

## HDS800 Series



- 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 & Controls
- 3 Year Warranty

## Specification

## Input

|                       |  |
|-----------------------|--|
| Input Voltage         | • 90-264 VAC (127-370 VDC), see derating curve |
| Input Frequency       | • 47-63 Hz                                     |
| Input Current         | • 9.3 A/3.7 A typical at 100/240 VAC           |
| Inrush Current        | • 30.0 A/60.0 A typical at 115/230 VAC         |
| Power Factor          | • 0.98/0.95, typical at 115/230 VAC full load  |
| Earth Leakage Current | • <1.0 mA at 264 VAC/60 Hz                     |
| Input Protection      | • T or F15 A/250 V internal fuse               |

## Output

|                            |   |
|----------------------------|---|
| Output Voltage             | • See model table   |
| Output Trim                | • $\pm 5.0\%$ by potentiometer  |
| Output Voltage Program     | • 0-105% of rated output  |
| Output Current Program     | • 0-105% of rated output  |
| Initial Set Accuracy       | • $\pm 1\%$   |
| Minimum Load               | • No minimum load required  |
| Start Up Delay             | • 800 ms maximum  |
| Start Up Rise Time         | • 100 ms maximum at full load   |
| Hold Up Time               | • 8 ms minimum  |
| Line Regulation            | • $\pm 1\%$   |
| Load Regulation            | • V1: $\pm 1\%$ , standby output: $\pm 3\%$   |
| Transient Response         | • <1% for a 25% step load change  |
| Ripple & Noise             | • 150 mV pk-pk all voltages, see note 1   |
| 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    | • $\pm 0.02\%/^{\circ}\text{C}$ (0-50 $^{\circ}\text{C}$ )  |
| Remote Sense               | • Compensates for 0.5 V max voltage drop<br>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             | • 5 V at 0.5 A, present whenever AC is applied (9V at 0.3A, user selectable, by connecting 'VSET', Pin 8 of CN2 to 'GND') |

## General

|                     |  |
|---------------------|--|
| Efficiency          | • See model table  |
| Isolation           | • 3000 VAC Input to Output, 1500 VAC Input to Ground, 500 VAC Output to Ground |
| Switching Frequency | • PFC 65 kHz typical, PWM 40-200 kHz variable                                  |
| Power Density       | • 10.1 W/in <sup>3</sup>   |
| Signals & Controls  | • Enable, Current Share, V Program, I Program, 5 V Standby, PWM switching      |
| MTBF                | • 90 kHrs to MIL-HDBK-217F at 25 $^{\circ}\text{C}$                            |

## Environmental

|                       |  |
|-----------------------|--|
| Operating Temperature | • -20 $^{\circ}\text{C}$ to 70 $^{\circ}\text{C}$ , derate linearly from 100% load at 50 $^{\circ}\text{C}$ to 50% load at 70 $^{\circ}\text{C}$ |
| Cooling               | • Internal fan fitted. Speed increases with load and internal temperature  |
| Operating Humidity    | • 20-90% R.H. non-condensing   |
| Storage Temperature   | • -40 $^{\circ}\text{C}$ to +85 $^{\circ}\text{C}$   |
| Storage Humidity      | • 10-95% R.H.  |
| Vibration             | • 10-500 Hz, 2g 10 min/cycle, 60 min period for each axis. Compliant to IEC68-2-6, IEC 68-2-64   |

## EMC &amp; Safety

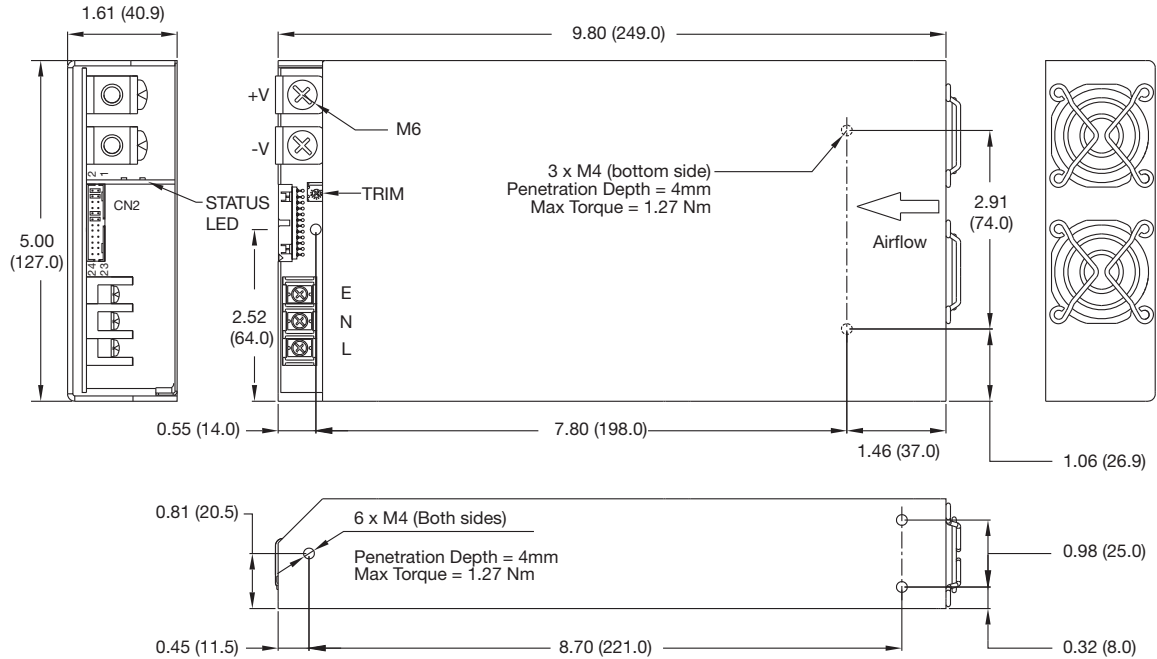
|                      |  |
|----------------------|--|
| Emissions            | • EN55032 class A conducted & radiated   |
| Harmonic Currents    | • EN61000-3-2 class A  |
| Voltage Flicker      | • EN61000-3-3  |
| ESD Immunity         | • EN61000-4-2, $\pm 4$ kV contact, $\pm 8$ kV air discharge, Perf Criteria A   |
| Radiated Immunity    | • EN61000-4-3, 3 V/m, Perf Criteria A  |
| EFT/Burst            | • EN61000-4-4, level 2, Perf Criteria A  |
| Surge                | • EN61000-4-5, installation class 3, Perf Criteria A   |
| Conducted Immunity   | • EN61000-4-6, 3 V, Perf Criteria A  |
| Magnetic Field       | • EN61000-4-8, 1 A/m, Perf Criteria A  |
| Dips & Interruptions | • EN55024, >95% 10 ms, 30% 500 ms, >95% 5000 ms, Perf Criteria A, A, B   |
| Safety Approvals     | • UL62368-1, CSA C22.2 No 62368-1-14, EN 62368-1, IEC62368-1:2014, CE (Meets all applicable directives), UKCA (Meets all applicable legislation) |

| Output Power | Output Voltage V1 | Output Current |        | Efficiency <sup>(2)</sup> | Model Number |
|--------------|-------------------|----------------|--------|---------------------------|--------------|
|              |                   | Min            | Max    |                           |              |
| 800 W        | 12.0 VDC          | 0.0 A          | 66.7 A | 89%                       | HDS800PS12   |
| 800 W        | 15.0 VDC          | 0.0 A          | 53.4 A | 90%                       | HDS800PS15   |
| 800 W        | 24.0 VDC          | 0.0 A          | 33.5 A | 92%                       | HDS800PS24   |
| 800 W        | 30.0 VDC          | 0.0 A          | 26.7 A | 92%                       | HDS800PS30   |
| 800 W        | 36.0 VDC          | 0.0 A          | 22.3 A | 92%                       | HDS800PS36   |
| 800 W        | 48.0 VDC          | 0.0 A          | 16.7 A | 92%                       | HDS800PS48   |
| 800 W        | 60.0 VDC          | 0.0 A          | 13.4 A | 92%                       | HDS800PS60   |

**Notes**

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

**Mechanical Details**



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

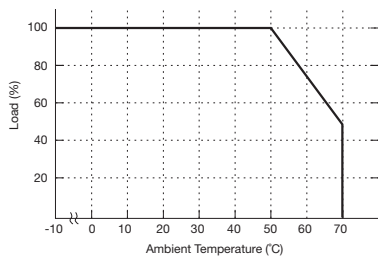
**Notes**

1. All dimensions are in inches (mm).
  2. Weight 3.85 lb (1.75 kg)
  3. Maintain 2" (50mm) clear space at each end.
- \*Only usable with driver board "KIT-RS232-X" or "KIT-RS485-1"

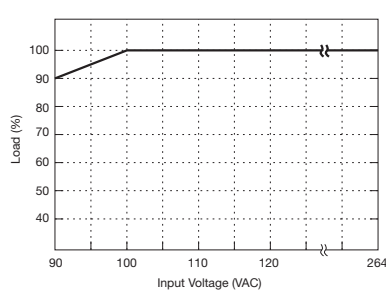
| CN2 Control Pin Connections |          |                                  |     |          |                                      |     |          |                                      |
|-----------------------------|----------|----------------------------------|-----|----------|--------------------------------------|-----|----------|--------------------------------------|
| Pin                         | Function | Description                      | Pin | Function | Description                          | Pin | Function | Description                          |
| 1                           | VS+      | Remote sense (+)                 | 9   | EN-      | Inhibit On/Off(-)                    | 17  | AUX      | +5V/0.5 A or +9V/0.3 A 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 <sup>2</sup> C Serial Clock        |
| 4                           | VO-      | Negative Output Voltage          | 12  | AUX      | +5V/0.5 A or +9V/0.3 A Standby power | 20  | SDA      | I <sup>2</sup> C Serial Data         |
| 5                           | POK      | Power OK                         | 13  | ACI      | I Program                            | 21  | AUX      | +5V/0.5 A or +9V/0.3 A 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                             |

**Derating Curve**

**Thermal Derating Curve**



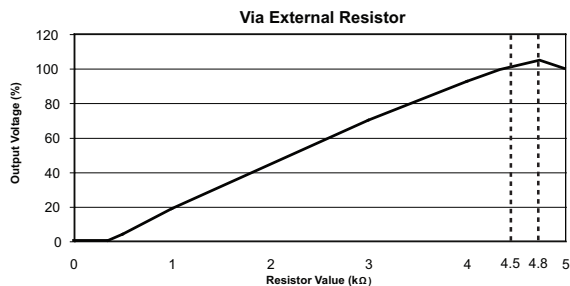
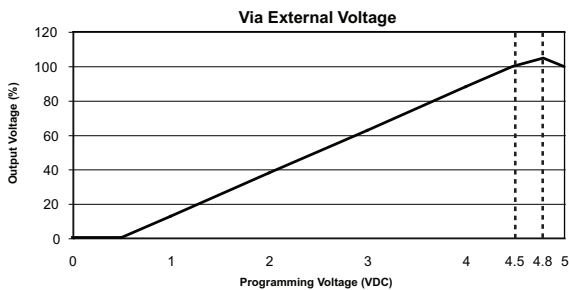
**Input Derating Curve**



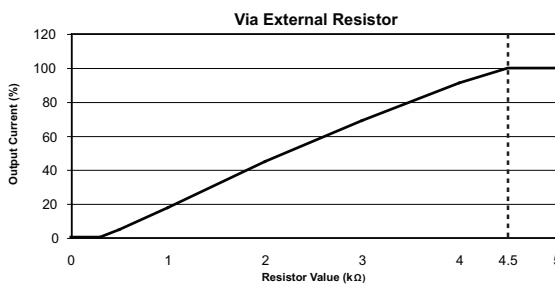
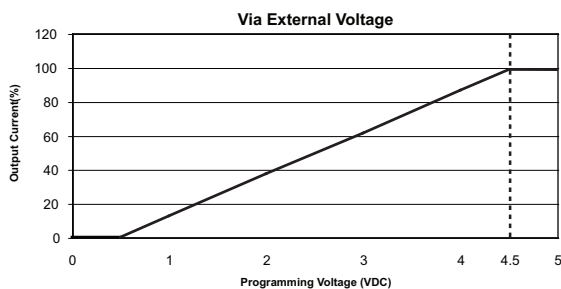
LED Status

| 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                 |

Output Voltage Programming

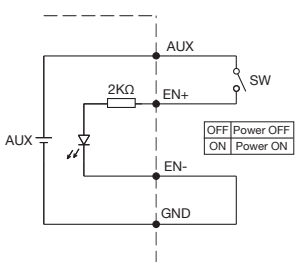


Output Current Program

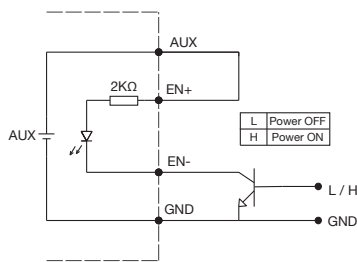


Remote Enable

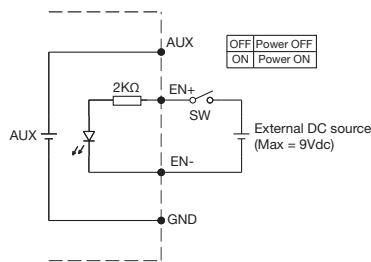
\*GND shown in the diagram (below) is referring to the GND of CN2, not the Grounding from output power (V-)



(A) Using internal auxiliary standby

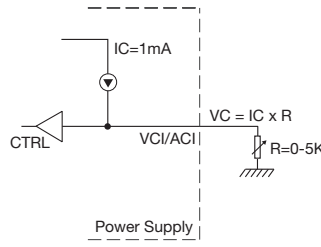
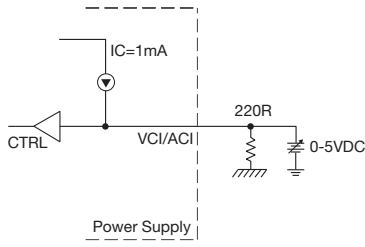
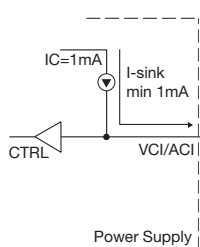


(B) Using external transistor

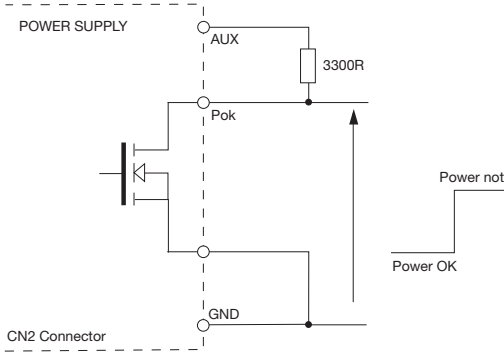


(C) Using external voltage source

External Programming Voltage Connection

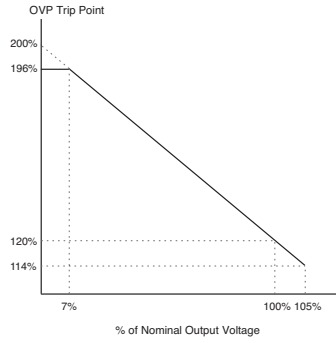


**POK Signal**

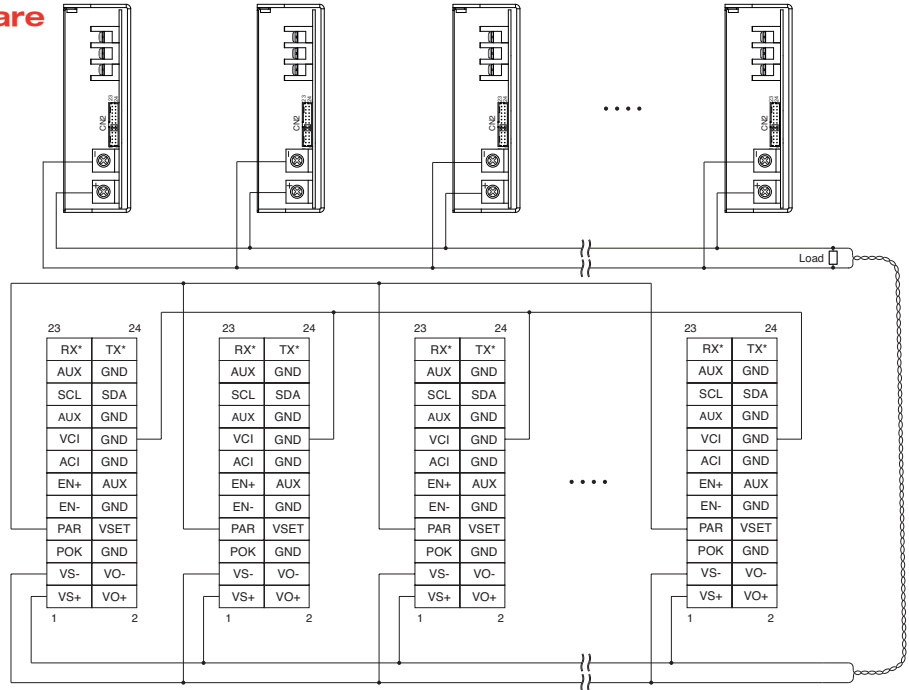


Open drain signal, low when PSU turns on  
 Maximum sink current: 20 mA  
 Maximum drain voltage: 40 V

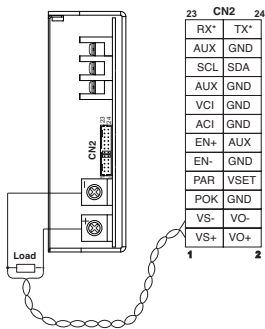
**OVP Setting**



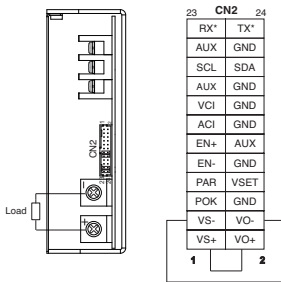
**Current Share**



**Remote Sense**

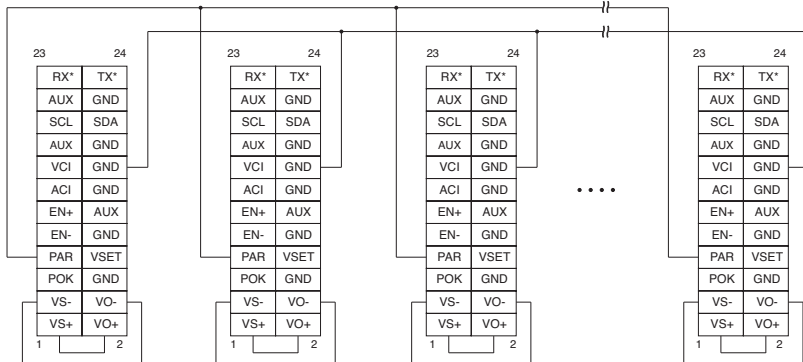


**Local Sense**



Must be used if remote sense is not required.

**Current Sharing with Remote Sensing**



**Current Sharing with Local Sensing**

**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. It is possible to have more than five units in parallel, contact sales for details.  
 \*Pin 23 and 24, Only usable with driver board "KIT-RS232-X" or "KIT-RS485-1"