



(XDR-960-xx)

(XDR-960-xxLA)

(XDR-960-xxPI)



(GL type)



LISTED Class 1, Div. 2



LISTED UL61010



BS EN/EN62368-1

BS EN/EN61558-1

BS EN/EN61010

IEC62368-1 IEC61558-1 IEC61010

AS/NZS61558-1 AS/NZS62368-1

IS13252



KC62368-1 (By request)



CNS15598-1 (By request)



GB4943.1



EAC



CE



UKCA



AS/NZS61558-1 AS/NZS62368-1



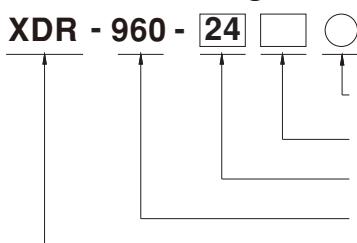
■ Features

- 85~305Vac input with PFC (277Vac available)
- Global certificates in multi-fields(ITE 62368-1,Industrial 61558-1-2-16,61010) & Marine DNV,SEMI47,CID2 HazLoc approved
- 96mm ultra slim width
- High efficiency up to 96% and no load power dissipation 1.5W by R.C.
- Built-in MODBus RTU protocol
- 200% peak power capability
- 600% transient peak current capability
- Built-in constant current limiting circuit
- Current sharing up to 3840W (3+1) for parallel use
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Fanless design, cooling by free air convection
- Over voltage category III (OVC III)
- -40~+85°C wide range operation temperature(>+60°C derating)
- Operating altitude up to 5000 meters
- Built-in remote ON/OFF control and DC OK relay contact
- Ultra low inrush current <10~23A
- Built-in ORing FET
- Tool free terminal block (LA Type)
- Conformal coating
- Can be installed on DIN rail TS-35/75 or15
- 5 years warranty

■ Description

The XDR-960 series is a 960W AC/DC high-end ultra slim industrial DIN rail power. Key features of this series include a narrow 96mm casing, optimizing system installation space, and an ultra-wide input range of 85~305Vac suitable for global use. It boasts a maximum efficiency of 96% and a low standby power consumption 1.5W for energy savings and carbon reduction. It supports MODBus communication interface, provides constant current with up to 200% peak power, and can handle transient peak current of 600%. It has a fanless design, ultra-wide operating temperature range of -40 to +85°C (up to +60°C at full load); OVCIII compliance; parallel function capability up to 3840W; ultra-low inrush current of <10~23A, and includes DC OK and remote ON/OFF functions. It also has a built-in ORing FET, the internal PCB has a coating for basic moisture and dust protection, and it has multiple terminal blocks for selection. With comprehensive protection functions, complete safety certifications, and a 5-years warranty, the XDR-960 series is a compact, high-performance, and highly reliable DIN rail power supply.

■ Model Encoding



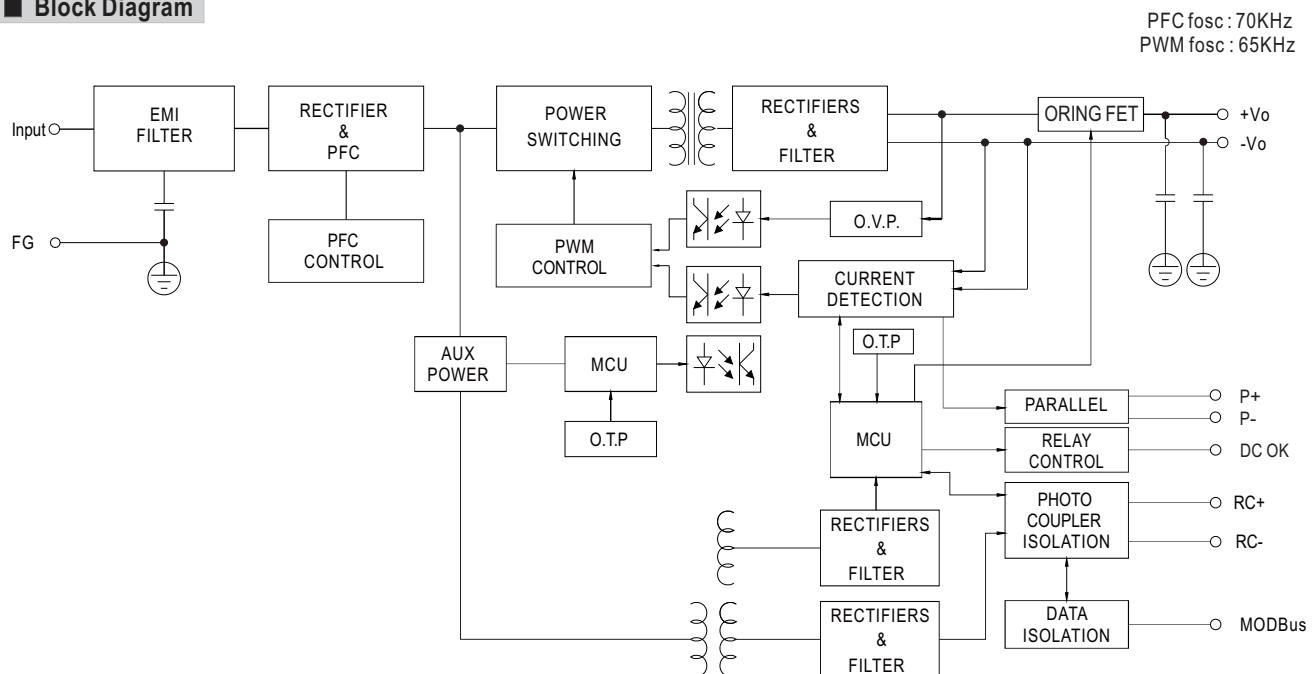
Mount bracket(Blank/GL)
Terminal type
Output voltage(24V/36V/48V)
Output wattage
Series name

Terminal Type Options		Note
Blank	Screw Terminal	In stock
LA	Lever-Actuated	In stock
PI	Push In	In stock

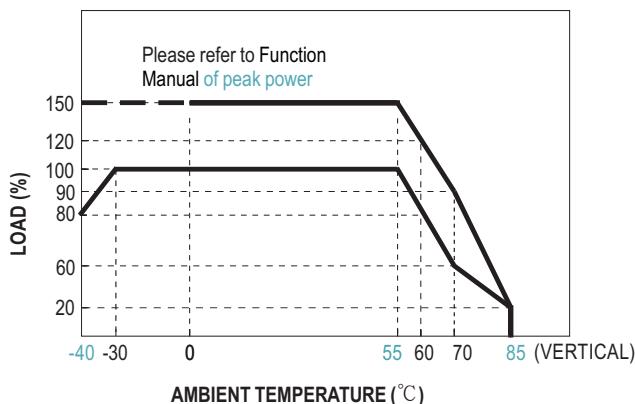
SPECIFICATION		XDR-960-24 <input type="checkbox"/> <input type="radio"/>	XDR-960-36 <input type="checkbox"/> <input type="radio"/>	XDR-960-48 <input type="checkbox"/> <input type="radio"/>		
		<input type="checkbox"/> =Blank, LA, PI <input type="radio"/> =Blank, GL				
OUTPUT						
DC VOLTAGE		24V	36V	48V		
LOAD CURRENT RANGE		0 ~ 40A	0 ~ 26.6A	0 ~ 20A		
RATED POWER		960W	957.6W	960W		
PEAK	CURRENT (5sec.)	80A	53.3A	40A		
	POWER (5sec.)	1920W				
RIPPLE & NOISE (max.)	Note.2	100mVp-p	120mVp-p	150mVp-p		
VOLTAGE ADJ. RANGE		24 ~ 29V	36 ~ 42V	48 ~ 55V		
VOLTAGE TOLERANCE	Note.3	±1.0%	±1.0%	±1.0%		
LINE REGULATION		±0.5%	±0.5%	±0.5%		
LOAD REGULATION		±1.0%	±1.0%	±1.0%		
SETUP, RISE TIME		1500ms, 150ms/230Vac	3000ms, 150ms/115Vac at full load			
HOLD UP TIME (Typ.)		15ms/230Vac	15ms/115Vac at full load			
INPUT						
AC VOLTAGE RANGE		85 ~ 305Vac				
DC VOLTAGE RANGE		80 ~ 431Vdc (Derating 50% Load @80Vdc)				
NO LOAD CONSUMPTION(Typ.)	Remote Power OFF	1.5W@115Vac & 230Vac & 277Vac				
	Remote Power ON	6.7W@115Vac 4.5W@230Vac & 277Vac				
FREQUENCY RANGE		47 ~ 63Hz				
POWER FACTOR (Typ.)		PF>0.98/115Vac	PF>0.95/230Vac	PF>0.9/277Vac at full load		
EFFICIENCY (Typ.)		95%	95.5%	96%		
AC CURRENT (Typ.)		9.5A/115Vac	4.5A/230Vac	4A/277Vac		
INRUSH CURRENT (Typ.)	COLD START	23A/115Vac	10A/230Vac	15A/277Vac		
LEAKAGE CURRENT		<3.5mA / 240Vac	<4.5mA / 277Vac			
PROTECTION						
OVERLOAD		105%~200% rated output power for more than 5 sec then constant current limiting at rate current without shutdown when Vo=30%~100%				
		Hiccup mode when Vo<30% rated voltage				
OVER VOLTAGE		30 ~ 34V	43 ~ 50V	57 ~ 66V		
		Protection type : Shut down o/p voltage, re-power on to recover				
OVER TEMPERATURE		Protection type : Shut down o/p voltage, recovers automatically after temperature goes down				
FUNCTION						
PARALLEL		Up to 3840W (3+1) units; Please refer to Function Manual for more details.				
DC OK RELAY CONTACT		Relay Contact Ratings (max.):30Vdc/1A, 30Vac/0.5A resistive load				
REMOTE CONTROL		Power ON :RC(Pin9) and 5V_AUX(Pin10) short.	Please refer to Function Manual for more details.			
		Power OFF:RC(Pin9) and 5V_AUX(Pin10) open.				
MODBus INTERFACE		Communication provides functions such as control, setting, and monitoring.				
TRANSIENT PEAK CURRENT CAPABILITY		600% transient peak current for 15ms				
ENVIRONMENT						
WORKING TEMP.		-40 ~ +85°C (Refer to "Derating Curve")				
WORKING HUMIDITY		20 ~ 95% RH non-condensing				
STORAGE TEMP., HUMIDITY		-40 ~ +85°C, 10 ~ 95% RH non-condensing				
TEMP. COEFFICIENT		±0.03%/°C (0 ~ 60°C)				
VIBRATION		Component:10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Compliance to IEC60068-2-6				



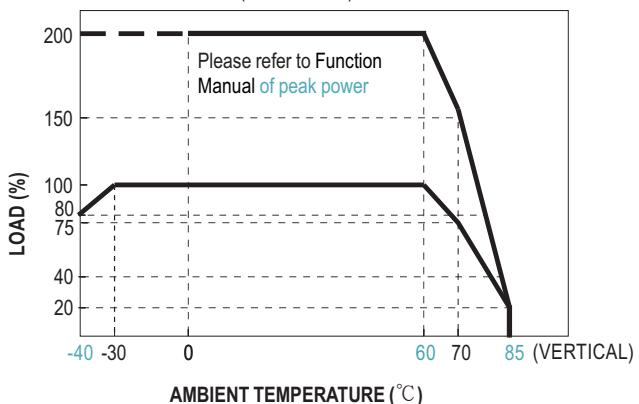
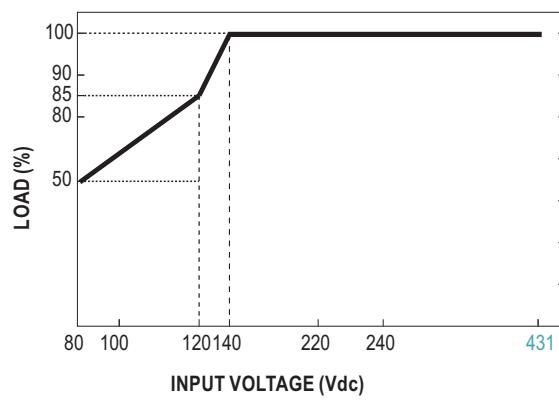
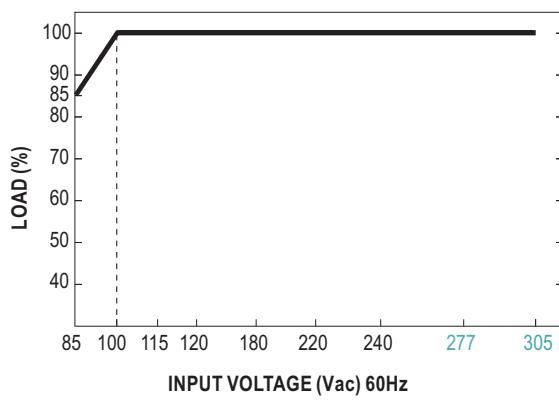
SPECIFICATION	XDR-960-24	XDR-960-36	XDR-960-48
	<input type="checkbox"/> =Blank, LA, PI	<input type="circle"/> =Blank, GL	<input type="checkbox"/> <input type="circle"/>
SAFETY & EMC Note.4			
SAFETY STANDARDS	CB IEC62368-1, IEC61558-1, IEC61010; DEKRA BS EN/EN62368-1,BS EN/EN61558-1/-2-16,BS EN/EN61010 UL UL121201/CSA C22.2 NO.213.17 Class I, DIV2 Group A,B,C,D Hazardous Locations T4 ;UL61010 RCM AS/NZS 62368-1, AS/NZS 61558-1/-2-16; CCC GB4943.1; BSMI CNS15598-1; EAC EAC TPTC004 approved; KC KC62368-1 and BIS IS13252 (Part 1):2010 certified, no stock ,contact sale for inquires		
OVER VOLTAGE CATEGORY	Note.5 IEC/EN 61558-1/-2-16 (OVC III , altitude up to 2000m) IEC/EN/UL 61010 (OVC II , altitude up to 5000m) IEC/EN 62368-1 (OVC II , altitude up to 5000m)		
SAFETY EXTRA-LOW VOLTAGE(SELV)	IEC/EN 61558-2-16 (SELV) IEC/EN/UL 61010-2-201 (SELV) IEC/EN 62368-1 (SELV / ES1)		
WITHSTAND VOLTAGE	I/P-O/P: 4KVac I/P-FG: 2KVac O/P-FG: 1.5KVac O/P-DC OK: 0.5KVac		
ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG: 100M Ohms/500VDC/25°C / 70%RH		
EMC EMISSION	Parameter	Standard	Test Level / Note
	Conducted	BS EN/EN55032 (CISPR32) / BS EN/EN61204-3 / CNS15936	Class B
	Radiated	BS EN/EN55032 (CISPR32) / BS EN/EN61204-3 / CNS15936	Class B
	Harmonic Current	BS EN/EN61000-3-2	Class A
	Voltage Flicker	BS EN/EN61000-3-3	----
EMC IMMUNITY	BS EN/EN55035 , BS EN/EN61204-3, BS EN/EN61000-6-2(BS EN/EN50082-2)		
	Parameter	Standard	Test Level / Note
	ESD	BS EN/EN61000-4-2	Level 4, 15KV air ; Level 4, 8KV contact; criteria A
	Radiated	BS EN/EN61000-4-3	Level 3, 10V/m ; criteria A
	EFT / Burst	BS EN/EN61000-4-4	Level 4, 4KV ; criteria A
	Surge	BS EN/EN61000-4-5	Level 4, 2KV/Line-Line ;Level 4, 4KV/Line-Line-Chassis ;criteria A
	Conducted	BS EN/EN61000-4-6	Level 3, 10V ; criteria A
	Magnetic Field	BS EN/EN61000-4-8	Level 4, 30A/m ; criteria A
OTHERS			
MTBF	819.6K hrs min. Telcordia SR-332 (Bellcore); 113.3K hrs min. MIL-HDBK-217F (25°C)		
DIMENSION	96*125.2*132mm (W*H*D)		
PACKING	2.06Kg; 6pcs/ 13.4Kg / 1.47CUFT		
NOTE			
1. All parameters NOT specially mentioned are measured at 230Vac input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 μ F & 47 μ F parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. (as available on https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf) 5. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft). 6. Installation clearances : 40mm on top, 20mm on the bottom, 5mm on the left and right side are recommended when loaded permanently with full power. In case the adjacent device is a heat source, 15mm clearance is recommended.			
※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx			

Block Diagram

Derating Curve

Suitable for 100/110/115/120Vac System
(85~132Vac)



Suitable for 220/230/240/277Vac System
(180~305Vac)


Output derating VS input voltage


■ Peak Power

$$P_{av} = \frac{P_{pk} \times t + P_{npk} \times (T-t)}{T} \leq P_{rated}$$

$$\text{Duty} = \frac{t}{T} \times 100\% \leq 35\%$$

$t \leq 5 \text{ sec}$

P_{av} : Average output power (W)

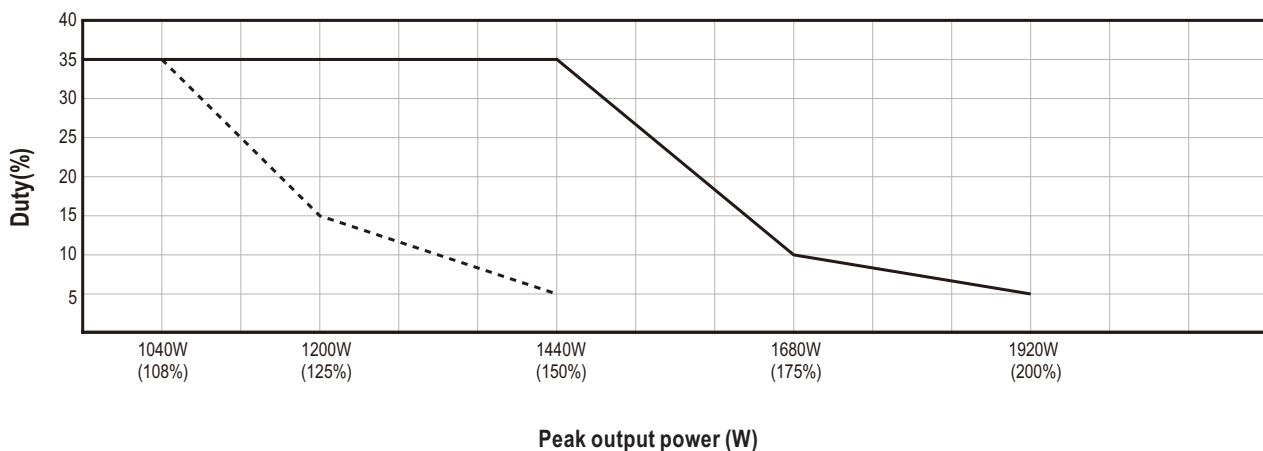
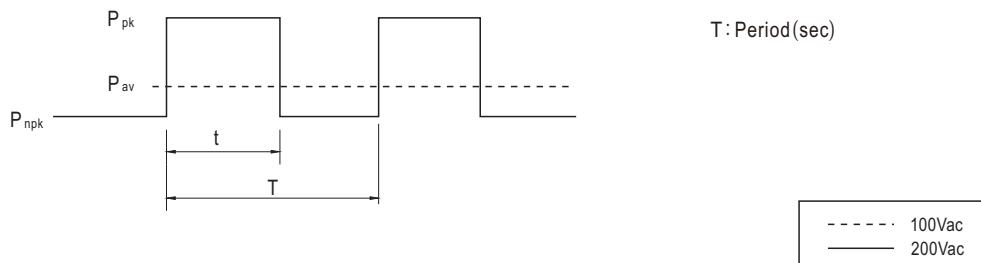
P_{pk} : Peak output power (W)

P_{npk} : Non-peak output power (W)

P_{rated} : Rated output power (W)

t : Peak power width (sec)

T : Period (sec)


For example (24V model) :

$V_{in} = 200\text{Vac}$ $\text{Duty}_{\text{max}} = 5\%$

$$P_{av} = P_{rated} = 960\text{W}$$

$$P_{pk} = 1920\text{W}$$

$t \leq 5 \text{ sec}$

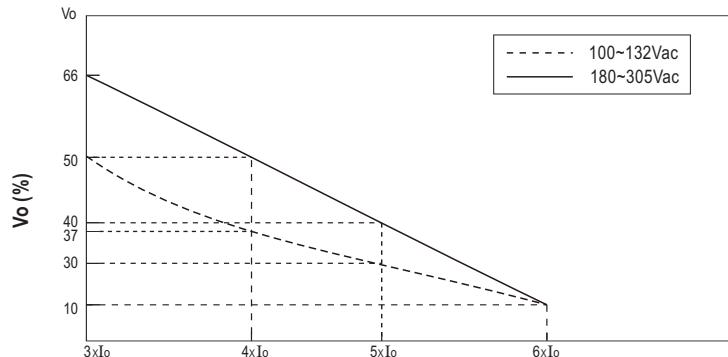
$$T \geq \frac{5 \text{ sec}}{5\%} \geq 100\text{sec}$$

$$P_{npk} \leq \frac{TP_{av} - tP_{pk}}{T-t}$$

$$P_{npk} \leq 909.5\text{W}$$

■ Transient peak current Capability

※ The power supply can provide transient peak current to support the start-up of inductive or capacitive loads. The maximum duration and voltage dips are explained below.

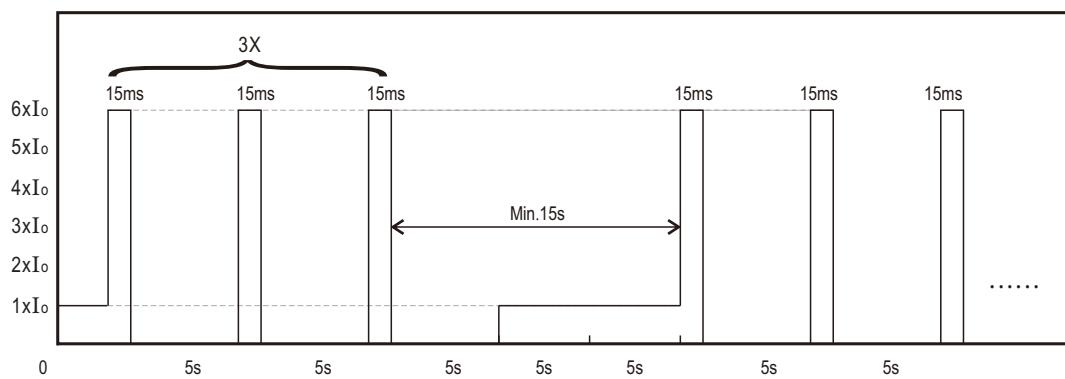


Transient peak current voltage dip

Load	100~132Vac Vo(%)	180~305Vac Vo(%)	Time (Max.)
3xI _o	50	66	100ms
4xI _o	37	50	70ms
5xI _o	30	40	40ms
6xI _o	10	10	15ms

※ After a transient peak current event occurs, the power supply must remain within its rated output for at least 5 seconds before the next event. If three transient peak current events occur consecutively, the power supply will limit the output current to 100% for at least 15 seconds.

For example : (600% transient peak current)



■ Function Manual

Pin No.	Function	Description
1,2	DC OK Relay Contact	Contact close : PSU turns ON/DC_OK ; Contact open : PSU turns OFF/DC_fail; Contact ratings (max.): 30Vdc/1A,30Vac/0.5A resistive load.
3	GND	Current sharing signal. When units are connected in parallel, the GND pins of the units should be connected mutually to allow current balance between units.
4	CS	Current sharing signal. When units are connected in parallel, the CS pins of the units should be connected mutually to allow current balance between units.
5	TC	Transient peak current Capability. the TC pin of the units should be connected GND
6	D-	Data line used in MODBUS interface
8	D+	
7	GND_AUX	The signal return is isolated from the output terminal. (+Vo & -Vo)
9	RC	The unit can turn the output ON/OFF by electrical signal or dry contact between RC ON/OFF(Pin9) and 5V_AUX(Pin10). Power ON: Short(4~5Vdc);Power OFF: Open(<0.5Vdc);The Maximum input voltage is 5Vdc.
10	5V_AUX	For remote control signal only. Isolated from the output terminals.



DC OK	2	1	DC OK
CS	4	3	GND
D-	6	5	TC
D+	8	7	GND_AUX
5V_AUX	10	9	RC

1. Parallel Use

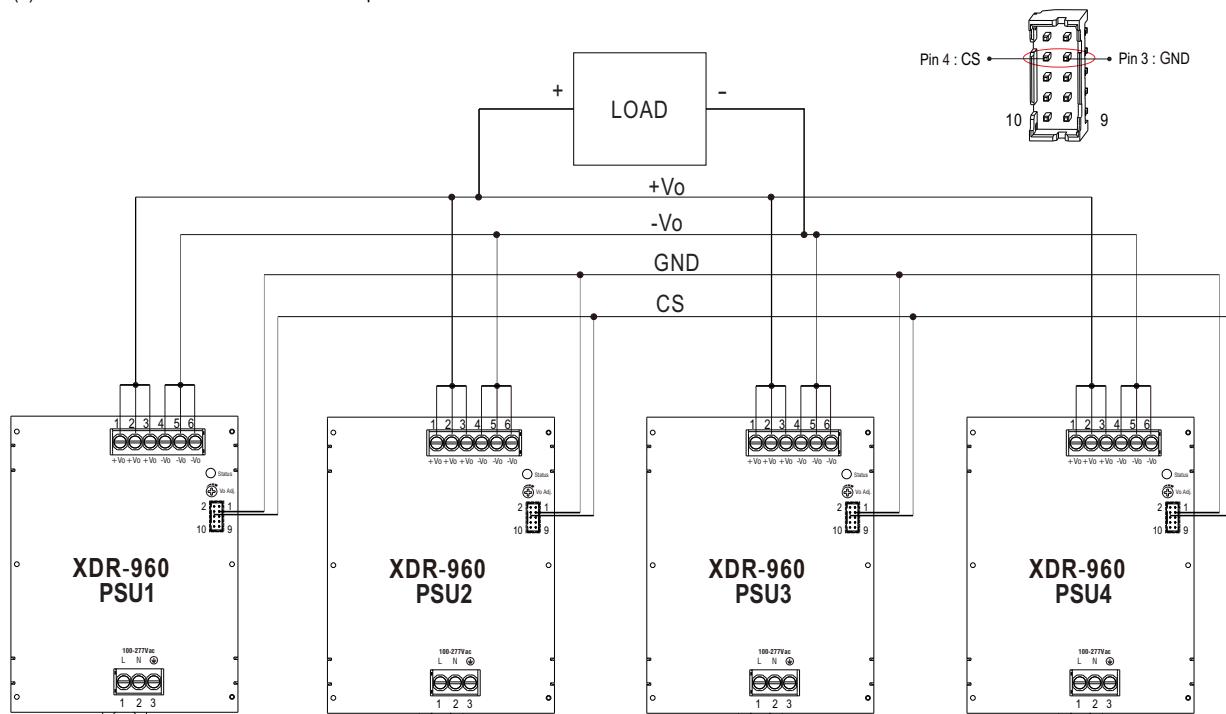
XDR-960 has the built-in active current sharing function and can be connected in parallel, up to 4 units, to provide higher output power as exhibited below :

- (1) The transient peak current capability needs to be disabled, The TC pin of the units cannot be connected to GND .
- (2) Parallel operation is available by connecting the units shown as below (CS,GND are connected mutually in parallel).
- (3) Difference of output voltages among parallel units should be less than 0.2V.
- (4) The total output current must not exceed the value determined by the following equation (Output current at parallel operation)

$$=(\text{The rated current per unit}) \times (\text{Number of unit}) \times 0.9.$$
- (5) In parallel operation 4 units is the maximum, please consult the manufacturer for other applications.
- (6) The power supplies should be paralleled using short and large diameter wiring and then connected to the load.
- (7) When in parallel operation, the minimum output load should be greater than 5% of total output load.

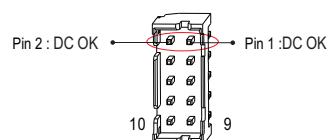
$$(\text{Min. load} > 5\% \text{ rated current per unit} \times \text{number of unit})$$
- (8) In parallel connection, maybe only one unit (master) operate if the total output load is less than 5% of rated load condition.
The other PSUs (slaves) may go into standby mode and their output Green LEDs & relays will not turn on.

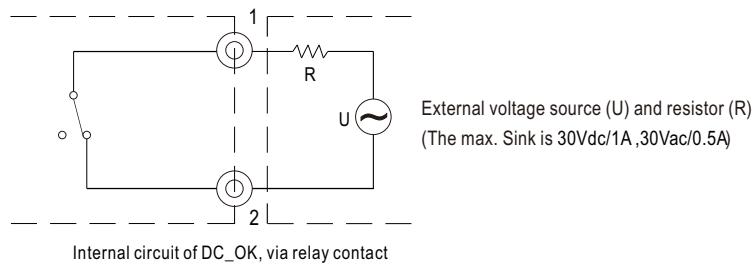
(9) CS and GND lines should be twisted in pairs.



2. DC OK Relay Contact

Contact Close	PSU turns ON / DC OK.
Contact Open	PSU turns OFF / DC Fail.
Contact Ratings (max.)	30Vdc/1A,30Vac/0.5A resistive load.



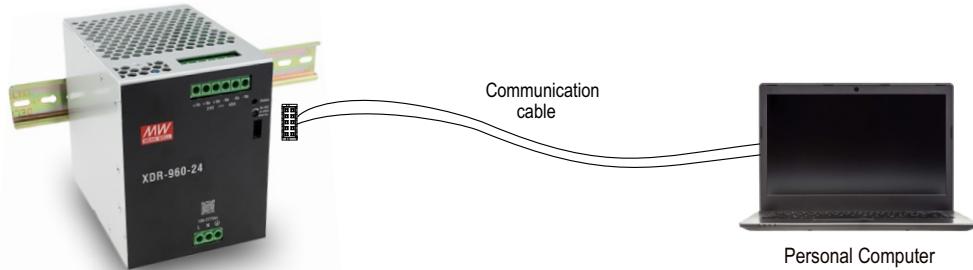
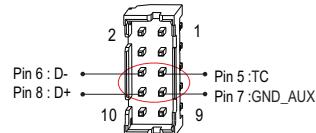


3. Support MODBus Communication

Communication provides functions such as control, setting, and monitoring.

Parameters include output voltage, output power, input voltage, etc

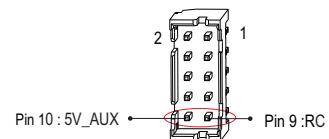
For details, Please refer to: <http://www.meanwell.com/manual.html>

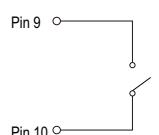
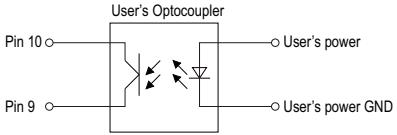
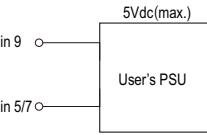
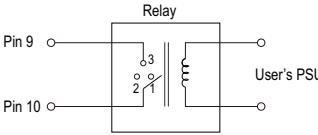


4. Remote ON/OFF Control

The PSU can be turned ON/OFF by using the "Remote Control" function.

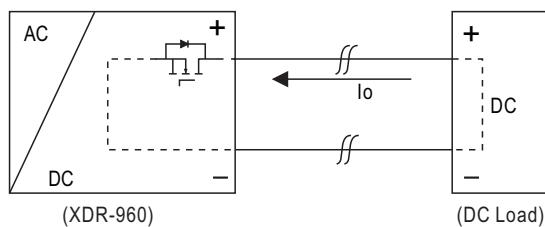
PSU Vo Status	Between RC(Pin9) and 5V_AUX(Pin10)
Remote power ON	Short or keep 4~5Vdc
Remote power OFF	Open or keep <0.5Vdc



 R.C. by external switch.	 R.C. by user's optocoupler control module.	 R.C. by user's external auxiliary power.	 R.C. by user's Relay control module.
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5. Protection Against Inverse Voltages From The Load

Prevent PSU damage from Back Electro magnetic Force during deceleration of motor or inductive load.



PSU'S ORing FET turn OFF voltage	
MODEL	Max. allowable reverse voltage
XDR-960-24	<35V
XDR-960-36	<50V
XDR-960-48	<63V

6. LED Status Indicators

Description	Output of alarm
Restore Factory Settings	Green : 3 Blink/Pause
DC OK	Green
DC Fail	Red
Overload (115Vac: >150% rated current) (230Vac: >200% rated current)	Red : 1 Blink/Pause
Over voltage	Red : 2 Blink/Pause
Over temperature	Red : 3 Blink/Pause
Against Inverse Voltages From The Load	Red : 4 Blink/Pause
High Ambient Temperature Warning	Red : Blink
Others (Note)	Red : 5 Blink/Pause

Note: Others include protection status AC UVP、Internal Communication error and EEPROM error.

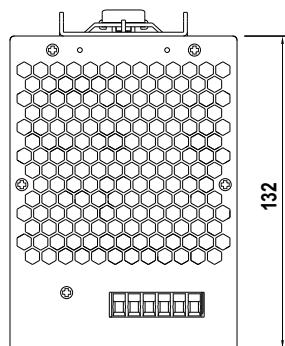
■ Mechanical Specification

(Unit:mm , Tolerance ± 1 mm)

Case No. 304

Ⓐ : Terminal Pin No.Assignment

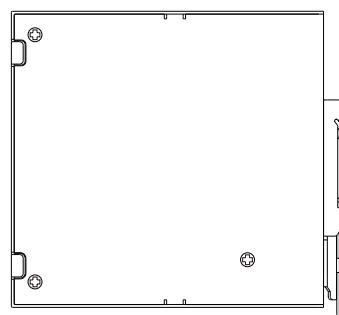
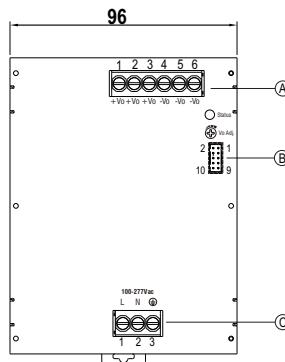
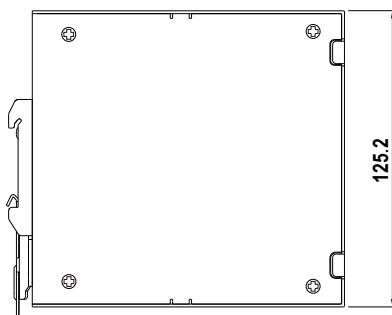
Pin No.	Assignment
1,2,3	DC Output +Vo
4,5,6	DC Output -Vo



Ⓑ : Control Pin No. Assignment:JS-2008R-2x05 or equivalent

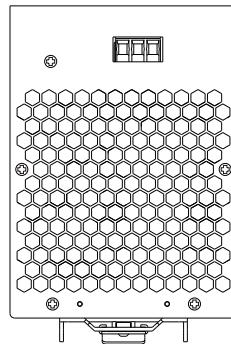
Mating Housing	Terminal
JS-2008R-2x05 or equivalent	H20J1-10 or equivalent

Pin No.	Assignment
1,2	DC OK
3	GND(Current sharing)
4	CS(Current sharing)
5	TC
6	D-
7	GND_AUX
8	D+
9	RC
10	5V_AUX



Ⓒ : Terminal Pin No.Assignment

Pin No.	Assignment
1	AC/L or DC Input +Vin
2	AC/N or DC Input -Vin
3	FG \ominus

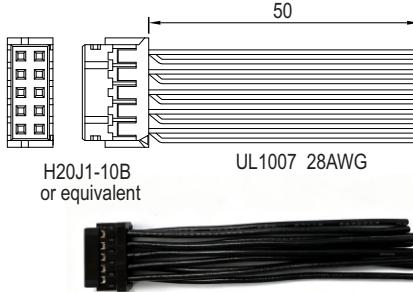


■ Recommend Wiring

	AC Input T.B	DC Output T.B	Signal connector
Solid Wire	6mm ² max.	6mm ² max.	1.5mm ² max.
A.W.G	18~10 AWG	18~8 AWG	24~16 AWG
Wire Stripping Length	10~11mm	10~11mm	8~9mm
Screw Terminal Torque	5 Lb-In	5 Lb-In	/

■ Accessory List

Communication interface mating wire (standard accessory)

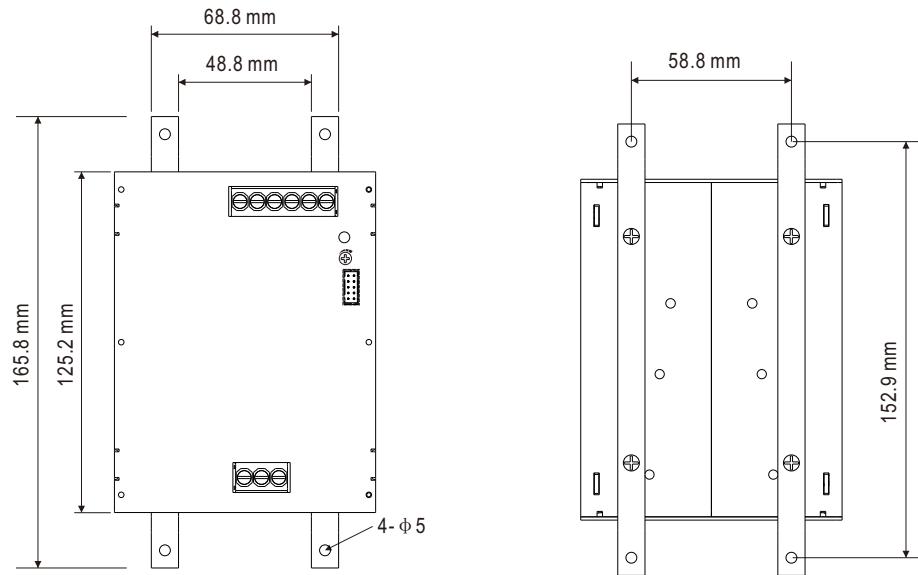
No.	Item	Quantity
1	Mating wire  H20J1-10B or equivalent UL1007 28AWG 	1pcs/per model

■ Accessory List and Installation Diagram for GL Type

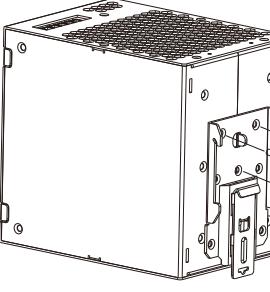
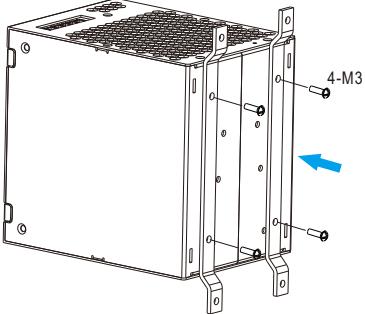
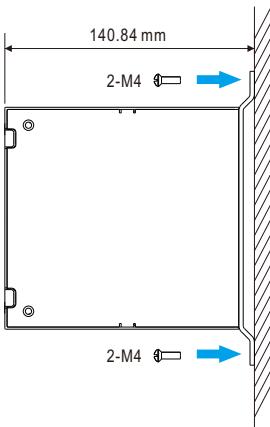
- The GL Type model is recommended for GNV certification or high vibration application.
- The GL Type model include the following accessories.

NO.	Item	Quantity
1	GL installation bracket	2
2	Screw(M3*8)	4
3	Screw(M4*8)	4

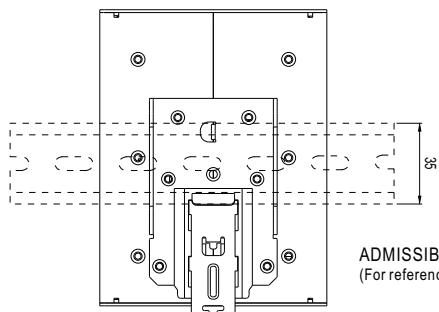
※ GL Type mechanical specification



※ GL Type installation steps

Step1	Step2	Step3
		
Detach the DIN Rail clip by removing screws.	Mount the steel brackets to the back of the case with M3*8 (L=8mm) screws. Recommended screw torque setting is 5 Lb-In.	Mount the XDR-960 power supply directly to the wall/panel through the mounting holes on the brackets.

■ Installation Instruction



This series fits DIN rail TS35/7.5 or TS35/15.
For installation details, please refer to the Instruction manual.

ADMISSIBLE DIN-RAIL: TS35/7.5 OR TS35/15
(For reference only. Not included with unit.)

■ Installation Manual

Please refer to : <http://www.meanwell.com/manual.html>