# 1500W Conduction Cooling with PFC Switching Supply UHP-1500 series

UL62368-1 TPTC004 IEC62368-1

Household Automate Industrial Security Network Telecom

## Features

- Slim and Low profile (41mm)
- Fanless and conduction-cooled design
- Built-in active PFC function
- -30~+70℃ working temperature
- Output voltage and constant current level programmable
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Built-in remote ON-OFF control
- DC OK active signal
- Operating altitude up to 5000 meter (Note.7)
- LED indicator for power on
- Optional PMBus or CANBus protocol
- 5 years warranty

## Applications

- Industrial automation machinery
- Industrial control system
- Mechanical and electrical equipment
- Electronic instruments, equipment or apparatus
- Test and measurement instrument
- Laser related machine
- Charging related equipment
- Household appliances
- Power Sourcing Equipment of PoE (48V model: DC O/P range 48~57.6V)

## Description

UHP-1500 series is a 1500W single-output slim type power supply with 41mm of low profile design. Adopting the full range 90~264VAC input, the entire series provides an output voltage line of 24V and 48V. In addition to the high efficiency up to 96%, that the whole series operates from -30℃ ~ 70℃ under air convection without fan. UHP-1500 has the complete protection functions and 5G anti-vibration capability; It is complied with the international safety regulations such as TUV EN62368-1, UL62368-1, and the design refers to EN61558-1 and EN60335-1. UHP-1500 series serves as a high performance power supply solution for various industrial applications.

## Model Encoding

UHP - 1500 - 24 □

- □ — Communication protocol option
- 24 — Output voltage(24V/48V)
- 1500 — Rated wattage
- UHP — Series name

| Type | Communication Protocol | Note |
|---|---|---|
| Blank | None | In Stock |
| PM | PMBus protocol | By request |
| CAN | CANBus protocol | By request |

## SPECIFICATION

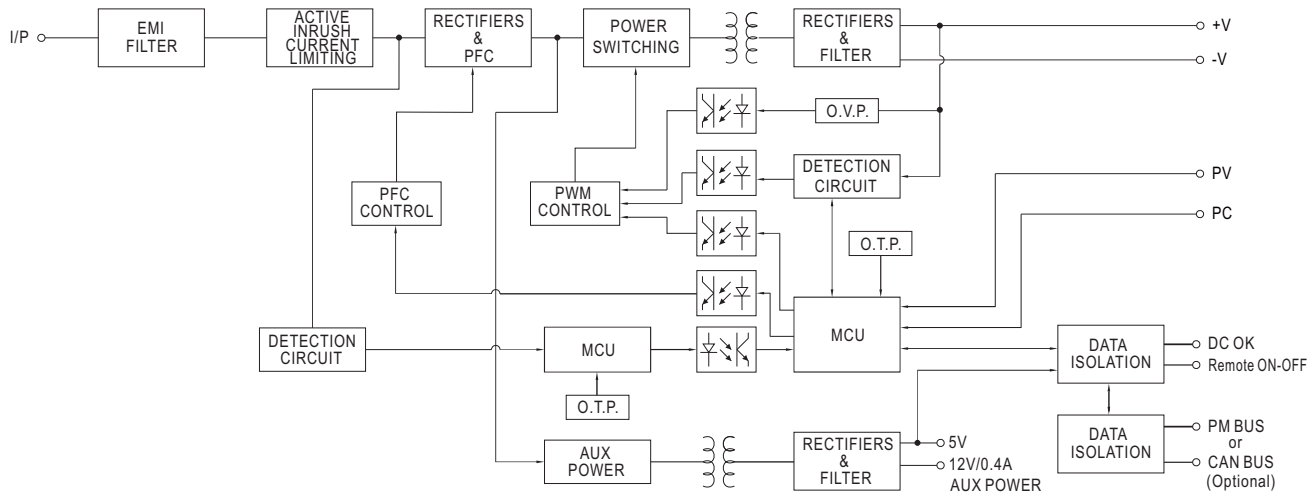
| MODEL | | UHP-1500-24 | UHP-1500-48 |
|---|---|---|---|
| OUTPUT | DC VOLTAGE | 24V | 48V |
| | RATED CURRENT | 62.5A | 31.5A |
| | RATED POWER | 1500W | 1512W |
| | RIPPLE & NOISE (max.) Note.2 | 240mVp-p | 350mVp-p |
| | VOLTAGE ADJ. RANGE | By built-in potentiometer, SVR | |
| | | 24~28.8V | 48~57.6V |
| | VOLTAGE TOLERANCE Note.3 | ±1.0% | ±1.0% |
| | LINE REGULATION | ±0.5% | ±0.5% |
| | LOAD REGULATION | ±0.5% | ±0.5% |
| | SETUP, RISE TIME | 1800ms, 60ms/230VAC at full load | |
| | HOLD UP TIME (Typ.) | 16ms/230VAC at 75% load 10ms/230VAC at full load | |
| INPUT | VOLTAGE RANGE Note.4 | 90 ~ 264VAC 250 ~ 370VDC | |
| | FREQUENCY RANGE | 47 ~ 63Hz | |
| | POWER FACTOR (Typ.) | PF≥0.95/230VAC at full load | |
| | EFFICIENCY (Typ.) | 95% | 96% |
| | AC CURRENT (Typ.) | 8A/230VAC | |
| | INRUSH CURRENT (Typ.) | Cold start 60A/230VAC | |
| | LEAKAGE CURRENT | <0.75mA / 240VAC | |
| PROTECTION | OVERLOAD | 105~125% rated output power | |
| | | Protection type : Constant current limiting, unit will shutdown after 5 sec, re-power on to recover. | |
| | SHORT CIRCUIT | Constant current limiting, unit will shutdown after 5 sec, re-power on to recover. | |
| | OVER VOLTAGE | 30 ~ 35V | 60 ~ 67V |
| | | Protection type :Shut down O/P voltage,re-power on to recover | |
| | OVER TEMPERATURE | Protection type :Shut down O/P voltage, recovers automatically after temperature goes down | |
| FUNCTION | OUTPUT VOLTAGE PROGRAMMABLE(PV) Note 5 | Adjustment of output voltage is allowable to 50 ~ 120% of nominal output voltage<br>Please refer to the Function Manual. | |
| | OUTPUT CURRENT PROGRAMMABLE(PC) Note 5 | Adjustment of constant current level is allowable to 20 ~ 100% of rated current.<br>Please refer to the Function Manual. | |
| | REMOTE ON/OFF CONTROL | Power ON : Short circuit Power OFF : Open circuit | |
| | AUXILIARY POWER | 12V @ 0.4A tolerance ±10%, ripple=150mVp-p | |
| | DC-OK SIGNAL | The TTL signal out, PSU turn on = 4.4 ~ 5.5V ; PSU turn off = -0.5 ~ 0.5V. Please refer to the Function Manual. | |
| 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, 5G 10min./1cycle, 60min. each along X, Y, Z axes | |
| SAFETY & EMC (Note.6) | SAFETY STANDARDS | UL62368-1,TUV EN62368-1, EAC TP TC 004 approved; Design refers to EN61558-1, EN60335-1(by request) | |
| | WITHSTAND VOLTAGE | I/P-O/P:3.75KVAC I/P-FG:2KVAC O/P-FG:1.25KVAC | |
| | 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 | EN55032 (CISPR32) / Class B |
| | | Radiated | EN55032 (CISPR32) / Class A |
| | | Harmonic Current | EN61000-3-2 / Class A |
| | | Voltage Flicker | EN61000-3-3 / ----- |
| | EMC IMMUNITY | EN55024 , EN61000-6-2 | |
| | | **Parameter** | **Standard** / **Test Level / Note** |
| | | ESD | EN61000-4-2 / Level 3, 8KV air ; Level 2, 4KV contact |
| | | Radiated | EN61000-4-3 / Level 3 |
| | | EFT / Burst | EN61000-4-4 / Level 3 |
| | | Surge | EN61000-6-2 / 2KV/Line-Line 4KV/Line-Earth |
| | | Conducted | EN61000-4-6 / Level 3 |
| | | Magnetic Field | EN61000-4-8 / Level 4 |
| | | Voltage Dips and Interruptions | EN61000-4-11 / >95% dip 0.5 periods, 30% dip 25 periods, >95% interruptions 250 periods |
| OTHERS | MTBF | 181.47K hrs min. Telcordia SR-332 (Bellcore) ; 56.72K hrs min. MIL-HDBK-217F (25℃) | |
| | DIMENSION | 290*140*41mm (L*W*H) | |
| | PACKING | 2.51kg ; 6pcs/16.06kg/0.86CUFT | |

**NOTE**

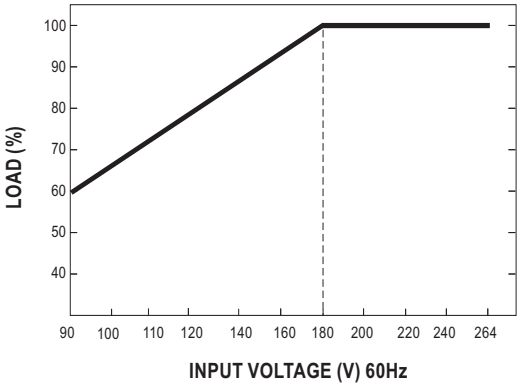
1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.
3. Tolerance :includes set up tolerance, line regulation and load regulation.
4. Derating may be needed under low input voltages. Please check the derating curve for more details.
5. PV/PC functions when users do not use SVR.
6. 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 http://www.meanwell.com)
7. 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).

## ■ BLOCK DIAGRAM

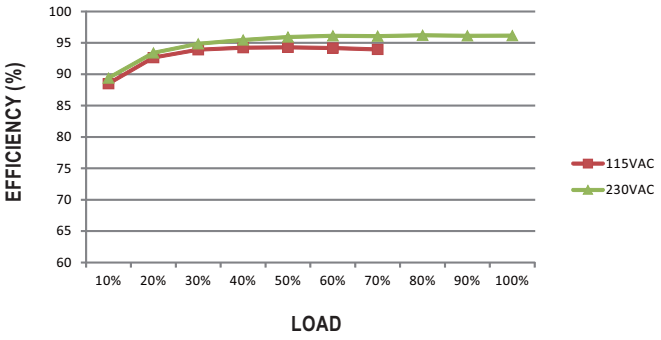
PFC fosc : 70KHz
PWM fosc : 55KHz



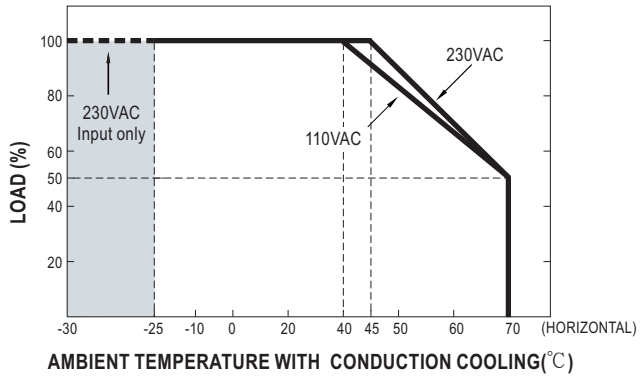

## ■ STATIC CHARACTERISTIC

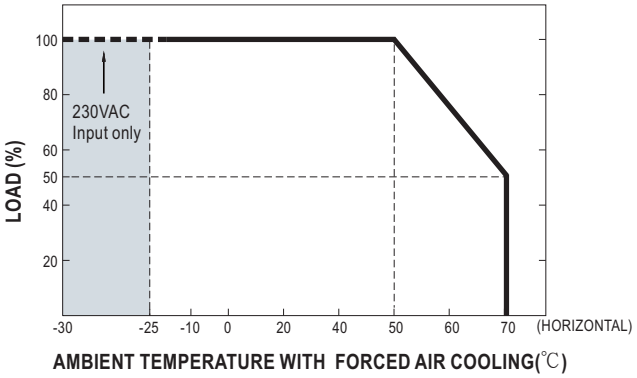


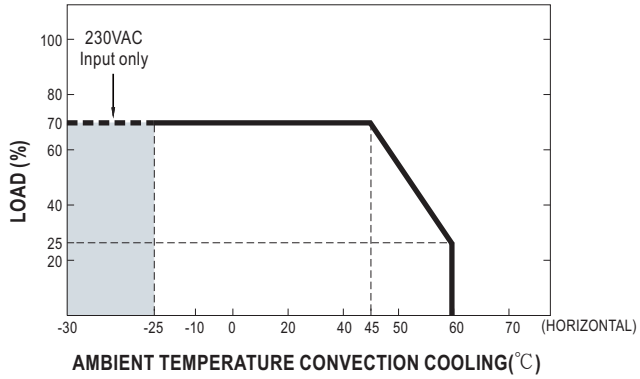

## ■ EFFICIENCY VS LOAD (48V MODEL)

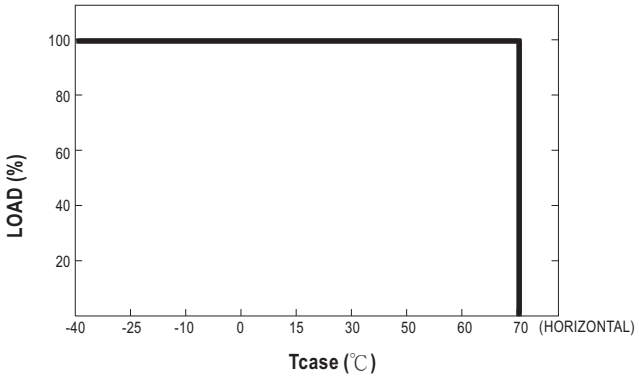



## ■ DERATING CURVE



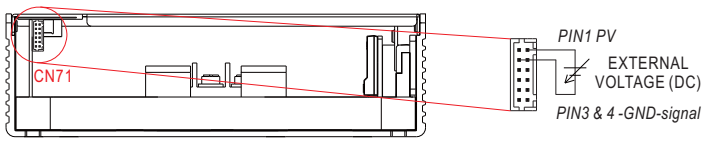



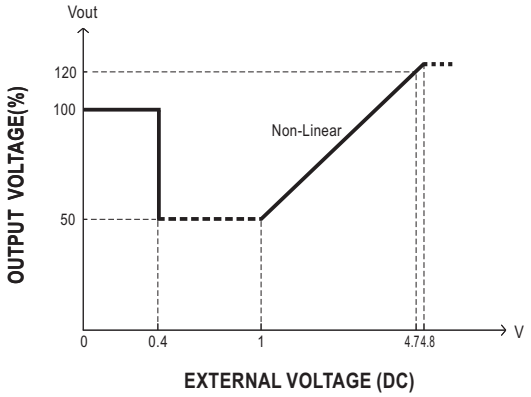



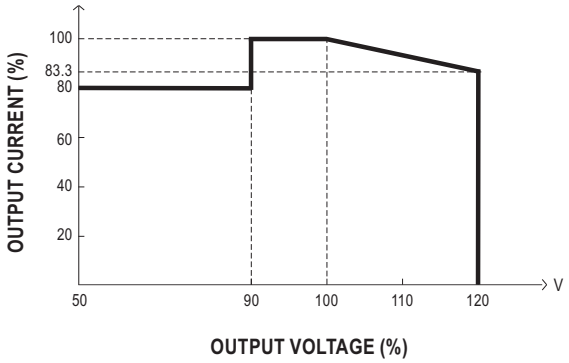
## ■ FUNCTION MANUAL

**1.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.



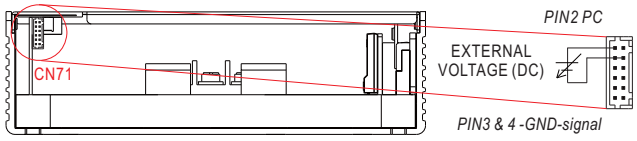




◎ The rated current should change with the Output Voltage Programming accordingly.

**2.Constant Current Programming (or, PC / remote current programming / dynamic current trim)**

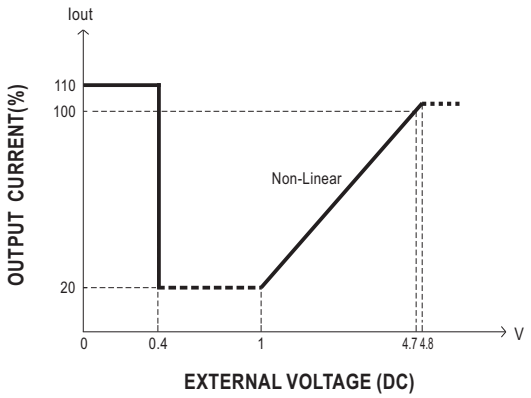
※ The output current can be trimmed to 20~100% of the rated current by applying EXTERNAL VOLTAGE.

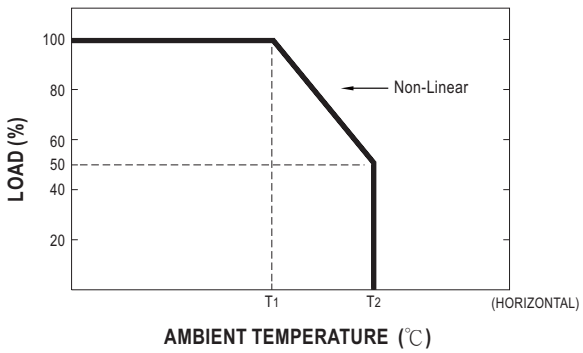



※ Covered by over temperature protection, auto de-rating function works under operation either in PC mode or under control by communication protocol.

$T_{1(Typ.)}$: Maximum ambient temperature of full load.

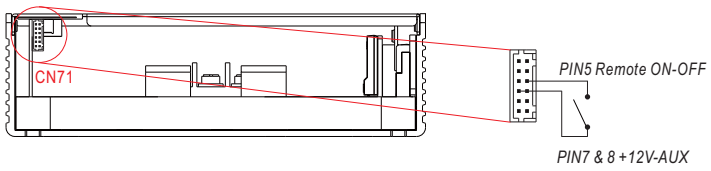
$T_{2(Typ.)}$: T1+5℃.



### 3.Remote ON-OFF Control

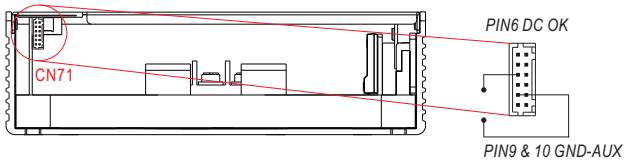
The power supply can be turned ON/OFF individually or along with other units in parallel by using the "Remote ON-OFF" function.




| Remote ON-OFF | Power Supply Status |
|---|---|
| Short circuit | ON |
| Open circuit | 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 5.6V.



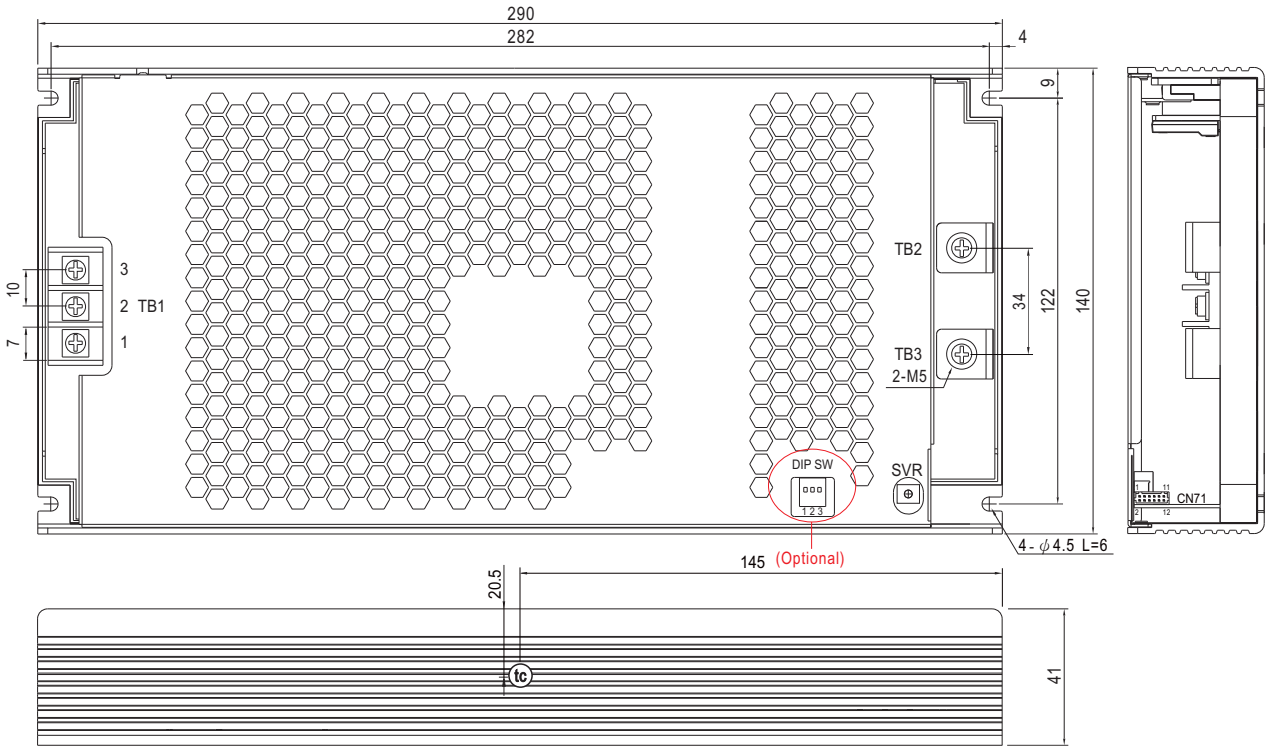

| DC-OK signal | Power Supply Status |
|---|---|
| “High” >4.4~5.5V | ON |
| “Low” <-0.5~0.5V | OFF |

### 5.PMBus Communication Interface

UHP-1500 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.

## ■ MECHANICAL SPECIFICATION

Case No.277A Unit:mm




• ⓣc : Max. Case Temperature

AC Input Terminal(TB1) Pin NO. Assignment

| Pin No. | Assignment | Terminal | Max mounting torque |
|---|---|---|---|
| 1 | AC/L | DECA T25 | 18Kgf-cm |
| 2 | AC/N | | |
| 3 | ⏚ | | |

DC Output Terminal(TB2,TB3) Pin NO. Assignment

| Pin No. | Assignment | Terminal | Max mounting torque |
|---|---|---|---|
| TB2 | +V | (MW) HS455A | 8Kgf-cm |
| TB3 | -V | | |

※DIP SW:

| Pin No. | Function | Description |
|---|---|---|
| 1 | A0 | PMBus / CANBus interface address switch. |
| 2 | A1 | |
| 3 | A2 | |

※Control Pin No. Assignment(CN71) : HRS DF11-12DP-2DS or equivalent


| Mating Housing | HRS DF11-12DS or equivalent |
|---|---|
| Terminal | HRS DF11-**SC or equivalent |

| Pin No. | Function | Description |
|---|---|---|
| 1 | PV | Connection for output voltage programming.(Note1) |
| 2 | PC | Connection for constant current level programming.(Note.1) |
| 3,4 | GND (Signal) | Negative output voltage signal. |
| 5 | Remote ON-OFF | The unit can turn the output ON/OFF by dry contact between Remote ON/OFF and 12-AUX.(Note.2)<br>Short (10.8 ~ 13.2V) : Power ON ; Open(0 ~ 0.5V) : Power OFF ; The maximum input voltage is 13.2V |
| 6 | DC-OK | Low (-0.5 ~ 0.5V) : When the Vout≦80%±6%.<br>High (4.4 ~ 5.5V) : When Vout≧80%±6%.<br>The maximum sourcing current is 10mA and only for output.(Note.2) |
| 7,8 | +12V-AUX | Auxiliary voltage output, 10.6~13.2V, referenced to GND-AUX (pin3 & 4).<br>The maximum load current is 0.4A. This output is not controlled by "Remote ON-OFF". |
| 9,10 | GND-AUX | Auxiliary voltage output GND.<br>The signal return is isolated from the output terminals (+V & -V). |
| 11 | 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) |
| 12 | 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) |

Note1: Non-isolated signal, referenced to [GND(signal)].
Note2: Isolated signal, referenced to GND-AUX.

**Operate with additional aluminum plate**

In order to meet the"Derating Curve"and the "Static Characteristics" ,UHP-1500 series must be installed onto an aluminum plate(or the cabinet of the same size) on the bottom.The size of the suggested aluminum plate is shown as below. And for optimizing thermal performance, the aluminum plate must have an even and smooth surface (or coated with thermal grease), and UHP-1500 series must be firmly mounted at the center of the aluminum plate.