



CERTIFICATE NUMBER  
17-YO1683502-PDA

DATE  
31 Oct 2017

ABS TECHNICAL OFFICE  
Yokohama Engineering Services

# CERTIFICATE OF DESIGN ASSESSMENT

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

## YOKOGAWA ELECTRIC CORPORATION

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: **Safety Control and Monitoring System**

Model: **ProSafe-RS**

This Product Design Assessment (PDA) Certificate 17-YO1683502-PDA, dated 31/Oct/2017 remains valid until 30/Oct/2022 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

Motohiro Tamura  
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-A/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010).

## YOKOGAWA ELECTRIC CORPORATION

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### Tier: 5 - Unit Certification Required

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**Product:** Safety Control and Monitoring System

**Model:** ProSafe-RS

#### Intended Service:

Safety Control and Monitoring System relative to high availability applications such as Emergency Shutdown System (ESD), Process Shutdown System (PSD), Burner Management System (BMS) and Fire & Gas System (F & G).

#### Description:

Safety Control and Monitoring System Hardware, ProSafe-RS Series

#### Rating:

Power Supply: 100-120V AC, 220-240V AC, 24V DC.

As for Model details, refer to the attached Equipment List.

Ambient Temperature: 0-55 degree C (Details depend on specifications)

#### Service Restriction:

Unit Certification is required in accordance with 4-9-8/13.3 of the Steel Vessel Rules for this product.

The following requirement applicable to computer based system in accordance with 4-9-3 of the Steel Vessel Rules;

(a) The assigned system Category III.

(b) The requirement evidence to be kept by the manufacturer in accordance with 4-9-3/Table 2 regarding the computer-based system.

#### Comments:

(a) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

(b) Unless specially directed by Administration, this approval is not to be construed as a substitute for flag Administration's approval.

#### Notes/Drawing/Documentation:

This PDA is based on the following documents:

Dwg. No.GS32P06K31-01EN 001: General Specifications (Rev.0),

Dwg. No.SHD- SIHW01- Z0025: Application (Type Approval Definition) for ProSafe- RS 2016 (Rev.0),

ABS Surveyor Report No.YO2041097.R1 dated 27 Oct. 2011,

Yokogawa Electric Test Report No.SHD-SIHW01-Z0015 dated 24 Oct. 2011,

ABS Surveyor Report No.YO2430518 dated 11 Dec. 2013,

Yokogawa Electric Test Report No.SHD-SIHW01-D0142 dated 16 July 2013,

Yokogawa Electric Test Report No.SHD-SIHW01-D0146, issued by IPS report No. EMC13160 dated 24 Oct 2013,

Yokogawa Electric Test Report No.SHD-SIHW01-D0147, issued by RIME test report No. 13-323(E) dated 18 Oct 2013,

Yokogawa Electric Test Report No.SHD-SIHW01-D0148, issued by RIME test report No. 13-321(E) dated 18 Oct 2013,

Yokogawa Electric Test Report No.SHD-SIHW01-D0149, issued by RIME test report No. 13-322(E) dated 18 Oct 2013,

Dwg. No.SHD-SIHW01-D0178, Test Reports of "ProSafe-RS System" issued by IPS report No. EMC16044 dated 13 May 2016,

Dwg. No.SHD-SIHW01-D0179, Test Reports of "ProSafe-RS System" issued by RIME test report No. 16-005(E) dated 27 Apr 2013,

Dwg. No.SHD-SIHW01-D0180, Test Reports of "ProSafe-RS System" issued by RIME test report No. 16-007(E) dated 27 Apr 2016,

Dwg. No.SHD-SIHW01-D0183, Test Reports of "ProSafe-RS System" issued by RIME test report No. 16-006(E) dated 27 Apr 2016,

Drawing No. GS32P06K52-01EN, General Specifications,



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### **Tier: 5 - Unit Certification Required**

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Drawing No. SHD-NDEA00-D0025, Type Approval Test Plan and Report of "CENTUM System" and "ProSafe-RS System" (2017), issued by Yokogawa Electric dated 24 July 2017,  
Drawing No. SHD-NDEA00-D0027, Test Report of "CENTUM System" and "ProSafe-RS System" FY17 for use in Marine Application on EMC test etc by e-OHTAMA, test report No T-1662825-01 dated 10 Aug 2017,  
Drawing No. SHD-NDEA00-D0029, Environmental Test Report of "CENTUM System" and "ProSafe-RS System" FY17 for use in Marine Application by Research Institute of Marine Engineering, test report No 17-171(E) dated 24 July 2017.

#### **Terms of Validity:**

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#### **STANDARDS**

##### **ABS Rules:**

2017 Steel Vessel Rules 1-1-4/7.7, 1-1-A3 & A4, 4-9-3 (Cat. III) and 4-9-8/13;  
2017 Mobile Offshore Drilling Units Rules 1-1-4/9.7, 1-1-A2 & A3 and 4-3-4/5;  
2017 Steel Vessels Under 90 Meters in Length 1-1-4/7.7, 1-1-A3 & A4 and 4-7-4/3;  
2017 Offshore Support Vessels 1-1-4/7.7, 1-1-A3 & A4 4-9-3 (Cat III) and 4-9-8/13;  
2017 High-Speed Craft 1-1-4/11.9, 1-1-A2 & A3 4-7-8 (Cat III) and 4-7-9/15.

##### **National:**

NA

##### **International:**

NA

##### **Government:**

NA

##### **EUMED:**

NA

##### **OTHERS:**

IACS E-10 (Rev.6, Oct 2014)

# **Design Assessment (DA) Certificate Attachment for Component Details**

**DA Certificate No:** 17-YO1683502-PDA  
**Effective Date:** 31 October 2017  
**Expire Date:** 30 October 2022  
**Company:** Yokogawa Electric Corporation  
**Factory or Works:** Head Office  
**Product/Equipment:** Safety Control and Monitoring System  
**Model:** ProSafe-RS

## **EQUIPMENT LIST**

The following equipment is applied for ABS type approval.

Kind of Product	Name	Model	Rated Power Supply	Remark
SCU	Safety Control Unit (19-inch Rack Mountable)	SSC10S Series	220-240 V AC : 290 VA 100-120 V AC : 240 VA 24 V DC : 7A	
	Duplexed Safety Control Unit (19-inch Rack Mountable)	SSC10D Series		
	Safety Control Unit for Vnet/IP (19-inch Rack Mountable)	SSC50S Series	220-240 V AC : 290 VA 100-120 V AC : 240 VA 24 V DC : 7A	
	Duplexed Safety Control Unit for Vnet/IP (19-inch Rack Mountable)	SSC50D Series		
	Safety Control Unit (for Vnet/IP-Upstream, Rack Mountable Type)	SSC57S series	220-240V AC : 290 VA 100-120V AC : 240 VA 24V DC : 7A	
	Duplexed Safety Control Unit (for Vnet/IP-Upstream, Rack Mountable Type)	SSC57D series		
	Safety Control Unit for Vnet/IP (19-inch Rack Mountable)	SSC60S Series	220-240 V AC : 290 VA 100-120 V AC : 240 VA 24 V DC : 7A	
	Duplexed Safety Control Unit for Vnet/IP (19-inch Rack Mountable)	SSC60D Series		
	Duplexed Safety Control Unit (for N-IO/FIO, Rack Mountable Type)	S2SC70D Series	220- 240V AC: 290 VA 100- 120V AC: 240 VA 24V DC: 7.0A	Wide range temperature type (- 20 to 70 deg. C)
	Safety Control Unit (for N- IO/FIO, Rack Mountable Type)	S2SC70S Series		
NODE	Safety Node unit for Dual-Redundant ESB Bus (19-inch Rack Mountable)	SNB10D Series	220-240 V AC : 230 VA 100-120 V AC : 200 VA 24 V DC : 5.5 A	
Digital I/O Module	Digital Input Module (16-channel, 24V DC, Isolated)	SDV144 Series		
	Digital Output Module (8-channel, 24V DC, Isolated)	SDV531 Series		
	Digital Output Module (16-channel, 24VDC, Isolated)	SDV541 Series		
	Digital Output Module (4-channel, 24V DC, Isolated)	SDV521 Series		
	Digital Output Module (16-channel, 48V DC, Isolated)	SDV53A Series		
	Digital I/O Module (16-channel, Module Isolated)	S2MDV843 Series		
Analog I/O Module	Analog Input Module (4-20mA, 16-channel, isolated)	SAI143 Series		
	Analog Input Module (1 to 5V/1 to 10V, 16-channel, Isolated)	SAV144 Series		
	Analog Output Module (4-20mA, 8-channel, isolated)	SAI533 Series		
	TC/mV input module (16-channel, Isolated Channels)	SAT145 series		
	RTD input module (16-channel, Isolated Channels)	SAR145 series		



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Kind of Product	Name	Model	Rated Power Supply	Remark
Analog Digital I/O Module	Analog Digital I/O Module (16-channel, Isolated)	S2MMM843 Series		
Bus Converter	Duplexed Vnet Router (Duplexed Communication module, Duplexed Power module)	AVR10D Series	220-240 V AC : 230 VA 100-120 V AC : 200 VA 24 V DC : 1.7 A	
Bus Interface Module	ESB Bus Coupler Module	SEC401 Series		
	ESB Bus Coupler Module (for 2 Port)	SEC402 Series		
	N- ESB Bus Coupler Module (for N-IO, 2- port)	S2EN402 Series		
	N- ESB Bus Coupler Module (for N-IO, 4- port)	S2EN404 Series		
Communication Interface card	RS-232C Communication Module (2-port, 1200bps to 115.2 kbps)	ALR111 Series		
	RS-422/RS-85 Serial Communication Module (2-port, 1200bps to 115.2 kbps)	ALR121 Series		
	Ethernet Communication Module	ALE111 Series		
	<b>Fire and Gas Communication Module</b>	<b>S2LP131 Series</b>		
Interface Card	Vnet Interface Card	VF701 Series		
	Vnet Interface Card	VF702 Series		
	Vnet/IP Interface Card	VI701 Series		
	Vnet/IP Interface Card	VI702 Series		
UNIT	Unit for Optical Bus Repeater Module (19-inch Rack Mountable)	SNT10D Series	220-240 V AC : 230 VA 100-120 V AC : 200 VA 24 V DC : 5.5 A	
	Node Interface Unit (for N- IO)	S2NN30D Series	100- 240V AC:190VA 24V DC:150W	Exclude DIN mount type
Optical Module	Optical ESB Bus Repeater Master Module	SNT401 Series		
	Optical ESB Bus Repeater Slave Module	SNT501 Series		
	Optical ESB Bus Repeater Master Module 5 km to 50 km	SNT411 Series		
	Optical ESB Bus Repeater Slave Module 5 km to 50 km (for	SNT511 Series		
Relay Board	8X2 dry contact outputs (Safety relay built-in, M4 terminals)	SRM53D Series	24V DC: 1.5 A	
	16 dry contact outputs (Safety relay built-in, M4 terminals)	SRM54D Series		
	Relay board for Digital output : DIN Rail mount type (Single and Dual-redundant, 16-channel x 1)	SBM54D Series		

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Kind of Product	Name	Model	Rated Power Supply	Remark
Terminal Board	Terminal Board for Analog (16-channel, with ISA Standard G3)	SEA4D Series		
	Terminal Board for Digital (Single and dual-redundant, 16-channel input or 8-channel output)	SED4D Series		
	Digital Terminal Board (Single and Dual-Redundant, 4-channel x 4)	SED2D Series		
	Digital Terminal Board (Single and Dual-Redundant, 8-channel x 4)	SED3D Series		
	Terminal board for TC/mV: DIN Rail mount type (Single and Dual-redundant, 16-channel x 1)	SBT4D Series		
	Terminal board for RTD input: DIN Rail mount type (Single and Dual-redundant, 16-channel x 1)	SBR4D Series		
	Terminal board for Analog :DIN Rail mount type (Single and Dual-redundant, 16-channel x 1)	SBA4D Series		
	Terminal board for Digital output :DIN Rail mount type (Single and Dual-redundant, 4-channel x 1)	SBD2D Series		
	Terminal board for Digital output :DIN Rail mount type (Single and Dual-redundant, 8-channel x 1)	SBD3D Series		
	Terminal board for Digital :DIN rail mount type (Single and Dual-redundant, 16-channel x 1)	SBD4D Series		
	Terminal Board for Analog Input, 3-wire:DIN rail mount type	S1BB4D Series		

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Kind of Product	Name	Model	Rated Power Supply	Remark
Cable	ESB Bus Cable (36-36 pins)	YCB301 Series		
	V net or ER Bus Cable (10BASE-2 cable)	YCB141 Series		
	V net Cable (10BASE-5 cable)	YCB111 Series		
	RS-232C Null Modem Cable for Start-Stop Synchronous Communication (D-sub 9 - D-sub 25 male pins)	AKB136 Series		
	RS-422/RS-485 cable Used between ALM side (M4 terminal) and other side (M3 terminal)	AKB161 Series		
	Signal Cable (50-50 pins)	AKB331 Series		
	Signal Cable (50-50 pins)	AKB651 Series		
	Signal Cable (40-40 pins)	KS1 Series		
	Signal cable for RTD input module	AKB611 Series		
	F- SB Bus Cable	S2KLF10 Series		
	Power Supply Cable for Base plate	S2KPB10 Series		
Base Plate	Base Plate with disconnecting terminal(for N- IO, 16-channel)	S2BN1D Series		Exclude DIN mount type
	Base Plate for Barrier (for N- IO, MTL Barrier)	S2BN4D Series		
	Base Plate for Barrier (for N- IO, P+F Barrier)	S2BN5D Series		
Others	Wiring Check Adapter for Digital Input (For ETS, with ISA Standard G3)	SCB100 Series		
	Wiring Check Adapter for Digital Input (For DTS, with ISA Standard G3)	SCB110 Series		
	V net Terminator (for 10base2 Cable)	YCB148 Series		
	T-type Connector of Control Bus for SENG	YCB146 Series		
	IRIG (GPS) Terminator	YCB128 Series		
	Dummy Cover (for I/O module)	SDCV01 Series		
	Dummy Cover (for N- IO, I/O module)	S2DCV02 Series		