

# 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

 **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.

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**AMETEK**<sup>®</sup>  
 PROGRAMMABLE POWER

# 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 : <a href="http://www.programmablepower.com">www.programmablepower.com</a>	

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

# DHP Series : Product Specifications

5–20 kW

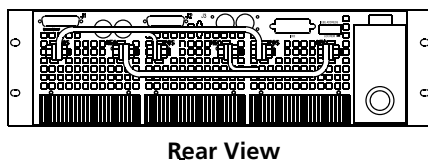
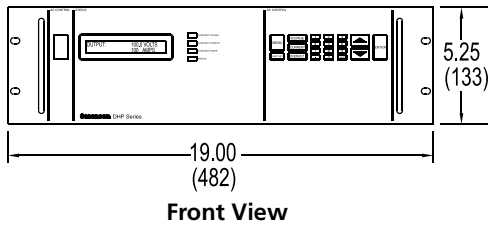
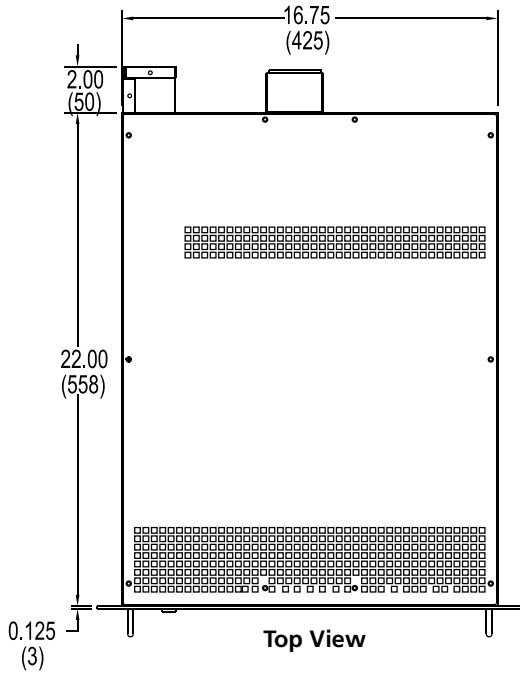
Output : Voltage and Amps									
5 kW to 15 kW*	Output DC		Ripple (rms) Typical	Case	16 kW to 20 kW*	Output DC		Ripple (rms) Typical	Case
	Voltage	Amps				Voltage	Amps		
DHP 5-1000	0-5	0-1000	10 mV	I	DHP 8-2000	0-8	0-2000	25 mV	II
DHP 5-1500	0-5	0-1500	10 mV	I	DHP 8-2400	0-8	0-2400	25 mV	II
DHP 5-2000	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.

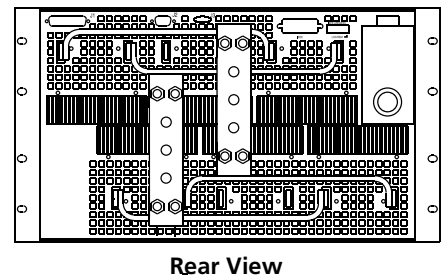
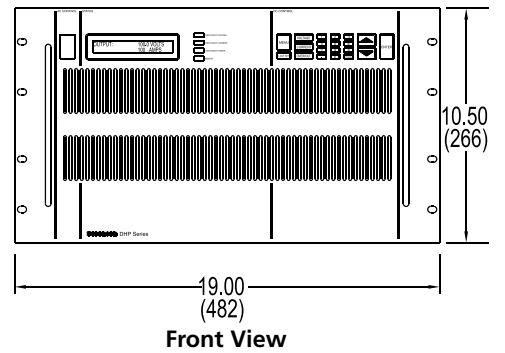
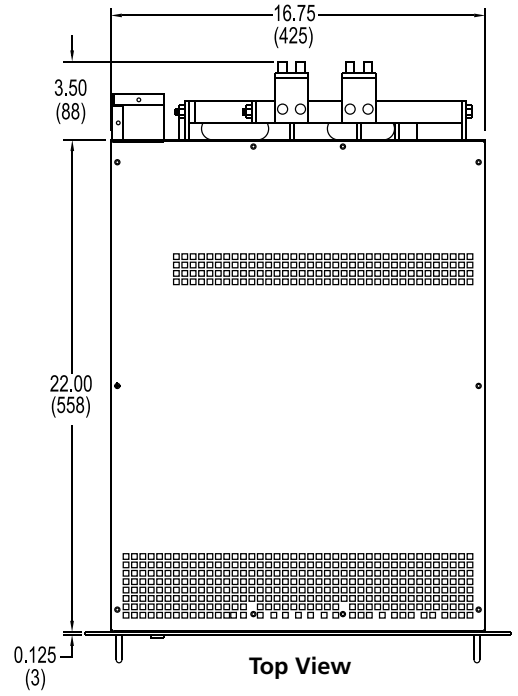
J3 Connector			
1	Remote Output Enable	14	TTL/CMOS On/Off Control
2	Remote Return for Pins 1 and 14	15	Remote Voltage Programming Input
3	Remote OVP Programming Input	16	Remote Current Programming Input
4	Voltage Return for Pins 9, 15 or 21	17	Fault State
5	Remote On/Off	18	Shutdown Fault
6	Circuit Common	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

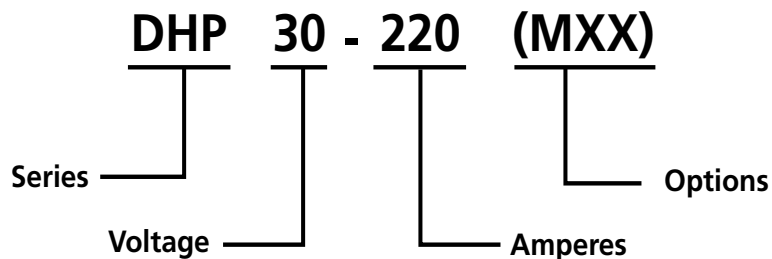


## Case II



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](http://www.elgar.com/products/DHP/DHP_Downloads.htm)

