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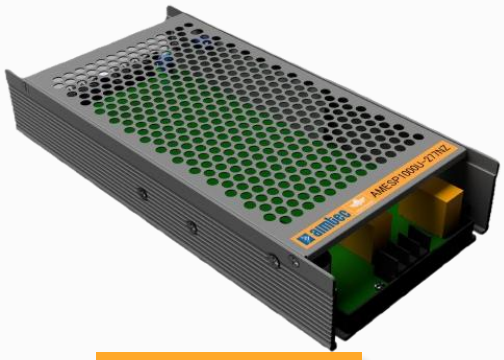
AMESP1000U-277NZ



Enclosed

The AMESP1000U-277NZ series is an efficient, enclosed, fan less, ultra-narrow, and semi-potted 1000W AC/DC power supply module. It offers a wide commercial input voltage range of 90-305VAC, output voltage ranges from 12-48V, low power consumption, high efficiency, high reliability, and safer isolation.

This new series offers great operating temperatures, from -30°C to +70°C with full power up to 50°C and features an isolation of 3750VAC with improved reliability and system safety. Furthermore, a high MTBF of 146,400h, output short circuit protection (OSCP), output over-current protection (OCP), output over-voltage protection (OVP), and over temperature protection (OTP) come standard with the series.

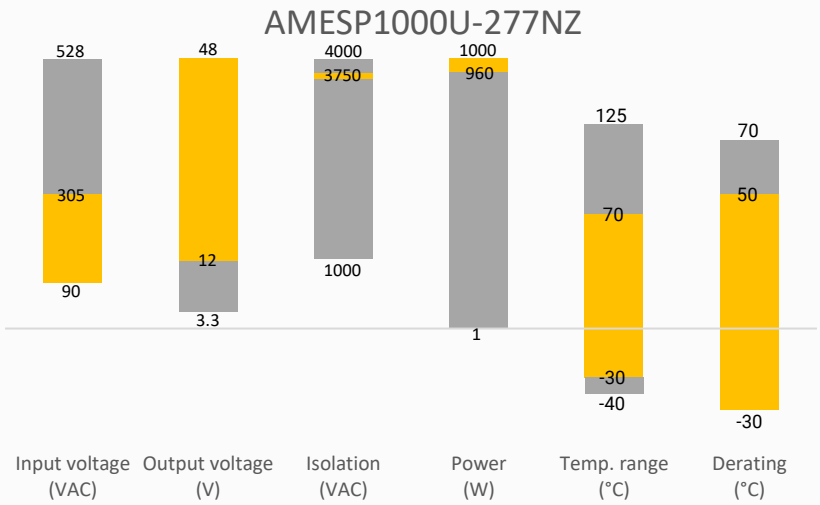
The AMESP1000U-277NZ is suitable for street lighting controls, grid power, instrumentation, industrial controls, communication, and civil applications.

Features

- Universal Input: 90 - 305VAC/127 - 430VDC
- Operating Temp: -30°C to +70°C
- High isolation voltage: 3750VAC
- Active PFC
- Output short circuit, over-current, over-voltage, over-temperature protection
- Efficiency up to 95%

RoHS · 3yr Warranty · CE · With PFC

Summary



Training

Product Training Video

Press Release

Coming Soon!

Application Notes

Applications

Power Grid · Industrial · Telecom

Models & Specifications

Single Output

Model	Input Voltage (VAC/Hz)	Input Voltage (VDC)	Max Output Wattage (W)	Output Voltage (V)	Output Voltage Adjustable Range (V)	Output Current max (A)	Maximum capacitive load (µF)	Average Efficiency (%)
AMESP1000U-12S277NZ-P	90-305/50-60	127-430	960	12	12-14.4	80	40000	94
AMESP1000U-24S277NZ-P	90-305/50-60	127-430	1008	24	24-28.8	42	20000	95
AMESP1000U-36S277NZ-P	90-305/50-60	127-430	1008	36	36-43.2	28	16000	95
AMESP1000U-48S277NZ-P	90-305/50-60	127-430	1008	48	48-57.6	21	12000	95

Note: The "-P" suffix indicates a terminal protective cover (ex. AMESP1000U-12S277NZ-P). For optional conformal coating, add "Q" after the "-P" (ex. AMESP1000U-12S277NZ-PQ is conformal coated version with terminal protective cover).

Input Specifications

Parameters	Conditions	Typical	Maximum	Units
Input current	115VAC	11.7	--	A
	230VAC	6	--	A
Inrush current	Cold Start, 115VAC	20	--	A
	Cold Start, 230VAC	40	--	A
Leakage	240VAC	--	0.75	mA
Power Factor	Full Load, 115VAC	0.99	--	--
	Full Load, 230VAC	0.95	--	--

Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	Full Load Range	±1.0	--	%
Line regulation	Rated Load	±0.5	--	%
Load Regulation	0%-100% Load	±0.5	--	%
Ripple & Noise*	12V output	150	--	mV p-p
	24V, 36V output	240	--	mV p-p
	48V output	300	--	mV p-p
Start-up time	Full Load, 115VAC/230VAC	1000	--	ms
Hold up time	Full Load, 115VAC/230VAC	12	--	ms

* Ripple and Noise are measured at 20MHz bandwidth with a 47µF electrolytic capacitor and a 0.1µF ceramic capacitor. Please refer to the application note for specific details.

Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	60 sec	--	3750	VAC
Tested Input to GND voltage	60 sec	--	2000	VAC
Tested Output to GND voltage	60 sec	--	1250	VAC
Resistance I/O	500VDC	--	100	MΩ

* Tested under 25±5°C ambient temperature with relative humidity <95% and no condensation.

General Specifications

Parameters	Conditions	Typical	Maximum	Units
Safety class	Class I			
Over voltage category	OVC III, According to EN62368-1			
Over current protection	Constant current limiting, 3 seconds delay to shutdown, Manual recovery	≥ 105	125	% of Iout

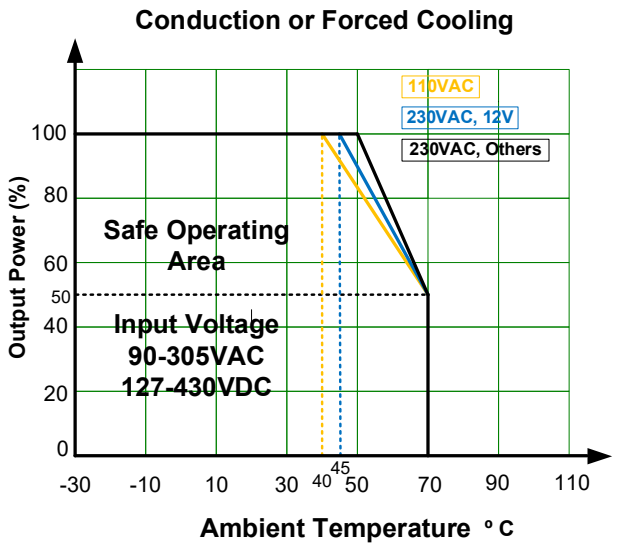
Over voltage protection	Shut-down, Manual recovery	≥ 115	145	% of Vout
Over temperature protection	Shut-down, Auto recovery			
Short circuit protection	Constant current limiting, 3 seconds delay to shutdown, Manual recovery			
Operating temperature	See derating graph	-30 ~ +70		°C
Storage temperature		-40 ~ +85		°C
Power Derating	40°C to 70°C, Conduction / Forced Cooling, 110Vac	1.67	--	%/°C
	45°C to 70°C, Conduction / Forced Cooling, 230Vac, 12V output	2	--	%/°C
	50°C to 70°C, Conduction / Forced Cooling, 230Vac, others	2.5	--	%/°C
	40°C to 60°C, Convection Cooling, 110Vac, 12V output	1.5	--	%/°C
	40°C to 60°C, Convection Cooling, 110Vac, others	1.75	--	%/°C
	45°C to 60°C, Convection Cooling, 230Vac, 12V output	2	--	%/°C
	50°C to 60°C, Convection Cooling, 230Vac, others	3.5	--	%/°C
	90VAC ~ 180VAC	0.33	--	%/VAC
Temperature coefficient	0 ~ 50 °C	±0.03	--	% / °C
Cooling	Free air convection / Conduction / Forced Cooling			
Operating humidity	Non-condensing	20	90	% RH
Storage humidity	Non-condensing	10	95	% RH
Case material	Aluminum/Steel			
Weight		1740	--	g
Dimensions (L x W x H)	9.49 x 4.53 x 1.63 inches (241.00 x 115.00 x 41.50 mm)			
Vibration	10 ~ 500H, 5G 10min / 1cycle, 60min. Each along X, Y, Z axes			
MTBF	> 146 400 hrs MIL-HDBK-217(25°C)			

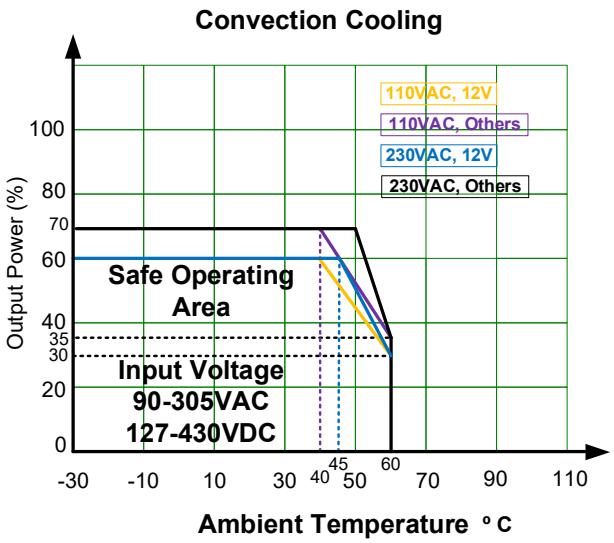
NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

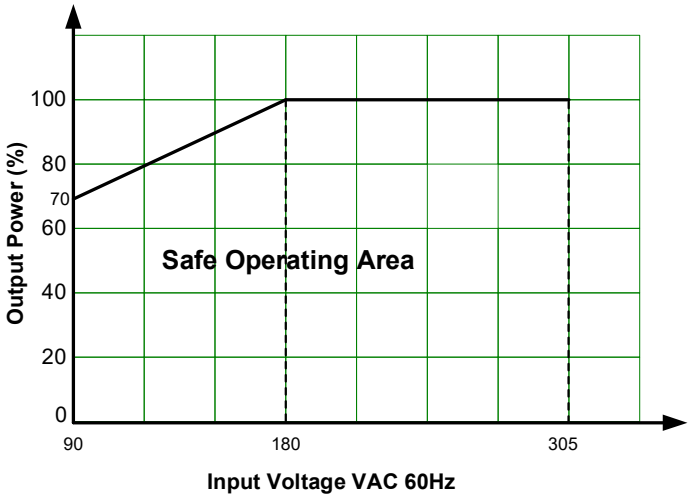
Safety Specifications

Parameters		
Standards	Information technology Equipment	Designed to meet BS EN/EN/UL62368-1, EN60335-1, EN61558-1
	EMC - Conducted and radiated emission	BS EN/EN55032(CISPR32), class B
	Harmonic current	BS EN/EN 61000-3-2, class A
	Voltage flicker	BS EN/EN 61000-3-3
	Electrostatic Discharge Immunity	BS EN/EN 61000-4-2 8KV air, 4KV contact, Criteria B
	RF, Electromagnetic Field Immunity	BS EN/EN 61000-4-3 Criteria A
	Electrical Fast Transient/Burst Immunity	BS EN/EN 61000-4-4 Criteria B
	Surge Immunity	BS EN/EN 61000-4-5 L-L ±1KV L-G ±2KV, Criteria B
	RF, Conducted Disturbance Immunity	BS EN/EN 61000-4-6 Criteria A
	Power Frequency Magnetic Field	BS EN/EN 61000-4-8 Criteria A
	Voltage dips, Short Interruptions Immunity	BS EN/EN 61000-4-11 Voltage dip: >95%, Criteria B, Voltage dip: 30%, Criteria C, Voltage Interruption: >95%, Criteria C

Derating

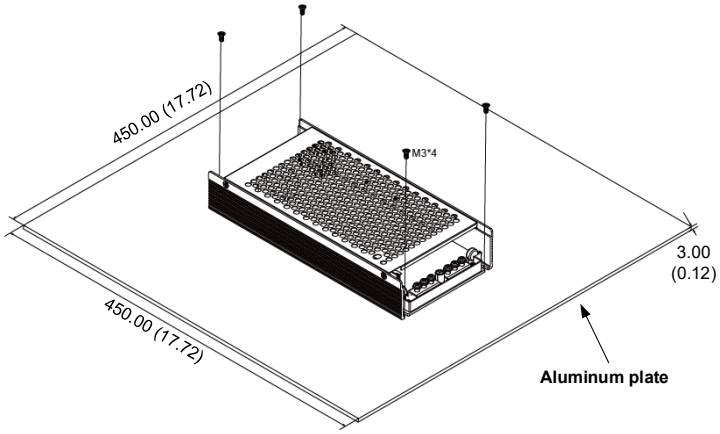


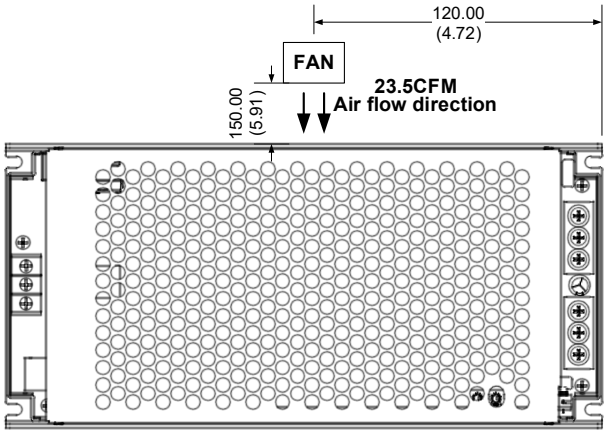




Operate with additional aluminum plate or fan

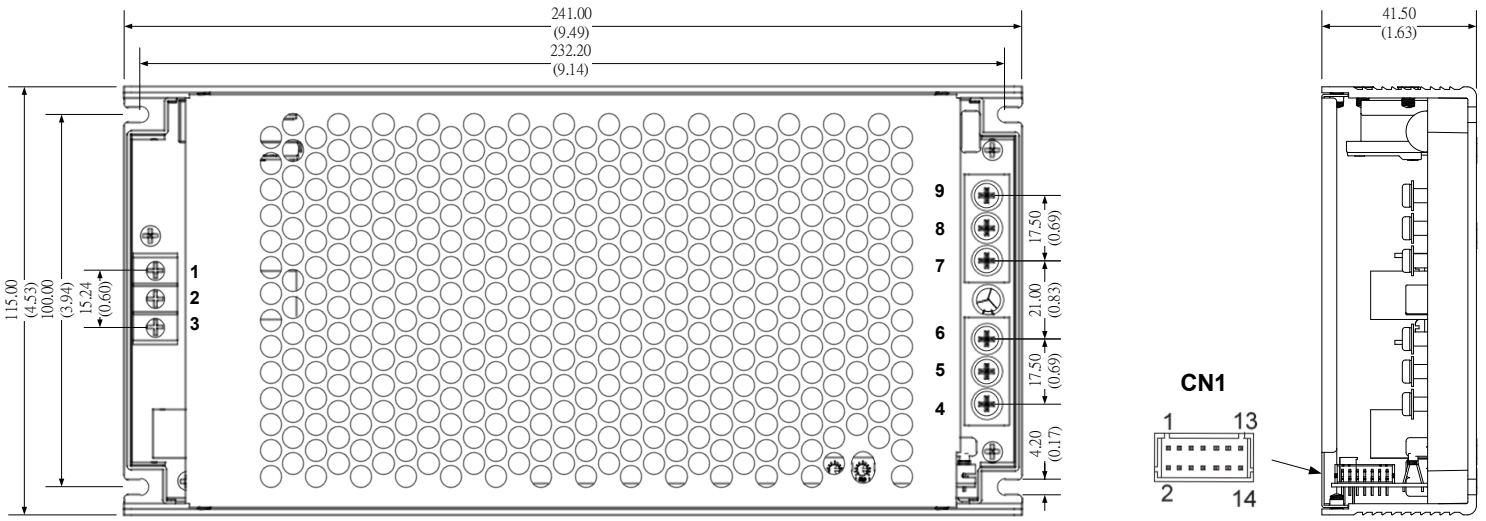
To meet the "Derating Curve" and the "static Characlerisics",AMESP1000U-277NZ series must be installed on the bottom aluminum plate (or the cabinet of the same size) or use forced air cooling solution.
The size of the suggested aluminum plate and configuration of fan are shown as below.
And for optimizing thermal performance, the aluminum plate must have an even and smooth surface (or coated with thermal grease), and AMESP1000U-277NZ series must be firmly mounted at the center of the aluminum plate.





Note:
Unit: mm(inch)
General tolerance: ±1.00(0.04)

Dimensions



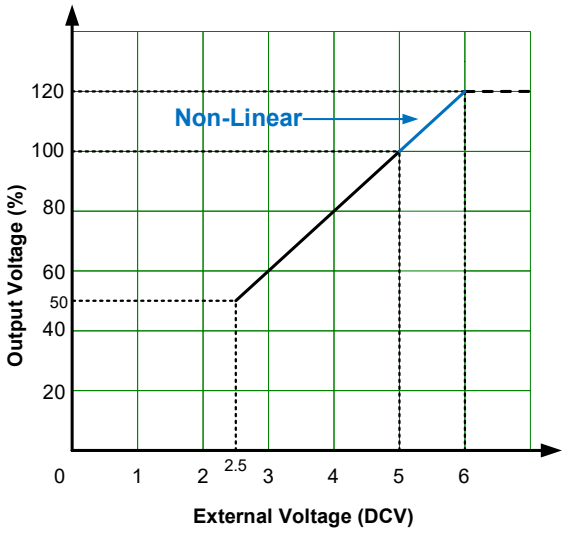
Note:
Unit: mm(inch)
General tolerance: ±1.00(0.04)
Connector screw: M3 position 1-3, M4 position 4-9

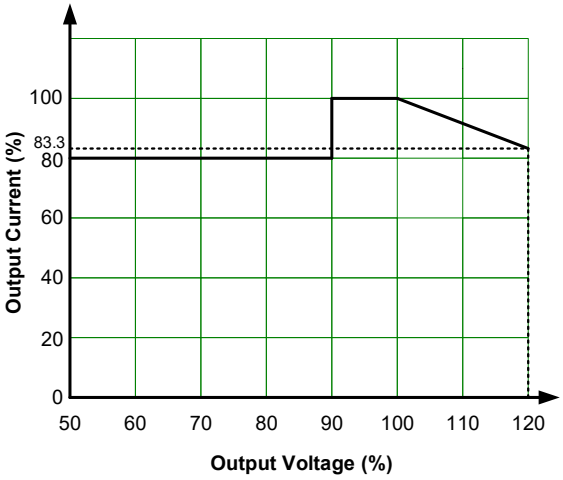
Pin Output Specifications			
Pin	Single	Terminal	Max mounting torque
1	PE GND	BHN 1.5-XX-7.62-02-T1-C	5.2N-m
2	AC Input (N)		
3	AC Input (L)		
4	-V Output	MCN 04423-T2	9.5N-m
5	-V Output		
6	-V Output		
7	+V Output		
8	+V Output		
9	+V Output		

CN1 Control Pin Assignment : HC-PHD-2x7A or equivalent		
Pin	Function	Description
1, 3	PV	Connection for output voltage programming.
2	PV-DIS	Short connecting between PV (pin1) and PV-DIS (pin2) if output voltage programming function is not activated.
4, 8, 10, 12	GND (Signal)	Negative output voltage signal.
5	+12V-AUX	Auxiliary voltage output, 10.8~13.2V, referenced to GND-AUX (pin6). The maximum load current is 0.5A. This output is not controlled by “Remote ON-OFF”.
6	GND-AUX	Auxiliary voltage output GND. The signal return is isolated from the output terminals (+V & -V).
7	Remote ON/OFF	The unit can turn the output ON/OFF by electrical signal or dry contact between Remote ON/OFF. Short (0 ~ 0.5V): Power ON; Open (2 ~ 5V): Power OFF ; The maximum input voltage is 5.5V.
9	DC OK	Low (-0.1 ~ 0.5V): When the Vout ≦80%±5%. High (4.5 ~ 5.5V): When Vout ≧80%±5%. The maximum sink current is 10mA and only for output.
11	PC	Connection for constant current level programming.
13	Vccs	Positive output voltage signal.
14	PC-DIS	Short connecting between Vccs (pin13) and PC-DIS (pin14) if output current programming function is not activated.

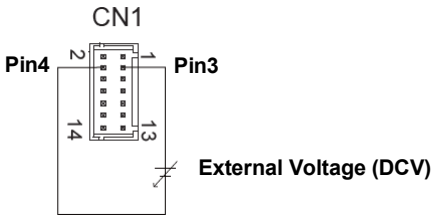
Function Manual

1. **Output Voltage Programming** (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.

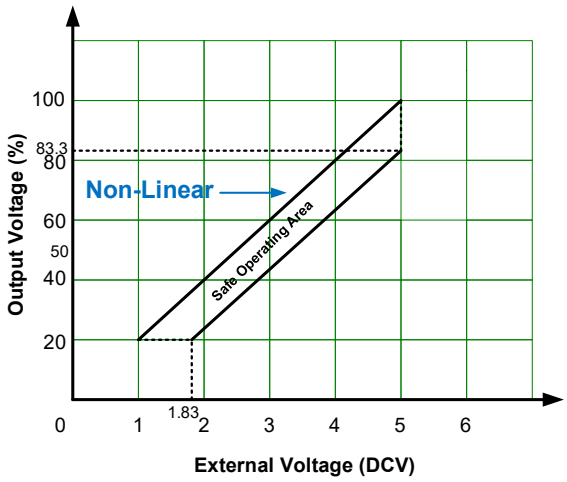


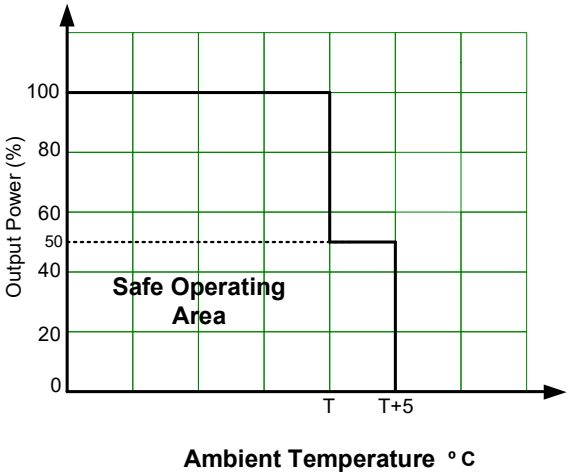


Caution:
By factory default, the Output Voltage Programming is not activated, Pin1(PV) and Pin2(PV-DIS) are shorted by connector.
Whenever this function is not needed to activate, as assumed in other sections diagrams, please keep Pin1(PV) and Pin2(PV-DIS) shorted ; otherwise the power supply will have no output.
When this function is needed to activate, please keep Pin1(PV) and Pin2(PV-DIS) opened.

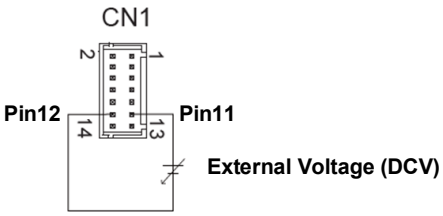


2. **Output Current Programming** (PC / remote current programming / dynamic current trim)
   The output current can be trimmed to 20~100% of the rated current by applying external voltage.





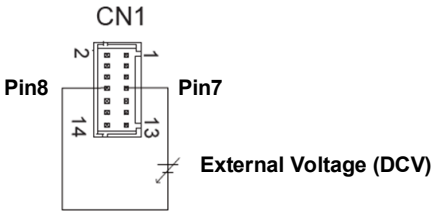
Caution:
By factory default, the Output Current Programming is not activated, Pin13(VCCS) and Pin14(PC-DIS) are shorted by connector.
Whenever this function is not needed to activate, as assumed in other sections diagrams, please keep Pin13(VCCS) and Pin14(PC-DIS) shorted ; otherwise, the power supply will have no output.
When this function is needed to activate, please keep Pin13(VCCS) and Pin14(PC-DIS) opened.
Covered by over temperature protection, auto de-rating function works under operation in PC mode.

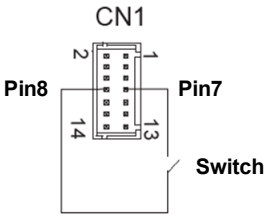


3. Remote ON-OFF Control

The power supply can be turned ON/OFF individually or along with other units in parallel by using the "Remote ON-OFF" function.

Remote ON-OFF	Power Supply Status
"Low" <0~0.5V or short Pin7 to Pin8	ON
"Hi" >2~5V or open Pin7 to Pin8	OFF





4. DC OK Signal

DC OK signal is a TTL level signal.
The maximum sink current is 10mA and the maximum external voltage is 5.5V.

DC OK Signal	Power Supply Status
"Low" <-0.1 ~ 0.5V	ON
"Hi" >4.5 ~ 5.5V	OFF