

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Frequency Converter**

with type designation(s)

SINAMICS G120C, SINAMICS G120, SINAMICS S120 Blocksize

Issued to

Siemens AG**Erlangen, Bayern, Germany**

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Hamburg** on **2019-12-03**This Certificate is valid until **2024-12-02**.DNV GL local station: **Augsburg**for **DNV GL**Approval Engineer: **Thomas Hartmann**

Arne Schaarmann
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Product description

Drive modules for adjustable speed electrical power drive systems for voltages between 200 V up to 690 V and power ranges from 0.55 kW up to 250 kW.

General performance data

SINAMICS G120C, SINAMICS G120 and SINAMICS S120 (blocksize)

Degree of protection IP	20
Pollution degree	2
Overvoltage Category	III
Nominal Input frequency	50/60 Hz
Max. Prospective short-circuit current (SCCR)	100 kA
Upstream protection	Fuse or circuit-breaker
Output frequency	0...550 Hz
Cooling method (power circuits)	Forced Air

SINAMICS G120C - Compact Converters

Operator panels (HMI)

IOP-2 Intelligent Operator Panel	6SL3255-0AA00-4JA2
BOP-2 Basic Operator Panel	6SL3255-0AA00-4CA1

Model variants:

6SL3210-1KExx-xxxx; 3-Phase AC 380...480V

Frame size	Rated input current [A]	Rated output current [A]	Rated output power [kW]
FSAA	2,3/ 2,9/ 4,1/ 5,5/ 7,4	1,7/ 2,2/ 3,1/4,1/ 5,6	0,55/ 0,75/ 1,1/ 1,5/ 2,2
FSA	9,5/ 11,4	7,3/ 8,8	3,0/ 4,0
FSB	16,5/ 21,5	12,5/ 16,5	5,5/ 7,5
FSC	33/ 40,6/ 48,2	25/ 31/ 37	11 / 15 / 18,5

Above performance characteristics are based $U_{VN} = 3\text{-Phase } 400\text{V AC}$

Following deratings of output current need to be consider as per SIEMENS technical data sheet:

- Ambient temperature $>40^{\circ}\text{C}$
- Current/ Power derating in relation to supply voltage

SINAMICS G120 - Standard Converters

G120 and S120 (blocksize) Converters provide different performance characteristics with regard to their control capabilities while using the same power modules PM240-2.

Operator panels (HMI)

IOP-2 Intelligent Operator Panel	6SL3255-0AA00-4JA2
BOP-2 Basic Operator Panel	6SL3255-0AA00-4CA1

Control units

CU230P-2 Series	6SL3243-0BB30-xxxx
CU240E-2 Series	6SL3244-0BB12-xxxx 6SL3244-0BB13-xxxx
CU250S-2 Series	6SL3246-0BA22-xxxx

Control-unit adapter Kit

CUA20	6SL3255-0BW01-0NA0
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SINAMICS S120 - Blocksize High Performance Converter

Operator panels (HMI):

Job Id: **262.1-029320-1**
Certificate No: **TAE00003SK**

IOP-2 Intelligent Operator Panel	6SL3255-0AA00-4JA2
BOP-2 Basic Operator Panel	6SL3255-0AA00-4CA1

Control-unit adapters

CUA31	6SL3040-0PA00-0AA1
CUA32	6SL3040-0PA01-0AA0

The control unit adapters allow connection to the super-ordinated control system e.g. CU320-2

Power modules PM240-2

PM240-2 Power Modules with integrated braking chopper

1-Phase AC 240V; 3-Phase AC 240V; 6SL3210-1PBxx-xxxx

Frame size	Rated input current [A]	Rated output current [A]	Rated output power [kW]
FSA	7,5/ 9,6	3,2/ 4,2	0,55/ 0,75
FSB	13,5/ 18,1/ 24	6/ 7,4/ 10,4	1,1/ 1,5/ 2,2
FSC	35,9/ 43	13,6/ 17,5	3/ 4

3-Phase AC 240V; 6SL3210-1PCxx-xxxx

Frame size	Rated input current [A]	Rated output current [A]	Rated output power [kW]
FSC	28,6/ 36,4	22/ 28	5,5/ 7,5
FSD	40/ 51/ 64	42/ 54/ 68	11/ 15/ 18,5
FSE	76/ 98	80/ 104	22/ 30
FSF	126/ 149/ 172	130/ 154/ 178	37/ 45/ 55

3-Phase 380...480V; 6SL3210-1PExx-xxxx

Frame size	Rated input current [A]	Rated output current [A]	Rated output power [kW]
FSA	2,3/ 2,9/ 4,1/ 5,5/ 7,7/ 10,1	1,7/ 2,2/ 3,1/ 4,1/ 5,9/ 7,7	0,55/ 0,75/ 1,1/ 1,5/ 2,2/ 3,0
FSB	13,3/ 17,2/ 22,2	10,2/ 13,2/ 18	4/ 5,5/ 7,5
FSC	32,6/ 39,9	26/ 32	11 / 15
FSD	36/ 42/ 57/ 70	38/ 45/ 60/ 75	18,5/ 22/ 30/ 37
FSE	86/ 104	90/ 110	45 / 55
FSF	140/ 172/ 198/ 242	145/178/ 205/ 250	75/ 90/ 110/ 132
FSG	300/ 365/ 470	302/ 370/ 477	160/ 200/ 250

3-Phase 500...690V; 6SL3210-1PHxx-xxxx

Frame size	Rated input current [A]	Rated output current [A]	Rated output power [kW]
FSD	14/ 18/ 22/ 25/ 33/ 40	14/ 19/ 23/ 27/ 35/ 42	11/ 15/ 18,5/ 22/ 30/ 37
FSE	50/ 59	52/ 62	45/ 55
FSF	78/ 97/ 111/ 137	80/ 100/ 115/ 142	75/ 90/ 110/ 132
FSG	170/ 205/ 250	171/ 208/ 250	160/ 200/ 250

Following deratings of output current need to be consider as per SIEMENS technical data sheet:

- a) Ambient temperature >40°C
- b) Power derating in relation to supply voltage

Application/ Limitation

SINAMICS G120C, SINAMICS G120 and SINAMICS S120 (blocksize) converters to be installed in a cubicle/ switchboard in accordance with Siemens "Application manual SINAMICS G120 / G120C / S120 Blocksize, Requirements when using SINAMICS G120 / G120C / S120 Blocksize converters in marine applications".

Location classes according to CG-0339:	
Temperature class	B
Vibration class	A
Humidity class	A ¹⁾
EMC class ²⁾	A

¹⁾ Installation at locations where special precautions to avoid condensation are taken or anti-condensation measures are required.

²⁾ Converters with conducted and radiated emission above the DNV GL required limits can be installed in "special power distribution zone" and "general power distribution zone", in accordance with IEC 60533 provided measures are taken to attenuate these effects on the distribution system, so the safe operation is assured. Planned EMC measures shall be submitted for approval prior to installation onboard.

Guidance Note:

The EMC measures should be derived from an EMC analysis and plan in accordance with IEC 60533 Annex B and /or IEC 61800-3 Annex E.
End of Guidance note

All 200 V and 400 V converters with class-A filter comply with EMC-requirements of "general power distribution zone" provided that manufacturer's installation instructions are observed (TN-grid).

For each delivery the following documents shall be submitted for approval:

- Reference to this Type Approval Certificate
- Functional description for the intended use, configuration and interface (e.g. alarms, monitoring and auxiliary power supplies)
- Test program for routine tests and functional tests
- If additional components to the type approved frequency converter are delivered, documentation according to DNV GL rules Pt.4 Ch.8 Sec.1 table 2 shall be submitted for review.

Type Approval documentation

Tests carried out

Electrical and performance tests (IEC 61800-5-1, IEC 60146-1-1), Environmental, EMC and Vibration Tests according CP-0395 (2015-12)

Marking of product

SIEMENS- Type designation - Power – Voltage

Place of Production

Siemens AG
Frauenauracher Str. 80
91056 Erlangen
Deutschland

Siemens plc
Varey Road
CW12 1PH Congleton
United Kingdom

Siemens Numerical Control Ltd., Nanjing
18, Siemens Road
211100 NANJING
China



Job Id: **262.1-029320-1**
Certificate No: **TAE00003SK**

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.