PRO2 Series

PRO2 Rotary Brushless Servo Motors with CDHD and DDHD Servo Drives

The Perfectly Matched Servo Bundle

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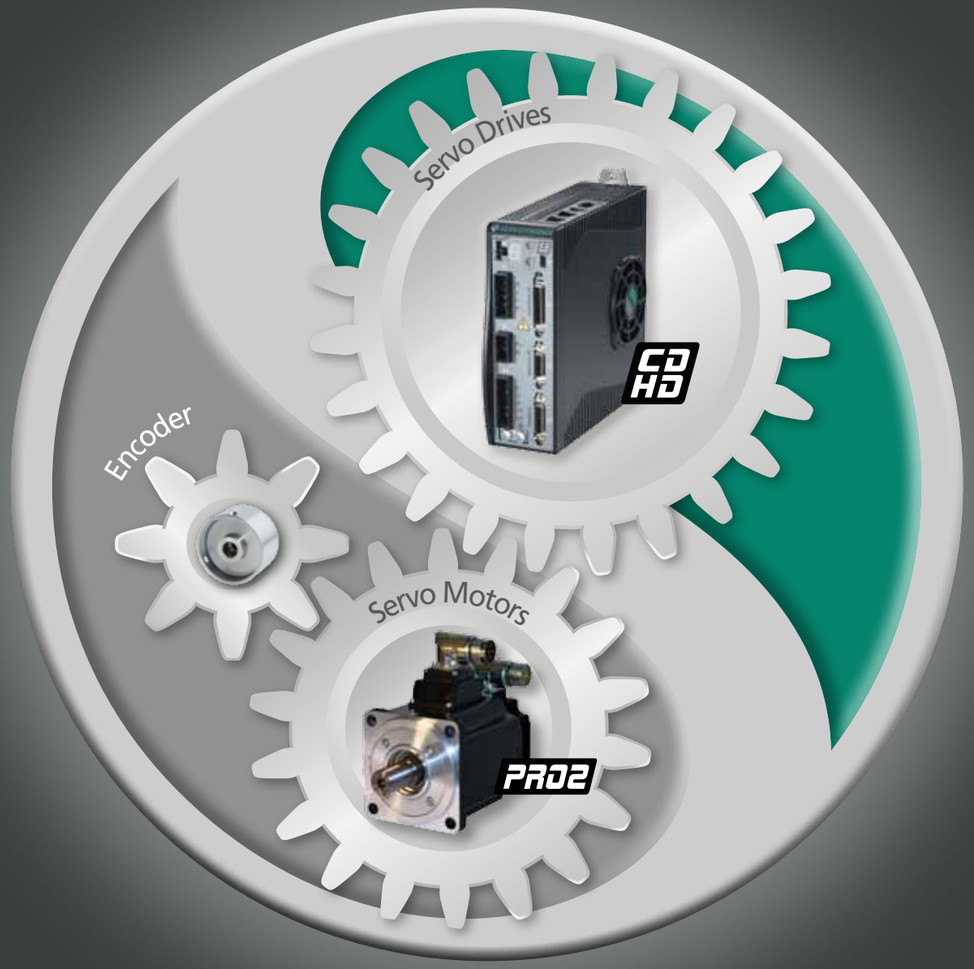
The Perfect Match



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PRO2 with CDHD and DDHD Servo Bundle

Introducing the perfectly matched servo bundle, featuring the PRO2 servo motors with the CDHD and DDHD servo drives.

Servotronix Motion Control is proud to introduce its first servo drive and motor bundle. The bundle features the dynamic PRO2 servo motors that are perfectly matched to the CDHD and DDHD servo drive family. The bundle, which enables fast and easy commissioning, further enhances ease of use and value for our customers.

Featuring the latest engineering and manufacturing technology, the advanced motors and drives provide high accuracy, dynamic response, and reliability for any automation need.

A careful selection of components, highest quality standards, international certifications, and a wide range of power ratings assure that these servo bundles render a dynamic, dependable and efficient motion solution.

The bundle also comprises Servotronix' proprietary sensAR 20 bit magnetic absolute encoder. This rotary encoder features a compact, robust and durable design that not only improves reliability but above all ensures high resolution and accuracy.

Servotronix customers are not limited to the matched servo bundles. We recognize the need of customers to size servo motors and drives to perfectly fit their applications.

PRO2 Series

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PRO2 FEATURES AND BENEFITS

Synchronous brushless servomotor, permanently excited
Flange dimensions: 40 - 60 - 80 - 100 - 130 - 180 mm
0.16 Nm to 45 Nm rated torque
50 W to 7 kW rated output power
Rated winding voltage 230 Vac and 400 Vac
Maximum servomotor speed up to 5000rpm
Built-in 20 bit proprietary absolute magnetic encoder
TTL encoder, absolute multiturn encoder (Hiperface), also available.
Insulation class F (155 °C)
IP 65 (with oil seal)
Shaft balancing class G 2,5 according ISO 1940
Ambient operation temperature from -20° C to +40° C
Optional holding brake
Optional shaft sealing
Ral 9005 black powder coating
UL [UL 1004], CSA, CE, Rohs certified
Reach compliance

PRO2 WITH CDHD AND DDHD

Bundle Technical Info - 230Vac

Motor Type	Nominal Power [W]	Nominal Torque [Nm]	Peak Torque [Nm]	Nominal Speed (RPM)	Moment of Inertia	Drive Type CDHD	Drive Type DDHD
P2-04A230	50	0.16	0.48	3000	Medium	CDHD-1D52A	DDHD-1D81D8
P2-04B230	100	0.32	0.96	3000	Medium	CDHD-1D52A	DDHD-1D81D8
P2-06A230	200	0.64	1.92	3000	Low	CDHD-1D52A	DDHD-1D81D8
P2-06B230	400	1.27	3.81	3000	Low	CDHD-0032A	DDHD-3D43D4 DDHD-3D46D8
P2-08A230	400	1.27	3.81	3000	Low	CDHD-0032A	DDHD-3D43D4 DDHD-3D46D8
P2-08B230	750	2.39	7.16	3000	Low / Medium	CDHD-4D52A	DDHD-4D54D5
P2-10A230	1000	3.18	9.54	3000	Low	CDHD-0062A CDHD-0082A	DDHD-3D46D8
P2-10B230	2000	6.37	19.11	3000	Low	CDHD-0102A	N/A
P2-13A220	500	2.39	7.16	2000	Medium	CDHD-0032A CDHD-4D52A	DDHD-3D43D4 DDHD-3D46D8
P2-13B210	300	2.86	8.59	1000	Medium	CDHD-0032A	DDHD-3D43D4 DDHD-3D46D8
P2-13C220	1000	4.77	14.3	2000	Medium / High	CDHD-0062A	DDHD-3D46D8
P2-13D215	850	5.39	13.8	1500	Medium	CDHD-0062A	DDHD-3D46D8
P2-13E210	600	5.73	17.19	1000	Medium	CDHD-4D52A	DDHD-4D54D5 DDHD-3D46D8
P2-13F210	900	8.59	25.77	1000	Medium	CDHD-0062A	DDHD-3D46D8
P2-13G220	1500	7.16	21.48	2000	Medium	CDHD-0062A CDHD-0082A	DDHD-3D46D8
P2-13H220	2000	9.55	28.65	2000	Medium	CDHD-0132A	N/A
P2-18A220	2000	9.55	28.65	2000	Medium / High	CDHD-0102A	N/A
P2-18B220	3000	14.32	42.97	2000	Medium	CDHD-0202A	N/A
P2-18C215	3000	19.1	57.29	1500	Medium	CDHD-0202A	N/A
P2-18D220	3500	16.7	50.3	2000	Medium	CDHD-0242A	N/A
P2-18E215	4500	28.65	71.62	1500	Medium	CDHD-0242A	N/A

PRO2 WITH CDHD AND DDHD

Bundle Technical Info - 400Vac

Motor Type	Nominal Power [W]	Nominal Torque [Nm]	Peak Torque [Nm]	Nominal Speed (RPM)	Moment of Inertia	Drive Type CDHD
P2-04A430	50	0.16	0.48	3000	Medium	CDHD-0034D
P2-04B430	100	0.32	0.96	3000	Medium	CDHD-0034D
P2-06A430	200	0.64	1.92	3000	Low	CDHD-0034D
P2-06B430	400	1.27	3.81	3000	Low	CDHD-0034D
P2-08A430	400	1.27	3.81	3000	Low	CDHD-0034D
P2-08B430	750	2.39	7.16	3000	Low / Medium	CDHD-0034D
P2-10A430	1000	3.18	9.54	3000	Low	CDHD-0064D
P2-10B430	2000	6.37	19.11	3000	Low	CDHD-0064D
P2-13A420	500	2.39	7.16	2000	Medium	CDHD-0034D
P2-13B410	300	2.86	8.59	1000	Medium	CDHD-0034D
P2-13C420	1000	4.77	14.3	2000	Medium / High	CDHD-0064D
P2-13D415	850	5.39	13.8	1500	Medium	CDHD-0064D
P2-13E410	600	5.73	17.19	1000	Medium	CDHD-0064D
P2-13F410	900	8.59	25.77	1000	Medium	CDHD-0064D
P2-13G420	1500	7.16	21.48	2000	Medium	CDHD-0064D
P2-13H420	2000	9.55	28.65	2000	Medium	CDHD-0124D
P2-18A420	2000	9.55	28.65	2000	Medium / High	CDHD-0124D
P2-18B420	3000	14.32	42.97	2000	Medium	CDHD-0124D
P2-18C415	3000	19.1	57.29	1500	Medium	CDHD-0244D
P2-18D420	3500	16.7	50.3	2000	Medium	CDHD-0244D
P2-18E415	4500	28.65	71.62	1500	Medium	CDHD-0244D

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PRO2 Synchronous Servo Motors

Ordering Information

P2 - 04 A 2 30 0 5 S3 0 D 000

PRO2 Series
Synchronous Servo Motors

Frame Size	
04	40 mm
06	60 mm
08	80 mm
10	100 mm
13	130 mm
18	180 mm

Length	
A	Shortest
B	
C	
D	
E	
F	
G	
H	Longest

Relative sizes, to differentiate motor lengths within each frame size.
Refer to motor datasheet for available motor lengths.

AC Bus Voltage	
2	230 VAC
4	400 VAC

Rated Speed	
10	1000 rpm
15	1500 rpm
20	2000 rpm
30	3000 rpm

According to motor datasheet

Shaft	
0	Smooth shaft
1	Smooth shaft and oil seal
2	Shaft with key
3	Shaft with key and oil seal
4 *	High inertia Smooth shaft
5 *	High inertia Smooth shaft and oil seal
6 *	High inertia shaft with key
7 *	High inertia shaft with key and oil seal

* Only available with P2-08B,P2-13C , P2-18A

IP Rating of Motor Housing (Without Shaft)	
5	IP 65 (IP65 for shaft requires oil seal)

Feedback	
S3	sensAR Single-turn absolute encoder 20 bit
M3 *	sensAR Multi-turn absolute encoder 20 bit
E1 *	Incremental encoder 2500 PPR
A1	SKM36 HIPERFACE multi-turn absolute encoder 128 sine/cosine

* Upcoming

Brake	
0	No brake
1	With brake

Connector	
D	300 mm cable with AMP connectors. Frame size 04 comes only with connector type D. Frame sizes 06 and 08 are available with connector type D.
F *	M23 (turntable) connectors. Available on all frame sizes except size 04.
A	MIL connectors. Available only on frame sizes 10, 13 and 18.

* Upcoming

000 — Future option

The Perfectly Matched Servo Bundle

SERVOTRONIX
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PRO2 SIZE 40
230 Vac RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	-20 ... + 40 °C
INSULATION CLASS	F	RELATIVE HUMIDITY	5 ... 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 54 Standard IP 65 with shaft sealing	CERTIFICATION	UL 1004, CSA, CE and Rohs approved Reach compliance

			P2-04A2	P2-04B2
Continuous stall torque	M_0	Nm	0.16	0.32
Peak torque	M_{max}	Nm	0.48	0.96
Nominal speed of rotation	nN	min $^{-1}$	3000	3000
Nominal torque	M_n	Nm	0.16	0.32
Nominal current	I_N	A_{rms}	0.59	0.89
Nominal power	P_N	kW	0.05	0.10
Rated winding voltage	Un	V_{ac}	230	230
Maximum winding voltage	U_{max}	V_{dc}	360	360
Maximum voltage to ground		V_{ac}	255	255
Maximum current	Imax	A_{rms}	1.80	2.70
Continuous stall current	I_0	A_{rms}	0.54	0.81
Voltage Constant	K_{eu-v}	Vrms/Krpm	18	24
Torque Constant	k_t	Nm/A_{rms}	0.30	0.40
Winding resistance	R_{20u-v}	Ohm	31.0	23.4
Winding inductance	L_{qu-v}	mH	26.4	21.5
Winding inductance	L_{du-v}	mH	24.7	20.6
Maximum speed of rotation	nmax	min $^{-1}$	5000	5000
Rotor inertia without holding brake	J_M	Kgcm^2	0.054	0.075
Rotor inertia with holding brake	J_M	Kgcm^2	0.055	0.076
Mass without holding brake	m	Kg	0.4	0.56
Mass with holding brake	m	Kg	0.6	0.77
Thermal time constant	Tth	min	10	15
Maximum radial shaft load		N	85	85
Maximum axial shaft load		N	40	40

Rated output with 185x185x8mm aluminum heat sink flange coupling - Ambient temperature 40°C - Derating must be considered if the oil seal is applied

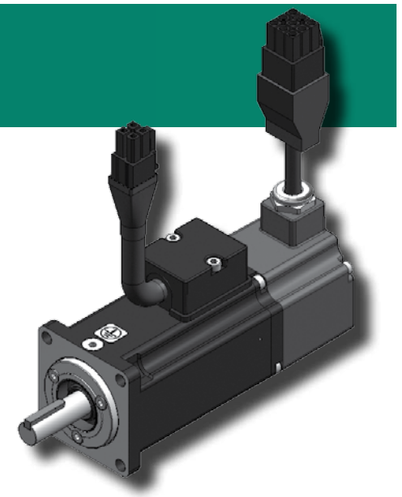
PRO2 SIZE 40
400 Vac RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	-20 ... + 40 °C
INSULATION CLASS	F	RELATIVE HUMIDITY	5 ... 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 54 Standard IP 65 with shaft sealing	CERTIFICATION	UL 1004, CSA, CE and Rohs approved Reach compliance

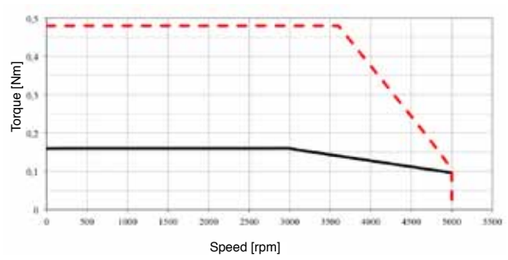
			P2-04A4	P2-04B4
Continuous stall torque	M_0	Nm	0.16	0.32
Peak torque	M_{max}	Nm	0.48	0.96
Nominal speed of rotation	nN	min $^{-1}$	3000	3000
Nominal torque	M_n	Nm	0.16	0.32
Nominal current	I_N	A_{rms}	0.59	0.89
Nominal power	P_N	kW	0.05	0.10
Rated winding voltage	Un	V_{ac}	400	400
Maximum winding voltage	U_{max}	V_{dc}	650	650
Maximum voltage to ground		V_{ac}	265	265
Maximum current	Imax	A_{rms}	1.80	2.70
Continuous stall current	I_0	A_{rms}	0.54	0.81
Voltage Constant	K_{eu-v}	Vrms/Krpm	18	24
Torque Constant	k_t	Nm/A_{rms}	0.30	0.40
Winding resistance	R_{20u-v}	Ohm	31.0	23.4
Winding inductance	L_{qu-v}	mH	26.4	21.5
Winding inductance	L_{du-v}	mH	24.7	20.6
Maximum speed of rotation	nmax	min $^{-1}$	5000	5000
Rotor inertia without holding brake	J_M	Kgcm^2	0.054	0.075
Rotor inertia with holding brake	J_M	Kgcm^2	0.055	0.076
Mass without holding brake	m	Kg	0.4	0.56
Mass with holding brake	m	Kg	0.6	0.77
Thermal time constant	Tth	min	10	15
Maximum radial shaft load		N	85	85
Maximum axial shaft load		N	40	40

Rated output with 185x185x8mm aluminum heat sink flange coupling - Ambient temperature 40°C - Derating must be considered if the oil seal is applied

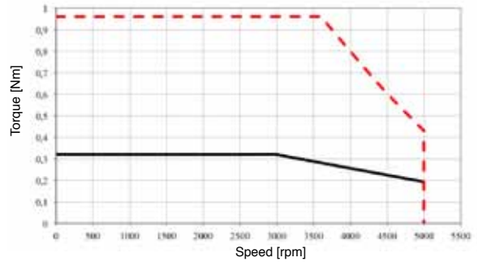
PRO2 SIZE 40
TORQUE AND SPEED CHARTS



PRO2 SIZE 40A



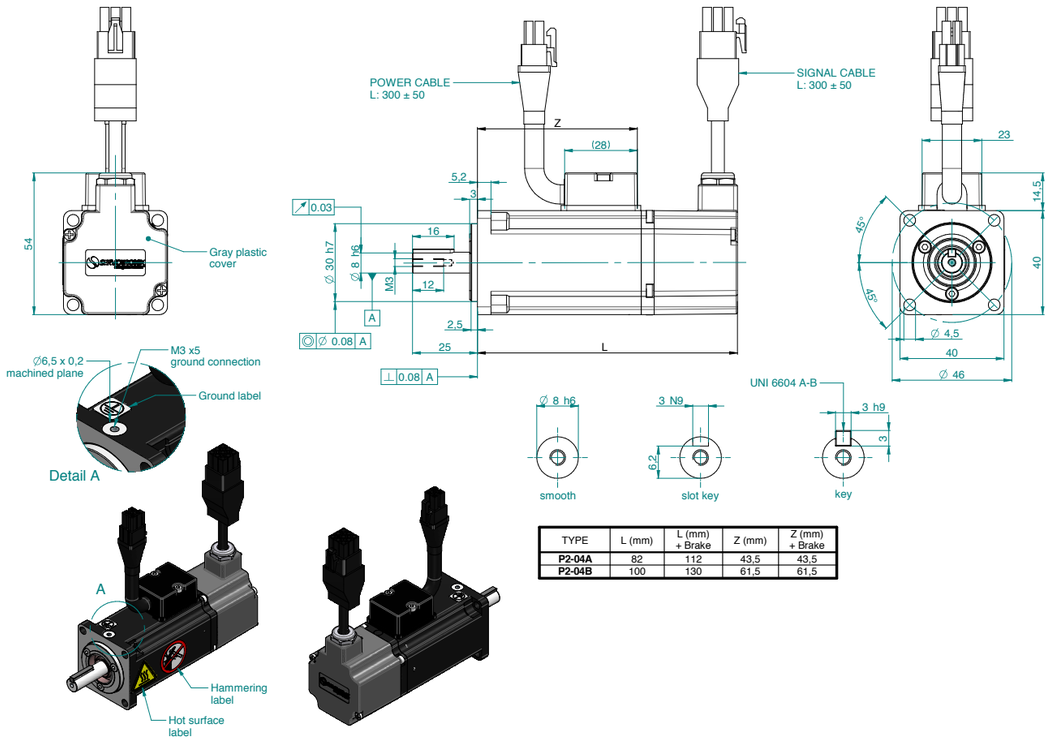
PRO2 SIZE 40B



Continuous torque
Peak operation

PRO2 SIZE 40 DIMENSIONS

		P2-04A	P2-04B
L without brake with feedback S3/M3	mm	82	100
L with brake with feedback S3/M3	mm	112	130
Z without brake	mm	43.5	61.5
Z with brake	mm	43.5	61.5



TYPE	L (mm)	L (mm) + Brake	Z (mm)	Z (mm) + Brake
P2-04A	82	112	43,5	43,5
P2-04B	100	130	61,5	61,5

PRO2 SIZE 60
230 Vac RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	-20 ... + 40 °C
INSULATION CLASS	F	RELATIVE HUMIDITY	5 ... 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 54 Standard IP 65 with shaft sealing	CERTIFICATION	UL 1004, CSA, CE and Rohs approved Reach compliance

			P2-06A2	P2-06B2
Continuous stall torque	M_0	Nm	0.64	1.27
Peak torque	M_{max}	Nm	1.92	3.81
Nominal speed of rotation	nN	min $^{-1}$	3000	3000
Nominal torque	M_n	Nm	0.64	1.27
Nominal current	I_N	A_{rms}	1.30	2.50
Nominal power	P_N	kW	0.20	0.40
Rated winding voltage	Un	V_{ac}	230	230
Maximum winding voltage	U_{max}	V_{dc}	360	360
Maximum voltage to ground		V_{ac}	255	255
Maximum current	Imax	A_{rms}	4.50	7.80
Continuous stall current	I_0	A_{rms}	1.11	2.19
Voltage Constant	K_{eu-v}	Vrms/Krpm	35	35
Torque Constant	k_t	Nm/A_{rms}	0.58	0.58
Winding resistance	R_{20u-v}	Ohm	12.2	5.2
Winding inductance	L_{qu-v}	mH	24.8	12.5
Winding inductance	L_{du-v}	mH	22.7	12
Maximum speed of rotation	nmax	min $^{-1}$	5000	5000
Rotor inertia without holding brake	J_M	$Kgcm^2$	0.16	0.27
Rotor inertia with holding brake	J_M	$Kgcm^2$	0.17	0.28
Mass without holding brake	m	Kg	1.02	1.45
Mass with holding brake	m	Kg	1.5	2
Thermal time constant	Tth	min	15	20
Maximum radial shaft load		N	200	200
Maximum axial shaft load		N	70	70

Rated output with 250x250x12mm aluminum heat sink flange coupling - Ambient temperature 40°C - Derating must be considered if the oil seal is applied

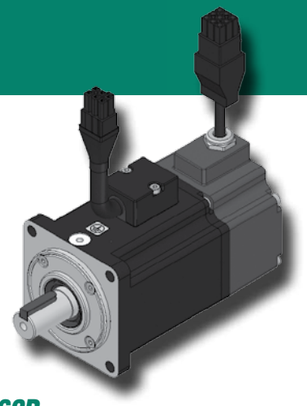
PRO2 SIZE 60
400 Vac RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	-20 ... + 40 °C
INSULATION CLASS	F	RELATIVE HUMIDITY	5 ... 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 54 Standard IP 65 with shaft sealing	CERTIFICATION	UL 1004, CSA, CE and Rohs approved Reach compliance

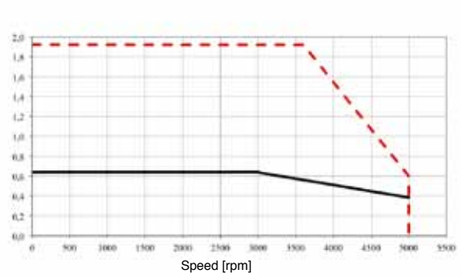
			P2-06A4	P2-06B4
Continuous.stall.torque	M_0	Nm	0.64	1.27
Peak.torque	M_{max}	Nm	1.92	3.81
Nominal.speed.of.rotation	nN	min.$^{-1}$	3000	3000
Nominal.torque	M_n	Nm	0.64	1.27
Nominal.current	I_N	A_{rms}	1.30	2.50
Nominal.power	P_N	kW	0.20	0.40
Rated.winding.voltage	Un	V_{ac}	400	400
Maximum.winding.voltage	U_{max}	V_{dc}	650	650
Maximum.voltage.to.ground		V_{ac}	265	265
Maximum.current	Imax	A_{rms}	4.50	7.80
Continuous.stall.current	I_0	A_{rms}	1.11	2.19
Voltage.Constant	K_{eu-v}	Vrms/Krpm	35	35
Torque.Constant.	k_t	Nm/A_{rms}	0.58	0.58
Winding.resistance	R_{20u-v}	Ohm	12.2	5.2
Winding.inductance	L_{qu-v}	mH	24.8	12.5
Winding.inductance	L_{du-v}	mH	22.7	12
Maximum.speed.of.rotation	nmax	min.$^{-1}$	5000	5000
Rotor.inertia.without.holding.brake	J_M	$Kgcm^2$	0.16	0.27
Rotor.inertia.with.holding.brake	J_M	$Kgcm^2$	0.17	0.28
Mass.without.holding.brake	m	Kg	1.02	1.45
Mass.with.holding.brake	m	Kg....	1.5	2
Thermal.time.constant	Tth	min	15	20
Maximum.radial.shaft.load.		N	200	200
Maximum.axial.shaft.load		N	70	70

Rated.output.with.250x250x12mm.aluminum.heat.sink.flange.coupling.-.Ambient.temperature.40°C.-.Derating.must.be.considered.if.the.oil.seal.is.applied.

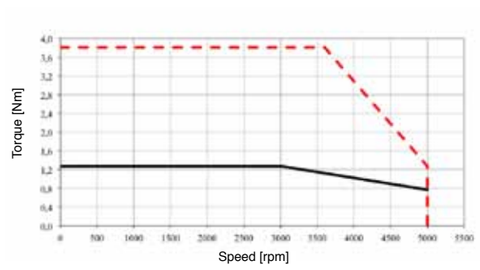
PRO2 SIZE 60
TORQUE AND SPEED CHARTS



PRO2 SIZE 60A



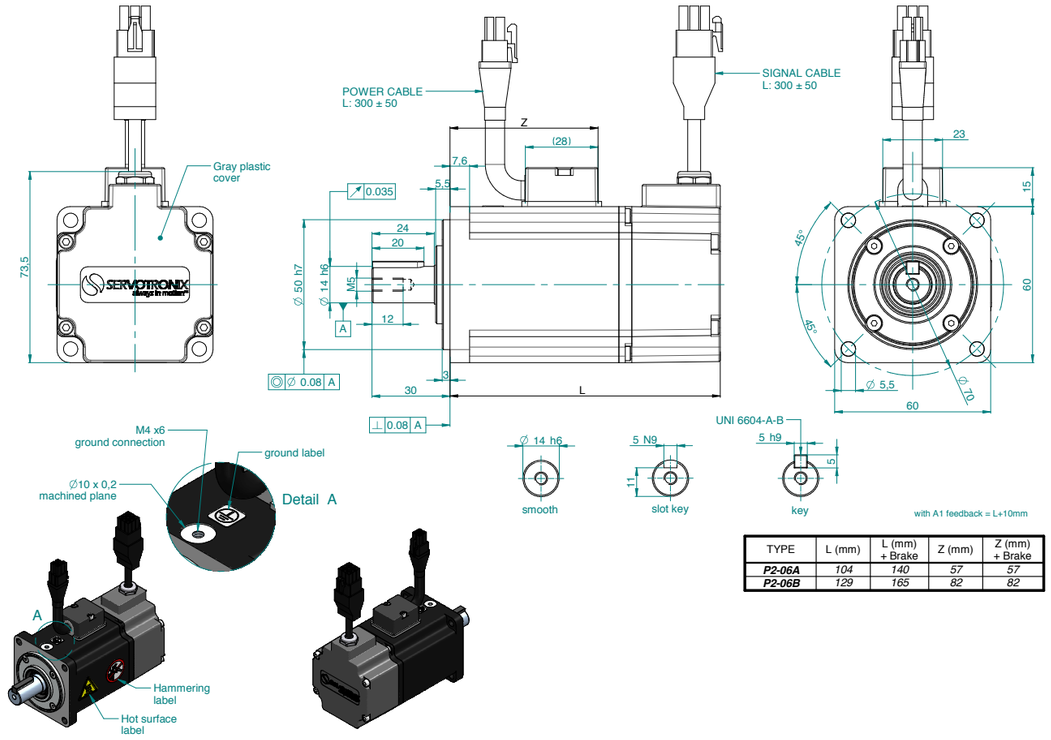
PRO2 SIZE 60B



Continuous torque
Peak operation

PRO2 SIZE 60 DIMENSIONS

		P2-06A	P2-06B
L Without Brake with feedback S3/M3	mm	104	129
L With Brake with feedback S3/M3	mm	140	165
L Without Brake with feedback A1	mm	114	139
L With Brake with feedback A1	mm	150	175
Z Without Brake	mm	57	82
Z With Brake	mm	57	82



TYPE	L (mm)	L (mm) + Brake	Z (mm)	Z (mm) + Brake
P2-06A	*104*	*140*	*57*	*57*
P2-06B	*129*	*165*	*82*	*82*

PRO2 SIZE 80
230 Vac RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	-20 ... + 40 °C
INSULATION CLASS	F	RELATIVE HUMIDITY	5 ... 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 54 Standard IP 65 with shaft sealing	CERTIFICATION	UL 1004, CSA, CE and Rohs approved Reach compliance

			P2-08A2	P2-08B2
Continuous stall torque	M_0	Nm	1.27	2.39
Peak torque	M_{max}	Nm	3.81	7.16
Nominal speed of rotation	nN	min $^{-1}$	3000	3000
Nominal torque	M_n	Nm	1.27	2.39
Nominal current	I_N	A_{rms}	2.52	4.29
Nominal power	P_N	kW	0.40	0.75
Rated winding voltage	Un	V_{ac}	230	230
Maximum winding voltage	U_{max}	V_{dc}	360	360
Maximum voltage to ground		V_{ac}	255	255
Maximum current	Imax	A_{rms}	7.80	13.50
Continuous stall current	I_0	A_{rms}	2.29	4.01
Voltage Constant	K_{eu-v}	V_{rms}/K_{rpm}	33.5	36
Torque Constant	k_t	Nm/A_{rms}	0.55	0.60
Winding resistance	R_{20u-v}	Ohm	3.2	1.5
Winding inductance	L_{qu-v}	mH	12	6.6
Winding inductance	L_{du-v}	mH	11.3	6.1
Maximum speed of rotation	nmax	min $^{-1}$	5000	5000
Rotor inertia without holding brake	J_M	$Kgcm^2$	0.67	1.19
Rotor inertia with holding brake	J_M	$Kgcm^2$	0.72	1.24
Rotor high inertia without holding brake	J_M	$Kgcm^2$	-	1.54
Rotor high inertia with holding brake	J_M	$Kgcm^2$	-	1.59
Mass without holding brake	m	Kg	2	2.8
Mass with holding brake	m	Kg	2.8	3.6
High inertia mass without holding brake	m	Kg	-	2.9
High inertia mass with holding brake	m	Kg	-	3.7
Thermal time constant	Tth	min	25	28
Maximum radial shaft load		N	332	332
Maximum axial shaft load		N	115	115

Rated output with 250x250x12mm aluminum heat sink flange coupling - Ambient temperature 40°C - Derating must be considered if the oil seal is applied

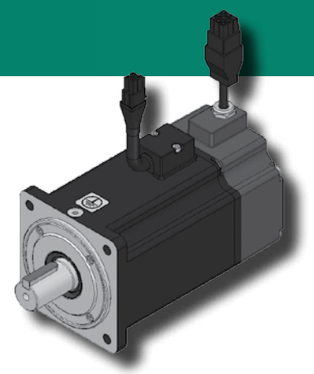
PRO2 SIZE 80
400 Vac RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	-20 ... + 40 °C
INSULATION CLASS	F	RELATIVE HUMIDITY	5 ... 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 54 Standard IP 65 with shaft sealing	CERTIFICATION	UL 1004, CSA, CE and Rohs approved Reach compliance

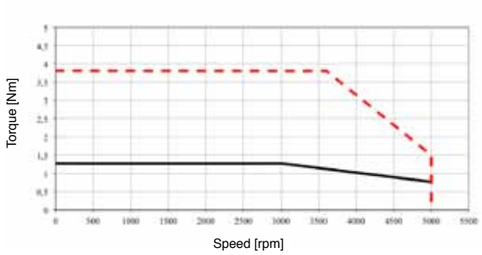
			P2-08A4	P2-08B4
Continuous stall torque	M_0	Nm	1.27	2.39
Peak torque	M_{max}	Nm	3.81	7.16
Nominal speed of rotation	nN	min $^{-1}$	3000	3000
Nominal torque	M_n	Nm	1.27	2.39
Nominal current	I_N	A_{rms}	2.52	2.81
Nominal power	P_N	kW	0.40	0.75
Rated winding voltage	Un	V_{ac}	400	400
Maximum winding voltage	U_{max}	V_{dc}	650	650
Maximum voltage to ground		V_{ac}	265	265
Maximum current	Imax	A_{rms}	7.80	8.66
Continuous stall current	I_0	A_{rms}	2.29	2.63
Voltage Constant	K_{eu-v}	V_{rms}/K_{rpm}	33.5	55
Torque Constant	k_t	Nm/A_{rms}	0.55	0.91
Winding resistance	R_{20u-v}	Ohm	3.2	3.5
Winding inductance	L_{qu-v}	mH	12	15.4
Winding inductance	L_{du-v}	mH	11.3	14.2
Maximum speed of rotation	nmax	min $^{-1}$	5000	5000
Rotor inertia without holding brake	J_M	$Kgcm^2$	0.67	1.19
Rotor inertia with holding brake	J_M	$Kgcm^2$	0.72	1.24
Rotor high inertia without holding brake	J_M	$Kgcm^2$	-	1.54
Rotor high inertia with holding brake	J_M	$Kgcm^2$	-	1.59
Mass without holding brake	m	Kg	2	2.8
Mass with holding brake	m	Kg	2.8	3.6
High inertia mass without holding brake	m	Kg	-	2.9
High inertia mass with holding brake	m	Kg	-	3.7
Thermal time constant	Tth	min	25	28
Maximum radial shaft load		N	332	332
Maximum axial shaft load		N	115	115

Rated output with 250x250x12mm aluminum heat sink flange coupling - Ambient temperature 40°C - Derating must be considered if the oil seal is applied

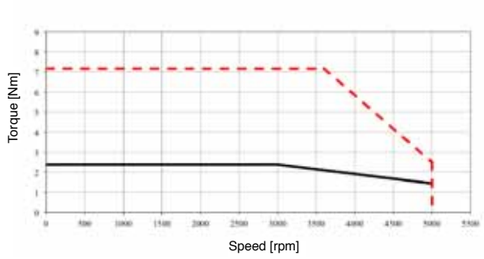
PRO2 SIZE 80
TORQUE AND SPEED CHARTS



PRO2 SIZE 80A



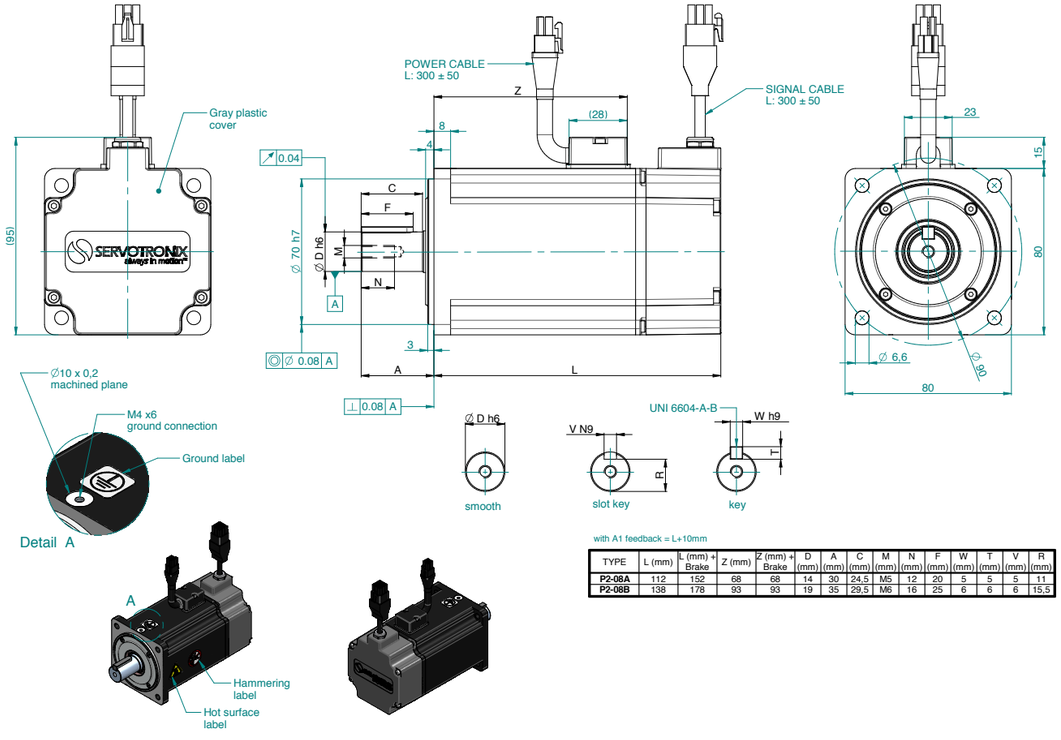
PRO2 SIZE 80B



Continuous torque
Peak operation

PRO2 SIZE 80 DIMENSIONS

		P2-08A	P2-08B
L Without Brake with feedback S3/M3	mm	112	138
L With Brake with feedback S3/M3	mm	152	178
L Without Brake with feedback A1	mm	122	148
L With Brake with feedback A1	mm	162	188
Z Without Brake	mm	68	93
Z With Brake	mm	68	93
D	mm	14	19
A	mm	30	35
C	mm	24.5	29.5
M	mm	M5	M6
N	mm	12	16
F	mm	20	25
W	mm	5	6
T	mm	5	6
V	mm	5	6
R	mm	11	15.5



with A1 feedback = L+10mm

TYPE	L (mm)	L (mm) + Brake	Z (mm)	Z (mm) + Brake	D (mm)	A (mm)	C (mm)	M (mm)	N (mm)	F (mm)	W (mm)	T (mm)	V (mm)	R (mm)
P2-08A	112	152	68	68	14	30	24,5	M5	12	20	5	5	5	11
P2-08B	138	178	93	93	19	35	29,5	M6	16	25	6	6	6	15,5

PRO2 SIZE 100
230 Vac RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	-20 ... + 40 °C
INSULATION CLASS	F	RELATIVE HUMIDITY	5 ... 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	10
PROTECTION CLASS	IP 54 Standard IP 65 with shaft sealing	CERTIFICATION	UL 1004, CSA, CE and Rohs approved Reach compliance

			P2-10A2	P2-10B2
Continuous stall torque	M_0	Nm	3.18	6.37
Peak torque	M_{max}	Nm	9.54	19.11
Nominal speed of rotation	nN	min^{-1}	3000	3000
Nominal torque	M_n	Nm	3.18	6.37
Nominal current	I_N	A_{rms}	6.64	10.27
Nominal power	P_N	kW	1.00	2.00
Rated winding voltage	Un	V_{ac}	230	230
Maximum winding voltage	U_{max}	V_{dc}	360	360
Maximum voltage to ground		V_{ac}	255	255
Maximum current	Imax	A_{rms}	20.0	35.0
Continuous stall current	I_0	A_{rms}	5.83	9.87
Voltage Constant	K_{eu-v}	V_{rms}/K_{rpm}	33	39
Torque Constant	k_t	Nm/A_{rms}	0.55	0.65
Winding resistance	R_{20u-v}	Ohm	0.67	0.36
Winding inductance	L_{qu-v}	mH	4.3	2.6
Winding inductance	L_{du-v}	mH	4.2	2.59
Maximum speed of rotation	nmax	min^{-1}	5000	5000
Rotor inertia without holding brake	J_M	$Kgcm^2$	2.4	4.28
Rotor inertia with holding brake	J_M	$Kgcm^2$	2.45	4.35
Mass without holding brake	m	Kg	4.6	6.7
Mass with holding brake	m	Kg	5.1	7.2
Thermal time constant	Tth	min	28	30
Maximum radial shaft load		N	570	570
Maximum axial shaft load		N	155	155

Rated output with 300x300x20mm steel heat sink flange coupling - Ambient temperature 40°C - Derating must be considered if the oil seal is applied

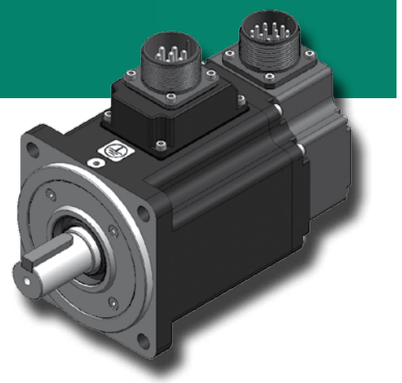
PRO2 SIZE 100
400 Vac RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	-20 ... + 40 °C
INSULATION CLASS	F	RELATIVE HUMIDITY	5 ... 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	10
PROTECTION CLASS	IP 54 Standard IP 65 with shaft sealing	CERTIFICATION	UL 1004, CSA, CE and Rohs approved Reach compliance

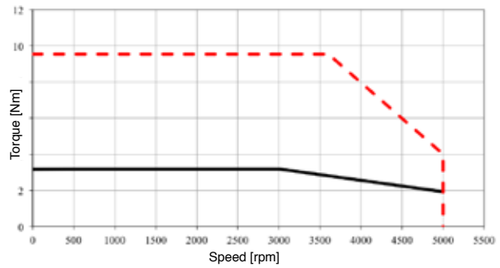
			P2-10A4	P2-10B4
Continuous stall torque	M_0	Nm	3.18	6.37
Peak torque	M_{max}	Nm	9.54	19.11
Nominal speed of rotation	nN	min^{-1}	3000	3000
Nominal torque	M_n	Nm	3.18	6.37
Nominal current	I_N	A_{rms}	5.77	5.56
Nominal power	P_N	kW	1.00	2.00
Rated winding voltage	Un	V_{ac}	400	400
Maximum winding voltage	U_{max}	V_{dc}	650	650
Maximum voltage to ground		V_{ac}	265	265
Maximum current	Imax	A_{rms}	16.40	17.65
Continuous stall current	I_0	A_{rms}	5.06	5.35
Voltage Constant	K_{eu-v}	V_{rms}/K_{rpm}	38	72
Torque Constant	k_t	Nm/A_{rms}	0.63	1.19
Winding resistance	R_{20u-v}	Ohm	0.89	1.23
Winding inductance	L_{qu-v}	mH	5.7	8.9
Winding inductance	L_{du-v}	mH	5.6	8.7
Maximum speed of rotation	nmax	min^{-1}	5000	5000
Rotor inertia without holding brake	J_M	$Kgcm^2$	2.4	4.28
Rotor inertia with holding brake	J_M	$Kgcm^2$	2.45	4.35
Mass without holding brake	m	Kg	4.6	6.7
Mass with holding brake	m	Kg	5.1	7.2
Thermal time constant	Tth	min	28	30
Maximum radial shaft load		N	570	570
Maximum axial shaft load		N	155	155

Rated output with 300x300x20mm steel heat sink flange coupling - Ambient temperature 40°C - Derating must be considered if the oil seal is applied

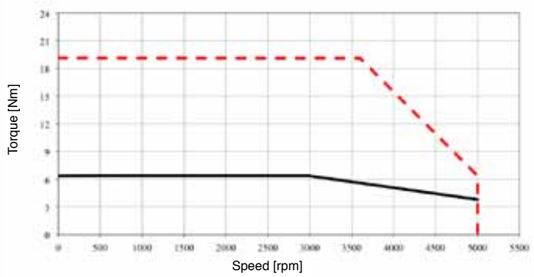
PRO2 SIZE 100
TORQUE AND SPEED CHARTS



PRO2 SIZE 100A



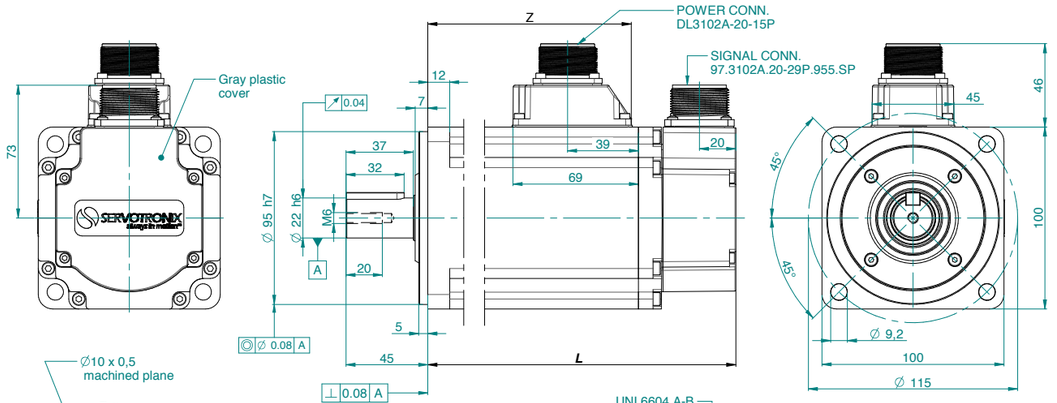
PRO2 SIZE 100B



Continuous torque
Peak operation

PRO2 SIZE 100 DIMENSIONS

		P2-10A	P2-10B
L Without Brake with feedback S3/M3	mm	153.5	198.5
L With Brake with feedback S3/M3	mm	180.5	225.5
L Without Brake with feedback A1	mm	165.5	210.5
L With Brake with feedback A1	mm	192.5	237.5
Z Without Brake	mm	96	141
Z With Brake	mm	96	141



TYPE	L (mm)	Z (mm)
P2-10A	153,5	96
P2-10B	198,5	141
P2-10A + Brake	180,5	96
P2-10B + Brake	225,5	141

with A1 feedback = L+12mm

PRO2 SIZE 130
230 Vac RATINGS AND SPECIFICATIONS.1

TIME RATING	Continuous	AMBIENT TEMPERATURE	-20 ... + 40 °C
INSULATION CLASS	F	RELATIVE HUMIDITY	5 ... 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	10
PROTECTION CLASS	IP 54 Standard IP 65 with shaft sealing	CERTIFICATION	UL 1004, CSA, CE and Rohs approved Reach compliance

			P2-13A2	P2-13B2	P2-13C2	P2-13D2
Continuous stall torque	M_0	Nm	2.39	2.86	4.77	5.39
Peak torque	M_{max}	Nm	7.16	8.59	14.3	13.8
Nominal speed of rotation	nN	min $^{-1}$	2000	1000	2000	1500
Nominal torque	M_n	Nm	2.39	2.86	4.77	5.39
Nominal current	I_N	A_{rms}	3.24	2.09	6.29	6.29
Nominal power	P_N	kW	0.50	0.30	1.00	0.85
Rated winding voltage	Un	V_{ac}	230	230	230	230
Maximum winding voltage	U_{max}	V_{dc}	360	360	360	360
Maximum voltage to ground		V_{ac}	255	255	255	255
Maximum current	Imax	A_{rms}	9.50	6.00	20.00	15.00
Continuous stall current	I_0	A_{rms}	2.89	1.88	5.77	5.62
Voltage Constant	K_{eu-v}	V_{rms}/K_{rpm}	50	92	50	58
Torque Constant	k_t	Nm/A_{rms}	0.83	1.52	0.83	0.96
Winding resistance	R_{20u-v}	Ohm	0.74	2.08	0.74	0.42
Winding inductance	L_{qu-v}	mH	7.84	26.25	7.84	4.70
Winding inductance	L_{du-v}	mH	7.14	23.91	7.14	4.30
Maximum speed of rotation	nmax	min $^{-1}$	3000	2000	3000	3000
Rotor inertia without holding brake	J_M	$Kgcm^2$	6.74	6.74	6.74	12.76
Rotor inertia with holding brake	J_M	$Kgcm^2$	6.88	6.88	6.88	12.96
Rotor high inertia without holding brake	J_M	$Kgcm^2$	-	-	8.41	-
Rotor high inertia with holding brake	J_M	$Kgcm^2$	-	-	8.54	-
Mass without holding brake	m	Kg	7	7	7	9.6
Mass with holding brake	m	Kg	8.2	8.2	8.2	10.9
High inertia mass without holding brake	m	Kg	-	-	7.1	-
High inertia mass with holding brake	m	Kg	-	-	8.3	-
Thermal time constant	Tth	min	30	30	33	35
Maximum radial shaft load		N	670	670	670	670
Maximum axial shaft load		N	200	200	200	200

Rated output with 400x400x20mm steel heat sink flange coupling - Ambient temperature 40°C - Derating must be considered if the oil seal is applied

PRO2 SIZE 130
230 Vac RATINGS AND SPECIFICATIONS.2

TIME RATING	Continuous	AMBIENT TEMPERATURE	-20 ... + 40 °C
INSULATION CLASS	F	RELATIVE HUMIDITY	5 ... 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	10
PROTECTION CLASS	IP 54 Standard IP 65 with shaft sealing	CERTIFICATION	UL 1004, CSA, CE and Rohs approved Reach compliance

			P2-13E2	P2-13F2	P2-13G2	P2-13H2
Continuous stall torque	M_0	Nm	5.73	8.59	7.16	9.55
Peak torque	M_{max}	Nm	17.19	25.77	21.48	28.65
Nominal speed of rotation	nN	min $^{-1}$	1000	1000	2000	2000
Nominal torque	M_n	Nm	5.73	8.59	7.16	9.55
Nominal current	I_N	A_{rms}	4.10	6.15	6.74	11.25
Nominal power	P_N	kW	0.60	0.90	1.50	2.00
Rated winding voltage	Un	V_{ac}	230	230	230	230
Maximum winding voltage	U_{max}	V_{dc}	360	360	360	360
Maximum voltage to ground		V_{ac}	255	255	255	255
Maximum current	Imax	A_{rms}	13.50	20.00	21.00	33.00
Continuous stall current	I_0	A_{rms}	3.77	5.64	6.18	9.95
Voltage Constant	K_{eu-v}	V_{rms}/K_{rpm}	92	92	70	58
Torque Constant	k_t	Nm/A_{rms}	1.52	1.52	1.16	0.96
Winding resistance	R_{20u-v}	Ohm	2.08	1.22	0.64	0.42
Winding inductance	L_{qu-v}	mH	26.25	16.4	7.20	4.70
Winding inductance	L_{du-v}	mH	23.91	14.90	6.40	4.30
Maximum speed of rotation	nmax	min $^{-1}$	2000	2000	3000	3000
Rotor inertia without holding brake	J_M	$Kgcm^2$	6.74	9.75	9.75	12.8
Rotor inertia with holding brake	J_M	$Kgcm^2$	6.88	10	10	13
Mass without holding brake	m	Kg	7	7.6	7.6	9.7
Mass with holding brake	m	Kg	8.2	8.8	8.8	11
Thermal time constant	Tth	min	33	35	35	35
Maximum radial shaft load		N	670	670	670	670
Maximum axial shaft load		N	200	200	200	200

Rated output with 400x400x20mm steel heat sink flange coupling - Ambient temperature 40°C - Derating must be considered if the oil seal is applied

PRO2 SIZE 130
400 Vac RATINGS AND SPECIFICATIONS.1

TIME RATING	Continuous	AMBIENT TEMPERATURE	-20 ... + 40 °C
INSULATION CLASS	F	RELATIVE HUMIDITY	5 ... 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	10
PROTECTION CLASS	IP 54 Standard IP 65 with shaft sealing	CERTIFICATION	UL 1004, CSA, CE and Rohs approved Reach compliance

			P2-13A4	P2-13B4	P2-13C4	P2-13D4
Continuous.stall.torque	M_0	Nm	2.39	2.86	4.77	5.39
Peak.torque	M_{max}	Nm	7.16	8.59	14.3	13.8
Nominal.speed.of.rotation	nN	$min.^{-1}$	2000	1000	2000	1500
Nominal.torque	M_n	Nm	2.39	2.86	4.77	5.39
Nominal.current	I_N	A_{rms}	3.24	2.09	6.29	6.29
Nominal.power	P_N	kW	0.50	0.30	1.00	0.85
Rated.winding.voltage	Un	V_{ac}	400	400	400	400
Maximum.winding.voltage	U_{max}	V_{dc}	650	650	650	650
Maximum.voltage.to.ground		V_{ac}	265	265	265	265
Maximum.current	Imax	A_{rms}	9.50	6.00	20.00	15.00
Continuous.stall.current	I_0	A_{rms}	2.89	1.88	5.77	5.62
Voltage.Constant	K_{eu-v}	V_{rms}/K_{rpm}	50	92	50	58
Torque.Constant.	k_t	Nm/A_{rms}	0.83	1.52	0.83	0.96
Winding.resistance	R_{20u-v}	Ohm	0.74	2.08	0.74	0.42
Winding.inductance	L_{qu-v}	mH	7.84	26.25	7.84	4.70
Winding.inductance	L_{du-v}	mH	7.14	23.91	7.14	4.30
Maximum.speed.of.rotation	nmax	$min.^{-1}$	3000	2000	3000	2000
Rotor.inertia.without.holding.brake	J_M	$Kgcm^2$	6.74	6.74	6.74	12.76
Rotor.inertia.with.holding.brake	J_M	$Kgcm^2$	6.88	6.88	6.88	12.96
Rotor.high.inertia.without.holding.brake	J_M	$Kgcm^2$	-	-	8.41	-
Rotor.high.inertia.with.holding.brake	J_M	$Kgcm^2$			8.54	
Mass.without.holding.brake	m	Kg	7	7	7	9.6
Mass.with.holding.brake	m	Kg....	8.2	8.2	8.2	10.9
High.inertia.mass.without.holding.brake	m	Kg	-	-	7.1	-
High.inertia.mass.with.holding.brake	m	Kg	-	-	8.2	-
Thermal.time.constant	Tth	min	30	30	33	35
Maximum.radial.shaft.load.		N	670	670	670	670
Maximum.axial.shaft.load		N	200	200	200	200

Rated.output.with.400x400x20mm.steel.heat.sink.flange.coupling.-.Ambient.temperature.40°C.-.Derating.must.be.considered.if.the.oil.seal.is.applied.

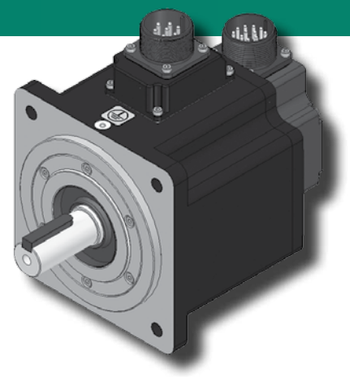
PRO2 SIZE 130
400 Vac RATINGS AND SPECIFICATIONS.2

TIME RATING	Continuous	AMBIENT TEMPERATURE	-20 ... + 40 °C
INSULATION CLASS	F	RELATIVE HUMIDITY	5 ... 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	10
PROTECTION CLASS	IP 54 Standard IP 65 with shaft sealing	CERTIFICATION	UL 1004, CSA, CE and Rohs approved Reach compliance

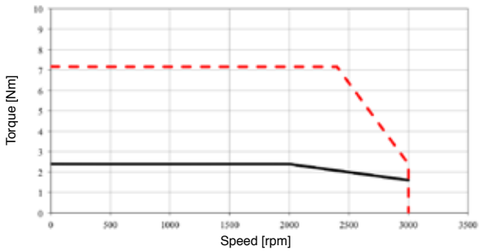
			P2-13E4	P2-13F4	P2-13G4	P2-13H4
Continuous stall torque	M_0	Nm	5.73	8.59	7.16	9.55
Peak torque	M_{max}	Nm	17.19	25.77	21.48	28.65
Nominal speed of rotation	nN	min^{-1}	1000	1000	2000	2000
Nominal torque	M_n	Nm	5.73	8.59	7.16	9.55
Nominal current	I_N	A_{rms}	4.10	6.15	6.74	11.25
Nominal power	P_N	kW	0.60	0.90	1.50	2.00
Rated winding voltage	Un	V_{ac}	400	400	400	400
Maximum winding voltage	U_{max}	V_{dc}	650	650	650	650
Maximum voltage to ground		V_{ac}	265	265	265	265
Maximum current	Imax	A_{rms}	13.50	20.00	21.00	33.00
Continuous stall current	I_0	A_{rms}	3.77	5.64	6.18	9.95
Voltage Constant	K_{eu-v}	V_{rms}/K_{rpm}	92	92	70	58
Torque Constant	k_t	Nm/A_{rms}	1.52	1.52	1.16	0.96
Winding resistance	R_{20u-v}	Ohm	2.08	1.22	0.64	0.42
Winding inductance	L_{qu-v}	mH	26.25	16.4	7.2	4.70
Winding inductance	L_{du-v}	mH	23.91	14.90	6.40	4.30
Maximum speed of rotation	nmax	min^{-1}	2000	2000	3000	3000
Rotor inertia without holding brake	J_M	$Kgcm^2$	6.74	9.75	9.75	12.8
Rotor inertia with holding brake	J_M	$Kgcm^2$	6.88	10	10	13
Mass without holding brake	m	Kg	7.0	7.6	7.6	9.7
Mass with holding brake	m	Kg	8.2	8.8	8.8	11
Thermal time constant	Tth	min	33	35	35	35
Maximum radial shaft load		N	670	670	670	670
Maximum axial shaft load		N	200	200	200	200

Rated output with 400x400x20mm steel heat sink flange coupling - Ambient temperature 40°C - Derating must be considered if the oil seal is applied

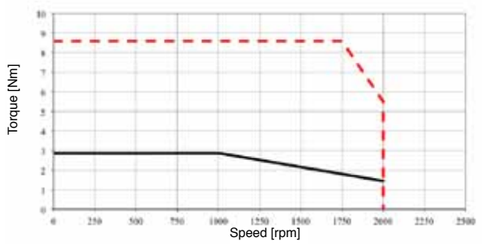
PRO2 SIZE 130
TORQUE AND SPEED CHARTS .1



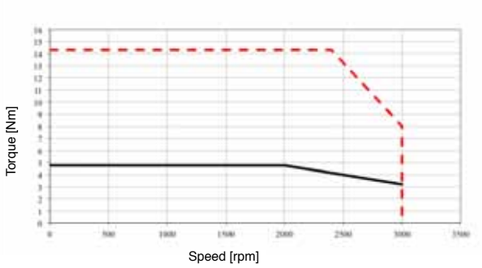
PRO2 SIZE 130A



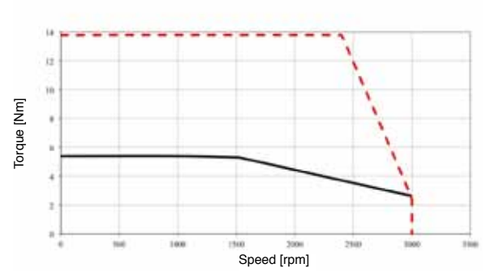
PRO2 SIZE 130B



PRO2 SIZE 130C

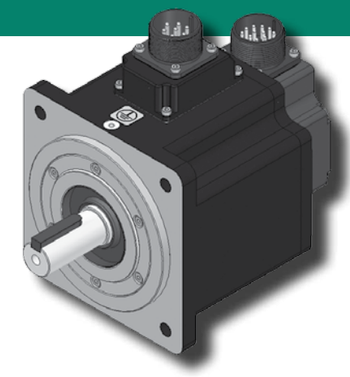


PRO2 SIZE 130D

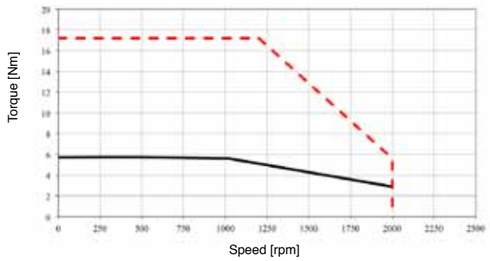


Continuous torque
Peak operation

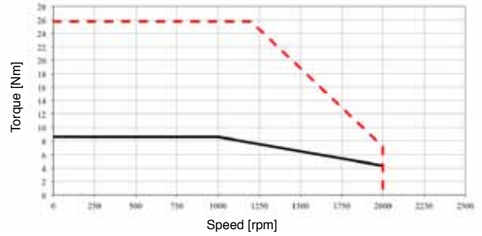
PRO2 SIZE130
TORQUE AND SPEED CHARTS .2



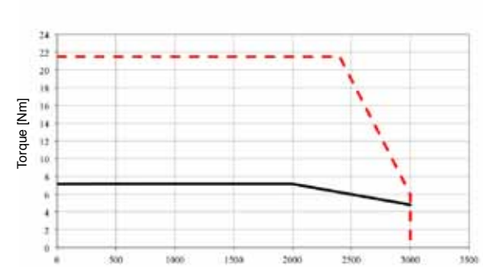
PRO2 SIZE 130E



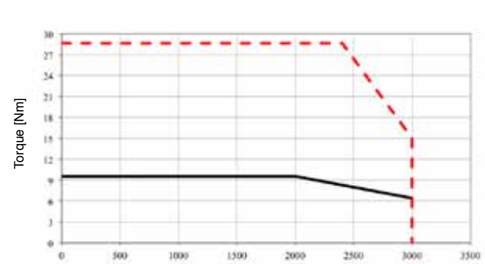
PRO2 SIZE 130F



PRO2 SIZE 130G



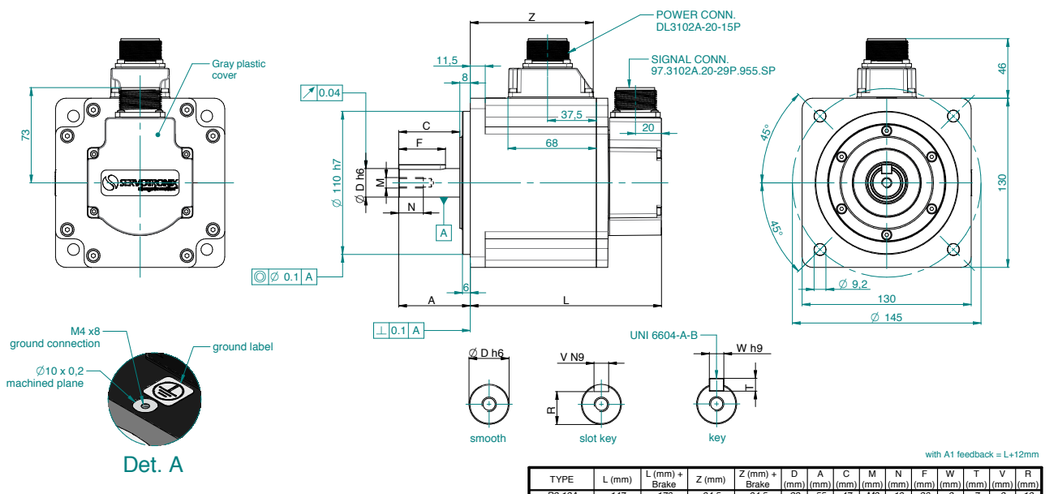
PRO2 SIZE 130H



Continuous torque
Peak operation

PRO2 SIZE 130 DIMENSIONS

			P2-13A	P2-13B	P2-13C	P2-13D	P2-13E	P2-13F	P2-13G	P2-13H
L Without Brake with feedback S3/M3		mm	147	147	147	187	147	163	163	187
L With Brake with feedback S3/M3		mm	183	183	183	216	183	198	198	216
L Without Brake with feedback A1		mm	159	159	159	199	169	175	175	199
L With Brake with feedback A1		mm	195	195	195	228	195	210	210	238
Z Without Brake		mm	94.5	94.5	94.5	134.5	94.5	110.5	110.5	134.5
Z With Brake		mm	94.5	94.5	94.5	134.5	94.5	110.5	110.5	134.5
	D	mm	22	22	22	19	22	22	22	22
	A	mm	55	55	55	48	55	55	55	55
	C	mm	47	47	47	40	47	47	47	47
	M	mm	M8	M8	M8	M6	M8	M8	M8	M8
	N	mm	19	19	19	16	19	19	19	19
	F	mm	36	36	36	25	36	36	36	36
	W	mm	8	8	8	6	8	8	8	8
	T	mm	7	7	7	6	7	7	7	7
	V	mm	8	8	8	6	8	8	8	8
	R	mm	18	18	18	15.5	18	18	18	18



with A1 feedback = L+12mm

TYPE	L (mm)	L (mm) + Brake	Z (mm)	Z (mm) + Brake	D (mm)	A (mm)	C (mm)	M (mm)	N (mm)	F (mm)	W (mm)	T (mm)	V (mm)	R (mm)
P2-13A	147	176	94,5	94,5	22	55	47	M8	19	36	8	7	8	18
P2-13B	147	176	94,5	94,5	22	55	47	M8	19	36	8	7	8	18
P2-13C	147	176	94,5	94,5	22	55	47	M8	19	36	8	7	8	18
P2-13C High Inertia	147	176	94,5	94,5	22	55	47	M8	19	36	8	7	8	18
P2-13D	187	216	134,5	134,5	19	48	40	M6	16	25	6	6	6	15,5
P2-13E	147	176	94,5	94,5	22	55	47	M8	19	36	8	7	8	18
P2-13F	163	192	110,5	110,5	22	55	47	M8	19	36	8	7	8	18
P2-13G	163	192	110,5	110,5	22	55	47	M8	19	36	8	7	8	18
P2-13H	187	216	134,5	134,5	22	55	47	M8	19	36	8	7	8	18

PRO2 SIZE 180
230 Vac RATINGS AND SPECIFICATIONS.1

TIME RATING	Continuous	AMBIENT TEMPERATURE	-20 ... + 40 °C
INSULATION CLASS	F	RELATIVE HUMIDITY	5 ... 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	10
PROTECTION CLASS	IP 54 Standard IP 65 with shaft sealing	CERTIFICATION	UL 1004, CSA, CE and Rohs approved Reach compliance

			P2-18A2	P2-18B2	P2-18C2	P2-18D2
Continuous stall torque	M_0	Nm	9.55	14.32	19.1	16.7
Peak torque	M_{max}	Nm	28.65	42.97	57.29	50.3
Nominal speed of rotation	nN	min^{-1}	2000	2000	1500	2000
Nominal torque	M_n	Nm	9.55	14.32	19.1	16.7
Nominal current	I_N	A_{rms}	9.6	18.8	18.8	19.3
Nominal power	P_N	kW	2.00	3.00	3.00	3.50
Rated winding voltage	Un	V_{ac}	230	230	230	230
Maximum winding voltage	U_{max}	V_{dc}	360	360	360	360
Maximum voltage to ground		V_{ac}	255	255	255	255
Maximum current	Imax	A_{rms}	35.5	56.0	61.0	61.0
Continuous stall current	I_0	A_{rms}	8.75	16.33	16.49	16.83
Voltage Constant	K_{eu-v}	V_{rms}/K_{rpm}	66	53	70	60
Torque Constant	k_t	Nm/A_{rms}	1.09	0.88	1.16	0.99
Winding resistance	R_{20u-v}	Ohm	0.572	0.168	0.234	0.168
Winding inductance	L_{qu-v}	mH	6.70	2.88	3.78	2.80
Winding inductance	L_{du-v}	mH	6.10	2.71	3.45	2.57
Maximum speed of rotation	nmax	min^{-1}	3000	3000	3000	3000
Rotor inertia without holding brake	J_M	$Kgcm^2$	26.5	53.56	53.56	53.56
Rotor inertia with holding brake	J_M	$Kgcm^2$	27	54.1	54.1	54.1
Rotor high inertia without holding brake	J_M	$Kgcm^2$	34.68	-	-	-
Rotor high inertia with holding brake	J_M	$Kgcm^2$	35.13	-	-	-
Mass without holding brake	m	Kg	13	18.5	18.5	18.5
Mass with holding brake	m	Kg	18	23	23	23
Mass without holding brake	m	Kg	14.3	-	-	-
Mass with holding brake	m	Kg	19.3	-	-	-
Thermal time constant	Tth	min	35	38	38	38
Maximum radial shaft load		N	1200	1200	1200	1200
Maximum axial shaft load		N	497	497	497	497

Rated output with 550x550x20mm steel heat sink flange coupling - Ambient temperature 40°C - Derating must be considered if the oil seal is applied

PRO2 SIZE 180
230 Vac RATINGS AND SPECIFICATIONS.2

TIME RATING	Continuous	AMBIENT TEMPERATURE	-20 ... + 40 °C
INSULATION CLASS	F	RELATIVE HUMIDITY	5 ... 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	10
PROTECTION CLASS	IP 54 Standard IP 65 with shaft sealing	CERTIFICATION	UL 1004, CSA, CE and Rohs approved Reach compliance

			P2-18E2	P2-18F2	P2-18G2
Continuous stall torque	M_0	Nm	28.65	35.01	44.6
Peak torque	M_{max}	Nm	71.62	87.53	119.36
Nominal speed of rotation	nN	min $^{-1}$	1500	1500	1500
Nominal torque	M_n	Nm	28.65	35.01	44.6
Nominal current	I_N	A_{rms}	22.8	31.14	39.67
Nominal power	P_N	kW	4.50	5.50	7.00
Rated winding voltage	Un	V_{ac}	230	230	230
Maximum winding voltage	U_{max}	V_{dc}	360	360	360
Maximum voltage to ground		V_{ac}	255	255	255
Maximum current	Imax	A_{rms}	61.0	88.4	120.6
Continuous stall current	I_0	A_{rms}	19.68	30.23	38.52
Voltage Constant	K_{eu-v}	V_{rms}/K_{rpm}	88	70	70
Torque Constant	k_t	Nm/A_{rms}	1.46	1.16	1.16
Winding resistance	R_{20u-v}	Ohm	0.199	0.11	0.048
Winding inductance	L_{qu-v}	mH	4.00	1.3	0.55
Winding inductance	L_{du-v}	mH	3.80	1.1	0.53
Maximum speed of rotation	nmax	min $^{-1}$	3000	3000	3000
Rotor inertia without holding brake	J_M	$Kgcm^2$	73.32	103.34	142.7
Rotor inertia with holding brake	J_M	$Kgcm^2$	74	120.2	158.7
Mass without holding brake	m	Kg	23.64	31	41
Mass with holding brake	m	Kg	28	37	47
Thermal time constant	Tth	min	40	50	60
Maximum radial shaft load		N	1200	1200	1200
Maximum axial shaft load		N	497	497	497

Rated output with 550x550x20mm steel heat sink flange coupling - Ambient temperature 40°C - Derating must be considered if the oil seal is applied

PRO2 SIZE 180
400 Vac RATINGS AND SPECIFICATIONS.1

TIME RATING	Continuous	AMBIENT TEMPERATURE	-20 ... + 40 °C
INSULATION CLASS	F	RELATIVE HUMIDITY	5 ... 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	10
PROTECTION CLASS	IP 54 Standard IP 65 with shaft sealing	CERTIFICATION	UL 1004, CSA, CE and Rohs approved Reach compliance

			P2-18A4	P2-18B4	P2-18C4	P2-18D4
Continuous stall torque	M_0	Nm	9.55	14.32	19.1	16.7
Peak torque	M_{max}	Nm	24	42.97	57.29	50.3
Nominal speed of rotation	nN	min $^{-1}$	2000	2000	1500	2000
Nominal torque	M_n	Nm	9.55	14.32	19.1	16.7
Nominal current	I_N	A_{rms}	7.50	18.8	18.8	19.30
Nominal power	P_N	kW	2.00	3.00	3.00	3.50
Rated winding voltage	Un	V_{ac}	400	400	400	400
Maximum winding voltage	U_{max}	V_{dc}	650	650	650	650
Maximum voltage to ground		V_{ac}	265	265	265	265
Maximum current	Imax	A_{rms}	23.0	56.0	61.0	61.0
Continuous stall current	I_0	A_{rms}	6.79	16.33	16.49	16.83
Voltage Constant	K_{eu-v}	V_{rms}/K_{rpm}	85	53	70	60
Torque Constant	k_t	Nm/A_{rms}	1.41	0.88	1.16	0.99
Winding resistance	R_{20u-v}	Ohm	1.156	0.168	0.234	0.168
Winding inductance	L_{qu-v}	mH	13.44	2.88	3.78	2.8
Winding inductance	L_{du-v}	mH	12.21	2.71	3.45	2.57
Maximum speed of rotation	nmax	min $^{-1}$	3000	3000	3000	3000
Rotor inertia without holding brake	J_M	$Kgcm^2$	26.5	53.56	53.56	53.56
Rotor inertia with holding brake	J_M	$Kgcm^2$	27	54.1	54.1	54.1
Rotor high inertia without holding brake	J_M	$Kgcm^2$	36.84	-	-	-
Rotor high inertia with holding brake	J_M	$Kgcm^2$	35.13	-	-	-
Mass without holding brake	m	Kg	13	18.5	18.5	18.5
Mass with holding brake	m	Kg	18	23	23	23
High inertia mass without holding brake	m	Kg	14.3	-	-	-
High inertia mass with holding brake	m	Kg	19.3	-	-	-
Thermal time constant	Tth	min	35	35	35	38
Maximum radial shaft load		N	1200	1200	1200	1200
Maximum axial shaft load		N	497	497	497	497

Rated output with 550x550x20 mm steel heat sink flange coupling - Ambient temperature 40°C. Derating must be considered if the oil seal is applied

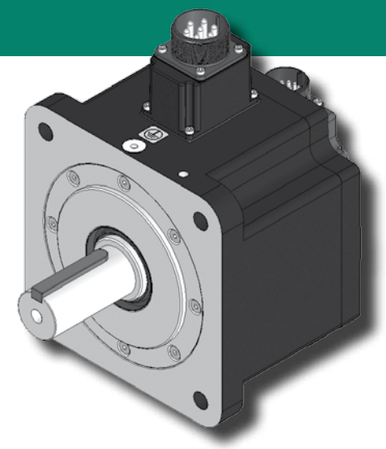
PRO2 SIZE 180
400 Vac RATINGS AND SPECIFICATIONS.2

TIME RATING	Continuous	AMBIENT TEMPERATURE	-20 ... + 40 °C
INSULATION CLASS	F	RELATIVE HUMIDITY	5 ... 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	10
PROTECTION CLASS	IP 54 Standard IP 65 with shaft sealing	CERTIFICATION	UL 1004, CSA, CE and Rohs approved Reach compliance

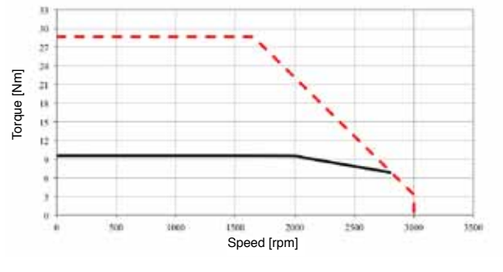
			P2-18E4	P2-18F4	P2-18G4
Continuous stall torque	M_0	Nm	28.65	38	50
Peak torque	M_{max}	Nm	71.62	87.53	111.5
Nominal speed of rotation	nN	min $^{-1}$	1500	1500	1500
Nominal torque	M_n	Nm	28.65	31.85	44.6
Nominal current	I_N	A_{rms}	22.8	20.30	28.40
Nominal power	P_N	kW	4.50	5.50	7.00
Rated winding voltage	Un	V_{ac}	400	400	400
Maximum winding voltage	U_{max}	V_{dc}	650	650	650
Maximum voltage to ground		V_{ac}	265	265	265
Maximum current	Imax	A_{rms}	61.0	56.3	71.7
Continuous stall current	I_0	A_{rms}	19.68	20.88	27.48
Voltage Constant	K_{eu-v}	V_{rms}/K_{rpm}	88	110	110
Torque Constant	k_t	Nm/A_{rms}	1.46	1.82	1.82
Winding resistance	R_{20u-v}	Ohm	0.199	0.167	0.115
Winding inductance	L_{qu-v}	mH	4.00	4.00	2.8
Winding inductance	L_{du-v}	mH	3.80	3.80	2.63
Maximum speed of rotation	nmax	min $^{-1}$	3000	3000	3000
Rotor inertia without holding brake	J_M	$Kgcm^2$	73.32	103.34	142.7
Rotor inertia with holding brake	J_M	$Kgcm^2$	74	120.2	158.7
Mass without holding brake	m	Kg	23.64	31	41
Mass with holding brake	m	Kg	28	37	47
Thermal time constant	Tth	min	40	50	60
Maximum radial shaft load		N	1200	1200	1200
Maximum axial shaft load		N	497	497	497

Rated output with 550x550x20 mm steel heat sink flange coupling - Ambient temperature 40°C. Derating must be considered if the oil seal is applied

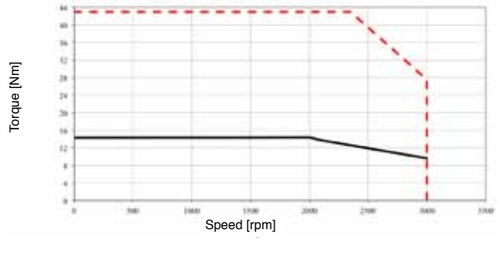
PRO2 SIZE 180
TORQUE AND SPEED CHARTS.1



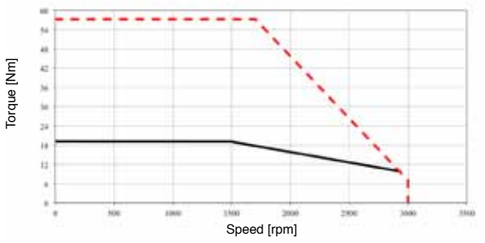
PRO2 SIZE 180A



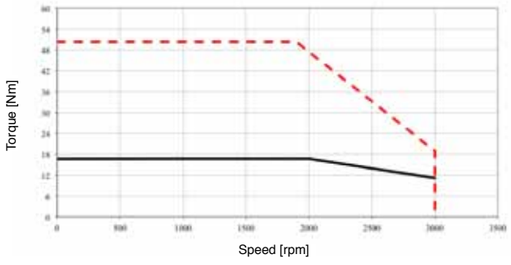
PRO2 SIZE 180B



PRO2 SIZE 180C

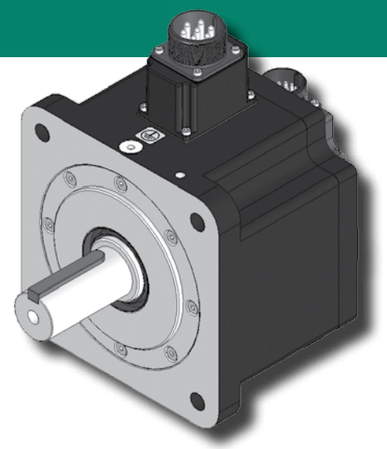


PRO2 SIZE 180D

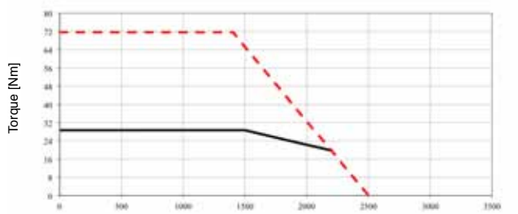


Continuous torque
Peak operation

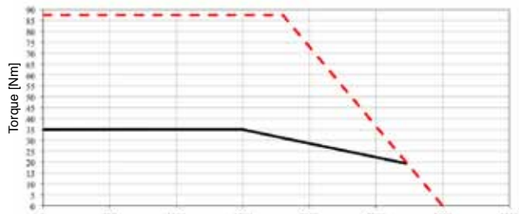
PRO2 SIZE 180
TORQUE AND SPEED CHARTS.2



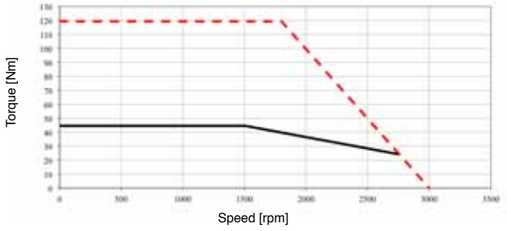
PRO2 SIZE 180E



PRO2 SIZE 180F



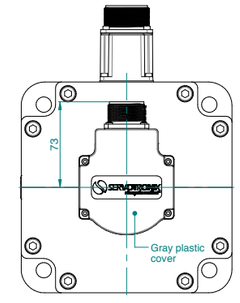
PRO2 SIZE 180G

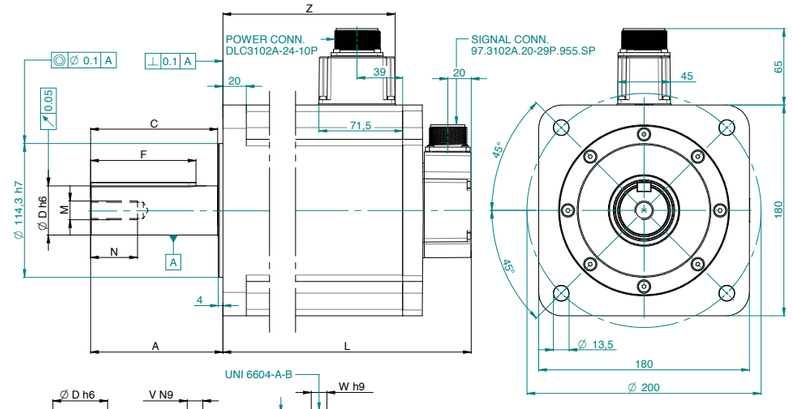


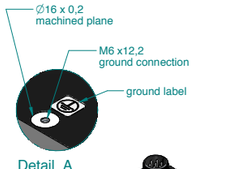
Continuous torque
Peak operation

PRO2 SIZE 180 DIMENSIONS

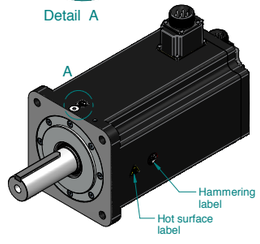
		P2-18A	P2-18B	P2-18C	P2-18D	P2-18E	P2-18F	P2-18G
L Without Brake with feedback S3/M3	mm	169	202	202	202	235	279	342
L With Brake with feedback S3/M3	mm	203	235	235	235	279	311	376
L Without Brake with feedback A1	mm	181	214	214	214	257	291	354
L With Brake with feedback A1	mm	215	257	257	257	291	323	388
Z Without Brake	mm	103	136	136	136	169	213	276
Z With Brake	mm	103	136	136	136	169	213	276
D	mm	35	35	35	35	35	42	42
A	mm	79	79	79	79	79	113	113
C	mm	73	73	73	73	73	108.5	108.5
M	mm	M12	M12	M12	M12	M12	M16	M16
N	mm	28	28	28	28	28	40	40
F	mm	63	63	63	63	63	90	90
W	mm	10	10	10	10	10	12	12
V	mm	10	10	10	10	10	12	12
R	mm	30	30	30	30	30	37	37

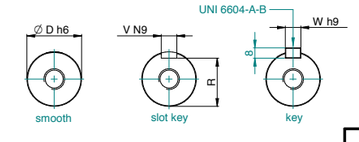


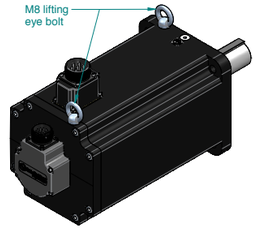




Detail A







with A1 feedback = L+12mm

TYPE	L (mm)	L (mm) + Brake	Z (mm)	Z (mm) + Brake	D (mm)	A (mm)	C (mm)	M (mm)	N (mm)	F (mm)	W (mm)	V (mm)	R (mm)
P2-18A	168	203	103	103	35	79	73	M12	28	63	10	10	30
P2-18A High Inertia	168	203	103	103	35	79	73	M12	28	63	10	10	30
P2-18B	201	236	136	136	35	79	73	M12	28	63	10	10	30
P2-18C	201	236	136	136	35	79	73	M12	28	63	10	10	30
P2-18D	201	236	136	136	35	79	73	M12	28	63	10	10	30
P2-18E	234	269	169	169	35	79	73	M12	28	63	10	10	30
P2-18F	278	313	213	213	42	113	108,5	M16	40	90	12	12	37
P2-18G	341	376	276	276	42	113	108,5	M16	40	90	12	12	37

FEEDBACK FEATURES

E1 TTL ENCODER

MOTOR SIZE		PRO2 SIZE 40 - 60 - 80	PRO2 SIZE 100 - 130 - 180
Nominal Voltage	V	5±5%	5±5%
Nominal current	mA	200	200
Max Frequency	Khz	200	200
Electronic type		LINE DRIVER AM 26 LS31	LINE DRIVER AM 26 LS31
Zero impulse		ONE PER REVOLUTION	ONE PER REVOLUTION
N° of pulses revolution	ppr	2500	2500
Resolution in Counts	cpr	10000	10000
N° of commutation signal		3	3
Rotor inertia	Kg cm^2	0.01	0.065
Maximum acceleration	rad/s^2	80.000	80.000

A1 ABSOLUTE MULTITURN ENCODER

MOTOR SIZE		PRO2 SIZE 40	PRO2 SIZE 40-60-80-100-130-180
Nominal Voltage	V	7 + 12	7 + 12
Nominal current	mA	50	60
Interface type		Hiperface	Hiperface
N° absolute multi turn steps		4096 (12 Bits)	4096 (12 Bits)
N° of sin/cos periods per revolution		16	128
Single turn resolution in drive (analog and digital)		17 Bits	20 bits
Rotor inertia	Kg cm^2	0.001	0.0045
Maximum acceleration	rad/s^2	500000	500000

S3 SINGLE-TURN ABSOLUTE ENCODER 20-BIT

MOTOR SIZE		PRO2 SIZE 40 - 60 - 80 - 100 - 130 - 180
Resolution		20 bits
Maximum rotational speed	rpm	10.000
Maximum angular acceleration	rad/s^2	100.000
Operating temperature range	°C	-20 to +115
Moment of inertia	kg m^2	0.028
Nominal voltage	V	4 - 5.25
Current consumption	mA	80
Standby period at power-on	ms	1500
Communication protocol		Servotronix proprietary protocol

ABSOLUTE MOTOR FEEDBACK SYSTEM

The reduced mechanical complexity of the sensAR™ rotary encoder improves compactness and durability, while ensuring high resolution and accuracy.

Simplicity
The sensAR™ magnetic absolute encoder features a simple mechanical design that allows the same level of resolution and accuracy as optical absolute encoders without the complexity.

Single track magnetic system
The Gray code is obtained on a single track, while other encoders tend to use at least two tracks (absolute and incremental) and an array of sensors.

The sensAR™ offers a 20 bit resolution
The sensAR™ offers a resolution of up to 20 bit and an accuracy of up to ±72 arc/sec. Advanced signal processing applies a unique patented method, where a digital position code is associated with a set of analog signals that represents a high resolution and accurate absolute angular position.

Robustness
Featuring only few mechanical components and no optical elements, sensAR™ is less sensitive to contamination, shock, vibration and mechanical tolerance deviations. It is also more durable (e.g. no component degradation over time), in particular when compared to optical encoders. Furthermore, lifetime expectancy of the encoder is higher due to the elimination of both optical components and bearings.

Key benefits

- Simple and compact mechanical design
- Operating temperature range of -20...125°C
- Robustness to contamination, shock and vibration
- Less sensitive to mechanical deviation
- Position / velocity feedback
- Four wire serial communication interface
- Electronic type-plate
- Fully digital
- Built-In thermal sensor
- Complete in-house technology.

BRAKE FEATURES

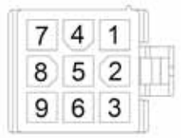
		P2-04	P2-06	P2-08	P2-10	P2-13	P2-18
Operating motor temperature	°C	-20 …+120	-20 …+120	-20 …+120	-20 …+120	-20 …+120	-20 …+120
External ambient temperature	°C	-20 …+40	-20 …+40	-20 …+40	-20 …+40	-20 …+40	-20 …+40
Standard brake duty		Stationary	Stationary	Stationary	Stationary	Stationary	Stationary
Minimum dry static torque (@-20...120°C)	Nm	0.32	1.3	2.5	6.5	9.6	48
Nominal operation voltage	Vdc	24±10%	24±10%	24±10%	24±10%	24±10%	24±10%
Power consumption (@20°)	W	4.35±7%	11.2±7%	10.2±7%	10.4±7%	19.7±7%	49.6±7%
Release time	ms	22	58	46	49	71	120
Brake release time (pull in)	ms	77	25	58	30	39	37
Backlash (max)	degree	1.2	1.2	1.2	1.2	1.2	1.2

SERVOTRONIX always in motion™

WIRING MOTOR CONNECTIONS

D type, AMP

Plug Housing :TE 1-172161-9,
316455-1 Contacts: 170359-3



Motors: P2-04,P2-06,P2-08

Feedback type: S3* and M3* (sensAR)

Motor Connector	Signal Name	Drive Connector	Twisted Pair
1	DATA +	1	T/P
4	DATA -	14	
3	N.C.		
4	N.C.		
5	N.C.		
6	N.C.		
7	5V	11	T/P
8	GND	24	
9	Shield	26	

Feedback type*: A1 (SKM36)

Motor Connector	Signal Name	Drive Connector	Twisted Pair
1	DATA +	1	T/P
4	DATA -	14	
2	Sine+	9	T/P
3	Sine-	22	
5	Cos+	10	T/P
6	Cos-	23	
7	8V	18	T/P
8	GND	24	
9	Shield	26	

A type MIL

Amphenol 97-3108B-20-29S-946
& 97-3057-1012-1-(621)

Motors: P2-10,P2-13,P2-18

Feedback type: S3 and M3* (sensAR)

Motor Connector	Signal Name	Drive Connector	Twisted Pair
A	DATA +	1	T/P
B	DATA -	14	
C	N.C.		
D	N.C.		
F	N.C.		
G	N.C.		
S	5V	11	T/P
R	GND	24	
L	Shield	26	

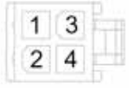
Feedback type*: A1 (SKM36)

Motor Connector	Signal Name	Drive Connector	Twisted Pair
A	8V	18	T/P
F	GND	24	
B	SIN+	9	T/P
C	SIN-	22	
D	COS+	10	T/P
E	COS-	23	
G	DATA+	1	T/P
H	DATA-	14	
J	Shield	26	

Motor power connector without brake

D type AMP 4 poles

P/N: MOLEX BLACK 46999-0294,
contacts: 39-00- 0040



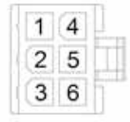
Motors: P2-04,P2-06,P2-08

Motor Connector	Signal Name
1	U
2	V
3	W
4	PE

Motor power connector with* brake

D type AMP 6 poles

P/N 46999-0295,
contacts:39-00-0040



Motors: P2-04,P2-06,P2-08

Motor Connector	Signal Name
1	U
2	V
4	W
5	PE
3	Brake_24V
6	Brake_0V

WIRING MOTOR CONNECTIONS

A type MIL

P/N: DL3108A-20-15S

Motors: P2-10,P2-13

Motor power connector without brake

Motor Connector	Signal Name
E	U
G	V
B	W
D	PE
F	N/A
A	N/A

Motor power connector with brake

Motor Connector	Signal Name
E	U
G	V
B	W
D	PE
F	Brake_24V
A	Brake_0V

A type MIL

P/N: DL3108A-24-10S

Motors: P2-18

Motor power connector without brake

Motor Connector	Signal Name
E	U
G	V
B	W
D	PE
F	N/A
A	N/A

Motor power connector with brake

Motor Connector	Signal Name
E	U
G	V
B	W
D	PE
F	Brake_24V
A	Brake_0V

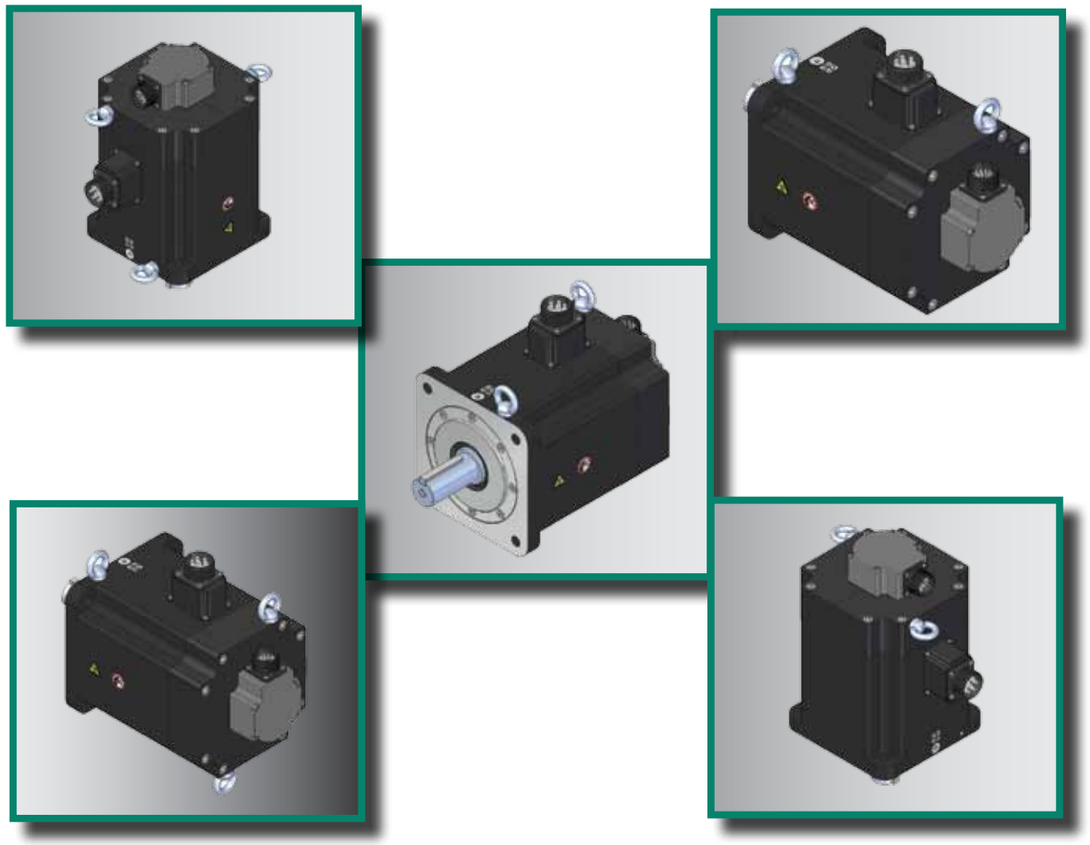
TRANSPORTATION AND STORAGE

The storage time is primarily limited by the service life of the lubricants in the bearings; do not store the product for more than 36 months. It is recommended to periodically operate the motor.

TOPIC	UNIT	VALUE
Temperature	[°C]	-40 ... 70
Relative humidity (non-condensing)	[%]	≤75
Set of class combinations as per IEC 60721-3-2		IE 21

HANDLING INSTRUCTION

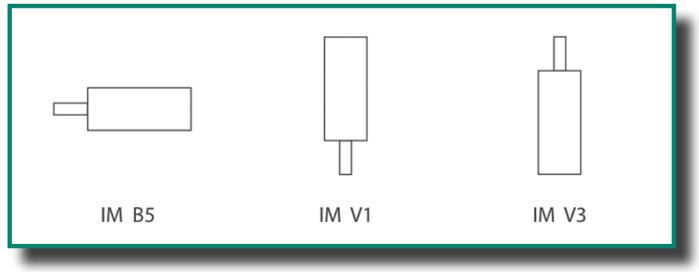
Consider the mass of the product when mounting the motor. It may be necessary to use suitable lifting gear in two points.



PROTECTION CLASS

IP 54 Standard - IP 65 Option

The possible protection class at the machine depends on the position in which the motor will be mounted.
According to DIN 42950 part 1 (edition 08.77), the motors can be mounted on the machine as follows:



MOTOR PART	PROTECTION CLASS	MOUNTING POSITION / REMARK
Shaft	IP54	IMB5, IMV1
	IP50	IMV3
	IP65	in IMV3 shaft sealing required
Housing	Standard: IP54	Without shaft sealing
	Optional: IP65	IP65 with shaft sealing
Power / FDBK interface @ motor side	Standard: IP65	Flying leads & Military connector
Flying leads plug on cable	IP40 [1)]	
Cooling system	Standard convection: see housing	

[1)] Wires are protected by a heat shrink tubing

CLIMATIC ENVIRONMENTAL CONDITIONS OPERATION

TOPIC	UNIT	VALUE
Ambient temperature without holding brake [1] (no icing, non-condensing)	[°C]	-20 ... 40
Motor with holding brake ambient temperature [1] (no icing, non-condensing)	[°C]	0 ... 40
Ambient temperature with current derating of 1% per °C [1]	[°C]	40 ... 60
Relative humidity (non-condensing)	[%]	5 ... 85
Class as per IEC 60721-3-3		3K3, 3Z12, 3Z2, 3B2, 3C1, 3M6
Installation altitude [2]	[m]	≤1000
Installation altitude with current derating of 1% per 100 m at altitudes of more than 1000 m [2]	[m]	1000 ... 3000

[1] Limit values with flanged motor.
[2] The installation altitude is defined as altitude above mean sea level.

OIL SEAL

Oil seal material is FPM (trade name Viton).

With shaft sealing ring the maximum speed of rotation is limited to 5000 rpm. Shaft sealing ring is provided with initial lubrication, if the sealing ring runs dry this increases friction and reduces service life. Derating must be considered if the oil seal is applied.

PROTECTIVE GROUND CONDUCTOR CONNECTION

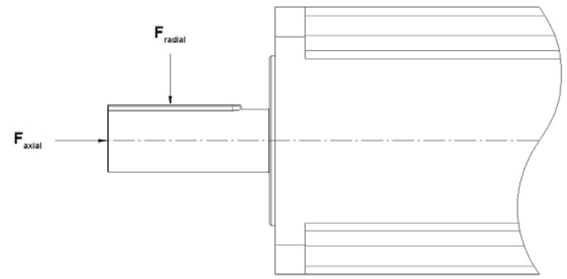
Ground the motor via a grounding screw if grounding via the flange and the protective ground conductor of the motor cable is not sufficient. Use parts with suitable corrosion protection.

BEARINGS

Rolling contact bearing with permanent grease lubrication; closed on both sides of the bearing.

Lifetime min L 10h = 20.000 hours

Admissible shaft strain
Axial shaft load:
Faxial = 0,2 x Fradial



All radial and axial loads are applied at the same time

SHOCK AND VIBRATION

TOPIC	VALUE
Vibration, sinusoidal	Type test with 10 runs as per IEC 60068-2-6 0.15 mm (von 10 Hz ... 60 Hz) 20 m/s2 (from 60 Hz ... 500 Hz)
Shock, semi-sinusoidal	Type test with 3 shocks in each direction as per IEC 60068-2-27 100 m/s2 (11 ms)

FLANGE SIZES FOR RATED OUTPUT VALUES

Rated output limit values are referring to this table relate to flanged motors with the following flange sizes

Motor model	Flange material	Flange size in [mm]
P2-04	Aluminum	185x185x8
P2-06	Aluminum	250x250x12
P2-08	Aluminum	250x250x12
P2-10	Steel	300x300x20
P2-13	Steel	400x400x20
P2-18	Steel	550x550x20

CDHD High-Performance Servo Drives

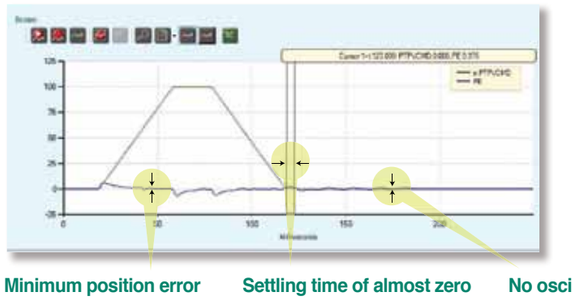
Hardware and software design innovations deliver superior servo performance, high power density, simple commissioning, and extensive versatility in a cost-effective package.

New current loop design achieves an industry-leading frequency response of 3-5 kHz

High sampling rates and flexible filtering options provide a faster response, and ensure maximum machine accuracy and throughput.

Advanced autotuning minimizes position error and settling time to almost zero

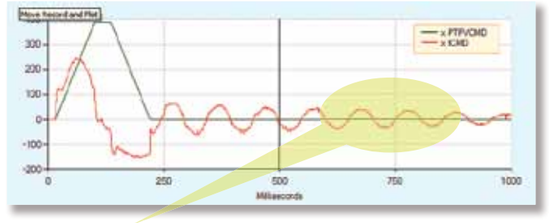
Engineering experience and expertise has been implemented in a sophisticated autotuning function that performs optimal configurations for a difference making performance.



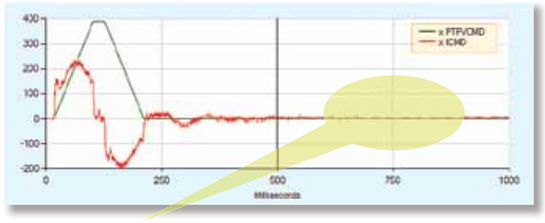
Minimum position error | Settling time of almost zero | No oscillations at stand-still

Innovative anti-vibration control algorithm eliminates mechanical resonance

An active non-linear algorithm eliminates vibration in highly flexible resonant systems. Commissioning is easy, using just a few gain parameters.



Without anti-vibe control



With anti-vibe control

KEY BENEFITS

- High performance control of all synchronous servo motors
- Interfaces multiple feedback devices
- I/O programming for any drive functionality
- Advanced control algorithms achieve maximum machine accuracy and throughput
- High power density in a small footprint
- Safe Torque Off (STO)
- Simple commissioning using ServoStudio™ GUI along with comprehensive parameterization options for optimal configuration
- Fast firmware modifications to meet particular application needs
- CE and UL compliance
- Competitive price

SERVOTRONIX always in motion™

ServoStudio™ wizard for simple commissioning in 4 steps

- Step-by-step guidance through the setup and tuning process
- Excellent results for novice users within minutes
- Real-time data recording and plotting
- Easy integration of servo axes
- Plug-and-play motor and feedback wiring

Model	Input Voltage (VAC)	Input Power Current Main Circuit	Continuous Current (A_{rms})	Peak Current (A_{rms})	Width (mm)	Height (mm)	Depth (mm)
CDHD-1D5	120/240	1 Phase	1.5	4.5	43.2	150	143.7
CDHD-003	120/240	1 Phase	3	9	43.2	150	143.7
CDHD-4D5	120/240	1/3 Phase	4.5	18	54.7	150	167.4
CDHD-006	120/240	1/3 Phase	6	18	54.7	150	167.4
CDHD-008	120/240	1/3 Phase	8	28	61.8	170	181.6
CDHD-010	120/240	1/3 Phase	10	28	61.8	170	181.6
CDHD-013	120/240	3 Phase	13	28	61.8	170	181.6
CDHD-020	120/240	3 Phase	20	48	117.4	233.8	193.5
CDHD-024	120/240	3 Phase	24	48	117.4	233.8	193.5
CDHD-003	400/480	3 Phase	3	9	110	162.8	193.1
CDHD-006	400/480	3 Phase	6	18	110	162.8	193.1
CDHD-012	400/480	3 Phase	12	24	117.4	234	193.5
CDHD-024	400/480	3 Phase	24	72	149.1	353	200.9
CDHD-030	400/480	3 Phase	30	90	149.1	353	200.9

Communication:
CANopen®*
EtherCAT®*
USB*
RS232
Daisy Chain
PWM**

Motor feedback:
sensAR™ magnetic absolute encoder
Incremental Encoder
Hall Sensors
Resolver
Sine Encoder (e.g., EnDat®, HIPERFACE®)
SSI Encoder (e.g., EnDat®, Nikon®, Tamagawa®)
Motor Temperature

I/Os:
Digital: 11 x Input, 6 x Output
Analog: 1 x Input or 2 x Input*, 1 x Output
Pulse & Direction
Equivalent Encoder Output
Secondary Feedback
Fault Output Relay

*Some features are not available on all models.
**Power block only, without motor feedback and I/Os

CE TÜVRheinland RoHS 2002/95/EC REACh

CDHD High Performance Servo Drives

Ordering Information

CDHD – 006 2A AP1 ST

CDHD Servo Drive – HD Series

Rating	120/240 VAC	
	Cont [A rms]	Peak [A rms]
1D5	1.5	4.5
003	3	9
4D5	4.5	18
006	6	18
008	8	28
010	10	28
013	13	28
020	20	48
024	24	48/72
	400/480 VAC	
	Cont [A rms]	Peak [A rms]
003	3	9
006	6	18
012	12	24
024	24	72
030	30	90

Motor Type and Safe Torque Off (STO) Function		Functional Safety Certified*
[blank]	Rotary and linear servo motors.	**No**
-RO	Rotary servo motors. Available in Asia market only.	**No**
-ST	Rotary and linear servo motors. Available for 120/240 VAC drives: models 1D5, 003, 4D5, 006, 008, 010, 013.	**Yes**
-RT	Rotary servo motors. Available for 120/240 VAC drives: models 1D5, 003, 4D5, 006, 008, 010, 013. Available in Asia market only.	**Yes**

* Functional safety certification option not available for following:
120/240 VAC drives: models 020, 024
400/480 VAC drives: all models

Communication Interfaces		Analog Inputs
PB0	PWM Power Block	**none**
APx	Analog Voltage, Pulse Train Ref, RS232	**1* or 2**
AFx	Analog Voltage, Pulse Train Ref, CANopen, USB, RS232	**1* or 2**
ECx	EtherCAT, USB, RS232	**1 or 2***
EB2	EtherCAT, USB.	**2**

* Standard configuration

x = 1: One analog input, 16 bit
x = 2: Two analog inputs, 14 bit each

AC and Controller Input Power Supply	
2A	Input Single Phase 120 L-L VAC +10% -15% 50/60 Hz Input Single Phase 240 L-L VAC +10% -15% 50/60 Hz Input Three Phase 120-240 L-L VAC +10% -15% 50/60 Hz
4D	**AC Input Power Supply:** - Input Three Phase 400 L-L VAC +10% -15% 50/60 Hz - Input Three Phase 480 L-L VAC +10% -15% 50/60 Hz **24 VDC** input for control board power supply

Supports a wide range of applications and requirements

CDHD supports a wide range of applications, covering a variety of industries. It can be coupled with any servo motor type, including rotary and linear brushless DC motors, as well as DC brush motors. Connectivity to controller is available through Analog Command, Pulse & Direction, CANopen® and EtherCAT®.

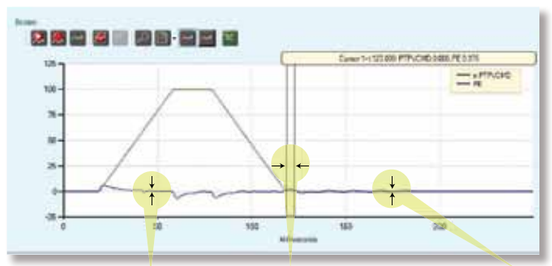
DDHD High-Performance Dual Axis Servo Drive

Superior servo performance and compact footprint make the DDHD dual axis drive the ideal cost-saving solution for low and medium voltage applications.

Powerful performance while reducing system costs
High sampling rates and flexible filtering options provide a faster response, and ensure maximum machine accuracy and throughput.

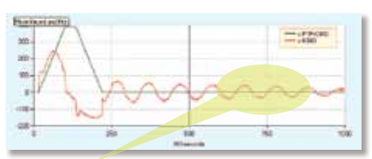
Maximum machine accuracy and throughput
New current loop design achieves an industry-leading Frequency response of 3-5 kHz.

Advanced autotuning minimizes position error and settling time to almost zero.

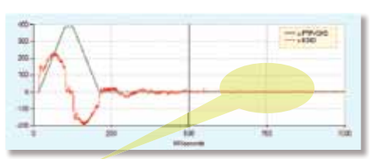


Minimum position error | Setting time of almost zero | No oscillations at stand-still

Active non-linear anti-vibration control algorithm eliminates mechanical resonance in highly flexible systems.



Without anti-vibe control

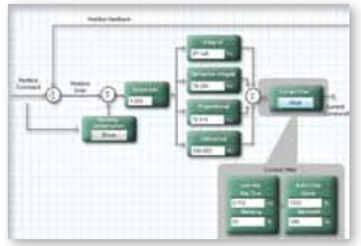


With anti-vibe control

KEY BENEFITS

- 20% lower cost per axis due to shared components and less wiring
- High performance control of synchronous servo motors
- I/O programming
- Command type: P&D, Analog
- Interfaces multiple feedback devices
- Share AC input and regeneration, for energy efficiency
- Simple commissioning using ServoStudio™ GUI
- High power density in a small footprint

ServoStudio™ wizard for simple commissioning
- Step-by-step guidance through setup and tuning process
- Excellent results for novice users within minutes
- Real-time data recording and plotting
- Easy integration of servo axes
- Plug-and-play motor and feedback wiring



Model	Input Voltage (VAC)	Input Power Current Main Circuit	Continuous Current (Arms)	Peak Current (Arms)	120 VAC Typical Motor Output (W)	240 VAC Typical Motor Output (W)	Width (mm)	Height (mm)	Depth (mm)
DDHD-1D81D8	120/240	1 Phase	1.8/1.8	6.5/6.5	100/100	200/200	83.5	175.5	169.4
DDHD-3D43D4	120/240	1 Phase	3.4/3.4	12.3/12.3	400/400	750/750	83.5	175.5	169.4
DDHD-4D54D5	120/240	1 Phase	4.5/4.5	13.5/13.5	350/350	750/750	83.5	175.5	169.4
DDHD-3D46D8	120/240	1/3 Phase	6.8/3.4	18/12.3	250/500	500/1000	83.5	175.5	169.4

Communication:
RS232
Daisy Chain

Motor feedback:
sensAR™ magnetic absolute encoder
Incremental Encoder
Hall Sensors
SSI Encoder (e.g. EnDat®, Nikon®, Tamagawa®)
Motor Temperature

I/Os:
Digital: 4 x Input, 4 x Fast Input, 10 x Output
Analog : 2 x Input
2 x Pulse & Direction
2 x Equivalent Encoder Output

Ordering information

DDHD – 3D46D8 AP – RO

AC Dual Drive – HD Series

Rating	Axis 1		Axis 2	
	Cont [A rms]	Peak [A rms]	Cont [A rms]	Peak [A rms]
1D81D8	1.8	6.5	1.8	6.5
3D43D4	3.4	12.3	3.4	12.3
4D54D5	4.5	13.5	4.5	13.5
3D46D8	6.8	18.0	3.4	12.3

Interface Options	
AP	Analog Voltage, Pulse Train Ref, RS232
AF*	CANopen, Analog Voltage, Pulse Train Ref, RS232

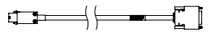
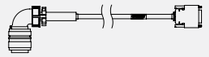
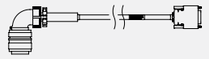
*Upcoming

Motor Type	
[blank]	Rotary and linear servo motors.
-RO	Rotary servo motors.

CE RoHS 2002/95/EC REACh

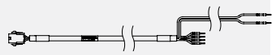
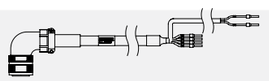
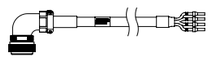
Cables

Feedback cables | PUR flexible cables

Cable P/N	Encoder	Connector	Motors	Drives	Drawing
CBL-FB1S300D0xx	sensAR single turn	AMP	PRO2 40, 60, 80	All CDHD/DDHD	
CBL-FB1S300A0xx	sensAR single turn	MIL	PRO2 100, 130, 180	All CDHD/DDHD	
CBL-FB1A100D0xx	SKM36 multi turn	AMP	PRO2 40, 60, 80	All CDHD/DDHD	
CBL-FB1A100A0xx	SKM36 multi turn	MIL	PRO2 100, 130, 180	All CDHD/DDHD	

Power cables | PUR flexible cables

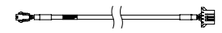
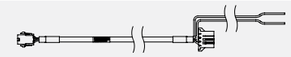
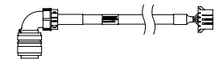
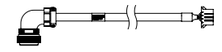
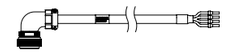
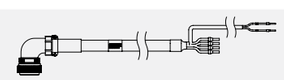
Flying Leads - 230 Vac , 400 Vac

Cable P/N	Brake	Connector	Motors	Drives	Drawing
CBL-PW10000D0xx	No brake	AMP	PRO2 40, 60, 80	All CDHD/DDHD	
CBL-PW10001D0xx	With brake	AMP	PRO2 40, 60, 80	All CDHD/DDHD	
CBL-PW10000A0xx	No brake	MIL	PRO2 100, 130	All CDHD/DDHD	
CBL-PW10001A0xx	With brake	MIL	PRO2 100, 130	All CDHD/DDHD	
CBL-PW10000A1xx	No brake	MIL	PRO2 180	All CDHD/DDHD	
CBL-PW10001A1xx	With brake	MIL	PRO2 180	All CDHD/DDHD	

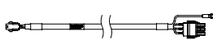
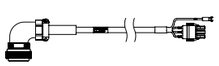
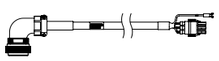
xx- cable length available at 3, 5, 10, 15 m

Power cables | PUR flexible cables

230 Vac

Cable P/N	Brake	Connector	Motors	Drives	Drawing
CBL-PW12AB0D0xx	No brake	AMP	PRO2 40, 60, 80	CDHD 1.5A, 3A, 4.5A, 6A	
CBL-PW12AB1D0xx	With brake	AMP	PRO2 40, 60, 80	CDHD 1.5A, 3A, 4.5A, 6A	
CBL-PW12AB0A0xx	No brake	MIL	PRO2 100, 130	CDHD 1.5A, 3A, 4.5A, 6A	
CBL-PW12AB1A0xx	With brake	MIL	PRO2 100, 130	CDHD 1.5A, 3A, 4.5A, 6A	
CBL-PW12C00A0xx	No brake	MIL	PRO2 100, 130	CDHD 8A,10A,13A	
CBL-PW12C01A0xx	With brake	MIL	PRO2 100, 130	CDHD 8A,10A,13A	
CBL-PW12C00A1xx	No brake	MIL	PRO2 180	CDHD 8A,10A,13A	
CBL-PW12C01A1xx	With brake	MIL	PRO2 180	CDHD 8A,10A,13A	
CBL-PW12D00A1xx	No brake	MIL	PRO2 180	CDHD 20A, 24A	
CBL-PW12D01A1xx	With brake	MIL	PRO2 180	CDHD 20A, 24A	

400 Vac

Cable P/N	Brake	Connector	Motors	Drives	Drawing
CBL-PW14000D0xx	No brake	AMP	PRO2 40, 60, 80	CDHD 3A, 6A, 12A, 24A, 30A	
CBL-PW14001D0xx	With brake	AMP	PRO2 40, 60, 80	CDHD 3A, 6A, 12A, 24A, 30A	
CBL-PW140000A0xx	No brake	MIL	PRO2 100, 130	CDHD 3A, 6A, 12A, 24A, 30A	
CBL-PW140001A0xx	With brake	MIL	PRO2 100, 130	CDHD 3A, 6A, 12A, 24A, 30A	
CBL-PW140000A1xx	No brake	MIL	PRO2 180	CDHD 3A, 6A, 12A, 24A, 30A	
CBL-PW140001A1xx	With brake	MIL	PRO2 180	CDHD 3A, 6A, 12A, 24A, 30A	

xx- cable length available at 3, 5, 10, 15 m

PRO2 Series

PRO2 Rotary Brushless Servo Motors with CDHD and DDHD Servo Drives

About Servotronix

Servotronix Motion Control develops and manufactures standard and customized automation solutions with a focus on motion control. Over decades, the company has developed generations of high-performance servo drive families and motion-control solutions tailored to customer needs and designed to meet the form, fit, functionality, and cost specifications of a wide range of applications and industries. With a global customer base of leading machine builders and automation system suppliers, Servotronix's guiding principles are to provide its customers with high-quality products, cost-effective solutions, and on-time deliveries.

DOC-PRO2-CAT-EN V2.2

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