2000~6000W 1U Distributed Power System RKP-1U Rack System

Rack Dimension

L	*	W	*	H	
350.8	*	482.6	*	44 (1U)	mm
13.8	*	19	*	1.73 (1U)	inch

User's Manual
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Parallel PFC c UL us UL62368-1 BS EN/EN62368-1 EAC TPTC004 CB IEC62368-1 CE UKCA

Industrial Automate Telecom Network EV

Features

- Universal AC input / Full range
- 1U profile 19" rack shelf, fitting three 2000W modules up to 6000W with active current sharing
- Output voltage programmable
- Support hot swap (hot plug)
- Built-in PMBus protocol
- 5 years warranty

Applications

- Industrial automation
- Distributed power architecture system
- Wireless/telecommunication solution
- Redundant power system
- Electric vehicle charger system
- Constant current source system

GTIN CODE

MW Search: https://www.meanwell.com/serviceGTIN.aspx

Description

RKP-1U rack system is a power distribution solution utilizing the rack configuration with 1U low profile. Starting with a single unit of 2000W, RCP-2000 is the front end rectifier (or, power supply). With the active current sharing function, up to 6000W is able to be provided by 1 stack of the 19" rack mountable shelf RKP-1U and 18000W by 3 stacks. The design flexibility for system applications is ideally fulfilled by various built-in features, such as output programming, communication protocol PMBus, remote ON-OFF, auxiliary power, external control/monitor via the control model RCP-CMU-1, etc.

Model Encoding

Rack Shelf:

RKP-1U I -CMU1

- CMU1: With RKP-CMU1
- —: Without RKP-CMU1
- I: AC Inlet (IEC320-C20)
- T: Terminal block
- Profile of the system
- Series name

Whole System:

RKP-6K1U I - CMU1 - 12

- Output voltage
- CMU1: With RKP-CMU1
- —: Without RKP-CMU1
- I: AC Inlet (IEC320-C20)
- T: Terminal block
- 1U: Profile of the system
- 6K: Maximum wattage with fully-populated shelf
- Series name

2000~6000W 1U Distributed Power System **RKP-1U Rack System**

SPECIFICATION - Power Supply System

MODEL		RKP-6K1U□-12	RKP-6K1U□-24	RKP-6K1U□-48
OUTPUT	RECTIFIER	RCP-2000-12	RCP-2000-24	RCP-2000-48
	RACK SHELF	RKP-1UI or RKP-1UT		
	OUTPUT VOLTAGE	12V	24V	48V
	MAX. OUTPUT CURRENT	300A	240A	126A
	MAX. OUTPUT POWER Note.7	3600W	5760W	6048W
INPUT	VOLTAGE RANGE Note.6	90 ~ 264VAC 250 ~ 370VDC		
	FREQUENCY RANGE	47 ~ 63Hz		
	AC CURRENT (Typ.)PER MODULE	13A/115VAC 7A/230VAC	16A/115VAC 11A/230VAC	16A/115VAC 11A/230VAC
	LEAKAGE CURRENT	<3.5mA / 230VAC		
FUNCTION	AUXILIARY POWER	5V @ 0.3A, 12V @ 0.8A		
	REMOTE ON-OFF CONTROL	By electrical signal or dry contact ON:short OFF:open		
	REMOTE SENSE	Compensate voltage drop on the load wiring up to 0.5V.		
	OUTPUT VOLTAGE PROGRAMMABLE	Adjustment of output voltage is allowable to 90 ~ 110% of nominal output voltage. Please refer to the Function Manual.		
	DC OK SIGNAL	The isolated TTL signal out, Please refer to the Installation Manual		
	AC OK SIGNAL	The isolated TTL signal out, Please refer to the Installation Manual		
	OVER TEMP WARNING	Logic " High" for over temperature warning, Please refer to the Installation Manual, isolated signal		
	FAN FAIL SIGNAL	The isolated TTL signal out, Please refer to the Installation Manual		
ENVIRONMENT	WORKING TEMP.	-40 ~ +70℃ (Refer to "Derating Curve")		
	WORKING HUMIDITY	20 ~ 90% RH non-condensing		
	STORAGE TEMP., HUMIDITY	-40 ~ +85℃, 10 ~ 95% RH non-condensing		
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)		
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes		
SAFETY & EMC (Note 5)	SAFETY STANDARDS	UL62368-1, CSA C22.2 No. 62368-1, TUV BS EN/EN62368-1, EAC TP TC 004 approved		
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.7KVDC		
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25℃/ 70% RH		
	EMC EMISSION	**Parameter**	**Standard**	**Test Level / Note**
		Conducted	BS EN/EN55032 (CISPR32)	Class A
		Radiated	BS EN/EN55032 (CISPR32)	Class A
		Harmonic Current	BS EN/EN61000-3-2	-----
		Voltage Flicker	BS EN/EN61000-3-3	-----
	EMC IMMUNITY	BS EN/EN55035, BS EN/EN61000-6-2		
		Parameter	**Standard**	**Test Level / Note**
		ESD	BS EN/EN61000-4-2	Level 3, 8KV air ; Level 2, 4KV contact
		Radiated	BS EN/EN61000-4-3	Level 3
		EFT / Burst	BS EN/EN61000-4-4	Level 3
		Surge	BS EN/EN61000-4-5	Level 4, 4KV/Line-Earth ; Level 3, 2KV/Line-Line
		Conducted	BS EN/EN61000-4-6	Level 3
		Magnetic Field	BS EN/EN61000-4-8	Level 4
		Voltage Dips and Interruptions	BS EN/EN61000-4-11	>95% dip 0.5 periods, 30% dip 25 periods, >95% interruptions 250 periods
OTHERS	DIMENSION	Rack 350.8*482.6*44(L*W*H, with mounting bracket) ; 350.8*440*44(L*W*H, without mounting bracket)		
	PACKING	14.1Kg; 1pcs/14.1Kg/2.67CUFT		

NOTE

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ 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. Under parallel operation of more than one rack connecting together, ripple of the output voltage may be higher than the SPEC at light load condition. It will go back to normal ripple level once the output load is more than 10%.
4. Tolerance : includes set up tolerance, line regulation and load regulation.
5. The power supply is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 720mm*360mm metal plate with 1mm of thickness. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to “EMI testing of component power supplies.” (as available on https://www.meanwell.com//Upload/PDF/EMI_statement_en.pdf)
6. Derating may be needed under low input voltages. Please check the static characteristics for more details.
7. Output of all the RCP-2000 modules are connected in parallel in the rack.
8. Because of component tolerance, there is a possibility that some of the units connected in parallel will reach the overcurrent limit and others enter overload in turn when operating at full load condition. If overload conditions happen in parallel usage, it is suggested that derate the total output current by 10%.
9. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft).

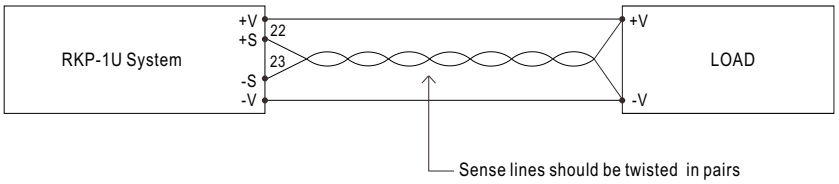
※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx

■ Function Manual

1. Voltage Drop Compensation

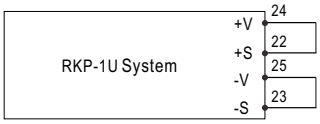
1.1 Remote Sense

The remote sense compensates voltage drop on the load wiring up to 0.5V.



1.2 Local Sense

Notice : The *+S,-S* on CN500 have to be connected to the *+V(signal),-V(signal)*,respectively, in order to get the correct output voltage if the remote sensing is not used.



2. Output Voltage Programming (or, PV / remote voltage programming / remote adjust / margin programming / dynamic voltage trim)

(1)Connecting an external DC source between PV(4,10,19) and -V(25) on CN500 that is shown in Fig. 3.1.

(2)Adjustment of output voltage is possible between 90~110%(Typ.) of the nominal voltage which is shown in Fig. 3.2. Reducing output current is required when the output voltage is trimmed up.

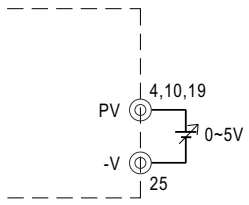
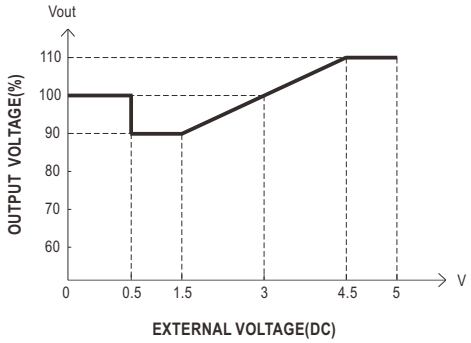


Fig. 2.1 Add on 0~5V external voltage



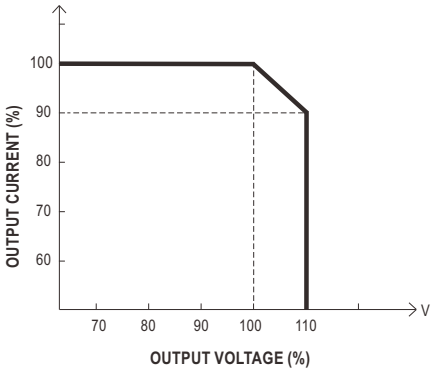
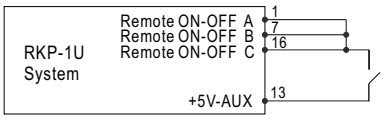
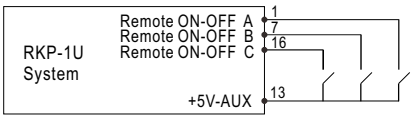


Fig. 2.2 Output voltage trimming

3. Remote ON-OFF Control

The power supply can be turned ON/OFF together or separately by using the "Remote ON-OFF" function.





Between Remote ON-OFF and +5V-AUX	Output
Switch Open	OFF
Switch Short	ON

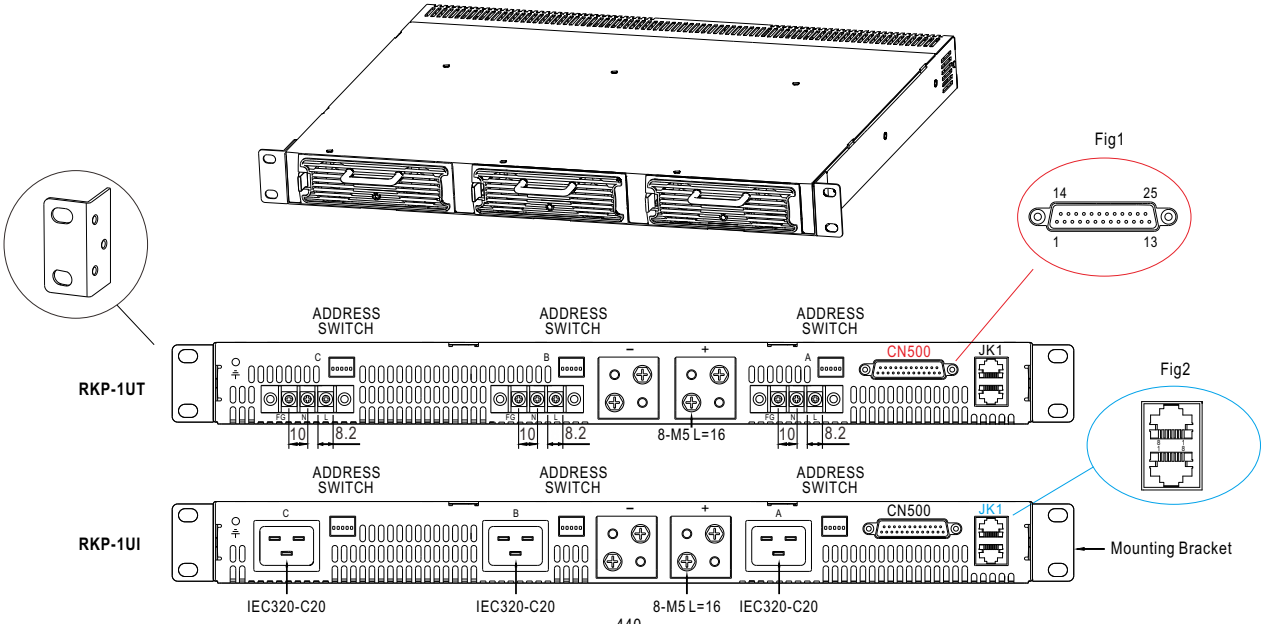
4.PMBus Communication Interface

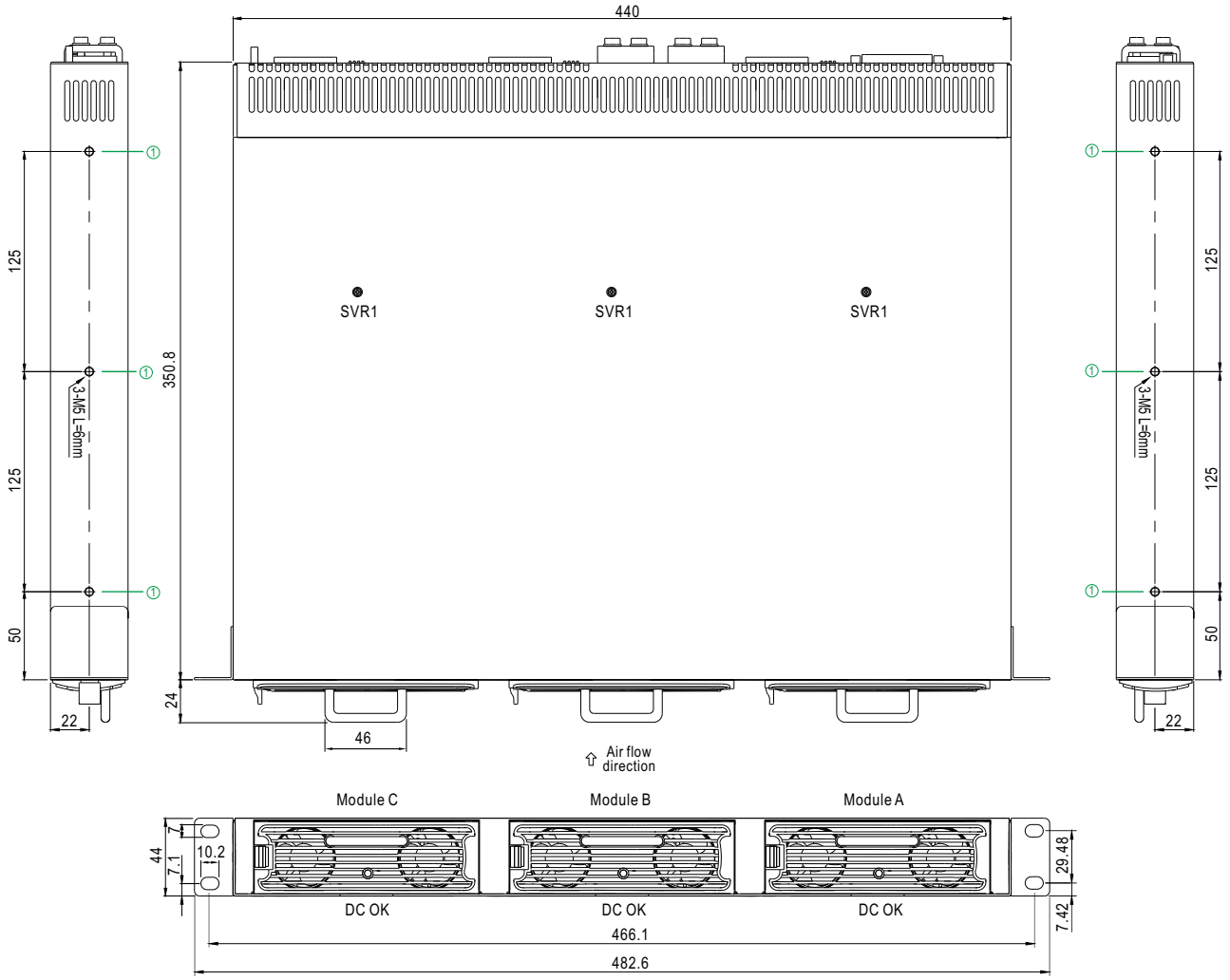
※ RCP-2000 supports PMBus Rev. 1.1 with maximum 100KHz bus speed, allowing information reading, status monitoring and output trimming. For details, please refer to the Installation Manual.

■ Mechanical Specification (Rack System)

(Unit: mm , tolerance ±0.5mm)

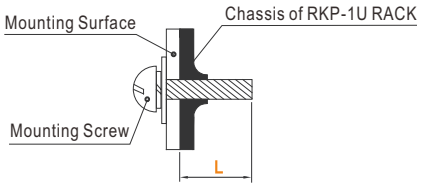
Case No. 959A





※ Mounting Instruction

Hole No.	Recommended Screw Size	MAX. Penetration Depth L	Recommended mounting torque
①	M5	6mm	10Kgf-cm

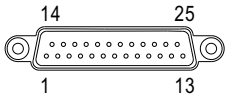


※ **LED Status Indicators & Corresponding Signal at Function Pins**

Function	LED	Description	* Signal	PSU Output
AC-OK	GREEN	When input voltage≧87V	0 ~ 0.5V	ON
AC-NG	RED	When input voltage ≦75V	4.5 ~ 5.5V	OFF
DC-OK	GREEN	When output voltage≧80%±5% of Vo rated.	0 ~ 0.5V	ON
DC-NG	RED	When output voltage≦80%±5% of Vo rated.	4.5 ~ 5.5V	ON
T-OK	GREEN	When the internal temperature (TSW1 & TSW2 short) is within safe limit	0 ~ 0.5V	ON
T-ALARM	RED	When the internal temperature (TSW1 or TSW2 open) exceeds the limit of temperature alarm	4.5 ~ 5.5V	OFF

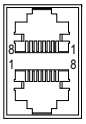
*Signal between function pin and "GND-AUX".

※ IN/OUT Connector Pin No. Assignment(CN500) : D-Type Right Angle 25 positions (female type)



Pin No.	Function	Description
1,7,16	REMOTE ON/OFF	Each unit can separately turn the output on and off by electrical signal or dry contact between *ON/OFF A,B,C(pin 1,7,16)* and *+5V-AUX(pin 13)*. Short: ON, Open:OFF. (Note.2)
2,8,17	AC-OK	Low : When the input voltage is ≧87Vrms. High : when the input voltage in ≦75Vrms. (Note.2)
3,9,18	DC-OK	High : When the Vout ≦80±5%. Low : When Vout ≧80±5%. (Note.2)
4,10,19	PV	Connection for output voltage programming.
5,11,20	T-ALARM	High : When the internal temperature (TSW1 or TSW2 open) exceeds the limit of temperature alarm. Low : When the internal temperature (TSW1 or TSW2 short) under the limit temperature. (Note.2)
6,12,21	FAN FAIL	High : When the internal fan fail. Low : When the internal fan is normal. (Note.2)
13	+5V-AUX	Auxiliary voltage output, 4.5 ~ 5.5V, referenced to *GND-AUX (pin 15)*. The maximum load current is 0.3A. This output has the built-in "Oring diodes" and is not controlled by the remote ON/OFF control.
14	+12V-AUX	Auxiliary voltage output, 10.8 ~ 13.2V, referenced to *GND-AUX (pin 15)*. The maximum load current is 0.8A. This output has the built-in "Oring diodes" and is not controlled by the remote ON/OFF control.
15	GND-AUX	Auxiliary voltage output GND. The signal return is isolated from the output terminals (+V & -V).
22	+S	Positive sensing for remote sense.
23	-S	Negative sensing for remote sense.
24	+V(signal)	Positive output voltage. For local sense use only, can't be connected directly to the load.
25	-V(signal)	Negative output voltage. For local sense use only, can't be connected directly to the load.

※ IN/OUT Connector Pin No. Assignment(JK1) : RJ45 8 positions



Pin No.	Function	Description
1,2	DA,DB	Differential digital signal for parallel control. (Note.1)
3	-V(signal)	Negative output voltage. For parallel control, can't be connected directly to the load.
4	CONTROL	Remote ON/OFF control pin used in the PMBus interface. (Note.2)
5	NC	Retain for future use.
6	SDA	Serial Data used in the PMBus interface. (Note.2)
7	SCL	Serial Clock used in the PMBus interface. (Note.2)
8	GND-AUX	Auxiliary voltage output GND. The signal return is isolated from the output terminals (+V & -V).

Note.1: Non-isolated signal, referenced to the -V(signal).
Note.2: Isolated signal, referenced to GND-AUX.