



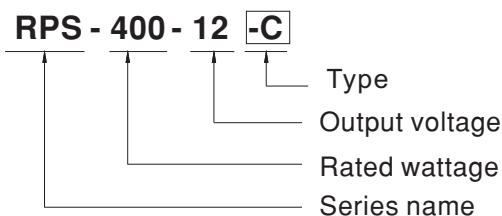
Features

- 5"×3" compact size
- Medical safety approved (2 x MOPP) according to ANSI/AAMI ES60601-1 and IEC/BS EN/EN60601-1
- Suitable for BF application with appropriate system configuration
- 250W convection, 400W force air
- EMI Class B for Class I & Class A for Class II configuration
- No load power consumption < 0.5W by PS-ON control
- 5Vdc standby output, 12Vdc fan supply, Power Good, Power Fail and remote sense
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Operating altitude up to 4000 meters
- 3 years warranty

Description

RPS-400 is a 400W highly reliable green PCB type medical power supply with a high power density on the 5" by 3" footprint. It accepts 80~264VAC input and offers various output voltages between 12V and 48V. The working efficiency is up to 94% and the extremely low no load power consumption is down below 0.5W. RPS-400 (blank type only) is able to be used for both Class I (with FG) or Class II (no FG) system design. The extremely low leakage current is less than 160μA. In addition, it conforms to international medical regulations (2*MOPP) and EMC BS EN/EN55011, perfectly fitting all kinds of BF rated "patient contact" medical system equipment. RPS-400 series also offers the enclosed style models (-C / TF / SF)

Model Encoding



| Type | Description | Note |
|-------|------------------------------------|----------|
| Blank | PCB Type | In stock |
| C | Enclosed casing Type | In stock |
| TF | Enclosed Type with fan on the top | In stock |
| SF | Enclosed Type with fan on the side | In stock |

**SPECIFICATION**

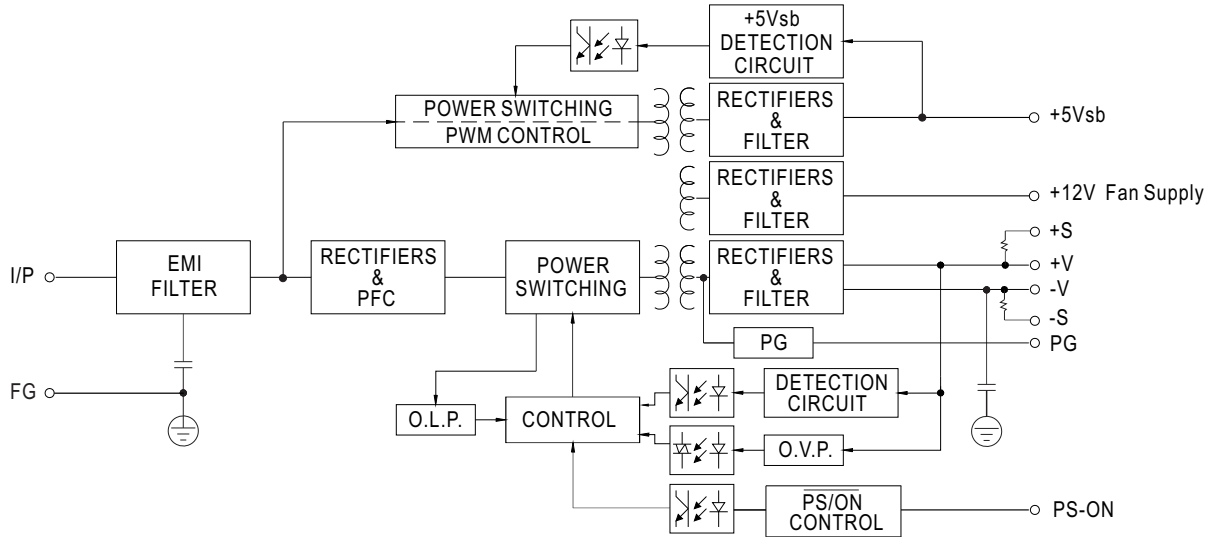
| MODEL | | RPS-400-12 □ | RPS-400-15 □ | RPS-400-18 □ | RPS-400-24 | RPS-400-27 □ | RPS-400-36 □ | RPS-400-48 □ | |
|---------------------------|---|---|--------------|--------------|--------------|--------------|--------------|--------------|--------|
| OUTPUT | DC VOLTAGE | 12V | 15V | 18V | 24V | 27V | 36V | 48V | |
| | CURRENT | 25CFM | 33.3A | 26.7A | 22.3A | 16.7A | 14.9A | 11.2A | 8.4A |
| | | Convection | 20.8A | 16.7A | 13.9A | 10.5A | 9.3A | 7A | 5.3A |
| | RATED POWER | 25CFM | 399.6W | 400.5W | 401.4W | 400.8W | 402.3W | 403.2W | 403.2W |
| | | Convection | 249.6W | 250.5W | 250.2W | 252W | 251.1W | 252W | 254.4W |
| | RIPPLE & NOISE (max.) Note.2 | 120mVp-p | 120mVp-p | 150mVp-p | 150mVp-p | 200mVp-p | 200mVp-p | 200mVp-p | |
| | VOLTAGE ADJ. RANGE(main output) | 11.4~12.6V | 14.3~15.8V | 17.1~18.9V | 22.8~25.2V | 25.6 ~ 28.4V | 34.2 ~37.8V | 45.6 ~50.4V | |
| | VOLTAGE TOLERANCE Note.3 | ±3.0% | ±3.0% | ±3.0% | ±2.0% | ±1.0% | ±1.0% | ±1.0% | |
| | LINE REGULATION | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | |
| | LOAD REGULATION | ±1.0% | ±1.0% | ±1.0% | ±1.0% | ±1.0% | ±1.0% | ±1.0% | |
| SETUP, RISE TIME | 1000ms, 30ms/230VAC 1500ms, 30ms/115VAC at full load | | | | | | | | |
| HOLD UP TIME (Typ.) | 16ms/230VAC 16ms/115VAC at full load | | | | | | | | |
| INPUT | VOLTAGE RANGE Note.4 | 80 ~ 264VAC | | 113 ~ 370VDC | | | | | |
| | FREQUENCY RANGE | 47 ~ 63Hz | | | | | | | |
| | POWER FACTOR | PF>0.94/230VAC PF>0.98/115VAC at full load | | | | | | | |
| | EFFICIENCY (Typ.) | 91.5% | 92% | 93% | 93% | 93.5% | 94% | 94% | |
| | AC CURRENT (Typ.) | 4.2A/115VAC | | 2.1A/230VAC | | | | | |
| | INRUSH CURRENT (Typ.) | COLD START 35A/115VAC | | 70A/230VAC | | | | | |
| | LEAKAGE CURRENT (max.) Note.5 | Earth leakage current <200μA/264VAC 50Hz , Touch current < 70μA/264VAC | | | | | | | |
| PROTECTION | OVERLOAD | 105 ~ 135% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed | | | | | | | |
| | OVER VOLTAGE | 13.2 ~ 15.6V | 16.5 ~ 19.5V | 19.8 ~23.4V | 26.4 ~ 31.2V | 29.7 ~ 35.1V | 39.6 ~ 46.8V | 52.8 ~ 62.4V | |
| | OVER TEMPERATURE | Protection type : Shut down o/p voltage, recovers automatically after temperature goes down | | | | | | | |
| FUNCTION | 5V STANDBY | 5Vsb : 5V@0.6A without fan, 1A with fan 25CFM ; Tolerance ±2%, ripple : 120mVp-p(max.) | | | | | | | |
| | FAN SUPPLY | 12V@0.5A for driving fan ; Tolerance -15% ~+10% at main output 35% rated current (25CFM) | | | | | | | |
| | PS-ON INPUT SIGNAL | Power on: PS-ON = "Hi" or " > 2 ~ 5V" ; Power off: PS-ON = "Low" or " < 0 ~ 0.5V" | | | | | | | |
| | POWER GOOD / POWER FAIL | 500ms>PG>10ms ; The TTL signal goes high with 10ms to 500ms delay after power set up ; The TTL signal goes low at least 1ms before Vo below 90% of rated value | | | | | | | |
| ENVIRONMENT | WORKING TEMP. | -30 ~ +70°C (Refer to "Derating Curve") | | | | | | | |
| | WORKING HUMIDITY | 20 ~ 90% RH non-condensing | | | | | | | |
| | STORAGE TEMP., HUMIDITY | -40 ~ +85°C, 10 ~ 95% RH non-condensing | | | | | | | |
| | TEMP. COEFFICIENT | ±0.03%/°C (0 ~ 50°C) | | | | | | | |
| | VIBRATION | 10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes | | | | | | | |
| OPERATING ALTITUDE Note.6 | 4000 meters | | | | | | | | |

SPECIFICATION

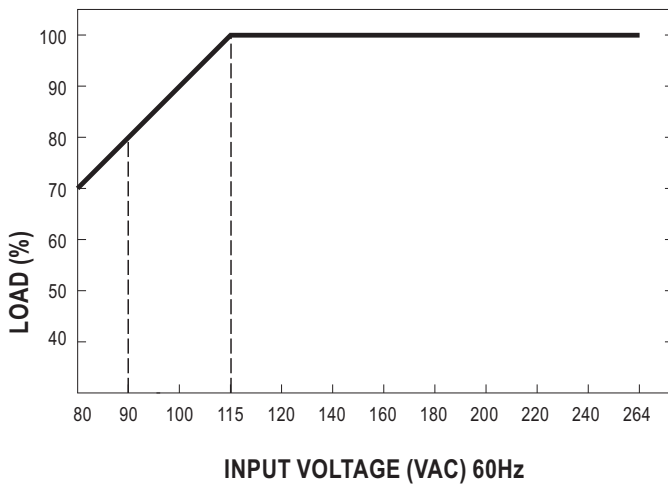
| | | | | | | |
|---------------------------|--|---|---|--------------------------------------|--|-------------------------------------|
| SAFETY & EMC (Note 7) | SAFETY STANDARDS | IEC60601-1, TUV BS EN/EN60601-1, EAC TP TC 004, UL ANSI / AAMI ES60601-1 (3.1 version), CAN/CSA-C22.2 No. 60601-1:14 - Edition 3 approved; Design refer to BS EN/EN60335-1 | | | | |
| | ISOLATION LEVEL | Primary-Secondary: 2xMOPP, Primary-Earth:1xMOPP, Secondary-Earth:1xMOPP | | | | |
| | WITHSTAND VOLTAGE | I/P-O/P:4KVAC I/P-FG:2KVAC O/P-FG:1.5KVAC | | | | |
| | ISOLATION RESISTANCE | I/P-O/P, I/P-FG:100M Ohms / 500VDC / 25°C / 70% RH | | | | |
| | EMC EMISSION | Parameter | Standard | Test Level / Note | | |
| | | Conducted emission | BS EN/EN55011 (CISPR11) | Class B(Please see last page note1) | | |
| | | Radiated emission | BS EN/EN55011 (CISPR11) | Class B(Please see last page note1) | | |
| | | Harmonic current | BS EN/EN61000-3-2 | Class A | | |
| | | Voltage flicker | BS EN/EN61000-3-3 | ----- | | |
| | EMC IMMUNITY | BS EN/EN55024 , BS EN/EN60601-1-2, BS EN/EN61204-3 | | | | |
| Parameter | | Standard | Test Level / Note | | | |
| ESD | | BS EN/EN61000-4-2 | Level 4, 15KV air ; Level 4, 8KV contact | | | |
| RF field susceptibility | | BS EN/EN61000-4-3 | Level 3, 10V/m(80MHz~2.7GHz) Table 9, 9~28V/m(385MHz~5.78GHz) | | | |
| EFT bursts | | BS EN/EN61000-4-4 | Level 3, 2KV | | | |
| Surge susceptibility | | BS EN/EN61000-4-5 | Level 4, 4KV/Line-FG ; 2KV/Line-Line | | | |
| Conducted susceptibility | | BS EN/EN61000-4-6 | Level 3, 10V | | | |
| Magnetic field immunity | | BS EN/EN61000-4-8 | Level 4, 30A/m | | | |
| Voltage dip, interruption | | BS EN/EN61000-4-11 | 100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods | | | |
| OTHERS | MTBF | 194.1Khrs min. MIL-HDBK-217F (25°C) | | | | |
| | DIMENSION | Type | RPS-400 | RPS-400-C | RPS-400-TF | RPS-400-SF |
| | | L*W*H | 127*76.2*35mm 5"*3"*1.37"inch | 130*86*43mm 5.11"*3.39"*1.69"inch | 130*86*66.5mm 5.11"*3.39"*2.62"inch | 160*86*43mm 6.3"*3.39"*1.69"inch |
| | PACKING | P.W. | 0.39Kg | 0.51Kg | 0.58Kg | 0.64Kg |
| | | Q'TY | 36pcs | 24pcs | 24pcs | 24pcs |
| | | G.W. | 15Kg | 13.2Kg | 14.9Kg | 16.4Kg |
| M'MENT | | 0.96CUFT | 0.77CUFT | 0.86CUFT | 0.91CUFT | |
| NOTE | <p>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25 of ambient temperature.</p> <p>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1μf & 47μf parallel capacitor.</p> <p>3. Tolerance : includes set up tolerance, line regulation and load regulation.</p> <p>4. Derating may be needed under low input voltages. Please check the derating curve for more details.</p> <p>5. Touch current was measured from primary input to DC output.</p> <p>6. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).</p> <p>7. The power supply is considered a component which will be installed into a final equipment. All the Class I (with FG) EMC tests are executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. The Class II (without FG) EMC tests are executed by mounting the unit on a 130mm*86.6mm 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 http://www.meanwell.com)</p> <p>※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx</p> | | | | | |

■ Block Diagram

PFC fosc : 90KHz
 PWM fosc : 100KHz

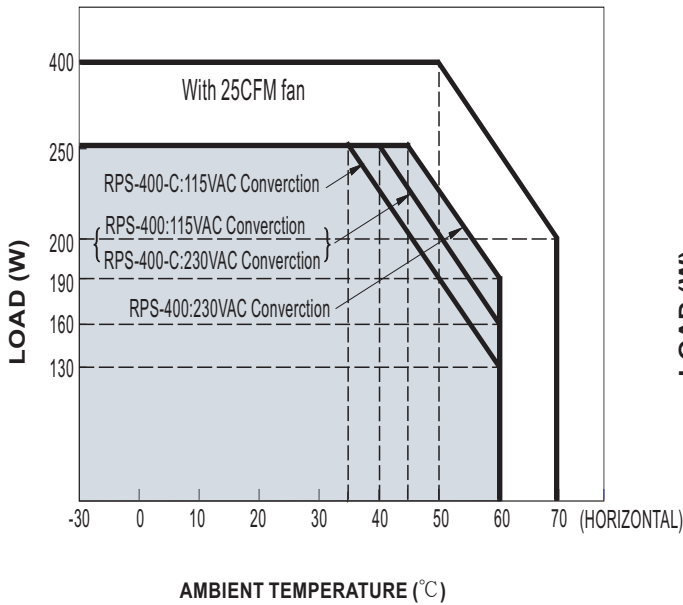


■ Output Derating vs Input Voltage

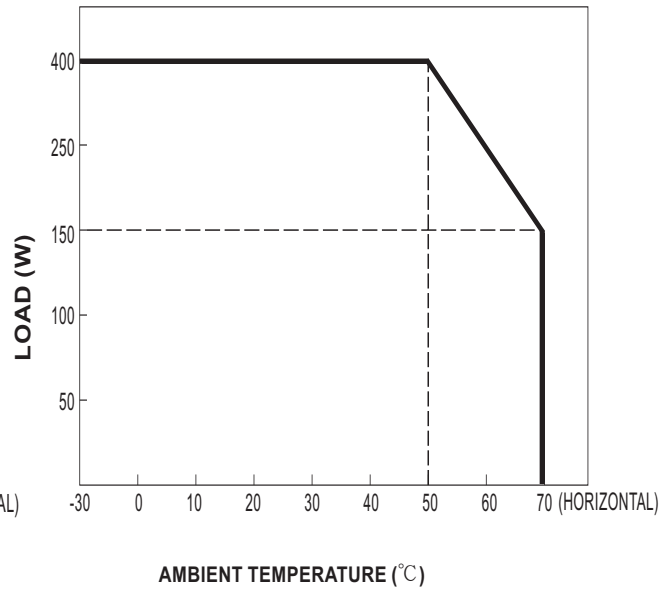


■ Derating Curve

○ RPS-400 & RPS-400-C



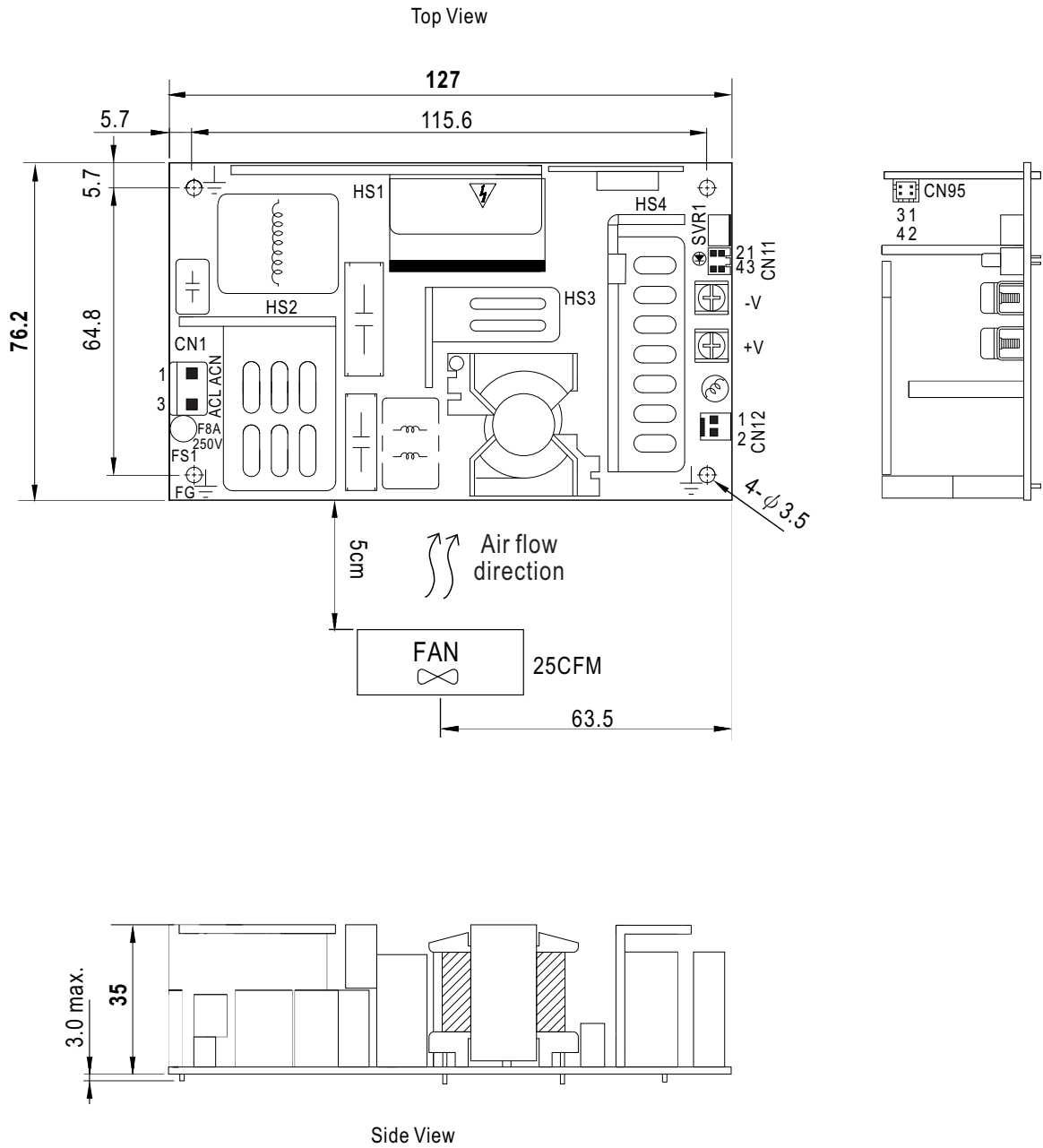
○ RPS-400-TF/SF



| Order No. | RPS-400 | RPS-400-C | RPS-400-TF | RPS-400-SF |
|------------|---------|-----------|------------|------------|
| Products | | | | |
| Convection | 250W | 250W | --- | --- |
| Force Air | 400W | 400W | 400W | 400W |

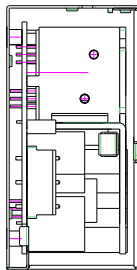
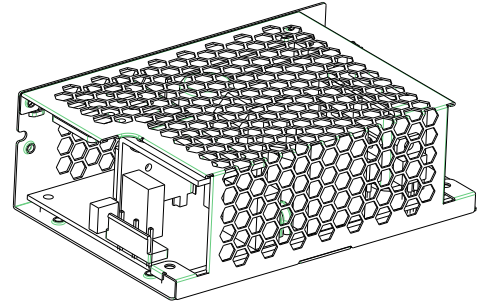
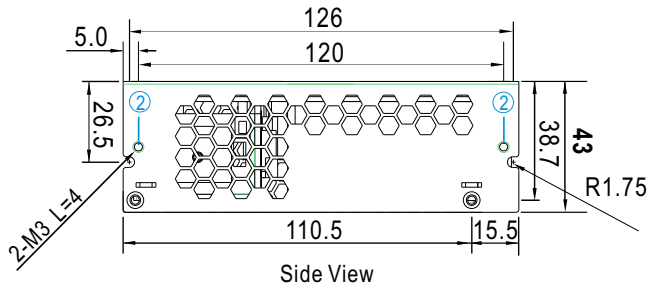
■ Mechanical Specification

● RPS-400 (PCB Type)

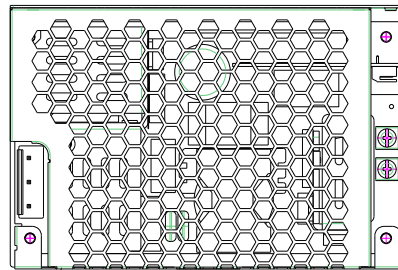


● RPS-400-C (Enclosed type)

Case No. 247A Unit:mm

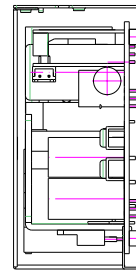
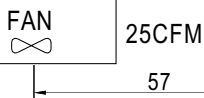


Side View

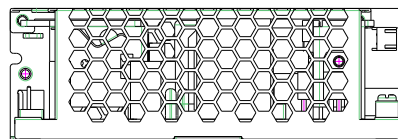


Top View

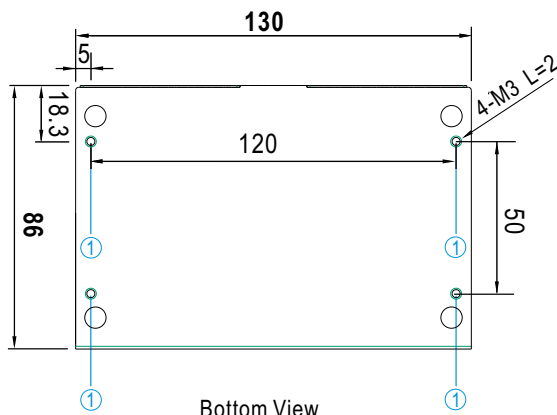
5cm
Air flow direction



Side View

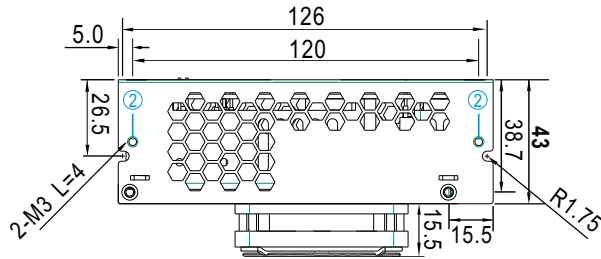


Side View

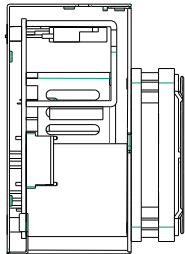
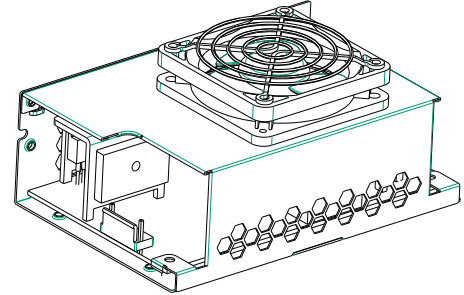


● RPS-400-TF (Enclosed type with fan on the top)

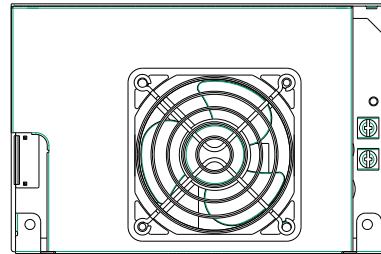
Case No. 247A-D 247B-T Unit:mm



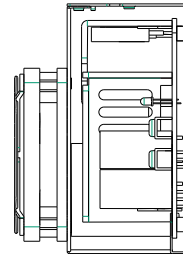
Side View



Side View

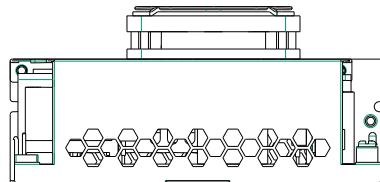


Top View

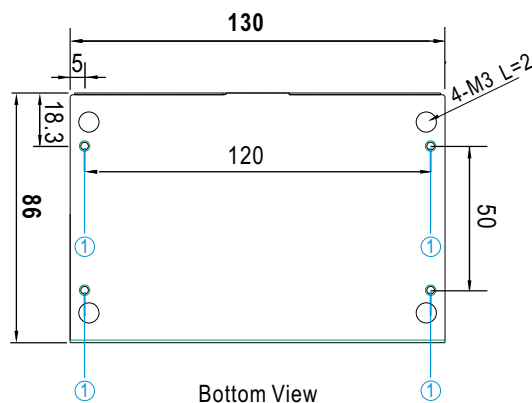


Side View

↕ Air flow direction



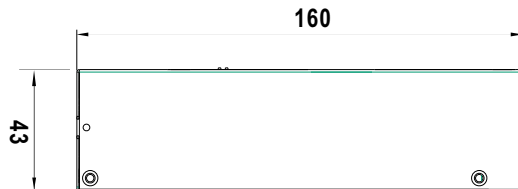
Side View



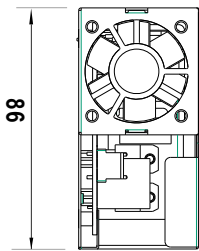
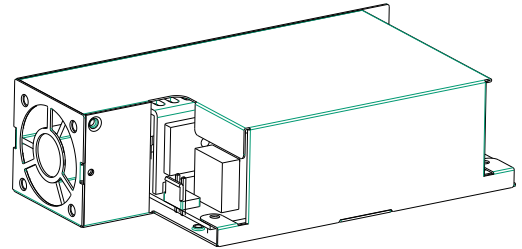
Bottom View

● RPS-400-SF (Enclosed type with fan on the side)

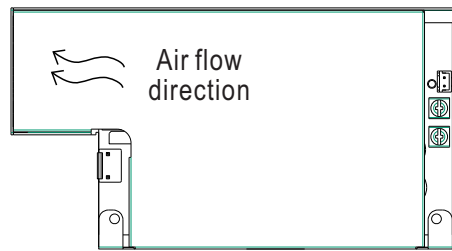
Case No. 248A Unit:mm



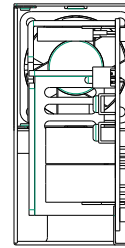
Side View



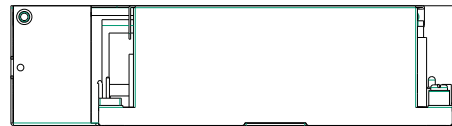
Side View



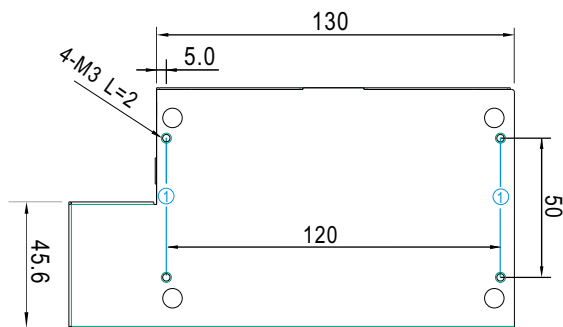
Top View



Side View



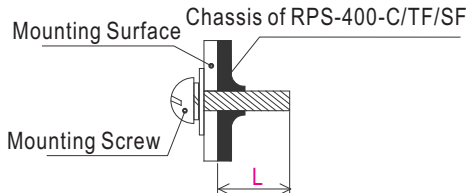
Side View



Bottom View

※ **Mounting Instruction for -C/-TF/-SF Type**

| Hole No. | Recommended Screw Size | MAX. Penetration Depth L | Recommended mounting torque |
|----------|------------------------|--------------------------|-----------------------------|
| ① | M3 | 2mm | 4~6Kgf-cm |
| ② | M3 | 4mm | 4~6Kgf-cm |



※ **CONNECTION**

AC Input Connector (CN1) : JST B3P-VH or equivalent

| Pin No. | Assignment | Mating Housing | Terminal |
|---------|------------|-----------------------|--------------------------------|
| 1 | AC/N | JST VHR or equivalent | JST SVH-21T-P1.1 or equivalent |
| 2 | No Pin | | |
| 3 | AC/L | | |

Function Connector(CN11): TKP DH2I-2X2 or equivalent

| Pin No. | Assignment | Mating Housing | Terminal |
|---------|------------|-----------------------|-------------------|
| 1 | -S | TKP DH2 or equivalent | TKP or equivalent |
| 2 | +S | | |
| 3 | DC COM | | |
| 4 | PG | | |

DC Output Connector (CN2,CN3)

| Pin No. | Assignment | Output Terminals |
|---------|------------|---|
| CN2 | -V | M3.5 Pan HD screw in 2 positions Torque to 8 lbs-in(90cNm)max. |
| CN3 | +V | |

Function Connector(CN95): TKP DH2L-2X2 or equivalent

| Pin No. | Assignment | Mating Housing | Terminal |
|---------|------------|-----------------------|-------------------|
| 1 | 5Vsb | TKP DH2 or equivalent | TKP or equivalent |
| 2,4 | DC COM | | |
| 3 | PS-ON | | |

⚠ HS1,HS2,HS3,HS4 can not be shorted

FAN Connector(CN12) : TKP 8812-2 or equivalent
(Except for RPS-400-TF/SF)

| Pin No. | Assignment | Mating Housing | Terminal |
|---------|------------|------------------------|------------------------|
| 1 | DC COM | TKP 2502 or equivalent | TKP 8811 or equivalent |
| 2 | +12V | | |

- ※ Note: 1. When the input voltage is 230VAC, the PCB type (Blank-Type) model delivers EMI Class B for both conducted emission and radiated emission for the power supply; When the input voltage is 110VAC, the PCB type (Blank Type) model delivers EMI Class B for conducted emission and Class A for radiated emission for the power supply. It delivers Class A for conducted emission and radiated emission, when configured into Class II (no FG) system.
2. The enclosed type (-C/TF/SF type) models are not suitable for configuration within a Class II (without FG) system, but suggested within a Class I (with FG) system.
3. Mounting Instruction for enclosed type.

■ **Installation Manual**

Please refer to : <http://www.meanwell.com/manual.html>