

# SIMOTICS N-compact Non-Standard Motors

Motors specially designed for converter-fed operation

Self-ventilated motors

Cast-iron series 1LA8 with special insulation for > 500 to 690 V

## Selection and ordering data

Operating values at rated output with sinusoidal infeed												Cast-iron series 1LA8 – with special insulation	$m_{IM\ B3}$	$J$	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, 690 V	$T_B/$ $I_{rated}$	$L_{pFA}$ , 50Hz, tolerance +3 dB(A)	$L_{WA}$ , 50Hz, tolerance +3 dB(A)				
kW	kW	FS	rpm	Nm	%	%		A		dB(A)	dB(A)				
• Cooling: Self-ventilated (IC 411)															
• Converter-fed operation: Specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages of > 500 to 690 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>															
240	270	315	2978	770	95.5	95.6	0.90	235	3.0	82 (75) <sup>2)</sup>	97 (90) <sup>2)</sup>	1LA8315-2PM	1300	2.7	10
300	335	315	2978	962	95.7	95.7	0.91	290	3.0	82 (75) <sup>2)</sup>	97 (90) <sup>2)</sup>	1LA8317-2PM	1500	3.3	10
345	385	355	2981	1105	95.7	95.7	0.90	335	2.6	77 <sup>3)</sup>	92 <sup>3)</sup>	1LA8353-2PM	1900	4.8	10
390	435	355	2981	1249	96.1	96.2	0.91	375	2.6	77 <sup>3)</sup>	92 <sup>3)</sup>	1LA8355-2PM	2000	5.3	10
485	545	355	2982	1553	96.5	96.6	0.91	460	2.6	77 <sup>3)</sup>	92 <sup>3)</sup>	1LA8357-2PM	2200	6.4	10
545	600	400	2986	1743	96.6	96.7	0.91	520	3.0	79 <sup>3)</sup>	94 <sup>3)</sup>	1LA8403-2PM	2800	8.6	10
610	670	400	2986	1951	96.6	96.7	0.91	580	3.1	79 <sup>3)</sup>	94 <sup>3)</sup>	1LA8405-2PM	3000	9.6	10
680	750	400	2986	2175	96.7	96.8	0.92	640	3.0	79 <sup>3)</sup>	94 <sup>3)</sup>	1LA8407-2PM	3200	11	10
775	–	450	2987	2478	96.7	96.8	0.92	730	2.8	81 <sup>3)</sup>	96 <sup>3)</sup>	1LA8453-2PM	4000	19	5
875	–	450	2987	2798	96.8	96.9	0.92	820	2.8	81 <sup>3)</sup>	96 <sup>3)</sup>	1LA8455-2PM	4200	21	5
970	–	450	2987	3101	96.9	97.0	0.93	900	2.8	81 <sup>3)</sup>	96 <sup>3)</sup>	1LA8457-2PM	4400	23	5
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz <sup>1)</sup>															
235	270	315	1485	1511	95.3	95.4	0.87	235	2.8	75	87	1LA8315-4PM	1300	3.6	13
290	335	315	1485	1865	95.4	95.5	0.87	290	2.8	75	87	1LA8317-4PM	1500	4.4	13
340	390	355	1488	2182	95.5	95.6	0.87	340	2.6	75	90	1LA8353-4PM	1900	6.1	13
385	445	355	1488	2471	95.7	95.8	0.87	385	2.6	75	90	1LA8355-4PM	2000	6.8	13
480	550	355	1488	3081	95.9	96.0	0.87	480	2.5	75	90	1LA8357-4PM	2200	8.5	13
545	625	400	1491	3491	96.0	96.1	0.88	540	2.6	78	93	1LA8403-4PM	2800	13	13
615	710	400	1491	3939	96.2	96.3	0.88	610	2.7	78	93	1LA8405-4PM	3000	14	13
690	795	400	1491	4420	96.4	96.5	0.89	670	2.6	78	93	1LA8407-4PM	3200	16	13
785	905	450	1492	5025	96.3	96.4	0.88	780	2.5	81	96	1LA8453-4PM	4000	23	10
880	1010	450	1492	5633	96.5	96.6	0.87	880	2.6	81	96	1LA8455-4PM	4200	26	10
980	1125	450	1492	6273	96.6	96.7	0.89	950	2.6	81	96	1LA8457-4PM	4400	28	10

Voltages		No. of poles	Motor type	Version		Order code(s)	
50 Hz	400 VΔ/690 VY	2	1LA8315 ... 357	Standard	8	–	
		4	1LA8315 ... 405	Standard	8	–	
	690 VΔ	2	1LA8403 ... 457	Standard	7	–	
		4	1LA8407 ... 457	Standard	7	–	
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 <sup>4)</sup>	With additional charge	8	–		
	IM V1 with protective cover	1LA8315 ... 457 <sup>4)</sup>	With additional charge	4	–		
	IM B35	1LA8315 ... 457 <sup>5)</sup>	With add.charge	6	–		

**Special versions**  
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

Parallel feeders required																					
400 V	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	Yes	Yes	Yes
690 V	–	–	–	–	–	–	–	–	–	Yes	Yes	–	–	–	–	–	–	–	–	Yes	Yes

**Mechanical limit speed  $n_{max}$  in rpm** (limit speeds for reinforced bearings, order code K20, for 4-pole motors on request.)

Standard	3600	3600	3600	3600	3600	3600	3600	3600	3000	3000	3000	3000	3000	2500	2500	2500	2200	2200	2200	2100	2100	2100
IM V1	–	–	3100	3100	3100	3100	3100	3100	–	–	–	–	–	–	–	–	2100	2100	2100	1800	1800	1800
Ex prot.	–	–	–	–	–	–	–	–	–	–	–	–	–	2650	2650	2350	2350	2350	2100	2100	1900	1900

**Mechanical limit frequency  $f_{max}$  in Hz** (limit frequencies for reinforced bearings, order code K20, for 4-pole motors on request.)

Standard	60	60	60	60	60	60	60	60	50	50	50	100	100	83	83	83	73	73	73	70	70	70
IM V1	–	–	52	52	52	52	52	52	–	–	–	–	–	–	–	–	70	70	70	60	60	60
Ex prot.	–	–	–	–	–	–	–	–	–	–	–	88	88	78	78	78	70	70	70	63	63	63

1) Voltages for 60 Hz can be ordered with voltage code 9 and the appropriate order code.  
 2) Low-noise version, 2-pole, 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) Not for 1LA8353 to 457 2-pole, 60 Hz.  
 5) Not for 1LA8453 to 457 2-pole, 60 Hz.

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Cast-iron series 1LA8 with special insulation for > 500 to 690 V

### Selection and ordering data (continued)

P <sub>rated</sub> , 50 Hz	P <sub>rated</sub> , 60 Hz 1)	Frame size	Operating values at rated output with sinusoidal infeed										Cast-iron series 1LA8 – with special insulation	m <sub>IM B3</sub>	J	Torque class					
			n <sub>rated</sub> , 50 Hz	T <sub>rated</sub> , 50 Hz	η <sub>rated</sub> , 50 Hz, 4/4	η <sub>rated</sub> , 50 Hz, 3/4	COS- φ <sub>rated</sub> , 50 Hz, 4/4	I <sub>rated</sub> , 50 Hz, 690 V	T <sub>p</sub> / I <sub>rated</sub>	L <sub>pfA</sub> , 50Hz, tolerance +3 dB(A)	L <sub>WA</sub> , 50Hz, tolerance +3 dB(A)	Order No.					▲ New	kg	kgm <sup>2</sup>	CL	
kW	kW	FS	rpm	Nm	%	%		A													
• Cooling: Self-ventilated (IC 411) • Converter-fed operation: Specially for operation on SINAMICS or SIMOVERT MASTERDRIVES with special insulation for voltages of > 500 to 690 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>																					
190	220	315	990	1833	95.0	95.2	0.85	196	2.7	68	82	1LA8315-6PM	1300	6.0	13						
235	270	315	990	2267	95.2	95.4	0.86	240	2.7	68	82	1LA8317-6PM	1500	7.3	13						
300	345	355	992	2888	95.7	95.7	0.86	305	2.8	71	86	1LA8355-6PM	2000	13	13						
340	390	355	992	3273	95.6	95.7	0.86	345	3.1	71	86	▲ 1LA8356-6PM	2200	15	13						
380	435	355	992	3658	95.9	96.0	0.86	385	2.9	71	86	1LA8357-6PM	2200	16	13						
435	500	400	993	4184	95.9	96.0	0.85	445	2.8	73	88	1LA8403-6PM	2800	21	13						
485	560	400	993	4664	96.0	96.1	0.86	490	2.8	73	88	1LA8405-6PM	3000	24	13						
545	625	400	993	5241	96.1	96.2	0.86	550	2.7	73	88	1LA8407-6PM	3200	27	13						
615	705	450	993	5915	96.3	96.4	0.84	640	2.7	75	90	1LA8453-6PM	4000	35	13						
690	795	450	993	6636	96.3	96.4	0.85	710	2.5	75	90	1LA8455-6PM	4200	39	13						
780	895	450	993	7502	96.4	96.6	0.85	800	2.6	75	90	1LA8457-6PM	4500	44	13						
8-pole: 750 rpm at 50 Hz, 900 rpm at 60 Hz <sup>1)</sup>																					
145	165	315	740	1871	94.1	94.2	0.79	164	2.5	65	79	1LA8315-8PM	1300	6.0	13						
180	205	315	740	2323	94.4	94.5	0.80	200	2.5	65	79	1LA8317-8PM	1500	7.3	13						
230	265	355	743	2956	95.0	95.1	0.80	255	2.4	67	82	1LA8355-8PM	2000	13	13						
290	335	355	743	3727	95.2	95.3	0.81	315	2.4	67	82	1LA8357-8PM	2200	16	13						
335	385	400	743	4306	95.5	95.6	0.80	365	2.6	69	84	1LA8403-8PM	2800	21	13						
375	430	400	743	4820	95.6	95.7	0.80	410	2.7	69	84	1LA8405-8PM	3000	24	13						
425	490	400	743	5463	95.7	95.8	0.79	470	2.7	69	84	1LA8407-8PM	3200	27	13						
485	560	450	745	6217	96.0	96.1	0.78	540	2.5	71	86	1LA8453-8PM	4000	35	13						
545	625	450	745	6986	96.1	96.2	0.78	610	2.5	71	86	1LA8455-8PM	4200	39	13						
600	690	450	745	7691	96.2	96.3	0.79	660	2.5	71	86	1LA8457-8PM	4500	44	13						
Voltagess	No. of poles		Motor type		Version		Order code(s)														
50 Hz	400 VΔ/690 VY	6	1LA8315 ... 453		<b>Standard</b>		8														
		8	1LA8315 ... 457		<b>Standard</b>		8														
	690 VΔ	6	1LA8455 ... 457		<b>Standard</b>		7														
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 supplements and special versions			Motor type		Version		Order code(s)														
Without flange	IM B3		1LA8315 ... 457		<b>Standard</b>		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																					
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	
500 V	-	-	-	Yes	Yes	-	-	-	Yes	Yes	Yes	-	-	-	-	-	-	-	-	Yes	Yes
690 V	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mechanical limit speed n <sub>max</sub> in rpm (limit speeds for reinforced bearings, order code K20, for 6-pole and 8-pole motors on request.)																					
Standard	2950	2950	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 protection	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 <sub>max</sub> 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 protection	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.