

Sorensen DHP Series

5–20 kW

DC High Power Programmable Supplies

5–50 V

- **Modular Design** : The series has a unique modular design that results in two rackmount profiles according to output power
- **External Shutdown** : An external shut down to inhibit the output
- **Sequencing** : Power and auto-step sequence settings
- **Protection** : Overvoltage, over-temperature, surge limit, soft start, brown out and short circuit protection current limit fold back.



133–3000 A



208

400

480

GPIB RS232

The Sorensen DHP Series provides models ranging in output power from 5 kW to 20 kW in a single chassis. Programmable output voltages range from 5V to 50 VDC, delivering up to 3,000 amperes. This family has two operational modes, constant-voltage and constant-current.

The DHP Series uses control technology permits up to nine (9) steps per sequence with a maximum sequence duration of up to 27.75 hours.

This family has standard analog and a variety of combinations of IEEE-488.2, RS-232 and/or isolated analog input control interface options.

AMETEK
Programmable Power
 9250 Brown Deer Road
 San Diego, CA 92121-2267
 USA



DHP Series : Product Specifications

| Common | | |
|-------------------------------------|--|--|
| Front Panel Controls | Keypad to select/adjust voltage, current and power with non-volatile memories to store commonly used parameters | |
| Remote Control/Monitor (Rear Panel) | On/off control via contact closure, 6-120 VDC, 12-240 VAC, TTL or CMOS switch, output voltage and current monitor, (0-10 volt) OVP limit set, summary fault status | |
| Remote Sense | The maximum line drop is 3% per line or 1V for 5-15V units, 3V for all others. Line drop subtracts from the maximum available output voltage at full rated power. | |
| Internal Programming | 9 memories are on-board for auto-step programming. Each step can be 1 second to 99,999 seconds or 27.78 hours long | |
| Protection | Over temperature, brown out, turn on surge limit, slow start, overvoltage (OVP resettable without recycling power) | |
| Displays and Indicators | Back lit LCD alphanumeric display and LEDs | |
| Regulatory | CE mark (LVD and EMC directive), Certified to UL/cUL 61010 (Up to 10kW output), EMC is to IEC 61326-1 | |
| Input | | |
| Voltage Ranges | 190-253 VAC, 47-63 Hz (Standard) 360-440 VAC, 47-63 Hz (Option) 432-528 VAC, 47-63 Hz (Option) | |
| Phases | Three phase, 3-wire plus ground, Delta or Wye input may be used (Wye does not require the neutral connection) | |
| Power Factor | 0.72 min. | |
| Output | | |
| Stability | ±0.05% maximum rating per 8 hours after a 30 minute warm-up time at fixed line, load and temperature | |
| Line Regulation | For input voltage variation over the AC input voltage range, with constant rated load. Voltage: 0.1% of maximum rated output. Current: 0.5% of maximum rated output. | |
| Load Regulation | For 0-100% load variation, with constant nominal line voltage. Voltage: 0.1% of maximum rated output. Current: 0.5% of maximum rated output. | |
| Transient Response | 2 ms to steady state output voltage (within 2% of Vmax) for 30% step load change | |
| Efficiency | 80% minimum at full load | |
| Temperature Coefficient | 0.02%/°C of rated output voltage; 0.03%/°C of rated output current. Change in output per °C change in ambient temperature, with constant line and load. | |
| Environmental | | |
| Operating Temperature | 0°C to 50°C (no derating) | |
| Storage Temperature | -20°C to 70°C | |
| Physical | | |
| | Case 1 | Case 2 |
| Dimensions | Width: 19" (482 mm) Height: 5.25" (133 mm) - 3U Depth: 22" (558 mm) | Width: 19" (482 mm) Height: 10.5" (43 mm) - 6U Depth: 22" (558 mm) |
| Weight | 80 lbs. (55 kg) | 160 lbs. (73 kg) |
| Shipping Weight | 120 lbs. (73 kg) | 200 lbs. (91 kg) |
| Remote Digital Control | | |
| Programming Resolution | Voltage: 0.3% of full scale; Current: 0.3% of full scale; Overvoltage Protection: 0.5% of full scale (full scale is 110% of maximum output voltage) | |
| Programming Accuracy | Voltage: 0.1% + 0.3% of maximum output voltage Current: 0.3% + 0.3% of maximum output current* Overvoltage Protection: 0.5% + 0.5% of maximum output voltage | |
| Readback Accuracy | Voltage: 0.1% + 0.3% of full scale output voltage; Current: 0.3% + 0.3% of full scale output current* | |
| Soft Calibration | Calibration via front panel without removing chassis covers | |
| Software | LabVIEW® driver for M9D, programs can be downloaded at no cost at : www.programmablepower.com | |

* After 30 minutes operation with fixed line, load and temperature

DHP Series : Product Specifications

5–20 kW

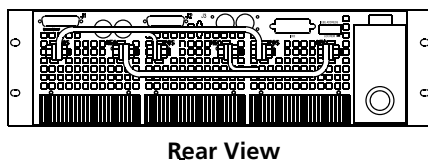
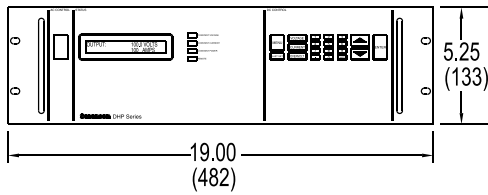
| Output : Voltage and Amps | | | | | | | | | |
|---------------------------|-----------|--------|----------------------|------|-----------------|-----------|--------|----------------------|------|
| 5 kW to 15 kW* | Output DC | | Ripple (rms) Typical | Case | 16 kW to 20 kW* | Output DC | | Ripple (rms) Typical | Case |
| | Voltage | Amps | | | | Voltage | Amps | | |
| DHP 5-1000 | 0-5 | 0-1000 | 10 mV | I | DHP 8-2000 | 0-8 | 0-2000 | 25 mV | II |
| DHP 5-1500 | 0-5 | 0-1500 | 10 mV | I | DHP 8-2400 | 0-8 | 0-2400 | 25 mV | II |
| DHP 5-2000 | 0-5 | 0-2000 | 15 mV | II | DHP 10-1650 | 0-10 | 0-1650 | 25 mV | II |
| DHP 5-2500 | 0-5 | 0-2500 | 15 mV | II | DHP 10-2000 | 0-10 | 0-2000 | 25 mV | II |
| DHP 5-3000 | 0-5 | 0-3000 | 15 mV | II | DHP 12.5-1325 | 0-12.5 | 0-1325 | 25 mV | II |
| DHP 8-800 | 0-8 | 0-800 | 10 mV | I | DHP 12.5-1600 | 0-12.5 | 0-1600 | 25 mV | II |
| DHP 8-1200 | 0-8 | 0-1200 | 10 mV | I | DHP 15-1100 | 0-15 | 0-1100 | 25 mV | II |
| DHP 8-1600 | 0-8 | 0-1600 | 15 mV | II | DHP 15-1320 | 0-15 | 0-1320 | 25 mV | II |
| DHP 10-660 | 0-10 | 0-660 | 10 mV | I | DHP 20-830 | 0-20 | 0-830 | 25 mV | II |
| DHP 10-1000 | 0-10 | 0-1000 | 10 mV | I | DHP 20-1000 | 0-20 | 0-1000 | 25 mV | II |
| DHP 10-1300 | 0-10 | 0-1300 | 15 mV | II | DHP 25-650 | 0-25 | 0-650 | 25 mV | II |
| DHP 12.5-530 | 0-12.5 | 0-530 | 10 mV | I | DHP 25-800 | 0-25 | 0-800 | 25 mV | II |
| DHP 12.5-800 | 0-12.5 | 0-800 | 10 mV | I | DHP 30-550 | 0-30 | 0-550 | 25 mV | II |
| DHP 12.5-1060 | 0-12.5 | 0-1060 | 15 mV | II | DHP 30-660 | 0-30 | 0-660 | 25 mV | II |
| DHP 15-440 | 0-15 | 0-440 | 10 mV | I | DHP 50-330 | 0-50 | 0-330 | 25 mV | II |
| DHP 15-660 | 0-15 | 0-660 | 10 mV | I | DHP 50-400 | 0-50 | 0-400 | 25 mV | II |
| DHP 15-880 | 0-15 | 0-880 | 15 mV | II | | | | | |
| DHP 20-330 | 0-20 | 0-330 | 10 mV | I | | | | | |
| DHP 20-500 | 0-20 | 0-500 | 10 mV | I | | | | | |
| DHP 20-665 | 0-20 | 0-665 | 15 mV | II | | | | | |
| DHP 25-265 | 0-25 | 0-265 | 10 mV | I | | | | | |
| DHP 25-400 | 0-25 | 0-400 | 10 mV | I | | | | | |
| DHP 25-520 | 0-25 | 0-520 | 15 mV | II | | | | | |
| DHP 30-220 | 0-30 | 0-220 | 10 mV | I | | | | | |
| DHP 30-330 | 0-30 | 0-330 | 10 mV | I | | | | | |
| DHP 30-440 | 0-30 | 0-440 | 15 mV | II | | | | | |
| DHP 50-133 | 0-50 | 0-133 | 10 mV | I | | | | | |
| DHP 50-200 | 0-50 | 0-200 | 10 mV | I | | | | | |
| DHP 50-265 | 0-50 | 0-265 | 15 mV | II | | | | | |

*Note: For high power 40V models and models above 50V see SG Series. Specifications subject to change.

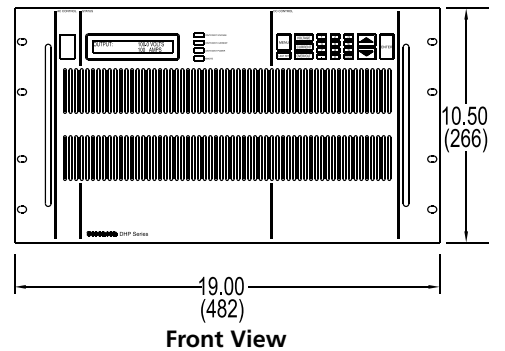
| J3 Connector | | | |
|--------------|-------------------------------------|----|--------------------------------------|
| 1 | Remote Output Enable | 14 | TTL/CMOS On/Off Control |
| 2 | Remote Return for Pins 1 and 14 | 15 | Remote Voltage Programming Input |
| 3 | Remote OVP Programming Input | 16 | Remote Current Programming Input |
| 4 | Voltage Return for Pins 9, 15 or 21 | 17 | Fault State |
| 5 | Remote On/Off | 18 | Shutdown Fault |
| 6 | Circuit Common | 19 | Output Voltage Monitor |
| 7 | Current Monitor Output | 20 | Voltage Return for Pins 9, 15 or 21 |
| 8 | Local Voltage Control Monitor | 21 | Voltage Control Resistance |
| 9 | Remote Voltage Programming Input | 22 | Current Control Resistance |
| 10 | Remote Current Programming Input | 23 | Current Return for Pins 10, 16 or 22 |
| 11 | Local Current Control Monitor | 24 | Circuit Common |
| 12 | Remote Sense – | 25 | Current Return for Pins 10, 16 or 22 |
| 13 | Remote Sense + | | |

DHP Series : Diagram

Case I



Case II



Dimensions in inches (millimeters)

Model Number Description



Options and Accessories

| | |
|-----|--|
| M1 | 360-440 VAC, 47-63 Hz, three phase, 3-wire plus ground, Delta or Wye may be used |
| M2 | 432-528 VAC, 47-63 Hz, three phase, 3-wire plus ground, Delta or Wye may be used |
| M8 | Internal RS-232 remote serial interface |
| M9D | Internal IEEE-488.2 interface |
| M10 | Both IEEE-488.2 and RS-232 |
| M11 | RS-232 and isolated analog programming |
| M12 | IEEE-488.2 and isolated analog programming |
| M14 | IEEE-488.2, RS-232 and isolated analog programming |
| M51 | Isolated analog programming Input Voltage Options. This isolation allows users to control power supplies not connected to a common ground. In addition, in systems with high ambient noise or with large ground loop currents the control ground can be isolated from the power ground eliminating problems. |

Software

LabVIEW® driver for M9D, programs can be downloaded at no cost at : http://www.elgar.com/products/DHP/DHP_Downloads.htm

