



IP20 Class I &amp; II (VI)

### Product Features

- Medical & ITE safety approvals
- 2 MOPP input to output isolation
- DOE Efficiency Level VI
- CoC V5 Tier 2(2016)
- Suitable for medical equipment up to class BF<sup>(^)</sup>
- Low leakage current  $\leq 100\mu\text{A}$
- $\leq 0.075$  Watts Standby Power
- 9-54V outputs, up to 48W
- 3,048m Operating Altitude
- Meet 4KV surge immunity
- 4 types of AC inlet



### Models & Ratings

Model Number	Voltage <sup>(*)</sup> (V)	Current (A)	Rated Power	Ripple & Noise (max) <sup>(*)2</sup>	Voltage Tolerance	Line & Load Regulation	Efficiency (Average)	Start Up Delay
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	9.1-10.0	0.01-4.50	45W	120mVpk-pk	±5%		88.7%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	10.1-11.0	0.01-4.36	48W	120mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	11.1-12.0	0.01-4.00	48W	120mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	12.1-13.0	0.01-3.69	48W	120mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	13.1-14.0	0.01-3.42	48W	120mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	14.1-15.0	0.01-3.20	48W	120mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	15.1-16.0	0.01-3.00	48W	120mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	16.1-17.0	0.01-2.82	48W	120mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	17.1-18.0	0.01-2.66	48W	120mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	18.1-19.0	0.01-2.52	48W	120mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	19.1-20.0	0.01-2.40	48W	120mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	20.1-21.0	0.01-2.28	48W	150mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	21.1-22.0	0.01-2.18	48W	150mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	22.1-23.0	0.01-2.08	48W	150mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	23.1-24.0	0.01-2.00	48W	150mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	24.1-25.0	0.01-1.92	48W	150mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	25.1-26.0	0.01-1.84	48W	150mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	26.1-27.0	0.01-1.77	48W	150mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	27.1-28.0	0.01-1.71	48W	150mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	28.1-29.0	0.01-1.65	48W	150mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	29.1-30.0	0.01-1.60	48W	150mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	30.1-31.0	0.01-1.54	48W	300mVpk-pk	±5%	Line: ±1% Load: ±5%	89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	31.1-32.0	0.01-1.50	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	32.1-33.0	0.01-1.45	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	33.1-34.0	0.01-1.41	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	34.1-35.0	0.01-1.37	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	35.1-36.0	0.01-1.33	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	36.1-37.0	0.01-1.29	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	37.1-38.0	0.01-1.26	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	38.1-39.0	0.01-1.23	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	39.1-40.0	0.01-1.20	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	40.1-41.0	0.01-1.17	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	41.1-42.0	0.01-1.14	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	42.1-43.0	0.01-1.11	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	43.1-44.0	0.01-1.09	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	44.1-45.0	0.01-1.06	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	45.1-46.0	0.01-1.04	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	46.1-47.0	0.01-1.02	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	47.1-48.0	0.01-1.00	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	48.1-49.0	0.01-0.97	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	49.1-50.0	0.01-0.96	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	50.1-51.0	0.01-0.94	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	51.1-52.0	0.01-0.92	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	52.1-53.0	0.01-0.90	48W	300mVpk-pk	±5%		89.0%	≤3s
UES48-XXXXXXSPA1/SPA2/SPA3/SPA4	53.1-54.0	0.01-0.88	48W	300mVpk-pk	±5%		89.0%	≤3s

Model encoding: replace "Z" with "1" for C8 (Class II), "2" for C6 (Class I), "3" for C14 (Class I) AC inlets

#### Notes

(\*1, 3, 4) Other options are available, please contact our sales representative for details.

(\*2) Measured at output connector with 20MHz bandwidth and 0.1uF ceramic in parallel with 10uF electrolytic capacitors.

(\*5) Polarized C8 is available.

(^) Power supplies are not medical equipment (applied parts), medical product manufacturers shall take responsibility for further evaluation of class B/BF/CF compliance of their end product.

## Input

Input Voltage Range	100-240VAC
Frequency Range	50-60Hz
Input Current	1.1A at 90VAC
Inrush Current	70A max at 240VAC cold start
Touch Leakage Current (max)	Class I & Class II $\leq 100\mu\text{A}$ at 264VAC

## Environmental

Operating Temperature	-10°C to 40°C
Storage Temperature	-20°C to 70°C
Operating Humidity	10% to 90% RH
Storage Humidity	5% to 90% RH
Operating Altitude	3,048m

## General

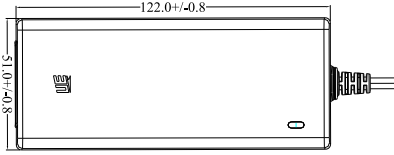
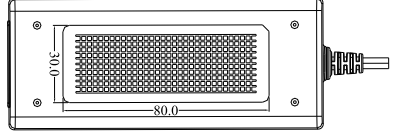
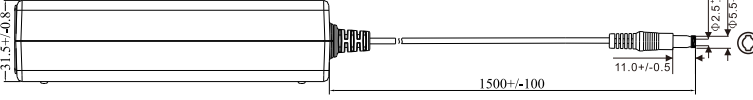
Dimensions	122(L)x51(W)x31.5(H)mm
Weight	300g
MTBF	>190,000hrs MIL-HDBK-217 at 25°C
Isolation	4,000VAC Input to Output 2,000VAC Input to Ground (Class I version only)

## Protection





Overload	120-180% rated output power, auto recovery
Over Voltage	120-180% rated output voltage, auto recovery
Short Circuit	Trip and restart (hiccup mode)

## Mechanical Details

DC Cable <sup>(*)3</sup>	U L1185 16AWG 1,500mm with ferrite for 9 - 24V U L1185 18AWG 1,500mm with ferrite for 36 - 54V
Connector <sup>(*)4</sup>	2.5x5.5x11mm, fork type, centre "+"

**Interchangeable AC Plug Options**

C8 (SPA1)<sup>(\*)5</sup>   C6 (SPA2)   C14 (SPA3)   C18 (SPA4)

Unit: mm

## Safety Approvals

Safety Agency / Mark	Medical	ITE
CB	IEC60601-1	IEC60950-1   IEC62368-1
UL	ANSI/AAMI ES60601-1	UL60950-1   UL62368-1
TUV	CAN/CSA C22.2 NO. 60601-1	EN60950-1   EN62368-1
CCC	EN60601-1	GB4943.1

## EMC

Emissions	Medical	ITE
Conducted	IEC/EN 60601-1-2, CISPR 11	EN55022, CISPR 22
Radiated	IEC/EN 60601-1-2, CISPR 11	EN55022, CISPR 22
Harmonic Currents	EN61000-3-2, Class A	EN61000-3-2, Class A
Voltage Flicker	EN61000-3-3	EN61000-3-3
Immunity	Medical	ITE
ESD	EN61000-4-2	±15kV air, ±8kV contact
Radiated Immunity	EN61000-4-3	10V/m, 3V/m 80MHz - 2.7GHz
EFT/Burst	EN61000-4-4	±2kV on AC port, ±1kV on signal ports
Surge	EN61000-4-5	±4KV line to line (diff mode)
Conducted Immunity	EN61000-4-6	3Vrms, 6Vrms (0.15MHz-80MHz)
Magnetic Field	EN61000-4-8	30 A/m
Dips & Interruptions	EN61000-4-11	0%, 70%, 0% of UT

## Others

Dielectric Withstand Voltage	4,000VAC/5,656VDC input to output
Insulation Resistance	10M Ohms, 500VDC input to output