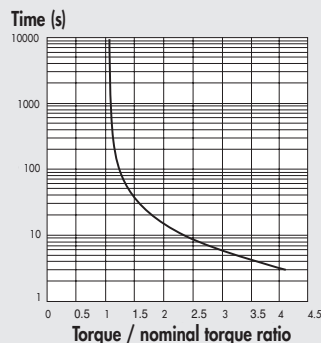
BRUSHLESS MOTORS



BRUSHLESS MOTORS

OVERLOAD CURVES FOR ELECTRIC BRUSHLESS MOTORS (SANYO DENKI)

The torque used can exceed the nominal torque within the time limits shown in the diagram. Never exceed the maximum torque.



ACTUATORS

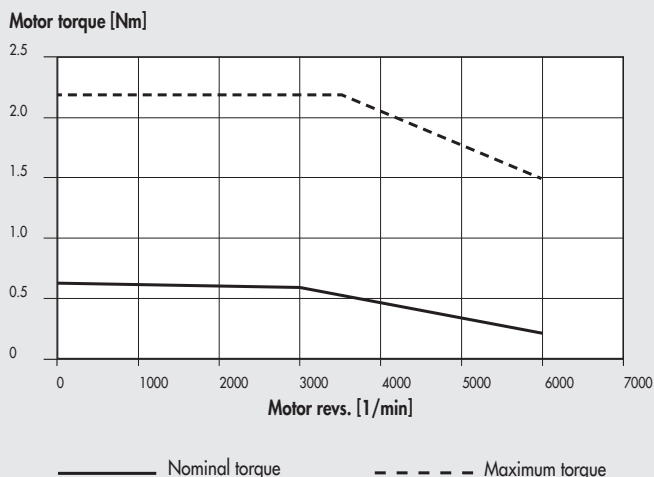
BRUSHLESS MOTORS

TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC BRUSHLESS MOTORS (SANYO DENKI)

The following diagrams show the torque delivered by the motor with changing speed (rpm). Each diagram shows two separate curves:

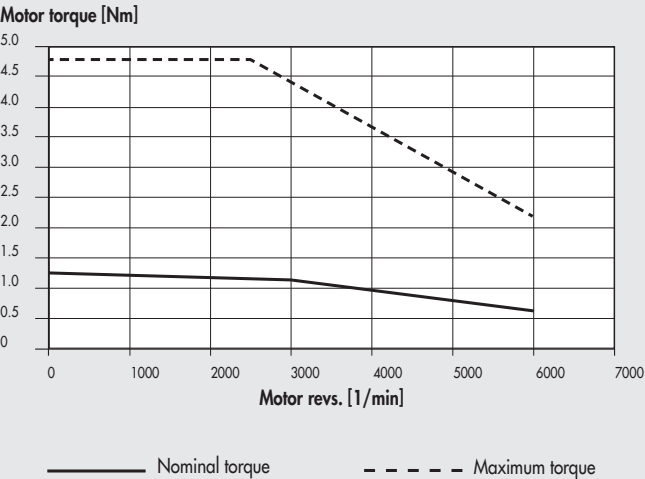
- **NOMINAL TORQUE** curve: the nominal torque delivered by the motor with a duty cycle of 100%
- **MAXIMUM TORQUE** curve: the torque delivered by the motor with a duty cycle of less than 100%

BRUSHLESS motor code **37M2200000** +
drive code **37D2400008** (200W)



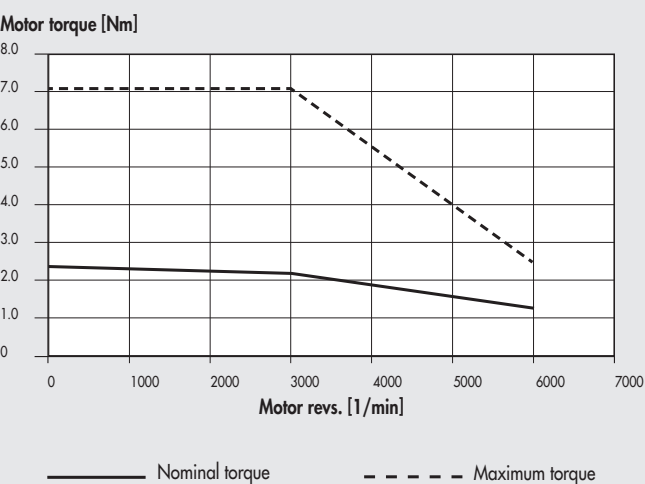
TECHNICAL DATA		MOTOR 37M2200000
Motor type		BRUSHLESS
Nominal torque	Nm	0.64
Coupling flange (square)	mm	60
Nominal power	W	200
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	0.686
Maximum torque	Nm	2.2
Rotor inertia	kgmm ²	21.9
Mass	kg	0.84
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
DRIVE	code	37D2400008
CABLES		
Brushless motor-drive, 3 metres		37C2130005
Brushless motor-drive-encoder, 3 metres		37C2230005
Brushless motor-drive, dynamic cable, 3 metres		37C2130004
Brushless motor-drive-encoder, dynamic cable, 3 metres		37C2230004
Brushless motor-drive, 5 metres		37C2150005
Brushless motor-drive-encoder, 5 metres		37C2250005
Brushless motor-drive, dynamic cable, 5 metres		37C2150004
Brushless motor-drive-encoder, dynamic cable, 5 metres		37C2250004
Brushless motor-drive, dynamic cable, 10 metres		37C2100004
Brushless motor-drive-encoder, dynamic cable, 10 metres		37C2200004

BRUSHLESS motor code **37M2220000** +
drive code **37D2400008** (400W)



TECHNICAL DATA		MOTOR 37M2220000
Motor type		BRUSHLESS
Nominal torque	Nm	1.27
Coupling flange (square)	mm	60
Nominal power	W	400
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	1.37
Maximum torque	Nm	4.8
Rotor inertia	kgmm ²	41.2
Mass	kg	1.3
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
DRIVE	code	37D2400008
CABLES		
Brushless motor-drive, 3 metres		37C2130005
Brushless motor-drive-encoder, 3 metres		37C2230005
Brushless motor-drive, dynamic cable, 3 metres		37C2130004
Brushless motor-drive-encoder, dynamic cable, 3 metres		37C2230004
Brushless motor-drive, 5 metres		37C2150005
Brushless motor-drive-encoder, 5 metres		37C2250005
Brushless motor-drive, dynamic cable, 5 metres		37C2150004
Brushless motor-drive-encoder, dynamic cable, 5 metres		37C2250006
Brushless motor-drive, dynamic cable, 10 metres		37C2100004
Brushless motor-drive-encoder, dynamic cable, 10 metres		37C2200004

BRUSHLESS motor code **37M2330000** +
drive code **37D2400008** (750W)



DATI TECNICI		MOTORE 37M2330000
Motor type		BRUSHLESS
Nominal torque	Nm	2.39
Coupling flange (square)	mm	80
Nominal power	W	750
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	2.55
Maximum torque	Nm	7.1
Rotor inertia	kgmm ²	182
Mass	kg	2.6
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
DRIVE	code	37D2400008
CABLES		
Brushless motor-drive, 3 metres		37C2130005
Brushless motor-drive-encoder, 3 metres		37C2230005
Brushless motor-drive, dynamic cable, 3 metres		37C2130004
Brushless motor-drive-encoder, dynamic cable, 3 metres		37C2230004
Brushless motor-drive, 5 metres		37C2150005
Brushless motor-drive-encoder, 5 metres		37C2250005
Brushless motor-drive, dynamic cable, 5 metres		37C2150004
Brushless motor-drive-encoder, dynamic cable, 5 metres		37C2250006
Brushless motor-drive, dynamic cable, 10 metres		37C2100004
Brushless motor-drive-encoder, dynamic cable, 10 metres		37C2200004

———— Nominal torque - - - - - Maximum torque

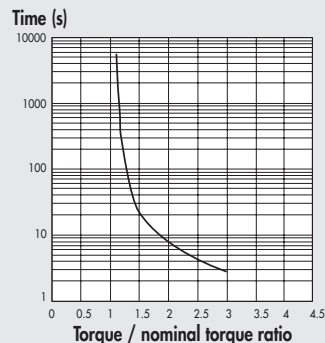
ACTUATORS

BRUSHLESS MOTORS

NOTES

OVERLOAD CURVES FOR ELECTRIC BRUSHLESS MOTORS (DELTA)

The torque used can exceed the nominal torque within the time limits shown in the diagram. Never exceed the maximum torque.

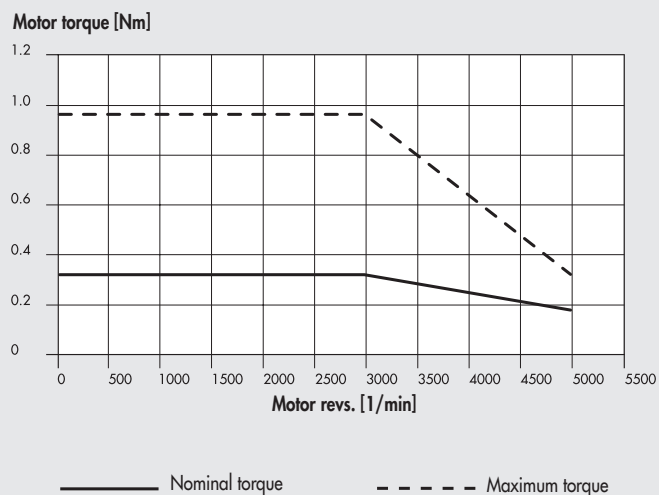


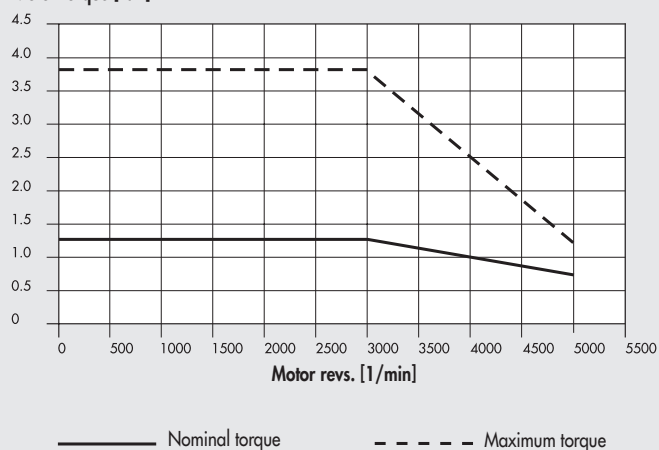
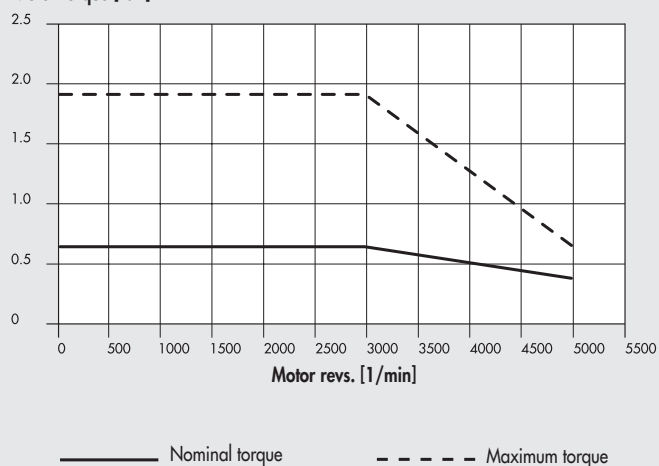
TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC BRUSHLESS MOTORS (DELTA)

The following diagrams show the torque delivered by the motor with changing speed (rpm). Each diagram shows two separate curves:

- **NOMINAL TORQUE** curve: the nominal torque delivered by the motor with a duty cycle of 100%
- **MAXIMUM TORQUE** curve: the torque delivered by the motor with a duty cycle of less than 100%

BRUSHLESS motor code **37M2000000** +
drive code **37D2100000** (100W)

[illegible]



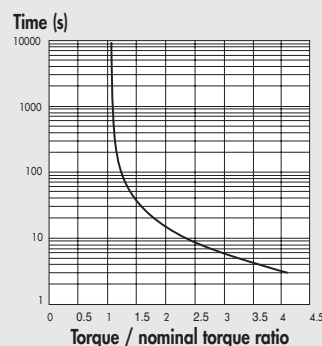
TECHNICAL DATA	MOTOR 37M2200001
Motor type	BRUSHLESS
Nominal torque	Nm 0.64
Coupling flange (square)	mm 60
Nominal power	W 200
Nominal speed	rpm 3000
Maximum speed	rpm 5000
Stall torque	Nm 0.64
Maximum torque	Nm 1.92
Rotor inertia	kgmm ² 17.7
Mass	kg 1.2
Encoder	pulse/rev 131072 (17 bit)
Degree of protection	IP65
DRIVE	code 37D2200001
CABLES	
Brushless motor-drive, dynamic cable, 3 metres	37C2130002
Brushless motor-drive-encoder, dynamic cable, 3 metres	37C2230002
Brushless motor-drive, dynamic cable, 5 metres	37C2150002
Brushless motor-drive-encoder, dynamic cable, 5 metres	37C2250002
Brushless motor-drive connecting dynamic cable, 10 metres	37C2100003
Brushless motor-drive-encoder, dynamic cable, 10 metres	37C2200003

[illegible]

BRUSHLESS MOTORS WITH BRAKE

OVERLOAD CURVES FOR ELECTRIC BRUSHLESS MOTORS (SANYO DENKI)

The torque used can exceed the nominal torque within the time limits shown in the diagram. Never exceed the maximum torque.

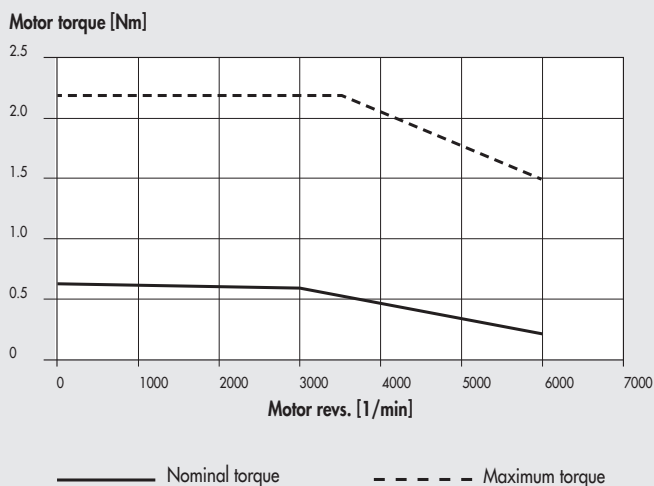


TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC BRUSHLESS MOTORS WITH BRAKE (SANYO DENKI)

The following diagrams show the torque delivered by the motor with changing speed (rpm). Each diagram shows two separate curves:

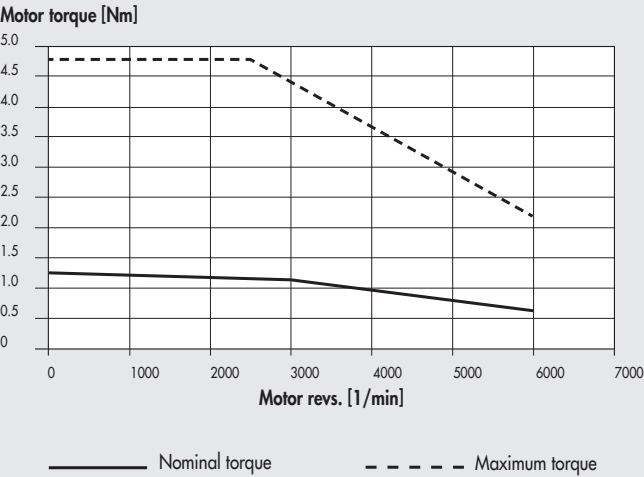
- **NOMINAL TORQUE** curve: the nominal torque delivered by the motor with a duty cycle of 100%
- **MAXIMUM TORQUE** curve: the torque delivered by the motor with a duty cycle of less than 100%

BRUSHLESS motor with BRAKE code **37M4200000** +
drive code **37D2400008** (200W)

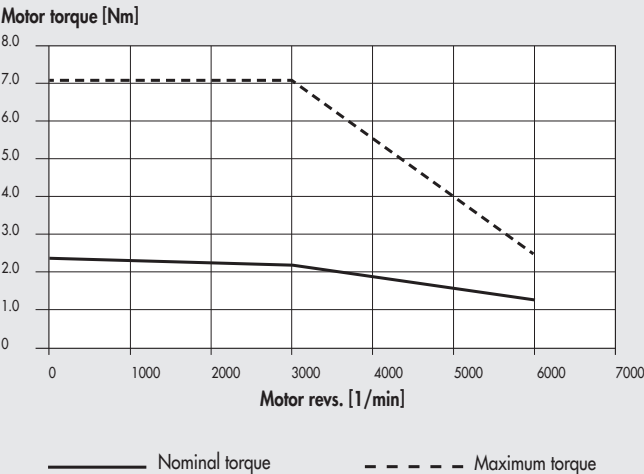


TECHNICAL DATA		MOTOR 37M4200000 BRUSHLESS with BRAKE
Motor type		
Nominal torque	Nm	0.64
Coupling flange (square)	mm	60
Nominal power	W	200
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	0.686
Maximum torque	Nm	2.2
Rotor inertia	kgmm ²	27.9
Mass	kg	1.23
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	1.37 min
DRIVE	code	37D2400008
CABLES		
Brushless motor-drive, 3 metres		37C2130005
Brushless motor-drive-encoder, 3 metres		37C2230005
Brushless motor-drive, dynamic cable, 3 metres		37C2130004
Brushless motor-drive-encoder, dynamic cable, 3 metres		37C2230004
Brushless motor-brake, dynamic cable, 3 metres		37C2330000
Brushless motor-drive, 5 metres		37C2150005
Brushless motor-drive-encoder, 5 metres		37C2250005
Brushless motor-drive, dynamic cable, 5 metres		37C2150004
Brushless motor-drive-encoder, dynamic cable, 5 metres		37C2250006
Brushless motor-brake, dynamic cable, 5 metres		37C2350000
Brushless motor-drive, dynamic cable, 10 metres		37C2100004
Brushless motor-drive-encoder, dynamic cable, 10 metres		37C2200004
Brushless motor-brake, dynamic cable, 10 metres		37C2310000

BRUSHLESS motor with BRAKE code **37M4220000** +
drive code **37D2400008** (400W)



BRUSHLESS motor with BRAKE code **37M4330000** +
drive code **37D2400008** (750W)

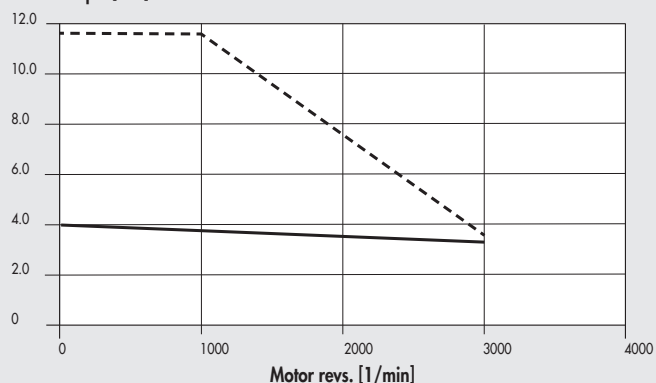


TECHNICAL DATA		MOTOR 37M4220000
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	1.27
Coupling flange (square)	mm	60
Nominal power	W	400
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	1.37
Maximum torque	Nm	4.8
Rotor inertia	kgmm ²	47.2
Mass	kg	1.69
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	1.37 min
DRIVE	code	37D2400008
CABLES		
Brushless motor-drive, 3 metres		37C2130005
Brushless motor-drive-encoder, 3 metres		37C2230005
Brushless motor-drive, dynamic cable, 3 metres		37C2130004
Brushless motor-drive-encoder, dynamic cable, 3 metres		37C2230004
Brushless motor-brake, dynamic cable, 3 metres		37C2330000
Brushless motor-drive, 5 metres		37C2150005
Brushless motor-drive-encoder, 5 metres		37C2250005
Brushless motor-drive, dynamic cable, 5 metres		37C2150004
Brushless motor-drive-encoder, dynamic cable, 5 metres		37C2250006
Brushless motor-brake, dynamic cable, 5 metres		37C2350000
Brushless motor-drive, dynamic cable, 10 metres		37C2100004
Brushless motor-drive-encoder, dynamic cable, 10 metres		37C2200004
Brushless motor-brake, dynamic cable, 10 metres		37C2310000

TECHNICAL DATA		MOTOR 37M4330000
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	2.39
Coupling flange (square)	mm	80
Nominal power	W	750
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	2.55
Maximum torque	Nm	7.1
Rotor inertia	kgmm ²	207
Mass	kg	2.19
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	2.55 min
DRIVE	code	37D2400008
CABLES		
Brushless motor-drive, 3 metres		37C2130005
Brushless motor-drive-encoder, 3 metres		37C2230005
Brushless motor-drive, dynamic cable, 3 metres		37C2130004
Brushless motor-drive-encoder, dynamic cable, 3 metres		37C2230004
Brushless motor-brake, dynamic cable, 3 metres		37C2330000
Brushless motor-drive, 5 metres		37C2150005
Brushless motor-drive-encoder, 5 metres		37C2250005
Brushless motor-drive, dynamic cable, 5 metres		37C2150004
Brushless motor-drive-encoder, dynamic cable, 5 metres		37C2250006
Brushless motor-brake, dynamic cable, 5 metres		37C2350000
Brushless motor-drive, dynamic cable, 10 metres		37C2100004
Brushless motor-drive-encoder, dynamic cable, 10 metres		37C2200004
Brushless motor-brake, dynamic cable, 10 metres		37C2310000

BRUSHLESS motor with BRAKE code **37M4540000** +
drive code **37D2400008** (1000W)

Motor torque [Nm]



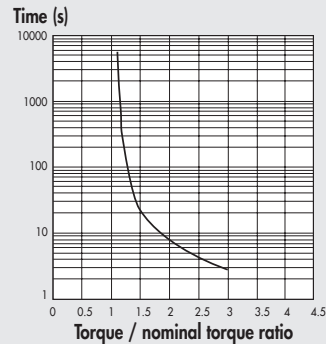
———— Nominal torque - - - - - Maximum torque

TECHNICAL DATA		MOTOR 37M4540000
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	3.18
Coupling flange (square)	mm	86
Nominal power	W	1000
Nominal speed	rpm	3000
Maximum speed	rpm	3000
Stall torque	Nm	3.92
Maximum torque	Nm	11.6
Rotor inertia	kgmm ²	272.6
Mass	kg	4.34
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	3.92 min
DRIVE		
DRIVE		code 37D2400008
CABLES		
Brushless motor-drive, 3 metres		37C2130005
Brushless motor-drive-encoder, 3 metres		37C2230005
Brushless motor-drive, dynamic cable, 3 metres		37C2130004
Brushless motor-drive-encoder, dynamic cable, 3 metres		37C2230004
Brushless motor-brake, dynamic cable, 3 metres		37C2330000
Brushless motor-drive, 5 metres		37C2150005
Brushless motor-drive-encoder, 5 metres		37C2250005
Brushless motor-drive, dynamic cable, 5 metres		37C2150004
Brushless motor-drive-encoder, dynamic cable, 5 metres		37C2250006
Brushless motor-brake, dynamic cable, 5 metres		37C2350000
Brushless motor-drive, dynamic cable, 10 metres		37C2100004
Brushless motor-drive-encoder, dynamic cable, 10 metres		37C2200004
Brushless motor-brake, dynamic cable, 10 metres		37C2310000

NOTES

OVERLOAD CURVES FOR ELECTRIC BRUSHLESS MOTORS (DELTA)

The torque used can exceed the nominal torque within the time limits shown in the diagram. Never exceed the maximum torque.

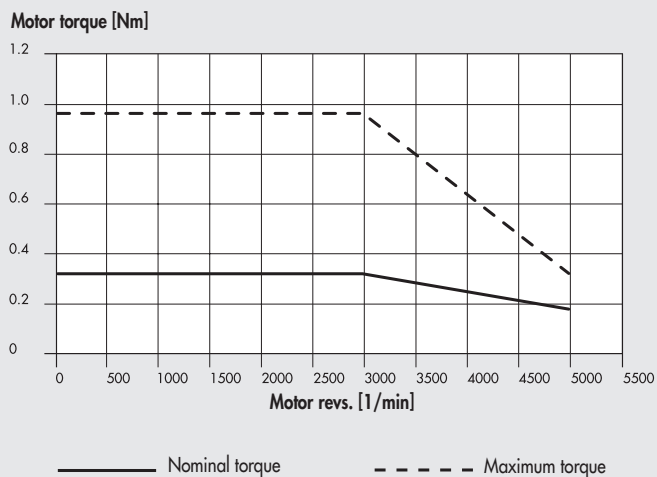


TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC BRUSHLESS MOTORS WITH BRAKE (DELTA)

The following diagrams show the torque delivered by the motor with changing speed (rpm). Each diagram shows two separate curves:

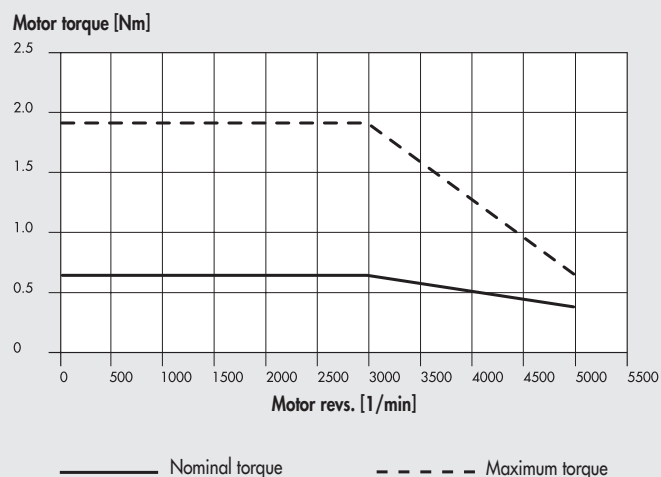
- **NOMINAL TORQUE** curve: the nominal torque delivered by the motor with a duty cycle of 100%
- **MAXIMUM TORQUE** curve: the torque delivered by the motor with a duty cycle of less than 100%

BRUSHLESS motor with BRAKE code **37M4000000** +
drive code **37D2100000** (100W)

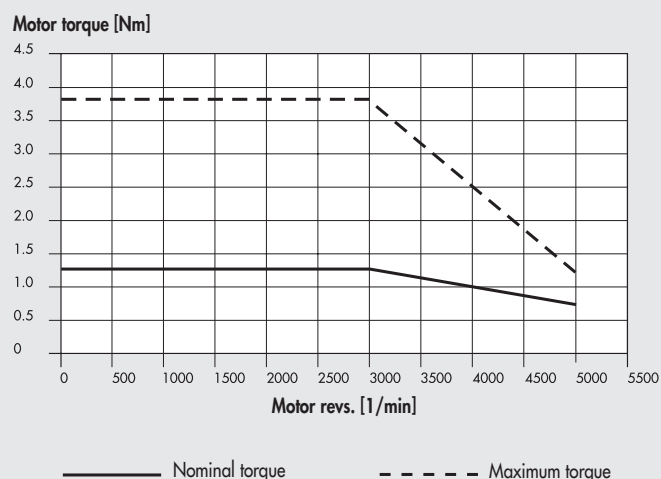


TECHNICAL DATA		MOTOR 37M4000000
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	0.32
Coupling flange (square)	mm	40
Nominal power	W	100
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	0.32
Maximum torque	Nm	0.96
Rotor inertia	kgmm ²	4
Mass	kg	0.8
Encoder	imp./giro	131072 (17 bit)
Degree of protection		IP40
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	0.3
Absorption	W	7.2
DRIVE	code	37D2100000
CABLES		
Brushless motor-drive with brake dynamic cable, 3 metres		37C2730001
Brushless motor-drive, dynamic cable, 3 metres		37C2230002
Brushless motor-drive with brake dynamic cable, 5 metres		37C2750001
Brushless motor-drive-encoder, dynamic cable, 5 metres		37C2250002
Brushless motor-drive with brake dynamic cable, 10 metres		37C2700001
Brushless motor-drive-encoder, dynamic cable, 10 metres		37C2200003

BRUSHLESS motor with BRAKE code **37M4200001** +
drive code **37D2200001** (200W)



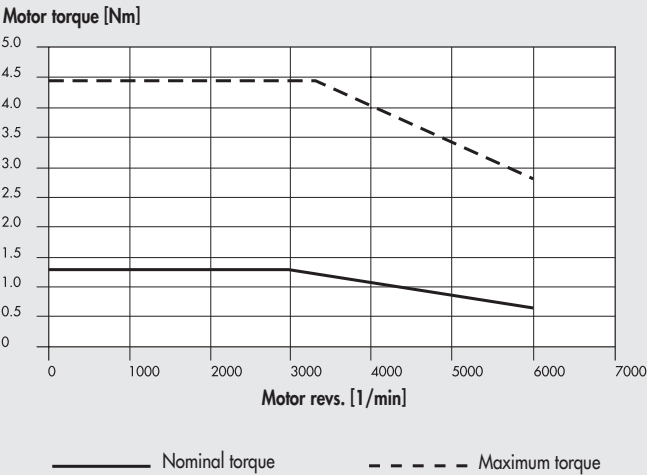
BRUSHLESS motor with BRAKE code **37M4220001** +
drive code **37D2300000** (400W)



TECHNICAL DATA		MOTOR 37M4200001
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	0.64
Coupling flange (square)	mm	60
Nominal power	W	200
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	0.64
Maximum torque	Nm	1.92
Rotor inertia	kgmm ²	19.2
Mass	kg	1.5
Encoder	imp./giro	131072 (17 bit)
Degree of protection		IP40
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	1.3
Absorption	W	6.5
DRIVE	code	37D2200001
CABLES		
Brushless motor-drive with brake dynamic cable, 3 metres		37C2730001
Brushless motor-drive , dynamic cable, 3 metres		37C2230002
Brushless motor-drive with brake dynamic cable, 5 metres		37C2750001
Brushless motor-drive-encoder , dynamic cable, 5 metres		37C2250002
Brushless motor-drive with brake dynamic cable, 10 metres		37C2700001
Brushless motor-drive-encoder , dynamic cable, 10 metres		37C2200003

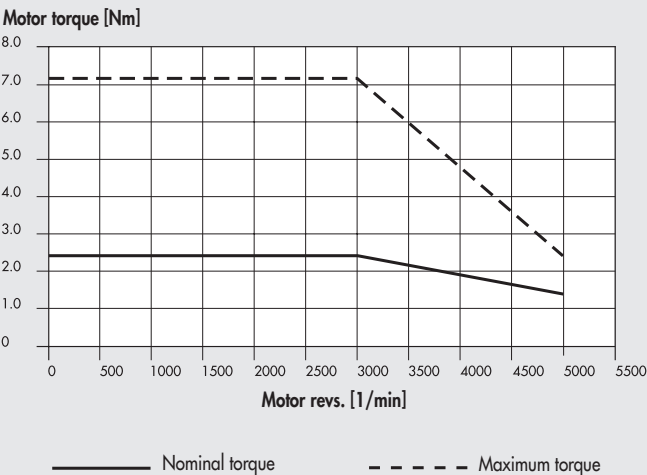
TECHNICAL DATA		MOTOR 37M4220001
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	1.27
Coupling flange (square)	mm	60
Nominal power	W	400
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	1.27
Maximum torque	Nm	3.82
Rotor inertia	kgmm ²	30
Mass	kg	2
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP40
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	1.3
Absorption	W	6.5
DRIVE	code	37D2300000
CABLES		
Brushless motor-drive with brake dynamic cable, 3 metres		37C2730001
Brushless motor-drive , dynamic cable, 3 metres		37C2230002
Brushless motor-drive with brake dynamic cable, 5 metres		37C2750001
Brushless motor-drive-encoder , dynamic cable, 5 metres		37C2250002
Brushless motor-drive with brake dynamic cable, 10 metres		37C2700001
Brushless motor-drive-encoder , dynamic cable, 10 metres		37C2200003

BRUSHLESS motor with BRAKE code **37M4220002** +
drive code **37D2300002** (400W)



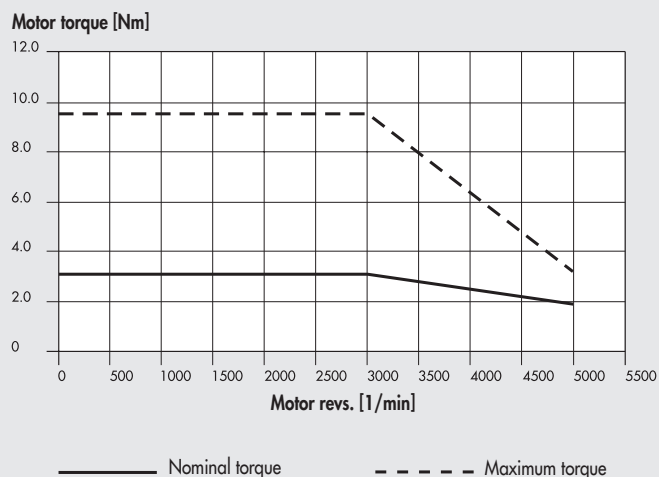
TECHNICAL DATA		MOTOR 37M4220002
Motor type		BRUSHLESS with BRAKE B3
Nominal torque	Nm	1.27
Coupling flange (square)	mm	60
Nominal power	W	400
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	1.3
Maximum torque	Nm	4.45
Rotor inertia	kgmm ²	26.4
Mass	kg	1.6
Encoder	pulse/rev	16777216 (24 bit)
Degree of protection		IP67
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	1.3
Absorption	W	7.6
DRIVE	code	37D2300002
CABLES		
Brushless motor-drive with brake dynamic cable, 3 metres		37C2730001
Brushless motor-drive-encoder, dynamic cable, 3 metres		37C2230006
Brushless motor-drive with brake dynamic cable, 5 metres		37C2750001
Brushless motor-drive-encoder, dynamic cable, 5 metres		37C2250007
Brushless motor-drive with brake dynamic cable, 10 metres		37C2700001
Brushless motor-drive-encoder, dynamic cable, 10 metres		37C2200006

BRUSHLESS motor with BRAKE code **37M4330001** +
drive code **37D2400007** (750W)



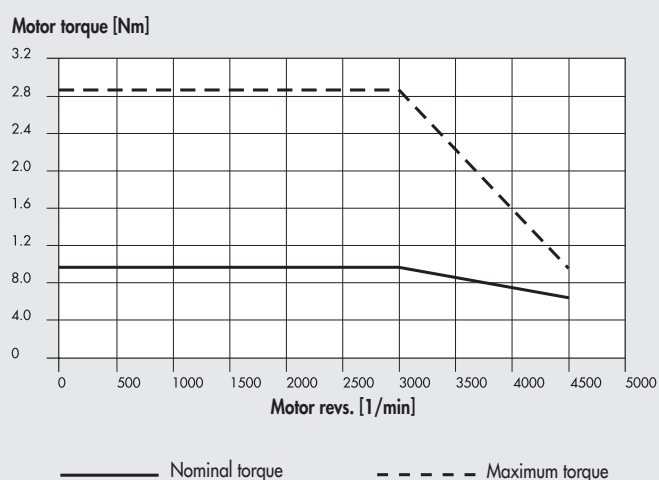
TECHNICAL DATA		MOTOR 37M4330001
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	2.39
Coupling flange (square)	mm	80
Nominal power	W	750
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	2.39
Maximum torque	Nm	7.17
Rotor inertia	kgmm ²	113
Mass	kg	3
Encoder	pulse/rev	1048576 (20 bit)
Degree of protection		IP40
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	2.5
Absorption	W	6.5
DRIVE	code	37D2400007
CABLES		
Brushless motor-drive with brake dynamic cable, 3 metres		37C2730001
Brushless motor-drive-encoder, dynamic cable, 3 metres		37C2230002
Brushless motor-drive with brake dynamic cable, 5 metres		37C2750001
Brushless motor-drive-encoder, dynamic cable, 5 metres		37C2250002
Brushless motor-drive with brake dynamic cable, 10 metres		37C2700001
Brushless motor-drive-encoder, dynamic cable, 10 metres		37C2200003

BRUSHLESS motor with BRAKE code **37M4640000** +
drive code **37D2400006** (1000W)



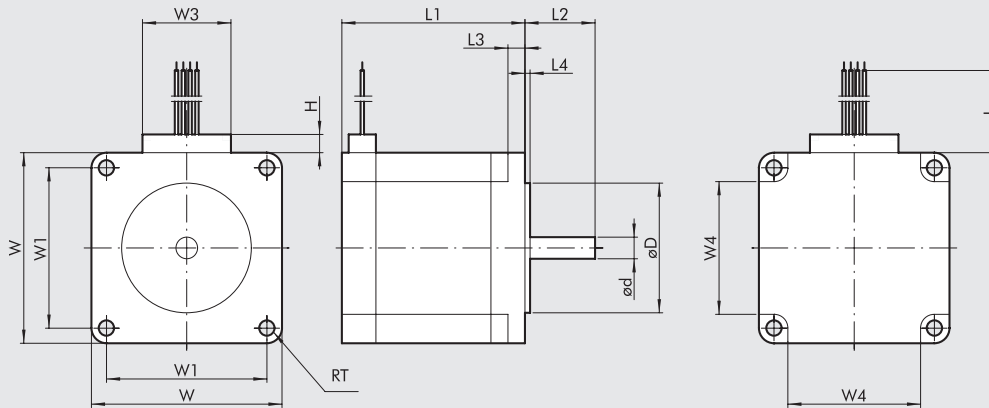
TECHNICAL DATA		MOTOR 37M4640000
Motor type		BRUSHLESS
Nominal torque	Nm	3.18
Coupling flange (square)	mm	100
Nominal power	W	1000
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	3.18
Maximum torque	Nm	9.54
Rotor inertia	kgmm ²	333
Mass	kg	4.7
Encoder	pulse/rev	131072 (17bit)
Degree of protection		IP65
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	10
Absorption	W	19
DRIVE	code	37D2400006
CABLES		
Brushless motor-drive with brake dynamic cable, 3 metres		37C2730002
Brushless motor-drive-encoder , dynamic cable, 3 metres		37C2230007
Brushless motor-drive with brake dynamic cable, 5 metres		37C2750003
Brushless motor-drive-encoder , dynamic cable, 5 metres		37C2250008
Brushless motor-drive with brake dynamic cable, 10 metres		37C2700002
Brushless motor-drive-encoder , dynamic cable, 10 metres		37C2200007

BRUSHLESS motor with BRAKE code **37M4770000** +
drive code **37D2600001** (3000W)

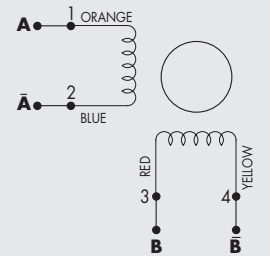


TECHNICAL DATA		MOTOR 37M4770000
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	9.55
Coupling flange (square)	mm	130
Nominal power	W	3000
Nominal speed	rpm	3000
Maximum speed	rpm	4500
Stall torque	Nm	9.55
Maximum torque	Nm	28.65
Rotor inertia	kgmm ²	1400
Mass	kg	9.2
Encoder	pulse/rev	1048576 (20 bit)
Degree of protection		IP65
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	10
Absorption	W	19
DRIVE	code	37D2600001
CABLES		
Brushless motor-drive with brake dynamic cable, 3 metres		37C2730002
Brushless motor-drive-encoder , dynamic cable, 3 metres		37C2230007
Brushless motor-drive with brake dynamic cable, 5 metres		37C2750003
Brushless motor-drive-encoder , dynamic cable, 5 metres		37C2250008
Brushless motor-drive with brake dynamic cable, 10 metres		37C2700002
Brushless motor-drive-encoder , dynamic cable, 10 metres		37C2200007

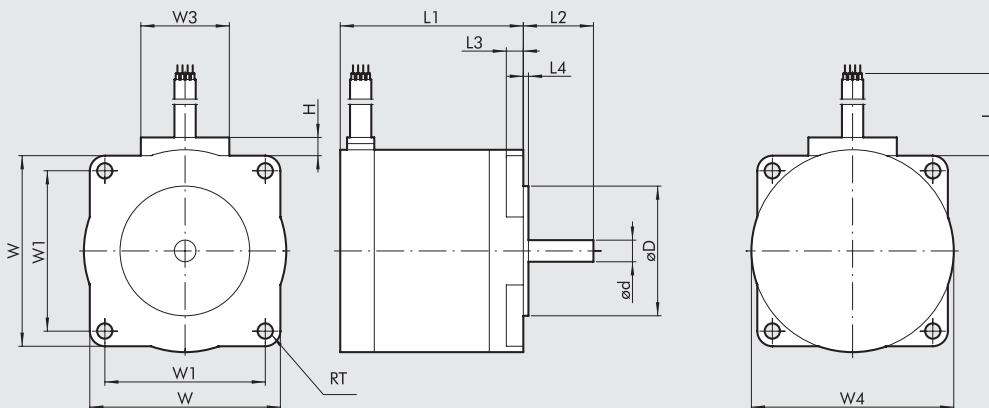
DIMENSIONS OF ELECTRIC MOTORS



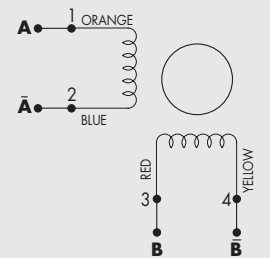
WIRING DIAGRAM



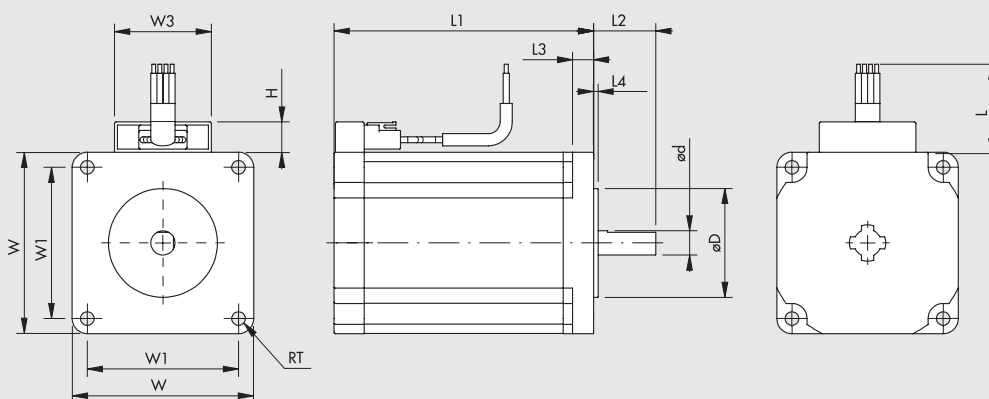
Motor type	Motor code	Motor torque [Nm]	Coupling flange	ϕd 0/-0.013	ϕD ± 0.025	H	L min	L1 ± 0.8	L2 ± 0.5	L3 ± 0.25	L4 ± 0.25	RT +0.5/0	W ± 0.5	W1 ± 0.13	W3 max	W4 ± 0.5
STEPPING	37M1110000	0.8	NEMA 23	6.35	38.1	7	305	53.8	20.6	5	1.5	4.5	56	47.14	26	39
	37M1120000	1.2	NEMA 23	6.35	38.1	7	305	75.8	20.6	5	1.5	4.5	56	47.14	26	39
	37M1120001	1.2	NEMA 23	6.35	38.1	10	305	75.8	20.6	5	1.5	4.5	56	47.14	39	39



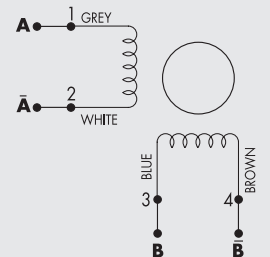
WIRING DIAGRAM



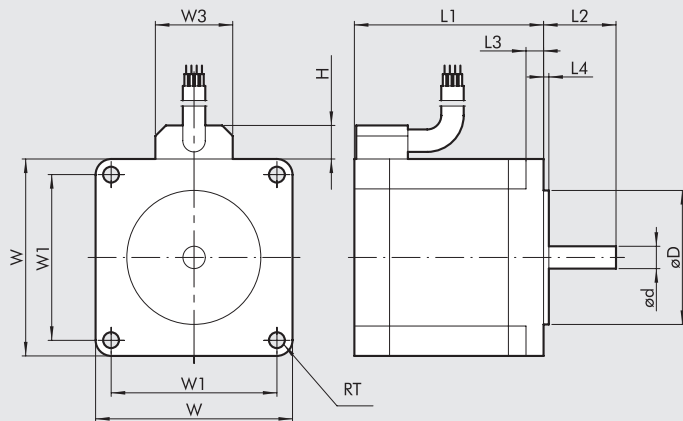
Motor type	Motor code	Motor torque [Nm]	Coupling flange	ϕd 0/-0.018	ϕD ± 0.025	H	L min	L1	L2 ± 0.5	L3 ± 0.50	L4 ± 0.25	RT +0.5/0	W ± 0.5	W1 ± 0.2	W3	W4 ± 0.5
STEPPING	37M1430000	2.4	NEMA 34	9.525	73.02	10	305	62	30	4.8	1.5	5.4	82.5	69.6	37	85.8
	37M1440000	4.2	NEMA 34	12	73.02	10	305	92.2	30	4.8	1.5	5.4	82.5	69.6	37	85.8
	37M1890000	17.5	NEMA 42	16	55.52	10	305	221	35	8.6	1.5	6.9	106.4	88.9	37	106.4



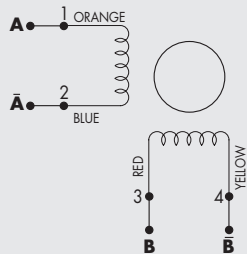
WIRING DIAGRAM



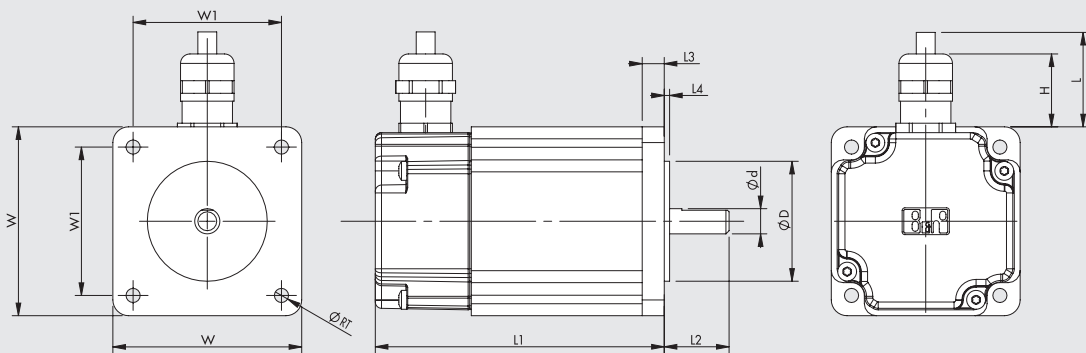
Motor type	Motor code	Motor torque [Nm]	Coupling flange	ϕd 0/-0.018	ϕD ± 0.025	H max	L min	L1 ± 1	L2 ± 0.5	L3 ± 0.50	L4 ± 0.25	RT +0.2	W ± 0.5	W1 ± 0.25	W3 max
STEPPING	37M1230000	2.2	60	8	36	10	300	86	20.6	7	1.5	4.5	60	50	32



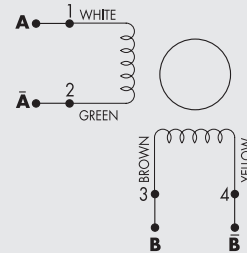
WIRING DIAGRAM



Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.018	øD ±0.025	H max	L min	L1 ±1	L2 ±0.5	L3 ±0.50	L4 ±0.25	L5	RT +0.2	W ±0.5	W1 ±0.25	W3 max
STEPPING	37M1450000	6.7	NEMA 34	14	73.025	12	305	127	30	8	1.5	50	5.6	85.5	69.6	27

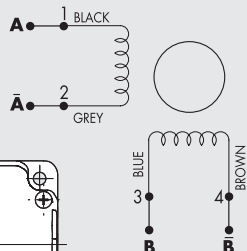


WIRING DIAGRAM

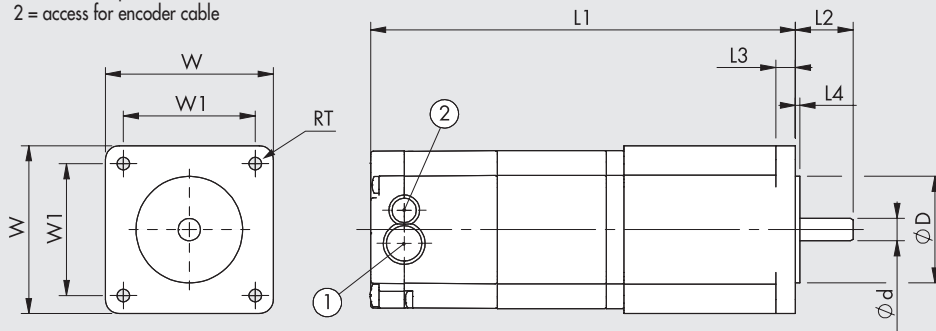


Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.013	øD ±0.025	H	L min	L1 ±1	L2 ±0.5	L3 ±0.50	L4 ±0.25	RT +0.2	W ±0.5	W1 ±0.13
STEPPING	37M1220000	1.2	60	8	38.1	23	1023	91.8	20.6	7	1.6	4.5	60	47.14

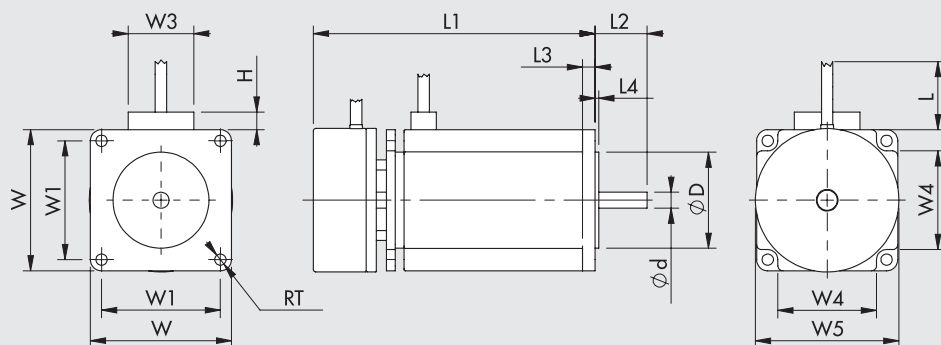
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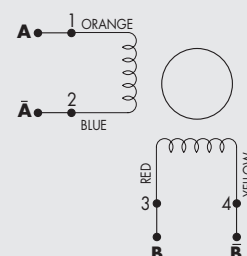
1 = access for power cable and brake
2 = access for encoder cable



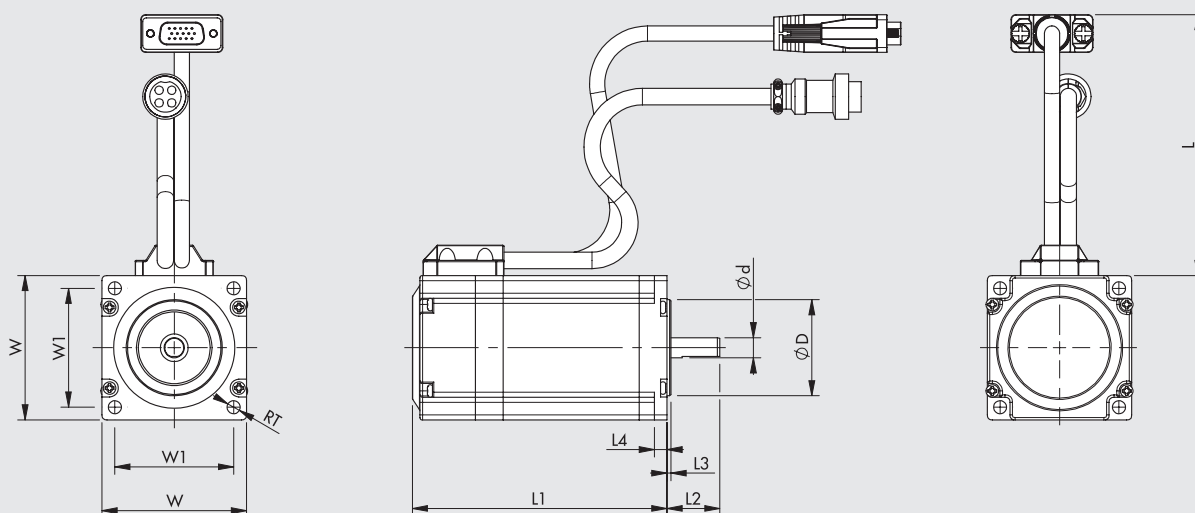
Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.013	øD ±0.025	L1	L2 ±0.51	L3	L4	RT	W	W1 ±0.13
STEPPING	37M1470000	9.3	NEMA 34	12.7	73.025	130	31.75	9.91	2.03	5.6	86.6	69.6
STEPPING	37M8220000	1.2	60	8	38.1	106.6	20.6	7	1.6	4.5	60	47.14
+ ENCODER	37M8470000	9.3	NEMA 34	12.7	73.025	165.4	31.75	9.91	2.03	5.6	86.6	69.6
STEPPING	37M3220000	1.2	60	8	38.1	151.8	20.6	7	1.6	4.5	60	47.14
+ BRAKE	37M3230000	2.5	60	8	38.1	184.5	20.6	7	1.6	4.5	60	47.14
+ ENCODER	37M3430000	2.9	NEMA 34	12.7	73.02	156.5	31.75	9.9	2	5.6	86.6	69.6
	37M3460000	5.5	NEMA 34	12.7	73.02	188.5	31.75	9.9	2	5.6	86.6	69.6
	37M3450000	6.3	NEMA 34	12.7	73.02	188.5	31.75	9.9	2	5.6	86.6	69.6
	37M3470000	9.3	NEMA 34	12.7	73.02	220.5	31.75	9.9	2	5.6	86.6	69.6



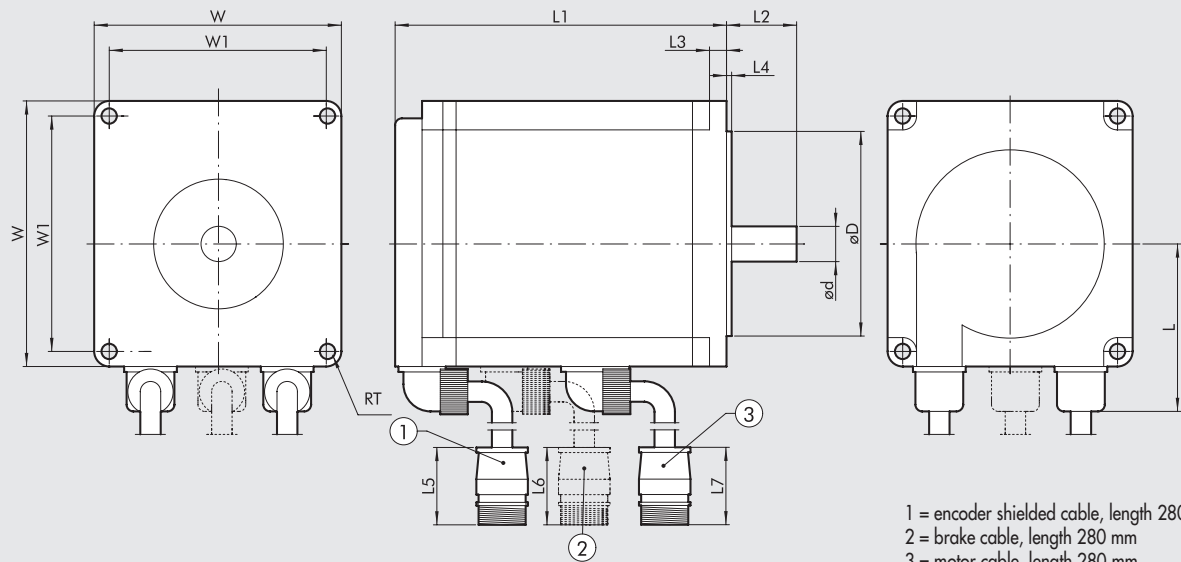
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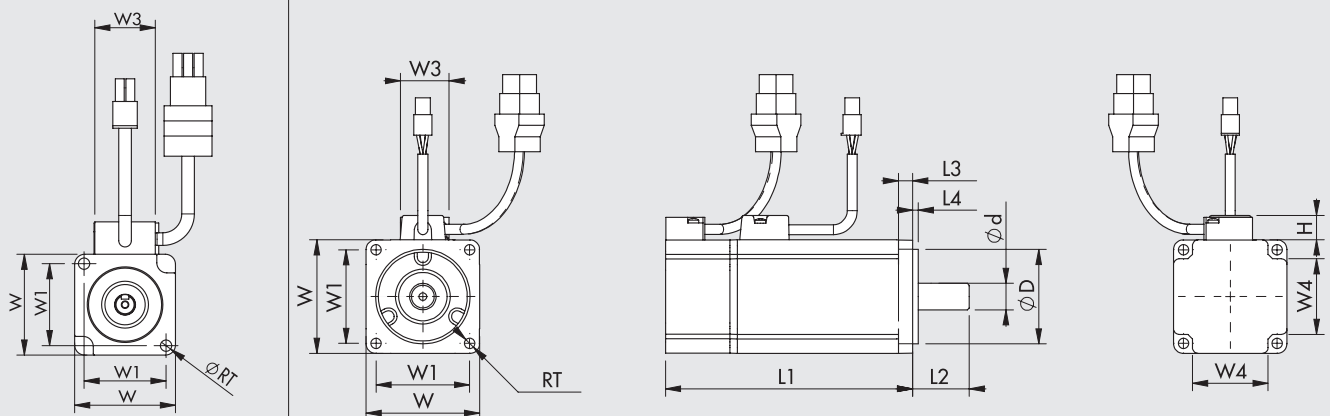
Motor type	Motor code	Motor torque [Nm]	Coupling flange	ϕd 0/-0.013	ϕD ± 0.025	H	L min	L1 ± 0.8	L2 ± 0.5	L3 ± 0.25	L4 ± 0.25	RT $\pm 0.5/0$	W ± 0.5	W1 ± 0.13	W3 max	W4 ± 0.5	W5 ± 0.5
STEPPING + BRAKE	37M5120000	1.2	NEMA 23	6.35	38.1	7	305	111.8	20.6	5	1.5	4.5	56	47.14	26	39	56.9



Motor type	Motor code	Motor torque [Nm]	Coupling flange	ϕd 0/-0.013	ϕD 0/-0.05	L	L1	L2	L3	L4	RT	W	W1 ± 0.25
STEPPING + ENCODER	37M1820000	1.4	NEMA 23	8	38.1	300	101	21	1.6	5	5.15	56.4	47.14
STEPPING + BRAKE + ENCODER	37M1320000	1.4	NEMA 23	8	38.1	270	137.5	21	1.6	5	5.15	57.15	47.14

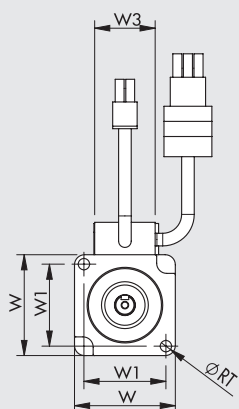


Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.011	øD h7	L	L1 ±1	L2 ±1	L3	L4	L5	L6	L7	RT	W	W1
BRUSHLESS (SANYO DENKI)	37M2200000	0.64	60	14	50	44.6	69.5	30	6	3	55	-	58	5.5	60	49.5
	37M2220000	1.27	60	14	50	44.6	95.5	30	6	3	55	-	58	5.5	60	49.5
	37M2330000	2.39	80	16	70	54.4	107.3	40	8	3	55	-	58	6.6	80	63.6
	37M2540000	3.18	86	16	80	59.55	137.1	35	8	3	55	-	58	6.6	86	70.7
BRUSHLESS + BRAKE (SANYO DENKI)	37M4200000	0.64	60	14	50	44.6	97.5	30	6	3	55	55	58	5.5	60	49.5
	37M4220000	1.27	60	14	50	44.6	117.5	30	6	3	55	55	58	5.5	60	49.5
	37M4330000	2.39	80	16	70	54.4	143	40	8	3	55	55	58	6.6	80	63.4
	37M4540000	3.18	86	16	80	59.55	162.95	35	8	3	55	55	58	6.6	86	70.7

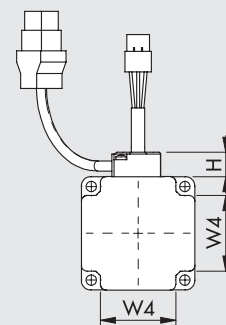
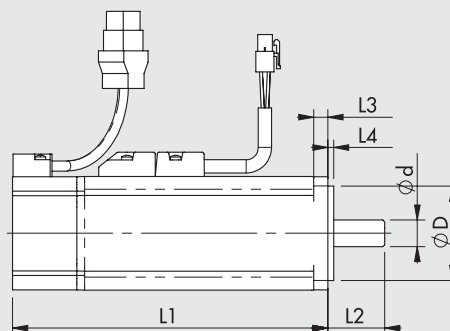
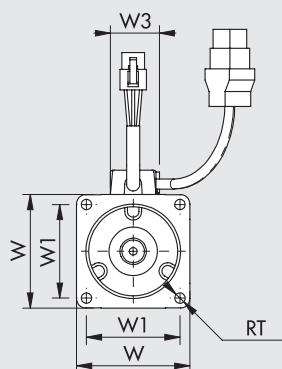


View for motor 37M2000000

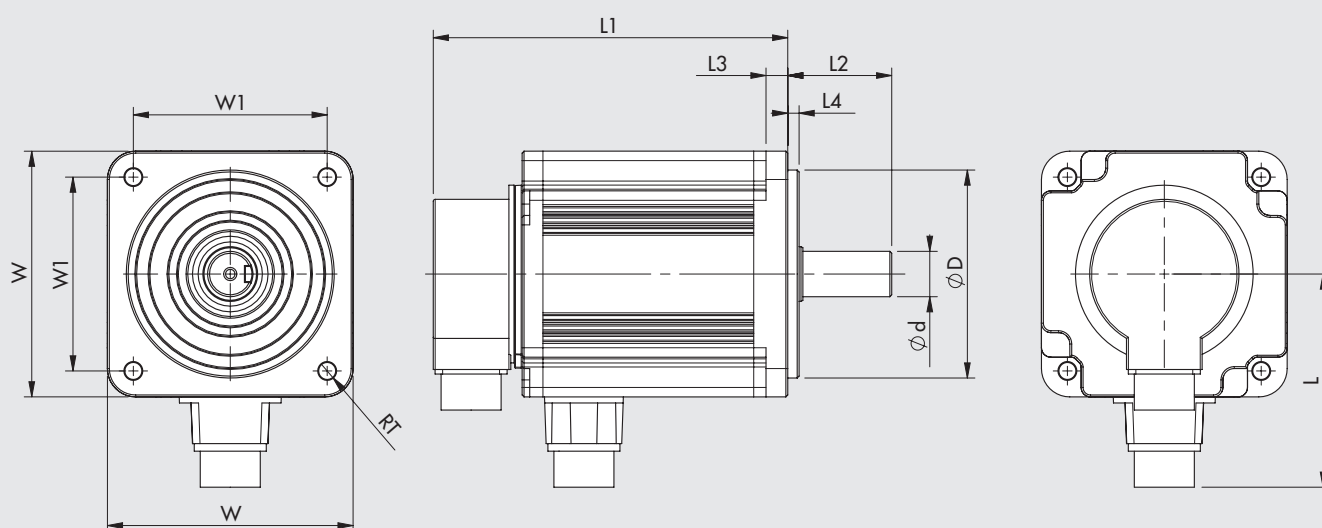
Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.011	øD 0/-0.025	H max	L1 ±0.3	L2 ±0.2	L3 ±0.2	L4 ±0.2	RT ±0.2	W ±0.25	W1 ±0.2	W3 max	W4 ±0.2
BRUSHLESS (DELTA)	37M2000000	0.32	40	8	30	13	100.6	25	5	2.5	4.5	40	32.53	25	-
	37M2200001	0.64	60	14	50	13	105.5	30	7.5	3	5.5	60	49.5	25	40
	37M2220001	1.27	60	14	50	13	130.7	30	7.5	3	5.5	60	49.5	30	40
	37M2330001	2.39	80	19	70	13	138.3	35	8	3	6.6	80	63.64	30	52



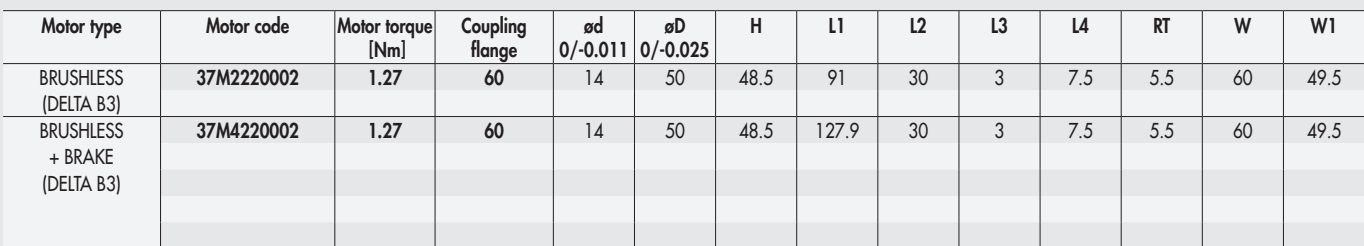
View for motor 37M4000000



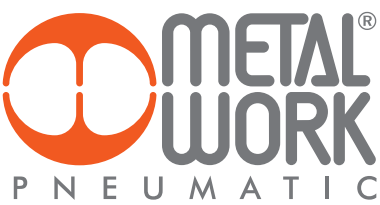
Motor type	Motor code	Motor torque [Nm]	Coupling flange	Ød 0/-0.011	ØD 0/-0.025	H max	L1 ±0.3	L2 ±0.2	L3 ±0.2	L4 ±0.2	RT ±0.2	W ±0.25	W1 ±0.2	W3 max	W4 ±0.2
BRUSHLESS + BRAKE (DELTA)	37M4000000	0.32	40	8	30	13	136.6	25	5	2.5	4.5	40	32.53	25	-
	37M4200001	0.64	60	14	50	13	141.6	30	7.5	3	5.5	60	49.5	25	40
	37M4220001	1.27	60	14	50	13	166.8	30	7.5	3	5.5	60	49.5	30	40
	37M4330001	2.39	80	19	70	13	178	35	8	3	6.6	80	63.64	30	52



Motor type	Motor code	Motor torque [Nm]	Coupling flange	Ød 0/-0.013	ØD 0/-0.035	L	L1	L2	L3	L4	RT	W	W1
BRUSHLESS (DELTA)	37M2640000	3.18	100	19	95	97.75	153.25	45	12	5	9	100	81.32
	37M2770000	9.55	130	24	110	113	187.5	55	11.5	6	9	130	102.53
BRUSHLESS + BRAKE (DELTA)	37M4640000	3.18	100	19	95	98.05	192.5	45	12	5	9	100	81.32
	37M4770000	9.55	130	24	110	111	216	55	11.5	6	9	130	102.53



NOTES



NOTES

ACTUATORS

DIMENSIONS OF ELECTRIC MOTORS

PROGRAMMABLE UNIT

e.motion

ACTUATORS

PROGRAMMABLE UNIT - E-MOTION

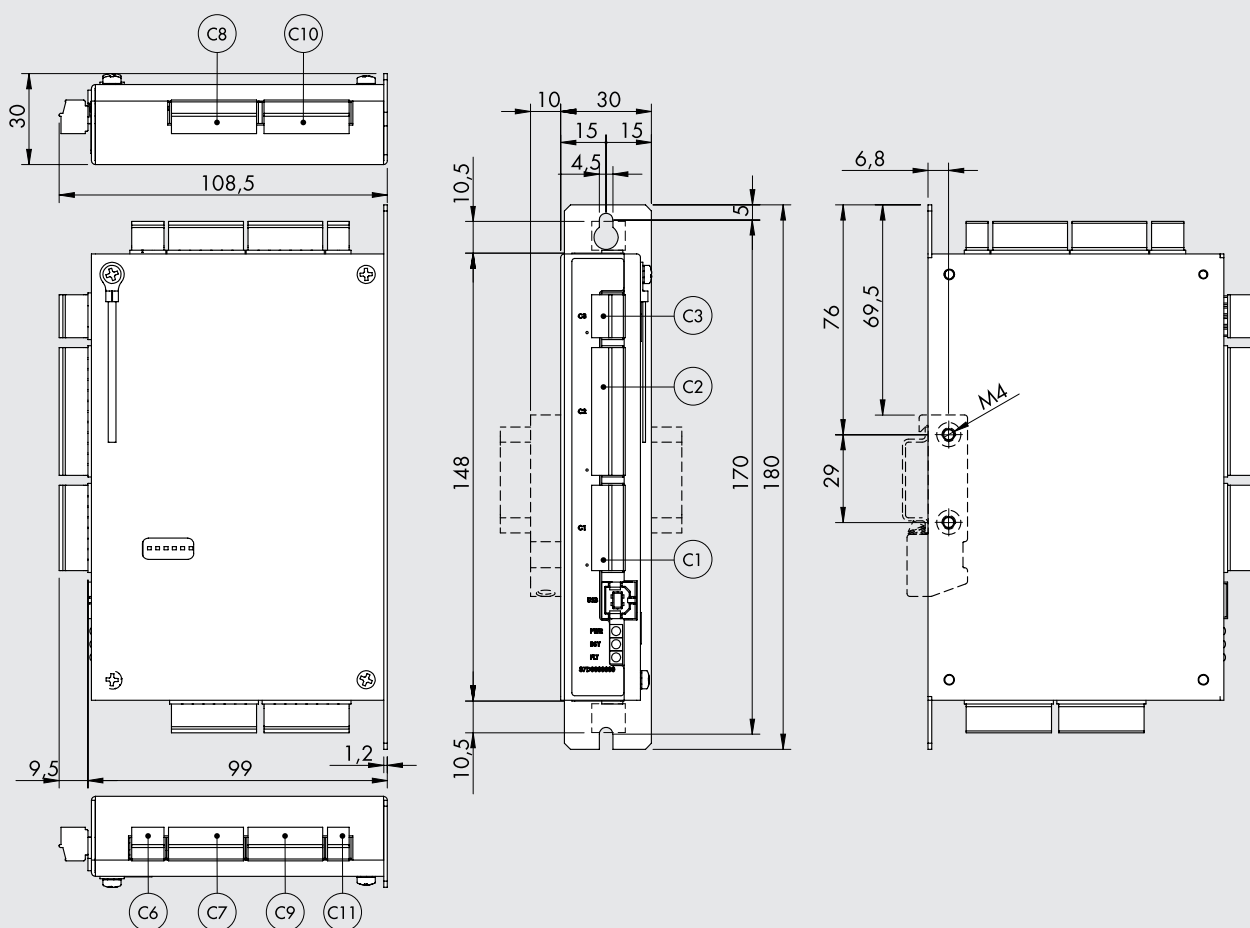
An independent system, ideal for stand-alone applications not requiring the use of any PLC. It can control electric cylinders simply and intuitively, or any other electric actuator, using either a STEPPING MOTOR or a BRUSHLESS motor of any size and capacity, connected to the relevant drive with a STEP/DIRECTION interface. It is connected to PC via USB port, and the user has access to a motion-control configuration, programming and debug environment irrespective of the type of motor/drive/actuator chosen, which uses a user-friendly language (MW POS) and a set of simple instructions and functions to create work cycles, including complex ones as it can handle both digital and analogue inputs and outputs. It consists of an electronic board housed in a metal box, which is designed for fixing to a wall or on a DIN bar with a fitting, and is equipped with removable screw connectors for wiring purposes.



TECHNICAL DATA

Code		37D0000000
Stand-alone motion programming unit for motors-drives with a STEP/DIRECTION interface, type		Metal box
Dimensions	mm	148 x 99 x 30
Weight	g	460
Connectors		Screw type
Temperature range		0 to 50 °C – relative humidity 10-90%, non-condensing
Degree of protection		IP 20
Voltage		24VDC ±10%
Communication interface		Serial USB port for connection to PC
Configuration/programming/debug and diagnosis software		MW POS in Windows® environment
Dedicated signals		Encoder input (A + B + Z), Line Driver type
Digital inputs		STEP/DIRECTION outputs, with frequency up to 100 kHz, Line Driver type
Analogue inputs		16, optoisolati, configurabili PNP o NPN, liberamente programmabili
Digital outputs		2, from 0 to 10V, freely programmable
Analogue outputs		15, Line Driver type, PNP, freely programmable
Controls available		1, from 0 to 10V, freely programmable
		- Search for home position on the end stop, up against the stop, on the end stop and the encoder mark, up against the stop and the encoder zero mark;
		- Positioning in relative or absolute mode;
		- Force control;
		- Closed-loop motion control and step-loss control in the case of STEPPING motors with encoder;
		- Integrated brake control in the case of motors with a brake;
		- Possible control of multiple separate drivers in parallel for concurrent applications;
		- Complementary and logical instructions for complex work cycles, such as:
		timings;
		repetitions;
		analogue and digital I/O control;
		variables control;
		tests

DIMENSIONS

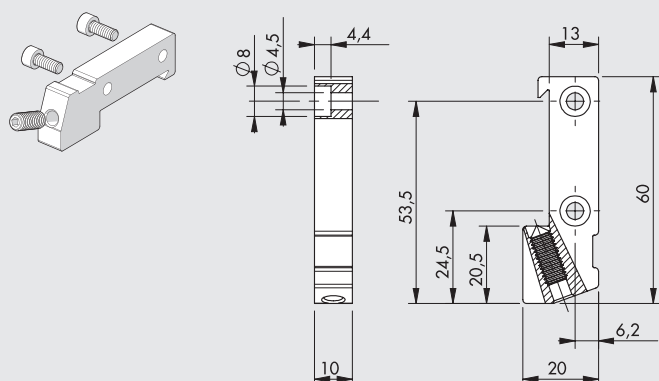


Below is a list of Phoenix Contact codes for the board connectors.

Connector	Description	Code Phoenix Contact
C11	2-pin plug with screw connection, MC 1.5/2-ST-3.5	1840366
C6	3-pin plug with screw connection, MC 1.5/3-ST-3.5	1840379
C3	4-pin plug with screw connection, MC 1.5/4-ST-3.5	1840382
C7, C9	7-pin plug with screw connection, MC 1.5/7-ST-3.5	1840418
C1, C8, C10	8-pin plug with screw connection, MC 1.5/8-ST-3.5	1840421
C2	12-pin plug with screw connection, MC 1.5/12-ST-3.5	1840463

ACCESSORIES

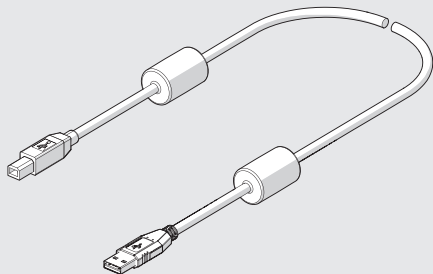
BRACKET MOUNTING ON OMEGA BAR (DIN EN 50022)



Code	Description	Weight [g]
095000M000	Bracket mounting e.motion / e.drive on Omega bar (DIN EN 50022)	30

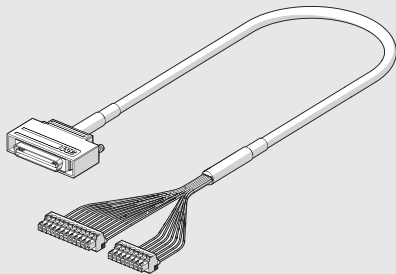
Note: Individually packed with 2 screws M4x10, 1 M6x16 grub screw

CABLE USB



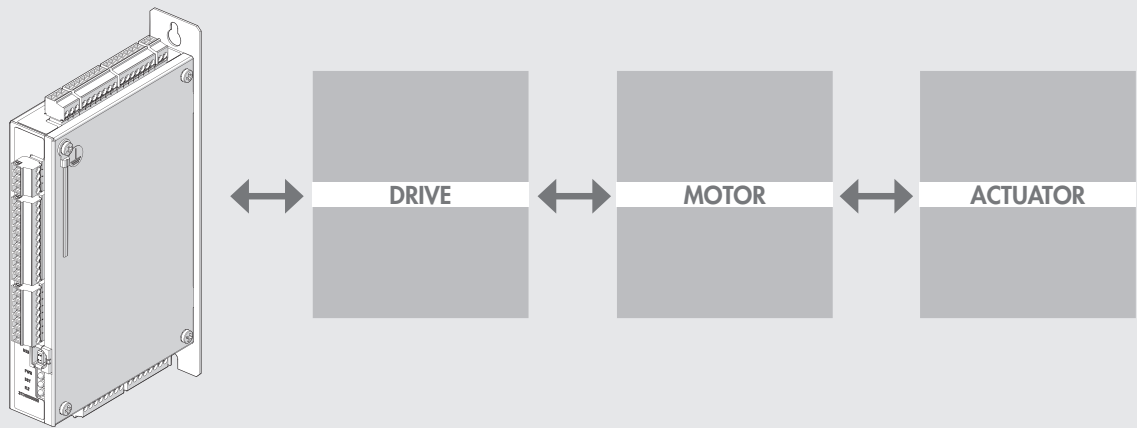
Code	Description	Weight [g]
37C0030000	Cable for USB 2.0 male A-B connector with ferrite core, for connecting the e.motion / e.drive board to a PC, 3 m	150

CABLE FOR BRUSHLESS DRIVERS



Code	Description	Weight [g]
37C2510000	Cable for connecting the e.motion board to Sanyo Denki RS_A0_ driver, 1 m	130
37C2510001	Cable for connecting the e.motion board to Delta ASDA A2 driver, 1 m	130

CONNECTION SCHEME



NOTES

PROGRAMMABLE STEPPING MOTOR DRIVE - e.drive



It can be used to control, easily and intuitively, electric cylinders that use a STEPPING motor with a rated current of up to 6A, two phases, with four, six or eight output wires. It connects up to a PC via a USB port and the user is provided with motion control configuration, programming and debugging environment, which allows you to create complex work cycles as it can handle both digital and analogue inputs and outputs, thanks to a user-friendly language (MW DRIVE) and a series of simple instructions and functions.

It consists of two electronic boards housed in a metal box that has been designed to be fixed onto a wall or to a DIN rail, using an accessory, and is equipped with removable screw connectors for wiring.

The electronic boards can control both the logic "motion control" stage and the power supply stage.

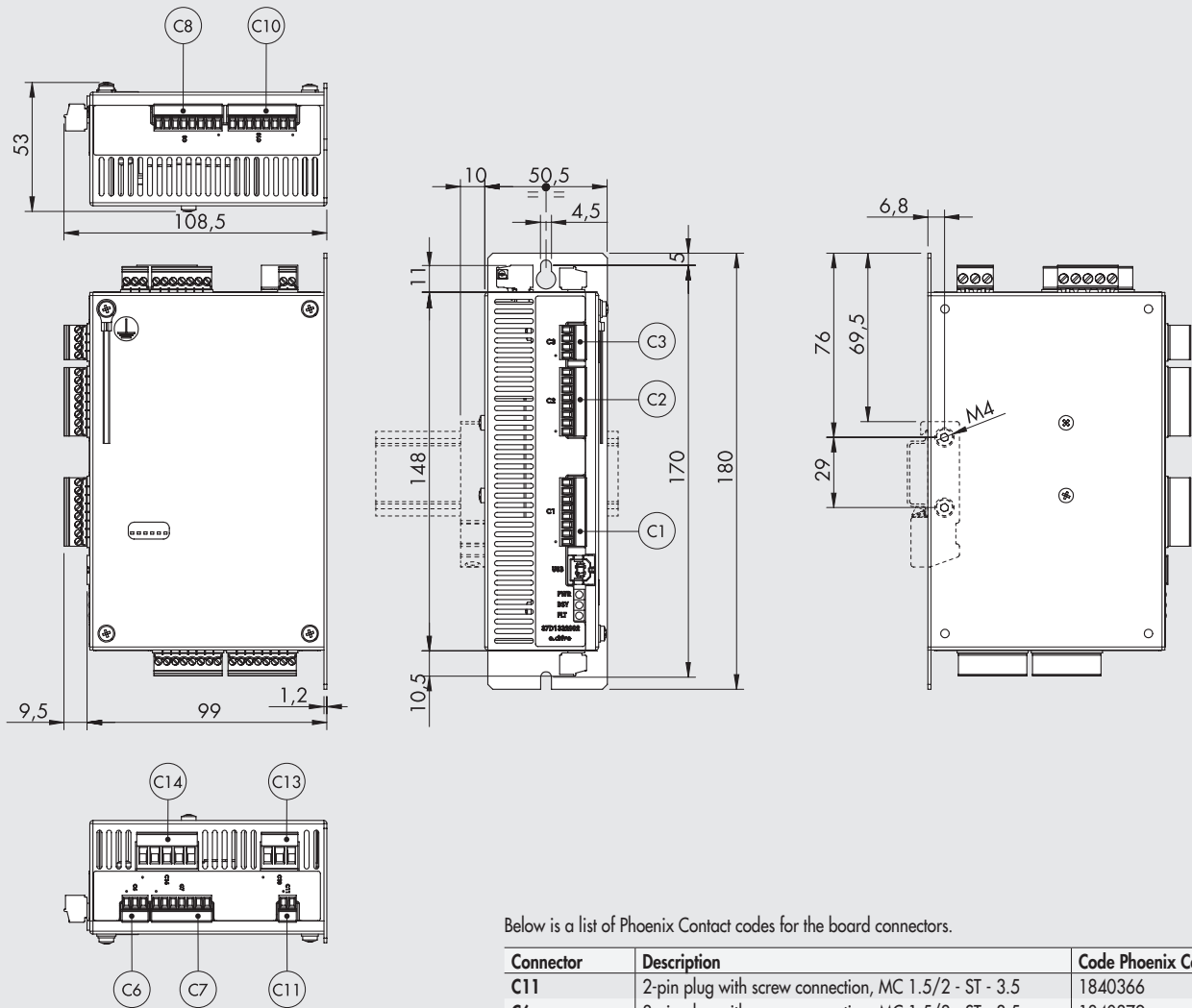
This independent system is ideal for use in stand-alone applications not requiring the use of any PLC.

The power stage consists of a ministepp bipolar chopper drive. It is characterised by a supply voltage of up to 55VDC for the power supply side and 24VDC for the logic side, compact dimensions and great flexibility of use.



TECHNICAL DATA		
Code		37D1332002
Motion control logic power supply	VDC	24
Drive power supply	VDC	24 to 55
Motor phase peak current	A	1 to 6
Temperature range	°C	-20 to 40
Relative humidity (without condensation)	%	5 to 85
Bipolar motor inductance (1.8° angle)	mH	1 to 12
Dimensions	mm	148 x 99 x 50.5
Weight	g	790
Degree of protection		IP20
Communication interface		Serial USB port for connection to PC
Configuration/programming/debug and diagnosis software		MW DRIVE in Windows® environment
Dedicated signals		Encoder input (A + B + Z), 5V line driver or 24V Push-Pull/Open collector
Digital inputs		14
Digital outputs		7
Analogue inputs		2, from 0 to 10V, freely programmable
Analogue outputs		1, from 0 to 10V
Controls available		<ul style="list-style-type: none"> - Can be used with motors with a 1.8° base angle, 200 pulses/rev.; - Step Mode settable in various ways: Full Step, Half Step, 1/4, 1/8, 1/16 of step; - Integrated linear position transducer by connecting directly to the analogue output; - Automatic 60% reduction of the current supplied with motor stopped; - Possible dynamic regulation of the current supplied via cycle software instructions, for energy-saving purposes; - Home position search on limit switch, mechanical stop, encoder limit switch and zero mark, encoder mechanical stop and zero mark; - Positioning in relative or absolute mode; - Closed-loop motion control and step-loss control in the case of STEPPING motors with an encoder; - Integrated, automatic brake control via dedicated digital output in the case of motors with a brake; - Complementary and logical instructions for complex work cycles, such as: <ul style="list-style-type: none"> timings; variables control; test; analogue and digital I/O control

DIMENSIONS

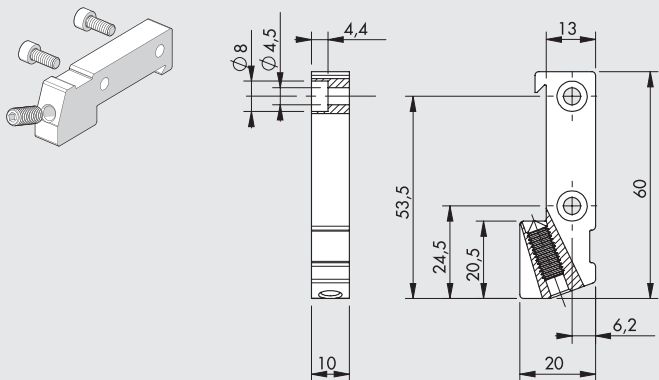


Below is a list of Phoenix Contact codes for the board connectors.

Connector	Description	Code Phoenix Contact
C11	2-pin plug with screw connection, MC 1.5/2 - ST - 3.5	1840366
C6	3-pin plug with screw connection, MC 1.5/3 - ST - 3.5	1840379
C3	4-pin plug with screw connection, MC 1.5/4 - ST - 3.5	1840382
C7	7-pin plug with screw connection, MC 1.5/7 - ST - 3.5	1840418
C1, C2, C8, C10	8-pin plug with screw connection, MC 1.5/8 - ST - 3.5	1840421
C13	3-pin plug with screw connection, MSTB 2.5/3 - ST - 5	1754465
C14	5-pin plug with screw connection, MSTB 2.5/5 - ST - 5	1754504

ACCESSORIES

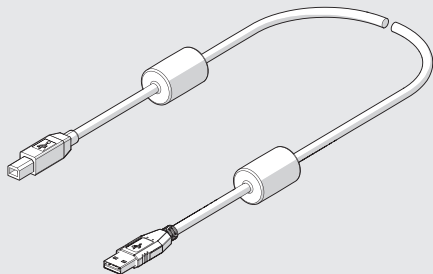
BRACKET MOUNTAING ON OMEGA BAR (DIN EN 50022)



Code	Description	Weight [g]
095000M000	Bracket mountaing e.motion / e.drive on Omega bar (DIN EN 50022)	30

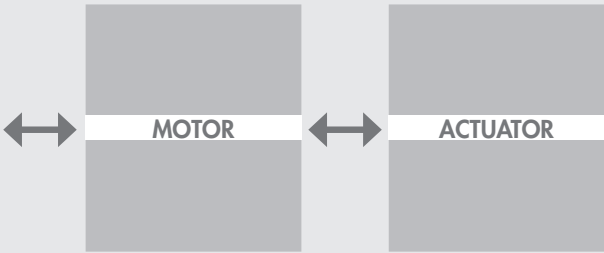
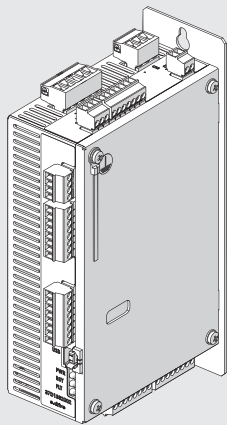
Note: Individually packed with 2 screws M4x10, 1 M6x16 grub screw

CABLE USB



Code	Description	Weight [g]
37C0030000	Cable for USB 2.0 male A-B connector with ferrite core, for connecting the e.motion / e.drive board to a PC, 3 m	150

CONNECTION SCHEME



NOTES

e.direct DRIVE FOR DIRECT CURRENT MOTORS

ACTUATORS

E.DIRECT DRIVE FOR DIRECT CURRENT MOTORS

With the e.direct drive for direct current motors, a 24VDC motor can be easily controlled and run. The electronic board is enclosed in a plastic housing designed for DIN rail mounting.

When activating the "CW" and "CCW" inputs, the motor starts running alternately clockwise and anticlockwise.

Two digital sensor inputs are provided to stop motor rotation upon activation.

The two stop signals are made available as outputs for possible connection to PLCs.

When activated, two digital sensor inputs are provided to stop motor rotation. The two stop signals are made available as outputs for possible connection to a PLC.

During acceleration and braking, the drive prevents mechanical stress on the motor and excessive energy regeneration.

Braking takes place dynamically, stopping the rotation immediately to avoid unwanted extra travel.

The rotation speed can be varied locally via the multi-turn trimmer installed on the board, or remotely, even continuously, via the analog input.

The board is equipped with 2 Hall sensor encoder inputs, NPN type and 5VDC power supply, which are fed back on two 24VDC encoder outputs, which adapt the signals coming from the Hall sensors to PLC inputs type OPEN DRAIN - PNP 24VDC.

The maximum current to be supplied to the motor can range between 1A, 2A, 3.5A and 5A via two DIP switch selectors.

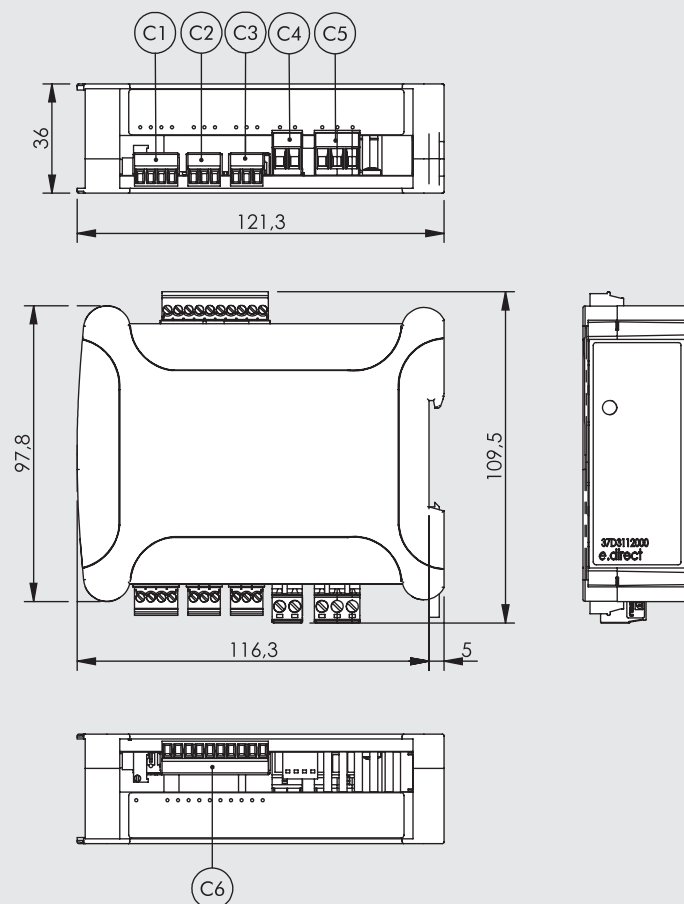
When the board is not powered and the motor is stopped, the motor phases are short-circuited to increase braking torque.



TECHNICAL DATA		
Code		37D3112000
Motor and auxiliary power supply	VDC	24 ±15%
Maximum power voltage	VDC	30
Wattage	W	150
Current	A	1, 2, 3.5, 5 (Dip-switch selectable)
Temperature range	°C	-20 to 40
Relative humidity (without condensation)	%	5 to 85
Dimensions	mm	110 x 121 x 36
Weight	g	160
Degree of protection		IP20
Digital inputs		- no. 2, type PNP 24VDC motor rotation control (CW/CCW); - no. 2, type OPEN DRAIN - PNP 24VDC limit switch (LS); - no. 2, type NPN 5VDC for encoder (Hall sensors).
Digital outputs		- no. 2, type 24VDC OPEN DRAIN - PNP suitable for PNP 24VDC PLC for limit switch (LS); - no. 2, 24VDC: adapting signals from Hall sensors to PLC inputs type OPEN DRAIN - PNP 24VDC.
Analogue inputs		- no. 1, 0-10VDC speed adjustment from PLC or potentiometer (31400 Ω input impedance); - Internal trimmer for manual speed adjustment (0-100%).
Protections		- Motor output overcurrent protection; - Phase-to-phase short-circuit protection on motor; - Microprocessor over-temperature protection (150°C).
Signals		- Overvoltage (Vsupply>30VDC) - Under-voltage (Vsupply<18VDC); - With fault diagnostic output (OPEN DRAIN - PNP); - Active output corresponds to one of the FAULT statuses.

N.B.: A delayed, external fuse of a value appropriate to the set current must be provided in the system.
An appropriate external mains filter must be placed on the power supply to avoid disturbances generated by the drive.

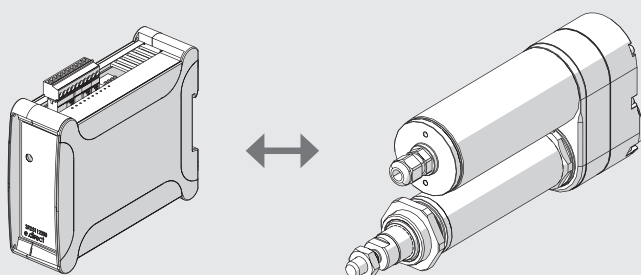
DIMENSIONS



Below is a list of Phoenix Contact codes for the board connectors.

Connector	Description	Code Phoenix Contact	Code Phoenix Contact BASIC LINE
C1	4-pin plug with screw connection, MC 1.5/4 - ST - 3.5	1840382	5441223
C2, C3	3-pin plug with screw connection, MC 1.5/3 - ST - 3.5	1840379	5441210
C4	2-pin plug with screw connection, MC 2.5/2 - ST - 5	1754449	5441171
C5	3-pin plug with screw connection, MC 2.5/3 - ST - 5	1754465	5448242
C6	10-pin plug with screw connection, MC 1.5/10 - ST - 3.5	1840447	5447560

EXAMPLE OF CONNCETION



6A - 75VDC DRIVE FOR STEPPING MOTORS

This is a ministepp bipolar chopper drive made by RTA Srl. It comes with a STEP & DIRECTION interface for piloting medium-low power two-stage STEPPING motors with four, six or eight terminals.

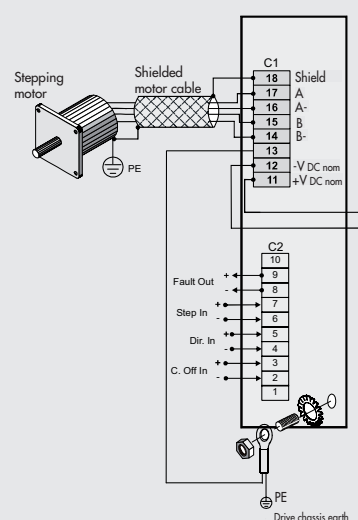
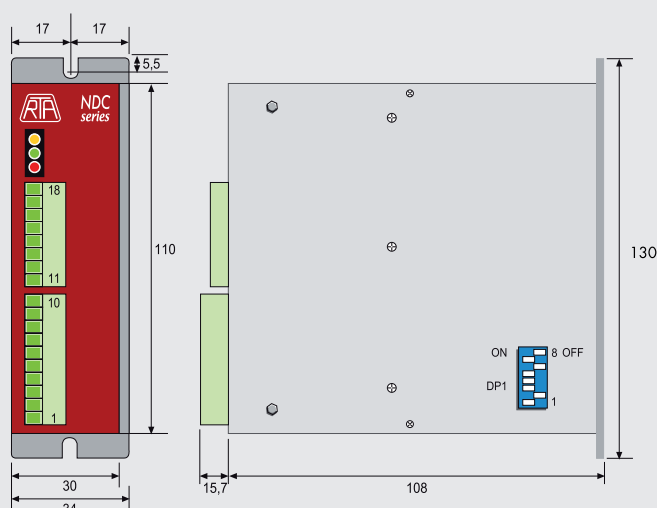
It has a supply voltage range up to 75VDC, compact dimensions and considerable operating flexibility. It consists of a board housed in a metal box and comes with separate logic and power pull-out screw connectors. It can control STEPPING motors with a nominal current up to 6A, the perfect choice for medium power applications using small and medium-size motors.



DRIVE TECHNICAL DATA

Drive code		37D1332000
Type of STEPPING motor drive		Metal box
Dimensions	mm	110 x 108 x 34
Connectors		Screw type
Onboard power supply		NO
Control		Step and direction
Operating voltage range	VDC	24 - 75
Current range	A	1.9 - 6
Current values selected via a dip-switch		8
Pulses per rev values selected by dip-switch	pulse/rev	400, 500, 800, 1000, 1600, 2000, 3200, 4000
Automatic current reduction with motor off		YES (50%)
Type of inputs		Opto-isolated
Protections		Maximum and minimum voltage. Motor output short-circuiting. Thermal protection. Electronic damping circuit for maximum control of noise and vibration.

OVERALL DIMENSIONS AND WIRING DIAGRAM



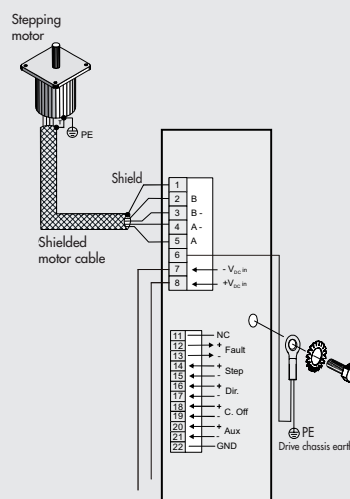
These are two ministeP bipolar chopper drives made by RTA S.r.l. They come with a STEP & DIRECTION interface for piloting medium/high-power two-stage STEPPING motors with four, six or eight terminals. They consist of a board housed in a metal box, which does not require external ventilation, and come with separate logic and power pull-out screw connectors.

Drive code 37D1442000 is characterised by a voltage range up to 140VDC, compact dimensions and considerable operating flexibility. This drive can control STEPPING motors with a nominal current up to 6A, the perfect choice for medium-power applications requiring a DC supply.

Drive code 37D1552000 is characterised by a voltage range up to 62VAC, compact dimensions and considerable operating flexibility. This drive can control STEPPING motors with a nominal current up to 10A, the perfect choice for medium-power applications requiring an AC supply.

[illegible]

Technical drawing of the RFA 152 Plus series LED strip light. The drawing shows a side view of the red LED strip with labels for components: DIP-SWITCH DP1, LED HV, LED TER, LED FAU, C1, C2, and PLUS series. Dimensions are provided in millimeters: 20, 26, 5, 152, 46, 17.5, and 129. A top view shows the strip's profile with mounting holes.



6A - 110 - 230VAC DRIVE FOR STEPPING MOTORS

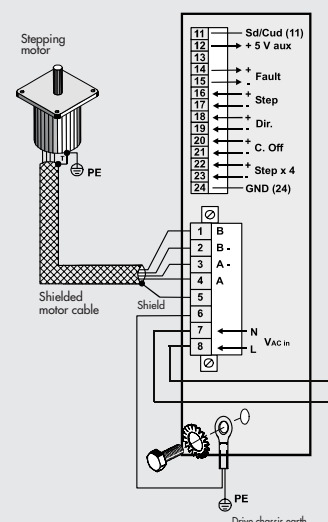
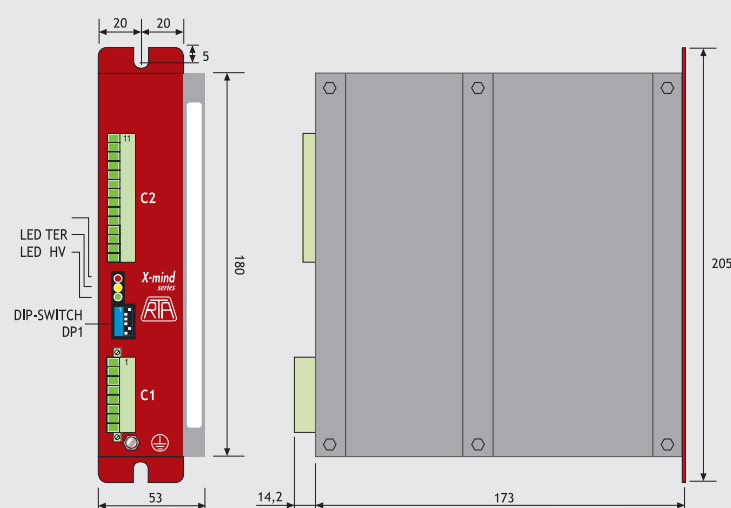
This is a ministepp bipolar chopper drive made by RTA Srl. It comes with a STEP & DIRECTION interface for piloting medium-low power two-stage STEPPING motors with four, six or eight terminals.

It has a supply voltage range up to 230VAC, compact dimensions and considerable operating flexibility. It consists of a board housed in a metal box and comes with separate logic and power pull-out screw connectors. It can control STEPPING motors with a nominal current up to 6A, the perfect choice for medium-high power applications using medium and big-size motors.



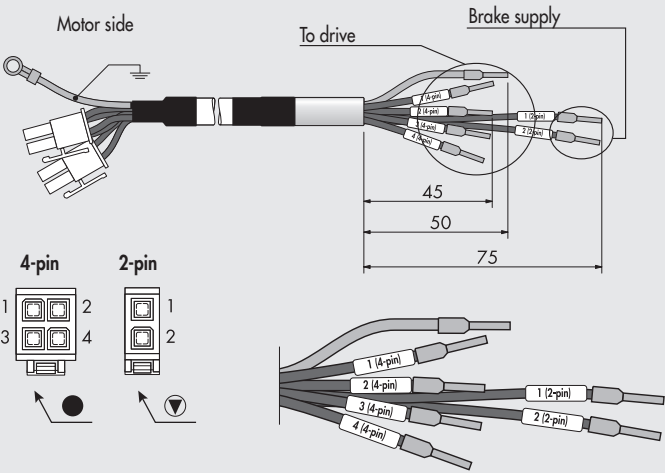
DRIVE TECHNICAL DATA	
Drive code	37D1362001
Type of STEPPING motor drive	Metal box
Dimensions	mm
Connectors	Screw type
Onboard power supply	NO
Control	Step and direction
Operating voltage range	VAC
Current range	A
Motor output stage	High-efficiency CHOPPER with IGBT final stage output
Current values selected via a dip-switch	8
Pulses per rev values selected by dip-switch	pulse/rev
Automatic current reduction with motor off	YES
Type of inputs	Opto-isolated
Protections	Maximum and minimum voltage. Motor output short-circuiting. Thermal protection. Electronic damping circuit for maximum control of noise and vibration.
Standards	UL and CSA
Other features	Possibility to switch off motor current via an external logic control device. Electronic sound-damping circuit for enhanced reduced noise and mechanical vibration at low and medium speed. Storage and reporting of the intervention of protection circuits. It must be coupled with STEPPING motors designed for high-voltage rating and flanges not below 86 mm. No need for forced ventilation.

OVERALL DIMENSIONS AND WIRING DIAGRAM



CABLES FOR B&R STEPPING MOTORS

POWER CABLE FOR MOTOR WITH BRAKE

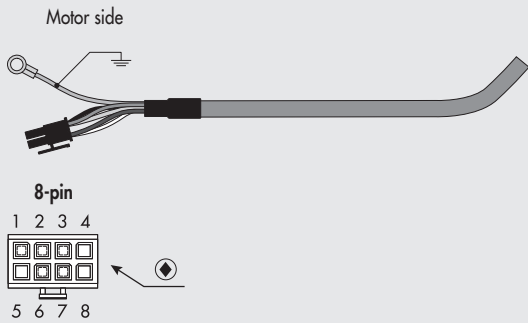


Code	Description
37C1330000	Power cable for stepping motor with brake, 3 metres
37C1350000	Power cable for stepping motor with brake, 5 metres

For use with STEPPING motors with brake and STEPPING motor code 37M1470000.

	Pin	Function	Corresponding wire colour
4-pin connector	1	A\	Black (1 4-pin)
	2	B\	Black (2 4-pin)
	3	A	Black (3 4-pin)
	4	B	Black (4 4-pin)
2-pin connector	1	24VDC brake	Black (1 2-pin)
	2	GND	Black (2 2-pin)

ENCODER CABLE



Code	Description
37C1230000	Encoder cable for stepping motors with brake, 3 metres
37C1250000	Encoder cable for stepping motors with brake, 5 metres

Optional – Can be used with STEPPING motor with encoder and brake.

Pin	Function		Corresponding wire colour
1	A	A	Green
2	B	B	Yellow
3	R	R	Gray
4	-	NC	-
5	-	NC	-
6	+ 24VDC	Encoder +24 V supply	Red
7	COM	Encoder 0 V supply	Blue
8	-	NC	-

REFERENCES FOR THE CONNECTORS

Below you find the codes of Molex to allow the customer to manufacture cables.

	Code Molex	Description
▼	39-01-2020	1 x 2 pin plug connector
	44476-1111	Crimping contacts
●	39-01-2040	1 x 4 pin plug connector
	44476-1111	Crimping contacts
◆	43025-0800	1 x 8 pin plug connector
	43030-0002	Crimping contacts

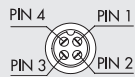
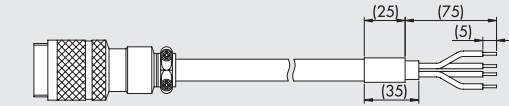
Special tools for crimping or pulling out contacts

	Code Molex	Description
Crimping gripper	0638190000	For 8-pin connector
	0638190900	For 4-pin and 2-pin connectors
Contact pull-out tool	0011030043	For 8-pin connector
	0011030044	For 4-pin and 2-pin connectors

NOTES

CABLES FOR STEPPING MOTORS STEPPERONLINE

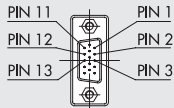
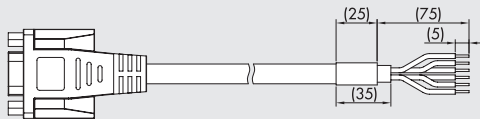
POWER CABLE FOR MOTOR WITH BRAKE



Code	Description
37C1150000	Power cable for stepping motor with brake, 5 metres
37C1100000	Power cable for stepping motor with brake, 10 metres

Pin	Function		Corresponding wire colour
1	A+	Motor phase A+	Black 1
2	A -	Motor phase A-	Black 2
3	B+	Motor phase B+	Black 3
4	B -	Motor phase B-	Black 4

ENCODER CABLE



Code	Description
37C1250001	Encoder cable for stepping motors with brake, 5 metres
37C1200003	Encoder cable for stepping motors with brake, 10 metres

Optional – Can be used with STEPPING motor with encoder and brake.

Pin	Function		Corresponding wire colour
1	A+	Phase A+	Green
2	+24VDC	Encoder +24 V supply	Brown
3	COM	Encoder 0 V supply	White
4	-	NC	-
5	-	NC	-
6	-	NC	-
7	-	NC	-
8	-	NC	-
9	-	NC	-
10	-	NC	-
11	B+	Phase B+	Gray
12	B-	Phase B-	Pink
13	A-	Phase A-	Yellow
14	-	NC	-
15	-	NC	-

NOTES

DRIVES FOR BRUSHLESS MOTORS

DRIVE FOR 200W, 400W, 750W, 1000W SANYO DENKI BRUSHLESS MOTORS

ACTUATORS

DRIVE FOR 200W, 400W, 750W, 1000W SANYO DENKI BRUSHLESS MOTORS

This drive made by SANYO DENKI is suitable for piloting BRUSHLESS motors. It features compact dimensions and considerable operating flexibility. It consists of a board housed in a metal box. It comes with pull-out screw connectors for power and plug connectors for logic. It can control BRUSHLESS motors with a nominal current up to 30A. All the system parameters can be configured and controlled using SANMOTION software.

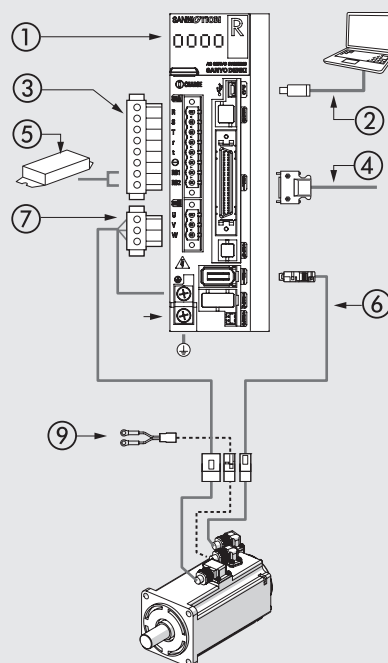


DRIVE TECHNICAL DATA	
Drive code	37D2400008
Nominal power	200 - 400 - 750 - 1000
Type of drive for BRUSHLESS motors	Metal box
Dimensions	50 x 160 x 130
Power connectors and motor power	Plug-type 3M
Encoder connectors and signals	Plug-type 3M
Max output current	30
Motor output stage	IGBT, PWM control, sinusoidal current
Power voltage	Single-phase or three-phase (user configurable) 200-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
Logic voltage	Single-phase 200-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
Control	With analogue signal (proportional to speed and torque). Pulse-train (clock + direction; forward + backward pulse; 90° phase difference) 8 inputs and 8 outputs, user configurable. In the event of pulse-train command, the control system outputs should be the Line Driver type. If the outputs are the open-collector type, you can use a 37D2000000 board, which is sold separately (see accessories).
Auto-tuning	YES
Communication interface	Mini USB for settings and monitoring via a personal computer.
Protections	Integrated against overloads, input extra-voltages, incorporated filters for suppressing the system's own resonance frequencies
Standards	CE, UL and CSA.
Other features	5-digit display and programming keypad. Integrated closed-loop system with position, speed and torque control modes. Instant changeover option: position + speed; position + torque; speed + torque. Automatic dynamic braking circuit in a alarm and power-off conditions. Connector for external braking resistance (optional). Configuration and control software.
Connecting cable:	
Brushless motor-drive connecting cable, 3 metres	37C2130005
Brushless motor-drive-encoder connecting cable, 3 metres	37C2230005
Brushless motor-drive connecting dynamic cable, 3 metres	37C2130004
Brushless motor-drive-encoder connecting dynamic cable, 3 metres	37C2230004
Brushless motor-brake connecting dynamic cable, 3 metres	37C2330000
Brushless motor-drive connecting cable, 5 metres	37C2150005
Brushless motor-drive-encoder connecting cable, 5 metres	37C2250005
Brushless motor-drive connecting dynamic cable, 5 metres	37C2150004
Brushless motor-drive-encoder connecting dynamic cable, 5 metres	37C2250006
Brushless motor-brake connecting dynamic cable, 5 metres	37C2350000
Brushless motor-drive connecting dynamic cable, 10 metres	37C2100004
Brushless motor-drive-encoder connecting dynamic cable, 10 metres	37C2200004
Brushless motor-brake connecting dynamic cable, 10 metres	37C2310000

WIRING DIAGRAM FOR BRUSHLESS MOTOR DRIVES

- ① 5-DIGIT DISPLAY and PROGRAMMING KEYPAD:
to display and modify parameters and monitor system operation in real time.
- ② PC CONNECTOR: settings and monitoring by PC via mini USB
- ③ POWER CONNECTOR: 230VAC, single-phase and three-phase (user configurable). **Included in the supply.**
Separate supply section for logic/signal and power electronics. Integrated circuits protecting against overloads and input extra-voltages.
- ④ SIGNAL CONNECTOR: pulse-train command (clock + direction; forward + backward pulse; 90° phase difference) or with analogue signal (proportional to speed or torque) 8 inputs and 8 outputs, user configurable. **Included in the supply.**
- ⑤ CONNECTOR: for external braking resistance (optional)
- ⑥ ENCODER CONNECTOR
- ⑦ MOTOR POWER CONNECTOR
- ⑧ EARTH CONNECTION
- ⑨ MOTOR BRAKE CONNECTOR (only for version with brake)

Log on to www.metalwork.it to view the instruction manual.



ACCESSORIES

⑥ ENCODER CABLE



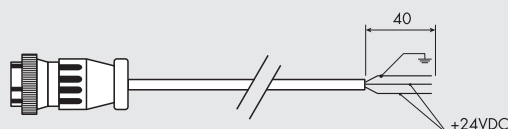
Code	Description
37C2230005	Brushless motor-drive-encoder connecting cable, 3 m
37C2250005	Brushless motor-drive-encoder connecting cable, 5 m
37C2230004	Brushless motor-drive-encoder connecting dynamic cable, 3 m
37C2250006	Brushless motor-drive-encoder connecting dynamic cable, 5 m
37C2200004	Brushless motor-drive-encoder connecting dynamic cable, 10 m

⑦ MOTOR POWER CABLE



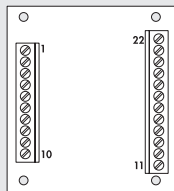
Code	Description
37C2130005	Brushless motor-drive connecting cable, 3 m
37C2150005	Brushless motor-drive connecting cable, 5 m
37C2130004	Brushless motor-drive connecting dynamic cable, 3 m
37C2150004	Brushless motor-drive connecting dynamic cable, 5 m
37C2100004	Brushless motor-drive connecting dynamic cable, 10 m

BRAKE CABLE



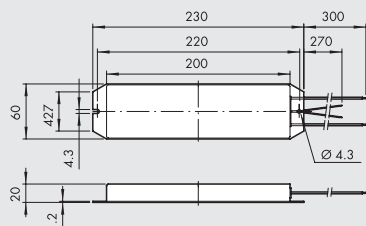
Code	Description
37C2330000	Brushless motor-brake connecting dynamic cable, 3 m
37C2350000	Brushless motor-brake connecting dynamic cable, 5 m
37C2310000	Brushless motor-brake connecting dynamic cable, 10 m

LINE-DRIVER INTERFACE BOARD



Code	Description
37D2000000	BRINT.A line driver interface board

EXTERNAL BRAKING RESISTANCES



Code	Description	For drive code
37D2R00000	220W 50 Ω braking resistance	37D2400008

Under certain operating conditions, such as sudden deceleration with high inertial load, it may be necessary to dissipate externally the reverse energy generated by the motor. The drive indicates this requirement via a specific alarm. Excess energy is dissipated externally via a braking resistance.

CONFIGURATION SOFTWARE

SANMOTION configuration software is used for parameter setting and complete control of all functions of the system.

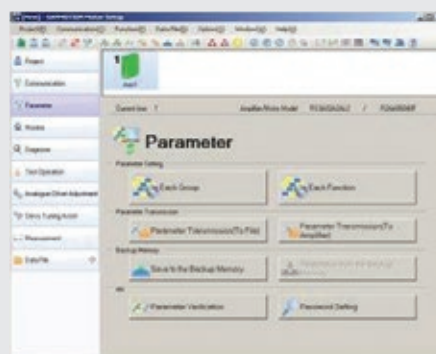
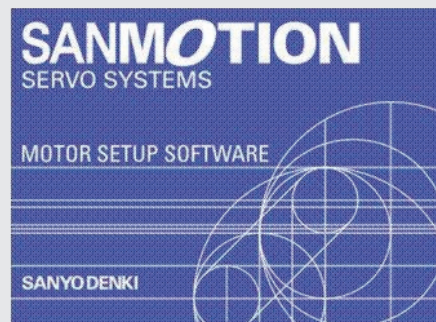
The software includes a detailed description of each parameter.

In addition to parameter setting SANMOTION software can accurately analyze operation of the system via the following functions.

- Monitor: real-time display of all details about the system.
- Diagnosis: shows the state of servo amplifier, the type of alarms and the possible causes.
- Test operation: performs the velocity system test with JOG Operation, the positioning test with Positioning Operation, the detection of the origin signal and Serial Encoder Clear.
- Servo Tuning: performs auto-tuning notch filter and auto-tuning vibration suppression frequency.
- Operation Trace: this function shows operational state and parameters as speed and torque, in waveform display on an integrated oscilloscope.
- System Analysis: used to study the system's frequency response to identify and correct any mechanical resonance phenomena.

The software can be freely downloaded from Sanyo Denki website at the following link:

<https://www.sanyodenki.com/products/sanmotion-softwareindex.html>
file SANMOTION MOTOR Setup Software.



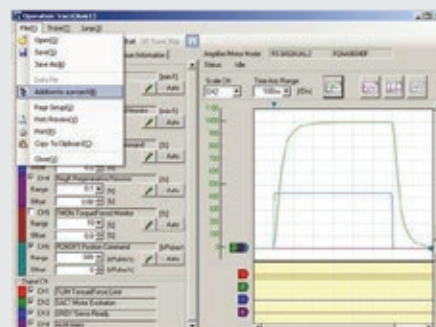
GRAPHIC MONITOR

Thanks to the integrated oscilloscope function, some important system parameters, such as speed and torque, can be displayed and saved on the PC monitor.

Data can be downloaded and saved in compatible Excel format.

The time setting range is 10 ms to 2 s.

Single values acquired and displayed can be read using the cursor.



DRIVE FOR 100W, 200W, 400W, 750W DELTA BRUSHLESS MOTORS

The DELTA ASD-A2-0121-M drive can only be used with a DELTA 100W motor, the DELTA ASDA-A2-0221-M drive can only be used with a DELTA 200W motor, the DELTA ASDA-A2-0421-M drive can only be used with the DELTA 400W motor, and the DELTA ASD-A2-0721-M drive can only be used with a DELTA 750W motor.

The drives are characterized by overall contained dimensions and great versatility of use. They consist of a circuit board situated in a metal box, complete with extractable power screw connectors and logics connectors.

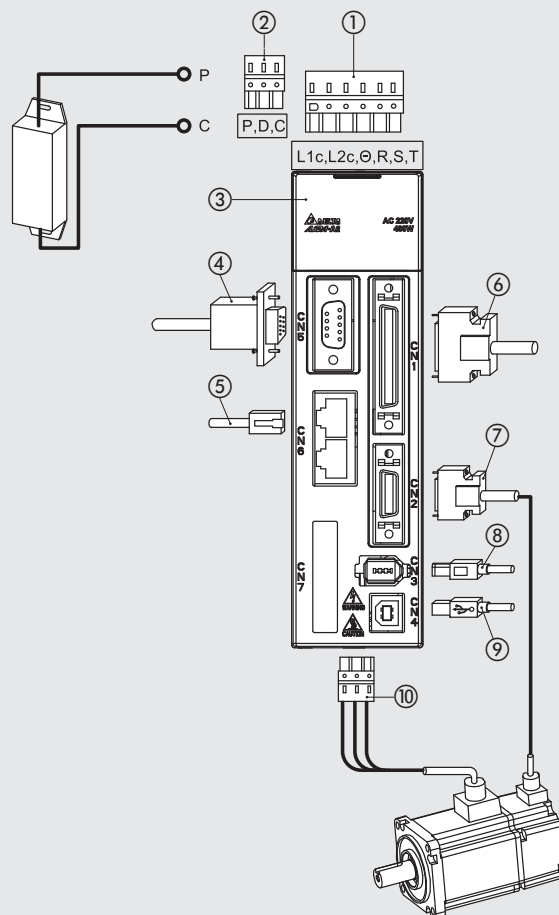


DRIVE TECHNICAL DATA				
Drive code		37D2100000	37D2200001	37D2300000
Nominal power	W	100	200	400
Type of drive for	BRUSHLESS motors	Metal box		
Dimensions	mm	170 x 173 x 45		
Power connectors and motor power		Spring type		
Encoder connectors and signals		Plug-type 3M		
Max output current	A	2.7	4.65	7.80
Motor output stage		IGBT, PWM control, sinusoidal current		
Power voltage		Single-phase or three-phase (user configurable) 200VAC-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)		
Logic voltage		Single-phase 200-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)		
Control		With analogue signal (proportional to speed and torque).		
		Pulse-train (clock + direction; forward + backward pulse; 90° phase difference)		
		fieldbus with "CANopen" communication protocol		
		8 inputs and 5 outputs, user configurable.		
		In the event of pulse-train command, the control system outputs should be the Line Driver type.		
		If the outputs are the open-collector type, you can use a 37D2000000 board, which is sold separately (see accessories).		
Auto-tuning		Yes		
Communication interface		Serial USB port for settings and monitoring via a personal computer		
Protections		Integrated against overloads, input extra-voltages, incorporated filters for suppressing the system's own resonance frequencies.		
Standards		CE and UL		
Other features		5-digit display and programming keypad.		
		Integrated closed-loop system with position, speed and torque control modes.		
		Control mode: position + speed; position + torque; speed + torque.		
		Automatic dynamic braking circuit in a alarm and power-off conditions.		
		Connector for external braking resistance (optional).		
		Configuration and control software (optional).		
Suitable for motors code		37M200000	37M2200001	37M2220001
		37M400000	37M4200001	37M4220001
Connecting cable:				
Brushless motor-drive connecting cable, 3 metres		37C2130001		
Brushless motor with brake-drive connecting cable, 3 metres		37C2730000		
Brushless motor-drive-encoder connecting cable, 3 metres		37C2230001		
Brushless motor-drive connecting dynamic cable, 3 metres		37C2130002		
Brushless motor-drive-encoder connecting dynamic cable, 3 metres		37C2230002		
Brushless motor with brake-drive connecting dynamic cable, 3 metres		37C2730001		
Brushless motor-drive connecting cable, 5 metres		37C2150001		
Brushless motor with brake-drive connecting cable, 5 metres		37C2750000		
Brushless motor-drive-encoder connecting cable, 5 metres		37C2250001		
Brushless motor-drive connecting dynamic cable, 5 metres		37C2150002		
Brushless motor-drive-encoder connecting dynamic cable, 5 metres		37C2250002		
Brushless motor with brake-drive connecting dynamic cable, 5 metres		37C2750001		
Brushless motor-drive connecting dynamic cable, 10 metres		37C2100003		
Brushless motor-drive-encoder connecting dynamic cable, 10 metres		37C2200003		
Brushless motor with brake-drive connecting dynamic cable, 10 metres		37C2700001		

WIRING DIAGRAM FOR 100W - 200W - 400W - 750W BRUSHLESS MOTOR DRIVES

- ① POWER CONNECTOR: 230VAC, single-phase and three-phase (user configurable). **Included in the supply.**
Separate supply section for logic/signal and power electronics. Integrated circuits protecting against overloads and input extra-voltages.
- ② CONNECTOR: for external braking resistance code 37D2R00000 (optional).
- ③ 5-DIGIT DISPLAY and PROGRAMMING KEYPAD: to display and modify parameters and monitor system operation in real time.
- ④ EXTERNAL ENCODER CONNECTOR (optional): possibility of connecting an external encoder to create a feedback of the linear axis position. Can support encoders A, B, Z, supplied at 5VDC.
- ⑤ CANopen CONNECTOR (optional): this drive is designed for communication with other devices via CANopen Fieldbus.
- ⑥ SIGNAL CONNECTOR: pulse-train command (clock + direction; forward + backward pulse; 90° phase difference) or with analogue signal (proportional to speed or torque) 8 inputs and 5 outputs, user configurable.
- ⑦ ENCODER CONNECTOR: connection for 100W - 200W - 400W - 750W BRUSHLESS motor encoder.
- ⑧ IEEE 1394 PC CONNECTOR: settings and possible connection to other devices via RS485 or RS232 (cable not included in the supply).
- ⑨ USB PC CONNECTOR: settings and monitor through personal computer (not included in the supply).
Data acquisition is only possible via this connection.
- ⑩ MOTOR POWER CONNECTOR

Log on to www.metalwork.it to view the instruction manual.



NOTES

DRIVE FOR 1kW DELTA BRUSHLESS MOTORS

It is a DELTA ASDA-A2-1021-M drive to be used only with a DELTA 1kW motor.
It features compact dimensions and considerable operating flexibility.
It consists of a board housed in a metal box. It comes with pull-out screw connectors for power and plug connectors for logic.

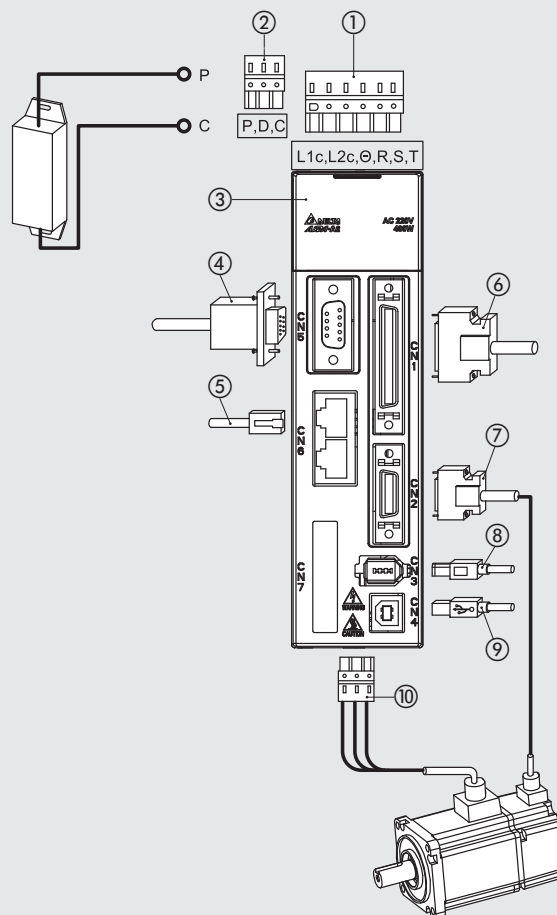


DRIVE TECHNICAL DATA	
Drive code	37D2400006
Nominal power	1kW
Type of drive for BRUSHLESS motors	Metal box
Dimensions	mm 180 x 173 x 65
Power connectors and motor power	Screw type
Encoder connectors and signals	Plug-type 3M
Max output current	A 21.90
Motor output stage	IGBT, PWM control, sinusoidal current
Power voltage	Single-phase or three-phase (user configurable) 200VAC-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
Logic voltage	Single-phase 200-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
Control	With analogue signal (proportional to speed and torque). Pulse-train (clock + direction; forward + backward pulse; 90° phase difference) fieldbus with "CANopen" communication protocol 8 inputs and 5 outputs, user configurable. In the event of pulse-train command, the control system outputs should be the Line Driver type. If the outputs are the open-collector type, you can use a 37D2000000 board, which is sold separately (see accessories).
Auto-tuning	Yes
Communication interface	Serial USB port for settings and monitoring via a personal computer
Protections	Integrated against overloads, input extra-voltages, incorporated filters for suppressing the system's own resonance frequencies.
Standards	CE and UL
Other features	5-digit display and programming keypad. Integrated closed-loop system with position, speed and torque control modes. Control mode: position + speed; position + torque; speed + torque. Automatic dynamic braking circuit in a alarm and power-off conditions. Connector for external braking resistance (optional). Configuration and control software (optional).
Suitable for motors code	37M2640000 - 37M4640000
Connecting cable:	
Brushless motor-drive connecting cable, 3 metres	37C3130001
Brushless motor with brake-drive connecting cable, 3 metres	37C3730000
Brushless motor-drive-encoder connecting cable, 3 metres	37C3230001
Brushless motor-drive connecting dynamic cable, 3 metres	37C2130006
Brushless motor-drive-encoder connecting dynamic cable, 3 metres	37C2230007
Brushless motor with brake-drive connecting dynamic cable, 3 metres	37C2730002
Brushless motor-drive connecting cable, 5 metres	37C3150001
Brushless motor with brake-drive connecting cable, 5 metres	37C3750000
Brushless motor-drive-encoder connecting cable, 5 metres	37C3250001
Brushless motor-drive connecting dynamic cable, 5 metres	37C2150006
Brushless motor-drive-encoder connecting dynamic cable, 5 metres	37C2250008
Brushless motor with brake-drive connecting dynamic cable, 5 metres	37C2750003
Brushless motor-drive connecting dynamic cable, 10 metres	37C2100006
Brushless motor-drive-encoder connecting dynamic cable, 10 metres	37C2200007
Brushless motor with brake-drive connecting dynamic cable, 10 metres	37C2700002

WIRING DIAGRAM FOR 1kW BRUSHLESS MOTOR DRIVES

- ① POWER CONNECTOR: 230VAC, single-phase and three-phase (user configurable). **Included in the supply.**
Separate supply section for logic/signal and power electronics. Integrated circuits protecting against overloads and input extra-voltages.
- ② CONNECTOR: for external braking resistance code 37D2R00000 (optional).
- ③ 5-DIGIT DISPLAY and PROGRAMMING KEYPAD: to display and modify parameters and monitor system operation in real time.
- ④ EXTERNAL ENCODER CONNECTOR (optional): possibility of connecting an external encoder to create a feedback of the linear axis position. Can support encoders A, B, Z, supplied at 5VDC.
- ⑤ CANopen CONNECTOR (optional): this drive is designed for communication with other devices via CANopen Fieldbus.
- ⑥ SIGNAL CONNECTOR: pulse-train command (clock + direction; forward + backward pulse; 90° phase difference) or with analogue signal (proportional to speed or torque) 8 inputs and 5 outputs, user configurable.
- ⑦ ENCODER CONNECTOR: connection for 100W - 200W - 400W - 750W BRUSHLESS motor encoder.
- ⑧ IEEE 1394 PC CONNECTOR: settings and possible connection to other devices via RS485 or RS232 (cable not included in the supply).
- ⑨ USB PC CONNECTOR: settings and monitor through personal computer (not included in the supply).
Data acquisition is only possible via this connection.
- ⑩ MOTOR POWER CONNECTOR

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NOTES

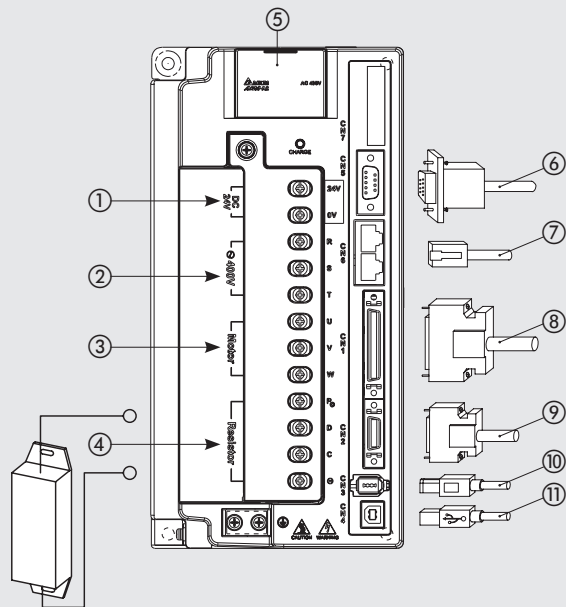
DRIVE FOR 3kW DELTA BRUSHLESS MOTORS

It is a DELTA ASDA-A2-3043-M drive to be used only with a DELTA 3kW motor.
It features compact dimensions and considerable operating flexibility.
It consists of a board housed in a metal box. It comes with pull-out screw connectors for power and plug connectors for logic.



DRIVE TECHNICAL DATA	
Drive code	37D2600001
Nominal power	3kW
Type of drive for BRUSHLESS motors	Metal box
Dimensions	mm 245 x 205.4 x 123
Power connectors and motor power	Screw type
Encoder connectors and signals	Plug-type 3M
Max output current	A 33.32
Motor output stage	IGBT, PWM control, sinusoidal current
Power voltage	Three-phase from 380VAC to 480VAC $\pm 10\%$ 50/60 Hz (± 3 Hz)
Logic voltage	24VDC $\pm 10\%$
Control	With analogue signal (proportional to speed and torque). Pulse-train (clock + direction; forward + backward pulse; 90° phase difference) fieldbus with "CANopen" communication protocol 8 inputs and 5 outputs, user configurable. In the event of pulse-train command, the control system outputs should be the Line Driver type. If the outputs are the open-collector type, you can use a 37D2000000 board, which is sold separately (see accessories).
Auto-tuning	Yes
Communication interface	Serial USB port for settings and monitoring via a personal computer
Protections	Integrated against overloads, input extra-voltages, incorporated filters for suppressing the system's own resonance frequencies.
Standards	CE and UL
Other features	5-digit display and programming keypad. Integrated closed-loop system with position, speed and torque control modes. Control mode: position + speed; position + torque; speed + torque. Automatic dynamic braking circuit in a alarm and power-off conditions. Connector for external braking resistance (optional). Configuration and control software (optional).
Suitable for motors code	37M2770000 - 37M4770000
Connecting cable:	
Brushless motor-drive connecting cable, 3 metres	37C3130001
Brushless motor with brake-drive connecting cable, 3 metres	37C3730000
Brushless motor-drive-encoder connecting cable, 3 metres	37C3230001
Brushless motor-drive connecting dynamic cable, 3 metres	37C2130006
Brushless motor-drive-encoder connecting dynamic cable, 3 metres	37C2230007
Brushless motor with brake-drive connecting dynamic cable, 3 metres	37C2730002
Brushless motor-drive connecting cable, 5 metres	37C3150001
Brushless motor with brake-drive connecting cable, 5 metres	37C3750000
Brushless motor-drive-encoder connecting cable, 5 metres	37C3250001
Brushless motor-drive connecting dynamic cable, 5 metres	37C2150006
Brushless motor-drive-encoder connecting dynamic cable, 5 metres	37C2250008
Brushless motor with brake-drive connecting dynamic cable, 5 metres	37C2750003
Brushless motor-drive connecting dynamic cable, 10 metres	37C2100006
Brushless motor-drive-encoder connecting dynamic cable, 10 metres	37C2200007
Brushless motor with brake-drive connecting dynamic cable, 10 metres	37C2700002

- ① LOGIC POWER CONNECTOR: 24VDC.
Included in the supply. Power section for logic electronics.
- ② POWER CONNECTOR: 400VAC, three-phase.
Included in the supply. Power signal supply section.
Integrated circuits protected against overload, input extra-voltages.
- ③ MOTOR POWER CONNECTOR
- ④ CONNECTOR: for external braking resistance code 37D2R00004 (optional).
- ⑤ 5-DIGIT DISPLAY and PROGRAMMING KEYPAD: to display and modify parameters and monitor system operation in real time.
- ⑥ EXTERNAL ENCODER CONNECTOR (optional): possibility of connecting an external encoder to create a feedback of the linear axis position. Can support encoders A, B, Z, supplied at 5VDC.
- ⑦ CANopen CONNECTOR (optional): this drive is designed for communication with other devices via CANopen Fieldbus.
- ⑧ SIGNAL CONNECTOR: pulse-train command (clock + direction; forward + backward pulse; 90° phase difference) or with analogue signal (proportional to speed or torque) 8 inputs and 5 outputs, user configurable. **Included in the supply.**
- ⑨ ENCODER CONNECTOR: connection for 3kW BRUSHLESS motor encoder.
- ⑩ IEEE 1394 PC CONNECTOR: settings and possible connection to other devices via RS485 or RS232 (cable not included in the supply).
- ⑪ USB PC CONNECTOR: settings and monitor through personal computer (not included in the supply).
Data acquisition is only possible via this connection.



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NOTES

DRIVE FOR B3 400W DELTA BRUSHLESS MOTORS

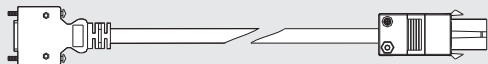
It is a DELTA ASD-B3A-0421-M drive to be used only with a DELTA B3 400W motor.
It features compact dimensions and considerable operating flexibility.
It consists of a board housed in a metal box. It comes with pull-out screw connectors for power and plug connectors for logic.



DRIVE TECHNICAL DATA	
Drive code	37D2300002
Nominal power	400
Type of drive for BRUSHLESS motors	Metal box
Dimensions	60 x 162 x 156
Power connectors and motor power	Spring type
Encoder connectors and signals	Plug-type, D-Sub high density 26 poles
Max output current	10.6
Motor output stage	IGBT, PWM control, sinusoidal current
Power voltage	Single-phase or three-phase (user configurable) 200-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
Logic voltage	Single-phase 200-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
Control	With analogue signal (proportional to speed and torque). Pulse-train (clock + direction; forward + backward pulse; 90° phase difference) fieldbus with "CANopen" communication protocol 4 inputs and 2 outputs, user configurable. In the event of pulse-train command, the control system outputs should be the Line Driver type. If the outputs are the open-collector type, you can use a 37D2000000 board, which is sold separately (see accessories).
Auto-tuning	Yes
Communication interface	Serial USB port for settings and monitoring via a personal computer
Protections	Integrated against overloads, input extra-voltages, STO (Safe Torque Off) incorporated filters for suppressing the system's own resonance frequencies.
Standards	CE and UL
Other features	5-digit display and programming keypad. Integrated closed-loop system with position, speed and torque control modes. Control mode: position + speed; position + torque; speed + torque. Automatic dynamic braking circuit in a alarm and power-off conditions. Connector for external braking resistance (optional). Configuration and control software (optional).
Suitable for motors code	37M2220002 - 37M4220002
Connecting cable:	
Brushless motor-drive, dynamic cable, 3 metres	37C2130002
Brushless motor-drive with brake dynamic cable, 3 metres	37C2230002
Brushless motor-drive-encoder, dynamic cable, 3 metres	37C2230006
Brushless motor-drive, dynamic cable, 5 metres	37C2150002
Brushless motor-drive with brake dynamic cable, 5 metres	37C2250002
Brushless motor-drive-encoder, dynamic cable, 5 metres	37C2250007
Brushless motor-drive, dynamic cable, 10 metres	37C2100003
Brushless motor-drive with brake dynamic cable, 10 metres	37C2200003
Brushless motor-drive-encoder, dynamic cable, 10 metres	37C2200006

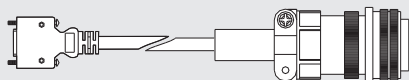
CABLES FOR DELTA BRUSHLESS MOTORS

ENCODER CABLE 100W - 750W



Code	Description
37C2230001	100W-750W brushless motor-drive-encoder connecting cable, 3 metres
37C2250001	100W-750W brushless motor-drive-encoder connecting cable, 5 metres
37C2230002	100W-750W brushless motor-drive-encoder connecting dynamic cable, 3 metres
37C2250002	100W-750W brushless motor-drive-encoder connecting dynamic cable, 5 metres
37C2200003	100W-750W brushless motor-drive-encoder connecting dynamic cable, 10 metres

ENCODER CABLE 1kW - 3kW



Code	Description
37C3230001	1kW - 3kW brushless motor-drive-encoder connecting cable, 3 m
37C3250001	1kW - 3kW brushless motor-drive-encoder connecting cable, 5 m
37C2230007	1kW - 3kW brushless motor-drive-encoder connecting dynamic cable, 3 metres
37C2250008	1kW - 3kW brushless motor-drive-encoder connecting dynamic cable, 5 metres
37C2200007	1kW - 3kW brushless motor-drive-encoder connecting dynamic cable, 10 metres

ENCODER CABLE B3 400W

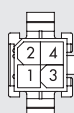


Code	Description
37C2230006	B3 400W brushless motor-drive-encoder connecting dynamic cable, 3 metres
37C2250007	B3 400W brushless motor-drive-encoder connecting dynamic cable, 5 metres
37C2200006	B3 400W brushless motor-drive-encoder connecting dynamic cable, 10 metres

MOTOR POWER CABLE 100W - 750W

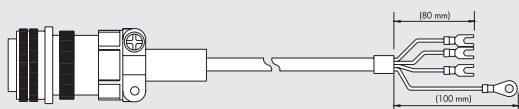


Code	Description
37C2130001	100W-750W brushless motor-drive connecting cable, 3 metres
37C2150001	100W-750W brushless motor-drive connecting cable, 5 metres
37C2130002	100W-750W brushless motor-drive connecting dynamic cable, 3 metres
37C2150002	100W-750W brushless motor-drive connecting dynamic cable, 5 metres
37C2100003	100W-750W brushless motor-drive connecting dynamic cable, 10 metres



Pin	Function	Corresponding wire colour
1	Motor phase U	Black 1
2	Motor phase V	Black 2
3	Motor phase W	Black 3
4	GND	Yellow / Green

MOTOR POWER CABLE 1kW - 3kW

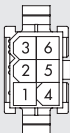
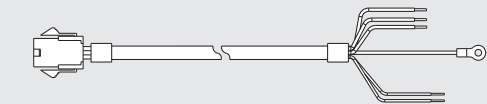


Code	Description
37C3130001	1kW - 3kW brushless motor-drive connecting cable, 3 m
37C3150001	1kW - 3kW brushless motor-drive connecting cable, 5 m
37C2130006	1kW - 3kW brushless motor-drive connecting dynamic cable, 3 metres
37C2150006	1kW - 3kW brushless motor-drive connecting dynamic cable, 5 metres
37C2100006	1kW - 3kW brushless motor-drive connecting dynamic cable, 10 metres



Pin	Function	Corresponding wire colour
A	-	-
B	Motor phase W	Black 4
C	-	-
D	-	-
E	GND	Yellow / Green
F	Motor phase U	Black 1
G	-	-
H	-	-
I	Motor phase V	Black 2

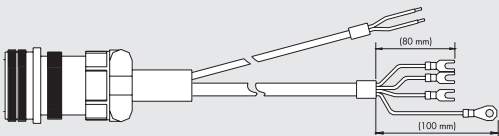
MOTOR POWER CABLE + BRAKE 100W - 750W



Code	Description
37C2730000	100W-750W brushless motor-drive connecting cable + brake, 3 metres
37C2750000	100W-750W brushless motor-drive connecting cable + brake, 5 metres
37C2730001	100W-750W brushless motor-drive connecting dynamic cable + brake, 3 metres
37C2750001	100W-750W brushless motor-drive connecting dynamic cable + brake, 5 metres
37C2700001	100W-750W brushless motor-drive connecting dynamic cable + brake, 10 metres

Pin	Function	Corresponding wire colour
1	Motor phase U	Black 1
2	Motor phase V	Black 2
3	24VDC brake	Black 3
4	Motor phase W	Black 4
5	GND	Yellow / Green
6	GND brake	Black 6

MOTOR POWER CABLE + BRAKE 1kW - 3kW



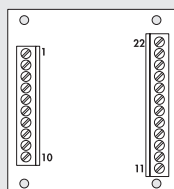
Code	Description
37C3730000	1kW - 3kW brushless motor drive connecting cable + brake, 3 m
37C3750000	1kW - 3kW brushless motor drive connecting cable + brake, 5 m
37C2730002	1kW - 3kW brushless motor-drive connecting dynamic cable + brake, 3 metres
37C2750003	1kW - 3kW brushless motor-drive connecting dynamic cable + brake, 5 metres
37C2700002	1kW - 3kW brushless motor-drive connecting dynamic cable + brake, 10 metres

Pin	Function	Corresponding wire colour
A	-	-
B	Motor phase W	Black 4
C	-	-
D	-	-
E	GND	Yellow / Green
F	Motor phase U	Black 1
G	24VDC brake	Black 3
H	GND brake	Black 6
I	Motor phase V	Black 2

NOTES

ACCESSORIES FOR DELTA DRIVES

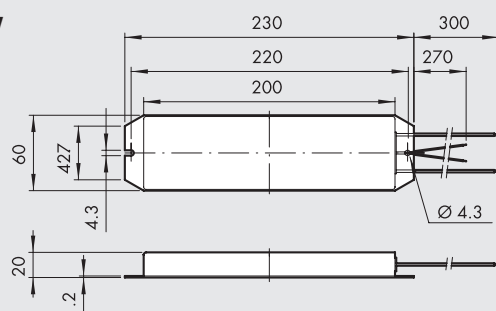
LINE-DRIVER INTERFACE BOARD



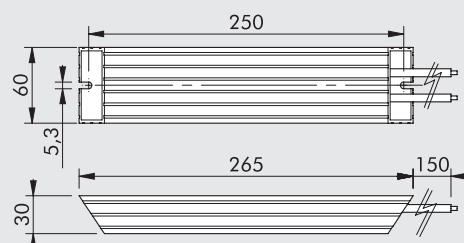
Code	Description
37D2000000	BRINT.A line driver interface board

EXTERNAL BRAKING RESISTANCES

220W



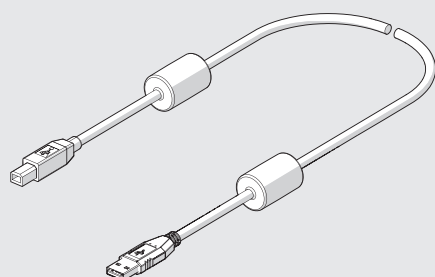
400W



Code	Description	For drive code
37D2R00000	220W 50 Ω braking resistance	37D2100000 - 37D2200001 37D2300000
37D2R00004	400W 40 Ω braking resistance	37D23000002 - 37D2400006 37D2400007 - 37D2600001

Under certain operating conditions, such as sudden deceleration with high inertial load, it may be necessary to dissipate externally the reverse energy generated by the motor. The drive indicates this requirement via a specific alarm. Excess energy is dissipated externally via a braking resistance.

CABLE USB



Code	Description	Weight [g]
37C0030000	Cable for USB 2.0 male A-B connector with ferrite core, for connecting the drive brushless to a PC, 3 m	150

CONFIGURATION SOFTWARE ASDASoft

ASDASoft communication software is used for parameter setting and complete control of all functions of the system. The configuration software can be downloaded free from the website <http://www.deltaww.com>

Access to parameter setting is done through the setup menus. The software includes a detailed description of each parameter. In addition to parameter setting ASDASoft software can accurately analyse operation of the system via the following functions.

- Status Monitor: real-time display of all details about the system.
- Data Scope: a complete oscilloscope with 4 channels that can be selected as desired among analogue and digital signals.
- System Analysis: used to study the system's frequency response to identify and correct any mechanical resonance phenomena.

JOG speed modes are also available (Digital IO/Jog Control) and Gain Auto-Tuning.



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