# MAX POWER FAMILY SWITCHMODE POWER SUPPLY SPECIFICATIONS

#### Specifications:

1. General Character:

The model WSX600 and WSX800 series power supplies are designed for use in medical, information technology or laboratory environments. They provide a "universal" AC input operation. Fan cooling is provided to allow higher power densities than is possible without fan cooling.

1.1 The model number suffix "M", indicates that a specific model is for use in a medical environment.

#### 2. Electrical Specifications:

#### 2.1 Input: 100-250Vac 50/60Hz

(90-264 Vac, 47-63 Hz is the tested operational range, 100-250 Vac range is marked on product to comply with safety standards.) Available as either a Class 1 or Class 2 input configuration, a "D" model number suffix indicates a Class 2 input configuration.

#### 2.1.1 Input Fuses:

A current fuse is incorporated in each of the 2 AC lines, slo blo type fuse element, configured with integral welded on leads.

#### 2.1.2 Input Switch:

An optional input switch may be provided if required. A "I" and a "O" will be marked on it, or next to it.

#### 2.2 Output:

Nominal output power: WSX600 family = 150W, WSX800 family = 180W

( Optional model number suffix letter "M", indicates medical usage. )

| WSX612 | 12Vdc 12.5A | WSX812 | 12Vdc 15A   |
|--------|-------------|--------|-------------|
| WSX613 | 13Vdc 11.5A | WSX813 | 13Vdc 13.8A |
| WSX614 | 14Vdc 10.7A | WSX814 | 14Vdc 12.8A |
| WSX615 | 15Vdc 10.0A | WSX815 | 15Vdc 12A   |
| WSX616 | 16Vdc 9.4A  | WSX816 | 16Vdc 11.2A |
| WSX618 | 18Vdc 8.3A  | WSX818 | 18Vdc 10A   |
| WSX620 | 20Vdc 7.5A  | WSX820 | 20Vdc 9A    |
| WSX622 | 22Vdc 6.8A  | WSX822 | 22Vdc 8.2   |
| WSX624 | 24Vdc 6.25A | WSX824 | 24Vdc 7.5A  |
| WSX626 | 26Vdc 5.8A  | WSX826 | 26Vdc 6.9A  |
| WSX628 | 28Vdc 5.4A  | WSX828 | 28Vdc 6.4A  |
| WSX630 | 30Vdc 5.0A  | WSX830 | 30Vdc 6A    |
| WSX632 | 32Vdc 4.7A  | WSX832 | 32Vdc 5.6A  |
| WSX636 | 36Vdc 4.2A  | WSX836 | 36Vdc 5A    |
| WSX640 | 40Vdc 3.75A | WSX840 | 40Vdc 4.5A  |
| WSX644 | 44Vdc 3.4A  | WSX844 | 44Vdc 4.1A  |
| WSX648 | 48Vdc 3.1A  | WSX848 | 48Vdc 3.75A |

2.3 Output Variance, Voltage:

+/- 5% at Full Load, any input voltage or environmental condition

2.4 Load Regulation, Voltage:

Not to exceed 800 millivolts for 100% to 0% load change, varies due to output cord selected, remote sense option available, contact factory.

2.5 Maximum Output Ripple:

- 12 24V: 100mVp-p 24.1 - 36V: 150mVp-p
- 36.1 48V: 200mVp-p

2.6 Protection Circuitry: The output is protected from short circuit and prolonged overload. The internal circuitry is protected against a locked fan condition.

#### 3. Mechanical Specifications:

3.1 Enclosure Dimensions: WSX600 family: 6.5"L X3.75"W X2.56"H inches. WSX800 family: Two enclosure options, Long = 7.4"L X3.75"W X2.56"H, Short = 6.5"L X3.75"W X2.56"H inches. Enclosure outline drawings available upon request.

3.2 Weight: Maximum weight, for power supply without the detachable input cordset is 2.05 pounds (0.93 kg).

3.3 Input Configuration: Male IEC320 power inlet, 2 or 3 conductor option. Optional input connector lock available.

3.4 Output Configuration: 6 foot length standard, various conductor arrangements and jacket material selections are available. Cordsets may be terminated with various dc connectors, custom output connector assemblies are available, contact customer service for details. Standard in-stock cordsets can be seen in the Jerome Industries engineering manual / catalog on pages 10 and 11.

## 4. Environmental:

Temperature: 0 to 40C Humidity: 10% to 95% non-condensing Atmospheric pressure: 70 to 106 kPa Please contact customer service if a wider operating range is required.

4.2 Storage :

Temperature: -40 to 75C Humidity: 10% to 95% non-condensing Atmosperic pressure: 50 to 106 kPa

4.3 Liquid Ingress:

Spill-proof per IEC60601-1 clause 44.3, vertical drip proof per IEC60529.

4.4 Ingress Protection Level: IPX1

4.5 Audible noise:

52 dBA maximum white noise measured 12 inches from any side. Virtually no detectable narrowband sound apparent.

4.6 Fan:

Fan will operate at normal speed from 100% load to approximately (10 to 30)% load. From no load to approximately (10 to 30)% load fan is stopped.

#### 5. Regulatory Compliance

5.1 Safety Compliance:

These power supplies have been certified by the following safety agencies to the standards shown:

5.1.1 Single Output Models

These power supplies have been certified by the following safety agencies to the standards shown:

| Regulatory Agency                     | Standard               | <b>Classification</b> | <u>File#</u>       |
|---------------------------------------|------------------------|-----------------------|--------------------|
| UL<br>UL testing and<br>evaluation of | UL60601-1<br>UL60950-1 | Isolation, BF<br>SELV | E160908<br>E148586 |
| Canadian                              | C22.2#601-1            | lsolation, BF         | E160908            |
| requirements.                         | C22.2#60950-1          | SELV                  | E148586            |
| TUV                                   | EN60601-1              | Isolation, BF         | B060324072023      |
|                                       | EN60950-1              | SELV                  | B060324072023      |

5.2 Power supplies shipped to European market need to bear the CE mark. Jerome Industries can supply a CE mark under the following standards:

| Standard  | <b>Classification</b> |  |
|-----------|-----------------------|--|
| EN60601-1 | Isolation, BF         |  |
| EN60950-1 | SELV                  |  |

5.3 Electro Magnetic Compatibility:

Meets requirements of European EMC directive and FCC requirements.

5.3.1 Medical:

Meets EMC requirements from EN60601-1-2 (EMC requirements for ElectroMedical Equipment).

5.3.2 Emissions:

Meets level B requirements of FCC 47 CFR part 15 and CISPR11 (EN55011) and CISPR22 (EN55022), EN61000-6-3 (light industrial) and line harmonic emissions EN61000-3-1.

5.3.3 Immunity:

Meets CISPR24 (EN55024), EN61326 and EN61000-6-3.

5.3.4 EMC Responsibility:

It is the responsibility of the OEM customer to verify EMC compliance with his system before marketing the end-use system.

Notes:

1) Emissions are monitored on all prototypes using a spectrum analyzer with peak, quasi peak and average mode power measurement capabilities. Conducted emissions are recorded for both 120 Vac and 230 Vac input conditions. A correlated radiated emissions

program is used in order to economically verify the radiated emissions from a specific model.

The emissions program works from the premises of the power supply acting as a dipole antenna radiator, one side of the dipole antenna being the input cord, the other side being the output cord. Levels are monitored on the cords by a common mode current sensing device operating into a spectrum analyzer. Correlation factors have been established which are based upon the difference between radiated field measurements made at independent labs and lamma Industries lab common mode current measurements on the assurements on the difference between radiated field measurements made at independent labs and lamma Industries lab common mode current measurements on the difference between radiated field measurements made at independent labs and the more Industries lab common mode current measurements on the difference the second measurements of the second measurements on the second

the cords of reference power supplies. Using this technique, Jerome Industries has experienced a 100% passing rate for prototypes submitted for radiated field emissions testing at independent labs.

#### **OEM System Engineer Instructions**

\* The EMC characteristics of the final system comprised of both the power supply and the main system must be evaluated to the applicable EMC environment regulations.

\* Should a power supply need repair, please return it along with a note describing the particular problem to:

Jerome Industries Inc. 730 Division St. Elizabeth, NJ 07201 U.S.A.

\* Circuit operation block diagrams, isolation diagrams, and a list of safety critical components will be available on request to appropriately qualified personnel.

\* All products which contain double input fuses shall contain the following text in the system installation manual: "CAUTION: DOUBLE POLE/NEUTRAL FUSING"

### **Medical Products**

\* When used with medical products the Instruction Manual prepared for the end use product must incorporate at a minimum, the following power supply warning notices:

a) **Warning:** When cleaning the power unit, use a cloth dampened with cleaning alcohol on the outside of the enclosure only. Do not immerse product in water or a safety hazard could arise during use.

b) Warning: Do not use this power unit in the presence of flammable anesthetics.

\* Periodic leakage current testing should be done on the combined power supply and end-use system on a yearly basis when used in a hospital environment where such test equipment is commonly available.

## Appendix A

## Class 1 WSX600/800 Family Typical Leakage Current Measurements per IEC60601-1 Clause 19

|  | NC  | SFC |
|--|-----|-----|
| Earth Leakage Current  | 234 | 420 |
| Enclosure Leakage Current  | 0.9 | 1.7 |
| Patient Leakage Current<br>(to output negative cord<br>connection)                           | 15  | 107 |
| Patient Leakage Current,<br>Mains Voltage Applied (to<br>output negative cord<br>connection) | N/A | 383 |

## Class 2 WSX600/800 Family Typical Leakage Current Measurements per IEC60601-1 Clause 19

|  | NC  | SFC |
|--|-----|-----|
| Enclosure Leakage Current  | 1.7 | 1.7 |
| Patient Leakage Current<br>(to output negative cord<br>connection)                           | 74  | 114 |
| Patient Leakage Current,<br>Mains Voltage Applied (to<br>output negative cord<br>connection) | N/A | 195 |

### Notes:

- 1) Measurement data in microamps.
- 2) Measurements made with 275 Vac, 60 Hz input.
- 3) Worst case measurement condition, including humidity preconditioning.
- 4) Reduced leakage designs available (including CF category compliant designs), contact factory for availability.
- 5) WSX600/800 Class 1 models may be optionally built with Class 2 EMI filter components which causes a significant reduction in leakage current.

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