ABS
FOUNDED 1862

CERTIFICATE NUMBER	DATE
16-HG1524880-PDA	10 Jun 2016

ABS TECHNICAL OFFICE
Hamburg Engineering Department

CERTIFICATE OF

DESIGN ASSESSMENT

This is to certify that a representative of this Bureau did, at the request of

SAIA-BURGESS CONTROLS AG

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: **Programmable Logic Controller**

Model: **PCD, Series PCD1/PCD2, PCD4 and PCD 7 and Series PCS1**

This Product Design Assessment (PDA) Certificate 16-HG1524880-PDA, dated 10/Jun/2016 remains valid until 09/Jun/2021 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product.

Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA.

Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

AMERICAN BUREAU OF SHIPPING

Ulf Numirski
Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by the terms and conditions as contained in ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010).

AB258(0110)

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Tier: 5 - Unit Certification Required

Product: **Programmable Logic Controller**
Model: **PCD, Series PCD1/PCD2, PCD4 and PCD 7 and Series PCS1**
Intended Service:
Process control units for Marine, Offshore and Industrial Applications.

Description:
The PCD1/PCD2 series of Process Control Device available in 4 or 8 Modules base unit. The PCD 4 series of Process Controllers are CPU bus modules. Both The PCD1/PCD2 and the PCD4 series of controllers use their own designated modules as well as the PCD7 components of memory modules, serial interface modules, communication modules, network modules, analogue range modules, vario plus modules and text terminal. The PCS1 are compact controllers, which include digital and analogous I/O. For a complete modules description, see attachment.

Rating:
Nominal voltage: 24 V DC, 220 V AC;
Operating Temperature: 0 to 55°.C;
Protection Rating: IP 20

Service Restriction:
Unit Certification is required for this product by the user to customize this equipment where it is used for Category II or III services as described in Section 4-9-3/Table 1 of the Steel Vessel Rules.

Comments:
The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
Each particular application/ configuration and the user operating software is to be specifically approved in conjunction with the relevant system in which the PC units are being used.
System Category III. Manufacturer is to keep evidence of quality plan for software, inspection of hardware components from sub-suppliers and quality control in production. Performance integration, fault simulation, final system factory acceptance tests, on-board system and integration tests to be witnessed by the Surveyor.

Notes/Drawing/Documentation:
Drawing No. 16008-LOM-ABS_based_on_03-LD346269-2-PDA_sent_20160606, List of Modules, Revision: 02, Pages: 3
Drawing No. 26-215_ENG13_SBC-SystemCatalogue, System Catalogue SBC PCD, Revision: 13, Pages: 301
Drawing No. PCD1_2_M_12002-MP_DNV_TATR_PCD1M2xxx, Test Report for Type Approval PCD1.M2, Revision: 02, Pages: 31
Drawing No. PCD1_M0160xx_Main_Parts_List, PCD1.M0160 Main List of Parts, Revision: 0, Pages: 2
Drawing No. PCD1_M2020_463671860, PCD1.M2020 Board / BOM, Revision: c, Pages: 5
Drawing No. PCD1_M2110R1_Main_Parts_List, PCD1.M2110R1 Main List of Parts, Revision: 0, Pages: 2
Drawing No. PCD1_M2120_463671180, PCD1.M2120 Board / BOM, Revision: K, Pages: 6
Drawing No. PCD1_M2x20_Main_Parts_List, List of parts .M2xxx, Revision: c, Pages: 1
Drawing No. PCD1_M2xxx_k_124466064_Schematics, PCD1.M2xxx / Schematics, Revision: d, Pages: 10
Drawing No. PCD1_M_Testreport_6830e_SAIA_Burgess_Controls_SPS_signed, Test Report Vibration .M2120, Revision: 0, Pages: 9
Drawing No. PCD1_M_Testreport_Rap_MES_20120489_20120605, Test Report EMC Immunity .2120, Revision: 0, Pages: 4
Drawing No. PCD1_M_Testreport_Rap_MES_2012_03_28, Test Report EMC .M2120, Revision: 0, Pages: 20
Drawing No. PCD2_M5_09036-MP_ABS_TATR-PCD2M5_V2, Test Report for Type Approval PCD2.M5xxx, Revision: 02, Pages: 38

Terms of Validity:
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Tier: 5 - Unit Certification Required

This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product.

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STANDARDS

ABS Rules:
2016 Steel Vessel Rules 1-1-4/7.7, 1-1-Appendix 3 and 4, 4-9-3/1/11 and 4-9-8/13
2016 Mobile Offshore Drilling Unit Rules 1-1-4/9.7, 1-1-Appendix 2 and 3, 4-3-4/

National:
UL 508 (Edition 1999)

International:
NA

Government:
NA

EUMED:
NA

OTHERS:
NA

Product Design Assessment (PDA) Certificate for Component Details

PDA Certificate No: 16-HG1524880-PDA
Company: Saia-Burgess Controls AG
Product/Equipment: Programmable Logic Controller
Model: PCD, Series PCD1 / PCD2, PCD4 and PCD7 and Series PCS1

Product description

Module	Module related Subcategories	Description
	PROCESSOR and SUPPLY MODULES	
PCD1	.M110	Base unit for 4 I/O modules
	.M120	Base unit for 4 I/O modules
	.M125	Base unit for 4 I/O modules
	.M130	Base unit for 4 I/O modules
	.M135	As M125, but with socket for CR2032 lithium battery
	.M137	Base unit for 4 I/O modules
	.M0160E0	Compact Base unit for 18 integrated I/O, no I/O slots, with Ethernet TCP/IP and S-Monitoring functionalities by default
	.M2020	Compact unit, 18 integrated I/O, 2 free I/O slots
	.M2120	Compact unit, 18 integrated I/O, 2 free I/O slots, with Ethernet TCP/IP
	.M2160	Compact unit, 18 integrated I/O, 2 free I/O slots, with Ethernet TCP/IP and expanded memory
	.M2110R1	Compact Base Unit for 24 integrated I/O, 1 free I/O slot, with Ethernet TCP/IP, for room automation applications
	.T240	Base unit for 4 I/O modules
PCD2	.M110	Base unit for 8 I/O modules
	.M120	Base unit for 8 I/O modules
	.M150	Base unit for 8 I/O modules
	.M170	Base unit for 8 I/O modules
	.M127	Base unit for 8 I/O modules
	.M157	Base unit for 8 I/O modules
	.M177	Base unit for 8 I/O modules
	.M480	Base unit for 8 I/O modules
	.M487	Base unit for 8 I/O modules
	.M4160	PCD2 processor base unit for 4 I/O modules, with Ethernet TCP/IP, 512 KB program memory, 64 I/O, not expandable
	.M4560	PCD2 processor base unit for 4 I/O modules, with Ethernet TCP/IP, 2 MB program memory, expandable to 1024 I/O
	.M5440	Base unit for 8 I/O modules, with RS232 and RS485, without Ethernet TCP/IP
	.M5540	Base unit for 8 I/O modules, with RS232 and RS485, with Ethernet TCP/IP
	.M5547	Similar to PCD2.M5540, but programmable with Step 7

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Product description (continued)

Module	Module related Subcategories	Description
	MEMORY MODULES	
PCD7	.R4xx	Flash Memory Backup module
	EXTENSION MODULES	
PCD2	.C10x	Extension unit for 8 I/O modules
	.C15x	Extension unit for 4 I/O modules
	.C2000	Extension unit for 8 I/O modules
	.C1000	As C2000, but half width (for 4 I/O modules)
	DIGITAL INPUT/OUTPUT MODULES	
PCD2	.E11x	8 inputs 24 V DC sink/source
	.E16x	16 inputs 24 V DC sink/source
	.E61x	8 inputs 24 V DC opto isolated
	.E500	6 inputs 115-230 V AC opto isolated
	.E520	6 inputs 24 V AC opto isolated
	.E523	6 inputs 48 V AC opto isolated
	.A2xx	4 relay outputs 230 V/ 2 A with VDR/RC protection
	.A220	6 relay outputs 230 V/ 2 A
	.A25x	8 relay outputs 48 V/ 2 A
	.A300	6 transistor outputs 24 V/ 2 A
	.A400	8 transistor outputs 24 V/ 0.5 A
	.A410	8 transistor outputs 24 V/ 0.5 A, opto isolated
	.A46x	16 transistor outputs 24 V/ 0.5 A
	.B100	8 combined inputs/outputs, 24 V/ 24 V/ 0.5 A

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Product description (continued)

Module	Module related Subcategories	Description
	ANALOGUE INPUT/OUTPUT MODULES	
PCD2	.W10x	4 analogue inputs (0…10 V, +/- 10 V, +/- 20 mA)
	.W11x	4 analogue inputs (Pt100, Ni100, Pt1000, Ni1000)
	.W2xx	8 analogue inputs (0…10 V, 0…20 mA, Pt1000)
	.W3xx	8 analogue inputs (0…10 V, 0…20 mA, Pt/Ni100, Pt1000)
	.W3x5	7 analogue inputs with galvanic separation (0…10 V, 0…20 mA, +/- 10 V)
	.W4xx	4 analogue outputs (0…10V, 0…20 mA)
	.W5xx	4 analogue in/outputs (0…10 V, 0…20 mA)
	.W525	4 analogue inputs/ 2 analogue outputs (0…10 V, 0…20 mA)
	.W6xx	4 analogue outputs (0…10 V, +/- 10 V, 0…20 mA)
	.W6x5	6/4/6 analogue outputs with galvanic separation (0…10 V, 0…20 mA, +/- 10 V)
	.W7x0	1/2 analogue weighing systems for up to 4 resp. 6 weighing cells
	.W745	4 analogue for sensor types RTD Thermocouple
	COMBINED DIGITAL / ANALOGUE MODULES	
PCD2	.G200	2 I/O modules combined from: .W200/ .W400.A400.E110
	.G400	4 I/O modules combined from: .W200/.W400.A400.E110
	.G410	4 I/O modules combined from: .E610 .A200 .W410 .W2…
	.G420	4 I/O modules combined from: .E110 .A200 .W410 .W2…
	COUNTING AND MOTION CONTROL MODULES	
	.H1xx	Counter module 20/ 100 kHz
	.H150	Serial synchronous interface (SSI) module

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Product description (continued)

Module	Module related Subcategories	Description
	SERIAL INTERFACE MODULES	
PCD7	.F1xx	Interface (RS422/485, RS232, 20 mA CL opto isolated, RS485 opto isolated)
	.F121	Interface (RS232) new generation
PCD2	.F2100	RS422 / RS485 and optional PCD7.F1xx
	.F2150	BACnet® MS/TP and optional PCD7.F1xxS
	.F2210	RS232 and optional PCD7.F1xx
	.F2400	LONFFT10 and optional PCD7.F1xxS
	.F2610	DALI incl. bus power supply
	.F2700	M-Bus master interface for up to 240 slaves
	.F2710	M-Bus master interface for up to 20 slaves
	.F2720	M-Bus master interface for up to 60 slaves
	.F2730	M-Bus master interface for up to 120 slaves
	.F2810	Belimo MP-Bus and optional PCD7.F1xx
	FLASH CARDS	
PCD2/PCD7	.Rxxx	Flash Memory Backup module
	COMMUNICATION MODULES	
PCD2	.F5xx	Real Time Clock (RTC), 7-segment display, serial ports, interface for display PCD7.D160
	.T500	MP-Bus (Belimo)
PCD7	.F180	MP-Bus (Belimo)
	.F700	Profibus FMS module
	.F750	Profibus DP Master module
	.F77x	Profibus DP Slave module
	.F80x	LON module
	.F65x	Ethernet module
	.T500	MP-Bus (Belimo)
	.F7400	CAN communication extension module
	.F7500	Profibus DP Master communication extension module

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Product description (continued)

Module	Module related Subcategories	Description
PCD2	**MODEM MODULES**	
	.T813	Analogue modem 33.6 kbps
	.T850	Digital modem ISDN-TA
PCD7	**BUS COMPONENTS FOR RS485 NETWORKS**	
	.T1xx	Repeater RS485, Converter RS232 and RS485, Termination Box
PCD4	**CPU BUS MODULES (for Power Supply and CPU)**	
	.C1xx	With 1 serial interface 20 mA CL, RS232, RS422/485
	.C340	With 3 serial interfaces and 4 I/O modules
PCD4	**INPUT/OUTPUT BUS MODULES**	
	.C22x	For 2 I/O modules
	.C260	For 6 I/O modules
PCD4	**PROCESSOR MODULES**	
	.M110	With PGU
	.M120	With PGU + 1 additional serial interface
	.M140	With PGU + 3 additional serial interfaces
	.M170	With PGU + 3 additional serial interfaces
	.M170Fxx	As M170 by adding PCD7.F700, F750, F77x, F65x (Communication Module)
	.M125	With PGU + 1 additional serial interface
	.M145	With PGU + 3 additional serial interfaces
	.M445	With PGU + 3 additional interfaces and PROFIBUS co-processor
PCD4	**POWER SUPPLY MODULES**	
	.N200	24 V DC, 5 V/ 4 A
	.N210	24 V DC, 5 V/ 4 A, +15 V/ 0.5 A, -15 V/ 0.45 A

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Product description (continued)

Module	Module related Subcategories	Description
	PUBLIC MEMORY MODULES	
PCD7	.R1xx	2 sockets for EPROM or RAM (max. 256 kByte), accumulator, HW clock, RAM for F/T/C/R media
	.R2xx	2 sockets for EPROM or RAM, equipment with RAM 256 kByte, accumulator, HW clock, RAM for F/T/C/R
	.R3xx	2 sockets for EPROM or RAM (max. 428 kByte), accumulator, HW clock, RAM for F/T/C/R media
	DIGITAL INPUT/OUTPUT MODULES	
PCD4	.E1xx	16 inputs 24 V DC
	.E600	16 inputs 24 V DC opto isolated
	.A200	8 relay outputs 230 V/ 2 A with VDR/RC protection
	.A250	16 relay outputs 230 V/ 2 A
	.A350	8 transistor outputs 24 V/ 2A
	.A400	16 transistor outputs 24 V/ 0.5 A
	.A410	16 transistor outputs 24 V/ 0.5 A opto isolated
	.B900	16 inputs 24 V DC and 16 transistor outputs 24 V/ 0.5 A
	ANALOGUE INPUT/OUTPUT MODULES	
PCD4	.W100	4 inputs + 2 outputs 12 Bit (range selected with PCD7.Wxxx modules)
	.W300	8 inputs 12 Bit + sign (range selected with PCD7.Wxxx modules)
	.W400	8outputs 8 Bit 0…10 V/ 0…20 mA
	.W500	8 inputs/outputs 12Bit, galvanic separated (range selected with PCD7.Wxxx modules)
	.W600	8 outputs 12 Bit, galvanic separated (range selected with PCD7.Wxxx modules)
	ANALOGUE RANGE MODULES	
PCD7	.W1xx	4 inputs (0…10 V, 0…20 mA, Pt100)
	.W2xx	1 output (+/- 10 V, 0…10 V, 0…20 mA, 4…20 mA)
	.W3xx	2 outputs (+/- 10 V, 0…10 V, 0…20 mA, 4…20 mA)

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Product description (continued)

Module	Module related Subcategories	Description
	VARIO PLUS MODULES	
PCD7	.L97x	VARIO-PLUS reduced
	.L98x	VARIO-PLUS standard
	.L99x	VARIO-PLUS extended
	Series PCD7 Text Terminals	
PCD7	.D170	Terminal via serial interface RS232
	.D202	Terminal via serial interface RS232
	.D250	Terminal via serial interface RS232
	.D23x	Graphics Terminal with single knob control, 10 resp. 20 function keys
	Series PCS1 Compact Controller	
PCS1	.C8xx (xxxx)	Base unit including 36 digital + analogue I/O, 4 NO + 4 SPDT Relay outputs
	.C6xx (xxxx)	Base unit as PCS1.C8xx with less I/O (30 data points)
	.C4xx (xxxx)	Base unit as PCS1.C8xx with less I/O (19 data points)
	TEXT TERMINALS	
PCD7	.D16x	Terminal, direct mounting on PCD1/PCD2
	,D170	Terminal via serial interface RS232
	.D202	Terminal via serial interface RS232(w/ display PC2004LR)
	.D250	Terminal via serial interface RS232
	.D23x	Graphics terminal with single knob control or function keys
	Accessories	
PCD7	.D3100e	Embedded display module