



A0600-090-500 AC-DC POWER MODULE AC

Input: 90V to 264V, Single DC Output: 49V, 600W

Outline Product Specification

FEATURES

- ❑ High power density, 6.2W / in³
- ❑ Net Weight: <2.3 KG typ.
- ❑ Low profile : 40.8mm (fit 1U shelf)
- ❑ Efficiency: 80% ~ 85 % typical
- ❑ Power factor correction (meet IEC1000-3-2 requirements)
- ❑ Overvoltage & overcurrent protection
- ❑ Over-temperature warning & protection
- ❑ Remote On/Off
- ❑ Power fail warning and fault alarm

The Powerstax A0600 series of front-ends power modules is specifically designed to operate as an integral part of a complete distributed power system, with or without battery backup.

The flexible feature set makes this front- end power module an excellent choice for applications requiring modular AC-to-DC power systems such as distributed power and DC UPS.

Applications

- ✓ Advanced workstations
- ✓ Telecom / Datacom equipment
- ✓ Midrange computers
- ✓ Mainframes
- ✓ File servers
- ✓ LAN/WAN applications
- ✓ Mass storage



NB: This image shown right, is a generic to the range and the final item may be different.

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Input Specification

Parameter	Min	Typ	Max	Unit	Condition
Input voltage	90	-	264	Vac	750W max for under 90V AC input
Input Frequency	47	-	63	Hz	400Hz available with safety approvals. Consult APC for details
Inrush Current (peak)	-	-	50	A	
Power Factor	0.95	0.99*	-	-	≥ 50% of full load
Inout Leakage Current	-	-	1.7	mA	264Vac, 50Hz
Lighting Surge & Transients (damage free operation)	-	-	-	-	1) IEC1000-4-5 Level 3 2) IEC1000-4-4 Level 3
Hold Up Time	20	-	-	mS	At 600W
EMC (conducted)	-	-	-	-	CISPR22 Class B, EN55022 Class B, with 3dB margin

Line Harmonics

Active power-factor correction circuitry ensures that this power supply meets the requirements of IEC1000-3-2.

Efficiency and Power Factor vs. Input Voltage at full load

Input voltage	Efficiency (Typical)	Power Factor (Typical)
90Vac	80%	0.99
100Vac	81%	0.99
110Vac	82%	0.99
120Vac	83%	0.99
180Vac	84%	0.98
220Vac	85%	0.98
240Vac	85%	0.98
264Vac	85%	0.97

Notes:

The efficiency is only for preliminary reference. To define the value by measure on the first proto-type.
 When using this table to calculate line cord requirements, allow, at a minimum, an extra 3% for variations between units.
 Actual measured results will depend upon the harmonic content of the input voltage waveform.



Output Specification

Parameter	Min	Typ	Max	Unit	Note
Vo Set Point	--	49.0	--	Vdc	
Regulation (line, load, temperature, and set point)	-2.0	--	2.0	%	Measured at power supply output terminal.
Io(rated)	0.5	--	12.24	Adc	600 W maximum.
Ripple (20 MHz bandwidth)	--	--	150	mVp-p	Under any load condition.
Noise (20 MHz bandwidth)	--	--	300	mVp-p	
Transmission Noise (C message)	--	--	45	dBrc	
Output Rise Time	10	--	100	ms	Rise from 10% to 90% of final output level (resistive load)
Overvoltage Protection	--	--	64	Vdc	Reset by cycling ac input or remote On/Off.
Output Current Limit (Steady state)	--	--	18	Adc	See figure 2.
Transient Response Voltage range	-2.0	--	2.0	%	25% step load transient with a slew rate 0.1A/us within the range from 25% to 75% of full load
Efficiency	80	81		%	At full load, 120Vac, with Oring diode.
	83	85		%	At full load, 264Vac, with Oring diode.
Reverse Output Current Protection	--	--	--	--	ORing diode.
Start up Delay	--	1.3	2	s	Measured from application of valid ac voltage.
Turn on Delay	--	--	250	ms	Measured from DC on/off.



Characteristic Curves

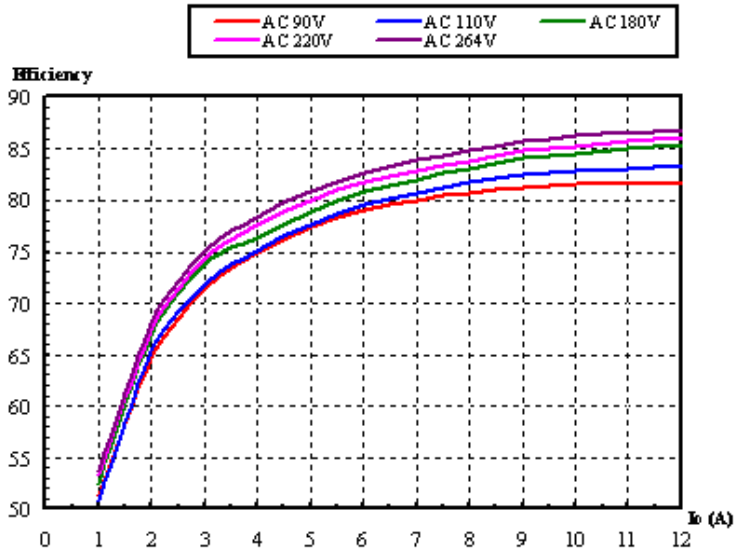


Figure 1. Efficiency vs. output current at different input voltage

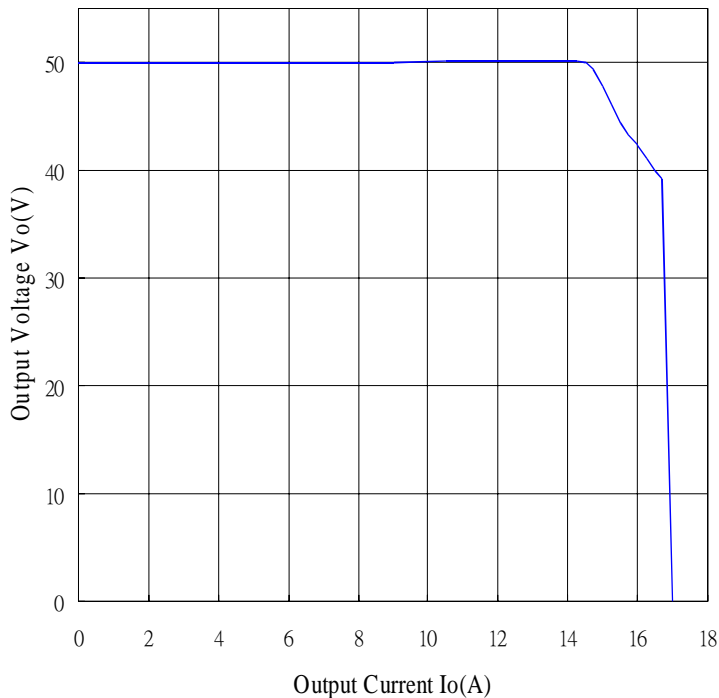


Figure 2. Output Voltage vs. Output Current



Characteristic Curves

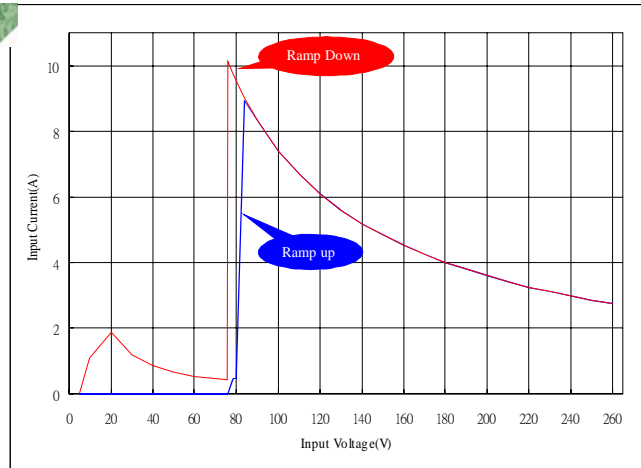


Figure 3. Typical input current vs. input voltage at full load.

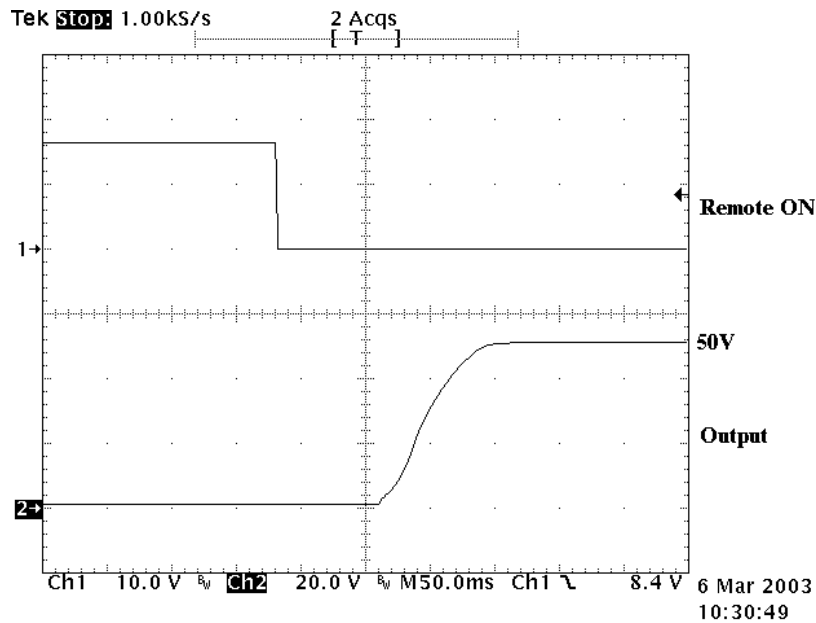
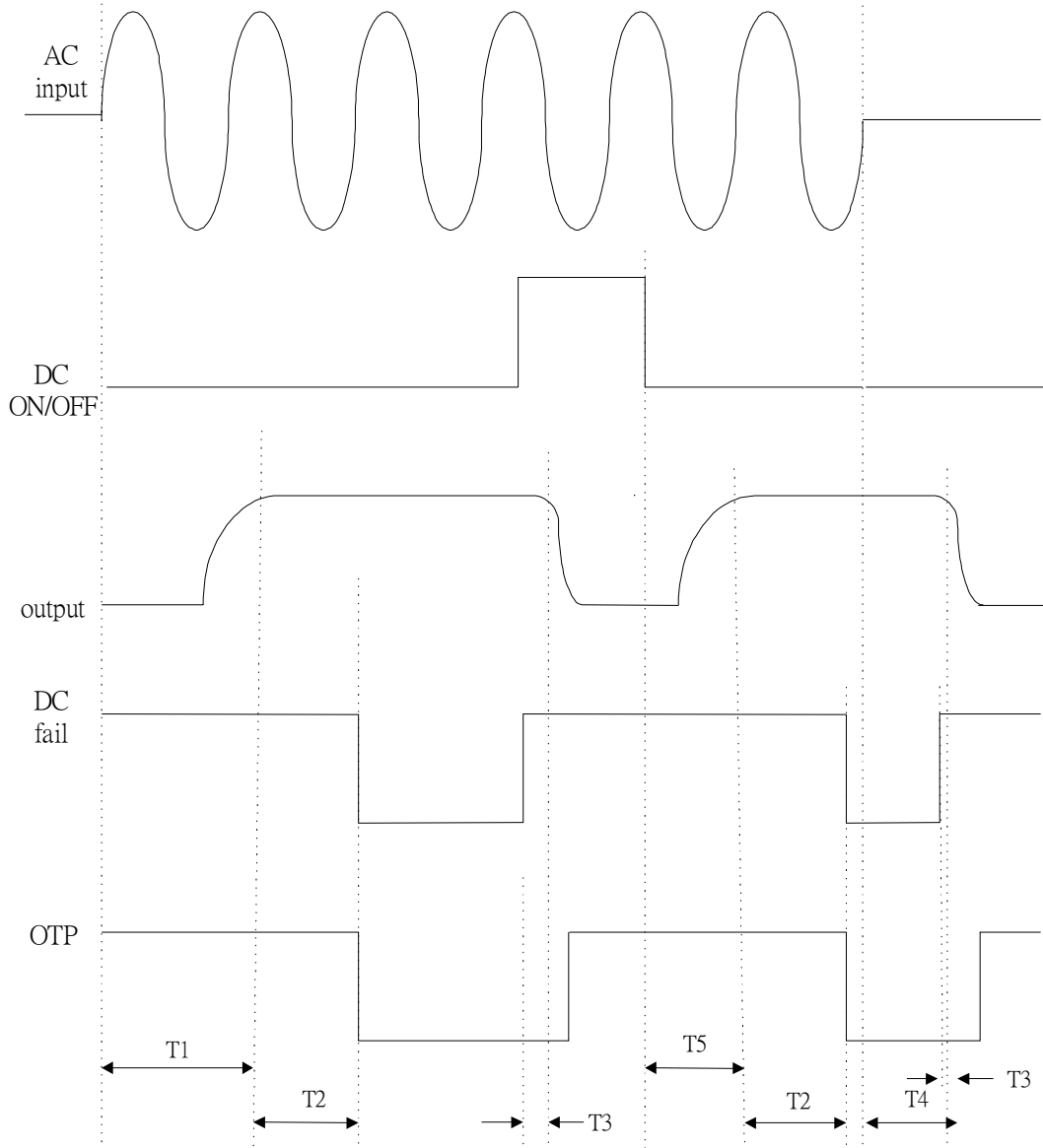


Figure 4. Typical turn-on timing at 25°C , 90Vac input when signal is applied to remote On/Off pin.

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Timing Charts



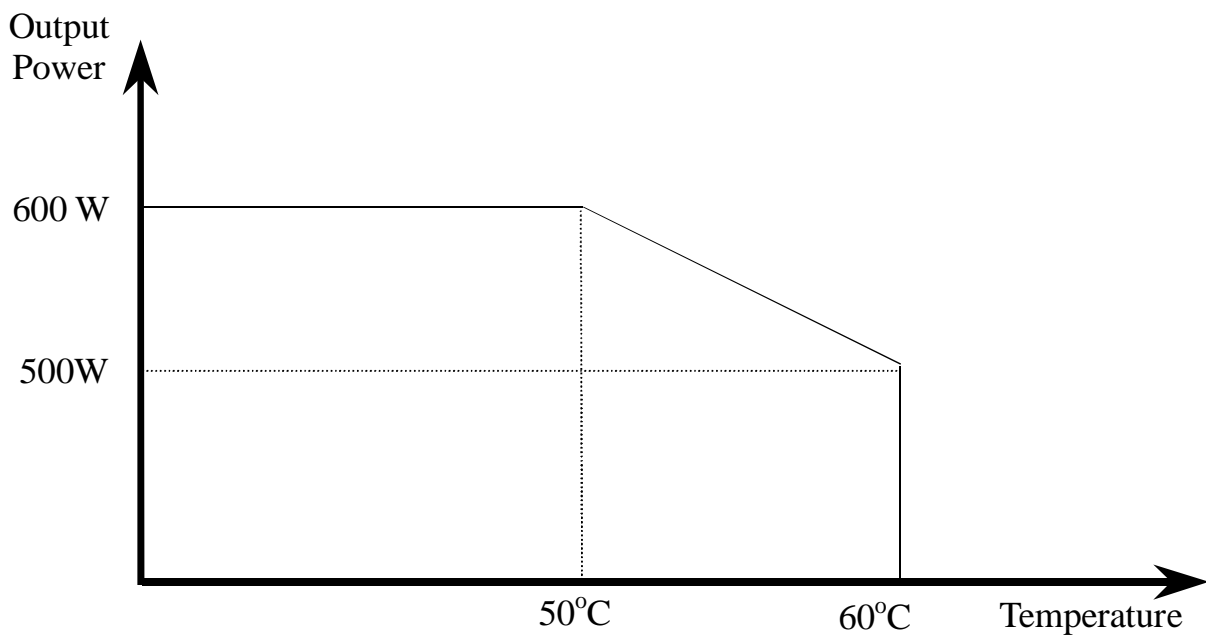
	T1	T2	T3	T4	T5
	Start up delay			Hold up time	Turn on delay
Min.		200	1	20*	
Typ.	1300	270			
Max.	2000	600	4		250
Units	mS	mS	mS	mS	mS



Environmental Characteristics

Parameter	Min	Typ	Max	Unit	Note
Storage Temperature	-40	--	85	°C	--
Operating Temperature (note 1)	0	--	60	°C	
Acoustics	--	47	52	dBa	Sound pressure level at 1m.
Humidity (Non-condensing)	5	--	95	%	--
Altitude	-200	--	13,000	Feet	Derate at 2% /1000 ft. above 8000 ft.
ESD					
Air Discharge	--	--	±8	KV	IEC1000-4-2. Performance B.
Contact Discharge			±4		
Surge					
Line to Line	--	--	±1	KV	IEC1000-4-5. Performance B.
Line to Earth			±2		
Isolation voltage	3000			VAC	Primary to secondary
	1500				Primary to chassis GND
	1500				Secondary to chassis GND
Vibration					Meet IEC68-2-6
Shock					Meet IEC68-2-36
MTBF	4x10 ⁵	--	--	hours	@110V Input 80% Load, T _A =30°
Weight	--	--	2.3	Kg	

Note 1 : Operation Derating Curve





Power Module Interfaces

Input Voltage

The product can be used with any standard global line voltage; consult Powerstax for any particular regional application concerns.

Input / Output Connector

The inputs are two wires with terminal.

The output connector is Mini Fit Molex P/N 39-00-0059 or equivalent.

AC Connector Pin Assignment

Terminals	FASTON AMP P/N : 2-520405-2 or equivalent
Wire Length	15cm (Double insulated wire)

Wire Name	Colour
Line	Black
Neutral	White

Note : Power supply FG is connected to power supply case.

DC Connector Pin Assignment

Please refer to “ Definition of Terms “ for detailed description for each pin

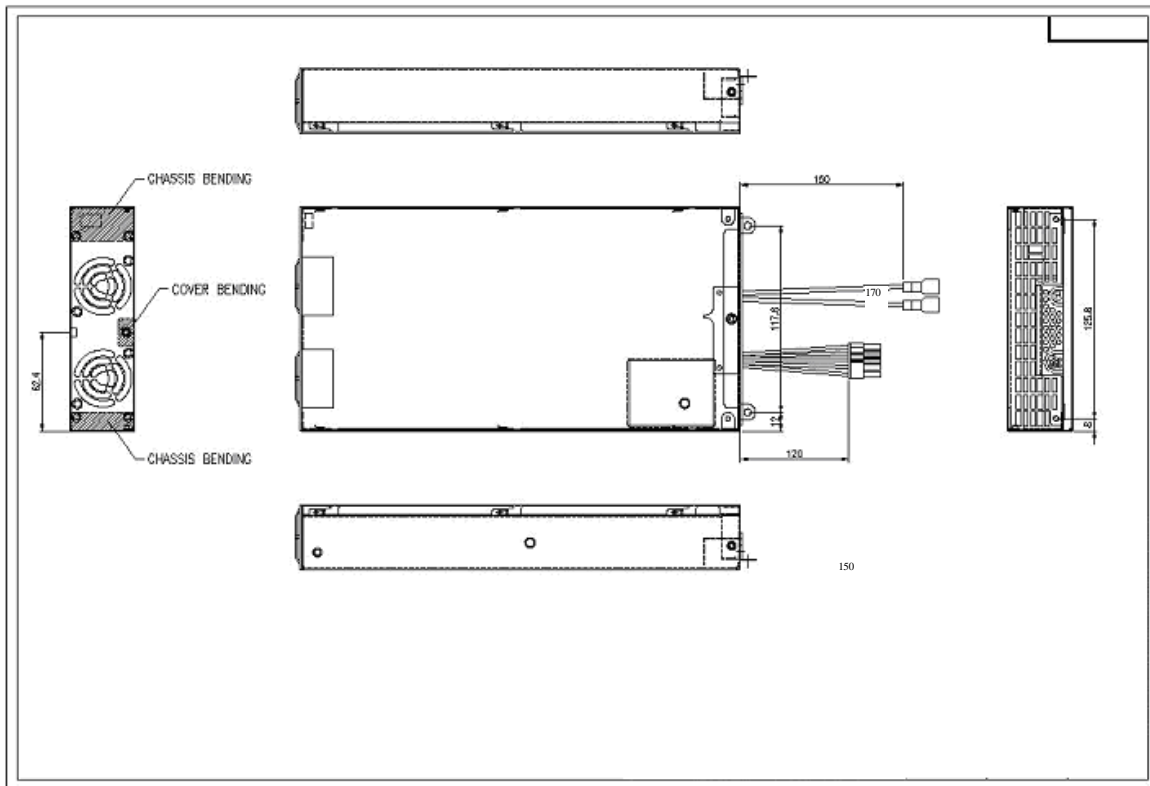
Connector	Molex 39-01-2105 or equivalent
Terminal	Molex 39-00-0039 or equivalent
Wire length	12cm

Pin Number	Pin Name	Wire Size	Color
1	Positive 48V	18	RED
2	Positive 48V	18	RED
3	Negative 48V	18	BLACK
4	ON/OFF	22	BLUE
5	OTP	22	YELLOW
6	Positive 48V	18	RED
7	Negative 48V	18	BLACK
8	Negative 48V	18	BLACK
9	RTN (GND)	22	BROWN
10	DC Fail	22	ORANGE

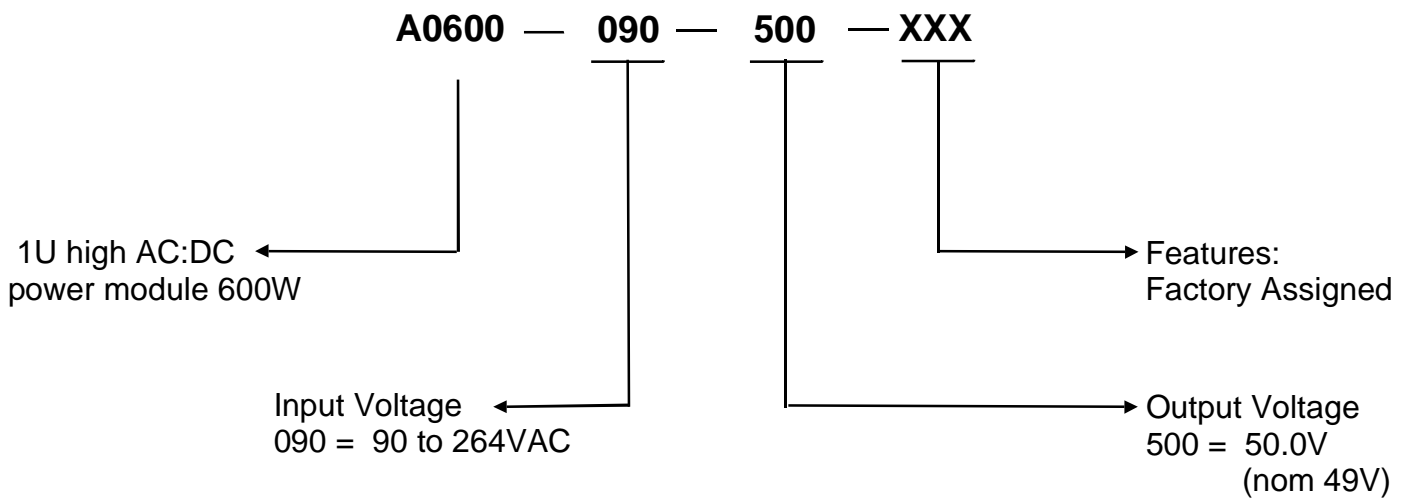


Mechanical Outline

Dimensions are in millimetres (inches).



Model Reference Guide





Definition of Terms

AC Line Discrimination

The unit senses the input line range at power up and shuts the unit down if the input drops below the line range for a specified period of time.

Input Overcurrent Protection

An internal fuse is provided for input protection in compliance with safety agency requirements.

Overcurrent Protection

In the event of an overload condition, the power supply limits the output current.

Overvoltage Protection

The power unit turns itself off before the output voltage reaches the OVP threshold.

Overtemperature Protection

In the event of an overtemperature condition, the power unit protects itself by shutting off, restarts automatically after cooling down.

Positive 48V

Output Voltage +.

Negative 48V

Output Voltage -.

ORing Diode

A diode at the output of the power unit protects the DC bus during a power supply failure or hot plugging of the power unit.

RTN (GND)

Reference of status signal.

On/Off

This is an input signal referenced to the negative output. Shorting this signal to the negative output will turn on the power unit.

Status Signals

The following are the optically isolated open-collector signals, and tested in 600W condition:

DC FAIL: This signal indicates the output fail. It becomes low with a turn on delay of 100 to 500mS after the output voltage reaches in the regulation window. It will go to a high level at least 1mS before output voltage runs out of regulation window.

OTP: This signal indicates fan fail or over temperature. It becomes low with a turn on delay of 100 to 500mS after the output voltage reaches in the regulation window. It will go to a high level 200mS before the unit shuts down if a fan fail or over temperature is sensed.

The logic low level is lower than 0.6V with the sink current of the photo-transistor less than 1mA.