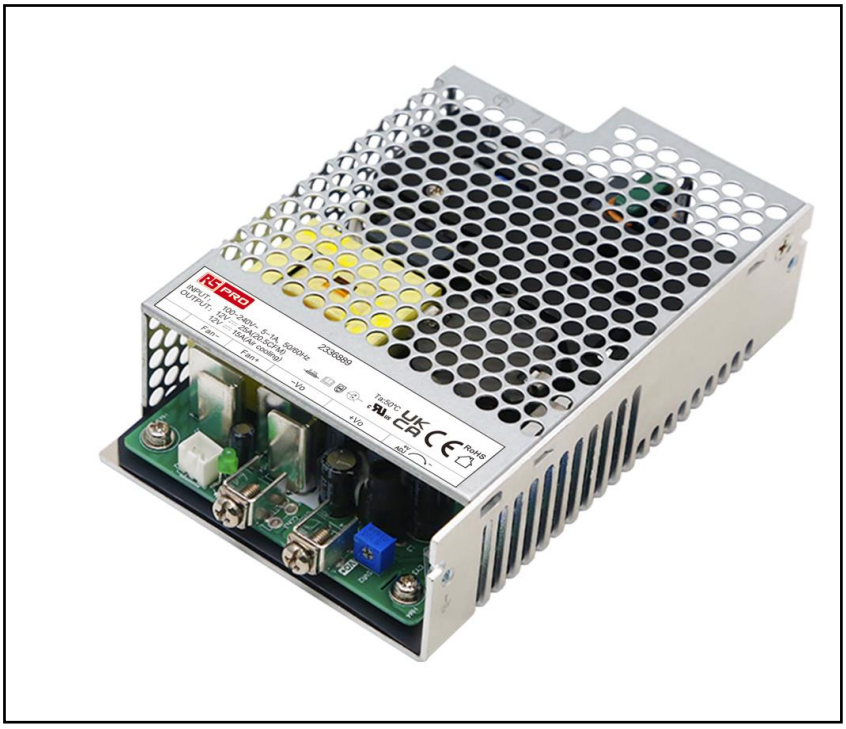
FEATURES

- Universal 90 - 264V AC Active PFC
- Compact size: 5” × 3” × 1”
- Efficiency up to 94%
- Stand-by power consumption. < 0.5W
- Operating temperature range - 40℃ to +70℃
- Conformally coated PCB
- Low leakage current < 0.1mA
- Output short circuit, over-current, over-voltage protection.
- EMI performance meets. CISPR32 / EN55032 CLASS B
- Medical and Industrial safety approvals. Suitable for BF application

  IEC/EN/UL62368-1, IEC/EN60335-1, IEC/EN61558-1, GB4943-1, IEC/EN/ES60601-1 (2 × MOPP)

RS PRO Embedded Switch Mode Power Supplies

- 233-6889
- 233-6892
- 233-6894



RS Professionally Approved Products bring to you professional quality parts across all product categories. Our product range has been tested by engineers and provides a comparable quality to the leading brands without paying a premium price.

Embedded Switch Mode Power Supplies (SMPS)

Product Description

AC-DC enclosed power supply suitable for a wide range of Industrial, Medical and Dental applications. Featuring a universal AC input this cost-effective, high density design is available in a range of standard outputs. Complying with International and European EMC and safety standards IEC/EN/UL62368, GB4943, IEC/EN60335, IEC/EN61558, IEC/EN/ES60601

General Specifications

Model	AC-DC enclosed 350W Medical / Industrial power supply
Mounting Type	Chassis Mount
MTBF	MIL-HDBK-217F@25°C > 300,000 h
Applications	Industrial control systems, instrumentation and medical equipment

RS Stock#	Input Voltage	Output Voltage	Adj'range (V)	Output Current	Wattage	Efficiency (Typ)
233-6889	90 to 264V ac 127 to 370V dc	12V DC	11.4-12.6	15A (Free air)	180W	92%
				25A (20.5CFM)	300W	
233-6892	90 to 264V ac 127 to 370V dc	24V DC	22.8-25.2	8.33A (Free air)	199W	93%
				14.6A (20.5CFM)	350W	
233-6894	90 to 264V ac 127 to 370V dc	48V DC	45.6-50.4	4.17A (Free air)	200W	94%
				7.3A (20.5CFM)	350W	

Input Specifications

Input Specification	
Voltage Range	90 to 264V ac, 127 to 370V dc
Frequency	47 to 63Hz
AC Current Rating	4A/115V ac, 2A/230V ac
Inrush Current	50A/ 115V ac, 75A / 230V ac
Leakage	<0.1mA, single fault <0.5mA
Power Factor	0.98 115Vac, 0.95 230Vac
Standby power consumption	0.5W

Output Specifications

Output Specification			
	233-6889	233-6892	233-6894
Output voltage	12V	24V	48V
Adjustment range	11.4-12.6V	22.8-25.2V	45.6-50.4V
Rated Current (20.5CFM)	25A	14.6A	7.3A
Ripple & Noise (max.) *	120mVp-p	150mVpp	250mVpp
Rated Power (20.5CFM)	300W	350W	350W
Line Regulation typ.	±0.5%	±0.5%	±0.5%
Load Regulation typ.	±1%	±1%	±1%
Max Capacitive load µF	6000µF	3200µF	2000µF
Minimum Load	0%	0%	0%
Fan Power	12V 0.5A with output voltage accuracy ±15%		

Hold Up Time	14ms/230V ac
Over Voltage Protection	12V output ≤15V (Output voltage turn off, re-power on for recover)
	24V output ≤30V (Output voltage turn off, re-power on for recover)
	48V output ≤59.5V (Output voltage turn off, re-power on for recover)
Over-current Protection	≥110% Io, Constant current, continuous, self-recover
Short Circuit Protection	Constant current, continuous, self-recover
Isolation	4KVAC

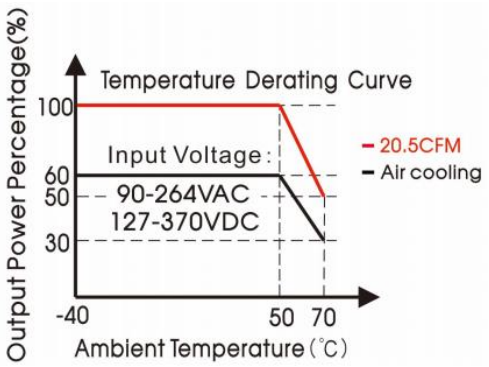
Notes: 1.* Output Voltage Accuracy: including setting error, line regulation, load regulation; 2.* The “Tip and barrel method” is used for ripple and noise test, output parallel 10uF electrolytic capacitor and 0.1uF ceramic capacitor, please refer to AC-DC Converter Application Notes for specific information; 3.* When the product works under light load (≤10%Io), in order to improve efficiency, the value of ripple & noise will be 1.5 times of the full load specification; 4.* For all the above test items, please refer to our company standard "AC-DC Black Box Test Specification" for specific test specifications and methods; 5.* For fan power connection method, please refer to pin 6/7 of the dimension drawing.

General Specifications

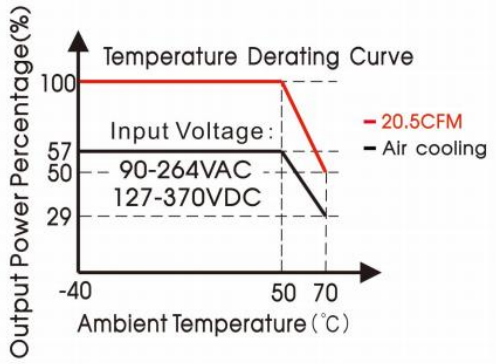
Item		Operating Conditions		Min	Typ	Max.	Unit
Isolation	Input-output	Electric Strength Test for 1min, leakage current <10mA		4000	-	-	VAC
	Input-Earth	Electric Strength Test for 1min, leakage current <10mA		2000	-	-	
	Output-Earth	Electric Strength Test for 1min, leakage current <5mA		1500	-	-	
Insulation Resistance	Input-Earth	500VDC, 25±5℃, Humidity < 95%RH, non-condensing 500VDC		100	-	-	MΩ
	Input-output			100	-	-	
	Output-Earth			100	-	-	
Isolation level	Input-output			2 × MOPP			
	Input-Earth			1 × MOPP			
	Output-Earth			1 × MOPP			
Operating Temperature				-40	-	+70	℃
Storage Temperature				-40	-	+85	
Storage Humidity		Non-condensing		10	-	95	%RH
Operating Humidity				20		90	
Power Derating		Operating temperature derating	+50℃to +70℃	2.5	-	-	%/℃
			-40℃to 50℃	0	-	-	
		Input voltage derating	90VAC - 100VAC	1.0	-	-	%/VAC
			100VAC - 264VAC	0			
Safety Standard				Meet IEC/EN/UL62368-1/EN60335-1 IEC/EN61558-1 /GB4943-1 IEC/EN60601-1/ES60601-1(3.1 version) CAN/CSA-C22.2 No.60601-1:14-Edition 3 EN60601-1-2 Edition 4			
Safety Certification				IEC/EN/UL62368-1 EN60335/EN61558/ EN/ES60601			
Safety Class				CLASS I (PE and must be connected)			
MTBF		MIL-HDBK-217F@25℃		＞300,000 h			

Derating

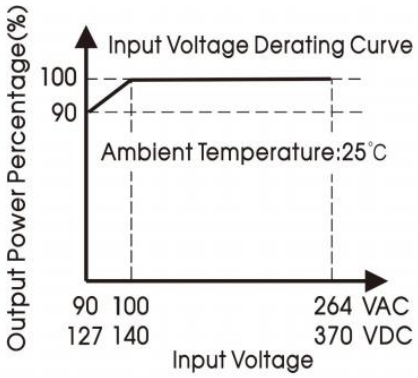
LOF350-20B12-C (full load 300W with Forced Air)



LOF350-20B24/48-C (full load 350W with Forced Air)



LOF350-20Bxx-C Input Voltage Derating Curve



EMC Specifications

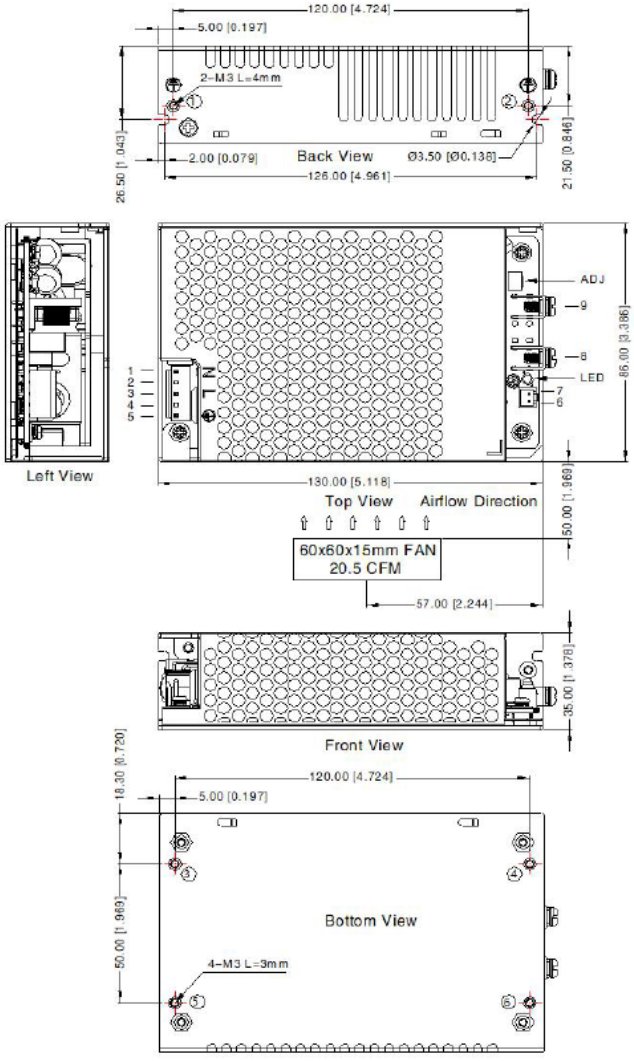
Emissions	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
	Harmonic Current	IEC/EN61000-3-2 CLASS D	
	Flicker	IEC/EN61000-3-3	
Immunity	ESD	IEC/EN 61000-4-2 Contact ±8KV/Air ±15KV	Perf. Criteria A
	RS	IEC/EN 61000-4-3 10V/m	Perf. Criteria A
	EFT	IEC/EN 61000-4-4 ±4KV	Perf. Criteria A
	Surge	EC/EN 61000-4-5 ±2KV/±4KV	Perf. Criteria A
	CS	IEC/EN61000-4-6 10 Vr.m.s	Perf. Criteria A
	DIP	IEC/EN61000-4-11 0%, 70%	Perf. Criteria B
Notes: 1.*The power supply is considered a component as part of system, all EMC items are tested on a metal plate (L x W x H, 360mm x 360mm x 1mm). Power supply should be combined with final equipment for EMC confirmation; 2.*Category I products with PE.			

Mechanical Specifications

Case Material	Metal (SUS304)
Dimensions	130 x 86 x 35mm
Weight	430g (Typ.)
Cooling Method	Air cooling 180-200W / 20.5CFM 300-350W

Embedded Switch Mode Power Supplies (SMPS)

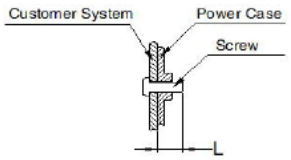
Dimensions and recommended layout



THIRD ANGLE PROJECTION

Pin-Out			
Pin	Mark	Product Connector	Customer Connector
1	AC(N)/DC-	JST B5P-VH or equivalent	Housing: JST VHR Contact: JST SVH-21T-P1.1 or equivalent
2	NC		
3	AC(L)/DC+		
4	NC		
5	⏚		
6	FAN-	KANGDAO 2.5XHS-2A or equivalent	Housing: KANGDAO 2.5XHS-2Y Contact: KANGDAO 2.5XH-TE or equivalent
7	FAN+		
8	-Vo		
9	+Vo		
	ADJ	Output adjustable resistor	

Position	Screw Spec.	L(max)	Torque(max)
①－②	M3	4mm	0.4N·m
③－⑥	M3	3mm	0.4N·m



Note:
1. Unit: mm[inch]
2. General tolerances: ± 1.00[± 0.039]
3. Connector tightening torque: M3.5, 0.8N·m
4. Wire range: 18-14AWG
5. The layout of the device is for reference only, please refer to the actual product

Approvals

Safety Standard	IEC/EN/UL62368-1, EN60335-1, IEC/EN61558-1, GB4943-1, IEC/EN60601-1, ES60601-1(3.1 version), CAN/CSA-C22.2 No.60601-1:14-Edition 3, EN60601-1-2 Edition 4
Safety Certification	IEC/EN/UL62368-1, UL/EN60601
Safety Class	Class I (PE and must be connected)

Note:

1. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75%RH with nominal input voltage and rated output load.
2. All index testing methods in this datasheet are based on our company corporate standards.
3. In order to improve the efficiency at high input voltage, there will be audible noise generated, but it does not affect product performance and reliability.
4. Products are related to laws and regulations: see "Features" and "EMC".
5. Our products shall be classified according to ISO14001 and related environmental laws and regulations and shall be handled by qualified units.
6. CAUTION: Double pole, neutral fusing. Disconnect mains before servicing."/" ATTENTION: Double pôle/fusible sur le neutre. Débrancher lalimentation avant lentretien;
7. The power supply is considered a component which will be installed into a terminal.