

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

This certificate is issued to:

PRODUCER HIMA Paul Hildebrandt GmbH + Co KG

PLACE OF PRODUCTION Albert-Bassermann-Straße 28
68782 Brühl
Germany

DESCRIPTION Safety Related Programmable Logic Control System

TYPE HIMax, Planar4, H41q and H51q

HIMax	Module	Description
X-CPU01	Processor	4x RJ-45
X-SB01	System Bus	Interface: Service PADT, System UP, DOWN, Diagnostic DIAG
X-COM01	Communication	2x 9-pole D-sub, 4x RJ-45
PS1000	PS series	Power Supply Unit
X-DI 64 01	Digital Input	64 channel, 24VDC
X-DI 32 01	Digital Input	32 channel, 24VDC
X-DI 32 02	Digital Input	32 channel, 8.2VDC, proximity switches
X-DI 32 03	Digital Input	32 channel, 48VDC
X-DI 32 04	Digital Input	32 channel, 24VDC, SOE (sequence of event)
X-DI 32 05	Digital Input	32 channel, 8.2VDC, proximity switches, SOE
X-DI 16 01	Digital Input	16 channel, 120VAC
X-AI 32 01	Analog Input	32 channel, 4...20mA
X-AI 32 02	Analog Input	32 channel, 4...20mA, SOE
X-CI 24 01	Counter	24 channel, 0...20kHz
X-AO 16 01	Analog Output	16 channel, 4...20mA, pairwise galvanically isolated

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TYPE (continued)

HIMax	Module	Description
X-DO 32 01	Digital Output	32 channel, 24VDC, 0.5A, line monitoring SC, individual channel shut-off
X-DO 24 01	Digital Output	24 channel, 24VDC, 0.5A, line monitoring OC/SC, individual channel shut-off
X-DO 24 02	Digital Output	24 channel, 48VDC, 0.5A, line monitoring OC/SC, individual channel shut-off
X-DO 12 01	Relay Output	12 channel, 230VAC/DC, current measurement, switching operation counting
X-DO 12 02	Digital Output	12 channel, 24VDC, 2A, line monitoring SC, individual channel shut-off
X-DI 64 51	Digital Input	64 channel, 24VDC
X-DI 32 51	Digital Input	32 channel, 24VDC
X-DI 32 52	Digital Input	32 channel, 8.2VDC, proximity switch, line monitoring OC/SC
X-DO 32 51	Digital Output	32 channel, 24VDC, 0.5A, protected outputs
X-DO 12 51	Digital Output	12 channel, 230VAC/DC,
X-AI 16 51	Analog Input/Temperature	16 channel, 0/4...20mA, ±280mV, galvanically isolated, TC, Pt100
X-AI 32 51	Analog Input	32 channel, 0/4...20mA, line monitoring OC/SC,
X-CI 24 51	Counter	24 channel, 0...20kHz
X-AO 16 51	Analog Output	16 channel, 0/4...20mA
X-Base Plate 10 01 15 01 / 02 18 01	Base Plate	10 Slots, Redundant Supply, for mounting plate 15 Slots, Redundant Supply, for mounting plate / 19" frame 18 Slots, Redundant Supply, for mounting plate
X-FAN 10 01 X-FAN 10 03	2 fans	for X-Base Plate 10 01
X-FAN 15 01 X-FAN 15 03	3 fans	for X-Base Plate 15 01
X-FAN 15 02 X-FAN 15 04	3 fans	for X-Base Plate 15 02
X-FAN 18 01 X-FAN 18 03	4 fans	for X-Base Plate 18 01

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TYPE (continued)

HIMax	Module	Description
H4135A	H Device	Relay with electronic housing
H4011/12	H Device	Switching Amplifier Ex(i), SIL 3
H4116	H Device	Relay with electronic housing, SIL 2
H4007	H Device	Switching Amplifier Ex(i), SIL 1 to 4
H6210	HART	Multiplexer 8-fold
H6200A	HART	Analog Repeater Power Supply
K7214	Distribution	120A, with 18 circuit breaker slots for 24V DC
H7014 H7201 H7202	Feed Line and Distribution	Fuse Board
H7505 H7506	H Device H Device	Interface converter Bus terminal

System Software:

Product Code:	Version at the time of testing:
X-CPU 01:	V.5.14
X-COM 01:	V.5.12
X-SB 01:	V.4.18
X-I/O modules:	V.5.10

Application Software

SILworX	V.5.30
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H41q & H51q	Module	Description
B5233-1	H51q-HS	1 channel bus + redundant central unit
B5233-2	H51q-HRS	Redundant bus + redundant central unit
B9302	Rack	1 /2 input-output busses
F3221	Input	16 channel binary, with safety isolation
F3222	Input	8 channel, with safety isolation
F3224A	Input	4 channel Ex(i), with safety isolation
F3236	Input	16 channel binary, safety related
F3237	Input	8 channel, safety related
F3238	Input	8 channel Ex(i), safety-related SIL 3

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TYPE (continued)

H41q & H51q	Module	Description
F3240	Input	16 channel, safety related SIL 3
F3248	Input	16 channel, safety related SIL 3
F3320	Output	16 channel, with safety isolation
F3325	Output	6 channel supply unit Ex(i) for transmitters
F3330	Output	8 channel, safety related with safe isolation
F3331	Output	8 channel, safety related with safe isolation
F3333	Output	4 channel, safety related SIL 3
F3334	Output	4 channel, safety related SIL 3
F3335	Output	4 channel Ex(i), safety related SIL 3
F3348	Output	8 channel, safety related SIL 3
F3349	Output	8 channel, with safe isolation
F3422	Output	8 channel relay module, with safe isolation
F3430	Output	4 channel relay module, safety-related SIL 3
F3322	Supply Unit	6 channel Ex(i) (preferably used for the F6221)
F5220	Counter	2 channel, safety related SIL 3
F6215	Analogue input	8 channel, with safety isolation
F6217	Analogue input	8 channel, safety related SIL 3
F6220	Analogue input	8 channel thermocouple Ex(i), safety related SIL 3
F6221	Analogue input	8 channel Ex(i), safety related SIL 3
F6705	Converter	2 channel D/A, safety related SIL 3
F6706	Converter	2 channel D/A, with safe isolation
F7126/30A	Distribution	Power supply , 24VDC, out 5VDC
F7131	Monitoring	Power supply with backup batteries for PES H51q
F7132/33	Distribution	4 channel power distribution
F7553	Coupling	with switch-off of watchdog signal, for H51q
F8621, -A	COM	For H51q
PS1000	PS series	Power Supply Unit
F8627 / X	COM	Module for Ethernet connection
F8628 / X	COM	Module for Profibus-DP connection
F8650 / 52 / A, E, X	Central-Processor	For H51q-MS, HS, HRS, H41q-MS, HS, HRS; SIL 3
B9361	Power supply	Additional rack, 5VDC for H51q systems

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Planar4	Module	Description
12100	4-fold input	SIL 4/Cat.4
13110	2-fold input	Ex(i), ATEX, SIL 4/Cat.4
22100	4-fold output	25VDC/3W, SIL4/Cat.4
22120	Output	25VDC/24W, SIL 4/Cat.4
22121	Output	60VDC/24W, SIL 4/Cat.4
32100	2-fold relay amplifier	24VDC/120W or 24VAC/120VA, SIL 4/Cat.4
32101	2-fold relay amplifier	48/60VDC/40W or 60VAC/240VA, SIL 4/Cat.4
32102	2-fold relay amplifier	110VDC/40W or 127VAC/500VA, SIL 4/Cat.4
32103	2-fold relay amplifier	220VDC/40W or 230VAC/1000VA, SIL 4/Cat.4
32110	4-fold relay amplifier	250VDC/40W or 250VAC/1000VA, SIL 2
42100	4-fold	AND element, SIL 4/Cat.4
42110	8-fold	AND element, SIL 4/Cat.4
42200	4-fold, 2-fold, 1-fold	AND element, OR element, Blocking element, SIL 4/Cat.4
42300	8-fold	OR element, SIL 4/Cat.4
42400	8-fold	Blocking element, SIL 4/Cat.4
42500	4-fold	Selection element, SIL 4/Cat.4
52100	-	Time delay element, SIL 3/Cat.4
52110	4-fold	Time delay element, 1...15s, SIL 3/Cat.4
62100	2-fold	Analogue limit monitor, 0/4...20mA, 0/1...5V, SIL 3/Cat.4
80105	Communication	MODBUS
80106	Communication	Profibus DP
80107	Communication	Ethernet (OPC)
80110	Reset	For reset of error messages (ERR)
90100	4-fold	Fuse module
90300	2-fold	Bypass module
90900	Subrack with Bus	Connection: pins for soldering
90901	Subrack with Bus	Connection: pins for soldering
90902	Subrack with Bus	Connection: pins for termi-point / wire-wrap
90903	Subrack with Bus	Connection: pins for termi-point / wire-wrap
90910	Subrack with Bus	Connection: pins for soldering
90911	Subrack with Bus	Connection: pins for soldering
90912	Subrack with Bus	Connection: pins for termi-point / wire-wrap

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APPLICATION

Marine and offshore applications for use in environmental categories ENV1, ENV2 and ENV3 as defined in Lloyd's Register's Type Approval System, Test Specification Number 1 – 2002.

STANDARD

The following standards according to TÜV Report "968/EZ 128.22/11" are fulfilled:
IEC 61508:2000, Part 1-7; IEC 61508:2010, Part 1-7 (partly);
EN ISO 13849-1:2008 + AC:2009; EN 62061:2005; IEC 61511:2004, Parts 1-3; EN 50156-1:2004; NFPA 85:2007; NFPA 86:2007; NFPA 72:2007;
EN 298:2003; EN 12067-2:2004; EN 230:2005; EN54-2:1997/A1:2007; EN 61131-2:2007; EN 61326-3-1:2008; EN 61000-6-2:2005; EN 61000-6-4:2007;
EN 50130-4:1998 A1:1998 + A2:2003 + Corr. 2003;
EN 50126:1999 SIL 4; EN 50129:2003 SIL 4;
EN 50128:2001 SIL 4; EN 50159-1:2001; EN 50122-1:1997;
EN50124-1:2001; EN 50121-4:2006; EN 50126:1999 SIL 4;
EN 1127-1; IEC60533:1999

ADDITIONAL TESTS

Shock Test: 15g/11ms
Low Temperature Test: 0°C/2hrs.

OTHER CONDITIONS

Final functional arrangements are to comply with appropriate Lloyd's Register Rules and will be subject of the Plan Approval process, if applicable.

Ratings for application in hazardous areas are to be obtained from the applicable Ex Certificates.

The equipment exceeds the maximum radiated and conducted emission level for bridge and deck zones. Therefore the components have to be installed in accordance to the test reports in a "Rittal TS 8" cabinet which satisfied the required limits.

The HIMax components "X-DI 1601", "X-DI 3203", "X-DO 1202", X-DO 2402" have to be fitted with the filter "H7013" for 24VDC and "H7021" for 48VDC.

For the H41q and H51q components power supply filter equal to FN660-16/06 or a Ferrite WE74271132 has to be fitted. The RS485 communication line has to be fitted with the Ferrite "WE74271132" or equal.

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"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid certificate."

The Design Appraisal Document No. HDS/ETS 27743-13 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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