

## DHP Series: DC High Power Programmable Supplies

The DHP Family contains over 80 models ranging in output power from 2 kW to 20 kW in a single chassis. The 2 kW and 3 kW models are housed in a thin 2U (3.5" high), (19" wide) rackmount chassis. Programmable output voltages range from 5V to 400 VDC, delivering up to 3,000 amperes. This family has three operational modes, constant-voltage, constant-current and constant-power.

The DHP Family uses second generation control technology for improved programmability and performance. This technology allows 9 auto sequence steps, each step can be up to

99,999 seconds in duration. Combining all the steps allows a maximum auto-step program 27.7 hours long. Various voltages, currents and durations can be programmed for each step.

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

All models come with the standard Sorensen 5-year warranty and CE Mark.

- **Modular Design**

The series has a unique modular design that results in three rackmount profiles according to output power

- **Unique Controls and Commands**

- Power-Off Memory: Enabling the input power and pushing the LAST SET button will restore the supply settings
- External Shutdown: An external shut down to inhibit the output
- Up/down arrows control voltages, step changes and current

- **Digital Displays**

- Power supply rating
- Output power, voltage and current
- All power, voltage and current set points and limits
- Present and highest AC input voltage
- Present and highest air inlet temperature

- Power and auto-step sequence settings
- Calibration set-up
- Remote operation set-up
- Diagnostics fault status summary

- **Protection and Safety**

- Safe Power-Up: In the local mode, the output is disabled for additional safety at power up
- Front Panel Lockout: Most front panel controls are disabled when operated remotely
- Overvoltage, over-temperature, surge limit, soft start, brown out and short circuit protection current limit fold back.

- **CE Mark**

- **5 Year Warranty**

## Output

### Voltage and Current

**Voltage, Current, and Ripple:** See Tables

### Regulation (Line or Load)

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

**Stability:**  $\pm 0.05\%$  maximum rating per 8 hours after a 30 minute warm-up time at fixed line, load and temperature

**Efficiency:** 80% minimum at full load

**Temperature Coefficient:** 0.02%/°C of rated output voltage; 0.03%/°C of rated output current

## Input

### Voltage and Frequency

**2-3 kW:** 190-253 VAC, 47-63 Hz, single phase, 2-wire plus ground

**5-20 kW:** 190-253 VAC, 47-63 Hz, three phase, 3-wire plus ground, Delta or Wye input may be used (Wye does not require the neutral connection)

## General

### Operating Temperature:

0°C to +50°C, no derating

**Storage Temperature:** -20°C to 70°C

**Cooling:** Internal fan

**Front Panel Controls:** Keypad to select/adjust voltage, current and power with non-volatile memories to store commonly used parameters

**Displays and Indicators:** Back lit LCD alphanumeric display and LEDs

**Built-in Protection:** Overtemperature, brown out, turn on surge limit, slow start, overvoltage (OVP) resettable without recycling power)

**Remote Sense:** The maximum line drop is 3% per line or 1V for 5-15V units, 3V for all others

**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

**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.

### 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: 0.10% + 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 Resolution:** Voltage and Current: 0.3% of full scale

#### Readback Accuracy:

Voltage: 0.10% + 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/M85, programs can be downloaded at no cost at: [www.elgar.com](http://www.elgar.com)

**Regulatory Compliance:** CE mark, TÜV CUL (NRTL) mark

### Dimensions

Case I: 2U or 3-1/2" (88 mm) H x 19" (482 mm) W x 18" (457 mm) D

Case II: 3U or 5-1/4" (133 mm) H x 19" (482 mm) W x 22" (558 mm) D

Case III: 5U 10-1/2" (266 mm) H x 19" (482 mm) W x 22" (558 mm) D

#### Weight: Maximum

Case I: 45 lbs. (22 kg)

Case II: 80 lbs. (55 kg)

Case III: 160 lbs. (73 kg)

#### Shipping Weight: Maximum

Case I: 48 lbs. (23 kg)

Case II: 120 lbs. (73 kg)

Case III: 200 lbs. (91 kg)

## Options & Accessories

### Remote Interface Options

**M8:** RS 232 internal 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

**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

**M3:** 190-253 VAC, 47-63 Hz, three phase, 3-wire plus ground, Delta or Wye may be used (3 kW models only)

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

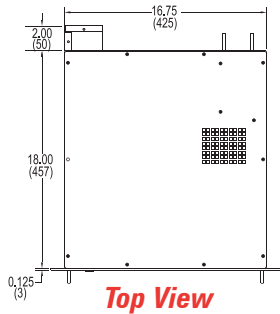
\*\* Applies to all models 6 kW or greater

Model	Output DC		Ripple (RMS) Typical	Case	Model	Output DC		Ripple (RMS) Typical	Case	Model	Output DC		Ripple (RMS) Typical	Case
	Volts	Amps				Volts	Amps				Volts	Amps		
<b>2 kW to 3 kW</b>					<b>5 kW to 20 kW*</b>					<b>5 kW to 20 kW (continued)*</b>				
DHP 5-325	0-5	0-325	10 mV	I	DHP 5-1000	0-5	0-1000	10 mV	II	DHP 20-330	0-20	0-330	10 mV	II
DHP 8-250	0-8	0-250	10 mV	I	DHP 5-1500	0-5	0-1500	10 mV	II	DHP 20-500	0-20	0-500	10 mV	II
DHP 8-350	0-8	0-350	10 mV	I	DHP 5-2000	0-5	0-2000	15 mV	III	DHP 20-665	0-20	0-665	15 mV	III
DHP 10-200	0-10	0-200	10 mV	I	DHP 5-2500	0-5	0-2500	15 mV	III	DHP 20-830	0-20	0-830	25 mV	III
DHP 10-300	0-10	0-300	10 mV	I	DHP 5-3000	0-5	0-3000	15 mV	III	DHP 20-1000	0-20	0-1000	25 mV	III
DHP 15-130	0-15	0-130	10 mV	I	DHP 8-800	0-8	0-800	10 mV	II	DHP 25-265	0-25	0-265	10 mV	II
DHP 15-200	0-15	0-200	10 mV	I	DHP 8-1200	0-8	0-1200	10 mV	II	DHP 25-400	0-25	0-400	10 mV	II
DHP 20-100	0-20	0-100	10 mV	I	DHP 8-1600	0-8	0-1600	15 mV	III	DHP 25-520	0-25	0-520	15 mV	III
DHP 20-150	0-20	0-150	10 mV	I	DHP 8-2000	0-8	0-2000	25 mV	III	DHP 25-650	0-25	0-650	25 mV	III
DHP 30-66	0-30	0-66	10 mV	I	DHP 8-2400	0-8	0-2400	25 mV	III	DHP 25-800	0-25	0-800	25 mV	III
DHP 30-100	0-30	0-100	10 mV	I	DHP 10-660	0-10	0-660	10 mV	II	DHP 30-220	0-30	0-220	10 mV	II
DHP 40-50	0-40	0-50	10 mV	I	DHP 10-1000	0-10	0-1000	10 mV	II	DHP 30-330	0-30	0-330	10 mV	II
DHP 40-75	0-40	0-75	10 mV	I	DHP 10-1300	0-10	0-1300	15 mV	III	DHP 30-440	0-30	0-440	15 mV	III
DHP 50-40	0-50	0-40	10 mV	I	DHP 10-1650	0-10	0-1650	25 mV	III	DHP 30-550	0-30	0-550	25 mV	III
DHP 50-60	0-50	0-60	10 mV	I	DHP 10-2000	0-10	0-2000	25 mV	III	DHP 30-660	0-30	0-660	25 mV	III
DHP 60-33	0-60	0-33	10 mV	I	DHP 12.5-530	0-12.5	0-530	10 mV	II	DHP 40-166	0-40	0-166	10 mV	II
DHP 60-50	0-60	0-50	10 mV	I	DHP 12.5-800	0-12.5	0-800	10 mV	II	DHP 40-250	0-40	0-250	10 mV	II
DHP 80-25	0-80	0-25	25 mV	I	DHP 12.5-1060	0-12.5	0-1060	15 mV	III	DHP 40-330	0-40	0-330	15 mV	III
DHP 80-37	0-80	0-37	25 mV	I	DHP 12.5-1325	0-12.5	0-1325	25 mV	III	DHP 40-415	0-40	0-415	25 mV	III
DHP 100-20	0-100	0-20	25 mV	I	DHP 12.5-1600	0-12.5	0-1600	25 mV	III	DHP 40-500	0-40	0-500	25 mV	III
DHP 100-30	0-100	0-30	25 mV	I	DHP 15-440	0-15	0-440	10 mV	II	DHP 50-133	0-50	0-133	10 mV	II
DHP 120-16	0-120	0-16	25 mV	I	DHP 15-660	0-15	0-660	10 mV	II	DHP 50-200	0-50	0-200	10 mV	II
DHP 120-25	0-120	0-25	25 mV	I	DHP 15-880	0-15	0-880	15 mV	III	DHP 50-265	0-50	0-265	15 mV	III
DHP 150-13	0-150	0-13	25 mV	I	DHP 15-1100	0-15	0-1100	25 mV	III	DHP 50-330	0-50	0-330	25 mV	III
DHP 150-20	0-150	0-20	25 mV	I	DHP 15-1320	0-15	0-1320	25 mV	III	DHP 50-400	0-50	0-400	25 mV	III
DHP 200-10	0-200	0-10	25 mV	I										
DHP 200-15	0-200	0-15	25 mV	I										
DHP 250-8	0-250	0-8	25 mV	I										
DHP 250-12	0-250	0-12	25 mV	I										
DHP 300-6.6	0-300	0-6.6	25 mV	I										
DHP 300-10	0-300	0-10	25 mV	I										
DHP 400-5	0-400	0-5	25 mV	I										
DHP 400-7.5	0-400	0-7.5	25 mV	I										

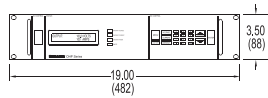
\*Note: For high power models 60V and above see SGI Series.

## Case I

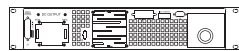
Dimensions in inches (millimeters)



**Top View**



**Front View**



**Rear View**

**Input Connections**

#8-32 Threaded Studs

**5-60 Volt Models  
Output Connections**

J1 for Remote Sense

Copper Bus Bars, Nickel Plated

Dimensions: 1.5" x 0.75" x 0.18"

Space Between Bus Bars:  
2.125"

Holes in Bus Bar: 0.375"

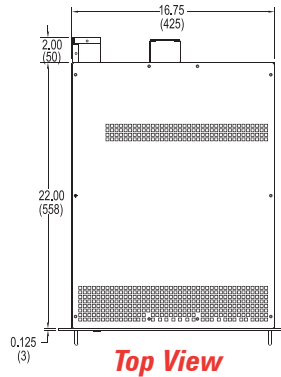
**80-400 Volt Models  
Output Connections**

J3 for Remote Sense

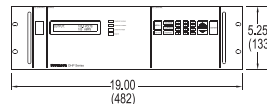
Two position terminal block

#10-32 screws

## Case II



**Top View**



**Front View**



**Rear View**

**Input Connections**

#10-32 Threaded Studs

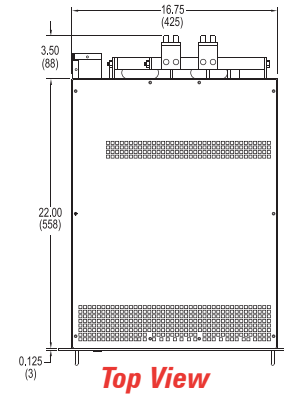
**Output Connections**

5-50 Volt Models

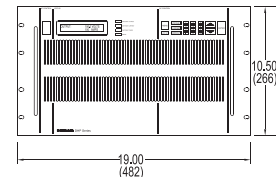
Copper Bus Bars, Nickel Plated

Holes in Bus Bar: 0.390"

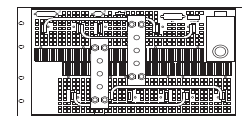
## Case III



**Top View**



**Front View**



**Rear View**

**Input Connections**

#10-32 Bronze Threaded Studs

**Output Connections**

5-50 Volt Models

Copper Bus Bars, Nickel Plated

Holes in Bus Bar: 0.410"

## Options & Accessories:

Voltage Options	
<b>M1*</b>	360-440 VAC, 47-63 Hz, 3 Phase, 3-wire plus ground
<b>M2*</b>	432-528 VAC, 47-63 Hz, 3 Phase, 3-wire plus ground
<b>M3**</b>	190-253 VAC, 47-63 Hz, 3 Phase, 3-wire plus ground (3 kW only)
Remote Interface Options	
<b>M8</b>	RS 232
<b>M9D</b>	IEEE-488.2
<b>M10</b>	RS 232 and IEEE-488.2
<b>M11</b>	RS 232 and Isolated Analog Programming
<b>M12</b>	IEEE-488.2 and Isolated Analog Programming
<b>M14</b>	RS 232, IEEE-488.2 and Isolated Analog Programming
<b>M51</b>	Isolated Analog Programming

\* Applies to all models 5 kW or greater

\*\*3 kW only

### J1 Connector

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