COTEK 1500W Programmable Single Output AE-1500 series

Features:

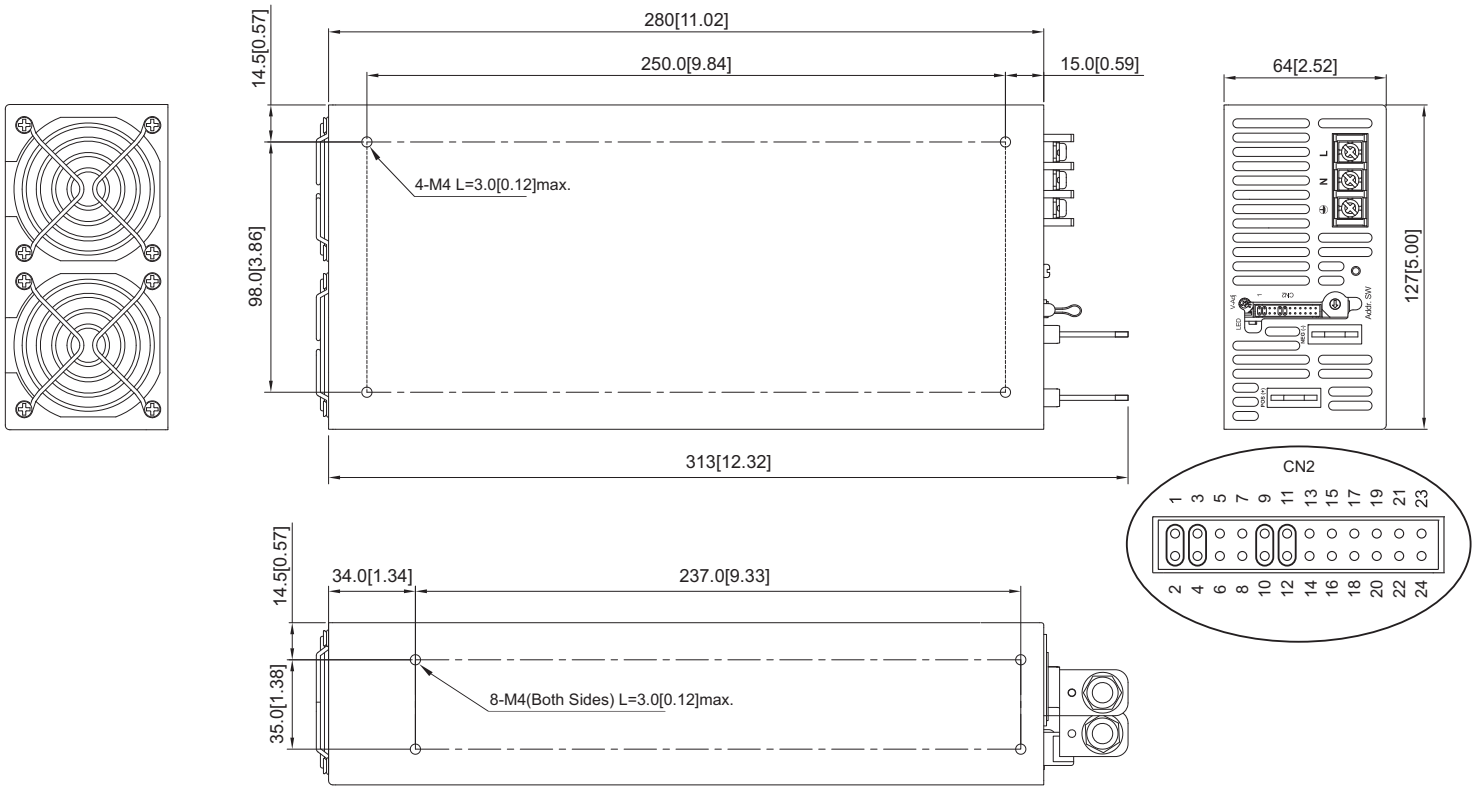
- Universal AC input / Full range
- Programmable output Voltage (0% ~ 105%)
- Programmable output Current (0% ~ 105%)
- Forced current sharing at parallel operation
- Constant current limit
- Selectable +5V / 0.5A or +9V / 0.3A auxiliary output
- Global control via RS232
- Remote setting multiple PSU via RS232, RS485 & I²C
- Power OK signal
- Remote ON / OFF, Remote sense function
- Protection: OVP, OLP, OTP, Fan failure



MODEL		AE-1500-12	AE-1500-15	AE-1500-24	AE-1500-30	AE-1500-36	AE-1500-48	AE-1500-60
Output	DC Voltage Range	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. (VR1)						
	Voltage Tolerance Note.3	±2.0%						
	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						
	Frequency Range	47 ~ 63Hz						
	Power Factor (Typ.)	0.95 / 230VAC, 0.99 / 115VAC at ful load						
	Efficiency (Typ.)	89%	90%	92%	92%	92%	92%	93%
	AC Current (Typ.)	18A / 115VAC, 9A / 230VAC						
	Inrush Current (Typ.)	30A / 115VAC, 45A / 230VAC						
	Leakage Current	< 2.5mA / 240VAC						
Protection	Over Load	105% rated output power						
		Protection type: Constant current limit						
	Over Voltage	Variable OVP, 120 ± 7% Vout. Refer to VCI VS OVP curve.						
		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 IEC 68-2-6, IEC 68-2-64						
Safety & EMC	Safety Standards	Certified UL 60950-1; EN 60950-1						
	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						
	EMI Conduction & Radiation	Certified EN 55022; EN 61204-3; EN 61000-6-3						
	Power Harmonic & Voltage Fluctuation and Flicker	Certified EN 61000-3-2; EN 61000-3-3						
Note.6	EMS Immunity	Certified EN 55024; EN6 1204-3; EN61000-6-1; IEC 61000-4-2, 3, 4, 5, 6, 8, 11						
Others	MTBF	111K 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.							

Mechanical Drawings:

Unit:mm / inch



Recommended screw length is measured from the power supply surface

AC Input Terminal Pin No. Assignment

Pin No.	Assignment
1	L
2	N
3	⏚

CN2 Function Description:

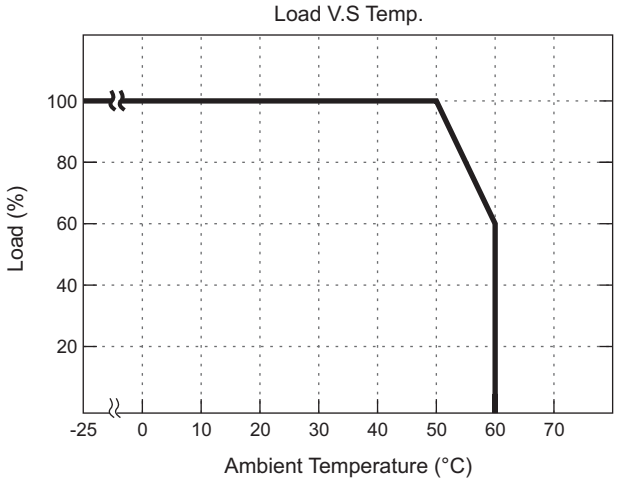
Pin No.	Function	Description	Pin No.	Function		Mating Housing / Contact	
1	VS+	Remote sense (+)	13	ACI	I Program	JST PHDR-24VS or equivalent	JST SPHD-002T-P0.5 or equivalent
2	VO+	Positive output voltage	14	GND	Ground		
3	VS-	Remote sense (-)	15	VCI	V Program		
4	VO-	Negative output voltage	16	GND	Ground		
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 I^{2}C interface		
8	VSET	Aux output setting	20	SDA	Serial Data used in the I^{2}C interface		
9	EN-	Inhibit ON/OFF (-)	21	AUX	+5V / 0.5A or +9V / 0.3A Auxiliary power		
10	GND	Ground	22	GND	Ground		
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		

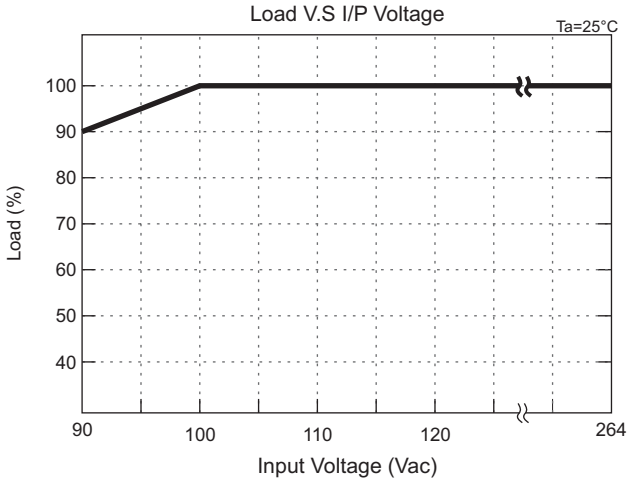
LED Status:

LED	LED Signal	Status
Solid(Green)		Power OK (Local mode)
Solid(Orange)		Power OK (Remote mode)
Slow Blink(Green)		Power Standby
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

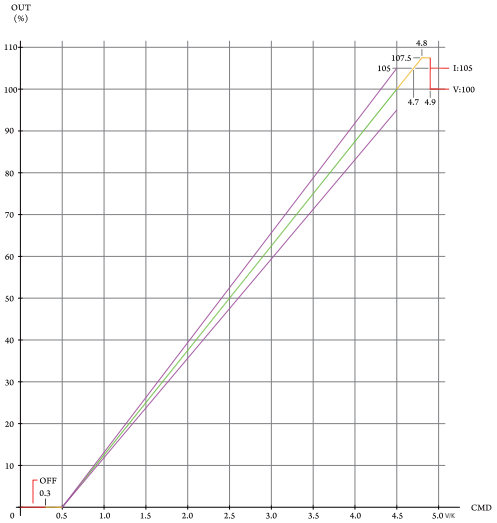
*Local mode : Use ACI/VCI to control output current and voltage.
Remote mode : Use RS-232 or I²C command to control output current and voltage.

De-rating Curve:



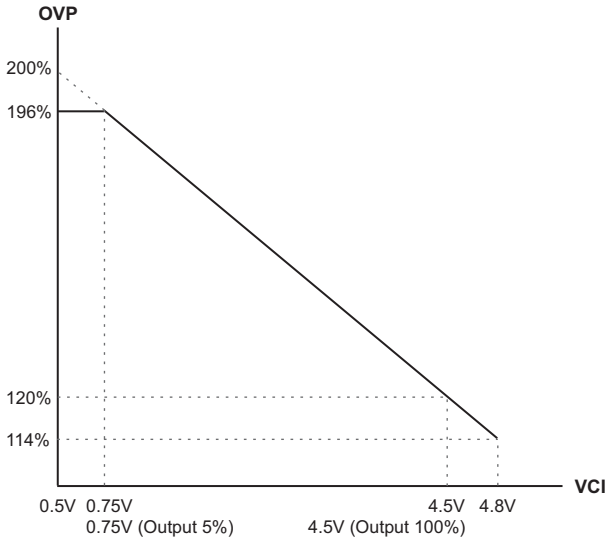


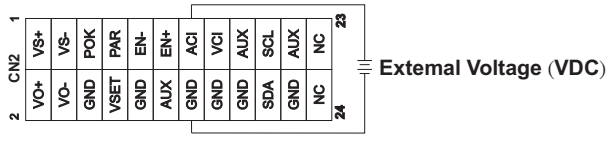
CMD VS Output Curve:

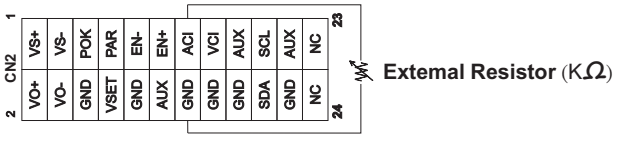


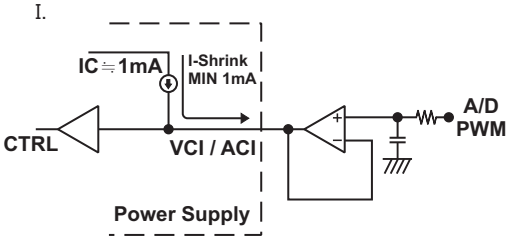
To ensure the power supply output voltage and current could be accurately adjusted, please make sure to adjust the output voltage and current > 10% vs. the rated voltage and current. (e.g. for a 24V unit, please adjust the DC output voltage above 2.4V to ensure accuracy; same applies to the output current)

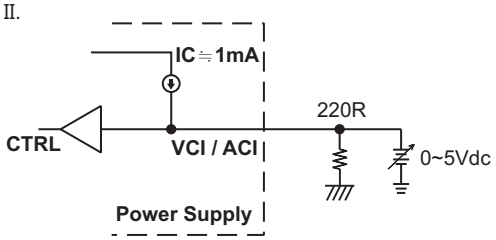
VCI VS OVP Curve:

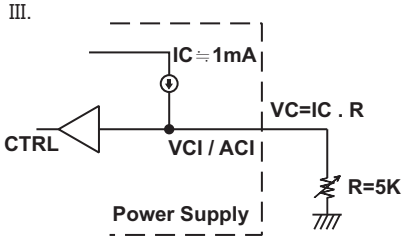






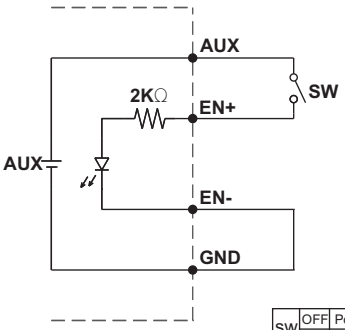






Remote ON/OFF:

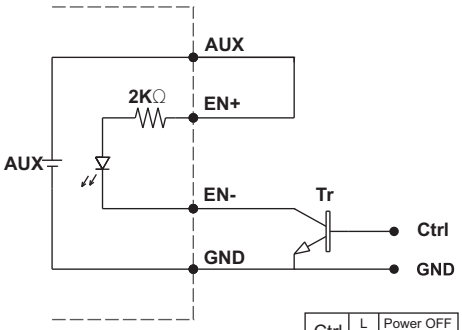
(A) Default Setting



SW	OFF	Power OFF
	ON	Power ON

(A) Using internal 5V auxiliary source

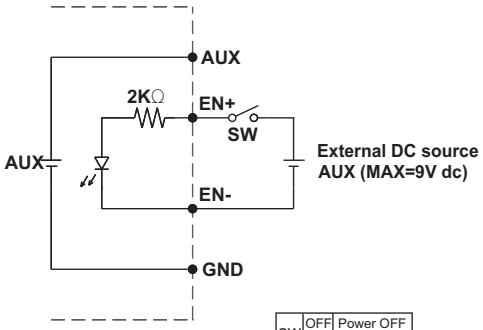
(B)



Ctrl	L	Power OFF
	H	Power ON

(B) ON / OFF Control by NPN transistor

(C)



SW	OFF	Power OFF
	ON	Power ON

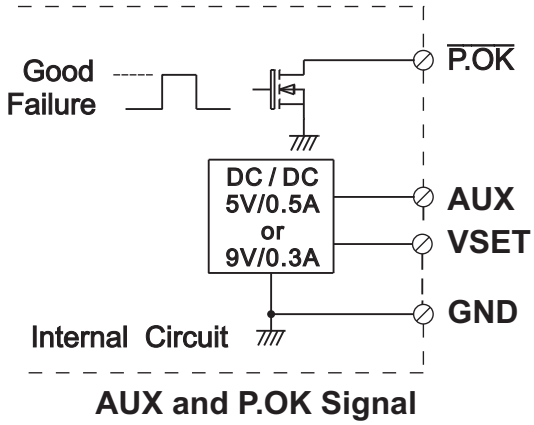
(C) Using external voltage source

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.

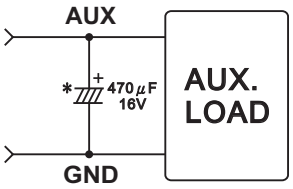
Open drain signal low when PSU turns on, Max. $\overline{\text{P.OK}}$ sink current: 20mA, Max. drain voltage: 40V.



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

AUX and P.OK Signal

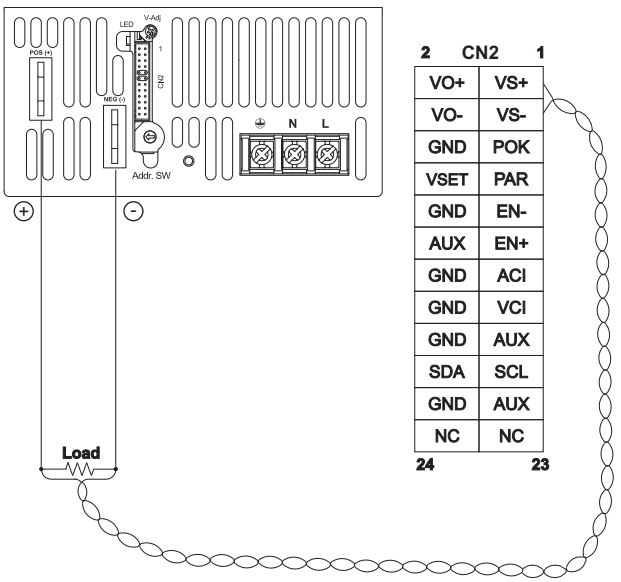
*Place an additional capacitor to have a better performance of auxiliary power operation.



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

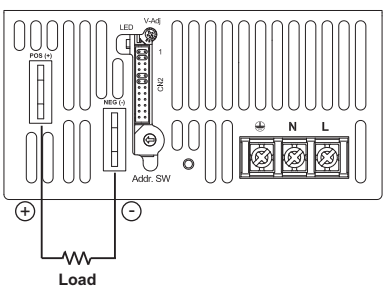
GND shown in above diagram is referring to the GND of CN2, not the Grounding from main power(NEG-).

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
GND	AUX
NC	NC
24	23

2. Local Sense (Default setting)

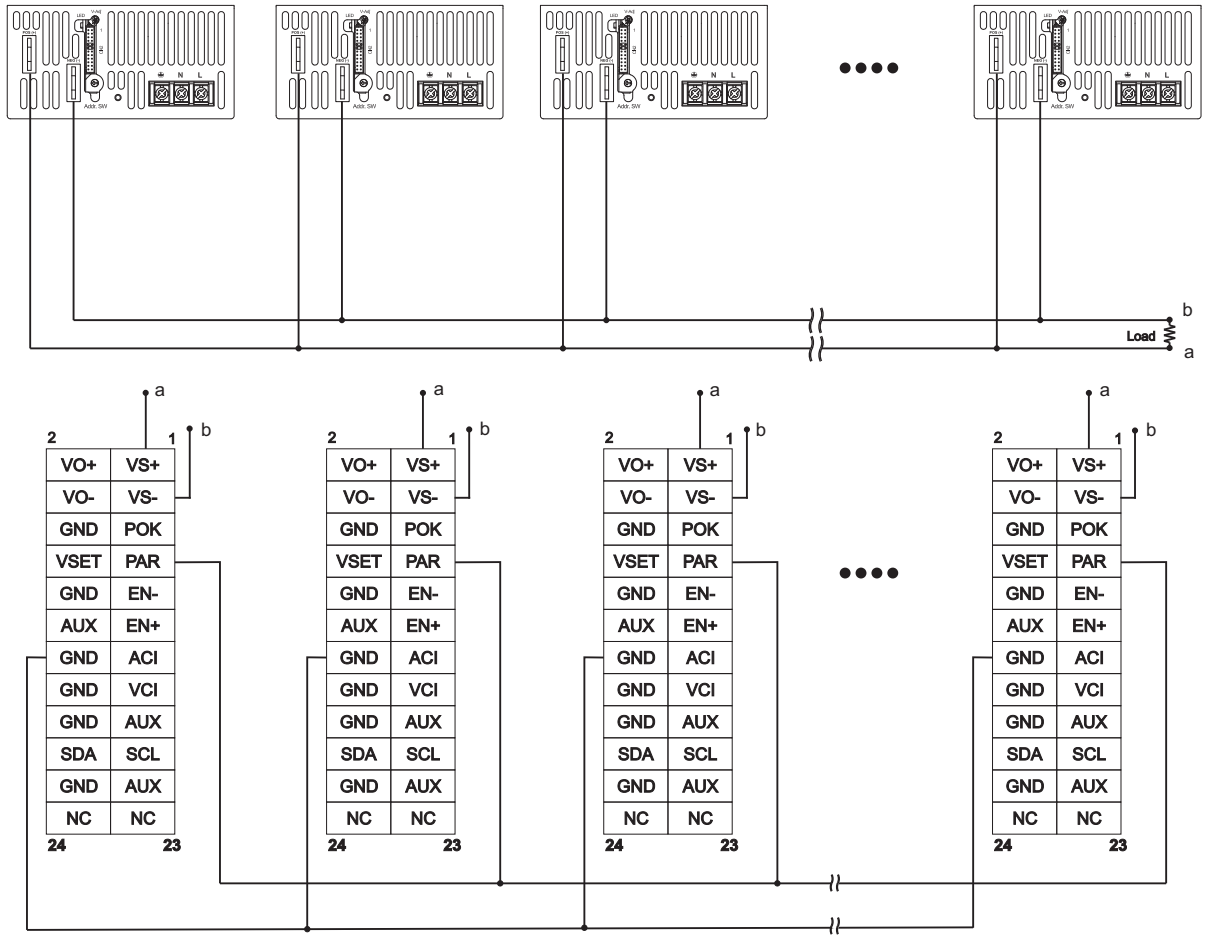


CN2

2	1
VO+	VS+
VO-	VS-
GND	POK
VSET	PAR
GND	EN-
AUX	EN+
GND	ACI
GND	VCI
GND	AUX
SDA	SCL
GND	AUX
NC	NC
24	23

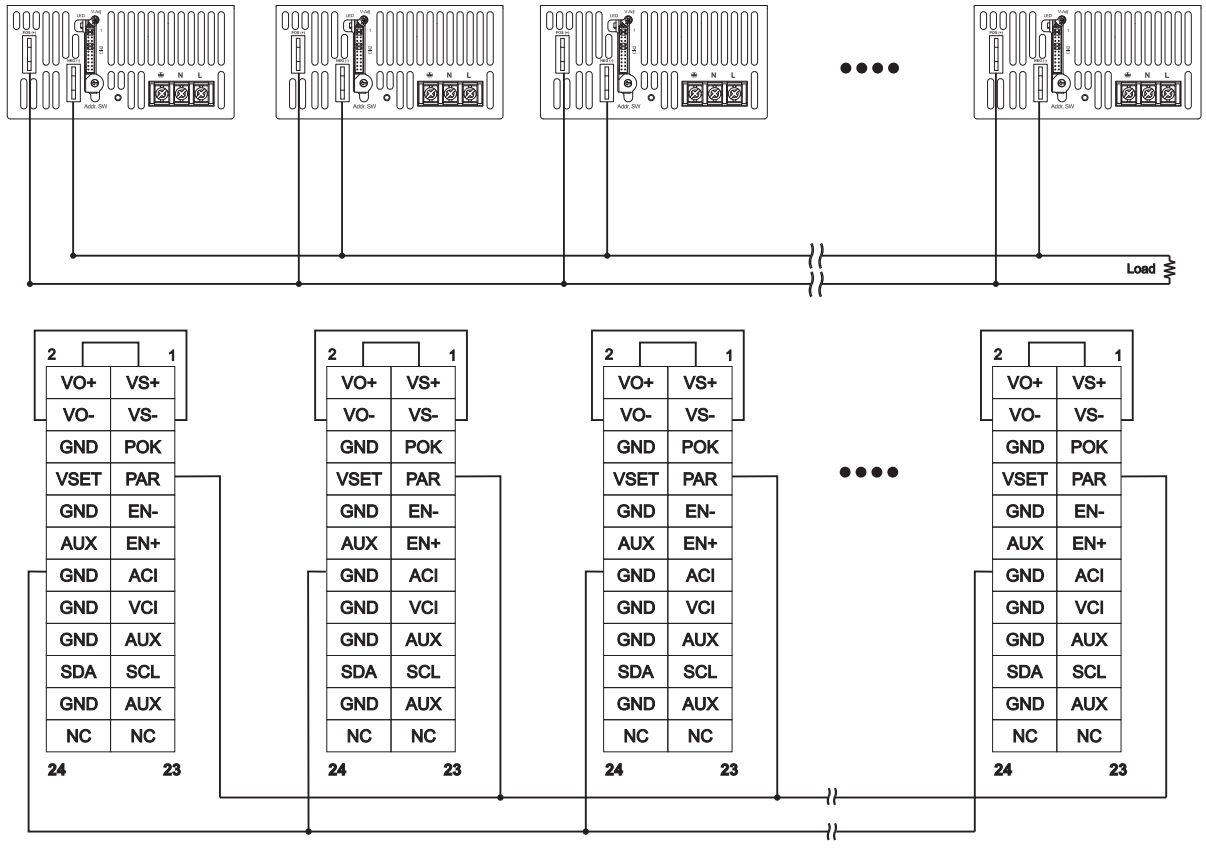
VS-,VS+ Compensation Voltage < 0.5V

3. Current Sharing with Remote Sensing(Parallel Connection)



Please connect PAR pins together for current sharing function

4. Current Sharing with Local Sensing

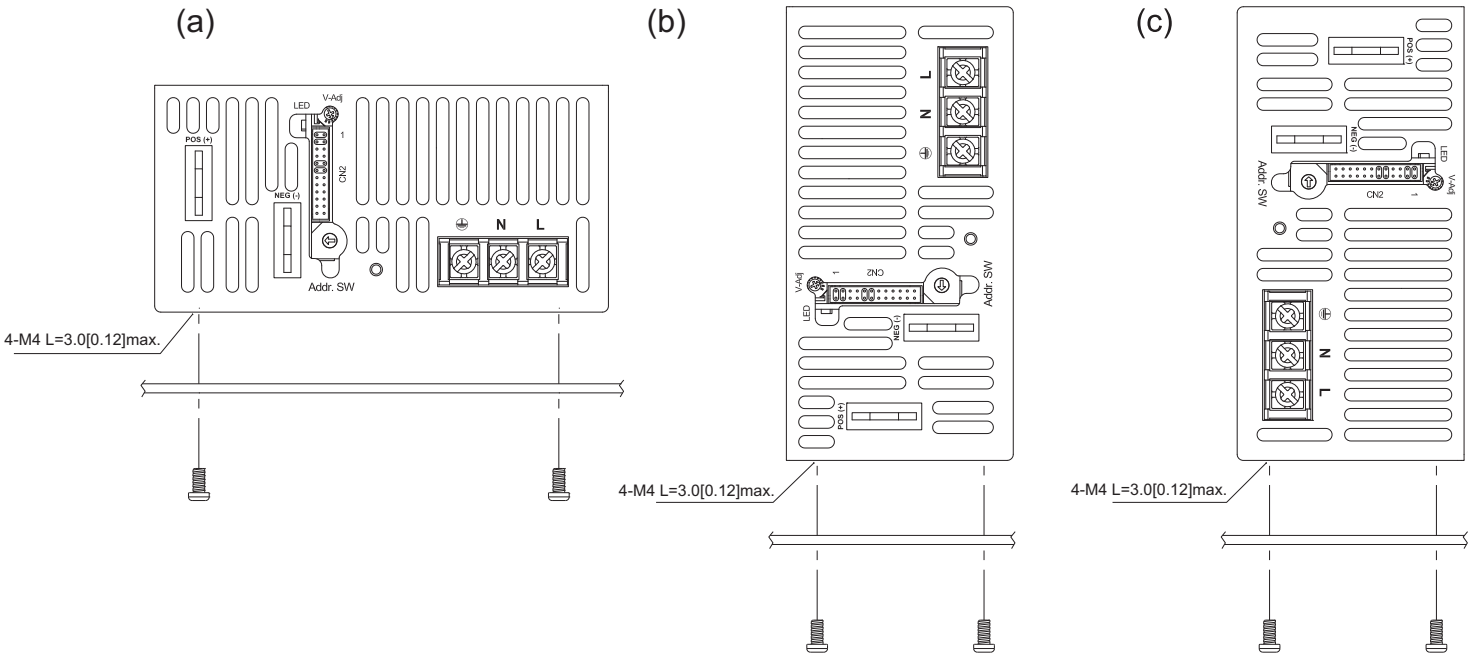


Please connect PAR pins together for current sharing function

Installation Instruction:

1. Mounting Directions

1-1 Recommended standard mounting methods:



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)

