



Dimension

| L | W | H |
|------|------|----------|
| 540 | 424 | 83.5(2U) |
| 21.3 | 16.7 | 3.29(2U) |



Features

- 3 ψ 3-wire / Δ 196~305VAC or 3 ψ 4-wire / Y 340~530VAC wide input range
- Built-in active PFC function
- High efficiency up to 91%
- Forced air cooling by built-in DC fan
- Output voltage and constant current level programmable
- Active current sharing up to 20000W (1+1)
- Built-in remote ON-OFF control / Remote sense / Auxiliary power / Alarm signal
- Protections: Short circuit / Overload / Over voltage / Over temperature / Fan fail
- 5 years warranty

Certificates

- Safety: UL/EN/IEC 60950-1
- EMC: EN 55022 / 55024

Applications

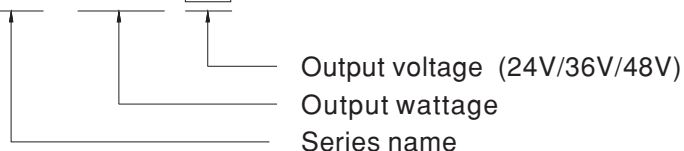
- Factory control or automation apparatus
- Test and measurement instrument
- Laser related machine
- Burn-in facility
- RF application
- Electric scooter or vehicle charger station
- Constant current source

Description

RST-10000 is a 10KW single output enclosed type AC/DC power supply. This series operates for the wide range three phase AC input (3 phase 3 wire / Δ 196~305VAC or 3 phase 4 wire / Y 340~530VAC) and offers the models with the DC output mostly demanded from the industry. Each model is cooled by the built-in fan with fan speed control, working for the temperature up to ,70°C. Moreover, RST-10000 provides vast design flexibility by equipping various built-in functions such as the output programming, active current sharing, remote ON-OFF control, auxiliary power, etc.

Model Encoding

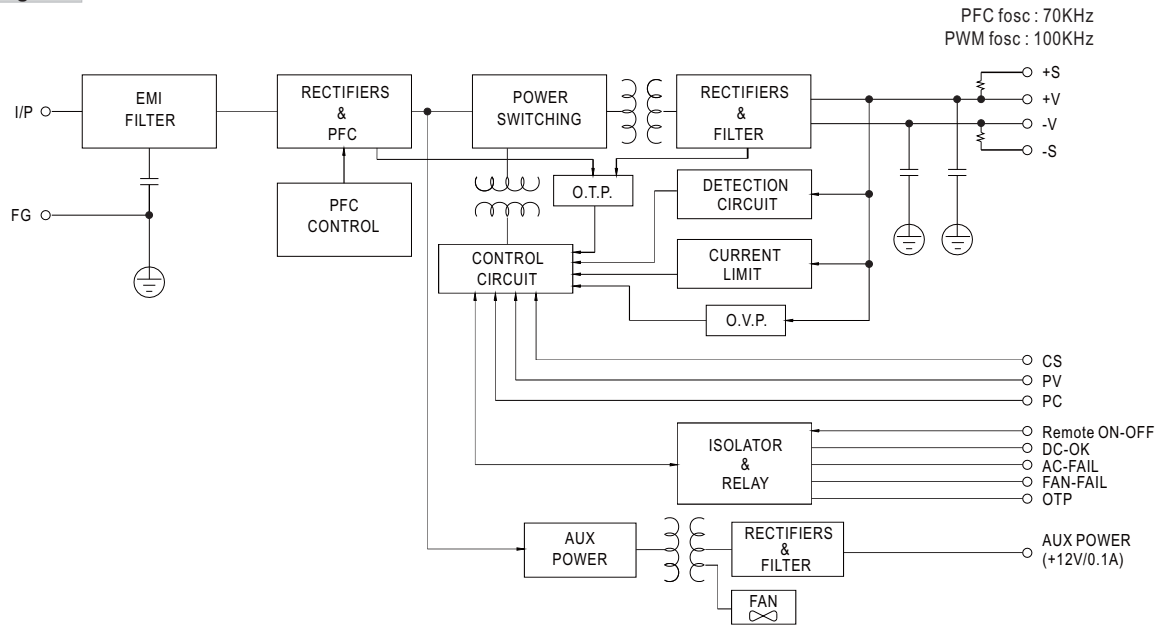
RST - 10000- 24



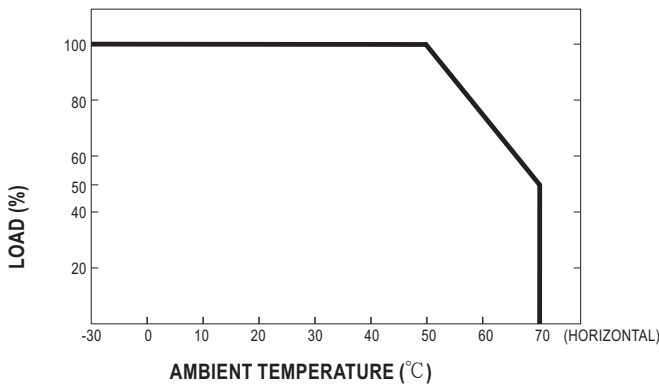
SPECIFICATION

| MODEL | RST-10000-24 | RST-10000-36 | RST-10000-48 | | |
|-----------------------|---|--|--|--|--|
| OUTPUT | DC VOLTAGE | 24V | 36V | 48V | |
| | RATED CURRENT | 400A | 276A | 210A | |
| | CURRENT RANGE | 0 ~ 400A | 0 ~ 276A | 0 ~ 210A | |
| | RATED POWER | 9600W | 9936W | 10080W | |
| | RIPPLE & NOISE (max.) Note.2 | 150mVp-p | 200mVp-p | 200mVp-p | |
| | VOLTAGE ADJ. RANGE | 23.5 ~ 28.8V | 35 ~ 43.2V | 47 ~ 57.6V | |
| | | Can be adjusted via built-in potentiometer | | | |
| | VOLTAGE TOLERANCE Note.3 | ±1.0% | ±1.0% | ±1.0% | |
| | LINE REGULATION | ±0.5% | ±0.5% | ±0.5% | |
| | LOAD REGULATION | ±0.5% | ±0.5% | ±0.5% | |
| SETUP, RISE TIME | 2200ms, 80ms at full load | | | | |
| HOLD UP TIME (Typ.) | 20ms / 230VAC at 75% load | 14ms / 230VAC at full load | | | |
| INPUT | VOLTAGE RANGE | 3 ϕ 3-wire / Δ 196 ~ 305VAC or 3 ϕ 4-wire / Y 340 ~ 530VAC | | | |
| | FREQUENCY RANGE | 47 ~ 63Hz | | | |
| | POWER FACTOR (Typ.) | 0.95/230VAC(400VAC) at full load | | | |
| | EFFICIENCY (Typ.) | 89% | 90% | 91% | |
| | AC CURRENT (Typ.) | 30A/230VAC(3 ϕ 3-wire / Δ) | 18A/400VAC(3 ϕ 4-wire / Y) | | |
| | INRUSH CURRENT (Typ.) | 150A/230VAC(3 ϕ 3-wire / Δ) | 100A/400VAC(3 ϕ 4-wire / Y) | | |
| | LEAKAGE CURRENT | <7mA / Δ 305VAC(Y 530VAC) | | | |
| PROTECTION | OVERLOAD(OLP) | 100 ~ 112% rated output power User selectable continuous constant current limiting or constant current limiting with delay shutdown after 5 seconds, re-power on to recover | | | |
| | OVER VOLTAGE | 30 ~ 33.6V | 45 ~ 50.4V | 60 ~ 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 SENSE | Compensate voltage drop on the load wiring up to 0.3V. Please refer to the Function Manual. | | | |
| | CURRENT SHARING | Up to 20000W or (1+1) units. Please refer to the Function Manual. | | | |
| | AUXILIARY POWER | 12V@0.1A(Only for Remote ON/OFF control) | | | |
| | REMOTE ON-OFF CONTROL | By electrical signal or dry contact Power ON:open Power OFF:short. Please refer to the Function Manual. | | | |
| | OUTPUT VOLTAGE PROGRAMMABLE | Adjustment of output voltage is allowable to between 20 ~ 120% of nominal output voltage. Please refer to the Function Manual. | | | |
| | CONSTANT CURRENT LEVEL PROGRAMMABLE | Adjustment of constant current level is allowable to between 20 ~ 100% of rated current. Please refer to the Function Manual. | | | |
| | ALARM SIGNAL OUTPUT | AC fail, DC OK, fan fail, OTP. Please refer to the Function Manual. | | | |
| 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 | | | |
| | TEMP. COEFFICIENT | ±0.03%/°C (0 ~ 50°C) | | | |
| | VIBRATION | 10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes | | | |
| SAFETY & EMC (Note 5) | SAFETY STANDARDS | UL60950-1, TUV EN60950-1 approved | | | |
| | WITHSTAND VOLTAGE Note.4 | I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC | | | |
| | ISOLATION RESISTANCE Note.4 | I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH | | | |
| | EMC EMISSION | Parameter | Standard | Test Level / Note | |
| | | Conducted | EN55022 (CISPR22) / EN55011 (CISPR11) | Class A | |
| | | Radiated | EN55022 (CISPR22) / EN55011 (CISPR11) | Class A | |
| | | Harmonic Current | EN61000-3-2 | ----- | |
| | | Voltage Flicker | EN61000-3-3 | ----- | |
| | EMC IMMUNITY | EN55024, EN61204-3, EN61000-6-2 | | | |
| | | Parameter | Standard | Test Level / Note | |
| | | ESD | EN61000-4-2 | Level 3, 8KV air ; Level 2, 4KV contact | |
| | | Radiated | EN61000-4-3 | Level 3 | |
| | | EFT / Burst | EN61000-4-4 | Level 3 | |
| | | Surge | EN61000-4-5 | Level 4, 4KV/Line-Earth ; Level 3, 2KV/Line-Line | |
| | | Conducted | EN61000-4-6 | Level 3 | |
| Magnetic Field | | EN61000-4-8 | Level 4 | | |
| | Voltage Dips and Interruptions | EN61000-4-11 | >95% dip 0.5 periods, 30% dip 25 periods, >95% interruptions 250 periods | | |
| OTHERS | MTBF | 50K hrs min. Telcordia SR-332 (Bellcore) ; 17K hrs min. MIL-HDBK-217F (25°C) | | | |
| | DIMENSION | 540*424*83.5mm (L*W*H) | | | |
| | PACKING | 23.5Kg; 1pcs/23.5Kg/2.5CUFT | | | |
| NOTE | <ol style="list-style-type: none"> All parameters NOT specially mentioned are measured at Δ230VAC(Y 400VAC) input, rated load and 25°C of ambient temperature. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor. Tolerance : includes set up tolerance, line regulation and load regulation. During withstand voltage and isolation resistance testing, the screw "A" shall be temporarily removed, and shall be installed back after the testing. 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 1300mm*900mm metal plate with 2mm 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) There is high possibility to trigger the floating over voltage protection when PV voltage is trimmed from a high voltage level to a lower voltage level at light load or no load condition. It is suggested that turn off the power supply and set PV voltage to the lowest level, then adjust output voltage to a desired value. | | | | |

Block Diagram

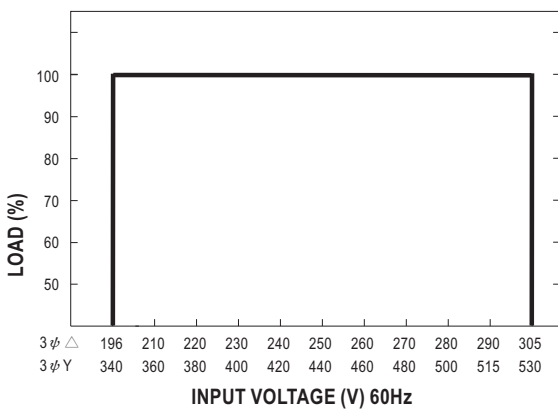


Derating Curve

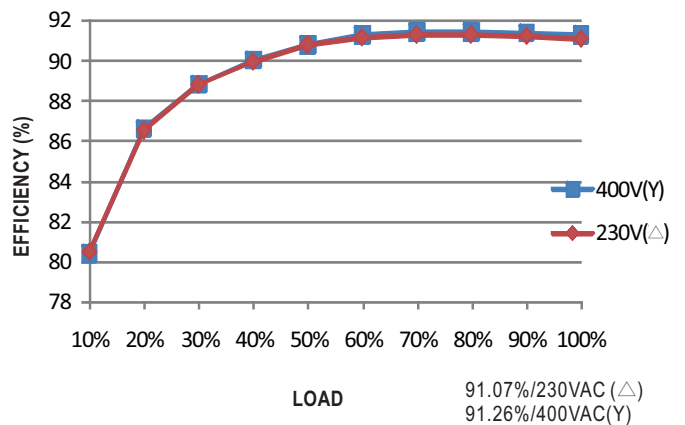


| MODEL | 24V | 36V | 48V |
|--------------|-------|-------|--------|
| INPUT | | | |
| △ 196~305VAC | 9600W | 9936W | 10080W |
| 340~530VAC | 400A | 276A | 210A |

Static Characteristics



Efficiency vs Load (48V Model)



AC Power Connection

◎ 3 ϕ 3 wire / Δ 230VAC

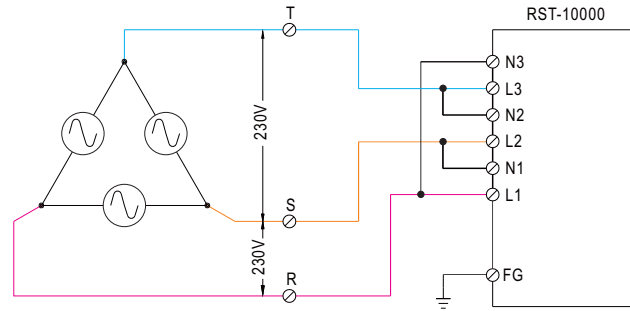


Fig 1.1

◎ 3 ϕ 4 wire / Y 400VAC

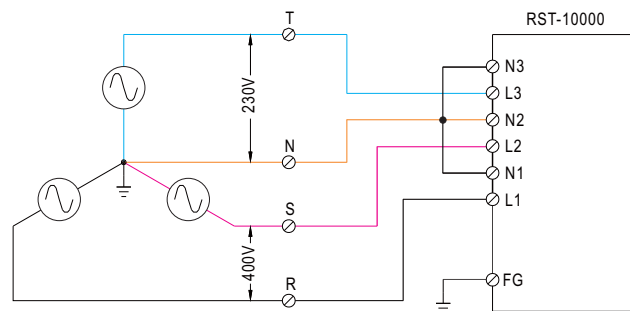


Fig 1.2

Function Manual

1. Remote Sense

- ※ The remote sense function compensates the voltage drop on the cable, between the power supply and the load, up to 0.3V.
- ※ If the remote sense function is not required, +S and +V of the output terminal, as well as -S and -V, need to be connected to be free from noise and interference. (+S and +V of the output terminal, -S and -V are connected as factory default setting)

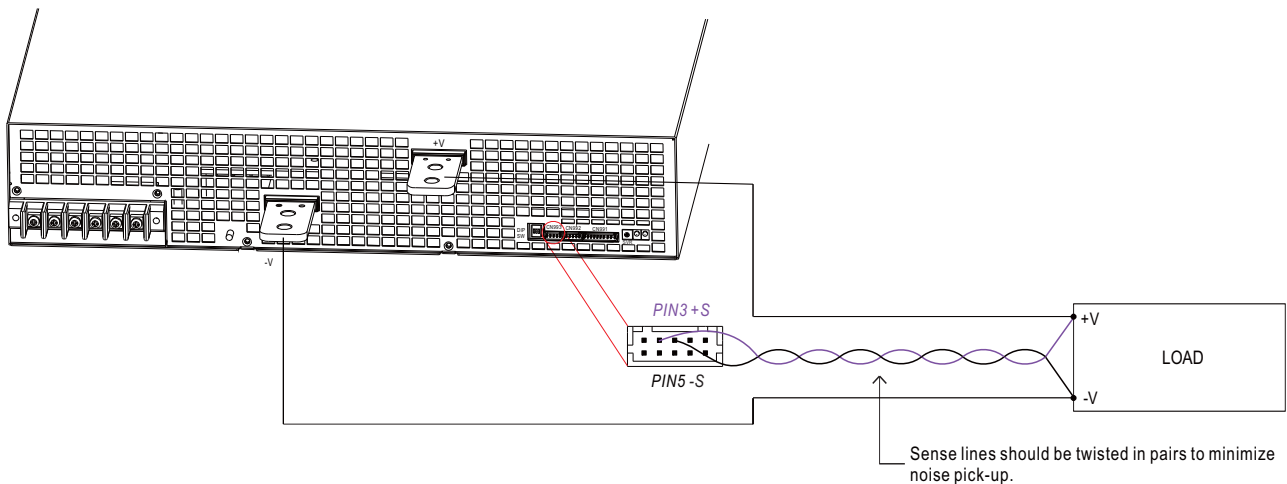


Fig 1.1

2.Voltage Adjustment

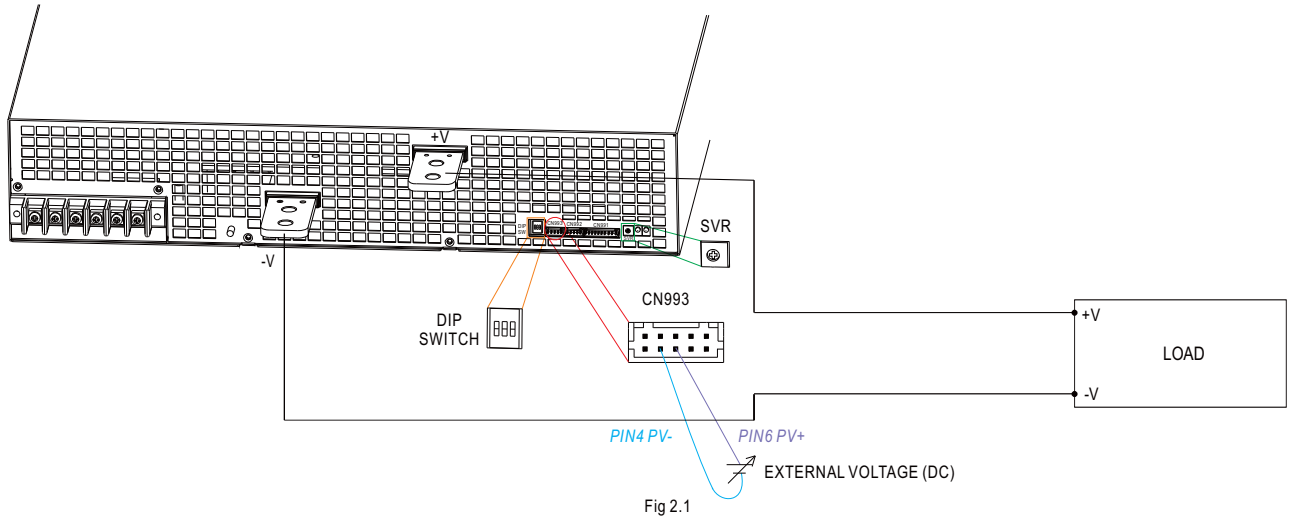
(1)by potentiometer (SVR)

- (a)Have the DIP switch position-3 set as
- (b)Output voltage can be trimmed by SVR.



(2)by Output Voltage Programming*

- (a)Have the DIP switch position-3 set as
- (b)The output voltage can be trimmed to 20~120% of the nominal voltage by applying EXTERNAL VOLTAGE between PV+ and PV- on CN992 or CN993.



⊙+S and +V, as well as -S and -V, need to be connected as factory default setting

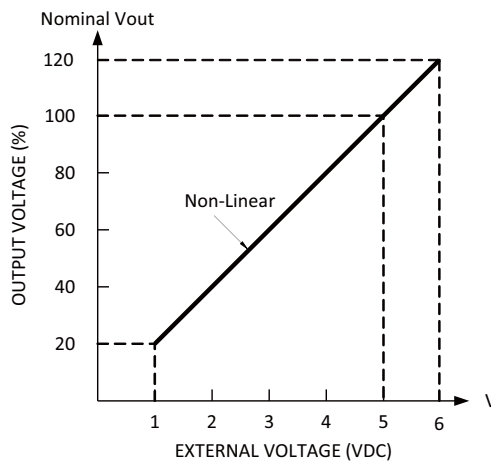


Fig 2.2

*: or, PV/remote voltage programming / remote adjust / margin programming / dynamic voltage trim.

3.Current Adjustment

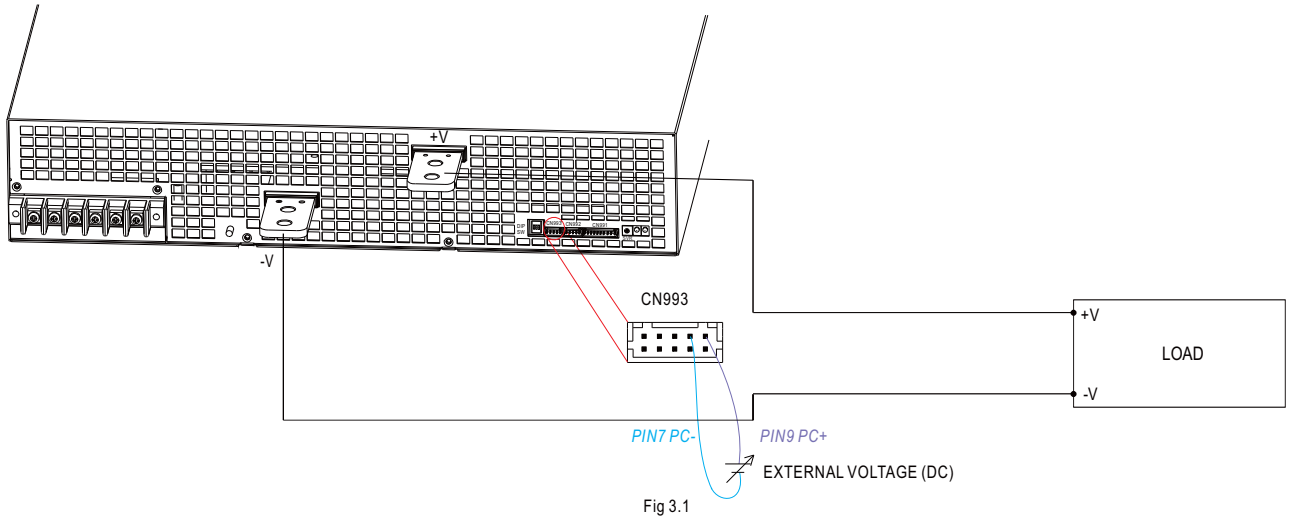
(1)Default Overload Protection(OLP) value

- (a)Have the DIP switch position-2 set as
- (b)Output current is set default value.

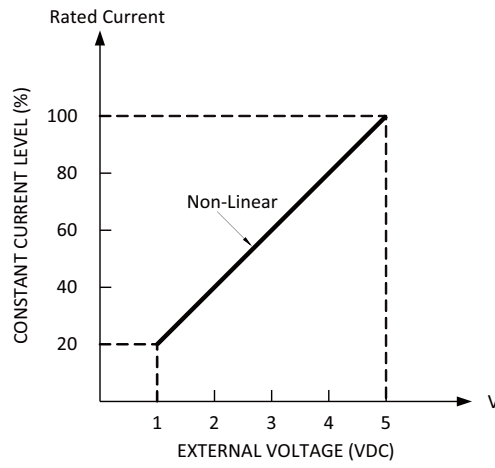


(2)by Constant Current Level Programming**

- (a)Have the DIP switch position-2 set as
- (b)The constant current level can be trimmed to 20~100% of the rated current by applying EXTERNAL VOLTAGE between PC+ and PC- on CN992 or CN993.




⊙+S and +V, as well as -S and -V, need to be connected as factory default setting




** : or, PC/remote current programming / dynamic current trim.

4. Select Overload Protection (OLP) Mode

(1) Continuous Constant Current mode

Have the DIP switch position-1 set as , and RST-10000 will work in continuous constant current mode when the output is overloaded and the output voltage is greater than 50% of the rated output voltage.

(2) Delay Shutdown mode

Have the DIP switch position-1 set as , and RST-10000 will shut down after 5 seconds of constant current operation, when the output is overloaded or short-circuited.

5. Remote ON-OFF Control

※ The power supply can be turned ON-OFF by using the "Remote ON-OFF" function.

| Between Remote ON-OFF(CN992 or CN993 pin10) and 12V-AUX(CN991 pin1) | Output Status |
|---|------------------|
| Switch close (Short) | power supply ON |
| Switch open (Open) | power supply OFF |

Table 5.1

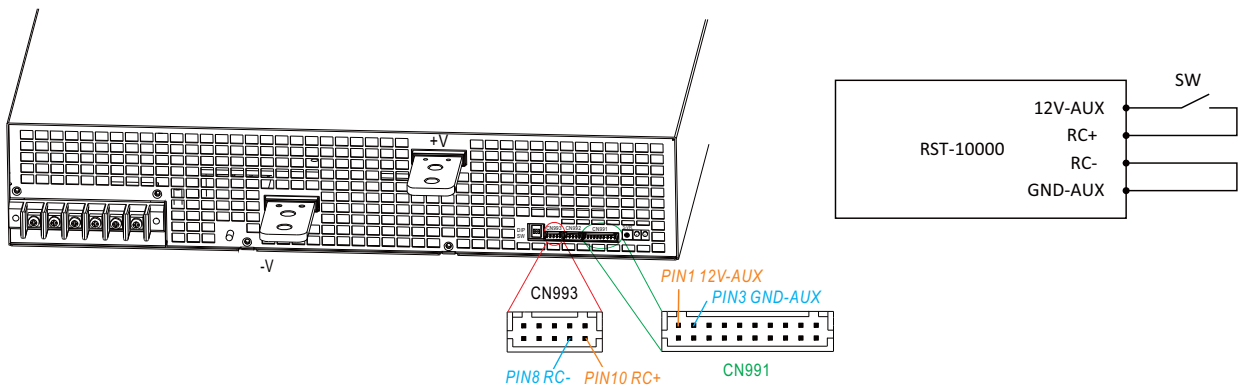


Fig 5.1

6. Alarm Signal Output

※ There are 4 alarm signals on CN991, and each signal can select two types of output circuit.

(1) Relay contact output {OTP1, OTP1-GND}; (DC-OK1, DC-OK1-GND); (AC-FAIL1-GND, AC-FAIL1); (FAN-FAIL1-GND, FAN-FAIL1)}

Normally open contact. "Short" when the alarm arises. Relay contact rating(maximum) is 30V/1A resistive.

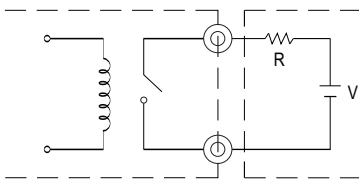


Fig 6.1

(2) Open collector output {DC-OK2-GND, DC-OK2}; (AC-FAIL2-GND, AC-FAIL2); (OTP2, OTP2-GND); (FAN-FAIL2, FAN-FAIL2-GND)}

An external voltage source is required for this function that is shown in Fig 6.2. These signals are isolated from output. The maximum sink current is 10mA and the maximum external voltage is 20V (there is a built-in 24V zener diode in inner circuitry).

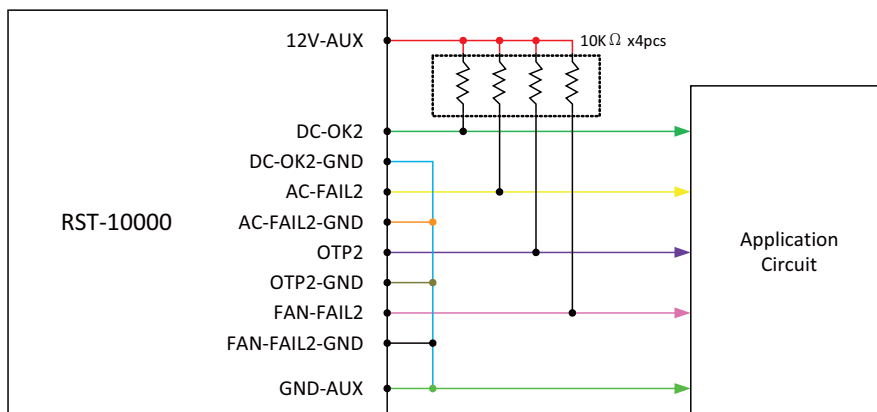


Fig 6.2

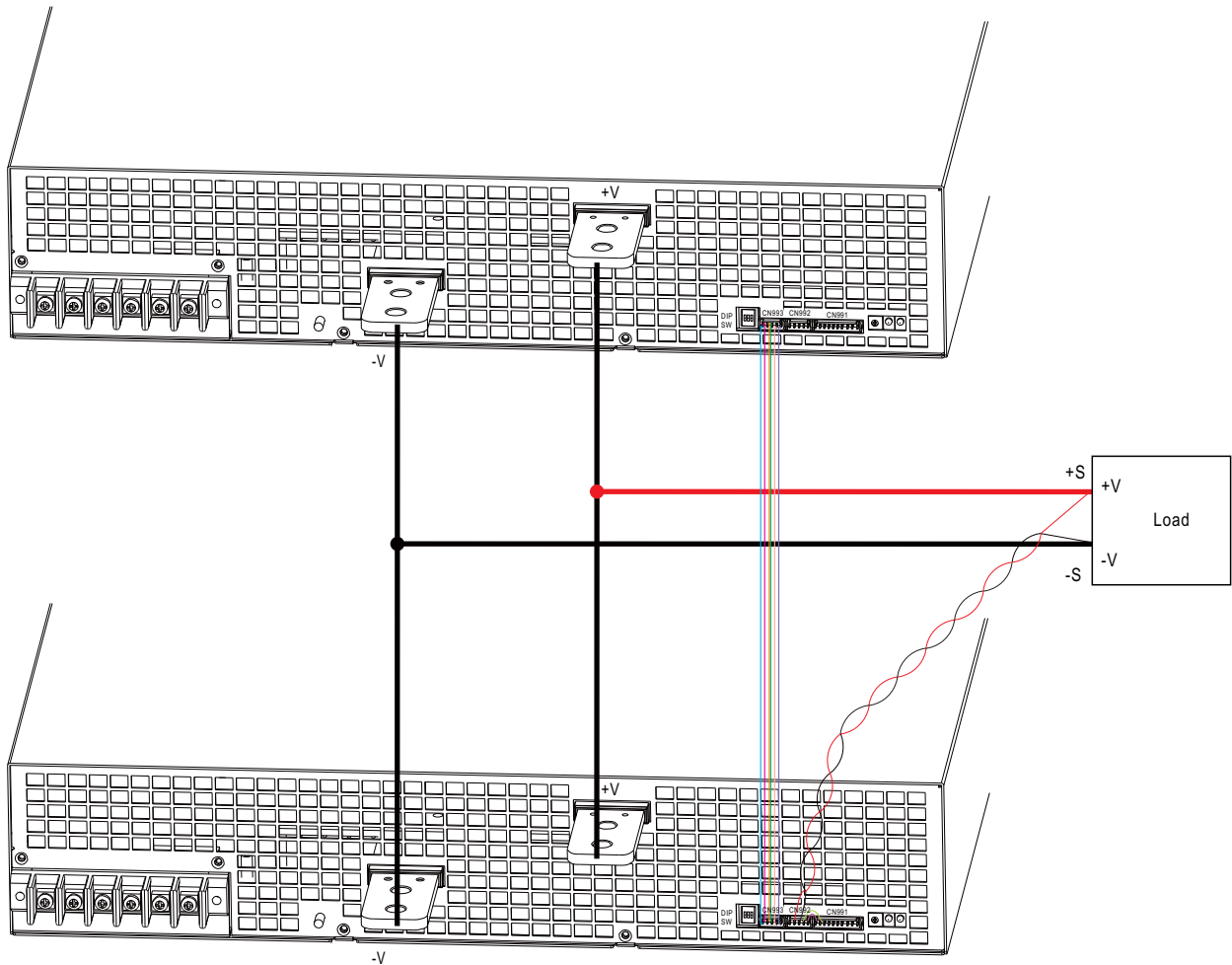
7.Current Sharing

RST-10000 has the built-in active current sharing function and can be connected in parallel, up to 2 units, to provide higher output power as exhibited below :

- ※ The voltage difference among each output should be minimized that less than 0.2V is required.
- ※ The total output current must not exceed the value determined by the following equation.

Maximum output current at parallel operation=(The rated current per unit)x(Number of unit)x0.9

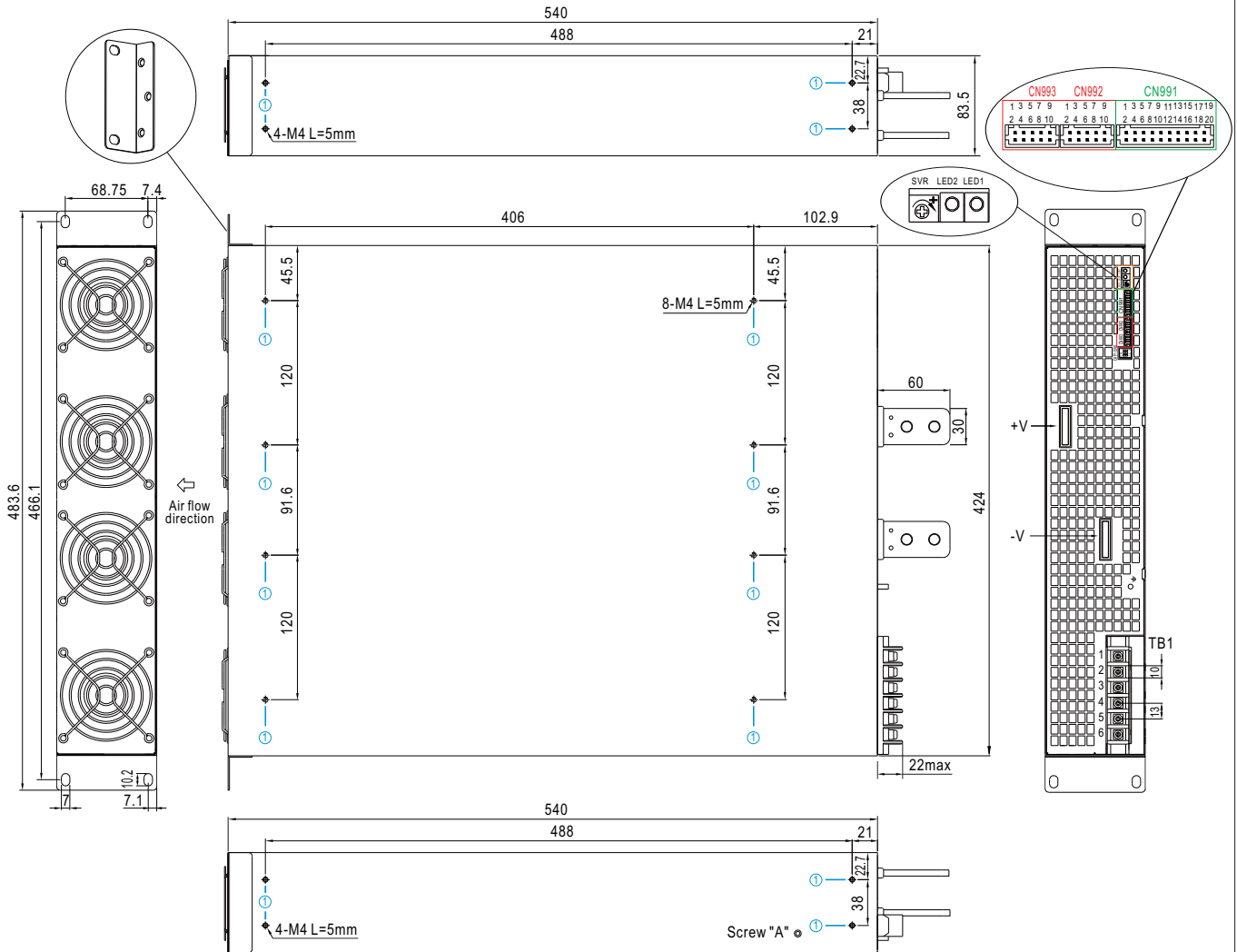
- ※ When the total output current is less than 5% of the total rated current, or say (5% of Rated current per unit) × (Number of unit) the current shared among units may not be fully balanced.



- ◎ +S, -S and CS+, CS- and RC+, RC- are connected mutually in parallel.
- ◎ When the remote sense function is used in parallel operation, the sensing wire must be connected only to the master unit.
- ◎ Wires of the remote sense function should be kept at least 30 cm from input wires.

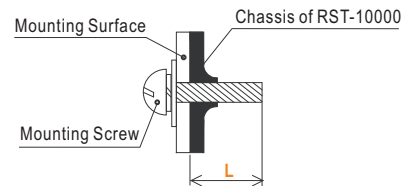
Mechanical Specification

Case No.234A Unit:mm

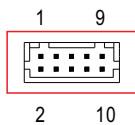


※ Mounting Instruction

| Hole No. | Recommended Screw Size | MAX. Penetration Depth L | Recommended mounting torque |
|----------|------------------------|--------------------------|-----------------------------|
| ① | M4 | 5mm | 7~10Kgf-cm |



※ Control Pin No. Assignment (CN992,CN993) : HRS DF11-10DP-2DS or equivalent

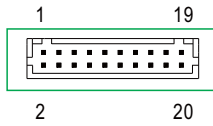


| | |
|----------------|-----------------------------|
| Mating Housing | HRS DF11-10DS or equivalent |
| Terminal | HRS DF11-10SC or equivalent |

◎ CN992 and CN993 are connected internally.

| Pin No. | Function | Description |
|---------|----------|--|
| 1 | CS- | Current sharing signal. When units are connected in parallel, the CS pins of the units should be connected to allow current balance between units. |
| 2 | CS+ | |
| 3 | +S | Positive sensing for remote sense. |
| 4 | PV- | Connection for output voltage programming. |
| 6 | PV+ | |
| 5 | -S | Negative sensing for remote sense. |
| 7 | PC- | Connection for output current programming. |
| 9 | PC+ | |
| 8 | RC- | The output can be turned ON-OFF in association with RC+ and RC-. |
| 10 | RC+ | |

※ Control Pin No. Assignment (CN991) : HRS DF11-20DP-2DS or equivalent



| | |
|----------------|-----------------------------|
| Mating Housing | HRS DF11-20DS or equivalent |
| Terminal | HRS DF11-20SC or equivalent |

| Pin No. | Function | Description |
|---------|---------------|---|
| 1 | 12V-AUX | Auxiliary voltage output, 11.4~12.6V, referenced to pin 3(GND-AUX). The maximum load current is 0.1A. This output is not controlled by the "Remote ON/OFF" function. |
| 2 | DC-OK2-GND | Alarm signal of DC-OK. Open collector signal. Low when the PSU turns on. The maximum sink current is 10mA and the maximum external voltage is 20V. |
| 4 | DC-OK2 | |
| 3 | GND-AUX | Auxiliary voltage output GND. The signal return is isolated from the output terminals (+V & -V). |
| 5 | +V(signal) | Positive output voltage. For local sense only ; it cannot be connected directly to the load. |
| 6 | AC-FAIL2-GND | Alarm signal of AC fail. Open collector signal. Low when the PSU input voltage is too low. The maximum sink current is 10mA and the maximum external voltage is 20V. |
| 8 | AC-FAIL2 | |
| 7 | -V(signal) | Negative output voltage. For local sense only ; it cannot be connected directly to the load. |
| 9 | OTP2 | Alarm signal of OTP. Open collector signal. Low when the PSU over temperature protection occurs. The maximum sink current is 10mA and the maximum external voltage is 20V. |
| 11 | OTP2-GND | |
| 10 | FAN-FAIL2 | Alarm signal of fan fail. Open collector signal. Low when the internal fan fails. The maximum sink current is 10mA and the maximum external voltage is 20V. |
| 12 | FAN-FAIL2-GND | |
| 13 | OTP1 | Alarm signal of OTP. Normally open contact. "Short" when the PSU over temperature protection occurs. Relay contact rating(maximum) is 30V/1A resistive. |
| 15 | OTP1-GND | |
| 14 | DC-OK1 | Alarm signal of DC-OK. Normally open contact. "Short" when the PSU turns on. Relay contact rating(maximum) is 30V/1A resistive. |
| 16 | DC-OK1-GND | |
| 17 | AC-FAIL1-GND | Alarm signal of AC-fail. Normally open contact. "Short" when the PSU input voltage is too low. Relay contact rating(maximum) is 30V/1A resistive. |
| 19 | AC-FAIL1 | |
| 18 | FAN-FAIL1-GND | Alarm signal of fan fail. Normally open contact. "Short" when the internal fan fails. Relay contact rating(maximum) is 30V/1A resistive. |
| 20 | FAN-FAIL1 | |

※LED Status Indicators

| LED | Description |
|---------------|-----------------------------------|
| ● Green(LED1) | LED on when output voltage is OK |
| ● Red(LED2) | LED on when any protection occurs |

※AC Input Terminal Pin No. Assignment (TB1)

| Pin No. | Assignment | Pin No. | Assignment | Diagram | Maximum mounting torque |
|---------|------------|---------|------------|---------|-------------------------|
| 1 | AC/L1 | 4 | AC/N2 | | 18Kgf-cm |
| 2 | AC/N1 | 5 | AC/L3 | | |
| 3 | AC/L2 | 6 | AC/N3 | | |

※DIP Switch Position Assignment(DIP-SW): Please refer to the Function Manual.

| Pin No. | Assignment | Diagram |
|---------|---------------------------------|---------|
| 1 | Overload Protection (OLP) | |
| 2 | Output Current Programming (PC) | |
| 3 | Output Voltage Programming (PV) | |

■ Installation Manual

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