



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **A-11771**

This is to certify that the
Programmable Electronic System

with type designation(s)
SAIA PLC type PCD3 Series, PCD7.D4xx MB Panels, PCD7.D410 VTCF Web Panel

Manufactured by
Saia-Burgess Controls AG
MURTEN, Switzerland

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application
Location classes:

Type	Temperature	Humidity	Vibration	EMC	Enclosure
SAIA PLC type PCD3 Series	C	B	A	B	Required protection according to the Rules to be provided upon installation onboard.
PCD7.D4xx MB Panels	B	A	A	B	
PCD7.D410 VTCF Web Panel	A	B	A	B	

Limitation: See page 5

Høvik, 2010-05-12
for **Det Norske Veritas AS**

This Certificate is valid until
2011-12-31

Odd Magne Nesvåg
Head of Section

DNV local office:
Essen

Aleksandra Górowska
Surveyor

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.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

Product description

Module Type	Function / Reference
CPU, Base units and their accessories	
PCD3.M5440/ M5540	PLC with 512 Kbytes of user memory with Run/Stop switch. Backup option with PCD7.R500 Flash Card, USB Port for PG5. max. 1 023 digital I / O, 2 interrupts, web-server RS 232, RS 485 for Profi-S-Net and RS 485 for S-Bus Data protection 1...3 years with lithium battery. M5540 is with Ethernet TCP/IP
PCD3.M5447/ M5547	Similar to PCD3.M5440/ M5540 but programmable with Siemens Step 7
PCD3.M6340/M6347	Similar to PCD3.M5440/ M5540 with Communication CAN
PCD3.M3020/ M3120 PCD3.M3230/ M3330	PLC with 128 or 256/512 KBytes of user memory. Backup with internal Flash memory, USB port for PG5, max. 64 or 1023 digital I/O, 2 interrupts, web-server; RS 485 for Profi-S-Net or S-Bus PCD3.M3120 and PCD3.M3330 with Ethernet TCP/IP
<i>and any combination like: PCD3.Mxxxx</i>	
PCD3.M2030V6/ M2130V6/	Compact PLC with 512 Kbytes user program, 20 dig. IN, 12 dig. OUT, 4 analogue IN, 2 analogue OUT. Expandable to max. 102 I/O's backup with onboard Flash memory, 1 MByte File System, USB port for programming with PG5, RS 485, 2 Interrupts, integral Web & FTP server, 1 port (socket A) for communications interface PCD7.F1xx, lithium battery, PCD3.M2130V6 with Ethernet TCP/IP
PCD3.M2137V6	Similar to PCD3.M2130V6 but programmable with Siemens Step 7
PCD3.M2330A4T1 PCD3.M2330A4T3 PCD3.M2330A4T5	Compact PLC with 512 kBytes user program memory, 8 dig. IN, 2 dig. OUT, 4 analogue IN, 1 Telecom port for PSTN (→T1), ISDN (→T3) or GSM/GPRS (→T5). Expandable to max. 78 I/O's
PCD3.M2230A4T5	Same as PCD3.M2330A4T5, but without Ethernet TCP/IP
PCD3.M3 Batterieprint	Holder for Lithium Battery and Led for CPU Status
PCD3.R500, R5xxx	Flash memory module, 1 Mbyte onto slot 0-3, for PCD3.M3xx0 as backup for the user program
PCD7.R500, R5xxx	Flash memory module, 1 Mbyte, plug-in, for PCD3.M5x4x as backup for the user program
PCD3.T760/T76x	Profibus DP RIO Head station with 4 I/O module slots, Profibus DP / Profi-S-Net connection and integral web server, 24 VDC supply
PCD3.T660/T66x	Ethernet RIO Head station with 4 I/O module slots, Ethernet / Ether-S-Net connection and integral web server, 24 VDC supply
Base Units Module	
PCD3.C100/C110	Extension housing with 4 resp. 2 I/O module sockets
PCD3.C200	Similar to PCD3.C100, with 24 VDC power supply
<i>For type PCD3.C... / M... / T... the designation may be followed by Z05.</i>	
Communication Modules	
PCD3.F1xx (incl. PCD7.Fxxx)	
PCD3.F110, F121, F130, F150	Serial interface module RS 422 / RS 485, RS232, current loop 20 mA, RS 485 with galvanic isolation
PCD3.F1xxR500	F1xx Serial interface module as above with Flash memory for user program backup
PCD3.F180	Serial interface module for Belimo MP-BUS, max. 8 actuators and sensors connectable
PCD3.K010	Extension plug PCD3 to PCD3
PCD3.K1xx, PCD2.K1xx	Extension cable PCD3 to PCD3, PCD2 to PCD3
Digital I/O Module	
PCD3.A200	Digital output module, 4 relays, 250 VAC/2 A, 'make' contact, contact protection
PCD3.A210	Digital output module, 4 relays, 250 VAC/2 A, 'break' contact, contact protection
PCD3.A220	Digital output module, 2 x 3 relays, 250 VAC/2 A, 'make' contact, without contact protection
PCD3.A251	Digital output module, 8 relays, 48 VAC/2 A or 50 VDC/2 A with 6 change-over contacts + 2 make-contacts. Connection via 24-pole cage clamp terminal block.
PCD3.A300	Digital output module, 6 outputs, transistors, 10..32 VDC/2 A
PCD3.A400	Digital output module, 8 outputs, transistors, 5..32 VDC/0.5 A

Module Type	Function / Reference
PCD3.A410	Digital output module, 8 outputs, transistors, 5..32 VDC/0.5 A, electrically isolated from PCD2 bus
PCD3.A460	Digital output module, 16 outputs, transistors, 10..32 VDC/0.5 A, ribbon cable connector for PCD2.K2xx
PCD3.A465	Digital output module, 16 outputs, transistors, 10..32 VDC/0.5 A, connection for spring terminals
PCD3.A810	Digital manual control module with 4 relays outputs: - 2 'changeover' contacts - 2 'make' contacts
PCD3.A860	Light and shades control module with - 2 relays outputs 250 VAC/12A - 2 digital inputs 24 VDC
PCD3.B100	Digital input/output module, 2 inputs, 2 outputs and 4 configurable inputs/outputs, inputs : 24 VDC / delay 8 ms outputs: breaking capacity 0.5 A / 5..32 VDC
PCD3.E110	Digital input module, 8 inputs, 24 VDC, source and sink operation, 8 ms input delay
PCD3.E111	As E110 with 0.2 ms input delay
PCD3.E116	Digital input module, 8 inputs, 5 VDC, source and sink operation, 0.2 ms input delay
PCD3.E160	Digital input module, 16 inputs, 24 VDC, source and sink operation, 8 ms input delay, cable with ribbon cable connector for PCD.K2xx/.K3xx
PCD3.E161	As E160 with 0.2 ms input delay
PCD3.E165	Digital input module, 16 inputs, 24 VDC, source and sink operation, 8 ms input delay, connection for spring terminals
PCD3.E166	Digital input module, 16 inputs, 24 VDC, source and sink operation, 0.2 ms input delay, connection with spring terminals to max 0.5 mm ²
PCD3.E500	Digital input module, 6 inputs, 110..240 VAC, electrically isolated, source operation
PCD3.E610	Digital input module, 8 inputs, 24 VDC, electrically isolated, source and sink operation, 8 ms delay
Analogue Module	
PCD3.W200	Analogue input module, 8 inputs, 10 bits, 0..10 V
PCD3.W210	Analogue input module, 8 inputs, 10 bits, 0..20 mA
PCD3.W220	Analogue input module, 8 inputs, 10 bits, Pt/Ni 1000
PCD3.W300	Analogue input module, 8 inputs, 12 bits, 0..10 V
PCD3.W305	Analogue input module with galvanic isolation, 7 inputs, 12 bits, 0..10 V
PCD3.W310	Analogue input module, 8 inputs, 12 bits, 0..20 mA
PCD3.W315	Analogue input module with galvanic isolation, 7 inputs, 12 bits, 0(4)..20 mA
PCD3.W325	Analogue input module with galvanic isolation, 7 inputs, 12 bits, ±10 V
PCD3.W340	Analogue input module, 8 inputs, 12 bits, universal: 0..10 V, 0..2.5 V, 0..20 mA, Pt/Ni 1000
PCD3.W350	Analogue input module, 8 inputs, 12 bits, Pt / Ni 100
PCD3.W360	Analogue input module, 8 inputs, 12 bits, Pt 1000 (-50..+150°C, 0.1°C)
PCD3.W400	Analogue output module, 4 outputs, 8 bits, 0..10 V
PCD3.W410	Analogue output module, 4 outputs, 8 bits, switchable 0..10 V / 0..20 mA / 4..20 mA
PCD3.W500	Analogue, combined input/output module, 2 inputs, 12 bits, 0..10 V or ±10 V and 2 outputs, 12 bits, 0..10 V or ±10 V
PCD3.W525	Customized multifunctional Module, 4 analogue inputs / 2 analogue outputs
PCD3.W600	Analogue output module, 4 outputs, 12 bits, 0..10 V
PCD3.W605	Analogue output module with galvanic isolation, 6 outputs, 10 bits, 0..10 V
PCD3.W610	Analogue output module, 4 outputs, 12 bits, 0..10 V / ±10V / 0..20 mA
PCD3.W615	Analogue output module with galvanic isolation, 4 outputs, 10 bits, 0(4)..20 mA
PCD3.W625	Analogue output module with galvanic isolation, 6 outputs, 10 bits, ±10 V
PCD3.W720	Weighing module with 2 systems for up to 6 weighing cells; resolution 18 bit
PCD3.W745	Universal temperature measurement module for up to 4 measuring inputs, resolution 16 bits, for TC Type J & K and Pt 100/1000 & Ni 100/1000
PCD3.W800	Analogue manual control module with: - 3 outputs 0..10 V with manual control - 1 output 0..10 V without manual control

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Module Type	Function / Reference
Motion Module	
PCD3.H100	Intelligent counting module, 1 counting channel, 20 kHz, 2 inputs
PCD3.H110	Intelligent fast counting module, 1 counting channel, 100 kHz, 2 inputs, measurement of period, pulse and frequency
PCD3.H150	Absolute encoder module with SSI interface and 4 outputs 24 VDC/0.5 A
PCD3.H210	Module for one stepper motor axis
PCD3.H310	Module for 1 servomotor axis, encoder input, 24 VDC/100 kHz, setpoint output $\pm 10V$ (12 Bit)
PCD3.H311	Module for 1 servomotor axis, encoder, 5 VDC/100 kHz, setpoint output $\pm 10V$ (12 Bit)
PCD7.D4XX PANELS	
PCD7.D410VTCF	Flush mounting Web panel with embedded Saia@Micro-Browser 10,4" TFT 65536 colors Base Line touch screen panel 4 MB flash
PCD7.D457BTCF	Flush mounting Web panel with embedded Saia@Micro-Browser 5,7" STN 16 levels of grey Base Line touch screen panel 4 MB flash
PCD7.D457STCF	Flush mounting Web panel with embedded Saia@Micro-Browser 5,7" STN 256 colors Base Line touch screen panel 4 MB flash
PCD7.D457VTCF	Same as PCD7.D457STCF, but with LCD VGA TFT 5.7"
PCD7.D457SLCG01	OEM Flush mounting Web panel with embedded Saia@Micro-Browser 5,7" STN 256 colors « Comfort Line » OEM, Numeric keyboard/Keys/Fkeys. 4MB flash, with PS/2 and serial port for printer. Customer specific.
PCD7.D457TTCF	Flush mounting Web panel with embedded Saia@Micro-Browser 5,7" TFT 256 colors Base Line touch screen panel 4 MB flash.
PCD7.D457BMCF	Flush mounting Web panel with embedded Saia@Micro-Browser 5,7" STN 16 levels of grey Comfort Line touch screen, Keys/Fkeys panel. 4MB flash, with PS/2 and serial port for printer.
PCD7.D457SMCF	Flush mounting Web panel with embedded Saia@Micro-Browser 5,7" STN 256 colors Comfort Line touch screen panel, Keys/Fkeys panel. 4MB flash, with PS/2 and serial port for printer
PCD7.D457VMCF	Same as PCD7.D457SMCF, but with LCD VGA TFT 5.7"
PCD7.D457TMCF	Flush mounting Web panel with embedded Saia@Micro-Browser 5,7" TFT 256 colors Comfort Line touch screen panel, Keys/Fkeys. 4MB flash, with PS/2 and serial port for printer.
PCD7.D435TLCF	Flush mounting Web panel with embedded Saia@Micro-Browser 3,5" TFT 256 colors Comfort Line panel, Numeric keyboard/Keys/Fkeys. 4MB flash, with PS/2 and serial port for printer.
PCD7.D457SNCG	OEM Flush mounting Web panel with embedded Saia Micro-Browser 5,7" STN 256 colors « Comfort Line » OEM touch screen panel, Numeric keyboard/Keys/Fkeys. 4MB flash, with PS/2 and serial port for printer.
PCD7.D457BNCG	OEM Flush mounting Web panel with embedded Saia@Micro-Browser 5,7" STN 16 levels of grey « Comfort Line » OEM touch screen panel, Numeric keyboard/Keys/Fkeys. 4MB flash, with PS/2 and serial port for printer.
PCD7.D457BLCG01	OEM Flush mounting Web panel with embedded Saia@Micro-Browser 5,7" STN 16 levels of grey « Comfort Line » OEM, Numeric keyboard/Keys/Fkeys. 4MB flash, with PS/2 and serial port for printer.
PCD7.D457LLLZxx PCD7.D410LLLZxx	Modules with Customer specific front design, which are coded by <i>PCD7.D457LLLZxx</i> or <i>PCD7.D410LLLZxx</i> , where LLL stands for the 3 letters found in the standard Module listed above, followed by a Z, and xx is a 2 digits value.
PCD7.RD4-SD	Basic interface for SD card. This interface is plugged directly on the PCB and screws fixing.
PCD7.R-SD256	Saia@ SD flash memory card 256 MBytes with file system
PCD7.R-SD512	Saia@ SD flash memory card 512 MBytes with file system
PCD7.R-SD1024	Saia@ SD flash memory card 1024 MBytes with file system
PCD7.R-CF128	Saia@ Compact Flash memory card 128 MBytes with file system
PCD7.R-CF1024	Saia@ Compact Flash memory card 1024 MBytes with file system
PCD7.R-CF2048	Saia@ Compact Flash memory card 2048 MBytes with file system

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Application/Limitation

PCD3.T76x series requires montage with ferrites to comply with EMC requirements. Installation to be made according to manufacturer instruction.

PCD3.M (from version D) can be installed without ferrites, for earlier version is montage with ferrites required to comply with EMC requirements.

* PCD7.D4xx Panels: at +70° C display of colours and contrast are slightly lower

PCD3.M2230A4T5 and PCD3.M2330A4T5 use the Wireless technology, which is not covered by this Type Approval Certificate. When used on board, the Wireless transmission shall be either deactivated or evaluated through "case-by-case" Plan Approval and witnessed by attending surveyor.

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, 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 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.

Tests carried out

Applicable tests according to Standard for Certification No. 2.4

PLC type PCD3 Compact and WAC series satisfies Vibration Class C requirements.

Type Approval documentation

Certificate Retention Survey

The scope of the retention/renewal survey 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 survey 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.

Retention survey is to be performed at least every second year and at renewal of this certificate.

END OF CERTIFICATE