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 OR'ing FETs
- 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
- Remote Sense 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-1500-12	AD-1500-15	AD-1500-24	AD-1500-30	AD-1500-36	AD-1500-48	AD-1500-60
Output	DC Voltage Rated	12V	15V	24V	30V	36V	48V	57V
	Rated Current	125A	100A	62.5A	50A	41.7A	31.3A	26.3A
	Current Range	0 ~ 125A	0 ~ 100A	0 ~ 62.5A	0 ~ 50A	0 ~ 41.7A	0 ~ 31.3A	0 ~ 26.3A
	Voltage Range	0~105% vs. rated						
	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	570mVp-p
	Voltage Adj. Range	±5.0% Typical adjustment, by potentiometer (via V-Adj for RS4(C11)version)						
	Voltage Tolerance (Note. 3)	±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, 100ms 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.)	89%	90%	92%	92%	92%	92%	93%
	AC Current (Typ.)	18A / 115VAC, 9A / 230VAC						
	Inrush Current (Typ.)	30A / 115VAC, 45A / 230VAC (cold start)						
	Leakage Current	< 3.5mA / 240VAC						

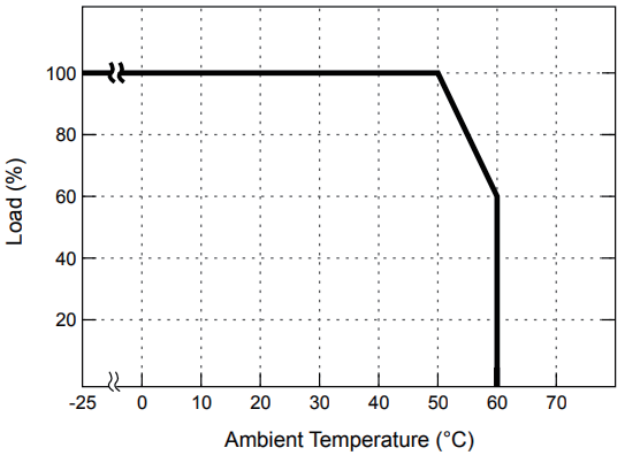
		AD-1500-12	AD-1500-15	AD-1500-24	AD-1500-30	AD-1500-36	AD-1500-48	AD-1500-60
Protection	Over Load	105% rated output power Protection type: Constant current limit						
	Over Voltage	Programmable OVP, 120 ± 7% Vout. Protection type: Latch-style (Recovery after reset AC power ON or inhibit)						
	Over 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 313.7 mm / 5.03 x 2.52 x 12.35 inch						
	Packing	2.42kg; 6pcs / 17.2kg / 1.86CUFT						

*Note:

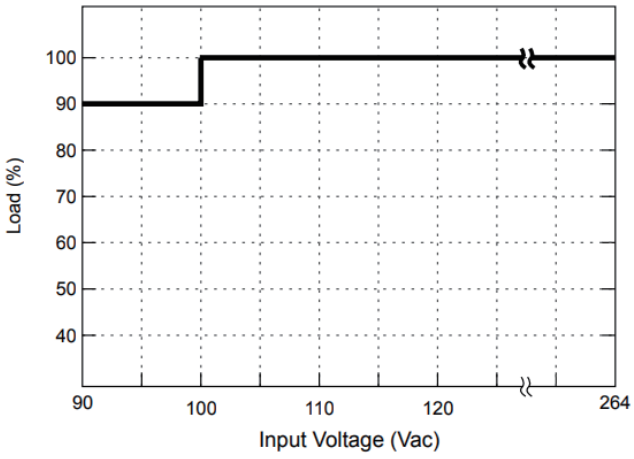
1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor.
3. Tolerance: includes setup time tolerance, line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

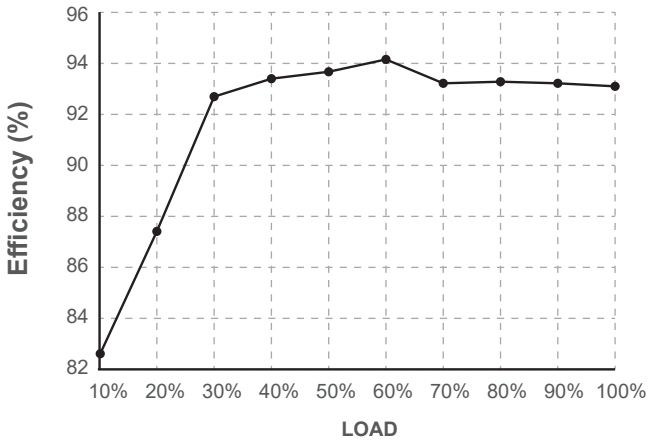
Thermal Derating Curve



Input Derating Curve



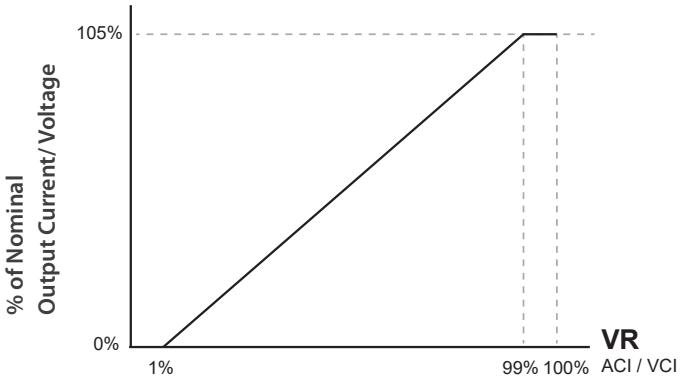
Efficiency Curve (60V Model):



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

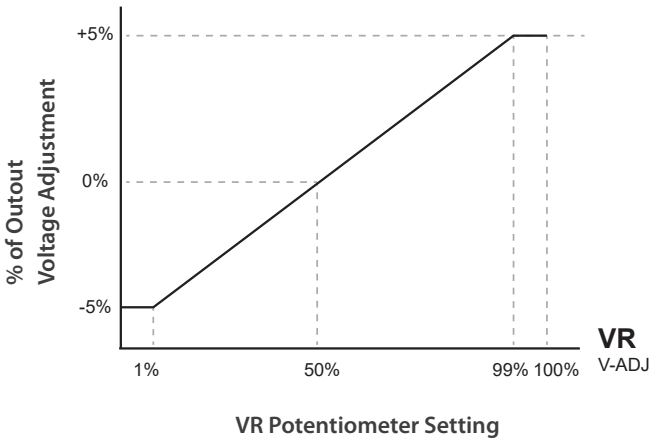
ACI / VCI

for RS4(C11) Version Potentiomter

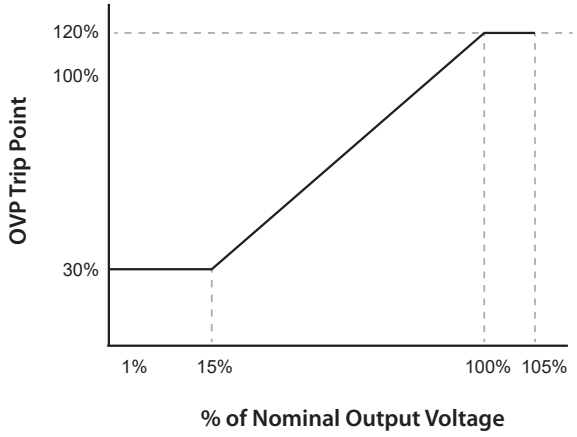


VADJ

for RS4(C11) Version Potentiomter

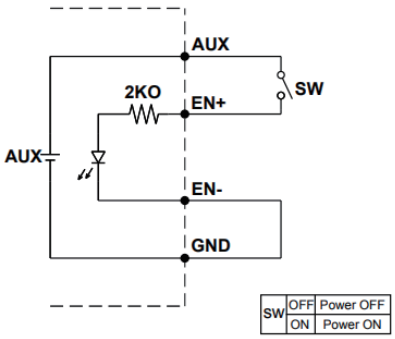


OVP Setting



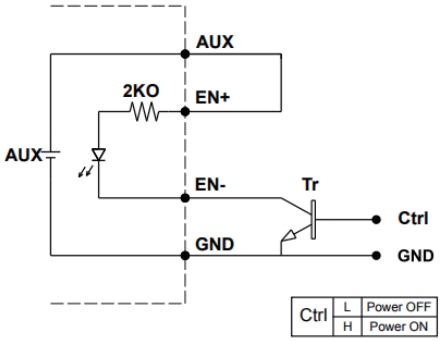
■ REMOTE ON/OFF

(A) Default Setting



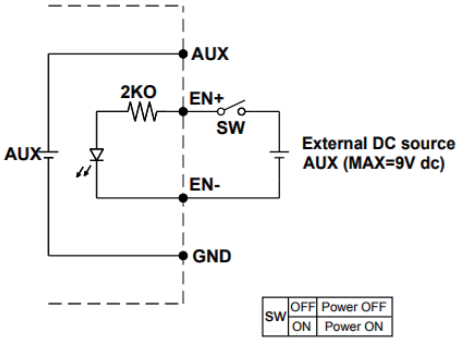
(A) Using internal 5V auxiliary source

(B)



(B) ON / OFF Control by NPN transistor

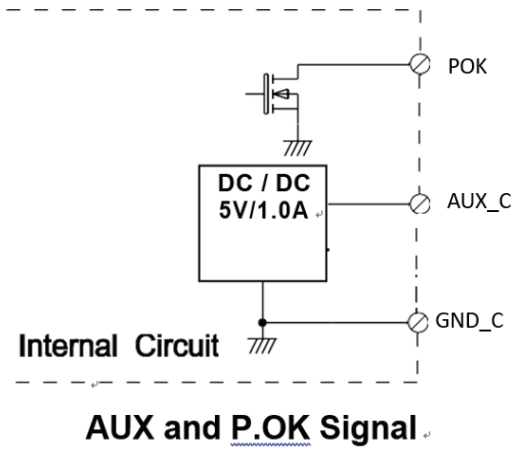
(C)



(C) Using external voltage source

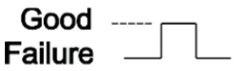
GND shown in above diagram is referring to the GND of the interchangeable interface card, not the Grounding from main power(NEG-).

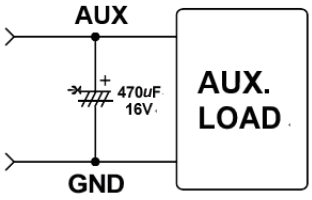
■ Power OK Signal & Auxiliary Power Setting



AUX and P.OK Signal

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





Do NOT exceed 5V/1.0A

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

A23 and 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.

C-11

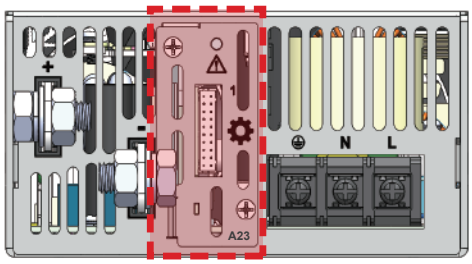
GND shown in above diagram is referring to the GND of the AD-1500 Chassis , not the Grounding from the main power(NEG-)

■ 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)

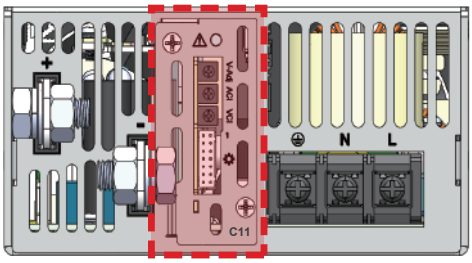
1. PMB(A23) **& MOD**(A24) Support parallel connection with built-in communication isolation circuit



PIN Function Description:

Pin No.	Function	Description	Pin No.	Function	Description	Mating Housing / Contact	
1	VS+	Remote sense (+)	2	VS -	Remote sense (-)	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	5V / 1A Auxiliary power	20	GND_C	Communication Ground		

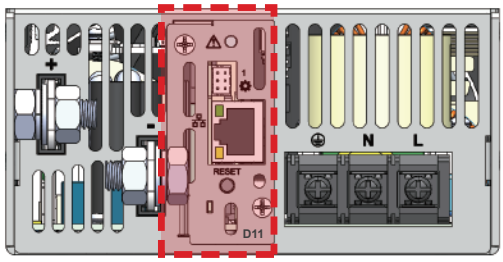
2. RS4(C11) Single unit



PIN Function Description:

Pin No.	Function	Description	Pin No.	Function	Description	Mating Housing / Contact	
1	VS+	Remote sense (+)	2	VS -	Remote sense (-)	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	RS485_A	Driver Output / Receiver Input Non-inverting	10	RS485_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

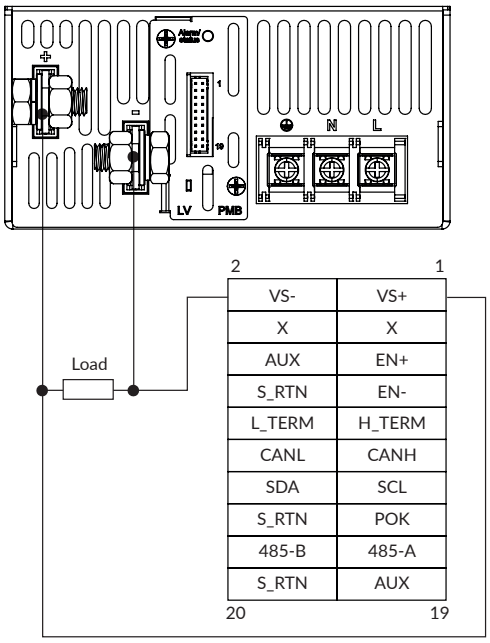


PIN Function Description:

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		

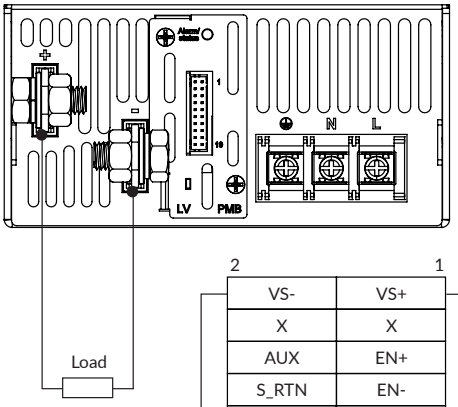
Models Sensing

PMB(A23) / Remote Sense



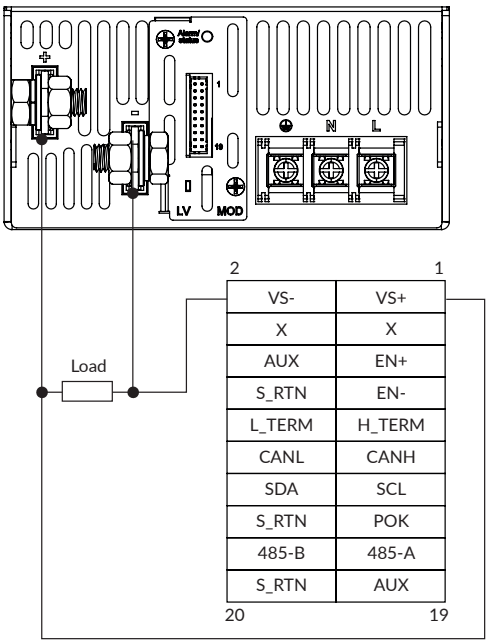
2	1
VS-	VS+
X	X
AUX	EN+
S_RTN	EN-
L_TERM	H_TERM
CANL	CANH
SDA	SCL
S_RTN	POK
485-B	485-A
S_RTN	AUX
20	19

PMB(A23) / Local Sense



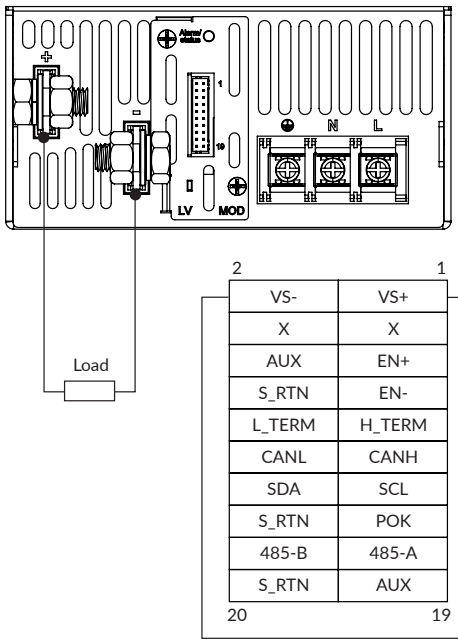
2	1
VS-	VS+
X	X
AUX	EN+
S_RTN	EN-
L_TERM	H_TERM
CANL	CANH
SDA	SCL
S_RTN	POK
485-B	485-A
S_RTN	AUX
20	19

MOD(A24) / Remote Sense



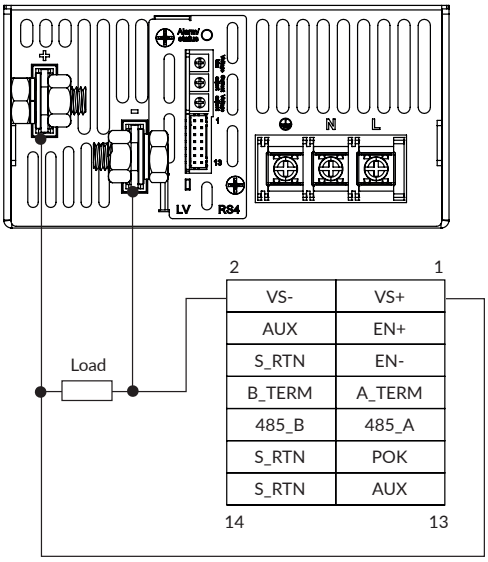
2	1
VS-	VS+
X	X
AUX	EN+
S_RTN	EN-
L_TERM	H_TERM
CANL	CANH
SDA	SCL
S_RTN	POK
485-B	485-A
S_RTN	AUX
20	19

MOD(A24) / Local Sense

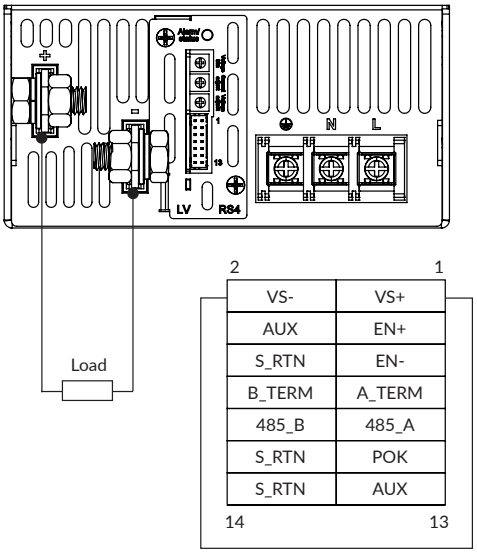


2	1
VS-	VS+
X	X
AUX	EN+
S_RTN	EN-
L_TERM	H_TERM
CANL	CANH
SDA	SCL
S_RTN	POK
485-B	485-A
S_RTN	AUX
20	19

RS4(C11) / Remote Sense

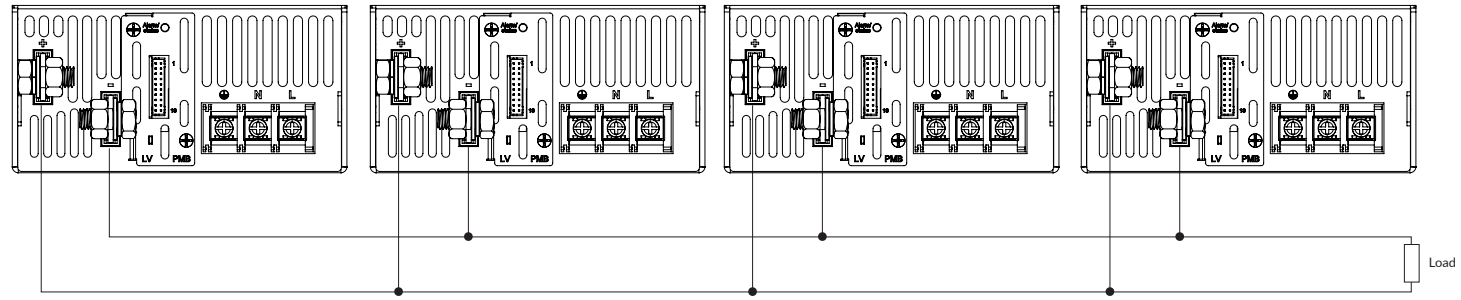


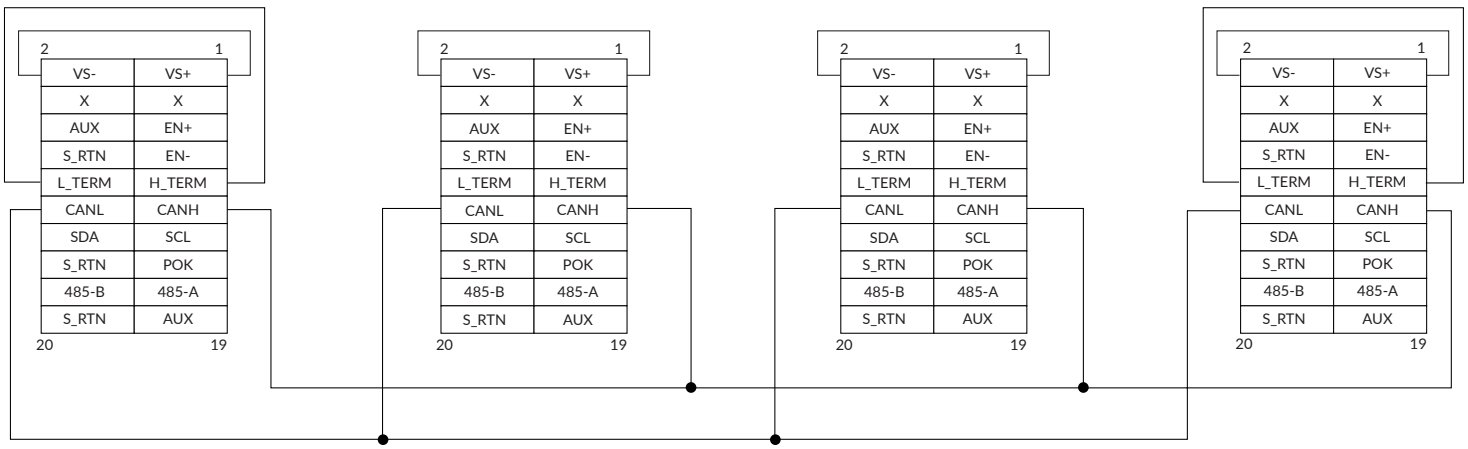
RS4(C11) / Local Sense



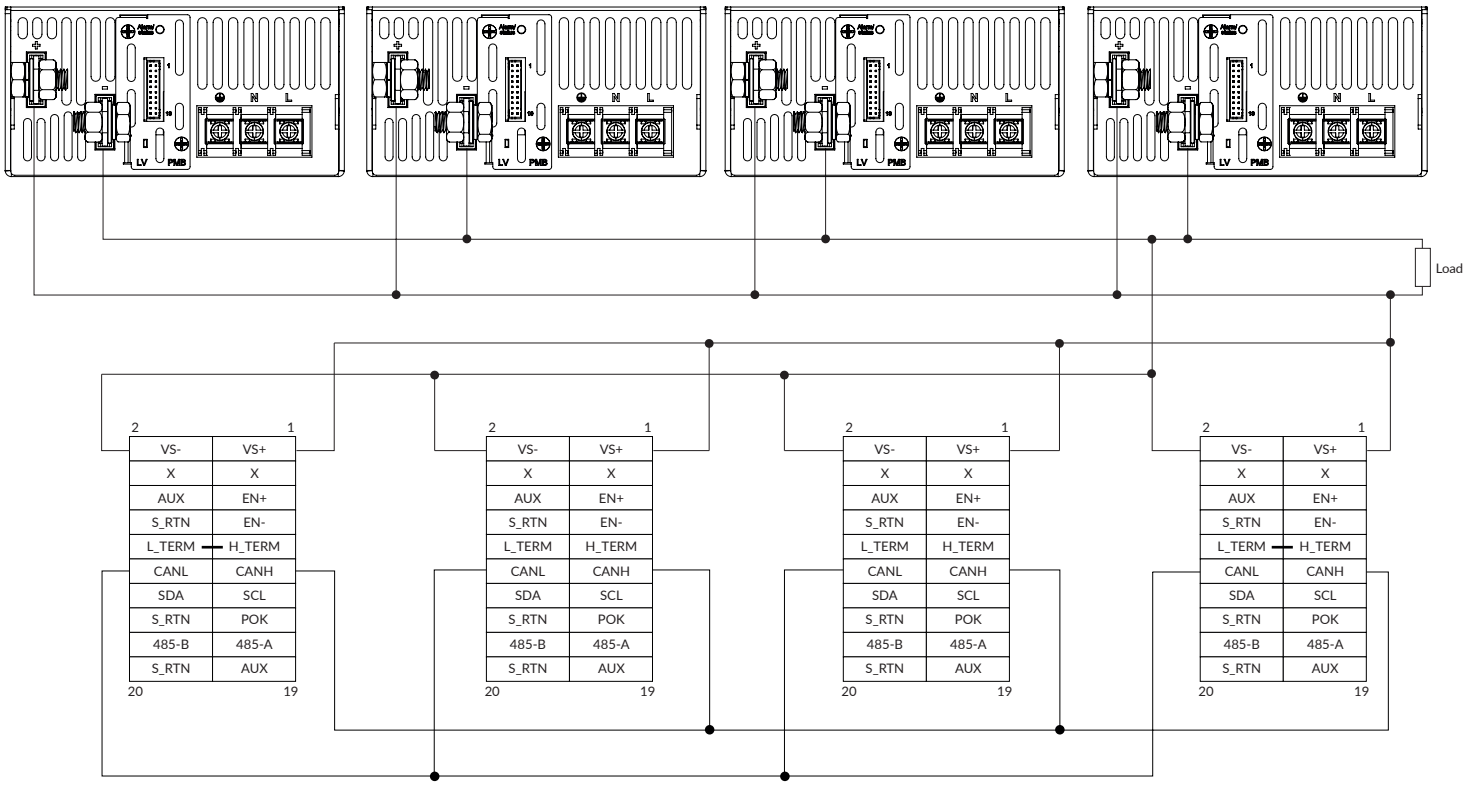
■ Current Sharing

PMB(A23) / MOD(A24), Current sharing with local sensing

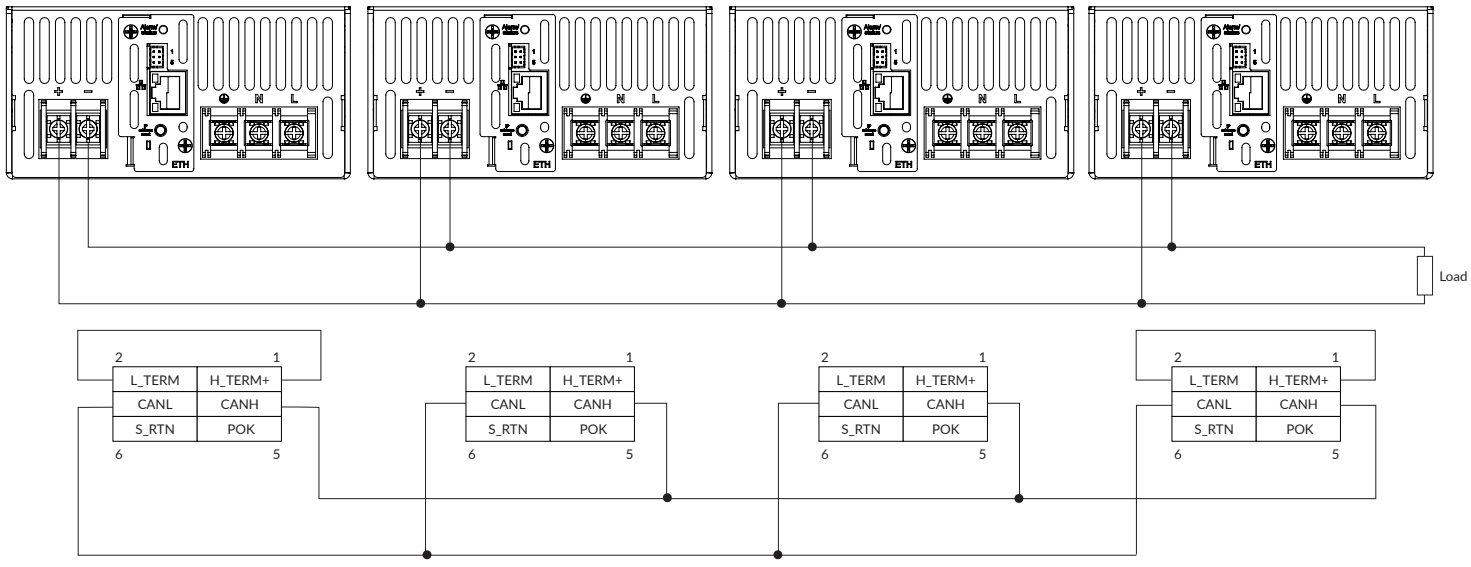




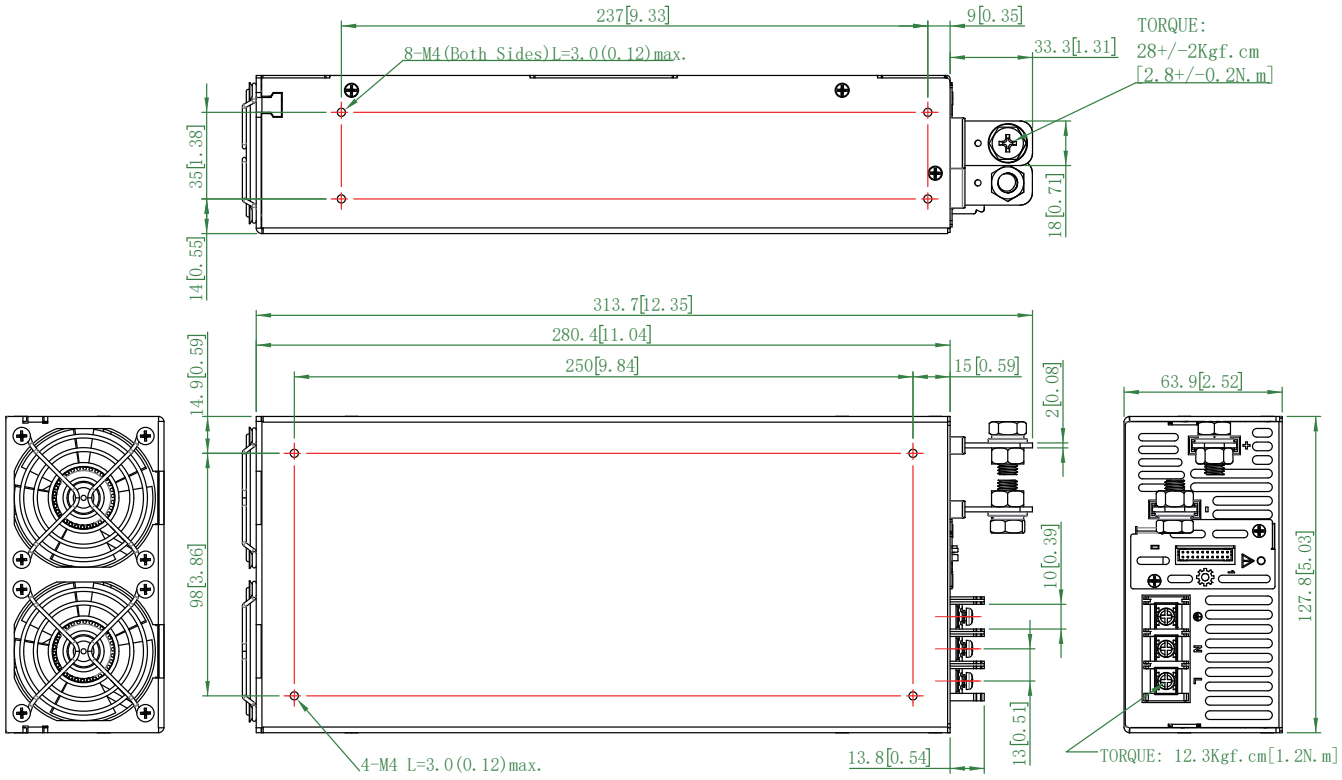
PMB(A23) / MOD(A24), Current sharing with remote sensing



ETH(D11) Current sharing



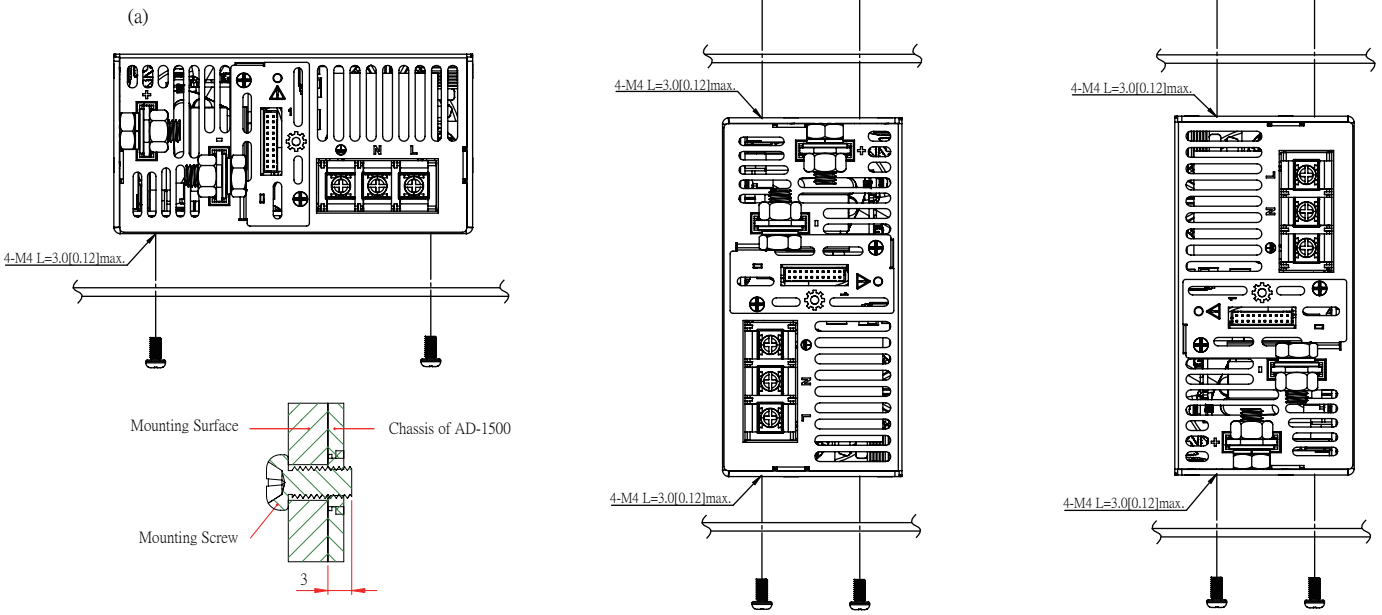
■ Mechanical Drawings : Unit: mm [inch]



■ Installation Instruction

1. Mounting Directions

1-1 Recommended standard mounting methods:

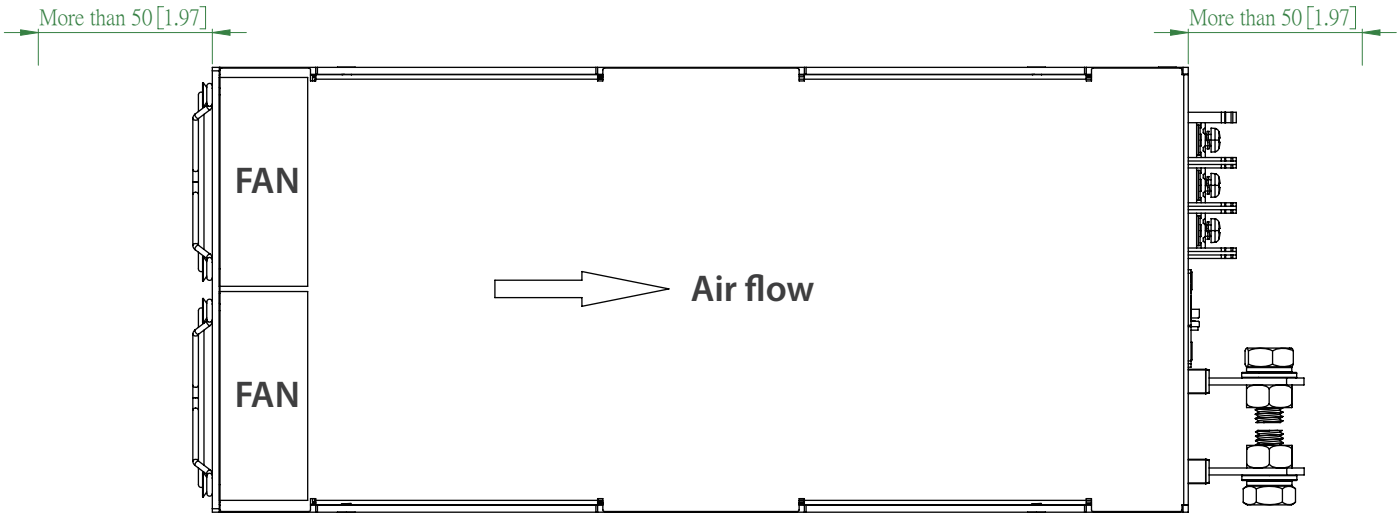


Recommended screw length is measured from the power supply surface

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: 1.27N • m (13.0kgf • cm)


More than 50 [1.97]
More than 50 [1.97]
FAN
FAN
Air flow