

# SIMOTICS N-compact Non-Standard Motors

## Motors specially designed for converter-fed operation

### Self-ventilated motors

### Cast-iron series 1LA8 with standard insulation for ≤ 500 V

#### Selection and ordering data

Operating values at rated output with sinusoidal infeed													Cast-iron series		$m_{IM\ B3}$	$J$	Torque class
$P_{rated, 50\ Hz}$	$P_{rated, 60\ Hz}$	Frame size	$n_{rated, 50\ Hz}$	$T_{rated, 50\ Hz}$	$\eta_{rated, 50\ Hz, 4/4}$	$\eta_{rated, 50\ Hz, 3/4}$	COS- $\varphi_{rated, 50\ Hz, 4/4}$	$I_{rated, 50\ Hz, 400\ V}$	$I_{rated, 50\ Hz, 690\ V}$	$\bar{T}_B / I_{rated}$	$L_{pfA, 50\ Hz, tolerance +3\ dB(A)}$	$L_{WA, 50\ Hz, tolerance +3\ dB(A)}$	1LA8 – with standard insulation Order No.	kg	kgm <sup>2</sup>	CL	
kW	kW	FS	rpm	Nm	%	%		A	A		dB(A)	dB(A)	▼ Standardline				
• Cooling: Self-ventilated (IC 411) • Converter-fed operation: Specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages of ≤ 500 V • Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 155 (temperature class F)																	
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz <sup>1)</sup>																	
250	280	315	2979	801	95.7	95.7	0.90	420	245	2.8	82 (75) <sup>2)</sup>	97 (90) <sup>2)</sup>	1LA8315-2PC	1300	2.7	10	
315	353	315	2979	1010	95.7	95.7	0.91	520	300	2.8	82 (75) <sup>2)</sup>	97 (90) <sup>2)</sup>	1LA8317-2PC	1500	3.3	10	
355	398	355	2980	1140	95.7	95.7	0.90	590	345	2.5	77 <sup>3)</sup>	92 <sup>3)</sup>	1LA8353-2PC	1900	4.8	10	
400	448	355	2980	1280	96.2	96.3	0.91	660	380	2.5	77 <sup>3)</sup>	92 <sup>3)</sup>	1LA8355-2PC	2000	5.3	10	
500	560	355	2982	1600	96.6	96.7	0.91	820	475	2.6	77 <sup>3)</sup>	92 <sup>3)</sup>	1LA8357-2PC	2200	6.4	10	
560	616	400	2985	1790	96.6	96.7	0.91	920	530	2.8	79 <sup>3)</sup>	94 <sup>3)</sup>	1LA8403-2PC	2800	8.6	10	
630	693	400	2985	2020	96.6	96.7	0.91	1040	600	2.8	79 <sup>3)</sup>	94 <sup>3)</sup>	1LA8405-2PC	3000	9.6	10	
710	781	400	2985	2270	96.8	96.9	0.91	–	670 <sup>4)</sup>	2.8	79 <sup>3)</sup>	94 <sup>3)</sup>	1LA8407-2PC	3200	11	10	
800	–	450	2986	2560	96.7	96.8	0.91	–	760	3.0	81 <sup>3)</sup>	96 <sup>3)</sup>	1LA8453-2PE	4000	19	5	
900	–	450	2986	2880	96.8	96.9	0.92	–	850	2.8	81 <sup>3)</sup>	96 <sup>3)</sup>	1LA8455-2PE	4200	21	5	
1000	–	450	2986	3200	96.9	97.0	0.93	–	930	2.7	81 <sup>3)</sup>	96 <sup>3)</sup>	1LA8457-2PE	4400	23	5	
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz <sup>1)</sup>																	
250	288	315	1488	1600	95.5	95.6	0.87	435	250	2.8	75	87	▼ 1LA8315-4PB	1300	3.6	13	
315	362	315	1488	2020	95.7	95.8	0.87	550	315	2.8	75	87	▼ 1LA8317-4PB	1500	4.4	13	
355	408	355	1488	2280	95.8	95.9	0.87	610	355	2.5	75	90	▼ 1LA8353-4PB	1900	6.1	13	
400	460	355	1488	2570	95.9	96.0	0.87	690	400	2.5	75	90	▼ 1LA8355-4PB	2000	6.8	13	
500	575	355	1488	3210	96.2	96.3	0.88	850	495	2.5	75	90	▼ 1LA8357-4PB	2200	8.5	13	
560	644	400	1492	3580	96.2	96.3	0.88	950	550	2.7	78	93	1LA8403-4PB	2800	13	13	
630	725	400	1492	4030	96.4	96.5	0.88	1080	620	2.7	78	93	1LA8405-4PB	3000	14	13	
710	817	400	1492	4540	96.5	96.6	0.89	–	690 <sup>4)</sup>	2.7	78	93	1LA8407-4PB	3200	16	13	
800	920	450	1492	5120	96.5	96.6	0.88	–	790 <sup>4)</sup>	2.6	81	96	1LA8453-4PC	4000	23	10	
900	1040	450	1492	5760	96.6	96.7	0.87	–	900 <sup>5)</sup>	2.6	81	96	1LA8455-4PC	4200	26	10	
1000	1150	450	1492	6400	96.6	96.7	0.89	–	970 <sup>5)</sup>	2.6	81	96	1LA8457-4PC	4400	28	10	
<b>Voltages</b>			No. of poles	Motor type	Version												Order code(s)
50 Hz	400 VΔ/690 VY	6 <sup>2)</sup>	2, 4	1LA8315 ... 405	Standard												8
	690 VΔ	6 <sup>2)</sup>	2, 4	1LA8407 ... 457	Standard												7
	400 VΔ		2, 4	1LA8315 ... 457	Without additional charge												4
	500 VΔ		2, 4	1LA8315 ... 457	Without additional charge												5
Further voltages <sup>1)</sup>			For add. charges, code numbers, order codes and descriptions, see suppl. and special versions.														9
<b>For types of construction see suppl.</b>			Motor type	Version												Order code(s)	
Without flange	IM B3		1LA8315 ... 457	Standard												0	
	IM V5, IM V6		1LA8315 ... 457	With additional charge												0	
With flange	IM V1 without protective cover		1LA8315 ... 457 <sup>7)</sup>	With additional charge		Not for explosion-proof motors.										8	
	IM V1 with protective cover		1LA8315 ... 457 <sup>7)</sup>	With additional charge		The "Second shaft extension" option (K16) is not possible.										4	
	IM B35		1LA8315 ... 457 <sup>8)</sup>	With additional charge												6	
<b>Special versions</b>																	Order code(s)
▼ Standardline	No. of poles	Motor type	Voltage	Type	For the range of options, see "Special versions".												
With price and delivery time advantages	4	1LA8315 ... 357	50 Hz, 400 VΔ/690 VY	IM B3	1LA83 ... -4AB 60												-Z B20 +...+...+...
Options	For add. charges, order codes and descriptions, see suppl. and special versions.												1LA8 ... -...	-Z ...+...+...+...			
Motor type 1LA8																	
315-2 317-2 353-2 355-2 357-2 403-2 405-2 407-2 453-2 455-2 457-2 315-4 317-4 353-4 355-4 357-4 403-4 405-4 407-4 453-4 455-4 457-4																	
<b>Parallel feeders required</b>																	
400 V	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
500 V	–	–	Yes	Yes	–	–	Yes	Yes	Yes	Yes	Yes	–	–	Yes	Yes	–	Yes
690 V	–	–	–	–	–	–	–	–	Yes	Yes	–	–	–	–	–	–	Yes
<b>Mechanical limit speed <math>n_{max}</math> in rpm</b> (limit speeds for reinforced bearings, order code K20, for 4-pole motors on request.)																	
Standard	3600	3600	3600	3600	3600	3600	3600	3000	3000	3000	3000	2500	2500	2500	2200	2200	2100
IM V1	–	–	3100	3100	3100	3100	3100	–	–	–	–	–	–	–	2100	2100	1800
Ex prot.	–	–	–	–	–	–	–	–	–	–	2650	2650	2350	2350	2350	2100	1900
<b>Mechanical limit frequency <math>f_{max}</math> in Hz</b> (limit frequencies for reinforced bearings, order code K20, for 4-pole motors on request.)																	
Standard	60	60	60	60	60	60	60	50	50	50	100	100	83	83	73	73	70
IM V1	–	–	52	52	52	52	52	–	–	–	–	–	–	–	70	70	60
Ex prot.	–	–	–	–	–	–	–	–	–	–	88	88	78	78	70	70	63

1) Voltages for 60 Hz can be ordered with voltage code 9 and the appropriate order code.  
 2) Low-noise version in brackets. To reduce noise, 2-pole motors can be equipped with an axial fan. Clockwise rotation order code K37, counter-clockwise rotation K38.  
 3) Standard version with axial fan for clockwise rotation. Without order code K37. For counter-clockwise rotation, order code K38 is necessary.

4) Can be ordered for 400 VΔ 50 Hz as special version with voltage code 9 and order code L1Y (specify output, voltage and frequency).  
 5) Also available on request for 400 VΔ 50 Hz.  
 6) Operation is possible only with converter circuit (du/dt filter or sine-wave filter).  
 7) Not for 1LA8353 to 457 2-pole, 60 Hz.  
 8) Not for 1LA8453 to 457 2-pole, 60 Hz.

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Self-ventilated motors  
Cast-iron series 1LA8 with standard insulation for ≤ 500 V

### Selection and ordering data (continued)

Operating values at rated output with sinusoidal infeed													Cast-iron series 1LA8 – with standard insulation Order No.	$m_{IM\ B3}$	$J$	Torque class					
$P_{rated, 50\ Hz}$	$P_{rated, 60\ Hz}^1)$	Frame size	$n_{rated, 50\ Hz}$	$T_{rated, 50\ Hz}$	$\eta_{rated, 50\ Hz, 4/4}$	$\eta_{rated, 50\ Hz, 3/4}$	COS- $\varphi_{rated, 50\ Hz, 4/4}$	$I_{rated, 50\ Hz, 400\ V}$	$I_{rated, 50\ Hz, 690\ V}$	$T_p/r_{rated}$	$L_{pfA, 50\ Hz, tolerance +3\ dB(A)}$	$L_{WA, 50\ Hz, tolerance +3\ dB(A)}$									
kW	kW	FS	rpm	Nm	%	%	A	A			dB(A)	dB(A)	▲ New	kg	kgm <sup>2</sup>	CL					
• Cooling: Self-ventilated (IC 411)																					
• Converter-fed operation: Specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with standard insulation for voltages of ≤ 500 V																					
• Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 155 (temperature class F)																					
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz <sup>1)</sup>																					
200	230	315	990	1930	95.2	95.4	0.86	355	205	2.5	68	82	1LA8315-6PB	1300	6.0	13					
250	288	315	989	2410	95.4	95.6	0.86	440	255	2.5	68	82	1LA8317-6PB	1500	7.3	13					
315	362	355	992	3040	95.7	95.7	0.86	550	320	2.8	71	86	1LA8355-6PB	2000	13	13					
355	408	355	992	3418	95.7	95.7	0.86	620	360	2.9	71	86	1LA8356-6PB	2200	15	13					
400	460	355	993	3850	96.0	96.1	0.86	700	405	2.8	71	86	1LA8357-6PB	2200	16	13					
450	518	400	992	4330	96.0	96.1	0.86	790	455	2.7	73	88	1LA8403-6PB	2800	21	13					
500	575	400	992	4810	96.0	96.1	0.86	870	510	2.7	73	88	1LA8405-6PB	3000	24	13					
560	644	400	992	5390	96.2	96.3	0.86	980	570	2.7	73	88	1LA8407-6PB	3200	27	13					
630	725	450	993	6060	96.3	96.4	0.85	1120	640	2.6	75	90	1LA8453-6PB	4000	35	13					
710	817	450	993	6830	96.3	96.4	0.85	–	730 <sup>2)</sup>	2.5	75	90	1LA8455-6PB	4200	39	13					
800	920	450	993	7690	96.5	96.7	0.85	–	820 <sup>3)</sup>	2.5	75	90	1LA8457-6PB	4500	44	13					
8-pole: 750 rpm at 50 Hz, 900 rpm at 60 Hz <sup>1)</sup>																					
160	184	315	739	2070	94.4	94.5	0.81	300	176	2.4	65	79	1LA8315-8PB	1300	6.0	13					
200	230	315	739	2580	94.7	94.8	0.82	370	215	2.4	65	79	1LA8317-8PB	1500	7.3	13					
250	288	355	741	3220	95.2	95.3	0.82	460	270	2.4	67	82	1LA8355-8PB	2000	13	13					
315	362	355	741	4060	95.5	95.6	0.82	580	335	2.4	67	82	1LA8357-8PB	2200	16	13					
355	408	400	742	4570	95.6	95.7	0.82	650	380	2.6	69	84	1LA8403-8PB	2800	21	13					
400	460	400	742	5150	95.7	95.8	0.82	740	425	2.6	69	84	1LA8405-8PB	3000	24	13					
450	518	400	742	5790	95.8	95.9	0.82	830	480	2.6	69	84	1LA8407-8PB	3200	27	13					
500	575	450	744	6420	95.9	96.0	0.80	940	550	2.4	71	86	1LA8453-8PB	4000	35	13					
560	644	450	744	7190	96.0	96.1	0.81	1040	600	2.4	71	86	1LA8455-8PB	4200	39	13					
630	725	450	744	8090	96.1	96.2	0.81	1160	680	2.4	71	86	1LA8457-8PB	4500	44	13					
Voltages		No. of poles		Motor type		Version												Order code(s)			
50 Hz	400 VΔ/690 VY <sup>4)</sup>	6		1LA8315 ... 453	Standard												8	–			
		8		1LA8315 ... 457	Standard												8	–			
	690 VΔ <sup>4)</sup>	6		1LA8455 ... 457	Standard												7	–			
	400 VΔ	6		1LA8315 ... 453	Without additional charge												4	–			
		8		1LA8315 ... 457	Without additional charge												4	–			
	500 VΔ	6, 8		1LA8315 ... 457	Without additional charge												5	–			
Further voltages <sup>1)</sup>		For add. charges, code numbers, order codes and descriptions, see suppl. and special versions.															9	...			
For types of construction see suppl.				Motor type		Version												Order code(s)			
Without flange	IM B3			1LA8315 ... 457	Standard												0	–			
	IM V5, IM V6			1LA8315 ... 457	With additional charge												0	–			
With flange	IM V1 without protective cover			1LA8315 ... 457	With additional charge		Not for explosion-proof motors.												8	–	
	IM V1 with protective cover			1LA8315 ... 457	With additional charge		The "Second shaft extension" option (K16) is not possible.												4	–	
	IM B35			1LA8315 ... 457	With additional charge												6	–			
Special versions																	Order code(s)				
Options	For add. charges, order codes and descriptions, see suppl. and special versions.													1LA8 ... - ...	-Z	...+...+...+...					
Motor type 1LA8																					
315-6 317-6 355-6 356-6 357-6 403-6 405-6 407-6 453-6 455-6 457-6 315-8 317-8 355-8 357-8 403-8 405-8 407-8 453-8 455-8 457-8																					
Parallel feeders required																					
400 V	–	Yes	Yes	Yes	Yes	–	Yes	Yes	Yes	–	–	–	–	–	Yes	–	–	Yes	Yes	Yes	Yes
500 V	–	–	–	Yes	Yes	–	–	–	Yes	Yes	Yes	–	–	–	–	–	–	–	–	Yes	Yes
690 V	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Mechanical limit speed $n_{max}$ in rpm (limit speeds for reinforced bearings, order code K20, for 6-pole and 8-pole motors on request.)																					
Standard	2950	2950	2500	2500	2500	2200	2200	2200	2100	2100	2100	2950	2950	2500	2500	2200	2200	2200	2100	2100	2100
IM V1	–	–	–	–	–	2100	2100	2100	1800	1800	1800	–	–	–	–	2100	2100	2100	1800	1800	1800
Ex prot.	2350	2350	2100	2100	2100	1900	1900	1900	1700	1700	1700	2350	2350	2100	2100	1900	1900	1900	1700	1700	1700
Mechanical limit frequency $f_{max}$ in Hz (limit frequencies for reinforced bearings, order code K20, for 6-pole and 8-pole motors on request.)																					
Standard	147	147	125	125	125	110	110	110	105	105	105	196	196	166	166	146	146	146	140	140	140
IM V1	–	–	–	–	–	105	105	105	90	90	90	–	–	–	–	140	140	140	120	120	120
Ex prot.	117	117	105	105	105	95	95	95	85	85	85	156	156	140	140	126	126	126	113	113	113

<sup>1)</sup> Voltages for 60 Hz can be ordered with voltage code 9 and the appropriate order code.

<sup>2)</sup> Can be ordered for 400 VΔ 50 Hz as special version with voltage code 9 and order code L1Y (specify output, voltage and frequency).

<sup>3)</sup> Also available on request for 400 VΔ 50 Hz.

<sup>4)</sup> Operation is possible only with converter circuit (du/dt filter or sine-wave filter).