# 960W AC/DC Economical Ultra Slim Industrial DIN Rail Power XDR-960E series

User's Manual


LISTED UL61010 | BS EN/EN62368-1, BS EN/EN61558-1, BS EN/EN61010 | IEC62368-1, IEC61558-1, IEC61010 | AS/NES61558-1, AS/NES62368-1 | IS13252 (By request) | KC62368-1 (By request)

CNS15598-1 | GB4943.1 (Applying) | TPTC004

Automate | Industrial | Security | Network | Telecom

## Features

- 180~264Vac input with PFC
- Global certificates in multi-fields (ITE 62368-1,Industrial 61558-1/-2-16,61010)
- 96mm slim width
- High efficiency up to 95.5% and no load power dissipation<3.6W
- 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~+70°C wide range operation temperature (>+50℃ derating)
- Operating altitude up to 5000 meters
- Built-in DC OK relay contact
- Can be installed on DIN rail TS-35/7.5 or 15
- 3 years warranty

## Applications

- Industrial control system
- Semiconductor fabrication equipment
- Factory automation
- Electro-mechanical apparatus
- Battery charger

## GTIN CODE

MW Search: https://www.meanwell.com/serviceGTIN.aspx

## Description

The XDR-960E series is a 960W AC/DC economical ultra slim industrial DIN rail power. Key features of this series include a narrow 96mm casing, optimizing system installation space. It boasts a maximum efficiency of 95.5% and a low standby power consumption <3.6W for energy savings and carbon reduction. It has built-in constant current, fanless design, a wide operating temperature range of -40 to +70℃ (up to +50℃ at full load); OVCIII compliance; parallel function capability up to 3840W; built-in DC OK signal. With comprehensive protection functions, complete safety certifications, and a 3-years warranty, the XDR-960E series is a compact, high-performance, and highly reliable DIN rail power supply.

## Model Encoding

XDR - 960E - 24

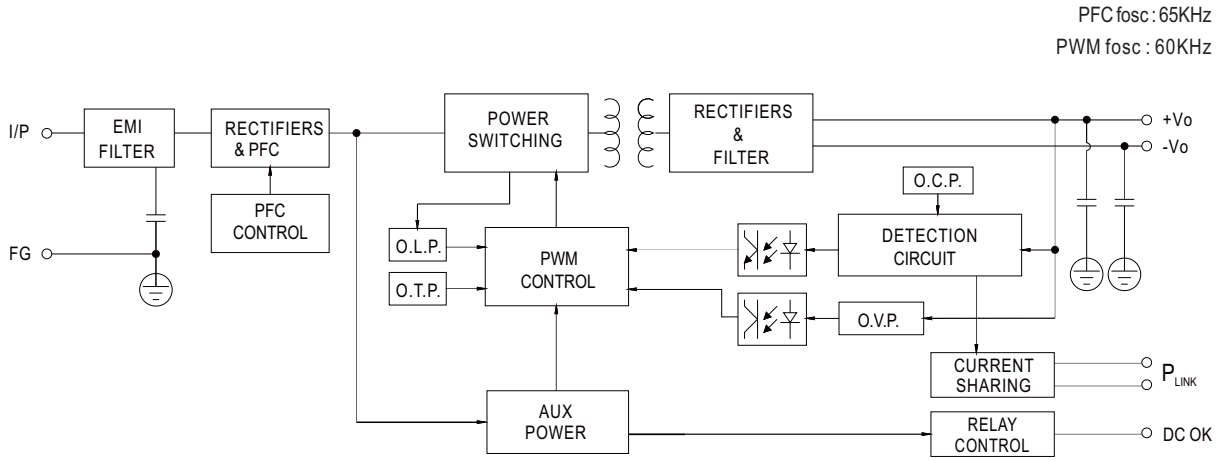
- 24 — Output voltage(24V/36V/48V)
- E — Economical version
- 960 — Output wattage
- XDR — Series name

# 960W AC/DC Economical Ultra Slim Industrial DIN Rail Power XDR-960E series

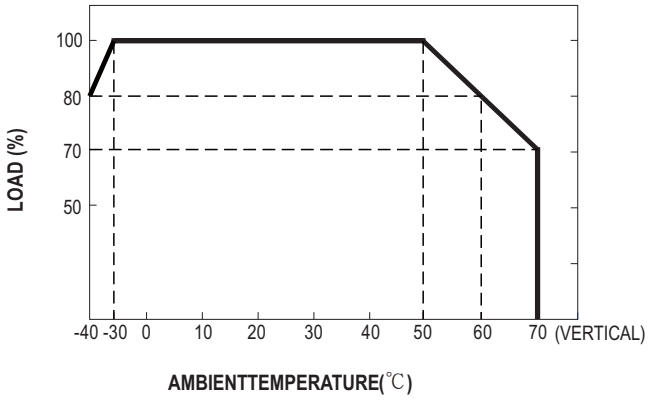
## SPECIFICATION

| MODEL | | XDR-960E-24 | XDR-960E-36 | XDR-960E-48 |
|---|---|---|---|---|
| OUTPUT | DC VOLTAGE | 24V | 36V | 48V |
| | RATED CURRENT | 40A | 26.6A | 20A |
| | CURRENT RANGE | 0 ~ 40A | 0 ~ 26.6A | 0 ~ 20A |
| | RATED POWER | 960W | 957.6W | 960W |
| | RIPPLE & NOISE (max.) Note.2 | 120mVp-p | 150mVp-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 | 500ms, 50ms/230Vac at full load | | |
| | HOLD UP TIME (Typ.) | 15ms/230Vac at full load | | |
| INPUT | AC VOLTAGE RANGE | 180 ~ 264Vac | | |
| | DC VOLTAGE RANGE | 254.5 ~ 370Vdc | | |
| | NO LOAD POWER CONSUMPTION (Typ.) | 2.7W @ 230Vac | 3.6W @ 230Vac | |
| | FREQUENCY RANGE | 47 ~ 63Hz | | |
| | POWDR FACTOR (Typ.) | PF>0.95/230Vac at full load | | |
| | EFFICIENCY (Typ.) | 94.5% | 95% | 95.5% |
| | AC CURRENT (Typ.) | 4.5A/230Vac | | |
| | INRUSH CURRENT (Typ.) | COLD START 30A/230Vac | | |
| | LEAKAGE CURRENT | <3.5mA / 240Vac | | |
| PROTECTION | OVERLOAD | 105~130% rated output power | | |
| | | Hiccup mode when output voltage <30%, recovers automatically after fault condition is removed<br>Constant current limiting without shutdown within 30%~100% rated output voltage, recovers automatically after fault condition is removed | | |
| | OVER VOLTAGE | 30 ~ 34V | 43 ~ 50V | 56 ~ 65V |
| | | 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(Droop Mode) | Up to 3840W or (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 | | |
| ENVIRONMENT | WORKING TEMP. | -40 ~ +70℃ (Refer to "Derating Curve") | | |
| | WORKING HUMIDITY | 20 ~ 95% RH non-condensing | | |
| | STORAGE TEMP., HUMIDITY | -40 ~ +85℃, 10 ~ 95% RH non-condensing | | |
| | TEMP. COEFFICIENT | ±0.03% /℃ (0 ~ 50℃) | | |
| | VIBRATION | Component:10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Compliance to IEC60068-2-6 | | |
| SAFETY & EMC (Note 6) | SAFETY STANDARDS | UL61010; TUV BS EN/EN62368-1, BS EN/EN61558-1/-2-16, BS EN/EN61010; CB IEC62368-1, IEC61558-1, IEC61010;<br>RCM AS/NZS 62368-1, AS/NZS 61558-1/-2-16; BSMI CNS15598-1; CCC GB4943.1;<br>EAC TPTC004 approved; KC KC62368-1 and BIS IS13252 (Part 1):2010 certified, no stock ,contact sale for inquires | | |
| | OVER VOLTAGE CATEGORY Note.4 | IEC/EN 61558-1/-2-16 (OVC Ⅲ, altitude up to 2000m )<br>IEC/EN/UL 61010 (OVC Ⅱ, altitude up to 5000m )<br>IEC/EN 62368-1 (OVC Ⅱ, altitude up to 5000m ) | | |
| | SAFETY EXTRA-LOW VOLTAGE(SELV) | IEC/EN 61558-2-16 (SELV )<br>IEC/EN/UL 61010-2-201 (SELV )<br>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℃/ 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 3, 8KV air ; Level 2, 4KV contact; criteria A |
| | | Radiated | BS EN/EN61000-4-3 | Level 3, 10V/m ; criteria A |
| | | EFT / Burst | BS EN/EN61000-4-4 | Level 3, 2KV ; 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 | 1147.2K hrs min. Telcordia SR-332 (Bellcore) ; 169.9K hrs min. MIL-HDBK-217F (25℃) | | |
| | DIMENSION | **96*125.2*132mm (W*H*D)** | | |
| | PACKING | 1.7Kg; 6pcs/11.2Kg/1.57CUFT | | |
| NOTE | 1. All parameters NOT specially mentioned are measured at 230Vac input, rated load and 25℃ of ambient temperature.<br>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 μF & 47 μF parallel capacitor.<br>3. Tolerance : includes set up tolerance, line regulation and load regulation.<br>4. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft).<br>5. 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.<br>6. 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 )<br>※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx | | | |

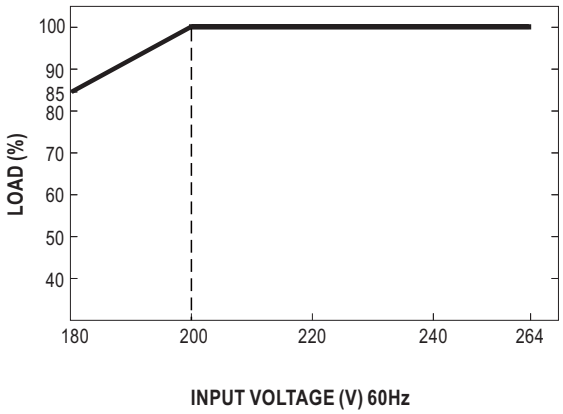
## ■ Block Diagram




## ■ Derating Curve




## ■ Static Characteristics

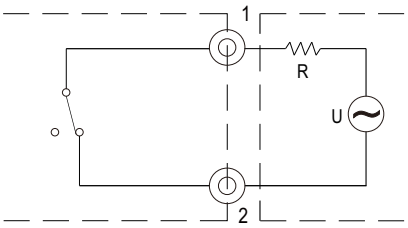


## ■ Function Manual

| Pin No. | Function | Description |
|---|---|---|
| 1,2 | DC OK Relay Contact | Contact Close: PSU turns ON/DC_OK<br>Contact Open: PSU turns OFF/DC_fail |
| 3,4 | Paraller Use Link($P_{LINK}$) | $P_{LINK}$ should be short to enable droop parallel use.(Default disable) |

### 1.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. |




External voltage source (U) and resistor (R)
(The max. Sink is 30Vdc/1A ,30Vac/0.5A)

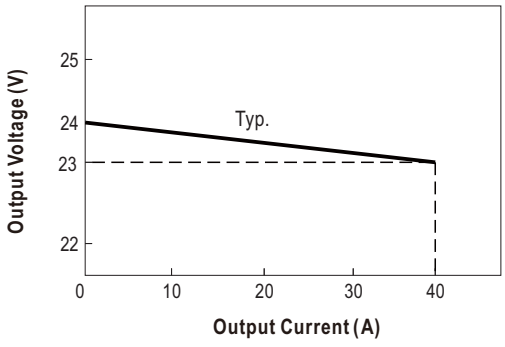
Internal circuit of DC_OK, via relay contact

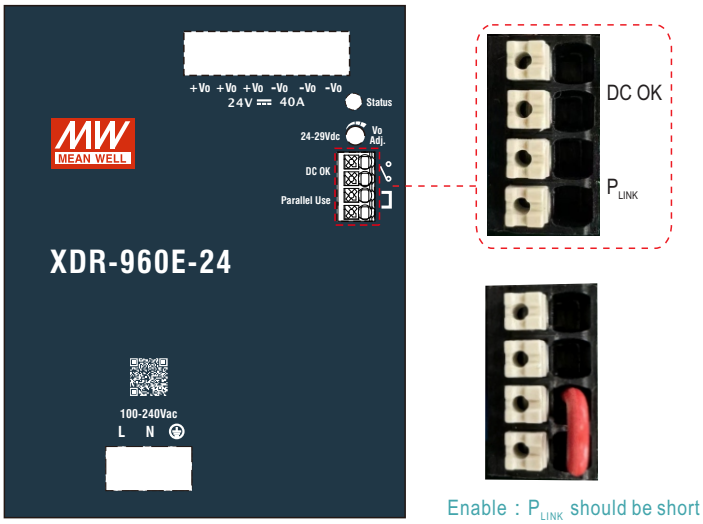
### 2.Parallel Use

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

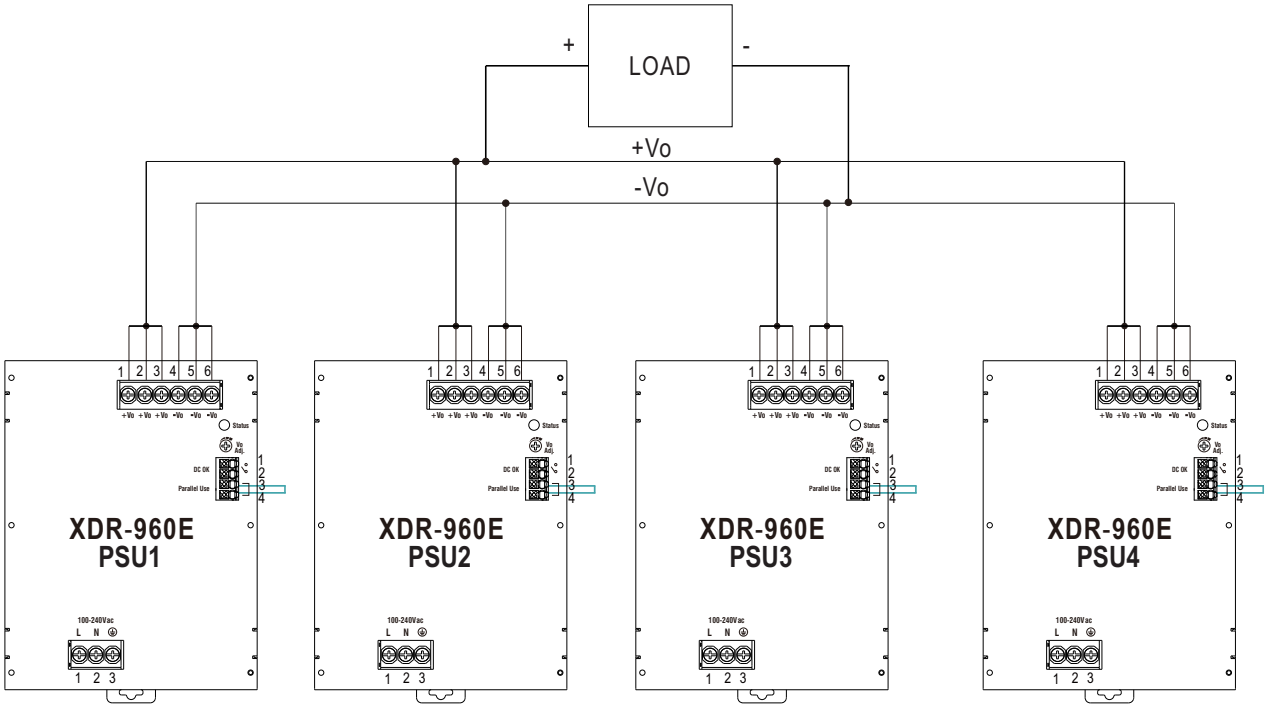
(1) Difference of output voltages among parallel units should be less than 0.1V.
(2) The total output current must not exceed the value determined by the following equation (Output current at parallel operation)=(The rated current per unit) x (Number of unit) x 0.9.
(3) In parallel operation 4 units is the maximum, please consult the manufacture for other applications.
(4) The power supplies should be paralleled using short and large diameter wiring and then connected to the load.
(5) When in parallel operation, the minimum output load should be greater than 7% of total output load. (Min. load >7% rated current per unit x number of unit)
(6) In parallel connection, maybe only one unit (master) operate if the total output load is less than 7% of rated load condition.
The other PSUs (slaves) may go into standby mode and their output LEDs & relays will not turn on.
(7) $P_{LINK}$ lines should be shorted locally.
(8) The "Parallel Use" mode regulates the output voltage in such a manner that the voltage at no load is approx. 4% higher than at normal load.

For example XDR-960E-24:
No load output voltage=24V
Normal load output current=40A
0~100% load output voltage=24V~23V




Enable : $P_{LINK}$ should be short

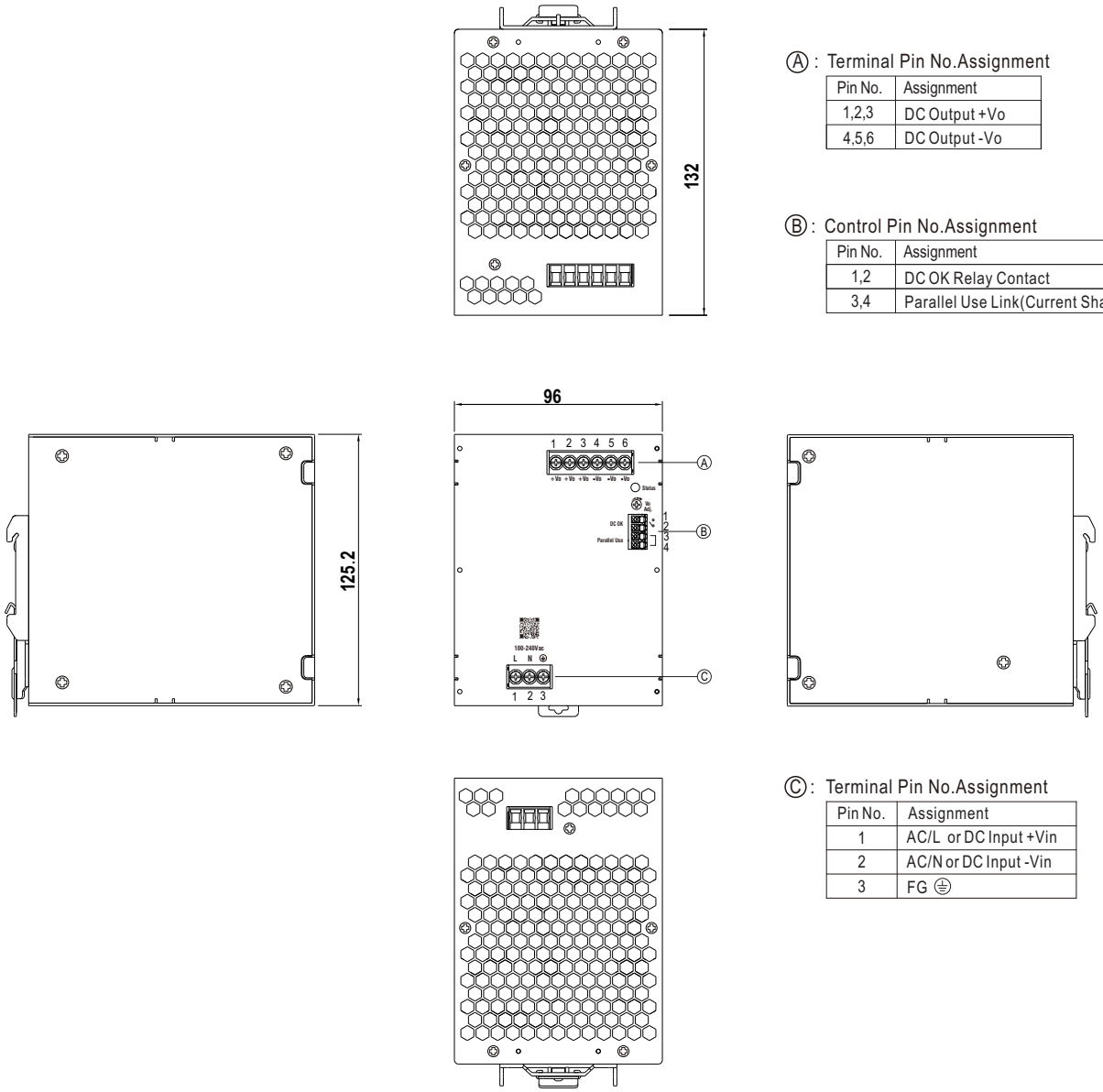



※ Please contact MEAN WELL for more details.

## ■ Mechanical Specification

(Unit:mm , Tolerance ±1mm)

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

| Pin No. | Assignment |
|---|---|
| 1,2 | DC OK Relay Contact |
| 3,4 | Parallel Use Link(Current Sharing) |

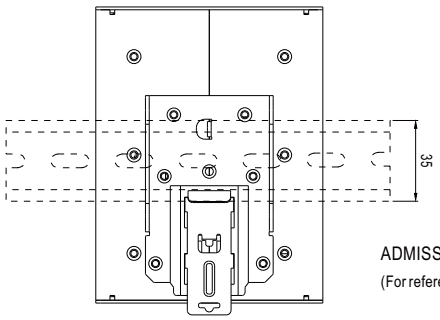
Ⓒ : Terminal Pin No.Assignment

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

## ■ 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 | 9 Lb-In | 9 Lb-In | / |

## ■ Installation Instruction




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

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

## ■ Installation Manual

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