

PS6R Series Switching Power Supplies

Expandable and space-saving switching power supplies. High efficiency reduces operation costs.

- 93% efficiency
- · Plug-in output modules for additional output voltages
- · Plug-in branch terminal module for additional terminals
- Power Range: 120W, 240W, 480W
- Input voltage: 100 to 240V AC (voltage range: 85 to 264V AC/110 to 350V DC)
- Up to 70°C (158°F) operating temperature
- DC low LED indicator and output contact
- The terminals are captive spring-up screws. Ring or fork terminals can be used.
- · Finger-safe construction prevents electric shocks.
- Panel mount bracket and side-mount panel mounting bracket. Can be attached to a DIN rail or directly to a panel surface.
- RoHS compliant
- UL listed for Class 1, Division 2 Hazardous Locations
- · Meets SEMI F47 Sag Immunity
- · ABS Certified for maritime use



Applicable Standards	Mark	File No. or Organization
UL508 CSA C22.2 No. 107.1	c UL US	UL/c-UL Listed File No. E177168
EN60950-1 EN50178		TÜV SÜD
EN61204-3	CE	EU Low Voltage Directive EMCD

Part Numbers

PS6R

Output Capacity*	Part No.	Input Voltage	Output Voltage	Output Current
120W	PS6R-F24			5A
240W	PS6R-G24	100 to 240V AC	21.6 to 26.4V	10A
480W	PS6R-J24			20A

^{*}Output voltage × output current = output capacity



120W shown with Branch Terminal module attached.

Accessories

ltem	Part No.	Note
Output Voltage Expansion	PS9Z-6RM1	Output: +5V, 2A, 10W
Module Note 1	PS9Z-6RM2	Output: +12V, 1A, 12W
	PS9Z-6RM3	Output: +5V, 1A/-5V, 1A, 10W
	PS9Z-6RM4	Output: +15V, 0.4A/-15V, 0.4A, 12W
	PS9Z-6RM5	Output: +5V, 1A/+12V, 0.5A, 11W
100	PS9Z-6RM6	Output: +12V, 0.5A/-12V, 0.5A, 12W
Branch Terminal Module Nete 2	PS9Z-6RS1	Additional screw terminals for wiring: 2 + terminals / 2 - terminals
Panel Mounting Bracket	PS9Z-6R1F	
Side-mount Panel Mounting Bracket	PS9Z-6R2F	Supplied with M3 × 6 countersunk mounting screws
DIN Rail	BNDN1000	1,000mm
DIN Rail End Clip	BNL6	

- 1. When using an output voltage expansion module, reduce 1A from the output current of PS6R.
- When using a branch terminal module, the total voltage/current of PS6R and the branch terminal module should not exceed the rated current/voltage of PS6R

Specifications

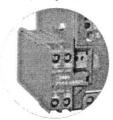
PS6R

P	art No.		PS6R-F24	PS6R-G24	PS6R-J24		
	Input Voltage		(Voltage range: 85 to 264V A	100 to 240V AC C/110 to 350V DC) (Load < 80% at 85 to	100V AC, 110 to 140V DC) Note		
	Frequency			50/60Hz			
	Input Current	100V AC	1.4A typ	2.7A typ	5.5A typ.		
	IIIput Curreiii	230V AC	0.7A typ	1.2A typ	2.3A typ.		
	Inrush 100V AC			9A max. (Ta=25°C, 100V AC cold start)			
Input	Current	230V AC		20A max. (Ta=25°C, 230V AC cold start)			
-	Leakage	120V AC		0.5mA max.			
	Current	230V AC		1mA max.			
	Efficiency	100V AC	90%	90%	91%		
	(Typical)	230V AC	90%	91%	93%		
	Power Factor		0.99	0.99	0.98		
	(Typical)	230V AC	0.96	0.97	0.97		
	Rated Voltage		24V/5A	24V/10A	24V/20A		
	Adjustable Vo	Itage Range		±10%			
	Output Holdin	ng Time		20ms min. (at rated input and output)			
	Start Time		800ms max. (at rated input and output)				
¥	Rise Time		200ms max. (at rated input and output)				
Output	Total Fluctuation Input Fluctuation Load Fluctuation Temperature Change Ripple (including noise)	Total Fluctuation		±5% max.			
0		Input Fluctuation		0.4% max.			
		Load Fluctuation		0.6% max.			
		Temperature Change		0.05%/oC max. (-10 to +60°C)			
		1% p-p max. (0 to +60°C)					
		mpple (moduling noise)		1.5% p-p max. (-10 to 0°C)			
ì	Overcurrent Pr	rotection	105 to 120% (auto reset) (output current when voltage	e drops by 5%)		
ions	Overvoltage P	rotection		Output off at 120% Note 2			
Functions	Operation Indi	cator	tor LED (green)				
4	Voltage Low In	ndication		LED (amber)			
2 =	ALCOHOLD DE LE	t and output terminals		3000V AC, 1 minute			
engt		t and ground terminals		2000V AC, 1 minute			
Strength		ut and ground terminals		500V AC, 1 minute			
	on Resistance		100MΩ min. 500V DC megger (be	tween input and output terminals/betw troom temperature and normal humidit	veen input and ground terminals y)		
erati	ng Temperature			-10 to +70°C (no freezing) Note 3			
erati	ng Humidity			20 to 90% RH (no condensation)			
orage	Temperature	Personal Metallic	−25 to +75°C (no freezing)				
torage Humidity		AND THE REST		20 to 90% RH (no condensation)			
bratio	n Resistance		10 to 55 Hz,	amplitude 0.375 mm (0.187mm using F 2 hours each in 3 axes, 6 directions	PS9Z-6R1F)		
hock Resistance			300 m/s² (150 n	n/s² when using a PS9Z-6R1F panel mou	unting bracket)		
ЛC	EMI			EN61204-3 (Class B)			
VIC.	EMS			EN61204-3 (industrial)			
egree	of Protection			IP20 (IEC 60529)			
eight	(approx.)		630g	960g	1400g		
rmina	I Screw	and the Viet of Spring of Spring of Spring		M3.5 (See last page for wire sizes)			

DC input voltage is not subjected to safety standards.
 One minute after the output has been turned off, turn on the input again.

3. See the output derating curves.

■ Easily Expandable



Output Voltage **Expansion Module**

In addition to the standard 24V output, additional 5, 12, and 15V outputs can be added.



Branch Terminal Module

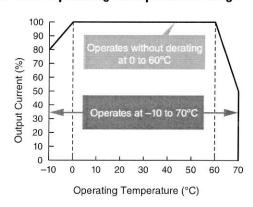
Two terminals can be added. No wiring is required, reducing installation space.

Accessories (For use with PS6R)

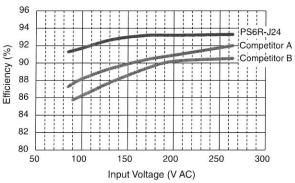
Part No.				(Output Voltage Ex	pansion Module		design.	Branch Terminal Module
FAILINO.			PS9Z-6RM1	PS9Z-6RM2	PS9Z-6RM3	PS9Z-6RM4	PS9Z-6RM5	PS9Z-6RM6	PS9Z-6RS1
Input Voltage	Input Voltage				24V	DC			
Output Capacity			10W max.	12W max.	10W max.	12W max.	11W max.	12W max.	N A
Rated Voltage/Current		ed Voltage/Current	5V/2A	12V/1A	±5V 2A	±15V 0.4A	5V/1A, 12V/0.5A	±12V 0.5A	24V/10A max. Note 1
	Adju	stable Voltage Range		<u>.</u>		Not available	Э		
	Volta	age Accuracy			±5% r	nax.			
	Star	t Time		200	ms max. (at rate	d input and output)			-
Output		Input Fluctuation			0.5% i	max.			
	ion	Load Fluctuation			1.0% r	max.			
	Regulation	Temperature Change			0.05%/max. (-	-10 to +60°C)			-
	Ripple (including noise)		100mV max.	150m'	V max.	100mV	max., 150mV max	ax.	
Supplementary	Over	current Protection	105% (auto reset)						
Functions	Overvoltage Protection		Output off at 120%					· 	
Operating Tempe	erature)	−10 to +70°C (no freezing) Note 2						
Operating Humic	lity		20 to 90%RH (no condensation)						
Storage Tempera	ature		−25 to +75°C (no freezing)						
Storage Humidit	Y		20 to 90% RH (no condensation)						
Vibration Resista	ance		10 to 55 Hz, amplitude 0.375 mm, 2 hours each in 3 axes, 6 directions (in combination with PS6R-J24)						
Shock Resistance			300 m/s² (150 m/s² when using a PS9Z-6R1F panel mounting bracket), 3 shocks each in 6 axes (in combination with PS6R-J24)						
EMC	EMI		EN61204-3 (Class B) (in combination with PS6R-□24)						
EMS		EN61204-3 (industrial) (in combination with PS6R-□24)							
Safety Standards		UL508 (Listing), CSA C22.2 No.107.1, IEC/EN60950-1, EN50178 (in combination with PS6R-□24)					PS6R-□24)		
Degree of Protec	tion					IP20 (IEC 60529	9)		
Weight (approx.)					90g	1			30g
Terminal Screw					M3.5	(See last page for	wire sizes.)		

^{1.} Ensure that the current does not exceed the rated current of the PS6R.

■ Wide Operating Termperature Range



■ Energy-saving 93% Efficiency (480W)



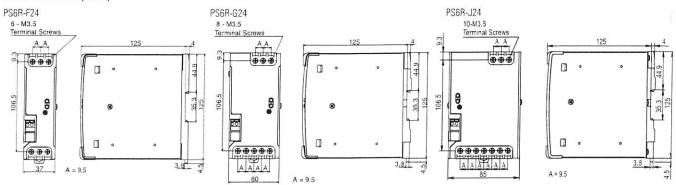
■ Easy Maintenance - LED Indicator

Status	Normal	Overload or Input Voltage Low*	Output short-circuit	Output OFF
DC ON (green LED)	-)0:	- ≫ -	•	
DC Low (amber LED)	•	- <u>w</u> -		•

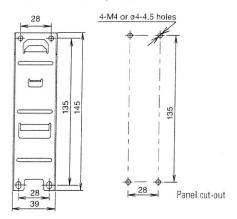
^{*}The LEDs turn on when the input voltage drops.

^{2.} See the output derating curves.

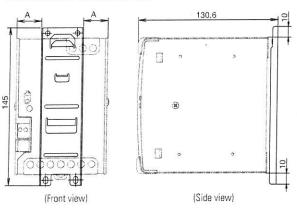
Dimensions (mm)



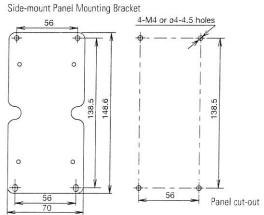
PS9Z-6R1F Panel Mounting Bracket



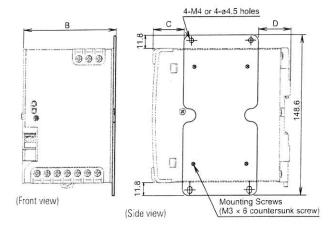
When a PS9Z-6R1F is installed on PS6R



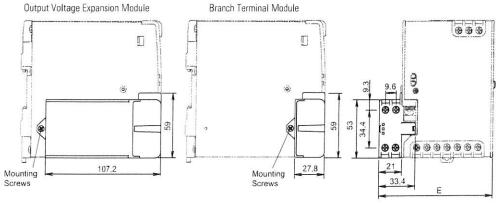
PS9Z-6R2F



When a PS9Z-6R2F is installed on PS6R



When using a PS9Z-6RM*

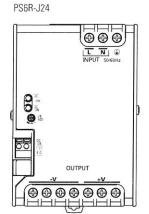


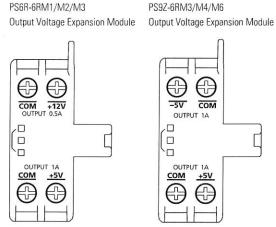
When using a PS9Z-6RS1

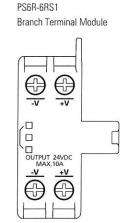
Dimension Table

	Α	В	С	D	E
PS6R-F24	-	39.3	29.5	29.5	58
PS6R-G24	10.5	62.3	29.5	31	81
PS6R-J24	23	87.3	29.5	31	106

Parts Description







(PS6R-6RM5 shown)

PS6R-□24/PS9Z-6RS1

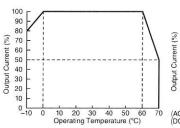
Marking	Name	Description
L, N	Input Terminal	Voltage range: 85 to 264V AC/110 to 350V DC
(1)	Ground Terminal	Be sure to connect this terminal to a proper ground.
+V, -V	DC Output Terminals	+V: Positive output terminal -V: Negative output terminal
VR.ADJ	Output Voltage Adjustment	Allows adjustment within ±10%. Turning clockwise increases the output voltage
DC ON	Operation Indicator (green)	Lights on when the output voltage is on.
DC LOW	Output Low Indicator (Amber)	Lights on when the output voltage drops approximately 80% of the rated value.
DC OK	DC OK Output	Lights on when the output voltage is more than 80% of the rated value. NPN transistor output (50V DC max., 50 mA max.)

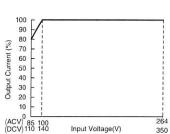
PS9Z-6RM□

Marking	Name	Description
+5V, +12V, +15V	DC Output Terminal	+5V side, +12V side, +15V side
-5V, -12V, -15V	DC Output Terminal	-5V side, -12V side, -15V side
COM	DC Output Terminal	0V side (wired internally to –V of PR6R-J24)

Characteristics

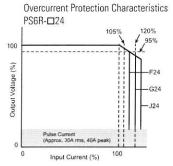


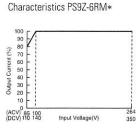




Output Current vs. Input Voltage

(Derating Curves) (Ta=25°C)





Overcurrent Protection

Part No.	UL508, CSA C22.2 No. 107. 1	EN60950-1, EN50178
PS6R-F24	60°C	60°C
PS6R-G24	60°C	60°C
PS6R-J24	55°C	60°C
PS9Z-6R□□	55°C	60°C

Operating Temperature approved by Safety Standards

Operating Instructions

The PS6R should be placed in a proper enclosure. It is designed to be used with general electrical equipment and industrial electric devices.

Operation Notes

- 1. Output interruption may indicate blown fuses. Contact IDEC.
- The PS6R contains an internal fuse for AC input. When using DC input, install an external fuse or DC input. To avoid blown fuses, select a fuse in consideration of the rated current of the internal fuse.

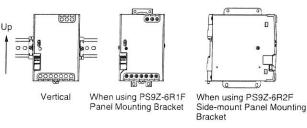
Rated Current of Internal Fuses

Part No.	Internal Fuse Rated Current
PS6R-F24	4A
PS6R-G24	6.3A
PS6R-J24	10A

- Avoid overload and short-circuit for a long period of time, otherwise internal elements may be damaged.
- DC input operation is not subjected to safety standards.

Installation Notes

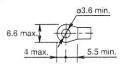
• The PS6R can be installed in the direction shown below only.



- Do not close the top and bottom openings of the PS6R to allow for heat radiation by convection.
- Maintain a minimum of 20mm clearance around the PS6R, except for the top and bottom openings.
- . When derating of the output does not work, provide forced air-cooling.
- Make sure to wire the ground terminal correctly.
- For wiring, use wires with heat resistance of 60°C or higher.
 Use copper wire of the following sizes. Wires of the following sizes must be used to comply with UL508, CSA C22.2 No. 107.1.

Model	Terminal	Wire Size/No. of Wire	Wire Type	Torque, in-ibs (N-m)
PS6R-F24 PS6R-G24	Input	18-14 AWG, 1-wire		
	Output	18-14 AWG, 1-wire, (18 AWG - 7A, 16 AWG - 10A, 14 AWG - 15A)		
, our uz i	DC OK Output	22-14 AWG, 1-wire (stripped wire length: 6 to 7mm)	Copper	
	Input	18-14 AWG, 1-wire Solid/Stranded		
		18-14 AWG, 2-wire Use the same size wire for each terminal (18 AWG - 7A, 16 AWG - 10A, 14 AWG - 15A)		7.0 (0.8)
PS6R-J24	Output	12 AWG, 1-wire	Copper Solid/Stranded Use with UL-listed ring/ fork crimp terminal.	Section 1 to 1
	DC OK Output	22-14 AWG, 1-wire (stripped wire length: 6 to 7mm) Copper		-
PS9Z-6R	Output	18-14 AWG, 1-wire (18 AWG - 7A, 16 AWG -10A, 14 AWG - 15A)	Solid/Stranded	7.0 (0.8)

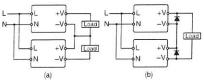
Applicable Crimp Terminal (reference)



- Recommended tightening torque of the input and output terminals is 0.8N.m
- The output voltage can be adjusted within ±10% of the rated output voltage by using the V.ADJ control. Note that overvoltage protection may work when increasing the output voltage.
- When large shocks or heavy vibrations on the PS6R are expected, the use of DIN rail or PS9Z-6R2F side-mount panel mounting bracket is recommended.

Series Operation

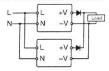
The following series operation is allowed. Connect Schottky barrier diodes as shown below. Output voltage expansion modules cannot be connected in series.



Select a Schottky diode in consideration of the rated current. The diode's reverse voltage must be higher than the PS6R's output voltage.

Parallel Operation

Parallel operation is possible to increase the output capacity. Output voltage expansion modules cannot be connected in series.



When increasing the capacity, observe the following.

- 1. Maintain the operating temperature below 40°C.
- Output cannot be connected directly in parallel operation. Connect a diode to the output of each PS6R.
- Output terminal voltage of both power supplies must be the same. Also, maintain the voltage difference between the power supplies below 30mV.
- 4. Use load lines of the same diameter and length.
- Set the output voltage higher for the amount of diode forward voltage drop.
- 6. Turn on the inputs at the same time.
- Select a diode in consideration of:
 Diode's reverse voltage must be higher than the PS6R's output voltage.
 Diode's current must be three times the PS6R's output current. Provide a heat sink for heat dissipation.



CERTIFICATE OF COMPLIANCE

Certificate Number Report Reference 20140322- E467154 E467154-20140320

Issue Date

2014-MARCH-22

Issued to:

IDEC CORP

6-64 NISHIMIYAHARA 2-CHOME

YODOGAWA-KU

OSAKA 532-0004 JAPAN

This is to certify that representative samples of

POWER CIRCUIT AND MOTOR-MOUNTED APPARATUS

FOR USE IN HAZARDOUS LOCATIONS

See addendum page

Have been investigated by UL in accordance with the

Standard(s) indicated on this Certificate.

Standard(s) for Safety:

Standard No. ANSI/ISA 12.12.01-2013, Nonincendive Electrical

Equipment for Use in Class I and II, Division 2 and Class III,

Divisions 1 and 2 Hazardous (Classified) Locations

Standard No. CAN/CSA C22.2 No. 213-M1987, 1st Ed., Non-incendive Electrical Equipment for Use in Class I, Division 2

Hazardous Locations.

Additional Information:

See the UL Online Certifications Directory at

www.ul.com/database for additional information

Only those products bearing the UL Listing Mark for the US and Canada should be considered as being covered by UL's Listing and Follow-Up Service meeting the appropriate requirements for US and Canada.

The UL Listing Mark for the US and Canada generally includes: the UL in a circle symbol with "C" and "US" identifiers: [©]Us the word "LISTED"; a control number (may be alphanumeric) assigned by UL; and the product category name (product identifier) as indicated in the appropriate UL Directory.

Look for the UL Listing Mark on the product.

Western R. Comy

William R. Carney, Director, North American Certification Programs

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CERTIFICATE OF COMPLIANCE

Certificate Number Report Reference 20140322- E467154 E467154-20140320

Issue Date

2014-MARCH-22

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

Power Supplies for use in Hazardous Locations, Class I, Division 2, Groups A, B, C and D Hazardous Locations

Industrial Control Equipment Power Supplies – Model PS6R-F24, PS6R-G24, PS6R-J24.

DC-DC Converter Units - Models PS9Z-6RM1, PS9Z-6RM2, PS9Z-6RM3, PS9Z-6RM4, PS9Z-6RM5, PS9Z-6MR6.

Expansion Terminal Unit - Model PS9Z-6RS1

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William R. Carney, Director, North American Certification Programs

UL LLC

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CERTIFICATE NUMBER

14-YO1251188-PDA

DATE

14 October 2014

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 IDEC IZUMI TAIWAN CORPORATION - KAOHSIUNG CITY

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: Power Supply Unit

MODEL: PS6R Series

This Product Design Assessment (PDA) Certificate 14-YO1251188-PDA, dated 14/Oct/2014 remains valid until 14/Oct/2019 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

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Telephone: +886-7-3713151 Fax: +886-7-3714902 Email: hlin@ideckt.com.tw

Tier: 2

Product:

Power Supply Unit

Model:

PS6R Series

Intended Service:

Switching Power Supplies installed on Marine, Offshore Vessels and MODU.

Description:

Power Supply, PS6R Series

PS6R Series consist of the Power Supply Unit, DC-DC Converter Unit and Expansion Terminal Unit.

Application Models are below.

1) Power Supply Unit

PS6R-F24, PS6R-G24, PS6R-J24

2) DC-DC Converter Unit

PS9Z-6RM1, PS9Z-6RM2, PS9Z-6RM3, PS9Z-6RM4, PS9Z-6RM5, PS9Z-6RM6

3) Expansion Terminal Unit

PS9Z-6RS1

Ratings:

1)Power Supply Unit

Model Number Input Voltage/Output Voltage/Output Current/ Ambient Temperature/Frequency

PS6R-F24 AC100V - AC240V/DC24V/5A/0 to +60/ 50Hz/60Hz

PS6R-G24 AC100V - AC240V/DC24V/10A/0 to +60/ 50Hz/60Hz

PS6R-J24 AC100V - AC240V/DC24V/20A/0 to +60/ 50Hz/60Hz

2)DC-DC Converter Unit

Model Number Input Voltage/Input Current/Output Voltage/Output Current/Ambient Temperature/ Maximum Output

PS9Z-6RM1 DC24V/DC0.5A/DC5V/DC2A/0 to +60/10W

PS9Z-6RM2 DC24V/DC0.55A/DC12V/DC1A/0 to +60/12W

PS9Z-6RM3 DC24V/DC0.52A/DC5V/DC1A and DC-5V/DC1A/0 to +60/10W (5W+5W)

PS9Z-6RM4 DC24V/DC0.58A/DC15V/DC0.4A and DC-15V/DC0.4A/0 to +60/12W (6W+6W)

PS9Z-6RM5 DC24V/DC0.53A/DC5V/DC1A and DC12V/DC0.5A/0 to +60/11W (5W+6W)

PS9Z-6RM6 DC24V/DC0.58A/DC12V/DC0.5A and DC-12V/DC0.5A/0 to +60/12W (6W+6W)

3) Expansion Terminal Unit

Model Number Output Voltage/Output Current/Ambient Temperature

PS9Z-6RS1 DC24V/DC10A/0 to +60

Service Restrictions:

Unit certification is not required for this product.

If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be defined. Detail of each particular application including wiring diagram, location/installation of sensors are to be specifically approved by ABS.

Comments:

- (1) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
- (2) Unless specially directed by Administration, this approval is not to be constructed as a substitute for flag Administration's approval.
- (3) If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be defined.

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(4) This certificate may not be used for EU and US flagged vessels (if MED and/or USCG have their own specific requirements).

Notes / Drawings / Documentation:

1)ABS Surveyor Report No. KO2662799 dated 29 August 2014.

2)IDEC Corporation Power Supply PS6R Series Test Report No. NSH-14006-19 dated 9 September 2014.

Referred Drawings are as below,

NSH-14006-09 Rev. 00 Product catalog

NSH-14006-10 Rev. 00 Product specifications

NSH-14006-11 Rev. 00 Instruction manual

NSH-14006-14 Rev. 00 Performance criteria

Term of Validity:

This Product Design Assessment (PDA) Certificate 14-YO1251188-PDA, dated 14/Oct/2014 remains valid until 14/Oct/2019 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.

STANDARDS

ABS Rules:

2014 Steel Vessel Rules 1-1-4/7.7, 1-1-Appendix 3 and 4, and 4-9-8/13

2014 Steel Vessel (Under 90M) Rules 1-1-4/7.7, 1-1-Appendix 3 and 4, 4-7-2/17 and 4-7-4/3

2014 Steel Offshore Support Vessel Rules 1-1-4/7.7, 1-1-Appendix 3 and 4, and 4-9-8/13

2014 High Speed Craft Rules 1-1-4/11.9, 1-1-Appendix 2 and 3, and 4-7-9/15

2014 Mobile Offshore Drilling Units Rules 1-1-4/9.7, 1-1-Appendix 2 and 3

2014 Facilities on Offshore Installations 1-1-4/9.7, 1-1-Appendix 2 and 3

National:

NA

International:

Government Authority:

NA

EUMED:

NA

Others:

NA