

# DCS Series

## 1 kW, 1.2 kW, & 3 kW

### DCS Applications

The DCS Family is ideally suited for a wide range of applications requiring DC power in a small form factor. Applications range from manufacturing test of automotive components, telecommunications products and avionics to beam steering, process control and laboratory R&D use.



### DC Programmable Switching Supplies

The DCS Family of 1 kW, 1.2 kW and 3 kW programmable power supplies utilize switching-mode technology to achieve high power density in a low profile chassis. Utilizing unique packaging techniques, the DCS Family provides continuous full output power (1 kW, 1.2 kW or 3 kW) in any volt/amp combination within the rated output voltage and current limits.

This family has 10-turn potentiometers to adjust voltage and current settings that are displayed simultaneously. LEDs indicate overtemperature, remote programming, shutdown and overvoltage protection, status and constant-voltage/current mode operation.

The DCS 3 kW Models have push button control of the output via standby mode, OVP reset, remote/ local programming and preview status of voltage, current and OVP setpoints.

Options include an internal IEEE-488/RS 232 interface, isolated analog programming of voltage and current, and the multichannel slave interface (Option M85).

#### Key Features

##### • Output Voltage

Voltage ranges from 0-8 VDC to 0-600 VDC; current levels from 1.7A to 350A

##### • Power Density

- 1 kW or 1.2 kW of power in a 19 lb. package only 1.75 inches high
- 3 kW of power in a 33 lb. package only 3.5 inches high

##### • Input Voltage

- 1 kW or 1.2 kW: 100-132 VAC, single phase, or 200-250 VAC, single phase 47-63 Hz
- 3 kW: 190-250 VAC, three phase or 200-250 VAC, single phase 47-63 Hz (2.5 kW max with single phase input)

##### • Regulation

- Line regulation: 0.1%
- Load regulation: 0.1%

##### • Remote Programming

- Selectable remote programming for voltage, current and OVP
- Optional internal IEEE-488/RS 232 Interface Card with voltage and current readback and adjustable OVP (Option M9C)
- Optional multichannel slave interface (Option M85)
- Optional isolated analog programming (Option M51A)

##### • Software

- LabVIEW® driver for M9C/M85 can be downloaded at no cost at [www.elgar.com](http://www.elgar.com)

##### • Regulatory Compliance

- CE Mark on all models, FCC Part 15 Class A and CSA 22.2 #220 (1 and 1.2 kW only)

##### • 5 Year Warranty

# Sorensen

## Output

### Voltage and Current

1 kW Model	Voltage	Current
DCS 8-125E	0-8	0-125
DCS 10-100E	0-10	0-100
DCS 20-50E	0-20	0-50
DCS 33-33E	0-33	0-33
DCS 40-25E	0-40	0-25
DCS 50-20E	0-50	0-20
DCS 60-18E	0-60	0-18
DCS 80-13E	0-80	0-13
DCS 100-10E	0-100	0-10
DCS 150-7E	0-150	0-7
DCS 300-3.5E	0-300	0-3.5
DCS 600-1.7E	0-600	0-1.7

1.2 kW Model	Voltage	Current
DCS 8-140E	0-8	0-140
DCS 10-120E	0-10	0-120
DCS 20-60E	0-20	0-60
DCS 33-36E	0-30	0-36
DCS 40-30E	0-40	0-30
DCS 50-24E	0-50	0-24
DCS 60-20E	0-60	0-20
DCS 80-15E	0-80	0-15
DCS 100-12E	0-100	0-12
DCS 150-8E	0-150	0-8
DCS 300-4E	0-300	0-4
DCS 600-2E	0-600	0-2

3 kW Model	Voltage	Current
DCS 8-350E	0-8	0-350
DCS 12-250E	0-12	0-250
DCS 20-150E	0-20	0-150
DCS 40-75E	0-40	0-75
DCS 55-55E	0-55	0-55
DCS 60-50E	0-60	0-50
DCS 80-37E	0-80	0-37
DCS 150-20E	0-150	0-20

**Voltage Resolution:** 0.02%

**Ripple (mV RMS or P-P):** See table

### Regulation (Line or Load)

**Voltage:** 0.1%

**Current:** 0.1%

**Transient Response:** Typically recovers in 500  $\mu$ s (1 & 1.2 kW) or 1ms (3k W) to 1% of steady-state output voltage (within 1% of  $V_{max}$ ) for 70-100% or 100-70% load change.

**Stability:**  $\pm 0.05\%$  of maximum voltage or current over 8 hours after 30 minute warm-up time at fixed line, load and temperature

**Efficiency:** See table

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

## Input

### Voltage and Frequency

**1 kW:** 200-250 VAC, single phase, 8A typical, 47-63 Hz; or 100-132 VAC, single phase, 15A typical, 47-63 Hz, internal jumper selectable (see M1 option)

**1.2 kW:** 200-250 VAC, single phase, 9A typical, 47-63 Hz; or 100-132 VAC, single phase, 18A typical, 47-63 Hz, internal jumper selectable (see M1 option)

**3 kW:** 190-250 VAC, three phase, 14A typical, 47-63 Hz; or 200-250 VAC, single phase, 20A typical, 47-63 Hz

*Note: Maximum power output of 3 kW supplies must be limited to 2.5 kW for single phase input*

**Soft Start:** Line current is lower than full load peak value during turn-on or power application after restart

## General

**Operating Temperature:** 0°C to 50°C (no derating), 50°C to 70°C (derate 2%/°C above 50°C)

**Storage Temperature:** -55°C to 85°C

**Humidity Range:** 0 to 80% RH, non condensing

**Meter Accuracy:** 1% of full scale + 1 count

**Max. Voltage Differential from Output to Safety Ground:** 150 VDC

**Remote Start/Stop and Interlock:** TTL compatible input or 12-250 VAC (12-130 VDC) or a contact closure

**Cooling:** Internal fan, overtemperature shutdown if internal heat sink exceeds set temperature

**Remote Sense:** The maximum allowed sense line drop is 4V per line (2V on the DCS 8 and 10V 1kW and 1.2 kW models and 1V/line for all 3 kW models)

**Remote Programming:** External jumper via rear panel connector J3

**Overvoltage Protection:** Crowbar type adjustable from 5-110% of rated output using front panel control (local or remote program selectable via J3 jumper)

### Remote Analog Programming

**Linearity:**  $\pm 1\%$

**Accuracy:**  $\pm 5\%$

**Software:** LabVIEW® driver for M9C/M85 can be downloaded at no cost at [www.elgar.com](http://www.elgar.com).

**Regulatory Compliance:** CE Mark (1, 1.2, 3k W); FCC Part 15 Class A, UL1012, CSA 22.2 #220 (1 and 1.2 kW only)

## Dimensions

**1 kW and 1.2 kW:** 1U or 1.75" (44 mm) H x 19" (482 mm) W x 17.5" (444 mm) D

**3 kW:** 2U or 3.5" (88 mm) H x 19" (482 mm) W x 17.5" (444 mm) D

## Weight

**1 kW and 1.2 kW:** 19 lbs. ( 8.6 kg)

**3 kW:** 33 lbs. (15 kg)

## Shipping Weight

**1 kW and 1.2 kW:** 24 lbs. (10.9 kg)

**3 kW:** 42 lbs. (19 kg)

## Options & Accessories

**M1:** Factory configured for 115 VAC input (1 kW and 1.2 kW units only)

**M9C:** Internal IEEE-488/RS 232 Interface

**M13:** Locking shafts (front panel potentiometers)

**M32:** Master/slave paralleling cable configured for two units

**M33:** Replace input connector with terminal block (3 kW only)

**M51A:** Isolated analog programming control of V/I/OVP and isolated V/I monitor outputs up to 500V relative to the supply's return line

**M85:** Multichannel slave interface allows use of a single GPIB address (using 1 master unit with M9C option) to control multiple units via a standard RS485 connector (3 ft. connector included)

## DCS 1 kW

Model	Output Power		Combined Regulation Line and Load %	Constant Voltage Mode*			Temp. Coeff. Voltage %/°C (Typ)	Voltage Drift % Vmax (Typ)	Programming Constants Voltage Mode	
	Voltage VDC	Current ADC @ 50°C		Ripple (RMS)**	Noise (P-P)	Transient Response Time $\mu$ s (Typ)			Ohms/V	V/V
DCS 8-125E	0-8	0-125	0.2	4 mV	60 mV	500	0.02	0.05	625	0-10V = 0-100% V <sub>0</sub> or 0-5V = 0-100% V <sub>0</sub>
DCS 10-100E	0-10	0-100	0.2	4 mV	60 mV	500	0.02	0.05	500	
DCS 20-50E	0-20	0-50	0.2	4 mV	60 mV	500	0.02	0.05	250	
DCS 33-33E	0-33	0-33	0.2	4 mV	60 mV	500	0.02	0.05	151.5	
DCS 40-25E	0-40	0-25	0.2	4 mV	60 mV	500	0.02	0.05	125	
DCS 50-20E	0-50	0-20	0.2	4 mV	60 mV	500	0.02	0.05	100	
DCS 60-18E	0-60	0-18	0.2	4 mV	60 mV	500	0.02	0.05	83	
DCS 80-13E	0-80	0-13	0.2	4 mV	60 mV	500	0.02	0.05	62.5	
DCS 100-10E	0-100	0-10	0.2	6 mV	60 mV	500	0.02	0.05	50	
DCS 150-7E	0-150	0-7	0.2	12 mV	160 mV	500	0.02	0.05	33.3	
DCS 300-3.5E	0-300	0-3.5	0.2	20 mV	200 mV	500	0.02	0.05	16.67	
DCS 600-1.7E	0-600	0-1.7	***	***	***	***	***	***	***	

Model	Constant Current Mode*		Temp. Coeff. %/°C (Typ.)	Current Drift %I <sub>0</sub> Max. (Typ.)	Programming Constants, Current Mode		Input Current, A Nominal		Efficiency % (Typ.)	Case
	Regulation Line and Load % Combined	Ripple (RMS)** mA			Ohms/A	V/A	230V Single Phase	208V Three Phase		
DCS 8-125E	0.2	160	0.03	0.05	40	0-10V= 0-100% I <sub>0</sub> or 0-5V= 0-100% I <sub>0</sub>	8	N/A	82	I
DCS 10-100E	0.2	128	0.03	0.05	50		8	N/A	82	I
DCS 20-50E	0.2	25	0.03	0.05	100		8	N/A	82	I
DCS 33-33E	0.2	10	0.03	0.05	151.5		8	N/A	84	I
DCS 40-25E	0.2	7	0.03	0.05	200		8	N/A	84	I
DCS 50-20E	0.2	7	0.03	0.05	250		8	N/A	84	I
DCS 60-18E	0.2	6	0.03	0.05	277.8		8	N/A	86	I
DCS 80-13E	0.2	4	0.03	0.05	384.6		8	N/A	86	I
DCS 100-10E	0.2	3	0.03	0.05	500		8	N/A	86	I
DCS 150-7E	0.2	2	0.03	0.05	714.3		8	N/A	86	I
DCS 300-3.5E	0.2	1	0.03	0.05	1428.6		8	N/A	86	I
DCS 600-1.7E	***	***	***	***	***		***	***	***	***

\* Typical resolution is 0.02% \*\* RMS ripple typical from 20 Hz to 300 kHz \*\*\*Consult factory

## DCS 1.2 kW

Model	Output Power		Combined Regulation Line and Load %	Constant Voltage Mode*			Temp. Coeff. Voltage %/°C (Typ)	Voltage Drift % Vmax (Typ)	Programming Constants Voltage Mode	
	Voltage VDC	Current ADC @ 50°C		Ripple (RMS)**	Noise (P-P)	Transient Response Time $\mu$ s (Typ)			Ohms/V	V/V
DCS 8-140E	0-8	0-140	0.2	5 mV	60 mV	500	0.02	0.05	625	0-10V= 0-100% V <sub>0</sub> or 0-5V= 0-100% V <sub>0</sub>
DCS 10-120E	0-10	0-120	0.2	5 mV	60 mV	500	0.02	0.05	500	
DCS 20-60E	0-20	0-60	0.2	5 mV	60 mV	500	0.02	0.05	250	
DCS 33-36E	0-33	0-36	0.2	5 mV	60 mV	500	0.02	0.05	151.5	
DCS 40-30E	0-40	0-30	0.2	5 mV	60 mV	500	0.02	0.05	125	
DCS 50-24E	0-50	0-24	0.2	5 mV	60 mV	500	0.02	0.05	100	
DCS 60-20E	0-60	0-20	0.2	5 mV	60 mV	500	0.02	0.05	83	
DCS 80-15E	0-80	0-15	0.2	5 mV	60 mV	500	0.02	0.05	62.5	
DCS 100-12E	0-100	0-12	0.2	10 mV	60 mV	500	0.02	0.05	50	
DCS 150-8E	0-150	0-8	0.2	15 mV	160 mV	500	0.02	0.05	33.3	
DCS 300-4E	0-300	0-4	0.2	25 mV	200 mV	500	0.02	0.05	16.67	
DCS 600-2E	0-600	0-2	***	***	***	***	***	***	***	

Model	Constant Current Mode*		Temp. Coeff. %/°C (Typ.)	Current Drift %I <sub>0</sub> Max. (Typ.)	Programming Constants, Current Mode		Input Current, A Nominal		Efficiency % (Typ.)	Case
	Regulation Line and Load % Combined	Ripple (RMS)** mA			Ohms/A	V/A	230V Single Phase	208V Three Phase		
DCS 8-140E	0.2	180	0.03	0.05	35.7	0-10V= 0-100% I <sub>0</sub> or 0-5V= 0-100% I <sub>0</sub>	9	N/A	82	I
DCS 10-120E	0.2	153	0.03	0.05	41.7		9	N/A	82	I
DCS 20-60E	0.2	30	0.03	0.05	83.3		9	N/A	82	I
DCS 33-36E	0.2	11	0.03	0.05	138.9		9	N/A	84	I
DCS 40-30E	0.2	9	0.03	0.05	166.7		9	N/A	84	I
DCS 50-24E	0.2	8.5	0.03	0.05	208.3		9	N/A	84	I
DCS 60-20E	0.2	6.6	0.03	0.05	250.0		9	N/A	85	I
DCS 80-15E	0.2	6	0.03	0.05	333.3		9	N/A	85	I
DCS 100-12E	0.2	3.6	0.03	0.05	416.7		9	N/A	85	I
DCS 150-8E	0.2	2.3	0.03	0.05	625.0		9	N/A	85	I
DCS 300-4E	0.2	1.2	0.03	0.05	1250.0		9	N/A	85	I
DCS 600-2E	***	***	***	***	***		***	***	***	***

\* Typical resolution is 0.02% \*\* RMS ripple typical from 20 Hz to 300 kHz \*\*\* Consult factory

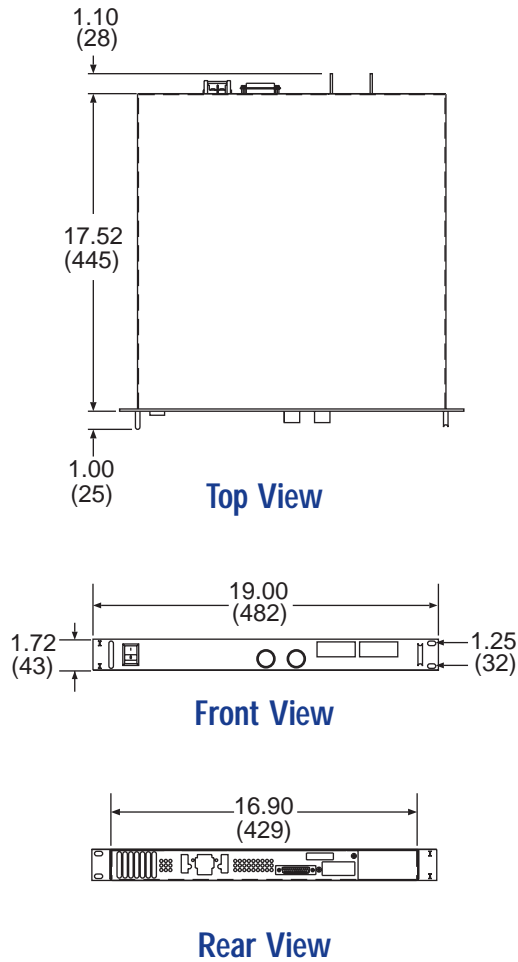
## DCS 3 kW

Model	Output Power		Combined Regulation Line and Load %	Constant Voltage Mode*			Temp. Coeff. Voltage %/°C (Typ)	Voltage Drift % Vmax (Typ)	Programming Constants Voltage Mode	
	Voltage VDC	Current ADC @ 50°C		Ripple (RMS)**	Noise (P-P)	Transient Response Time $\mu$ s (Typ)			Ohms/V	V/V
DCS 8-350E	0-8	0-350	0.2	15 mV	100 mV	1000	0.02	0.05	625	0-10V= 0-100% V <sub>0</sub> or 0-5V= 0-100% V <sub>0</sub>
DCS 12-250E	0-12	0-250	0.2	10 mV	100 mV	1000	0.02	0.05	416.7	
DCS 20-150E	0-20	0-150	0.2	10 mV	100 mV	1000	0.02	0.05	250	
DCS 40-75E	0-40	0-75	0.2	20 mV	100 mV	1000	0.02	0.05	125	
DCS 55-55E	0-55	0-55	0.2	20 mV	100 mV	1000	0.02	0.05	90.9	
DCS 60-50E	0-60	0-50	0.2	20 mV	100 mV	1000	0.02	0.05	83	
DCS 80-37E	0-80	0-37	0.2	20 mV	100 mV	1000	0.02	0.05	62.5	
DCS 150-20E	0-150	0-20	0.2	30 mV	200 mV	1000	0.02	0.05	33.3	

Model	Constant Current Mode*		Temp. Coeff. %/°C (Typ.)	Current Drift %I <sub>0</sub> Max. (Typ.)	Programming Constants, Current Mode		Input Current, A Nominal		Efficiency % (Typ.)	Case
	Regulation Line and Load % Combined	Ripple (RMS)** mA			Ohms/A	V/A	230V Single Phase	208V Three Phase		
DCS 8-350E	0.2	870	0.03	0.05	14.3	0-10V= 0-100% I <sub>0</sub> or 0-5V= 0-100% I <sub>0</sub>	24	13	82	II
DCS 12-250E	0.2	400	0.03	0.05	20		26	14	82	II
DCS 20-150E	0.2	100	0.03	0.05	33.3		26	14	82	II
DCS 40-75E	0.2	75	0.03	0.05	66.7		26	14	86	II
DCS 55-55E	0.2	40	0.03	0.05	90.9		26	14	82	II
DCS 60-50E	0.2	33	0.03	0.05	100		26	14	86	II
DCS 80-37E	0.2	20	0.03	0.05	135		26	14	86	II
DCS 150-20E	0.2	10	0.03	0.05	250		26	14	86	II

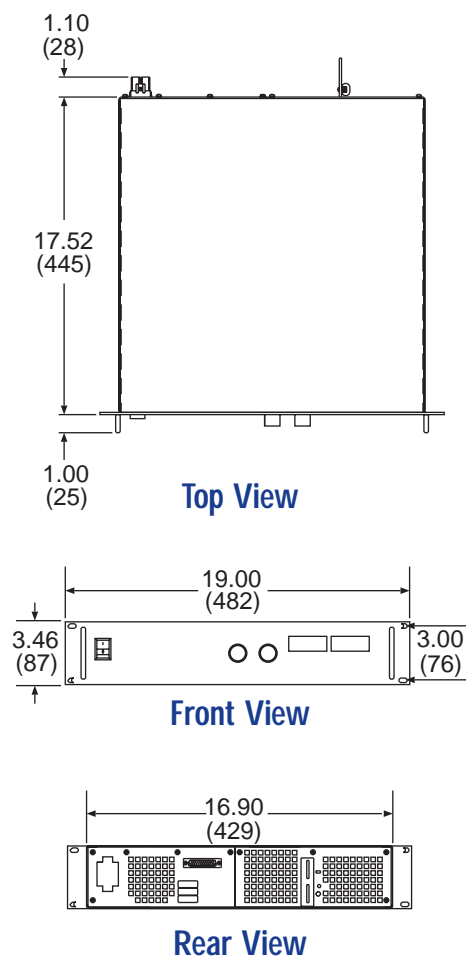
\* Typical resolution is 0.02% \*\* RMS ripple typical from 20 Hz to 300 kHz

## Case I



Dimensions in inches (millimeters)

## Case II



## Options & Accessories

### Input Voltage Options

M1	Factory configured for 115 VAC input (1 and 1.2 kW only)
----	--

### Remote Interface Options

M9C	Internal IEEE-488/RS 232 interface
M13	Locking shafts (front panel potentiometers)
M32	Master/slave cable configured for two or more units
M33	Replace input connector with terminal block (3 kW only)
M51A	Isolated analog programming control
M85	Multichannel slave interface
105-330-26	Rack slide kit (3 kW only)

### J3 Program and Sense

1	90-250 VAC Remote Shutdown	14	TTL Shutdown
2	Shutdown Return	15	+12 VDC
3	OVP Program	16	1 mA Current Source (OVP)
4	Remote/Local Status Indicator	17	OVP Indicator
5	Mode Status Indicator	18	Thermal S/DN Status
6	Ground	19	0-5V Voltage Monitor
7	0-5V Current Monitor	20	Remote Voltage Select
8	Voltage Control	21	1 mA Current Source (V)
9	Voltage Program Input	22	1 mA Current Source (I)
10	Current Program Unit	23	Remote Current Select
11	Current Control	24	Return
12	Return Sense	25	POS Output (8-100V Models Only)
13	POS Sense (8-100V Models Only)		

**ELGAR**

**Sorensen**

**POWER10EN**

9250 Brown Deer Road, San Diego California 92121-2294 • 858/450-0085 • 800/733-5427 • Fax: 858/458-0267  
 IN EUROPE • Kaap Hoordreef 30 • 3563 AT Utrecht • The Netherlands • +31-30-265-0946 • Fax: +31-30-265-0985  
 E-mail: sales@elgar.com • Web Site: www.elgar.com

DCS 10/03