DCS: 1 kW, 1.2 kW and 3 kW DC Programmable Switching Supplies

The DCS Family of 1 kW, 1.2 kW and 3 kW programmable power supplies utilize switch-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 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 (Option M9C), isolated analog programming of voltage and current (Option M51A), and the multichannel slave interface (Option M85).

DCS 1 kW, 3 kW, and 1.2 kW *(From top to bottom)*

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 " high
  - 3 kW of power in a 33 lb. package only 3.5 " high
- **Input Voltage**
  - 1 kW or 1.2 kW: 100-132 VAC, single phase, or 200-250 VAC, single phase, 47-63 Hz (other inputs available)
  - 3 kW: 190-250 VAC, three phase or 200-250 VAC, single phase 47-63 Hz (2.5 kW max with single phase input; other inputs available)
- **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 isolated analog programming (Option M51)
  - Optional multichannel slave interface (Option M85)
- **Regulation**
  - Line regulation: 0.1%
  - Load regulation: 0.1%
- **Software**
  LabVIEW® driver for M9C/M85 can be downloaded at no cost at **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**

DCS: Common Specifications

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

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 @ Nominal Line Voltage (mV RMS or P-P): See table

Regulation (Line or Load)
Voltage: 0.1%
Current: 0.1%

Transient Response: Typically recovers in <1 ms to 1% of steady-state output voltage (within 1% of Vmax) for 70-100% or 100-70% load change. 500 μs typical

Stability: ±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

Common

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: ±1%
Accuracy: ±5%

Software: LabVIEW® driver for M9C/M85, programs can be downloaded at no cost at: **www.elgar.com**.

Regulatory Compliance: CE Mark (1-3 kW); 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 (May not be combined with M51A or M85)

M13: Locking shafts (front panel potentiometers)

M32: Master/slave paralleling cable configured for two or more 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 and status outputs up to 500V relative to the supply's return line (May not be combined with M9C or M85)

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)
(May not be combined with M9C or M51A)

Model (DCS 1 kW)	Output Power		Combined Regulation Line and Load %	Constant Voltage Mode*			Temperature Coefficient 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 µs (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_o or 0-5V = 0-100% V_o
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	0.2	50 mV	300 mV	500	0.02	0.05	8.33	

Model (DCS 1 kW)	Constant Current Mode*		Temperature Coefficient %/°C (Typ.)	Current Drift %I_o Max. (Typ.)	Programmong 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_o or 0-5V = 0-100% I_o	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	0.2	1	0.03	0.05	2941.2		9.5	N/A	86	I

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

DCS: Data Tables (1.2 kW)

Model (DCS 1.2 kW)	Output Power		Combined Regulation Line and Load %	Constant Voltage Mode*			Temperature Coefficient 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 μs (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_o or 0-5V = 0-100% V_o
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	

Model (DCS 1.2 kW)	Constant Current Mode*		Temperature Coefficient %/°C (Typ.)	Current Drift %I_o Max. (Typ.)	Programmong 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_o or 0-5V = 0-100% I_o	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

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

Model (DCS 3 kW)	Output Power		Combined Regulation Line and Load %	Constant Voltage Mode*			Temperature Coefficient 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 μs (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_o or 0-5V = 0-100% V_o
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 (DCS 3 kW)	Constant Current Mode*		Temperature Coefficient %/°C (Typ.)	Current Drift %I_o Max. (Typ.)	Programmong 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_o or 0-5V = 0-100% I_o	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 from 20 Hz to 300 kHz*

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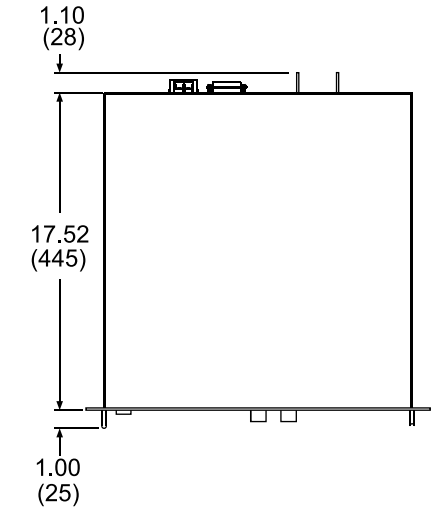
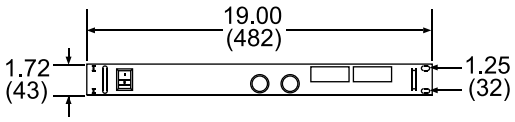
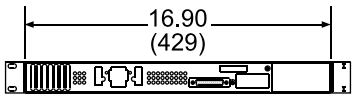
Case I



Top View



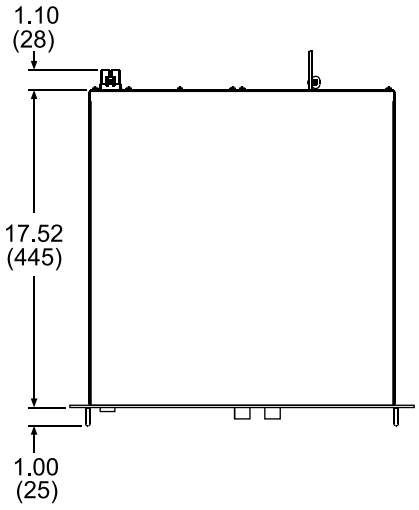
Front View



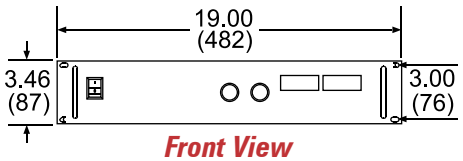
Rear View

Dimensions in inches (millimeters)

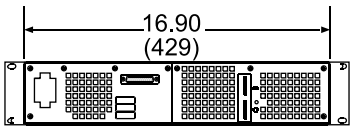
Case II



Top View



Front View



Rear View

Dimensions in inches (millimeters)

Options & Accessories:

Input Voltage Options	
M1	Factory configured for 115 VAC input (1 & 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 and Monitoring
M85	Multichannel slave interface
105-330-26	Rack slide lit (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**	1mA 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	Votlage 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 (8-100 Models Only)		