



15W DIN Rail Type DC-DC Converter

**DDR-15 series**

User's Manual



## Feature

- Width only 17.5mm (1SU)
- 4:1 ultra wide input range
- -40~+85°C wide working temperature
- No minimum load required
- DC output adjustable ( $\pm 10\%$ )
- Cooling by free air convection
- Can be installed on DIN rail TS-35/7.5 or 15
- Protections: Short circuit / Overload / Over voltage /  
Input reverse polarity /  
Input under voltage protection
- 4KVdc I/O isolation(Reinforced isolation)
- 3 years warranty

## Description

DDR-15 series is a 15W DIN Rail type DC-DC converter with main features including DIN rail-type easy installation, ultra slim width (17.5mm), 4: 1 ultra wide input voltage, -40~+85°C wide operating temperature, 4KVdc I/O isolation, adjustable output voltage ( $\pm 10\%$ ) and full protective functions...etc.

This series has two input options: 9~36V / 18~75V and various output options: 3.3V / 5V / 12V / 15V / 24V and can be used for industrial control, security control, communication system and other fields. Suitable applications are DC buck/boost regulator, increasing system insulation level and voltage drop compensation along cable...etc.

## Model Encoding

**DDR - 15 G - 24**

- Output voltage(3.3/5/12/15/24Vdc)
- Input voltage (G: 9~36Vdc, L: 18~75Vdc)
- Rated wattage
- Series name



## SPECIFICATION

MODEL		DDR-15G-3.3	DDR-15G-5	DDR-15G-12	DDR-15G-15	DDR-15G-24
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V
	RATED CURRENT	3.5A	3A	1.25A	1A	0.63A
	CURRENT RANGE	0 ~ 3.5A	0 ~ 3A	0 ~ 1.25A	0 ~ 1A	0 ~ 0.63A
	RATED POWER	11.6W	15W	15W	15W	15W
	RIPPLE & NOISE (max.) <small>Note.2</small>	50mVp-p	50mVp-p	60mVp-p	75mVp-p	100mVp-p
	VOLTAGE ADJ. RANGE	3.0 ~ 3.6V	4.5 ~ 5.5V	9 ~ 13.2V	13.5 ~ 16.5V	21.6 ~ 28V
	VOLTAGE TOLERANCE <small>Note.3</small>	± 2.0%	± 2.0%	± 2.0%	± 2.0%	± 2.0%
	LINE REGULATION	± 0.5%	± 0.5%	± 0.5%	± 0.5%	± 0.5%
	LOAD REGULATION	± 1.5%	± 1%	± 0.5%	± 0.5%	± 0.5%
	SETUP, RISE TIME	120ms, 85ms at full load				
	HOLD UP TIME (Typ.)	G-type: 8ms@24Vdc input				
EXTERNAL CAPACITANCE LOAD (Max.)	3300 $\mu$ F	3300 $\mu$ F	1200 $\mu$ F	1200 $\mu$ F	680 $\mu$ F	
INPUT	VOLTAGE RANGE <small>Note.4</small>	9 ~ 36Vdc				
	EFFICIENCY (Typ.)	84%	84%	85%	85%	86%
	DC CURRENT (Typ.)	0.8A/24Vdc				
	INRUSH CURRENT (Typ.)	15A/24Vdc				
PROTECTION	OVERLOAD	110 ~ 150% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed				
	OVER VOLTAGE	3.8 ~ 4.7V	5.75 ~ 7V	13.8 ~ 16.2V	17.25 ~ 20.25V	28.8 ~ 32.4V
		Protection type : Shut down o/p voltage, re-power on to recover				
	REVERSE POLARITY	By internal MOSFET, no damage, recovers automatically after fault condition removed				
	UNDER VOLTAGE LOCKOUT	Power ON≥9V , OFF≤8.5V				
ENVIRONMENT	WORKING TEMP.	-40 ~ +85℃ (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%/℃ (0 ~ 60℃ )				
	VIBRATION	Component:10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Compliance to IEC60068-2-6				
	OPERATING ALTITUDE	5000 meters				
SAFETY & EMC (Note 5)	SAFETY STANDARDS	UL 62368-1, IEC 62368-1, AS/NZS 62368.1, EAC TP TC 004 approved				
	WITHSTAND VOLTAGE	I/P-O/P:4KVdc				
	ISOLATION RESISTANCE	I/P-O/P>100M Ohms / 500Vdc / 25℃ / 70% RH				
	EMC EMISSION	Parameter	Standard		Test Level / Note	
		Conducted	BS EN/EN55032		Class B	
		Radiated	BS EN/EN55032		Class B	
		Voltage Flicker	BS EN/EN61000-3-3		-----	
	EMC IMMUNITY	BS EN/EN55024 , 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 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	
		Surge	BS EN/EN61000-4-5		Level 3, 1KV/Line-Line ; 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	907K hrs min. MIL-HDBK-217F (25℃)			
	DIMENSION	17.5*90*54.5mm (W*H*D)				
	PACKING	68g; 160pcs/12Kg/1.14CUFT				
NOTE	1. All parameters NOT specially mentioned are measured at 24VDC input, rated load and 25℃ of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 $\mu$ f & 47 $\mu$ f 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. The power supply is considered as an independent unit, but the final equipment still need 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> ) 6. 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). ※ Product Liability Disclaimer : For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a>					



## 15W DIN Rail Type DC-DC Converter

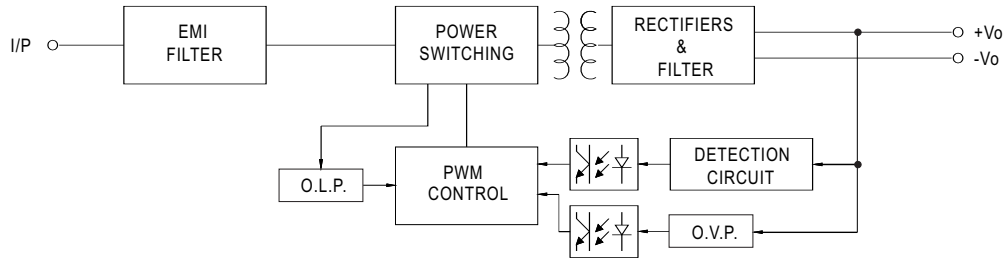
## DDR-15 series

## SPECIFICATION

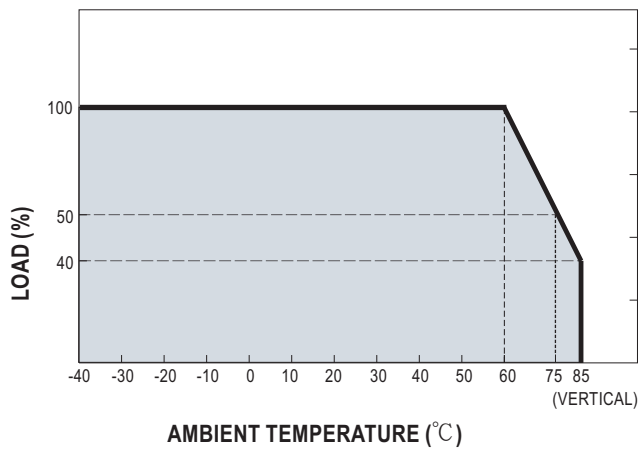
MODEL		DDR-15L-3.3	DDR-15L-5	DDR-15L-12	DDR-15L-15	DDR-15L-24
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V
	RATED CURRENT	4.5A	3A	1.25A	1A	0.63A
	CURRENT RANGE	0 ~ 4.5A	0 ~ 3A	0 ~ 1.25A	0 ~ 1A	0 ~ 0.63A
	RATED POWER	15W	15W	15W	15W	15W
	RIPPLE & NOISE (max.) <small>Note.2</small>	50mVp-p	50mVp-p	60mVp-p	75mVp-p	100mVp-p
	VOLTAGE ADJ. RANGE	3.0 ~ 3.6V	4.5 ~ 5.5V	9 ~ 13.2V	13.5 ~ 16.5V	21.6 ~ 28V
	VOLTAGE TOLERANCE <small>Note.3</small>	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION	±1.5%	±1%	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME	120ms, 85ms at full load				
	HOLD UP TIME (Typ.)	L-type: 16ms@48Vdc input				
EXTERNAL CAPACITANCE LOAD (Max.)	3300 $\mu$ F	3300 $\mu$ F	1200 $\mu$ F	1200 $\mu$ F	680 $\mu$ F	
INPUT	VOLTAGE RANGE <small>Note.4</small>	18 ~ 75Vdc				
	EFFICIENCY (Typ.)	84%	85%	86%	86%	87%
	DC CURRENT (Typ.)	0.4A/48Vdc				
	INRUSH CURRENT (Typ.)	15A/48Vdc				
PROTECTION	OVERLOAD	110 ~ 150% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed				
	OVER VOLTAGE	3.8 ~ 4.7V	5.75 ~ 7V	13.8 ~ 16.2V	17.25 ~ 20.25V	28.8 ~ 32.4V
		Protection type : Shut down o/p voltage, re-power on to recover				
	REVERSE POLARITY	By internal MOSFET, no damage, recovers automatically after fault condition removed				
	UNDER VOLTAGE LOCKOUT	Power ON ≥ 18V , OFF ≤ 17V				
ENVIRONMENT	WORKING TEMP.	-40 ~ +85℃ (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%/℃ (0 ~ 60℃ )				
	VIBRATION	Component:10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Compliance to IEC60068-2-6				
	OPERATING ALTITUDE	2000 meters				
SAFETY & EMC (Note 5)	SAFETY STANDARDS	IEC 62368-1 (LVD) ,AS/NZS 62368.1 approved; Design refer to UL508				
	WITHSTAND VOLTAGE	I/P-O/P:4KVdc				
	ISOLATION RESISTANCE	I/P-O/P>100M Ohms / 500Vdc / 25℃ / 70% RH				
	EMC EMISSION	Parameter	Standard		Test Level / Note	
		Conducted	BS EN/EN55032		Class B	
		Radiated	BS EN/EN55032		Class B	
		Voltage Flicker	BS EN/EN61000-3-3		-----	
	EMC IMMUNITY	BS EN/EN55024 , 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 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	
		Surge	BS EN/EN61000-4-5		Level 3, 1KV/Line-Line ; 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	907K hrs min. MIL-HDBK-217F (25℃)				
	DIMENSION	17.5*90*54.5mm (W*H*D)				
	PACKING	68g; 160pcs/12Kg/1.19CUFT				
NOTE	1. All parameters NOT specially mentioned are measured at 48VDC input, rated load and 25℃ of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 $\mu$ f & 47 $\mu$ f 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. The power supply is considered as an independent unit, but the final equipment still need 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> ) 6. 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).  ※ 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

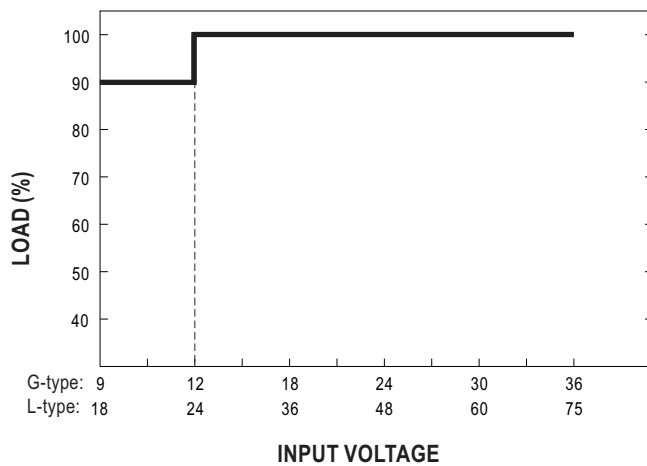
fosc : 100KHz



## Derating Curve



## Output derating VS input voltage



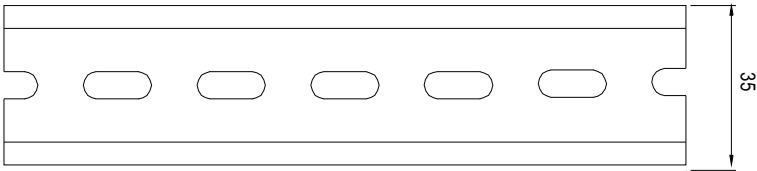
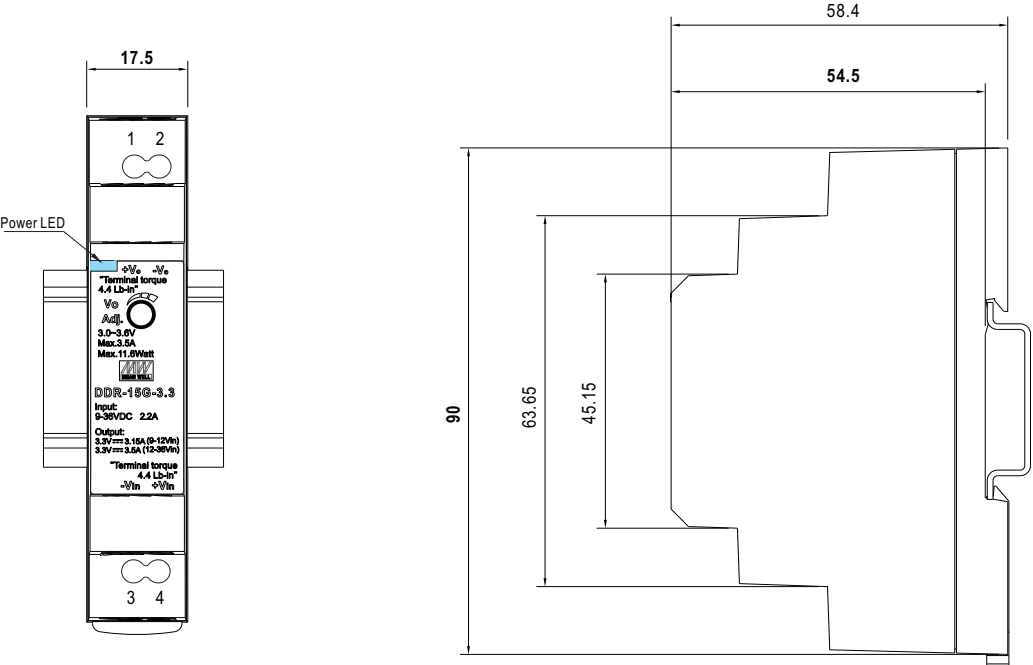


15W DIN Rail Type DC-DC Converter

DDR-15 series

■ Mechanical Specification

(Unit: mm , tolerance  $\pm 0.5\text{mm}$ )



ADMISSIBLE DIN-RAIL: TS35/7.5 OR TS35/15

Terminal Pin No. Assignment

Pin No.	Assignment
1	DC Output +Vo
2	DC Output -Vo
3	DC Input -Vin
4	DC Input +Vin

■ Installation Manual

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