DESCRIPTIONS DC/DC Parallel Redundancy Module



RoHS

FEATURES

- Input voltage range: 22 - 60VDC
- Operating ambient temperature range: -40℃ to +85℃
- High efficiency up to 98%
- Transient peak current function: 6 times rated current for 15ms
- Up to 150% (PN) dynamic power for 5s
- Continuous static power margin of up to 125% (PN)
- 1000VAC insulation voltage
- Double-sided conformal coating, salt-spray proof
- The DC OK function is displayed, relay contact signal output
- Redundant OK indicator function
- Current Sharing OK indicator function
- Operating altitude up to 5000m
- Support output 100VDC voltage backdown
- Support input over-voltage, under-voltage protection
- OVC III (design refer to EN62477, 2000m)
- Supporting for N+1 parallel redundancy
- Safety according to ATEX, IECEx increased safety type explosion-proof certification
- Meets ANSI/ISA 71.04-2013 G3
- Safety according to IEC/UL62368, EN61558, EN60335
- 5 years warranty

APPLICATIONS

- Industrial Control
- electricity
- security
- telecommunications

Selection Guide

Certification	Part No.	Voltage Drop Vin-Vo (V/Typ.)	Nominal Output Current (A) Max.	Efficiency (24/48VDC, %/Typ.)
--	DDHR40-20-H	0.2	40	98

Note: 1. The rated voltage difference of the product is related to the input voltage and load, the larger the load, the larger the voltage difference.

2. The product picture is for reference only.For details, please refer to the actual product

Specifications

Product Specifications	Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Specifications	Input Voltage Range	DC input	22	24/48	60	VDC
	Input Current Range	The sum of 2*20A&1*40A input currents is not greater than 40A (increase power)	--	--	40	A
		The sum of 1*20A input currents is not greater than 20A (Redundant)	--	--	20	
	Hot Plug		Unavailable			
Output Specifications	Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	200	--	mV
	DC OK Function	When the two input voltages are normal and the voltage difference does not exceed the over-voltage or under-voltage alarm, the DC OK function is normal (the relay on), the two input LED indicators light on	--	--	--	--
	Output Power	24V/20A (Redundant)	--	480	--	W
		24V/40A (increase power)	--	960	--	
	Anti-backflow Voltage	Full load range, back-flow voltage slope≤ 1V/ms	--	--	100	VDC
	Static power	1. The sum of 2*20A&1*40A input currents is not greater than 40A (increase power) 2. The sum of 1*20A input currents is not greater than 20A (Redundant)	125%Io (typ.), work for a long time at room temperature			
	Dynamic power		150% Io working 5s (min.), the off time adapts with different load conditions, long-term protection, self-recover			
	Transient Peak Current Function		600% Io working 15ms 3 times (typ.), long-term short-circuit protection, self-recover			
	LED1 (DC_OK)	ON	Output DC_OK			
	LED2 (PCS OK)	ON	Both input current share are OK			
	LED3 (Redundant OK)	ON	Both input redundancy OK			
General Specifications	Isolation Test Input output - ⏚	Electric strength test for 1min., leakage current < 5mA	1000	--	--	VAC
	Insulation Resistance Input output - ⏚	At 500VDC	50	--	--	MΩ
	Operating Temperature		-40	--	+85	℃
	Storage Temperature		-40	--	+85	
	Storage Humidity	Non-condensing	--	--	90	%RH
	Power Derating	Operating temperature derating +60℃ to +85℃	3.2	--	--	%/℃
	Safety Class		CLASS I			
	MTBF	MIL-HDBK-217F@25℃	> 1000,000 h			
Environmental Characteristics	Item	Operating Conditions	Standard			
	High and Low Temperature Working	+85℃, -40℃	GB2423.1, IEC60068-2-1			
	Sinusoidal Vibration	10 - 500Hz, 2g, three directions of X, Y, Z axis	GB2423.10, IEC60068-2-6			
	Salt Mist	+35℃, 5%NACL, 48h	GB2423.17, IEC60068-2-11			
	Alternating Hot and Humid	+25℃, 95%RH - +60℃, 95%RH	GB2423.4, IEC60068-2-30			

	Low Temperature Storage	-40℃	GB2423.1, IEC60068-2-1
	High Temperature Storage	+85℃	GB2423.2, IEC60068-2-2
	High Temperature Aging	+60℃	GB2423.2, IEC60068-2-2
	Normal Temperature Aging	+25℃	GB2423.1, IEC60068-2-1
	Temperature Shock	-40℃ to +85℃	GB2423.22, IEC60068-2-14
	Temperature Cycle	-25℃ to +60℃	GB2423.22, IEC60068-2-14
	Hot and Humid	+85℃, 85%RH	GB2423.50, IEC60068-2-67
	High Temperature Elevation	+60℃, 54KPa	GB2423.26, IEC60068-2-41
	Low Temperature Elevation	-25℃, 54KPa	GB2423.25, IEC60068-2-40
	Constant Humid and Hot	+40℃, 95%RH	GB2423.3, IEC60068-2-78
	Random Vibration	5 - 10Hz, ASD 0.3 - 10g²/Hz, three directions of X, Y, Z axis	GB/T 4798.2-2008, IEC60721-3-2
	Sinusoidal Vibration Response	10 - 150Hz, 1g, three directions of X, Y, Z axis	GB/T 11287-2000, IEC60255-21-1
	Sinusoidal Vibration Endurance Test		
	Sinusoidal Impulse Response	15g, pulse duration 11ms, three times in each direction of X, Y, Z axis	GB/T 114537-1993, IEC60255-21-2
	Sinusoidal Impact Endurance Test		
	Packaging Drop	1m, one corner, three edges and six sides	GB2423.8, IEC68-2-32
Mechanical Specifications	Case Material	Metal (AL5052, SUS304)	
	Dimensions	121.00mm x 34.00mm x 124.00mm	
	Weight	485g (Typ.)	
	Cooling Method	Natural air cooling	

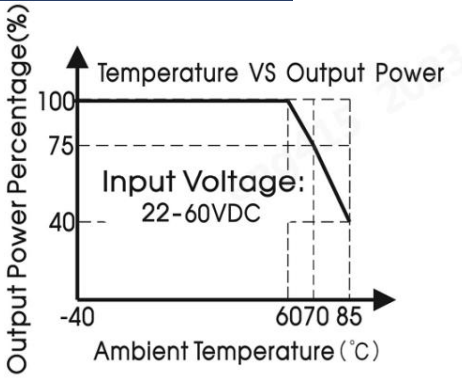
Note: *The "Tip and barrel method" is used for ripple and noise test, output parallel 47uF electrolytic capacitor and 0.1uF ceramic capacitor.

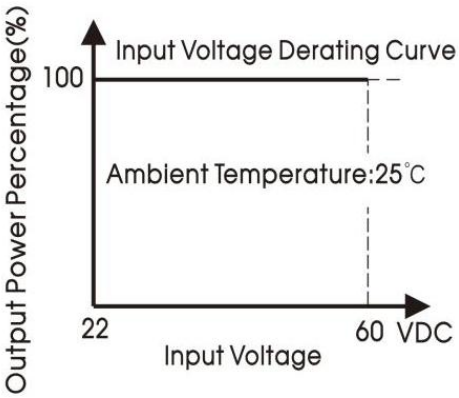
Electromagnetic Compatibility (EMC)

Electromagnetic Compatibility (EMC)	Emissions (EMI)	CE	CISPR32/EN55032 CLASS B	
		RE	CISPR32/EN55032 CLASS B	
	Immunity (EMS)	ESD	IEC/EN 61000-4-2 Contact ±8KV/Air ±15KV	Perf. Criteria A
		RS	IEC/EN 61000-4-3 10V/m	perf. Criteria A
		EFT	IEC/EN 61000-4-4 ±2KV	perf. Criteria A
		Surge	IEC/EN 61000-4-5 line to line ±1KV/line to ground ±2KV	perf. Criteria A
		CS	IEC/EN61000-4-6 10 Vr.m.s	perf. Criteria A

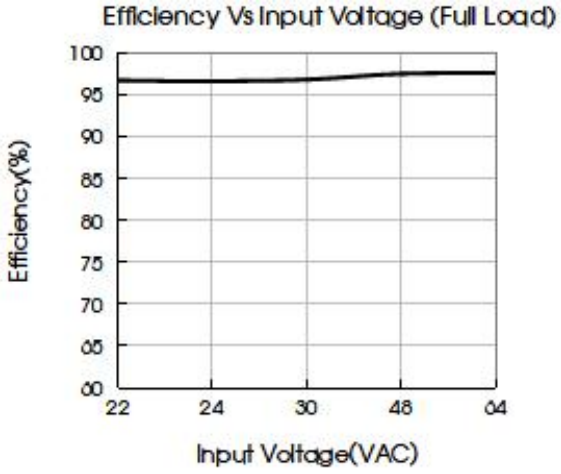
Note: *For immunity test, please add AC-DC module at front of AD、ADF、ADMF、ADHF120/240/480/960 series products are recommended).

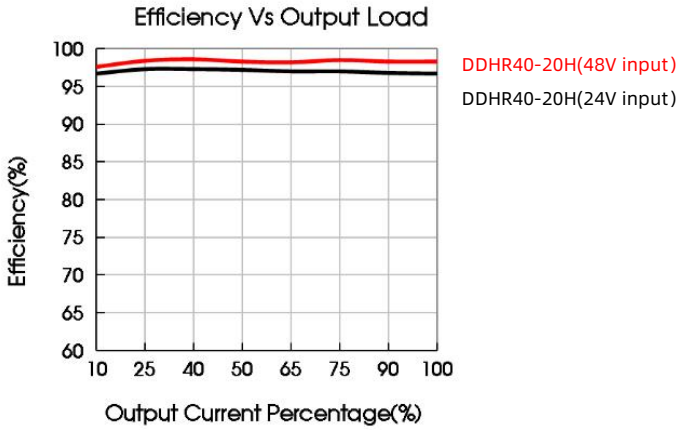
Characteristic Curve





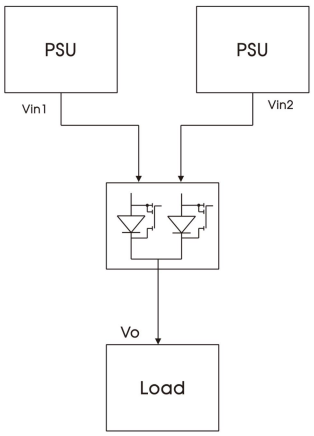
Note: This product is suitable for applications using natural air cooling.



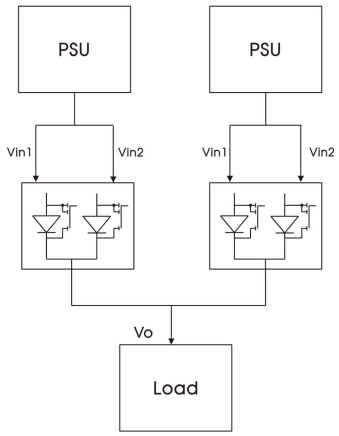


Typical Application

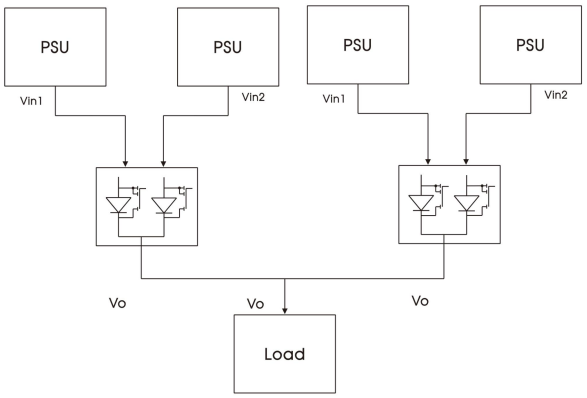
1. 1+1 Redundancy: Using 1 more PSU as the redundant unit.



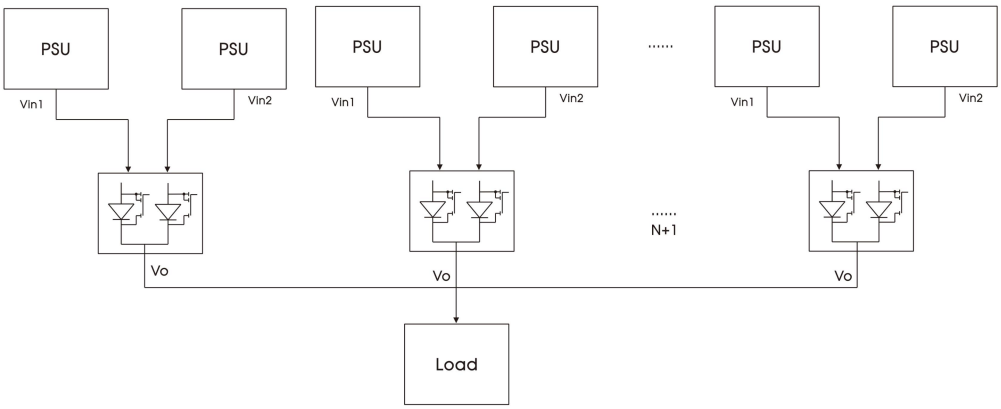
2. Single Use: Connecting only one PSU to one DDHR40-20H module to reduce the stress of the MOS and hence increase the reliability.



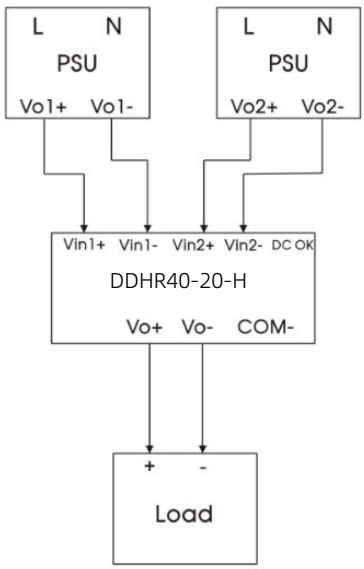
3. 2+2 Redundancy: Using 2 more PSU as the redundant unit.



4. N+1Redundancy: Using more PSUs as the redundant units to increase the reliability.



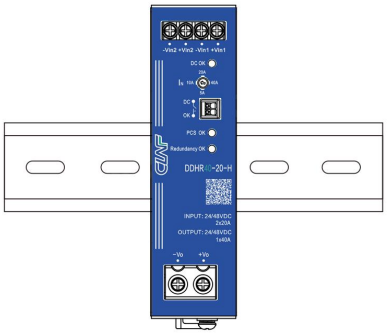
5. Cable connection reference

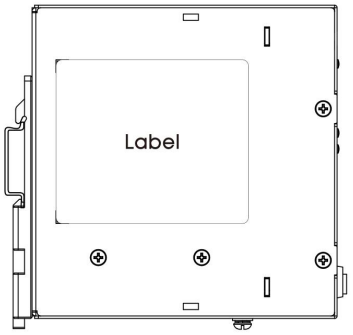


Note: 1. Please add AC-DC module at front of AD、ADF、ADMF、ADHF120/240/480/960 series products are recommended);

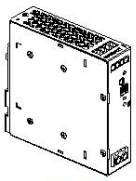
2. When the output is short circuited, the pre-stage AC-DC module short circuit protection will be triggered;

Installation Diagram

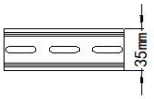




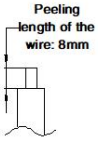
Materials required in the installation		
1	Product	1 PCS
2	Phillips screwdriver Slotted screwdriver	1 PCS
3	TS35/7.5 or TS35/15	1 PCS
4	14–6AWG wire	/ PCS
	The content is for reference only. Regarding the actual wire diameter and tightening torque, refer to the dimensional drawing.	


Product


Phillips screwdriver
Slotted screwdriver
Diameter of the cutting
Diameter: 3mm

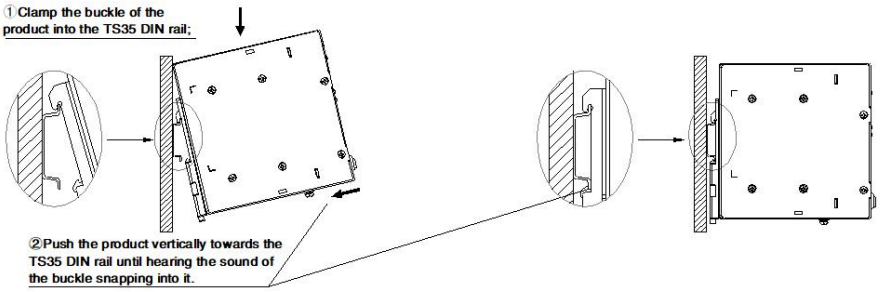


TS35/7.5 or TS35/15

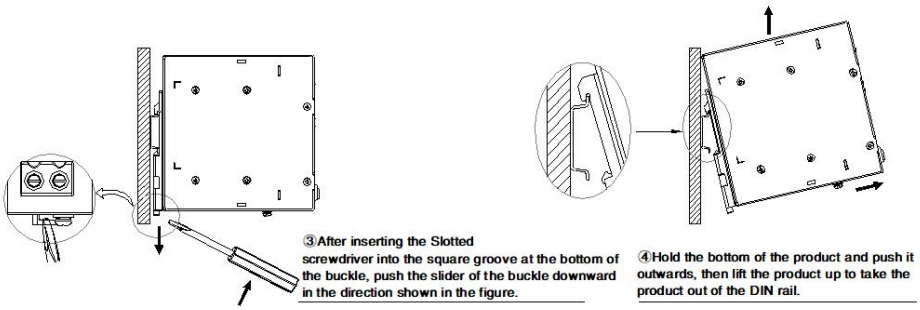


14–6AWG wires

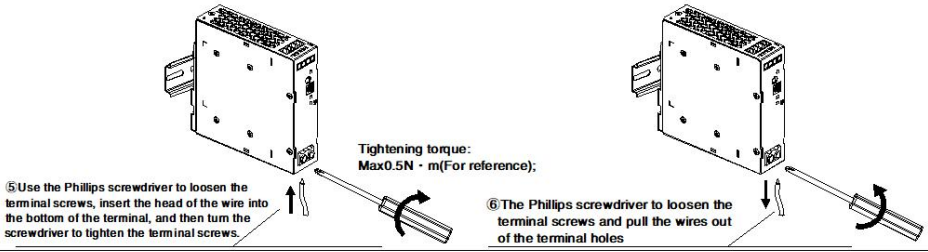
Installation Steps ①–②



Disassembly steps ③–④

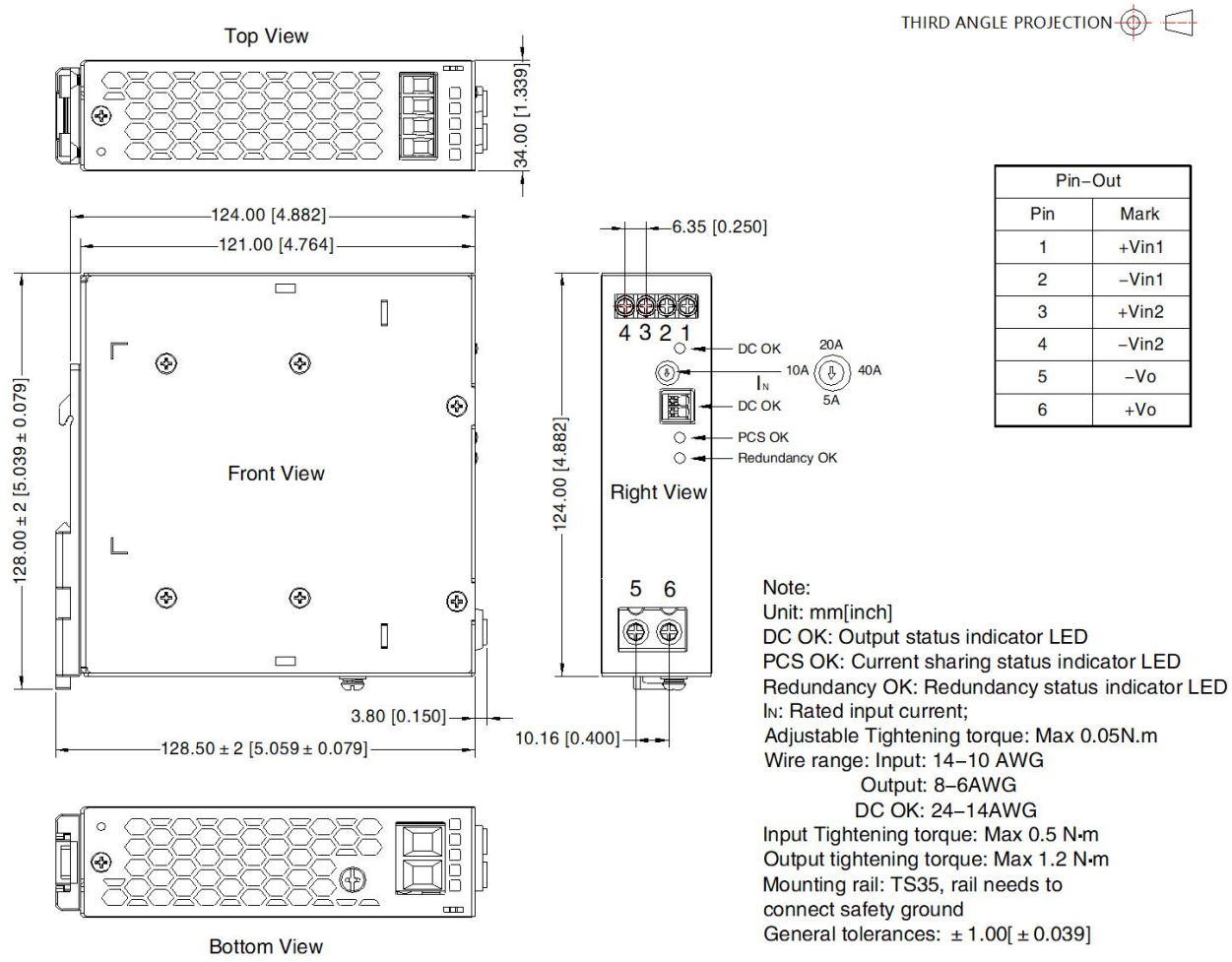


Wiring / Unwiring Steps ⑤–⑥



Note: Keep the following installation clearances: 20mm on top, 20mm on the bottom, 5mm on the left and right sides are recommended when the device is loaded permanently with more than 50% of the rated power. Increase this clearance to 15mm in case the adjacent device is a heat source (e.g. another power supply).

Dimensions and Recommended



Pin–Out	
Pin	Mark
1	+Vin1
2	–Vin1
3	+Vin2
4	–Vin2
5	–Vo
6	+Vo

Note:
Unit: mm[inch]
DC OK: Output status indicator LED
PCS OK: Current sharing status indicator LED
Redundancy OK: Redundancy status indicator LED
I_N: Rated input current;
Adjustable Tightening torque: Max 0.05N.m
Wire range: Input: 14–10 AWG
Output: 8–6AWG
DC OK: 24–14AWG
Input Tightening torque: Max 0.5 N•m
Output tightening torque: Max 1.2 N•m
Mounting rail: TS35, rail needs to connect safety ground
General tolerances: ± 1.00[± 0.039]

Note:

1. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75% RH with nominal input voltage and rated output load;
2. The ambient temperature derating of 5℃/1000m is needed for operating altitude greater than 2000m;
3. All index testing methods in this datasheet are based on our company corporate standards;
4. In order to improve the efficiency at high input voltage, there will be audible noise generated, but it does not affect product performance and reliability;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Products are related to laws and regulations: see "Features" and "EMC";
7. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.