

# MBU60 SERIES

## 63W Open Frame Switching Power Supplies For Medical Equipment.

### Description:

The MBU60 series of compact, open frame constructed, AC/DC switching mode power supplies provide 63 Watts of continuous output power. They are ideally suited for use in hospital instrument and many other applications. All models meet FCC Part-18 class B and CISPR-11 EN55011 class B emission Limits and are designed to comply with UL/c-UL(UL 60601-1), TUV/T-mark(EN 60601-1) and new CE requirements. All units are 100% burned in and tested.



### Features:

- Wide Input Voltage 90 to 264 VAC, 47 to 63 Hz
- Internal EMI filter
- Single to Quad Output
- Input connector mates with Molex housing 09-50-3051 and Molex 2878 series crimp terminal
- Output connector mates with Molex housing 09-50-3081 and Molex 2878 series crimp terminal
- Output Voltage Available From 3 VDC Thru 40 VDC
- Input Surge Current, Over Voltage and Over Load protection
- Size: 3"x5"x1.1"
- Power Fail Detect (Optional)
- Class I Insulation
- Two Years Warranty

### Safety Approvals :



### Electrical Characteristics:

Sym.	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>in</sub>	Input Voltage	Operating Voltage	90		264	VAC
F <sub>in</sub>	Input Frequency		47		63	Hz
W <sub>o</sub>	Output Power Range	V <sub>in</sub> =90 to 264 VAC	0		63	W
V <sub>o</sub>	Output Voltage Range		See rating Chart			V
I <sub>o</sub>	Output Current Range		See rating Chart			A
I <sub>il</sub>	Input Current (Low Line)	I <sub>o</sub> =Full load, V <sub>in</sub> =115VAC			1.6	A
I <sub>ih</sub>	Input Current (High Line)	I <sub>o</sub> =Full load, V <sub>in</sub> =230VAC			0.8	A
I <sub>rl</sub>	Low Line Inrush Current	I <sub>o</sub> =Full load, 25°C, Cool start, V <sub>in</sub> =115VAC		15	18	A
I <sub>rh</sub>	High Line Inrush Current	I <sub>o</sub> =Full load, 25°C, Cool start, V <sub>in</sub> =230VAC		21	25	A
Eff	Efficiency	I <sub>o</sub> =Full load, V <sub>in</sub> =230VAC	70	80	85	%
REG-i	Line Regulation	I <sub>o</sub> =Full load		0.5	1	%
REG-o	Load Regulation	V <sub>in</sub> =230VAC		3	6	%
OVP	Over Voltage Protection		112		132	%
OCP	Over Current Protection		110		150	%
T <sub>tr</sub>	Transient Response	I <sub>o</sub> =Full load to Half Load, V <sub>in</sub> =100VAC			4	mS
Thold	Hold-Up Time	I <sub>o</sub> =Full load, V <sub>in</sub> =110VAC	16			mS
T <sub>s</sub>	Start Up Time	I <sub>o</sub> =Full load, V <sub>in</sub> =100VAC	0.3	1	2	S
V <sub>p-p</sub>	Ripple & Noise (Peak to Peak)	Full load, V <sub>in</sub> =90VAC		1	2	%
I <sub>lk</sub>	Safety Ground Leakage Current	I <sub>o</sub> =Full load, V <sub>in</sub> =240VAC		0.1	0.3	mA
T <sub>c</sub>	Temperature Coefficient	All output	-0.04		0.04	%/°C

### Environmental :

Sym.	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
T <sub>oper</sub>	Operating Temperature		0		70	°C
T <sub>stg</sub>	Storage Temperature		-40		85	°C
H <sub>r</sub>	Relative Humidity		5		95	%
P <sub>d</sub>	Derate linearly from 100% load at 50°C to 50% load at 70°C					

### Safety Specifications:

Sym.	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>ps</sub>	Dielectric Withstanding Voltage for Primary to secondary	Primary to secondary	5600			VDC
V <sub>pg</sub>	Dielectric Withstanding Voltage for Primary to Ground	Primary to ground	2800			VDC
R <sub>i</sub>	Isolation Resistance	Test Voltage=2100VDC	50			MΩ
CISPR	EMI requirements for CISPR-11	V <sub>in</sub> =220VAC	B			CLASS
FCC	EMI requirements for FCC PART-18	V <sub>in</sub> =110VAC	B			CLASS

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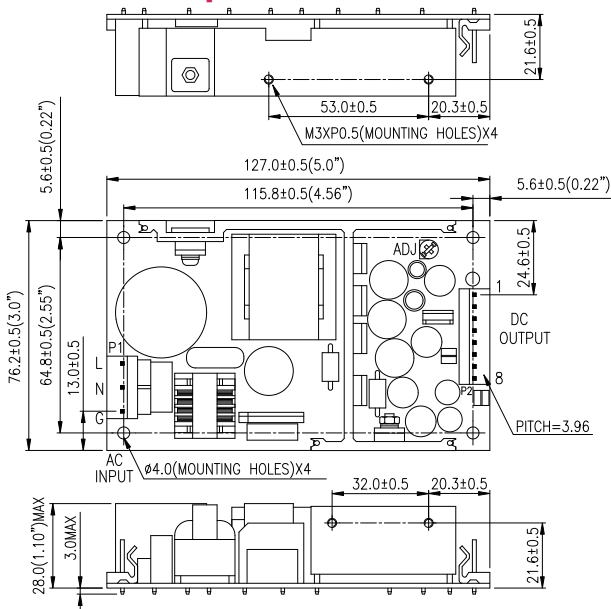
## 63W Open Frame Switching Power Supplies For Medical Equipment. Output Voltage And Current Rating Chart (Single Output) :

Model Number	Output Voltage	Output Current	Total Regulation	Maximum Output Power
MBU60-101	3 - 5 VDC	16.66 - 10.0 A	5%	50W
MBU60-102	5 - 6 VDC	11.0 - 9.16 A	5%	55W
MBU60-103	6 - 8 VDC	10.0 - 7.50 A	4%	60W
MBU60-104	8 - 11 VDC	7.87 - 5.72 A	3%	63W
MBU60-105	11 - 13 VDC	5.72 - 4.84 A	3%	63W
MBU60-105-1	11 - 13 VDC	4.09 - 3.46 A	3%	45W
MBU60-106	13 - 16 VDC	4.84 - 3.93 A	3%	63W
MBU60-107	16 - 21 VDC	3.93 - 3.00 A	3%	63W
MBU60-108	21 - 27 VDC	3.00 - 2.33 A	2%	63W
MBU60-109	27 - 33 VDC	2.33 - 1.90 A	2%	63W
MBU60-110	33 - 40 VDC	1.90 - 1.57 A	2%	63W

## Output Voltage And Current Rating Chart ( Multi Output ) :

Model Number	Output #1				Output #2				Output #3				Output #4				Maximum Output Power
	Voncom	Iomin	Iomax	Regmax	Voncom	Iomin	Iomax	Regmax	Voncom	Iomin	Iomax	Regmax	Voncom	Iomin	Iomax	Regmax	
MBU60-200	+3.3V	1.4A	7A	7%	+12V	0.6A	3A	5%									59.1W
MBU60-201	+5V	0.7A	7A	5%	+12V	0.3A	3A	5%									63W
MBU60-202	+5V	0.7A	7A	5%	+15V	0.3A	3A	5%									63W
MBU60-203	+5V	0.7A	7A	5%	+24V	0.4A	2A	5%									63W
MBU60-204	+3.3V	1.4A	7A	7%	+5V	0.5A	5A	5%									48.1W
MBU60-215	+5V	0.7A	7A	5%	-24V	0.2A	2A	5%									63W
MBU60-300	+3.3V	1.2A	6A	7%	+12V	0.6A	3A	5%	-12V	0A	0.8A	5%					63W
MBU60-300-1	+3.3V	1.2A	6A	7%	+12V	0.6A	3A	5%	+12V	0A	0.8A	5%					63W
MBU60-301	+5V	0.6A	6A	5%	+12V	0.3A	3A	5%	-5V	0A	0.8A	5%					63W
MBU60-301-1	+5V	0.6A	6A	5%	+12V	0.3A	3A	5%	+5V	0A	0.8A	5%					63W
MBU60-302	+5V	0.6A	6A	5%	+12V	0.6A	3A	5%	-12V	0A	0.8A	5%					63W
MBU60-302-1	+5V	0.6A	6A	5%	+12V	0.6A	3A	5%	+12V	0A	0.8A	5%					63W
MBU60-303	+5V	0.6A	6A	5%	+15V	0.3A	3A	5%	-15V	0A	0.8A	5%					63W
MBU60-303-1	+5V	0.6A	6A	5%	+15V	0.3A	3A	5%	+15V	0A	0.8A	5%					63W
MBU60-305	+5V	1.2A	6A	5%	+24V	0.4A	2A	5%	-12V	0A	0.8A	5%					63W
MBU60-305-1	+5V	1.2A	6A	5%	+24V	0.4A	2A	5%	+12V	0A	0.8A	5%					63W
MBU60-306	+3.3V	1.2A	6A	7%	+12V	0.6A	3A	5%	-5V	0A	0.8A	5%					59.8W
MBU60-306-1	+3.3V	1.2A	6A	7%	+12V	0.6A	3A	5%	+5V	0A	0.8A	5%					59.8W
MBU60-308	+3.3V	0.5A	5A	7%	+5V	0.5A	5A	5%	-12V	0A	1A	5%					53.5W
MBU60-308-1	+3.3V	0.5A	5A	7%	+5V	0.5A	5A	5%	+12V	0A	1A	5%					53.5W
MBU60-400	+3.3V	1.2A	6A	7%	+12V	0.6A	3A	5%	-12V	0A	0.8A	5%	-5V	0A	0.8A	5%	63W
MBU60-400-1	+3.3V	1.2A	6A	7%	+12V	0.6A	3A	5%	-12V	0A	0.8A	5%	+5V	0A	0.8A	5%	63W
MBU60-400-2	+3.3V	1.2A	6A	7%	+12V	0.6A	3A	5%	+12V	0A	0.8A	5%	-5V	0A	0.8A	5%	63W
MBU60-400-3	+3.3V	1.2A	6A	7%	+12V	0.6A	3A	5%	+12V	0A	0.8A	5%	+5V	0A	0.8A	5%	63W
MBU60-401	+5V	0.6A	6A	5%	+12V	0.3A	3A	5%	-12V	0A	0.8A	5%	-5V	0A	0.8A	5%	63W
MBU60-401-1	+5V	0.6A	6A	5%	+12V	0.3A	3A	5%	-12V	0A	0.8A	5%	+5V	0A	0.8A	5%	63W
MBU60-401-2	+5V	0.6A	6A	5%	+12V	0.3A	3A	5%	+12V	0A	0.8A	5%	-5V	0A	0.8A	5%	63W
MBU60-401-3	+5V	0.6A	6A	5%	+12V	0.3A	3A	5%	+12V	0A	0.8A	5%	+5V	0A	0.8A	5%	63W
MBU60-402	+5V	1.2A	6A	5%	+12V	0.6A	3A	5%	-12V	0A	0.8A	5%	-12V	0A	0.8A	5%	63W
MBU60-402-1	+5V	1.2A	6A	5%	+12V	0.6A	3A	5%	-12V	0A	0.8A	5%	+12V	0A	0.8A	5%	63W
MBU60-402-2	+5V	1.2A	6A	5%	+12V	0.6A	3A	5%	+12V	0A	0.8A	5%	-12V	0A	0.8A	5%	63W
MBU60-402-3	+5V	1.2A	6A	5%	+12V	0.6A	3A	5%	+12V	0A	0.8A	5%	+12V	0A	0.8A	5%	63W
MBU60-403	+5V	1.2A	6A	5%	+12V	0.6A	3A	5%	-12V	0A	0.8A	5%	-24V	0A	0.8A	5%	63W
MBU60-403-1	+5V	1.2A	6A	5%	+12V	0.6A	3A	5%	-12V	0A	0.8A	5%	+24V	0A	0.8A	5%	63W
MBU60-403-2	+5V	1.2A	6A	5%	+12V	0.6A	3A	5%	+12V	0A	0.8A	5%	-24V	0A	0.8A	5%	63W
MBU60-403-3	+5V	1.2A	6A	5%	+12V	0.6A	3A	5%	+12V	0A	0.8A	5%	+24V	0A	0.8A	5%	63W
MBU60-404	+5V	0.6A	6A	5%	+15V	0.3A	3A	5%	-15V	0A	0.8A	5%	-5V	0A	0.8A	5%	63W
MBU60-404-1	+5V	0.6A	6A	5%	+15V	0.3A	3A	5%	-15V	0A	0.8A	5%	+5V	0A	0.8A	5%	63W
MBU60-404-2	+5V	0.6A	6A	5%	+15V	0.3A	3A	5%	+15V	0A	0.8A	5%	-5V	0A	0.8A	5%	63W
MBU60-404-3	+5V	0.6A	6A	5%	+15V	0.3A	3A	5%	+15V	0A	0.8A	5%	+5V	0A	0.8A	5%	63W

## Mechanical Specifications :



## PIN CHART

MODEL	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8 (Optional)
MBU60-1XX	OUT	OUT	OUT	RTN	RTN	RTN	RTN	PFD
MBU60-2XX	Vo2	Vo1	Vo1	COM	COM	N/C	N/C	PFD
MBU60-3XX	Vo2	Vo1	Vo1	COM	COM	Vo3	N/C	PFD
MBU60-4XX	Vo2	Vo1	Vo1	COM	COM	Vo3	Vo4	PFD

Note: Vo1:Output#1 Vo2:Output#2 Vo3:Output#3 Vo4:Output#4

## Note:

1. Dimensions are shown in inches or mm.
2. Weight: 300gs approx.
3. Input connector mates with Molex housing 09-50-3051 and Molex 2878 series crimp terminal.
4. Output connector mates with Molex housing 09-50-3081 and Molex 2878 series crimp terminal.