3200~12800W 1U Distributed Power/Charger System DHP-1U Rack System

Rack Dimension					
L	*	W	*	H	
400	*	440	*	44 (1U)	mm
14.4	*	17.3	*	1.73 (1U)	inch

User's Manual

Parallel

UL62368-1 BS EN/EN62368-1 IEC62368-1

Industrial Automate Telecom Network EV Marine

Features

- Universal AC input / Full range
- 1U profile 19" rack shelf, fitting four 3200W modules up to 12800W with active current sharing
- Output voltage and current programmable
- Support hot swap (hot plug)
- Built-in PMBus protocol (Optional CANBus protocol)
- 5 years warranty

Applications

- Distributed power architecture system
- Wireless/telecommunication solution
- Electric vehicle or marine charger station
- DC UPS or emergency backup
- Wastewater treatment system
- Electrolysis system

GTIN CODE

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

Description

DHP-1U rack power system and DHB-1U rack charger system are the complete solution for the power distribution utilizing the rack configuration with the 1U low profile. Starting with a single unit of 3200W, DRP-3200 is the front end rectifier (or, power supply) and DBR-3200 is the charger module. With the active current sharing function, up to 12800W is able to be provided by 1 stack of the 19" rack mountable shelf DHP-1U, with either rectifier or charger, and 25600W by 2 stacks with rectifier.

Model Encoding

Rack Shelf:

DHP-1U T -A

- A: Rack Shelf for 3200W unit
- T: Terminal block
- 1U: Profile of the system
- DHP: Series name

Whole System:

DHP-12K1U T -24

- 24: Output voltage(24V/48V)
- T: Terminal block
- 12K: Maximum wattage with fully-populated shelf
- 1U: Profile of the system
- DHP: Series name (DHP : Power supply system; DHB : Charger system)

3200~12800W 1U Distributed Power/Charger System **DHP-1U Rack System**

SPECIFICATION - Power Supply System

MODEL		DHP-12K1U□-24		DHP-12K1U□-48
OUTPUT	RECTIFIER	DRP-3200-24		DRP-3200-48
	OUTPUT VOLTAGE	24V		48V
	MAX. OUTPUT CURRENT	532A		268A
	MAX. OUTPUT POWER Note.4	12768W		12864W
INPUT	VOLTAGE RANGE Note.5	90 ~ 264VAC 127 ~ 370VDC		
	FREQUENCY RANGE	47 ~ 63Hz		
	AC CURRENT (Typ.) per RECTIFIER	17A/230VAC		
	LEAKAGE CURRENT per RECTIFIER Note.7	<1.5mA / 230VAC		
FUNCTION	OUTPUT VOLTAGE PROGRAMMABLE(PV)	Adjustment of output voltage is allowable to 50 ~ 125% of nominal output voltage. Please refer to the Function Manual.		
	CONSTANT CURRENT LEVEL PROGRAMMABLE(PC)	Adjustment of constant current level is allowable to 20 ~ 100% of rated current. Please refer to the Function Manual.		
	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		
	AUXILIARY POWER	5V @ 0.3A, tolerance ±10%, ripple 150mVp-p, 12V @ 0.8A, tolerance ±10%, ripple 450mVp-p		
	ALARM SIGNAL	Isolated TTL signal output for T-Alarm, AC-OK and DC-OK		
ENVIRONMENT	WORKING TEMP.	-30 ~ +70℃, when 3 or 4 power/charger units are paralleled in power shelf, highest working temperature shall de-rate to 40℃ at full load		
	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 8)	SAFETY STANDARDS	UL62368-1, CSA C22.2 No. 62368-1, TUV BS EN/EN62368-1 approved		
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:700VDC		
	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 B
		Radiated	BS EN/EN55032 (CISPR32)	Class A
		Harmonic Current	BS EN/EN61000-3-2	Class A
		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, 2KV/Line-Line 4KV/Line-Earth
		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	MTBF	4484.6K hrs min. Telcordia SR-332 (Bellcore) ; 1090.4K hrs min. MIL-HDBK-217F (25℃)		
	DIMENSION	Rack 400*482.6*44(L*W*H, with mounting bracket) ; 400*440*44(L*W*H, without mounting bracket)		
	PACKING	4.85Kg; 3pcs/17.4Kg/1.8CUFT		

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. 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 5%.
3. Tolerance : includes set up tolerance, line regulation and load regulation.
4. Output of all the DRP-3200 modules are connected in parallel in the rack.
5. Derating may be needed under low input voltages. Please check the static characteristics for more details.
6. Because of component tolerance, there is a possibility that some of units connected in parallel will reach an overcurrent limit then overloading the other units when operating at full load condition. If overload conditions happen in parallel usage, it is suggested that derate the total output current by 10%.
7. The equivalent leakage current of the system is determined by the quantity of populated rectifiers.
8. 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 1000mm*1300mm metal plate with 2mm 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 http://www.meanwell.com)
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

3200~12800W 1U Distributed Power/Charger System DHP-1U Rack System

SPECIFICATION - Charger System

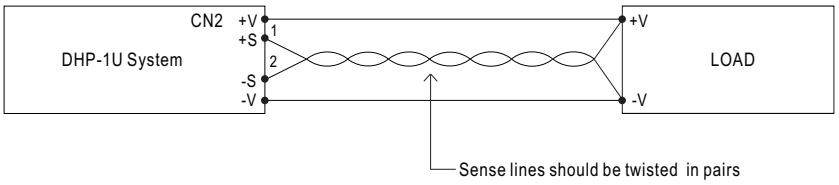
MODEL		DHB-12K1U□-24	DHB-12K1U□-48
OUTPUT	CHARGER	DBR-3200-24	DBR-3200-48
	BOOST CHARGE VOLTAGE(Vboost)(default)	28.8V	57.6V
	FLOAT CHARGE VOLTAGE(Vfloat)(default)	27.6V	55.2V
	CURRENT RANGE	0 ~ 440A	0 ~ 220A
INPUT	VOLTAGE RANGE Note.2	90 ~ 264VAC 127 ~ 370VDC	
	FREQUENCY RANGE	47 ~ 63Hz	
	AC CURRENT (Typ.) per CHARGER	17A/230VAC	
	LEAKAGE CURRENT per CHARGER Note.4	<1.5mA / 230VAC	
FUNCTION	OUTPUT VOLTAGE PROGRAMMABLE(PV)	Adjustment of output voltage is allowable to 75 ~ 125% of nominal output voltage. Please refer to the Function Manual.	
	OUTPUT CURRENT PROGRAMMABLE(PC)	Adjustment of output current is allowable to 20 ~ 100% of rated current. Please refer to the Function Manual.	
	REMOTE ON-OFF CONTROL	By electrical signal or dry contact ON:short OFF:open	
	AUXILIARY POWER	5V @ 0.3A, tolerance ±10%, ripple 150mVp-p, 12V @ 0.8A, tolerance ±10%, ripple 450mVp-p	
	ALARM SIGNAL	The isolated TTL signal out, Please refer to Installation Manual	
	TEMPERATURE COMPENSATION	-3mV / ℃ / cell / (24V = 12 cells ; 48V = 24 cells)	
ENVIRONMENT	WORKING TEMP.	-30 ~ +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, TUV BS EN/EN62368-1 approved	
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:700VDC	
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25℃/ 70% RH	
	EMC EMISSION	Compliance to BS EN/EN55032 (CISPR32) Conduction Class B, Radiation Class A ; BS EN/EN61000-3-2,-3	
	EMC IMMUNITY	Compliance to BS EN/EN61000-4-2,3,4,5,6,8,11, BS EN/EN61000-6-2 (BS EN/EN50082-2), BS EN/EN55035, Heavy industry level, criteria A	
OTHERS	MTBF	4484.6K hrs min. Telcordia SR-332 (Bellcore) ; 1090.4K hrs min. MIL-HDBK-217F (25℃)	
	DIMENSION	Rack 400*482.6*44(L*W*H, with mounting bracket) ; 400*440*44(L*W*H, without mounting bracket)	
	PACKING	5.5Kg; 3pcs/17.5Kg/2.11CUFT	
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature. 2. Derating may be needed under low input voltages. Please check the static characteristics for more details. 3. Output of all the DBR-3200 modules are connected in parallel in the rack. 4. The equivalent leakage current of the system is determined by the quantity of populated chargers. 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 1000mm*1300mm metal plate with 2mm 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 http://www.meanwell.com) 6. 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 (Only for power supply system)

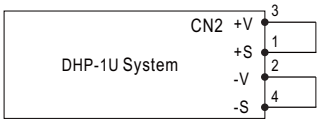
1.1 Remote Sense

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



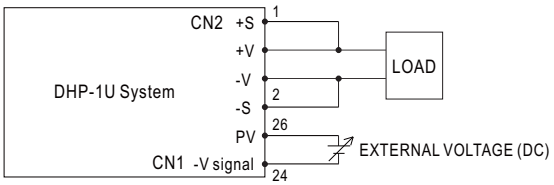
1.2 Local Sense

Notice : The +S,-S 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.

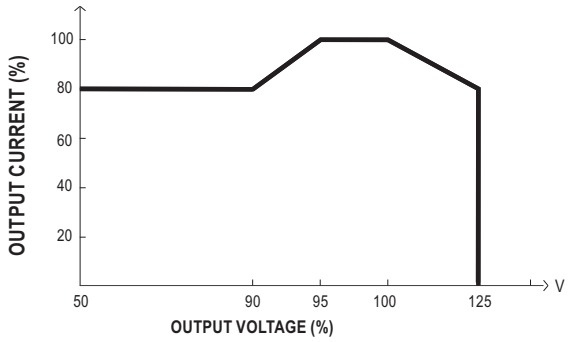


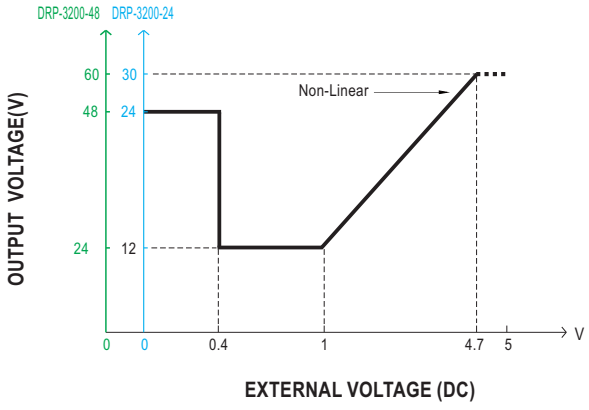
2. Output Voltage Programming (or, PV / remote voltage programming / remote adjust / margin programming / dynamic voltage trim)

※ In addition to the adjustment via the built-in potentiometer, the output voltage can be trimmed by applying EXTERNAL VOLTAGE.

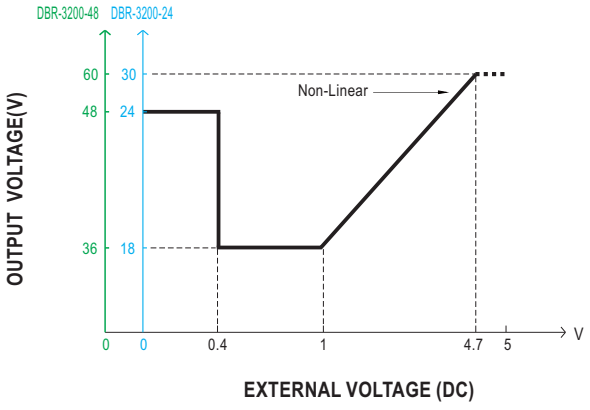


+S & +V, -S & -V also need to be connected on CN2. (Only for power supply system)





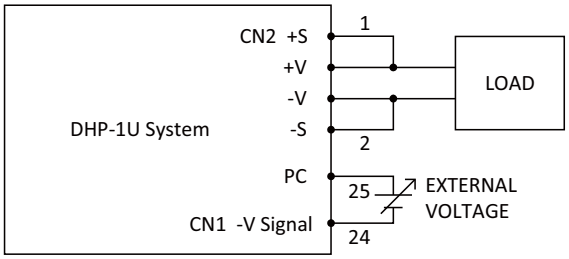
◎ For power supply system



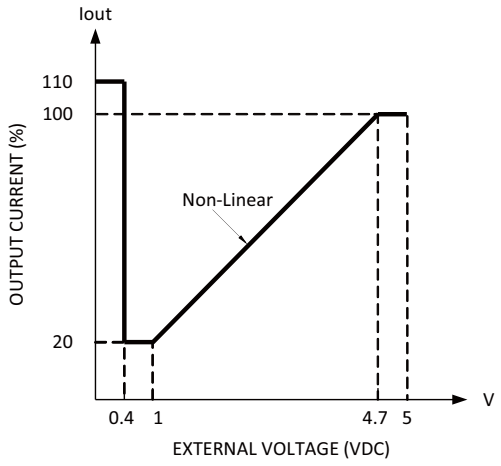
◎ For charger system

3. Output Current Programming (or, PC / remote current programming / dynamic current trim)

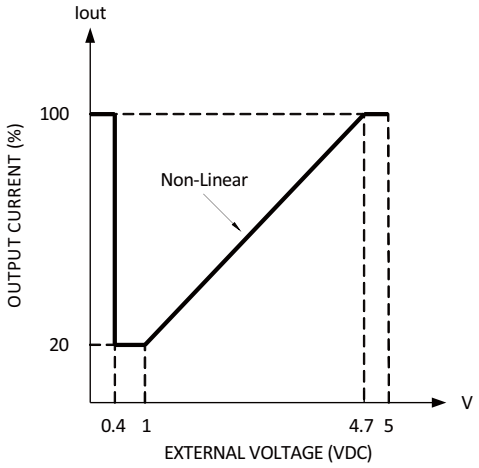
※ The output current can be trimmed to 20~100% of the rated current by applying EXTERNAL VOLTAGE.



+S & +V, -S & -V also need to be connected on CN2. (Only for power supply system)



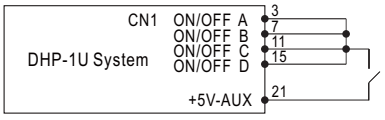
◎ For power supply system

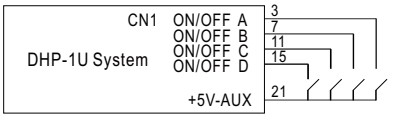


◎ For charger system

4. Remote ON-OFF Control

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





Between ON/OFF and +5V-AUX	Output
SW Open	OFF
SW Short	ON

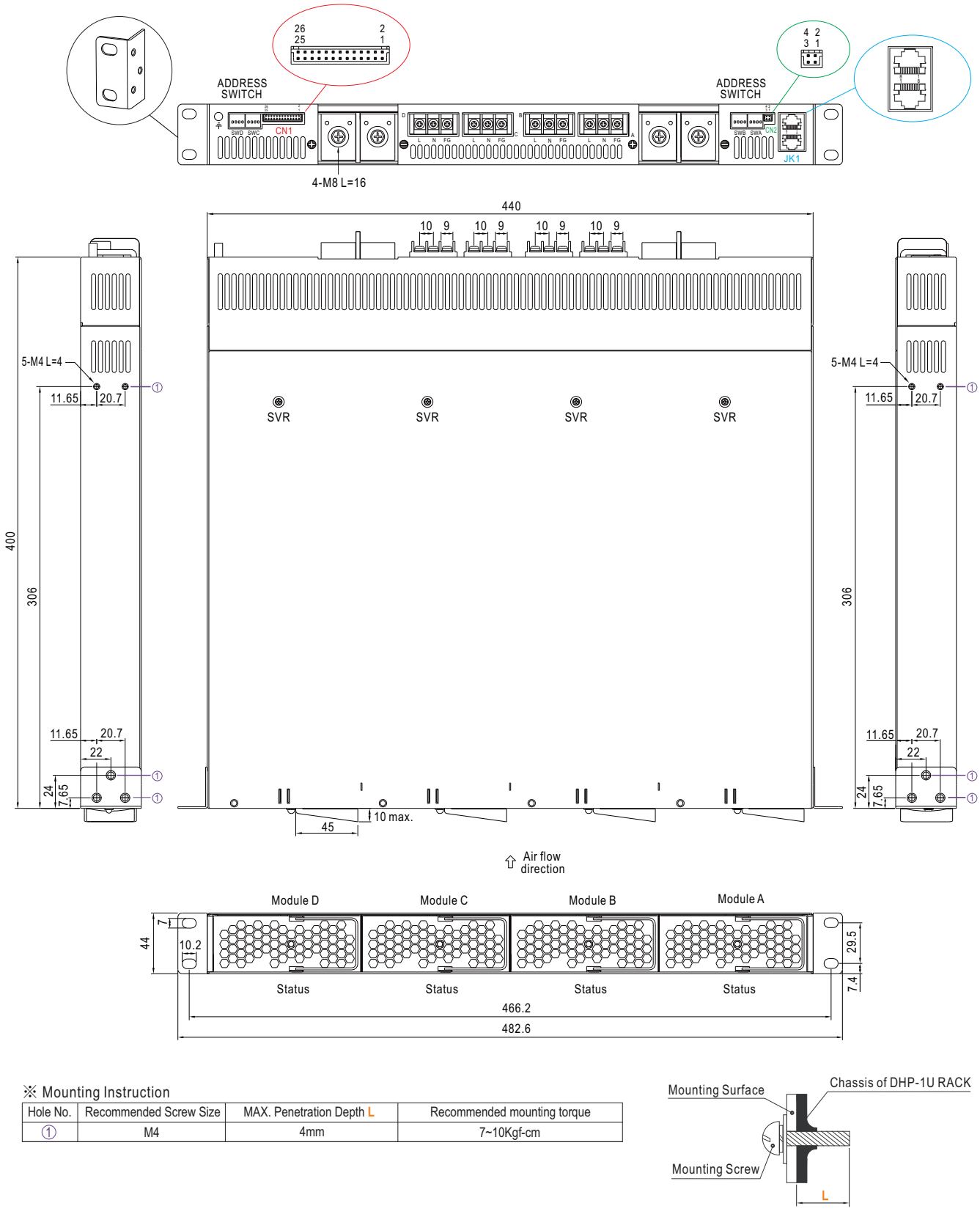
5.PMBus Communication Interface

DRP-3200/DBR-3200 supports PMBus Rev. 1.1 with maximum 100KHz bus speed, allowing information reading, status monitoring, output trimming, etc. For details, please refer to the Function Manual.

3200~12800W 1U Distributed Power/Charger System DHP-1U Rack System

■ MECHANICAL SPECIFICATION

Case No.257 Unit:mm



※ Mounting Instruction

Hole No.	Recommended Screw Size	MAX. Penetration Depth L	Recommended mounting torque
①	M4	4mm	7~10Kgf-cm

※ LED Status Indicators & Corresponding Signal at Function Pins

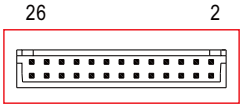
◎ For power supply system

LED	Description
Green	The power supply functions normally.
Red	The LED will present a constant red light when the abnormal status (OTP, OLP, fan fail and charging timeout) arises.
Red (Flashing)	The LED will flash with the red light when the internal temperature reaches 60℃; under this condition, the unit still operates normally without entering OTP. (In the meantime, an alarm signal will be sent out through the PMBus interface.)

◎ For charger system

LED	Description
Green	Float (stage 3)
Orange	Charging (stage 1 or stage 2)
Red	The LED will present a constant red light when the abnormal status (OTP, OLP, fan fail and charging timeout) arises.
Red (Flashing)	The LED will flash with the red light when the internal temperature reaches 60℃; under this condition, the unit still operates normally without entering OTP. (In the meantime, an alarm signal will be sent out through the PMBus interface.)

※ Connector Pin No. Assignment(CN1) : HRS DF11-26DP-2DS

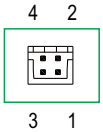


Mating Housing	HRS DF11-26DS or equivalent
Terminal	HRS DF11-**SC or equivalent

Pin No.	Function	Description
1,5,9,13	AC-OK	High (3.5 ~ 5.5V) : When the input voltage is ≧87Vrms . Low (-0.5 ~ 0.5V) : When the input voltage is ≦75Vrms. The maximum sourcing current is 10mA and only for output. (Note.2)
2,6,10,14	DC-OK	For power supply system High (3.5 ~ 5.5V) : When the Vout ≦80%±5%. Low (-0.5 ~ 0.5V) : When Vout ≧80%±5%. The maximum sourcing current is 10mA and only for output. (Note.2)
		For charger system High (3.5 ~ 5.5V) : When the Vout ≦16V/32V±1V. Low (-0.5 ~ 0.5V) : When Vout ≧16V/32V±1V. The maximum sourcing current is 10mA and only for output. (Note.2) DC OK is associated with battery low protection.
3,7,11,15	Remote ON-OFF	The unit can turn the output ON/OFF by electrical signal or dry contact between Remote ON-OFF and +5V-AUX. (Note.2) Short (4.5 ~ 5.5V) : Power ON ; Open (0 ~ 0.5V) : Power OFF ; The maximum input voltage is 5.5V.
4,8,12,16	T-ALARM	High (3.5 ~ 5.5V) : When the internal temperature exceeds the limit of temperature alarm, or when fan fails. Low (-0.5 ~ 0.5V) : When the internal temperature is normal, and when fan normally works. The maximum sourcing current is 10mA and only for output(Note.2)
17,18,19,20	NC	Retain for future use.
21	+5V-AUX	Auxiliary voltage output, 4.5~5.5V, referenced to GND-AUX (pin 22). 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.
22	GND-AUX	Auxiliary voltage output GND. The signal return is isolated from the output terminals (+V & -V).
23	+12V-AUX	Auxiliary voltage output, 10.8~13.2V, referenced to GND-AUX (pin 22). 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.
24	-V(Signal)	Negative output voltage. For local sense use only; It can't be connected directly to the load.
25	PC	Connection for output current programming. The current can be trimmed within its defined range. (Note.1)
26	PV	Connection for output voltage programming. The voltage can be trimmed within its defined range. (Note.1)

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

※ Connector Pin No. Assignment(CN2) : HRS DF11-4DP-2DS



Mating Housing	HRS DF11-4DS or equivalent
Terminal	HRS DF11-**SC or equivalent

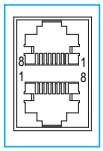
◎ For power supply system

1	+S	Positive sensing. The +S signal should be connected to the positive terminal of the load. The +S and -S leads should be twisted in pair to minimize noise pick-up effect. The maximum line drop compensation is 0.5V.
2	-S	Negative sensing. The -S signal should be connected to the negative terminal of the load. The -S and +S leads should be twisted in pair to minimize noise pick-up effect. The maximum line drop compensation is 0.5V.
3	+V(Signal)	Positive output voltage. For local sense use only, can't be connected directly to the load.
4	-V(Signal)	Negative output voltage. For local sense use only, can't be connected directly to the load.

◎ For charger system

1	RTH+	Temperature sense associated with the temperature compensation function.
2	RTH-	
3,4	NC	Not use.

※ 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 signal. It is for local sense and certain function reference; it cannot 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	For PMBus model: Serial Data used in the PMBus interface. (Note.2)
	CANH	For CANBus model: Data line used in CANBus interface. (Note.2)
7	SCL	For PMBus model: Serial Clock used in the PMBus interface. (Note.2)
	CANL	For CANBus model: Data line used in CANBus 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 [-V(signal)].
Note.2: Isolated signal, referenced to GND-AUX.