Premium
Powering Your Challenge

ARP-500

500W SINGLE OUTPUT AC/DC CONVERTER WITH PFC

GENERAL FEATURES:

- Universal AC input, 88 … 264Vac
- Active PFC, PFC >0.95
- Short-circuit, overload, over-voltage and over-temperature protection
- Built-in DC fan cooling
- Efficiency up to 90.5% @230Vac
- Remote ON/OFF control and remote sense
- -30 … +70°C (see derating curve)
- 2kVac input-output dielectric strength



3 YEAR WARRANTY INDUSTRY

ROHS REACH

Part number	Input voltage range [Vac]	Output voltage nom. [Vdc]	Output current max. [A]	Output power max. [W]
ARP-500-35417	88 … 264	12	41.7	500.4
ARP-500-35334	88 … 264	15	33.4	501
ARP-500-35210	88 … 264	24	21	504
ARP-500-35186	88 … 264	27	18.6	502.2
ARP-500-35105	88 … 264	48	10.5	504

Several references are subjected to special MOQs and lead times. Please consult Premium's Sales Dept. and web site.

INPUT	
Input voltage range	88 … 264Vac or 124 … 370Vdc
Input frequency range	47 … 63Hz
Power factor (typ.)	>0.95 @230Vac; >0.98 @115Vac (at full load)
Efficiency (typ.)	88 … 90.5% @230Vac (see Ordering Codes)
Input current (typ.)	6A @115Vac; 3A @230Vac
Inrush current (typ.)	20A @115Vac; 40A @230Vac
Leakage current	<2.5mA @240Vac
OUTPUT	
Rated output voltage	12 / 15 / 24 / 27 / 48Vdc
Output current range	0 … rated current per model (see Ordering Codes)
Rated output power	500.4 / 501 / 504 / 502.2 / 504W by model (see Ordering Codes)
Ripple and noise (max.)	150mVp-p (Note 2)
Output voltage adjustment range	Per model (see Ordering Codes)
Output voltage tolerance	±1.0% (Note 3)
Line regulation	±0.3% (12V, 15V); ±0.2% (24V, 27V, 48V)
Load regulation	±0.5%
Setup, rise time (at full load)	1500ms, 80ms @230Vac; 3000ms, 80ms @115Vac
Hold-up time (typ., at full load)	18ms @230Vac; 14ms @115Vac
ENVIRONMENTAL	
Operating temperature	-30 … +70°C (see Derating Curve)
Operating humidity	20 … 90% RH, non-condensing
Storage temperature / humidity	-40 … +85°C, 10 … 95% RH
Temperature coefficient	±0.03%/°C (0 … 50°C)
Vibration	10 … 500Hz, 2G, 10min/cycle, 60min each along X, Y, Z axes
RELIABILITY	
MTBF (MIL-HDBK-217F, 25°C)	≥187.7k h
SAFETY	
Safety standards	Designed to meet GB4943.1, EN 60950.1
Dielectric withstand voltage Input-Output	2kVac
Dielectric withstand voltage Input-FG	2kVac
Dielectric withstand voltage Output-FG	0.5kVac
Isolation resistance (I/P-O/P, I/P-FG, O/P-FG)	100MΩ @500Vdc, 25°C, 70% RH
EMC (DESIGNED TO MEET)	
Emission	EN61000-3-2:2014, EN61000-3-3:2013
Immunity	EN55032:2015, EN55035:2017, 60950-1
PROTECTIONS	
Overload	105 … 130% of rated output power; hiccup mode, automatic recovery after the fault condition is removed
Over-voltage (12V / 15V)	13.8 … 16.2V / 18.8 … 21.8V
Over-voltage (24V / 27V / 48V)	27.6 … 32.4V / 32.9 … 38.3V / 58.4 … 68V
Over-voltage action	Shuts down output voltage; re-power on to recover
Over-temperature	Shuts down output voltage; recovers automatically after the temperature goes down
CONTROL	
Remote control: power on	Open or 0 … 0.8Vdc, RC+ (pin 4) to RC- (pin 3), CN100
Remote control: power off	4 … 10Vdc, RC+ (pin 4) to RC- (pin 3), CN100
Remote sense	Compensates voltage drop on the load wiring up to 0.3V
Fan control (typ.)	RTH2 ≥50°C ±10°C: fan on; RTH2 ≤40°C ±10°C: fan off (fan always on for 3.3 … 5V; fan ON/OFF control for 12 … 48V)
Switching frequency	fosc 70kHz
MECHANICAL	
Dimensions (L x W x H)	230 x 127 x 40.5 mm

Packing	1.3kg; 9pcs / 12.7kg / 0.7CUFT
Cooling	Built-in DC fan

NOTES

Note 4	Derating may be needed under low input voltage. Please check the derating curve for more details.
Note 5	The power supply shall be regarded as a part of the components in the system. For all EMC tests, the test samples shall be installed on a metal iron plate with thickness of 1mm, length of 360mm * width of 360mm.
Note 5 (cont.)	The power supply shall be confirmed related to electromagnetic compatibility in combination with the terminal equipment.

ORDERING CODES

Part Number	Input range	Output voltage	Adjust range	Output current	Output power	Efficiency*
ARP-500-35417	**88-264Vac**	**12V**	**10-13.2V**	**41.7A**	**500.4W**	**88%**
ARP-500-35334	**88-264Vac**	**15V**	**13.5-18V**	**33.4A**	**501W**	**88%**
ARP-500-35210	**88-264Vac**	**24V**	**20-26.4V**	**21A**	**504W**	**89%**
ARP-500-35186	**88-264Vac**	**27V**	**26-30V**	**18.6A**	**502.2W**	**89.5%**
ARP-500-35105	**88-264Vac**	**48V**	**41-56V**	**10.5A**	**504W**	**90.5%**

* Typical. All parameters not specially mentioned are measured at 230Vac input, rated load and 25°C ambient temperature.

Several references are subjected to special MOQs and lead times. Please consult Premium's Sales Dept. and web site.

DESCRIPTION

The ARP-500 series is a 500W single-output AC/DC power supply with universal 88-264Vac input and active PFC. Five models cover output voltages from 12V to 48V, each with an output voltage adjustment range (see Ordering Codes).

Typical efficiency reaches up to 90.5% (48V model). The operating temperature range is -30°C to +70°C (see derating curve), with cooling by a built-in DC fan. Protections: short circuit, overload, over voltage and over temperature. Remote ON/OFF control and remote sense are available on connector CN100.

INSTALLATION

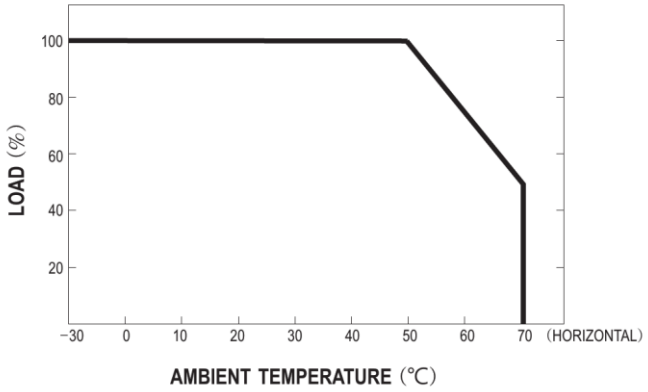
For safety reasons, the following requirements must be met:

- Provide the equipment with some kind of protective enclosure that complies with the electrical safety directives in effect within the country where the equipment is installed.
- Include a time-lag input fuse or a curve D circuit breaker with a rating immediately higher than the maximum input current.
- Use cables of adequate cross-section to connect inputs and outputs.

For the installation of the unit, the following must be adhered to:

- The unit must be installed at a secure location out of reach of the user, to prevent dangers such as accidental touching of HV components or skin burns on the hot housing.
- The unit should be installed at a dry location, safe from splashing water, dirt and stone chipping.
- The tightness of the unit can only be guaranteed if all signal wires to the signal connectors are assembled and connected to a tight unit on both sides. If this is not the case for a cable or wire, it must be sealed separately.
- The mechanical fixture is to be designed in such a way that the device is installed in a fixed position and with as little vibration as possible.
- All cable connections must be secured with strain relief elements near the device (not included in the scope of delivery).
- Cable connections must have sufficient play and must not meet sharp-edged components.
- The enclosure should be sufficiently ventilated (no heat accumulation).

POWER DERATING VS AMBIENT TEMPERATURE

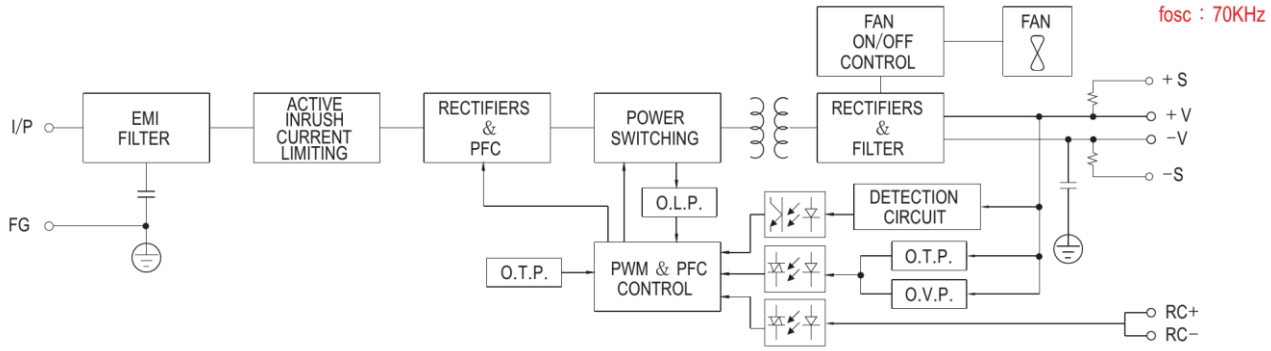


CONNECTIONS

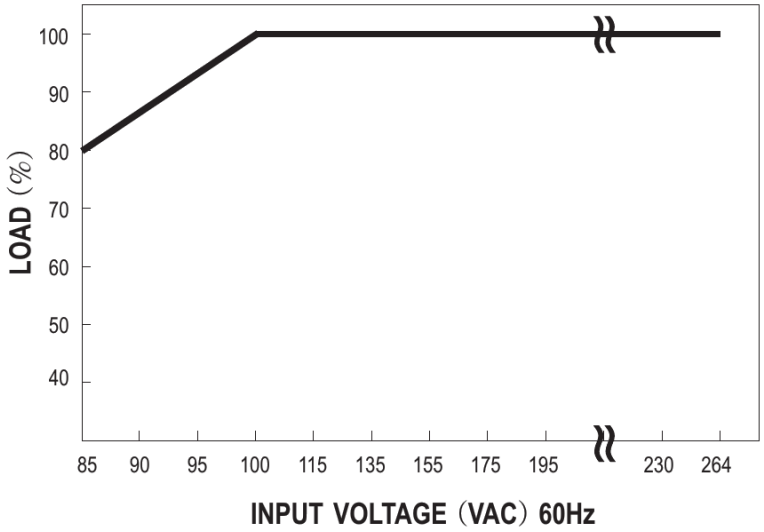
Pin	Mark	Description
AC input terminal (TB1)		
1	AC/L	AC line
2	AC/N	AC neutral
3	FG	Frame ground
DC output terminal (TB2)		
1 - 3	-V	DC output negative
4 - 6	+V	DC output positive
Connector CN100		
1	-S	Negative sensing
2	+S	Positive sensing
3	RC-	Return for RC+ signal input
4	RC+	Remote ON/OFF control
Adjustment		
-	SVR1 (+V ADJ.)	Output voltage potentiometer

See Dimensions for the position of terminals and connector.

BLOCK DIAGRAM



STATIC CHARACTERISTICS

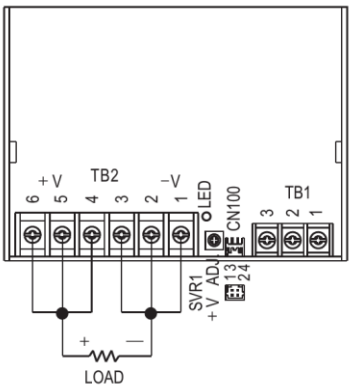


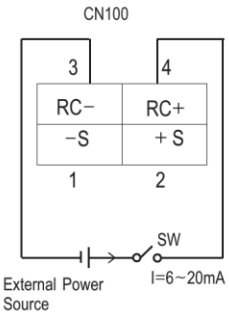
REMOTE CONTROL

1.Remote Control

The PSU can be turned ON/OFF by using the "Remote Control" function.

Between RC−(pin3) and RC+ (pin4) on CN100	PSU Status
SW OFF (0 ~ 0.8VDC) or open	ON
SW ON (4 ~ 10V)	OFF





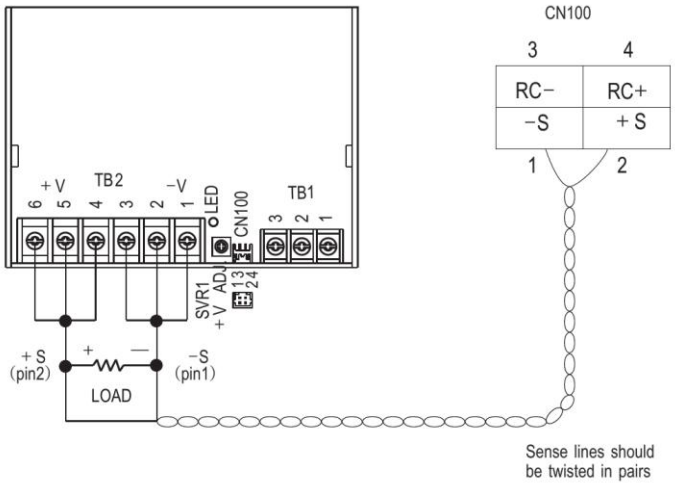
The PSU can be turned ON/OFF by using the Remote Control function.

Between RC- (pin 3) and RC+ (pin 4) on CN100: SW OFF (0 - 0.8Vdc) or open: PSU ON; SW ON (4 - 10V): PSU OFF.

External power source, I = 6 - 20mA.

REMOTE SENSE

The remote sensing compensates voltage drop on the load wiring up to 0.3V

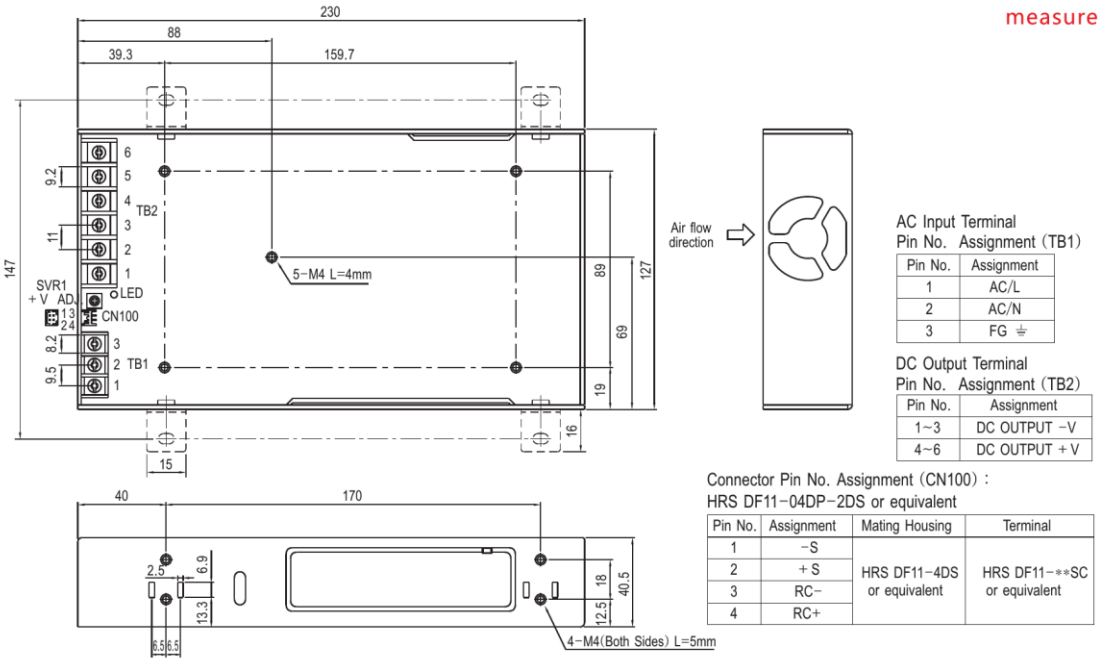


The remote sensing compensates voltage drop on the load wiring up to 0.3V.

-S (pin 1) should be connected to the negative terminal of the load and +S (pin 2) to the positive terminal of the load. The -S and +S leads should be twisted in pair to minimize noise pick-up effect.

DIMENSIONS

measurement unit : mm



AC Input Terminal
Pin No. Assignment (TB1)

Pin No.	Assignment
1	AC/L
2	AC/N
3	FG ⏚

DC Output Terminal
Pin No. Assignment (TB2)

Pin No.	Assignment
1~3	DC OUTPUT −V
4~6	DC OUTPUT +V

Connector Pin No. Assignment (CN100) :
HRS DF11-04DP-2DS or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	−S	HRS DF11-4DS or equivalent	HRS DF11-**SC or equivalent
2	+S		
3	RC−		
4	RC+		

WARRANTY AND GUARANTEE

The warranty corresponds to the regulations in our currently valid general terms and conditions.

INSTRUCTIONS REGARDING DISPOSAL

A basic requirement for the re-use and recycling of used electronic devices is their correct disposal. With the implementation of the electric and electronic device regulation, electronic devices may no longer be disposed of along with ordinary household waste but must be separately collected and recorded by a specialist service. Disposal through a specialist service significantly helps to avoid dangers to people and nature. Therefore, in the case of disposal, we recommend contacting a recognized specialist disposal service.

The product information and specifications may be subject to changes even without prior written notice. The product has been designed for various applications; its suitability lies in the responsibility of each customer. The products are not authorized for use in safety-critical applications without PREMIUM's explicit written consent. A safety-critical application is an application where a failure may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The applicant shall indemnify and hold harmless PREMIUM, its affiliated companies and its representatives against any damage claims in connection with the unauthorized use of PREMIUM products in such safety-critical applications.