



3 Phase Rotary Brushless Servomotor with Resolver



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3 Phase Rotary Brushless Servomotors

Motor

H2W Technologies rotary 3 phase brushless servo motors, are sinusoidally commutated synchronous motors with Neodymium permanent magnet rotors. The stator consists of a three-phase windings that is star connected. The commutation and the sinusoidal current control is performed by a matched digital servo amplifier / controller using signals from the integral resolver. Encoder feedback is optional.

The maximum winding temperature is monitored by sensors. A thermal switch is standard, with PTC or NTC sensors available as an option. The standard winding layout is for bus voltage 320 VDC and 560 VDC, however special windings are available on request. One socket connects the windings and the brake, a second socket interfaces the resolver signals.

The motors can be purchased with matched digital servo amplifiers. Standard motor and resolver cables with mating connectors are also available.

Resolver

The resolver is a sensor, which continuously measures the angle position of the rotor of the motor. It incorporates a transformer for energizing the two coils which are 90° phase shifted. The sensing coils on the stator receive the sinusoidal signal of the transmitting coils. The amplitude of the signal will vary depending on the position of the rotor. The controller evaluates the amplitude of the signal from the two receiving coils from the resolver to determine an absolute position within one revolution. The information from the resolver is also used to determine the sinusoidal driving current for the three phase motor windings.

The resolver does not incorporate any electronic components. It is very robust with a high temperature range and is inherently shock resistance due to it's design. The resolver is the most reliable sensor for harsh environments.

Brake

All of H2W Technologies rotary 3 phase brushless servo motors can be delivered with a brake, which is mounted behind the front flange. The brake is consists of permanent magnets and biasing coils. The permanent magnet attractive force is biased by the electromagnetic flux that is generated by a DC voltage passing thru the coil. In this condition the motor can rotate freely. To brake, the coil current is switched off. Braking should be executed only after the rotation stopped except for emergency situations. Positioning should be performed by the motor / resolver and the digital servo amplifier.

Gearboxes

Planetary reducers can be easily interfaced on the standard flange dimensions of the motors.

Brushless Servomotor ADT2-L and ADT3-L Ucc=320VDC

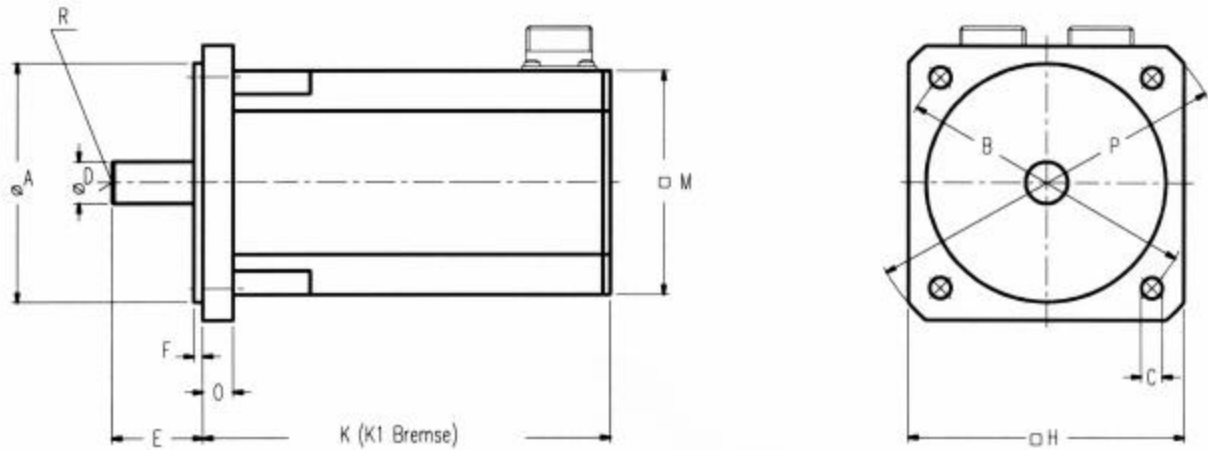
		ADT2-0020-L	ADT2-0040-L	ADT2-0060-L	ADT2-0080-L	ADT3-0065-L	ADT3-0130-L	ADT3-0250-L
Torque, rated	T_c oz-in [Nm]	26.9 [0.19]	51.0 [0.36]	77.9 [0.55]	102.0 [0.72]	77.9 [0.55]	163.0 [1.15]	305.0 [2.15]
Speed, rated	V_R Rpm	4500	4500	4500	4500	3000	3000	3000
Current, rated	I_c A	0.6	0.9	1.15	1.45	1.0	1.6	2.8
Holding Current	I_H A	0.6	0.9	1.15	1.5	1.08	1.7	3.0
Peak Torque	T_p oz-in [Nm]	113 [0.8]	227 [1.6]	340 [2.4]	453 [3.2]	368 [2.6]	736 [5.2]	1416 [10.0]
Peak Current	I_p A	2.7	4.2	5.3	6.8	5.0	7.5	13.5
Torque Constant	K_m oz-in / A [Nm / A]	46.7 [0.33]	61.0 [0.43]	72.2 [0.51]	76.5 [0.54]	85.0 [0.6]	110.5 [0.78]	118.5 [0.83]
Back EMF	K_E V / krpm	20.0	26.0	31.0	33.0	36.5	47.0	50.0
Resistance	R_{PH-PH} Ohm	62.0	26.7	19.7	14.7	30.3	13.0	5.1
Inductance	L_{PH-PH} mH	29.5	20.5	17.0	13.0	31.0	22.0	11.0
Time Constant	T ms	0.48	0.77	0.86	0.88	1.02	1.7	2.0
Inertia	J lb-ft ² [Kgcm ²]	1.42×10^{-4} [0.06]	1.89×10^{-4} [0.08]	2.61×10^{-4} [0.11]	3.32×10^{-4} [0.14]	10.67×10^{-4} [0.45]	16.59×10^{-4} [0.7]	28.44×10^{-4} [1.2]
Weight	m lbs [Kg]	2.0 [0.9]	2.4 [1.1]	2.8 [1.25]	3.2 [1.45]	4.2 [1.9]	5.1 [2.3]	7.3 [3.3]

Protection class IP 54 • 2 Interconnecton connectors

Temperature switch 145° Celsius, PTC sensor optional • Max. temperature rise: 100° C, ambient 40° C when attached to heat sink

Specified in compliance with Standard VDE 0530 at altitude 1000m

Max Speed = 12000 RPM

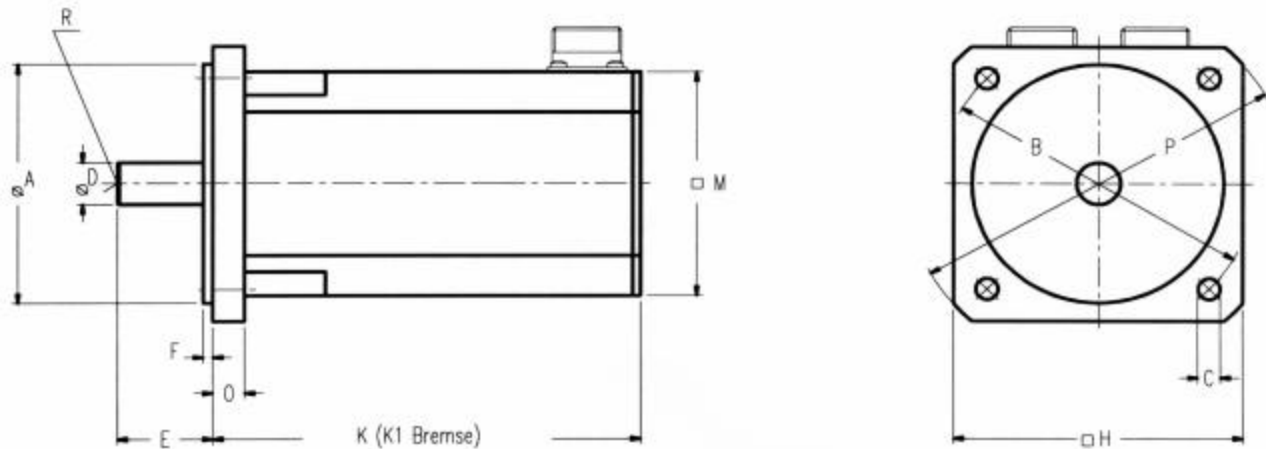


Dimension	A_B In [mm]	B In [mm]	C In [mm]	D_{60} In [mm]	E In [mm]	F In [mm]	H In [mm]	K In [mm]	K1 In [mm]	M In [mm]	O In [mm]	P In [mm]	R
ADT2-0020-L	1.57 [40]	2.48 [63]	0.23 [5.8]	0.35 [9]	0.94 [24]	0.1 [2.5]	2.17 [55]	4.2 [107]	5.5 [140]	2.0 [50]	0.28 [7]	2.9 [74]	-
ADT2-0040-L	1.57 [40]	2.48 [63]	0.23 [5.8]	0.35 [9]	0.94 [24]	0.1 [2.5]	2.17 [55]	4.8 [122]	6.1 [155]	2.0 [50]	0.28 [7]	2.9 [74]	-
ADT2-0060-L	1.57 [40]	2.48 [63]	0.23 [5.8]	0.35 [9]	0.94 [24]	0.1 [2.5]	2.17 [55]	5.4 [137]	6.7 [170]	2.0 [50]	0.28 [7]	2.9 [74]	-
ADT2-0080-L	1.57 [40]	2.48 [63]	0.23 [5.8]	0.35 [9]	0.94 [24]	0.1 [2.5]	2.17 [55]	6.0 [152]	7.3 [185]	2.0 [50]	0.28 [7]	2.9 [74]	-
ADT3-0065-L	3.15 [80]	2.48 [100]	0.28 [7]	0.55 [14]	1.18 [30]	0.12 [3]	3.5 [88]	4.6 [116]	5.9 [149]	2.9 [74]	0.35 [9]	4.2 [115]	M4x10
ADT3-0130-L	3.15 [80]	2.48 [100]	0.28 [7]	0.55 [14]	1.18 [30]	0.12 [3]	3.5 [88]	5.3 [134]	6.6 [167]	2.9 [74]	0.35 [9]	4.2 [115]	M4x10
ADT3-0250-L	3.15 [80]	2.48 [100]	0.28 [7]	0.55 [14]	1.18 [30]	0.12 [3]	3.5 [88]	6.7 [170]	8.0 [203]	2.9 [74]	0.35 [9]	4.2 [115]	M4x10

Brushless Servomotor ADT4-L and ADT5-L U_{cc}=320 VDC

		ADT4-0260-L	ADT4-0530-L	ADT4-0750-L	ADT5-0660-L	ADT5-1050-L	ADT5-1350-L
Torque, rated	T _c oz-in [Nm]	326 [2.3]	652 [4.6]	892 [6.3]	793 [5.6]	1204 [8.5]	1515 [10.7]
Speed, rated	V _R Rpm	3000	3000	3000	3000	3000	3000
Current, rated	I _c A	2.8	5.7	7.6	6.6	10.5	13.5
Holding Current	I _h A	3.0	6.3	8.6	7.7	12.0	15.7
Peak Torque	T _p oz-in [Nm]	1416 [10]	2974 [21]	4249 [30]	3682 [26]	5948 [42]	7648 [54]
Peak Current	I _p A	13	28	38	35	55	72
Torque Constant	K _m oz-in / A [Nm / A]	122 [0.86]	119 [0.84]	123 [0.87]	122 [0.86]	125 [0.88]	122 [0.86]
Back EMF	K _E V / krpm	52	51	53	52	53	52
Resistance	R _{PH-PH} Ohm	3.8	1.65	1.0	1.2	0.64	0.5
Inductance	L _{PH-PH} mH	15.0	8.5	5.9	5.1	3.8	3.0
Time Constant	T ms	3.9	5.1	6.0	4.25	5.94	6.0
Inertia	J lbs-ft ² [kgcm ²]	39.11x10 ⁻⁴ [1.65]	74.18x10 ⁻⁴ [3.13]	106.65x10 ⁻⁴ [4.5]	210.93x10 ⁻⁴ [8.9]	282.03x10 ⁻⁴ [11.9]	317.58x10 ⁻⁴ [13.4]
Weight	m lbs [Kg]	10.0 [4.5]	12.6 [5.7]	16.8 [7.6]	17.6 [8.0]	21.6 [9.8]	25.0 [11.2]

Protection class IP 54 • 2 Interconnectron connectors
 Temperature switch 145^o Celsius, PTC sensor optional • Max. temperature rise: 100^o C, ambient 40^o C when attached to heat sink
 Specified in compliance with Standard VDE 0530 at altitude 1000m
 Max Speed: ADT4 = 12000 RPM; ADT5 = 6000 RPM



Dimension	A _B	B	C	D ₀₆	E	F	H	K	K1	M	O	P	R
	In [mm]	In [mm]	In [mm]	In [mm]	In [mm]	In [mm]	In [mm]	In [mm]	In [mm]	In [mm]	In [mm]	In [mm]	In [mm]
ADT4-0260-L	3.7 [95]	4.5 [115]	0.35 [9]	0.75 [19]	1.6 [40]	0.12 [3]	4.1 [105]	6.1 [155]	7.5 [190]	3.8 [97]	0.4 [10]	5.3 [134]	M5x12
ADT4-0530-L	3.7 [95]	4.5 [115]	0.35 [9]	0.75 [19]	1.6 [40]	0.12 [3]	4.1 [105]	7.3 [185]	8.7 [220]	3.8 [97]	0.4 [10]	5.3 [134]	M5x12
ADT4-0750-L	3.7 [95]	4.5 [115]	0.35 [9]	0.75 [19]	1.6 [40]	0.12 [3]	4.1 [105]	9.1 [230]	10.4 [265]	3.8 [97]	0.4 [10]	5.3 [134]	M5x12
ADT5-0660-L	5.1 [130]	6.5 [165]	0.43 [11]	0.94 [24]	2.0 [50]	0.14 [3.5]	5.6 [142]	7.3 [186]	9.0 [229]	5.0 [127]	0.43 [11]	7.4 [188]	M8x19
ADT5-1050-L	5.1 [130]	6.5 [165]	0.43 [11]	0.94 [24]	2.0 [50]	0.14 [3.5]	5.6 [142]	8.7 [220]	10.4 [263]	5.0 [127]	0.43 [11]	7.4 [188]	M8x19
ADT5-1350-L	5.1 [130]	6.5 [165]	0.43 [11]	0.94 [24]	2.0 [50]	0.14 [3.5]	5.6 [142]	9.3 [237]	11.0 [280]	5.0 [127]	0.43 [11]	7.4 [188]	M8x19