DNV·GL

Certificate No:
TAA000011N

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Programmable Electronic System

with type designation(s)
HIMA HIMAX and Planar4 System

Issued to
HIMA Paul Hildebrandt GmbH
Brühl, Germany

is found to comply with
DNV GL rules for classification – Ships

Application :

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

Location classes:

Temperature	**B (from 0°C)**
Humidity	**B**
Vibration	**A**
EMC	**B**
Enclosure	**Required protection according to DNVGL Rules shall be provided upon**

Issued at **Hamburg** on **2017-02-07**
This Certificate is valid until **2017-06-30**.
DNV GL local station: **Augsburg**

Approval Engineer: **Klaus-Peter Schröder**

for **DNV GL**

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.

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Product description

HIMax is a module based safety system which may be used for safety and critical control applications.

Hardware:

Product Code	Description
X-SB 01	HIMax System Bus Module
X-CPU 01	HIMax CPU Module
X-CPU 31	HIMax CPU Module
X-COM 01	HIMax Communication Module
X-Base Plate 10 01	HIMax Base Plate (10 Slots, Redundant Supply, for Mounting Plate)
X-Base Plate 15 01	HIMax Base Plate (15 Slots, Redundant Supply, for Mounting Plate)
X-Base Plate 15 02	HIMax Base Plate (15 Slots, Redundant Supply, for 19" Frame)
X-Base Plate 18 01	HIMax Base Plate (18 Slots, Redundant Supply, for Mounting Plate)
X-FAN 10 01	HIMax 2 fans for X-Base Plate 10 01
X-FAN 15 01	HIMax 3 fans for X-Base Plate 15 01
X-FAN 15 02	HIMax 3 fans for X-Base Plate 15 02
X-FAN 18 01	HIMax 4 fans for X-Base Plate 18 01
X-FAN 10 03	HIMax 2 fans for X-Base Plate 10 01
X-FAN 15 03	HIMax 3 fans for X-Base Plate 15 01
X-FAN 15 04	HIMax 3 fans for X-Base Plate 15 02
X-FAN 18 03	HIMax 4 fans for X-Base Plate 18 01
X-DI 16 01	HIMax Digital Input Module (16 Ch. 120 VAC)
X-DI 32 01	HIMax Digital Input Module (32 Ch. 24 VDC)
X-DI 32 02	HIMax Digital Input Module (32 Ch. 8.2 VDC, proximity switch)
X-DI 32 03	HIMax Digital input Module (32 Ch. 48 VDC)
X-DI 32 04	HIMax Digital input Module (32 Ch. 24 VDC SOE)
X-DI 32 05	HIMax Digital input Module (32 Ch. 8.2 VDC, proximity switch, SOE)
X-DI 64 01	HIMax Digital input Module (64 Ch. 24 VDC)
X-AI 32 01	HIMax Analog Input Module (32 Ch. 4-20 mA)
X-AI 32 02	HIMax Analog Input Module (32 Ch. 4-20 mA, SOE)
X-DO 12 01	HIMax Relay Output Module (12 Ch. 230 VAC/DC, current measurment, cycle counting)
X-DO 12 02	HIMax Digital Output Module (12 Ch., 24 VDC, 2 A, short-circuit mon. LS, inidivdual ch. shut-off)
X-DO 24 01	HIMax Digital Output Module (24 Ch., 24 VDC, 0.5 A, line monitoring LS/LB, inidivdual ch. shut-off)
X-DO 24 02	HIMax Digital Output Module (24 Ch., 48 VDC, 0.5 A, line monitoring LS/LB, inidivdual ch. shut-off)
X-DO 32 01	HIMax Digital Output Module (32 Ch., 24 VDC, 0.5 A, short-circuit mon. LS, inidivdual ch. shut-off)
X-AO 16 01	HIMax Analog Output Module (16 Ch. 0/4-20 mA)
X-CI 24 01	HIMax Counter Input Module (24 Ch. 8.2/24 V, 0..20 kHz ot 0..10 kHz for proximity switches)
H7201	HIMax Feed Line and Distribution Fuse Board
H7202	HIMax Distribution Fuse Board
X-FTA 001 01L	Field Termination Assembly, Single construction, designed for X-DI 32 01, X-DI 32, 03, X-DI 32 04, X-DI 32 51 (32 channels)
X-FTA 001 02L	Field Termination Assembly, Redundant construction, designed for X-DI 32 01, X-DI 32 03, X-DI 32 04 (32 channels)
X-FTA 002 01L 01R	Field Termination Assembly, Single construction, designed for X-DI 32 01, X-DI 32 02, X-DI 32 03, X-DI 32 04, X-DI 32 05, X-DI 32 51, X-DI 32 52, X-AI 32 01, X-AI 32 02, X-AI 32 51, X-AI 16 51, X-CI 24 01, X-CI 24 51, X-DO 32 01, X-DO 32 51, X-DO 24 01, X-DO 24 02, X-AO 16 01, X-AO 16 51 (32 channels)
X-FTA 002 02L 02R	Field Termination Assembly, Redundant construction, designed for X-DI 32 01, X-DI 32 03, X-DI 32 04, X-CI 24 01, X-DO 32 01, X-DO 24 01, X-DO 24 02 (32 channels)

X-FTA 003 02L 02R	Field Termination Assembly, Redundant construction, designed for X-DI 64 01, X-DI 64 51 (64 channels)
X-FTA 005 02L	Field Termination Assembly, Redundant construction, designed for X-DO 12 01, X-DO 12 51 (12 channels)
X-FTA 006 01L	Field Termination Assembly, Single construction, designed for X-DO 12 02 (12 channels)
X-FTA 006 02L	Field Termination Assembly, Redundant construction, designed for X-DO 12 02 (12 channels)
X-FTA 007 02L	Field Termination Assembly, Redundant construction, designed for X-AI 32 01, X-AI 32 02 (32 channels)
X-FTA 008 02L	Field Termination Assembly, Redundant construction, designed for X-DI 32 02, X-DI 32 05 (32 channels)
X-FTA 009 02L	Field Termination Assembly, Redundant construction, designed for X-AO 16 01 (8/16 channels)
X-FTA AI 32 01 01	Field Termination Assembly for X-AI 32 01
X-FTA DI 32 01 01	Field Termination Assembly for X-DI 32 01
X-FTA DI 32 02 01	Field Termination Assembly for X-DI 32 02
X-FTA DO 12 01 01	Field Termination Assembly for X-DO 12 01
X-FTA DO 24 01 01	Field Termination Assembly for X-DO 24 01
X-HART 32 01	HIMax HART Communication Module
X-MIO 7/6 01	HIMax Overspeed Trip Module
H7505 H device	Multifunctional interface converter
H7506 H device	Bus terminal
PS1000 PS serie	Power Supply Unit
H 4135A	H device Relay with electronic housing
H 4011	H device Switching Amplifier (Ex)I, SIL 3
H 4012	H device Switching Amplifier (Ex)I, SIL 3
H 4116	H device Relay in electronic housing, SIL 2
H 4007	H device Switching Amplifier (Ex)I SIL1 to SIL4
H 6210	Harting HART multiplexer 8-fold
H 6200A	Harting Analog Repeater Power Supply
90 900	Planar4 Subrack with bus, Connection: pins for soldering
90 901	Planar4 Subrack with bus, Connection: pins for soldering
90 902	Planar4 Subrack with bus, Connection: pins for termi-point / wire-wrap
90 903	Planar4 Subrack with bus, Connection: pins for termi-point / wire-wrap
90 910	Planar4 Subrack with bus, Connection: pins for soldering
90 911	Planar4 Subrack with bus, Connection: pins for soldering
90 912	Planar4 Subrack with bus, Connection: pins for termi-point / wire-wrap
90 100	Planar4 4-fold Fuse Module
90 300	Planar4 Bypass Module
12 100	Planar4 4-fold Input Module, SIL 4/Kat.4
13 110	Planar4 2-fold Input Module (Ex)I, ATEX, SIL 4/Kat.4
22 100	Planar4 4-fold Output Module 25 V =/ 3 W, SIL 4/Kat.4
22 120	Planar4 Output Module 25 V=/ 24 W, SIL 4/Kat.4
22 121	Planar4 Output Module 60 V=/ 24 W, SIL 4/Kat.4
32 100	Planar4 2-fold Relay Amplifier, SIL 4/Kat.4, switching voltage 24 V =/~
32 101	Planar4 2-fold Relay Amplifier, SIL 4/Kat.4, switching voltage 48/60 V =/ 60 V~
32 102	Planar4 2-fold Relay Amplifier, SIL 4/Kat.4, switching voltage 110 V =/ 127V~
32 103	Planar4 2-fold Relay Amplifier, SIL 4/Kat.4, switching voltage 220 V =/ 230 V~
32 110	Planar4 4-fold Relay Amplifier, SIL 2
42 100	Planar4 4-fold AND Element with 5 inputs each, SIL4/Kat.4
42 110	Planar4 8-fold AND Element with 2 inputs each, SIL4/Kat.4
42 200	Planar4 Element Combination, SIL 4/Kat.4
42 300	Planar4 8-fold OR Element with 2 inputs each, SIL4/Kat.4
42 400	Planar4 4-fold Blocking Element, SIL 4/Kat.4

42 500	Planar4 4-fold Selection Element, 2 out of 3 selection, SIL4/Kat.4
52 100	Planar4 Time Delay Element, SIL 3/Kat.4
52 110	Planar4 4-fold Time Delay Element, SIL 3/Kat.4
62 100	Planar4 2-fold Analog Limit Monitor, SIL 3/Kat.4
80 105	Planar4 Communication Module, Modbus
80 106	Planar4 Communication Module, Profibus-DP
80 107	Planar4 Communication Module, Ethernet (OPC)
	80 110 Planar4 Reset Module, for reset of the error messagers (ERR)

System cables
The HIMax –PLC -system cables are used to wire the connector boards of the I/O Modules with the termination assemblies X-FTA's.w
Depending on the type of connector board, termination assemblies X-FTA's , several different types of system cables are available:

- with connector on both sides System;
- with connector on one side and with open wire ends on the other side;
- and with open wire ends on both sides.

X-CA 002 93 n	LIHH 34x2x0,25 HF
X-CA 005 93 n	LIHCH 38x2x0,25 HF
X-CA 010 93 n	LIHH 48x0,5/2x2x0,14 HF
X-CA 011 93 n	LIHCH-TP 18x2x0,25

flame-retardant acc. IEC 60332-1, IEC 60332-2, IEC 60332-3
n meaning: up to max. 30 m length

System Software:

Product Code	**Description**	**Version**
X-CPU 01	HIMax CPU Module	At the time of certification. 3.8 Valid: 7.10
X-COM 01	HIMax Communication Module	At the time of certification: 3.10 Valid: 7.20
X-SB 01	HIMax System Bus Module	At the time of certification: 3.6 Valid: 7.24
X-I/O modules	HIMax System I/O Modules	At the time of certification: 3.4 Valid 7.20
Device Type	**Description**	
SILworX	Programming System	At the time of certification: 3.38.0 Valid 7.18

Application/Limitation

The following documentation of the actual application is required to be submitted for approval in each case:

- Reference to this type approval certificate
- Project specific functional description and system block diagram including philosophy for segregation and allocation of functions
- Power supply arrangement (may be part of the system block diagram)
- Document compliance with environment requirements for equipment not included in the type approval
- Test program for certification

The Type Approval covers hardware and softeware listed under Product Description.

Product certificate
Each delivery of the HIMA HIMax and Planar4 systems is to be certified according to Pt.4 Ch.9.
The certification test is required to be performed at the manufacturer/supplier of the application system according to an approved test program before the system is shipped to the yard. The project specific application functions shall be included in the certification testing of each delivery.

The software version for each application function shall be recorded in the product certificate. After

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 DNVGL for evaluation and approval. Major changes in the software are to be approved before being installed in the computer.

System cables
The following restrictions apply to the listed system cables:

- Nominal voltage: ≤50V AC/DC
- Use only for installation inside switchgears
- Not suitable for the use of special transmission protocols

Type Approval documentation

Tests carried out

Applicable tests according to Class Guideline DNVGL-CG-0339, Edition November 2015.
Applicable tests according to IEC 60533 second edtition, 1999.

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.

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