FEATURES

- Universal 85 - 305Vac and 120 - 430Vdc
- Active PFC
- Operating temperature range - 30℃ to +70℃
- Output short circuit, over-current (Built-in constant current limiting circuit), over-voltage, over-temperature protection.
- EMI performance meets. CISPR32 / EN55032 CLASS B
- Safety EN/UL/IEC 62368 IEC/EN60335-1, GB4943-1
- Compact size with a low 1U profile
- Operating Altitude upto 5000m
- Supplied with Terminal cover

RS PRO Embedded Switch Mode Power Supplies

RS Stock No:

2193033
2193034
2193035

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 switching power supply with built-in active PFC function. Provides high efficiency and high reliability solutions for industrial, street lighting and instrumentation applications. These converters offer excellent EMC performance, meeting CISPR32/EN55032 Class B and IEC/EN61000-4. Safety approval UL/EN/IEC62368, EN60335, GB4943

Model	AC-DC Enclosed 200W
Mounting Type	Chassis Mount
MTBF	MIL-HDBK-217F@25°C > 250,000 h
Applications	Industrial control systems, instrumentation and lighting

RS Stock#	Input Voltage	Output Voltage	Output Current	Adj' range (V)	Wattage	Efficiency (Typ)
2193033	85 to 305V ac 120 to 430V dc	12V DC	16.7A	11.4 - 12.6V	200W	88%
2193034	85 to 305V ac 120 to 430V dc	24V DC	8.4A	22.8 - 25.2V	200W	90%
2193035	85 to 305V ac 120 to 430V dc	48V DC	4.2A	45.6 - 50.4V	200W	89%

Input Specifications

Item	Operating Conditions		Min	Typ	Max.	Unit
Input Voltage Range	AC Input		85	-	305	VAC
	DC Input		120	-	430	VDC
Input Voltage Frequency			47	-	63	Hz
Input Current	115VAC		-	2.5	3	A
	230VAC		-	1.3	2	
Inrush Current	115VAC	Cold Start	-	35	-	
	230VAC		-	65	-	
Power Factor	115VAC	At full Load	-	0.98	-	
	230VAC		-	0.95	-	
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min	Typ	Max.	Unit
Output Voltage Accuracy	Full Load Range	12V	-	±1	-	%
		24V/48V	-	±1	-	
Line Regulation	Rated Load		-	±0.5	-	
Load Regulation	0% - 100% load		-	±0.5	-	
Output Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	12V	-	150	-	mV
		24V	-	150	-	
		48V	-	240	-	
Temperature Coefficient			-	±0.03	-	%/℃
Minimum Load			0	-	-	%
Hold-up Time	230VAC		8	-	-	ms
Short Circuit Protection	Recovery time <5s after the short circuit disappear		Hiccup , continuous, self-recover			
Over-current Protection			105%-200% Io, self-recover			
Over-voltage Protection	12V		≤ 16.2V (Output voltage turn off, re-power on for recover)			
	24V		≤ 32.4V(Output voltage turn off, re-power on for recover)			
	48V		≤ 60V (Output voltage turn off, re-power on for recover)			
Over-temperature Protection*	Over-temperature Protection Activation		-	-	85	℃
	Over-temperature Protection Deactivation		55	-	-	
Note ： *The “Tip and barrel method” is used for ripple and noise test, output parallel 47uF electrolytic capacitor and 0.1uF ceramic capacitor, please refer to Enclosed Switching Power Supply Application Notes for specific information. *Over-temperature Protection needs to be tested under rated full load conditions.						

General Specifications

Item		Operating Conditions	Min	Typ	Max.	Unit
Isolation	Input-Earth	Electric Strength Test for 1min, leakage current <10mA	2000	-	-	VAC
	Input-output	Electric Strength Test for 1min, leakage current <10mA	4000	-	-	
	Output-Earth	Electric Strength Test for 1min, leakage current <5mA	500	-	-	
Insulation Resistance	Input-Earth	500VDC, 25±5℃, Humidity < 95%RH, non-condensing 500VDC	100	-	-	MΩ
	Input-output		100	-	-	
	Output-Earth		100	-	-	
Operating Temperature			-30	-	+70	℃
Storage Temperature			-40	-	+85	
Storage Humidity		Non-condensing	10	-	95	%RH
Power Derating		-30℃ to +45℃	0	-	-	%/℃
		+45℃ to +70℃	2	-	-	
		85VAC-100VAC 50Hz	2	-	-	%/VAC
		120VDC - 140VDC	1.25	-	-	%/VDC
Altitude			-	-	5000	m
Safety Standard			Meet IEC/EN/UL62368/EN60335/GB4943			
Safety Certification			UL/EN/IEC6236 /GB4943			
Safety Class			CLASS I			
MTBF		MIL-HDBK-217F@25℃	＞250,000 h			

EMC Specifications

Emissions	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
	Harmonic Current	IEC/EN61000-3-2 CLASS D	
	Voltage Flicker	IEC/EN61000-3-3	
Immunity	ESD	IEC/EN 61000-4-2 Contact ±6KV /Air ±8KV	Perf. Criteria A
	RS	IEC/EN 61000-4-3 10V/m	Perf. Criteria A
	EFT	IEC/EN 61000-4-4 ±2KV	Perf. Criteria A
	Surge	IEC/EN 61000-4-5 ±1KV/±2KV	Perf. Criteria A
	CS	IEC/EN61000-4-6 10 Vrms	Perf. Criteria A
	DIP (AC input)	IEC/EN61000-4-11 0%, 70%	Perf. Criteria B

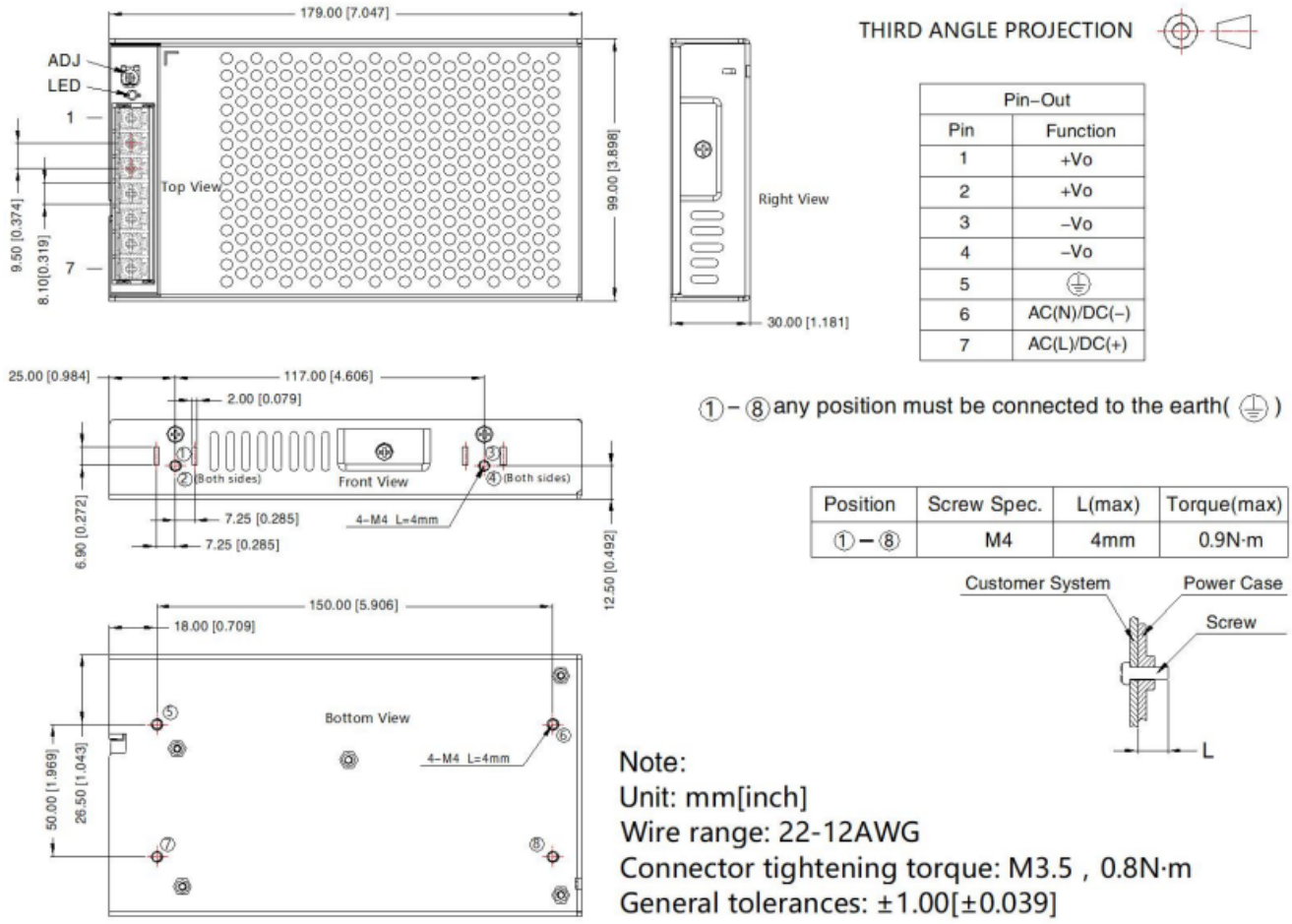
Note: 1.*One magnetic bead(nickel-zinc ferrite)should be coupled with the output load line during CE/RE testing. 2.*The power supply is considered a component as part of system, all EMC items are tested on a metal plate (LxWxH, 450mmx450mmx3mm). Power supply should be combined with final equipment for EMC confirmation.

Embedded Switch Mode Power Supplies (SMPS)

Mechanical Specifications

Case Material	Metal (AL1100)
Dimensions	179 x 99 x 30.0mm
Weight	475g (Typ.)
Cooling Method	Free air convection

Dimensions and recommended layout



Pin-Out	
Pin	Function
1	+Vo
2	+Vo
3	-Vo
4	-Vo
5	⏚
6	AC(N)/DC(-)
7	AC(L)/DC(+)

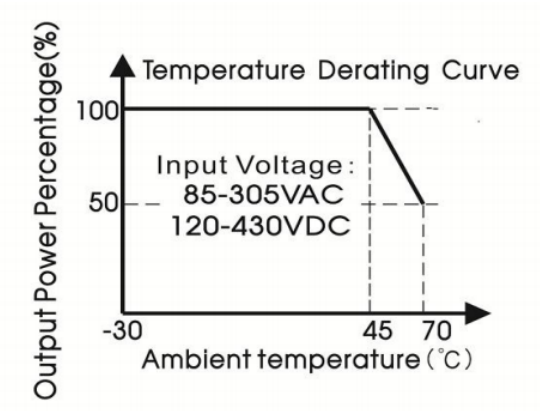
Position	Screw Spec.	L(max)	Torque(max)
①-⑧	M4	4mm	0.9N·m

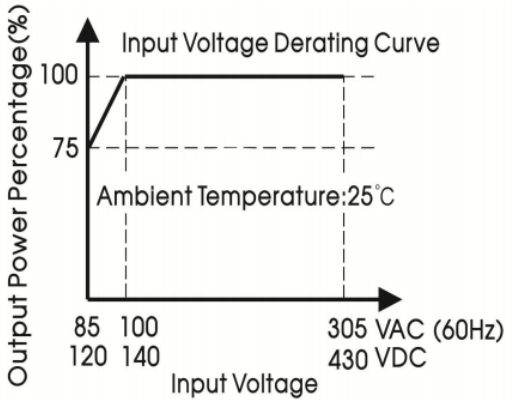
Note:
Unit: mm[inch]
Wire range: 22-12AWG
Connector tightening torque: M3.5 , 0.8N·m
General tolerances: ±1.00[±0.039]

Approvals

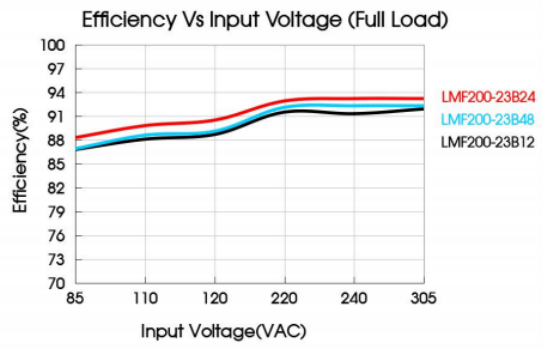
Safety Standard	Meet IEC/EN/UL62368/EN60335/GB4943
Safety Certification	IEC/EN/UL62368/GB4943
Safety Class	Class I (PE and must be connected)

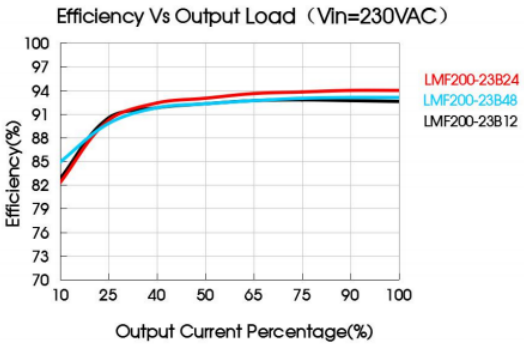
Product Characteric Curve





Note: ①With an input voltage between 85-100VAC and a DC input between 120-140VDC, the output power must be derated as per the temperature derating curves;
②This product is suitable for applications using natural air cooling; for applications in closed environment please consult Mornsun FAE.





Note:

1. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity.
2. All index testing methods in this datasheet are based on our company corporate standards.
3. 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. The out case needs to be connected to PE of system when the terminal equipment in operating.
6. Our products shall be classified according to ISO14001 and related environmental laws and regulations and shall be handled by qualified units.
7. The power supply is considered a component which will be installed into a terminal equipment. All EMC tests should be confirmed with the final equipment.