SINAMICS G130

Line reactors

Operating Instructions · 05/2010

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Safety information 1

General 2

Mechanical installation 3

Electrical installation 4

Technical specifications

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SINAMICS G130 Line reactors

Operating Instructions

Control version V4.3 SP2

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

DANGER

indicates that death or severe personal injury will result if proper precautions are not taken.

/ WARNING

indicates that death or severe personal injury may result if proper precautions are not taken.

↑ CAUTION

with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.

CAUTION

without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.

NOTICE

indicates that an unintended result or situation can occur if the corresponding information is not taken into account.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation for the specific task, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

↑ WARNING

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be adhered to. The information in the relevant documentation must be observed.

Trademarks

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Table of contents

1	Safety	ty information	7
	1.1	Warnings	7
	1.2	Safety and operating instructions	8
2	Gene	eral	9
3	Mecha	hanical installation	11
4	Electr	trical installation	15
5	Techr	nnical specifications	17

Safety information

1.1 Warnings



/!\warning

Hazardous voltages are present when electrical equipment is in operation.

Severe personal injury or substantial material damage may result if these warnings are not observed.

Only qualified personnel are permitted to work on or around the equipment.

This personnel must be thoroughly familiar with all the warnings and maintenance procedures described in these operating instructions.

The successful and safe operation of this device is dependent on correct transport, proper storage and installation, as well as careful operation and maintenance.

National safety guidelines must be observed.



/!\DANGER

Five safety rules

When carrying out any kind of work on electrical devices, the "five safety rules" defined in EN 50110 must always be observed:

- 1. Disconnect the system.
- 2. Protect against reconnection.
- 3. Make sure that the equipment is de-energized.
- 4. Ground and short-circuit.
- 5. Cover or enclose adjacent components that are still live.

NOTICE

For a UL-approved system use 60/75°C copper conductors only.

1.2 Safety and operating instructions



!\DANGER

This equipment is used in industrial high-voltage installations. During operation, this equipment contains rotating and live, bare parts. For this reason, they could cause severe injury or significant material damage if the required covers are removed, if they are used or operated incorrectly, or have not been properly maintained.

When the machines are used in non-industrial areas, the installation location must be protected against unauthorized access (protective fencing, appropriate signs).

Prerequisites

Those responsible for protecting the plant must ensure the following:

- The basic planning work for the plant and the transport, assembly, installation, commissioning, maintenance, and repair work is carried out by qualified personnel and/or checked by experts responsible.
- The operating manual and machine documentation are always available.
- The technical specifications regarding the applicable installation, connection, environmental, and operating conditions are always observed.
- The plant-specific assembly and safety guidelines are observed and personal protection equipment is used.
- Unqualified personnel are forbidden from using these machines and working near them.

This operating manual is intended for qualified personnel and only contain information and notes relating to the intended purpose of the machines.

The operating manual and machine documentation are written in different languages as specified in the delivery contracts.

Note

We recommend engaging the support and services of your local Siemens service center for all planning, installation, commissioning and maintenance work.

General 2

Description

Line reactors limit low-frequency line-side harmonics to permissible values.

Note

The connecting cables to the Power Module must be kept as short as possible.

/!\CAUTION

The surface temperature of the line reactors may exceed 80 °C.

CAUTION

The 100 mm cooling clearances above and to the side of the components must be observed.

CAUTION

Provisions for component cooling must be made at the installation site. Power loss data are given in the technical specifications.

Assignment of line reactor and Power Module

Table 2- 1 Assignment of line reactor and Power Module

Power Module	Unit rating of the Power Module	Suitable line reactor
	Line voltage 380 – 480	V 3 AC
6SL3310-1GE32-1AAx	110 kW	6SL3000-0CE32-3AA0
6SL3310-1GE32-6AAx	132 kW	6SL3000-0CE32-8AA0
6SL3310-1GE33-1AAx	160 kW	6SL3000-0CE33-3AA0
6SL3310-1GE33-8AAx	200 kW	6SL3000-0CE35-1AA0
6SL3310-1GE35-0AAx	250 kW	6SL3000-0CE35-1AA0
6SL3310-1GE36-1AAx	315 kW	6SL3000-0CE36-3AA0
6SL3310-1GE37-5AAx	400 kW	6SL3000-0CE37-7AA0
6SL3310-1GE38-4AAx	450 kW	6SL3000-0CE38-7AA0
6SL3310-1GE41-0AAx	560 kW	6SL3000-0CE41-0AA0
	Line voltage 500 – 600	V 3 AC
6SL3310-1GF31-8AAx	110 kW	6SL3000-0CH32-2AA0
6SL3310-1GF32-2AAx	132 kW	6SL3000-0CH32-2AA0
6SL3310-1GF32-6AAx	160 kW	6SL3000-0CH32-7AA0
6SL3310-1GF33-3AAx	200 kW	6SL3000-0CH33-4AA0
6SL3310-1GF34-1AAx	250 kW	6SL3000-0CH34-8AA0
6SL3310-1GF34-7AAx	315 kW	6SL3000-0CH34-8AA0
6SL3310-1GF35-8AAx	400 kW	6SL3000-0CH36-0AA0
6SL3310-1GF37-4AAx	500 kW	6SL3000-0CH38-4AA0
6SL3310-1GF38-1AAx	560 kW	6SL3000-0CH38-4AA0
	Line voltage 660 – 690	V 3 AC
6SL3310-1GH28-5AAx	85 kW	6SL3000-0CH31-1AA0
6SL3310-1GH31-0AAx	90 kW	6SL3000-0CH31-1AA0
6SL3310-1GH31-2AAx	110 kW	6SL3000-0CH31-6AA0
6SL3310-1GH31-5AAx	132 kW	6SL3000-0CH31-6AA0
6SL3310-1GH31-8AAx	160 kW	6SL3000-0CH32-2AA0
6SL3310-1GH32-2AAx	200 kW	6SL3000-0CH32-2AA0
6SL3310-1GH32-6AAx	250 kW	6SL3000-0CH32-7AA0
6SL3310-1GH33-3AAx	315 kW	6SL3000-0CH33-4AA0
6SL3310-1GH34-1AAx	400 kW	6SL3000-0CH34-8AA0
6SL3310-1GH34-7AAx	450 kW	6SL3000-0CH34-8AA0
6SL3310-1GH35-8AAx	560 kW	6SL3000-0CH36-0AA0
6SL3310-1GH37-4AAx	710 kW	6SL3000-0CH38-4AA0
6SL3310-1GH38-1AAx	800 kW	6SL3000-0CH38-4AA0

Mechanical installation

Dimension drawing

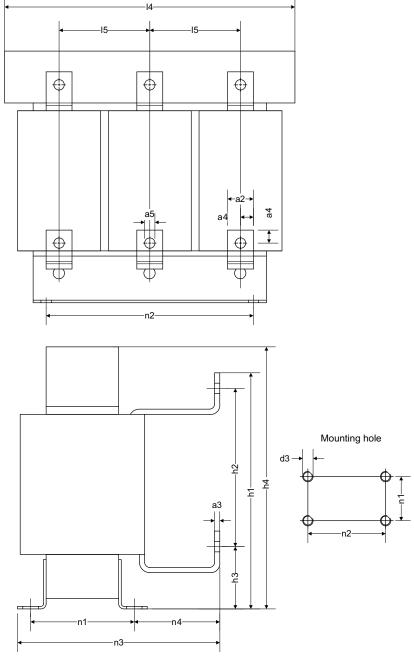


Figure 3-1 Dimension drawing of line reactor

Table 3-1 Dimensions of line reactor, 380 V – 480 V 3 AC (all values in mm)

6SL3000-	0CE32-3AA0 0CE32-8AA0 0CE33-3AA0	0CE35-1AA0 0CE36-3AA0 0CE37-7AA0	0CE38-7AA0	0CE41-0AA0
a2	25	30	40	50
a3	5	6	8	8
a4	12.5	15	20	25
a5	11	14	14	14
14	270	300	350	350
15	88	100	120	120
h1	-	-	392	397
h2	150	180	252	252
h3	60	60	120	120
h4	248	269	321	321
n1 ¹⁾	101	118	138	138
n2 ¹⁾	200	224	264	264
n3	200	212.5	211.5	211.5
n4	84.5	81	60	60
d3	M8	M8	M8	M8
1) Lengths n1 and n2 cor	respond to the drill hole s	pacing		

Table 3- 2 Dimensions of line reactor, 500 V – 600 V 3 AC (all values in mm)

6SL3000-	0CH32-2AA0 0CH32-7AA0 0CH33-4AA0	0CH34-8AA0 0CH36-0AA0	0CH38-4AA0
a2	25	30	40
a3	5	6	8
a4	12.5	15	20
а5	11	14	14
14	270	350	410
15	88	120	135
h1	-	-	392
h2	150	198	252
h3	60	75	120
h4	248	321	385
n1 ¹⁾	101	138	141
n2 ¹⁾	200	264	316
n3	200	232.5	224
n4	84.5	81	56.5
d3	M8	M8	M10
1) Lengths n1 and n2 co	rrespond to the drill hole sp	acing	

Table 3-3 Dimensions of line reactor, 660 V – 690 V 3 AC (all values in mm)

6SL3000-	0CH31-1AA0 0CH31-6AA0 0CH32-2AA0 0CH32-7AA0 0CH33-4AA0	0CH34-8AA0 0CH36-0AA0	0CH38-4AA0
a2	25	30	40
a3	5	6	8
a4	12.5	15	20
a5	11	14	14
14	270	350	410
15	88	120	135
h1	-	-	392
h2	150	198	252
h3	60	75	120
h4	248	321	385
n1 ¹⁾	101	138	141
n2 ¹⁾	200	264	316
n3	200	232.5	224
n4	84.5	81	56.5
d3	M8	M8	M10
1) Lengths n1 and n2 corr	respond to the drill hole sp	acing	

Electrical installation 4

Important safety precautions

/ WARNING

The devices are operated with high voltages.

All connection procedures must be carried out when the cabinet is de-energized.

All work on the device must be carried out by trained personnel only.

Death, serious injury, or substantial material damage can result if these warnings are not taken into account.

Work on an open device must be carried out with extreme caution because external supply voltages may be present. The power and control terminals may be live even when the motor is not running.

Dangerously high voltage levels are still present in the cabinet up to five minutes after it has been disconnected due to the DC link capacitors on the Power Module. For this reason, the cabinet should not be opened until a reasonable period of time has elapsed.

The operator is responsible for ensuring that the line reactor and other components are installed and connected in accordance with the recognized technical rules in the country of installation and applicable regional guidelines. Special attention should be paid to cable dimensioning, fuses, grounding, shutdown, disconnection, and overcurrent protection.

If an item of protective gear trips in a branch circuit, a leakage current may have been disconnected. To reduce the risk of fire or an electric shock, the current-carrying parts and other components in the cabinet unit should be inspected and damaged parts replaced. When an item of protective gear trips, the cause of the trip must be identified and rectified.

Connection

When connecting the line filter and line reactor, you must take into account the following conditions to ensure that they function correctly:

- Use shielded control cables. The shield must be connected at both ends.
- With analog control cables, connecting the shield at both ends can result in coupled-in noise. To prevent this, the shield must only be connected at one end on the Power Module.
- Control cables must be routed separately from power cables. Power cables are motor
 cables or connecting cables from the DC link of the Power Module (terminals
 DCPA/DCNA) to other components (e.g. Braking Module). In particular, you must ensure
 that control cables and power cables are not routed in parallel in a joint cable raceway,
 even if all the cables are shielded.
- You must use shielded motor cables. The shield for the motor cable must be attached to the shield plate and motor housing.
- The ground wire for the motor must be fed directly back to the Power Module.

Connection overview

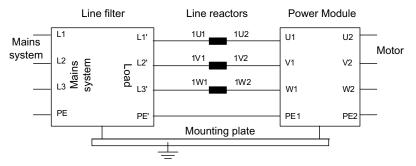


Figure 4-1 Connecting the line filter, line reactor, and Power Module

Technical specifications

5

General technical specifications

Table 5-1 General technical specifications

Line frequency	47 63 Hz							
Product standard	EN 61800-5-1	EN 61800-5-1						
Ambient conditions	Storage	torage Transport Operation						
Ambient temperature	-25 +70 °C	-25 +70 °C	0 +50 °C					
Relative humidity (non- condensing), corresponds to class:	5 95 % 1K4 to EN 60721-3-1	5 95% at 40 °C 2K3 to EN 60721-3-2	5 95 % 3K3 to EN 60721-3-3					
Mechanical stability	Storage	Transport	Operation					
Vibrational load: - Displacement - Acceleration	1.5 mm at 5 9 Hz 5 m/s² at >9 200 Hz	3.5 mm at 5 9 Hz 10 m/s² at >9 200 Hz	0.075 mm at 10 58 Hz 10 m/s² at >58 200 Hz					
Shock load: - Acceleration	40 m/s² at 22 ms	100 m/s² at 11 ms	100 m/s² at 11 ms					

Detailed technical specifications

Table 5-2 Technical specifications of line reactors, 380 V – 480 V 3 AC, part 1

Order number	6SL3000-	0CE32-3AA0	0CE32-8AA0	0CE33-3AA0	0CE35-1AA0
Suitable for Power Module	6SL3310-	1GE32-1AAx	1GE32-6AAx	1GE33-1AAx	1GE33-8AAx
Unit rating of the Power Module	kW	110	132	160	200
Rated voltage	V	380 V 3	AC -10 % to 480 V	3 AC +10% (-15%	< 1 min)
I _{thmax}	А	224	278	331	508
Power loss	kW	0.274	0.247	0.267	0.365
Line system/load connection		M10 connecting lugs	M10 connecting lugs	M10 connecting lugs	M12 connecting lugs
Degree of protection		IP00	IP00	IP00	IP00
Dimensions Width Height Depth	mm mm mm	270 248 200	270 248 200	270 248 200	300 269 212.5
Weight	kg	24.5	26.0	27.8	38.0

Table 5-3 Technical specifications of line reactors, 380 V – 480 V 3 AC, part 2

Order number	6SL3000-	0CE35-1AA0	0CE36-3AA0	0CE37-7AA0	0CE38-7AA0
Suitable for Power Module	6SL3310-	1GE35-0AAx	1GE36-1AAx	1GE37-5AAx	1GE38-4AAx
Unit rating of the Power Module	kW	250	315	400	450
Rated voltage	V	380 V 3 AC -10 % to 480 V 3 AC +10% (-15% < 1 min)			
I _{thmax}	Α	508	628	773	871
Power loss	kW	0.365	0.368	0.351	0.458
Line/load connection		M12 connecting lugs	M12 connecting lugs	M12 connecting lugs	M12 connecting lugs
Degree of protection		IP00	IP00	IP00	IP00
Dimensions Width Height Depth	mm mm mm	300 269 212.5	300 269 212.5	300 269 212.5	350 321 211.5
Weight	kg	38.0	41.4	51.3	63.2

Table 5-4 Technical specifications of line reactors, 380 V – 480 V 3 AC, part 3

Order number	6SL3000-	0CE41-0AA0			
Suitable for Power Module	6SL3310-	1GE41-0AAx			
Unit rating of the Power Module	kW	560			
Rated voltage	V	380 V 3	AC –10 % to 480 V	3 AC +10% (-15%	< 1 min)
Ithmax	Α	1022			
Power loss	kW	0.498			
Line system/load connection		M12 connecting lugs			
Degree of protection		IP00			
Dimensions Width Height Depth	mm mm mm	350 321 211.5			
Weight	kg	69.6			

Table 5-5 Technical specifications of line reactors, 500 V – 600 V 3 AC, part 1

Order number	6SL3000-	0CH32-2AA0	0CH32-2AA0	0CH32-7AA0	0CH33-4AA0
Suitable for Power Module	6SL3310-	1GF31-8AAx	1GF32-2AAx	1GF32-6AAx	1GF33-3AAx
Unit rating of the Power Module	kW	110	132	160	200
Rated voltage	V	500 V 3	AC -10 % to 600 V	3 AC +10% (-15%	< 1 min)
I _{thmax}	Α	230	230	270	342
Power loss	kW	0.275	0.275	0.277	0.270
Line/load connection		M10 connecting lugs	M10 connecting lugs	M10 connecting lugs	M10 connecting lugs
Degree of protection		IP00	IP00	IP00	IP00
Dimensions Width Height Depth	mm mm mm	270 248 200	270 248 200	270 248 200	270 248 200
Weight	kg	31.1	31.1	27.9	38.9

Table 5- 6 Technical specifications of line reactors, 500 V – 600 V 3 AC, part 2

Order number	6SL3000-	0CH34-8AA0	0CH34-8AA0	0CH36-0AA0	0CH38-4AA0
Suitable for Power Module	6SL3310-	1GF34-1AAx	1GF34-7AAx	1GF35-8AAx	1GF37-4AAx
Unit rating of the Power Module	kW	250	315	400	500
Rated voltage	V	500 V 3	AC -10 % to 600 V	3 AC +10% (-15%	< 1 min)
I _{thmax}	Α	482	482	597	840
Power loss	kW	0.478	0.478	0.485	0.618
Line/load connection		M12 connecting lugs	M12 connecting lugs	M12 connecting lugs	M12 connecting lugs
Degree of protection		IP00	IP00	IP00	IP00
Dimensions Width Height Depth	mm mm mm	350 321 232.5	350 321 232.5	350 321 232.5	410 385 224
Weight	kg	55.6	55.6	63.8	98

Table 5-7 Technical specifications of line reactors, 500 V – 600 V 3 AC, part 3

Order number	6SL3000-	0CH38-4AA0	
Suitable for Power Module	6SL3310-	1GF38-1AAx	
Unit rating of the Power Module	kW	560	
Rated voltage	V	500 V 3	AC -10 % to 600 V 3 AC +10% (-15% < 1 min)
I _{thmax}	Α	840	
Power loss	kW	0.618	
Line system/load connection		M12 connecting lugs	
Degree of protection		IP00	
Dimensions Width Height Depth	mm mm mm	410 385 224	
Weight	kg	98	

Table 5-8 Technical specifications of line reactors 660 V – 690 V 3 AC, part 1

Order number	6SL3000-	0CH31-1AA0	0CH31-1AA0	0CH31-6AA0	0CH31-6AA0
Suitable for Power Module	6SL3310-	1GH28-5AAx	1GH31-0AAx	1GH31-2AAx	1GH31-5AAx
Unit rating of the Power Module	kW	75	90	110	132
Rated voltage	V	660 V 3 AC -10 % to 690 V 3 AC +10% (-15% < 1 min)			
I _{thmax}	Α	107	107	164	164
Power loss	kW	0.252	0.252	0.281	0.281
Line/load connection		M10 connecting lugs	M10 connecting lugs	M10 connecting lugs	M10 connecting lugs
Degree of protection		IP00	IP00	IP00	IP00
Dimensions Width Height Depth	mm mm mm	270 248 200	270 248 200	270 248 200	270 248 200
Weight	kg	24.4	24.4	25.9	25.9

Table 5-9 Technical specifications of line reactors 660 V – 690 V 3 AC, part 2

Order number	6SL3000-	0CH32-2AA0	0CH32-2AA0	0CH32-7AA0	0CH33-4AA0
Suitable for Power Module	6SL3310-	1GH31-8AAx	1GH32-2AAx	1GH32-6AAx	1GH33-3AAx
Unit rating of the Power Module	kW	160	200	250	315
Rated voltage	V	660 V 3 AC -10 % to 690 V 3 AC +10% (-15% < 1 min)			
I _{thmax}	Α	230	230	270	342
Power loss	kW	0.275	0.275	0.277	0.270
Line/load connection		M10 connecting lugs	M10 connecting lugs	M10 connecting lugs	M10 connecting lugs
Degree of protection		IP00	IP00	IP00	IP00
Dimensions Width Height Depth	mm mm mm	270 248 200	270 248 200	270 248 200	270 248 200
Weight	kg	31.1	31.1	27.9	38.9

Table 5- 10 Technical specifications of line reactors, 660 V – 690 V 3 AC, part 3

Order number	6SL3000-	0CH34-8AA0	0CH34-8AA0	0CH36-0AA0	0CH38-4AA0
Suitable for Power Module	6SL3310-	1GH34-1AAx	1GH34-7AAx	1GH35-8AAx	1GH37-4AAx
Unit rating of the Power Module	kW	400	450	560	710
Rated voltage	V	660 V 3 AC -10 % to 690 V 3 AC +10% (-15% < 1 min)			
I _{thmax}	Α	482	482	597	840
Power loss	kW	0.478	0.478	0.485	0.618
Line/load connection		M12 connecting lugs	M12 connecting lugs	M12 connecting lugs	M12 connecting lugs
Degree of protection		IP00	IP00	IP00	IP00
Dimensions Width Height Depth	mm mm mm	350 321 232.5	350 321 232.5	350 321 232.5	410 385 224
Weight	kg	55.6	55.6	63.8	98

Table 5- 11 Technical specifications of line reactors, 660 V – 690 V 3 AC, part 4

Order number	6SL3000-	0CH38-4AA0		
Suitable for Power Module	6SL3310-	1GH38-1AAx		
Unit rating of the Power Module	kW	800		
Rated voltage	V	660 V 3 AC -10 % to 690 V 3 AC +10% (-15% < 1 min)		
I _{thmax}	Α	840		
Power loss	kW	0.618		
Line system/load connection		M12 connecting lugs		
Degree of protection		IP00		
Dimensions Width Height Depth	mm mm mm	410 385 224		
Weight	kg	98		

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