

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Programmable Controller

with type designation(s)

Fail-safe Programmable Logic Controller and Fail-safe Modules

Issued to

Siemens AG

Amberg 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.

Temperature D

Humidity B

Vibration A

EMC A

Enclosure Required protection according to DNV GL Rules shall be provided upon installation on board

Issued at **Hamburg** on **2017-02-06**

This Certificate is valid until **2022-02-05**.

for **DNV GL**

DNV GL local station: **Augsburg**

Approval Engineer: **Andrea Grün**

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Joannis Papanuskas
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

Fail-Safe Programmable Logic Controller and Fail-Safe Modules as follows:

CPU 315F-2DP

6ES7 315-6FF00-0AB0	Release 01 or higher
6ES7 315-6FF01-0AB0	Release 01 or higher
6ES7 315-6FF04-0AB0	Release 01 or higher

CPU 315F-2PN/DP

6ES7 315-2FH10-0AB0	Release 01 or higher
6ES7 315-2FH13-0AB0	Release 01 or higher
6ES7 315-2FJ14-0AB0	Release 01 or higher

CPU 317F-2DP

6ES7 317-6FF00-0AB0	Release 01 or higher
6ES7 317-6FF03-0AB0	Release 01 or higher
6ES7 317-6FF04-0AB0	Release 01 or higher

CPU 317F-2PN/DP

6ES7 317-2FJ10-0AB0	Release 01 or higher
6ES7 317-2FK13-0AB0	Release 01 or higher
6ES7 317-2FK14-0AB0	Release 01 or higher

CPU 317TF

6ES7 317-6TF14-0AB0	Release 01 or higher
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CPU317TF-3PN/DP

6ES7 317-7UL10-0AB0	Release 01 or higher
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CPU 319F-3 PN/DP

6ES7 318-3FL00-0AB0	Release 01 or higher
6ES7 318-3FL01-0AB0	Release 01 or higher

IM 154-8F PN/DP

6ES7 154-8FB01-0AB0	Release 01 or higher Safety-related CPU
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IM 154-8FX PN/DP

6ES7 154-8FX00-0AB0	Release 01 or higher Safety-related CPU
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CPU IM151-7F

6ES7 151-7FA01-0AB0	Release 01 or higher
6ES7 151-7FA20-0AB0	Release 01 or higher
6ES7 151-7FA21-0AB0	Release 01 or higher

CPU IM151-8F

6ES7 151-8FB00-0AB0	Release 01 or higher
6ES7 151-8FB01-0AB0	Release 01 or higher

- 2 central controllers: 2 separate central controllers (UR1/UR2)
or 2 halves on a split central controller (UR2-H)
- 2 sync modules per central controller for linking the two controllers via fiber-optical cable

SM 326

DI 24 x DC24V	6ES7 326-1BK00-0AB0
	6ES7 326-1BK01-0AB0
	6ES7 326-1BK02-0AB0
DI 8 x NAMUR	6ES7 326-1RF00-0AB0
DO 10 x DC24V/2A	6ES7 326-2BF00-0AB0
	6ES7 326-2BF01-0AB0
	6ES7 326-2BF10-0AB0
DO 8 x 24V/2A P-/M-Switch	6ES7 326-2BF40-0AB0
	6ES7 326-2BF41-0AB0
I 6 x 13 Bit	6ES7 336-1HE00-0AB0
F AI 6 x 0/4 ..20mA HART	6ES7 336-4GE00-0AB0

ET200S

4/8 F-DI DC24V 4/8 channel digital input module 6ES7 138-4FA01-0AB0
6ES7 138-4FA02-0AB0
6ES7 138-4FA03-0AB0
6ES7 138-4FA04-0AB0

4 F-DO DC24V/2A 4 channel digital output module 24V DC / 2A 6ES7 138-4FB01-0AB0
6ES7 138-4FB02-0AB0
6ES7 138-4FB03-0AB0

PM-E F DC24V Power module 24V DC; P- / M-switch 6ES7 138-4CF01-0AB0
6ES7 138-4CF02-0AB0
6ES7 138-4CF03-0AB0

PM-D F DC24V Power module 24V DC 3RK 1903-3BA00
3RK 1903-3BA01
3RK 1903-3BA02
6ES7 195-7KF00-0XA0

Safety protector

PM-E F Power Module PM-E F pp 24 V DC PROFIsafe

6ES7 138-4CF40-0AB0
6ES7 138-4CF41-0AB0
6ES7 138-4CF42-0AB0
6ES7 138-4FR00-0AA0
6ES7 138-4FC00-0AB0
6ES7 138-4FC01-0AB0
6ES7 148-4FS00-0AB0
6ES7 148-3FA00-0XB0
6ES7 148-4FA00-0AB0
6ES7 148-4FC00-0AB0

1F-RO

4F-DI / 3F-DO

F-Switch

ET200 eco-F 4/8 F-DI DC24V

ET200 pro-F 8/16 F-DI DC24V

ET200 pro-F 4/8 F-DI / 4F-DO DC24V / 2A

S7-1200

CPU 1214FC DC/DC/RLY	6ES7 214-1HF40-0XB0	Release 01 or higher
CPU 1214FC DC/DC/DC	6ES7 214-1AF40-0XB0	Release 01 or higher
CPU 1215FC DC/DC/RLY	6ES7 215-1HF40-0XB0	Release 01 or higher
CPU 1215FC DC/DC/DC	6ES7 215-1AF40-0XB0	Release 01 or higher

S7-1500

CPU 1511F-1 PN	6ES7 511-1FK00-0AB0	Release 01 or higher
CPU 1513F-1 PN	6ES7 513-1FL00-0AB0	Release 01 or higher
CPU 1515F-2 PN	6ES7 515-2FM00-0AB0	Release 01 or higher
CPU 1516F-3 PN/DP	6ES7 516-3FN00-0AB0	Release 01 or higher
CPU 1517F-3 PN/DP	6ES7 517-3FP00-0AB0	Release 01 or higher
CPU 1518F-4 PN/DP	6ES7 518-4FP00-0AB0	Release 01 or higher

ET200SP

CPU 1510SP F-1 PN	6ES7 510-1SJ00-0AB0	Release 01 or higher
CPU 1512SP F-1 PN	6ES7 512-1SK00-0AB0	Release 01 or higher
F-DI 8x24VDC HF	6ES7 136-6BA00-0CA0	Release 01 to 03 or higher
F-DQ 4x24VDC/2A PM HF	6ES7 136-6DB00-0CA0	Release 01 to 03 or higher
F-PM-E 24VDC/8A PPM ST	6ES7 136-6PA00-0BC0	Release 01 to 02 or higher
F-RQ 1x24VDC/ 24...230VAC/5A	6ES7 136-6RA00-0BF0	Release 01 or higher

HMI

KP8F 6AV3 688 Key Panel

Safety-Relevant Software Components:

S7 Distributed Safety Programming V5.4 SP4; S7 F Configuration Pack V5.5 SP4, V5.5 SP5
Programming Software: STEP 7 basic package V5.3 + Service Pack 3 or higher
S7 F Systems V6.0; S7 F Systems V5.2 + SPx

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL Rules for Ships Pt.4 Ch.9 Control and Monitoring Systems.

Product certificate

If specified in the Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. The test shall be done according to an approved test program. After the certification the clause for application software control will be put into force.

Clause for application software control

All changes in software are to be recorded as long as the system is in use on board. The records of all changes are to be forwarded to DNV for evaluation and approval. Major changes in the software are to be approved before being installed in the computer.

Application/Limitation

Surge Immunity: External Protective circuits required for DC systems. See the current System Manual for recommendations.

*EMC1 System S7-1200, S7-1500, ET200SP for use on bridge and deck zone, the power supply lines are to be protected by filter type B84113C (manufacturer by Epcos or equivalent)
Tested with: I=3A, C=2x0,47uF+2x4700pF, L=4x4,7mH.

HMI KP8F: In power supply line and signal line a choke is to be fitted manufactured by Würth order No. 742 716 22 (tested) or equivalent.

Installation of the units described in manufacturer instructions.

Type Approval documentation

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|------------------------------------|------------------|
| • SN73321C-A1 Rev. 3.11 | dated 05-04-2012 |
| • SIMATIC Type Test - 2015-07 | dated 17-08-2015 |
| • SN73331C-A1 Revision 2.16 | dated 05-04-2012 |
| • SN83929C-A1 Revision 1.9 | dated 14-01-2015 |
| • SN73331C-A3 Revision 1.1 | dated 25-06-2013 |
| • M6A 12 11 14912 011 Revision 1.0 | dated 27-11-2012 |

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.
Tests and evidence according Requirement Class 4 according IEC 60092-504.
Requirement class 5 and 6 in DIN V 19250 äquivalent to IEC 61508.

Marking of product

Marking of product

The products to be marked with:

- Model name
- Manufacturer name
- Serial number

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

Job Id: **262.1-024490-1**
Certificate No: **TAA0000120**

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the 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.

END OF CERTIFICATE