

Technical data sheet - servomotors ULTRACT - UL04

Motor Identifier	Symbol	Units	UL0403	UL0403	UL0405	UL0405	UL0406	UL0406	UL0408	UL0408
Reference Data			300 rad/s 230 Vac	300 rad/s 400 Vac	300 rad/s 230 Vac	300 rad/s 400 Vac	300 rad/s 230 Vac	300 rad/s 400 Vac	300 rad/s 230 Vac	300 rad/s 400 Vac
➔ Nominal torque, c. duty S1, 0 speed, $\Delta T=100^{\circ}\text{C}$	T100	Nmrms	2,85	2,79	5,01	4,70	6,49	6,29	8,01	8,20
Nominal torque, c. duty S1, 0 speed, $\Delta T=65^{\circ}\text{C}$, in air (1)	Tn	Nmrms	2,29	2,25	4,04	3,79	5,23	5,07	6,46	6,61
➔ Base speed	wn	rad/s	314	314	314	314	314	314	314	314
Nominal power, S1 $\Delta T=65^{\circ}\text{C}$ (1)	Pn	W	573	562	990	927	1259	1219	1538	1575
Nominal power, S1 $\Delta T=100^{\circ}\text{C}$ (2)	P100	W	835	820	1463	1347	1824	1767	2216	2269
Torque at max. speed (1)	Tw	Nmrms	1,82	1,79	3,15	2,95	4,01	3,88	4,90	5,02
Torque at max. speed (2)	Tw100	Nmrms	2,66	2,61	4,57	4,29	5,81	5,63	7,06	7,22
Peak torque, S.I.R. 10%	Tpk	Nmrms	7,65	7,51	13,47	12,63	17,45	16,91	21,54	22,05

Physical Data	Symbol	Units	UL0403	UL0403	UL0405	UL0405	UL0406	UL0406	UL0408	UL0408
Maximum speed	wmax	rad/s	1000	1000	1000	1000	1000	1000	1000	1000
Rotor inertia	Jm	mkgm ²	0,1	0,1	0,29	0,29	0,41	0,41	0,5	0,5
Acceleration at peak torque	apk	rad/s ²	76478	75103	46437	43548	42549	41233	43074	44100
Max. shock on motor, any direction	S	m/s ²	200	200	200	200	200	200	200	200
Max. vibration, radial	Vr	m/s ²	200	200	200	200	200	200	200	200
Max. vibration, axial	Va	m/s ²	40	40	30	30	30	30	30	20
Shaft torsional resonance frequency (3)	fm	Hz	N.A.	N.A.	N.A.	N.A.	700	700	400	400
Mass	M	kg	2,7	2,7	4	4	5	5	6,2	6,2
Winding insulation	-	-	classe H	classe H	classe H	classe H	classe H	classe H	classe H	classe H
Motor insulation	-	-	classe F	classe F	classe F	classe F	classe F	classe F	classe F	classe F
Cooling	-	-	convezione	convezione	convezione	convezione	convezione	convezione	convezione	convezione
Protection (4)	-	-	IP54	IP54	IP54	IP54	IP54	IP54	IP54	IP54

Thermal Data	Symbol	Units	UL0403	UL0403	UL0405	UL0405	UL0406	UL0406	UL0408	UL0408
Motor losses at nominal power, $\Delta T=65^{\circ}\text{C}$	Ln	W	85	85	93	93	103	103	115	115
Thermal impedance, motor to air	Rtha	$^{\circ}\text{C}/\text{W}$	0,76	0,76	0,69	0,69	0,63	0,63	0,56	0,56
Thermal impedance, motor to air + flange	Rthf	$^{\circ}\text{C}/\text{W}$	0,62	0,62	0,58	0,58	0,53	0,53	0,48	0,48
Thermal capacity	Cth	J/ $^{\circ}\text{C}$	2260	2260	3140	3140	4081	4081	4898	4898
Thermal time constant in air	ta	s	1729	1729	2194	2194	2576	2576	2768	2768
No load losses at base speed	L0	W	26	26	33	33	39	39	45	45
Threshold of built-in PTC	PTCt	$^{\circ}\text{C}$	130 $^{\circ}$	130 $^{\circ}$	130 $^{\circ}$	130 $^{\circ}$	130 $^{\circ}$	130 $^{\circ}$	130 $^{\circ}$	130 $^{\circ}$

Electrical Data	Symbol	Units	UL0403	UL0403	UL0405	UL0405	UL0406	UL0406	UL0408	UL0408
Pole number	PN	-	8	8	8	8	8	8	8	8
Connection	-	-	Y	Y	Y	Y	Y	Y	Y	Y
Back E.M.F., 20 $^{\circ}\text{C}$ (5)	Ke	Vs	0,54	0,98	0,55	0,86	0,55	0,97	0,55	0,98
Torque constant	Kt	Nm/Arms	0,93	1,7	0,96	1,49	0,96	1,67	0,96	1,7
Temperature coefficient of E.M.F.	dKe/dT	%/ $^{\circ}\text{C}$	-0,09	-0,09	-0,09	-0,09	-0,09	-0,09	-0,09	-0,09
Winding resistance, 20 $^{\circ}\text{C}$ (5)	Rw	Ohm	7,04	24,42	2,63	7,23	1,74	5,66	1,27	3,83
Winding inductance (1000Hz)	Lw	mH	10,11	33,79	5,35	12,94	3,56	10,91	2,67	8,45
➔ Nominal voltage	Vn	Vrms	183	336	183	285	181	317	180	320
E.M.F. at 3000 rpm	V3000	Vrms	169	309	174	270	174	304	174	309
➔ Nominal current, 0 speed, $\Delta T=100^{\circ}\text{C}$	In0	Arms	3,22	1,73	5,51	3,32	7,14	3,95	8,81	5,07
Nominal current at nom. power (1)	In	Arms	2,16	1,16	3,58	2,16	4,55	2,52	5,54	3,19
Peak current	lpk	Arms	8,22	4,41	14,07	8,48	18,23	10,09	22,5	12,96
Frequency	fn	Hz	200	200	200	200	200	200	200	200
Efficiency at rated power	n	-	0,87	0,87	0,91	0,91	0,92	0,92	0,93	0,93
Min. demag. current, 125 $^{\circ}\text{C}$	ldm	Apk	69	38	135	87	203	116	270	152
Winding capacitance to ground	Wc	nF	2	2	3	3	4	4	5	5

Test conditions

- (1) Motor suspended in horizontal position in free still air, ambient temperature = 20 $^{\circ}\text{C}$
- (2) Motor flanged to 20 mm thick aluminium base at 20 $^{\circ}\text{C}$ in horizontal position, ambient temperature = 20 $^{\circ}\text{C}$
- (3) With interference coupling and infinite load inertia applied in the middle of the shaft extension
- (4) Standard type
- (5) Typical value, tolerance +/-10%

Remark: All quantities are in International Standard units, 20 $^{\circ}\text{C}$ unless stated otherwise