

Medical Power Supply

MANGO120S Series

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120W AC-DC ADAPTER



FEATURES

- Medical 60601-1 Safety Approvals
- Small 6.02 x 2.43 x 1.28 " Footprint
- Universal AC Input with Active PFC
- IP22 Rated Enclosure
- Class I or Class II Construction
- High Efficiency - Level VI
- High Power Density - 6.4W/in3
- EN55011 / FCC Part 15J Class B Emissions
- 3 Year Warranty



GENERAL DESCRIPTION

The cost competitive MANGO120S can be ordered as a Class I or Class II device. An optimized PFC + LLC with Synchronous Rectification yields up to 95% efficiency and meets all Medical and Commercial compliance requirements. The series has low standby power consumption and excellent EMC performance, which makes it perfect for ventilators, oxygen concentrators, ultrasound equipment and other portable home medical equipment and hospital medical equipment.

APPLICATIONS



MODELS & RATINGS

MODELS	OUTPUT VOLTAGE	OUTPUT CURRENT	PEAK CURRENT	RIPPLE & NOISE(MAX)	MAX TOTAL REGULATION
MANGO120S-12xy	12V	10.0A	12A	120mV	±5%
MANGO120S-15xy	15V	8.0A	9.6A	150mV	±5%
MANGO120S-19xy	19V	6.3A	7.5A	190mV	±5%
MANGO120S-24xy	24V	5.0A	6.0A	240mV	±5%
MANGO120S-26xy	26V	4.6A	5.5A	260mV	±5%
MANGO120S-28xy	28V	4.3A	5.0A	280mV	±5%

Medical Power Supply

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MODEL ENCODING

MANGO120S	-	xx/xxx	xy	-	abc
DESKTOP ADAPTER 120 Watts		OUTPUT VOLTAGE 12: 12V 165: 16.5V	x: Input Type and Safety Class y: DC Output Connector		CUSTOMER CODE OR OTHERS

1). Designate Input Type and Safety Class by replacing “x” with the following: “A” for IEC320-C14 Inlet (Class I Safety Approvals) “B” for IEC-320 C8 Inlet (Class II Safety Approvals)		“C” for IEC-320 C18 Inlet (Class II Safety Approvals) “D” for IEC-320 C6Inlet (Class I Safety Approvals)	
2). Designate DC Output Connector by replacing “y” with the following: “D” for for 8 Pin DIN Connector “K” for Kycon KPPX-4P Non Locking Connector		“M” for Molex 6CKT Model # 39-01-2060 or equivalent	
3). Other Connectors available upon request, please consult factory. Consult factory for unique Voltage setpoints or other modifications.			

INPUT ELECTRICAL CHARACTERISTICS

Normal voltage range	100-240VAC
Input Voltage Range	90~264Vac (Universal)
Input Frequency	47~63Hz
Input Current	2.0A _{RMS} @ 115VAC
Inrush Current	<120A @ 240 VAC, Cold Start
Power Factor	>0.95

Earth Leakage Current	<150μA @ 264VAC 60Hz
Touch Current	<100μA @ 264VAC 60Hz
Patient Leakage Current	<100μA @ 264VAC 60Hz
No Load Input Power	<0.21W @ 240VAC

OUTPUT ELECTRICAL CHARACTERISTICS

Total Regulation	±5%
Line Regulation	±0.5%
Load Regulation	±5%
Minimum Load	None
Transient Response	±5%, 50% step-load, slew rate 1A/μS

Ripple & Noise	1% pk-pk Max
Turn-On Delay	1.5 seconds max @ 115VAC
Hold-Up Time	>20ms at 115VAC Input

Medical Power Supply

MANGO120S Series

SAFETY & EMC

Safety	EN/IEC60601-1, 3rd Edition
	ANSI / AAMIES60601-1
	CSA 22.2 No. 60601-1
	CE Mark (LVD)
EMC	IEC60601-1-2 Edition 4.1
Conduction Emission	EN55011, FCC Part J15, Class B
Radiated Emission	EN55011, FCC Part J15, Class B
Voltage Fluctuation & Flicker	EN61000-3-3
Harmonic Distortion	EN61000-3-2 Class A
ESD	EN61000-4-2, 8kV contact, 15kV Air Discharge
EFT	EN61000-4-4, Level 3, Criterion A
SURGE	EN61000-4-5 Installation Class 3, Criterion A
DIP ⁽¹⁾	EN61000-4-11
Conducted Immunity	EN61000-4-6, 3V _{RMS} (6V _{RMS} , ^{ISM} band), Criterion A
Radiated Immunity	EN61000-4-3, 10V/m, Criterion A
Magnetic Fields Immunity	EN61000-4-8, 30A/m, Criterion A
Proximity Fields Immunity	EN61000-4-3, (Table 9 in IEC60601-1-2 4 th ED)

PROTECTION

Over shoot	5%
Over-Voltage	110~140% Latching
Over-Temperature	Latching, recycle input and cool to reset
Over-Load	Hiccup, Auto-Recovery
Short Circuit	Continuous
Over Current Protection	Hiccup, Auto Recovery
Input Brown Out	AC On Voltage ≤ 80Vac
	AC Off Voltage ≥ 60Vac
	Minimum Hysteresis 5Vac

RELIABILITY & ENVIRONMENTAL REQUIREMENTS

Operating Temperature	0°C to +40°C
Derating	5%/°C > 40°C, up to 50°C max
Storage Temperature	-40°C to +80°C
Operating Humidity	10% to 95% (non-condensing)
Storage Humidity	5 to 95% (non-condensing)
Operating Altitude	4000M (max)
Storage Altitude	5000M (max)
Shock	294 m/s ² (30G), 10ms, 6 times on each of 3axes
Vibration	10-500 Hz, 19.6 m/s ² (2G), 20 mins on 3 axes

DIMENSION & PACKING

Efficiency	88%-93% typical at 115/230 VAC, full load
Isolation	4000 VAC – Input to Output; 1500 VAC – Input to Ground; 1500 VAC – Output to Ground;
MTBF	200K Hours, Mil-217F at 25 °C, full load
Weight	500g ref
Dimensions	153x61.7x32.5mm
	6.02x2.43x1.28"inch

(1) Power supply DIP voltage sag requirements table:

Drop	Time	Criterion
0%Ut	0.5cycle	A
0%Ut	1cycle	A
70%Ut	25/30 cycles	B
0%Ut	300cycles	C

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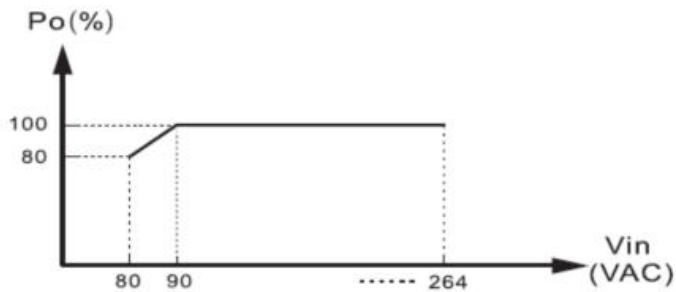
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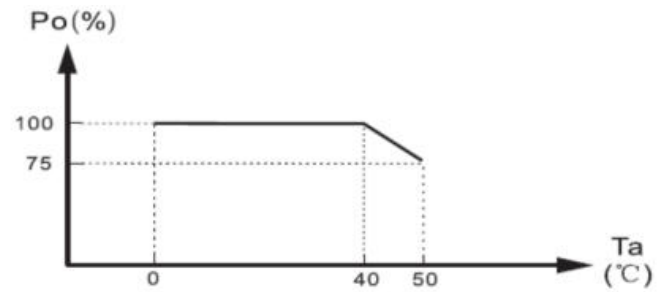
120W AC-DC ADAPTER

DERATING CURVE

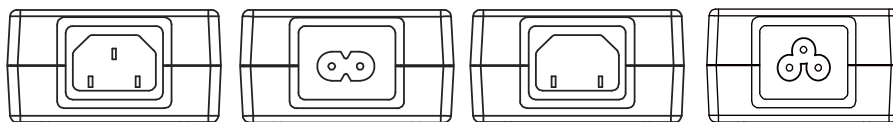
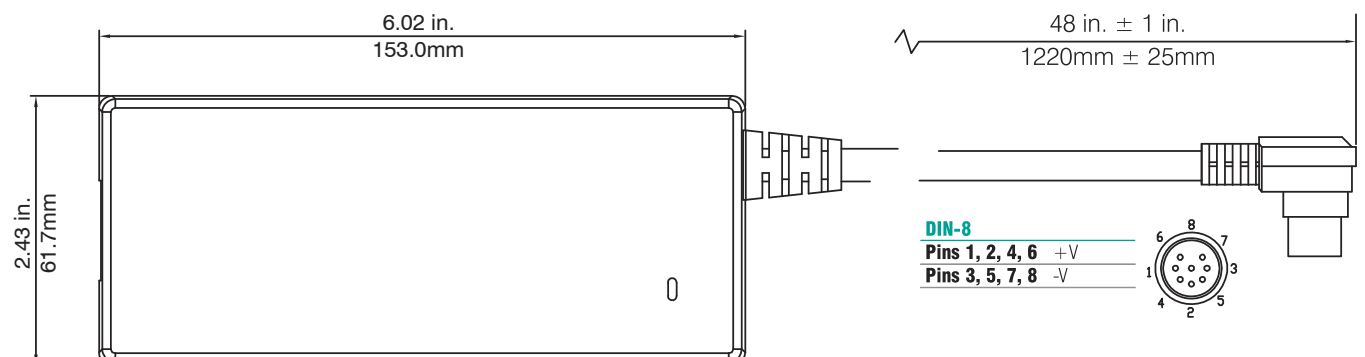
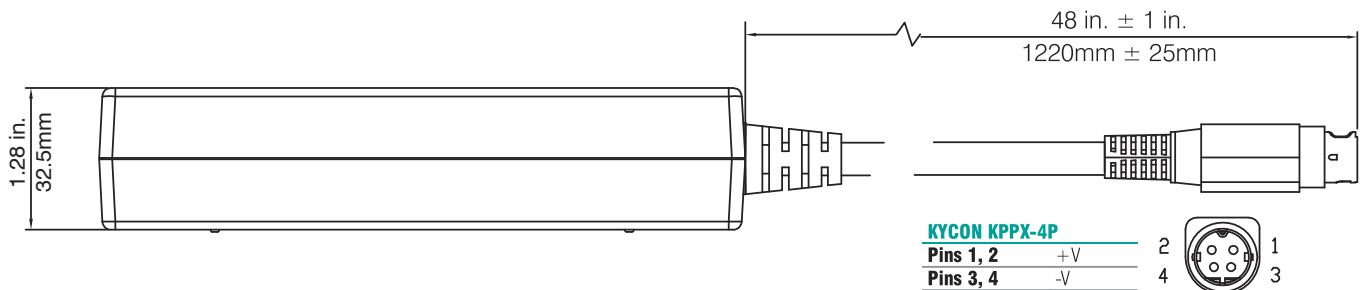
OUTPUT POWER VS INPUT VOLTAGE



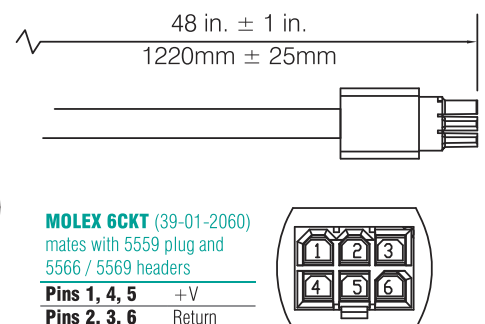
OUTPUT POWER VS AMBIENT TEMPERATURE



MECHANICAL AND CONNECTOR INFORMATION



"A" Package C14 Inlet / Class I Safety Approvals
 "B" Package C8 Inlet / Class II Safety Approvals
 "C" Package C18 Inlet / Class II Safety Approvals
 "D" Package C6 Inlet / Class I Safety Approvals



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GLOBAL OPERATION AND SERVICE



MANUFACTURER

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TECHNICAL SUPPORT

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