



# MEAN WELL DDR-480 Series 480W DIN Rail Type DC to DC Converter Instruction Manual

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**MEAN WELL DDR-480 Series 480W DIN Rail Type DC to DC Converter**



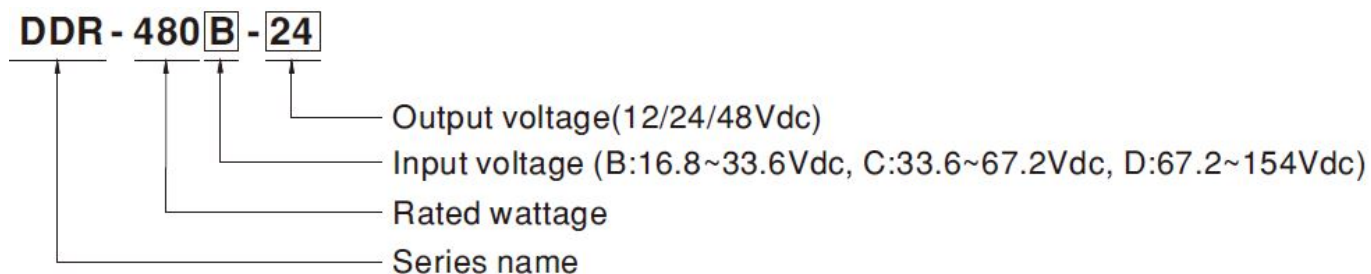
## Features

- Compliance to BS EN/EN50155 and BS EN/EN45545-2 railway standard
- Width only 85.5mm
- 2:1 wide input range
- -40+80C wide operating temperature
- 150% peak load capability
- Current sharing up to 1920W(3+1)
- DC output adjustable
- Cooling by free air convection
- Can be installed on DIN rail TS-35/7.5 or 15
- **Protections:** Short circuit/ Overload/Over voltage
  - Over temperature / Input reverse polarity/
  - Input under voltage protection
- 4KVdc O isolation (Reinforced isolation)
- DC OK relay contact
- Remote ON-OFF control
- Operating altitude up to 5000 meters(Note.6)
- 3 years warranty

## Description

DDR-480 series is a 480W DIN Rail type DC-DC converter with main features including DIN rail-type easy installation, ultra-slim width (85.5mm), 2:1 wide input voltage, fanless design, -40-+80C wide operating temperature, 4KVdc I/O isolation, 150% peak load, current sharing, DC OK, adjustable output voltage and full protective functions. This series of models have various input options: 16.8-33.6V/33.6-67.2V/ 67.2-154V and multiple output options: 12V/24V / 48V and can be used for industrial & railway control, security control, communication system, and other fields. Suitable applications include to DC buck/boost regulator, increasing system insulation level and voltage drop compensation along cable...etc.

## Model Encoding



## Applications

- Bus, tram, metro, or railway system
- Industrial control system
- Semiconductor fabrication equipment
- Factory automation
- Electro-mechanical
- Wireless network
- Telecom or datacom system

## GTIN CODE

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

## SPECIFICATION

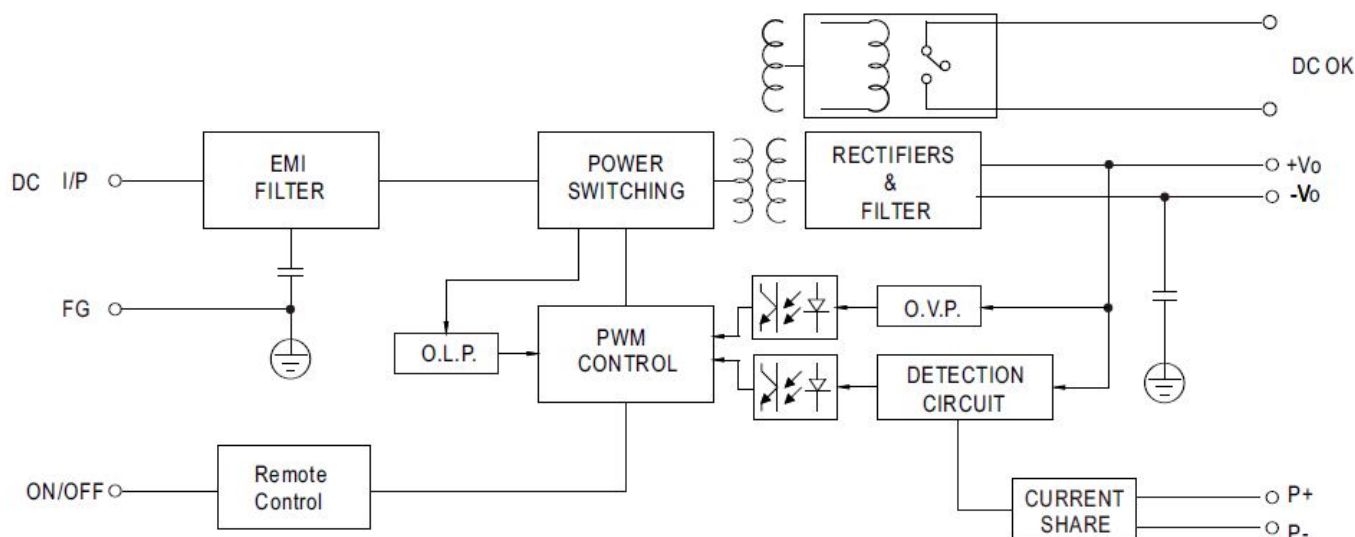
MO DEL		DDR -480 B-12	DDR -480 B-24	DDR -480 B-48	DDR -480 C-12	DDR -480 C-24	DDR-480C-48	DDR -480 D-12	DDR -480 D-24	DDR -480 D-48	
OUT PUT	DC VOLTAGE		12V	24V	48V	12V	24V	48V	12V	24V	48V
	RATED CUR RENT		33.4 A	20A	10A	33.4 A	20A	10A	33.4 A	20A	10A
	CURRENT R ANGE		0 ~ 3 3.4A	0 ~ 2 0A	0 ~ 1 0A	0 ~ 3 3.4A	0 ~ 2 0A	0 ~ 10A	0 ~ 3 3.4A	0 ~ 2 0A	0 ~ 1 0A
	RATED POW ER		400. 8W	480 W	480 W	400. 8W	480 W	480W	400. 8W	480 W	480 W
	PEA K	CURR ENT 5 sec.	50.1 A	30A	15A	50.1 A	30A	15A	50.1 A	30A	15A
	Note .5	POWE R 5se c.	12Vo: 601.2W, 24Vo / 48Vo : 720W								
	RIPPLE & NO ISE (max.) Note.2		100 mVp -p	120 mVp -p	150 mVp -p	100 mVp -p	120 mVp -p	150mVp-p	100 mVp -p	120 mVp -p	150 mVp- p
	VOLTAGE AD J. RANGE		12 ~ 14V	24 ~ 28V	48~ 56V	12 ~ 14V	24 ~ 28V	48~ 56V	12 ~ 14V	24 ~ 28V	48~ 56V



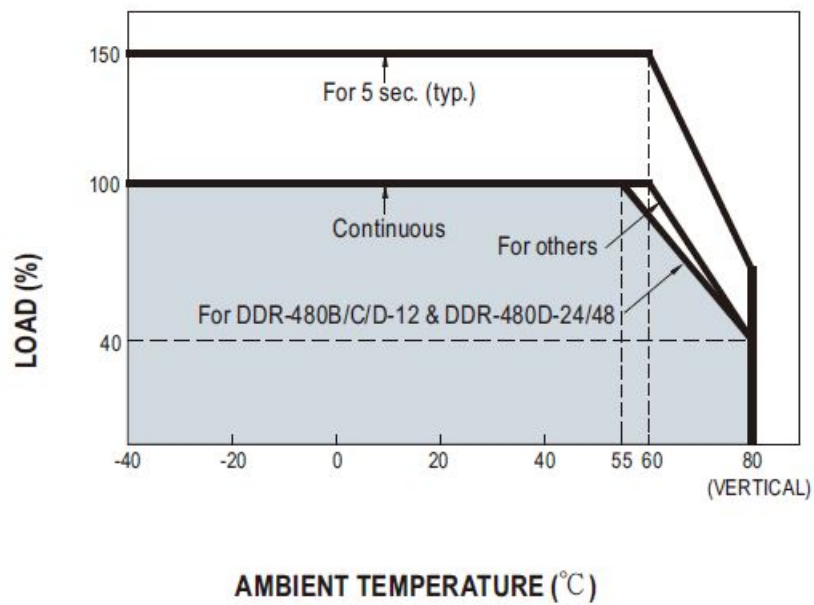
FUNCTION	DC OK REAL Y CONTACT RATINGS (max.)	30Vdc/1A resistive load		
	CURRENT SHARING	Up to 1920W (3+1 units). Please refer to the Function Manual		
	REMOTE ON-OFF CONTROL	Please refer to the Function Manual		
ENVIRONMENT	WORKING TEMP.	-40 ~ +80°C (Refer to “Derating Curve”)		
	WORKING HUMIDITY	5 ~ 95% RH non-condensing		
	STORAGE TEMP., HUMIDITY	-40 ~ +85, 5 ~ 95% RH non-condensing		
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 55°C)		
	VIBRATION	Component:10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Compliance to IEC61373		
	OPERATING ALTITUDE Note.6	5000 meters / OVCII		
SAFETY & EMC (Note 7)	SAFETY STANDARDS	UL 62368-1, IEC 62368-1, AS/NZS 62368-1, EAC TP TC 004 approved		
	WITHSTAND VOLTAGE	I/P-O/P:4KVdc I/P-FG:2.5KVdc O/P-FG:0.71KVdc		
	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 (CISRP3 2)	Class A
		Radiated	BS EN/EN55032 (CISRP3 2)	Class B
		Voltage Flicker	BS EN/EN61000-3-3	—
		Harmonic Current	—	—
		BS EN/EN55035		
		Parameter	Standard	Test Level / Note
		ESD	BS EN/EN61000-4-2	Level 3, 8KV air ; Level 3, 6KV 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

	EMC IMMUNITY	Surge	BS EN/EN61000-4-5	Level 3, 1KV/Line-Line ;Level 3, 2K V/Line-Line-FG ;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
	RAILWAY STANDARD	Compliance to BS EN/EN45545-2 for fire protection ; Meet BS EN/EN50155 / IEC60571 including IEC61373 for shock & vibration, BS EN/EN50121-3-2 for EMC		
OTHERS	MTBF	750.3K hrs min. F (25°C)	Telcordia SR-332 (Bellcore); 101.7K hrs min.	MIL-HDBK-217
	DIMENSION	85.5*125.2*129.2mm (W*H*D)		
	PACKING	1.375Kg;8pcs/12Kg/0.95CUFT		
NOTE	1. All parameters NOT specially mentioned are measured at normal input (B:24Vdc, C:48Vdc, D:110Vdc ), rated load, and 25C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance: includes set up tolerance, line regulation, and load regulation. 4. Derating may be needed under low input voltage. Please check the derating curve for more details. 5. 150% 5 seconds, please refer to peak loading curves. 6. The ambient temperature derating of 3.5 C/1000m with fanless models and of 5 C/100Om with fan models for operating altitude higher than2000m(6500ft). 7. The power supply is considered an independent unit, but the final equipment still needs to re-confirm that the whole system complies with the EMC directives. For guidance on how to perform these EMC tests, please refer to “EMI testing of component power supplies.” (as available on <a href="http://www.meanwell.com">http://www.meanwell.com</a> ). Product Liability Disclaimer: For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a> .			

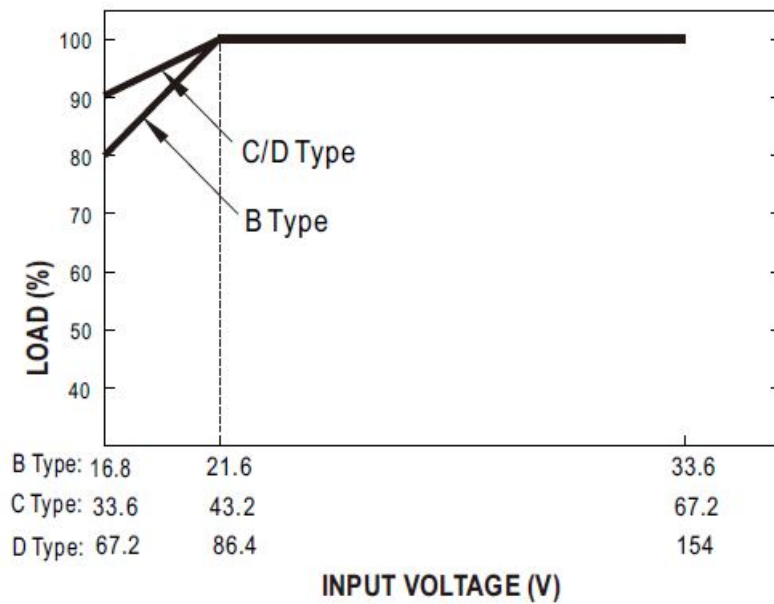
## Block Diagram



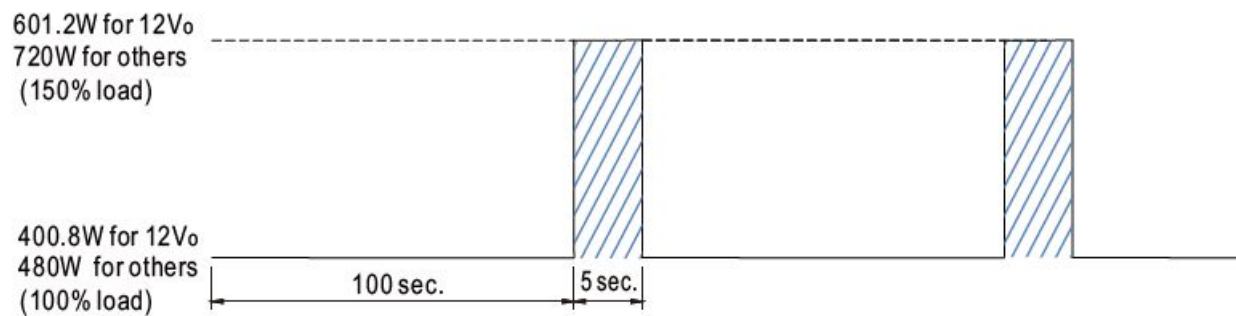
## Derating Curve



### Output derating VS Input Voltage



### Peak Loading



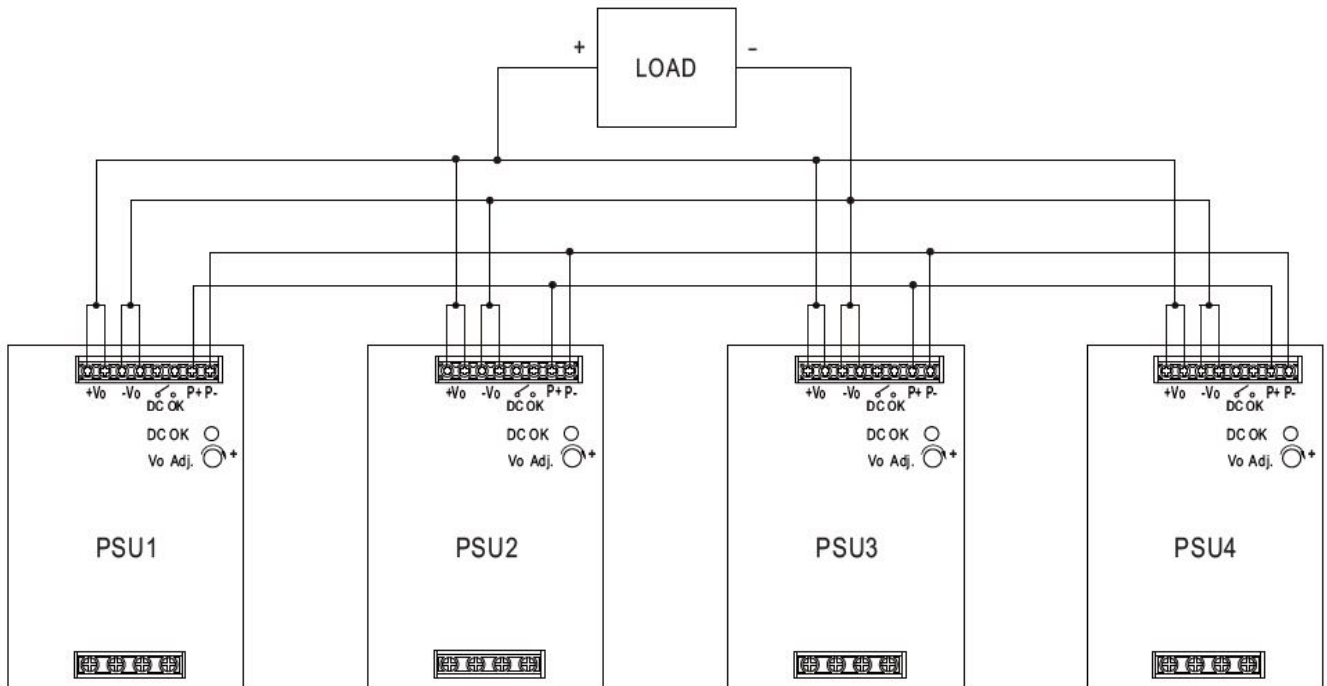
### DC OK Relay Contact

Contact Close	PSU turns on/DC OK.
Contact Open	PSU turns off/DC Fail.
Contact Ratings (max.)	30V/1A resistive load.

## Function Manual

### Current sharing

1. Parallel operation is available by connecting the units shown below (P+, and P- are connected mutually in parallel) :
2. The voltage difference among each output should be minimized so that less than 0.2V is required.
3. 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 units) x 0.9.
4. In parallel operation 4 units are the maximum, please consult the manufacturer for other applications.
5. When in parallel operation, the minimum output load should be greater than 3% of the total output load. (Min. load > 3% rated current per unit x number of unit).



### Remote ON-OFF Control

- The power supply can be turned ON-OFF by using the “Remote ON-OFF” function.

Remote ON-OFF (TB1 PIN2,4)	Output Status
Open or 5.5 ~ 10VDC	power supply ON
Short or 0 ~ 0.8VDC	power supply OFF

### Input Fuse

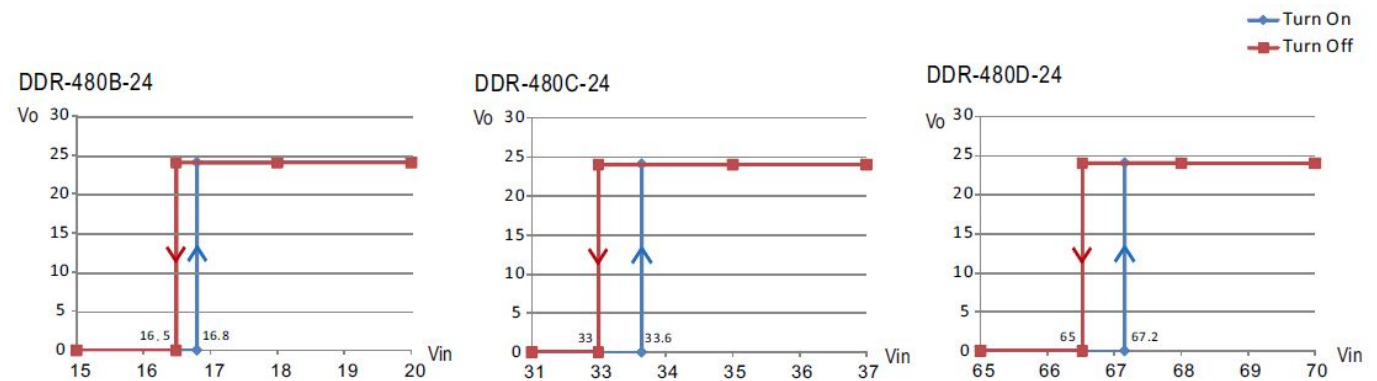
There is one fuse connected in series to the positive input line, which is used to protect against the abnormal

surge. The fuse specifications of each model are shown below.

Type	Fuse Type	Reference and Rating
B	Time-Lag	Conquer MST, 10A, 250V *5
C	Time-Lag	Conquer MST, 8A, 250V *3
D	Time-Lag	Conquer MST, 6.3A, 250V *2

### Input Under-Voltage Protection

If the input voltage drops below  $V_{in}$ , the internal control IC shuts down and there is no output voltage. It recovers automatically when the input voltage reaches above  $V_{in}$ , please refer to the curve below.



### Input Reverse Polarity Protection

There are two MOSFETs connected in series to the negative input line. If the input polarity is connected reversely, the MOSFETs open and there will be no output to protect the unit.

### Inrush Current

Inrush current is suppressed by a resistor during the initial start-up, and then the resistor is bypassed by MOSFETs to reduce power consumption after accomplishing the start-up.



### Hold-up Time

EN50155:2017 version- B/C/D type complies with S2 level (10ms) @ full load, please refer to the table and curves shown below for the hold-up time specification.

Load Model	100% load	70% load	another load
B type (24Vin)	10ms min.	16ms min.	figure 1,2,3
C type (48Vin)	11ms min.	17ms min.	figure 4,5,6
D type (110Vin)	16ms min.	24ms min.	figure 7,8,9

DDR-480B-12

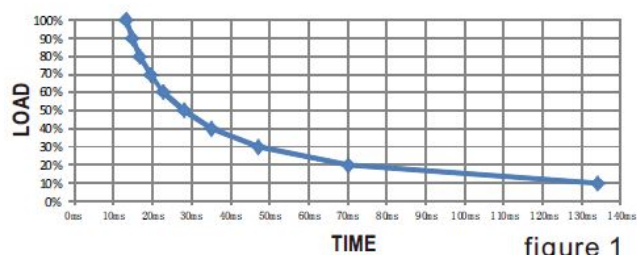


figure 1

DDR-480B-24

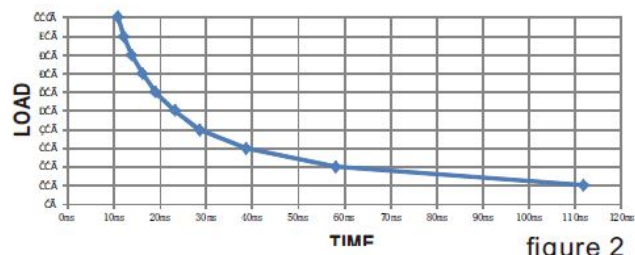


figure 2

DDR-480B-48

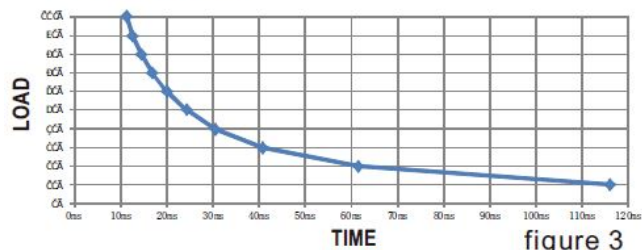


figure 3

DDR-480C-12

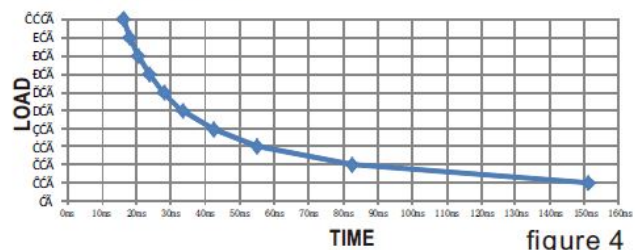


figure 4

DDR-480C-24

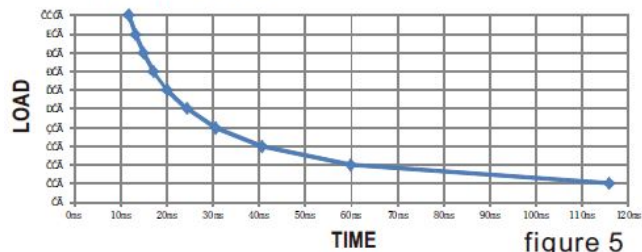


figure 5

DDR-480C-48

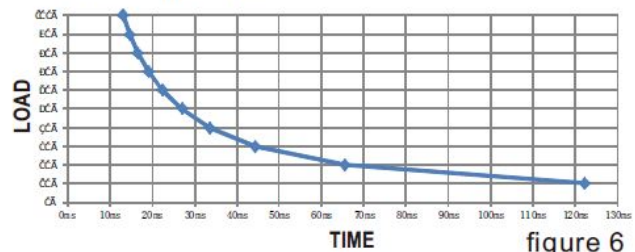


figure 6

DDR-480D-12

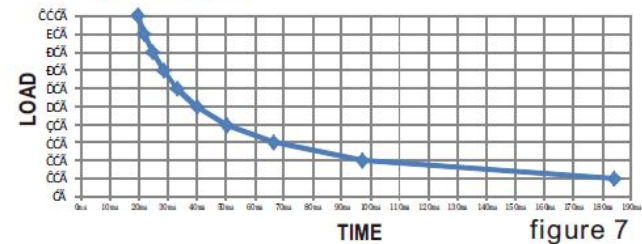


figure 7

DDR-480D-24

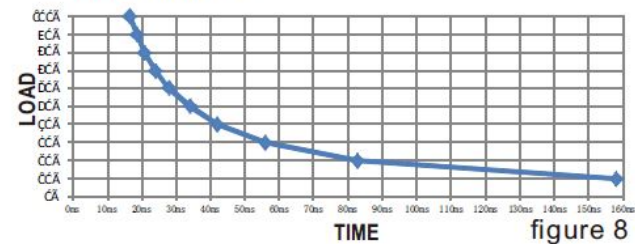


figure 8

DDR-480D-48

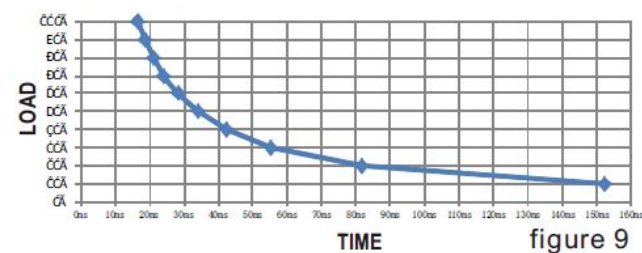
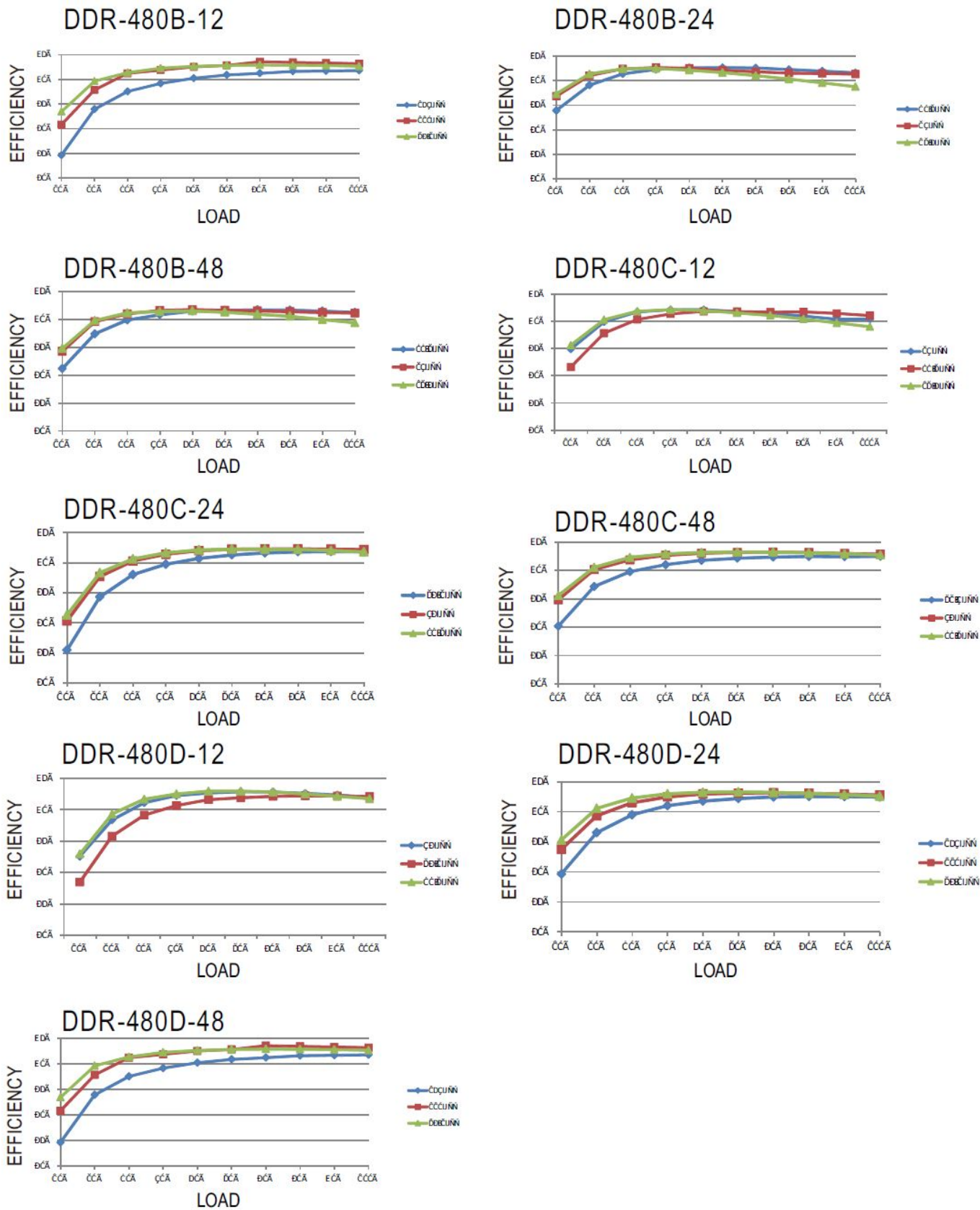


figure 9

## Efficiency vs Load & Vin Curve

The efficiency vs load & Vin curves of each model are shown as below.



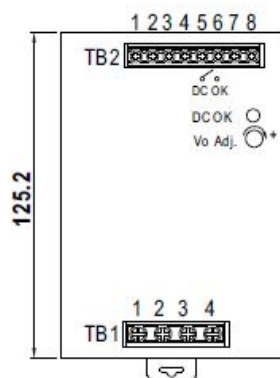
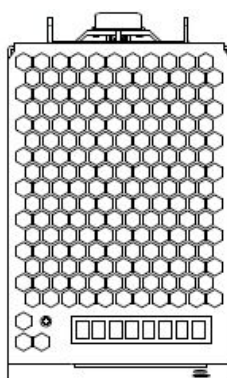
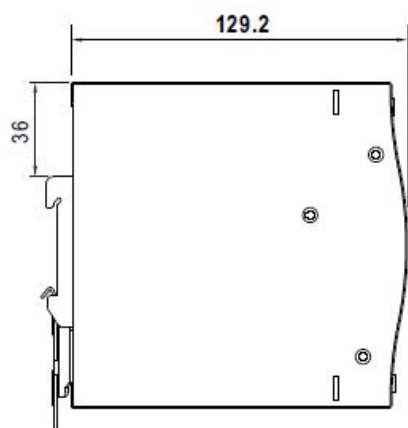
Immunity to Environmental Conditions

Test method	Standard	Test conditions	Status
Cooling Test	EN 50155 section 12.2.3 (Column 2, Class TX) EN 60068-2-1	Temperature: -40°C Dwell Time: 2 hrs/cycle	No damage
Dry Heat Test	EN 50155 section 12.2.4 (Column 2, Class TX) EN 50155 section 12.2.4 (Column 3, Class TX & Column 4, Class TX) EN 60068-2-2	Temperature: 70°C / 85°C Duration: 6 hrs / 10min	PASS
Damp Heat Test, Cyclic	EN 50155 section 12.2.5 EN 60068-2-30	Temperature: 25°C~55°C Humidity: 90%~100% RH Duration: 48 hrs	PASS
Vibration Test	EN 50155 section 12.2.11 EN 61373	Temperature: 19°C Humidity: 65%  Duration: 10 mins	PASS
Increased Vibration Test	EN 50155 section 12.2.11 EN 61373	Temperature: 19°C Humidity: 65%  Duration: 5 hrs	PASS
Shock Test	EN 50155 section 12.2.11 EN 61373	Temperature: 21±3°C  Humidity: 65 ± 5% Duration: 30ms*18	PASS
Low-Temperature Storage Test	EN 50155 section 12.2.3 (Column 2, Class TX) EN 60068-2-1	Temperature: -40°C Dwell Time: 16 hrs	PASS
Salt Mist Test	EN 50155 section 12.2.10 (Class ST4)	Temperature: 35°C±2°C Duration: 48 hrs	PASS

## EN45545-2 Fire Test Conditions

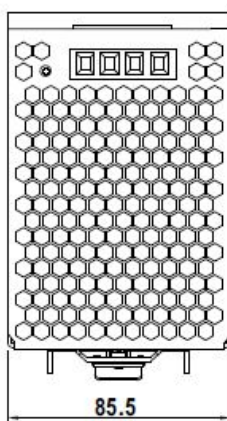
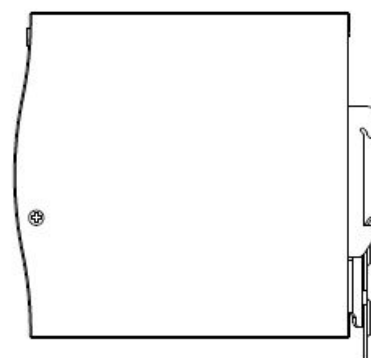
Test Items				Hazard Level	
	Items	Standard	HL1	HL2	HL3
R22	Oxygen index test	EN 45545-2:2013 EN ISO 4589-2:1996	PASS	PASS	PASS
	Smoke density test	EN 45545-2:2013 EN ISO 5659-2:2006	PASS	PASS	PASS
	Smoke toxicity test	EN 45545-2:2013 NF X70-100:2006	PASS	PASS	PASS
R24	Oxygen index test	EN 45545-2:2013 EN ISO 4589-2:1996	PASS	PASS	PASS
R25	Glow-wire test	EN 45545-2:2013 EN 60695-2-11:2000	PASS	PASS	PASS
R26	Vertical flame test	EN 45545-2:2013 EN 60695-11:2003	PASS	PASS	PASS

## Mechanical Specification



Terminal Pin No. Assignment (TB2)

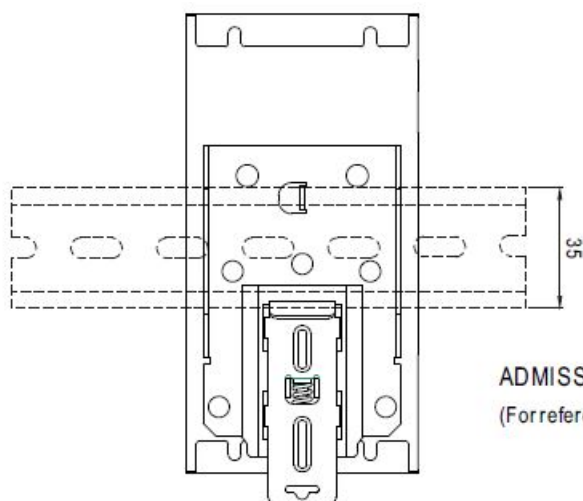
Pin No.	Assignment
1,2	DC output +Vo
3,4	DC output -Vo
5,6	DC OK Relay Contact
7,8	P+,P-(Current sharing)



Terminal Pin No. Assignment (TB1)

Pin No.	Assignment
1	FG (Earth)
2	DC input -Vin
3	DC input +Vin
4	Remote ON/OFF

## Installation Instruction



Back View


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>.

## Documents / Resources

	<p><a href="#">MEAN WELL DDR-480 Series 480W DIN Rail Type DC to DC Converter</a> [pdf] Instruction Manual</p> <p>DDR-480 Series, 480W DIN Rail Type DC to DC Converter, DDR-480 Series 480W DIN Rail Type DC to DC Converter, DIN Rail Type DC to DC Converter, Rail Type DC to DC Converter, DC to DC Converter, Converter</p>
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## References

- [MEAN WELL Switching Power Supply Manufacturer](#)
- [Installation Manual-MEAN WELL Switching Power Supply Manufacturer](#)
- [Product Liability Disclaimer-MEAN WELL Switching Power Supply Manufacturer](#)