

LV 7000 Drives

LV 7000-5: Inverter units for common DC bus

fact sheet

LV 7000-5 covers a number of inverter units for common DC bus applications in the entire power range from 1 kW to 2000 kW at 460 VAC to 690 VAC.

Technical Data		
DC Connection	Input voltage U <sub>in</sub>	465 to 800 VDC ( 380-500 VAC)
		640 to 1100 VDC ( 525-690 VAC)
	Starting delay	FR4-FR8: 2s FI 9 and greater: 5s
DC side charging circuit		FR4-FR8: integrated
		FI 9 and greater: external
Motor Connection	Cont. output current	High overloadability: I(H) at max. +50°C ambient temperature (FI 9 and up: +40°C)
	Overloadability	Low overloadability: I(L) at max. +40°C ambient temperature High: 1.5 x I <sub>H</sub> (1 min/10 min), Low: 1.1 x I <sub>L</sub> (1 min/10 min)
	Output frequency	0 to 320 Hz
Control characteristics	Control method	Frequency Control U/f
		Open Loop Sensorless Vector Control
		Closed Loop Vector Control
	Control performance	Open loop vector control (5-150% of base speed):
		• Speed control 0.5%, dynamic 0.3%sec • Torque lin.<2%, torque rise time ~5 ms
	Frequency reference	Closed loop vector control (entire speed range):
		• Speed control 0.01%, dynamic 0.2%sec, • Torque lin.<2%, torque rise time ~2 ms
Acceleration time	Analogue input: Resolution 0.1% (10-bit), accuracy ±1%	
	Keypad reference: Resolution 0.01 Hz	
Deceleration time	0 to 3000 sec	
Ambient conditions	Ambient operating temperature	-10°C (no frost) to +40°C
	Storage temperature	-40°C to +70°C
	Relative humidity	0 to 95% RH, non-condensing, non-corrosive, no dripping water
	Altitude	100% load capacity (no derating) up to 1,000 m
		1% derating for each 100 m above 1000; max 3000 m
	Air quality:	
	Chemical vapours	IEC 721-3-3, unit in operation, class 3C2
	Mechanical particles	IEC 721-3-3, unit in operation, class 3S2
	Cooling	Forced air cooling
	Unit enclosure class	FR4 to FR7: IP21
FR8 to FI14: IP00		

Technical Data		
Control connections	Analog input voltage	0 to +10 V, R <sub>i</sub> = 200 kΩ, (-10 V to +10 V joystick control)
	Analog input current	0(4) to 20 mA, R <sub>i</sub> = 250Ω differential
	Digital inputs	(6) Positive or negative logic; 18 to 30 VDC
	Auxiliary voltage	+24 V, ±15%, max. 250 mA
	Output reference voltage	+10 V, +3%, max. load 10 mA
	Analog output	0(4) to 20 mA; R <sub>L</sub> max. 500Ω; Resolution 10 bits; Accuracy ±2%
	Digital outputs	Open collector output, 50 mA/48 V
Relay outputs	2 programmable change-over relay outputs, switching capacity: 24 VDC/8 A, 250 VAC/8 A, 125 VDC/0.4 A	
	Control	I/O
Communication	The standard I/O can easily be extended with I/O expanders and fieldbus boards (up to 3).	
	Flexibility in communication via multiple fieldbuses: Profibus DP, CANopen, Device Net, Modbus/TCP (Ethernet)	
Keypad	Alphanumeric display: Multi-Monitoring, Default page, Back-up Function, RS-232 communication for PC connection	
Protections	Overvoltage trip limit	LV 7000-5: 911 VDC; LV 7000-6: 1200 VDC
	Undervoltage trip limit	LV 7000-5: 333 VDC; LV 7000-6: 460 VDC
	Motor protections	Overvoltage, undervoltage, earth fault, motor phase supervision, overcurrent, unit overtemperature, motor overload, motor stall, motor underload, short-circuit of +24 V and +10 V, reference voltages
EMC	Immunity	Fulfil all EMC immunity requirements
Safety	EN 50178 (1997), EN 60204-1 (1996), EN 60950 (2000, 3rd edition) (as relevant), CE, UL, CUL, FI, GOST R, IEC 61800-5	
Features	Controls induction and permanent magnet motors	
	Complete range of communications and I/O options	
	Capability for master/slave configurations	



## INVERTER UNITS

Motor voltage 460 VAC, 50/60 Hz, 3 Phase

Type	High Overload (2)			Low Overload (1)			FR	W x H x D
	P [kW]	HP	I(H)	P [kW]	HP	I(L)		Power Module
								inches/lbs
LV7000-5-0004 5	2.1	3	3.3	2.8	4	4.3	FR4	5 x 11.5 x 7.5/11
LV7000-5-0009 5	4.9	7	7.6	5.8	8	9	FR4	5 x 11.5 x 7.5/11
LV7000-5-0012 5	5.8	8	9	7.7	10	12	FR4	5 x 11.5 x 7.5/11
LV7000-5-0016 5	7.7	10	12	10.3	14	16	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0022 5	10.3	14	16	14.8	20	23	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0031 5	14.8	20	23	19.9	27	31	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0038 5	19.9	27	31	24.4	33	38	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0045 5	24.4	33	38	29.6	40	46	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0061 5	30	40	46	39	53	61	FR7	9.3 x 23.3 x 10.1/64
LV7000-5-0072 5	39	53	61	46	62	72	FR7	9.3 x 23.3 x 10.1/64
LV7000-5-0087 5	46	62	72	56	75	87	FR7	9.3 x 23.3 x 10.1/64
LV7000-5-0105 5	56	75	87	68	91	105	FR7	9.3 x 23.3 x 10.1/64
LV7000-5-0140 5	68	91	105	90	121	140	FR8	11.4 x 29.8 x 13.5/106
LV7000-5-0168 5	90	121	140	109	147	170	FI9	9.4 x 40.6 x 14.6/148
LV7000-5-0205 5	109	147	170	132	178	205	FI9	9.4 x 40.6 x 14.6/148
LV7000-5-0261 5	132	178	205	168	226	261	FI9	9.4 x 40.6 x 14.6/148
LV7000-5-0300 5	158	212	245	193	260	300	FI9	9.4 x 40.6 x 14.6/148
LV7000-5-0385 5	193	260	300	248	333	385	FI10	9.4 x 40.6 x 21.7/220
LV7000-5-0460 5	248	333	385	296	398	460	FI10	9.4 x 40.6 x 21.7/220
LV7000-5-0520 5	296	398	460	335	450	520	FI10	9.4 x 40.6 x 21.7/220
LV7000-5-0590 5	335	450	520	380	511	590	FI12	18.8 x 40.6 x 21.7/441
LV7000-5-0650 5	380	511	590	418	563	650	FI12	18.8 x 40.6 x 21.7/441
LV7000-5-0730 5	418	563	650	470	632	730	FI12	18.8 x 40.6 x 21.7/441
LV7000-5-0820 5	470	632	730	528	710	820	FI12	18.8 x 40.6 x 21.7/441
LV7000-5-0920 5	528	710	820	592	797	920	FI12	18.8 x 40.6 x 21.7/441
LV7000-5-1030 5	592	797	920	663	892	1030	FI12	18.8 x 40.6 x 21.7/441
LV7000-5-1150 5	663	892	1030	740	996	1150	FI13	27.9 x 40.6 x 21.8/675
LV7000-5-1300 5	740	996	1150	836	1126	1300	FI13	27.9 x 40.6 x 21.8/675
LV7000-5-1450 5	836	1126	1300	933	1256	1450	FI13	27.9 x 40.6 x 21.8/675
LV7000-5-1770 5	1029	1385	1600	1139	1533	1770	FI14	2 power modules each 27.9 X 40.6 X 21.8/675
LV7000-5-2150 5	1248	1680	1940	1383	1862	2150	FI14	2 power modules each 27.9 X 40.6 X 21.8/675
LV7000-5-2700 5	1480	1992	2300	1737	2338	2700	FI14	2 power modules each 27.9 X 40.6 X 21.8/675

(1) Low Overload = 110% Overloadability, 1 min/10 min

(2) High Overload = 150% Overloadability, 1 min/10 min

kW and HP calculations are based on motor efficiency of .95% and motor power factor of .85. Use actual motor data for final inverter selection. Ratings based on ambient temperature of 0°C to 40°C (32°F–104°F), and altitude below 1,000 M (3,280 Ft) above sea level.

## INVERTER UNITS

Motor voltage 575 VAC, 50/60 Hz, 3 Phase

Type	High Overload (2)			Low Overload (1)			FR	W x H x D
	P [kW]	HP	I(H)	P [kW]	HP	I(L)		Power Module
								inches/lbs
LV7000-5-0004 6	2.6	3	3.2	3.6	5	4.5	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0005 6	3.6	5	4.5	4.4	6	5.5	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0007 6	4.4	6	5.5	6.0	8	7.5	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0010 6	6.0	8	7.5	8.0	11	10	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0013 6	8.0	11	10	10.9	15	13.5	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0018 6	10.9	15	13.5	14.5	19	18	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0022 6	14.5	19	18	17.7	24	22	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0027 6	17.7	24	22	21.7	29	27	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0034 6	21.7	29	27	27.3	37	34	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0041 6	27.3	37	34	33	44	41	FR7	9.3 x 23.3 x 10.1/64
LV7000-5-0052 6	33	44	41	42	56	52	FR7	9.3 x 23.3 x 10.1/64
LV7000-5-0062 6	42	56	52	50	67	62	FR8	11.4 x 29.8 x 13.5/106
LV7000-5-0080 6	50	67	62	64	86	80	FR8	11.4 x 29.8 x 13.5/106
LV7000-5-0100 6	64	86	80	80	108	100	FR8	11.4 x 29.8 x 13.5/106
LV7000-5-0125 6	80	108	100	101	135	125	FI9	9.4 x 40.6 x 14.6/148
LV7000-5-0144 6	101	135	125	116	155	144	FI9	9.4 x 40.6 x 14.6/148
LV7000-5-0170 6	116	155	144	137	183	170	FI9	9.4 x 40.6 x 14.6/148
LV7000-5-0208 6	137	183	170	167	224	208	FI9	9.4 x 40.6 x 14.6/148
LV7000-5-0261 6	167	224	208	210	281	261	FI10	9.4 x 40.6 x 21.7/220
LV7000-5-0325 6	210	281	261	261	350	325	FI10	9.4 x 40.6 x 21.7/220
LV7000-5-0385 6	261	350	325	310	415	385	FI10	9.4 x 40.6 x 21.7/220
LV7000-5-0416 6	261	350	325	335	448	416	FI10	9.4 x 40.6 x 21.7/220
LV7000-5-0460 6	310	415	385	370	496	460	FI12	18.8 x 40.6 x 21.7/441
LV7000-5-0502 6	370	496	460	404	541	502	FI12	18.8 x 40.6 x 21.7/441
LV7000-5-0590 6	404	541	502	474	636	590	FI12	18.8 x 40.6 x 21.7/441
LV7000-5-0650 6	474	636	590	523	701	650	FI12	18.8 x 40.6 x 21.7/441
LV7000-5-0750 6	523	701	650	603	809	750	FI12	27.9 x 40.6 x 21.8/675
LV7000-5-0820 6	523	701	650	659	884	820	FI12	27.9 x 40.6 x 21.8/675
LV7000-5-0920 6	659	884	820	740	992	920	FI13	27.9 x 40.6 x 21.8/675
LV7000-5-1030 6	740	992	920	828	1110	1030	FI13	27.9 x 40.6 x 21.8/675
LV7000-5-1180 6	828	1110	1030	949	1272	1180	FI13	27.9 x 40.6 x 21.8/675
LV7000-5-1500 6	1045	1401	1300	1206	1617	1500	FI14	2 power modules each 27.9 X 40.6 X 21.8/675
LV7000-5-1900 6	1206	1617	1500	1528	2048	1900	FI14	2 power modules each 27.9 X 40.6 X 21.8/675
LV7000-5-2250 6	1528	2048	1900	1809	2426	2250	FI14	2 power modules each 27.9 X 40.6 X 21.8/675

(1) Low Overload = 110% Overloadability, 1 min/10 min

(2) High Overload = 150% Overloadability, 1 min/10 min

kW and HP calculations are based on motor efficiency of .95% and motor power factor of .85. Use actual motor data for final inverter selection. Ratings based on ambient temperature of 0°C to 40°C (32°F–104°F), and altitude below 1,000 M (3,280 Ft) above sea level.

# fact sheet

## INVERTER UNITS

Motor voltage 690 VAC, 50/60 Hz, 3 Phase

Type	High Overload (2)			Low Overload (1)			FR	W x H x D
	P [kW]	HP	I(H)	P [kW]	HP	I(L)		Power Module
								inches/lbs
LV7000-5-0004 6	3.1	4	3.2	4.3	6	4.5	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0005 6	4.3	6	4.5	5.3	7	5.5	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0007 6	5.3	7	5.5	7.2	10	7.5	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0010 6	7.2	10	7.5	9.7	13	10	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0013 6	9.7	13	10	13.0	17	13.5	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0018 6	13.0	17	13.5	17.4	23	18	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0022 6	17.4	23	18	21.2	28	22	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0027 6	21.2	28	22	26.1	35	27	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0034 6	26.1	35	27	32.8	44	34	FR6	7.7 x 20.4 x 9.3/35.3
LV7000-5-0041 6	33	44	34	40	53	41	FR7	9.3 x 23.3 x 10.1/64
LV7000-5-0052 6	40	53	41	50	67	52	FR7	9.3 x 23.3 x 10.1/64
LV7000-5-0062 6	50	67	52	60	80	62	FR8	11.4 x 29.8 x 13.5/106
LV7000-5-0080 6	60	80	62	77	103	80	FR8	11.4 x 29.8 x 13.5/106
LV7000-5-0100 6	77	103	80	97	129	100	FR8	11.4 x 29.8 x 13.5/106
LV7000-5-0125 6	97	129	100	121	162	125	FI9	9.4 x 40.6 x 14.6/148
LV7000-5-0144 6	121	162	125	139	186	144	FI9	9.4 x 40.6 x 14.6/148
LV7000-5-0170 6	139	186	144	164	220	170	FI9	9.4 x 40.6 x 14.6/148
LV7000-5-0208 6	164	220	170	201	269	208	FI9	9.4 x 40.6 x 14.6/148
LV7000-5-0261 6	201	269	208	252	338	261	FI10	9.4 x 40.6 x 21.7/220
LV7000-5-0325 6	252	338	261	314	420	325	FI10	9.4 x 40.6 x 21.7/220
LV7000-5-0385 6	314	420	325	372	498	385	FI10	9.4 x 40.6 x 21.7/220
LV7000-5-0416 6	314	420	325	401	538	416	FI10	9.4 x 40.6 x 21.7/220
LV7000-5-0460 6	372	498	385	444	595	460	FI12	18.8 x 40.6 x 21.7/441
LV7000-5-0502 6	444	595	460	484	649	502	FI12	18.8 x 40.6 x 21.7/441
LV7000-5-0590 6	484	649	502	569	763	590	FI12	18.8 x 40.6 x 21.7/441
LV7000-5-0650 6	569	763	590	627	841	650	FI12	18.8 x 40.6 x 21.7/441
LV7000-5-0750 6	627	841	650	724	970	750	FI12	27.9 x 40.6 x 21.8/675
LV7000-5-0820 6	627	841	650	791	1061	820	FI12	27.9 x 40.6 x 21.8/675
LV7000-5-0920 6	791	1061	820	888	1190	920	FI13	27.9 x 40.6 x 21.8/675
LV7000-5-1030 6	888	1190	920	994	1332	1030	FI13	27.9 x 40.6 x 21.8/675
LV7000-5-1180 6	994	1332	1030	1139	1526	1180	FI13	27.9 x 40.6 x 21.8/675
LV7000-5-1500 6	1255	1682	1300	1448	1940	1500	FI14	2 power modules each 27.9 X 40.6 X 21.8/675
LV7000-5-1900 6	1448	1940	1500	1834	2458	1900	FI14	2 power modules each 27.9 X 40.6 X 21.8/675
LV7000-5-2250 6	1834	2458	1900	2171	2911	2250	FI14	2 power modules each 27.9 X 40.6 X 21.8/675

(1) Low Overload = 110% Overloadability, 1 min/10 min

(2) High Overload = 150% Overloadability, 1 min/10 min

kW and HP calculations are based on motor efficiency of .95% and motor power factor of .85. Use actual motor data for final inverter selection.

Ratings based on ambient temperature of 0°C to 40°C (32°F–104°F), and altitude below 1,000 M (3,280 Ft) above sea level.



imagination at work

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