

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Peripheral Equipment

with type designation(s)
Module IMX12-DI

Issued to

Hans Turck GmbH + Co. KG
Mülheim an der Ruhr, Germany

is found to comply with

DNV GL rules for classification – Ships

DNV GL rules for classification – High speed and light craft

DNV GL rules for classification – Naval vessels

DNV GL rules for classification – Ships and offshore units

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Temperature B

Humidity B

Vibration A

EMC B

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

This Certificate is valid until **2021-09-22**.

Issued at **Hamburg** on **2016-09-23**

for **DNV GL**

DNV GL local station: **Essen**

Approval Engineer: **Andrea Grün**

Duy Nam Le
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

Isolating Switching Amplifier 2-Channel
Module IMX12-DI

- IMX12-DI01-2S-2T-PR/24VDC
- IMX12-DI01-2S-2T-0/24VDC
- IMX12-DI01-2S-2T-PR/24VDC/CC
- IMX12-DI01-2S-2T-0/24VDC/CC
- IMX12-DI01-2S-2R-PR/24VDC
- IMX12-DI01-2S-2R-0/24VDC
- IMX12-DI01-2S-2R-PR/24VDC/CC
- IMX12-DI01-2S-2R-0/24VDC/CC

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

Each delivery of the application system is to be certified according to Pt.4 Ch.9 Sec.1. The certification test is to be performed at the manufacturer of the application system according to an approved test program before the system is shipped to the yard. 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

Ex-certification is not covered by this certificate. Application in hazardous area to be approved in each case according to the Rules and Ex-Certification/ Special Condition for Safe Use listed in valid Ex-Certificate issued by a notified/recognized Certification Body.

For Ex-applications the values specified in the corresponding Ex certificates (ATEX, IECEx, UL, etc.) apply.

Ex approval acc. to conformity certificate TÜV 14 ATEX 147004 X

Application area II (1) G, II (1) D

Ignition protection category [Ex ia Ga] IIC; [Ex ia Da] IIIC

Application area II 3 (1) G

Ignition protection type Ex nA nC [ia Ga] IIC T4 Gc

If the device is used in applications to achieve functional safety according to IEC 61508, the safety manual must be used. Information in the data sheet are not valid for functional safety.

SIL safety circuits: SIL 2 acc. to IEC 61508

Type Approval documentation

Test Reports:

U3812 dated 19-01-2016
E145282E1 Version 2 dated 18-11-2014
U147566E1 dated 19-12-2014
U160506E1 dated 02-05-2016
U3653 dated 24-11-2014
U3811 and U3812 dated 19-01-2016
U3813 and U3814 dated 21-01-2016

Data sheets: IMX12-DI01-2S-2R-0/24VDC Edition 2016-08-18T
IMX12-DI01-2S-2R-PR/24VDC Edition 2016-08-18T
IMX12-DI01-2S-2R-0/24VDC/CC Edition 2016-08-18T
IMX12-DI01-2S-2R-PR/24VDC/CC Edition 2016-08-18T
IMX12-DI01-2S-2T-0/24VDC Edition 2016-08-18T
IMX12-DI01-2S-2T-PR/24VDC Edition 2016-08-18T
IMX12-DI01-2S-2T-0/24VDC/CC Edition 2016-08-18T
IMX12-DI01-2S-2T-PR/24VDC/CC Edition 2016-08-18T

Drawings: D_10016069_000_01 dated 04-12-2014
D_10016065_000_01 dated 04-12-2014
D_10016068 dated 01-04-2015

Quick-Start Guide

Isolating Switching Amplifier IMX12-DI01...-2R D201465 2016-06 DE FR EN | V1.2
Isolating Switching Amplifier IMX12-DI01...-2T D201474 2015-10 DE FR EN | V1.1

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2015.

Marking of product

Each product shall be provided with visible marking, giving at least the following information:

- Manufacturer's name
- Type
- 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.

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 at least every second year and at renewal of this certificate.

END OF CERTIFICATE