

SINAMICS S120 drive system

Line Modules and line-side components

Active Line Modules in booksize format

Overview



Active Line Modules are self-commutated feed/feedback units (with IGBTs in infeed and regenerative feedback directions) and 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, star (TN, TT) and non-grounded, symmetrical IT systems.

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

In order to operate an Active Line Module, it is absolutely essential to use the appropriate Active Interface Module.

Design

The Active Line Modules in booksize format feature the following connections and 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 plates 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 adjacent Control Unit on the left for drive control, length 0.11 m (4.33 in)
- DRIVE-CLiQ cable (length depends on module width) to connect Active Line Module to adjacent Motor Module, length = width of Active Line Module + 0.11 m (4.33 in)
- 2 blanking plugs for sealing unused DRIVE-CLiQ sockets
- Jumper for connecting the 24 V DC busbar to the adjacent Motor Module
- 24 V terminal adapter (X24)
- Connector X21 for digital inputs
- Fan insert for Active Line Modules of 80 kW (107 HP) and 120 kW (161 HP) (the voltage is supplied by the Active Line Module)
- 1 set of warning signs in 30 languages
- 1 heat conducting foil (for Active Line Modules with cold plate cooling only)

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Active Line Modules in booksize format

Selection and ordering data

Description	Active Line Module in booksize format Order No.
Line voltage 380 ... 480 V 3 AC	
Internal air cooling	
Rated power:	
16 kW (18 HP)	6SL3130-7TE21-6AA3
36 kW (40 HP)	6SL3130-7TE23-6AA3
55 kW (60 HP)	6SL3130-7TE25-5AA3
80 kW (100 HP)	6SL3130-7TE28-0AA3
120 kW (150 HP)	6SL3130-7TE31-2AA3
External air cooling	
Rated power:	
16 kW (18 HP)	6SL3131-7TE21-6AA3
36 kW (40 HP)	6SL3131-7TE23-6AA3
55 kW (60 HP)	6SL3131-7TE25-5AA3
80 kW (100 HP)	6SL3131-7TE28-0AA3
120 kW (150 HP)	6SL3131-7TE31-2AA3
Cold plate cooling	
Rated power:	
16 kW (18 HP)	6SL3136-7TE21-6AA3
36 kW (40 HP)	6SL3136-7TE23-6AA3
55 kW (60 HP)	6SL3136-7TE25-5AA3
80 kW (100 HP)	6SL3136-7TE28-0AA3
120 kW (150 HP)	6SL3136-7TE31-2AA3
Liquid cooling	
Rated power:	
120 kW (150 HP)	6SL3135-7TE31-2AA3

Description	Order No.
Accessories	
Shield connection plate For Line Modules and Motor Modules in booksize format with a width of	
• 150 mm (5.91 in), for internal air cooling	6SL3162-1AF00-0AA1
• 150 mm (5.91 in) for external air cooling and cold plate cooling	6SL3162-1AF00-0BA1
• 200 mm (7.87 in), for internal air cooling	6SL3162-1AH01-0AA0
• 200 mm (7.87 in) for external air cooling and cold plate cooling	6SL3162-1AH01-0BA0
• 300 mm (11.8 in) for all cooling types	6SL3162-1AH00-0AA0
DC link rectifier adapter For direct infeed of DC link voltage	
• Screw-type terminals 0.5 ... 10 mm ² For Line Modules and Motor Modules in booksize format with a width of 50 mm (1.97 in) or 100 mm (3.94 in)	6SL3162-2BD00-0AA0
• Screw-type terminals 35 ... 95 mm ² For Line Modules and Motor Modules in booksize format with a width of 150 mm, 200 mm and 300 mm (5.91 in, 7.87 in and 11.81 in)	6SL3162-2BM00-0AA0
DC link adapter (2 units) For multi-tier configuration Screw-type terminals 35 ... 95 mm ² For all Line Modules and Motor Modules in booksize format	6SL3162-2BM01-0AA0
Accessories for re-ordering	
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 labels in 30 languages This set of foreign language warning signs can be placed on top of the standard English or German signs. A set of signs is supplied with the units. One sign in each of the following languages is provided in each set: BG, CN, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, JP, KR, LT, LV, MT, NL, NO, PL, PT, RO, RU, SE, SI, SK, TR	6SL3166-3AB00-0AA0
Accessories pack (plug-in terminals, DRIVE-CLiQ jumper (length = module width + 60 mm (2.36 in)), dust-proof blanking plugs) For DRIVE-CLiQ port For Active Line Modules with a width of	
• 100 mm (3.94 in), int./ext. air cooling	6SL3163-8FD00-0AA0
• 150 mm (5.91 in), int./ext. air cooling	6SL3163-8GF00-0AA0
• 200 mm (7.87 in), int./ext. air cooling	6SL3163-8HH00-0AA0
• 300 mm (11.8 in), int./ext. air cooling	6SL3163-8JM00-0AA0
SINAMICS/SINUMERIK/SIMOTION dust-proof blanking plugs (50 units) For DRIVE-CLiQ port	6SL3066-4CA00-0AA0

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Active Line Modules in booksize format Active Interface Modules

Overview



Active Interface Modules for 16 kW, 36 kW, 55 kW and 80 kW/120 kW

The Active Interface Modules combine with the Active Line Modules to form a functional unit and are essential for operation of the associated Active Line Module. The Active Interface Modules contain a Clean Power Filter, reactor, and basic interference suppression to ensure compliance with Category C3 in accordance with EN 61800-3 regarding emitted interference.

The Clean Power Filter protects the line supply from switching-frequency harmonics. The drive system therefore draws a sinusoidal current from the supply and causes virtually no harmonics.

The Active Line Modules in combination with the Active Interface Module can also be operated with supply systems with an isolated star point (IT systems).

Design

The scope of supply of the Active Interface Modules includes:

- Connector X21 for temperature evaluation and fan control
- Connector X24 for connecting the 24 V supply for the integrated fan
- DRIVE-CLiQ cable for connecting the Control Unit to the Active Line Module; length of the DRIVE-CLiQ cable = width of the Active Interface Module + 0.11 m (4.33 in)
- Shield connection plate for Active Interface Module 16 kW
- 1 set of warning signs in 30 languages

Selection and ordering data

Rated power of the Active Line Module kW (HP)	Suitable for Active Line Module in booksize format	Active Interface Module in booksize format Order No.
Line voltage 380 ... 480 V 3 AC		
16 (18)	6SL3130-7TE21-6AA3 6SL3131-7TE21-6AA3 6SL3136-7TE21-6AA3	6SL3100-0BE21-6AB0
36 (40)	6SL3130-7TE23-6AA3 6SL3131-7TE23-6AA3 6SL3136-7TE23-6AA3	6SL3100-0BE23-6AB0
55 (60)	6SL3130-7TE25-5AA3 6SL3131-7TE25-5AA3 6SL3136-7TE25-5AA3	6SL3100-0BE25-5AB0
80 (100)	6SL3130-7TE28-0AA3 6SL3131-7TE28-0AA3 6SL3136-7TE28-0AA3	6SL3100-0BE28-0AB0
120 (150)	6SL3130-7TE31-2AA3 6SL3131-7TE31-2AA3 6SL3136-7TE31-2AA3 6SL3135-7TE31-2AA3	6SL3100-0BE31-2AB0

Description	Order No.
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Accessories

Description	Order No.
Shield connection plate ¹⁾	
• For Active Interface Module 36 kW	6SL3163-1AF00-0AA0
• For Active Interface Module 55 kW	6SL3163-1AH00-0AA0
• For Active Interface Modules 80 kW and 120 kW	6SL3163-1AM00-0AA0
DRIVE-CLiQ cable, preassembled Degree of protection of connector IP20/IP20	
• For Active Interface Module 16 kW, 0.31 m (1.02 ft) in length	6SL3060-4AK00-0AA0
• For Active Interface Module 36 kW, 0.41 m (1.35 ft) in length	6SL3060-4AP00-0AA0
• For Active Interface Module 55 kW, 0.6 m (1.97 ft) in length	6SL3060-4AU00-0AA0
• For Active Interface Module 80 kW and 120 kW, 0.95 m (3.12 ft) in length	6SL3060-4AA10-0AA0

Accessories for re-ordering

Description	Order No.
Accessories pack (plug-in terminals, DRIVE-CLiQ jumper)	
• For Active Interface Module 16 kW	6SL3160-8CD10-0AA0
• For Active Interface Module 36 kW	6SL3160-8DF10-0AA0
• For Active Interface Module 55 kW	6SL3160-8EH10-0AA0
• For Active Interface Modules 80 kW and 120 kW	6SL3160-8FM10-0AA0

Warning labels in 30 languages

6SL3166-3AB00-0AA0

This set of foreign language warning signs can be placed on top of the standard English or German signs. A set of signs is supplied with the units. One sign in each of the following languages is provided in each set: BG, CN, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, JP, KR, LT, LV, MT, NL, NO, PL, PT, RO, RU, SE, SI, SK, TR

¹⁾ For Active Interface Module 16 kW, included in scope of supply.

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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 power of the Active Line Module kW (HP)	Suitable for Active Line Module in booksize format	Basic Line Filter Order No.
Line voltage 380 ... 480 V 3 AC		
16 (18)	6SL3130-7TE21-6AA3 6SL3131-7TE21-6AA3 6SL3136-7TE21-6AA3	6SL3000-0BE21-6DA0
36 (40)	6SL3130-7TE23-6AA3 6SL3131-7TE23-6AA3 6SL3136-7TE23-6AA3	6SL3000-0BE23-6DA1
55 (60)	6SL3130-7TE25-5AA3 6SL3131-7TE25-5AA3 6SL3136-7TE25-5AA3	6SL3000-0BE25-5DA0
80 (100)	6SL3130-7TE28-0AA3 6SL3131-7TE28-0AA3 6SL3136-7TE28-0AA3	6SL3000-0BE28-0DA0
120 (150)	6SL3130-7TE31-2AA3 6SL3131-7TE31-2AA3 6SL3136-7TE31-2AA3 6SL3135-7TE31-2AA3	6SL3000-0BE31-2DA0

Technical specifications

Line voltage 380 ... 480 V 3 AC	Basic Line Filter					
	6SL3000-...	0BE21-6DA0	0BE23-6DA1	0BE25-5DA0	0BE28-0DA0	0BE31-2DA0
Rated current	A	36	74	105	132	192
Power loss	kW	0.016	0.028	0.041	0.048	0.086
Line/load connection L1, L2, L3 / U, V, W		Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals
• Conductor cross-section	mm ²	10	35	50	95	95
PE connection		M6 screw studs according to DIN 46234	M6 screw studs according to DIN 46234	M8 screw studs according to DIN 46234	M10 screw studs according to DIN 46234	M10 screw studs according to DIN 46234
Degree of protection		IP20	IP20	IP20	IP20	IP20
Dimensions						
• Width	mm (in)	50 (1.97)	75 (2.95)	100 (3.94)	150 (5.90)	150 (5.90)
• Height	mm (in)	429 (16.9)	433 (17.0)	466 (18.3)	479 (18.9)	479 (18.9)
• Depth	mm (in)	226 (8.90)	226 (8.90)	226 (8.90)	226 (8.90)	226 (8.90)
Weight, approx.	kg (lb)	5 (11)	7.5 (16.5)	11.5 (25)	18.2 (40)	18.8 (41)
Approvals, according to		cURus	cURus	cURus	cURus	cURus
Suitable for Active Line Module in booksize format	Type	6SL3130-7TE21-6AA3 6SL3131-7TE21-6AA3 6SL3136-7TE21-6AA3	6SL3130-7TE23-6AA3 6SL3131-7TE23-6AA3 6SL3136-7TE23-6AA3	6SL3130-7TE25-5AA3 6SL3131-7TE25-5AA3 6SL3136-7TE25-5AA3	6SL3130-7TE28-0AA3 6SL3131-7TE28-0AA3 6SL3136-7TE28-0AA3	6SL3130-7TE31-2AA3 6SL3131-7TE31-2AA3 6SL3136-7TE31-2AA3 6SL3135-7TE31-2AA3
• Rated power of the Active Line Module	kW	16	36	55	80	120