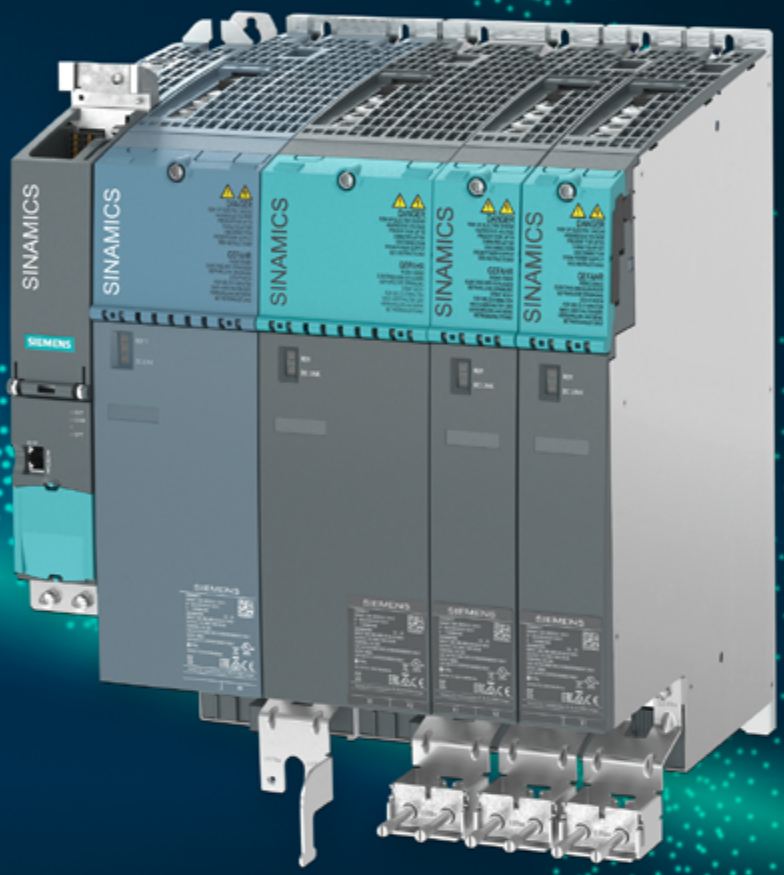
SIEMENS



Catalog News D 21.4 N

Edition April 2022

MOTION CONTROL DRIVES

SINAMICS S120, SINAMICS S220 and SIMOTICS

SINAMICS S220 Smart Line Modules Booksize format

siemens.com/d21-4n

Related catalogs

Motion Control Drives D 31.1
SINAMICS Inverters for Single-Axis Drives
Built-In Units

E86060-K5531-A111-A2-7600

Motion Control Drives D 31.2
SINAMICS Inverters for Single-Axis Drives
Distributed Inverters

E86060-K5531-A121-A2-7600

Motion Control Drives D 31.5
SINAMICS Converters for Single-Axis Drives
SINAMICS G120X infrastructure converters
for HVAC/Water/Wastewater

PDF (E86060-K5531-A151-A3-7600)

Motion Control Drives D 32
SINAMICS S210 Servo Drive System

PDF (E86060-K5532-A101-A7-7600)

Motion Control Drives D 34
SIMATIC MICRO-DRIVE
Servo Drive System

PDF (E86060-K5534-A101-A2-7600)

SINAMICS S120 D 21.3
Chassis Format Converter Units
Chassis-2 Format Converter Units
Cabinet Modules, Cabinet Modules-2
SINAMICS S150
Converter Cabinet Units
E86060-K5521-A131-A7-7600

Motion Control Drives D 21.4
SINAMICS S120 and SIMOTICS

E86060-K5521-A141-A1-7600

SIMOTICS S-1FG1 D 41
Servo geared motors
Helical, Parallel shaft, Bevel and
Helical worm geared motors

PDF (E86060-K5541-A101-A5-7600)

SIMOTICS GP, SD, XP, DP D 81.1
Low-Voltage Motors
Type series 1FP1, 1LE1, 1LE5, 1MB1, 1MB5, 1PC1
Frame sizes 63 to 450
Power range 0.09 to 1000 kW
PDF (E86060-K5581-A111-B5-7600)

Motion Control NC 62
SINUMERIK 840
Equipment for Machine Tools

PDF (E86060-K4462-A101-A4-7600)

Motion Control NC 63
SINUMERIK ONE
Equipment for Machine Tools

PDF (E86060-K4463-A101-A5-7600)

Motion Control NC 64
SINUMERIK MC
Equipment for woodworking, glass working and stone working machines, as well as special technologies

PDF (E86060-K4464-A101-A2-7600)

Industrial Controls IC 10
SIRIUS

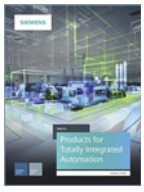
PDF (E86060-K1010-A101-B3-7600)

Low-Voltage Power Distribution and Electrical Installation Technology LV 10
SENTRON • SIVACON • ALPHA
Protection, Switching, Measuring and Monitoring Devices, Switchboards and Distribution Systems

PDF (E86060-K8280-A101-B4-7600)

SIMATIC ST 70
Products for
Totally Integrated Automation

PDF (E86060-K4670-A101-B8-7600)



SIMATIC HMI / PC-based Automation ST 80/ST PC
Human Machine Interface Systems
PC-based Automation

PDF (E86060-K4680-A101-C9-7600)

Industrial Communication IK PI
SIMATIC NET

E86060-K6710-A101-B8-7600

Industry Mall
Information and Ordering Platform
on the Internet:

www.siemens.com/industrymall

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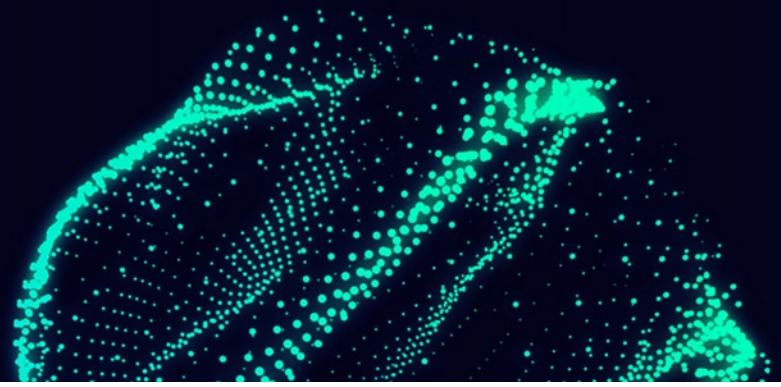


Catalog News D 21.4 N

Edition April 2022

MOTION CONTROL DRIVES

SINAMICS S120, SINAMICS S220 and SIMOTICS

siemens.com/d21-4n

Dear Customer,

We are pleased to present you with the new Catalog News D 21.4 N · April 2022. The Catalog News is a supplement to Catalog D 21.4 · 2017 and provides a comprehensive overview of the new SINAMICS S220 Smart Line Modules in booksize format incl. accessories and power components.

The products listed in this catalog are also included in the Industry Mall.

Please contact your local Siemens office for additional information.

Up-to-date information about SINAMICS S120 and SINAMICS S220 is available on the internet at
www.siemens.com/sinamics-s120
www.siemens.com/sinamics-s220
You can access our Industry Mall on the internet at
www.siemens.com/industrymall

Your personal contact will be happy to receive your suggestions and recommendations for improvement.
You can find your representative in our Personal Contact database at
www.siemens.com/automation-contact

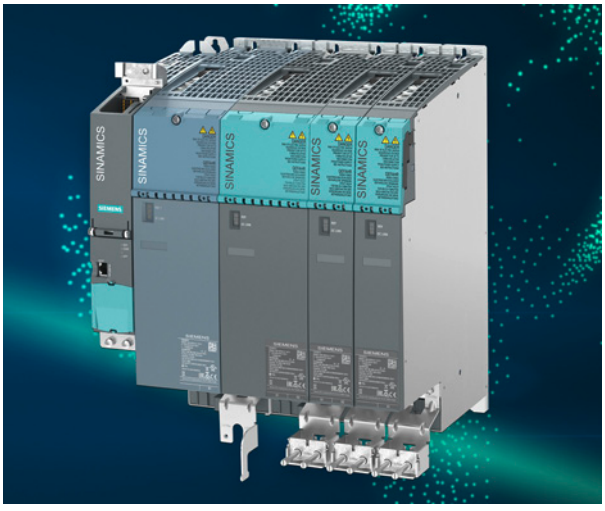
We hope that you will often enjoy using Catalog News D 21.4 N · April 2022 as a selection and ordering reference document and wish you every success with our products and solutions.

With kind regards,

Frank Golüke
Vice President
General Motion Control
Siemens AG, Digital Industries, Motion Control

SINAMICS S120, SINAMICS S220 and SIMOTICS

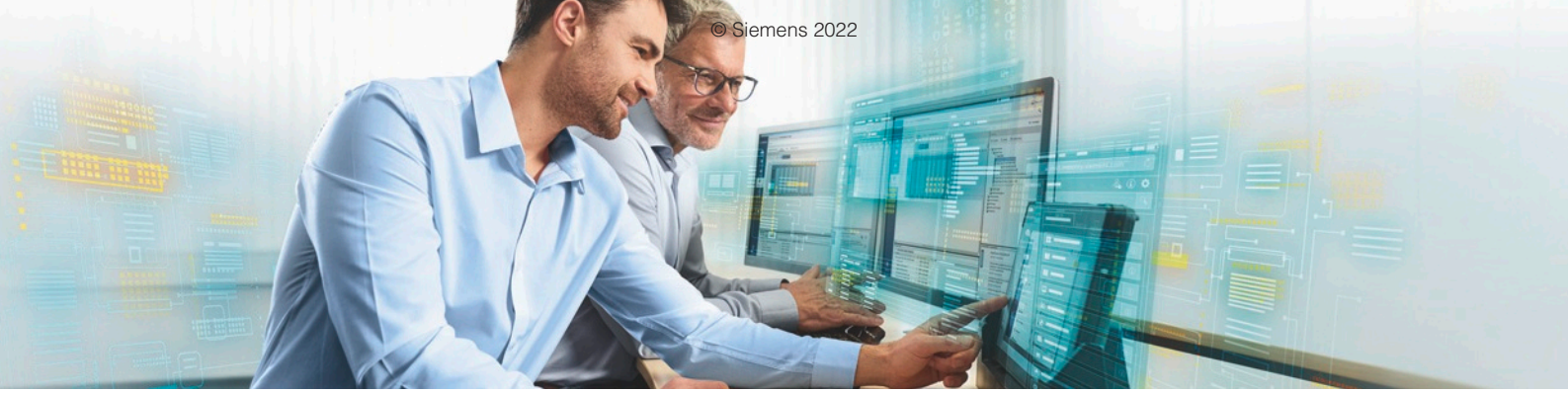
Motion Control



Catalog News D 21.4 N · April 2022

Refer to the Industry Mall for current updates of this catalog:
www.siemens.com/industrymall

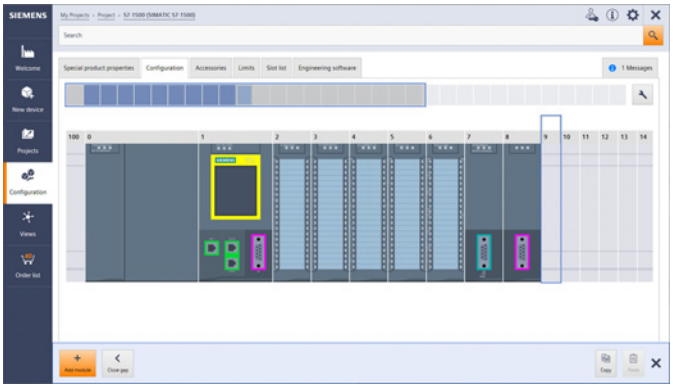
The products and systems described in this catalog are manufactured/distributed under application of a certified quality management system in accordance with EN ISO 9001 (Certified Registration No. 001258). The certificate is recognized by all IQNet countries.



TIA Selection Tool – quick, easy, smart configuration

For you to get the most out of our portfolio quickly and easily.

Do you always need the optimum configuration for planning your project?
For your application we offer the TIA Selection Tool to support all project planners, beginners and experts alike.
No detailed portfolio knowledge is necessary.
TIA Selection Tool is available for download as a free desktop version or a cloud variant.



Your Advantages

Quick

- Configure a complete project with just a few entries – without a manual, without special knowledge
- Import and export of hardware configuration to TIA Portal or other systems
- Ideal visualization of the projects to be configured

Easy

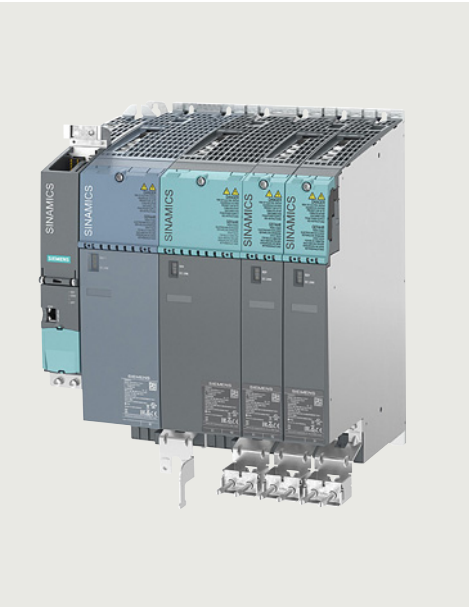
- Tool download either as desktop version or web-based cloud version
- Technically always up-to-date about product portfolio and innovative approaches
- Highly flexible, secure, cross-team work in the cloud
- Direct ordering in the Siemens Industry Mall

Smart

- Smart selection wizard for error-free configuration and ordering
- Configuration options can be tested and simulated in advance
- Library for archiving sample configurations

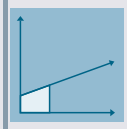
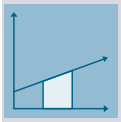
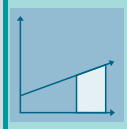
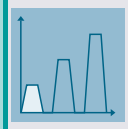
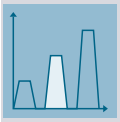
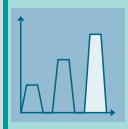
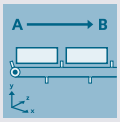
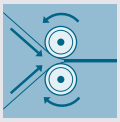
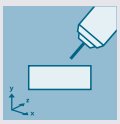
The TIA Selection Tool is a completely paperless solution.
Download it now:
www.siemens.com/tst

For more information, scan the QR code



Overview

SINAMICS selection guide – typical applications

Use	Requirements for torque accuracy/speed accuracy/position accuracy/coordination of axes/functionality					
	Continuous motion			Non-continuous motion		
	Basic	Medium	High	Basic	Medium	High
						
Pumping, ventilating, compressing	Centrifugal pumps Radial / axial fans Compressors	Centrifugal pumps Radial / axial fans Compressors	Eccentric screw pumps	Hydraulic pumps Metering pumps	Hydraulic pumps Metering pumps	Descaling pumps Hydraulic pumps
	V20 G120C G120X	G120X G130/G150 G180 [1] DCM	**S120/S220**	G120	S110	**S120/S220**
Moving 	Conveyor belts Roller conveyors Chain conveyors	Conveyor belts Roller conveyors Chain conveyors Lifting/lowering devices Elevators Escalators/moving walkways Indoor cranes Marine drives Cable railways	Elevators Container cranes Mining hoists Excavators for open-cast mining Test bays	Acceleration conveyors Storage and retrieval machines	Acceleration conveyors Storage and retrieval machines Cross cutters Reel changers	Storage and retrieval machines Robotics Pick & place Rotary indexing tables Cross cutters Roll feeds Engagers/disengagers
	V20 G115D G120C ET 200pro FC-2 [2]	G120 G120D G130/G150 G180 [1]	**S120/S220** S150 DCM	V90 G120 G120D	S110 S210 DCM	**S120/S220** S210 DCM
Processing 	Mills Mixers Kneaders Crushers Agitators Centrifuges	Mills Mixers Kneaders Crushers Agitators Centrifuges Extruders Rotary furnaces	Extruders Winders/unwinders Lead/follower drives Calenders Main press drives Printing machines	Tubular bagging machines Single-axis motion control such as • Position profiles • Path profiles	Tubular bagging machines Single-axis motion control such as • Position profiles • Path profiles	Servo presses Rolling mill drives Multi-axis motion control such as • Multi-axis positioning • Cams • Interpolations
	V20 G120C	G120 G130/G150 G180 [1]	**S120/S220** S150 DCM	V90 G120	S110 S210	**S120/S220** S210 DCM
Machining 	Main drives for • Turning • Milling • Drilling	Main drives for • Drilling • Sawing	Main drives for • Turning • Milling • Drilling • Gear cutting • Grinding	Axis drives for • Turning • Milling • Drilling	Axis drives for • Drilling • Sawing	Axis drives for • Turning • Milling • Drilling • Lasering • Gear cutting • Grinding • Nibbling and punching
	S110	S110 **S120/S220**	**S120/S220**	S110	S110 **S120/S220**	**S120/S220**

Using the SINAMICS selection guide

The varying range of demands on modern variable frequency drives requires a large number of different types. Selecting the optimum drive has become a significantly more complex process. The application matrix shown simplifies this selection process considerably, by suggesting the ideal SINAMICS drive for examples of typical applications and requirements.

- The application type is selected from the vertical column
  - Pumping, ventilating, compressing
  - Moving
  - Processing
  - Machining
- The quality of the motion type is selected from the horizontal row
  - Basic
  - Medium
  - High

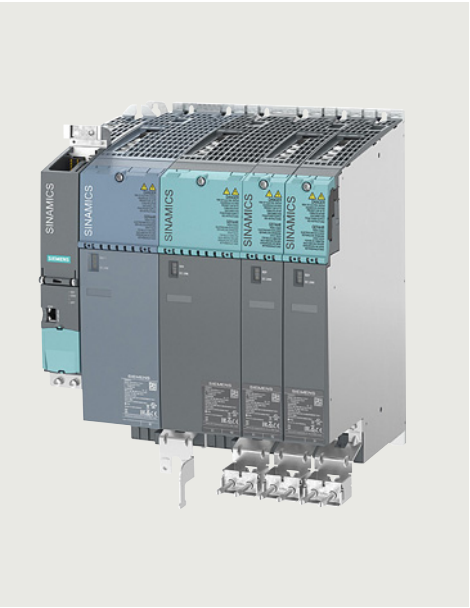
More information

Further information about SINAMICS is available on the internet at www.siemens.com/sinamics

Practical application examples and descriptions are available on the internet at www.siemens.com/sinamics-applications

[1] Industry-specific converters.

[2] Information on the SIMATIC ET 200pro FC-2 frequency converter is available in Catalog D 31.2 and at: www.siemens.com/et200pro-fc



Overview

SINAMICS S220 Smart Line Module between Control Unit CU320-2 and SINAMICS S120 Motor Modules, in booksize format

With SINAMICS S120 Booksize, Siemens is one of the world's leading suppliers of drive solutions for machine tools/production machines and General Motion Control applications. Used in a wide variety of areas, industries and applications, Siemens delivers outstanding customer benefits and industry know-how with SINAMICS S120.

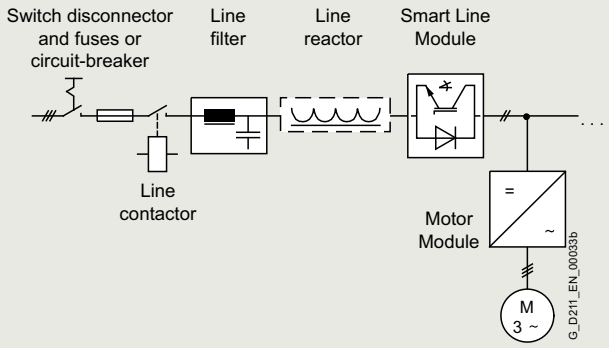
The requirements that drive solutions need to meet are continually changing and increasing. Machine solutions need to be perfectly tailored to one another, offer the highest level of functionality and quality, while being economic and simple to implement across the board.

With SINAMICS S220 Booksize, Siemens is innovating the proven SINAMICS S120 series with considerably more powerful functions and is providing answers to future requirements. SINAMICS S220 is the reliable, robust, and innovative high-performance solution that meets all the requirements for IoT and industrial security.

SINAMICS S220 Smart Line Modules are the first steps in innovating the proven SINAMICS S120 range. Smart Line Modules are an integral part of the SINAMICS S220 Booksize series and are characterized by the highest level of performance, maximum flexibility, high degree of user-friendliness and being fit for digitalization. Available in two versions (C and D type), thanks to their higher power density, greater overload capability and precise dimensioning, economical machine solutions can be implemented while also requiring less space in the control cabinet. Thanks to their innovative mechanical design, Smart Line Modules are also simple and reliable to install and extremely robust.

Operation of SINAMICS S220 Smart Line Modules is possible with a CU320-2 Control Unit (SINAMICS firmware V5.2 SP3 HF10).

Smart Line Modules can supply energy and return regenerative energy to the supply system. A Braking Module and braking resistor are required only if the drives need to be decelerated in a controlled manner after a power failure (i.e. when energy cannot be recovered to the supply). When a Smart Line Module is used as the infeed, the matching line reactor must be installed. A line filter can be optionally installed in order to ensure compliance with the limits stipulated for Category C2 in EN 61800-3.



Drive dimensioning in the TIA Selection Tool

Application-specific requirements can be determined using drive technology dimensioning in the TIA Selection Tool. This can include motors, gearboxes and converters. The tool supports the configuration and dimensioning of control functions with an open and closed control loop. The technical documentation with features of the technical drive system, as well as a product list for ordering via the Industry Mall can also be compiled.

You can find more information on the SIZER for Siemens Drives engineering tool at
https://support.industry.siemens.com/cs/ww/en/ps/13434/dl

You can find more information about the TIA Selection Tool at
www.siemens.com/tia-selection-tool

Virtualization

The "SINAMICS DriveSim Basic" virtualization solution makes it possible to simulate all SINAMICS S220 device types in a realistic manner, with minimum work for parameter setting and simple handling.

Overview

SINAMICS S220 Smart Line Module, in booksize format

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

- C type: Optimized for continuous load with up to 200 % overload (continuous motion)
- D type: Optimized for highly dynamic, intermittent duty cycles with up to 300 % overload (discontinuous motion)

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

The associated line reactor is required for operating a Smart Line Module.

Design

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

- 1 power connection via screw-type terminals (plugs included in the scope of supply)
- 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
- 3 DRIVE-CLiQ sockets
- 1 temperature sensor input for KTY84-130, Pt1000 or PTC (Pt1000 can be used from firmware V4.7 HF17)

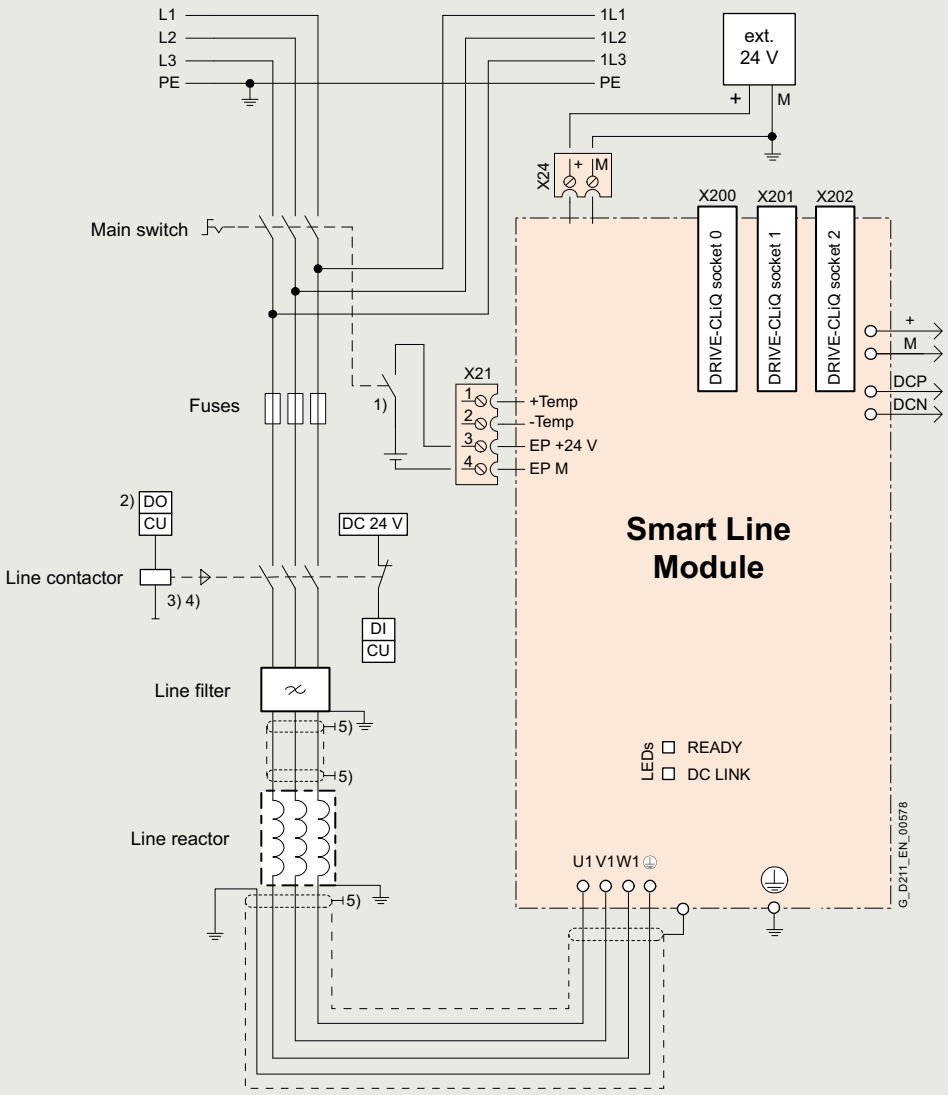
The status of the Smart Line Modules is indicated via two multi-color LEDs.

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

The scope of supply of the Smart Line Modules includes:

- DRIVE-CLiQ cable for connection to the adjacent Control Unit on the left for drive control, length 0.11 m
- 2 blanking plugs for sealing unused DRIVE-CLiQ sockets
- DRIVE-CLiQ cable (length depends on Smart Line Module width) for connection to the adjacent Motor Module, length = width of Smart Line Module + 0.11 m
- Jumper plug 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 X1 for the line connection (screw version)
- 1 set of warning labels in 36 languages

Integration



[1] Leading NC contact *t* >10 ms. When using a VSM10, the leading NC contact can be omitted.
[2] DI/DO, controlled by the Control Unit.
[3] No additional load permitted downstream of the line contactor.
[4] The current carrying capacity of the digital output must be taken into account. An output interface element may have to be used.
[5] Contacting via rear panel or shield panels according to EMC Installation Guidelines.

Connection example of 16 kW and 24 kW Smart Line Modules in booksize format

Selection and ordering data

	Rated power at 380 V kW	Maximum power at 380 V kW	C/D type	**Smart Line Module in booksize format** Article No.
Line voltage 380 ... 480 V 3 AC				
	16	35	C type	**6SL5130-6UE21-6AC0**
		48	D type	**6SL5130-6UE21-6AD0**
	24	48	C type	**6SL5130-6UE22-4AC0**
		72	D type	**6SL5130-6UE22-4AD0**

Description	Article No.
Accessories	
 **Shield connection plate** For Smart Line Modules in booksize format with a width of 100 mm (3.94 in)	**6SL5166-1BD00-0AA0**
 **Shield terminal** For shield connection on the shield connection plate • SK28 cable diameter 3 ... 20 mm (0.12 ... 0.79 in)	**8WH9130-0NA00**
 • SK35 cable diameter 20 ... 35 mm (0.79 ... 1.38 in)	**8WH9130-0PA00**
 **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, 75 mm and 100 mm (1.97 in, 2.95 in and 3.94 in)	**6SL3162-2BD00-0AA0**
• Screw-type terminals 10 ... 35 mm^2 For Line Modules and Motor Modules in booksize format with a width of 100 mm, 150 mm, 200 mm and 300 mm (3.94 in, 5.91 in, 7.87 in and 11.81 in)	**6SL3162-2BE00-0AA0**
 **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**
Connector For 16 kW and 24 kW Smart Line Modules in booksize format Screw-type terminals 6 ... 16 mm^2	**6SL5166-2NA00-0AA0**

Description	Article No.
Accessories for re-ordering	
24 V terminal adapter For all Line Modules and Motor Modules in booksize format	**6SL3162-2AA00-0AA0**
24 V jumper plug For connection of the 24 V busbars (for booksize format)	**6SL3162-2AA01-0AA0**
Terminal Kit (Plug-in terminals, DRIVE-CLiQ jumper (length = module width + 110 mm (4.33 in)), dust protection blanking plugs) For DRIVE-CLiQ port For Smart Line Modules in booksize format with a width of 100 mm (3.94 in)	**6SL5166-8AD03-0AA0**
 **Warning labels in 36 languages** This label set can be glued over the standard English or German labels to provide warnings in other languages. One set of labels is supplied with the devices. One sign in each of the following languages is provided in each set: BG, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LV, MT, NL, NO, PL, PT, RO, RU, SE, SI, SK, TR, CN, ID, IL, IR, JP KR, SA, TH, TW	**6SL3166-3AB00-0AA0**
 **Dust protection blanking plugs** (50 units) For DRIVE-CLiQ port	**6SL3066-4CA00-0AA0**

Technical specifications

	Smart Line Module in booksize format 6SL5130-...
Line voltage (up to 4000 m (13124 ft) above sea level)	380 ... 480 V 3 AC ±10 % (in operation -15 % <1 min)
Line frequency	50/60 Hz (47 ... 63 Hz)
SCCR (short-circuit current rating)	100 kA in conjunction with the recommended Class J fuse, or circuit breaker according to UL489 / CSA 22.2 No. 5-02 see recommended line-side components
Line power factor at rated power • Fundamental (cos φ_1) • Total (λ)	 >0.98 0.65 ... 0.9
Overvoltage category according to EN 60664-1	Class III
DC link voltage, approx.	495 ... 720 V (typ. 1.35 × line voltage) [1]
Electronics power supply	24 V DC -15 %/+20 %
Radio interference suppression • Standard • With line filter	 No radio interference suppression Category C2 to EN 61800-3 Total cable length up to 750 m (2460 ft) (shielded)
Cooling method	Internal air cooling (power units with increased air cooling by built-in fan)
Permissible ambient and coolant temperature (air) during operation for line-side components, Line Modules and Motor Modules	-10 ... +40 °C (14 ... 104 °F) without derating, >40 ... 55 °C (104 ... 131 °F), see derating characteristics
Installation altitude	Up to 1000 m (3281 ft) above sea level without derating, > 1000 ... 4000 m (3281 ... 13124 ft) above sea level, see derating characteristics
Declarations of Conformity	CE (Low-Voltage and EMC Directives)
Certificate of suitability	cULus

[1] The DC link voltage is maintained at the mean value of the rectified line voltage. For further information, see section Configuration notes.

Technical specifications

Line voltage 380 ... 480 V 3 AC		Smart Line Module in booksize format			
Internal air cooling		6SL5130-6UE21-6AC0	6SL5130-6UE21-6AD0	6SL5130-6UE22-4AC0	6SL5130-6UE22-4AD0
Power data		C type	D type	C type	D type
• Rated power P_N					
- At 380 V 3 AC	kW	**16.0**	**16.0**	**24**	**24**
- At 400 V 3 AC	kW	**16.8**	**16.8**	**25.3**	**25.3**
- At 480 V 3 AC	kW	**20.2**	**20.2**	**30**	**30**
• Maximum power P_{max}					
- At 380 V 3 AC	kW	35	48	48	72
- At 400 V 3 AC	kW	37	51	51	76
- At 480 V 3 AC	kW	51	61	61	91
Input data					
• Rated current	A	29	29	43	43
• Maximum current	A	62	86	86	129
Output data					
• Rated DC current	A	33	33	49	49
• Maximum DC current	A	71	97	97	146
Current demand 24 V DC electronics power supply, max.	A	0.7	0.7	0.7	0.7
Current carrying capacity					
• 24 V DC busbars	A	20	20	20	20
• DC link busbars	A	200	200	200	200
DC link capacitance					
• Smart Line Module	µF	820	820	940	940
• Drive line-up, max.	µF	20000	20000	20000	20000
Power loss [1]	kW	0.15	0.15	0.2	0.2
Cooling air requirement	m^3/h (ft^3/h)	77 (2719)	77 (2719)	77 (2719)	77 (2719)
Sound pressure level L_{pA} (1 m)	dB	<70	<70	<70	<70
Line connection U1, V1, W1		Screw-type terminals (X1)	Screw-type terminals (X1)	Screw-type terminals (X1)	Screw-type terminals (X1)
• Conductor cross-section	mm^2	6 ... 16	6 ... 16	6 ... 16	6 ... 16
Shield connection		6SL5166-1BD00-0AA0	6SL5166-1BD00-0AA0	6SL5166-1BD00-0AA0	6SL5166-1BD00-0AA0
PE connection		M5 screw	M5 screw	M5 screw	M5 screw
Cable length, max. (total of all motor power cables and DC link)					
• Shielded	m (ft)	1000 (3281)	1000 (3281)	1000 (3281)	1000 (3281)
• Unshielded	m (ft)	1200 (3937)	1200 (3937)	1200 (3937)	1200 (3937)
Degree of protection		IP20	IP20	IP20	IP20
Dimensions					
• Width	mm (in)	100 (3.94)	100 (3.94)	100 (3.94)	100 (3.94)
• Height	mm (in)	380 (14.96)	380 (14.96)	380 (14.96)	380 (14.96)
• Depth	mm (in)	270 (10.63)	270 (10.63)	270 (10.63)	270 (10.63)
Weight, approx.	kg (lb)	8.2 (18.1)	8.2 (18.1)	8.2 (18.1)	8.2 (18.1)

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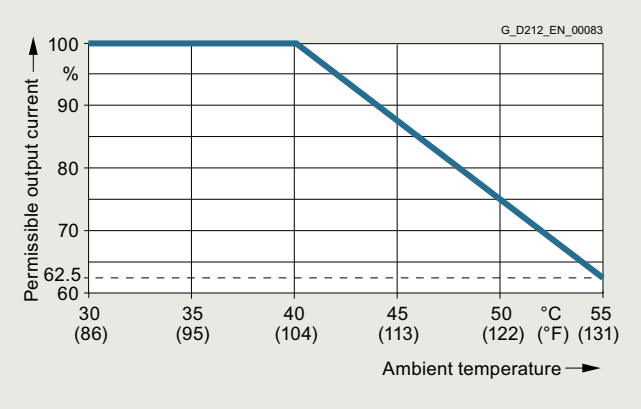
[1] Power loss of Smart Line Module at rated output including losses of 24 V DC electronics power supply.

Characteristic curves

Derating characteristics



Output power as a function of ambient temperature

Installation altitude

- 0 ... 1000 m (0 ... 3281 ft) above sea level without derating
- > 1000 ... 2000 m (3281 ... 6562 ft)
  - Reduction of the output current by 10 % per 1000 meters (3281 feet), or
  - reduction in the ambient temperature by 5 °C (41 °F) per 1000 meters (3281 ft)
- > 2000 ... 4000 m (6562 ... 13124 ft)
  - Reduction of the output current by 10 % per 1000 meters (3281 feet), or
  - reduction in the ambient temperature by 5 °C (41 °F) per 1000 meters (3281 ft)
  - Operation on line supply systems with grounded neutral point, or
  - operation with an isolating transformer with secondary grounded neutral point

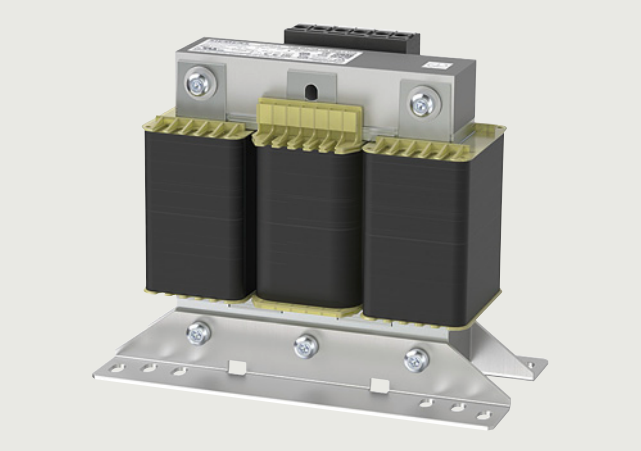
More information

Compact Operating Instructions are supplied in hard copy form in English and Turkish with every SINAMICS S220 Smart Line Module format Booksize.

The latest technical documentation as well as further technical specifications are available on the internet at:
www.siemens.com/sinamics-s220/documentation

and in the Drive Technology Configurator (DT Configurator):
www.siemens.com/sinamics-s220/configuration

Overview



Line reactors are always to be provided for operation of Smart Line Modules, as line harmonics can occur on converters that damage/disturb other loads connected to the same line supply. Line reactors limit the line harmonics to permissible values. Line reactors that are not permissible can damage the Smart Line Modules.

Selection and ordering data

Rated power of the Smart Line Module kW	Suitable for Smart Line Module in booksize format	**Line reactor** Article No.
Line voltage 380 ... 480 V 3 AC		
16	6SL5130-6UE21-6AC0	**6SL3100-0EE21-6AA0**
	6SL5130-6UE21-6AD0	**6SL5100-0EE21-6AD0**
24	6SL5130-6UE22-4AC0	**6SL5100-0EE22-4AC0**
	6SL5130-6UE22-4AD0	**6SL5100-0EE22-4AD0**

Technical specifications

Line voltage 380 ... 480 V 3 AC		**Line reactor**			
		6SL3100-0EE21-6AA0	6SL5100-0EE21-6AD0	6SL5100-0EE22-4AC0	6SL5100-0EE22-4AD0
Rated current	A	29	29	43.5	43.5
Power loss	W	90	90	92	92
Line/load connection 1U1, 1V1, 1W1 / 1U2, 1V2, 1W2		Screw terminals	Screw terminals	Screw terminals	Screw terminals
• Conductor cross-section	mm^2	10	16	16	16
PE connection		M6 screw stud	M6 screw	M6 screw	M6 screw
Degree of protection		IPXXB	IPXXB	IPXXB	IPXXB
Dimensions					
• Width	mm (in)	219 (8.62)	219 (8.62)	219 (8.62)	219 (8.62)
• Height	mm (in)	176 (6.93)	176 (6.93)	195 (7.68)	195 (7.68)
• Depth	mm (in)	110.5 (4.35)	110.5 (4.35)	126 (4.96)	126 (4.96)
Weight, approx.	kg (lb)	9.0 (19.9)	9.0 (19.9)	15.5 (34.2)	15.5 (34.2)
Certificate of suitability		cURus	cURus	cURus	cURus
Suitable for Smart Line Module in booksize format	Type	6SL5130-6UE21-6AC0	6SL5130-6UE21-6AD0	6SL5130-6UE22-4AC0	6SL5130-6UE22-4AD0
• Rated power of the Smart Line Module	kW	16 C type	16 D type	24 C type	24 D type

Line filters for Smart Line Modules

Overview

In conjunction with line reactors and a consistent EMC-compliant system design, line filters limit the conducted electromagnetic emissions generated by the Smart Line Modules to the limit values according to IEC 61800-3. Line filters are only suitable for direct connection to TN line systems.

Selection and ordering data

Rated power of the Smart Line Module kW	Suitable for Smart Line Module in booksize format	**Line filter** Article No.
Line voltage 380 ... 480 V 3 AC		
16	6SL5130-6UE21-6AC0 6SL5130-6UE21-6AD0	**6SL5100-0HE21-6DD0**
24	6SL5130-6UE22-4AC0 6SL5130-6UE22-4AD0	**6SL5100-0HE22-4DD0**

Technical specifications

Line voltage 380 ... 480 V 3 AC		**Line filter**	
		6SL5100-0HE21-6DD0	6SL5100-0HE22-4DD0
Rated current	A	30	44
Power loss	W	12.0	22.0
Line/load connection L1, L2, L3 / U, V, W		Screw terminals	Screw terminals
• Conductor cross-section	mm^2	10	35
PE connection		M8 screw studs	M8 screw studs
Degree of protection		IPXXB	IPXXB
Dimensions			
• Width	mm (in)	50 (1.97)	50 (1.97)
• Height	mm (in)	370 (14.57)	370 (14.57)
• Depth	mm (in)	205 (8.07)	205 (8.07)
Weight, approx.	kg (lb)	5 (11.0)	5 (11.0)
Certificate of suitability		cURus	cURus
Suitable for Smart Line Module in booksize format	Type	6SL5130-6UE21-6AC0 6SL5130-6UE21-6AD0	6SL5130-6UE22-4AC0 6SL5130-6UE22-4AD0
• Rated power of the Smart Line Module	kW	16	24

Selection and ordering data

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

The tables below list recommended components.

Additional information about the line-side power components can be found in Catalogs LV 10 and IC 10 as well as the Industry Mall.

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

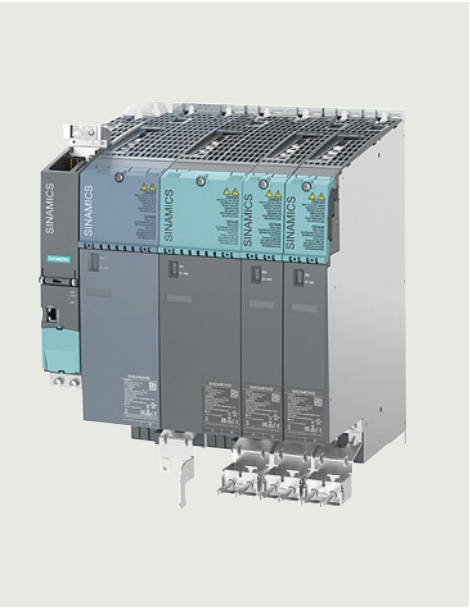
Rated power	Suitable for Smart Line Module in booksize format	**Line contactor**	**LV HRC fuse (gL/gG)**			**UL/CSA fuse, Class J** Available from: Mersen http://www.ep.mersen.com		
			Rated current	Size		Rated current	Size	
kW	Type	Type	A		Article No.	A	mm	Reference No.
Line voltage 380 ... 480 V 3 AC								
16	6SL5130-6UE21-6AC0 6SL5130-6UE21-6AD0	**3RT2035**	40	000	**3NA3817**	40	27 × 60	AJT40
24	6SL5130-6UE22-4AC0 6SL5130-6UE22-4AD0	**3RT2037**	80	000	**3NA3824**	80	27 × 117	AJT80

Recommendations on further overcurrent protection devices are available at:
https://support.industry.siemens.com/cs/document/109804134

Notes

Appendix

16

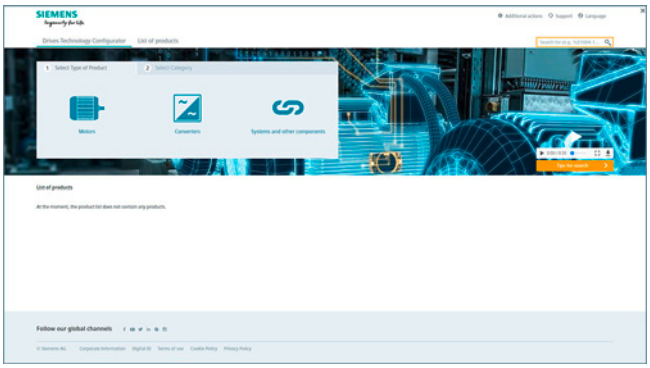


Drive Technology Configurator

Overview

The Drive Technology Configurator (DT Configurator) helps you to configure the optimum drive technology products for your application – starting with gearboxes, motors, converters as well as the associated options and components and ending with controllers, software licenses and connection systems. Whether with little or detailed knowledge of products: preselected product groups, deliberate navigation through selection menus and direct product selection through entry of the article number support quick, efficient and convenient configuration.

In addition, comprehensive documentation comprising technical data sheets, 2D dimensional drawings/3D CAD models, operating instructions, certificates, etc. can be selected in the DT Configurator. Immediate ordering is possible by simply transferring a parts list to the shopping cart of the Industry Mall.



Drive Technology Configurator for efficient drive configuration with the following functions

- Quick and easy configuration of drive products and associated components – gearboxes, motors, converters, controllers, connection systems
- Configuration of drive systems for pump, fan and compressor applications from 1 kW to 2.6 MW
- Retrievable documentation for configured products and components, such as
  - Data sheets in up to 9 languages in PDF or RTF format
  - 2D dimensional drawings/3D CAD models in various formats
  - Terminal box drawing and terminal connection diagram
  - Operating instructions
  - Certificates
  - Start-up calculation for SIMOTICS motors
  - EPLAN macros
- Support with retrofitting in conjunction with Spares On Web www.siemens.com/sow
- Ability to order products directly through the Siemens Industry Mall

Access to the Drive Technology Configurator

The Drive Technology Configurator can be called up without registration and without a login:
www.siemens.com/dt-configurator

Overview

Selection guide and configurator for automation technology

Error-free configuration without expert knowledge through intelligent configurators and selection wizards. Desktop and cloud versions enable cross-team collaboration with maximum flexibility.

There are two versions of the TIA Selection Tool:

- One for downloading and execution on Windows PCs (from Microsoft Windows 10)
- One for running from the cloud, which is launched from mobile devices directly in the browser (we recommend Safari, Chrome and Firefox)

Projects stored in the cloud can be edited with both tools. This makes it possible to work on-the-go using a tablet, at home on a PC – and vice versa, or together with colleagues and customers.

In order to use the full functionality, we recommended setting up a Siemens Industry Mall account for both cases. This gives you access to prices and enables you to save your projects to our cloud.

You can find additional information about the TIA Selection Tool at:
www.siemens.com/tia-selection-tool

Drive dimensioning in the TIA Selection Tool

Application-specific requirements can be determined using drive technology dimensioning in the TIA Selection Tool. This can include motors, gearboxes and converters. The tool supports the configuration and dimensioning of control functions with an open and closed control loop. The technical documentation with features of the technical drive system, as well as a product list for ordering via the Industry Mall can also be compiled.

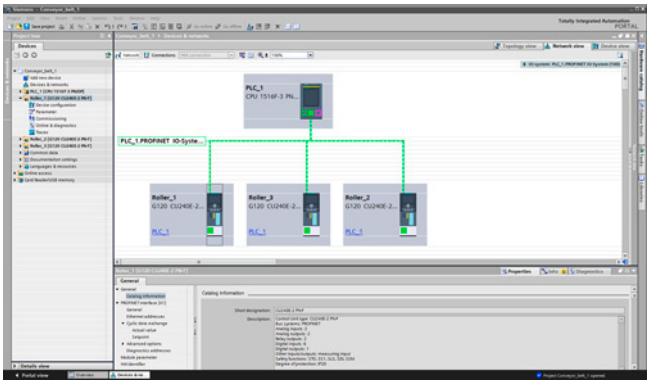
You can find more information on the SIZER for Siemens Drives engineering tool at
https://support.industry.siemens.com/cs/ww/en/ps/13434/dl

SINAMICS Startdrive commissioning tool

Overview

SINAMICS Startdrive is integrated in the TIA Portal and is a tool for the configuration, commissioning and diagnostics of the SINAMICS family of converters.

The SINAMICS Startdrive commissioning tool has been optimized with regard to user friendliness and consistent use of the TIA Portal benefits of a common working environment for PLC, HMI and drives. Time-saving and guided step-by-step commissioning with maximum flexibility is complemented by user-friendly graphic function views for all drive functions, including functional safety (Safety Integrated) and drive-based technology functions (e.g. EPos). The automatic message display, the powerful real-time trace and the context-sensitive online help make converter diagnostics very easy.



The software packages based on the TIA Portal are harmonized with each other and offer important benefits, the main advantage being a shared project storage. The TIA Portal enables simple integration of SINAMICS converters in your automation solution. Thanks to the standardization of operator actions and the integration in general TIA Portal operating concepts (e.g. UMAC, Openness) as well as standard TIA Portal functions (e.g. Undo/Redo), familiarization is easy both for drive experts as well as SIMATIC users. Special focus is placed on the interaction between SIMATIC and SINAMICS, especially when connecting the SINAMICS drives to SIMATIC technology objects.

Integration

Supported frequency converters

SINAMICS Startdrive Basic enables complete commissioning, diagnostics, parameterization, optimization and connection to the PLC for the following SINAMICS converters integrated in SINAMICS Startdrive:

- SINAMICS G120, G120C, G120D, G120P
- SINAMICS G115D
- SINAMICS G130, G150
- SINAMICS S120 *), S150
- SINAMICS S210
- SINAMICS MV

SINAMICS Startdrive Advanced

With SINAMICS Startdrive Advanced (available as of V15) you benefit from powerful engineering functions that save you considerable time and ultimately costs.

- Advanced functions for SINAMICS Startdrive: Safety acceptance test for SINAMICS G120, SINAMICS S120 and SINAMICS S210
  - Safety Activation Test
  - Improved optimization options in the drive for CU320-2 PN/DP and CU310-2 PN-based drive units: Extended measuring functions (available as of V5.2 SP3)
  - Prompted acceptance test wizard for all drive-based Safety Integrated functions (Basic and Extended Safety)
  - Automatic and safety function-specific generation of traces to analyze the machine behavior
  - Generation of an acceptance report as Excel file (xlsx format, can also be used with OpenOffice)
  - Available for SINAMICS G120, G120C, G115D, G120D, G120P, S120 and S210
- Also contains all Startdrive Basic functions
- License key only required, no additional installation

New in V17

Startdrive Basic V17

- Extension for UMAC: Additional function right for drive parameter changes including DCC
- Extension of the SINAMICS S210 family: Support of the SINAMICS firmware V5.2 SP3
- Extension of the SINAMICS S120 family: Support of CU320-2 DP (in V4.8 or higher) for SINAMICS S120 Booksize and Chassis
- Extension of the SINAMICS MV family: Support of the SINAMICS firmware V5.2 SP2
- Extensions for CU320-2 PN/DP and CU310-2 PN-based drive units
  - Support of the SINAMICS firmware V5.2 SP3
  - User-defined parameter list
  - Data set switchover (drive, motor, encoder and command data sets)
  - Improved optimization option in the drive (Bode diagram)
  - Extensions for CU320-2 Integrated in SIMATIC Drive Controller
  - EPOS (basic positioner)
  - DCC (Drive Control Chart)
  - Improved interaction between drives and SIMATIC technology objects
  - Transfer of optimization parameters from One Button Tuning (OBT) of the drive to the technology object
  - Display of drive configuration status in the technology object
  - Support of new SINAMICS Technology Extensions (TEC) function, see https://support.industry.siemens.com/cs/ww/en/view/109771648
- Extension of the SINAMICS G120 family:
  - Support of the SINAMICS G115D distributed drive
  - Improved AS-i connection for SINAMICS G115D AS-i (in combination with SIMATIC ET200SP AS-i Master)
- Extension of technology object "BasicPosControl"
  - Physical units
  - Entry of mechanical data
- Extension of Openness for drive units
  - Support of the SINAMICS G115D distributed drive
  - More information on Startdrive Openness can be found at https://support.industry.siemens.com/cs/ww/en/view/109763491

*) Including SINAMICS S220 Smart Line Modules in booksize format as of SINAMICS Startdrive V17 Update 1.

Integration

Startdrive Advanced V17

- Extension of safety acceptance test
  - Safety Activation Test
  - Support of the SINAMICS G115D distributed drive
- Extension for CU320-2 PN/DP and CU310-2 PN-based drive units: Improved optimization options in the drive: Extended measuring functions (available as of V5.2 SP3)

Installation versions

SINAMICS Startdrive can be installed as an optional package to SIMATIC STEP 7 or as a stand-alone application (without SIMATIC STEP 7).

System requirements

The following table shows the recommended hardware and system equipment for the operation of SINAMICS Startdrive.

Hardware	Recommendation
Computer	As of SIMATIC FIELD PG M5 Advanced (or comparable PC)
Processor	Intel Core i5-8400H (2.5 ... 4.2 GHz; 4 cores + hyper-threading; 8 MB Smart Cache)
RAM	16 GB or more (32 GB for large projects)
Hard disk	SSD with at least 50 GB available memory
Screen resolution	15.6"' Full HD display (1920 × 1080 or larger)
Operating systems	• **Windows 10 (64 bit)** - Windows 10 Professional Version 1909, 2004, 2009/20H2 - Windows 10 Enterprise 1909, 2004, 2009/20H2 - Windows 10 IoT Enterprise 2016 LTSB - Windows 10 IoT Enterprise 2019 LTSC • **Windows Server (64 bit)** - Windows 10 Professional Version 1909, 2004, 2009/20H2 - Windows 10 Enterprise 1909, 2004, 2009/20H2 - Windows 10 IoT Enterprise 2016 LTSB - Windows 10 IoT Enterprise 2019 LTSC

Compatibility with other products

- SINAMICS Startdrive V17 operates with STEP 7, WinCC and Scout TIA V17 in one framework
- SINAMICS Startdrive V17 can be installed on the same computer as other versions of SINAMICS Startdrive V12 to V16
- SINAMICS Startdrive can be installed on the same computer as SINAMICS MICROMASTER STARTER

Supported virtualization platforms

SINAMICS Startdrive can be installed in a virtual machine. For this purpose, one of the following virtualization platforms in the specified version or a newer version can be used:

- Windows 10 Professional Version 1909, 2004, 2009/20H2
- Windows 10 Enterprise 1909, 2004, 2009/20H2
- Windows 10 IoT Enterprise 2016 LTSB
- Windows 10 IoT Enterprise 2019 LTSC

Supported security programs

The following security programs have been tested with SINAMICS Startdrive V17:

- Virus scanners:
  - Symantec Endpoint Protection 14.2
  - Trend Micro OfficeScan 12.0
  - McAfee Endpoint Security (ENS) 10.6
  - Kaspersky Endpoint Security 11.3
  - Windows Defender
  - Qihoo 360 "Safe Guard 12.1" + "Virus Scanner"
- Encryption software:
  - Microsoft Bitlocker
- Host-based Intrusion Detection System
  - McAfee Application Control 8.2

Selection and ordering data

Description	Article No.
SINAMICS Startdrive Basic V17 commissioning tool Single license and certificate of license English, French, German, Italian, Spanish, Chinese Simplified	
• On DVD-ROM	**6SL3072-4HA02-0XA0**
• Software download (email address required for delivery)	**6SL3072-4HA02-0XG0**
SINAMICS Startdrive Advanced V17 commissioning tool License key (floating license) English, French, German, Italian, Spanish, Chinese Simplified	
• On DVD-ROM with license key on USB flash drive	**6SL3072-4HA02-0XA5**
• Software download incl. license key (email address required for delivery)	**6SL3072-4HA02-0XG5**
Upgrade SINAMICS Startdrive Advanced V15 ... V16 to V17	
• On DVD-ROM with license key on USB flash drive	**6SL3072-4HA02-0XE5**
• Software download incl. license key (email address required for delivery)	**6SL3072-4HA02-0XK5**
Software Update Service with SINAMICS Startdrive Advanced in the TIA Portal Delivery is performed according to the number of ordered SUS products (e.g. 10 upgrade license keys (floating license) with 10 DVD-ROMs, 10 USB flash drives, etc.)	
• On DVD-ROM with upgrade license key on USB flash drive	**6SL3072-4AA02-0XL8**
• Software download incl. license key (email address required for delivery)	**6SL3072-4AA02-0XY8**

More information

The SINAMICS Startdrive Basic commissioning tool is available free on the internet at
www.siemens.com/startdrive

Certificates of suitability (approvals)

Overview

Many of the products in this catalog fulfill requirements, e.g. for UL, CSA or FM and are labeled with the corresponding approval designation.

All of the certificates of suitability, approvals, certificates, declarations of conformity, test certificates, e.g. CE, UL, Safety Integrated etc. have been performed with the associated system components as they are described in the Catalogs and Configuration Manuals.

The certificates are only valid if the products are used with the described system components, are installed according to the Installation Guidelines and used for their intended purpose.

In other cases, the vendor of these products is responsible for arranging for the issue of new certificates.

Test code	Tested by	Device series/ Component	Test standard	Product category/ File-No.
UL: Underwriters Laboratories Independent public testing body in North America				
	UL according to UL standard	SINUMERIK	Standard UL 508, CSA C22.2 No. 142	NRAQ/7.E164110 NRAQ/7.E217227
		SIMOTION	Standard UL 508, CSA C22.2 No. 142	NRAQ/7.E164110
	UL according to CSA standard	SINAMICS	Standard UL 508, 508C, 61800-5-1 CSA C22.2 No. 142, 274	NRAQ/7.E164110, NMMS/2/7/8.E192450, NMMS/2/7/8.E203250, NMMS/7.E214113, NMMS/7.E253831
	UL according to UL and CSA standards			NMMS/2/7/8.E121068 NMMS/7.E355661 NMMS/7.E323473
	UL according to UL standard	SIMODRIVE	Standard UL 508C, CSA C22.2 No. 274	NMMS/2/7/8.E192450 NMMS/7.E214113
	UL according to CSA standard	SIMOTICS	Standard UL 1004-1, 1004-6, 1004-8, CSA C22.2 No. 100	PRGY2/8.E227215 PRHZ2/8.E93429 PRHJ2/8.E342747 PRGY2/8.E253922 PRHZ2/8.E342746
	UL according to UL and CSA standards			
		Line/motor reactors	Standard UL 508, 506, 5085-1, 5085-2, 1561, CSA C22.2 No. 14, 47, 66.1-06, 66.2-06	XQNX2/8.E257859 NMTR2/8.E219022 NMMS2/8.E333628 XPTQ2/8.E257852 XPTQ2/8.E103521 NMMS2/8.E224872 XPTQ2/8.E354316 XPTQ2/8.E198309 XQNX2/8.E475972
		Line filters, dv/dt filters, sine-wave filters	UL 1283, CSA C22.2 No. 8	FOKY2/8.E70122
		Resistors	UL 508, 508C, CSA C22.2 No. 14, 274	NMTR2/8.E224314 NMMS2/8.E192450 NMTR2/8.E221095 NMTR2/8.E226619
TUV: TUV Rheinland of North America Inc. Independent public testing body in North America, Nationally Recognized Testing Laboratory (NRTL) TÜV: TÜV SÜD Product Service Independent public testing body in Germany, Nationally Recognized Testing Laboratory (NRTL) for North America				
	TUV according to UL and CSA standards	SINAMICS	NRTL listing according to standard UL 508C	U7V 12 06 20078 013 U7 11 04 20078 009 U7 11 04 20078 010 U7 11 04 20078 011
		SIMOTION	NRTL listing according to standard UL 508	U7V 13 03 20078 01
		SIMODRIVE	NRTL listing according to standard UL 508C, CSA C22.2. No. 14	CU 72090702
		Motion Control Encoder	NRTL listing according to UL 61010-1 CSA C22.2 No. 61010-1	U8V 10 06 20196 024

Overview

Test code	Tested by	Device series/ Component	Test standard	Product category/ File-No.
CSA: Canadian Standards Association Independent public testing body in Canada				
	CSA according to CSA standard	SINUMERIK	Standard CSA C22.2 No. 142	2252-01 : LR 102527
FMRC: Factory Mutual Research Corporation Independent public testing body in North America				
	FM according to FM standard	SINUMERIK	Standard FMRC 3600, FMRC 3611, FMRC 3810, ANSI/ISA S82.02.1	–
EAC: Ivanovo-Certificate Independent public testing body in the Russian Federation				
	EAC in accordance with the EAC Directive	SINAMICS SINUMERIK SIMOTION	Standard IEC 61800-5-1/-2, IEC 61800-3	–
RCM: Australian Communications and Media Authority Independent public testing body in Australia				
	RCM according to EMC standard	SINAMICS SINUMERIK SIMOTION	Standard IEC AS 61800-3, EN 61800-3	–
KC: National Radio Research Agency Independent public testing body in South Korea				
	KC according to EMC standard	SINAMICS SINUMERIK SIMOTION	Standard KN 11	–
BIA Federal Institute for Occupational Safety				
–	Functional safety	SINAMICS SINUMERIK SIMOTION	Standard EN 61800-5-2	–
TÜV SÜD Rail				
–	Functional safety	SINAMICS SINUMERIK SIMOTION	Standard EN 61800-5-2	–

More information about certificates can be found online at:
https://support.industry.siemens.com/cs/ww/en/ps/cert

Software licenses

Overview

Software types

Software requiring a license is categorized into types.
The following software types have been defined:

- Engineering software
- Runtime software

Engineering software

This includes all software products for creating (engineering) user software, e.g. for configuring, programming, parameterizing, testing, commissioning or servicing.

Data generated with engineering software and executable programs can be duplicated for your own use or for use by third-parties free-of-charge.

Runtime software

This includes all software products required for plant/machine operation, e.g. operating system, basic system, system expansions, drivers, etc.

The duplication of the runtime software and executable programs created with the runtime software for your own use or for use by third-parties is subject to a charge.

You can find information about license fees according to use in the ordering data (e.g. in the catalog). Examples of categories of use include per CPU, per installation, per channel, per instance, per axis, per control loop, per variable, etc.

Information about extended rights of use for parameterization/configuration tools supplied as integral components of the scope of supply can be found in the readme file supplied with the relevant product(s).

License types

Siemens Industry Automation & Drive Technologies offers various types of software license:

- Floating license
- Single license
- Rental license
- Rental floating license
- Trial license
- Demo license
- Demo floating license

Floating license

The software may be installed for internal use on any number of devices by the licensee. Only the concurrent user is licensed. The concurrent user is the person using the program. Use begins when the software is started.
A license is required for each concurrent user.

Single license

Unlike the floating license, a single license permits only one installation of the software per license.

The type of use licensed is specified in the ordering data and in the Certificate of License (CoL). Types of use include for example per instance, per axis, per channel, etc.

One single license is required for each type of use defined.

Rental license

A rental license supports the "sporadic use" of engineering software. Once the license key has been installed, the software can be used for a specific period of time (the operating hours do not have to be consecutive).
One license is required for each installation of the software.

Rental floating license

The rental floating license corresponds to the rental license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

Trial license

A trial license supports "short-term use" of the software in a non-productive context, e.g. for testing and evaluation purposes. It can be transferred to another license.

Demo license

The demo license supports the "sporadic use" of engineering software in a non-productive context, for example, use for testing and evaluation purposes. It can be transferred to another license. After the installation of the license key, the software can be operated for a specific period of time, whereby usage can be interrupted as often as required.

One license is required per installation of the software.

Demo floating license

The demo floating license corresponds to the demo license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

Certificate of License (CoL)

The CoL is the licensee's proof that the use of the software has been licensed by Siemens. A CoL is required for every type of use and must be kept in a safe place.

Downgrading

The licensee is permitted to use the software or an earlier version/release of the software, provided that the licensee owns such a version/release and its use is technically feasible.

Delivery versions

Software is constantly being updated.
The following delivery versions

- PowerPack
- Upgrade

can be used to access updates.

Existing bug fixes are supplied with the ServicePack version.

PowerPack

PowerPacks can be used to upgrade to more powerful software. The licensee receives a new license agreement and CoL (Certificate of License) with the PowerPack. This CoL, together with the CoL for the original product, proves that the new software is licensed.
A separate PowerPack must be purchased for each original license of the software to be replaced.

Upgrade

An upgrade permits the use of a new version of the software on the condition that a license for a previous version of the product is already held.
The licensee receives a new license agreement and CoL with the upgrade. This CoL, together with the CoL for the previous product, proves that the new version is licensed.
A separate upgrade must be purchased for each original license of the software to be upgraded.

Overview

ServicePack

ServicePacks are used to debug existing products. ServicePacks may be duplicated for use as prescribed according to the number of existing original licenses.

License key

Siemens Industry Automation & Drive Technologies supplies software products with and without license keys.

The license key serves as an electronic license stamp and is also the "switch" for activating the software (floating license, rental license, etc.).

The complete installation of software products requiring license keys includes the program to be licensed (the software) and the license key (which represents the license).

Software Update Service (SUS)

As part of the SUS contract, all software updates for the respective product are made available to you free of charge for a period of one year from the invoice date. The contract will automatically be extended for one year if it is not canceled three months before it expires.

The possession of the current version of the respective software is a basic condition for entering into an SUS contract.

You can download explanations concerning license conditions from https://mall.industry.siemens.com/legal/ww/en/terms_of_trade_en.pdf

Notes

1. General Provisions

By using this catalog you can purchase products (hardware, software and services) described therein from Siemens Aktiengesellschaft subject to the following Terms and Conditions of Sale and Delivery (hereinafter referred to as "T&C"). Please note that the scope, the quality and the conditions for supplies and services, including software products, by any Siemens entity having a registered office outside Germany, shall be subject exclusively to the General Terms and Conditions of the respective Siemens entity. The following T&C apply exclusively for orders placed with Siemens Aktiengesellschaft, Germany.

1.1 For customers with a seat or registered office in European Union

For customers with a seat or registered office in European Union, the following terms and conditions apply subordinate to T&C:

- for products, which include specific terms and conditions in the description text, these specific terms and conditions shall apply and subordinate thereto,
- for stand-alone software products and software products forming a part of a product or project, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or registered Office in Germany"[1)] and/or
- for consulting services the “Allgemeine Geschäftsbedingungen für Beratungsleistungen der Division DF – Deutschland” (available only in German) and/or
- for other services, the „Supplementary Terms and Conditions for Services (“BL”)[1)] and/or
- for other supplies the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"[1)].
  In case such supplies should contain Open Source Software, the conditions of which shall prevail over the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"[1)], a notice will be contained in the scope of delivery in which the applicable conditions for Open Source Software are specified. This shall apply mutatis mutandis for notices referring to other third party software components.

1.2 For customers with a seat or registered office outside European Union

For customers with a seat or registered office outside European Union, the following terms and conditions apply subordinate to T&C:

- for products, which include specific terms and conditions in the description text, these specific terms and conditions shall apply and subordinate thereto,
- for consulting services the "Standard Terms and Conditions for Consulting Services of the Division DF for Customers with a Seat or Registered Office Outside of Germany"[1)] and/or
- for other services the "International Terms & Conditions for Services"[1)] supplemented by "Software Licensing Conditions"[1)] and/or
- for other supplies of hard- and software the "International Terms & Conditions for Products"[1)] supplemented by "Software Licensing Conditions"[1)]

1.3 For customers with master or framework agreement

To the extent our supplies and/or services offered are covered by an existing master or framework agreement, the terms and conditions of that agreement shall apply instead of T&C.

2. Prices

The prices are in € (Euro) ex point of delivery, exclusive of packaging.

The sales tax (value added tax) is not included in the prices. It shall be charged separately at the respective rate according to the applicable statutory legal regulations.

Prices are subject to change without prior notice. We will charge the prices valid at the time of delivery.

To compensate for variations in the price of raw materials (e.g. silver, copper, aluminum, lead, gold, dysprosium and neodym), surcharges are calculated on a daily basis using the so-called metal factor for products containing these raw materials.
A surcharge for the respective raw material is calculated as a supplement to the price of a product if the basic official price of the raw material in question is exceeded.

The metal factor of a product indicates the basic official price (for those raw materials concerned) as of which the surcharges on the price of the product are applied, and with what method of calculation.

An exact explanation of the metal factor can be downloaded at:

https://mall.industry.siemens.com/legal/ww/en/terms_of_trade_en.pdf

To calculate the surcharge (except in the cases of dysprosium and neodym), the official price from the day prior to that on which the order was received or the release order was effected is used.

To calculate the surcharge applicable to dysprosium and neodym ("rare earths"), the corresponding three-month basic average price in the quarter prior to that in which the order was received or the release order was effected is used with a one-month buffer (details on the calculation can be found in the explanation of the metal factor).

3. Additional Terms and Conditions

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches apply only to devices for export.

Illustrations are not binding.

Insofar as there are no remarks on the individual pages of this catalog – especially with regard to data, dimensions and weights given – these are subject to change without prior notice.

[1)] The text of the Terms and Conditions of Siemens AG can be downloaded at
https://mall.industry.siemens.com/legal/ww/en/terms_of_trade_en.pdf

4. Export Regulations

We shall not be obligated to fulfill any agreement if such fulfillment is prevented by any impediments arising out of national or international foreign trade or customs requirements or any embargoes and/or other sanctions.

Export may be subject to license. We shall indicate in the delivery details whether licenses are required under German, European and US export lists.

Our products are controlled by the U.S. Government (when labeled with "ECCN" unequal "N") and authorized for export only to the country of ultimate destination for use by the ultimate consignee or end-user(s) herein identified. They may not be resold, transferred, or otherwise disposed of, to any other country or to any person other than the authorized ultimate consignee or end-user(s), either in their original form or after being incorporated into other items, without first obtaining approval from the U.S. Government or as otherwise authorized by U.S. law and regulations. Products labeled with "AL" unequal "N" are subject to European / national export authorization.

The export indications can be viewed in advance in the description of the respective goods on the Industry Mall, our online catalog system. Only the export labels "AL" and "ECCN" indicated on order confirmations, delivery notes and invoices are authoritative.

Products without label, with label "AL:N" / "ECCN:N", or label "AL:9X9999" / "ECCN: 9X9999" may require authorization from responsible authorities depending on the final end-use, or the destination.

If you transfer goods (hardware and/or software and/or technology as well as corresponding documentation, regardless of the mode of provision) delivered by us or works and services (including all kinds of technical support) performed by us to a third party worldwide, you shall comply with all applicable national and international (re-)export control regulations. In any event of such transfer of goods, works and services you shall comply with the (re-) export control regulations of the Federal Republic of Germany, of the European Union and of the United States of America.

Prior to any transfer of goods, works and services provided by us to a third party you shall in particular check and guarantee by appropriate measures that

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If required to enable authorities or us to conduct export control checks, you, upon request by us, shall promptly provide us with all information pertaining to the particular end customer, the particular destination and the particular intended use of goods, works and services provided by us, as well as any export control restrictions existing.

You acknowledge that under the EU embargo regulations against Iran, Syria and Russia respectively the sale of certain listed goods and related services is subject to authorization by the competent export control authorities of the European Union. If (i) the goods or services ordered by you are destined for Iran, Syria or Russia, and (ii) the contract for our supplies and/or services is subject to prior authorization of the competent export control authorities of the European Union, the contract between you and us shall come into force in this respect only upon granting of such authorization.

The products listed in this catalog may be subject to European/German and/or US export regulations. Any export requiring approval is therefore subject to authorization by the relevant authorities.

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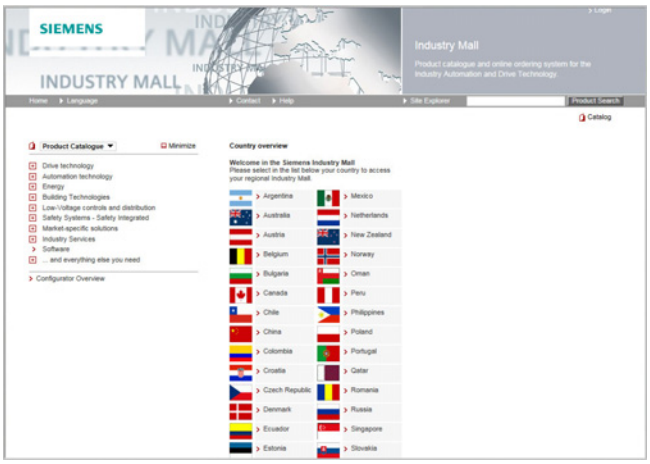

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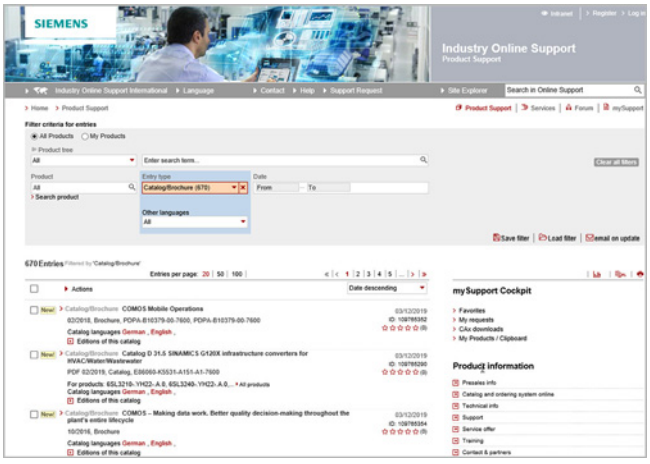

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Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit **https://www.siemens.com/industrialsecurity**

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under **https://www.siemens.com/cert**