## ■ Features:

- Universal AC input / Full range
- Programmable output Voltage (0% ~ 105%)
- Programmable output Current (0% ~ 105%)
- Built-in ORingFET
- Built-in IC to isolate communication
- Forced current sharing at parallel operation (Refer to pg. 5 for connection diagram)
- Constant current limit
- Selectable +5V / 0.5A or +9V / 0.3A auxiliary output
- Global control via RS232
- Remote setting multiple PSU via RS232, RS485 & I²C
- Power OK signal
- Remote ON / OFF, Remote sense function
- Protection: OVP, OLP, OTP, Fan failure
- Built-in active PFC Function

MODEL		PAE1500-12 ORing	PAE1500-15 ORing	PAE1500-24 ORing	PAE1500-30 ORing	PAE1500-36 ORing	PAE-1500-48 ORing	PAE1500-60 ORing
Output	DC Voltage Rated	12V	15V	24V	30V	36V	48V	60V
	Rated Current	125A	100A	62.5A	50A	41.7A	31.3A	25A
	Current Range	0 ~ 125A	0 ~ 100A	0 ~ 62.5A	0 ~ 50A	0 ~ 41.7A	0 ~ 31.3A	0 ~ 25A
	Rated Power	1500W	1500W	1500W	1500W	1500W	1500W	1500W
	Ripple & Noise (Max.) Note.2	150mVp-p	150mVp-p	240mVp-p	300mVp-p	360mVp-p	480mVp-p	600mVp-p
	Voltage Adj. Range	±5.0% Typical adjustment by potentiometer. (Via V-Adj from PSU front panel)						
	Voltage Tolerance Note.3	±2.0% (rated output voltage of single unit)						
	Current Tolerance	±3.0% (rated output current of single unit)						
	Line Regulation	±1.0%						
	Load Regulation	±1.0%						
	Setup, Rise Time	800ms, 100ms at full load						
	Hold Up Time (Typ.)	14ms / 230VAC at full load						
Input	Voltage Range Note.4	90 ~ 264VAC, 127 ~ 370VDC (Refer to de-rating curve)						
	Frequency Range	47 ~ 63Hz						
	Power Factor (Typ.)	0.95 / 230VAC, 0.99 / 115VAC at ful load						
	Efficiency (Max.)	88%	89%	91%	91%	91%	92%	92%
	AC Current (Max.)	18A / 115VAC, 9A / 230VAC						
	Inrush Current (Typ.)	30A / 115VAC, 45A / 230VAC						
	Leakage Current	< 3.5mA / 240VAC						
Protection	Over Load	105% rated output power						
		Protection type: Constant current limit						
	Over Voltage	Variable OVP Refer to VCI VS OVP curve.(OVP Tolerance 7%)						
		Protection type: Latch-style (Recovery after reset AC power ON or inhibit)						
	Over Temperature	85 ±5°C detect on NTC, Protection type: Auto recovery after temperature goes down						
Function	Auxiliary Power	Selectable +5V / 0.5A or +9V / 0.3A auxiliary output						
	Remote ON / OFF Control	By external switch						
	Power OK Signal	Open drain signal low when PSU turns on, Max. sink current: 20mA, Max. drain voltage: 40V.						
	Output Voltage Trim	Adjustment of output voltage is between 0 ~ 105% of rated output						
	Output Current Trim	Adjustment of output current is between 0 ~ 105% of rated output						
	Parallel (Current Sharing) Note.5	Please refer to page 5						
Environment	Working Temp.	-25 ~ +60°C (Refer to load de-rating curve)						
	Working Humidity	20 ~ 90% RH non-condensing						
	Storage Temp. & Humidity	-40 ~ +85°C, 10 ~ 95% RH						
	Temp. Coefficient	±0.02% / °C (0 ~ 50°C)						
	Vibration	10 ~ 500Hz, 2G 10min. / 1cycle, period for 60min. each along X, Y, Z axes Compliance to IEC60068-2-6; IEC60068-2-64						
Safety & EMC	Safety Standards	Certified UL 62368-1; EN 62368-1						
	Withstand Voltage Note.7	I/P-O/P: 3KVAC (4242VDC), I/P-FG: 1.5KVAC (2121VDC), O/P-FG: 0.5KVAC (707VDC)						
	Isolation Resistance	I/P-O/P, I/P-FG, O/P-FG: 100M Ohms / 500VDC (25°C / 70% RH)						
	EMI Conduction & Radiation	Certified EN 55032; EN 61204-3; EN 610000-6-3						
	Power Harmonic & Voltage Fluctuation and Flicker	Certified EN 61000-3-2; EN 61000-3-3						
Note.6	EMS Immunity	Certified EN 55035: 2017 / A11: 2020; IEC 61000-4-2,3,4,5,6,8,11						
Others	MTBF	90.7K HRS Certified MIL-HDBK-217F						
	Cooling	Load and temperature control fan						
	Dimension (WxHxD)	127x64x280 mm / 5.00x2.52x11.02 inch						
	Packing	2.6kg; 6pcs / 16.6kg / 1.86CUFT						
Note		1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor. 3. Tolerance: includes setup time tolerance, line regulation and load regulation. 4. De-rating may apply in low input voltage. Please check the de-rating curve for more details. 5. In parallel connection only one unit will operate if the total output load is less than 5% of the rated power. 6. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. 7. This test is done without enclosure: I/P-O/P 4242VDC. If with enclosure: I/P-O/P 2121VDC,I/P-FG:2121VDC, O/P-FG: 707VDC						

Mechanical Drawings:

Unit:mm / inch
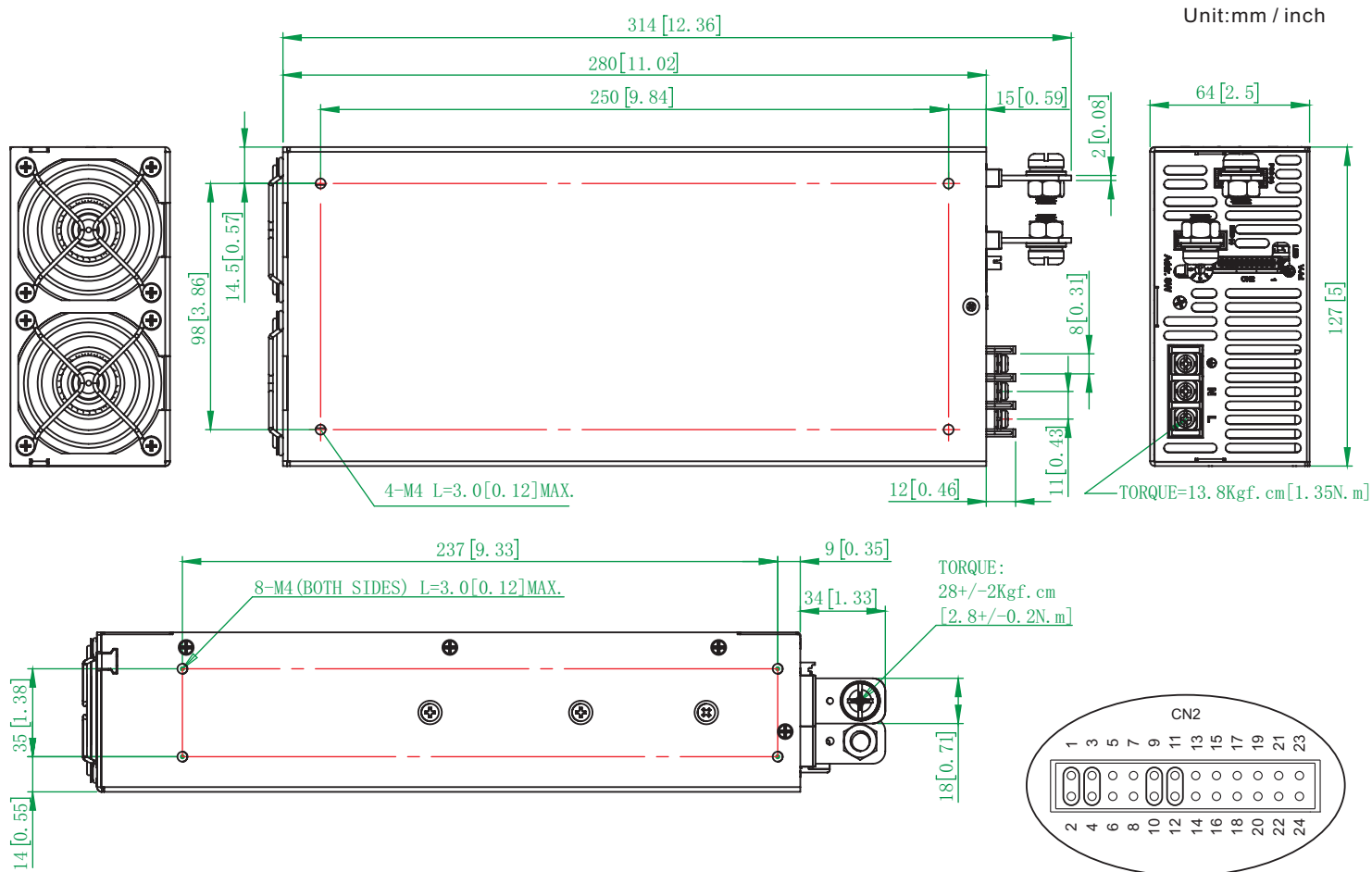
Recommended screw length is measured from the power supply surface

AC Input Terminal Pin No. Assignment

Pin No.	Assignment
L	ACL
N	CAN
⏚	⏚

CN2 Function Description:

Pin No.	Function	Description	Pin No.	Function	Description	Mating Housing / Contact	
1	VS+	Remote sense (+)	13	ACI	I Program	JST PHDR-24VS or equivalent	JST SPHD-002T-P0.5 or equivalent
2	VO+	Positive output voltage	14	GND	Ground		
3	VS-	Remote sense (-)	15	VCI	V Program		
4	VO-	Negative output voltage	16	GND	Ground		
5	POK	Power OK	17	AUX	+5V / 0.5A or +9V / 0.3A Auxiliary power		
6	GND	Ground	18	GND	Ground		
7	PAR	Parallel operation current share	19	SCL	Serial Clock used in the I²C interface		
8	VSET	Aux output setting	20	SDA	Serial Data used in the I²C interface		
9	EN-	Inhibit ON/OFF (-)	21	+5VC	+5V power supply, needs to be used with GND1		
10	GND	Ground	22	GND1	Ground 1, needs to be used with +5VC		
11	EN+	Inhibit ON/OFF (+)	23	RX	For RS232 Receiver function		
12	AUX	+5V / 0.5A or +9V / 0.3A Auxiliary power	24	TX	For RS232 Transmission function		

LED Status:

LED	LED Signal	Status
Solid(Green)		Power OK (Local mode)
Solid(Orange)		Power OK (Remote mode)
Slow Blink(Green)		Power Standby (Local mode)
Slow Blink(Orange)		Power Standby (Remote mode)
Fast Blink(Red)		Over Voltage Protection (OVP)
Solid(Red)		Over Load Protection (OLP)
Slow Blink(Red)		Over Temperature Protection (OTP)
Intermittent Blink(Red)		Fan Failure
Interlace Blink(Red)		Power Failure

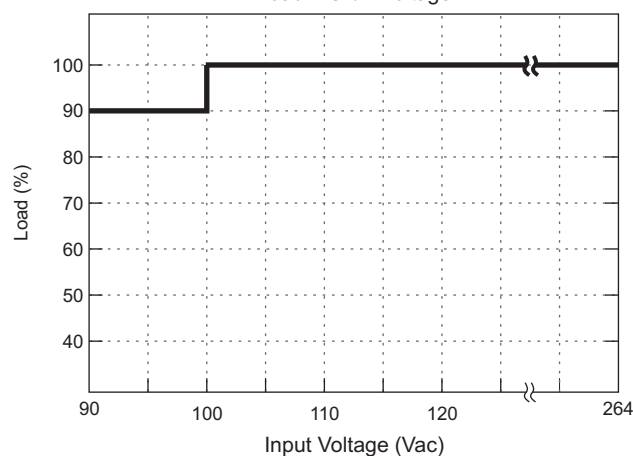*Local mode : Use ACI/VCI to control output current and voltage.
 Remote mode : Use RS-232 or I^2C command to control output current and voltage.
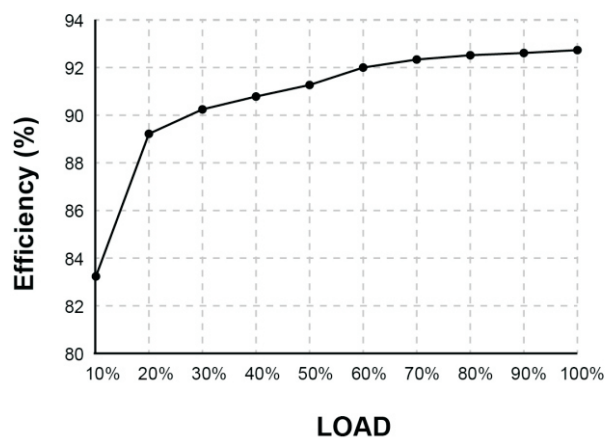
De-rating Curve:
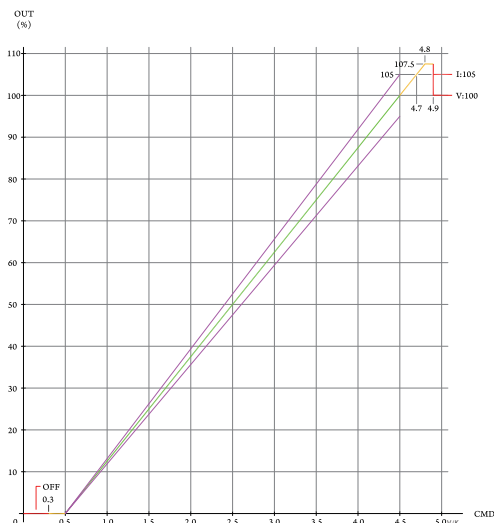
Load V.S Temp.
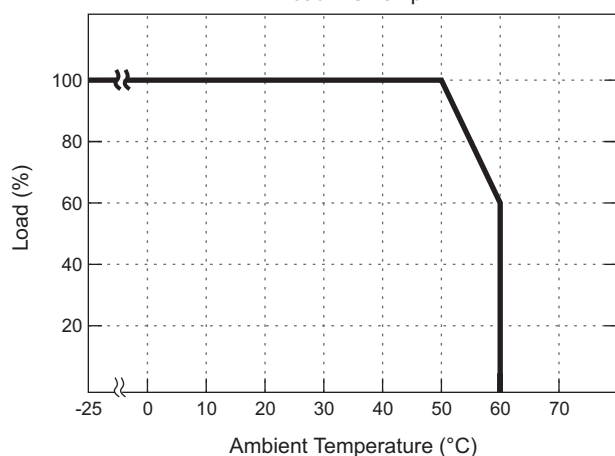
Load V.S I/P Voltage

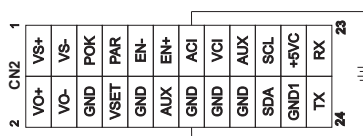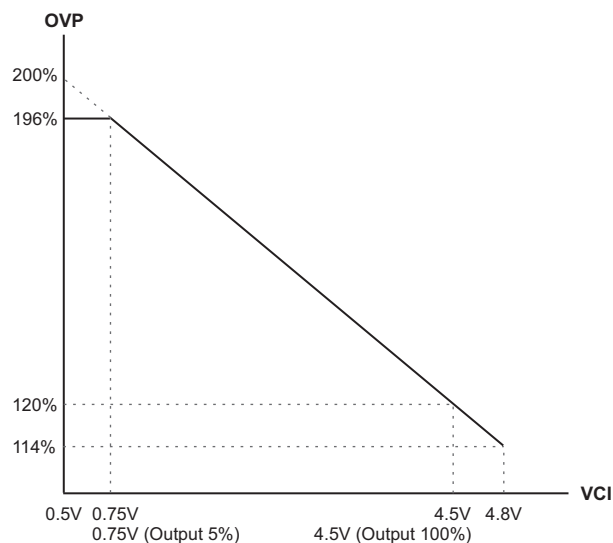## Efficiency Curve (60V Model):

LOAD

The curve above is measured at 230Vac
(Ambient temperature @ 25°C)
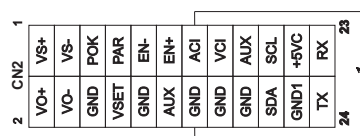
■ CMD VS Output Curve:

To ensure the power supply output voltage and current could be accurately adjusted, please make sure to adjust the output voltage and current > 10% vs. the rated voltage and current. (e.g. for a 24V unit, please adjust the DC output voltage above 2.4V to ensure accuracy; same applies to the output current)
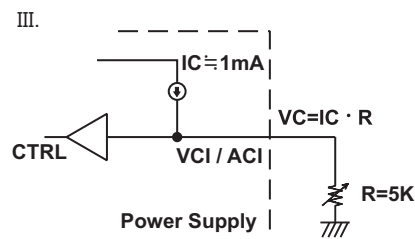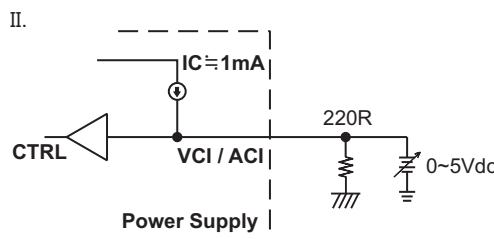
■ VCI VS OVP Curve:

External Voltage（VDC）

External Resistor（KΩ）

I.

$IC \fallingdotseq 1mA$

I-Shrink MIN 1mA

CTRL

VCI / ACI

A/D PWM

Power Supply

II.

$IC \fallingdotseq 1mA$

CTRL

VCI / ACI

220R

0~5Vdc

Power Supply

III.

$IC \fallingdotseq 1mA$

CTRL

VCI / ACI

$VC = IC \cdot R$

R=5K

Power Supply
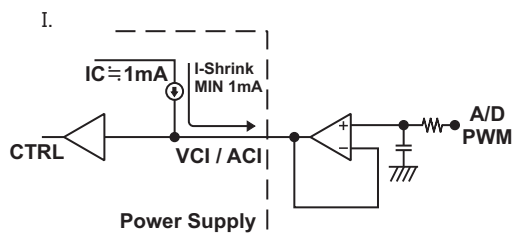
■ Remote ON/OFF:

(A) Default Setting

2KΩ
AUX
EN+
SW
EN-
GND

SW	OFF	Power OFF
	ON	Power ON
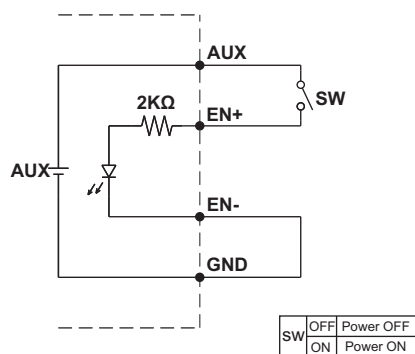
(A) Using internal 5V auxiliary source

(B)

2KΩ
AUX
EN+
AUX
EN-
Tr
Ctrl
GND

Ctrl	L	Power OFF
	H	Power ON
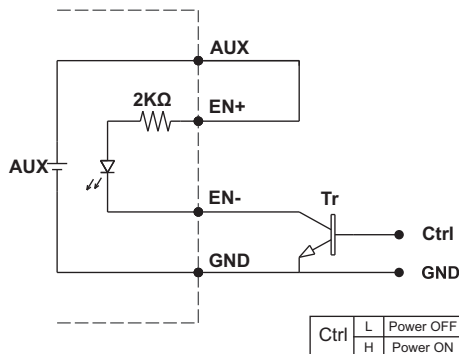
(B) ON / OFF Control by NPN transistor

(C)

2KΩ
AUX
EN+
SW
AUX
EN-
GND
External DC source AUX (MAX=9V dc)

SW	OFF	Power OFF
	ON	Power ON
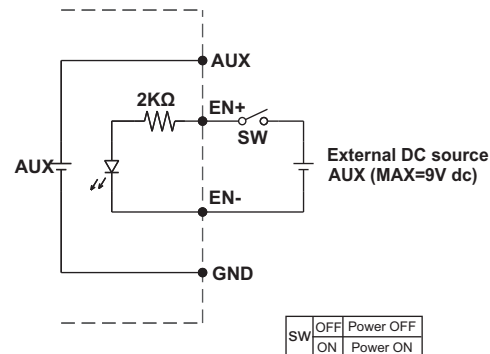
(C) Using external voltage source

GND shown in above diagram is referring to the GND of CN2, not the Grounding from main power(NEG-).

■ Power OK Signal & Auxiliary Power Setting:

*The grounding of "AUX" power and P.OK signal should be connected to "GND" port. If " VO-" is connected as Grounding, make sure to short the GND and VO- ports.

Open drain signal low when PSU turns on, Max. $\overline{P.OK}$ sink current: 20mA, Max. drain voltage: 40V.

AUX
*470 μF 16V
AUX. LOAD
GND

Do NOT exceed 5V/0.5A or 9V/0.3A

Good
Failure

$\overline{P.OK}$

DC / DC 5V/0.5A or 9V/0.3A

AUX

VSET

VSET	Open(Default Setting)	5V
	Short To GND	9V

Internal Circuit

GND
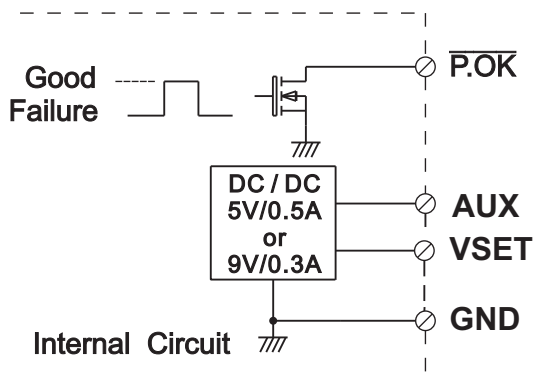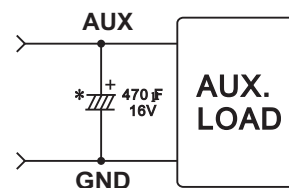
*Place an additional capacitor to have a better performance of auxiliary power operation.

AUX and P.OK Signal

GND shown in above diagram is referring to the GND of CN2, not the Grounding from main power(NEG-).

■ RS232 communication diagram

AE-1500 ORingFET with built-in isolation IC for communication

1 3 5 7 9 11 13 15 17 19 21 23

2 4 6 8 10 12 14 16 18 20 22 24

RX
TX
+5VC
GND1

CT BOARD

PC

23			24
+5VC 21			22 GND1
19			20
VAUX 17			18
15			16 GND
13			14
01			02

Short

Short

CT board internal circuit (factory default)
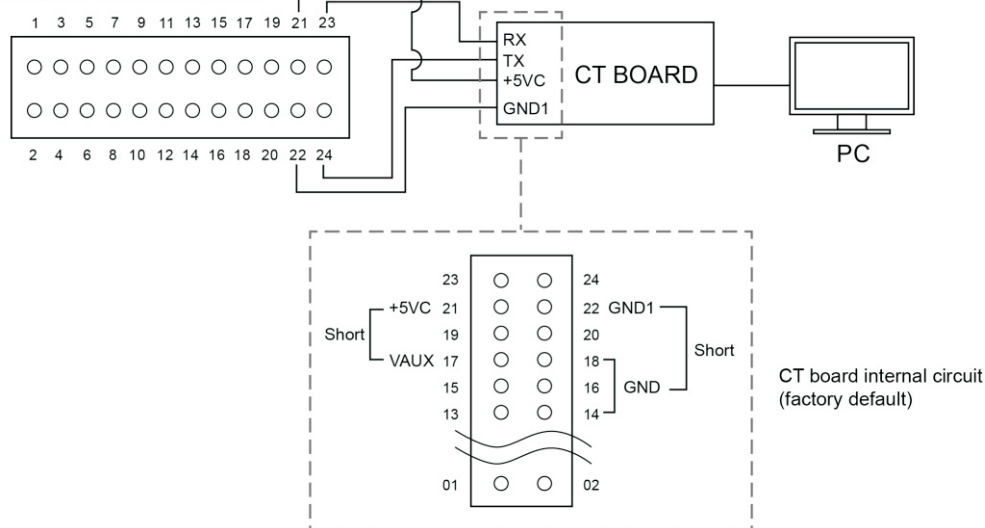
*CT board does have communication isolation IC, no need to isolate communication in this application

*As PAE-1500 ORing have built-in isolation IC, when select 3rd party communication kit, no need to use the communication kit with built-in isolation IC.

*Make sure to connect +5VC (pin21) and GND1 (pin 22) when using 3rd party communication kit

1. Remote Sense

2 CN2	1
VO+	VS+
VO-	VS-
GND	POK
VSET	PAR
GND	EN-
AUX	EN+
GND	ACI
GND	VCI
GND	AUX
SDA	SCL
GND1	+5VC
TX	RX
24	**23**

VS-,VS+ Compensation Voltage < 0.5V

2. Local Sense (Default setting)

CN2

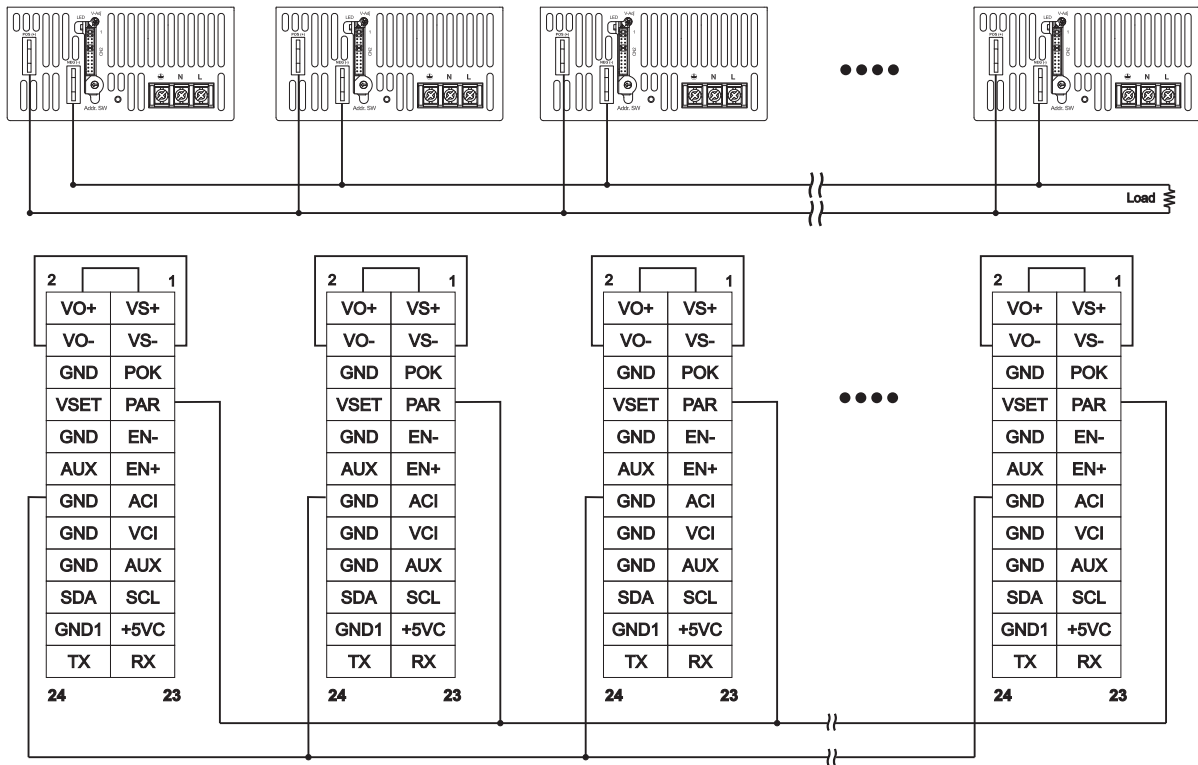| 2	1
VO+	VS+
VO-	VS-
GND	POK
VSET	PAR
GND	EN-
AUX	EN+
GND	ACI
GND	VCI
GND	AUX
SDA	SCL
GND1	+5VC
TX	RX
24	**23**

POWER SOLVE

3. Current Sharing with Remote Sensing(Parallel Connection)
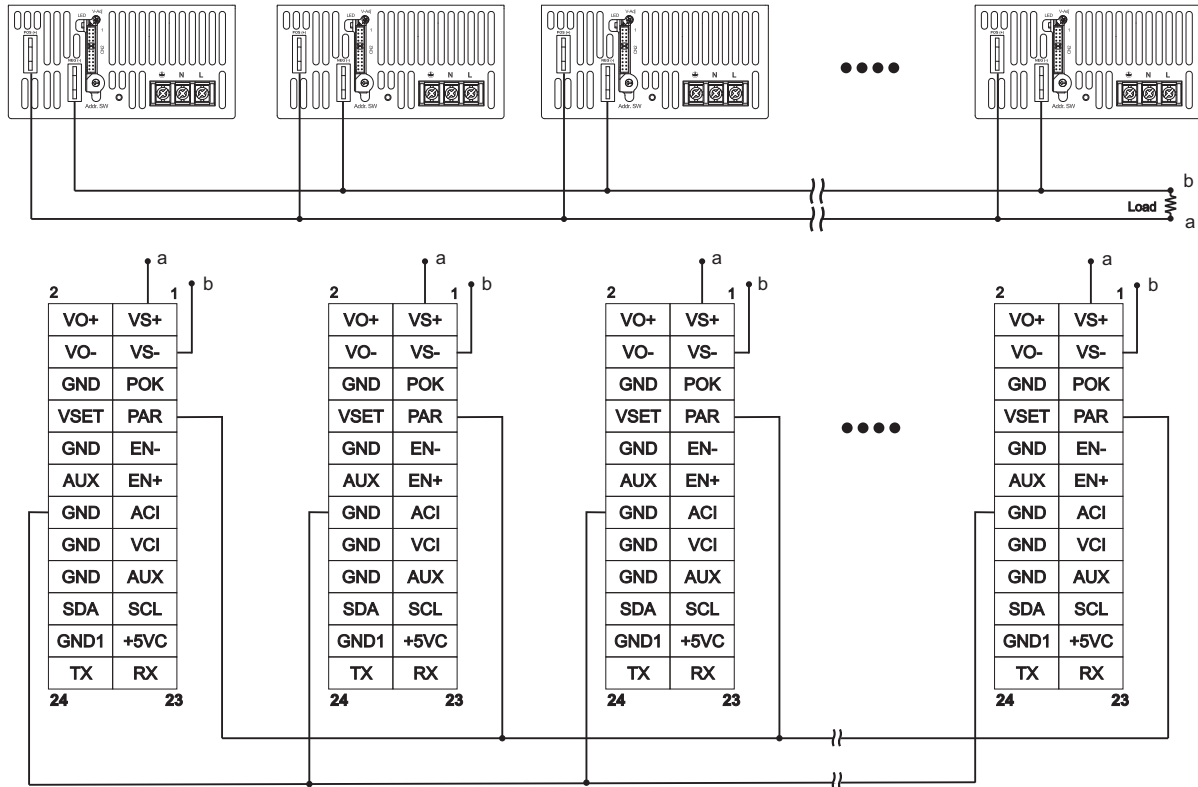
Please connect PAR pins together for current sharing function
For Series connection, make sure to isolate CN2 control signals

4. Current Sharing with Local Sensing

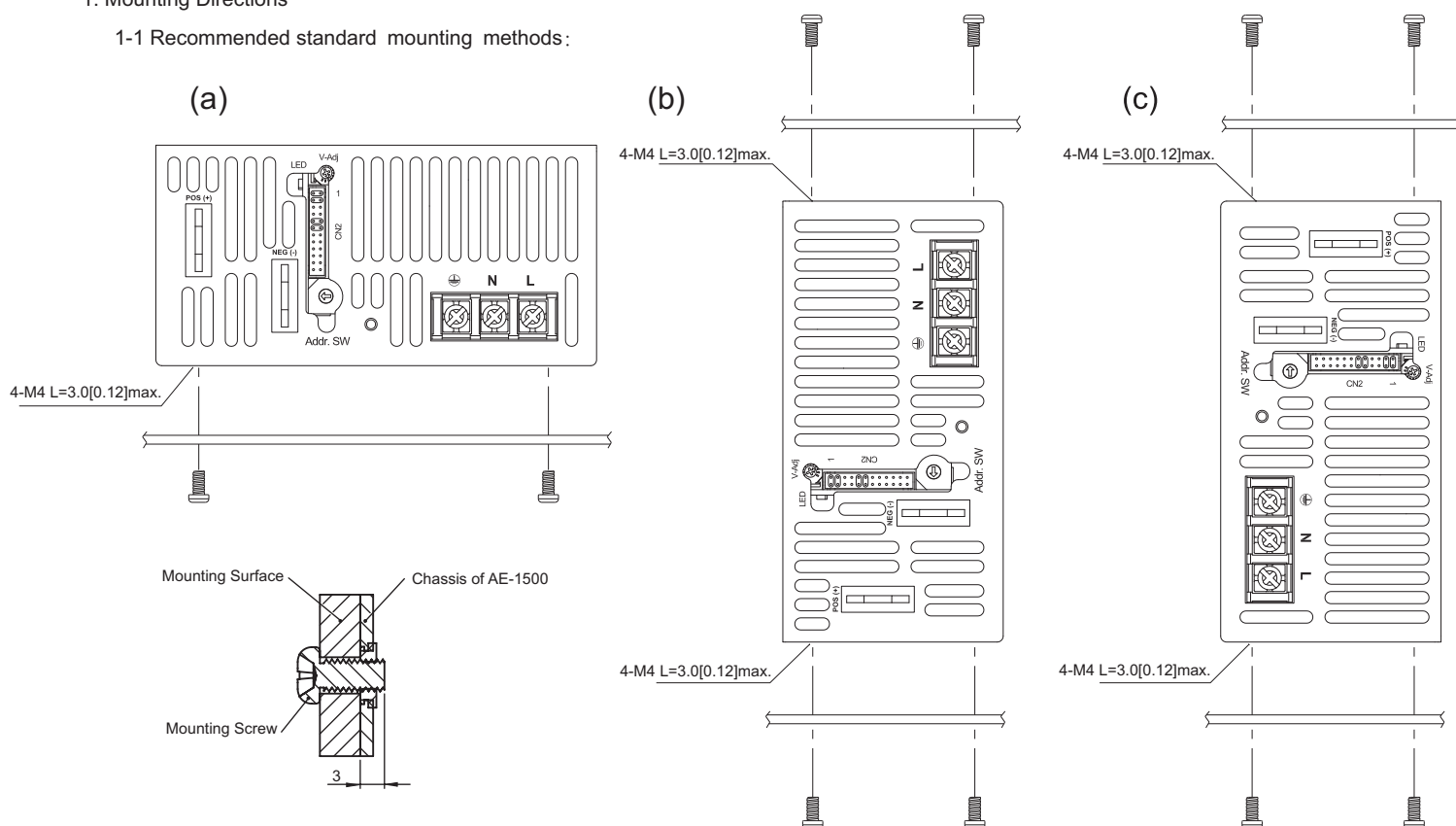Please connect PAR pins together for current sharing function

NOTE : PAE-1500 ORingFET has built-in active current sharing function to support max. of 8pcs connected in parallel condition to support higher output power. When performing parallel connection, make sure to note the followings:

    A. Please connect PAR pins together for current sharing function

    B. Among the parallel connection units, output voltage difference of each PSU should be <0.2VDC
      (This can be set via V-adj from the PSU front panel VR)

    C. Total output current must not exceed 90% of the rated power in parallel condition
      Maximum output current at parallel condition = rated current per unit x number of unit x 0.9

    D. To ensure current share balance, output current of each unit must be >10% vs. the rated output current

■ Installation Instruction:

1. Mounting Directions

   1-1 Recommended standard mounting methods：

(a)

(b)

(c)

4-M4 L=3.0[0.12]max.

4-M4 L=3.0[0.12]max.

4-M4 L=3.0[0.12]max.

4-M4 L=3.0[0.12]max.

4-M4 L=3.0[0.12]max.

Mounting Surface

Chassis of AE-1500

Mounting Screw

3

Recommended screw length is measured from the power supply surface

2. Mounting Method

   2-1 There are ventilating holes on the front and back side panels,
      do not obstruct; allow 50mm at least for air flow.

   2-2 Recommended the torque of mounting screw:
      M4 screw: 1.27N • m (13.0kgf • cm)

More than 50mm

More than 50mm

FAN

Air flow ⬅

FAN