

800W FAN COOLED

AC-DC POWER SUPPLIES

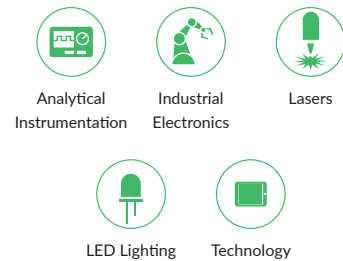
The HDS800 series offers users both output voltage and output current programming (0 – 105%) via resistance, voltage or I²C bus in a very high efficiency, high power density 800W chassis mount package. Measuring just 9.8" x 1.6" x 5.0", the HDS800 also features active current sharing, remote On/Off, remote sense and a power OK signal. The standby output is available whenever the mains supply is present and can be user selected as either 5V at 0.5A or 9V at 0.3A.



Features

- High efficiency up to 92%
- 1U profile, high power density
- Programmable output voltage (0-105%)
- Programmable output current (0-105%)
- Parallel operation
- Fully featured signals and controls
- 3 year warranty

Applications



Dimensions

9.8" x 1.6" x 5.0" (248.92 x 40.64 x 127.00mm)

Models & Ratings

| Model Number | Output Voltage V1 | Output Current | | Efficiency ⁽²⁾ | Ripple & Noise | Output Power |
|--------------|-------------------|----------------|-------|---------------------------|----------------|--------------|
| | | Min | Max | | | |
| HDS800PS12 | 12.0VDC | 0.0A | 66.7A | 89% | 120mV | 800W |
| HDS800PS15 | 15.0VDC | 0.0A | 53.4A | 90% | 150mV | 800W |
| HDS800PS24 | 24.0VDC | 0.0A | 33.5A | 92% | 240mV | 800W |
| HDS800PS30 | 30.0VDC | 0.0A | 26.7A | 92% | 300mV | 800W |
| HDS800PS36 | 36.0VDC | 0.0A | 22.3A | 92% | 360mV | 800W |
| HDS800PS48 | 48.0VDC | 0.0A | 16.7A | 92% | 480mV | 800W |
| HDS800PS60 | 60.0VDC | 0.0A | 13.4A | 92% | 600mV | 800W |

Notes:

1. Ripple and noise is measured with 20MHz bandwidth and using 12" twisted pair-wire terminated with 0.1μF & 47μF capacitors in parallel.
2. Measured with 230VAC input and full load.

Input

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|-----------------------|-------------------------------|-----------|---------|-------|--------------------------------|
| Input Voltage | 90 | | 264 | VAC | 127-370VDC, See derating curve |
| Input Frequency | 47 | | 63 | Hz | |
| Power Factor | | 0.98/0.95 | | | 115/230VAC full load |
| Input Current | | | 9.3/3.7 | A | 100/240VAC |
| Inrush Current | | | 30/60 | A | 115/230VAC |
| Earth Leakage Current | | | 1.0 | mA | 264VAC/60Hz |
| Input Protection | T or F15A/250 V internal fuse | | | | |

Output

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|----------------------------------|---|---------|---------|----------|--------------------------------|
| Output Voltage | 12 | | 60 | VDC | See Models & Ratings table |
| Output Trim | | ±5.0 | | % | By potentiometer |
| Output Voltage Program | 0 | | 105 | % | Of rated output |
| Output Current Program | 0 | | 105 | % | Of rated output |
| Initial Set Accuracy | | ±1 | | % | |
| Voltage Tolerance ⁽¹⁾ | | | ±2 | % | Of rated output ⁽¹⁾ |
| Current Tolerance ⁽¹⁾ | | | ±3 | % | Of rated output ⁽¹⁾ |
| Minimum Load | No minimum load required | | | | |
| Start Up Delay | | | 800 | ms | |
| Start Up Rise Time | | | 100 | ms | At full load |
| Hold Up Time | 8 | | | ms | |
| Line Regulation | | | ±1 | % | |
| Load Regulation | | | ±1 | % | V1, 0-100% load |
| | | | ±3 | % | Standby, 0-100% load |
| Transient Response | | | 1 | % | For a 25% step load change |
| Ripple & Noise | | 150 | | mV pk-pk | |
| Overvoltage Protection | Tracks output voltage. See application notes, recycle AC to reset | | | | |
| Overtemperature Protection | Primary and secondary heatsinks monitored. Output shuts down, auto recovers | | | | |
| Overload Protection | 105 | | | % | Rated power, constant current |
| Short Circuit Protection | Auto recovery | | | | |
| Temperature Coefficient | | ±0.02 | | %/°C | 0-50°C |
| Remote Sense | Compensates for 0.5V max voltage drop If remote sense is not required, local sense must be used | | | | |
| Enable | Output must be enabled. See application notes, power supply is shipped with enable links fitted | | | | |
| Current Share | 5 supplies can share within 5% | | | | |
| Standby Output | 5V at 0.5A, present whenever AC is applied (9V at 0.3A, user selectable, by connecting 'VSET', Pin 8 of CN2 to 'GND') | | | | |

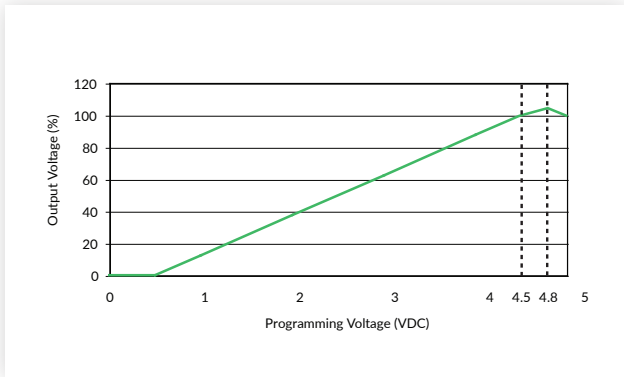
Notes:

1. Tolerance includes setup time tolerance, line regulation and load regulation.

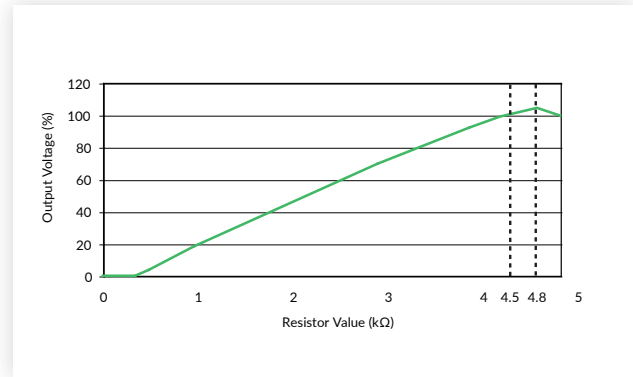
Output

Output Voltage Programming

Via External Voltage

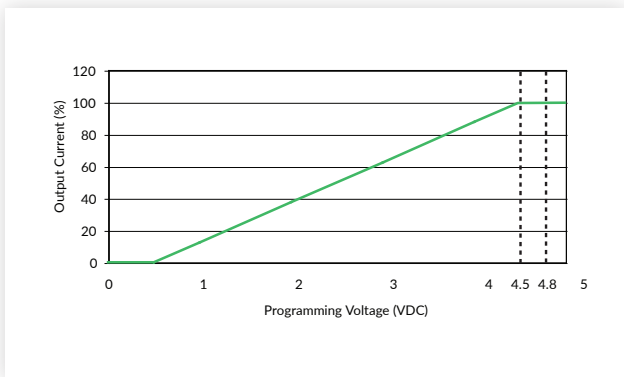


Via External Resistor

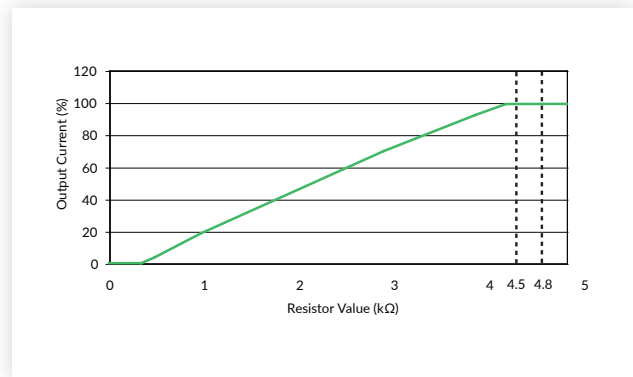


Output Current Programming

Via External Voltage



Via External Resistor



General

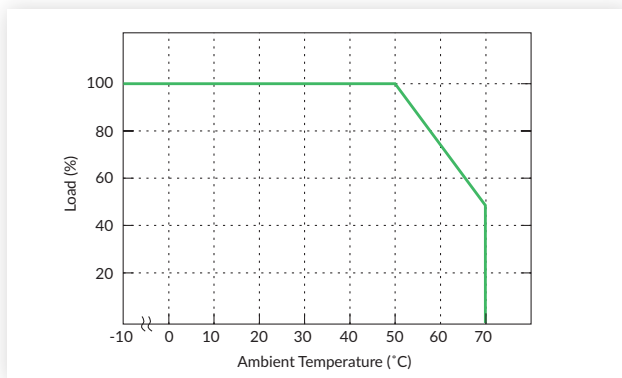
| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|----------------------------|---------|-------------|---------|-------------------|--|
| Efficiency | 89 | | 92 | % | See Models and Ratings |
| Isolation: Input to Output | 3000 | | | VAC | |
| Input to Ground | 1500 | | | VAC | |
| Output to Ground | 500 | | | VAC | |
| Switching Frequency | 40 | 65 | 200 | kHz | PFC converter |
| | | | | | PWM, variable |
| Power Density | | | 10.1 | W/in ³ | |
| Signals and Controls | | | | | Enable, Current Share, V Program, I Program, 5V Standby, PWM Switching |
| Mean Time Between Failure | | 90 | | khrs | MIL-HDBK-217F, 25°C GB |
| Weight | | 3.82 (1.75) | | lb (kg) | |

Environmental

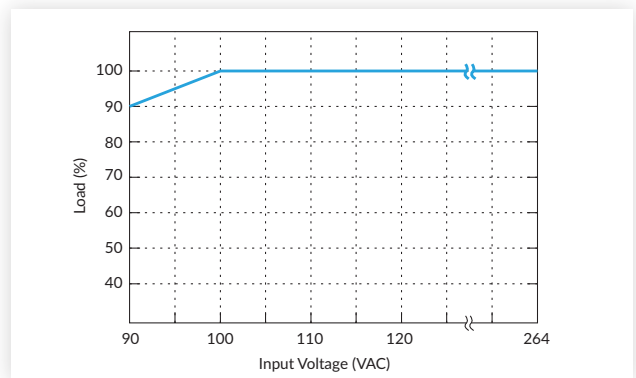
| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|-----------------------|---|---------|---------|-------|---|
| Operating Temperature | -20 | | +70 | °C | Derate linearly from 100% load at 50°C to 50% load at 70°C |
| Storage Temperature | -40 | | +85 | °C | |
| Cooling | Internal fan fitted, speed increases with load and internal temperature | | | | |
| Operating Humidity | 20 | | 90 | %RH | Non-condensing |
| Storage Humidity | 10 | | 95 | | |
| Vibration | | | 2 | g | 10-500 Hz, 10 min/cycle, 60 min period for each axis, compliant to IEC68-2-6, IEC 68-2-64 |

Derating Curve

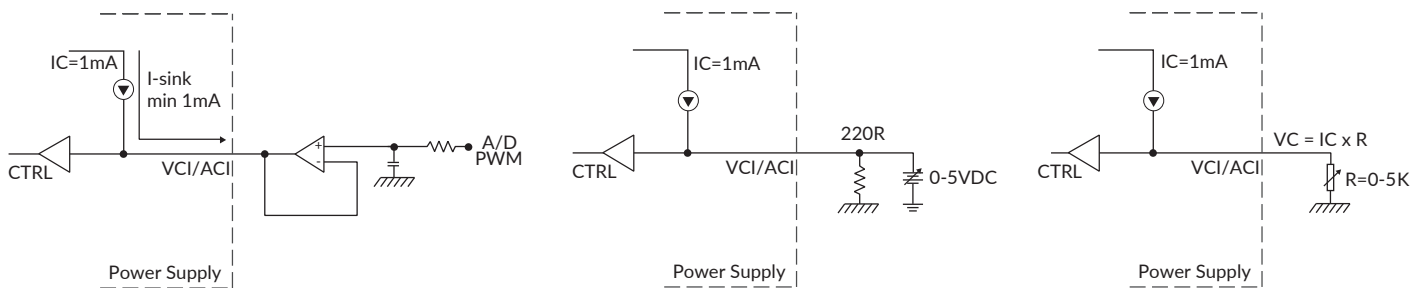
Thermal Derating Curve



Input Derating Curve



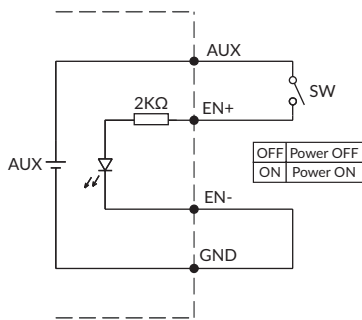
External Programming Voltage Connection



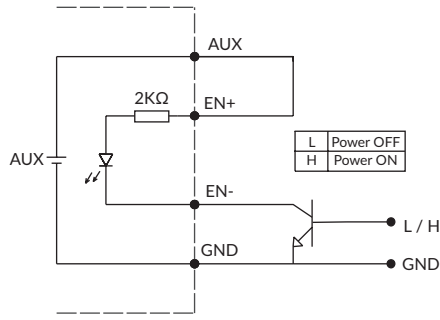
Signals & Controls

| LED Status | Output Status |
|--------------------------|-------------------------------------|
| Solid (Green) | DC Output OK |
| Solid (Orange) | DC Output OK in remote control mode |
| Slow Blink (Green) | Output Not Enabled |
| Fast Blink (Red) | Over Voltage |
| Solid (Red) | Over Loaded |
| Slow Blink (Red) | Over Temperature |
| Intermittent Blink (Red) | Fan Fail |
| Short & Long Blink (Red) | AUX Standby Failure |

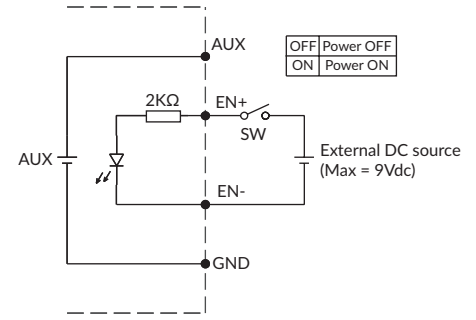
Remote Enable



(A) Using internal auxiliary standby



(B) Using external transistor



(C) Using external voltage source

*GND shown in above diagram is referring to the GND of CN2, not the grounding from output power (NEG (-))

EMC: Emissions

| Phenomenon | Standard | Test Level | Notes & Conditions |
|-------------------|-------------|------------|--------------------|
| Conducted | EN55032 | Class A | |
| Radiated | EN55032 | Class A | |
| Harmonic Currents | EN61000-3-2 | Class A | |
| Voltage Flicker | EN61000-3-3 | | |

EMC: Immunity

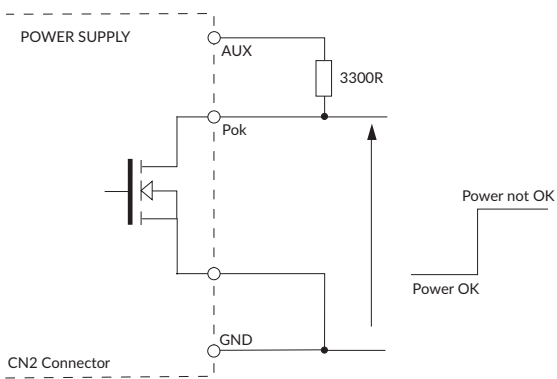
| Phenomenon | Standard | Test Level | Criteria | Notes & Conditions |
|------------------------|-------------|----------------------|----------|----------------------------------|
| ESD Immunity | EN61000-4-2 | 2/3 | A | ±4kV contact, ±8kV air discharge |
| Radiated | EN61000-4-3 | 3 | A | 3V/m |
| EFT/Burst | EN61000-4-4 | 2 | A | |
| Surges | EN61000-4-5 | Installation class 3 | A | |
| Conducted | EN61000-4-6 | 3 | A | 3V |
| Magnetic Field | EN61000-4-8 | 3 | A | 1A/m |
| Dips and Interruptions | EN55024 | Dip 30% 500ms | A | |
| | | Int >95% 10ms | A | |
| | | Int >95% 5000ms | B | |

Safety Approvals

| Certification | Standard | Notes & Conditions |
|---------------|------------------------------------|------------------------|
| CB | IEC62368-1 | Information Technology |
| UL | UL62368-1, CSA C22.2 No 62368-1-14 | |
| TUV | EN62368-1 | |
| CE | Meets all applicable directives | |
| UKCA | Meets all applicable legislation | |

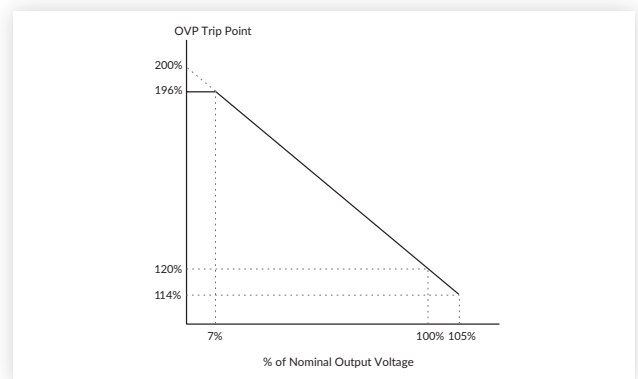
Application Notes

POK Signal



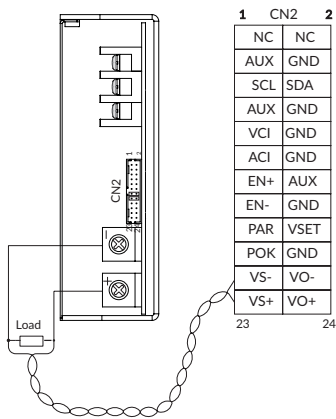
Open drain signal, low when PSU turns on
 Maximum sink current: 20mA
 Maximum drain voltage: 40V

OVP Setting

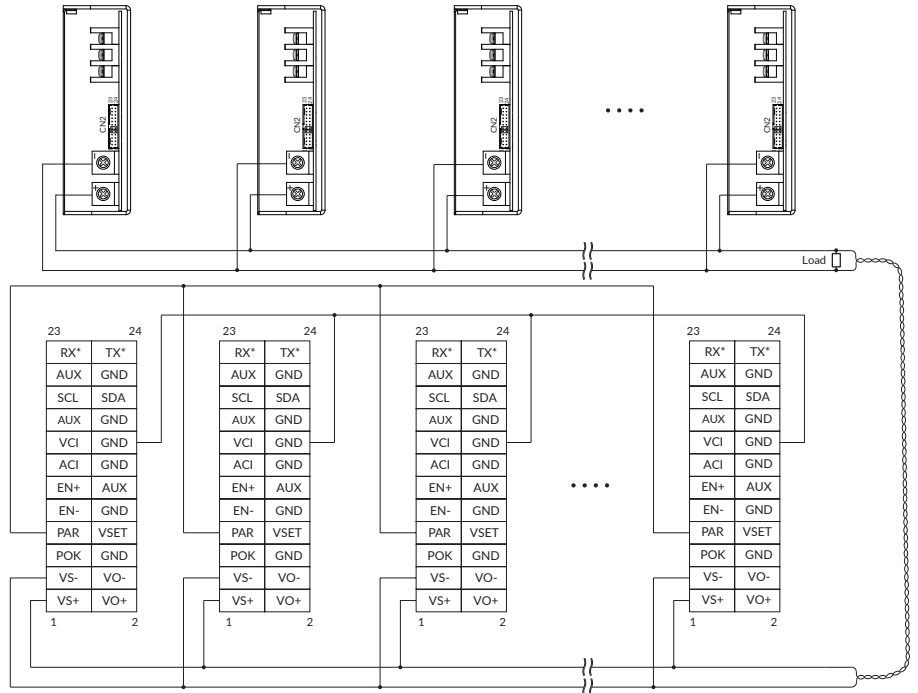


Application Notes

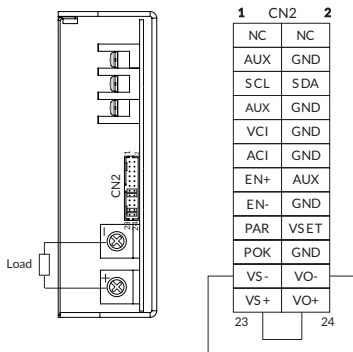
Remote Sense



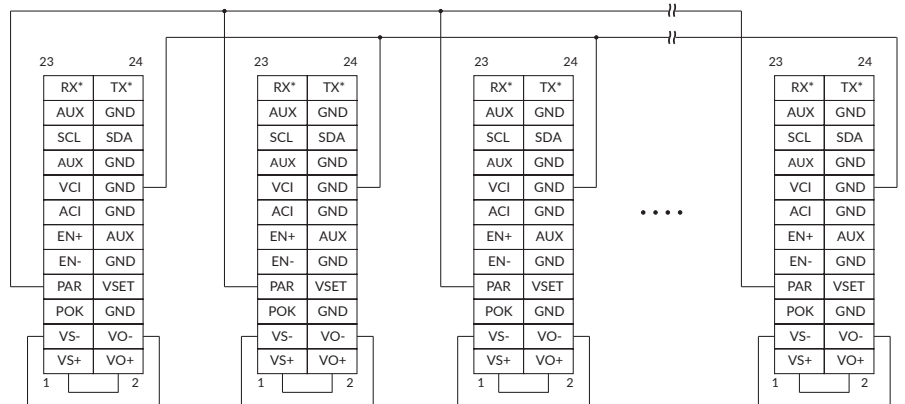
Current Share with Remote Sensing



Local Sense



Current Share with Local Sensing



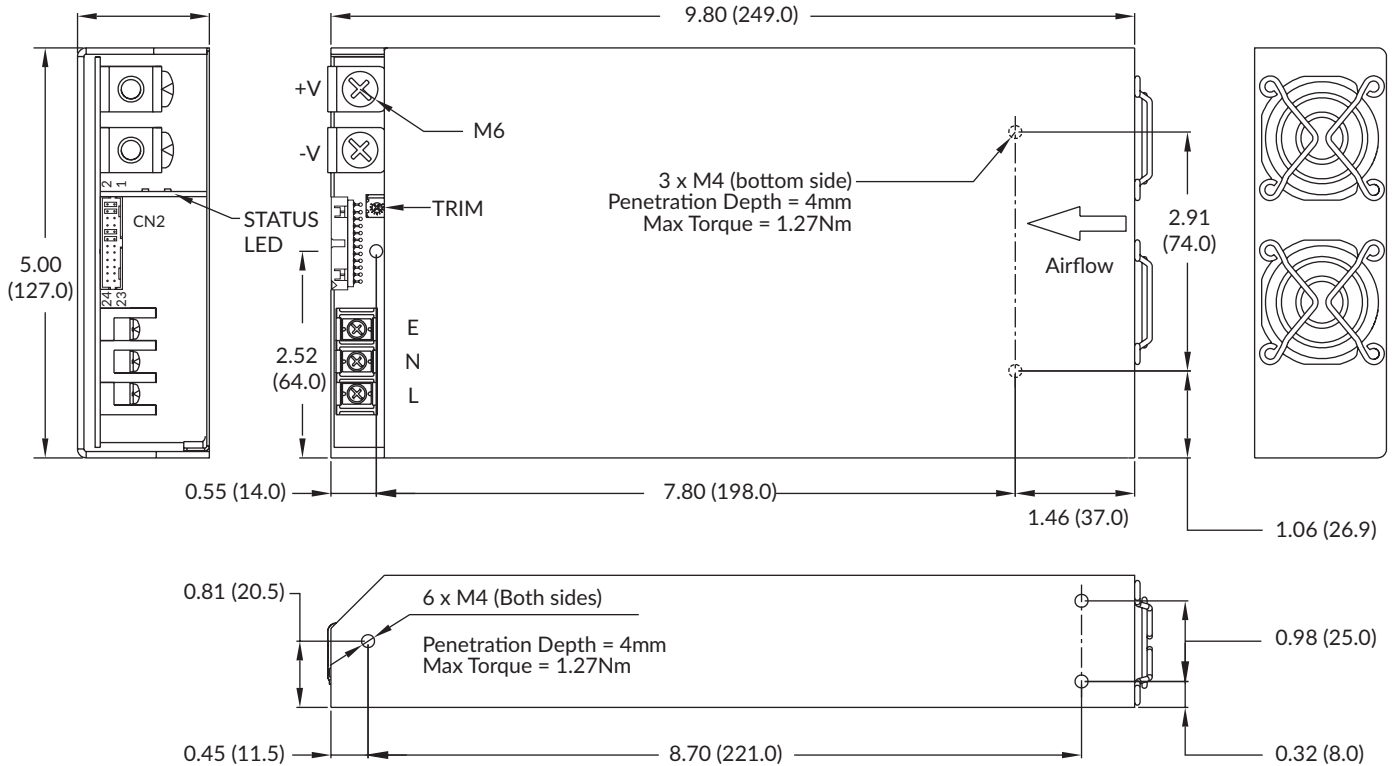
Must be used if remote sense is not required.

Notes:

In parallel operation, it is possible that only one unit will operate if the load is less than 5% of the combined rated output load.

*Pin 23 and 24, only usable with driver board "KIT-RS232-X" or "KIT-RS485-1".

Mechanical Details



CN2 Control Pin Connections

| Pin | Function | Description | Pin | Function | Description | Pin | Function | Description |
|-----|----------|----------------------------------|-----|----------|------------------------------------|-----|----------|--------------------------------------|
| 1 | VS+ | Remote Sense (+) | 9 | EN- | Inhibit On/Off (-) | 17 | AUX | +5V/0.5A or +9V/0.3A Standby power |
| 2 | VO+ | Positive Output Voltage | 10 | GND | Ground | 18 | GND | Ground |
| 3 | VS- | Remote Sense (-) | 11 | EN+ | Inhibit On/Off (+) | 19 | SCL** | I ² C Serial Clock |
| 4 | VO- | Negative Output Voltage | 12 | AUX | +5V/0.5A or +9V/0.3A Standby power | 20 | SDA** | I ² C Serial Data |
| 5 | POK | Power OK | 13 | ACI | I Program | 21 | AUX | +5V/0.5A or +9V/0.3A Auxiliary power |
| 6 | GND | Ground | 14 | GND | Ground | 22 | GND | Ground |
| 7 | PAR | Parallel Operation Current Share | 15 | VCI | V Program | 23 | RX* | Receive |
| 8 | VSET | AUX Output Setting | 16 | GND | Ground | 24 | TX* | Transmit |

Mating connector CN2: Manufacturer :JST
Housing: PHDR-24VS Contacts: SPHD-002T-P0.5 (28-24 AWG)

Notes:

1. All dimensions are in inches (mm).
2. Weight 3.85lb (1.75kg)

3. Maintain 2" (50mm) clear space at each end.

*Only usable with driver board "KIT-RS232-X" or "KIT-RS485-1"