AD-1500

1500W Programmable Digital Power Supply



■ Features:

- Universal AC input/Full range (90~264Vac)
- Programmable output voltage and current 0~105%
- Current sharing at parallel operation
- Constant current limit
- AUX POWER ：+5.0V/1.0A
- Built-in ORing Diode
- Support Parallel operation via CANBUS Built-in isolation circuit (PMB(A23), MOD(A24), ETH(D11) Version)
- Power OK signal (built-in isolation circuit)
- Intelligent GUI to set and monitoring parameter
- Remote On/Off Function
- Support PMBus(meet), MODBUS, RS232/485, I²C and Ethernet protocols
- Protection: OVP, OLP, OTP, AC Failure, Power and Fan Failures
- Built-in VR to adjust output voltage & current (RS4(C11) version)
- Built-in EEPROM to memorize power supply settings
- Optional Changeable interface cards: PMB(A23), MOD(A24), RS4(C11) & ETH(D11)

■ Model Naming Rule: AD-1500-XXV-①②③

AD : Product Series　**1500** : Wattage　**XX** : Output voltage　①②③ : can be PMB(A23) / MOD(A24) / RS4(C11) / ETH(D11)

Model	Hardware (Interface changeable)	Communication protocol
PMB (A23)	RS-485 Support parallel connection with built-in communication isolation circuit	Cotek STD protocol (RS-485), and Meet PMBus, I²C
MOD (A24)		MODBUS & Meet PMBUS, I²C
RS4 (C11)	Single unit only	Cotek STD protocol (RS-485)
ETH (D11)	Ethernet	ARP, Device Search Utility (DSU), DHCP Client, IPv4, SNMP, TCP, UDP, ICMP, Cotek STD protocol

		AD-1500-120	AD-1500-150	AD-1500-250	AD-1500-400
Output	DC Voltage Rated	120V	150V	250V	400V
	Rated Current	12.5A	10.0A	6.0A	3.75A
	Current Range	0 ~ 12.5A	0 ~ 10.0A	0 ~ 6.0A	0 ~ 3.75A
	Voltage Range	0~105% vs. rated			
	Rated Power	1500W	1500W	1500W	1500W
	Ripple & Noise (Max.)	1200mVp-p	1500mVp-p	2500mVp-p	4000mVp-p
	Voltage Adj. Range	±5.0% Typical adjustment, by potentiometer (via V-Adj for RS4(C11)version)			
	Voltage Tolerance	±2.0% (rate output voltage of single unit)			
	Current Tolerance	±3.0% (rate output current of single unit)			
	Line Regulation	±1.0%			
	Load Regulation	±1.0%			
	Setup, Rise Time	1300ms, 200ms at full load (230V ac)			
	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.)	92%			
	AC Current (Typ.)	18A / 115VAC, 9A / 230VAC			
	Inrush Current (Typ.)	30A / 115VAC, 45A / 230VAC (cold start)			
	Leakage Current	< 3.5mA / 240VAC			

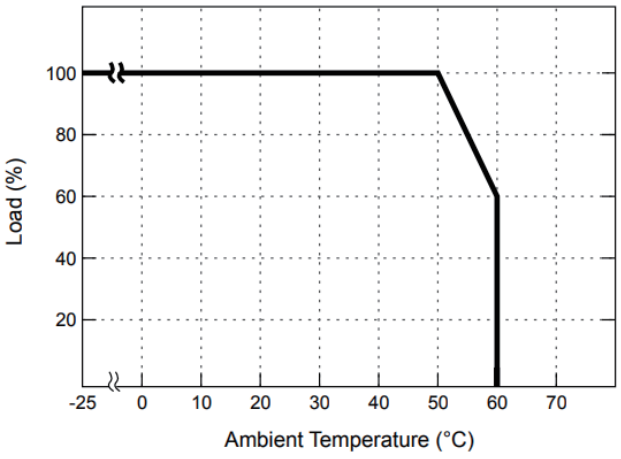
		AD-1500-120	AD-1500-150	AD-1500-250	AD-1500-400
Protection	Over Load	105% rated output power Protection type: Constant current limit			
	Over Voltage	Programmable OVP, 120 ± 7% Vout. Protection type: Latch-style (Recovery after reset AC power ON or inhibit)			
	Over Temperature	Detect on NTC, Protection type: Auto recovery after temperature goes down			
Function	Auxiliary Power	+5.0V / 1.0A			
	Remote ON / OFF Control	By external switch / communication			
	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 (RS4(C11) Version)			
	Output Current Trim	Adjustment of output current is between 0% ~ 105% of rated output (RS4(C11) Version)			
	Parallel Connection (Note. 5)	Current sharing via CANBUS (PMB(A23), MOD(A24), ETH(D11) Version)			
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	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			
	EMI Conduction & Radiation	EN 55032; EN 61204-3; EN 61000-6-3			
	Power Harmonic & Voltage Fluctuation and Flicker	EN 61000-3-2; EN 61000-3-3			
	EMS Immunity (Note. 6)	EN55035: 2017 / A11: 2020 ; IEC 61000-4-2,3,4,5,6,8,11			
Others	Cooling	Load and temperature control fan			
	Dimension (WxHxD)	127.8 x 64 x 296.3 mm / 5.03 x 2.52 x 11.67 inch			
	Packing	2.21kg; 6pcs / 16kg / 1.86 CUFT			

*Note:

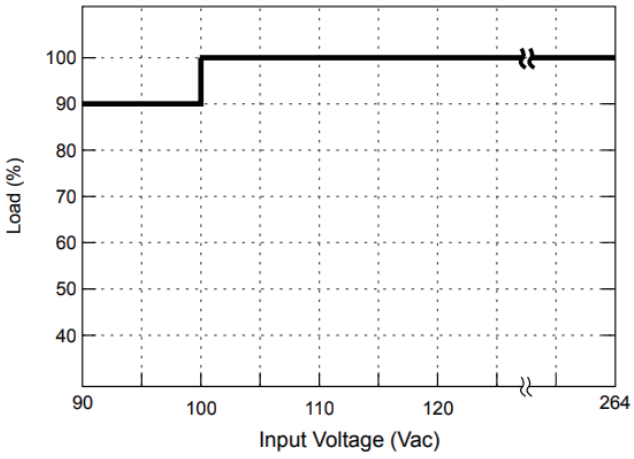
1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor.
3. Tolerance: includes setup time tolerance, line 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 10% 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

De-rating Curve

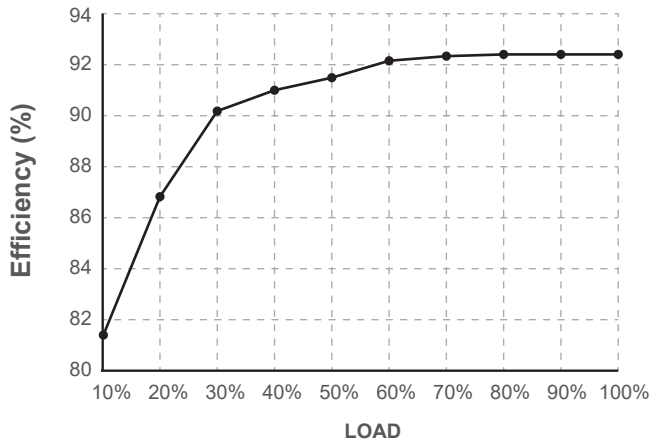
Thermal Derating Curve



Input Derating Curve



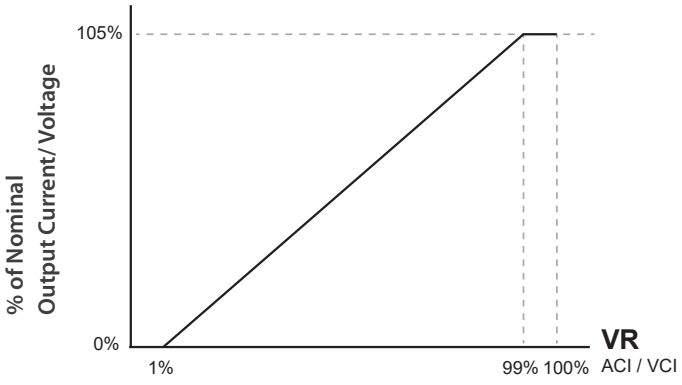
Efficiency Curve :



The curve above is measured at 230Vac
(Ambient temperature @ 25°C)

ACI / VCI

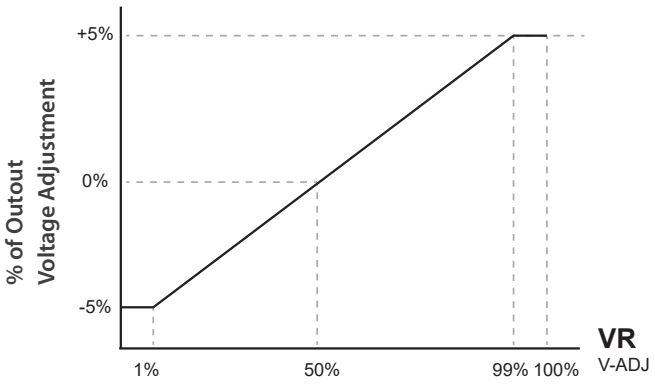
for RS4(C11) Version Potentiomter



VR Potentiometer Setting

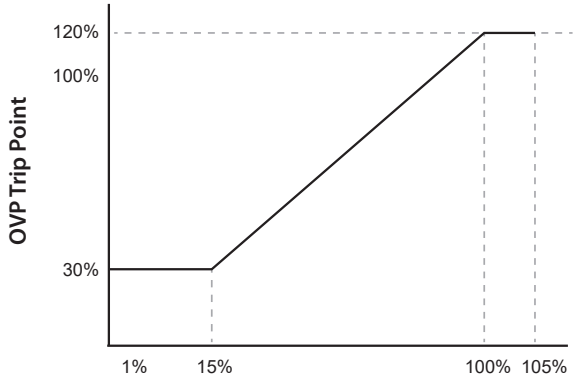
VADJ

for RS4(C11) Version Potentiomter



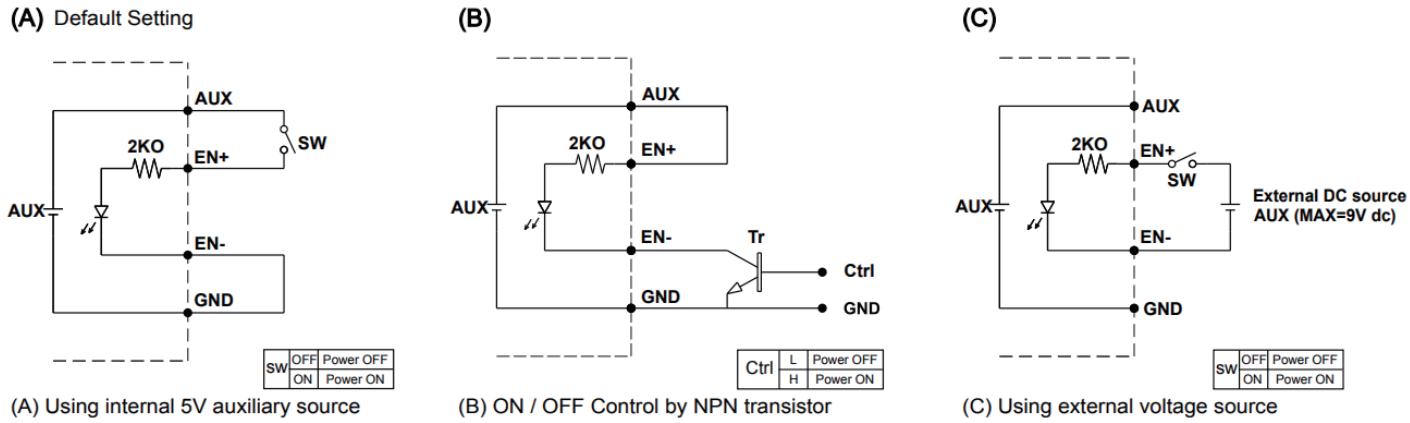
VR Potentiometer Setting

OVP Setting



% of Nominal Output Voltage

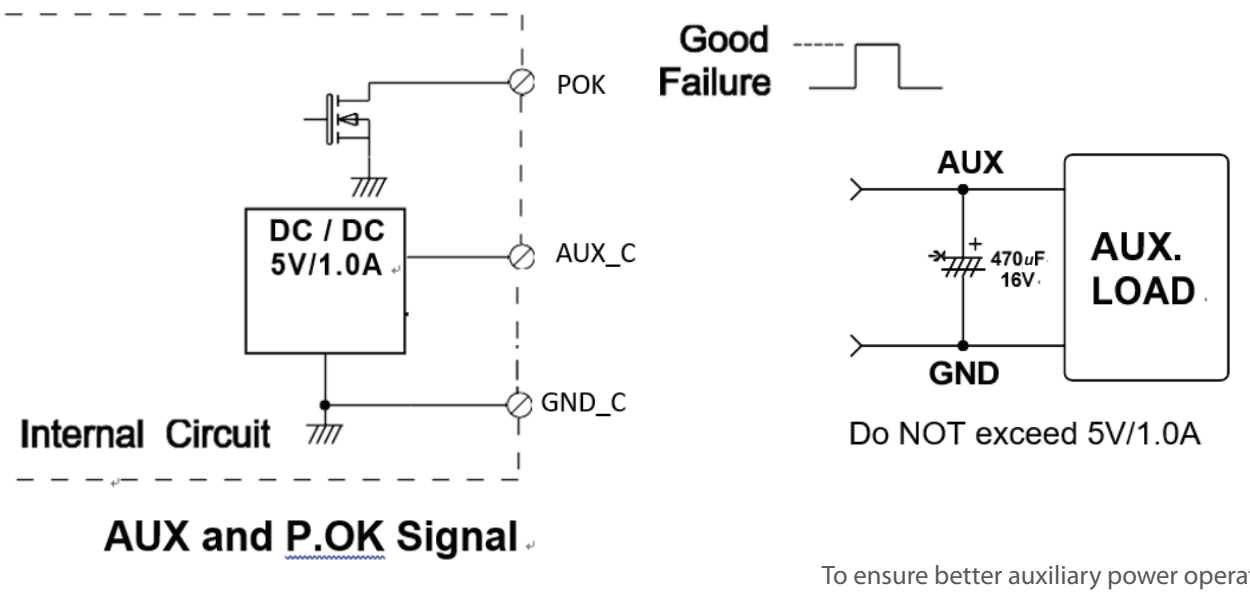
■ REMOTE ON/OFF



(A) Using internal 5V auxiliary source (B) ON / OFF Control by NPN transistor (C) Using external voltage source

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

■ Power OK Signal & Auxiliary Power Setting



AUX and P.OK Signal

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

To ensure better auxiliary power operation performance, install an additional capacitor per diag. as shown above

PMB (A23) and MOD (A24)

The grounding of "AUX" power and P.OK signal should be connected to GND_C port. GND_C & VO- are used for isolation with different voltage level.

RS4 (C11)

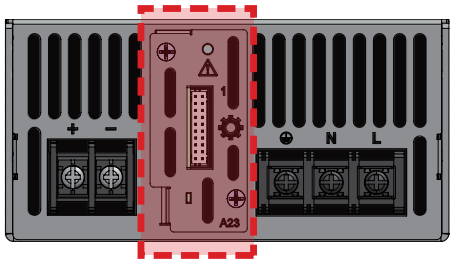
GND shown in above diagram is referring to the GND of the AD-1500 Chassis , not the Grounding from the main power(NEG-)

■ Function LED

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
Slow Blink (Red)		AC Failure
Alternate Flash		Parallel Connection

■ Interface card (Changeable)

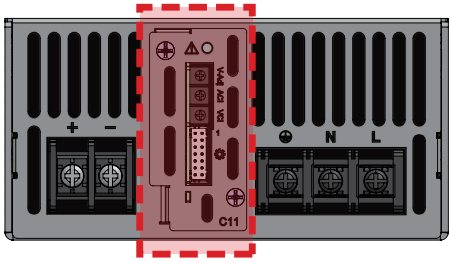
1. PMB(A23) **& MOD**(A24) Support parallel connection with built-in communication isolation circuit



PIN Function Description:

Pin No.	Function	Description	Pin No.	Function	Description	Mating Housing / Contact	
1	X	Reserve	2	X	Reserve	JST PHDR-20VS or equivalent	JST SPHD-002T-P0.5 or equivalent
3	X	Reserve	4	X	Reserve		
5	EN+	Inhibit ON/OFF (+)	6	AUX	5V / 1A Auxiliary power		
7	EN-	Inhibit ON/OFF (-)	8	GND_C	Communication Ground		
9	H_TERM	CAN Termination	10	L_TERM	CAN Termination		
11	CANH	Dedicated in parallel (CAN BUS High-level)	12	CANL	Dedicated in parallel (CAN BUS Low-level)		
13	SCL	Serial Clock used in the I²C interface	14	SDA	Serial Data used in the I²C interface		
15	POK	Power OK (40V / 20mA / <0.5W Open collector)	16	GND_C	Communication Ground		
17	RS485_A	Driver Output / Receiver Input Non-inverting	18	RS485_B	Driver Output / Receiver Input Inverting		
19	AUX_C	5V / 1A Auxiliary power	20	GND_C	Communication Ground		

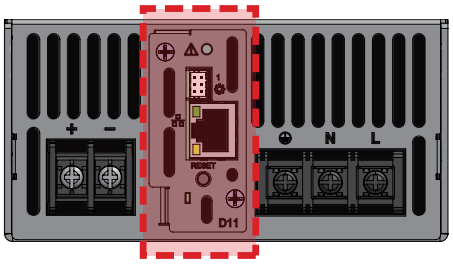
2. RS4(C11) Single unit



PIN Function Description:

Pin No.	Function	Description	Pin No.	Function	Description	Mating Housing / Contact	
1	X	Reserve	2	X	Reserve	JST PHDR-14VS or equivalent	JST SPHD-002T-P0.5 or equivalent
3	ENB+	Inhibit ON/OFF (+)	4	AUX	5V / 1A Auxiliary power		
5	ENB-	Inhibit ON/OFF (-)	6	GND	Communication Ground		
7	A_TERM	RS-485 Termination	8	B_TERM	RS-485 Termination		
9	485_A	Driver Output / Receiver Input Non-inverting	10	485_B	Driver Output/Receiver Input Inverting		
11	POK	Power OK (40V / 20mA / <0.5W Open collector)	12	GND	Communication Ground		
13	AUX	5V / 1A Auxiliary power	14	GND	Communication Ground		

3. ETH(D11) Ethernet

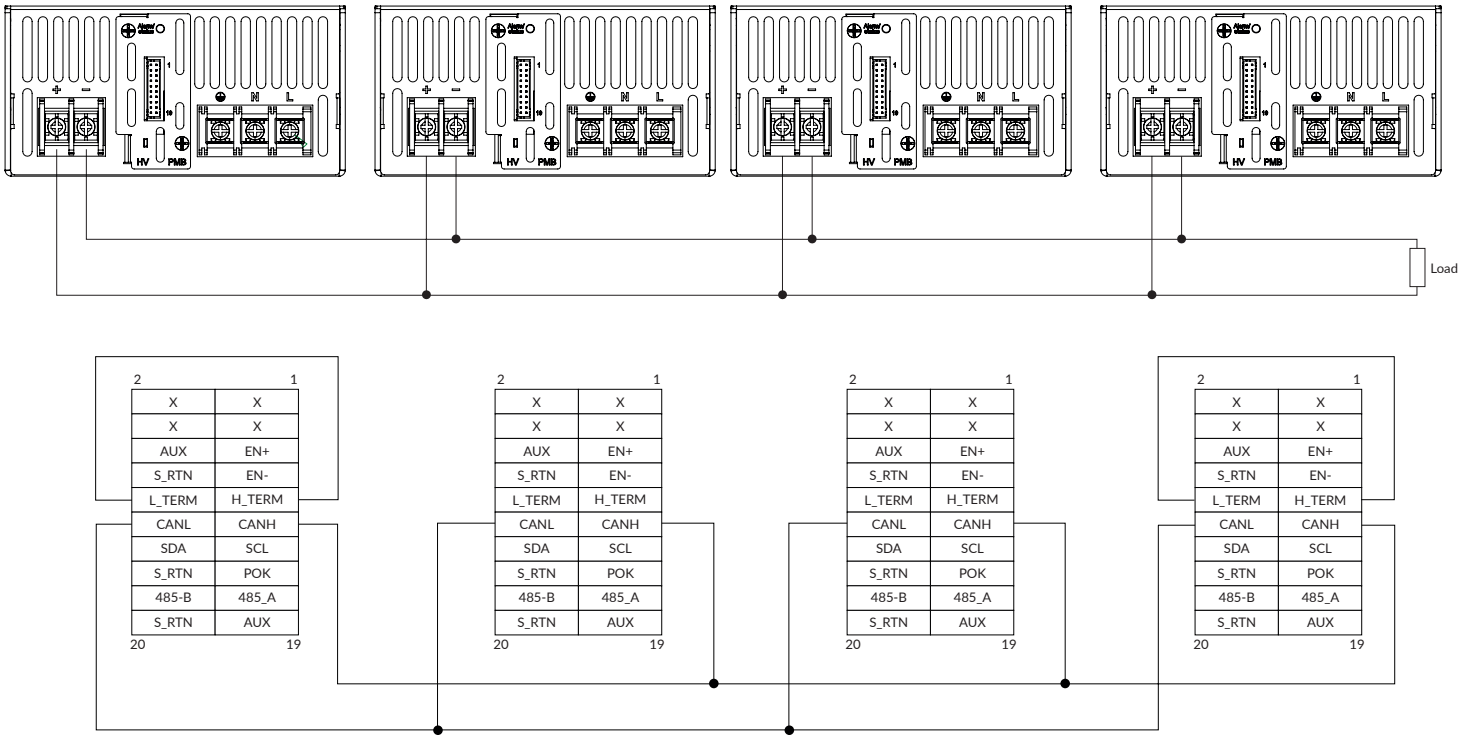


PIN Function Description:

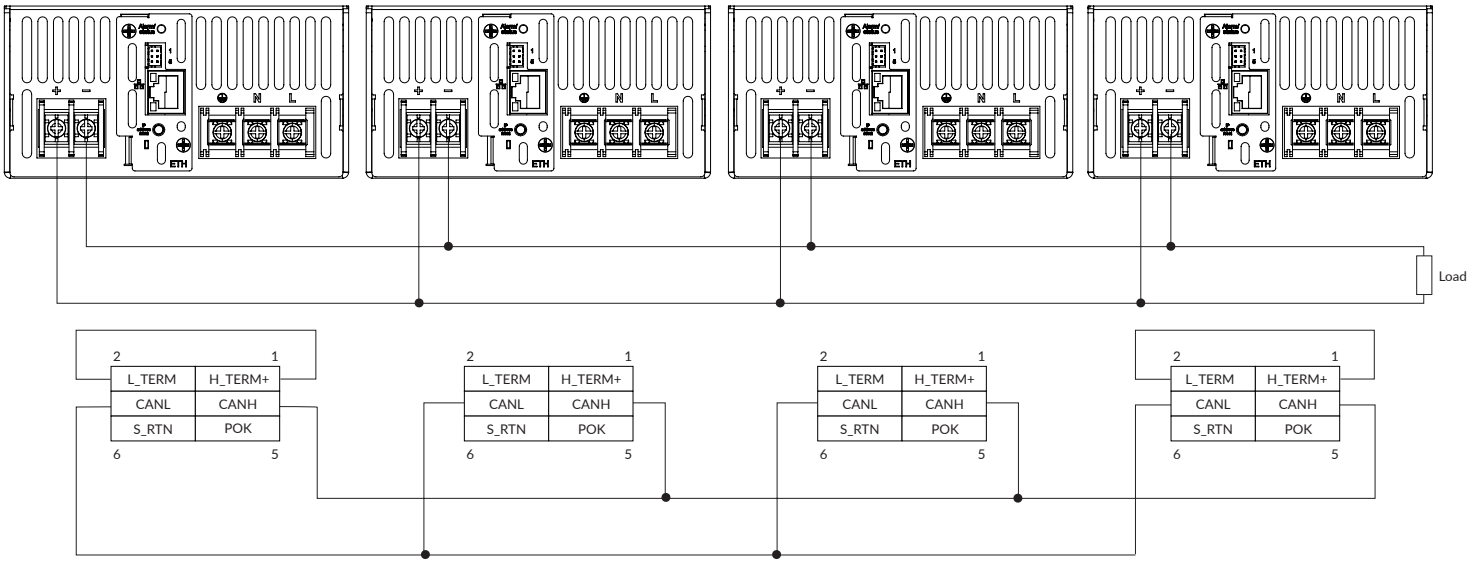
Pin No.	Function	Description	Pin No.	Function	Description	Mating Housing / Contact	
1	H_TERM +	CAN Termination	2	L_TERM	CAN Termination	JST PHDR-6VS or equivalent	JST SPHD-002T-P0.5 or equivalent
3	CANH	Dedicated in parallel (CAN BUS High-level)	4	CANL	Dedicated in parallel (CAN BUS Low-level)		
5	POK	Power OK	6	GND_C	Communication Ground		

Current Sharing

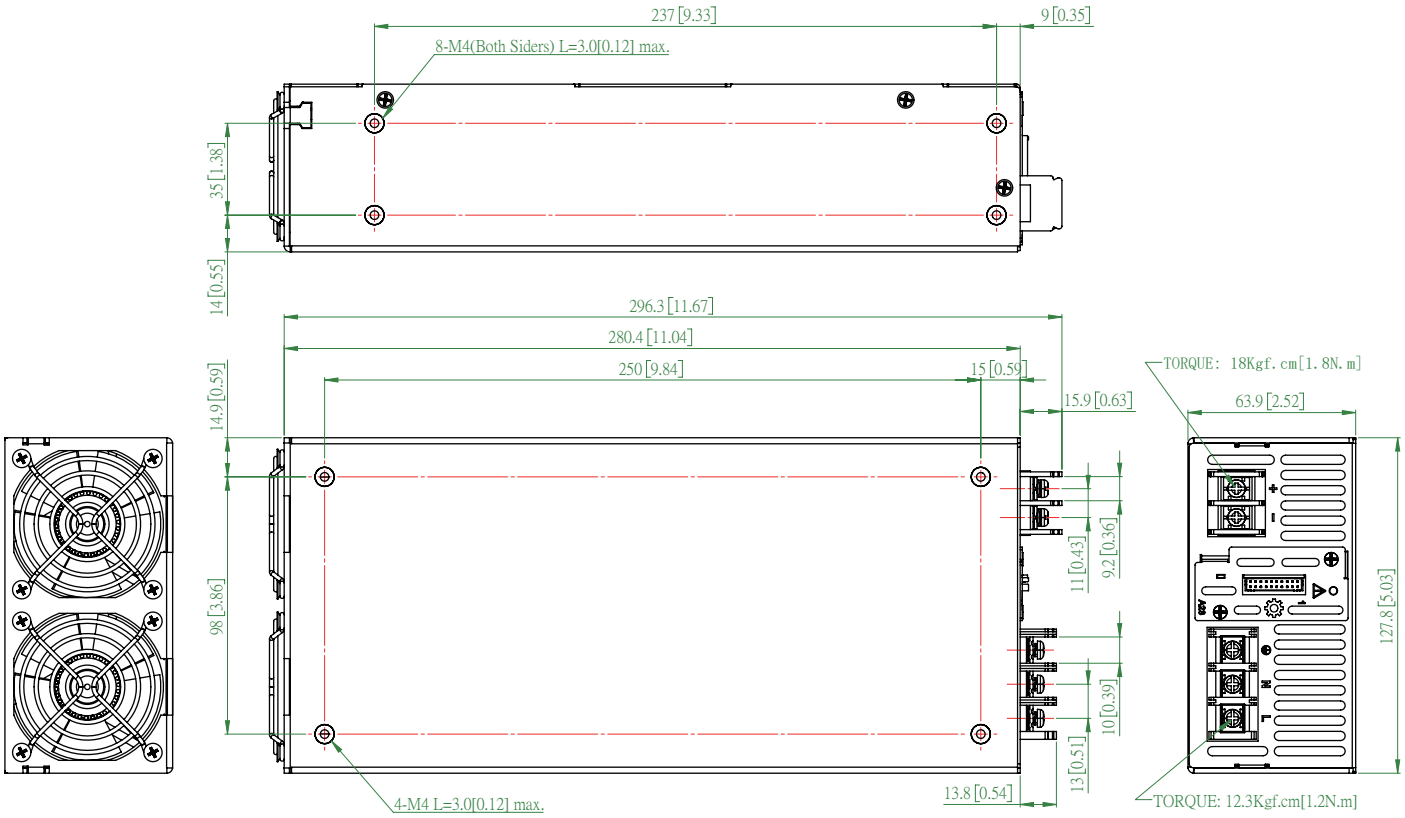
PMB(A23) / MOD(A24), Current sharing



ETH(D11) Current sharing



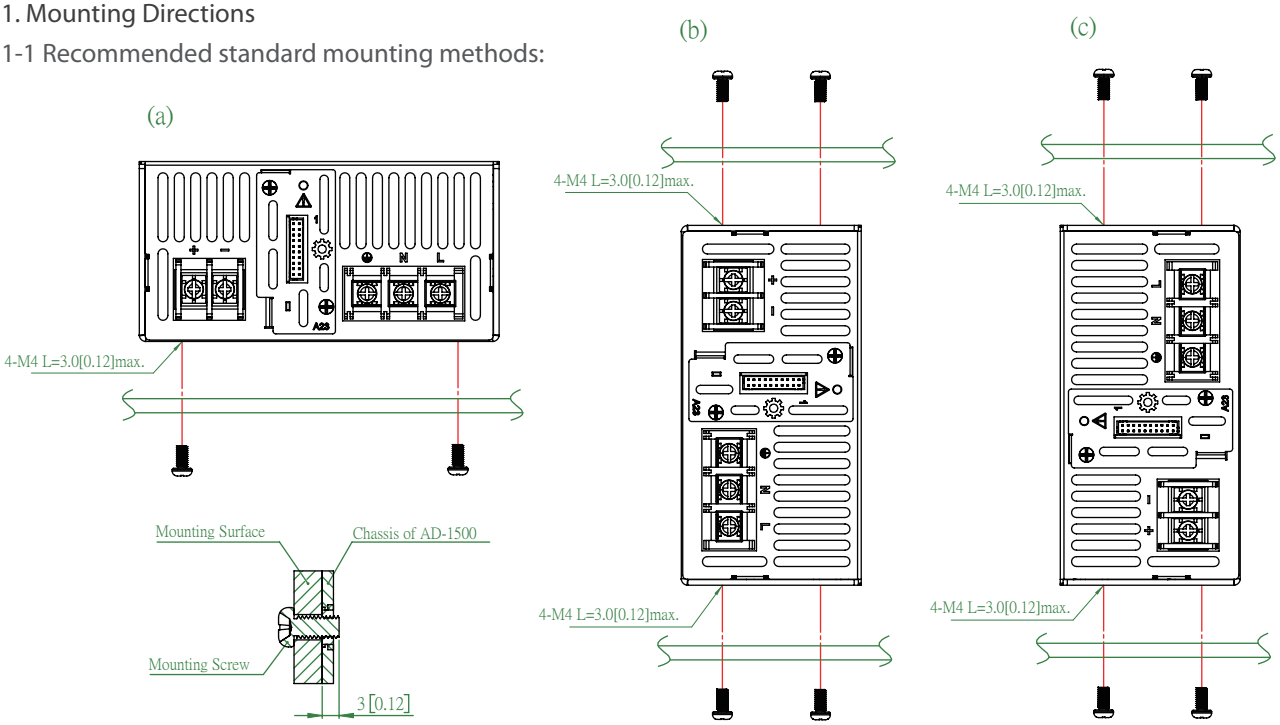
■ Mechanical Drawings : Unit: mm [inch]



■ Installation Instruction

1. Mounting Directions

1-1 Recommended standard mounting methods:

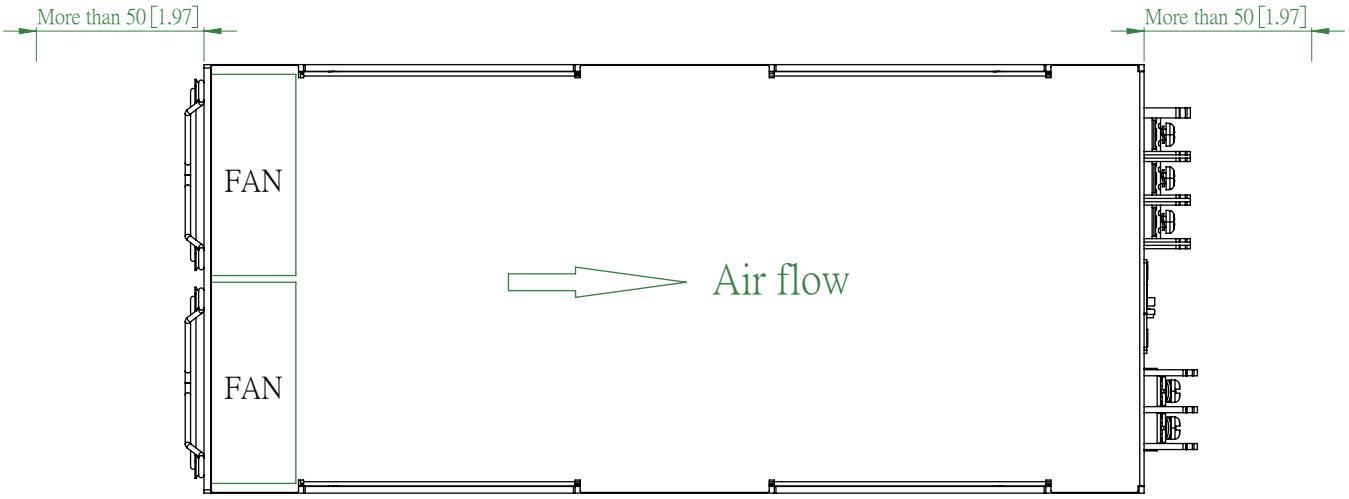


Recommended screw length is measured from the power supply surface

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: 1.27Nm (13.0kgf cm)



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