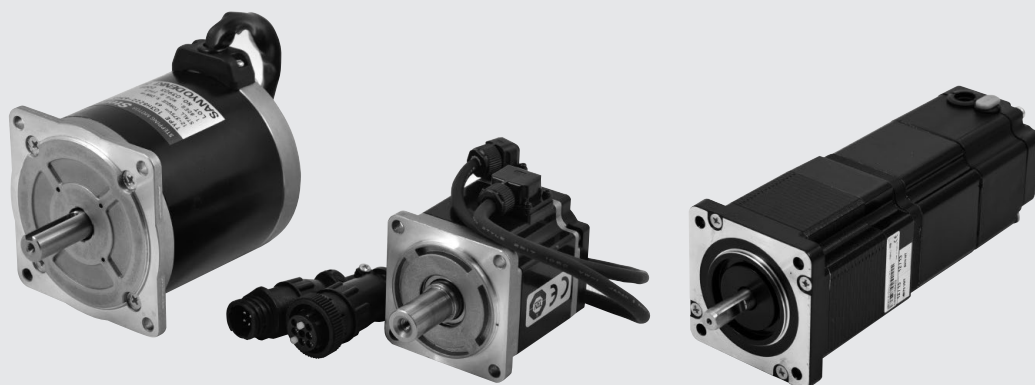


MOTORS AND DRIVES

ELECTRIC MOTORS FOR ELECTRIC CYLINDERS SERIES ELEKTRO



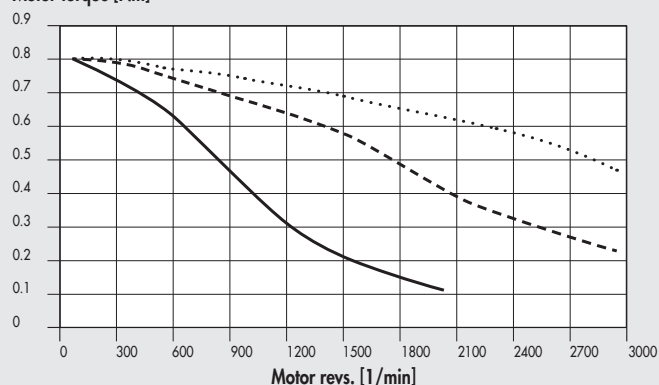
STEPPING MOTORS

N.B.: With motor off, the drive current is automatically reduced by 50% to prevent overheating. Consequently, available torque with the motor stopped is also reduced by 50%.

TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC STEPPING MOTORS

STEPPING motor code 37M1110000

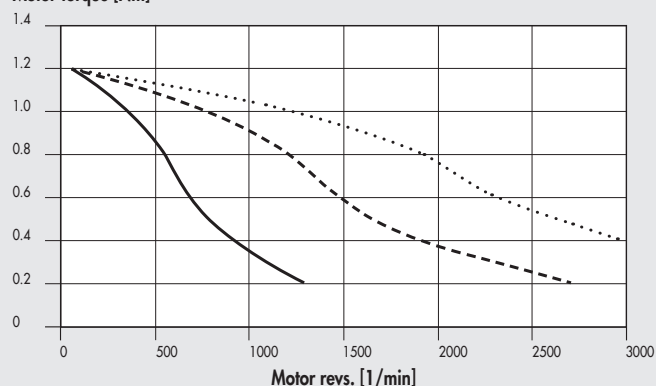
Motor torque [Nm]



— 37M1110000 (24VDC) 37M1110000 (75VDC)
- - - 37M1110000 (48VDC)

STEPPING motor code 37M1120000

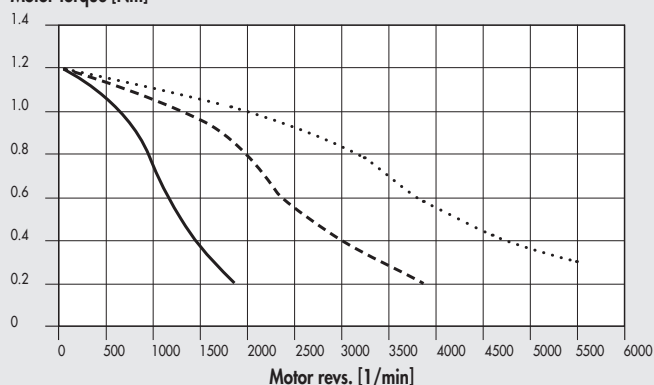
Motor torque [Nm]



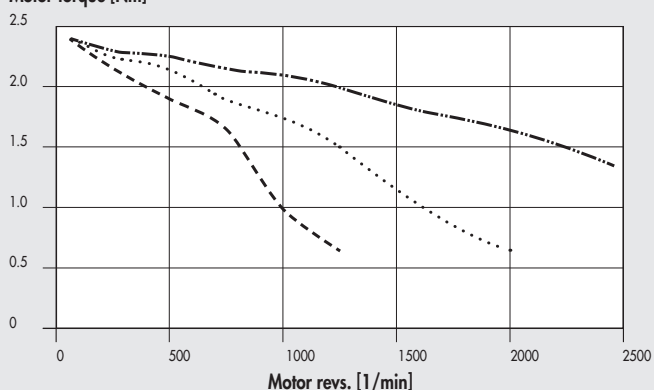
— 37M1120000 (24VDC) 37M1120000 (75VDC)
- - - 37M1120000 (48VDC)

TECHNICAL DATA		MOTOR 37M1110000
Motor type		STEPPING
Nominal torque	Nm	0.8
Coupling flange		NEMA 23
Base step angle		1.8°±0.09°
Bipolar current	A	4
Resistance	Ω	0.41
Inductance	mH	1.6
Bipolar holding torque	Nm	1.1
Rotor inertia	kgmm ²	21
Theoretical acceleration	rad · s ⁻²	50000
Back E.M.F.	V/krpm	20
Mass	kg	0.65
Degree of protection		IP40

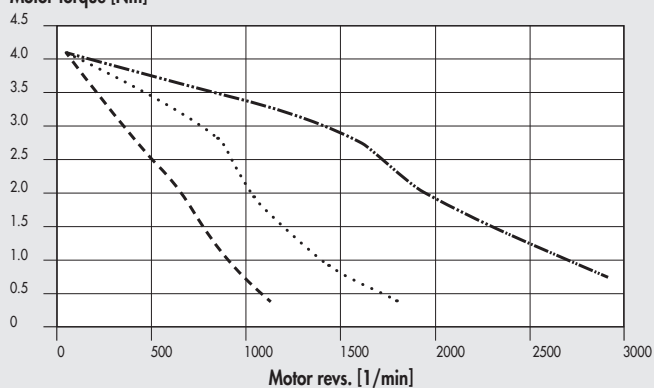
TECHNICAL DATA		MOTOR 37M1120000
Motor type		STEPPING
Nominal torque	Nm	1.2
Coupling flange		NEMA 23
Base step angle		1.8°±0.09°
Bipolar current	A	4
Resistance	Ω	0.48
Inductance	mH	2.2
Bipolar holding torque	Nm	1.65
Rotor inertia	kgmm ²	36
Theoretical acceleration	rad · s ⁻²	45800
Back E.M.F.	V/krpm	31
Mass	kg	1
Degree of protection		IP40

STEPPING motor code 37M1120001
Motor torque [Nm]


— 37M1120001 (24VDC)
 --- 37M1120001 (48VDC)
 37M1120001 (75VDC)

STEPPING motor code 37M1430000
Motor torque [Nm]


--- 37M1430000 (48VDC)
 37M1430000 (75VDC)
 -.-.- 37M1430000 (140VDC)

STEPPING motor code 37M1440000
Motor torque [Nm]


--- 37M1440000 (48VDC)
 37M1440000 (75VDC)
 -.-.- 37M1440000 (140VDC)

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

TECHNICAL DATA

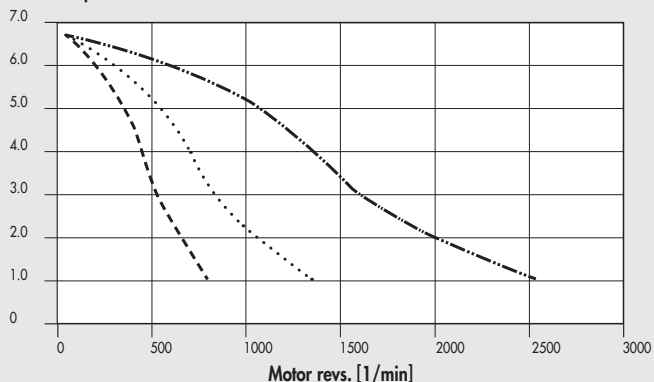
		MOTOR 37M1430000
Motor type		STEPPING
Nominal torque	Nm	2.4
Coupling flange		NEMA 34
Base step angle		1.8°±0.09°
Bipolar current	A	6
Resistance	Ω	0.3
Inductance	mH	1.65
Bipolar holding torque	Nm	3
Rotor inertia	kgmm ²	145
Theoretical acceleration	rad · s ⁻²	20600
Back E.M.F.	V/krpm	50
Mass	kg	1.5
Degree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

STEPPING motor code **37M1450000**

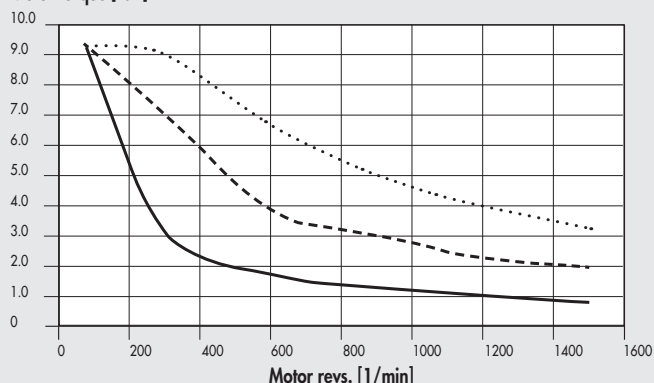
Motor torque [Nm]



--- 37M1450000 (48VDC)
 37M1450000 (75VDC)
 -.-.- 37M1450000 (140VDC)

STEPPING motor code **37M1470000**

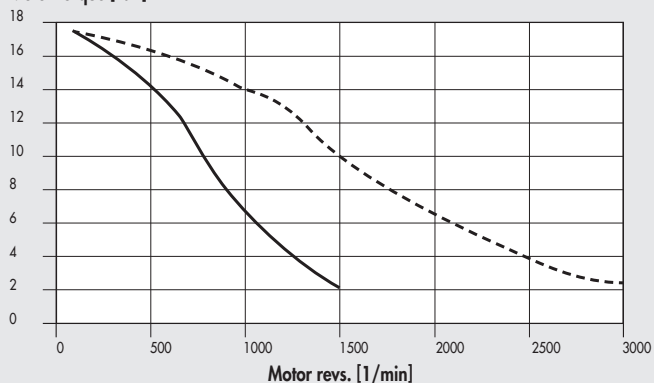
Motor torque [Nm]



— 37M1470000 (24VDC)
 --- 37M1470000 (48VDC)
 37M1470000 (75VDC)

STEPPING motor code **37M1890000**

Motor torque [Nm]



--- 37M1890000 (230VAC)
 — 37M1890000 (115VAC)

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

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

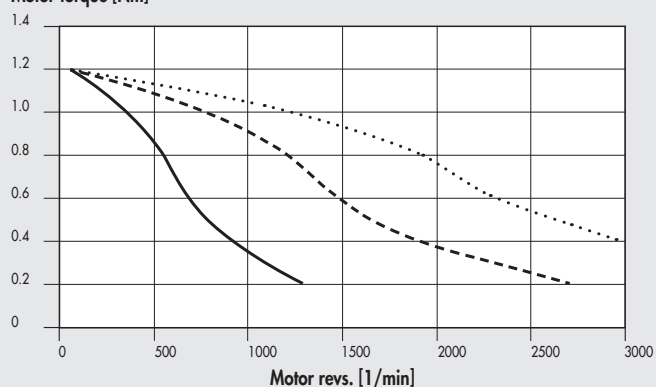
TECHNICAL DATA		MOTOR 37M1890000
Motor type		STEPPING
Nominal torque	Nm	17.5
Coupling flange		NEMA 42
Base step angle		1.8°±0.09°
Bipolar current	A	6
Resistance	Ω	0.63
Inductance	mH	8
Bipolar holding torque	Nm	24.6
Rotor inertia	kgmm ²	2200
Theoretical acceleration	rad · s ⁻²	11100
Back E.M.F.	V/krpm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

STEPPING MOTORS WITH BRAKE

TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC STEPPING MOTORS WITH BRAKE

STEPPING motor with BRAKE code 37M5120000

Motor torque [Nm]



— 37M5120000 (24VDC)

..... 37M5120000 (75VDC)

- - - 37M5120000 (48VDC)

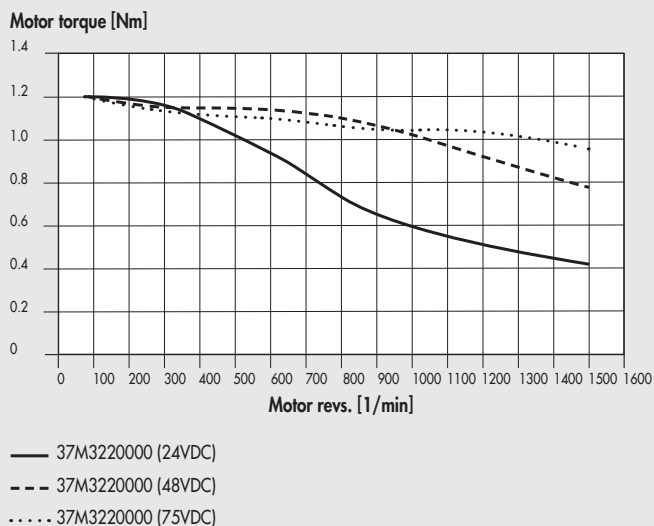
TECHNICAL DATA		MOTOR 37M5120000
Motor type		STEPPING with BRAKE
Nominal torque	Nm	1.2
Coupling flange		NEMA 23
Base step angle		1.8°±0.09°
Bipolar current	A	4
Resistance	Ω	0.48
Inductance	mH	2.2
Bipolar holding torque	Nm	1.65
Rotor inertia	kgmm ²	36
Theoretical acceleration	rad · s ⁻²	45800
Back E.M.F.	V/krpm	31
Mass	kg	1 - 5
Degree of protection		IP40
BRAKE		
Braking torque	Nm	3.3
Duty Cycle		50% max
Supply voltage	VDC	24
Power consumption	W	18
Connecting time	ms	300

NOTES

STEPPING MOTORS WITH BRAKE + ENCODER

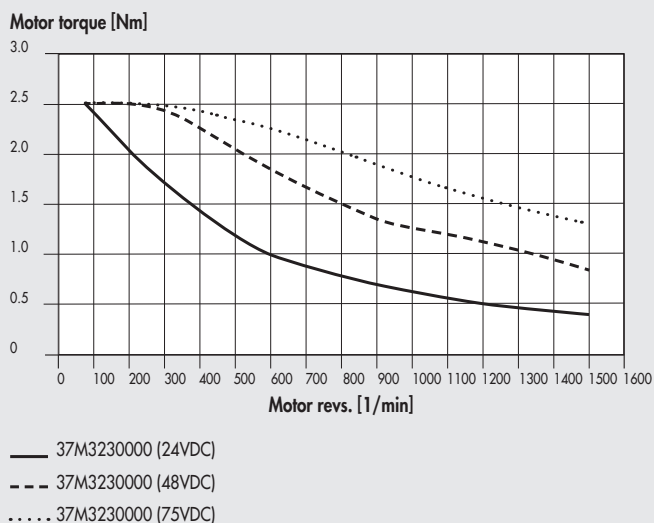
TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC STEPPING MOTORS WITH BRAKE + ENCODER

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

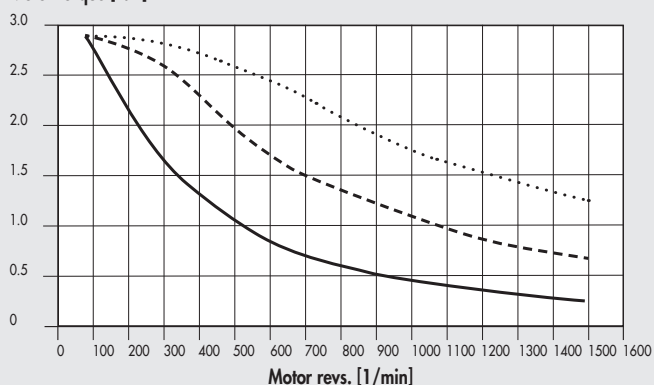


TECHNICAL DATA		MOTOR 37M3220000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	1.2
Coupling flange		60
Base step angle		1.8°
Current	A	5
Resistance	Ω	0.38
Inductance	mH	1.4
Bipolar holding torque	Nm	1.7
Rotor inertia	kgmm ²	44
Mass	kg	1.28
Degree of protection		IP65
Encoder cable for stepping 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
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

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

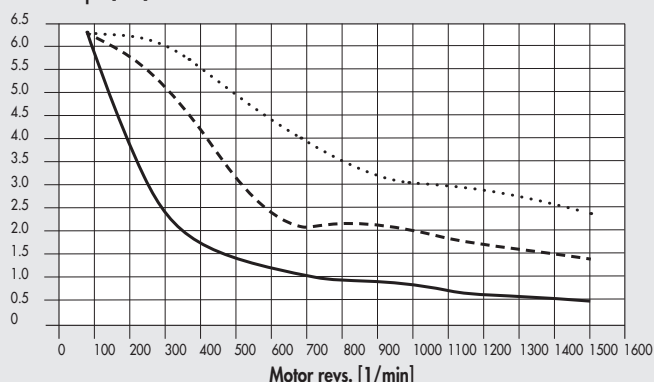


TECHNICAL DATA		MOTOR 37M3230000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	2.5
Coupling flange		60
Base step angle		1.8°
Bipolar current	A	5
Resistance	Ω	0.6
Inductance	mH	2.8
Bipolar holding torque	Nm	3.5
Rotor inertia	kgmm ²	92
Mass	kg	1.8
Degree of protection		IP65
Encoder cable 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
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

STEPPING motor with BRAKE + ENCODER code 37M3430000
Motor torque [Nm]


— 37M3430000 (24VDC)
 - - - 37M3430000 (48VDC)
 37M3430000 (75VDC)

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 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
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

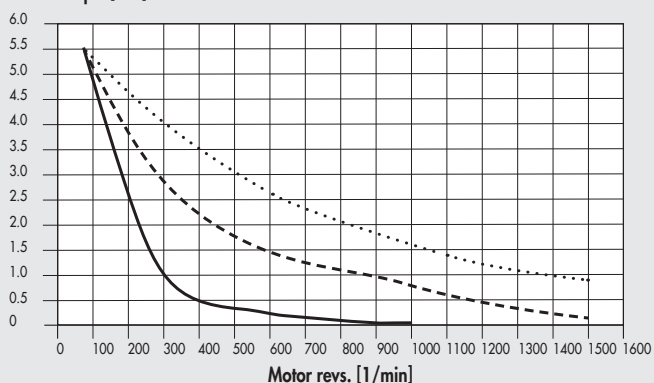
STEPPING motor with BRAKE + ENCODER code 37M3450000
Motor torque [Nm]


— 37M3450000 (24VDC)
 - - - 37M3450000 (48VDC)
 37M3450000 (75VDC)

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 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
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

STEPPING motor with BRAKE + ENCODER code **37M3460000**

Motor torque [Nm]

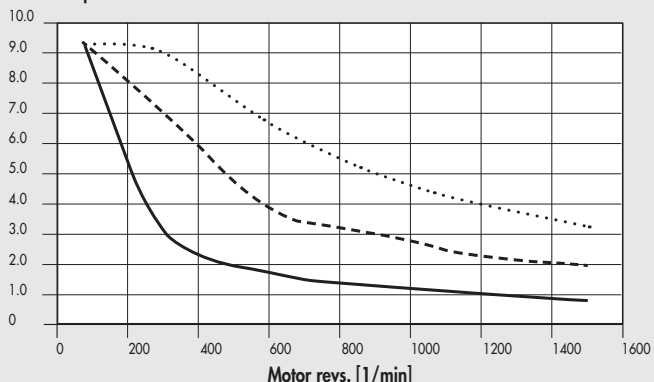


— 37M3460000 (24VDC)
 --- 37M3460000 (48VDC)
 37M3460000 (75VDC)

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 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
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

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

Motor torque [Nm]



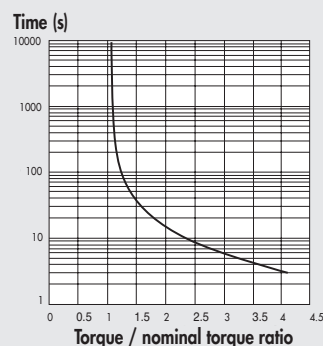
— 37M3470000 (24VDC)
 --- 37M3470000 (48VDC)
 37M3470000 (75VDC)

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	kgmm ²	392
Mass	kg	4.2
Degree of protection		IP65
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
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

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.

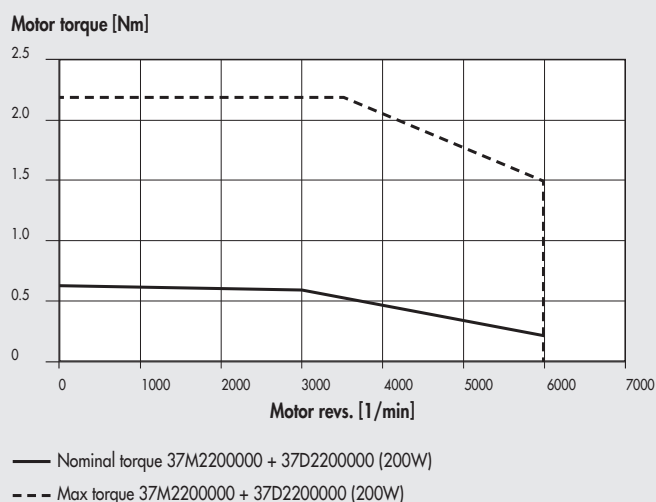


TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC BRUSHLESS MOTORS (SANYO DENKI)

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

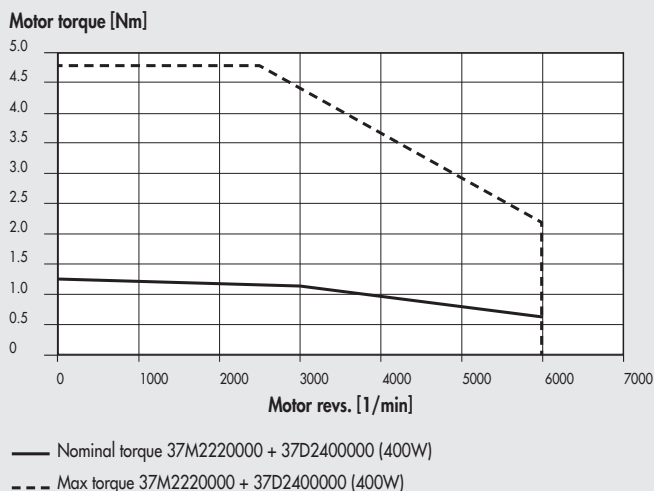
- **NOMINAL TORQUE** curve: the nominal torque delivered by the motor with a duty cycle of 100%
- **MAXIMUM TORQUE** curve: the torque delivered by the motor with a duty cycle of less than 100%

BRUSHLESS motor code **37M2200000** + drive code **37D2200000** (200W)



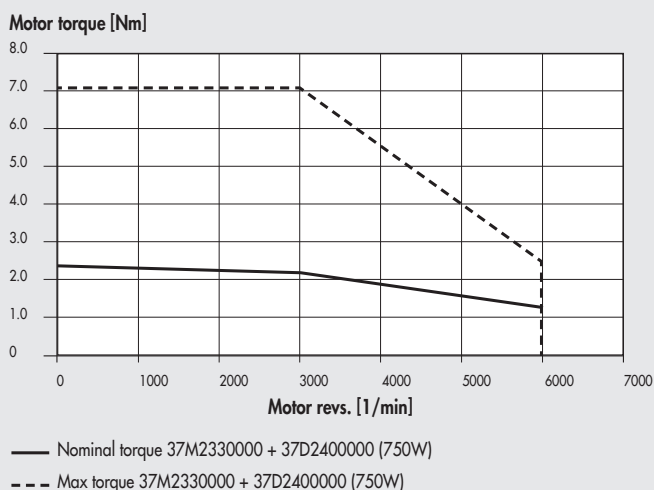
TECHNICAL DATA		MOTOR 37M2200000
Motor type		BRUSHLESS
Nominal torque	Nm	0.64
Coupling flange (square)	mm	60
Nominal power	W	200
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	0.686
Maximum torque	Nm	2.2
Rotor inertia	kgmm ²	21.9
Mass	kg	0.84
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
Drive code		37D2200000
Connecting cable:		
Brushless motor-drive, 3 metres		37C2130000
Brushless motor-drive-encoder, 3 metres		37C2230000
Brushless motor-drive, dynamic cable, 3 metres		37C2130003
Brushless motor-drive-encoder, dynamic cable, 3 metres		37C2230003
Brushless motor-drive, 5 metres		37C2150000
Brushless motor-drive-encoder, 5 metres		37C2250000
Brushless motor-drive, dynamic cable, 5 metres		37C2150003
Brushless motor-drive-encoder, dynamic cable, 5 metres		37C2250003
Brushless motor-drive, dynamic cable, 10 metres		37C2110003
Brushless motor-drive-encoder, dynamic cable, 10 metres		37C2210003

BRUSHLESS motor code **37M2220000** + drive code **37D2400000** (400W)

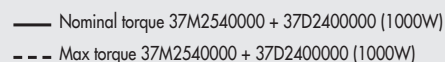


TECHNICAL DATA		MOTOR 37M2220000
Motor type		BRUSHLESS
Nominal torque	Nm	1.27
Coupling flange (square)	mm	60
Nominal power	W	400
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	1.37
Maximum torque	Nm	4.8
Rotor inertia	kgmm ²	41.2
Mass	kg	1.3
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
Drive code		37D2400000
Connecting cable:		
Brushless motor-drive, 3 metres		37C2130000
Brushless motor-drive-encoder, 3 metres		37C2230000
Brushless motor-drive, dynamic cable, 3 metres		37C2130003
Brushless motor-drive-encoder, dynamic cable, 3 metres		37C2230003
Brushless motor-drive, 5 metres		37C2150000
Brushless motor-drive-encoder, 5 metres		37C2250000
Brushless motor-drive, dynamic cable, 5 metres		37C2150003
Brushless motor-drive-encoder, dynamic cable, 5 metres		37C2250003
Brushless motor-drive, dynamic cable, 10 metres		37C2110003
Brushless motor-drive-encoder, dynamic cable, 10 metres		37C2210003

BRUSHLESS motor code **37M2330000** + drive code **37D2400000** (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		37D2400000
Connecting cable:		
Brushless motor-drive, 3 metres		37C2130000
Brushless motor-drive-encoder, 3 metres		37C2230000
Brushless motor-drive, dynamic cable, 3 metres		37C2130003
Brushless motor-drive-encoder, dynamic cable, 3 metres		37C2230003
Brushless motor-drive, 5 metres		37C2150000
Brushless motor-drive-encoder, 5 metres		37C2250000
Brushless motor-drive, dynamic cable, 5 metres		37C2150003
Brushless motor-drive-encoder, dynamic cable, 5 metres		37C2250003
Brushless motor-drive, dynamic cable, 10 metres		37C2110003
Brushless motor-drive-encoder, dynamic cable, 10 metres		37C2210003

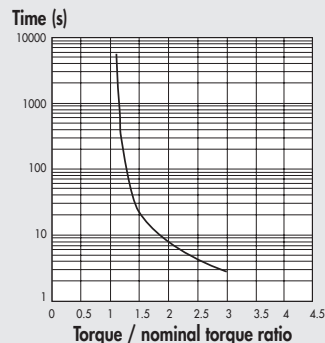


TECHNICAL DATA		MOTOR 37M2540000
Motor type		BRUSHLESS
Nominal torque	Nm	3.18
Coupling flange (square)	mm	86
Nominal power	W	1000
Nominal speed	rpm	3000
Maximum speed	rpm	3000
Stall torque	Nm	3.92
Maximum torque	Nm	11.6
Rotor inertia	kgmm ²	238.3
Mass	kg	3.5
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
Drive code		37D2400000
Connecting cable:		
Brushless motor-drive , 3 metres		37C2130000
Brushless motor-drive-encoder , 3 metres		37C2230000
Brushless motor-drive, dynamic cable, 3 metres		37C2130003
Brushless motor-drive-encoder, dynamic cable, 3 metres		37C2230003
Brushless motor-drive , 5 metres		37C2150000
Brushless motor-drive-encoder , 5 metres		37C2250000
Brushless motor-drive, dynamic cable, 5 metres		37C2150003
Brushless motor-drive-encoder, dynamic cable, 5 metres		37C2250003
Brushless motor-drive, dynamic cable, 10 metres		37C2110003
Brushless motor-drive-encoder, dynamic cable, 10 metres		37C2210003

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.

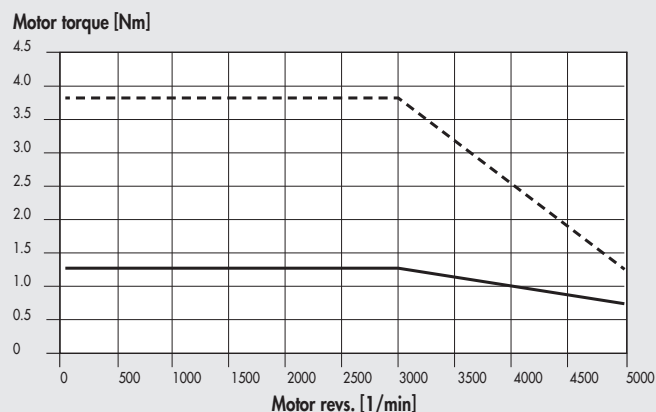


TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC BRUSHLESS MOTORS (DELTA)

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%

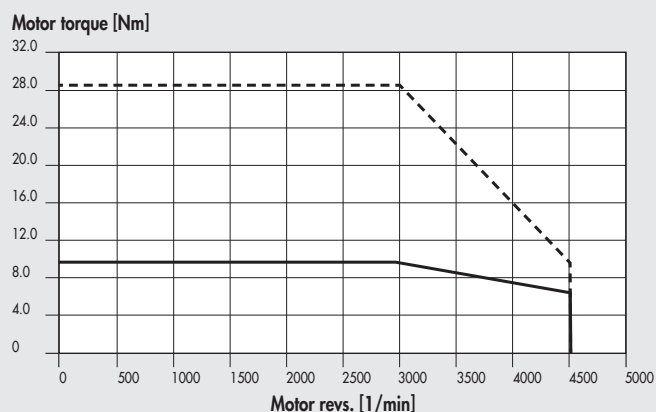
BRUSHLESS motor code **37M2220001** + drive code **37D2300000** (400W)



— Nominal torque 37M2220001 + 37D2300000 (400W)
 - - - Max torque 37M2220001 + 37D2300000 (400W)

TECHNICAL DATA		MOTOR 37M2220001
Motor type		BRUSHLESS
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	27.7
Mass	kg	1.6
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP40
Drive code		37D2300000
Connecting cable:		
Brushless motor-drive, 3 metres		37C2130001
Brushless motor-drive-encoder, 3 metres		37C2230001
Brushless motor-drive, 5 metres		37C2150001
Brushless motor-drive-encoder, 5 metres		37C2250001

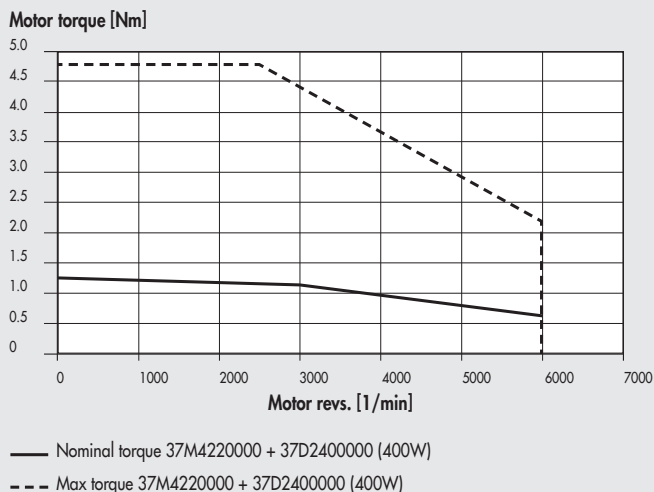
BRUSHLESS motor code **37M2770000** + drive code **37D2600001** (3000W)



— Nominal torque 37M2770000 + 37D2600001 (3000W)
 - - - Max torque 37M2770000 + 37D2600001 (3000W)

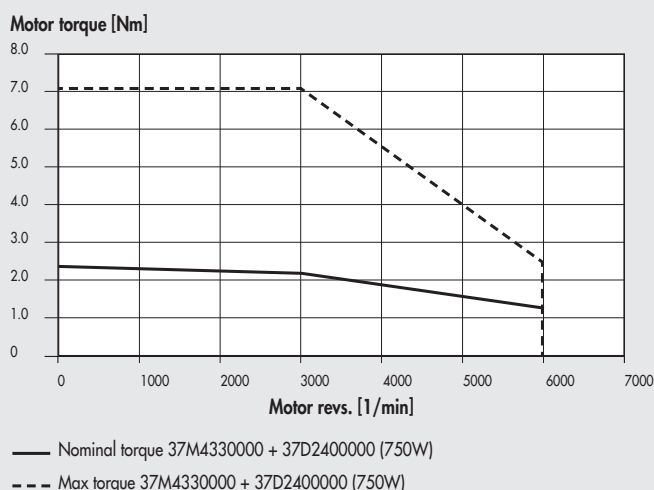
TECHNICAL DATA		MOTOR 37M2770000
Motor type		BRUSHLESS
Nominal torque	Nm	9.55
Coupling flange (square)	mm	130
Nominal power	W	3000
Nominal speed	rpm	3000
Maximum speed	rpm	4500
Stall torque	Nm	9.55
Maximum torque	Nm	28.65
Rotor inertia	kgmm ²	1270
Mass	kg	7.8
Encoder	pulse/rev	1048576 (20 bit)
Degree of protection		IP65
Drive code		37D2600001
Connecting cable:		
Brushless motor-drive, 3 metres		37C3130001
Brushless motor-drive-encoder, 3 metres		37C3230001
Brushless motor-drive, 5 metres		37C3150001
Brushless motor-drive-encoder, 5 metres		37C3250001

BRUSHLESS motor with BRAKE code **37M4220000** + drive code **37D2400000** (400W)



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
Drive code		37D2400000
Connecting cable:		
Brushless motor-drive, 3 metres		37C2130000
Brushless motor-drive-encoder, 3 metres		37C2230000
Brushless motor-drive, dynamic cable, 3 metres		37C2130003
Brushless motor-drive-encoder, dynamic cable, 3 metres		37C2230003
Brushless motor-brake, dynamic cable, 3 metres		37C2330000
Brushless motor-drive, 5 metres		37C2150000
Brushless motor-drive-encoder, 5 metres		37C2250000
Brushless motor-drive, dynamic cable, 5 metres		37C2150003
Brushless motor-drive-encoder, dynamic cable, 5 metres		37C2250003
Brushless motor-brake, dynamic cable, 5 metres		37C2350000
Brushless motor-drive, dynamic cable, 10 metres		37C2110003
Brushless motor-drive-encoder, dynamic cable, 10 metres		37C2210003
Brushless motor-brake, dynamic cable, 10 metres		37C2310000
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	1.37 min

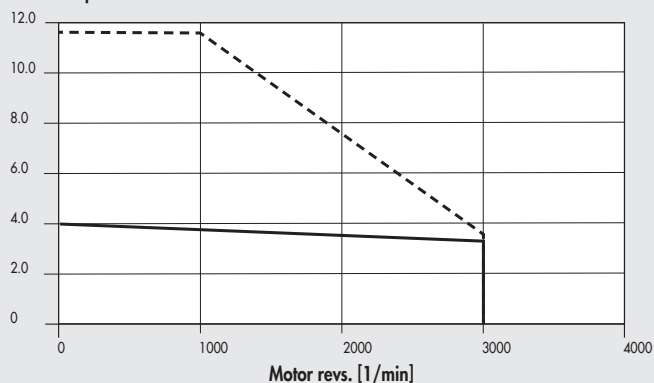
BRUSHLESS motor with BRAKE code **37M4330000** + drive code **37D2400000** (750W)



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	8.5
Rotor inertia	kgmm ²	207
Mass	kg	2.19
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
Drive code		37D2400000
Connecting cable:		
Brushless motor-drive, 3 metres		37C2130000
Brushless motor-drive-encoder, 3 metres		37C2230000
Brushless motor-drive, dynamic cable, 3 metres		37C2130003
Brushless motor-drive-encoder, dynamic cable, 3 metres		37C2230003
Brushless motor-brake, dynamic cable, 3 metres		37C2330000
Brushless motor-drive, 5 metres		37C2150000
Brushless motor-drive-encoder, 5 metres		37C2250000
Brushless motor-drive, dynamic cable, 5 metres		37C2150003
Brushless motor-drive-encoder, dynamic cable, 5 metres		37C2250003
Brushless motor-brake, dynamic cable, 5 metres		37C2350000
Brushless motor-drive, dynamic cable, 10 metres		37C2110003
Brushless motor-drive-encoder, dynamic cable, 10 metres		37C2210003
Brushless motor-brake, dynamic cable, 10 metres		37C2310000
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	2.55 min

BRUSHLESS motor with BRAKE code **37M4540000** + drive code **37D2400000** (1000W)

Motor torque [Nm]



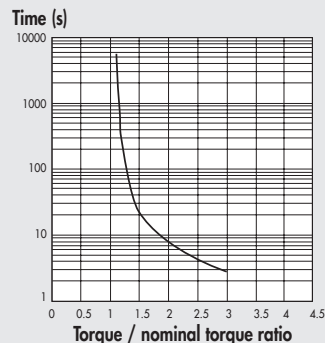
— Nominal torque 37M4540000 + 37D2400000 (1000W)

- - - Max torque 37M4540000 + 37D2400000 (1000W)

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
Drive code		37D2400000
Connecting cable:		
Brushless motor-drive, 3 metres		37C2130000
Brushless motor-drive-encoder, 3 metres		37C2230000
Brushless motor-drive, dynamic cable, 3 metres		37C2130003
Brushless motor-drive-encoder, dynamic cable, 3 metres		37C2230003
Brushless motor-brake, dynamic cable, 3 metres		37C2330000
Brushless motor-drive, 5 metres		37C2150000
Brushless motor-drive-encoder, 5 metres		37C2250000
Brushless motor-drive, dynamic cable, 5 metres		37C2150003
Brushless motor-drive-encoder, dynamic cable, 5 metres		37C2250003
Brushless motor-brake, dynamic cable, 5 metres		37C2350000
Brushless motor-drive, dynamic cable, 10 metres		37C2110003
Brushless motor-drive-encoder, dynamic cable, 10 metres		37C2210003
Brushless motor-brake, dynamic cable, 10 metres		37C2310000
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	3.92 min

NOTES

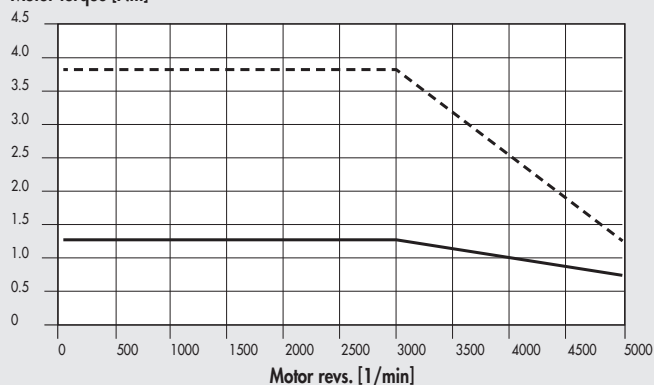
The torque used can exceed the nominal torque within the time limits shown in the diagram. Never exceed the maximum torque.



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%

Motor torque [Nm]

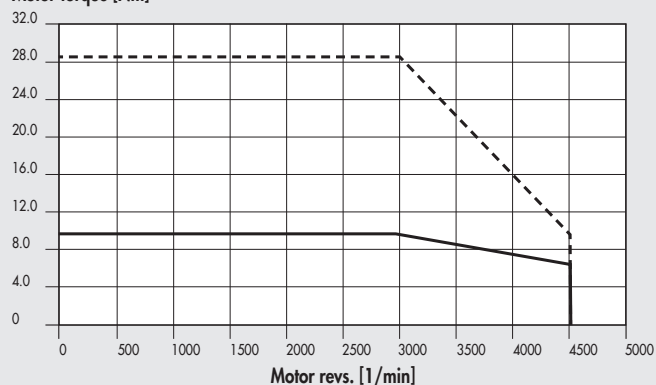


— Nominal torque 37M4220001 + 37D2300000 (400W)
 - - - Max torque 37M4220001 + 37D2300000 (400W)

[illegible]

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

Motor torque [Nm]



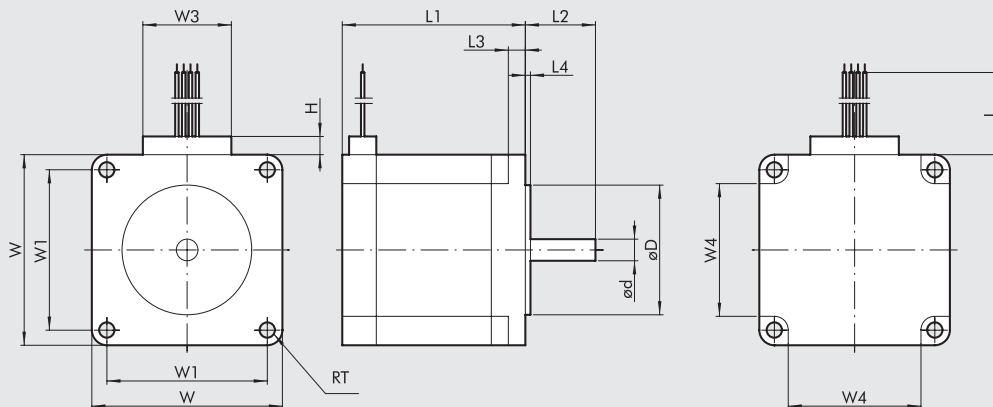
— Nominal torque 37M4770000 + 37D2600001 (3000W)

- - - Max torque 37M4770000 + 37D2600001 (3000W)

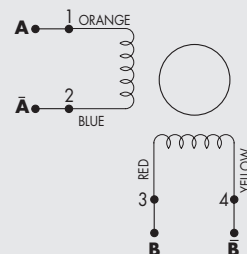
TECHNICAL DATA		MOTOR 37M4770000
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	9.55
Coupling flange (square)	mm	130
Nominal power	W	3000
Nominal speed	rpm	3000
Maximum speed	rpm	4500
Stall torque	Nm	9.55
Maximum torque	Nm	28.65
Rotor inertia	kgmm ²	1400
Mass	kg	9.2
Encoder	pulse/rev	1048576 (20 bit)
Degree of protection		IP65
Drive code		37D2600001
Connecting cable:		
Brushless motor-drive-encoder, 3 metres		37C3230001
Brushless motor-drive with brake, 3 metres		37C3730000
Brushless motor-drive-encoder, 5 metres		37C3250001
Brushless motor-drive with brake, 5 metres		37C3750000
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	10

NOTES

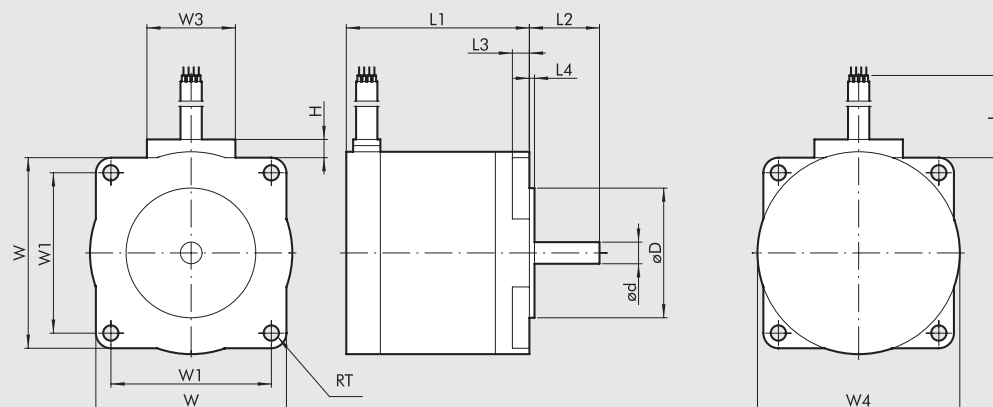
DIMENSIONS OF ELECTRIC MOTORS



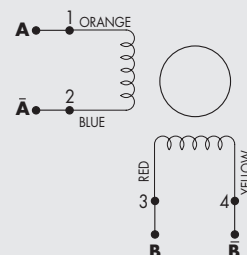
WIRING DIAGRAM



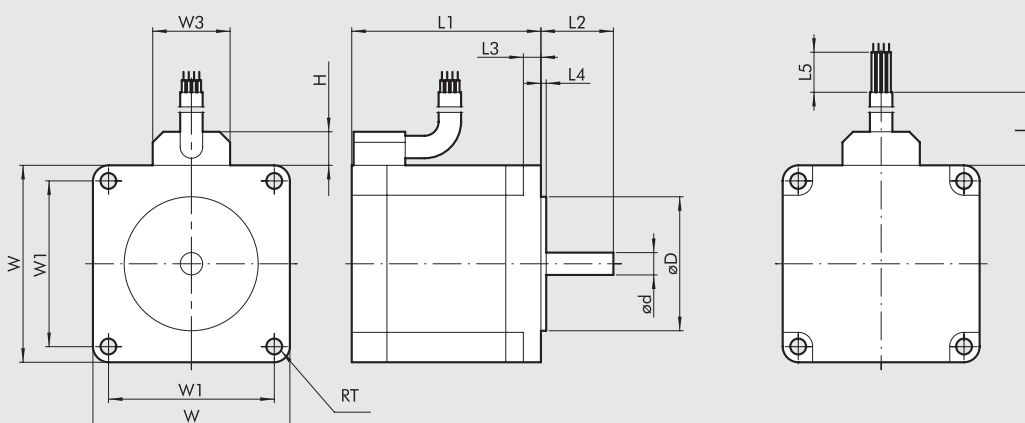
Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.013	øD ±0.025	H	L min	L1 ±0.8	L2 ±0.5	L3 ±0.25	L4 ±0.25	RT +0.5/0	W ±0.5	W1 ±0.13	W3 max	W4 ±0.5
STEPPING	37M1110000	0.8	NEMA 23	6.35	38.1	7	305	53.8	20.6	5	1.5	4.5	56	47.14	26	39
	37M1120000	1.2	NEMA 23	6.35	38.1	7	305	75.8	20.6	5	1.5	4.5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



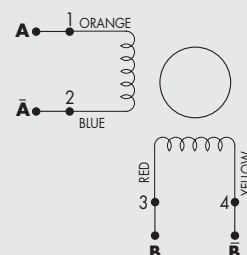
WIRING DIAGRAM



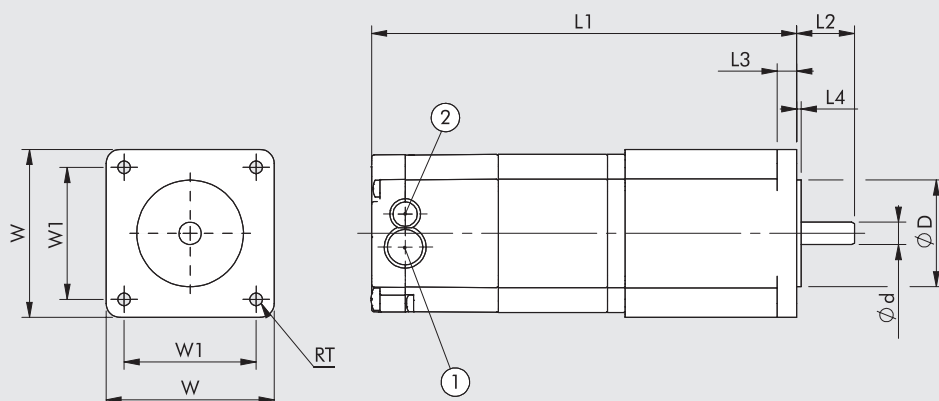
Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.018	øD ±0.025	H	L min	L1	L2 ±0.5	L3 ±0.50	L4 ±0.25	RT +0.5/0	W ±0.5	W1 ±0.2	W3	W4 ±0.5
STEPPING	37M1430000	2.4	NEMA 34	9.525	73.02	10	305	62	30	4.8	1.5	5.4	82.5	69.6	37	85.8
	37M1440000	4.2	NEMA 34	12	73.02	10	305	92.2	30	4.8	1.5	5.4	82.5	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



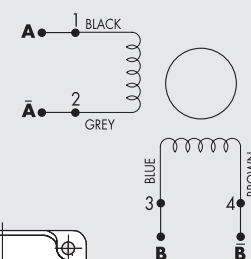
WIRING DIAGRAM



Motor type	Motor code	Motor torque [Nm]	Coupling flange	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	73.02	12	305	127	30	8	1.5	50	5.6	85.5	69.6	27

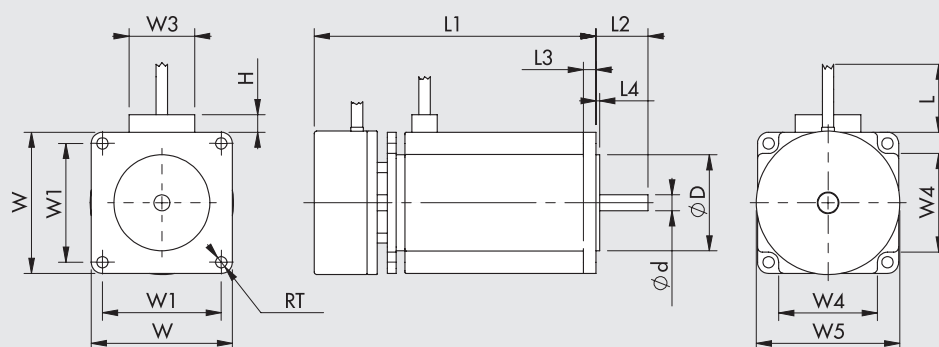


WIRING DIAGRAM

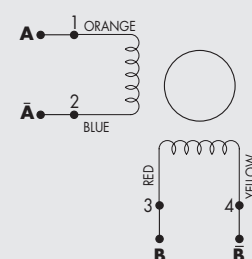


1 = access for power cable and brake
2 = access for encoder cable

Motor type	Motor code	Motor torque [Nm]	Coupling flange	ϕd 0/-0.013	ϕD ± 0.25	L1	L2 ± 0.51	L3	L4	RT	W	W1 ± 0.13
STEPPING	37M1470000	9.3	NEMA 34	12.7	73.02	130	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

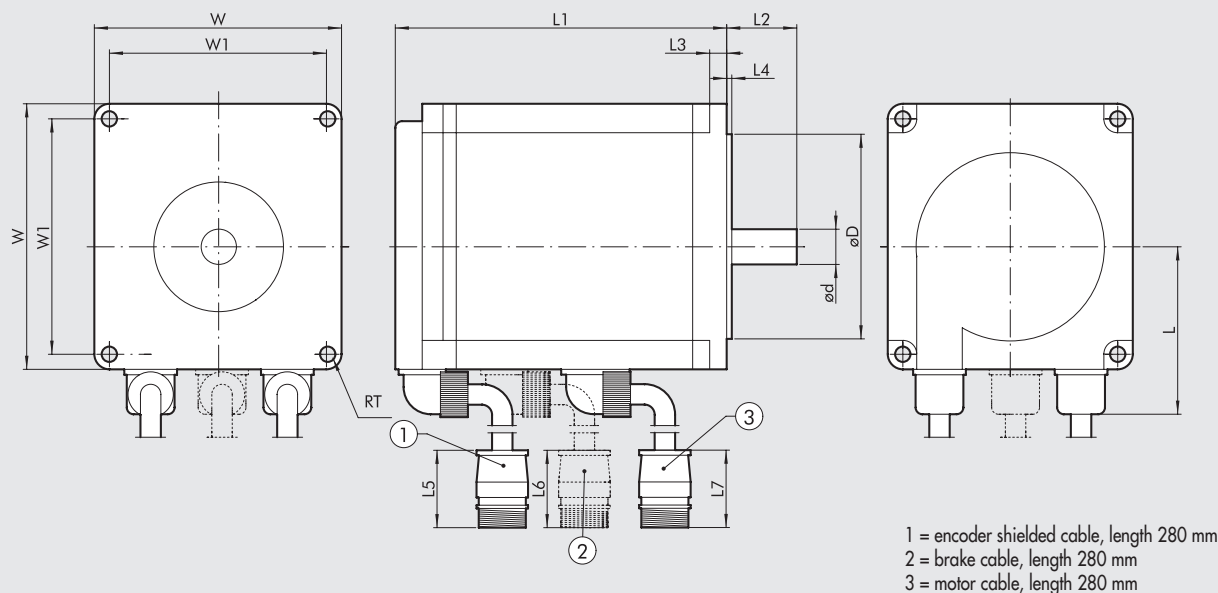


WIRING DIAGRAM

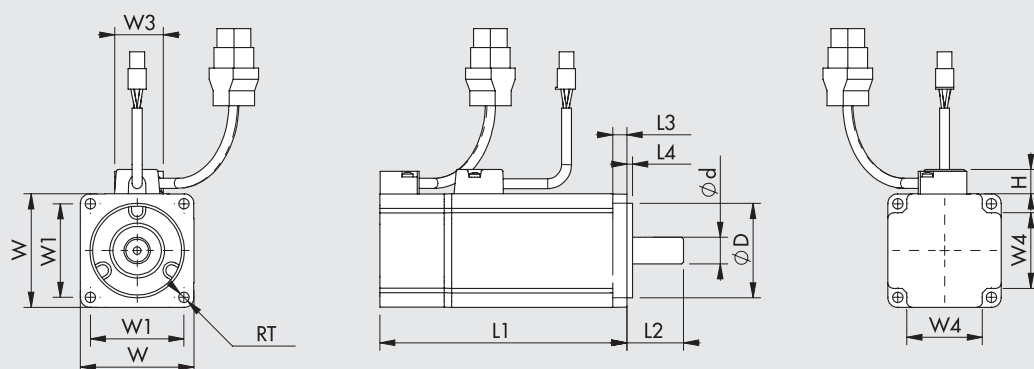


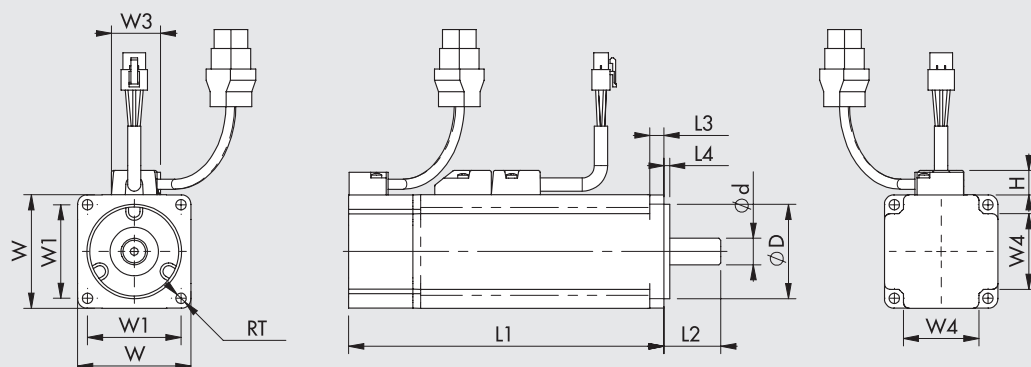
Motor type	Motor code	Motor torque [Nm]	Coupling flange	ϕd 0/-0.013	ϕD ± 0.025	H	L min	L1 ± 0.8	L2 ± 0.5	L3 ± 0.25	L4 ± 0.25	RT $\pm 0.5/0$	W ± 0.5	W1 ± 0.13	W3 max	W4 ± 0.5	W5 ± 0.5
STEPPING + BRAKE	37M5120000	1.2	NEMA 23	6.35	38.1	7	305	111.8	20.6	5	1.5	4.5	56	47.14	26	39	56.9

DIMENSIONS OF ELECTRIC MOTORS

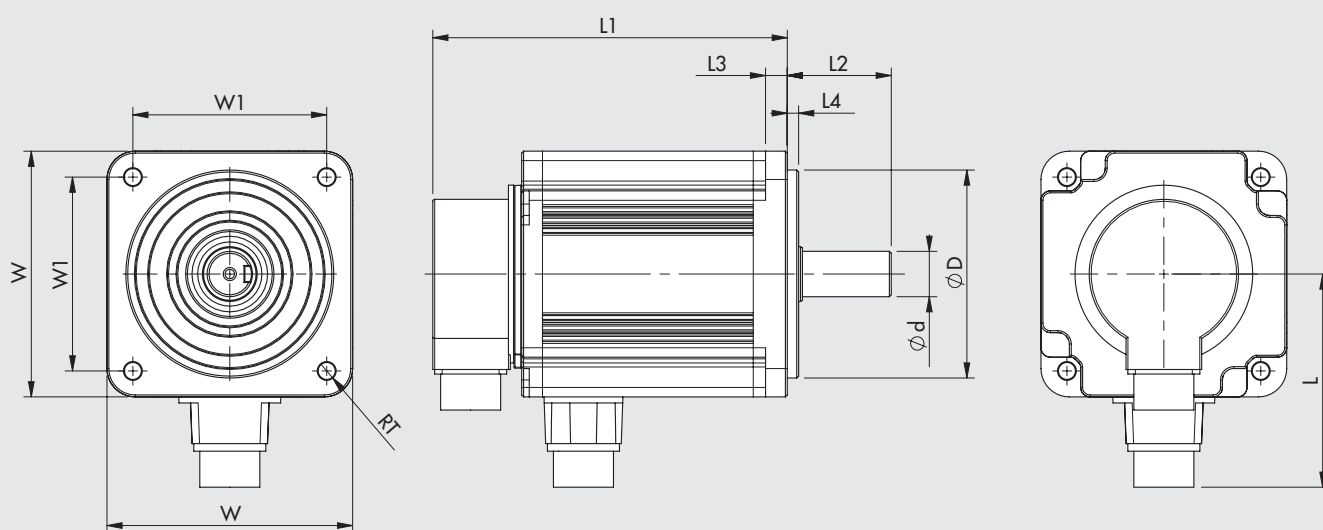


Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.011	øD h7	L	L1 ±1	L2 ±1	L3	L4	L5	L6	L7	RT	W	W1
BRUSHLESS (SANYO DENKI)	37M2200000	0.64	60	14	50	44.6	69.5	30	6	3	55	-	58	5.5	60	49.5
	37M2220000	1.27	60	14	50	44.6	95.5	30	6	3	55	-	58	5.5	60	49.5
	37M2330000	2.39	80	16	70	54.4	107.3	40	8	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

[illegible]



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)	37M4220001	1.27	60	14	50	13	166.8	30	7.5	3	5.5	60	49.5	30	40



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)	37M2770000	9.55	130	24	110	113	187.5	55	11.5	6	9	130	102.53
BRUSHLESS + BRAKE (DELTA)	37M4770000	9.55	130	24	110	111	216	55	11.5	6	9	130	102.53

PROGRAMMING UNIT

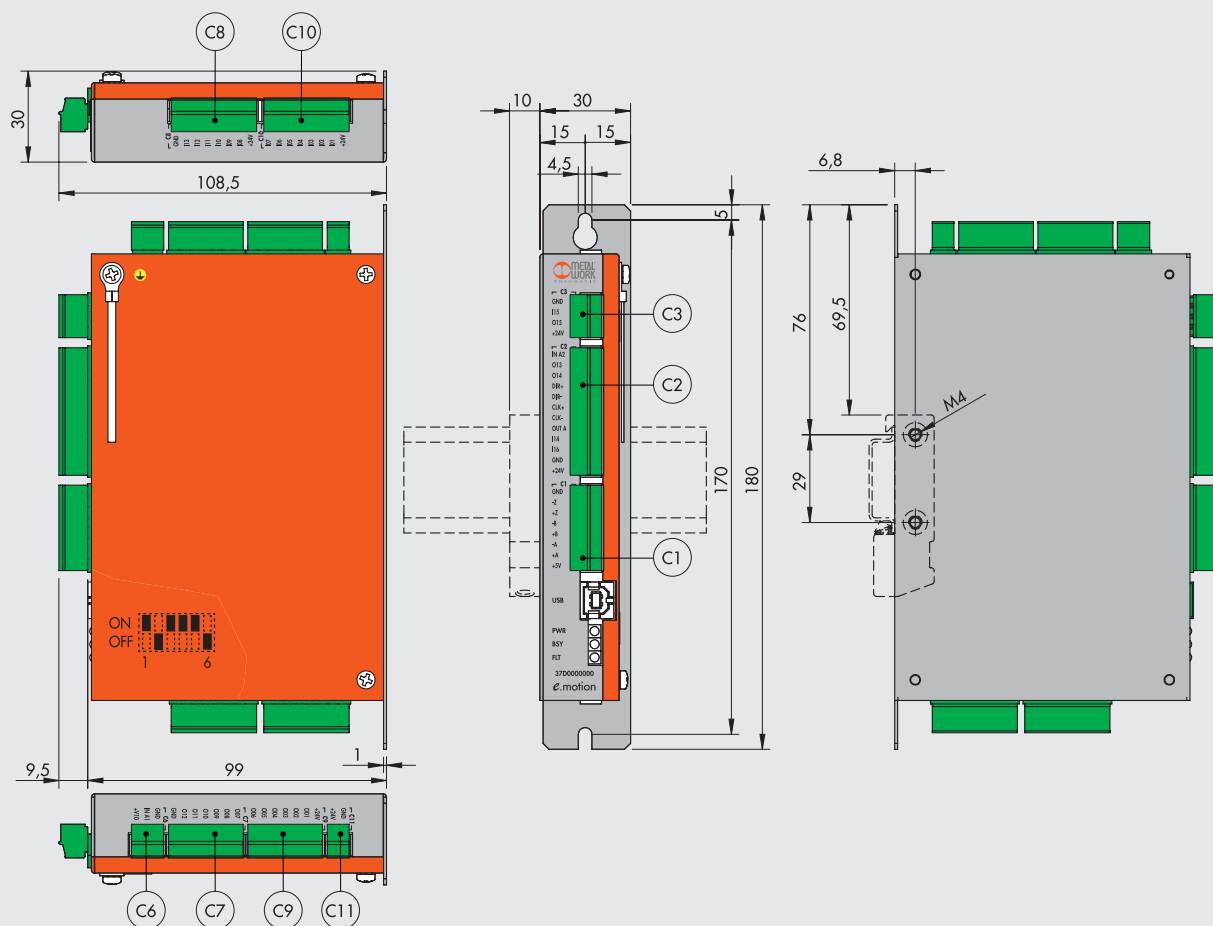
e.motion

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 STEPPER 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 180 x 99 x 30
Weight	g 460
Connectors	Screw type, pull-out
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 STEPPER 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

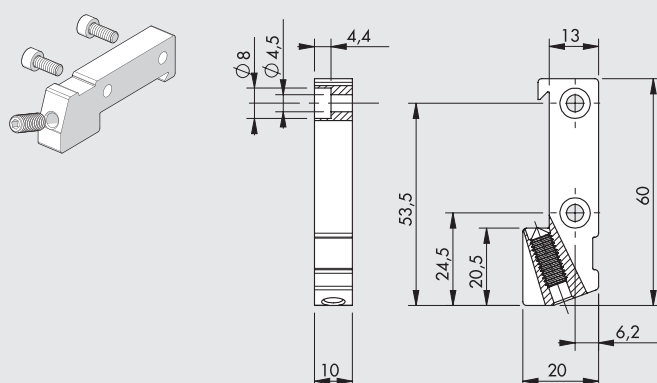


Below is a list of Phoenix Contact codes for the board connectors.

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

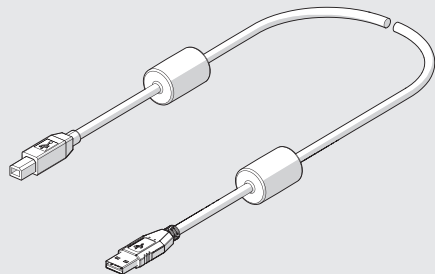
BRACKET TO FIT ONTO OMEGA BAR



Code	Description	Weight [g]
095000M000	Bracket to fix e.motion board onto Omega bar (DIN EN 50022)	30

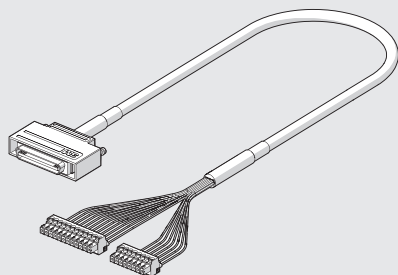
Note: Individually packed with 2 screws M4x10, 1 M6x16 grub screw

CABLE USB



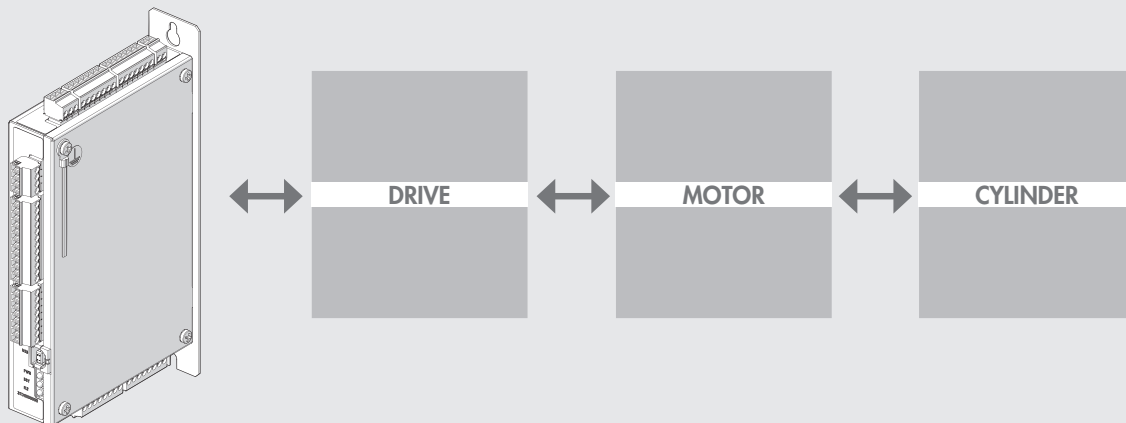
Code	Description	Weight [g]
37C0030000	Cable for USB 2.0 male A-B connector with ferrite core, for connecting the e.motion board to a PC, 3 m	150

CABLE FOR BRUSHLESS DRIVERS



Code	Description	Weight [g]
37C2510000	Cable for connecting the e.motion board to Sanyo Denki RS1A0x driver, 1 m	130
37C2510001	Cable for connecting the e.motion board to Delta ASDA A2, 1 m	130

CONNECTION SCHEME



NOTES

DRIVES FOR STEPPING MOTORS FOR ELECTRIC CYLINDERS SERIES ELEKTRO



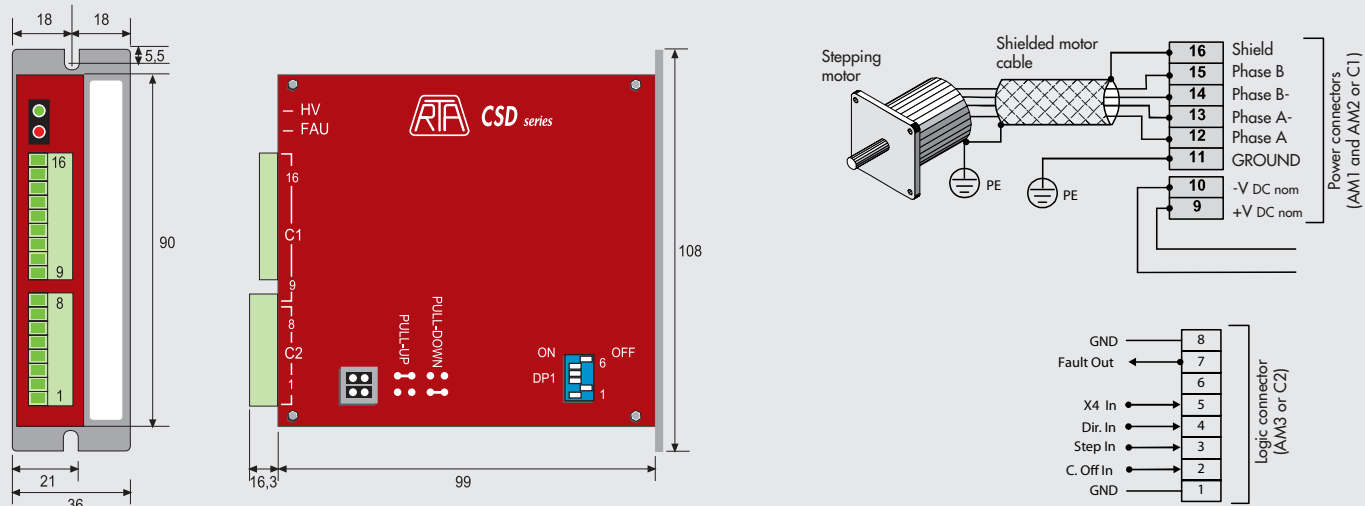
4.4A - 48VDC DRIVE FOR STEPPING MOTORS, CODE 37D1222000

This is a ministepp bipolar chopper drive made by RTA S.r.l. It comes with a STEP & DIRECTION interface for piloting low/medium-power two-stage STEPPING motors with four, six or eight terminals. It has a supply voltage range up to 48VDC, compact dimensions and considerable operating flexibility. It consists of a board housed in a metal box, which does not require external ventilation, and comes with separate logic and power pull-out screw connectors. It can control STEPPING motors with a nominal current up to 4.4A, the perfect choice for low/medium-power applications using small motors.



DRIVE TECHNICAL DATA		
Drive code		37D1222000
Type of STEPPING motor drive		Metal box
Dimensions	mm	90 x 99 x 21
Connectors		Screw type, pull-out
Onboard power supply		NO
Control		Step and direction
Operating voltage range	VDC	24 - 48
Current range	A	2.6 - 4.4
Current values selected via a dip-switch		8
Pulses per rev values selected by dip-switch	pulse/rev	400, 800, 1600, 3200
Automatic current reduction with motor off		YES (50%)
Type of inputs		Pull-up or Pull-down, settable
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



6A - 75VDC DRIVE FOR STEPPING MOTORS, CODE 37D1332000

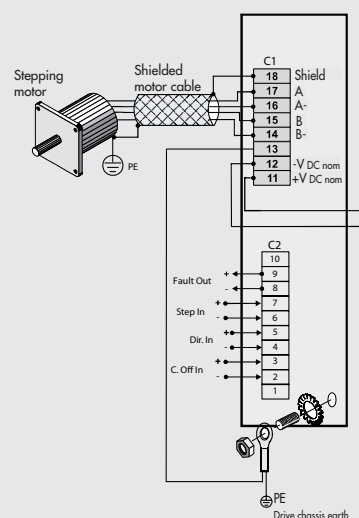
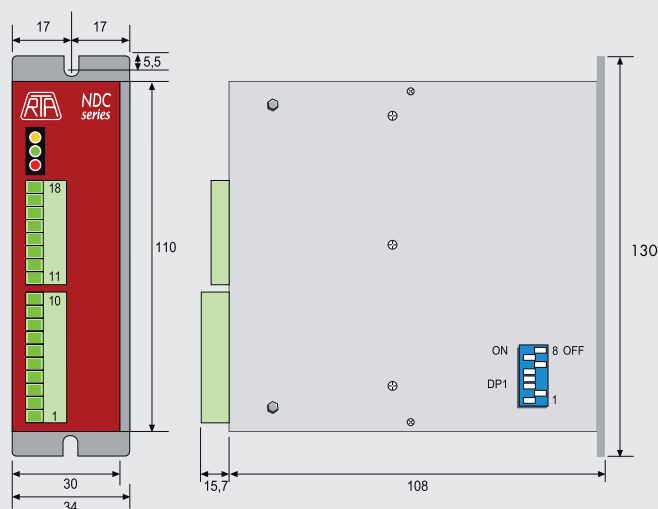
This is a ministepp bipolar chopper drive made by RTA Srl. It comes with a STEP & DIRECTION interface for piloting medium-low power two-stage STEPPING motors with four, six or eight terminals. It has a supply voltage range up to 75VDC, compact dimensions and considerable operating flexibility. It consists 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, pull-out
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



6A - 140VDC DRIVE FOR STEPPING MOTORS, CODE 37D1442000 10A - 62VAC DRIVE FOR STEPPING MOTORS, CODE 37D1552000

These are two ministepp 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.

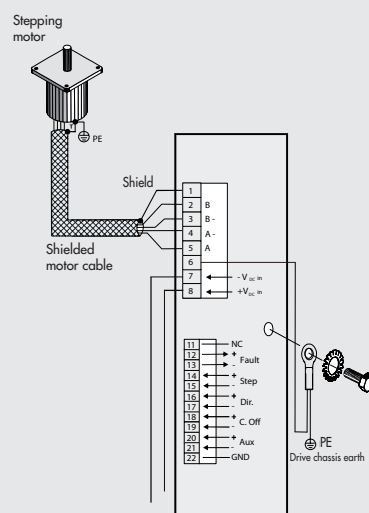
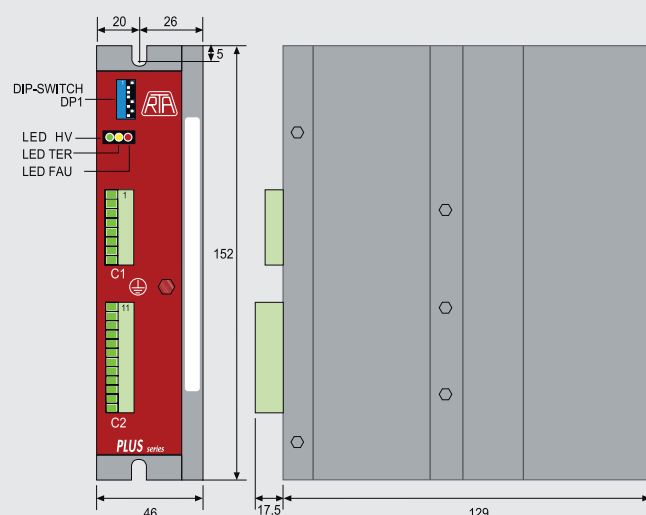
Drive code 37D1552000 is characterised by a voltage range up to 62VDC, compact dimensions and considerable operating flexibility.

This drive can control STEPPING motors with a nominal current up to 10A, the perfect choice for medium-power applications requiring an AC supply.



DRIVE TECHNICAL DATA		37D1442000	37D1552000
Drive code		37D1442000	37D1552000
Type of STEPPING motor drive		Metal box	
Dimensions	mm	152 x 129 x 46	
Connectors		Screw type, pull-out	
Onboard power supply		NO	
Control		Step and direction	
Operating voltage range		77 - 140 VDC	28 - 62 VAC
Current range	A	1.9 - 6	3 - 10
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%)	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



6A - 110 - 230VAC DRIVE FOR STEPPING MOTORS, CODE 37D1362001

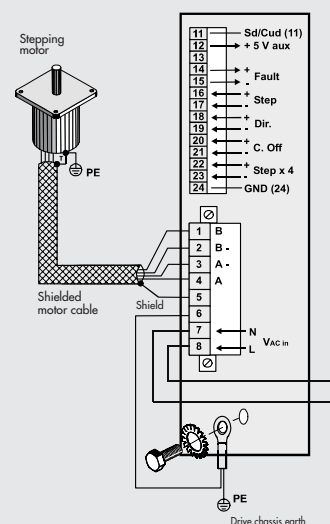
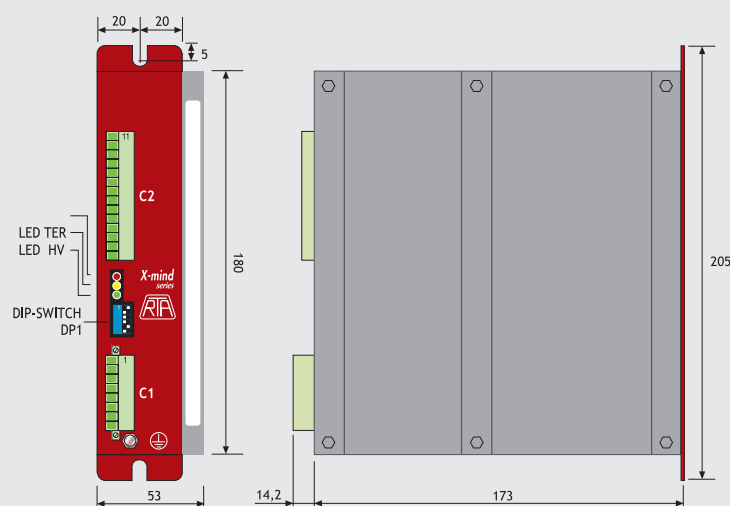
This is a ministepp bipolar chopper drive made by RTA Srl. It comes with a STEP & DIRECTION interface for piloting medium-low power two-stage STEPPING motors with four, six or eight terminals. It has a supply voltage range up to 230VAC, compact dimensions and considerable operating flexibility. It consists 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

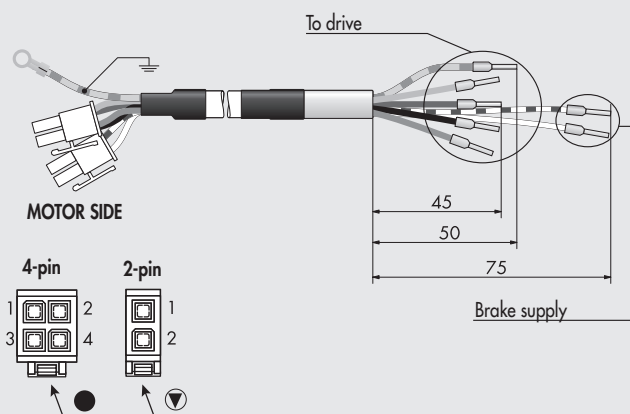
Drive code		37D1362001
Type of STEPPING motor drive		Metal box
Dimensions	mm	180 x 173 x 53
Connectors		Screw type, pull-out
Onboard power supply		NO
Control		Step and direction
Operating voltage range	VAC	Single-phase 110 - 230
Current range	A	3.4 - 6
Motor output stage		High-efficiency CHOPPER with IGBT final stage output
Current values selected via a dip-switch		8
Pulses per rev values selected by dip-switch	pulse/rev	400, 500, 800, 1000, 1600, 2000, 3200, 4000
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 STEPPER motors designed for high-voltage rating and flanges not below 86 mm. No need for forced ventilation.
Suitable for motors code		37M1890000

OVERALL DIMENSIONS AND WIRING DIAGRAM



ACCESSORIES

POWER CABLE FOR MOTOR WITH BRAKE

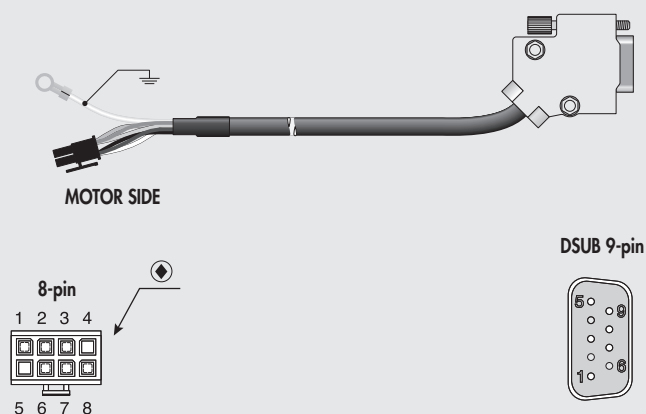


For use with stepping motors with brake and stepping motor code 37M1470000.

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

	Pin	Function	Corresponding wire colour
4-pin connector	1	A\	Gray
	2	B\	Blue
	3	A	Black
	4	B	Brown
2-pin connector	1	24VDC brake	White + red ring
	2	GND	White

ENCODER CABLE



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

8-pin connector	Function		DSUB 9-pin connector (6 pins used)
1	A	A	1
2	B	B	3
3	R	R	5
4	-	NC	-
5	-	NC	-
6	+ 24VDC	Encoder +24 V supply	8
7	COM	Encoder 0 V supply	9
8	Temp	Temperature	7

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

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

DRIVES FOR BRUSHLESS MOTORS FOR ELECTRIC CYLINDERS SERIES ELEKTRO

15A DRIVE FOR BRUSHLESS MOTORS, CODE 37D2200000

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 15A.



DRIVE TECHNICAL DATA

Drive code	37D2200000
Type of drive for BRUSHLESS motors	Metal box
Dimensions	45 x 168 x 130
Power connectors and motor power	Screw type, pull-out
Encoder connectors and signals	Plug-type 3M
Max output current	15
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	RS232 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 (optional).
Brushless motor-drive connecting cable, 3 metres	37C2130000
Brushless motor-drive-encoder connecting cable, 3 metres	37C2230000
Brushless motor-drive connecting dynamic cable, 3 metres	37C2130003
Brushless motor-drive-encoder connecting dynamic cable, 3 metres	37C2230003
Brushless motor-brake connecting dynamic cable, 3 metres	37C2330000
Brushless motor-drive connecting cable, 5 metres	37C2150000
Brushless motor-drive-encoder connecting cable, 5 metres	37C2250000
Brushless motor-drive connecting dynamic cable, 5 metres	37C2150003
Brushless motor-drive-encoder connecting dynamic cable, 5 metres	37C2250003
Brushless motor-brake connecting dynamic cable, 5 metres	37C2350000
Brushless motor-drive connecting dynamic cable, 10 metres	37C2110003
Brushless motor-drive-encoder connecting dynamic cable, 10 metres	37C2210003
Brushless motor-brake connecting dynamic cable, 10 metres	37C2310000

30A DRIVE FOR BRUSHLESS MOTORS, CODE 37D2400000

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 (optional) R-Set up software.

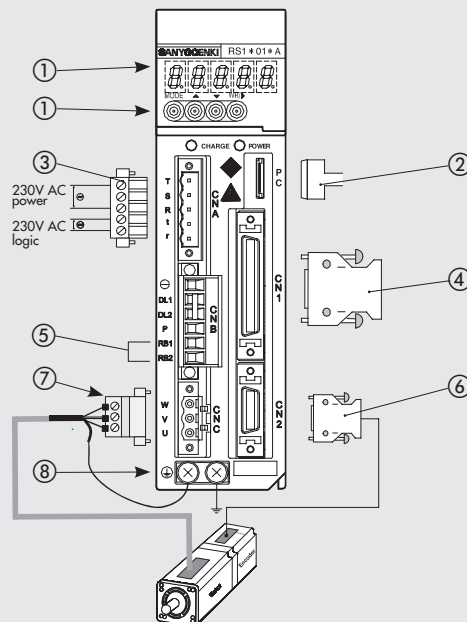


DRIVE TECHNICAL DATA	
Drive code	37D2400000
Type of drive for BRUSHLESS motors	Metal box
Dimensions	mm
Power connectors and motor power	50 x 168 x 130
Encoder connectors and signals	Screw type, pull-out
Max output current	Plug-type 3M
Motor output stage	30
Power voltage	IGBT, PWM control, sinusoidal current
Logic voltage	Single-phase or three-phase (user configurable) 200-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
Control	Single-phase 200-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
	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	RS232 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 (optional).
Brushless motor-drive connecting cable, 3 metres	37C2130000
Brushless motor-drive-encoder connecting cable, 3 metres	37C2230000
Brushless motor-drive connecting dynamic cable, 3 metres	37C2130003
Brushless motor-drive-encoder connecting dynamic cable, 3 metres	37C2230003
Brushless motor-brake connecting dynamic cable, 3 metres	37C2330000
Brushless motor-drive connecting cable, 5 metres	37C2150000
Brushless motor-drive-encoder connecting cable, 5 metres	37C2250000
Brushless motor-drive connecting dynamic cable, 5 metres	37C2150003
Brushless motor-drive-encoder connecting dynamic cable, 5 metres	37C2250003
Brushless motor-brake connecting dynamic cable, 5 metres	37C2350000
Brushless motor-drive connecting dynamic cable, 10 metres	37C2110003
Brushless motor-drive-encoder connecting dynamic cable, 10 metres	37C2210003
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 RS232 (supplied with configuration software kit)
- 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: compatible with any type of Sanyo Denki encoder
- ⑦ MOTOR POWER CONNECTOR
- ⑧ EARTH CONNECTION

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



ACCESSORIES FOR BRUSHLESS MOTORS DRIVES

⑥ ENCODER CABLE



Code	Description
37C2230000	Brushless motor-drive-encoder connecting cable 3 m
37C2250000	Brushless motor-drive-encoder connecting cable 5 m
37C2230003	Brushless motor-drive-encoder connecting dynamic cable, 3 m
37C2250003	Brushless motor-drive-encoder connecting dynamic cable, 5 m
37C2210003	Brushless motor-drive-encoder connecting dynamic cable, 10 m

⑦ MOTOR POWER CABLE



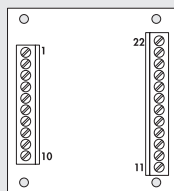
Code	Description
37C2130000	Brushless motor-drive connecting cable 3 m
37C2150000	Brushless motor-drive connecting cable 5 m
37C2130003	Brushless motor-drive connecting dynamic cable, 3 m
37C2150003	Brushless motor-drive connecting dynamic cable, 5 m
37C2110003	Brushless motor-drive connecting dynamic cable, 10 m

BRAKE CABLE



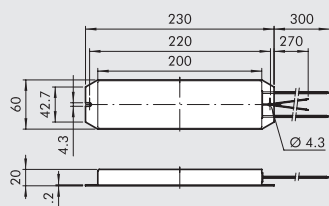
Code	Description
37C2330000	Brushless motor-brake connecting dynamic cable, 3 m
37C2350000	Brushless motor-brake connecting dynamic cable, 5 m
37C2310000	Brushless motor-brake connecting dynamic cable, 10 m

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	37D2400000
37D2R00001	220W 100 Ω braking resistance	37D2200000

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 + PC CONNECTING CABLE KIT, R - SETUP SOFTWARE CODE 37D2S00000

R-Setup communication software is used for parameter setting and complete control of all functions of the system.

Access to parameter configuration can take place at three levels: basic level, standard level, advanced level.

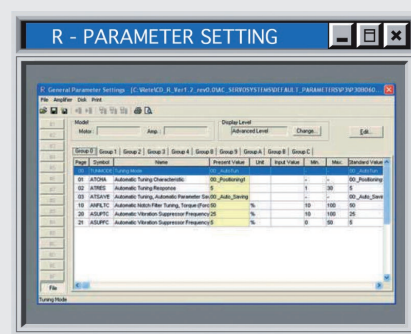
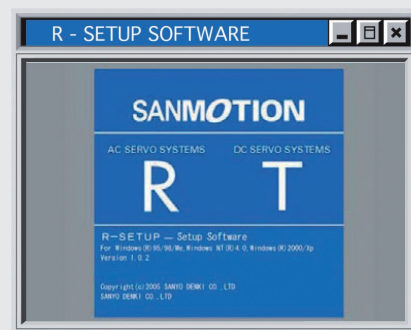
The software includes a detailed description of each parameter.

In addition to parameter setting R-Setup software can accurately analyse operation of the system via the following functions.

- Monitor Display: real-time display of all details about the system.
- Trace Operation: a complete oscilloscope with 4 analogue channels and 4 digital channels. Use to save and print traces and settings.
- System Analysis: used to study the system's frequency response to identify and correct any mechanical resonance phenomena.

JOG modes for speed (Jogging Operation) and position (Operation Pulse Feed Jogging) are also available.

N.B.: the software can be used only with drives for brushless motors.

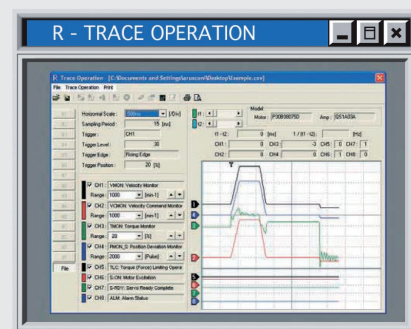


GRAPHIC MONITOR

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 400W BRUSHLESS MOTOR, CODE 37D2300000

It is a DELTA ASDA-A2-0421-M drive to be used only with a DELTA 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.



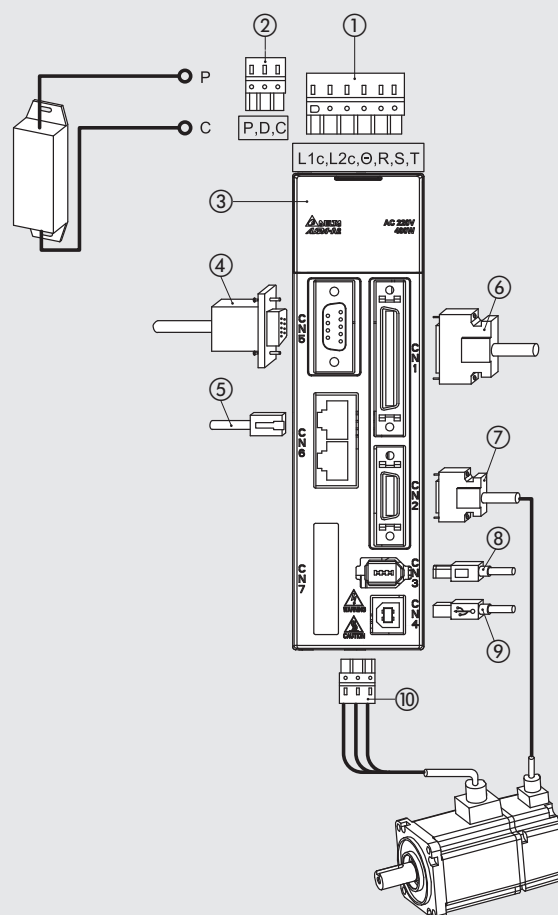
DRIVE TECHNICAL DATA

Drive code	37D2300000
Type of drive for	BRUSHLESS motors
Dimensions	mm
Power connectors and motor power	170 x 173 x 45
Encoder connectors and signals	Screw type, pull-out
Max output current	Plug-type 3M
Motor output stage	7.80
Power voltage	IGBT, PWM control, sinusoidal current
Logic voltage	Single-phase or three-phase (user configurable) 200VAC-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
Control	Single-phase 200-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
	With analogue signal (proportional to speed and torque).
	Pulse-train (clock + direction; forward + backward pulse; 90° phase difference)
	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.
	Circuito automatico di frenatura dinamica in condizioni di allarme o power-off.
	Connector for external braking resistance (optional).
	Configuration and control software (optional).
Suitable for motors code	37M2220001 - 37M4220001
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 cable, 5 metres	37C2150001
Brushless motor with brake-drive connecting cable, 5 metres	37C2750000
Brushless motor-drive-encoder connecting cable, 5 metres	37C2250001

WIRING DIAGRAM FOR 400W BRUSHLESS MOTOR DRIVES

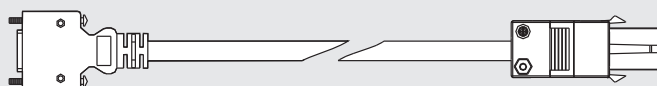
- ① POWER CONNECTOR: 230VAC, single-phase and three-phase (user configurable). **Included in the supply.**
Separate supply section for logic/signal and power electronics.
Integrated circuits protecting against overloads and input extra-voltages.
- ② CONNECTOR: for external braking resistance code 37D2R00002 (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. **Included in the supply.**
- ⑦ ENCODER CONNECTOR: connection for 400W 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 via RS232 (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.



ACCESSORIES

⑥ ENCODER CABLE



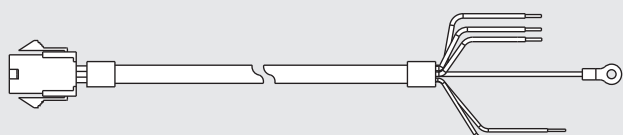
Code	Description
37C2230001	400W Brushless motor-drive-encoder connecting cable, 3 m
37C2250001	400W Brushless motor-drive-encoder connecting cable, 5 m

⑦ MOTOR POWER CABLE



Code	Description
37C2130001	400W Brushless motor-drive connecting cable, 3 m
37C2150001	400W Brushless motor-drive connecting cable, 5 m

MOTOR POWER CABLE + BRAKE



Code	Description
37C2730000	400W brushless motor drive connecting cable + brake, 3 m
37C2750000	400W brushless motor drive connecting cable + brake, 5 m

DRIVE FOR 3kW BRUSHLESS MOTOR, CODE 37D2600001

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.

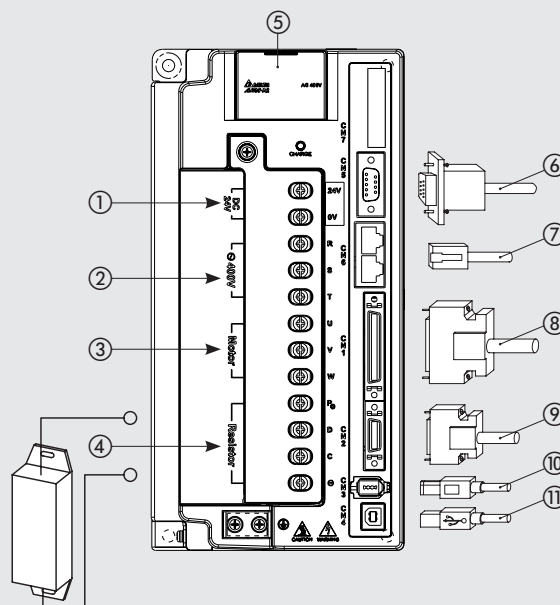


DRIVE TECHNICAL DATA

Drive code	37D2600001
Type of drive for	BRUSHLESS motors
Dimensions	mm
Power connectors and motor power	245 x 205.4 x 123
Encoder connectors and signals	Screw type, pull-out
Max output current	Plug-type 3M
Motor output stage	33.32
Power voltage	IGBT, PWM control, sinusoidal current
Logic voltage	Three-phase from 380VAC to 480VAC $\pm 10\%$ 50/60 Hz (± 3 Hz)
Control	24VDC $\pm 10\%$
	With analogue signal (proportional to speed and torque).
	Pulse-train (clock + direction; forward + backward pulse; 90° phase difference)
	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.
	Circuito automatico di frenatura dinamica in condizioni di allarme o power-off.
	Connector for external braking resistance (optional).
	Configuration and control software (optional).
Suitable for motors code	37M2770000 - 37M4770000
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 cable, 5 metres	37C3150001
Brushless motor with brake-drive connecting cable, 5 metres	37C3750000
Brushless motor-drive-encoder connecting cable, 5 metres	37C3250001

WIRING DIAGRAM FOR 3kW BRUSHLESS MOTOR DRIVES

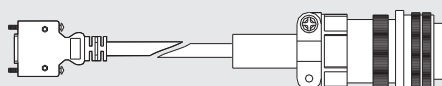
- ① LOGIC POWER CONNECTOR: 24VDC.
Included in the supply. Power section for logic electronics.
- ② POWER CONNECTOR: 400VAC, three-phase.
Included in the supply. Power signal supply section.
Integrated circuits protected against overload, input extra-voltages.
- ③ MOTOR POWER CONNECTOR
- ④ CONNECTOR: for external braking resistance code 37D2R00002 (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 CENCODER CONNECTOR: connection for 400W 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 via RS232 (not included in the supply).
Data acquisition is only possible via this connection.



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

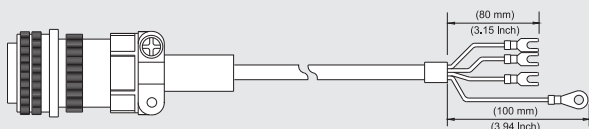
ACCESSORIES

⑥ CAVO ENCODER



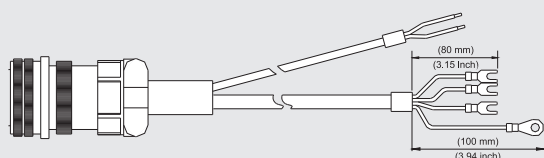
Code	Description
37C3230001	3kW Brushless motor-drive-encoder connecting cable, 3 m
37C3250001	3kW Brushless motor-drive-encoder connecting cable, 5 m

⑦ MOTOR POWER CABLE



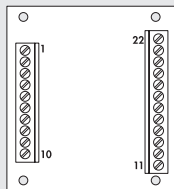
Code	Description
37C3130001	3kW Brushless motor-drive connecting cable, 3 m
37C3150001	3kW Brushless motor-drive connecting cable, 5 m

MOTOR POWER CABLE + BRAKE



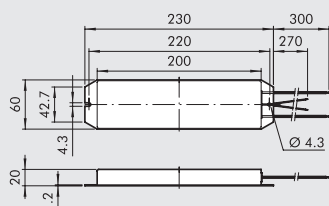
Code	Description
37C3730000	3kW brushless motor drive connecting cable + brake, 3 m
37C3750000	3kW brushless motor drive connecting cable + brake, 5 m

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	37D2300000
37D2R00002	500W 10 Ω braking resistance	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.

CONFIGURATION SOFTWARE + PC CONNECTING CABLE KIT, SOFTWARE ASDASoft

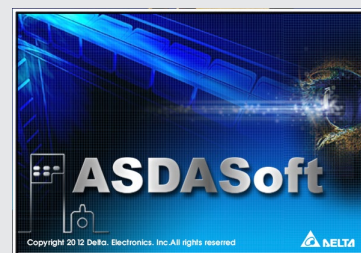
ASDASoft communication software is used for parameter setting and complete control of all functions of the system.

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.

N.B.: the software can be used only with drives for BRUSHLESS motors.

Code	Value	Unit	Min	Max	Default	Description
P7-00	0.00000000		0.00000000	0.00000000	0.00000000	PATH00 Definition
P7-01	0.00000000		-2147483648	2147483647	0	PATH00 Data
P7-02	0.00000000		0.00000000	0.00000000	0.00000000	PATH01 Definition
P7-03	0.00000000		-2147483648	2147483647	0	PATH01 Data
P7-04	0.00000000		0.00000000	0.00000000	0.00000000	PATH02 Definition
P7-05	0.00000000		-2147483648	2147483647	0	PATH02 Data
P7-06	0.00000000		0.00000000	0.00000000	0.00000000	PATH03 Definition
P7-07	0.00000000		-2147483648	2147483647	0	PATH03 Data
P7-08	0.00000000		0.00000000	0.00000000	0.00000000	PATH04 Definition
P7-09	0.00000000		-2147483648	2147483647	0	PATH04 Data
P7-10	0.00000000		0.00000000	0.00000000	0.00000000	PATH05 Definition
P7-11	0.00000000		-2147483648	2147483647	0	PATH05 Data
P7-12	0.00000000		0.00000000	0.00000000	0.00000000	PATH06 Definition
P7-13	0.00000000		-2147483648	2147483647	0	PATH06 Data
P7-14	0.00000000		0.00000000	0.00000000	0.00000000	PATH07 Definition
P7-15	0.00000000		-2147483648	2147483647	0	PATH07 Data
P7-16	0.00000000		0.00000000	0.00000000	0.00000000	PATH08 Definition
P7-17	0.00000000		-2147483648	2147483647	0	PATH08 Data
P7-18	0.00000000		0.00000000	0.00000000	0.00000000	PATH09 Definition
P7-19	0.00000000		-2147483648	2147483647	0	PATH09 Data
P7-20	0.00000000		0.00000000	0.00000000	0.00000000	PATH10 Definition
P7-21	0.00000000		-2147483648	2147483647	0	PATH10 Data
P7-22	0.00000000		0.00000000	0.00000000	0.00000000	PATH11 Definition
P7-23	0.00000000		-2147483648	2147483647	0	PATH11 Data
P7-24	0.00000000		0.00000000	0.00000000	0.00000000	PATH12 Definition
P7-25	0.00000000		-2147483648	2147483647	0	PATH12 Data
P7-26	0.00000000		0.00000000	0.00000000	0.00000000	PATH13 Definition
P7-27	0.00000000		-2147483648	2147483647	0	PATH13 Data

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. displayed can be read using the cursor.

