

**JASPER  
ELECTRONICS**



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# JBPA-R950-560-120A

**Dual Output 950W**



*JBPA SERIES FRONT VIEW*

**GENERAL OVERVIEW**

The JBPA-R950-560-120A is a highly reliable, 950W, AC to DC, dual output, redundant / removable power supply module. With a full range input of 90-264VAC, the power supply achieves the highest performance and efficiency by incorporating CCM PFC and half bridge resonance with synchronized rectification.

**SPECIAL FEATURES:**

- Compact Size of 39.6 x 101.6 x 152.4 mm
- High efficiency up to 93.5%
- Active Power Factor Correction
- 56V Output Isolated from 12V Output & Ground
- Wide input voltage range: 90 – 264VAC
- Redundant operation
- Hot insertion/removal (hot plug)
- Single wire current sharing
- Fully secure(OTP, OVP, OCP, SCP)
- LEDs Status :OK, Fault
- P\_OK, PG\_56, PS\_ON
- CE Compliant
- RoHS Compliant
- Three Year Warranty
- Approved to latest edition of the following Safety Standards: UL/cUL 60950-1 and 62368-1, and DEMKO
- Custom modifications available

**APPLICATIONS**

- Switches (POE)
- Telecommunication
- Industrial Application

TOTAL POWER	INPUT VOLTAGE	OUTPUT VOLTAGE	MINIMUM	MAXIMUM
950W	90-264 VAC	56V	0A	14A
		12V	0A	16.7A



ISO9001:2015

American Systems REGISTRAR

Rev A-February-17-2024

## TECHNICAL SPECIFICATIONS

INPUT					
Parameter	Description/ Condition	Min	Nom	Max	Units
$V_{i\ nom}$	Nominal Input Voltage	100		240	VAC
$V_i$	Input Voltage Ranges	Normal Operating ( $V_{min}$ to $V_{max}$ )		264	VAC
$I_{i\ max}$	Max Input Current	$V_{in} = 90VAC/60HZ, Full Load$		12.5	$A_{rms}$
$I_{i\ p}$	Inrush Current	$264V_{rms}, 25^{\circ}C$		32	$A_p$
	Leakage Current			1.8	mA
$F_i$	Input Frequency	47	50/60	63	Hz
PF	Power Factor	$V_{in} = 230V/50Hz$		0.99	W/VA
$V_{i\ on}$	Turn-On Voltage	Ramping Up		89	VAC
$V_{i\ off}$	Turn-Off Voltage	Ramping Down			VAC
$Power_i$	Input Power	$V_{in} = 90VAC-264VAC Full Load$		1150	W
		$V_{in} = 230V, 56V/2.8A, 12V /3.34A, T_A = 25^{\circ}C$		88	
$\eta$	Efficiency without Fan	$V_{in} = 230V, 56V/7.0A, 12V /8.35A, T_A = 25^{\circ}C$		92	%
		$V_{in} = 230V, 56V/214A, 12V /16.7A, T_A = 25^{\circ}C$		93	
$T_{hold}$	Hold-up Time	15			ms

\*Specifications subject to change without notice.

### 1.1 INPUT FUSE

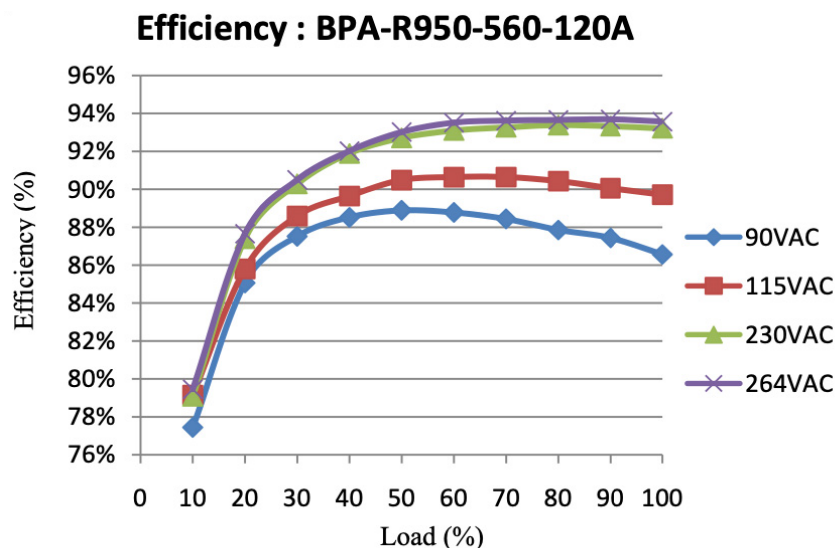
An internal 12.5A input fuse, in series with the input line, protects against severe defects.

### 1.2 INRUSH CURRENT

When the power supply module is connected to the main input, it exhibits a low and short peak current due to an X-capacitances initial charge. The internal bulk capacitor is charged through a controlled NTC circuit which will limit the inrush current.

### 1.3 INPUT FACTOR CORRECTION

Power factor correction (PFC) is achieved by controlling the input current waveform synchronous with the input voltage and this provides outstanding PFC results over wide input voltage and load ranges.



## TECHNICAL SPECIFICATIONS

OUTPUT					
Parameter	Description/ Condition	Min	Nom	Max	Units
<b>56V Main Output <math>V_1</math></b>					
$V_{1\text{nom}}$	Nominal Output Voltage	$0.5 \cdot I_{1\text{nom}}, T_{\text{amb}} = 25^\circ\text{C}$		56.00.1	Vdc
$V_{1\text{set}}$	Output Setpoint Accuracy	$0.5 \cdot I_{1\text{nom}}, T_{\text{amb}} = 25^\circ\text{C}$	-0.02		$V_1$
$P_{1\text{nom}}$	Nominal Output Power	$V_1 = 56 V_{\text{DC}}$		784	W
$I_{1\text{nom}}$	Nominal Output Current	$V_1 = 56 V_{\text{DC}}$		14	$A_{\text{DC}}$
$V_{1\text{pp}}$	Output Ripple Voltage	$V_{1\text{nom}}, I_{1\text{nom}}, 20\text{MHz BW}$		280	$\text{mV}_{\text{pp}}$
$Dv_{1\text{Load}}$	Load Regulation	$V_i = V_{1\text{nom}}, 0 - 100\% I_{1\text{nom}}$	-1	1	%V
$Dv_{1\text{Line}}$	Line Regulation	$V_i = V_{i\text{min}} \dots V_{i\text{max}}$	-0.2	0.2	%V
$Dv_{1\text{tot}}$	Total Regulation	$V_{i\text{min}} \text{ to } V_{i\text{max}}, 0 \text{ to } 100\% I_{1\text{nom}}, T_{a\text{min}} \text{ to } T_{a\text{max}}$	-1	1	% $V_1$
$DI_{\text{share}}$	Current Sharing	when Bus load $\geq$ (20%)	-5	5	%A
$DI_{\text{share}}$	Current Sharing	when Bus load $<$ (20%)	-10	10	%A
$Dv_{\text{dyn}}$	Dynamic Load Regulation	$I_{\text{out}} : 10\% - 60\% \text{ of full load}; 50 - 100\% \text{ of full load}$	-2	2	%V
$T_{\text{rec}}$	Recovery Time	$di_1/dt = 1\text{A}/\mu\text{s}$ , recovery within 1% of $V_{1\text{nom}}$		1	ms
$t_{\text{ACV1}}$	Start-Up Time from AC	Varies with Input Line		2	sec
$tV_{1\text{rise}}$	Rise Time	$V_1 = 10\% \dots 90\% V_{1\text{nom}}$		12	ms
$C_{\text{Load}}$	Capacitive Loading	$T_{\text{amb}} = 25^\circ\text{C}$		36000	$\mu\text{F}$
<b>12V Output <math>V_2</math></b>					
$V_2$	Nominal Output Voltage	$0.5 \cdot I_{1\text{nom}}, T_{\text{amb}} = 25^\circ\text{C}$		12.00	Vdc
$V_{2\text{set}}$	Output Setpoint Accuracy	$0.5 \cdot I_{1\text{nom}}, T_{\text{amb}} = 25^\circ\text{C}$	-0.02	.02	$V_{\text{SB}}$
$P_{2\text{nom}}$	Nominal Output Power	$V_2 = 12 V_{\text{DC}}$		200	W
$I_{2\text{nom}}$	Nominal Output Current	$V_2 = 12 V_{\text{DC}}$		16.7	$A_{\text{DC}}$
$V_{2\text{pp}}$	Output Ripple Voltage	$V_{2,2}, 20\text{MHz BW}$		120	$\text{mV}_{\text{pp}}$
$Dv_{2\text{Load}}$	Load Regulation	$V_i = V_{1\text{nom}}, 0 - 100\% I_{1\text{nom}}$	-1	1	%V
$Dv_{2\text{Line}}$	Line Regulation	$V_i = V_{i\text{min}} \dots V_{i\text{max}}$	-0.2	0.2	%V
$dV_{2\text{tot}}$	Total Regulation	$V_{i\text{min}} \text{ to } V_{i\text{max}}, 0 \text{ to } 100\% I_{2\text{nom}}, T_{a\text{min}} \text{ to } T_{a\text{max}}$	-1	1	%V
$DI_{\text{share}}$	Current Sharing	when Bus load $\geq$ (20%)	-5	5	%A
$DI_{\text{share}}$	Current Sharing	when Bus load $<$ (20%)	-10	10	%A
$Dv_{2\text{dyn}}$	Dynamic Load Regulation	$\Delta I_2 : 50\% I_{\text{SB nom}}, I_{\text{SB}} 5 \dots 100\% I_{\text{SB nom}}$	-2%	2%	%V
$T_{\text{rec}}$	Recovery Time	$di_1/dt = 1\text{A}/\mu\text{s}$ , recovery within 1% of $V_{\text{SB nom}}$		1	$\mu\text{s}$
$t_{\text{ACV2}}$	Start-Up Time from AC	Varies with Input Line		2	sec
$tV_{2\text{rise}}$	Rise Time	$V_{\text{SB}} = 10\% \dots 90\% V_{\text{SB nom}}$		20	ms
$C_{\text{Load}}$	Capacitive Loading	$T_{\text{amb}} = 25^\circ\text{C}$		360000	$\mu\text{F}$

\*Specifications subject to change without notice.

### 2.1. OUTPUT VOLTAGE RIPPLE

Ripple and noise are measured with 0.1 $\mu\text{F}$  of ceramic capacitance and 10  $\mu\text{F}$  of tantalum capacitance on each of the outputs

PROTECTION					
Parameter	Description/ Condition	Min	Nom	Max	Units
F <sub>1</sub>	Input Fuse	Not User Accessible	12.5		A
V <sub>1OV</sub>	Over Voltage Threshold V <sub>1</sub>	58.0		60.0	Vdc
t <sub>OVV1</sub>	Over Voltage Latch Off Time V <sub>1</sub>			1	ms
V <sub>2OV</sub>	Over Voltage Threshold V <sub>2</sub>	13.2		14.4	Vdc
t <sub>OVV2</sub>	Over Voltage Latch Off Time V <sub>SB</sub>			1	ms
I <sub>V1 lim</sub>	Current Limit	Hiccup	15.3	23	A
I <sub>V1 lim</sub>	Current Limit	Latch Off	23		A
I <sub>V2 lim</sub>	Current Limit	Latch Off	18,5		A
T <sub>V2</sub>	Latch Off Time		3	5	s
V <sub>1SC Max</sub>	Short Circuit Current V <sub>1</sub>	V <sub>1</sub> < 3V		80	A
t <sub>V1 SC off</sub>	Short Circuit Latch Off Time	Time to latch off when in Short Circuit	3	5	s
V <sub>2SC Max</sub>	Short Circuit Current V <sub>1</sub>	V <sub>1</sub> < 3V		80	A
t <sub>V2 SC off</sub>	Short Circuit Latch Off Time	Time to latch off when in Short Circuit	3	5	s
T <sub>SD</sub>	Over Temperature Protection	Internal Temperature	90	100	°C

\*Specifications subject to change without notice.

### 3.1 OVERVOLTAGE PROTECTION

The power supply module will shut down if the output voltage exceeds the over voltage threshold. The power supply module must be manually repowered by recycling AC Source, by toggle PS\_ON, or Pmbus™ operation command.

### 3.2 UNDERVOLTAGE PROTECTION

The power supply module will shut down after 3 sec if the output voltage falls more than 10% under the rated output voltage. The power supply module must be manually repowered by recycling AC Source for a minimum of 30 sec or by toggle PS\_ON.

### 3.3 OVERLOAD PROTECTION

Hiccup/ Latch for the V1 Output and constant current latch for the V2 output. The power supply will latch off after 3 sec. The power supply module must be manually repowered by recycling AC Source for a minimum of 30 sec or by toggle PS\_ON.

### 3.4 SHORT-CIRCUIT PROTECTION

Latching method on the V1 and V2 output. The power supply module must be manually repowered by recycling AC Source for a minimum of 30 sec or by toggle PS\_ON.

### 3.5 OVER TEMPERATURE PROTECTION

The power supply module will shut down if temperature exceeds the over temperature threshold (internal temperature).

The power supply module must be manually repowered by recycling AC Source for a minimum of 30 sec or by toggle PS\_ON.

SAFETY/ APPROVAL				
Parameter	Description/ Condition	Min	Max	Units
Agency Approvals	Approved to the latest edition of the following standards: UL/cUL 62368-1 2nd ed, Demko IEC/EN 62368-1 2nd ed, Demko		Approved By independent Body	
Isolation Strength	Input(L/N) to case (PE)	1500	Basic	Vrms
	Input (L/N) to output	3000	Reinforced	Vrms
	V1 to V2	1500	Basic	Vrms
	V1 to Case (PE)	1500	Basic	Vrms
Electrical Strength Test	Input to Case	2121		VDC
	Input to Output	4242		VDC

ELECTROMAGNETIC COMPATIBILITY		
Parameter	Description/ Condition	Criterion
ESD Contact Discharge	IEC/EN61000-4-2, Level 2 ±4kV	A
Radiated Electromagnetic Field	IEC/EN61000-4-3,Level 2 (3V/m) 80-1000MHz, 1.4-2.0GHz, A Level 1 (1V/m) 2.0-2.7GHz	A A
Electrical Fast Transients/ Burst	IEC/EN61000-4-4,level 2 AC port ±1kV,1 minute	A
Surge	IEC/EN61000-4-5, Level 2 AC port± 1kV,1 min CM, Level 3 AC port ± 2kV,1 min CM	A A
RF Conducted Immunity	IEC/EN 61000-4-6,Level 2, 3 V,CW,0.15 ... 80MHz Amplitude Modulation 1kHz/80%	A
Magnetic Field Immunity	IEC/EN 61000-4-8,Level 2 3A/m	A
Voltage Dips and Interruptions	IEC/EN61000-4-11 1.0% residual voltage, 0.5 cycle 2.0% residual voltage, 1 cycle 3.40% residual voltage, 5 cycles 4.70% residual voltage, 0.5 cycle 5.70% residual voltage, 25 cycles/50Hz 6.0% residual voltage, 250 cycles/50Hz	A B B A B B

\*Specifications subject to change without notice.

EMISSION		
Parameter	Description/ Condition	Criterion
Conducted Emissions	EN 55032 / EN 55016-2-1 conducted	Class B
Radiated Emission	EN 55032 / EN 55016-2-3 radiated	Class B
Harmonics Emission	IEC61000-3-2,V <sub>in</sub> =230VAC/50Hz,100% Load	Class A
	46dB at 1 meter, 25 C , 50% Load	—
AC Flicker	IEC61000-3-3,V <sub>in</sub> =230VAC/50Hz,100% Load,<20Arms	Pass

\*Specifications subject to change without notice.

ENVIRONMENTAL					
Parameter	Description/ Condition	Min	Nom	Max	Units
T <sub>A</sub> Ambient Temperature	V <sub>i min</sub> to V <sub>i max,I1 nom,I5B nom</sub>	-20		70	°C
T <sub>S</sub> Storage Temperature	Non-Operational	-40		85	°C
Altitude	Operational, Above Sea Level		5000 16400		Meter Feet
RH Humidity	Non-Condensing	5		95	%
NA Audible Noise	V <sub>i nom</sub> , 50% I <sub>o nom</sub> , T <sub>a</sub> =25°C		0		dBa

\*Specifications subject to change without notice.

\*Derating linearly from 51° -70°C @ 50% load.

SIGNALS AND CONTROLS						
Parameter		Min	Nom	Max	Units	
<b>PS_ON</b>						
V <sub>IL</sub>	Input Low Level Voltage	0		0.8	V	
V <sub>IH</sub>	Input High Level Voltage	2.4		3.6	V	
<b>P_OK</b>						
V <sub>IL</sub>	Input Low Level Voltage	0		0.8	V	
V <sub>IH</sub>	Input High Level Voltage	2.4		3.6	V	
<b>SCL/SDA</b>						
V <sub>IL</sub>	Input Low Level Voltage	0		0.8	V	
V <sub>IH</sub>	Input High Level Voltage	2.4		3.3	V	
V <sub>IL,H</sub>	Maximum Input Sink or Source Current			0.25	mA	
R <sub>puSCL</sub>	Internal Pull Up Resistor on SCL		6.8		kΩ	
R <sub>puSDA</sub>	Internal Pull Up Resistor on SDA		16.8		kΩ	
<b>A0</b>						
V <sub>IL</sub>	Input Low Level Voltage	0		0.8	V	
V <sub>IH</sub>	Input High Level Voltage	2.4		3.3	V	
R <sub>puA0</sub>	Internal Pull Up Resistor on A0		4.7		kΩ	
<b>PS_PRE</b>						
R <sub>puPS_Pre</sub>	Internal Resistor to COM		0		Ω	
<b>PG_56</b>						
V <sub>IH</sub>	Input High Voltage PG_56 (Voltage Divider from 56V)		5.1		V	

\*Specifications subject to change without notice.

## 7.2 PS\_ON

The PS\_ON signal is used to remotely enable/disable both outputs of the front-end. This active-low pin is also used to clear any latched fault condition.

## 7.3 PS\_PRESENT

The PS\_Present signal is internally connected to COM. This active-low signal is used to indicate to a power distribution unit controller that the power supply module is fully engaged.

## 7.4 P\_OK

The P\_OK provides a 3.3V signal with an active-high when the AC input voltage is above 88VAC and both outputs are in regulation.

## 7.5 PG\_56

The PG\_56 signal uses a voltage divider (30k/3k) from V1 output to approximately provide 9.1% of the rated output voltage.

### 7.6.1 CURRENT SHARE (56VCS)

When used in a redundant configuration, all the current share pins need to be interconnected in order to activate the sharing function. If a supply has an internal fault or is not turned on, the current share line will automatically disengage from the bus.

### 7.6.2 CURRENT SHARE (12VCS)

When used in a redundant configuration, all the current share pins need to be interconnected in order to activate the sharing function. If a supply has an internal fault or is not turned on, the current share line will automatically disengage from the bus.

If current share is not required the current share pin can be left open.

## 7.7.1 REMOTE SENSE (+56 AND -56)

The main output incorporates sense lines to compensate for voltage drop across the load line.

1. (+) Sense connects to the positive rail of the equipment used. Maximum voltage drop of 200mV.
2. (-) Sense connects to the negative rail of the equipment used. Maximum voltage drop of 200mV.

## 7.7.2 REMOTE SENSE (+12VS AND -12VS)

The main output incorporates sense lines to compensate for voltage drop across the load line.

1. (+) Sense connects to the positive rail of the equipment used. Maximum voltage drop of 200mV.
2. (-) Sense connects to the negative rail of the equipment used. Maximum voltage drop of 200mV.

If remote sense is not required the (+) Sense and (-) Sense pins can be left open.

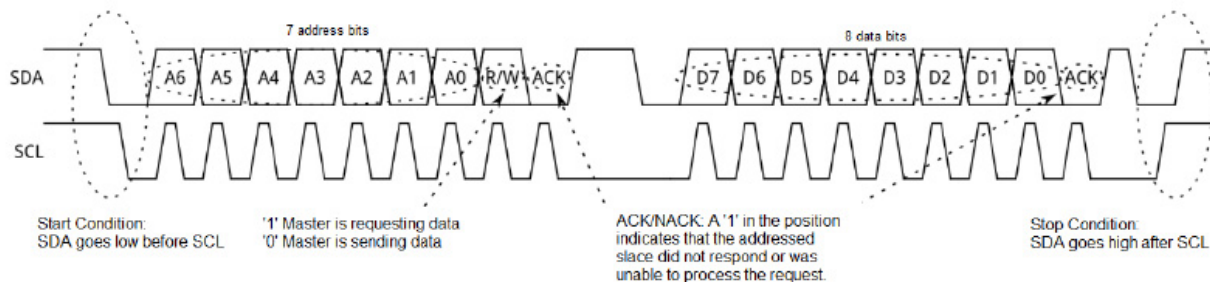
CONNECTOR LED1 (REQUIRES LED)			
Power Supply Condition	Green LED	Yellow LED	P_OK
Normal Operation	On	Off	High
<i>PSU Faults Condition*</i>			
Input UnderVoltage	Off	On	Low
Output OverVoltage	Off	On	Low
Over Temperature	Off	On	Low
Output Over Current	Off	On	Low

*\*Specifications subject to change without notice.*

\*For Faults the power supply module must be manually repowered by recycling AC Source for a minimum of 30sec or by toggle PS\_ON.

## 7.9 SDA & SCL

The I<sup>2</sup>C bus consist of a Serial Clock (SCL) and a Serial Data Line (SDA). Both signals lines are pull up internally to 3.3V bus via 6.8k ohm resistors, if customer requires stronger pull up resistors, it is possible to install additional pull up resistors in the customer's backplane.

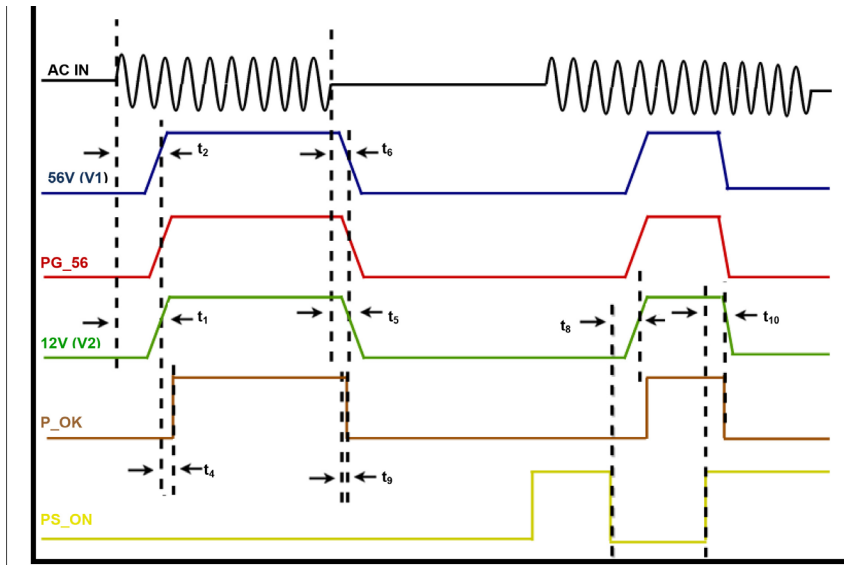


## 7.10 ADDRESS SELECT (A0)

These digital input lines are used to set the address of the power supply module. These addresses are used to differentiate between multiple power supply modules utilize in a redundant mode within the same system.

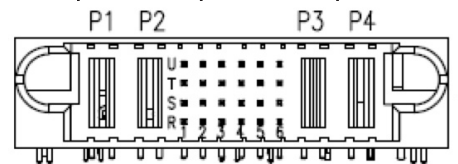
## 7.11 PSU ADDRESS TABLE (ADDRESS BIT SETTINGS)

A0	PSU ADDRESS VALUE	A0	RECOGNIZE ADDRESS
00h	A0h	0	Yes
01h	A2h	1	Yes



### TIMING GRAPH

Parameter	Description/ Condition	Min	Nom	Max	Units		
V2t <sub>risetime</sub>	12VOUT,0V to 12V	15		35	ms		
V2 <sub>ttrigger</sub>	P_OK(low)	10.8		11.4	V		
V1t <sub>risetime</sub>	56VOUT,0V to 56V	10		20	ms		
V1 <sub>ttrigger</sub>	P_OK(low)	50.0		52.0	V		
<i>Turn-On</i>							
t <sub>1</sub>	AC INPUT — V2	Varies Due to Line and Load		.3	Varies	2	s
t <sub>2</sub>	AC INPUT — V1	Varies Due to Line and Load		.3	Varies	2	ms
—	V1 - PG_56	PG_56 Follows V1					
t <sub>4</sub>	V2 - P_OK	20		50			ms
t <sub>8</sub>	PS_ON(low) — V1/V2	PS_ON Turn-ON		50	-	300	ms
<i>Turn-Off</i>							
t <sub>5</sub>	AC INPUT — V2	AC_IN Turn-Off		15	-	-	ms
t <sub>6</sub>	AC INPUT — V1	AC_IN Turn-Off		20	-	-	ms
—	PG_56-V1	PG_56 Follows V1					
t <sub>9</sub>	P_OK— V2	4					
t <sub>10</sub>	PS_ON(high)— V2	PS_ON Turn-Off		1			



### 8.1 MAIN CONNECTORS

Input ----- CNT1 (3 - 1/4 inch fastons terminals L/N/G)

Output ----- CNT2: FCI-51730-145LF or equivalent

**Note: 3S and 3T are short pins**

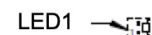
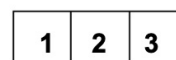
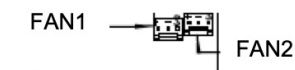
	P1	P2	1	2	3	4	5	6	P3	P4
<b>U T S R</b>	COM	V2_PWR	12VCS	P_OK	PWM1	SCL	NU	56VCS	V1_PWR	V1_RTN
			A0	TS-SNS-N	PS_PRE	SDA	NU	PG_56		
			12VCS (-)	TS-SNS-P	PS_ON	PWM2	NU	56VS(-)		
			12VCS (+)	NU	TACH2	TACH1	NU	56VS(+)		



PINS	PIN TYPE	ASSIGNMENT	DESCRIPTION/ FUNCTION
<b>Output</b>			
P3	Power	V1_PWR	These are the +56 voltage output pins.
P4	Power	V1_RTN	These are the 56V return output pins.
P2	Power	V2_PWR	These are the +12 voltage output pins.
P1	Power	COM	These are the 12V return output pins.
<b>Control</b>			
1R	Signal	12VS(+)	(+) Sense - If remote sense is required this pin must be connected to the +12V load on the system backplane. This pin can be left open if remote sense is not required.
1S	Signal	12VS(-)	(-) Sense - If remote sense is required this pin must be connected to the 12V return on the system backplane. This pin can be left open if remote sense is not required.
6R	Signal	56VS(+)	(+) Sense - If remote sense is required this pin must be connected to the +56V load on the system backplane. This pin can be left open if remote sense is not required.
6S	Signal	56VS(-)	(-) Sense - If remote sense is required this pin must be connected to the 56V return on the system backplane. This pin can be left open if remote sense is not required.
1U	Signal	12VCS	Current Share - This pin must be connected to the 12V current share of the redundant power supplies on the system backplane. This pin can be left open if current share is not required.
6U	Signal	56VCS	Current Share - This pin must be connected to the 56V current share of the redundant power supplies on the system backplane. This pin can be left open if current share is not required.
3T	Signal	PS_PRE	Power Supply Present - This signal is connected to the common internally. This signal is used to identify that the power supply module is fully plugged into the system backplane
3S	Signal	PS_ON	Power Supply On - This is the power supply module control pin. This pin must be directly connected to common or controlled by a transistor connected to common on the system backplane.
6T	Signal	PG_56	Power Good 56V - This pin is used as a reference to the the 56V output. The signal's voltage is 9.1% of the rated output voltage.
2U	Signal	P_OK	Power Okay - This pin is used to monitor both output voltages and AC input. The signal on this pin will go high when both outputs are in regulation and AC input is above 88VAC. This signal will go low when either output voltages drop out of regulation or AC fall under 72VAC .
4R	Signal	SDA	Communication Data pin internal pulled up by a 6.8k $\Omega$ resistor.
6R	Signal	SCL	Communication Clock pin internal pulled up by a 6.8k $\Omega$ resistor.
1T	Signal	A0	Address Pin-This pin operates at 3.3V internal pulled up by a 4.7k $\Omega$ resistor.
2T	Signal	TS-SNS-N	(-)Temperature Sensor – negative pin of the sense transistor.
2S	Signal	TS-SNS-P	(+)Temperature Sensor - positive pin of the sense transistor.
4R 3R	Signal	TACH1 TACH2	Fan speed detection Signal: Passes signal from Fan's connector to the main output 3R TACH2 connector through the power supply's PCB.
3U 4S	Signals	PWM1 PWM2	Fan Control Signal: Passes signal from Fan's connector to the main output connector 4S PWM2 through the power supply's PCB.

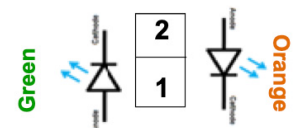
Fan 1 and 2 connector: AMP 640456-3 or equivalent. Requires Fans.

PINS	ASSIGNMENT	DESCRIPTION
1	PWM	Fan control Signal
2	COM	Return for the input signal
3	TACH	Fan speed detect signals



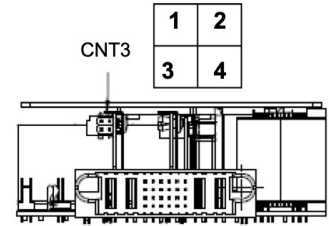
LED1 connector: AMP 640456-2 or equivalent. Used for dual color LED.

PINS	ASSIGNMENT	DESCRIPTION
1	Status Signal OK	Anode
2	Status Signal Fault	Cathode



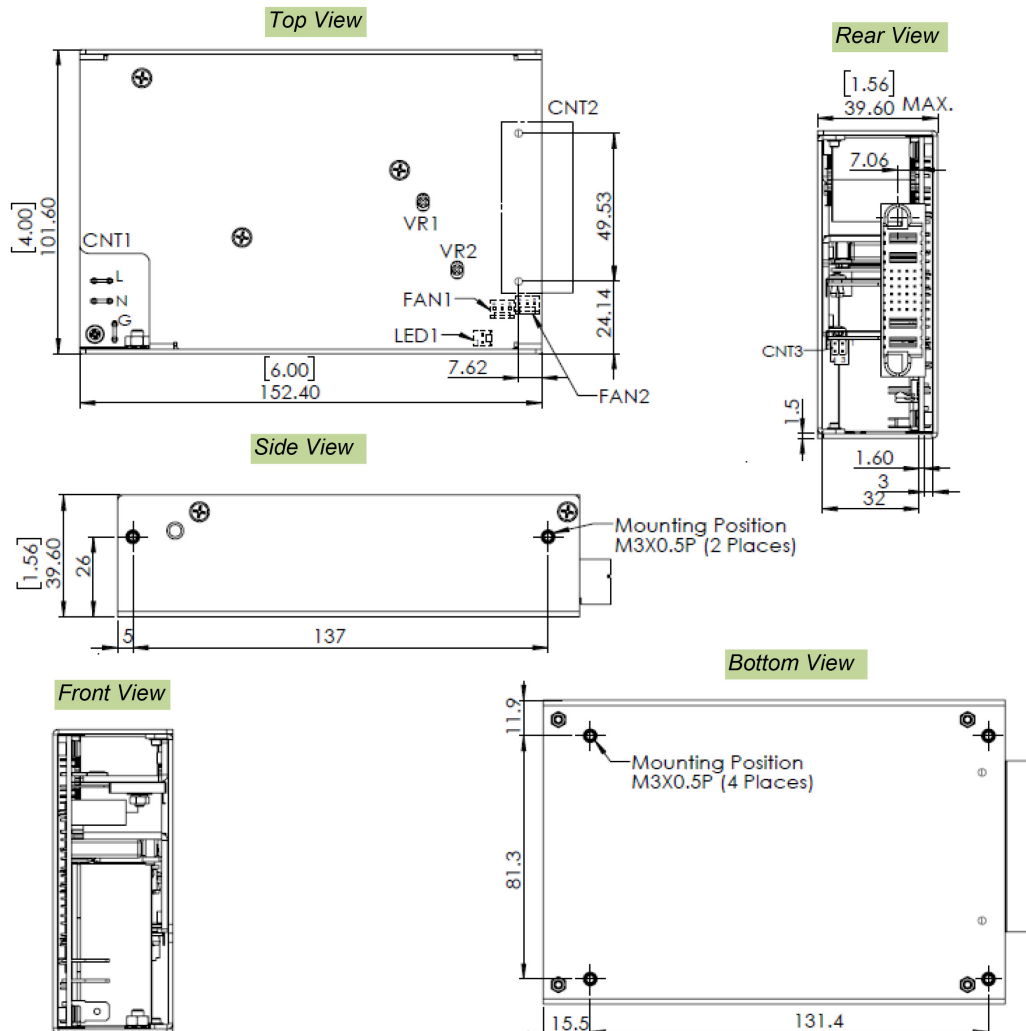
CNT3 connector: LCU P302G-2x2-G3-R or equivalent. Used for programming EEPROM.

PINS	ASSIGNMENT	DESCRIPTION
1	SDA	Communication Data pin
2	WP	EEPROM write protection pin
3	SCL	Communication Clock pin
4	COM	Return



MECHANICAL			
Parameter	Description/ Condition	Nom	Units
Dimension	Width	101.6(4.00)	
	Height	39.6(1.56)	mm(in)
	Depth	152.4(6.00)	
Weight		0.89(1.96)	Kg(lbs)

## TECHNICAL DRAWING



# INNOVATIVE SPECIALTY DC POWER SYSTEMS

*Standard and Custom Power Supplies from 5W to 10KW*

## TRAFFIC CONTROL POWER SUPPLIES



- 70-400+ Watts / 120 and 220 VAC Models Available
- CALTRANS TEES, NYSDOT, CDOT, GDOT Compliant for 332, 334, 336, 342, 344, and 346 Series cabinets
- RoHS and NEMA Compliant
- Custom labeling and barcoding available
- Ruggedization against shock / vibration / humidity available

## CUSTOM POWER DISTRIBUTION ASSEMBLIES (PDAs)



- Compliant with TEES 2020
- 1U smaller than the PDA2-LX and PDA3-LX
- User accessible slots as specified
- Custom labeling and barcoding available
- Ruggedization against shock / vibration / humidity available

## COMPACT PCI



- AC or DC input, 175W - 500W DC output, active PFC
- 3U x 8HP, 6U x 8HP sizes
- PICMG 2.11 compliant, UL/CSA, NEMKO/TUV/CE certified, ROHS compliant
- Ruggedization against shock/ vibration/ humidity optional

**Primary Applications: Industrial Computing, Military, Satellite Comm, Test, Transportation, Telecom, Aerospace**

## SPECIALTY HOT-SWAPPABLE POWER SUPPLIES



- 200-1500W, Universal Input, 5-54VDC Output
- Hot Swap. N+1, 90+% Efficiency
- 1U Form Factors
- 30+ Variations for Various Applications Including Nuclear
- Ruggedization against shock/ vibration/ humidity optional

**Primary Applications: Medical Equipment, Military, Test, Automotive, Computing, Audio, Sensitive Electronics**

## RACK POWER SYSTEMS



- 200W-1500W, 2-8 slots, single or mixed output voltages, up to 10KW total
- Single, dual, or individual unit AC or DC input
- Internally or externally redundant DC outputs
- Standard 19" and 23" size or user-specified configurations also available
- Ruggedization against shock/ vibration/ humidity optional

**Primary Applications: Medical Equipment, Military, Test, Automotive, Computing, Audio, Sensitive Electronics**

## CUSTOMS & MODIFIED STANDARDS



- 75W-2KW
- Single to 7 outputs
- Designed and built to custom or semi-custom specifications
- Ruggedization against shock/ vibration/ humidity optional
- Custom electrical specs, chassis, paint, labeling, connectors, interface all available

**Primary Applications: Medical Equipment, Military, Test, Automotive, Computing, Audio, Sensitive Electronics**

## LOW NOISE CONVECTION / CONDUCTION COOLED POWER SUPPLIES



- 200W-500W, 90—264VAC full range input with 12-54 VDC Output
- Wide operating temperature range / high efficiency
- Small form factors
- Ruggedization against shock/ vibration/ humidity optional

**Primary Applications: Medical Equipment, Military, IT, Sensitive Electronics**

## MEDICAL ADAPTERS



- 6W-250W, Efficiency levels V & VI
- Desktop, Wall-mount, and Interchangeable AC plug types
- Large selection of output connectors – additional cable lengths available
- UL60601 (medical) approved adapters available
- Ruggedization against shock/ vibration/ humidity optional

