

## Technical data sheet - servomotors ULTRACT - UL10

Motor Identifier			Symbol	Units	UL1004	UL1004	UL1004	UL1007	UL1007	UL1007	UL1010	UL1010	UL1010	UL1013	UL1013	UL1013
Reference Data					100 rad/s 400 Vac	200 rad/s 400 Vac	300 rad/s 400 Vac	100 rad/s 400 Vac	200 rad/s 400 Vac	300 rad/s 400 Vac	100 rad/s 400 Vac	200 rad/s 400 Vac	300 rad/s 400 Vac	100 rad/s 400 Vac	200 rad/s 400 Vac	300 rad/s 400 Vac
➔ Nominal torque, c. duty S1, 0 speed, $\Delta T=100^{\circ}\text{C}$	T100	Nmrms			30	30	30	57	57	57	82	80	82	106	105	105
Nominal torque, c. duty S1, 0 speed, $\Delta T=65^{\circ}\text{C}$ , in air (1)	Tn	Nmrms			24	25	25	46	46	46	66	64	66	86	85	85
➔ Base speed	wn	rad/s			105	209	314	105	209	314	105	209	314	105	209	314
Nominal power, S1 $\Delta T=65^{\circ}\text{C}$ (1)	Pn	W			2347	4405	5590	4390	7555	7383	6318	9978	6253	8175	12478	2529
Nominal power, S1 $\Delta T=100^{\circ}\text{C}$ (2)	P100	W			3371	6632	9410	6193	11691	15645	8751	15700	20430	11161	19931	24415
Torque at max. speed (1)	Tw	Nmrms			22,42	21,04	17,8	41,94	36,09	23,51	60,37	47,67	19,91	78,11	59,61	8,06
Torque at max. speed (2)	Tw100	Nmrms			32,21	31,68	29,97	59,17	55,85	49,83	83,6	75	65,06	106,63	95,21	77,75
Peak torque, S.I.R. 10%	Tpk	Nmrms			80,56	81,70	81,70	151,99	151,99	151,99	220,07	213,87	220,07	286,13	282,13	282,13
Physical Data			Symbol	Units	UL1004	UL1004	UL1004	UL1007	UL1007	UL1007	UL1010	UL1010	UL1010	UL1013	UL1013	UL1013
Maximum speed	wmax	rad/s			400	400	400	400	400	400	400	400	400	400	400	400
Rotor inertia	Jm	mkgm <sup>2</sup>			6	6	6	9	9	9	12	12	12	15	15	15
Acceleration at peak torque	apk	rad/s <sup>2</sup>			13426	13616	13616	16888	16888	16888	18339	17822	18339	19075	18809	18809
Max. shock on motor, any direction	S	m/s <sup>2</sup>			200	200	200	200	200	200	200	200	200	200	200	200
Max. vibration, radial	Vr	m/s <sup>2</sup>			200	200	200	200	200	200	200	200	200	200	200	200
Max. vibration, axial	Va	m/s <sup>2</sup>			50	50	50	40	40	40	30	30	30	30	30	20
Shaft torsional resonance frequency (3)	fm	Hz			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1200	1200	1200	450	450	450
Mass	M	kg			30,5	30,5	30,5	43	43	43	55	55	55	68	68	68
Winding insulation	-	-			classe H	classe H	classe H	classe H	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	classe F	classe F	classe F	classe F
Cooling	-	-			convezione	convezione	convezione	convezione	convezione	convezione	convezione	convezione	convezione	convezione	convezione	convezione
Protection (4)	-	-			IP54	IP54	IP54	IP54	IP54	IP54	IP54	IP54	IP54	IP54	IP54	IP54
Thermal Data			Symbol	Units	UL1004	UL1004	UL1004	UL1007	UL1007	UL1007	UL1010	UL1010	UL1010	UL1013	UL1013	UL1013
Motor losses at nominal power, $\Delta T=65^{\circ}\text{C}$	Ln	W			270	270	270	310	310	310	360	360	360	410	410	410
Thermal impedance, motor to air	Rtha	$^{\circ}\text{C}/\text{W}$			0,241	0,241	0,241	0,21	0,21	0,21	0,181	0,181	0,181	0,159	0,159	0,159
Thermal impedance, motor to air + flange	Rthf	$^{\circ}\text{C}/\text{W}$			0,17	0,17	0,17	0,15	0,15	0,15	0,14	0,14	0,14	0,12	0,12	0,12
Thermal capacity	Cth	J/ $^{\circ}\text{C}$			21977	21977	21977	28883	28883	28883	35790	35790	35790	42697	42697	42697
Thermal time constant in air	ta	s			5291	5291	5291	6056	6056	6056	6462	6462	6462	6769	6769	6769
No load losses at base speed	L0	W			31	65	121	43	110	223	54	155	324	65	200	405
Threshold of built-in PTC	PTCt	$^{\circ}\text{C}$			130 $^{\circ}$	130 $^{\circ}$	130 $^{\circ}$	130 $^{\circ}$	130 $^{\circ}$	130 $^{\circ}$	130 $^{\circ}$	130 $^{\circ}$	130 $^{\circ}$	130 $^{\circ}$	130 $^{\circ}$	130 $^{\circ}$
Electrical Data			Symbol	Units	UL1004	UL1004	UL1004	UL1007	UL1007	UL1007	UL1010	UL1010	UL1010	UL1013	UL1013	UL1013
Pole number	PN	-			8	8	8	8	8	8	8	8	8	8	8	8
Connection	-	-			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Back E.M.F., 20 $^{\circ}\text{C}$ (5)	Ke	Vs			2,78	1,43	0,95	2,86	1,43	0,95	2,86	1,43	0,95	2,86	1,59	0,95
Torque constant	Kt	Nm/Arms			4,81	2,48	1,65	4,95	2,48	1,65	4,95	2,48	1,65	4,95	2,75	1,65
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	-0,09	-0,09	-0,09	-0,09
Winding resistance, 20 $^{\circ}\text{C}$ (5)	Rw	Ohm			5,40	1,39	0,62	1,84	0,46	0,2	1,02	0,27	0,11	0,69	0,22	0,08
Winding inductance (1000Hz)	Lw	mH			53,76	14,22	6,32	28,44	7,11	3,16	18,96	4,74	2,11	14,22	4,39	1,58
➔ Nominal voltage	Vn	Vrms			329	324	316	327	316	307	323	312	302	321	345	300
E.M.F. at 3000 rpm	V3000	Vrms			873	449	299	898	449	299	898	449	299	898	449	299
➔ Nominal current, 0 speed, $\Delta T=100^{\circ}\text{C}$	In0	Arms			6,55	12,92	19,38	12,02	24,04	36,06	17,4	33,83	52,21	22,63	40,16	66,94
Nominal current at nom. power (1)	In	Arms			4,97	9,08	11,6	9	15,57	15,45	12,94	20,58	13,36	16,73	23,17	5,96
Peak current	lpk	Arms			16,73	33	49,49	30,69	61,39	92,08	44,44	86,38	133,32	57,78	102,55	170,92
Frequency	fn	Hz			67	133	200	67	133	200	67	133	200	67	133	200
Efficiency at rated power	n	-			0,9	0,94	0,95	0,93	0,96	0,96	0,95	0,97	0,95	0,95	0,97	0,86
Min. demag. current, 125 $^{\circ}\text{C}$	ldm	Apk			69	135	203	135	270	405	203	405	608	270	486	810
Winding capacitance to ground	Wc	nF			16	16	16	32	32	32	48	48	48	64	64	64

### 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