# MSP-100 series

100W Single Output Medical Type

## Features :

- Universal AC input / Full range
- Built-in active PFC function
- High efficiency up to 90%
- Withstand 300VAC surge input for 5 seconds
- Protections: Short circuit / Overload / Over voltage
- Protections: Over temperature (optional)
- Cooling by free air convection
- 1U low profile 38mm
- Medical safety approved (MOOP level)
- Built-in remote ON-OFF control
- No load power consumption<0.5W
- All using 105℃ long life electrolytic capacitors
- 5 years warranty

User's Manual

ANSI/AAMI ES60601-1 IEC60601-1 TPTC004

## GTIN CODE

MW Search: https://www.meanwell.com/serviceGTIN.aspx

## SPECIFICATION

| MODEL | | MSP-100-3.3 | MSP-100-5 | MSP-100-7.5 | MSP-100-12 | MSP-100-15 | MSP-100-24 | MSP-100-36 | MSP-100-48 |
|---|---|---|---|---|---|---|---|---|---|
| OUTPUT | DC VOLTAGE | 3.3V | 5V | 7.5V | 12V | 15V | 24V | 36V | 48V |
| | RATED CURRENT | 20A | 17A | 13.5A | 8.5A | 7A | 4.5A | 2.9A | 2.2A |
| | CURRENT RANGE | 0 ~ 20A | 0 ~ 17A | 0 ~ 13.5A | 0 ~ 8.5A | 0 ~ 7A | 0 ~ 4.5A | 0 ~ 2.9A | 0 ~ 2.2A |
| | RATED POWER | 66W | 85W | 101.3W | 102W | 105W | 108W | 104.4W | 105.6W |
| | RIPPLE & NOISE (max.) Note.2 | 80mVp-p | 80mVp-p | 100mVp-p | 120mVp-p | 150mVp-p | 150mVp-p | 200mVp-p | 240mVp-p |
| | VOLTAGE ADJ. RANGE | 3.1 ~ 3.8V | 4.75 ~ 5.8V | 7.1 ~ 9V | 11.4 ~ 13.8V | 14.25 ~ 18V | 22.8 ~ 28.8V | 34.2 ~ 39.6V | 45.6 ~ 55.2V |
| | VOLTAGE TOLERANCE Note.3 | +2.5,-3.5% | +2.5,-3.5% | ±2.5% | ±1.5% | ±1.5% | ±1.5% | ±1.5% | ±1.5% |
| | LINE REGULATION | ±0.5% | ±0.5% | ±0.5% | ±0.3% | ±0.3% | ±0.2% | ±0.2% | ±0.2% |
| | LOAD REGULATION | ±2.0% | ±2.0% | ±1.5% | ±0.8% | ±0.8% | ±0.5% | ±0.5% | ±0.5% |
| | SETUP, RISE TIME | 2500ms, 100ms/230VAC 2500ms, 100ms/115VAC at full load | | | | | | | |
| | HOLD UP TIME (Typ.) | 50ms/230VAC 20ms/115VAC at full load | | | | | | | |
| INPUT | VOLTAGE RANGE Note.5 | 85 ~ 264VAC 120 ~ 370VDC | | | | | | | |
| | FREQUENCY RANGE | 47 ~ 63Hz | | | | | | | |
| | POWER FACTOR (Typ.) | PF>0.95/230VAC PF>0.98/115VAC at full load | | | | | | | |
| | EFFICIENCY (Typ.) | 78% | 83% | 84% | 87.5% | 88% | 88.5% | 89% | 90% |
| | AC CURRENT (Typ.) | 1.2A/115VAC 0.6A/230VAC | | | | | | | |
| | INRUSH CURRENT (Typ.) | 35A/115VAC 65A/230VAC | | | | | | | |
| | LEAKAGE CURRENT Note.6 | Earth leakage current < 300μA/264VAC , Touch leakage current < 100μA/264VAC | | | | | | | |
| PROTECTION | OVERLOAD | 105 ~ 135% rated output power | | | | | | | |
| | | Protection type : Constant current limiting for Vo=50 ~ 100% of rated voltage, recovers automatically after fault condition is removed | | | | | | | |
| | OVER VOLTAGE | 3.96 ~ 4.62V | 6 ~ 7V | 9.4 ~ 10.9V | 14.4 ~ 16.8V | 18.8 ~ 21.8V | 30 ~ 34.8V | 41.4 ~ 48.6V | 57.6 ~ 67.2V |
| | | Protection type : Shut down o/p voltage, re-power on to recover | | | | | | | |
| | OVER TEMPERATURE | Shut down o/p voltage, recovers automatically after temperature goes down | | | | | | | |
| FUNCTION | REMOTE CONTROL | RC+/RC- : 0 ~ 0.8V= power on ; 4 ~ 10V = power off | | | | | | | |
| ENVIRONMENT | WORKING TEMP. | -40 ~ +60℃ (Refer to "Derating Curve") | | | | | | | |
| | WORKING HUMIDITY | 20 ~ 90% RH non-condensing | | | | | | | |
| | STORAGE TEMP., HUMIDITY | -40 ~ +85℃, 10 ~ 95% RH | | | | | | | |
| | TEMP. COEFFICIENT | ±0.04%/℃ (0 ~ 50℃) | | | | | | | |
| | VIBRATION | 10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes | | | | | | | |
| SAFETY & EMC (Note 4) | SAFETY STANDARDS | IEC 60601-1:2005+A1+A2, ANSI/AAMI ES 60601-1:2005+A2, CAN/CSA C22.2 No. 60601-1:2014+A2, EAC TP TC 004 approved Design refer to BS EN/EN60335-1, BS EN/EN 62368-1(by request) | | | | | | | |
| | ISOLATION LEVEL | Primary-Secondary: 2×MOOP, Primary-Earth: 1×MOOP, Secondary-Earth: 1×MOOP | | | | | | | |
| | WITHSTAND VOLTAGE | I/P-O/P:4KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC | | | | | | | |
| | ISOLATION RESISTANCE | I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25℃/ 70% RH | | | | | | | |
| | EMC EMISSION | Compliance to BS EN/EN55011 (CISPR11) Class B, BS EN/EN61000-3-2,-3, EAC TP TC 020 | | | | | | | |
| | EMC IMMUNITY | Compliance to BS EN/EN61000-4-2,3,4,5,6,8,11, BS EN/EN55035,BS EN/EN60601-1-2, EAC TP TC 020 | | | | | | | |
| OTHERS | MTBF | 2272.8K hrs min. Telcordia SR-332 (Bellcore) ; 352.4K hrs min. MIL-HDBK-217F (25℃) | | | | | | | |
| | DIMENSION | 159*97*38mm (L*W*H) | | | | | | | |
| | PACKING | 0.55Kg; 24pcs/ 14.3Kg/0.9CUFT | | | | | | | |

**NOTE**

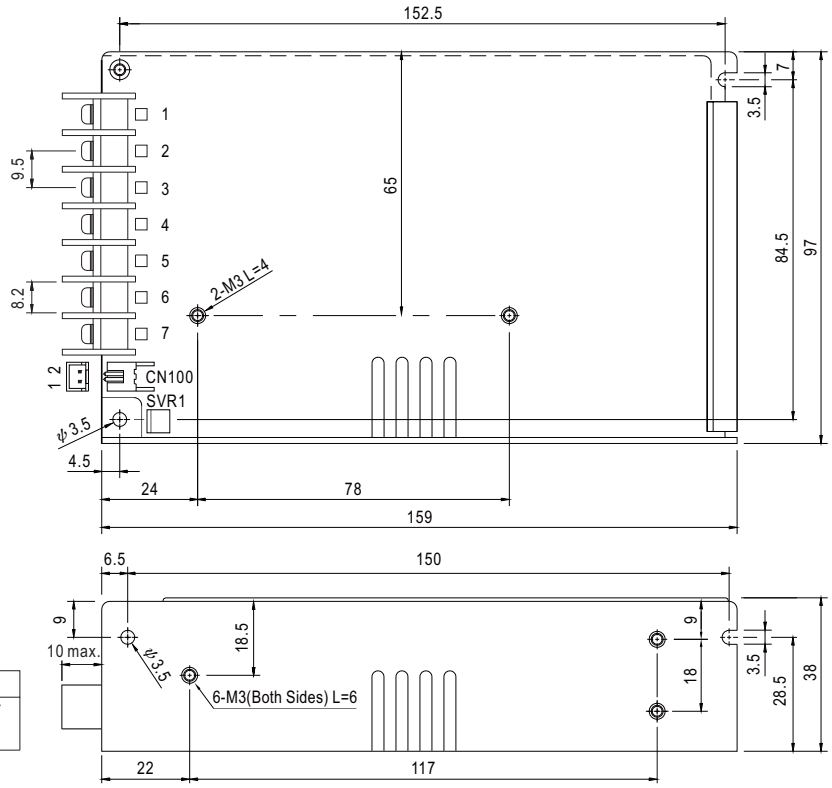
1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 μF & 47 μF parallel capacitor.
3. Tolerance : includes set up tolerance, line regulation and load regulation.
4. The power supply is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on https://www.meanwell.com//Upload/PDF/EMI_statement_en.pdf )
5. Derating may be needed under low input voltages. Please check the derating curve for more details.
6. Touch current was measured from primary input to DC output.
7. When the input voltage is less than 40VAC, the SPS may exhibit degradation of performance. The final product manufacturers must re-confirm this deviation that does not affect basic safety or essential performance.
8. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft).

※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx

## ■ Mechanical Specification

(Unit: mm , tolerance ± 1mm)

Case No.901I



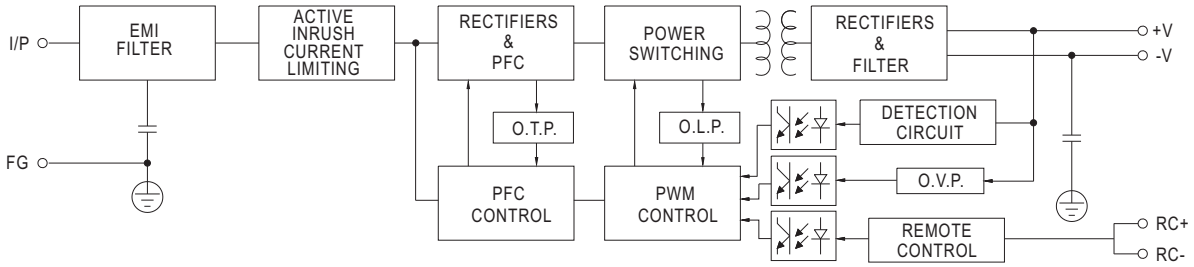

Terminal Pin No. Assignment

| Pin No. | Assignment | Pin No. | Assignment |
|---|---|---|---|
| 1 | AC/L | 4,5 | DC OUTPUT -V |
| 2 | AC/N | 6,7 | DC OUTPUT +V |
| 3 | FG ⏚ | | |

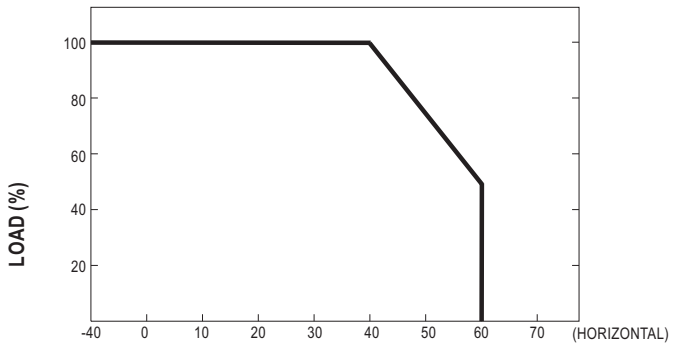
Remote ON/OFF (CN100) : JST B-XH or equivalent

| Pin No. | Assignment | Mating Housing | Terminal |
|---|---|---|---|
| 1 | RC- | JST XHP or equivalent | JST SXH-001T or equivalent |
| 2 | RC+ | | |

## ■ Block Diagram

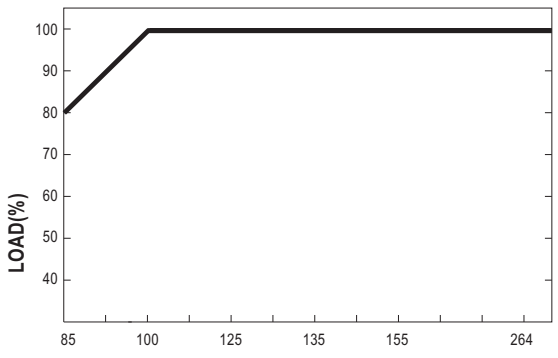



## ■ Derating Curve




AMBIENT TEMPERATURE (℃)

## ■ Output Derating VS Input Voltage




INPUT VOLTAGE (V) 60Hz