

# SFP1050-12BG

## AC-DC Power Supply

### 12V Output, 1050 Watts



#### Key Features & Benefits

- Ideal server form factor optimizes, space, efficiency, and load variations
- High efficiency maximized between 30-80% load conditions
- Unconditionally stable under any load condition
- Wide input voltage range (90-264 VAC) with PFC
- 1U or 2U height configurations
- Active current share with ORing FET
- Incorporate Remote sense
- I<sup>2</sup>C interface status monitoring
- Primary and secondary voltage and current monitor over I<sup>2</sup>C
- Standby voltage of 3.3 VDC @ 3 A
- Overtemperature, overload, and overvoltage protection
- Status LEDs: AC OK, POWER GOOD, PS FAIL

The Bel Power Solutions SFP1050-12BG is a 1050 W, power factor corrected (PFC) front-end which provides a 12 VDC output for datacom and other distributed power applications. Its compact size enables mounting in both 1U and 2U height racks.

High efficiencies, advanced thermal management techniques, and an internal fan increase reliability over a broad range of operating conditions. Internal ORing FETs facilitate use in hot-swap (plug)\*, redundant configurations. Status is provided with front panel LEDs, logic signals, and via the I<sup>2</sup>C management interface bus.

The SFP1050-12BG meets international safety requirements and is CE marked to the Low Voltage Directive (LVD).

\* Proper hot-swap (plug) operation instruction: Power supply is not intended to be inserted into the system with AC cord already applied. Alternatively, if there is an application where power supply insertion with AC cord is required; PS\_ON must be toggled or AC recycled after insertion into the system to reset the power supply.

#### Applications

- Datacom
- Distributed Power Systems

#### North America

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#### Asia-Pacific

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#### Europe, Middle East

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# SFP1050-12BG

## Model Selection

MODEL	NOMINAL OUTPUT VOLTAGE	ADJUSTMENT RANGE	MAXIMUM OUTPUT CURRENT (Amps)	REGULATION	RIPPLE & NOISE @ 20 MHz BW
SFP1050-12BG	12 VDC 3.3 VDC (Standby)	N/A N/A	86.7 A 3 A	±3 % ±3 %	100 mV 100 mV

## Input Specifications

PARAMETER	CONDITIONS / DESCRIPTION	MIN	NOM	MAX	UNITS
AC Input Voltage	Single-phase continuous input range.	90		264	VAC
Input Frequency	AC input.	47		63	Hz
Hold-up Time	After last AC line peak at full power.	At 115 VAC	20		ms
Input Current	At full-rated load.	At 90 VAC		15	Arms
Inrush Surge Current	Excluding Xcap. Vin = 264 VAC, T = 25 °C			25	Apk
Power Factor	Per EN61000-3-2	> 0.95			W/VA

## Output Specifications

PARAMETER	CONDITIONS / DESCRIPTION	MIN	NOM	MAX	UNITS
Efficiency <sup>1</sup>	With Vin at 110 VAC and 50% to 75% load on V1.	87			%
	With Vin at 110 AC and 75% to 100% load on V1.	85			%
	With Vin at 220 VAC and 50% to 75% load on V1.	88			%
	With Vin at 220 VAC and 75% to 100% load on V1.	89			%
Minimum Load	Minimum loading required to maintain regulation.	0			A
Output Power				1050	W
Overshoot	Output voltage overshoot at turn-on.			< 5	%
Transient Response	Maximum recovery time to within 1% of initial set point due to a 25% load change, 1A/μs.	12 V output:		5	ms
		Standby output:		5	ms
Turn-On Delay with PS_ON signal	Time required for initial output voltage stabilization after application of AC input or ON/OFF signal.	12 V output:		3	%
		Standby output:		3	%
Output Regulation	See Model Selection table above.			1500	ms

## I<sup>2</sup>C Bus Management Interface<sup>2</sup>

PARAMETER	CONDITIONS / DESCRIPTION
<b>Static</b>	Includes static information such as: part number and revision level, output rating, serial number, date code, and manufacturing location.
<b>Status</b> (Logic 1 or 0)	AC Input OK. DC Output OK. Overtemperature. Overcurrent. Fan OK. Overvoltage Alert Undervoltage Alert
<b>Real-Time Monitoring</b>	Output voltage (main output). LSB = 20 mV Output current (main output). LSB = 100 mA

<sup>1</sup> Internal fan is considered part of the load as it is driven from the 12 V output; Vaux load is set to 0.5 A for efficiency measurements.

<sup>2</sup> Reference "I<sup>2</sup>C Management Interface" and "EEPROM Table of Contents" documents for SFP1050-12BG (consult factory).

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## Interface Signals & Internal Protection<sup>3</sup>

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Overvoltage Protection	Latch-style overvoltage protection.			15 4.3	V
Overcurrent Protection	Current limit (Latching Mode). 12V output: Standby output:	91 3.2		112.7 6	A
Short-Circuit Protection	Latching Mode.				
Overtemperature/ Fan Failure Warning	12 V output will shut down in the event of an overtemperature condition or blocked fan rotor. OT setpoint is 55 ±3 °C. Supply's fan and Vaux are active. Power supply will recover when OT condition is removed. Amber OT LED will turn ON to indicate fault condition.				
PS_ON	Output enable. Pulled low allows V1 to be activated.				
+12V Current Share	0 to 8 V signal used for active current sharing.				
Write Protect	For factory use only.				
PS A0, PS A1	I <sup>2</sup> C Address.				
SDA	I <sup>2</sup> C Data line (3.3 V).				
SCL	I <sup>2</sup> C Clock line (3.3 V).				
Tach_1	Two pulses per fan revolution.				
AC_OK/H	High signal indicates AC is within PSU limits.				
Present/L	100 Ohm resistor internally connected to RTN allowing the PSU to be detected on insertion.				
Alert/L	Low signal indicates PSU fan is running below speed or an overtemperature limit was exceeded.				
PWROK/H	High signal indicates both outputs are within regulation limits.				

## Safety, Regulatory and EMI Specifications

PARAMETER	CONDITIONS / DESCRIPTION	MIN	NOM	MAX	UNITS
Agency Approvals	Approved to the latest edition of the following standards: UL/CSA60950-1, IEC60950-1 and EN60950-1. CE Mark for LVD				
Electromagnetic Interference	FCC CFR title 47 Part 15 Sub-Part B, EN 55022/CISPR 22.	Conducted: Radiated:	A A		Class
Harmonics	Per IEC 61000-3-2.		A		Class
Voltage Fluctuation and Flicker	Per IEC 61000-3-3.		Pass		
ESD Susceptibility	Per EN 61000-4-2, Level 4, Performance criteria A	Contact Discharge: Air Discharge:	±8 ±15	.	kV
Radiated Susceptibility	Per EN 61000-4-3, Level 3, Performance criteria A		10	.	V/m
EFT/Burst	Per EN 61000-4-4, Level 4, Performance criteria A		±4	.	kV
Input Transient Protection	Per EN 61000-4-5, Class 4, Performance criteria A	Line-to-Line: Line-to-Ground:	2 4	.	kV
RF Conducted Disturbances	Per EN 61000-4-6, Level 2., Performance criteria A		3	.	V
Voltage Interruptions	Per EN 61000-4-11, performance criterion B 30%. Per EN 61000-4-11, performance criterion C 60%. Per EN 61000-4-11, performance criterion C 95%.		10 100 5	.	ms ms Sec
Leakage Current	Per EN 60950, 264 VAC @ 60Hz:			1.75	mA

<sup>3</sup> Refer to product specification for internal pull up impedances and timing of these signals.

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## Environmental Specifications

PARAMETER	CONDITIONS / DESCRIPTION	MIN	NOM	MAX	UNITS
Altitude	Operating. Non-Operating.			10K 40K	ASL ft
Operating Temperature	Internal DC fan for cooling. At 100% load:	0		50	°C
Storage Temperature		-40		85	°C
Temperature Coefficient	0 °C to 45 °C (after 15-minute warm-up).			0.02	%/°C
Relative Humidity	Non-condensing. @ 40 °C	5		93	%RH
Shock	Operating: half-sine, 11 ms, 10 shock per face, 6 faces Non-Operating: half-sine, 11 ms, 10 shock per face, 6 faces			7 30	G
Vibration	Operating: 3 axis swept sine 5-500 Hz, 1 octave/min, 5 sweep cycles per axis Non-operating: random 10-500 Hz.			1 3.5	G Grms
Reliability MTBF	(Calculated) Bellcore Ground Benign @ 25 °C. Demonstrated	100 000 300 000			hrs

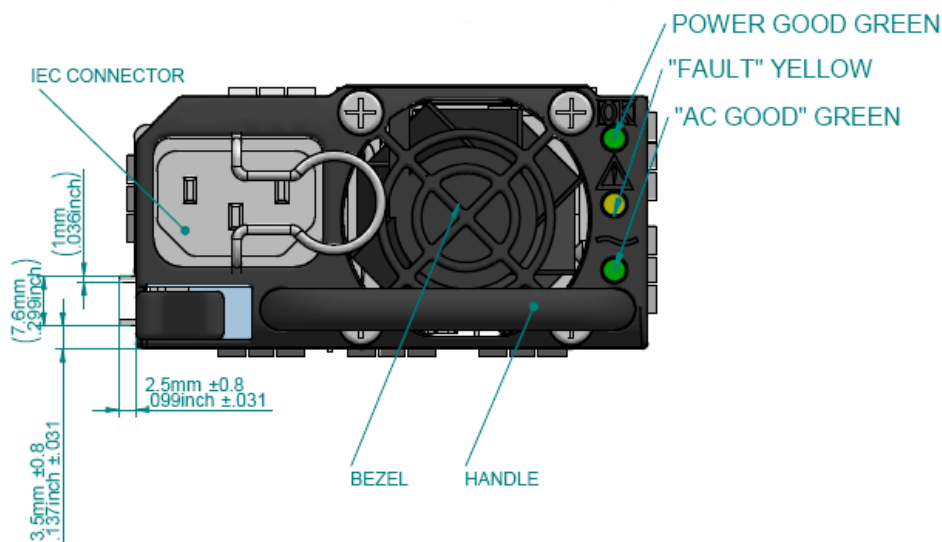
## LED Indicators

Indicator	LED Color
Power Good	GREEN
AC OK	GREEN
PS FAIL	AMBER

## Mechanical Specifications

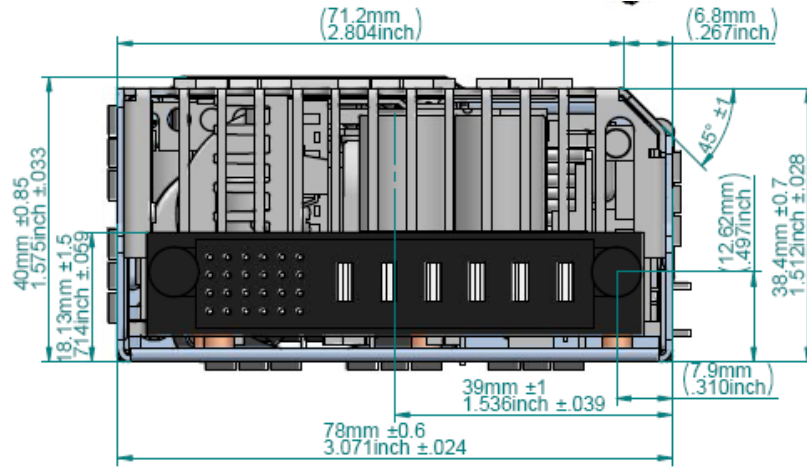
PARAMETER	CONDITIONS / DESCRIPTION
Dimensions	78 x 40 x 340.5 mm
Weight	1.62 kg (3.57 lb)

Front View

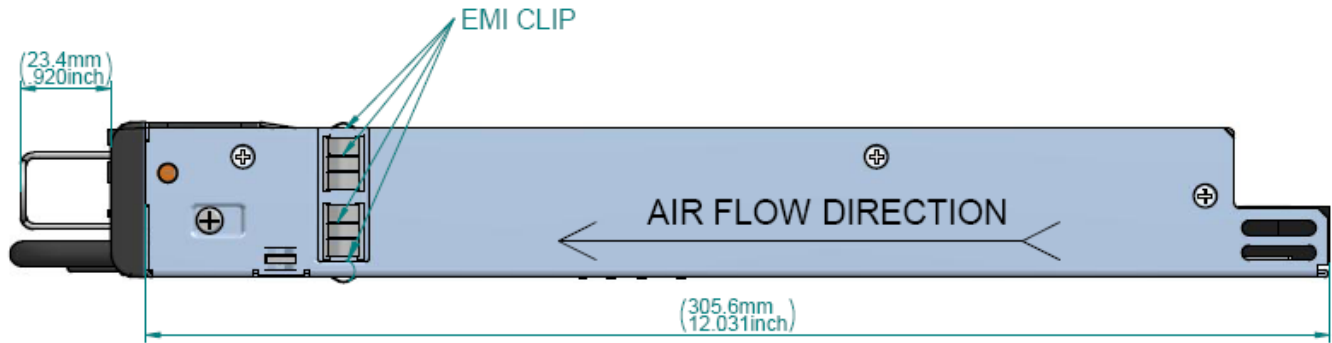


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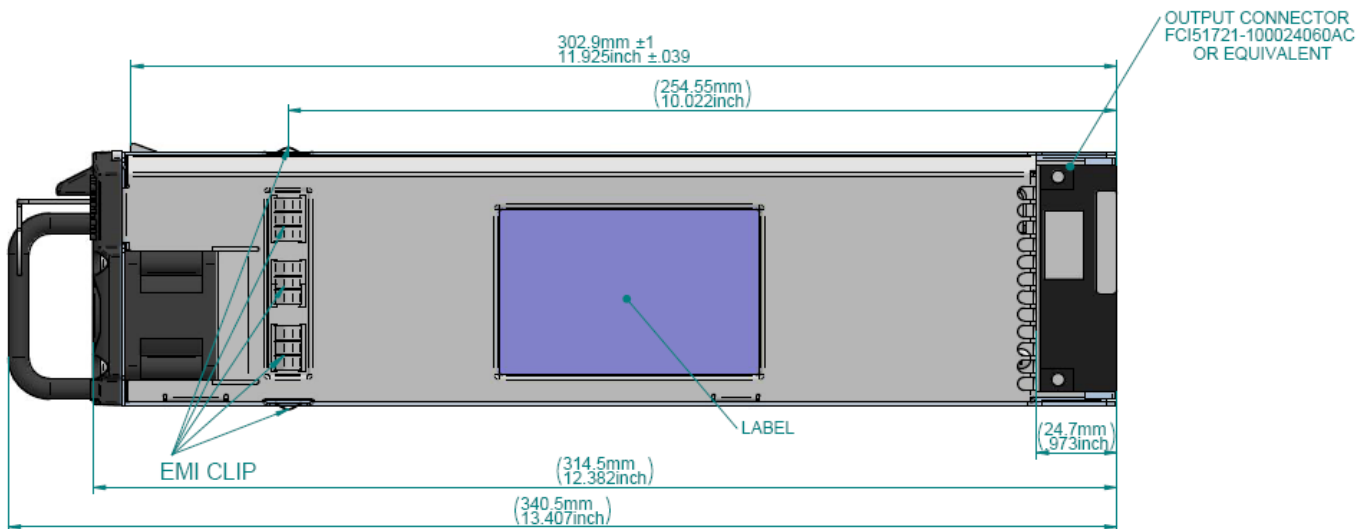
Rear View



Side View



Top View

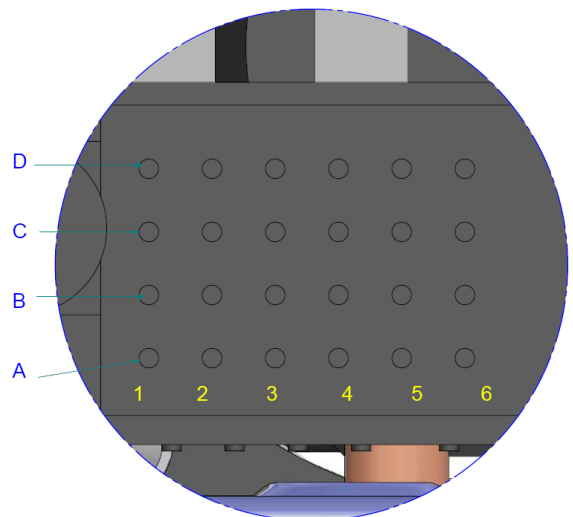


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## Connector Information

<b>Power Supply:</b>	Input - IEC 320 input (Male) standard line cord connection Output - P/N FCI 51721-10002406AA or equivalent	
<b>Mating Connections:</b>	Input - IEC 320 output (Socket) Standard line cord (15A) Output - P/N: FCI 51741-10002406CC	
	<b>Input</b>	<b>Location</b>
<b>Input IEC Connector:</b>	Chassis (Safety) Ground	Ground
	Line 1 (Line)	L
	Line 2 (Neutral)	N

Output Connector Details



DETAIL A

**OUTPUT CONNECTOR:**

**FCI ( POWER BLADE )**  
51721-10002406AC OR EQUIVALENT

**WILL MATE WITH SYSTEM BOARD CONNECTOR:**

**FCI ( POWER BLADE )**  
5174-10002406AA  
5174-10002406BA  
5174-10002406CB

**STRAIGHT IN CONNECTOR**

**FCI ( POWER BLADE )**  
51761-10002406AA  
51761-10002406BA  
51761-10002406CB

**RIGHT ANGLE CONNECTOR**

PIN	SIGNAL NAME
RH1	+12V Return
Rh2	+12v Return
Rh3	+12v Return
Rh4	+12v
Rh5	+12v
Rh6	+12v
A1	PS A1
A2	+12v Current Share
A3	RETURN
A4	WRITE PROTECT
A5	PS A0
A6	+3.3V SB
B1	RETURN
B2	SENSE +12V Return
B3	RETURN
B4	+3.3v SB
B5	SDA
B6	PS ON/L
C1	RETURN
C2	Tach 1
C3	RETURN
C4	+3.3v SB
C5	SCL
C6	ACOK/H
D1	Present/L
D2	SENSE +12V
D3	RETURN
D4	+3.3V SB
D5	Alert/L
D6	PWROK/H

NOTES: UNLESS OTHERWISE SPECIFIED.

For more information on these products consult: [tech.support@psbel.com](mailto:tech.support@psbel.com)

**NUCLEAR AND MEDICAL APPLICATIONS** - Products are not designed or intended for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems.

**TECHNICAL REVISIONS** - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.