

HIGHLIGHTS

- Universal AC input / Full range
- Programmable output Voltage (30% ~ 105%)
- Programmable output Current (40% ~ 105%)
- +5V / 0.5A auxiliary output
- Forced current sharing at parallel operation
- Power OK signal
- Remote ON / OFF, Remote sense function
- Protection: OVP, OLP, OTP, SCP, Fan Failure
- 3 years warranty



MODEL		Note.1	PL650-05	PL650-12	PL650-15	PL650-24	PL650-27	PL650-48
Output	DC Voltage Range		5V	12V	15V	24V	27V	48V
	Rated Current		100A	50A	40A	27A	24A	13.6A
	Current Range		0 ~ 100A	0 ~ 50A	0 ~ 40A	0 ~ 27A	0 ~ 24A	0 ~ 13.6A
	Rated Power		500W	600W	600W	648W	648W	652W
	Ripple & Noise (Max.)	Note.2	150mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p
	Voltage Adj. Range		±5.0% Typical adjustment by potentiometer					
	Voltage Tolerance	Note.3	±1.0%					
	Line Regulation		±0.5%					
	Load Regulation		±0.5%					
	Setup, Rise Time		800ms, 60ms at full load					
	Hold Up Time (Typ.)		16ms / 230VAC at full load					
Input	Voltage Range	Note.4	90 ~ 264VAC, 127 ~ 370VDC					
	Frequency Range		47 ~ 63Hz					
	Power Factor (Typ.)		0.98 / 230VAC, 0.99 / 115VAC at full load					
	Efficiency (Typ.)		83%	88%	88%	90%	90%	91%
	AC Current (Typ.)		7.5A / 115VAC, 3.5A / 230VAC					
	Inrush Current (Typ.)		27A / 115VAC, 54A / 230VAC					
Protection	Leakage Current		< 1.0mA / 240VAC					
	Over Load		105 ~ 125% rated output power Protection type: Total Power limit, Latch-style (Recovery after reset AC power ON or inhibit)					
	Over Voltage		Variable OVP, 125 ±10% Vout. Protection type: Latch-style (Recovery after reset AC power ON or inhibit)					
	Over Temperature		By detecting primary and secondary heat sink. Protection type: Shut down o/p voltage (Recovers automatically after temperature goes down)					
Function	Auxiliary Power		5V / 0.5A (±3%)					
	Remote ON / OFF Control		External switch or NPN Transistor to turn ON / OFF					
	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 30 ~ 105% of rated output					
	Output Current Trim		Adjustment of output voltage is between 40 ~ 105% of rated output					
	Parallel (Current Sharing)	Note.5	Please refer to Function Manual					
Environment	Working Temp.		-25 ~ +60°C (Refer to 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), 1min					
	Isolation Resistance		I/P-O/P, I/P-FG, O/P-FG: 100M Ohms / 500VDC					
	EMI Conduction & Radiation		Certified EN 55022; EN 61000-6-3					
	Harmonic Current		Certified EN 61000-3-2; EN 61000-3-3					
	EMS Immunity	Note.6	Certified EN 55024; EN 61204-3; EN 61000-6-1; ENV 50204; IEC 61000-4-2, 3, 4, 5, 6, 8, 11					
Others	MTBF		166.2K HRS Certified MIL-HDBK-217F					
	Cooling		Load and Temperature control fan					
	Dimension (WxHxD)		127x40.9x249 mm / 5.00x1.61x9.80 inch					
	Packing		1.68kg; 9pcs / 16.1kg / 1.86CUFT					

Notes: 1. All parameters NOT especially 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 & 0.47uF parallel capacitor.

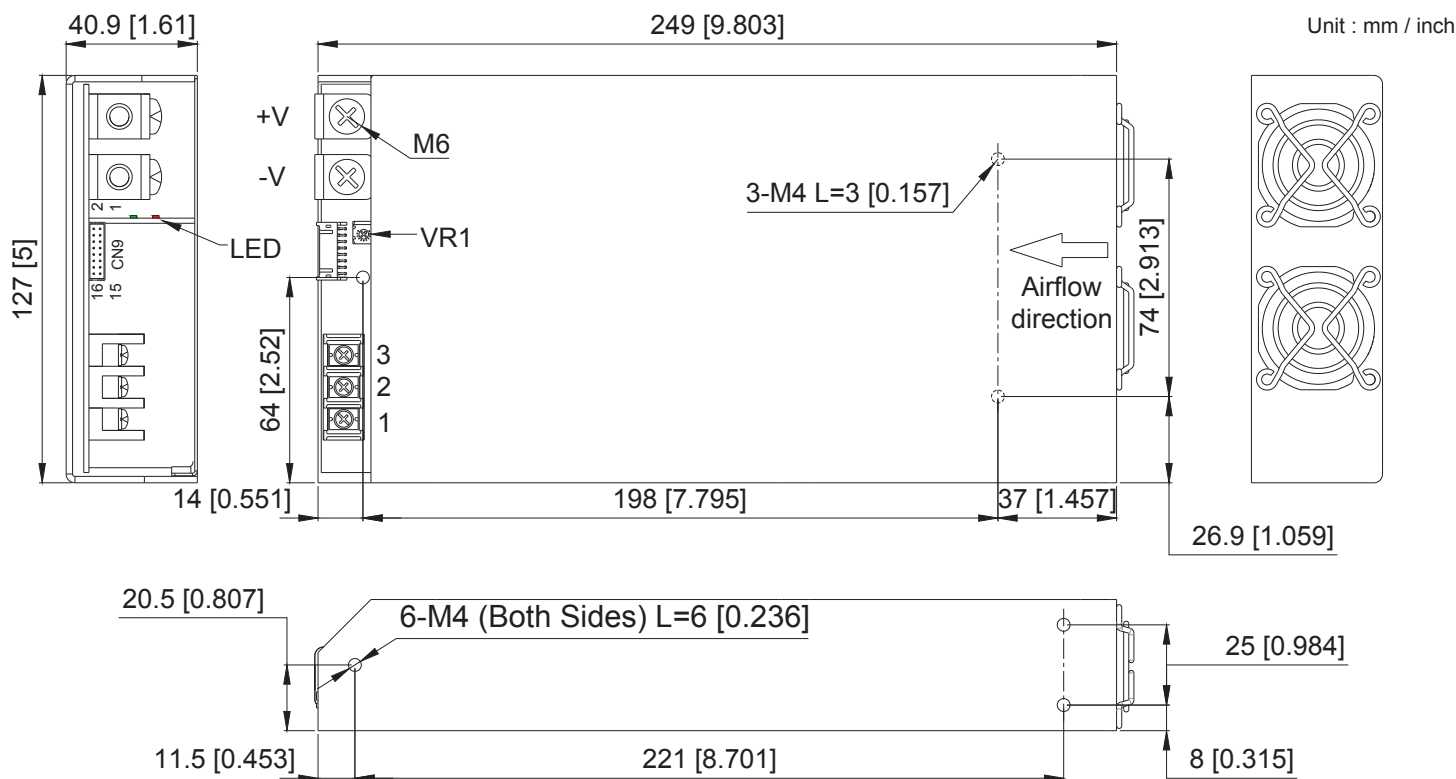
3. Tolerance: includes setup time tolerance, line regulation and load regulation. 4. De-rating may apply in low input voltage. Check the de-rating curve for more details. 5. In parallel connection, only one unit will operate if the total output load is less than 5% of the rated load condition.

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. Conduct this test without enclosure.



Mechanical Drawings:



AC Input Terminal
Pin No. Assignment

Control pin number assignment (CN9) : JST S16B-PHDSS or equivalent

Pin No.	Assignment
1	ACL
2	ACN
3	⏏

Pin No.	Assignment	Pin No.	Assignment	Pin No.	Assignment	Pin No.	Assignment	Mating Housing	Terminal
1	VS+	5	AUX	9	EN-	13	VCI	PHDR-16VS	SPHD-002T-P05
2	VO+	6	AUX	10	GND	14	GND		
3	VS-	7	EN+	11	P.OK	15	PAR		
4	VO-	8	GND	12	GND	16	ACI		

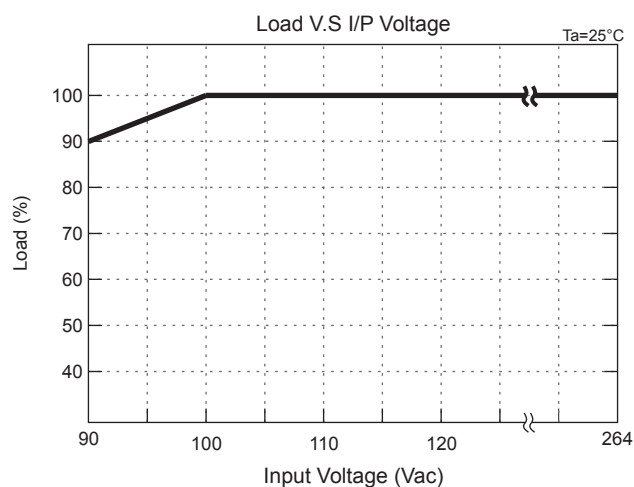
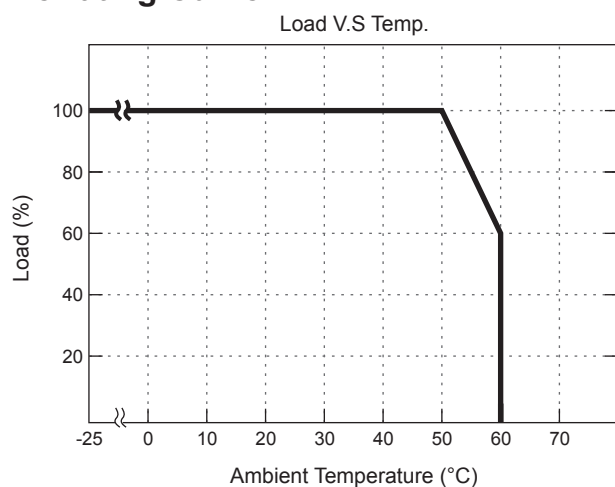
Function Description of CN9:

Pin No.	Function	Description
1	VS+	Remote voltage sense (+)
2	VO+	Local output voltage sense (+)
3	VS-	Remote voltage sense (-)
4	VO-	Local output voltage sense (-)
5,6	AUX	+5V / 0.5A Auxiliary power
7	EN+	Remote ON/OFF (+)
8,10,12,14	GND	Ground
9	EN-	Remote ON/OFF (-)
11	P.OK	Power OK
13	VCI	V Program
15	PAR	Parallel operation current share
16	ACI	I Program

LED Status:

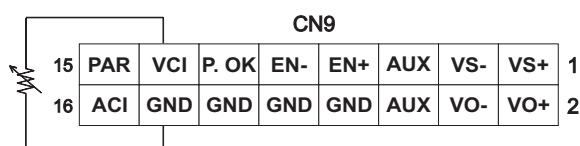
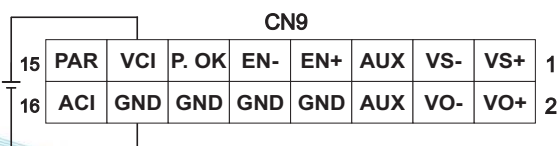
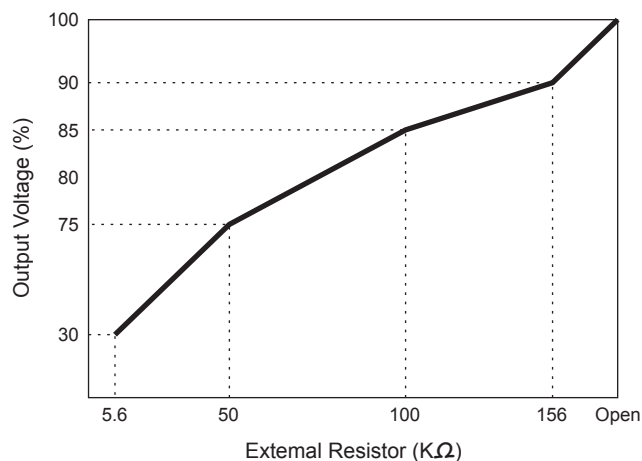
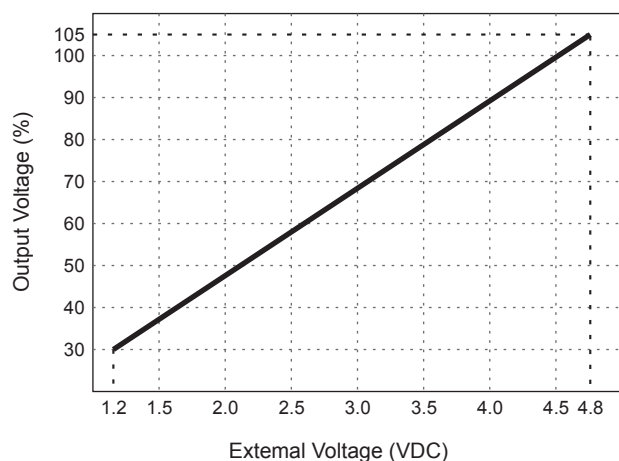
Green LED	LED Signal	Status
Solid		Power OK
Slow Blink		Power Standby
Red LED	LED Signal	Status
Fast Blink		Over Voltage Protection (OVP)
Solid		Over Load Protection (OLP)
		Output Short Circuit Protection (SCP)
		Under Voltage Protection (UVP)
Slow Blink		Over Temperature Protection (OTP)
Intermittent Blink		Fan Failure
Interlace Blink		Power Failure

De-rating Curve:

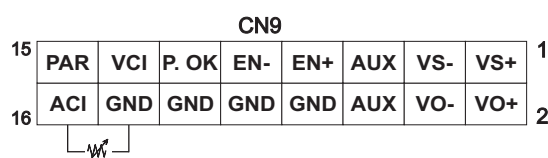
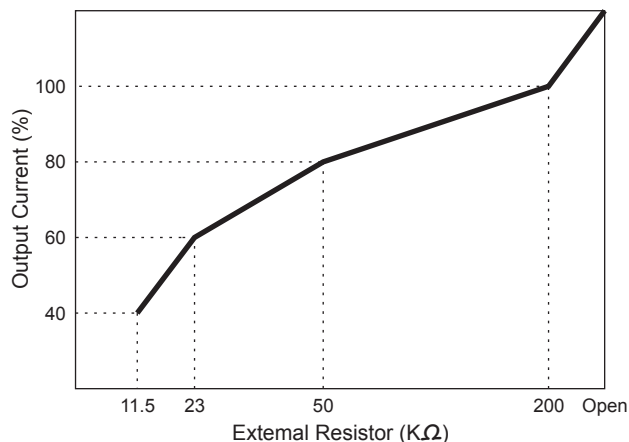
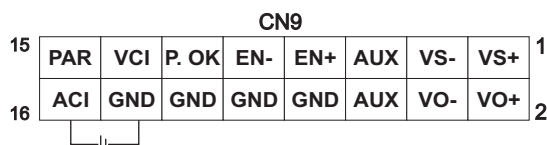
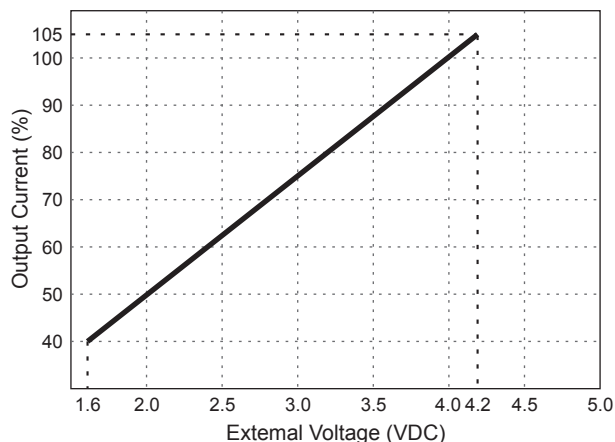


Function Manual:

1. Output Voltage Trim

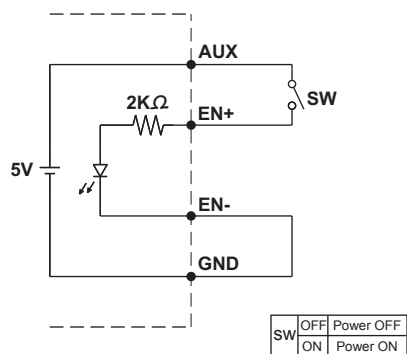


2. Output Current Trim (For Reference Only)



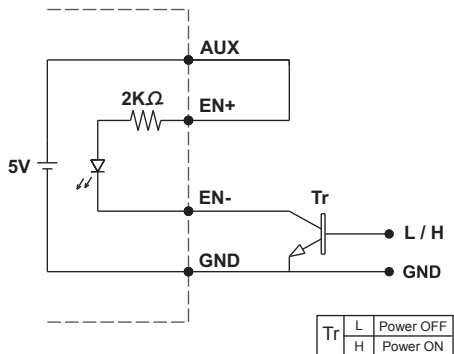
3. Remote ON/OFF

(A)



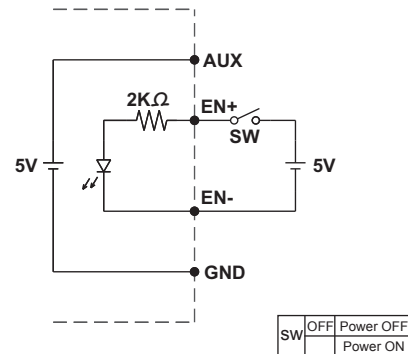
(A) Using internal 5V auxiliary source

(B)



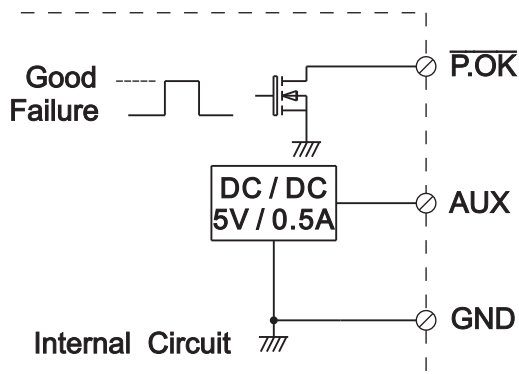
(B) ON / OFF Control by NPN transistor

(C)



(C) Using external voltage source

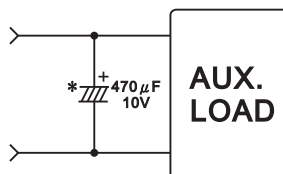
4. Power OK Signal



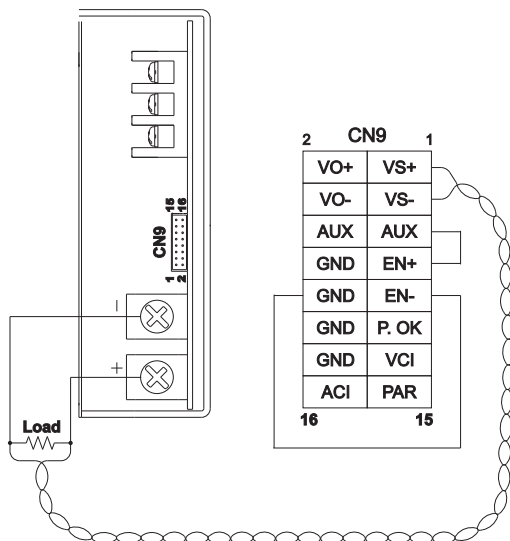
AUX and P. OK Signal

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

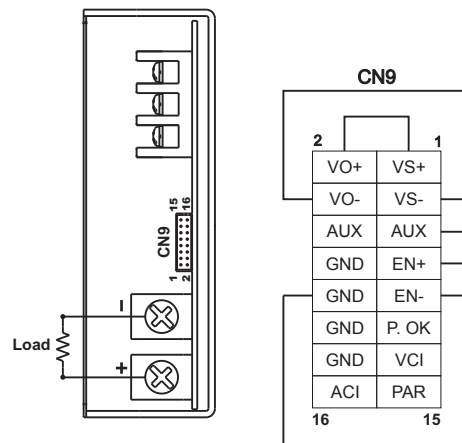
*The grounding of "AUX" power should be connected to "GND" port. If "V-" is connected as Grounding, make sure to short the GND and V- ports.



5. Remote Sense



6. Local Sense



7. Current Sharing with Remote Sensing

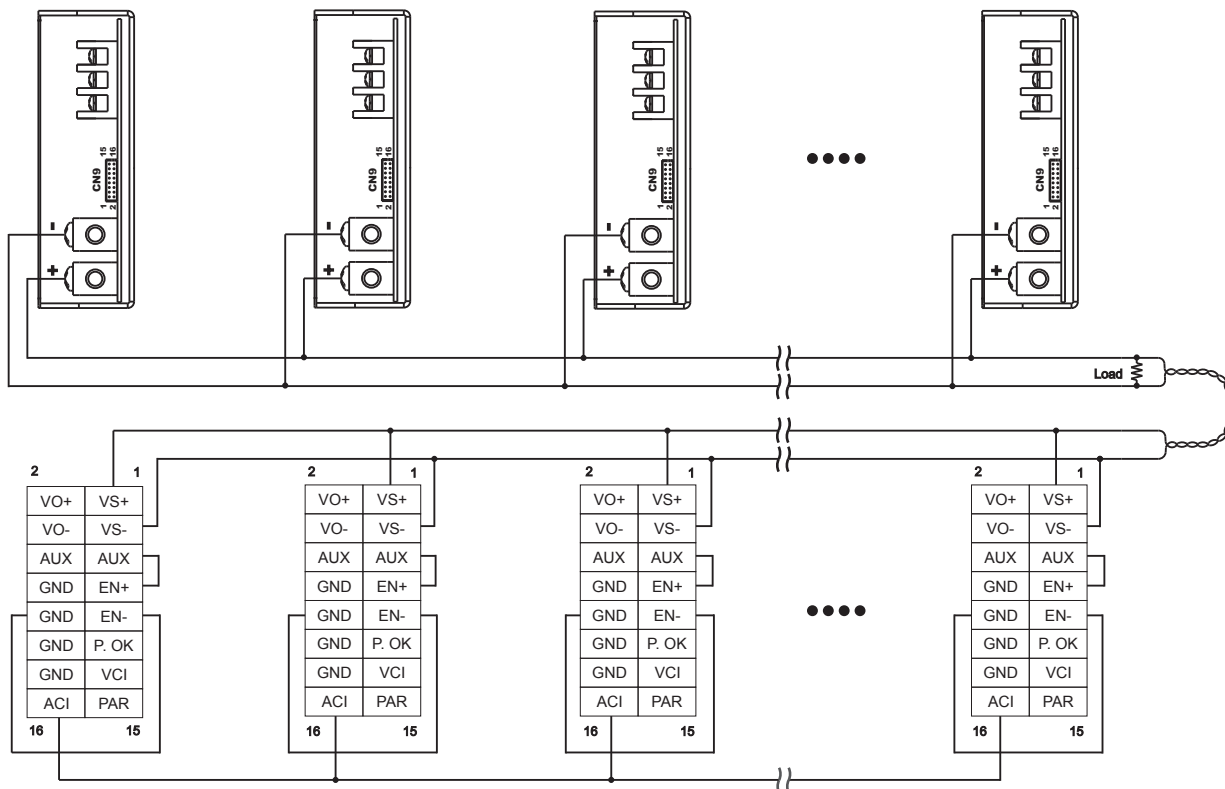


Figure 1: Pin connections for the 16-channel module. The diagram shows four identical module pin configurations connected in parallel. Each module has 16 pins: 15 on the left and 16 on the right. The pin connections are as follows: Pin 1 (top right) is connected to Pin 15 (bottom right). Pin 2 (top left) is connected to Pin 16 (bottom left). Pin 3 (top right) is connected to Pin 15 (bottom right). Pin 4 (top left) is connected to Pin 16 (bottom left). Pin 5 (top right) is connected to Pin 15 (bottom right). Pin 6 (top left) is connected to Pin 16 (bottom left). Pin 7 (top right) is connected to Pin 15 (bottom right). Pin 8 (top left) is connected to Pin 16 (bottom left). Pin 9 (top right) is connected to Pin 15 (bottom right). Pin 10 (top left) is connected to Pin 16 (bottom left). Pin 11 (top right) is connected to Pin 15 (bottom right). Pin 12 (top left) is connected to Pin 16 (bottom left). Pin 13 (top right) is connected to Pin 15 (bottom right). Pin 14 (top left) is connected to Pin 16 (bottom left). Pin 15 (top right) is connected to Pin 15 (bottom right). Pin 16 (top left) is connected to Pin 16 (bottom left). The modules are connected in parallel, with the top pins of all modules connected to a common line and the bottom pins connected to another common line.

3-M4
L=4mm max.

Technical drawing of the rear view of the device. It shows a vertical rectangular panel with a mounting rail at the bottom. Three vertical lines indicate the mounting holes. A dimension line points to the bottom edge of the panel with the text: 3-M4 L=4mm max.

(c)

3-M4
L=4mm max.

The diagram illustrates the airflow within a server rack. On the right side, there are two components labeled 'FAN' and 'FA' (likely Fan Array). On the left side, there are components labeled 'CPU' and 'GPU'. A large arrow labeled 'Air Flow' points from the right side towards the left side, indicating the direction of air circulation. The rack is shown with a top rail and a bottom rail, and the components are mounted on vertical slots.