600 Watts

- Convection cooled
- Medical and ITE approvals
- Compact 5.0" by 8.0" footprint
- Suitable for BF applications
- 5 V standby and remote on/off
- 12 V fan output
- -40 °C to +70 °C operation
- High efficiency, up to 95%

Dimensions:

UCH600:
8.00 x 5.00 x 1.57" (203.2 x 127.0 x 40.0 mm)

The UCH600 series is designed to minimize the no load power consumption and maximize efficiency to facilitate equipment design to meet the latest environmental legislation. Approved for medical and ITE applications, this range of convection cooled single output AC/DC power supplies are packaged in an ultra compact foot print of just 5.0" by 8.0". The UCH600 provides up to 600 W convection-cooled leading to very high power densities of 9.5 W/in^3. A 12 V, 600 mA fan supply is included in the design to faciliate system cooling, along with 5 V/1 A standby output. The power supply contains two fuses and low leakage currents as required by medical applications and is safety approved to operate in a 70 °C ambient. The low profile and safety approvals covering ITE and medical standards along with conducted emissions to EN55011/22 level B allow the versatile UCH600 series to be used in a vast range of applications.

Models & Ratings

Output Voltage	Output Current	Optional Standby Output	Fan Output[2,4]	Efficiency[1]	Model Number
12.0 V	12.50 A	5 V/1.0 A	12 V/0.6 A	95%	UCH600PS12
24.0 V	25.0 A	5 V/1.0 A	12 V/0.6 A	95%	UCH600PS24
36.0 V	4.16 A	5 V/1.0 A	12 V/0.6 A	95%	UCH600PS36
48.0 V	3.10 A	5 V/1.0 A	12 V/0.6 A	95%	UCH600PS48

Notes

1. Typical efficiencies measured at 100% load and 230 VAC input.
2. Typical voltage, actual regulated voltage will be in range of 11.4V to 12.6V.
3. Regulation of the fan output requires a minimum load of 10W on the main output.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage - Operating	90	115/230	264	VAC	Derate output from 100% at 90 VAC to 90% at 85 VAC
Input Frequency	47	50/60	63	Hz	
Power Factor		>0.9			230 VAC, 100% load. EN61000-3-2 class A, class C >145W
Input Current - Full Load		7.0/2.7		A	115/230 VAC
Inrush Current			60	A	230 VAC cold start, 25 °C
Earth Leakage Current				µA	115/230 VAC/50 Hz (Typ), 264 VAC/60 Hz (Max)
No load Input Power				W	When main output is Inhibited
Input Protection	F10A/250 V Internal fuse fitted in line and neutral.				

Output - Main Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage - V1	12		48	VDC	See Models and Ratings table
Initial Set Accuracy			±1	%	50% load, 115/230 VAC
Minimum Load	0			A	No minimum load required
Start Up Delay			2	s	115/230 VAC full load.
Hold Up Time	10			ms	Min at full load, 115 VAC.
Drift			±0.02	%	After 20 min warm up
Line Regulation			±0.5	%	90-264 VAC
Load Regulation			±0.5	%	0-100% load.
Transient Response			4	%	Recovery within 1% in less than 500 µs for a 50-75% and 75-50% load step
Over/Undershoot		5	9	%	Full load
Ripple & Noise			1	% pk-pk	20 MHz bandwidth and 10 µF electrolytic capacitor in parallel with 0.1 µF ceramic capacitator.
Overvoltage Protection	110		130	%	Vnom, recycle input to reset
Overload Protection	110		130	% I nom	
Short Circuit Protection					Trip & Restart
Temperature Coefficient			0.02	%/°C	
Overtemperature Protection					Measured internally, Auto Resetting

Output - Optional 5 V Standby Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage		5.0		VDC	
Initial Set Accuracy			±1	%	50% load, 115/230 VAC
Minimum Load	0			A	
Start Up Delay			0.5	s	115/230 VAC full load.
Hold Up Time	500			ms	Min at full load, 115 VAC.
Drift			±0.02	%	After 20 min warm up
Line Regulation			±0.5	%	90-264 VAC
Load Regulation			5	%	0-100% load.
Transient Response			4	%	Recovery within 1% in less than 500 µs for a 50-75% and 75-50% load step
Over/Undershoot			5	%	Full load
Ripple & Noise			1.2	% pk-pk	20 MHz bandwidth and 10 µF electrolytic capacitor in parallel with 0.1 µF ceramic capacitator
Overload Protection			2.0	A	
Short Circuit Protection					Trip & Restart
Temperature Coefficient			0.02	%/°C	
Remote On/Off					

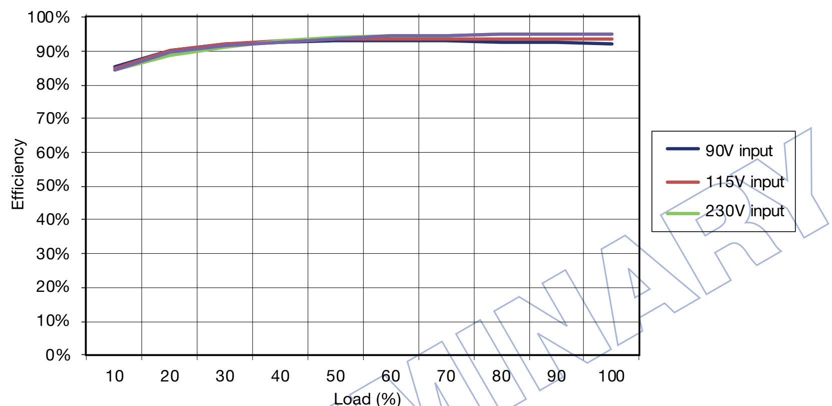
General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		95		%	230 VAC Full load (see fig. 1 to 4)
Isolation: Input to Output	4000			VAC	2 MOPP
Input to Ground	1500			VAC	1 MOPP
Output to Ground	1500			VAC	1 MOPP
Switching Frequency		50		kHz	PFC
		80		kHz	Main converter
		100		kHz	For standby output
Power Density			9.5	W/in³	
Mean Time Between Failure		300		kHrs	MIL-HDBK-217F, Notice 2 +25 °C GB
Weight		2.43 (11000)		lb(g)	

Efficiency Vs Load

Figure 1 - UCH600PS12

Figure 2 - UCH600PS24

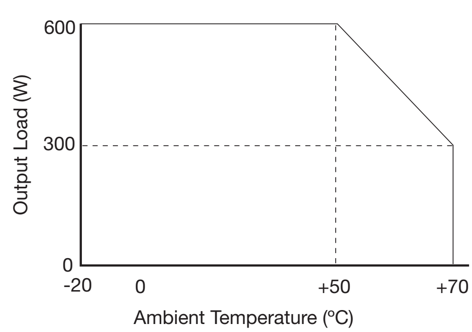


Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-20		+70	°C	
Storage Temperature	-40		+85	°C	
Cooling	10			CFM	Forced-cooled > 150W
Humidity	5		95	%RH	Non-condensing
Operating Altitude			5000/4000	m	ITE/Medical
Shock	±3 x 30g shocks in each plane, total 18 shocks. 30g = 11ms (+/- 0.5msecs), half sine. Conforms to EN60068-2-27				
Vibration	Single axis 10-500 Hz at 2g sweep and endurance at resonance in all 3 planes. Conforms to EN60068-2-6				

Temperature Derating Curves

Figure 2 - 150 W Convection Cooled



EMC: Emissions

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
Conducted	EN55011/32	Class B		
Radiated	EN55011/32	Class B		
Harmonic Current	EN61000-3-2	Class A		
Voltage Functions	EN61000-3-3			

EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
Medical Device EMC	IEC60601-1-2	Ed.4.0 : 2014	as below	
Low Voltage PSU EMC	EN61204-3	High severity level	as below	
ESD	EN61000-4-2	4	A	±8kV contact, ±15kV air
Radiated	EN61000-4-3	3	A	
EFT	EN61000-4-4	3	A	
Surges	EN61000-4-5	Installation class 3	A	
Conducted	EN61000-4-6	3	A	
Magnetic Fields	EN61000-4-8	4	A	
Dips and Interruptions	EN55024 (100 VAC)	Dip >95% (0 VAC), 8.3 ms	A	
		Dip 30% (70 VAC), 416 ms	A	
		Dip >95% (0 VAC), 4160 ms	B	
	EN55024 (240 VAC)	Dip >95% (0 VAC), 10.0 ms	A	
		Dip 30% (168 VAC), 500 ms	A	
		Dip >95% (0 VAC), 5000 ms	B	
	EN60601-1-2 (100 VAC)	Dip 100% (0 VAC), 10.0 ms	A	
		Dip 100% (0 VAC), 20 ms	B	
		Dip 60% (40 VAC), 100 ms	A	
		Dip 30% (40 VAC), 500 ms	A	
		Dip 100% (0 VAC), 5000 ms	B	
	EN60601-1-2 (240 VAC)	Dip 100% (0 VAC), 10.0 ms	A	
		Dip 100% (0 VAC), 20 ms	B	
		Dip 60% (96 VAC), 100 ms	A	
		Dip 30% (168 VAC), 500 ms	A	
		Dip 100% (0 VAC), 5000 ms	B	

Safety Approvals

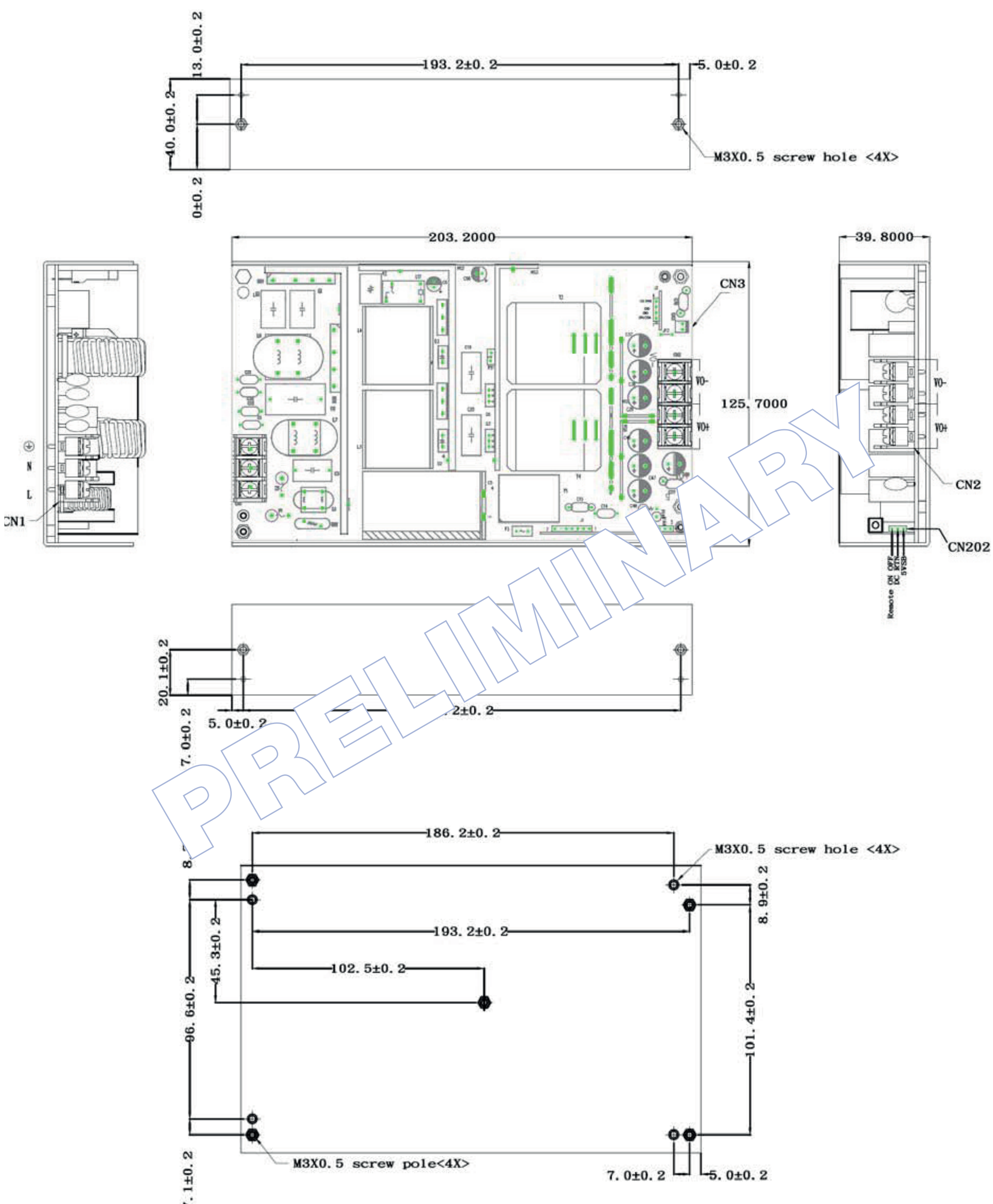
Safety Agency	Safety Standard	Notes & Conditions
CB Report	IEC60950-1, IEC62368	Information Technology
UL		Information Technology
TUV	EN62368-1	Information Technology
CE	LVD	

Safety Agency	Safety Standard	Notes & Conditions
CB Report	IEC60601-1 Ed 3.1 Including Risk Management	Medical
UL	ANSI/AAMI ES60601-1 & CSA C22.2 No.60601-1:08	Medical
TUV	EN60601-1	Medical

Isolation	Level	Notes & Conditions
Primary to Secondary	2 x MOPP (Means of Patient Protection)	IEC60601-1 Ed 3.1
Primary to Earth	1 x MOPP (Means of Patient Protection)	
Secondary to Earth	1 x MOPP (Means of Patient Protection)	

Mechanical Details

Standard U-Channel Version



Notes

1. All dimensions shown in inches (mm).
   Tolerance: ±0.02 (0.5)
2. Weight: 2.43 lbs (1100 g) approx.

Thermal Considerations

In order to ensure safe operation of the PSU in the end-use equipment, the temperature of the components listed in the table below must not be exceeded. Temperature should be monitored using K type thermocouples placed on the hottest part of the component (out of direct air flow). See Mechanical Details for component locations.

Temperature Measurements (At Maximum Ambient)	
Component	**Max Temperature °C**
TR1 Coil	110°C
L4 Coil	120°C
Q1 Body	120°C
C2	105°C
C51	105°C

Service Life

The estimated service life of the UCH600 is determined by the cooling arrangements and load conditions experienced in the end application. Due to the uncertain nature of the end application this estimated service life is based on the actual measured temperature of a key capacitor with in the product when installed by the end application,

The graph below expresses the estimated lifetime of a given component temperature and assumes continuous operation at this temperature.

Estimated Service Life vs Component Temperature

Figure 5