

SINAMICS S120

Line Modules and line-side components

Basic Line Modules in chassis format

Overview



A Basic Line Module converts an AC source into an unregulated DC supply. Basic Line Modules are used for applications in which no energy is returned to the supply or where the energy exchange between motor and generator axes takes place in the DC link. The connected Motor Modules are precharged via the thyristor gate control which supplies a DC voltage equal to 1.35 x the line voltage. Basic Line Modules are designed for connection to grounded-neutral (TN, TT) and non-grounded (IT) supply systems.

Design

The Basic Line Modules in chassis format feature the following connections as standard:

- 1 power connection
- 1 connection for the 24 V DC electronics power supply
- 1 DC link connection
- 3 DRIVE-CLiQ sockets

The status of the Basic Line Modules is indicated via two multi-color LEDs.

The scope of supply of the Basic Line Modules includes:

- 0.6 m (1.97 ft) DRIVE-CLiQ cable for connection to a CU320 or SIMOTION D Control Unit
- 1.45 m (4.76 ft) DRIVE-CLiQ cable for connection between the Control Unit and first Motor Module

Selection and ordering data

Infeed power kW (HP)	Basic Line Module in chassis format Order No.
Line voltage 380 V to 480 V 3 AC	
200 (300)	6SL3330-1TE34-2AA0
250 (400)	6SL3330-1TE35-3AA0
400 (600)	6SL3330-1TE38-2AA0
560 (800)	6SL3330-1TE41-2AA0
710 (1000)	6SL3330-1TE41-5AA0
Line voltage 660 V to 690 V 3 AC	
250 (400)	6SL3330-1TH33-0AA0
355 (476)	6SL3330-1TH34-3AA0
560 (800)	6SL3330-1TH36-8AA0
900 (1207)	6SL3330-1TH41-1AA0
1100 (1475)	6SL3330-1TH41-4AA0

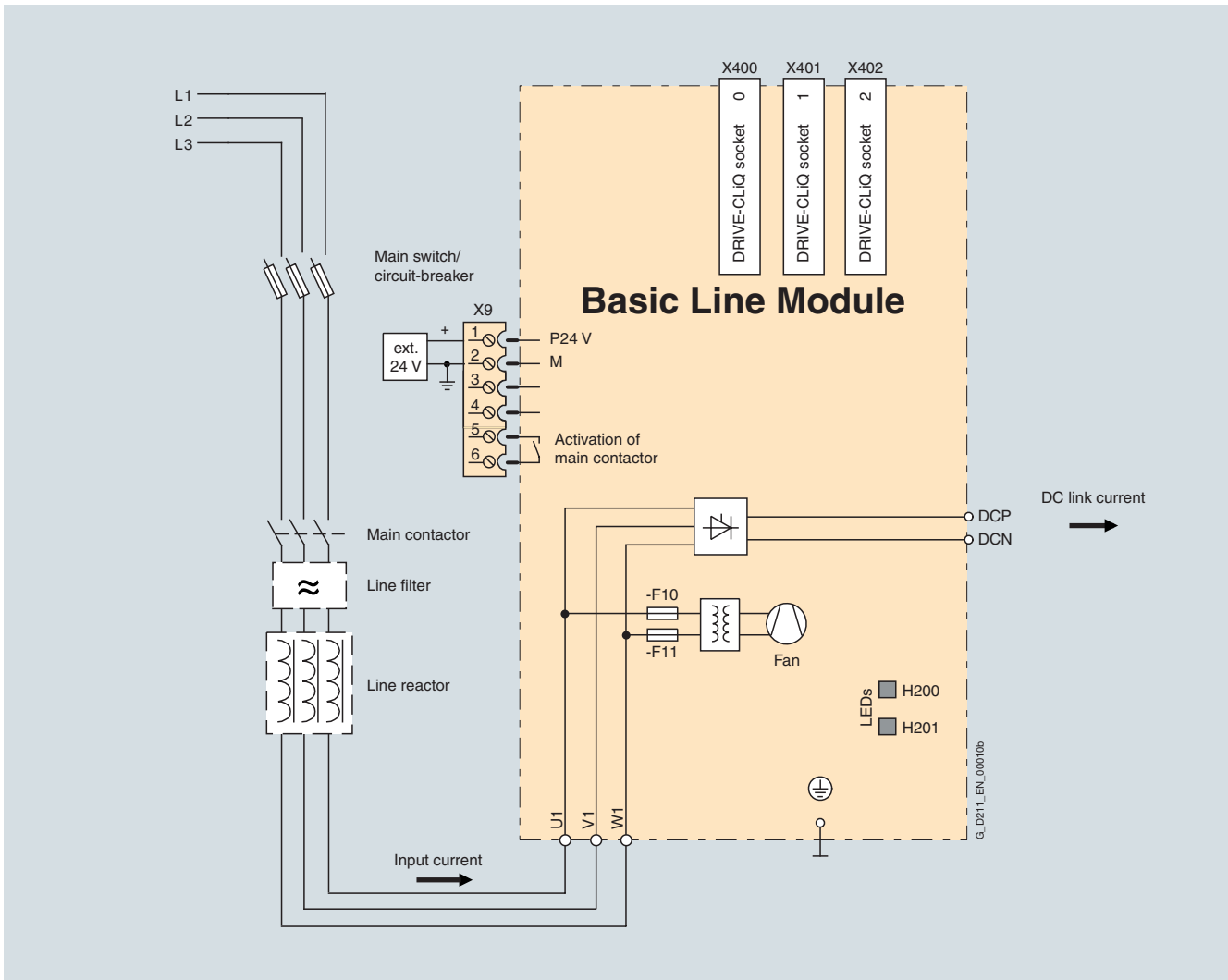
Warning signs in foreign languages

Warning signs in other languages can be placed on top of the standard warning signs in German or English.

The following signs are supplied with chassis format units: Chinese, Danish, Finnish, French, Greek, Italian, Japanese, Korean, Dutch, Polish, Portuguese, Russian, Swedish, Spanish, Czech and Turkish.

Integration

The Basic Line Module communicates with a CU320 or SIMOTION D Control Unit via DRIVE-CLiQ.



Connection example of Basic Line Module

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Basic Line Modules in chassis format

Technical data

General technical data

Electrical data	
Line connection voltage (up to 2000 m (6563 ft) above sea level)	380 V to 480 V 3 AC \pm 10% (– 15% < 1 min) or 660 V to 690 V 3 AC \pm 10% (– 15% < 1 min)
Power frequency	47 Hz to 63 Hz
Line power factor at rated output	
• Fundamental Power factor	> 0.96
• Total (λ)	0.75 to 0.93
Overvoltage category	Class III to EN 60664-1
DC link voltage	approx. 1.35 x line voltage ¹⁾
Electronics power supply	24 V DC – 15%/+ 20%
Main contactor control	
• Terminal strip X9/5-6	240 V AC/ max. 8 A 30 V DC/ max. 1 A
Radio interference suppression	
• Standard	No radio interference suppression (Category C3 to EN 61800-3 up to 300 m (984 ft) total cable length)
• With line filter	Category C2 to EN 61800-3
Ambient conditions	
Type of cooling	Forced air cooling through a built-in fan
Permissible ambient and coolant temperature (air) during operation for line-side components, Line Modules and Motor Modules	0 °C to + 40 °C (32 °F to +104° F) without derating, > 40 °C to + 55 °C (> 104 °F to +131 °F)see derating characteristics
Installation altitude	Up to 2000 m (6563 ft) above sea level without derating, > 2000 m (6563 ft) to 4000 m (13126 ft) above sea level see derating characteristics
Certificates	
Conformity	CE (low-voltage and EMC Directives)
Approvals	cULus (File No.: E192450)

¹⁾ The DC link voltage is unregulated and load-dependent. For further information see System Description.

Technical data (continued)

Line voltage 380 V to 480 V 3 AC		Basic Line Modules in chassis format				
		6SL3330-1TE34-2AA0	6SL3330-1TE35-3AA0	6SL3330-1TE38-2AA0	6SL3330-1TE41-2AA0	6SL3330-1TE41-5AA0
Infeed power P_{rated} with 400 V 3 AC with 460 V 3 AC ¹⁾	kW (HP)	200 (300)	250 (400)	400 (600)	560 (800)	710 (1000)
Infeed power for S6 duty (40%) P_{S6}	kW	On request	On request	On request	On request	On request
Max. infeed power P_{max} (HP)	kW	300 (402)	375 (503)	600 (805)	840 (1126)	1065 (1428)
Rated DC link current I_{rated_DC}	A	420	530	820	1200	1500
DC link current I_{H_DC}	A	328	413	640	936	1170
Max. DC link current I_{max_DC}	A	630	795	1230	1800	2250
Input current at $V_{ine} = 400$ V	A	365	460	710	1010	1265
Max. input current at $V_{ine} = 400$ V	A	547	690	1065	1515	1897
Max. current requirement 24 V DC electronics power supply	A	1.1	1.1	1.1	1.1	1.1
DC link capacitance	μF	7200	9600	14600	23200	29000
Max. DC link capacitance of drive group	μF	57600	76800	116800	185600	232000
Efficiency η		0.991	0.992	0.992	0.992	0.992
Power loss	kW	1.9	2.1	3.2	4.6	5.5
Cooling air requirement	m ³ /s (ft ³ /s)	0.17 (6)	0.17 (6)	0.17 (6)	0.36 (12.71)	0.36 (12.71)
Sound pressure level at 50/60 Hz	dB(A)	67/68	67/68	67/68	72/73	72/73
Power connection U1, V1, W1		Flange connection with M10 screw, max. cross section 2 × 185 mm ²	Flange connection with M10 screw, max. cross section 2 × 185 mm ²	Flange connection with M10 screw, max. cross section 2 × 185 mm ²	Flange connection with M12 screw, max. cross section 6 × 240 mm ²	Flange connection with M12 screw, max. cross section 6 × 240 mm ²
DC link connection DCP, DCN		Flange connection with M10 screw, max. cross section 2 × 185 mm ²	Flange connection with M10 screw, max. cross section 2 × 185 mm ²	Flange connection with M10 screw, max. cross section 2 × 185 mm ²	Flange connection with M12 screw, max. cross section 2 × 240 mm ²	Flange connection with M12 screw, max. cross section 2 × 240 mm ²
PE connection		On housing with M10 screw, max. cross section 2 × 185 mm ²	On housing with M10 screw, max. cross section 2 × 185 mm ²	On housing with M10 screw, max. cross section 2 × 185 mm ²	On housing with M10 screw, max. cross section 2 × 240 mm ²	On housing with M10 screw, max. cross section 2 × 240 mm ²
Max. cable length (total of all motor cables and DC link)	m (ft)	1500 (4921)	1500 (4921)	1500 (4921)	2250 (7382)	2250 (7382)
Degree of protection		IP00	IP00	IP00	IP00	IP00
Width	mm (inch)	305 (12)	305 (12)	305 (12)	305 (12)	305 (12)
Height	mm (inch)	1160 (45.67)	1160 (45.67)	1160 (45.67)	1650 (64.96)	1650 (64.96)
Depth	mm (inch)	351 (13.82)	351 (13.82)	351 (13.82)	550 (21.65)	550 (21.65)
Size		FB	FB	FB	GB	GB
Weight, approx.	kg (lb)	86 (190)	86 (190)	86 (190)	214 (472)	214 (472)

1) Nominal HP ratings are provided for ease of assigning components only. The Line Module outputs are dependent on the Motor Module loading and are to be dimensioned accordingly.

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Line Modules and line-side components

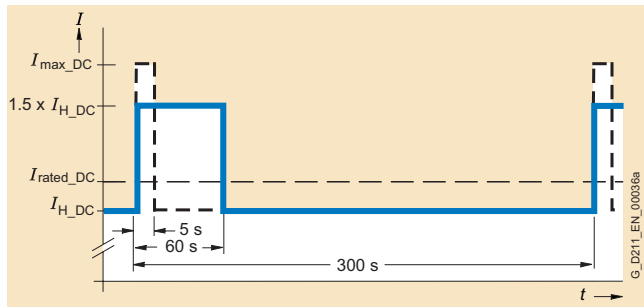
Basic Line Modules in chassis format

Technical data (continued)

Line voltage 660 V to 690 V 3 AC		Basic Line Modules in chassis format				
		6SL3330-1TH33-0AA0	6SL3330-1TH34-3AA0	6SL3330-1TH36-8AA0	6SL3330-1TH41-1AA0	6SL3330-1TH41-4AA0
Infeed power P_{rated} with 690 V 3 AC	kW	250	355	560	900	1100
Infeed power for S6 duty (40%) P_{S6}	kW	On request	On request	On request	On request	On request
Max. infeed power P_{max} (HP)	kW	375 (503)	532.5 (714)	840 (1126)	1350 (1810)	1650 (2213)
Rated DC link current $I_{\text{rated_DC}}$	A	300	430	680	1100	1400
DC link current I_{H_DC}	A	234	335	530	858	1092
Max. DC link current $I_{\text{max_DC}}$	A	450	645	1020	1650	2100
Input current at $V_{\text{line}} = 690$ V	A	260	375	575	925	1180
Max. input current at $V_{\text{line}} = 690$ V	A	390	562.5	862.5	1387.5	1770
Max. current requirement 24 V DC electronics power supply	A	1.1	1.1	1.1	1.1	1.1
DC link capacitance	μF	3200	4800	7300	11600	15470
Max. DC link capacitance of drive group	μF	25600	38400	58400	92800	123760
Efficiency η		0.994	0.994	0.995	0.994	0.995
Power loss	kW	1.5	2.1	3.0	5.4	5.8
Cooling air requirement	m^3/s (ft^3/s)	0.17 (6)	0.17 (6)	0.17 (6)	0.36 (12.71)	0.36 (12.71)
Sound pressure level at 50/60 Hz	dB(A)	67/68	67/68	67/68	72/73	72/73
Power connection U1, V1, W1		Flange connection with M10 screw, max. cross section $2 \times 185 \text{ mm}^2$ with adapter max. cross section $3 \times$ 240 mm^2	Flange connection with M10 screw, max. cross section $2 \times 185 \text{ mm}^2$ with adapter max. cross section $3 \times$ 240 mm^2	Flange connection with M10 screw, max. cross section $2 \times 185 \text{ mm}^2$ with adapter max. cross section $3 \times$ 240 mm^2	Flange connection for busbar connection with M12 screw or with adapter max. cross section $6 \times 240 \text{ mm}^2$	Flange connection for busbar connection with M12 screw or with adapter max. cross section $6 \times 240 \text{ mm}^2$
DC link connection DCP, DCN		Flange connection with M10 screw, max. cross section $2 \times 185 \text{ mm}^2$ with adapter max. cross section $3 \times$ 240 mm^2	Flange connection with M10 screw, max. cross section $2 \times 185 \text{ mm}^2$ with adapter max. cross section $3 \times$ 240 mm^2	Flange connection with M10 screw, max. cross section $2 \times 185 \text{ mm}^2$ with adapter max. cross section $3 \times$ 240 mm^2	Flange connection for busbar connection with M12 screw or with adapter max. cross section $6 \times 240 \text{ mm}^2$	Flange connection for busbar connection with M12 screw or with adapter max. cross section $6 \times 240 \text{ mm}^2$
PE connection		On housing with M10 screw, max. cross section $2 \times 185 \text{ mm}^2$	On housing with M10 screw, max. cross section $2 \times 185 \text{ mm}^2$	On housing with M10 screw, max. cross section $2 \times 185 \text{ mm}^2$	On housing with M12 screw, max. cross section $4 \times 240 \text{ mm}^2$	On housing with M12 screw, max. cross section $4 \times 240 \text{ mm}^2$
Max. cable length (total of all motor cables and DC link)	m (ft)	1500 (4921)	1500 (4921)	1500 (4921)	2250 (7382)	2250 (7382)
Degree of protection		IP00	IP00	IP00	IP00	IP00
Width	mm (inch)	305 (12)	305 (12)	305 (12)	305 (12)	305 (12)
Height	mm (inch)	1160 (45.67)	1160 (45.67)	1160 (45.67)	1650 (64.96)	1650 (64.96)
Depth	mm (inch)	351 (13.82)	351 (13.82)	351 (13.82)	550 (21.65)	550 (21.65)
Size		FB	FB	FB	GB	GB
Weight, approx.	kg (lb)	86 (190)	86 (190)	86 (190)	214 (472)	214 (472)

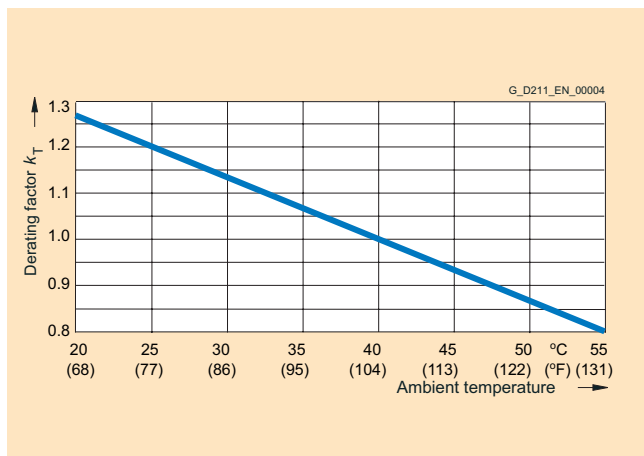
Characteristics

Overload capability



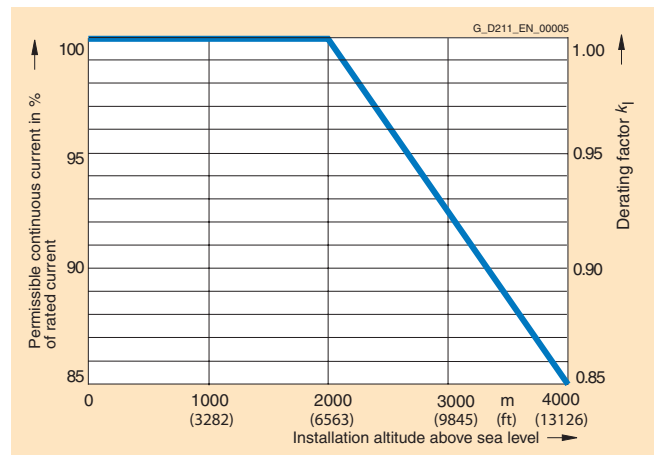
Overload capability

Derating characteristics

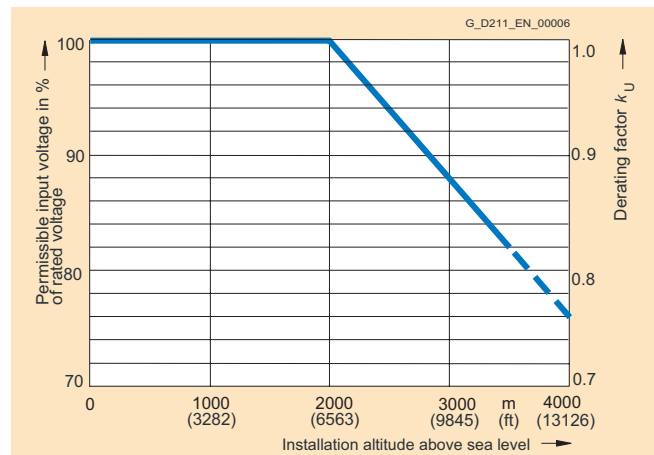


Current derating dependent on ambient temperature

Note: A derating factor $k_T > 1.0$ is to be taken into account only in conjunction with "current derating dependent on installation altitude". See also System description.



Current derating dependent on installation altitude



Voltage derating dependent on installation altitude

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Line Modules and line-side components

Basic Line Modules in chassis format

Line reactors

Overview



Line reactors reduce harmonic currents on the supply system and limit commutating dips in the Basic Line Module. For this reason, line reactors should always be used.

Selection and ordering data

Infeed power of the Basic Line Module kW (HP)	Suitable for Basic Line Module	Line reactor Order No.
Line voltage 380 V to 480 V 3 AC		
200 (300)	6SL3330-1TE34-2AA0	6SL3000-OCE35-1AA0
250 (400)	6SL3330-1TE35-3AA0	6SL3000-OCE35-1AA0
400 (600)	6SL3330-1TE38-2AA0	6SL3000-OCE37-7AA0
560 (800)	6SL3330-1TE41-2AA0	6SL3000-OCE41-0AA0
710 (1000)	6SL3330-1TE41-5AA0	6SL3000-OCE41-5AA0
Line voltage 660 V to 690 V 3 AC		
250	6SL3330-1TH33-0AA0	6SL3000-OCH32-7AA0
355	6SL3330-1TH34-3AA0	6SL3000-OCH34-8AA0
560	6SL3330-1TH36-8AA0	6SL3000-OCH36-0AA0
900	6SL3330-1TH41-1AA0	6SL3000-OCH41-2AA0
1100	6SL3330-1TH41-4AA0	6SL3000-OCH41-2AA0

Technical data

Line voltage 380 V to 480 V 3 AC		Line reactor 6SL3000-OCE35-1AA0		6SL3000- OCE37-7AA0	6SL3000- OCE41-0AA0	6SL3000- OCE41-5AA0
Max. thermal current $I_{th\ max}$	A	508	508	773	1022	1485
Power loss 50 Hz/60 Hz	kW	0.292/0.328	0.323/0.365	0.310/0.351	0.441/0.498	0.687/0.776
Line/load connection		M12 connecting lugs	M12 connecting lugs	M12 connecting lugs	M12 connecting lugs	M12 connecting lugs
Degree of protection		IP00	IP00	IP00	IP00	IP00
Width	mm (inch)	300 (11.81)	300 (11.81)	300 (11.81)	350 (13.78)	460 (18.11)
Height	mm (inch)	269 (10.59)	269 (10.59)	269 (10.59)	321 (12.64)	435 (17.13)
Depth	mm (inch)	212.5 (8.37)	212.5 (8.37)	212.5 (8.37)	211.5 (8.33)	235 (9.25)
Weight, approx.	kg (lb)	38.0 (84)	38.0 (84)	51.3 (113)	69.6 (154)	118 (260)
Suitable for Basic Line Module	Type	6SL3330-1TE34-2AA0	6SL3330-1TE35-3AA0	6SL3330-1TE38-2AA0	6SL3330-1TE41-2AA0	6SL3330-1TE41-5AA0

Line voltage 660 V to 690 V 3 AC		Line reactor 6SL3000- OCH32-7AA0	6SL3000- OCH34-8AA0	6SL3000- OCH36-0AA0	6SL3000-OCH41-2AA0	
Max. thermal current $I_{th\ max}$	A	270	482	597	1167	1167
Power loss 50 Hz/60 Hz	kW	0.245/0.277	0.424/0.478	0.430/0.485	0.620/0.697	0.693/0.783
Line/load connection		M10 connecting lugs	M12 connecting lugs	M12 connecting lugs	M12 connecting lugs	M12 connecting lugs
Degree of protection		IP00	IP00	IP00	IP00	IP00
Width	mm (inch)	270 (10.63)	350 (13.78)	350 (13.78)	460 (18.11)	460 (18.11)
Height	mm (inch)	248 (9.76)	321 (12.64)	321 (12.64)	435 (17.13)	435 (17.13)
Depth	mm (inch)	200 (7.87)	232.5 (9.15)	232.5 (9.15)	235 (9.25)	235 (9.25)
Weight, approx.	kg (lb)	27.9 (62)	55.6 (123)	63.8 (141)	147 (324)	147 (324)
Suitable for Basic Line Module	Type	6SL3330-1TH33-0AA0	6SL3330-1TH34-3AA0	6SL3330-1TH36-8AA0	6SL3330-1TH41-1AA0	6SL3330-1TH41-4AA0

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Line Modules and line-side components

Basic Line Modules in chassis format Line filters

Overview



In plants with strict EMC requirements, line filters work together with line reactors to restrict the conducted interference emanating from the power modules to the limit values of Category C2 as defined in EN 61800-3. Line filters are suited only for direct connection to TN (grounded) systems.

Selection and ordering data

Infeed power of the Basic Line Module kW (HP)	Suitable for Basic Line Module	Line filter Order No.
Line voltage 380 V to 480 V 3 AC		
200 (300)	6SL3330-1TE34-2AA0	6SL3000-0BE34-4AA0
250 (400)	6SL3330-1TE35-3AA0	6SL3000-0BE36-0AA0
400 (600)	6SL3330-1TE38-2AA0	6SL3000-0BE41-2AA0
560 (800)	6SL3330-1TE41-2AA0	6SL3000-0BE41-2AA0
710 (1000)	6SL3330-1TE41-5AA0	6SL3000-0BE41-6AA0
Line voltage 660 V to 690 V 3 AC		
250	6SL3330-1TH33-0AA0	6SL3000-0BG34-4AA0
355	6SL3330-1TH34-3AA0	6SL3000-0BG34-4AA0
560	6SL3330-1TH36-8AA0	6SL3000-0BG36-0AA0
900	6SL3330-1TH41-1AA0	6SL3000-0BG41-2AA0
1100	6SL3330-1TH41-4AA0	6SL3000-0BG41-2AA0

Technical data

Line voltage 380 V to 480 V 3 AC		Line filter			
		6SL3000-0BE34-4AA0	6SL3000-0BE36-0AA0	6SL3000-0BE41-2AA0	6SL3000-0BE41-6AA0
Rated current	A	440	600	1200	1600
Power loss	kW	0.049	0.055	0.137	0.182
Line/load connection L1, L2, L3 / L1', L2', L3'		M10 connecting lugs	M10 connecting lugs	M12 connecting lugs	M12 connecting lugs
PE connection		On housing with M8 bolt	On housing with M10 bolt	On housing with M10 bolt	On housing with M10 bolt
Degree of protection		IP00	IP00	IP00	IP00
Width	mm (inch)	360 (14.17)	400 (15.75)	425 (16.73)	505 (19.88)
Height	mm (inch)	240 (9.45)	265 (10.43)	265 (10.43)	265 (10.43)
Depth	mm (inch)	116 (4.57)	140 (5.51)	145 (5.71)	145 (5.71)
Weight, approx.	kg (lb)	12.3 (27)	19.0 (42)	25.2 (56)	28.8 (64)
Suitable for Basic Line Module	Type	6SL3330-1TE34-2AA0	6SL3330-1TE35-3AA0	6SL3330-1TE38-2AA0 6SL3330-1TE41-5AA0	6SL3330-1TE41-5AA0

Line voltage 660 V to 690 V 3 AC		Line filter		
		6SL3000-0BG34-4AA0	6SL3000-0BG36-0AA0	6SL3000-0BG41-2AA0
Rated current	A	440	600	1200
Power loss	kW	0.049	0.055	0.137
Line/load connection L1, L2, L3 / L1', L2', L3'		M10 connecting lugs	M10 connecting lugs	M12 connecting lugs
PE connection		On housing with M8 bolt	On housing with M10 bolt	On housing with M10 bolt
Degree of protection		IP00	IP00	IP00
Width	mm (inch)	360 (14.17)	360 (14.17)	425 (16.73)
Height	mm (inch)	240 (9.45)	240 (9.45)	265 (10.43)
Depth	mm (inch)	116 (4.57)	116 (4.57)	145 (5.71)
Weight, approx.	kg (lb)	12.3 (27)	19.0 (42)	25.2 (56)
Suitable for Basic Line Module	Type	6SL3330-1TH33-0AA0 6SL3330-1TH34-3AA0	6SL3330-1TH36-8AA0	6SL3330-1TH41-1AA0 6SL3330-1TH41-4AA0

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Line Modules and line-side components

Basic Line Modules in chassis format Recommended line-side components

Overview

Assignment of line-side power components to Basic Line Modules in chassis format

Suitable line-side power components are assigned depending on the power rating of the Basic Line Module.

The tables below list recommended components.

Further information about the main contactors, switch disconnectors, fuses and circuit-breakers specified in the tables can be found in Catalogs LV 1, LV IT and ET BI.¹⁾

Infeed power	Input current	Suitable for Basic Line Module	Main contactor	Fixed-mounted circuit-breaker	Switch disconnector without handle and shaft	Switch disconnector with handle and shaft
kW (HP)	A	Type 6SL3330-...	Type	Order No.	Order No.	Order No.
Line voltage 380 V to 480 V 3 AC						
200 (300)	365	1TE34-2AA0	3RT1075-...	–	3KL6130-1AB02	3KL6130-1EB02
250 (400)	460	1TE35-3AA0	3RT1076-...	–	3KL6130-1AB02	3KL6130-1EB02
400 (600)	710	1TE38-2AA0	3RT1066-... (x 3)	–	3KL6230-1AB02	3KL6230-1EB02
560 (800)	1010	1TE41-2AA0	–	3WL1112-2BB34-4AN2-Z C22	–	–
710 (1000)	1265	1TE41-5AA0	–	3WL1116-2BB34-4AN2-Z C22	–	–
Line voltage 660 V to 690 V 3 AC						
250	260	1TH33-0AA0	3RT1066-...	–	3KL5730-1AB01	3KL5730-1EB01
355	375	1TH34-3AA0	3RT1476-6AP36	–	3KL6130-1AB02	3KL6130-1EB02
560	575	1TH36-8AA0	3RT1476-6AP36	–	3KL6130-1AB02	3KL6130-1EB02
900	925	1TH41-1AA0	–	3WL1210-4BB34-4AN2-Z C22	–	–
1100	1180	1TH41-4AA0	–	3WL1212-4BB34-4AN2-Z C22	–	–

Infeed power	Input current	Suitable for Basic Line Module	Cable protection fuse		Cable protection fuse incl. semiconductor protection	
kW (HP)	A	Type 6SL3330-...	Order No.	Rated current A	Order No.	Rated current A
Line voltage 380 V to 480 V 3 AC						
200 (300)	365	1TE34-2AA0	3NA3365	500	3NE1333-2	450
250 (400)	460	1TE35-3AA0	3NA3372	630	3NE1334-2	500
400 (600)	710	1TE38-2AA0	3NA3475	800	3NE1448-2^{*)}	800
560 (800)	1010	1TE41-2AA0	3NA3482	1250	3NE1435-2 (x 2)	2 × 560
710 (1000)	1265	1TE41-5AA0	3NA3475 (x 2)	2 × 800	3NE1437-2 (x 2)	2 × 710
Line voltage 660 V to 690 V 3 AC						
250	260	1TH33-0AA0	3NA3252-6	315	3NE1230-2	315
355	375	1TH34-3AA0	3NA3365-6	500	3NE1333-2^{*)}	450
560	575	1TH36-8AA0	3NA3252-6 (x 2)	2 × 315	3NE1436-2^{*)}	630
900	925	1TH41-1AA0	3NA3365-6 (x 2)	2 × 500	3NE1334-2 (x 2)	2 × 500
1100	1180	1TH41-4AA0	3NA3365-6 (x 3)	3 × 500	3NE1436-2^{*)} (x 2)	2 × 630

¹⁾ Component selections are per IEC standards and not necessarily in accordance with UL or NEC requirements. For NEMA components please see North American Industrial Products Catalog and Speedfax Catalog.

^{*)} No semiconductor protection.

Overview



Smart Line Modules are non-regulated feed/feedback units (diode bridge for incoming supply; line-commutated feedback via IGBTs) with 100% regenerative feedback power. The regenerative feedback capability of the modules can be deactivated by means of a digital input. Smart Line Modules are designed for connection to grounded-neutral (TN, TT) and non-grounded (IT) supply systems.

The DC link is pre-charged via integrated precharging resistors.

Design

The Smart Line Modules in booksize format feature the following interfaces as standard:

- 1 power connection via screw-type terminals
- 1 connection for the 24 V DC electronics power supply via the 24 V terminal adapter included in the scope of supply
- 1 DC link connection via integrated DC link busbars
- 2 PE (protective earth) connections
- 2 digital inputs (5 kW (5 HP) and 10 kW (10 HP) on Smart Line Modules only)
- 1 x digital output (5 kW (5 HP) and 10 kW (10 HP) on Smart Line Modules only)
- 3 DRIVE-CLiQ sockets (16 kW (18 HP) and 36 kW (40 HP) on Smart Line Modules only)

The status of the Smart Line Modules is indicated via two multi-color LEDs.

The signal cable shield can be connected to the Line Module by means of a shield connection terminal, e.g. Weidmüller type KLBU 3-8 SC.

The scope of supply of the Smart Line Modules includes:

- DRIVE-CLiQ cable for connection to the Control Unit on the immediate left for drive control (on 16 kW (18 HP) and 36 kW (40 HP) Smart Line Modules only)
- DRIVE-CLiQ cable (length depends on module width) to connect Smart Line Modules to adjacent Motor Module
- Jumper for connecting the 24 V DC busbar to the adjacent Motor Module
- 24 V terminal adapter (X24)
- Connector X21 for digital inputs and outputs
- Connector X22 for digital inputs and outputs (5 kW (5 HP) and 10 kW (10 HP) on Smart Line Modules only)
- Connector X1 for line supply connection (5 kW (5 HP) and 10 kW (10 HP) on Smart Line Modules only)

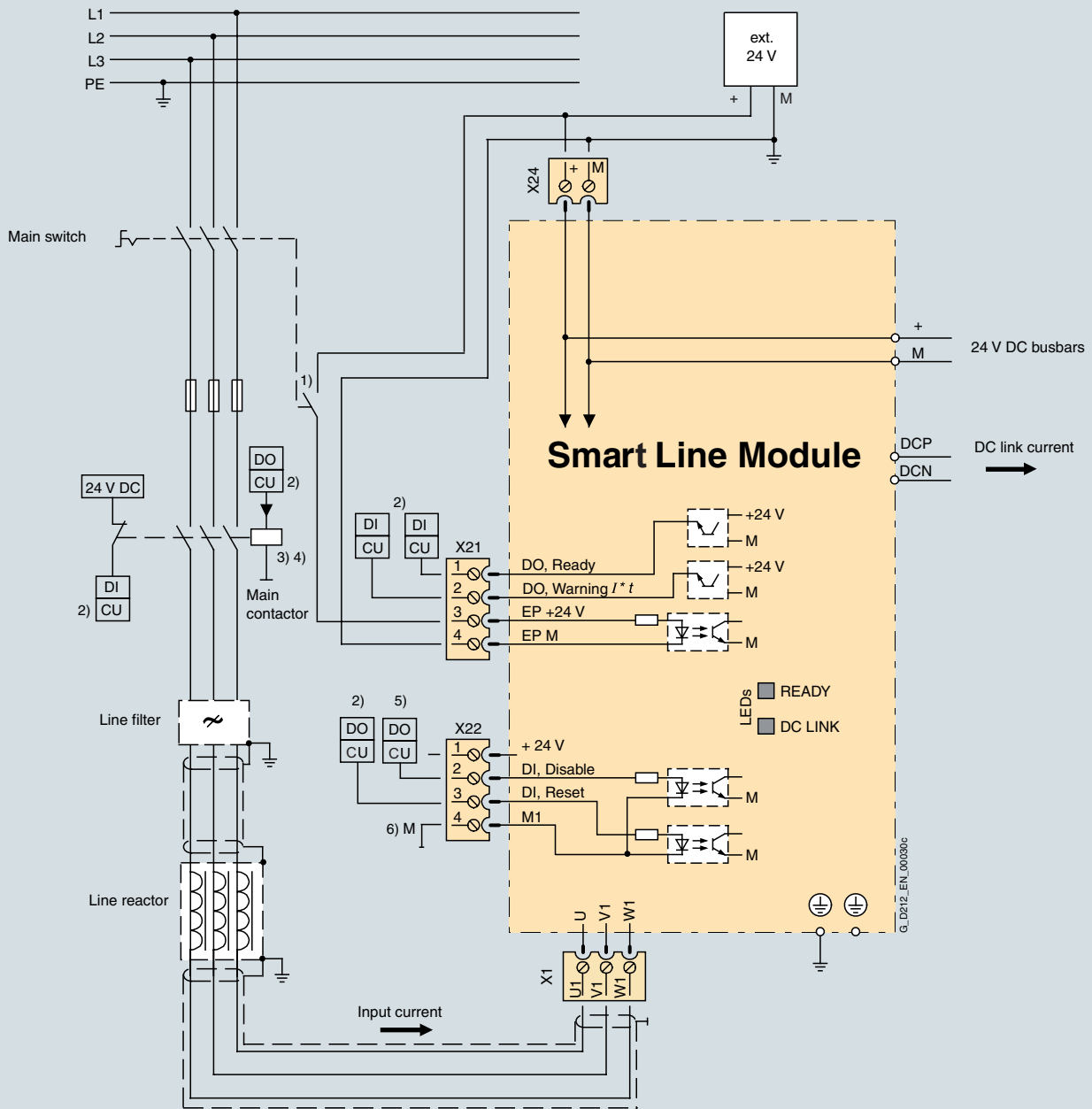
SINAMICS S120

Line Modules and line-side components

Smart Line Modules in booksize format

Integration

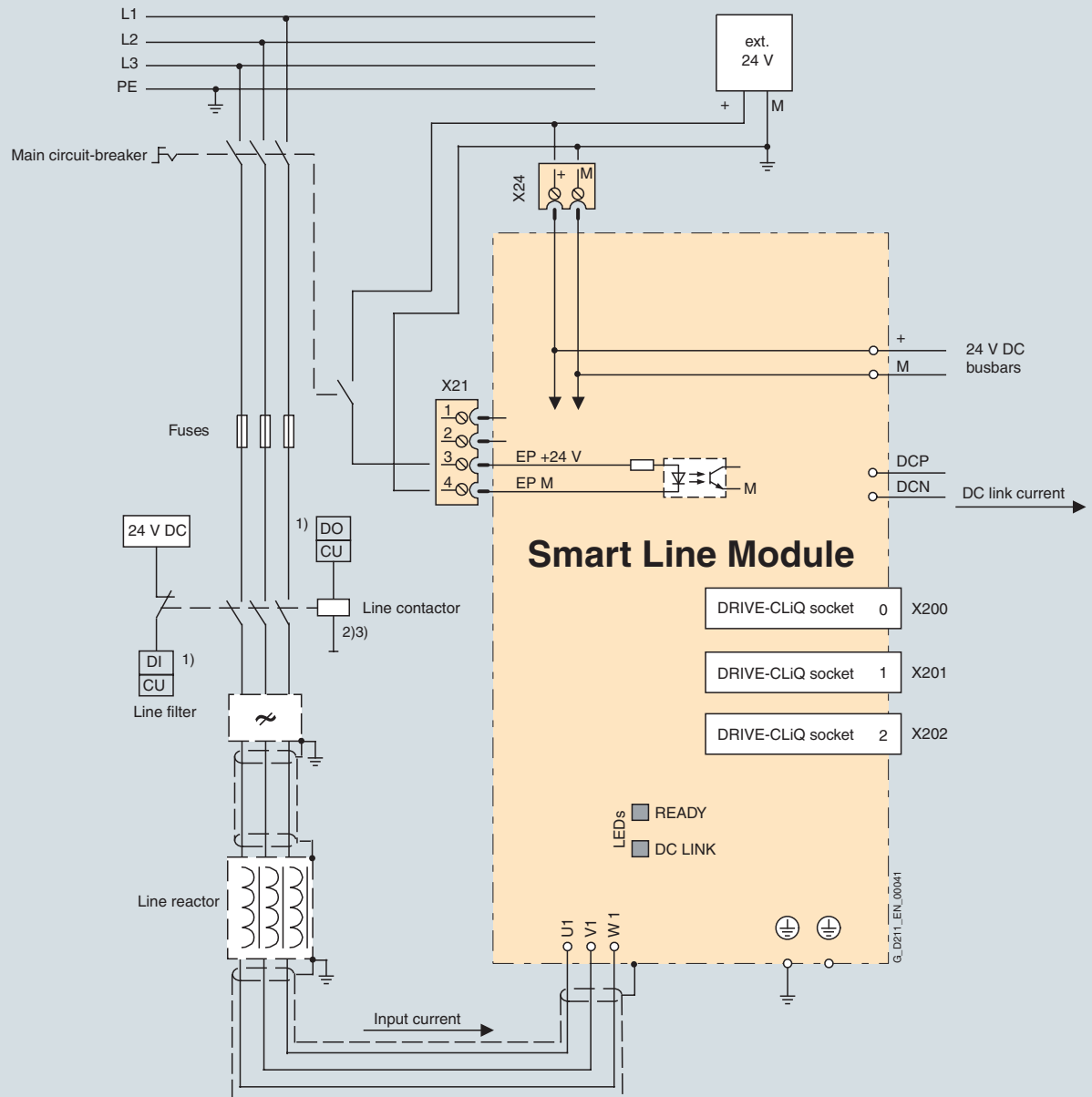
2



- 1) Leading NC contact $t > 10$ ms, 24 V DC and ground must be connected for operation.
- 2) Digital input (DI) or digital output (DO) controlled by the Control Unit.
- 3) No additional load permitted downstream of the main contactor.
- 4) The current capacity of the digital output (DO) must be taken into account; an output interface element may have to be used.
- 5) Digital output (DO) = High means: feedback deactivated (a jumper can be inserted between X22 pins 1 and 2 for permanent deactivation).
- 6) X22 pin 4 must be connected to ground (ext. 24 V).

Connection example of 5 kW (5 HP) and 10 kW (10 HP) Smart Line Modules

Integration (continued)



- 1) Digital input (DI) or digital output (DO), controlled via Control Unit.
- 2) No additional load permitted downstream of the line contactor.
- 3) The current load of the digital output (DO) must be observed; an output interface may have to be used.

Connection example of 16 kW (18 HP) and 36 kW (40 HP) Smart Line Modules

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Line Modules and line-side components

Smart Line Modules in booksize format

Technical data

General technical data

Electrical data	
Line connection voltage (up to 2000 m (6563 ft) above sea level)	380 V to 480 V 3 AC $\pm 10\%$ (– 15% < 1 min)
Power frequency	47 Hz to 63 Hz
Line power factor at rated output	
• Fundamental Power Factor	> 0.96
• Total (λ)	0.65 to 0.90
Overvoltage category	Class III to EN 60664-1
DC link voltage	approx. 1.35 x line voltage ¹⁾
Electronics power supply	24 V DC – 15%/+ 20%
Radio interference suppression	
• Standard	No radio interference suppression
• With line filter	Class A1 to EN 55011 and Category C2 to EN 61800-3
Ambient conditions	
Type of cooling	Forced air cooling through a built-in fan
Permissible ambient and coolant temperature (air) during operation for line-side components, Line Modules and Motor Modules	0 °C to + 40 °C (32 °F to +104°F) without derating, > 40°C to + 55 °C (> 104 °F to +131 °F) see derating characteristics
Installation altitude	Up to 1000 m (1328 ft) above sea level without derating, > 1000 m (1328 ft) to 4000 (13126 ft) m above sea level see derating characteristics
Certificates	
Conformity	CE (low-voltage and EMC Directives)
Approvals	cULus (File No.: E192450)

¹⁾ The DC link voltage is unregulated and load-dependent. For further information see System Description.

Technical data (continued)

Line voltage 380 V to 480 V 3 AC	Smart Line Modules in booksize format				
		6SL3130-6AE15-0AA0	6SL3130-6AE21-0AA0	–	–
Internal air cooling					
Internal air cooling with varnished modules		6SL3130-6AE15-0AB0	6SL3130-6AE21-0AB0	6SL3130-6TE21-6AB0	6SL3130-6TE23-6AB0
External air cooling		6SL3131-6AE15-0AA0	6SL3131-6AE21-0AA0	–	–
Rated feed/feedback power P_{rated} with 380 V 3 AC with 460 V 3 AC ²⁾	kW (HP)	5 (5)	10 (10)	16 (18)	36 (40)
I/RF power for S6 duty (40%) P_{S6}	kW	6.5	13	21	47
Max. I/RF power P_{max}	kW	10	20	35	70
DC link current at 600 V DC	A	8.3	16.6	27	60
DC link current for S6 duty (40%)	A	11	22	35	79
Max. DC link current	A	16.6	33.2	59	117
Rated input current with 380 V 3 AC	A	12	24	26	58
Input current for S6 duty (40%)	A	15.6	31.2	35	79
Max. input current	A	22	44	59	117
Max. current requirement 24 V DC electronics power supply	A	1.0	1.3	1.1	1.5
24 V DC busbar current capacity	A	20	20	20	20
DC link capacitance	μF	220	330	710	1410
Max. DC link capacitance of drive group	μF	6000	6000	20000	20000
DC link busbar current capacity	A	100	100	100	100
Efficiency η		0.98	0.98	0.99	0.99
Power loss ¹⁾ with internal air cooling	kW	0.09	0.17	0.17	0.37
Power loss ¹⁾ with external air cooling int./ext.	kW	0.04/0.05	0.065/0.105	–	–
Cooling air requirement	m ³ /s (ft ³ /s)	0.008 (0.283)	0.008 (0.283)	0.016 (0.565)	0.031 (1.095)
Sound pressure level	dB(A)	< 60	< 60	< 60	< 60
Power connection U1, V1, W1		Screw-type terminals 2.5 mm ² to 6 mm ² (X1)	Screw-type terminals 2.5 mm ² to 6 mm ² (X1)	Screw-type terminals 2.5 mm ² to 10 mm ² (X1)	M6 screw studs for ring terminal ends 2.5 mm ² to 50 mm ² (X1)
Shield connection		Cable shield connec- tion plate integrated into the connector	Cable shield connec- tion plate integrated into the connector	Cable shield connec- tion plate integrated into the connector	see Accessories
PE connection		On housing with M5 screw	On housing with M5 screw	On housing with M5 screw	On housing with M6 screw
Max. cable length (total of all motor power cables and DC link)	m (ft)	350 (1150) shielded 560 (1838) unshielded	350 (1150) shielded 560 (1838) unshielded	350 (1150) shielded 560 (1838) unshielded	350 (1150) shielded 560 (1838) unshielded
Degree of protection		IP20	IP20	IP20	IP20
Width	mm (inch)	50 (1.97)	50 (1.97)	100 (3.94)	150 (5.91)
Height	mm (inch)	380 (14.96)	380 (14.96)	380 (14.96)	380 (14.96)
Depth with internal air cooling	mm (inch)	270 (10.63)	270 (10.63)	270 (10.63)	270 (10.63)
Depth with external air cooling on/behind mounting surface	mm (inch)	226/66.5 (8.9/2.6)	226/66.5 (8.9/2.6)	–	–
Approx. weight with internal air cooling	kg (lb)	4.7 (10)	4.8 (11)	7 (15)	10.3 (23)
Approx. weight with external air cooling	kg (lb)	5.3 (12)	5.4 (12)	–	–

¹⁾ Power loss of Smart Line Module at rated output without losses of 24 V DC electronics power supply.

²⁾ Nominal HP ratings are provided for ease of assigning components only. The Line Module outputs are dependent on the Motor Module loading and are to be dimensioned accordingly.

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Line Modules and line-side components

Smart Line Modules in booksize format

Selection and ordering data

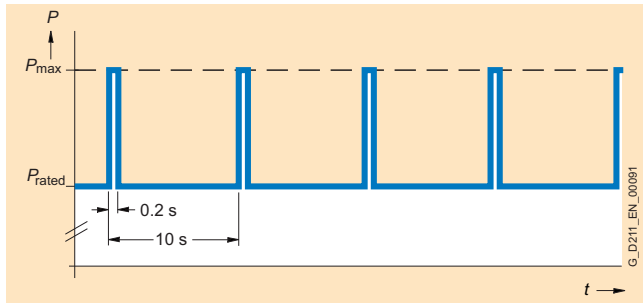
Rated infeed power kW (HP)	Smart Line Module in booksize format		
	Internal air cooling Order No.	Internal air cooling with varnished modules Order No.	External air cooling Order No.
Line voltage 380 V to 480 V 3 AC			
5 (5)	6SL3130-6AE15-0AA0	6SL3130-6AE15-0AB0	6SL3131-6AE15-0AA0
10 (10)	6SL3130-6AE21-0AA0	6SL3130-6AE21-0AB0	6SL3131-6AE21-0AA0
16 (18)	–	6SL3130-6TE21-6AB0	–
36 (40)	–	6SL3130-6TE23-6AB0	–

Accessories

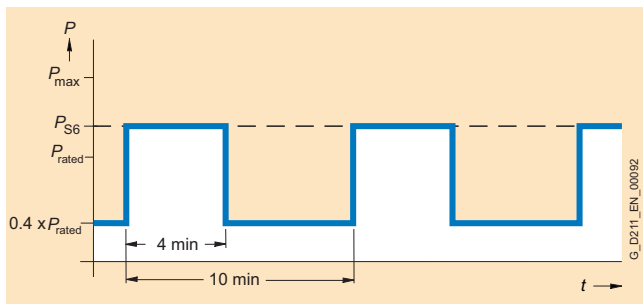
Description	Order No.
Shield connection kit for Line/Motor Modules in booksize format with a width of 150 mm (5.91 in)	6SL3162-1AF00-0AA0
DC link supply adapter for direct infeed of DC link voltage <ul style="list-style-type: none"> Screw-type terminals 0.5 mm² to 10 mm² for Line Modules and Motor Modules in booksize format with a width of 50 mm (1.97 in) or 100 mm (3.94 in) Screw-type terminals 35 mm² to 95 mm² for Line Modules and Motor Modules in booksize format with a width of 150 mm (5.91 in), 200 mm (7.87 in) and 300 mm (11.81 in) 	6SL3162-2BD00-0AA0 6SL3162-2BM00-0AA0
DC link adapters (2x) for multi-tier configuration Screw-type terminals 35 mm ² to 95 mm ² for all Line Modules and Motor Modules in booksize format	6SL3162-2BM01-0AA0
24 V terminal adapter for all Line Modules and Motor Modules in booksize format	6SL3162-2AA00-0AA0
24 V jumper for connection of the 24 V busbars (for booksize format)	6SL3162-2AA01-0AA0
Warning signs in foreign languages This set of foreign language warning signs can be placed on top of the standard German or English signs. One sign in each of the following languages is provided in each set: Chinese Simplified, Danish, Dutch, Finnish, French, Greek, Italian, Japanese, Korean, Portuguese, Spanish and Swedish.	6SL3166-3AB00-0AA0

Characteristics

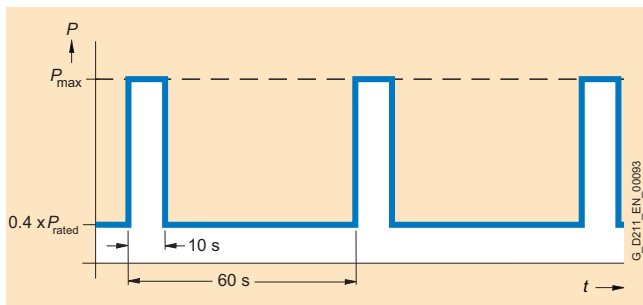
Overload capability



Load cycle with previous load

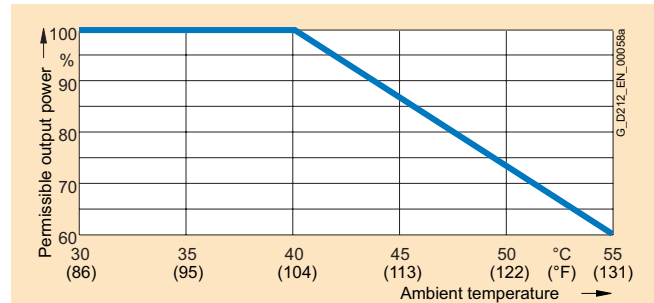


S6 load cycle with previous load

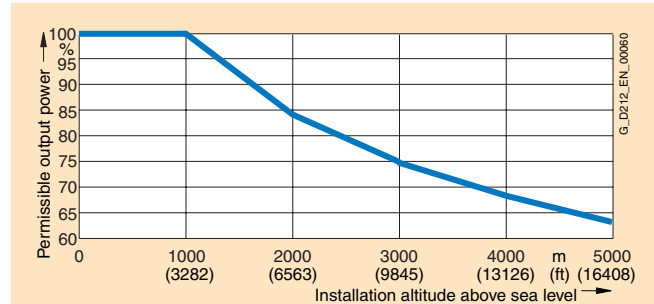


S6 load cycle with previous load

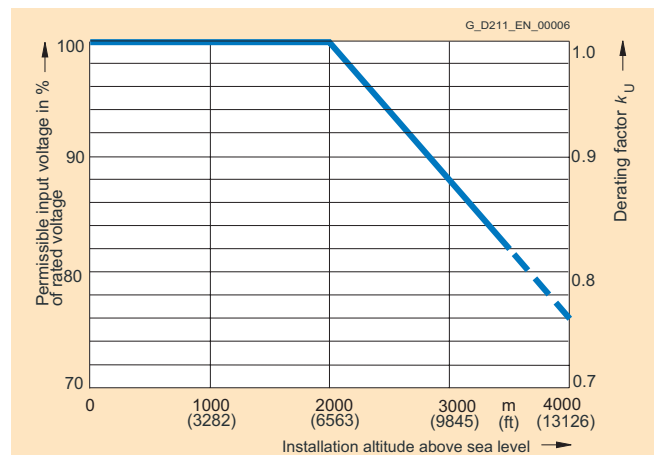
Derating characteristics



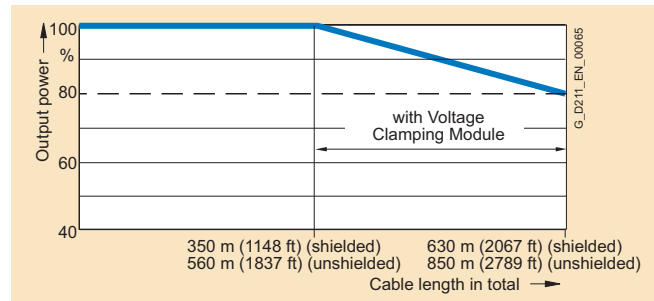
Output rating dependent on ambient temperature



Output rating dependent on installation altitude



Voltage derating dependent on installation altitude



Output rating dependent on total cable length

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Line Modules and line-side components

Smart Line Modules in booksize format Line reactors

Overview



Smart Line Modules are not warranted to operate without the specified line reactors. The use of other makes of line reactor can lead to malfunctions or irreparable damage to equipment.

Selection and ordering data

Rated infeed power of the Smart Line Module kW (HP)	Suitable for Smart Line Module	Line reactor Order No.
Line voltage 380 V to 480 V 3 AC		
5 (5)	6SL3130-6AE15-0AA0 6SL3130-6AE15-0AB0 6SL3131-6AE15-0AA0	6SL3000-OCE15-0AA0
10 (10)	6SL3130-6AE21-0AA0 6SL3130-6AE21-0AB0 6SL3131-6AE21-0AA0	6SL3000-OCE21-0AA0
16 (18)	6SL3130-6TE21-6AB0	6SL3000-OCE21-6AA0
36 (40)	6SL3130-6TE23-6AB0	6SL3000-OCE23-6AA0

Technical data

Line voltage 380 V to 480 V 3 AC		Line reactor			
		6SL3000-OCE15-0AA0	6SL3000-OCE21-0AA0	6SL3000-OCE21-6AA0	6SL3000-OCE23-6AA0
Rated current	A	14	28	35	69
Power loss	kW	0.062	0.116	0.11	0.17
Line/load connection 1U1, 1V1, 1W1 / 1U2, 1V2, 1W2		4 mm ² screw-type terminals	10 mm ² screw-type terminals	10 mm ² screw-type terminals	16 mm ² screw-type terminals
PE connection		4 mm ² screw-type terminals	10 mm ² screw-type terminals	10 mm ² screw-type terminals	16 mm ² screw-type terminals
Degree of protection		IP20	IP20	IP20	IP20
Width	mm (inch)	150 (5.91)	177 (6.97)	219 (8.62)	228 (8.98)
Height	mm (inch)	175 (6.89)	196 (7.72)	180 (7.09)	235 (9.25)
Depth	mm (inch)	90 (3.54)	110 (4.33)	144 (5.67)	224 (8.82)
Weight, approx.	kg (lb)	3.7 (8)	7.5 (17)	9.5 (21)	17 (38)
Suitable for Smart Line Module	Type	6SL3130-6AE15-0AA0 6SL3130-6AE15-0AB0 6SL3131-6AE15-0AA0	6SL3130-6AE21-0AA0 6SL3130-6AE21-0AB0 6SL3131-6AE21-0AA0	6SL3130-6TE21-6AB0	6SL3130-6TE23-6AB0

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Line Modules and line-side components

Smart Line Modules in booksize format
Line filters

Overview



In plants with strict EMC requirements, line filters work together with line reactors to restrict the conducted interference emanating from the Power Modules to the limit values of Class A1 as defined in EN 55011 and Category C2 as defined in EN 61800-3. Line filters are suited only for direct connection to TN (grounded) systems.

Selection and ordering data

Rated infeed power of the Smart Line Module kW (HP)	Suitable for Smart Line Module	Line filter Order No.
Line voltage 380 V to 480 V 3 AC		
5 (5)	6SL3130-6AE15-0AA0 6SL3130-6AE15-0AB0 6SL3131-6AE15-0AA0	6SL3000-0HE15-0AA0
10 (10)	6SL3130-6AE21-0AA0 6SL3130-6AE21-0AB0 6SL3131-6AE21-0AA0	6SL3000-0HE21-0AA0
16 (18)	6SL3130-6TE21-6AB0	6SL3000-0BE21-6DA0
36 (40)	6SL3130-6TE23-6AB0	6SL3000-0BE23-6DA0

Technical data

Line voltage 380 V to 480 V 3 AC		Line filter			
		6SL3000-0HE15-0AA0	6SL3000-0HE21-0AA0	6SL3000-0BE21-6DA0	6SL3000-0BE23-6DA0
Rated current	A	16	25	36	65
Power loss	W	20	20	6	10
Line/load connection L1, L2, L3 / U, V, W		10 mm ² screw-type terminals	10 mm ² screw-type terminals	10 mm ² screw-type terminals	35 mm ² screw-type terminals
PE connection		On housing with M6 bolt	On housing with M6 bolt	On housing with M6 bolt	On housing with M6 bolt
Degree of protection		IP20	IP20	IP20	IP20
Width	mm (inch)	60 (2.36)	60 (2.36)	50 (1.97)	75 (2.95)
Height	mm (inch)	285 (11.22)	285 (11.22)	420 (16.54)	420 (16.54)
Depth	mm (inch)	122 (4.8)	122 (4.8)	226 (8.9)	226 (8.9)
Weight, approx.	kg(lb)	3.8 (8)	5.7 (13)	5.0 (11)	6.5 (14)
Suitable for Smart Line Module	Type	6SL3130-6AE15-0AA0 6SL3130-6AE15-0AB0 6SL3131-6AE15-0AA0	6SL3130-6AE21-0AA0 6SL3130-6AE21-0AB0 6SL3131-6AE21-0AA0	6SL3130-6TE21-6AB0	6SL3130-6TE23-6AB0

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Line Modules and line-side components

Smart Line Modules in booksize format Recommended line-side components

Overview

Assignment of line-side power components to Smart Line Modules in booksize format

Suitable line-side power components are assigned depending on the power rating of the Smart Line Module.

The tables below list recommended components.

Further information about the main contactors, switch disconnectors, fuses and circuit-breakers specified in the tables can be found in Catalogs LV 1, LV 1T and ET B1. ¹⁾

Rated infeed power kW (HP)	Assignment to Smart Line Module Type 6SL3...	Main contactor Type	Circuit-breaker Order No.	Main switch Order No.	Fuse switch disconnecter Order No.
Line voltage 380 V to 480 V 3 AC					
5 (5)	130-6AE15-0AA0 130-6AE15-0AB0 131-6AE15-0AA0	3RT1023-...	3RV1031-4BA10	3LD2003-0TK51	3NP4010-0CH01
10 (10)	130-6AE21-0AA0 130-6AE21-0AB0 131-6AE21-0AA0	3RT1026-...	3RV1031-4FA10	3LD2203-0TK51	3NP4010-0CH01
16 (18)	130-6AE21-6AB0	3RT1035-...	3RV1031-4FA10	3LD2504-0TK51	3NP4010-0CH01
36 (40)	130-6AE23-6AB0	3RT1045-...	3RV1041-4LA10	3LD2704-0TK51	3NP4010-0CH01

Rated infeed power kW (HP)	Assignment to Smart Line Module Type 6SL3...	Switch disconnecter with fuse holders Order No.	NH fuse (gL/gG)		
			Order No.	Rated current A	Size
Line voltage 380 V to 480 V 3 AC					
5 (5)	130-6AE15-0AA0 130-6AE15-0AB0 131-6AE15-0AA0	3KL5030-1EB01	3NA3805	16	000
10 (10)	130-6AE21-0AA0 130-6AE21-0AB0 131-6AE21-0AA0	3KL5030-1EB01	3NA3814	35	000
16 (18)	130-6AE21-6AB0	3KL5030-1EB01	3NA3814	35	000
36 (40)	130-6AE23-6AB0	3KL5230-1EB01	3NA3824	80	000

1) Component selections are per IEC standards and not necessarily in accordance with UL or NEC requirements. For NEMA components please see North American Industrial Products Catalog and Speedfax Catalog.

Overview



The self-commutated feed/feedback units (with IGBTs in infeed and regenerative feedback directions) generate a regulated DC link voltage. This means that the connected Motor Modules are decoupled from the line voltage. Line voltage fluctuations within the permissible supply tolerances have no effect on the motor voltage. Active Line Modules are designed for connection to grounded-neutral (TN, TT) and non-grounded (IT) supply systems.

The DC link is pre-charged via integrated precharging resistors.

Design

The Active Line Modules in booksize format feature the following interfaces as standard:

- 1 power connection via screw-type terminals
- 1 connection for the 24 V DC electronics power supply via the 24 V terminal adapter included in the scope of supply
- 1 DC link connection via integrated DC link busbars
- 3 DRIVE-CLiQ sockets
- 2 PE (protective earth) connections

The status of the Active Line Modules is indicated via two multi-color LEDs.

On the 100 mm (3.94 in) wide Active Line Module, the shield for the power supply cable can be connected to the integrated shield connection plate via a shield connection terminal or tube clip, e.g., Weidmüller type KLBÜ CO 4. The shield connection terminal must not be used for strain relief. Shield connection kits are available for the 150 mm (5.91 in), 200 mm (7.87 in) and 300 mm (11.81 in) wide modules.

The signal cable shield can be connected to the Line Module by means of a shield connection terminal, e.g. Weidmüller type KLBÜ 3-8 SC.

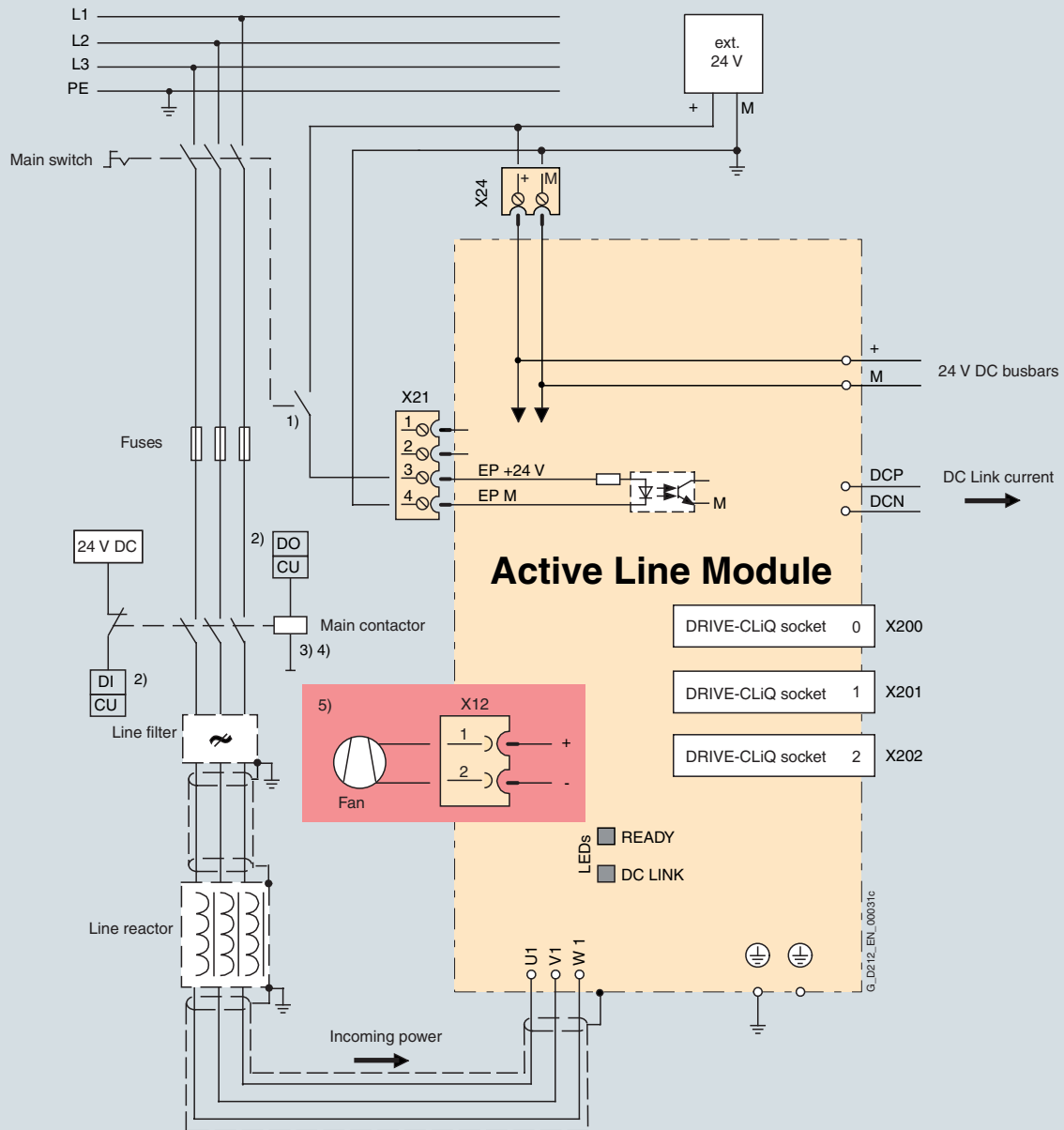
The scope of supply of the Active Line Modules includes:

- DRIVE-CLiQ cable for connection to the Control Unit for drive control on the immediate left
- DRIVE-CLiQ cable (length depends on module width) to connect Active Line Module to adjacent Motor Module
- Jumper for connecting the 24 V DC busbar to the adjacent Motor Module
- 24 V terminal adapter (X24)
- Connector X21 for digital inputs

Integration

The Active Line Module communicates with the CU 320 Control Unit via DRIVE-CLiQ and receives its control information via this route.

2



- 1) Leading NC contact $t > 10$ ms, 24 V DC and ground must be connected for operation.
- 2) Digital Input (DI) or digital output (DO) controlled by the Control Unit.
- 3) No additional load permitted downstream of the main contactor.
- 4) The current capacity of the digital output (DO) must be taken into account; an output interface element may have to be used.
- 5) Fan insert for Active Line Module 80 kW and 120 kW. The fan insert is supplied with the Active Line Module.

Connection example of Active Line Module in booksize format

Technical data

General technical data

Electrical data	
Line connection voltage (up to 2000 m (6563 ft) above sea level)	380 V to 480 V 3 AC $\pm 10\%$ ($-15\% < 1 \text{ min}$)
Power frequency	47 Hz to 63 Hz
Power factor	
• Active mode	
- Fundamental Power Factor	1.0 (factory setting), can be altered by input of a reactive current setpoint
- Total (λ)	1.0 (factory setting)
• Smart mode	
- Fundamental mode	> 0.96
- Overall	0.65 to 0.90
Overtoltage category	Class III to EN 60664-1
DC link voltage V_d	In "Active Mode" the DC link voltage is regulated and can be adjusted as a voltage decoupled from the line voltage. In "Smart Mode" the DC link voltage is regulated in proportion to the line voltage to the mean rectified line voltage value. Factory setting for DC link voltage: 380 V to 400 V 3 AC: 600 V (Active Mode) 400 V to 415 V 3 AC: 625 V (Active Mode) 416 V to 480 V 3 AC: 1.35 x line voltage (Smart Mode)
Electronics power supply	24 V DC $-15\%/+20\%$
Radio interference suppression	
• Standard	No radio interference suppression
• With line filter	Class A1 to EN 55011 and Category C2 to EN 61800-3
Ambient conditions	
Type of cooling	Forced air cooling through a built-in fan
Permissible ambient and coolant temperature (air) during operation for line-side components, Line Modules and Motor Modules	0 °C to + 40 °C (32° F to +104 °F) without derating, > 40°C to + 55 °C (> 104 °F to +131 °F) see derating characteristics
Site altitude	Up to 1000 m (1328 ft) above sea level without derating, > 1000 m (1328 ft) to 4000 m (13126 ft) above sea level see derating characteristics
Certificates	
Conformity	CE (low-voltage and EMC Directives)
Approvals	cULus (File No.: E192450)

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Line Modules and line-side components

Active Line Modules in booksize format

Technical data (continued)

Line voltage 380 V to 480 V 3 AC		Active Line Modules in booksize format				
Internal air cooling		6SL3130-7TE21-6AA1	6SL3130-7TE23-6AA1	6SL3130-7TE25-5AA2	6SL3130-7TE28-0AA1	6SL3130-7TE31-2AA1
Internal air cooling with varnished modules		6SL3130-7TE21-6AB0	6SL3130-7TE23-6AB0	6SL3130-7TE25-5AB0	6SL3130-7TE28-0AB0	6SL3130-7TE31-2AB0
External air cooling		6SL3131-7TE21-6AA0	6SL3131-7TE23-6AA0	6SL3131-7TE25-5AA0	6SL3131-7TE28-0AA0	6SL3131-7TE31-2AA0
Rated feed/feedback power P_{rated} with 380 V 3 AC with 460 V 3 AC ³⁾	kW (HP)	16 (18)	36 (40)	55 (60)	80 (100)	120 (150)
I/RF power for S6 duty (40%) P_{S6}	kW	21	47	71	106	158
Max. I/RF power P_{max}	kW	35	70	91	131	175
DC link current at 600 V DC	A	27	60	92	134	200
DC link current for S6 duty (40%)	A	35	79	121	176	244
Max. DC link current	A	59	117	152	218	292
Rated input current with 380 V 3 AC	A	26	58	88	128	192
Input current for S6 duty (40%)	A	35	79	121	176	244
Max. input current	A	59	117	152	195	292
Max. current requirement 24 V DC electronics power supply	A	1.1	1.5	1.9	2.0	2.5
24 V DC busbar current capacity	A	20	20	20	20	20
DC link capacitance	μF	710	1410	1880	2820	3995
Max. DC link capacitance of drive group	μF	20000	20000	20000	20000	20000
DC link busbar current capacity	A	100	100	200	200	200
Efficiency η		0.98	0.98	0.98	0.98	0.98
Power loss ¹⁾ with internal air cooling	kW	0.26	0.63	0.90	1.35	2.20
Power loss ¹⁾ with external air cooling int./ext.	kW	0.06/0.2	0.135/0.495	0.2/0.7	0.305/1.045	0.49/1.71
Cooling air requirement	m ³ /s (ft ³ /s)	0.016 (0.565)	0.031 (1.095)	0.044 (1.554)	0.144 (5.085)	0.144 (5.085)
Sound pressure level	dB(A)	< 60	< 65	< 60	< 75	< 75
Power connection U1, V1, W1		Screw-type terminals 2.5 mm ² to 10 mm ² (X1)	M6 screw studs for ring terminal ends 2.5 mm ² to 50 mm ² (X1)	M8 screw studs for ring terminal ends 2.5 mm ² to 95 mm ² , 2 x 35 mm ² (X1)	M8 screw studs for ring terminal ends 2.5 mm ² to 120 mm ² , 2 x 50 mm ² (X1)	M8 screw studs for ring terminal ends 2.5 mm ² to 120 mm ² , 2 x 50 mm ² (X1)
Shield connection		Integrated into the connector	see Accessories	see Accessories	see Accessories	see Accessories
PE connection		On housing with M5 screw	On housing with M6 screw	On housing with M6 screw	On housing with M8 screw	On housing with M8 screw
Max. cable length (total of all motor power cables and DC link)	m (ft)	350 (1150) shielded 560 (1840) unshielded	350 (1150) shielded 560 (1840) unshielded	350 (1150) shielded 560 (1840) unshielded	350 (1150) shielded 560 (1840) unshielded	350 (1150) shielded 560 (1840) unshielded
Degree of protection		IP20	IP20	IP20	IP20	IP20
Width	mm (inch)	100 (3.94)	150 (5.91)	200 (7.87)	300 (11.81)	300 (11.81)
Height	mm (inch)	380 (14.96)	380 (14.96)	380 (14.96)	380 (14.96) with fan ²⁾ : 629 (24.8)	380 (14.96) with fan ²⁾ : 629 (24.8)
Depth with internal air cooling	mm (inch)	270 (10.63)	270 (10.63)	270 (10.63)	270 (10.63)	270 (10.63)
Depth with external air cooling on/behind mounting surface	mm (inch)	226/66.5 (8.9/2.6)	226/71 (8.9/2.8)	226/92 (8.9/3.6)	226/82 (8.9/3.2)	226/82 (8.9/3.2)
Approx. weight with internal air cooling	kg (lb)	7 (15)	10.3 (23)	17 (38)	23 (51)	23 (51)
Approx. weight with external air cooling	kg (lb)	8.8 (19)	13.8 (30)	18.5 (41)	27.7 (61)	30.7 (68)

¹⁾ Power loss of Active Line Module at rated output without losses of 24 V DC electronics power supply.

²⁾ The fan is supplied with the Active Line Module and must be installed before the Active Line Module is commissioned.

³⁾ Nominal HP ratings are provided for ease of assigning components only. The Line Module outputs are dependent on the Motor Module loading and are to be dimensioned accordingly.

Selection and ordering data

Rated infeed power kW (HP)	Active Line Module in booksize format		
	Internal air cooling	Internal air cooling with varnished modules	External air cooling
	Order No.	Order No.	Order No.
Line voltage 380 V to 480 V 3 AC			
16 (18)	6SL3130-7TE21-6AA1	6SL3130-7TE21-6AB0	6SL3131-7TE21-6AA0
36 (40)	6SL3130-7TE23-6AA1	6SL3130-7TE23-6AB0	6SL3131-7TE23-6AA0
55 (60)	6SL3130-7TE25-5AA2	6SL3130-7TE25-5AB0	6SL3131-7TE25-5AA0
80 (100)	6SL3130-7TE28-0AA1	6SL3130-7TE28-0AB0	6SL3131-7TE28-0AA0
120 (150)	6SL3130-7TE31-2AA1	6SL3130-7TE31-2AB0	6SL3131-7TE31-2AA0

Accessories

Description	Order No.
Shield connection kit for Line/Motor Modules in booksize format <ul style="list-style-type: none"> • 150 mm (5.91 in) wide for internal air cooling • 150 mm (5.91 in) wide for external air cooling • 200 mm (7.87 in) wide for internal air cooling • 200 mm (7.87 in) wide for external air cooling • 300 mm (11.81 in) wide 	6SL3162-1AF00-0AA1 6SL3162-1AF00-0BA0 6SL3162-1AH01-0AA0 6SL3162-1AH01-0BA0 6SL3162-1AH00-0AA0
DC link supply adapter for direct infeed of DC link voltage <ul style="list-style-type: none"> • Screw-type terminals 0.5 mm² to 10 mm² for Line Modules and Motor Modules in booksize format with a width of 50 mm (1.97 in) or 100 mm (3.94 in) • Screw-type terminals 35 mm² to 95 mm² for Line Modules and Motor Modules in booksize format with a width of 150 mm (5.91 in), 200 mm (7.87 in) and 300 mm (11.81 in) 	6SL3162-2BD00-0AA0 6SL3162-2BM00-0AA0
DC link adapters (2x) for multi-tier configuration Screw-type terminals 35 mm ² to 95 mm ² for all Line Modules and Motor Modules in booksize format	6SL3162-2BM01-0AA0
24 V terminal adapter for all Line Modules and Motor Modules in booksize format	6SL3162-2AA00-0AA0
24 V jumper for connection of the 24 V busbars (for booksize format)	6SL3162-2AA01-0AA0
Warning signs in foreign languages This set of foreign language warning signs can be placed on top of the standard German or English signs. One sign in each of the following languages is provided in each set: Simplified Chinese, Danish, Dutch, Finnish, French, Greek, Italian, Japanese, Korean, Portuguese, Spanish and Swedish.	6SL3166-3AB00-0AA0

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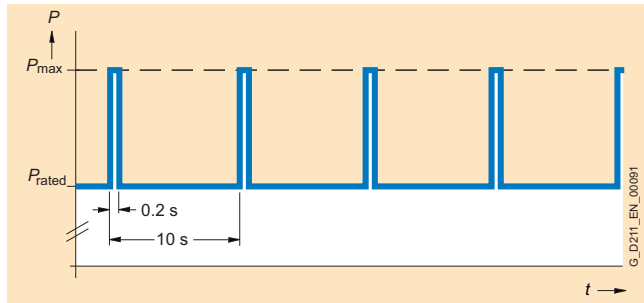
Line Modules and line-side components

Active Line Modules in booksize format

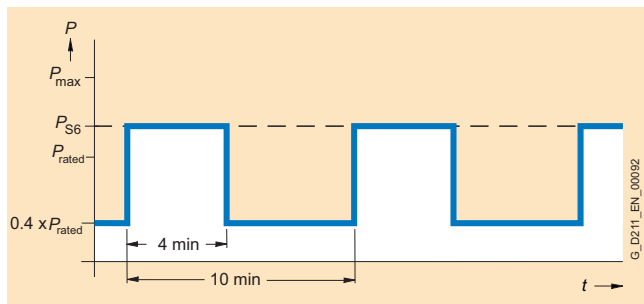
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Characteristics

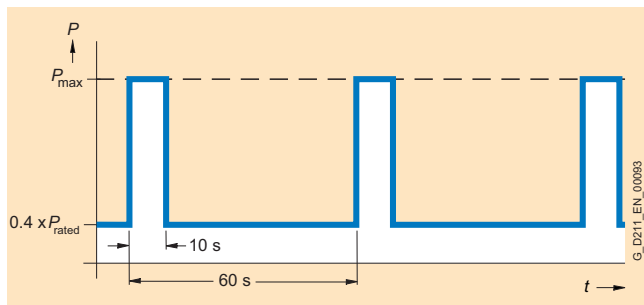
Overload capability



Load cycle with previous load

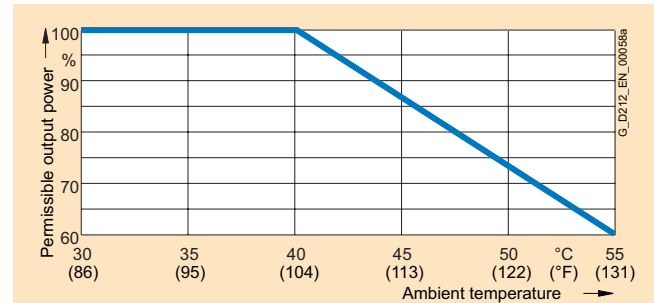


S6 load cycle with previous load

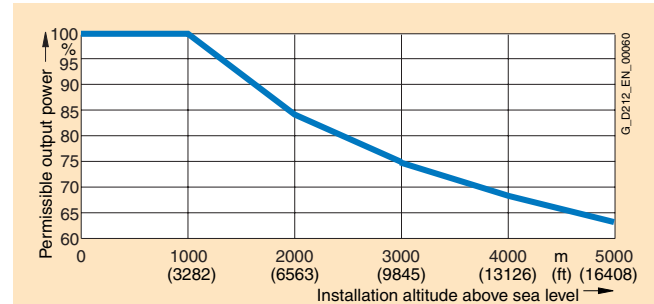


S6 load cycle with previous load

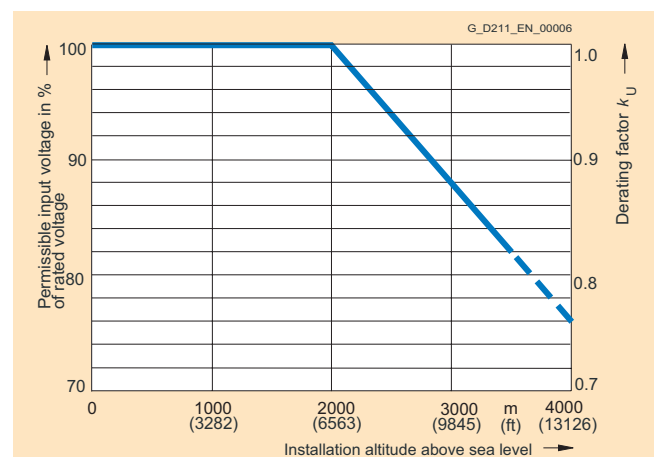
Derating characteristics



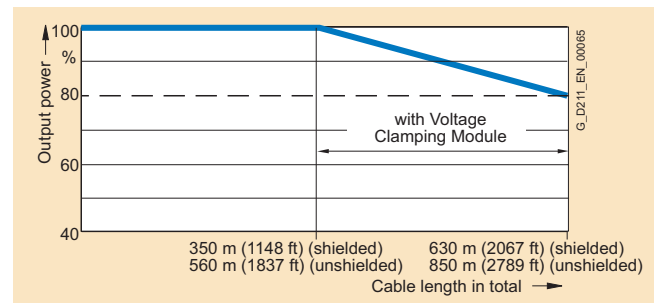
Output rating dependent on ambient temperature



Output rating dependent on installation altitude



Voltage derating dependent on installation altitude



Output rating dependent on total cable length

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Line Modules and line-side components

Active Line Modules in booksize format
Line reactors

Overview



Active Line Modules cannot operate without the specified line reactors. The use of other makes of line reactor can lead to malfunctions or irreparable damage to equipment.

Selection and ordering data

Rated input power of the Active Line Module kW (HP)	Suitable for Active Line Module	Line reactor Order No.
Line voltage 380 V to 480 V 3 AC		
16 (18)	6SL3130-7TE21-6AA1 6SL3130-7TE21-6AB0 6SL3131-7TE21-6AA0	6SN1111-0AA00-0BA1
36 (40)	6SL3130-7TE23-6AA1 6SL3130-7TE23-6AB0 6SL3131-7TE23-6AA0	6SN1111-0AA00-0CA1
55 (60)	6SL3130-7TE25-5AA2 6SL3130-7TE25-5AB0 6SL3131-7TE25-5AA0	6SN1111-0AA00-0DA1
80 (100)	6SL3130-7TE28-0AA1 6SL3130-7TE28-0AB0 6SL3131-7TE28-0AA0	6SN1111-0AA00-1EA0
120 (150)	6SL3130-7TE31-2AA1 6SL3130-7TE31-2AB0 6SL3131-7TE31-2AA0	6SL3000-0DE31-2BA0

Technical data

Line voltage 380 V to 480 V 3 AC		Line reactor 6SN1111-0AA00-0BA1	6SN1111-0AA00-0CA1	6SN1111-0AA00-0DA1	6SN1111-0AA00-1EA0	6SL3000-0DE31-2BA0
Rated current	A	30	67	103	150	225
Power loss	kW	0.17	0.25	0.35	0.45	0.59
Line/load connection 1U1, 1V1, 1W1 / 1U2, 1V2, 1W2		16 mm ² screw-type terminals	35 mm ² screw-type terminals	70 mm ² screw-type terminals	M10 connecting lugs	M10 connecting lugs
PE connection		16 mm ² screw-type terminals	35 mm ² screw-type terminals	70 mm ² screw-type terminals	M10 connecting lugs	M10 connecting lugs
Degree of protection		IP20	IP20	IP20	IP00	IP00
Width	mm (inch)	150 (5.91)	150 (5.91)	150 (5.91)	225 (8.86)	225 (8.86)
Height	mm (inch)	330 (12.99)	330 (12.99)	330 (12.99)	380 (14.96)	490 (19.29)
Depth	mm (inch)	145 (5.71)	230 (9.05)	280 (11.02)	220 (8.66)	250 (9.84)
Weight, approx.	kg (lb)	8.5 (19)	13 (29)	18 (40)	40 (88)	64 (141)
Suitable for Active Line Module	Type	6SL3130-7TE21-6AA1 6SL3130-7TE21-6AB0 6SL3131-7TE21-6AA0	6SL3130-7TE23-6AA1 6SL3130-7TE23-6AB0 6SL3131-7TE23-6AA0	6SL3130-7TE25-5AA2 6SL3130-7TE25-5AB0 6SL3131-7TE25-5AA0	6SL3130-7TE28-0AA1 6SL3130-7TE28-0AB0 6SL3131-7TE28-0AA0	6SL3130-7TE31-2AA1 6SL3130-7TE31-2AB0 6SL3131-7TE31-2AA0

Overview

In plants which have strict EMC requirements, line filters work together with line reactors to restrict the conducted interference emanating from the Power Modules to the limit values of Class A1 as defined in EN 55011 and Category C2 as defined in EN 61800-3. Line filters are suited only for direct connection to TN (grounded) systems.

Optional line filter ranges that are coordinated with the power range are available for the SINAMICS S120 drive system:

- Wideband Line Filters
- Basic Line Filters

These line filters differ with regard to the frequency range in which they reduce the conducted emissions.

Note: According to product standard IEC 61800-3 or EN 50370-1, RI suppression commensurate with the relevant operating conditions must be provided and is a legal requirement in the EU (EMC Directive). Line filters and line reactors are required for this purpose. The use of filters of other makes can lead to limit value violations, resonance, overvoltages and irreparable damage to motors or other equipment. The machine manufacturer must provide verification that the machinery to be operated with the drive products and the installed suppression elements, e.g. line filters, are CE/EMC-compliant before the machines are approved for delivery.

Active Line Modules in booksize format Wideband Line Filters (in line filter package)

Overview



The damping characteristics of Wideband Line Filters for Active Line Modules not only conform with the requirements of EMC standards for the frequency range of 150 kHz to 30 MHz but also include low frequencies of 2 kHz and above. As a result, these line filters have an extended functional range, allowing a certain independence with respect to the machine installation location in cases where the line properties are generally unknown (e.g., line impedance).

Selection and ordering data

Line filters for Active Line Modules in booksize format are available only in combination with the relevant line reactor as a line filter package. The order number for the line filter package includes the Wideband Line Filter and the line reactor.

Rated input power of the Active Line Module kW (HP)	Suitable for Active Line Module	Line filter package (Wideband Line Filter and line reactor) Order No.
Line voltage 380 V to 480 V 3 AC		
16 (18)	6SL3130-7TE21-6AA1 6SL3130-7TE21-6AB0 6SL3131-7TE21-6AA0	6SL3000-0FE21-6AA0
36 (40)	6SL3130-7TE23-6AA1 6SL3130-7TE23-6AB0 6SL3131-7TE23-6AA0	6SL3000-0FE23-6AA0
55 (60)	6SL3130-7TE25-5AA2 6SL3130-7TE25-5AB0 6SL3131-7TE25-5AA0	6SL3000-0FE25-5AA0
80 (100)	6SL3130-7TE28-0AA1 6SL3130-7TE28-0AB0 6SL3131-7TE28-0AA0	6SL3000-0FE28-0AA0
120 (150)	6SL3130-7TE31-2AA1 6SL3130-7TE31-2AB0 6SL3131-7TE31-2AA0	6SL3000-0FE31-2AA1

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Line Modules and line-side components

Active Line Modules in booksize format
Wideband Line Filters (in line filter package)

2

Technical data

Line voltage 380 V to 480 V 3 AC		Wideband Line Filter (included in each line filter package)				
		6SL3000-0FE21-6AA0	6SL3000-0FE23-6AA0	6SL3000-0FE25-5AA0	6SL3000-0FE28-0AA0	6SL3000-0FE31-2AA1
Rated current	A	30	67	103	150	225
Power loss	kW	0.07	0.09	0.11	0.15	0.20
Line/load connection L1, L2, L3 / U, V, W		10 mm ² screw-type terminals	50 mm ² screw-type terminals	50 mm ² screw-type terminals	95 mm ² screw-type terminals	M10 connecting lugs
PE connection		On housing with M5 bolt	On housing with M8 bolt	On housing with M8 bolt	On housing with M8 bolt	On housing with M8 bolt
Degree of protection		IP20	IP20	IP20	IP20	IP00
Width	mm (inch)	130 (5.12)	130 (5.12)	130 (5.12)	200 (7.87)	300 (11.81)
Height	mm (inch)	480 (18.9)	480 (18.9)	480 (18.9)	480 (18.9)	480 (18.9)
Depth	mm (inch)	150 (5.91)	245 (9.65)	260 (10.24)	260 (10.24)	260 (10.24)
Weight, approx.	kg (lb)	9 (20)	16 (35)	19 (42)	22 (49)	32 (71)
Suitable for Active Line Module	Type	6SL3130-7TE21-6AA1 6SL3130-7TE21-6AB0 6SL3131-7TE21-6AA0	6SL3130-7TE23-6AA1 6SL3130-7TE23-6AB0 6SL3131-7TE23-6AA0	6SL3130-7TE25-5AA2 6SL3130-7TE25-5AB0 6SL3131-7TE25-5AA0	6SL3130-7TE28-0AA1 6SL3130-7TE28-0AB0 6SL3131-7TE28-0AA0	6SL3130-7TE31-2AA1 6SL3130-7TE31-2AB0 6SL3131-7TE31-2AA0

Accessories



Line filter package assembled with an adapter set

The adapter sets for units in booksize format are designed for very compact mounting. They enable line filters and line reactors to be installed compactly one above the other in the control cabinet.

Active Line Module power output kW (HP)	Line filter package	Adapter set Order No.
16 (18)	6SL3000-0FE21-6AA0	6SL3060-1FE21-6AA0
36 (40)	6SL3000-0FE23-6AA0	6SN1162-0GA00-0CA0

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Line Modules and line-side components

Active Line Modules in booksize format Basic Line Filters

Overview



Basic Line Filters are used on machines on which conducted interference emissions in the frequency range between 150 kHz and 30 MHz need to be damped in accordance with the requirements of CE-EMC legislation.

Selection and ordering data

Rated input power of the Active Line Module kW (HP)	Suitable for Active Line Module	Basic Line Filter Order No.
Line voltage 380 V to 480 V 3 AC		
16 (18)	6SL3130-7TE21-6AA1 6SL3130-7TE21-6AB0 6SL3131-7TE21-6AA0	6SL3000-0BE21-6DA0
36 (40)	6SL3130-7TE23-6AA1 6SL3130-7TE23-6AB0 6SL3131-7TE23-6AA0	6SL3000-0BE23-6DA0
55 (60)	6SL3130-7TE25-5AA2 6SL3130-7TE25-5AB0 6SL3131-7TE25-5AA0	6SL3000-0BE25-5DA0

Further information

You must follow the instructions in the Equipment Manual when using Basic Line Filters in conjunction with Active Line Modules on your machine: SINAMICS S120 booksize power units.

Technical data

Line voltage 380 V to 480 V 3 AC	Basic Line Filters			
		6SL3000-0BE21-6DA0	6SL3000-0BE23-6DA0	6SL3000-0BE25-5DA0
Rated current	A	36	65	105
Power loss	kW	0.006	0.010	0.015
Line/load connection L1, L2, L3 / U, V, W		10 mm ² screw-type terminals	35 mm ² screw-type terminals	50 mm ² screw-type terminals
PE connection		On housing with M6 bolt	On housing with M6 bolt	On housing with M8 bolt
Degree of protection		IP20	IP20	IP20
Width	mm (inch)	50 (1.97)	75 (2.95)	100 (3.94)
Height	mm (inch)	420 (16.54)	420 (16.54)	420 (16.54)
Depth	mm (inch)	226 (8.9)	226 (8.9)	226 (8.9)
Weight, approx.	kg (lb)	5 (11)	6.5 (14)	11.5 (25)
Suitable for Active Line Module	Type	6SL3130-7TE21-6AA1 6SL3130-7TE21-6AB0 6SL3131-7TE21-6AA0	6SL3130-7TE23-6AA1 6SL3130-7TE23-6AB0 6SL3131-7TE23-6AA0	6SL3130-7TE25-5AA2 6SL3130-7TE25-5AB0 6SL3131-7TE25-5AA0

Overview

Assignment of line-side power components to Active Line Modules in booksize format

Suitable line-side power components are assigned depending on the power rating of the Active Line Modules.

The tables below list recommended components.

Further information about the main contactors, switch disconnectors, fuses and circuit-breakers specified in the tables can be found in Catalogs LV 1 and LV 1T.¹⁾

Rated infeed power kW (HP)	Assignment to Active Line Module Type 6SL3...	Main contactor Type	Output interface for main contactor (relay coupler) Order No.	Main switch (switch disconnector) Order No.	Leading auxiliary circuit switch for main switch Order No.
Line voltage 380 V to 480 V 3 AC					
16 (18)	130-7TE21-6AA1 130-7TE21-6AB0 131-7TE21-6AA0	3RT1035-...	3TX7004-1LB00	3LD2504-0TK51	3LD9200-5B
36 (40)	130-7TE23-6AA1 130-7TE23-6AB0 131-7TE23-6AA0	3RT1045-...	3TX7004-1LB00	3LD2704-0TK51	3LD9200-5B
55 (60)	130-7TE25-5AA2 130-7TE25-5AB0 131-7TE25-5AA0	3RT1054-...	3TX7004-1LB00	3KA5330-1EE01	3KX3552-3EA01
80 (100)	130-7TE28-0AA1 130-7TE28-0AB0 131-7TE28-0AA0	3RT1056-...	3TX7004-1LB00	3KA5330-1EE01	3KX3552-3EA01
120 (150)	130-7TE31-2AA1 130-7TE31-2AB0 131-7TE31-2AA0	3RT1065-...	3TX7004-1LB00	3KA5730-1EE01	3KX3552-3EA01
Rated infeed power kW (HP)	Assignment to Active Line Module Type 6SL3...	Circuit-breaker Order No.	Fuse switch disconnector Order No.	Switch disconnector with fuse holders Order No.	Leading auxiliary switch for switch disconnector with fuse holders Order No.
Line voltage 380 V to 480 V 3 AC					
16 (18)	130-7TE21-6AA1 130-7TE21-6AB0 131-7TE21-6AA0	3RV1031-4FA10	3NP4010-0CH01	3KL5030-1EB01	3KX3552-3EA01
36 (40)	130-7TE23-6AA1 130-7TE23-6AB0 131-7TE23-6AA0	3RV1041-4LA10	3NP4010-0CH01	3KL5230-1EB01	3KX3552-3EA01
55 (60)	130-7TE25-5AA2 130-7TE25-5AB0 131-7TE25-5AA0	3VL2712-3DC33-0AA0	3NP4270-0CA01	3KL5530-1EB01	3KX3552-3EA01
80 (100)	130-7TE28-0AA1 130-7TE28-0AB0 131-7TE28-0AA0	3VL2716-3DC33-0AA0	3NP4270-0CA01	3KL5530-1EB01	3KX3552-3EA01
120 (150)	130-7TE31-2AA1 130-7TE31-2AB0 131-7TE31-2AA0	3VL3725-3DC36-0AA0	3NP5360-0CA00	3KL5730-1EB01	3KX3552-3EA01

1) Component selections are per IEC standards and not necessarily in accordance with UL or NEC requirements. For NEMA components please see North American Industrial Products Catalog and Speedfax Catalog.

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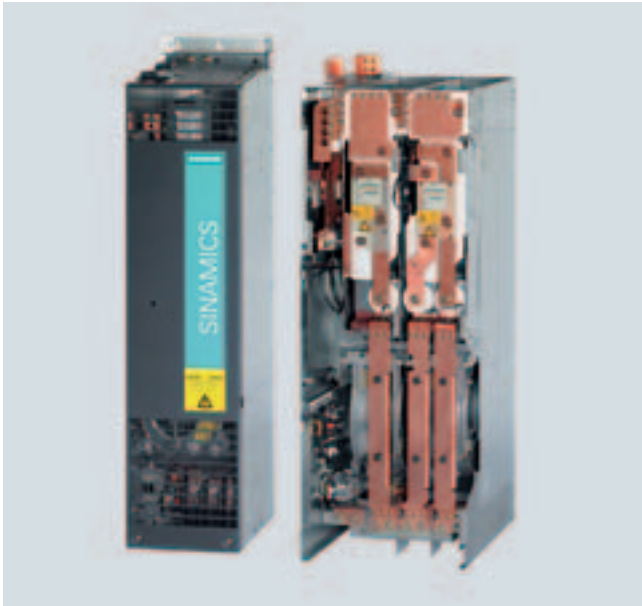
Line Modules and line-side components

Active Line Modules in booksize format Recommended line-side components

Overview (continued)

Rated infeed power	Assignment to Active Line Module	NEOZED fuse (gL/gG)			DIAZED fuse (gL/gG)			NH fuse (gL/gG)			UL/CSA fuse, Class J Available from: Ferraz Shawmut http://www.ferrazshawmut.com		
		Order No.	Rated current	Size	Order No.	Rated current	Size	Order No.	Rated current	Size	Reference No.	Rated current	Size
kW (HP)	Type 6SL3...												
Line voltage 380 V to 480 V 3 AC													
16 (18)	130-7TE21-6AA1 130-7TE21-6AB0 131-7TE21-6AA0	5SE2335	35 A	D02	5SB411	35 A	DIII	3NA3814	35 A	000	AJT35	35 A	27 × 60
36 (40)	130-7TE23-6AA1 130-7TE23-6AB0 131-7TE23-6AA0	–	–	–	5SC211	80 A	DIVH	3NA3824	80 A	000	AJT80	80 A	29 × 117
55 (60)	130-7TE25-5AA2 130-7TE25-5AB0 131-7TE25-5AA0	–	–	–	–	–	–	3NA3132	125 A	1	AJT125	125 A	41 × 146
80 (100)	130-7TE28-0AA1 130-7TE28-0AB0 131-7TE28-0AA0	–	–	–	–	–	–	3NA3136	160 A	1	AJT175	175 A	41 × 146
120 (150)	130-7TE31-2AA1 130-7TE31-2AB0 131-7TE31-2AA0	–	–	–	–	–	–	3NA3144	250 A	1	AJT250	250 A	54 × 181

Overview



The self-commutated feed/feedback units (with IGBTs in infeed and regenerative feedback directions) generate a regulated DC link voltage. This means that the connected Motor Modules are decoupled from the line voltage. Line voltage fluctuations within the permissible supply tolerances have no effect on the motor voltage.

If required, the Active Line Modules can also provide reactive power compensation.

Active Line Modules are designed for connection to grounded-neutral (TN, TT) and non-grounded (IT) supply systems.

Design

The Active Line Modules in chassis format feature the following interfaces as standard:

- 1 power connection
- 1 connection for the 24 V DC electronics power supply
- 1 DC link connection
- 3 DRIVE-CLiQ sockets
- 2 PE (protective earth) connections

The status of the Active Line Modules is indicated via two multi-color LEDs.

The scope of supply of the Active Line Modules includes:

- Types FX and GX:
 - 0.60 m (1.97 ft) DRIVE-CLiQ cable for connection to the CU320 or SIMOTION D Control Unit
- Types HX and JX
 - 0.35 m (1.15 ft) DRIVE-CLiQ cable for connection to the CU320 or SIMOTION D Control Unit
 - 2.10 m (6.89 ft) DRIVE-CLiQ cable for connection to the first Motor Module

Selection and ordering data

Infeed power kW (HP)	Active Line Modules in chassis format Order No.
Line voltage 380 V to 480 V 3 AC	
132 (200)	6SL3330-7TE32-1AA0
160 (225)	6SL3330-7TE32-6AA0
235 (350)	6SL3330-7TE33-8AA0
300 (450)	6SL3330-7TE35-0AA0
380 (550)	6SL3330-7TE36-1AA0
500 (700)	6SL3330-7TE38-4AA0
630 (800)	6SL3330-7TE41-0AA0
900 (1150)	6SL3330-7TE41-4AA0
Line voltage 660 V to 690 V 3 AC	
560	6SL3330-7TH35-8AA0
800	6SL3330-7TH37-4AA0
1100	6SL3330-7TH41-0AA0
1400	6SL3330-7TH41-3AA0

Warning signs in foreign languages

Warning signs in other languages can be placed on top of the standard warning signs in German or English.

The following signs are supplied with chassis format units: Chinese, Danish, Finnish, French, Greek, Italian, Japanese, Korean, Dutch, Polish, Portuguese, Russian, Swedish, Spanish, Czech and Turkish.

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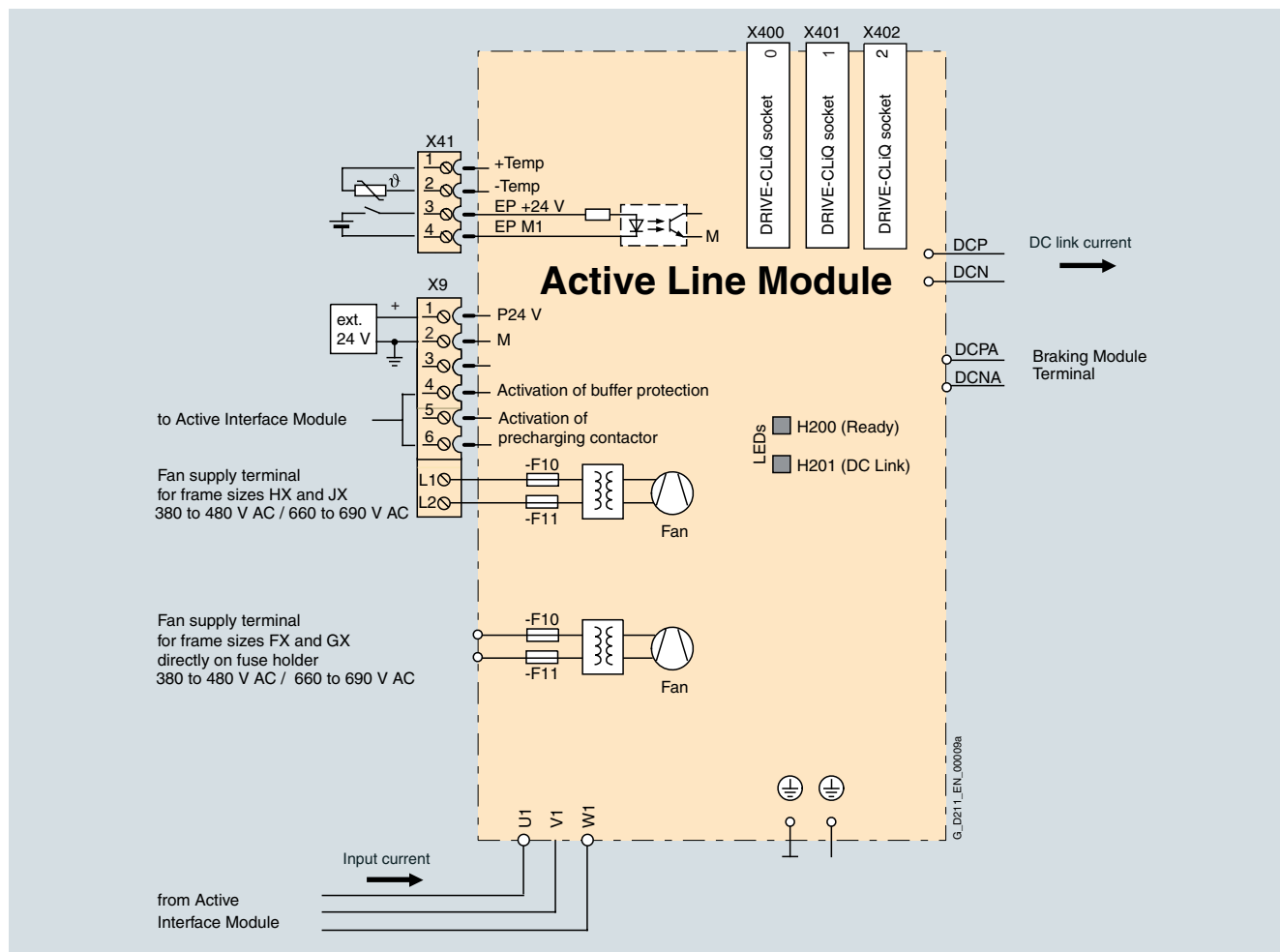
Line Modules and line-side components

Active Line Modules in chassis format

Integration

The Active Line Module communicates with the CU320 or SIMOTION D Control Unit via DRIVE-CLiQ.

2



Connection example of Active Line Module in chassis format

Technical data

General technical data

Electrical data	
Line connection voltage (up to 2000 m (6563 ft) above sea level)	380 V to 480 V 3 AC ± 10% (– 15% < 1 min) or 660 V to 690 V 3 AC ± 10% (– 15% < 1 min)
Power frequency	47 Hz to 63 Hz
Power factor	
• Fundamental Power Factor	1.0 (factory setting), can be altered by input of a reactive current setpoint
• Total (λ)	1.0 (factory setting)
Overvoltage category	Class III to EN 60664-1
DC link voltage U_d	The DC link voltage is regulated and can be adjusted as a voltage decoupled from the line voltage. Factory setting for DC link voltage: 1.5 x line voltage
Electronics power supply	24 V DC – 15%/+ 20%
Radio interference suppression	
• Standard (with Active Interface Module)	Category C3 to EN 61800-3
• With line filter (and Active Interface Module)	Class A1 to EN 55011 and Category C2 to EN 61800-3
Ambient conditions	
Type of cooling	Forced air cooling through a built-in fan
Permissible ambient and coolant temperature (air) during operation for line-side components, Line Modules and Motor Modules	0 °C to + 40 °C (32 °F to +104 °F) without derating, > 40 °C to + 55 °C (> 104 °F to +131 °F) see derating characteristics
Installation altitude	Up to 2000 m (6563 ft) above sea level without derating, > 2000 m (6563 ft) to 4000 m (13126 ft) above sea level see derating characteristics
Certificates	
Conformity	CE (low-voltage and EMC Directives)
Approvals	cULus (File No.: E192450)

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Line Modules and line-side components

Active Line Modules in chassis format

Technical data (continued)

Line voltage 380 V to 480 V 3 AC		Active Line Modules in chassis format			
		6SL3330-7TE32-1AA0	6SL3330-7TE32-6AA0	6SL3330-7TE33-8AA0	6SL3330-7TE35-0AA0
Feed/feedback power P_{rated} with 400 V 3 AC with 460 V 3 AC ¹⁾	kW (HP)	132 (200)	160 (225)	235 (350)	300 (450)
Feed/feedback power for S6 duty (40%) P_{S6}	kW	On request	On request	On request	On request
Max. I/RF power P_{max}	kW	198	240	352.5	450
Rated DC link current $I_{\text{rated_DC}}$	A	235	291	425	549
DC link current $I_{\text{H_DC}}$	A	209	259	378	489
Max. DC link current $I_{\text{max_DC}}$	A	352	436	637	823
Input current for 3 AC 400 V	A	210	260	380	490
Input current for S6 duty (40%)	A	On request	On request	On request	On request
Max. input current	A	315	390	570	735
Max. current requirement 24 V DC electronics power supply	A	1.1	1.1	1.35	1.35
DC link capacitance	μF	4200	5200	7800	9600
Max. current requirements (fan supply) at 400 V 2 AC	A	0.63	2.0	2.6	2.6
Efficiency η		0.98	0.98	0.98	0.98
Power loss	kW	2.2	2.7	3.9	4.8
Cooling air requirement	m ³ /s (ft ³ /s)	0.17 (6)	0.23 (8.12)	0.36 (12.71)	0.36 (12.71)
Sound pressure level ²⁾ 50 Hz/60 Hz	dB(A)	74/76	75/77	76/78	76/78
Power connection U1, V1, W1		Flange connection with M10 screw, max. cross section 2 × 185 mm ²	Flange connection with M10 screw, max. cross section 2 × 185 mm ²	Flange connection with M10 screw, max. cross section 2 × 185 mm ²	Flange connection with M10 screw, max. cross section 2 × 185 mm ²
DC link connection DCP, DCN		Flange connection with M10 screw, max. cross section 2 × 185 mm ²	Flange connection with M10 screw, max. cross section 2 × 185 mm ²	Flange connection with M10 screw, max. cross section 2 × 185 mm ²	Flange connection with M10 screw, max. cross section 2 × 185 mm ²
PE connection		On housing with M10 screw, max. cross section PE1/GND 1 × 185 mm ² PE2/GND 2 × 185 mm ²	On housing with M10 screw, max. cross section PE1/GND 1 × 185 mm ² PE2/GND 2 × 185 mm ²	On housing with M10 screw, max. cross section PE1/GND 1 × 185 mm ² PE2/GND 2 × 185 mm ²	On housing with M10 screw, max. cross section PE1/GND 1 × 185 mm ² PE2/GND 2 × 185 mm ²
Max. cable length (total of all motor cables and DC link)	m (ft)	1000 (1328)	1000 (1328)	1000 (1328)	1000 (1328)
Degree of protection		IP20	IP20	IP20	IP20
Width	mm (inch)	326 (12.83)	326 (12.83)	326 (12.83)	326 (12.83)
Height	mm (inch)	1400 (55.12)	1400 (55.12)	1533 (60.35)	1533 (60.35)
Depth	mm (inch)	356 (14.02)	356 (14.02)	543 (21.38)	543 (21.38)
Size		FX	FX	GX	GX
Weight, approx.	kg (lb)	88 (194)	88 (194)	152 (335)	152 (335)

¹⁾ Nominal HP ratings are provided for ease of assigning components only. The Line Module outputs are dependent on the Motor Module loading and are to be dimensioned accordingly.

²⁾ Total sound pressure level of Active Interface Module and Active Line Module.

Technical data (continued)

Line voltage 380 V to 480 V 3 AC		Active Line Modules in chassis format			
		6SL3330-7TE36-1AA0	6SL3330-7TE38-4AA0	6SL3330-7TE41-0AA0	6SL3330-7TE41-4AA0
Feed/feedback power P_{rated} with 400 V 3 AC with 460 V 3 AC ¹⁾	kW (HP)	380 (550)	500 (700)	630 (800)	900 (1150)
Feed/feedback power for S6 duty (40%) P_{S6}	kW	On request	On request	On request	On request
Max. I/RF power P_{max}	kW	570	750	945	1350
Rated DC link current $I_{\text{rated_DC}}$	A	678	940	1103	1574
DC link current $I_{\text{H_DC}}$	A	603	837	982	1401
Max. DC link current $I_{\text{max_DC}}$	A	1017	1410	1654	2361
Input current for 3 AC 400 V	A	605	840	985	1405
Input current for S6 duty (40%)	A	On request	On request	On request	On request
Max. input current	A	907	1260	1477	2107
Max. current requirement 24 V DC electronics power supply	A	1.4	1.4	1.5	1.7
DC link capacitance	μF	12600	16800	18900	28800
Max. current requirements (fan supply) at 400 V 2 AC	A	5.2	5.2	7.8	7.8
Efficiency η		0.98	0.98	0.98	0.98
Power loss	kW	6.2	7.7	10.1	13.3
Cooling air requirement	m ³ /s (ft ³ /s)	0.78 (27.55)	0.78 (27.55)	1.08 (38.14)	1.08 (38.14)
Sound pressure level ²⁾ 50 Hz/60 Hz	dB(A)	78/80	78/80	78/80	78/80
Power connection U1, V1, W1		Flange connection with M12 screw, max. cross section 4 × 240 mm ²	Flange connection with M12 screw, max. cross section 4 × 240 mm ²	Flange connection with M12 screw, max. cross section 6 × 240 mm ²	Flange connection with M12 screw, max. cross section 6 × 240 mm ²
DC link connection DCP, DCN		Flange connection for busbar connection	Flange connection for busbar connection	Flange connection for busbar connection	Flange connection for busbar connection
PE connection		On housing with M12 screw, max. cross section PE1/GND 1 × 240 mm ² PE2/GND 2 × 240 mm ²	On housing with M12 screw, max. cross section PE1/GND 1 × 240 mm ² PE2/GND 2 × 240 mm ²	On housing with M12 screw, max. cross section PE1/GND 1 × 240 mm ² PE2/GND 2 × 240 mm ²	On housing with M12 screw, max. cross section PE1/GND 1 × 240 mm ² PE2/GND 2 × 240 mm ²
Max. cable length (total of all motor cables and DC link)	m (ft)	1500 (4921)	1500 (4921)	1500 (4921)	1500 (4921)
Degree of protection		IP00	IP00	IP00	IP00
Width	mm (inch)	503 (19.8)	503 (19.8)	704 (27.72)	704 (27.72)
Height	mm (inch)	1475 (58.07)	1475 (58.07)	1475 (58.07)	1475 (58.07)
Depth	mm (inch)	540 (21.26)	540 (21.26)	540 (21.26)	540 (21.26)
Size		HX	HX	JX	JX
Weight, approx.	kg (lb)	290 (640)	290 (640)	450 (992)	450 (992)

¹⁾ Nominal HP ratings are provided for ease of assigning components only. The Line Module outputs are dependent on the Motor Module loading and are to be dimensioned accordingly.

²⁾ Total sound pressure level of Active Interface Module and Active Line Module.

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Line Modules and line-side components

Active Line Modules in chassis format

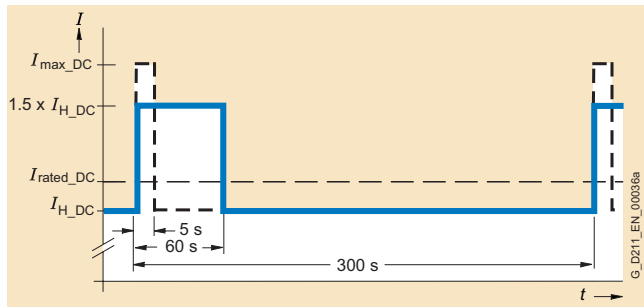
Technical data (continued)

Line voltage 660 V to 690 V 3 AC		Active Line Modules in chassis format			
		6SL3330-7TH35-8AA0	6SL3330-7TH37-4AA0	6SL3330-7TH41-0AA0	6SL3330-7TH41-3AA0
Feed/feedback power P_{rated} with 690 V 3 AC	kW	560	800	1100	1400
Feed/feedback power for S6 duty (40%) P_{S6}	kW	On request	On request	On request	On request
Max. I/RF power P_{max}	kW	840	1200	1650	2100
Rated DC link current $I_{\text{rated_DC}}$	A	644	823	1148	1422
DC link current $I_{\text{H_DC}}$	A	573	732	1022	1266
Max. DC link current $I_{\text{max_DC}}$	A	966	1234	1722	2133
Input current for 3 AC 690 V	A	575	735	1025	1270
Input current for S6 duty (40%)	A	On request	On request	On request	On request
Max. input current	A	862	1102	1537	1905
Max. current requirement 24 V DC electronics power supply	A	1.4	1.5	1.7	1.7
DC link capacitance	μF	7400	11100	14400	19200
Max. current requirements (fan supply) at 690 V 2 AC	A	3	4.5	4.5	4.5
Efficiency η		0.98	0.98	0.98	0.988
Power loss	kW	6.8	10.2	13.6	16.5
Cooling air requirement	m^3/s (ft ³ /s)	0.78 (27.55)	1.1 (38.85)	1.1 (38.85)	1.1 (38.85)
Sound pressure level ¹⁾ 50 Hz/60 Hz	dB(A)	78/80	78/80	78/80	78/80
Power connection U1, V1, W1		Flange connection with M12 screw, max. cross section 4 × 240 mm ²	Flange connection with M12 screw, max. cross section 6 × 240 mm ²	Flange connection with M12 screw, max. cross section 6 × 240 mm ²	Flange connection with M12 screw, max. cross section 6 × 240 mm ²
DC link connection DCP, DCN		Flange connection for busbar connection	Flange connection for busbar connection	Flange connection for busbar connection	Flange connection for busbar connection
PE connection		On housing with M12 screw, max. cross section PE1/GND 1 × 240 mm ² PE2/GND 2 × 240 mm ²	On housing with M12 screw, max. cross section PE1/GND 1 × 240 mm ² PE2/GND 2 × 240 mm ²	On housing with M12 screw, max. cross section PE1/GND 1 × 240 mm ² PE2/GND 2 × 240 mm ²	On housing with M12 screw, max. cross section PE1/GND 1 × 240 mm ² PE2/GND 2 × 240 mm ²
Max. cable length (total of all motor cables and DC link)	m (ft)	1500 (4921)	1500 (4921)	1500 (4921)	1500 (4921)
Degree of protection		IP00	IP00	IP00	IP00
Width	mm (inch)	503 (19.8)	704 (27.72)	704 (27.72)	704 (27.72)
Height	mm (inch)	1475 (58.07)	1475 (58.07)	1475 (58.07)	1475 (58.07)
Depth	mm (inch)	540 (21.26)	540 (21.26)	540 (21.26)	540 (21.26)
Size		HX	JX	JX	JX
Weight, approx.	kg (lb)	290 (640)	450 (992)	450 (992)	450 (992)

¹⁾ Total sound pressure level of Active Interface Module and Active Line Module.

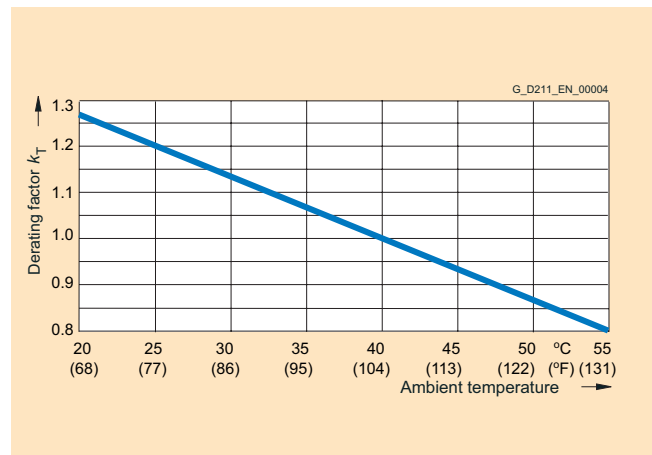
Characteristics

Overload capability



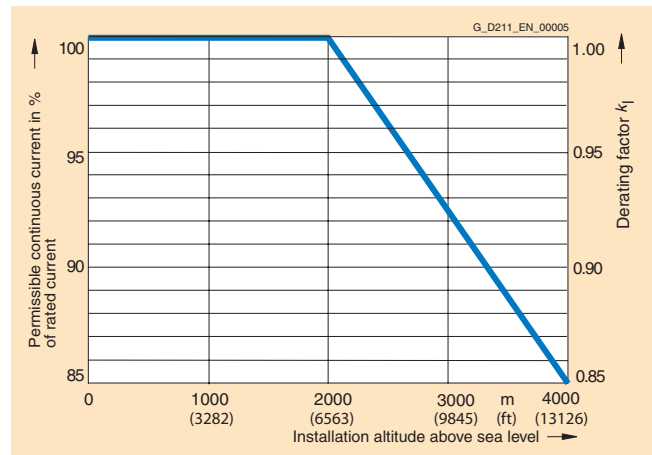
High overload

Derating characteristics

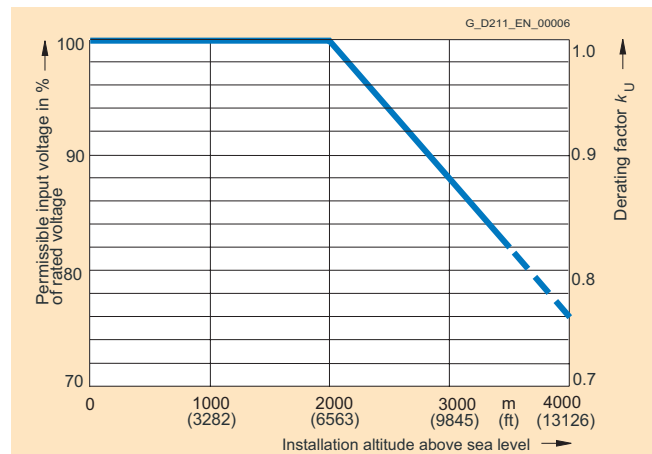


Current derating dependent on ambient temperature

Note: A derating factor k_T 1.0 is only possible in connection with the "current derating depending on the installation altitude". See also System description.



Current derating dependent on installation altitude



Voltage derating dependent on installation altitude

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Line Modules and line-side components

Active Interface Modules

Overview



Active Interface Modules are used in combination with Active Line Modules in chassis format. Active Interface Modules contain a clean power filter with basic RI suppression, the pre-charging circuit for the Active Line Module, the line voltage sensing circuit and monitoring sensors. The bypass contactor is an integral component in types FI and GI, thereby making the module very compact. The bypass contactor must be provided separately for types HI and JI.

The vast majority of line harmonics are suppressed by the clean power filter.

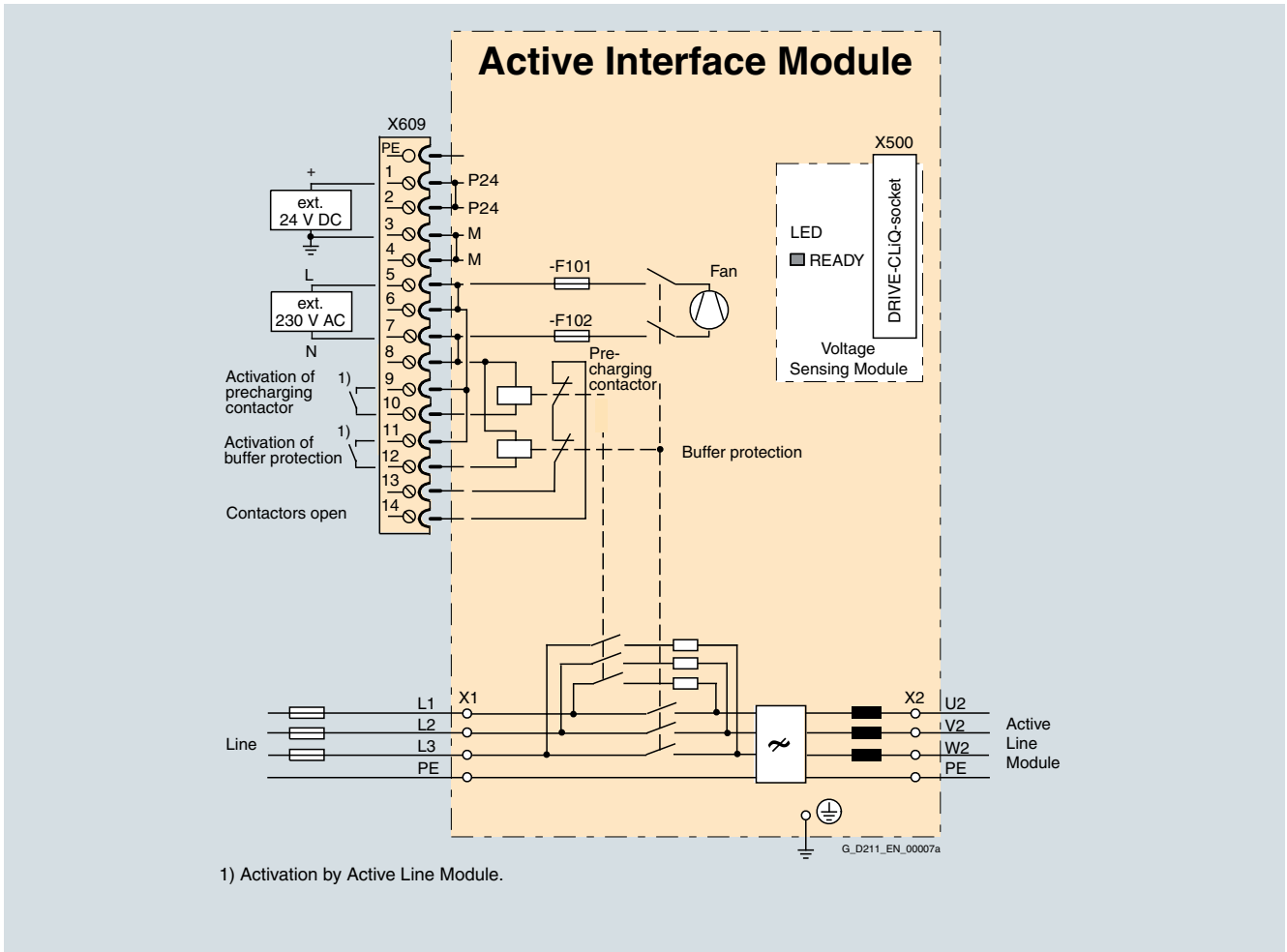
The scope of supply of the Active Interface Modules includes:

- Type FI:
 - 0.60 m (1.97 ft) DRIVE-CLiQ cable for connection between Active Interface Module and Active Line Module
 - 1.45 m (4.76 ft) DRIVE-CLiQ cable for connection between the CU320 or SIMOTION D Control Unit and first Motor Module.
- Type GI:
 - 0.95 m (3.12 ft) DRIVE-CLiQ cable for connection between Active Interface Module and Active Line Module
 - 1.45 m (4.76 ft) DRIVE-CLiQ cable for connection between the CU320 or SIMOTION D Control Unit and first Motor Module.
- Types HI and JI:
 - 2.40 m (7.88 ft) DRIVE-CLiQ cable for connection between Active Interface Module and Active Line Module

Selection and ordering data

Active Line Module infeed power kW (HP)	Suitable for Active Line Module	Active Interface Module Order No.
Line voltage 380 V to 480 V 3 AC		
132 (200)	6SL3330-7TE32-1AA0	6SL3300-7TE32-6AA0
160 (225)	6SL3330-7TE32-6AA0	6SL3300-7TE32-6AA0
235 (350)	6SL3330-7TE33-8AA0	6SL3300-7TE33-8AA0
300 (450)	6SL3330-7TE35-0AA0	6SL3300-7TE35-0AA0
380 (550)	6SL3330-7TE36-1AA0	6SL3300-7TE38-4AA0
500 (700)	6SL3330-7TE38-4AA0	6SL3300-7TE38-4AA0
630 (800)	6SL3330-7TE41-0AA0	6SL3300-7TE41-4AA0
900 (1150)	6SL3330-7TE41-4AA0	6SL3300-7TE41-4AA0
Line voltage 660 V to 690 V 3 AC		
560	6SL3330-7TH35-8AA0	6SL3300-7TH35-8AA0
800	6SL3330-7TH37-4AA0	6SL3300-7TH37-4AA0
1100	6SL3330-7TH41-0AA0	6SL3300-7TH41-3AA0
1400	6SL3330-7TH41-3AA0	6SL3300-7TH41-3AA0

Integration



Connection example of Active Interface Module with integrated bypass contactor (types FI and GI)

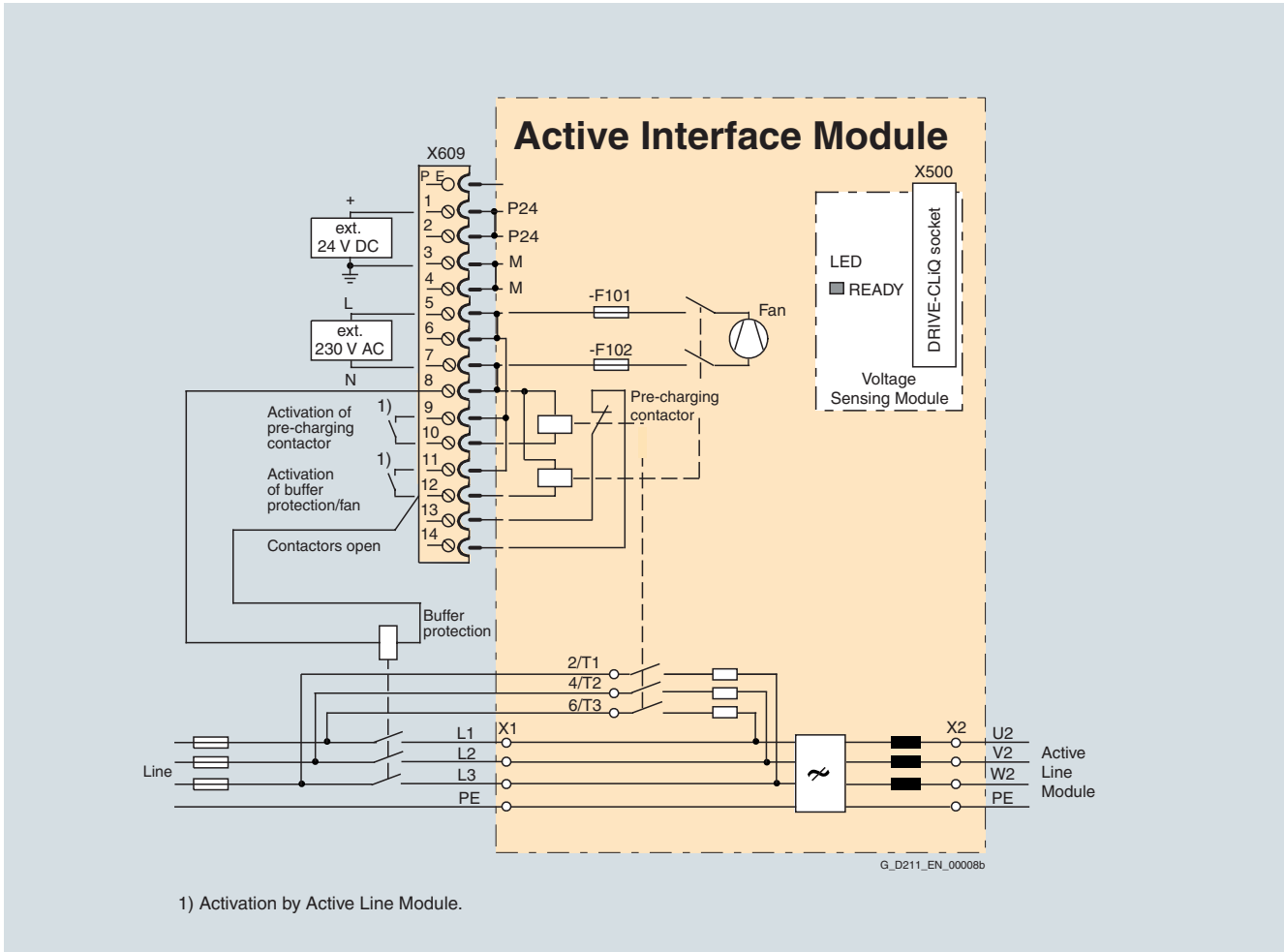
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Line Modules and line-side components

Active Interface Modules

Integration (continued)

2



Connection example of Active Interface Module with externally mounted bypass contactor (types HI and JI)

Technical data

Line voltage 380 V to 480 V 3 AC		Active Interface Modules in chassis format			
		6SL3300-7TE32-6AA0		6SL3300-7TE33-8AA0	6SL3300-7TE35-0AA0
Rated current	A	210	260	380	490
Bypass contactor		included	included	included	included
Max. DC link capacitance of drive group					
• at 400 V/50 Hz	μF	31200	31200	57600	57600
• at 480 V/60 Hz	μF	20800	20800	38400	38400
Max. current requirement 24 V DC electronics power supply	A	0.17	0.17	0.17	0.17
Max. current requirement 230 V AC	A	0.6	0.6	1.2	1.2
Power loss	kW	2.1	2.2	3.0	3.9
Cooling air requirement	m ³ /s (ft ³ /s)	0.24 (8.48)	0.24 (8.48)	0.47 (16.6)	0.47 (16.6)
Sound pressure level ¹⁾ 50 Hz/60 Hz	dB(A)	74/76	75/77	76/78	76/78
Line/load connection L1, L2, L3 / U2, V2, W2		Flange connection with M10 screws	Flange connection with M10 screws	Flange connection with M10 screws	Flange connection with M10 screws
Max. conductor cross section		2 × 185 mm ² per connection	2 × 185 mm ² per connection	2 × 185 mm ² per connection	2 × 185 mm ² per connection
PE connection		M10 screw	M10 screw	M10 screw	M10 screw
Max. conductor cross section		2 × 185 mm ²	2 × 185 mm ²	2 × 185 mm ²	2 × 185 mm ²
Degree of protection		IP20	IP20	IP20	IP20
Width	mm (inch)	325 (12.8)	325 (12.8)	325 (12.8)	325 (12.8)
Height	mm (inch)	1400 (55.12)	1400 (55.12)	1533 (60.35)	1533 (60.35)
Depth	mm (inch)	355 (13.98)	355 (13.98)	544 (21.42)	544 (21.42)
Size		FI	FI	GI	GI
Weight, approx.	kg (lb)	135 (298)	135 (298)	190 (419)	190 (419)
Suitable for Active Line Module	Type	6SL3330-7TE32-1AA0	6SL3330-7TE32-6AA0	6SL3330-7TE33-8AA0	6SL3330-7TE35-0AA0
Active Line Module infeed power	kW (HP)	132 (200)	160 (225)	235 (350)	300 (450)

¹⁾ Total sound pressure level of Active Interface Module and Active Line Module.

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Line Modules and line-side components

Active Interface Modules

Technical data (continued)

Line voltage 380 V to 480 V 3 AC		Active Interface Modules in chassis format			
		6SL3300-7TE38-4AA0		6SL3300-7TE41-4AA0	
Rated current	A	605	840	985	1405
Bypass contactor		3RT1476-6AP36	3WL1110-2BB34-4AN2-Z C22	3WL1112-2BB34-4AN2-Z C22	3WL2226-2BB34-4AN2-Z C22
Max. DC link capacitance of drive group					
• at 400 V/50 Hz	μF	100800	100800	172800	172800
• at 480 V/60 Hz	μF	67200	67200	115200	115200
Max. current requirement 24 V DC electronics power supply	A	0.17	0.17	0.17	0.17
Max. current requirement 230 V AC	A	4.6	4.6	4.9	4.9
Power loss	kW	5.5	6.1	7.5	8.5
Cooling air requirement	m ³ /s (ft ³ /s)	0.4 (14.13)	0.4 (14.13)	0.4 (14.13)	0.4 (14.13)
Sound pressure level ¹⁾ 50 Hz/60 Hz	dB(A)	78/80	78/80	78/80	78/80
Line/load connection L1, L2, L3 / U2, V2, W2		Flange connection with M12 screws	Flange connection with M12 screws	Flange connection with M12 screws	Flange connection with M12 screws
Max. conductor cross section		4 × 240 mm ² per connection	4 × 240 mm ² per connection	6 × 240 mm ² per connection	6 × 240 mm ² per connection
PE connection		M12 screw	M12 screw	M12 screw	M12 screw
Max. conductor cross section		2 × 240 mm ²	2 × 240 mm ²	4 × 240 mm ²	4 × 240 mm ²
Degree of protection		IP00	IP00	IP00	IP00
Width	mm (inch)	305 (12)	305 (12)	505 (19.88)	505 (19.88)
Height	mm (inch)	1750 (68.9)	1750 (68.9)	1750 (68.9)	1750 (68.9)
Depth	mm (inch)	545 (21.46)	545 (21.46)	545 (21.46)	545 (21.46)
Size		HI	HI	JI	JI
Weight, approx.	kg (lb)	390 (860)	390 (860)	620 (1367)	620 (1367)
Suitable for Active Line Module	Type	6SL3330-7TE36-1AA0	6SL3330-7TE38-4AA0	6SL3330-7TE41-0AA0	6SL3330-7TE41-4AA0
Active Line Module infeed power	kW (HP)	380 (550)	500 (700)	630 (800)	900 (1150)

¹⁾ Total sound pressure level of Active Interface Module and Active Line Module.

Technical data (continued)

Line voltage 660 V to 690 V 3 AC		Active Interface Modules in chassis format			
		6SL3300-7TH35-8AA0	6SL3300-7TH37-4AA0	6SL3300-7TH41-3AA0	
Rated current	A	575	735	1025	1270
Bypass contactor		3RT1476-6AP36	3WL1210-4BB34-4AN2 ^{*)}	3WL1212-4BB34-4AN2-Z C22	3WL1216-4BB34-4AN2-Z C22
Max. DC link capacitance of drive group	μF	29600	76800	76800	76800
Max. current requirement 24 V DC electronics power supply	A	0.17	0.17	0.17	0.17
Max. current requirement 230 V AC	A	4.6	4.9	4.9	4.9
Power loss	kW	6.8	9.0	9.6	9.6
Cooling air requirement	m ³ /s (ft ³ /s)	0.4 (14.13)	0.4 (14.13)	0.4 (14.13)	0.4 (14.13)
Sound pressure level ¹⁾ 50 Hz/60 Hz	dB(A)	78/80	78/80	78/80	78/80
Line/load connection L1, L2, L3 / U2, V2, W2		Flange connection with M12 screws	Flange connection with M12 screws	Flange connection with M12 screws	Flange connection with M12 screws
Max. conductor cross sec- tion		4 × 240 mm ² per connection	6 × 240 mm ² per connection	6 × 240 mm ² per connection	6 × 240 mm ² per connection
PE connection		M10 fixing screw	M10 fixing screw	M10 fixing screw	M10 fixing screw
Max. conductor cross sec- tion		2 × 240 mm ²	4 × 240 mm ²	4 × 240 mm ²	4 × 240 mm ²
Degree of protection		IP00	IP00	IP00	IP00
Width	mm (inch)	305 (12)	505 (19.88)	505 (19.88)	505 (19.88)
Height	mm (inch)	1750 (68.9)	1750 (68.9)	1750 (68.9)	1750 (68.9)
Depth	mm (inch)	545 (21.46)	545 (21.46)	545 (21.46)	545 (21.46)
Size		HI	JI	JI	JI
Weight, approx.	kg (lb)	390 (860)	620 (1367)	620 (1367)	620 (1367)
Suitable for Active Line Module	Type	6SL3330-7TH35-8AA0	6SL3330-7TH37-4AA0	6SL3330-7TH41-0AA0	6SL3330-7TH41-3AA0
Active Line Module infeed power	kW	560	800	1100	1400

¹⁾ Total sound pressure level of Active Interface Module and Active Line Module.

^{*)} Alternatively 3x 3RT1466-6AP36.

SINAMICS S120

Line Modules and line-side components

Active Line Modules in chassis format Recommended line-side components

Overview

Assignment of line-side power components to Active Line Modules in chassis format

Suitable line-side power components are assigned depending on the power rating of the Active Line Modules.

The tables below list recommended components.

Further information about the main contactors, switch disconnectors, fuses and circuit-breakers specified in the tables can be found in Catalogs LV 1, LV 1T and ET B1. ¹⁾

Infeed power	Input current	Assignment to Active Interface Module	Assignment to Active Line Module	Bypass contactor	Fixed-mounted circuit-breaker
kW (HP)	A	Typ 6SL3300-...	Type 6SL3330-...	Order No.	Order No.
Line voltage 380 V to 480 V 3 AC					
132 (200)	210	7TE32-6AA0	7TE32-1AA0	included in Active Interface Module	–
160 (225)	260	7TE32-6AA0	7TE32-6AA0	included in Active Interface Module	–
235 (350)	380	7TE33-8AA0	7TE33-8AA0	included in Active Interface Module	–
300 (450)	490	7TE35-0AA0	7TE35-0AA0	included in Active Interface Module	–
380 (550)	605	7TE38-4AA0	7TE36-1AA0	3RT1476-6AP36	–
500 (700)	840	7TE38-4AA0	7TE38-4AA0	3WL1110-2BB34-4AN2	3WL1110-2BB34-4AN2-Z C22
630 (800)	985	7TE41-4AA0	7TE41-0AA0	3WL1112-2BB34-4AN2	3WL1112-2BB34-4AN2-Z C22
900 (1150)	1405	7TE41-4AA0	7TE41-4AA0	3WL1116-2BB34-4AN2	3WL1116-2BB34-4AN2-Z C22
Line voltage 660 V to 690 V 3 AC					
560	575	7TH35-8AA0	7TH35-8AA0	3RT1476-6AP36	–
800	735	7TH37-4AA0	7TH37-4AA0	3WL1210-4BB34-4AN2	3WL1210-4BB34-4AN2-Z C22
1100	1025	7TH41-3AA0	7TH41-0AA0	3WL1212-4BB34-4AN2	3WL1212-4BB34-4AN2-Z C22
1400	1270	7TH41-3AA0	7TH41-3AA0	3WL1216-4BB34-4AN2	3WL1216-4BB34-4AN2-Z C22

Infeed power	Input current	Assignment to Active Interface Module	Switch disconnector without handle and shaft	Switch disconnector with handle and shaft	Cable protection fuse		Cable protection fuse incl. semiconductor protection	
kW (HP)	A	Typ 6SL3300-...	Order No.	Order No.	Order No.	Rated current	Order No.	Rated current
Line voltage 380 V to 480 V 3 AC								
132 (200)	210	7TE32-6AA0	3KL5530-1AB01	3KL5530-1EB01	3NA3242	224 A	3NE1230-2	315 A
160 (225)	260	7TE32-6AA0	3KL5730-1AB01	3KL5730-1EB01	3NA3252	315 A	3NE1331-2	350 A
235 (350)	380	7TE33-8AA0	3KL5730-1AB01	3KL5730-1EB01	3NA3260	400 A	3NE1334-2	500 A
300 (450)	490	7TE35-0AA0	3KL6130-1AB02	3KL6130-1EB02	3NA3365	500 A	3NE1436-2	630 A
380 (550)	605	7TE38-4AA0	3KL6230-1AB02	3KL6230-1EB02	3NA3372	630 A	3NE1437-2	710 A
500 (700)	840	7TE38-4AA0	–	–	2 × 3NA3362	2 × 425 A	2 × 3NE1334-2	2 × 500 A
630 (800)	985	7TE41-4AA0	–	–	2 × 3NA3365	2 × 500 A	2 × 3NE1436-2	2 × 630 A
900 (1150)	1405	7TE41-4AA0	–	–	3 × 3NA3365	3 × 500 A	3 × 3NE1448-2	2 × 850 A
Line voltage 660 V to 690 V 3 AC								
560	575	7TH35-8AA0	3KL6130-1AB02	3KL6130-1EB02	2 × 3NA3352-6	2 × 315 A	3NE1447-2	670 A
800	735	7TH37-4AA0	3KL6230-1AB02	3KL6230-1EB02	2 × 3NA3360-6	2 × 400 A	3NE1448-2	850 A
1100	1025	7TH41-3AA0	–	–	3 × 3NA3354-6	3 × 355 A	2 × 3NE1436-2	2 × 630 A
1400	1270	7TH41-3AA0	–	–	3 × 3NA3365-6	3 × 500 A	2 × 3NE1438-2	2 × 800 A

1) Component selections are per IEC standards and not necessarily in accordance with UL or NEC requirements. For NEMA components please see North American Industrial Products Catalog and Speedfax Catalog.