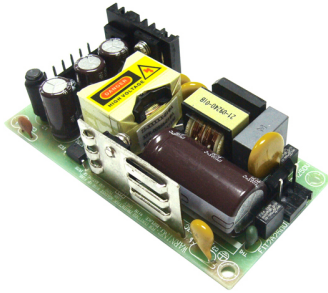


SHFA60 SERIES

60W Open-Frame Power Supply for Healthcare Equipment

- Wide Operating Voltage, 80 to 275 VAC, 47 to 63 Hz
- Single Output
- Crowbar Mode Over Voltage Protection
- Input to Output : 2MOPP
- High ESD immunity
- Suitable professional healthcare facility
- Low earth leakage current < 0.25mA

3 Year Warranty

Approvals:

Single Output

PART NO.	Setting Voltage Range (Factory setting, can't be adjusted)		Output Current (Based on the output volt.)		Max. Output Power (W)	Ripple & Noise (mVp-p)	Total Reg. (%)	Typ. Efficiency (%)	Typ. No Load Power (W)	Hold-up Time (ms)	Protect ion Mode
	min	max	min	max							
	(VDC)	(VDC)	(A)	(A)							
SHFA60-S05	12.0	13.0	4.61	5.00	60	120	±5	84	0.5	12	Hiccup
SHFA60-S06	13.0	16.0	3.75	4.67	60	130	±5	85	0.5	12	Hiccup
SHFA60-S07	16.0	21.0	2.85	3.75	60	160	±5	85	0.5	12	Hiccup
SHFA60-S08	21.0	27.0	2.22	2.85	60	200	±3	86	0.5	12	Hiccup
SHFA60-S09	27.0	33.0	1.81	2.22	60	200	±3	86	0.5	12	Hiccup
SHFA60-S10	33.0	40.0	1.50	1.81	60	200	±3	86	0.5	12	Hiccup

Electrical Characteristics & General Specifications

Characteristic	Condition	Min.	Typ.	Max.	Unit
Safety Approval Input Voltage Range	Safety Approval & Specification in Label	100		240	VAC
Input Operate Voltage Range	Detail to see Fig.1 (Derate linearly from 100% load at 90VAC to 80% load at 80VAC)	80		275	VAC
Input Frequency	Sine wave	47		63	Hz
Output Power Range	See Rating Chart			60	W
Low Line Input Current	Full Load, Vin=100VAC		0.8		A
High Line Input Current	Full Load, Vin=240VAC		0.4		A
Low Line Input Inrush Current	Full Load, 25°C, Cool start, Vin=100VAC			31	A
High Line Input Inrush Current	Full Load, 25°C, Cool start, Vin=240VAC			62	A
Safety Ground Leakage Current	Vin=240VAC, Fi=60Hz			0.25	mA
Efficiency	Full Load, Vin=230VAC, Detail to see Rating Chart				See Rating Chart
Line Regulation	Full Load, Vin=100~120VAC or 200~240VAC			1	%
Over Voltage Protection		112		132	%
Over Load Protection	Recovers automatically after fault condition is removed	110		150	%
Time of Transient Response	Full Load, Vin=110VAC			4	ms
Hold-Up Time	Full Load, Vin=100VAC				See Rating Chart
Start-up time	Full Load, Vin=100~240VAC			2	s
Insulation Resistance		50			MΩ
Temperature Coefficient	All Condition			±0.04	%/°C
Dielectric Withstanding Voltage (P-S)	Primary to Secondary, limit current <10mA			4000	VAC
Dielectric Withstanding Voltage (P-G)	Primary to PE, limit current <10mA			1500	VAC
EMC Emission	Compliance to EN55011 (CISPR11), EN60601-1-2	B			Class

Short Circuit Protection	Auto Recovery
Cooling	Free Air Convection
Flammability Rating	UL94V-1
Protection Classes	Class I
Safety	IEC60601-1 Edition3.1, ES60601-1:2005(R2012), CSAC22.2 NO.60601-1:14, EN60601-1:2006/A1:2013

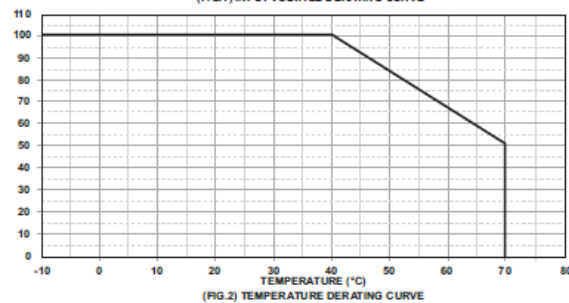
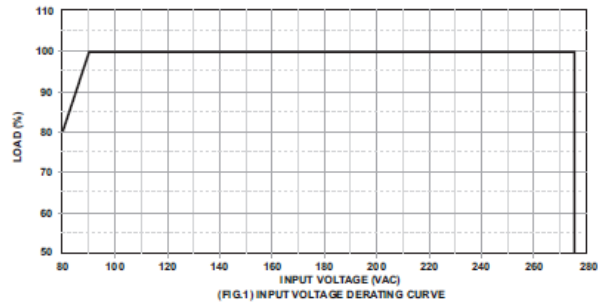
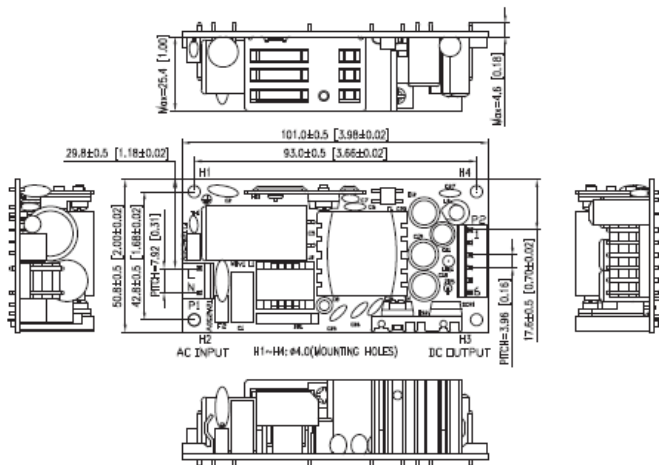
Environmental

Characteristic	Condition	Min.	Typ.	Max.	Unit
Operating Temperature	Detail to see Fig.2 (Derate linearly from 100% load at 50°C to 50% load at 70°C)	-10		70	°C
Storage Temperature	10 ~ 95% RH	-40		85	°C
Operating Humidity	non-condensing	0		95%	RH
Storage Humidity		0		95%	RH
Electro Static Discharge	Air Discharge, IEC61000-4-2			15	kV
Electro Static Discharge	Contact Discharge, IEC61000-4-2			8	kV
Mean Time Between Failure	Operating Temperature at 25°C, Calculated per MIL-HDBK-217F	200k			h
Operating Altitude (Elevation)	All condition			3000	m
Vibration	10 ~ 500Hz, 10min./1cycle, 60min. each along X, Y, Z axes			5	G
Surge Voltage	Line-Neutral			1	kV
Surge Voltage	Line-PE & Neutral-PE			2	kV

Mechanical Diagram and Technical Charts

SPECIFICATION NOTE :

- Output can provide up to peak load when the power supply starts up. Continuous staying in more than rated load is not allowed.
- At factory, in 60% rated load condition, each output is checked to be within voltage accuracy.
- Line regulation is defined by changing $\pm 10\%$ of input voltage from nominal line at rated load.
- Load regulation is defined by changing $\pm 40\%$ of measured output load from 60% rated load.
- Ripple & noise is measured by using 20MHz bandwidth limited oscilloscope and terminated each output with a 0.47uF capacitor at rated load and nominal line.
- Hold up time is measured from the end of the last charging pulse to the time which the main output drops down to low limit of main output at rated load and nominal line.
- Efficiency is measured at rated load, and nominal line.


MECHANICAL DIMENSIONS: (UNIT: mm)

PACKING :

- Net weight: 140g approx.
- Input connector mates with Molex housing 09-50-3031/35977-0300 and Molex 2478/ 35922 series crimp terminal.
- Output connector mates with Molex housing 09-50-3061/35977-0600 and Molex 2478/ 35922 series crimp terminal.

PIN CHART

MODEL	PIN	1	2	3	4	5	6
SHFA60-SXX	OUT	OUT	OUT	RTN	RTN	RTN	