



### ■ 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

### ■ Applications

- Industrial control system
- Semi-conductor fabrication equipment
- Factory automation
- Electro-mechanical
- Wireless network
- Telecom or datacom system

### ■ 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

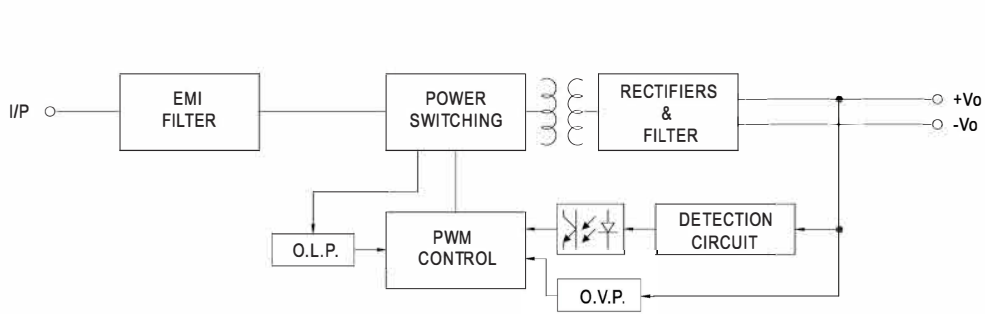
**SPECIFICATION**

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.) Note.2	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 Note.3	±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 μ F	3300 μ F	1200 μ F	1200 μ F	680 μ F	
INPUT	VOLTAGE RANGE Note.4	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
	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°C (Refer to "Derating Curve")				
	WORKING HUMIDITY	5 ~ 95% RH non-condensing				
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 5 ~ 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				
	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°C / 70% RH				
	EMC EMISSION	Parameter	Standard		Test Level / Note	
		Conducted	EN55032		Class B	
		Radiated	EN55032		Class B	
		Voltage Flicker	EN61000-3-3		-----	
	EMC IMMUNITY	EN55024 , EN61000-6-2(EN50082-2)				
		Parameter	Standard		Test Level / Note	
		ESD	EN61000-4-2		Level 3, 8KV air ; Level 3, 6KV contact; criteria A	
		Radiated	EN61000-4-3		Level 3, 10V/m ; criteria A	
		EFT / Burst	EN61000-4-4		Level 3, 2KV ; criteria A	
		Surge	EN61000-4-5		Level 3, 1KV/Line-Line ; criteria A	
Conducted		EN61000-4-6		Level 3, 10V ; criteria A		
Magnetic Field	EN61000-4-8		Level 4, 30A/m ; criteria A			
OTHERS	MTBF	907K hrs min. MIL-HDBK-217F (25°C)				
	DIMENSION	17.5*90*54.5mm (W*H*D)				
	PACKING	68g; 160pcs/12Kg/1.19CUFT				
NOTE	<p>1. All parameters NOT specially mentioned are measured at 24VDC input, rated load and 25°C of ambient temperature.</p> <p>2. Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 μ f &amp; 47 μ f parallel capacitor.</p> <p>3. Tolerance : includes set up tolerance, line regulation and load regulation.</p> <p>4. Derating may be needed under low input voltage. Please check the derating curve for more details.</p> <p>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."</p> <p>6. 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).</p>					

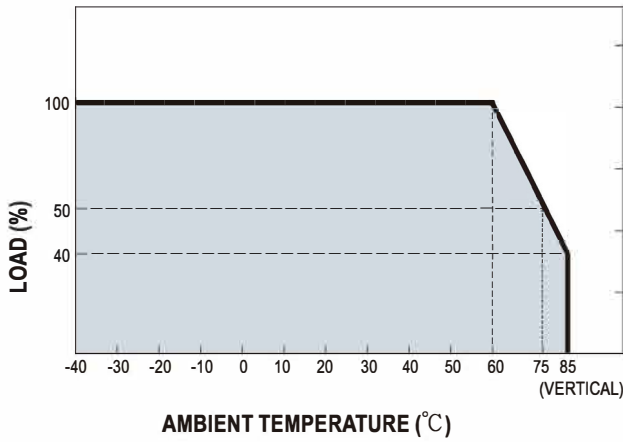
**SPECIFICATION**

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.) Note.2	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 Note.3	±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 μ F	3300 μ F	1200 μ F	1200 μ F	680 μ F
INPUT	VOLTAGE RANGE Note.4	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
	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°C (Refer to "Derating Curve")				
	WORKING HUMIDITY	5 ~ 95% RH non-condensing				
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 5 ~ 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				
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°C / 70% RH				
	EMC EMISSION	Parameter	Standard		Test Level / Note	
		Conducted	EN55032		Class B	
		Radiated	EN55032		Class B	
		Voltage Flicker	EN61000-3-3		-----	
	EMC IMMUNITY	EN55024 , EN61000-6-2(EN50082-2)				
		Parameter	Standard		Test Level / Note	
		ESD	EN61000-4-2		Level 3, 8KV air ; Level 3, 6KV contact; criteria A	
Radiated		EN61000-4-3		Level 3, 10V/m ; criteria A		
EFT / Burst		EN61000-4-4		Level 3, 2KV ; criteria A		
Surge		EN61000-4-5		Level 3, 1KV/Line-Line ; criteria A		
Conducted		EN61000-4-6		Level 3, 10V ; criteria A		
Magnetic Field	EN61000-4-8		Level 4, 30A/m ; criteria A			
OTHERS	MTBF	907K hrs min. MIL-HDBK-217F (25°C)				
	DIMENSION	17.5*90*54.5mm (W*H*D)				
	PACKING	68g; 160pcs/12Kg/1.19CUFT				
NOTE	<ol style="list-style-type: none"> <li>All parameters NOT specially mentioned are measured at 48VDC input, rated load and 25°C of ambient temperature.</li> <li>Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 μ f &amp; 47 μ f parallel capacitor.</li> <li>Tolerance : includes set up tolerance, line regulation and load regulation.</li> <li>Derating may be needed under low input voltage. Please check the derating curve for more details.</li> <li>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."</li> <li>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).</li> </ol>					

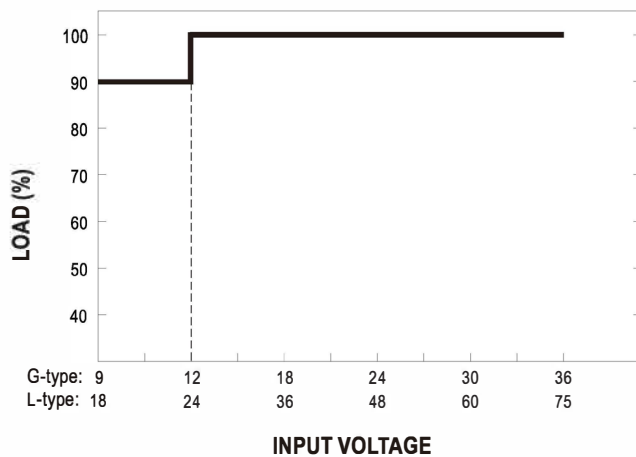
**Block Diagram**



**Derating Curve**

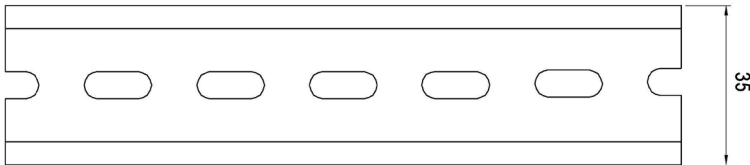
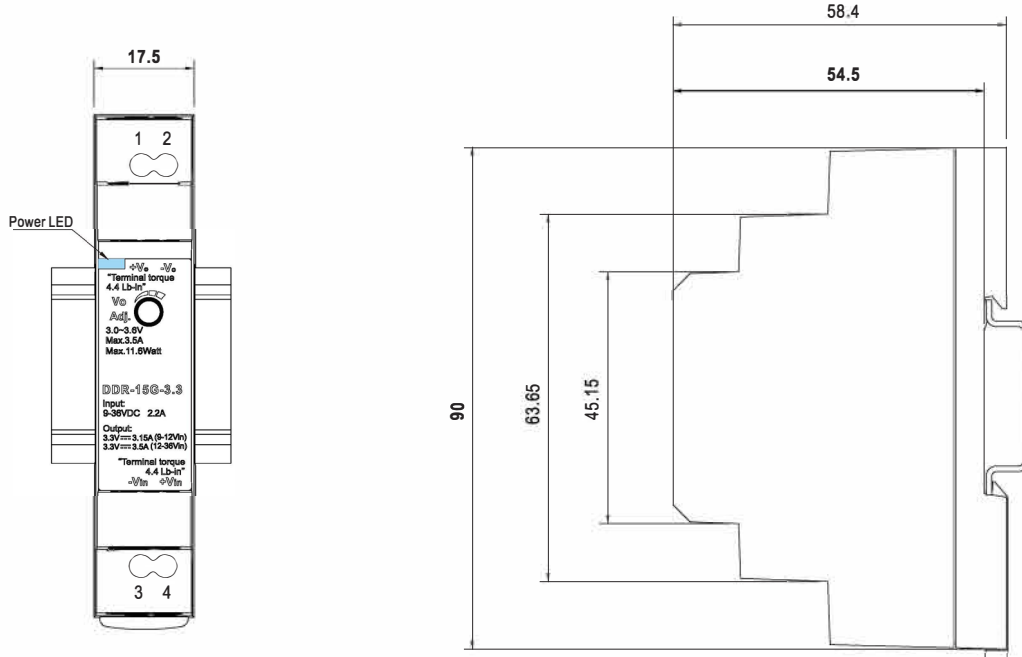


**Output derating VS input voltage**



■ **Mechanical Specification**

(Unit: mm , tolerance  $\pm 0.5$ 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



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