

Advance Product Release



Features

- Wide input voltage range 85-264 VAC
- High current 12V main output
- Dual input fuses
- Active current sharing
- Variable speed fan for optimal cooling
- Low conducted and radiated EMI
- UL recognized to UL 60950-1/CSA 22.2 No. 60950-1, and TUV approved to EN 60950-1 and IEC60950-1
- High density design
4" x 1.65" x 8.5" cassette
- Highly-efficient topology
- 100 kHz I²C interface
- Overtemperature, output overvoltage, and output overcurrent protection
- Supervisory signaling
- Included ORing components for true redundant operation

Applications

- Telecommunications equipment

Description

The FCP600-12G is a highly-efficient ac-dc power supply with one high current output and an additional standby output, which can be used in a wide range of applications. Active current share along with internal ORing components allow this unit to be also used in redundant, hot-swap applications. The FCP600 meets international safety standards and displays the CE Mark for the low Voltage Directive.

Model Selection						
Model	Input Voltage VAC	Output 1		Standby Output		Rated Power W
		V_o nom VDC	I_o max ADC	V_o nom VDC	I_o max ADC	
FCP600-12G	85-264	12	50	12	1	612

Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings may cause performance degradation, adversely effect long-term reliability, and cause permanent damage to the converter.

Parameter	Conditions/Description	Min	Max	Units
Input Voltage	Continuous		264	VAC
	Transient, 60 ms		300	VAC
Operating Temperature	Ambient $V_{i \min} - V_{i \max}, I_{o \text{ nom}},$ cooling by internal fan	0	55	°C
Storage Temperature	Non-operational	-40	85	°C

Environmental, Mechanical, & Reliability Specifications

All specifications apply over specified input voltage, output load and temperature range, unless otherwise noted.

Parameter	Conditions/Description	Min	Nom	Max	Units
Operating Humidity	Relative humidity, non-condensing	10		90	%
Storage Humidity	Relative humidity, non-condensing	5		95	%
Shock	IEC/EN 60068-2-27, 11 ms			30	g_n
Sinusoidal Vibration	IEC/EN 60068-2-6 2-8 Hz 8-200 Hz 200-500 Hz		7.5		mil
			2		g_n
			4		g_n
MTBF	MIL-HDBK-217F Notice 2, $G_B, 25\text{ }^\circ\text{C}$	100			kh

Isolation Specifications

The electric strength test is performed in the factory as routine test in accordance with EN 550116, IEC/EN 60950-1 and UL 60950-1 and should not be repeated in the field. Power-One will not honor any warranty claims resulting from electric strength field tests.

Parameter	Conditions/Description	Min	Nom	Max	Units
Insulation Safety Rating	Input/Case		Basic Reinforced Functional		
	Input/Output				
	Output/Case				
Electric Strength Test Voltage	Input/Case	2.121			kVDC
	Input/Output	4.242			kVDC
	Output/Case	0.5			kVDC

EMC Specifications

All specifications apply over specified input voltage, output load and temperature range, unless otherwise noted.

Parameter	Description	Criterion
Electrostatic Discharge	IEC/EN 61000-4-2, level 4 (contact/air)	8/15 kV, criterion B
Electromagnetic Field	IEC/EN 61000-4-3, level 3	10 V/m, criterion A
Electr. Fast Transients / Burst	IEC/EN 61000-4-4, level 3 (direct/capacitive)	2/1 kV, criterion B
Surge	IEC/EN 61000-4-5, level 3 (L/L, L/C)	1/2 kV, criterion B
Voltage Dips and Interruptions	IEC/EN 61000-4-11	Criterion B
RF Conducted Immunity	IEC/EN 61000-4-6	10 VAC, AM 80%, 1 kHz, criterion A
Emissions Radiated Emissions Conducted	CISPR 22/EN 55022/EN 61204	Class A Class B
Harmonics	IEC/EN 61000-3-2	Class B
Voltage Fluctuation and Flicker	IEC/EN 61000-3-3	Pass

Input Specifications

All specifications apply over specified input voltage, output load and temperature range, unless otherwise noted.

Parameter	Conditions/Description	Min	Nom	Max	Units
Input Voltage		85	115/230	264	VAC
Turn-On Input Voltage	Ramping up	70	-	85	VAC
Turn-Off Input Voltage	Ramping down	70	-	85	VAC
Input Frequency		47	50/60	63	Hz
Inrush Current Limitation	115/230 VAC			20	A
Power Factor	V_i nom, I_o nom	0.96			
Efficiency	$V_i = 230$ VAC, I_o nom	87			%
	$V_i = 115$ VAC, I_o nom	84			
Leakage current	$V_i=264$ VAC, 60Hz			3.5	mA

Output Specifications

All specifications apply over specified input voltage, output load and temperature range unless otherwise noted.

Parameter	Conditions/Description	Min	Nom	Max	Units
Output Voltage Setpoint Accuracy	$V_i = 230$ VAC, I_{o1} @ 25 ADC, $T_C = 25$ °C	-0.5		0.5	% V_o nom
Output Current V1		0	50	55	ADC
Output Current V2		0	1	1.1	ADC
Static Line Regulation V1	$V_{i\ min} - V_{i\ max}$, V_i nom, 0-100% I_o nom	-0.5		0.5	% V_o nom
Static Load Regulation V1	$V_{i\ min} - V_{i\ max}$, V_i nom, 0-100% I_o nom	-0.5		0.5	% V_o nom
Hold-Up Time	Starting at $V_i = 230$ VAC, P_o nom	20			ms
Dynamic Load Regulation	Load change = $\pm 33\%$, $dI_o/dt = 2$ A/ μ s voltage deviation recovery time	-2		2 400	% V_o nom μ s
Start-Up Time	V_i nom, I_o nom			1.5	s
Output Voltage Ripple and Noise	V_i nom, I_o nom, 20 MHz bandwidth			120	mVpp

Protection

All specifications apply over specified input voltage, output load and temperature range, unless otherwise noted.

Parameter	Conditions/Description	Min	Nom	Max	Units
Input Fuse (double)	Not user accessible	2 x 12.5 AT			
Input Transient Protection	With varistor				
Output	No-load and short circuit proof short circuit proof overload (hiccup style)	110		130	% $I_{o\ nom}$
Overvoltage Protection	Latch style	115		130	% $V_{o\ nom}$
Overtemperature Protection	Automatic power shutdown at $T_C = TBD$				

Control

All specifications apply over specified input voltage, output load and temperature range, unless otherwise noted.

Parameter	Conditions/Description
I ² C Digital Bus	Reports information and monitors alarm functions
Power Supply Present	Contact closure to Signal RTN
Output Enable	TTL compatible signal, open collector. Power supply enabled at Low or TTL "0" (e.g. by connecting of pin R1 to 0V or GND), and inhibited at High or TTL "1", or leave it open.
AC fail pre-warning (I ² C & OC)*	Supervisory AC input voltage; Pre-warning time >6 ms, Active high
DC fail (I ² C & OC)*	Supervisory under- and overvoltage pre-ORing diode of V1 Active high
Temperature Warning (I ² C & OC)*	Indicates if unit is operating normally or in overtemperature, Pre-warning time >10 ms
Fan Fail (I ² C & OC)*	Indicates if fan is operating or has failed Active high
Current Share	Active current sharing
Status Indication	LEDs: DC OK (green), AC OK (green)

* Signal providing by I²C interface (I²C) or by open collector (OC)

Features

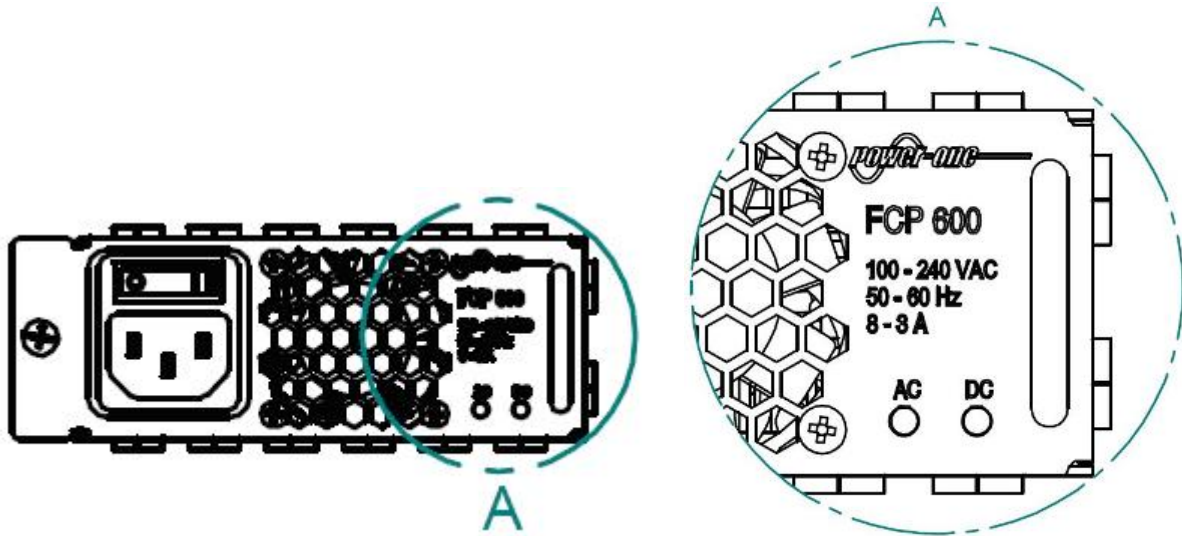
All specifications apply over specified input voltage, output load, and temperature range, unless otherwise noted.

Parameter	Conditions/Description
Fan speed control	2 fan speed levels depending on internal heat sink temperature Fan speed level and temperature information available on I ² C digital bus
μC supply voltage in-/output (Pin U4)	If unit is operating: 5 to 7V is provided at pin U4. If unit is NOT operating, pin U4 is input from a parallel connected unit for μC supply.

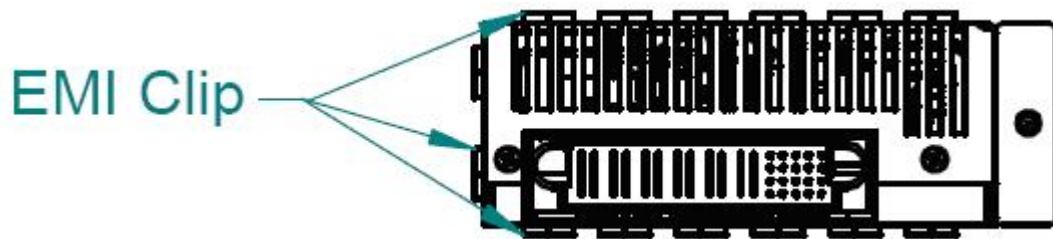
Mechanical Data

Mechanical Data (H, W, D)	4" (101.6mm) x 1.65" (41.9mm) x 8.5" (215.9mm)
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FRONT VIEW



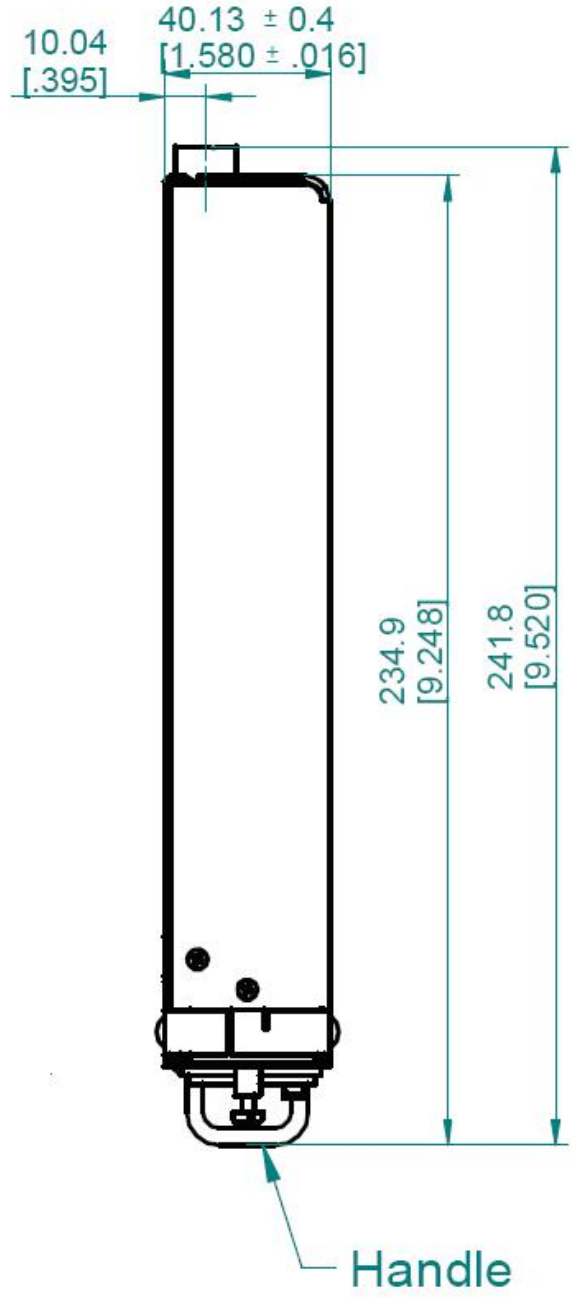
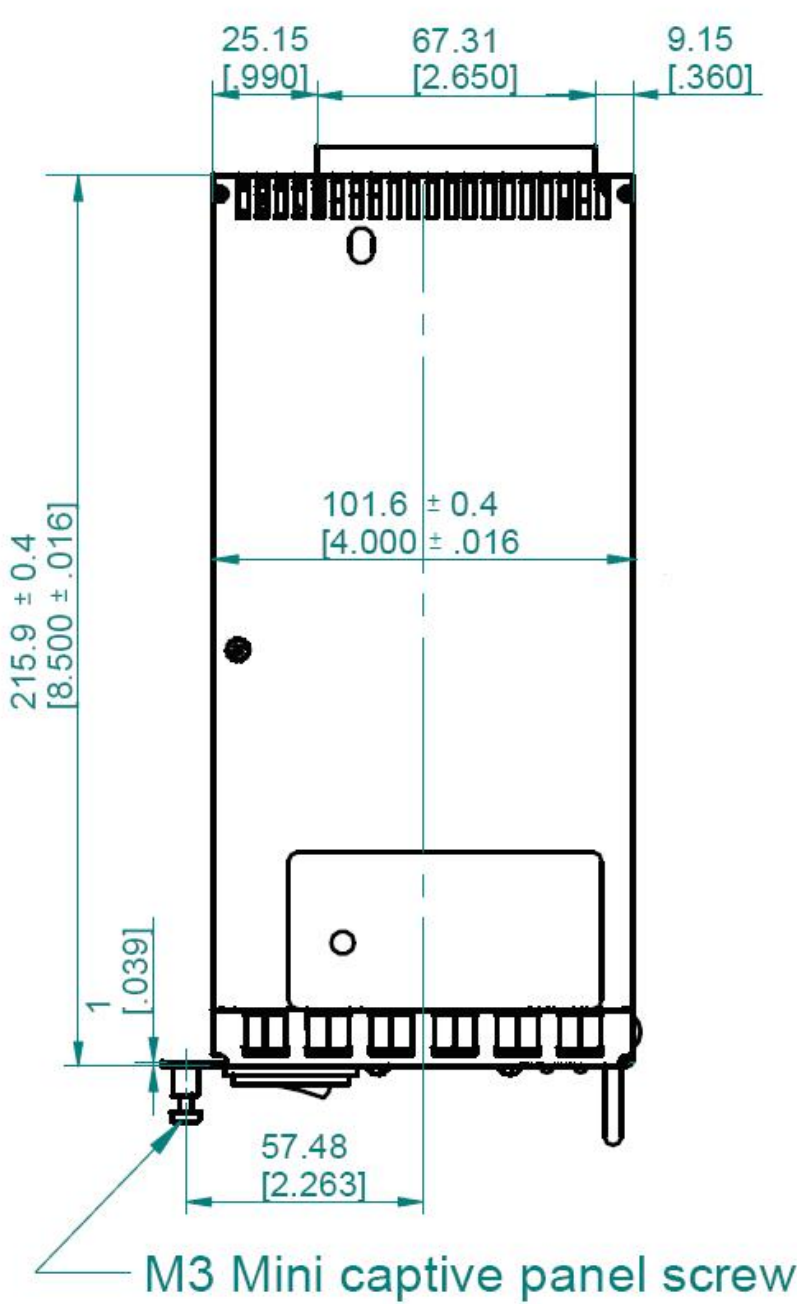
REAR VIEW





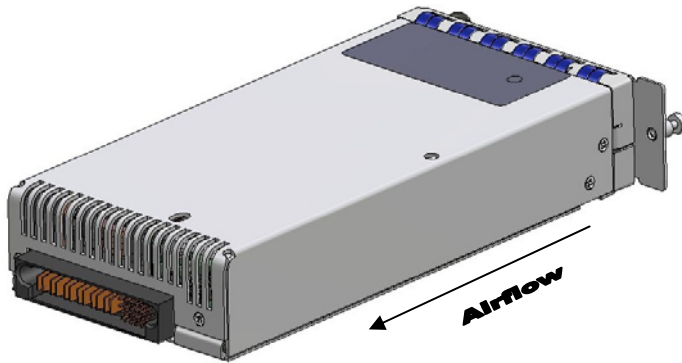
TOP VIEW

SIDE VIEW





Input and Output Connector Descriptions



Rear View

Connector Information

Power Supply:

Input - IEC 320 input (Male) standard line cord connection

Output - FCI 51732-020LF

POWER						SIG. .						
E1	P1	P2	P3	P4	P5	P6	1	2	3	4	5	E2
	PA	PA	PA	PA	PA	PA	UUUUU	TTTTT	SSSSS	RRRRR		

Mating Connections:

Input - IEC 320 output (Socket) standard line cord

Output - FCI 51762-10602000AALF

Input IEC Connector

Input	Location
Chassis (Safety) Ground	Ground
Line 1 (Line)	L
Line 2 (Neutral)	N

Output Pin assignment FCP600-12G

Power pins:

Main output Vo1 + (12V)	P1, P2, P3
Main output Vo1 - (RTN)	P4, P5, P6

Signal pins:

Fan Fail	U1
OTP, AC, DC power Fail	U2
Power Supply Present	U3
uC supply voltage 5 - 7V	U4
Signal RTN	U5

Serial Data Line, I2C SDA	S1
Serial Clock Line, I2C SCL	S2
Auxiliary output Vo2 + (12V)	S3
Auxiliary output Vo2 - (Signal RTN)	S4
Signal RTN	S5

Address input line A0	T1
Reserve	T2
Reserve	T3
Reserve	T4
Signal RTN	T5

Output Enable **	R1
V sense +	R2
V sense -	R3
Reserve	R4
Current Sharing	R5

** short length pin

NUCLEAR AND MEDICAL APPLICATIONS - Power-One products are not designed, intended for use in, or authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of the respective divisional president of Power-One, Inc.

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