120-960W Single Output Full Featured DIN Rail Mount Power Supplies

https://product.tdk.com/en/power/drf
www.emea.lambda.tdk.com/drf

Industrial | Test | Semi-Fab | HazLoc | Renewable

The DRF series provides full featured DIN Rail mount power supplies for industrial and process control applications. The series combines careful thermal design, reliability and compact dimensions with energy saving efficiencies of up to 95%. Conservatively rated electrolytic capacitor temperatures offer improved field life-times of up to 10 years. Available in four power levels, 120W, 240W, 480W and 960W, the series provides 24V outputs with a peak loading capability of 150% for up to four seconds. The models can be operated in parallel, have remote on/off and remote voltage adjustment. For operation in hazardous locations, the /HL option can be selected on the DRF120 to DRF480 models, which includes coating of the circuit boards for added protection.

Features	Benefits
• High Efficiency, up to 95%	• Lowers Operating Costs and Improves Thermal Performance
• 150% Peak Power for Four Seconds	• Operates With Capacitive and Inductive Loads
• Long E-Capacitor Life (Up to 10 Years)	• Improved Field Life
• Low Off-Load Power Consumption	• Saves Energy
• Remote On/Off and Remote Output Control	• Supports Intelligent System Control
• Hazardous Location Option (/HL)	• Certified For Use in Explosive Atmospheres

Model Selector

Model	Output Voltage (V)	Adjustment Range (V)	Max Current (A)	Max Power (W)	Peak Output Current (1) (A)	Peak Output Power (1) (W)
DRF120-24-1	24	24 - 28	5	120	7.5	180
DRF240-24-1	24	24 - 28	10	240	15	360
DRF480-24-1	24	24 - 28	20	480	30	720
DRF960-24-1	24	24 - 28	40	960	60	1440

DRF	240	-24	-1	/HL
Series	120, 240, 480, 960W	24V Output	Single phase	

Blank	No ATEX, IEC EX Certification or pcb coating
/HL	ATEX, IEC EX Certification (Including pcb coating). Not available for DRF960.

Related Products

Type	Part Number(s)	Description
Buffer Module	DBM20	24V 20A Hold-Up DIN Rail Module
Redundancy Module	DRM40	20A to 40A DIN Rail Redundancy Module
Low power DIN rail power supplies	DRB15, 30, 50, 100	15 to 100W AC-DC DIN rail power supplies
Mid to high power DIN rail power supplies	DRB120, 240, 480	120 to 480W AC-DC DIN rail power supplies
Mid to high power 3-phase DIN rail power supplies	DRB-3	3- phase AC-DC DIN rail power supplies
DIN rail mount filters	RSMN	3A to 30A 250Vac 2 stage filters with pulse attenuation
DIN rail mount filters	RSEV	6A to 30A 250Vac 2 stage filters
RSEV DIN rail mounting kit	DIN-RSEV	RSEV DIN rail mounting kit

Specifications

Model		DRF120	DRF240	DRF480	DRF960
Input					
AC Input Voltage Range (Operating)	Vac	85 - 264			180 - 264
Nominal Input Voltage Range	Vac	100 - 240 (Safety certified for 90 - 264Vac only)			200-240
Input Frequency	Hz	47 - 63 (Note: Safety certified for 50/60Hz only)			
DC Input Voltage Range (2)	Vdc	125 - 370 (Note: Safety certified for AC input only)			-
Input Current (115 / 230Vac)	A	1.2 / 0.6	2.4 / 1.2	4.7 / 2.5	- / 4.5
Inrush Current (typ) (Cold Start)	A	20			
Leakage Current (240Vac, 60Hz)	mA	<1			
Power Factor (115 / 230Vac)	-	0.98 / 0.95	0.98 / 0.95	0.98 / 0.92	- / 0.98
Harmonic Compliance	-	Meets EN61000-3-2 Class A			
Standby Power Consumption (3)	W	<0.5	<0.5	<0.75	<1
Hold Up Time at 230Vac Input	ms	>20			>10
Efficiency (115 / 230Vac)	%	89 / 91	92.5 / 94	92.5 / 94	- / 95
Average Efficiency (230Vac) (4)	%	88.6	92.6	92	-
Conducted & Radiated EMI	-	EN55032-B			
Immunity	-	See immunity table			
Safety Certifications and Markings	-	UL508 Listed, IEC/UL/CSA/EN62368-1 (DRF120-480 only), IEC/UL/CSA/EN61010-1 (DRF960 only), 60950-1, CE Mark and UKCA Mark /HL option: ATEX, IEC Ex. Class 1 Div 2, Group A, B, C, D (not available for DRF960)			

Immunity

Test	Standard	Test Level	Criteria	Notes
ESD	EN61000-4-2	4kV contact 8kV air discharge	A	See full immunity reports on website
Radiated Susceptibility	EN61000-4-3	10V/m: 80MHz to 1GHz 3V/m 1.4GHz to 2GHz 1V/m 2GHz to 2.7GHz	A	
Electrical Fast Transient Burst	EN61000-4-4	Input 2kV 5kHz Output 1kV 5kHz Signal contact 1kV 5kHz	A	
Surge	EN61000-4-5	Input symmetrical (L-L) 2kV Input asymmetrical (L-PE) 4kV Output symmetrical (L-L) 0.5kV Output asymmetrical (L-PE) 1kV	A	
Conducted Susceptibility	EN61000-4-6	10V	A	
Magnetic fields	EN61000-4-8	30A/m	A	
Voltage Dips and Input Interuptions	EN61000-4-11	230Vac at 30%, 50Hz 230Vac at 60%, 50Hz 230Vac at 100%, 50Hz 230Vac at 100%, 50Hz	A A A C	
SEMI F47 Line Dip	SEMI F47	-	-	>200Vac input, not applicable for the DRF960 model

Specifications

Model		DRF120-24-1	DRF240-24-1	DRF480-24-1	DRF960-24-1
Output					
Line Regulation	mV	<96			
Load Regulation	mV	<240			
Ripple & Noise	mV	<240			
Temperature Coefficient	%/°C	<0.02			
Minimum Load	-	No minimum load required			
Over Current Protection	%	>101 of peak current rating. Shutdown after 4 seconds			
Over Voltage Protection	V	30 - 35.5			31.5 - 34
Remote Voltage Adjustment	-	5 - 6V external voltage adjusts the output from 24 - 28V			
Remote Sense	-	None			
Remote On/Off	-	When signal is low, the output is active			
DC OK Relay	-	Relay contact 30V/1A (closed if Vout > 80% of rated output voltage)			
LED Indicators	-	Green LED = DC is OK (>80% Nom). Red LED = Peak Load Operation			
Parallel Operation	-	Droop Mode. Refer to instruction manual			
Environmental					
Operating Temperature	°C	-25 to +70. Start up at -40. Derate linearly to 75% load above 60 (50 for the DRF960)			
Storage Temperature	°C	-40 to +85			
Humidity (non condensing)	%RH	5-95 (Operating & Storage)			
Cooling	-	Convection			
Altitude	m	3,000			
Withstand Voltage (For 1 minute)	Vac/Vdc	Input to Output 3,000Vac, Input to Ground 1,500Vac, Output to Ground 500Vdc (DRF960: 500Vac)			
Isolation Resistance	MΩ	>100 (500Vdc) at 25°C & 70%RH			
Vibration (Non operating)	-	10-55Hz (sweep for 1 min.):19.6m/s^2 constant, X,Y,Z axis 1 hour each			
Shock	-	<196m/s^2			
Other					
Weight (Typ)	g	600	900	1300	1735
Size (WxHxD)	mm	36.5 x 123.4 x 115	49 x 123.4 x 115	82 x 123.4 x 115	110 x 123.4 x 139
Size (WxHxD)	Inches	1.44 x 4.86 x 4.53	1.93 x 4.86 x 4.53	3.23 x 4.86 x 4.53	4.33 x 4.86 x 5.47
Case Material	-	Metal			
DIN Rail Type	-	TS-35/7.5 or TS-35/15 DIN Rails			
MTBF - JEITA (RCR-9102B)*	Hours	140,001	123,911	112,108	1,103,504**
Warranty	Years	5			

Notes

See website for detailed specifications, test methods and installation manual

* The JEITA RCR-9102B calculation method produces figures significantly lower than Telcordia. ** DRF960 calculated to IEC61709.

(1) Operating period at peak output current is 4 sec, max duty cycle <35% & < rated output power

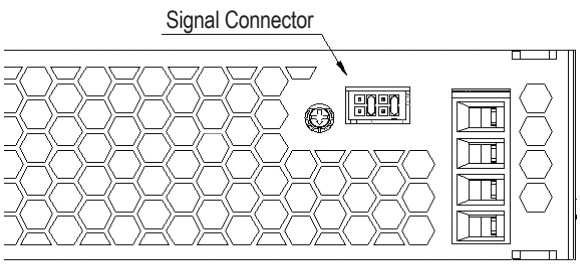
(2) Safety certified for AC input only

(3) Utilizing remote on/off function

(4) Measured at 25%, 50%, 75% and 100% load conditions

Signal Connector Pin Assignment (DRF120 model shown)

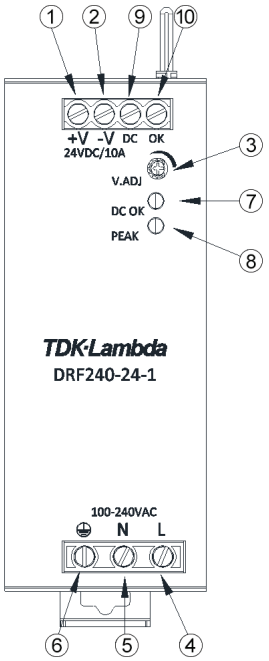
PIN	Function	Detail
1	CB	For parallel operation cut the link between
2	CB-COM	pins 1 & 2 for droop mode current share
3	N/C	No connection
4	N/C	
5	CNT+	Remote ON/OFF control, when CNT+ is pulled to
6	CNT-	TTL low the power supply turns ON, otherwise it turns OFF
7	PV	Programming voltage range 5-6V presets the output to 24-28V
8	COMM	



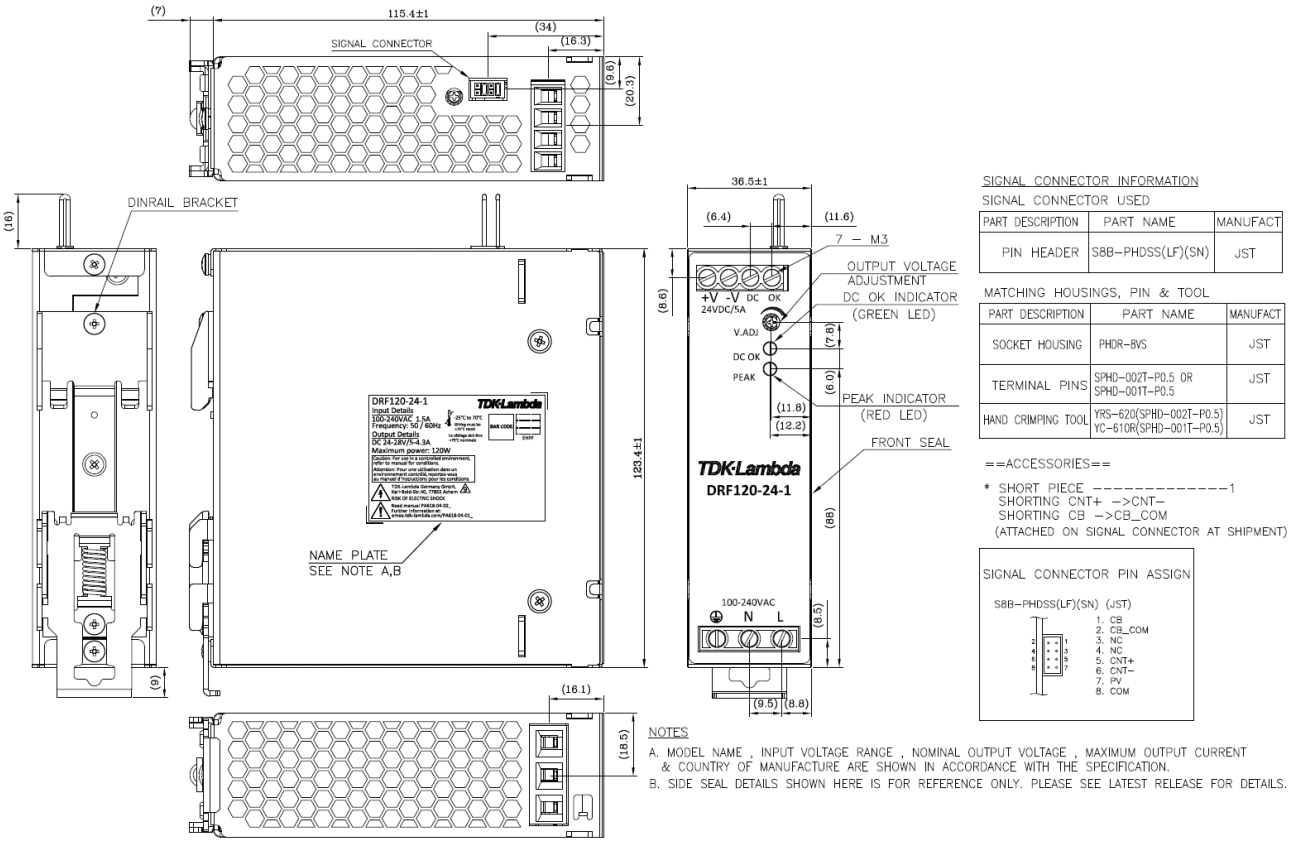
Signal Connector: please refer to instruction manual. Potentiometer on top of unit is for factory settings only. Please do not adjust.

Front Panel View and Connections (DRF240 model shown)

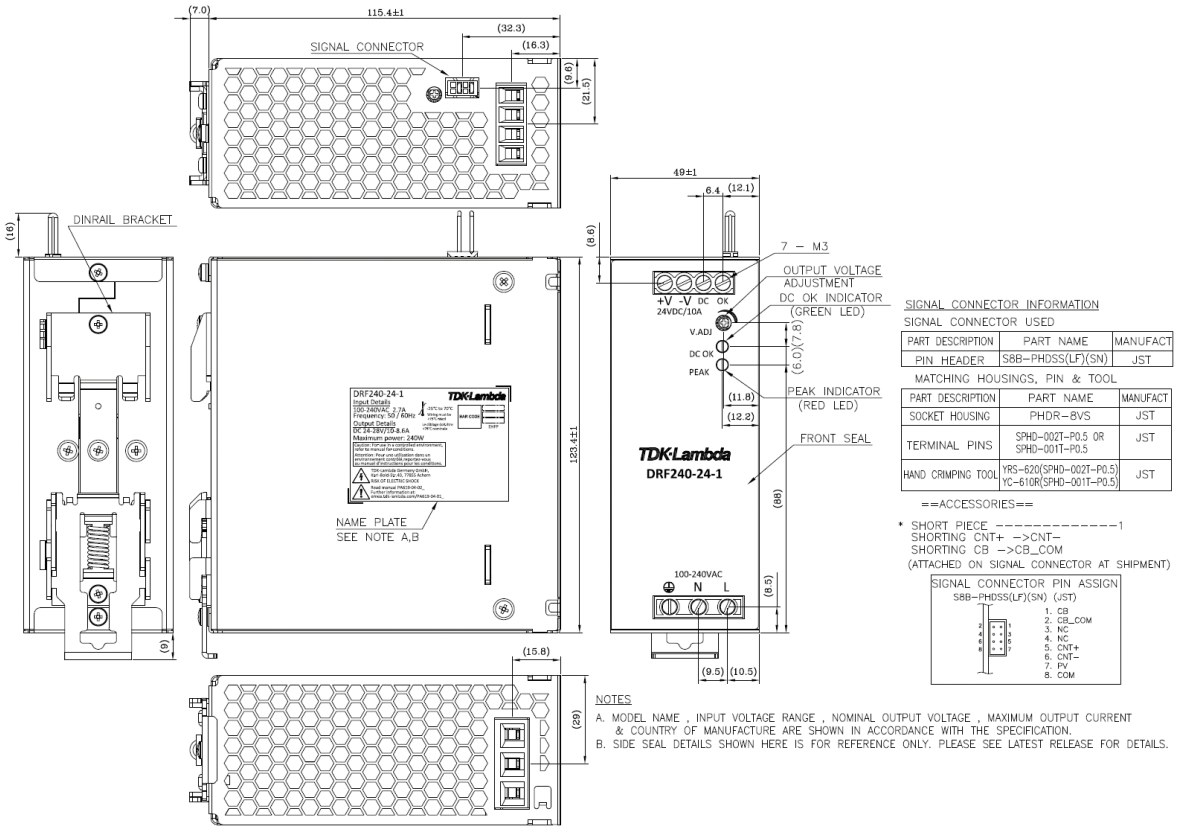
Terminal	Connection
1	+V: +Output terminal
2	-V: - Output terminal
3	V.ADJ: Output voltage adjust trimmer The output voltage rises when trimmer is turned clockwise.
4	L: AC Input terminal. Live line (fuse in line)
5	N: AC Input terminal. Neutral line
6	⏚: Protective Earth Connect to safety ground of apparatus or equipment.
7	DC OK : Green LED lights when Output Voltage on and within specification
8	PEAK : Red LED lights when Output Current peaks
9	DC OK: Relay contact
10	DC OK : Relay contact



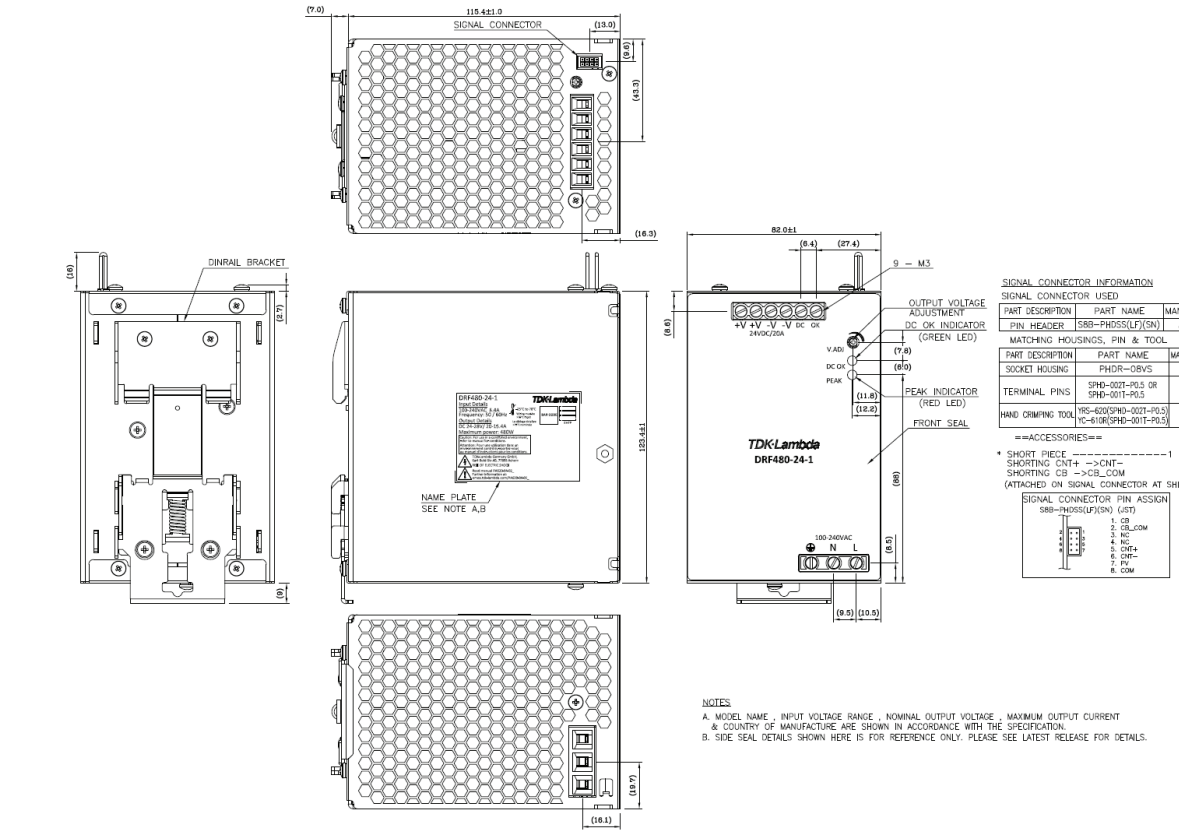
DRF120 Outline Drawing



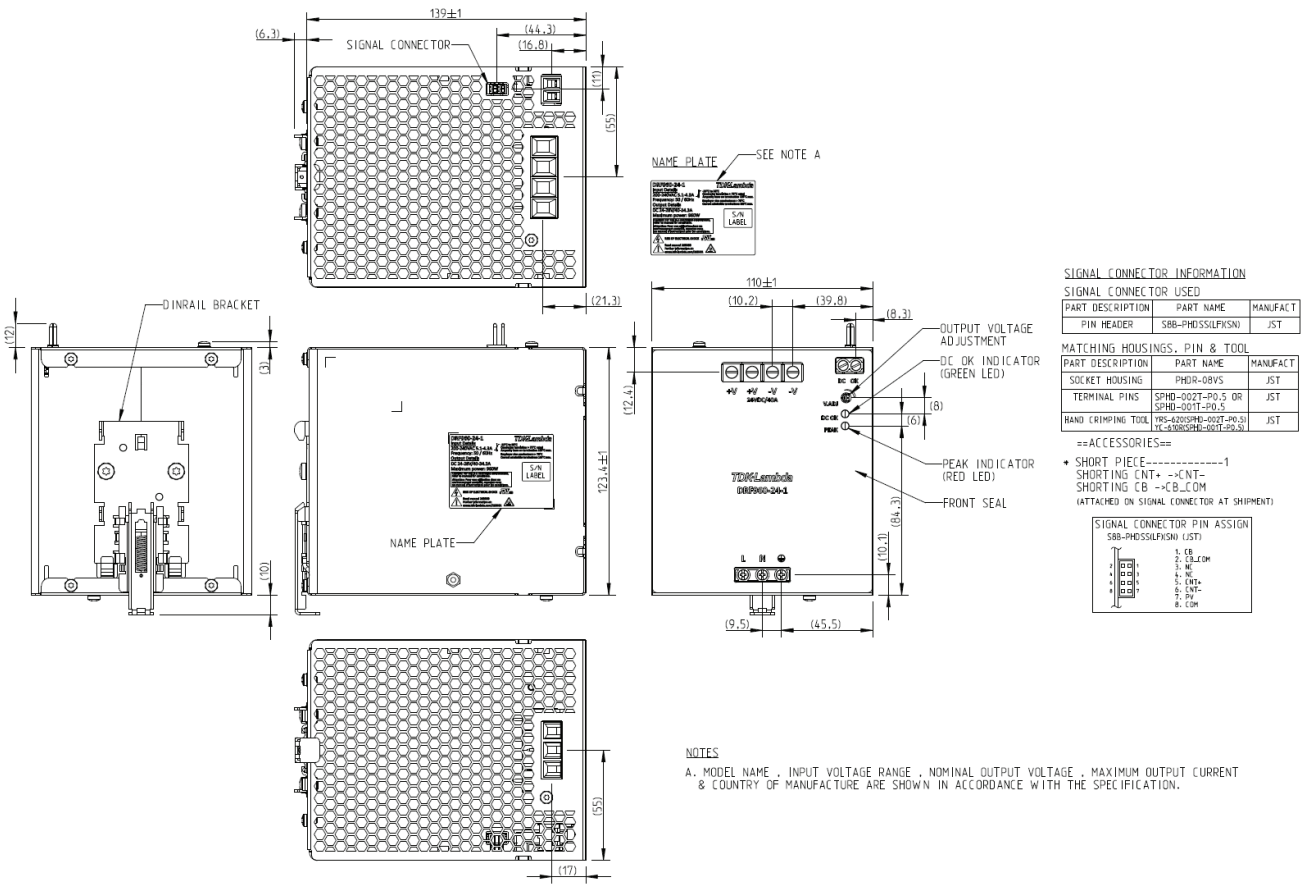
DRF240 Outline Drawing



DRF480 Outline Drawing



DRF960 Outline Drawing



SIGNAL CONNECTOR INFORMATION

SIGNAL CONNECTOR USED

PART DESCRIPTION	PART NAME	MANUFACT
PIN HEADER	S8B-PHDSS(LF)(SN)	JST

MATCHING HOUSINGS. PIN & TOOL

PART DESCRIPTION	PART NAME	MANUFACT
SOCKET HOUSING	PHDR-08VS	JST
TERMINAL PINS	SPHD-002T-P0.5 OR SPHD-001T-P0.5	JST
HAND CRIMPING TOOL	YRS-620(SPHD-002T-P0.5) YC-610R(SPHD-001T-P0.5)	JST

==ACCESSORIES==

* SHORT PIECE----------1
SHORTING CNT+ ->CNT-
SHORTING CB ->CB_COM
(ATTACHED ON SIGNAL CONNECTOR AT SHIPMENT)

SIGNAL CONNECTOR PIN ASSIGN
S8B-PHDSS(LF)(SN) (JST)

NOTES

A. MODEL NAME , INPUT VOLTAGE RANGE , NOMINAL OUTPUT VOLTAGE , MAXIMUM OUTPUT CURRENT & COUNTRY OF MANUFACTURE ARE SHOWN IN ACCORDANCE WITH THE SPECIFICATION.

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For Additional Information, please visit
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