medical

SINPRO

MPU16C series

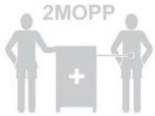
15W External Medical Grade Power Supply

The MPU16C series of AC/DC switching mode power supplies provide 15 Watts of continuous output power . All supplies are UL94V-1 min compliant. All models meet FCC Part-18 class B and CISPR-11 EN55011 class B emission Limits and are designed to comply with ANSI/AAMI ES 60601-1: 2005(UL/cUL 3rd Edition), EN 60601-1:2006 (TUV/T-mark 3rd Edition) and new CE requirements. All units are 100% burned in and tested.

RoHS2 2011/65/EU

FEATURES:

* Wide Operating Voltage, 80 to 275 VAC, 47 to 63 Hz
* IEC-320-C6 Input Inlet
* Single Output
* Over Voltage and Over Load protection
* Medical Safety 3rd (IEC60601-1 3rd Edition)
* Input to Output : 2MOPP
* Class I system
* 5 year warranty



APPLICATIONS:

* Medical Equipment
* Patient Monitor
* Blood Pressure system
* Portable medical devices
* ECG machine

APPROVALS:

GENERAL SPECIFICATION:

* **Short Circuit Protection**: Auto Recovery
* **Cooling**: Free Air Convection
* **Flammability Rating**: UL94V-1
* **Class of equipment**: Class I
* **Safety**: ANSI/AAMI ES 60601-1:2005(UL/cUL 3rd Edition), EN 60601-1:2006 (TUV/T-mark 3rd Edition)

Electrical Characteristics:

Symbol	Characteristic	Condition	Min.	Typ.	Max.	Unit
Vins	Safety Approval Input Voltage Range	Safety Approval & Specification in Label	100		240	VAC
Vin	Input Operate Voltage Range	Detail to see Fig.1 (Derate linearly from 100% load at 90VAC to 80% load at 80VAC)	80		275	VAC
Fi	Input Frequency	Sine wave	47		63	Hz
Po	Output Power Range	See Rating Chart			15	W
Iil	Low Line Input Current	Full Load, Vin=100VAC	0.29		0.32	A
Iih	High Line Input Current	Full Load, Vin=240VAC	0.17		0.19	A
Irl	Low Line Input Inrush Current	Full Load, 25°C, Cool start, Vin=100VAC			23	A
Irh	High Line Input Inrush Current	Full Load, 25°C, Cool start, Vin=240VAC			55	A
Ik	Safety Ground Leakage Current	Vin=240VAC, Fi=60Hz			0.1	mA
η	Efficiency	Full Load, Vin=230VAC, Detail to see Rating Chart	See Rating Chart			
△Voi	Line Regulation	Full Load, Vin=100~120VAC or 200~240VAC	0.5		1	%
OVP	Over Voltage Protection		112		132	%
OLP	Over Load Protection	Recovers automatically after fault condition is removed	110		150	%
ttr	Time of Transient Response	Full Load, Vin=110VAC			4	ms
thu	Hold-Up Time	Full Load, Vin=100VAC	10			ms
ts	Start-up time	Full Load, Vin=100~240VAC	0.5		1	s
Ris	Insulation Resistance		50			MΩ
Tc	Temperature Coefficient	All Condition			±0.04	%/°C
HV	Dielectric Withstanding Voltage (P-S)	Primary to Secondary, limit current <10mA			4000	VAC
Vpg	Dielectric Withstanding Voltage (P-G)	Primary to PE, limit current <10mA			1500	VAC
EMI	EMC Emission	Compliance to EN55011 (CISPR11), EN61000-3-2,-3	B			Class

Environmental:

Symbol	Characteristic	Condition	Min.	Typ.	Max.	Unit
To	Operating Temperature	Detail to see Fig.2 (Derate linearly from 100% load at 50°C to 50% load at 70°C)	-10		70	°C
Ts	Storage Temperature	10 ~ 95% RH	-40		85	°C
Ho	Operating Humidity	non-condensing	0		95%	RH
Hs	Storage Humidity	See Rating Chart	0		95%	RH
Vsg	Surge Voltage	All Condition			2	kV
ESDa	Electro Static Discharge	Air Discharge, IEC61000-4-2			8	kV
ESDc	Electro Static Discharge	Contact Discharge, IEC61000-4-2			6	kV
MTBF	Mean Time Between Failure	Operating Temperature at 25°C, Calculated per MIL-HDBK-217F	100k			h
ELEV	Operating Altitude (Elevation)	All condition			3000	m
VBR	Vibration	10 ~ 500Hz, 10min./1cycle, 60min. each along X, Y, Z axes	5			G

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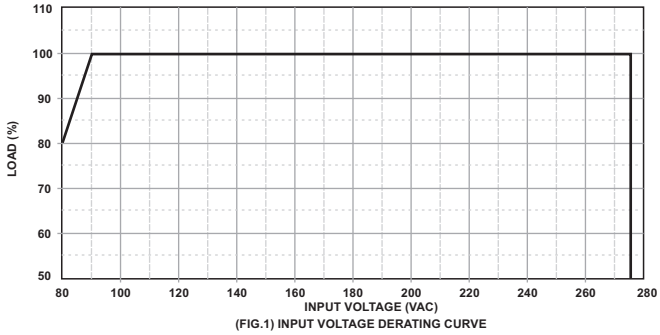
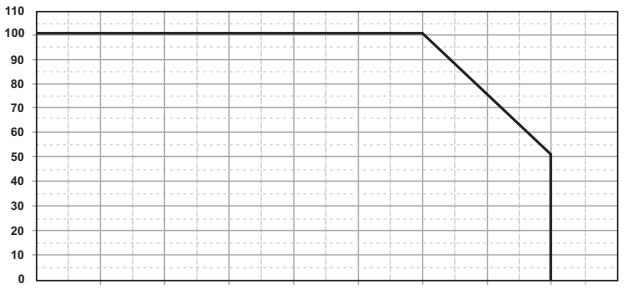
SPECIFICATION NOTE :

1. Output can provide up to peak load when the power supply starts up. Continuous staying in more than rated load is not allowed.
2. At factory, in 60% rated load condition, each output is checked to be within voltage accuracy.
3. Line regulation is defined by changing ±10% of input voltage from nominal line at rated load.
4. Load regulation is defined by changing ±40% of measured output load from 60% rated load.
5. 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.
6. 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.
7. Efficiency is measured at rated load, and nominal line.
8. The specifics for testing the energy efficiency of this Series are outlined in a separate document titled "Test Method for Calculating the Energy Efficiency of Single-Voltage Interchangeable AC-DC and AC-AC Power Supplies (August 11, 2004)," which is available on the ENERGY STAR Website.

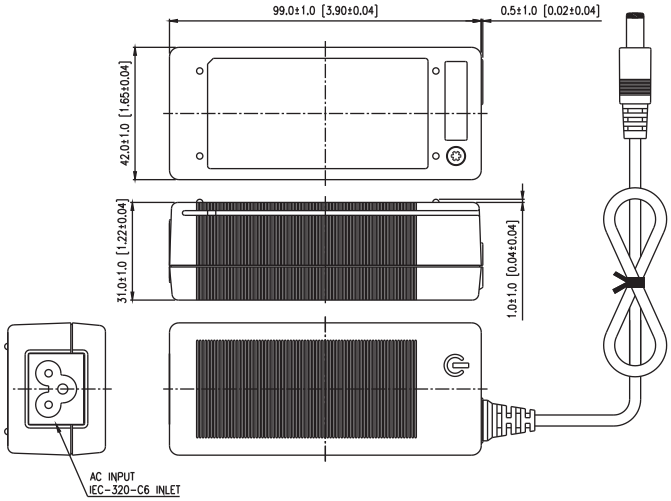


(FIG.1) INPUT VOLTAGE DERATING CURVE



(FIG.2) TEMPERATURE DERATING CURVE

MECHANICAL DIMENSIONS: (UNIT: mm)



OUTPUT CABLE RECOMMEND :

1. Selected output connectors and wire, please refer to Appendix.
2. MPU16C-102~103 are required to use AWG#16/4FT output cable.
3. MPU16C-105~110 are required to use AWG#18/4FT output cable.
4. The regulation and efficiency will be changed by modified output cable.

PACKING :

1. Net weight: 170g approx.
2. Optional output connectors available contact sales for details.

Rating Chart:

MODEL NO.	Voltage Range		Output Current (Based on the output volt.)		Maximum Output Power	Ripple & Noise	Total Regulation	Typ. Efficiency	No Load Consumption	Hold-Up Time	Protection Mode
	min	max	min	max							
	(VDC)	(VDC)	(A)	(A)	(W)	(mVp-p)	(%)	(%)	(W)	(ms)	
MPU16C-102	5.0	5.99	2.16	2.60	13	50	±5	75	0.3	10	OLP
MPU16C-103	6.0	8.0	1.62	2.16	13	60	±5	78	0.3	10	OLP
MPU16C-104	8.0	11.0	1.36	1.87	15	80	±5	81	0.3	10	OLP
MPU16C-105	11.0	13.0	1.15	1.36	15	100	±5	81	0.3	10	OLP
MPU16C-106	13.0	16.0	0.93	1.15	15	100	±5	81	0.3	10	OLP
MPU16C-107	16.0	21.0	0.71	0.93	15	100	±5	81	0.3	10	OLP
MPU16C-108	21.0	27.0	0.55	0.71	15	100	±3	82	0.3	10	OLP
MPU16C-109	27.0	33.0	0.45	0.55	15	100	±3	84	0.3	10	OLP
MPU16C-110	33.0	36.0	0.41	0.45	15	100	±3	85	0.3	10	OLP