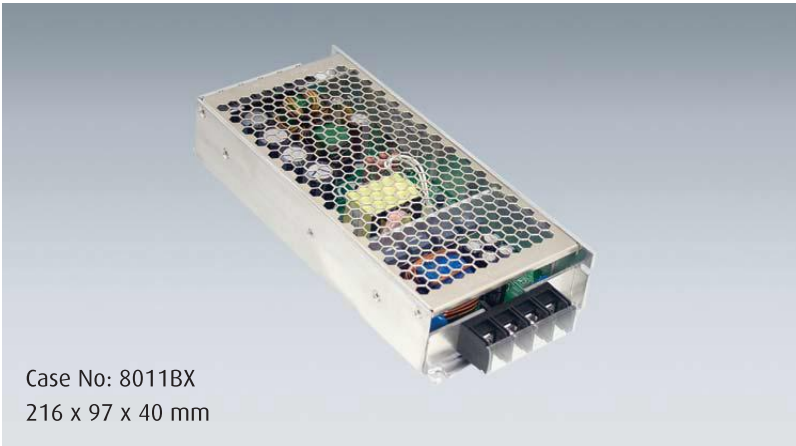


# RSD-300 Series

## 300W Single Output DC-DC Converter



Case No: 8011BX  
216 x 97 x 40 mm

### Features

- Compliance to EN50155 railway certification
- Protections: Short circuit / Overload / Over voltage / Over temperature / Input reverse polarity
- 4000VDC I/O isolation
- Cooling by free air convection
- Built-in constant current limiting circuit
- 1U low profile: 40mm
- All using 105°C long life electrolytic capacitors
- LED indicator for power on
- 100% full load burn-in test



### Specification

<b>INPUT</b>	<b>Voltage (Continuous)</b>	B: 16.8~31.2VDC	C: 33.6~62.4VDC	D: 67.2~143VDC				
	<b>Voltage (1 Sec.)</b>	B: 14.4~33.6VDC	C: 28.8~67.2VDC	D: 57.6~154VDC				
	<b>Inrush Current</b>	B: 45A/24VDC	C: 45A/48VDC	D: 45A/110VDC				
	<b>MODEL No.</b>	<b>RSD-300B-12</b>	<b>RSD-300B-24</b>	<b>RSD-300B-48</b>	<b>RSD-300C-12</b>	<b>RSD-300C-24</b>	<b>RSD-300C-48</b>	
<b>OUTPUT</b>	<b>Current</b>	14.6A/24V	14.6A/24V	14.6A/24V	7.2A/48V	7.2A/48V	7.2A/48V	
	<b>MODEL No.</b>	<b>RSD-300B-12</b>	<b>RSD-300B-24</b>	<b>RSD-300B-48</b>	<b>RSD-300C-12</b>	<b>RSD-300C-24</b>	<b>RSD-300C-48</b>	
	<b>Voltage</b>	12V	24V	48V	12V	24V	48V	
	<b>Rated Current</b>	22.5A	11.3A	5.7A	25A	12.5A	6.3A	
	<b>Current Range</b>	0~22.5A	0~11.3A	0~5.7A	0~25A	0~12.5A	0~6.3A	
	<b>Output Tolerance</b>	± 2%	± 2%	± 2%	± 2%	± 2%	± 2%	
	<b>Line Regulation</b>	± 0.3%	± 0.2%	± 0.5%	± 0.3%	± 0.2%	± 0.5%	
	<b>Output Tolerance</b>	± 1%	± 1%	± 1%	± 1%	± 1%	± 1%	
	<b>Ripple Noise MAX.</b>	120mV	150mV	180mV	120mV	150mV	180mV	
	<b>Efficiency (TYP.)</b>	89%	89%	89%	91%	91%	91%	
	<b>Power</b>	270W	271.2W	273.6W	300W	300W	302.4W	
	<b>PROTECTION</b>	<b>Over Voltage</b>	13.8~16.2V	27.6~32.4V	55.2~64.8V	13.8~16.2V	27.6~32.4V	55.2~64.8V
			Shutdown o/p voltage, re-power on to recover					
<b>Over Load</b>		When the power supply is over 105~135% constant current limiting, recovers automatically after fault condition is removed						
<b>ELEC. CHAR.</b>	<b>Over Temperature</b>	B/C type: 110°C ±5°C (TSW1) detect on main power transformer; D-type: 115°C ±5°C (TSW1) detect on main power transformer						
		Shut down o/p voltage, recovers automatically after temperature goes down						
	<b>Rise Time</b>	<50mS at full load						
<b>ENVIRONMENT</b>	<b>Hold up Time</b>	B/C-type comply with S1 level @ full load, comply with S2 level @ 70% load; D-type comply with S2 level @ full load						
	<b>Setup Time</b>	800mS at full load						
	<b>Temperature</b>	Operating:-40~+55°C(No derating); +70°C@60% load by free air convection; No derating with external base plate, Tx case compliance Storage: -40~+85°C						
<b>SAFETY</b>	<b>Humidity</b>	Operating: 20% ~ 95% RH; Storage: 10% ~ 95% RH (non condensing)						
	<b>Withstand Voltage</b>	I/P-O/P:4KVDC, I/P-FG:2.5KVDC, O/P-FG:2.5KVDC, 1minute						
	<b>Isolation Resistance</b>	I/P-O/P, I/P-FG, O/P-FG 100MΩ/500VDC						
<b>EMC</b>	<b>Safety Standard</b>	Meets IEC60950-1 (LVD)						
	<b>EMI</b>	Compliance to EN55022 (CISPR22) Conduction Emission: Class A, Radiation Emission: Class B; EN55015 (EN50121-3-2)						
	<b>EMS</b>	EN61000-4-2,3,4,5,6,8,11, Light industry level, criteria A; EN50121-3-2						
<b>OTHERS</b>	<b>Railway Standard</b>	Meets EN50155/IEC60571 including IEC61373 for shock & vibration, EN50121-3-2 for EMC						
	<b>Cooling</b>	Natural cooling						
	<b>M.T.B.F.</b>	130.7Khrs min. MIL-HDBK-217F (°C)						
	<b>Packing</b>	1.19Kg; 12 pcs/15.3Kg/1.12 CUFT						

1 All parameters NOT specially mentioned are measured at 24,48,110VDC input, rated load and 25°C of ambient temperature

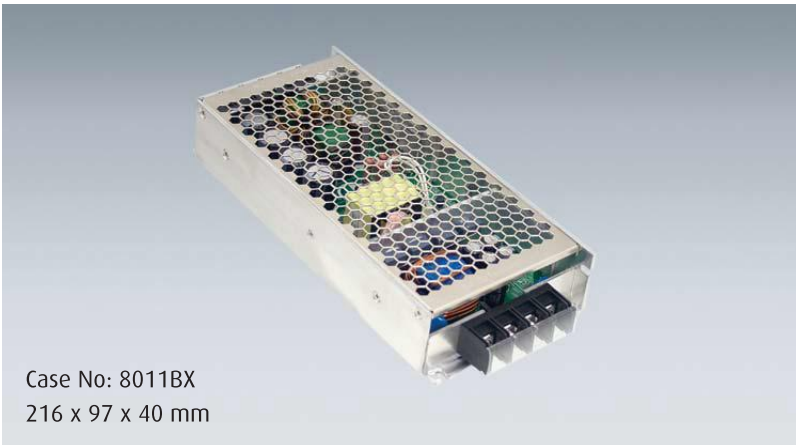
2 Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.

3 Tolerance : includes set up tolerance, line regulation and load regulation.

4 The power supply is considered a component which will be installed into final equipment, this equipment must be re-confirmed that it still meets EMC.

# RSD-300 Series

## 300W Single Output DC-DC Converter



Case No: 8011BX  
216 x 97 x 40 mm

### Features

- Compliance to EN50155 railway certification
- Protections: Short circuit / Overload / Over voltage / Over temperature / Input reverse polarity
- 4000VDC I/O isolation
- Cooling by free air convection
- Built-in constant current limiting circuit
- 1U low profile: 40mm
- All using 105°C long life electrolytic capacitors
- LED indicator for power on
- 100% full load burn-in test



### Specification

<b>INPUT</b>	<b>Voltage (Continuous)</b>	A: 16.8~31.2VDC	B: 33.6~62.4VDC	C: 67.2~143VDC
	<b>Voltage (1 Sec.)</b>	A: 16.8~31.2VDC	B: 28.8~67.2VDC	C: 57.6~154VDC
	<b>Inrush Current</b>	A: 45A/24VDC	B: 45A/48VDC	C: 45A/110VDC
	<b>MODEL No.</b>	<b>RSD-300D-12</b>	<b>RSD-300D-24</b>	<b>RSD-300D-48</b>
<b>OUTPUT</b>	<b>Current</b>	3.1A/110V	3.1A/110V	3.1A/110V
	<b>MODEL No.</b>	<b>RSD-300D-12</b>	<b>RSD-300D-24</b>	<b>RSD-300D-48</b>
	<b>Voltage</b>	12V	24V	48V
	<b>Rated Current</b>	25A	12.5A	6.3A
	<b>Current Range</b>	0~25A	0~12.5A	0~6.3A
	<b>Output Tolerance</b>	± 2%	± 2%	± 2%
	<b>Line Regulation</b>	± 0.2%	± 0.2%	± 0.5%
	<b>Output Tolerance</b>	± 1%	± 1%	± 1%
	<b>Ripple Noise MAX.</b>	120mV	150mV	180mV
	<b>Efficiency (TYP.)</b>	91%	91%	91%
	<b>Power</b>	300W	300W	302.4W
<b>PROTECTION</b>	<b>Over Voltage</b>	13.8~16.2V	27.6~32.4V	55.2~64.8V
		Shutdown o/p voltage, re-power on to recover		
	<b>Over Load</b>	When the power supply is over 105~135% constant current limiting, recovers automatically after fault condition is removed		
<b>ELEC. CHAR.</b>	<b>Over Temperature</b>	B/C type: 110°C ±5°C (TSW1) detect on main power transformer; D-type: 115°C ±5°C (TSW1) detect on main power transformer		
		Shut down o/p voltage, recovers automatically after temperature goes down		
	<b>Rise Time</b>	<50mS at full load		
<b>ENVIRONMENT</b>	<b>Hold up Time</b>	B/C-type comply with S1 level @ full load, comply with S2 level @ 70% load; D-type comply with S2 level @ full load		
	<b>Setup Time</b>	800mS at full load		
<b>SAFETY</b>	<b>Temperature</b>	Operating:-40~+55°C(No derating); +70°C@60% load by free air convection; No derating with external base plate, Tx case compliance Storage: -40~+85°C		
	<b>Humidity</b>	Operating: 20% ~ 95% RH; Storage: 10% ~ 95% RH (non condensing)		
<b>EMC</b>	<b>Withstand Voltage</b>	I/P-O/P:4KVDC, I/P-FG:2.5KVDC, O/P-FG:2.5KVDC, 1minute		
	<b>Isolation Resistance</b>	I/P-O/P, I/P-FG, O/P-FG 100MΩ/500VDC		
	<b>Safety Standard</b>	Meets IEC60950-1 (LVD)		
<b>OTHERS</b>	<b>EMI</b>	Compliance to EN55022 (CISPR22) Conduction Emission: Class A, Radiation Emission: Class B; EN55015 (EN50121-3-2)		
	<b>EMS</b>	EN61000-4-2,3,4,5,6,8,11, Light industry level, criteria A; EN50121-3-2		
	<b>Railway Standard</b>	Meets EN50155/IEC60571 including IEC61373 for shock & vibration, EN50121-3-2 for EMC		
<b>OTHERS</b>	<b>Cooling</b>	Natural cooling		
	<b>M.T.B.F.</b>	130.7Khrs min.	MIL-HDBK-217F (°C)	
	<b>Packing</b>	1.19Kg;	12 pcs/15.3Kg/1.12 CUFT	

1 All parameters NOT specially mentioned are measured at 24,48,110VDC 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 0.1uf & 47uf parallel capacitor.

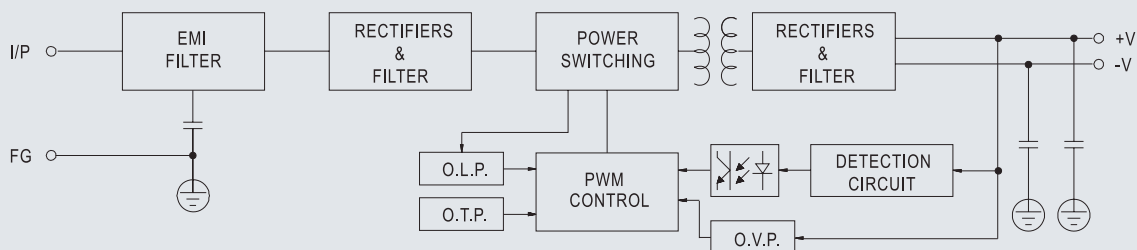
3 Tolerance : includes set up tolerance, line regulation and load regulation.

4 The power supply is considered a component which will be installed into final equipment, this equipment must be re-confirmed that it still meets EMC.

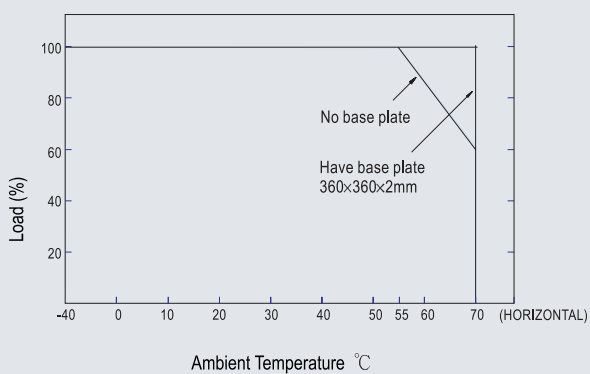
# RSD-300 Series

300W Single Output DC-DC Converter

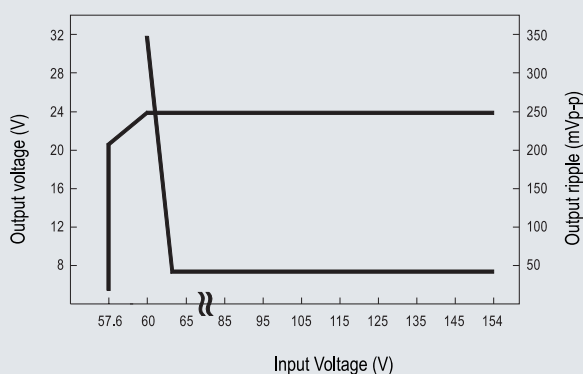
## Block Diagram



## De-Rating Curve



## Static Characteristics (RSD-300D-24)



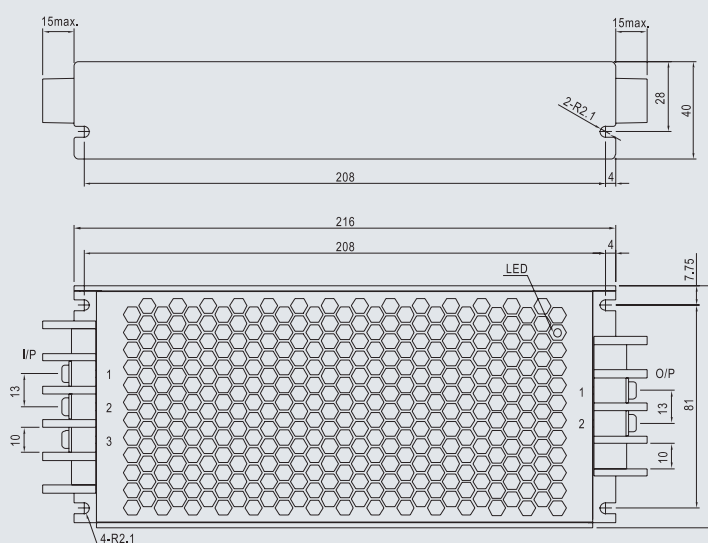
## Dimensions

Input Terminal Pin. No Assignment:

Pin No.	Assignment
1	DC Input V+
2	DC Input V-
3	FG

Output Terminal Pin. No Assignment:

Pin No.	Assignment
1	DC Input V-
2	DC Input V+



# RSD-300 Series

## 300W Single Output DC-DC Converter

### Input Fuse

There is one fuse connected in series to the positive input line, which are used to protect against abnormal surge. Fuse specifications of each model are as shown below:

Type	Fuse Type	Reference and Rating
B	Fast	Littelfuse 257, 30A, 32V
C	Time-Lag	Conquer UDA-A, 16A, 250V
D	Time-Lag	Conquer UDA-A, 8A, 250V

### Input Reverse Polarity Protection

There is MOSFET connected in series to the negative input line. If the input polarity is connected reversely, the MOSFET opens and there will be no output to protect the unit

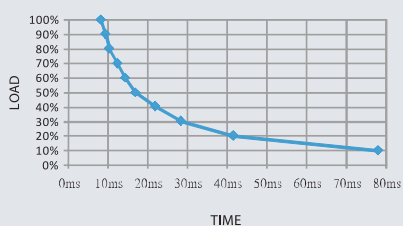
### Input Under-voltage Protection

If input voltage drops to  $V_{imin}$  -3V, the internal control IC shuts down and there is no output voltage

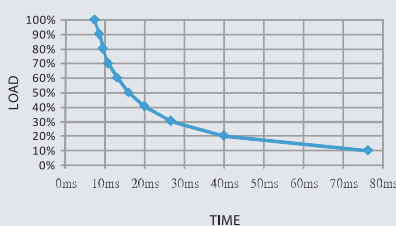
### Hold-up Time

D type is in compliance to S2 level, while B and C types are in compliance with S1 level at full load output condition. To fulfil the requirements of S2 level, B and C types require de-rating their output load to 70%, please refer to the curve diagrams below.

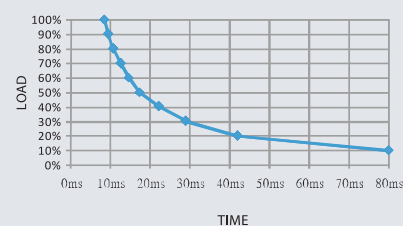
B-12



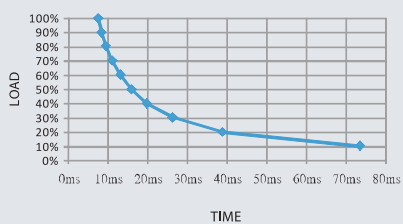
B-24



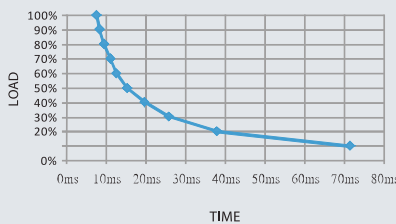
B-48



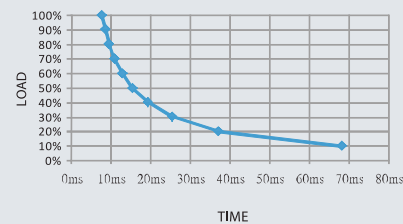
C-12



C-24

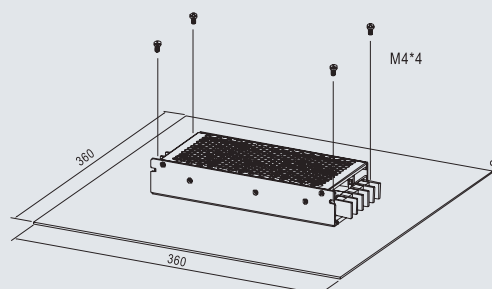


C-48



### Size of Base Panel

To fulfil the requirements of EN50155 TX level, RSD-300 series must be installed onto an iron plate at the base of the power supply. In order for optimal thermal performance, the iron plate must have an even and smooth surface and the RSD-300 series must be firmly mounted at the centre of the iron plate as shown in the diagram.



# RSD-300 Series

## 300W Single Output DC-DC Converter

### Immunity of Environmental Conditions

Test Method	Standard	Test Conditions	Status
Cooling Test	EN50155 Section 12.2.3 (Column 2, class TX) EN60068-2-1	Temp: -40°C Dwell Time: 2 hrs/cycle	No Damage
Dry Heat Test	EN50155 Section 12.2.4 (Column 2, Class TX) EN50155 Section 12.2.4 (Column 3, Class TX & Column 4, Class TX) EN60068-2-30	Temp: 70°C/85°C Duration: 6 hrs/10 min	PASS
Damp Heat Test, Cyclic	EN50155 Section 12.2.5 EN61373	Temp: 25°C~55°C Humidity: 90~100% RH Duration: 48hrs	PASS
Vibration Test	EN50155 Section 12.2.11 EN61373	Temp: 19°C Humidity: 65% Duration: 10 mins	PASS
Increased Vibration Test	EN50155 Section 12.2.11 EN61373	Temp: 19°C Humidity: 65% Duration: 5 hrs	PASS
Shock Test	EN50155 Section 12.2.11 EN61373	Temp: 21±3°C Humidity: 65±5% Duration: 30ms <sup>3</sup> 18	PASS
Low Temp Storage Test	EN50155 Section 12.2.3 (Column 2, Class TX) EN60068-2-1	Temp: -40°C Dwell Time: 16 hrs	PASS
Salt Mist Test	EN50155 Section 12.2.10 (Class ST4)	Temp: 35°C±2°C Duration: 96hrs	PASS