

SPU65 series

V2.4

65W / 80W External Power Supply for General Purpose

The SPU65 series of AC/DC switching mode power supplies provide 80 Watts of continuous output power. All supplies are UL 94V-1 min compliant. All models meet FCC Part-15 class B and CISPR-32 class B emission Limits and are designed to comply with UL/c-UL, FCC, CB and CE marking conformity assessment. All units are 100% burned in and tested.

FEATURES:

- * Wide Operating Voltage 80 to 275 VAC, 47 to 63 Hz
- * IEC-320-C14 Input Inlet
- * Single to Quad Output
- * Crowbar Mode Over Voltage Protection
- * High Altitude of 5000m
- * DoE VI
- * 3 year warranty



RoHS2
2011/65/EU



APPLICATIONS:

- * POS System
- * AV Equipment
- * Industrial PC
- * Note PC
- * Charger

GENERAL SPECIFICATION:

- * **Short Circuit Protection:** Auto Recovery
- * **Cooling:** Free Air Convection
- * **Flammability Rating:** UL94V-1 min.
- * **Protection Classes:** Class I
- * **Safety:** IEC 62368-1 Edition 2.0, UL 62368-1, CAN/CSA-C22.2 NO.62368-1-14, EN 62368-1:2014, J 62368-1

APPROVALS:



Electrical Characteristics: (Single Output)

| Symbol | Characteristic | Condition | Min. | Typ. | Max. | Unit |
|--------|---------------------------------------|--|------------------|------|-------|-------|
| Vins | Safety Approval Input Voltage Range | Safety Approval & Specification in Label | 100 | | 240 | VAC |
| Vin | Input Operate Voltage Range | Detail to see Fig.1 | 80 | | 275 | VAC |
| Fi | Input Frequency | Sine wave | 47 | | 63 | Hz |
| Po | Output Power Range | See Rating Chart | | | 80 | W |
| Iil | Low Line Input Current | Full Load, Vin=100VAC | | 1.9 | | A |
| Iih | High Line Input Current | Full Load, Vin=240VAC | | 0.79 | | A |
| Irl | Low Line Input Inrush Current | Full Load, 25°C, Cool start, Vin=100VAC (Except 102~104) | | | 30 | A |
| Irh | High Line Input Inrush Current | Full Load, 25°C, Cool start, Vin=240VAC (Except 102~104) | | | 72 | A |
| Ik | Safety Ground Leakage Current | Vin=240VAC, Fi=60Hz | | | 0.75 | mA |
| η | Efficiency | Full Load, Vin=230VAC, Detail to see Rating Chart | See Rating Chart | | | |
| ΔVoi | Line Regulation | Full Load, Vin=100~120VAC | 0.5 | | 1 | % |
| ΔVoL | Load Regulation | Vin=230VAC, 10~90% Load Change at Condition | 3 | | 7 | % |
| OVP | Over Voltage Protection | Over Voltage Protection | 112 | | 132 | % |
| OLP | Over Load Protection | Recovers automatically after fault condition is removed | 110 | | 150 | % |
| ttr | Time of Transient Response | Io=Full Load to Half Load, Vin=110VAC | | | 4 | ms |
| thu | Hold-Up Time | Full Load, Vin=100VAC | See Rating Chart | | | |
| ts | Start-up time | Full Load, Vin=100~240VAC | | | 2 | s |
| Tc | Temperature Coefficient | Full load, Vin=100~240VAC | | | ±0.04 | %/°C |
| HV | Dielectric Withstanding Voltage (P-S) | Primary to Secondary | | | 4242 | VDC |
| Vpg | Dielectric Withstanding Voltage (P-G) | Primary to PE | | | 2121 | VDC |
| EMI | EMC Emission | | | | B | Class |

Environmental: (Single Output)

| Symbol | Characteristic | Condition | Min. | Typ. | Max. | Unit |
|--------|--------------------------------|--|------|------|------|------|
| To | Operating Temperature | Detail to see Fig.2 (Derate linearly from 100% load at 40°C to 50% load at 70°C) | 0 | | 70 | °C |
| Ts | Storage Temperature | 10 ~ 95% RH | -40 | | 85 | °C |
| Ho | Operating Humidity | non-condensing | 0 | | 95% | RH |
| Hs | Storage Humidity | | 0 | | 95% | RH |
| ESDa | Electro Static Discharge | Air Discharge, IEC61000-4-2 | | | 8 | kV |
| ESDc | Electro Static Discharge | Contact Discharge, IEC61000-4-2 | | | 4 | kV |
| MTBF | Mean Time Between Failure | Operating Temperature at 25°C, Calculated per MIL-HDBK-217F | 100k | | | h |
| ELEV | Operating Altitude (Elevation) | All condition | | | 5000 | m |
| VBR | Vibration | 10 ~ 500Hz, 10min./1cycle, 60min. each along X, Y, Z axes | | | 5 | G |
| Vsl | Surge Voltage | Line-Neutral | | | 1 | kV |
| Vsg | Surge Voltage | Line-PE & Neutral-PE | | | 2 | kV |

Electrical Characteristics: (Multi Output)

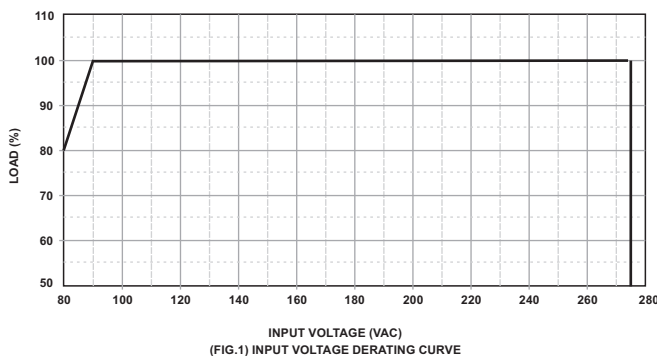
| Symbol | Characteristic | Condition | Min. | Typ. | Max. | Unit |
|--------|---------------------------------------|---|------------------|------|-------|-------|
| Vins | Safety Approval Input Voltage Range | Safety Approval & Specification in Label | 100 | | 240 | VAC |
| Vin | Input Operate Voltage Range | Detail to see Fig.1 | 80 | | 275 | VAC |
| Fi | Input Frequency | Sine wave | 47 | | 63 | Hz |
| Po | Output Power Range | See Rating Chart | | | 65 | W |
| Iil | Low Line Input Current | Full Load, Vin=100VAC | | 1.65 | | A |
| Iih | High Line Input Current | Full Load, Vin=240VAC | | 0.68 | | A |
| Irl | Low Line Input Inrush Current | Full Load, 25°C, Cool start, Vin=100VAC | | | 55 | A |
| Irh | High Line Input Inrush Current | Full Load, 25°C, Cool start, Vin=240VAC | | | 132 | A |
| Ik | Safety Ground Leakage Current | Vin=240VAC, Fi=60Hz | | | 0.75 | mA |
| η | Efficiency | Full Load, Vin=230VAC, Detail to see Rating Chart | See Rating Chart | | | |
| ΔVoi | Line Regulation | Full Load, Vin=100~120VAC | 0.5 | | 1 | % |
| ΔVoL | Load Regulation | Vin=230VAC, 10~90% Load Change at Condition | 3 | | 7 | % |
| OVP | Over Voltage Protection | Over Voltage Protection | 112 | | 132 | % |
| OLP | Over Load Protection | Recovers automatically after fault condition is removed | 110 | | 150 | % |
| ttr | Time of Transient Response | Io=Full Load to Half Load, Vin=110VAC | | | 4 | ms |
| thu | Hold-Up Time | Full Load, Vin=100VAC | See Rating Chart | | | |
| ts | Start-up time | Full Load, Vin=100~240VAC | | | 2 | s |
| Tc | Temperature Coefficient | Full load, Vin=100~240VAC | | | ±0.04 | %/°C |
| HV | Dielectric Withstanding Voltage (P-S) | Primary to Secondary | | | 4242 | VDC |
| Vpg | Dielectric Withstanding Voltage (P-G) | Primary to PE | | | 2121 | VDC |
| EMI | EMC Emission | | | | B | Class |

Environmental: (Multi Output)

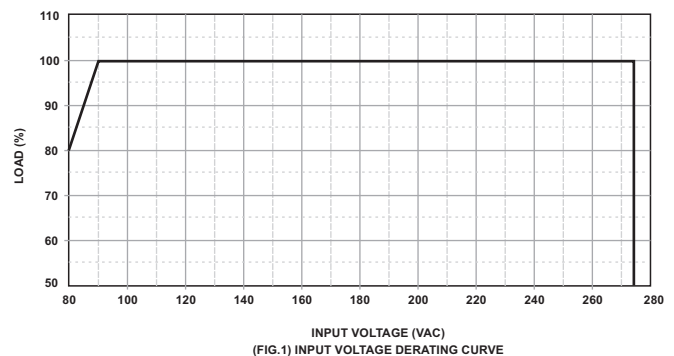
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|--------|--------------------------------|--|------|------|------|------|
| To | Operating Temperature | Detail to see Fig.2 (Derate linearly from 100% load at 40°C to 50% load at 70°C) | 0 | | 70 | °C |
| Ts | Storage Temperature | 10 ~ 95% RH | -40 | | 85 | °C |
| Ho | Operating Humidity | non-condensing | 0 | | 95% | RH |
| Hs | Storage Humidity | | 0 | | 95% | RH |
| ESDa | Electro Static Discharge | Air Discharge, IEC61000-4-2 | | | 8 | kV |
| ESDc | Electro Static Discharge | Contact Discharge, IEC61000-4-2 | | | 4 | kV |
| MTBF | Mean Time Between Failure | Operating Temperature at 25°C, Calculated per MIL-HDBK-217F | 100k | | | h |
| ELEV | Operating Altitude (Elevation) | All condition | | | 5000 | m |
| VBR | Vibration | 10 ~ 500Hz, 10min./1cycle, 60min. each along X, Y, Z axes | | | 5 | G |
| Vsl | Surge Voltage | Line-Neutral | | | 1 | kV |
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Input Voltage Derating Curves :

(Single output model)



(Multi output model)



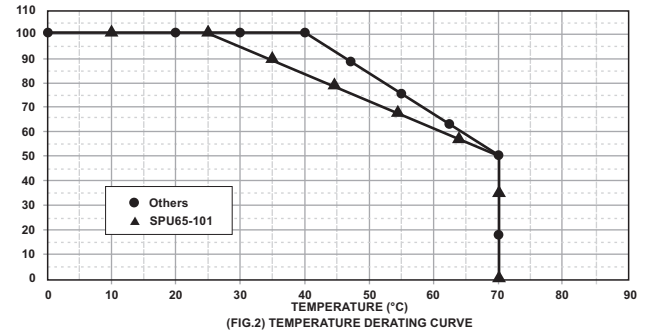
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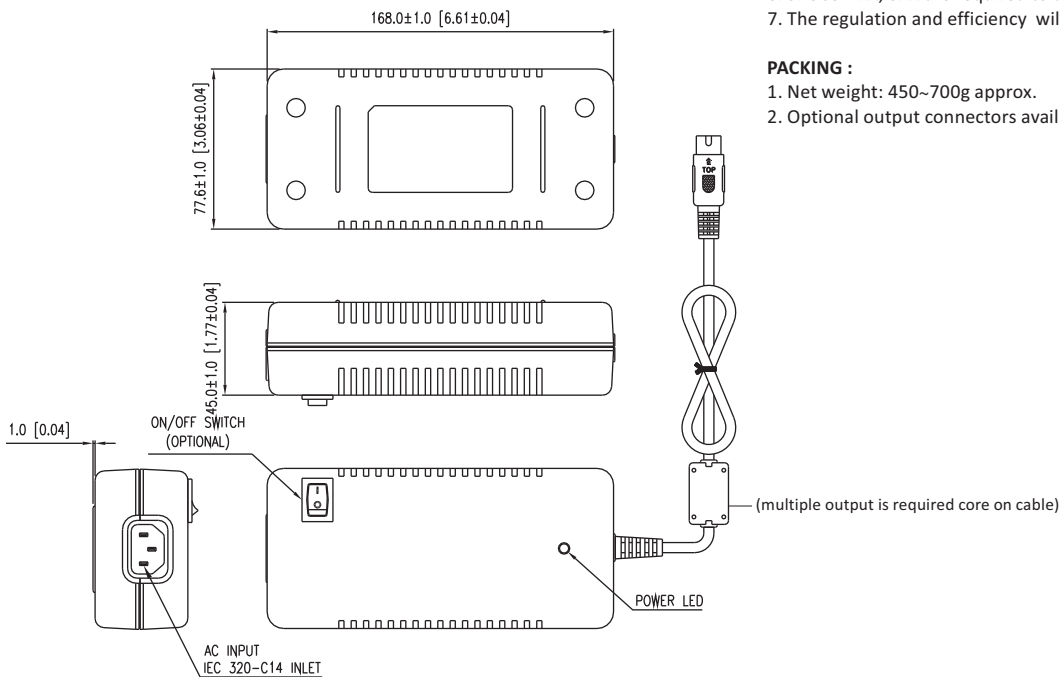
65W / 80W External Power Supply for General Purpose

SPECIFICATION NOTE :

1. Output can provide up to peak load when the power supply starts up. Continuous staying in more than rated load is not allowed.
2. At factory, in 60% rated load condition, each output is checked to be within voltage accuracy.
3. Line regulation is defined by changing $\pm 10\%$ of input voltage from nominal line at rated load.
4. Load regulation is defined by changing $\pm 40\%$ of measured output load from 60% rated load.
5. The ripple is measured from peak to peak with a bandwidth-limit of 20MHz (Measured at the output connector with a 0.1uF ceramic capacitor and a 47uF electrolytic capacitor).
6. Hold up time is measured from the end of the last charging pulse to the time which the main output drops down to low limit of main output at rated load and nominal line.
7. Efficiency is measured at rated load, and nominal line.



MECHANICAL DIMENSIONS: (UNIT: mm [inch])



OUTPUT CABLE RECOMMEND :

1. Selected output connectors and wire, please refer to Appendix.
2. SPU65-101~106 are required to use AWG#16X5C/4FT output cable.
3. SPU65-107 are required to use AWG#16X2C/4FT output cable.
4. SPU65-108~109 are required to use AWG#18X2C/6FT output cable.
5. SPU65-110~111 are required to use AWG#20X2C/6FT output cable.
6. SPU65-2XX, 3XX are required to use AWG#16X5C/4FT+core output cable.
7. The regulation and efficiency will be changed by modified output cable.

PACKING :

1. Net weight: 450~700g approx.
2. Optional output connectors available contact sales for details.

Rating Chart: (Single Output)

| MODEL NO. | Setting Voltage Range (Factory setting, can't be adjusted) | | Output Current (Based on the output volt.) | | Maximum Output Power (W) | Ripple & Noise (mVp-p) | Total Regulation (%) | Typ. Efficiency (%) | Typ. No Load Consumption (W) | Hold-Up Time (ms) | Protection Mode |
|-----------|---|-------|---|-------|-----------------------------|---------------------------|-------------------------|------------------------|---------------------------------|----------------------|-----------------|
| | min | max | min | max | | | | | | | |
| | (VDC) | (VDC) | (A) | (A) | | | | | | | |
| SPU65-102 | 5.0 | 5.99 | 10.80 | 13.00 | 65 | 60 | ±7 | 87 | 0.21 | 12 | Hiccup |
| SPU65-103 | 6.0 | 8.0 | 8.70 | 11.60 | 69.6 | 80 | ±5 | 88 | 0.21 | 12 | Hiccup |
| SPU65-104 | 8.0 | 11.0 | 6.81 | 9.37 | 75 | 110 | ±5 | 88 | 0.21 | 12 | Hiccup |
| SPU65-105 | 11.0 | 13.0 | 6.15 | 7.27 | 80 | 130 | ±5 | 88 | 0.21 | 12 | Hiccup |
| SPU65-106 | 13.0 | 16.0 | 5.00 | 6.15 | 80 | 150 | ±5 | 88 | 0.21 | 12 | Hiccup |
| SPU65-108 | 21.0 | 27.0 | 2.96 | 3.80 | 80 | 200 | ±5 | 88 | 0.21 | 12 | Hiccup |
| SPU65-109 | 27.0 | 33.0 | 2.42 | 2.96 | 80 | 250 | ±3 | 88 | 0.21 | 12 | Hiccup |
| SPU65-110 | 33.0 | 40.0 | 2.00 | 2.42 | 80 | 250 | ±3 | 88 | 0.21 | 12 | Hiccup |
| SPU65-111 | 40.0 | 48.0 | 1.66 | 2.00 | 80 | 300 | ±3 | 88 | 0.21 | 12 | Hiccup |

Rating Chart: (Multi Output)

| MODEL NO. | Setting Voltage Range (Factory setting, can't be adjusted) | Output Current (Based on the output volt.) | | Maximum Output Power | Ripple & Noise | Total Regulation | Typ. Efficiency | Typ. No Load Consumption | Hold-Up Time | Protection Mode |
|-----------|---|---|-----|-------------------------|----------------|------------------|-----------------|-----------------------------|--------------|-----------------|
| | | min | max | | | | | | | |
| | (VDC) | (A) | (A) | (W) | (mVp-p) | (%) | (%) | (W) | (ms) | |
| SPU65-201 | +5.0 | 0.7 | 7.0 | 65 | 50 | ±5 | 86 | 0.3 | 12 | Hiccup |
| | +12.0 | 0.7 | 3.0 | | 120 | ±5 | | | | |
| SPU65-202 | +5.0 | 1.4 | 7.0 | 65 | 50 | ±5 | 86 | 0.3 | 12 | Hiccup |
| | +15.0 | 0.6 | 3.0 | | 150 | ±6 | | | | |
| SPU65-203 | +5.0 | 1.4 | 7.0 | 65 | 50 | ±5 | 86 | 0.3 | 12 | Hiccup |
| | +24.0 | 0.4 | 2.0 | | 240 | ±5 | | | | |

Rating Chart: (Multi Output)

| MODEL NO. | Setting Voltage Range (Factory setting, can't be adjusted) | Output Current (Based on the output volt.) | | Maximum Output Power | Ripple & Noise | Total Regulation | Typ. Efficiency | Typ. No Load Consumption | Hold-Up Time | Protection Mode |
|-----------|---|---|-----|-------------------------|----------------|------------------|-----------------|-----------------------------|--------------|-----------------|
| | | min | max | | | | | | | |
| | (VDC) | (A) | (A) | (W) | (mVp-p) | (%) | (%) | (W) | (ms) | |
| SPU65-302 | +5.0 | 0.6 | 6.0 | 65 | 50 | ±5 | 86 | 0.3 | 12 | Hiccup |
| | +12.0 | 0.6 | 3.0 | | 120 | ±5 | | | | |
| | -12.0 | 0.0 | 0.8 | | 120 | ±5 | | | | |
| SPU65-303 | +5.0 | 0.6 | 6.0 | 65 | 50 | ±5 | 86 | 0.3 | 12 | Hiccup |
| | +15.0 | 0.6 | 3.0 | | 150 | ±6 | | | | |
| | -15.0 | 0.0 | 0.8 | | 150 | ±5 | | | | |