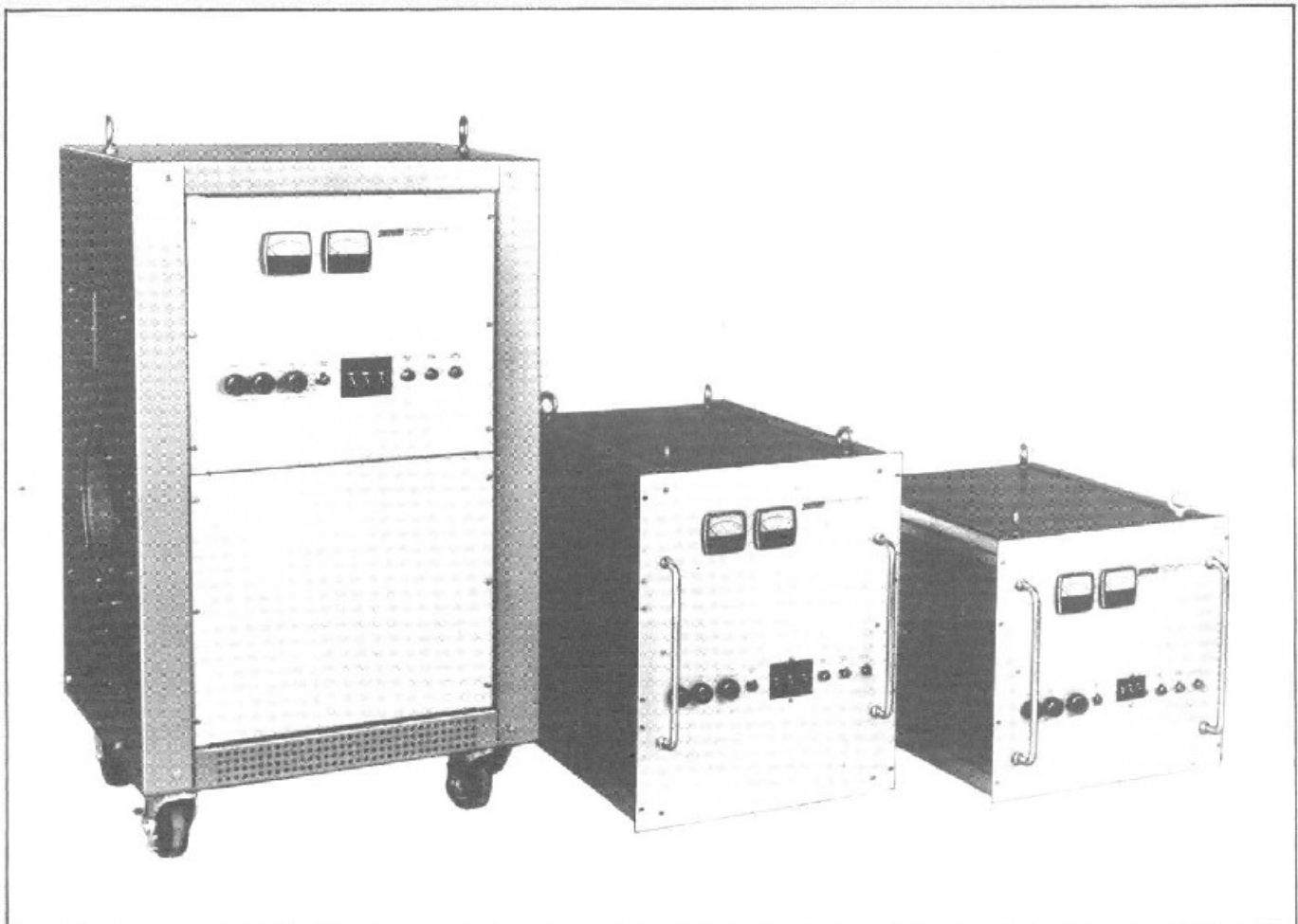


5 to 20 kW Three Phase Input Lab & Industrial Power Supplies DCR-A Series

DCR-A Series supplies 5 to 20 kW power levels in 11 models in ranges from 0-20 Vdc to 0-600 Vdc. SRC controlled regulator produces high efficiency and fully adjustable output power.

- 11 models in five voltage ranges, from 0-20 Vdc to 0-600 Vdc, with power levels from 5 to 20 kW
- 208 Vac three phase input standard on 5 kW models. 460 Vac, three phase input standard on all others
- 50/60 Hz operation
- Optional input voltages available for 208/230/390/415 Vac three phase operation
- Remote voltage or resistance programming in voltage and current modes
- Adjustable current limiting (overload/short circuit protection) with automatic recovery
- Excellent voltage and current regulation with automatic crossover
- 0.2% line & load regulation (typical)
- 160-2000 mV rms ripple (model dependent)
- 40 msec transient response—50% change (typical)
- Option M5: OVP except 20 kW models
- Options M2, M3, M6, M8: Input voltage modifications (see p.41)
- Accessories: Kit CSE—side enclosures; Kit CH—casters; ST-101—step down input transformer
- 5-year warranty



DC OUTPUT

CONSTANT VOLTAGE MODE

Voltage Regulation:

Line and load combined:

0-20 Vdc to 0-40 Vdc models

0.2% or 30 mV, whichever is greater.

0-150 Vdc to 0-600 Vdc models

Line and load combined:

0.2% or 240 mV, whichever is greater.

Temperature Coefficient:

0.04%/°C of E_o max.

Resistive Programming:

See model specification chart.

Voltage Programming:

Consult local sales office or factory.

Stability:

0.1% E_o max for 8 hours after 30 minute warm-up.

Remote Sensing:

3 V maximum drop per load lead but not to exceed 10% of E_o max.

Transient Response:

40 ms (typical) to return to $\pm 1\%$ band for a step load change. 50% to 100% or 100% to 50% of full load. (20 V models $\pm 2\%$ band.)

CONSTANT CURRENT MODE

Current Regulation:

0.4% I_o max. line and load combined.

Temperature Coefficient:

0.2%/°C of I_o max.

Current Programming:

See model specification chart.

Stability:

0.5% of I_o maximum for 8 hours after 30 minute warm-up.

INPUT

Voltage:

187-229 Vac three phase for 5 kW models. 414-506 Vac three phase for 10 and 20 kW models.

Voltage Options:

Optional inputs available. See page 41.

Model	Output Power			Constant Voltage Regulation ¹ Line & Load	Constant Current Regulation ¹ (mA)	Constant Voltage Ripple (PARD) rms/mV	Constant Current Ripple (PARD) rms/mV	Optional Overvoltage Protection ¹¹	Drift ⁶ (Typ.)		Temperature Coeff. (Typ.)		
	Voltage (Vdc)	Current (A dc)							% E_o max.	% I_o max.	(mV/°C)	(mA/°C)	
		40°C	50°C	70°C									
DCR20-250A	0-20	275	250	165	.2% or 16 mV ²	1000	160	2000	VP 18	.10	.50	8	500
DCR20-500A	0-20	550	500	330	.2% or 16 mV ²	2000	160	4000	VP 24	.10	.50	8	1000
DCR20-1000A	0-20	1100	1000	660	.2% or 16 mV ²	4000	160	8000	-	.10	.50	8	2000
DCR40-125A	0-40	138	125	82.5	.2% or 30 mV ²	500	160	563	VP 19	.10	.50	16	250
DCR40-250A	0-40	275	250	165	.2% or 30 mV ²	1000	160	1125	VP 19	.10	.50	16	500
DCR40-500A	0-40	550	500	330	.2% or 30 mV ²	2000	160	2250	-	.10	.50	16	1000
DCR150-35A	0-150	38.5	35	23	.2% or 60 mV ²	140	500	140	VP 20	.10	.50	60	70
DCR150-70A	0-150	77	70	47	.2% or 60 mV ²	280	500	280	VP 20	.10	.50	60	140
DCR300-18A	0-300	19.8	18	12	.2% or 120 mV ²	72	1000	72	VP 21	.10	.50	120	36
DCR300-35A	0-300	38.5	35	23	.2% or 120 mV ²	140	1000	140	VP 21	.10	.50	120	70
DCR600-18A	0-600	19.8	18	12	.2% or 240 mV ²	72	2000	72	VP 22	.10	.50	240	36

NOTES: 1. With load change (NL to FL or FL to NL) and line voltage change ($\pm 10\%$) combined. 2. Whichever is greater. 3. With 0 to 95% load change and $\pm 10\%$ line voltage change combined. 4. Whichever is smaller. 5. At full compliance voltage. 6. For 8 hours (after 30 min. warmup) with constant line, load and ambient temperature. 7. To return to $\pm 1\%$ band (20 volt models $\pm 2\%$ band) for a step load change of half load to full load or full load to half load. 8. Optional auxiliary chassis (ST101) permits operation from 342-418, 374-456, or 414-506 input. See outline drawing on the next page. 9. Alternate inputs (with voltage derating, if applicable) for DCR20-500A, DCR40-250A, DCR150-70A, DCR300-35A, DCR600-18A are: 187-229 Vac, 57-63 Hz, 100% E_o Max.; 207-253 Vac, 57-63 Hz, 100% E_o Max.; 342-418 Vac, 47-63 Hz, 90%

E_o Max.; 390-440 Vac, 47-63 Hz, 100% E_o Max. Alternate inputs (with voltage derating, if applicable) for DCR20-1000A and DCR40-500A are: 342-418 Vac, 47-63 Hz, 75% E_o Max.; 390-440 Vac, 47-63 Hz, 92% E_o Max. 10. Below 60 Hz, ripple and transient response characteristics will deteriorate by a factor of $(60/f)^2$, where "f" is the input frequency. 11. When ordering over-voltage protection accessory, specify both model number and VP number. VP 18, 19, 20, 21, 22 and 24 must be installed at the factory prior to shipment. 12. Current per phase. 13. 60/54 amperes drawn with 208/230 volt input; 27 amperes at 460 volts. 14. Also derated DC output voltage to 86-7% of maximum at 50°C. 15. M1 option available for 207-253 Vac operation. M2 option available for 198-242 Vac operation.

DCR-A Series Specifications

Frequency:

57-63 Hz all models.
49-63 Hz for 5 kW models only.
49-63 Hz for 380/415 V operation only on 10 kW and 20 kW models.

OPERATING DATA

Efficiency:

66-82% depending on model.

Series Operation:

200 Vdc maximum (150 and 300 V models, two in series).

Parallel Operation:

Direct paralleling of any number of units.

Overvoltage Protection:

Optional adjustable crowbar protection available on all models

except DCR 20-1000A and DCR 40-500A. Add suffix M5 to model number.

Ambient Operating Temperature Range:

0 to + 70°C

Storage Temperature Range:

- 40°C to +85°C.

Cooling:

Forced air.

DCR-A ACCESSORIES

Cabinet Style Side Enclosures:

Available for all models with 17.5 inch (445 mm) and 22.75 inch (578 mm) front panel heights. Specify Kit CSE. Consult local sales representative for the following accessory pricing data.

Casters:

Standard on models DCR 20-1000A and DCR 40-500A. Available as option on all other models. Specify Kit CH.

Step Down Input Transformer

380/415/460 Vac three phase to 208/230 Vac three phase @ 8 kW for models DCR 20-250A, DCR 40-125A, DCR 150-35A, DCR 300-18A. Specify ST 101.

Digital Programmer:

Available for all models in DCR-A series. IEEE-488 interface to GPIB Bus. Order Model 488 DAP.

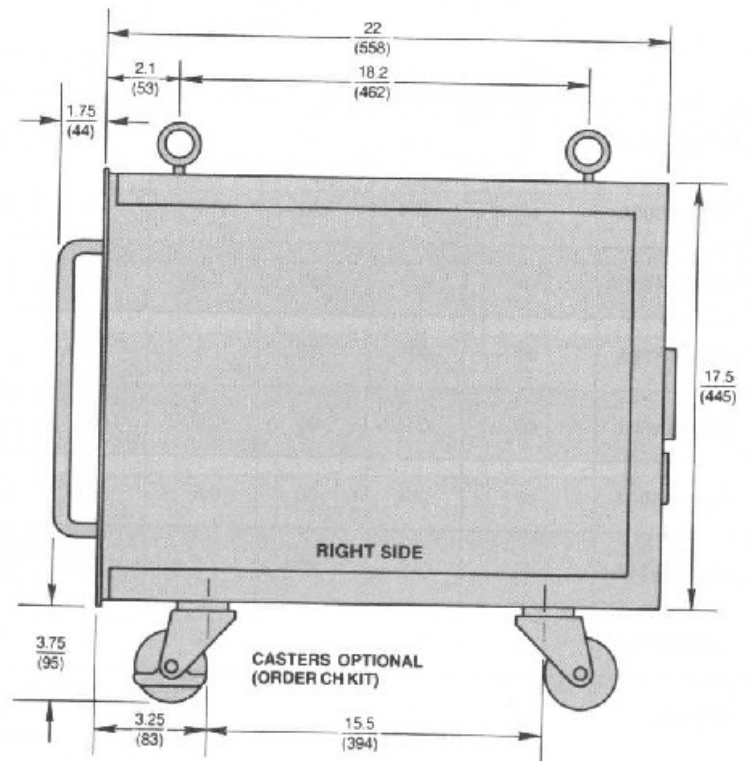
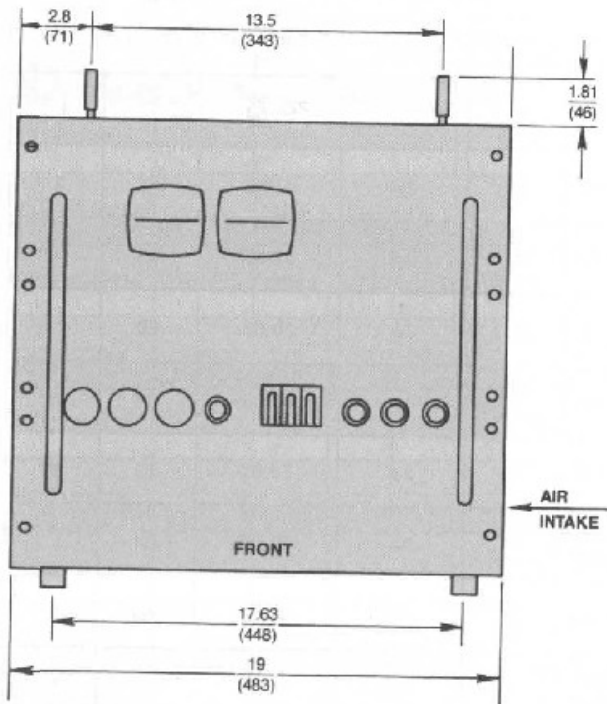
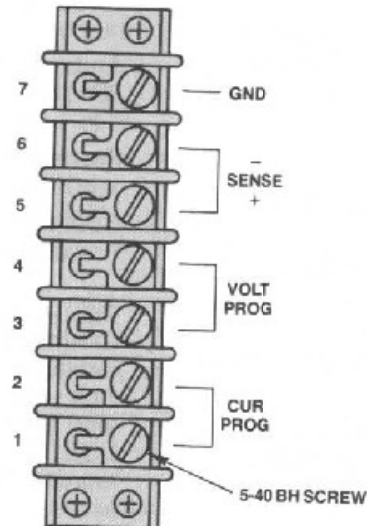
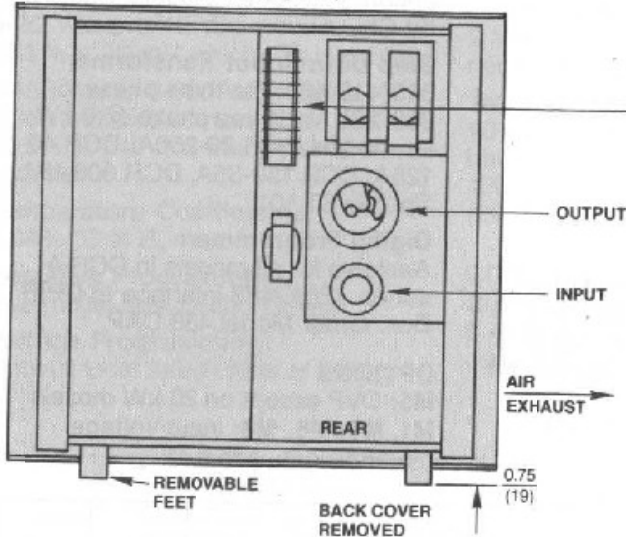
OPTIONS

M5: OVP except on 20 kW models
M1, M3, M6, M8: input voltage modifications; see p.41.

Model	Transient Response Time ⁷ ms (Typ.)	Output Imp. (Ohms) @ 1 kHz (Typ.)	Remote Prog. (Typ.)		Efficiency % (Typ.)	Input Power				Pwr. Factor (Typ.)	Case Size
			Ohms/V	Ohms/A		Voltage (Vac)	Current ¹² Max (Aac)	Phase	Frequency ¹⁰ (Hz)		
DCR20-250A	40	.006	160	0.6	66	187-229 207-253 ⁶	37	3 ϕ	50-63	.57	I
DCR20-500A	40	.004	160	0.3	70	414-506 ⁹	27	3 ϕ	47-63	.63	II
DCR20-1000A	40	.003	160	0.15	74	414-506 ⁹	80	3 ϕ	57-53 ⁹	.63	III
DCR40-125A	40	.006	80	1.2	72	187-229 207-253 ³	25	3 ϕ	50-63	.60	I
DCR40-250A	40	.006	80	0.6	75	414-506 ⁹	60 ¹⁴ 27	3 ϕ	57-63 ⁹	.67	II
DCR40-500A	40	.004	80	0.3	79	414-506 ⁹	60	3 ϕ	50-63	.59	III
DCR150-35A	40	.02	20	4.3	77	187-229 207-253 ⁸	35	3 ϕ	60-63	.64	I
DCR150-70A	40	.02	20	2.2	81	414-506 ⁹	60 ¹³ 27	3 ϕ	57-63 ⁹	.69	II
DCR300-18A	40	.04	10	8.3	78	187-229 207-253 ⁸	35	3 ϕ	50-63	.69	I
DCR300-35A	40	.02	10	4.3	82	414-506 ⁹	60 ¹³ 27	3 ϕ	57-63 ⁹	.68	II
DCR600-18A	40	.35	5	8.3	81	414-506 ⁹	60 ¹³ 27	3 ϕ	57-63 ⁹	.69	II

CASE I

For rack mounting; rear mounting support RP9 (see Optional Equipment page 44.)



Input Terminals:

Input Terminals:	Model
4 Terminal barrier strip with 10-32BH Screws	DCR 150-35A DCR 300-18A
Cabinet side enclosures optional for all models (order CSE kit)	DCR 20-250A DCR 40-125A

Weight

Weight	Output Terminals
lb.	kg.
309	140
318	144
309	140
315	143

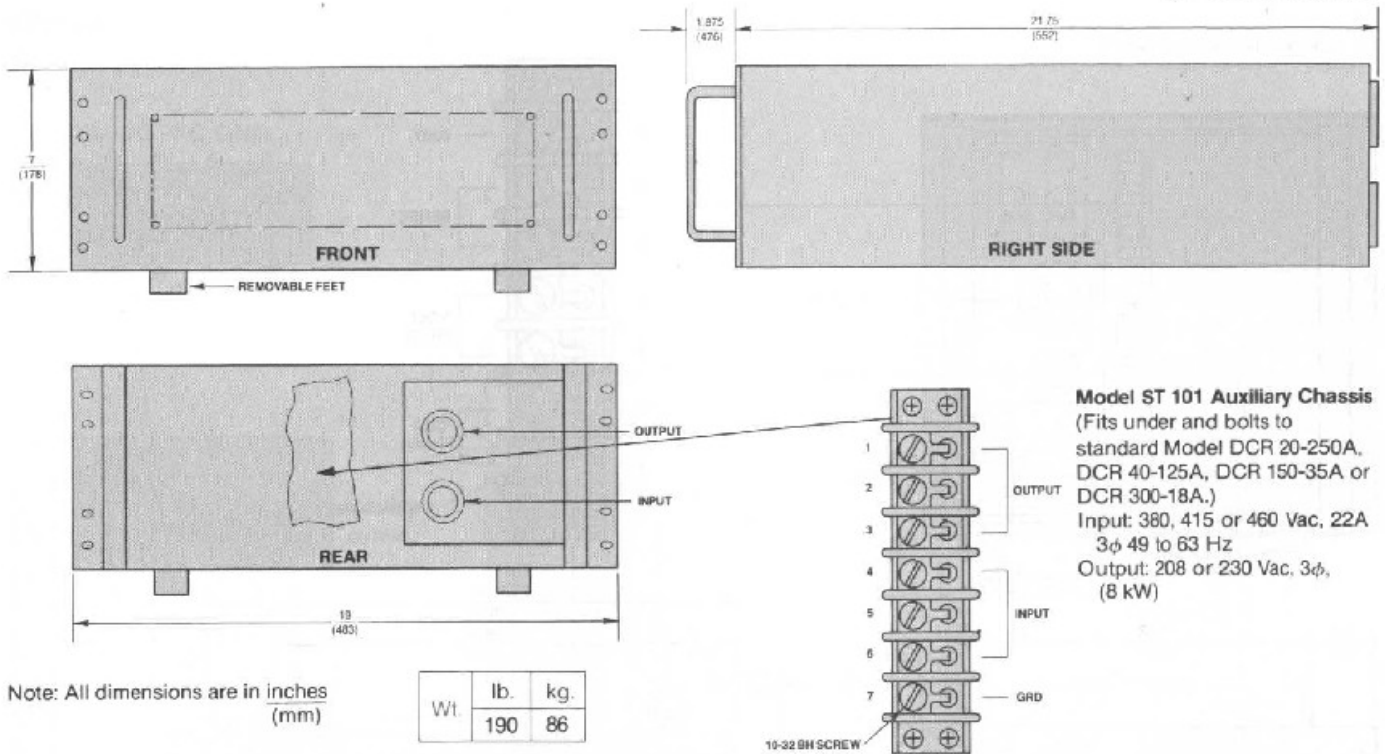
Barrier Terminal
Blocks/10-32BH Screws

Post lug terminals for 1/0 to 350 MCM

Note: All dimensions are in inches
(mm)

DCR-A Series Dimensional Drawings

ST 101 CHASSIS



Factory Input Voltage Modifications

Model	187-229 V	207-253 V	342-418 V (Three Phase)	390-440 V	414-506 V
0-20 V					
DCR 20-250A	Standard	M3	N/A ⁶	N/A ⁶	N/A ⁶
DCR 20-500A	M1	M3	M6 ³	M8	Standard
DCR 20-1000A	N/A	N/A	M6 ⁴	M8 ⁵	Standard
0-40 V					
DCR 40-125A	Standard	M3	N/A ⁶	N/A ⁶	N/A ⁶
DCR 40-250A	M1	M3	M6 ³	M8	Standard
DCR 40-500A	N/A	N/A	M6 ⁴	M8 ⁵	Standard
0-150 V					
DCR 150-35A	Standard	M3	N/A ⁶	N/A ⁶	N/A ⁶
DCR 150-70A	M1	M3	M6 ³	M8	Standard
0-300 V					
DCR 300-18A	Standard	M3	N/A ⁶	N/A ⁶	N/A ⁶
DCR 300-35A	M1	M3	M6 ³	M8	Standard
0-600 V					
DCR 600-18A	M1	M3	M6 ³	M8	Standard

³Derate output voltage range by 10%. ⁴Derate output voltage range by 25%. ⁵Derate output voltage range by 7%.

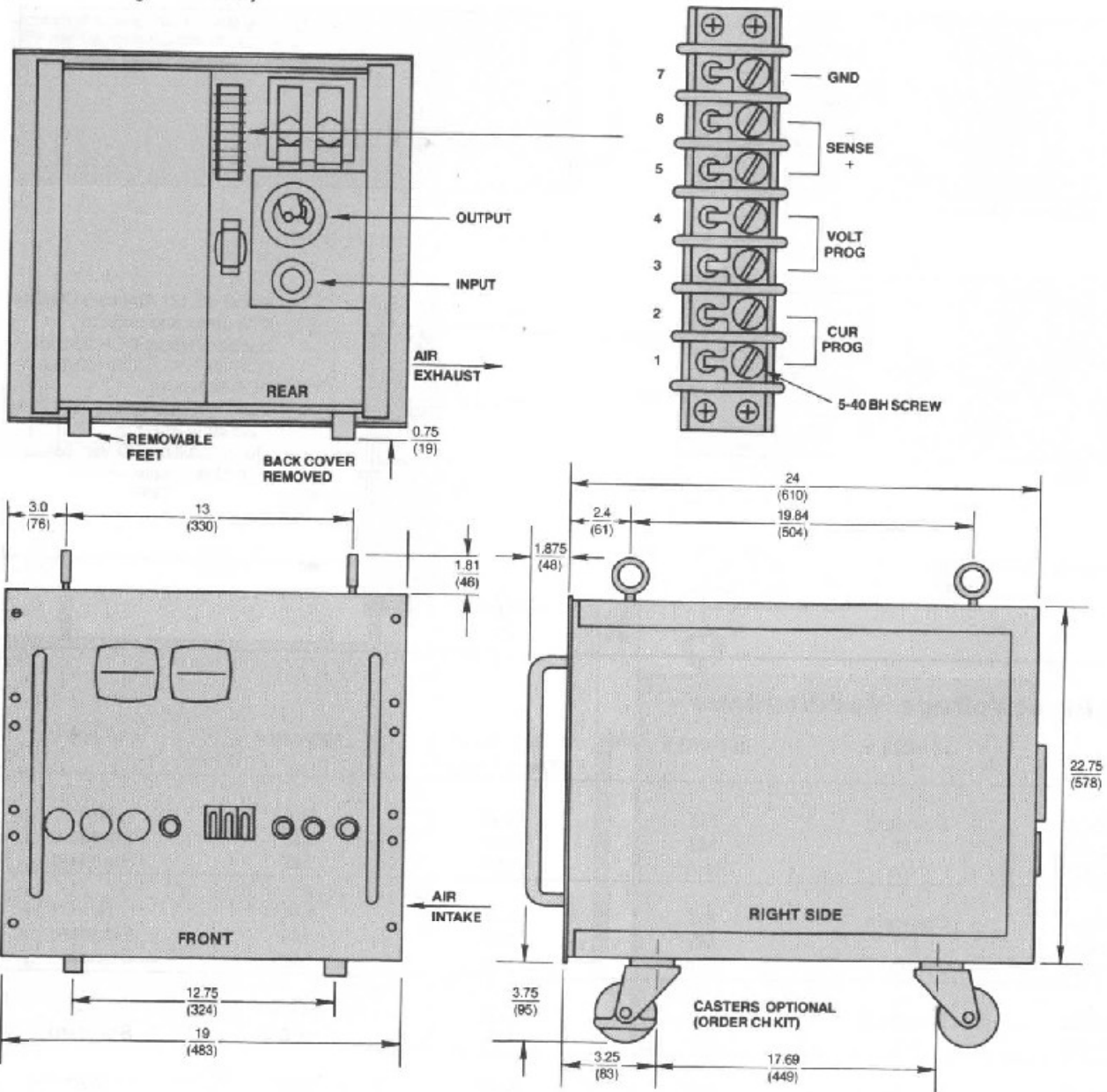
⁶Modification not available. Specify *optional* step down transformer (see accessories) ST101.

Note: To specify, add modification suffix to model number. Example: DCR 40-250A M8. Consult local sales representative for pricing data.

Field Input Voltage Modifications

Alternatively, where applicable, customer may perform field modification without voiding warranty. (See instruction manual for simple transformer tap changes.)

For rack mounting; consult factory.



Input Terminals

4 terminal barrier strip with 12-32BH Screws

Model

DCR 300-35A
DCR 600-18A
DCR 20-500A

Weight

lb.	kg.
481	218
481	218
481	218

Output Terminals

Barrier Terminal
Blocks/10-32BH Screws
post lug terminals for
700MCM to 1000 MCM
post lug terminals for 1/0 to 350 MCM

Cabinet side enclosures optional for all models (order CSE kit)

DCR 40-250A

481	218
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DCR 150-70A

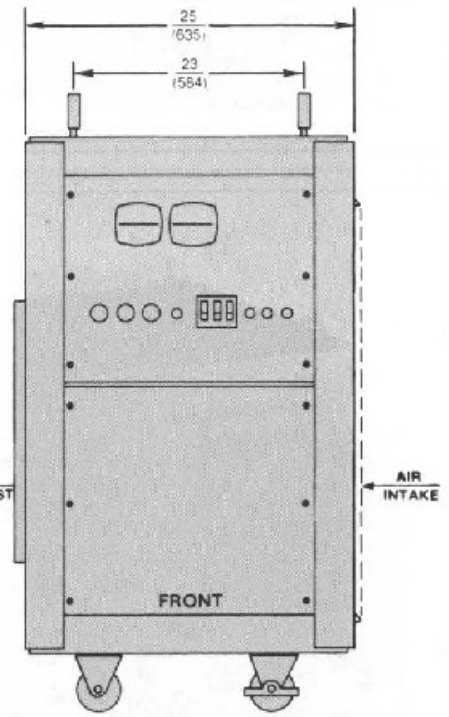
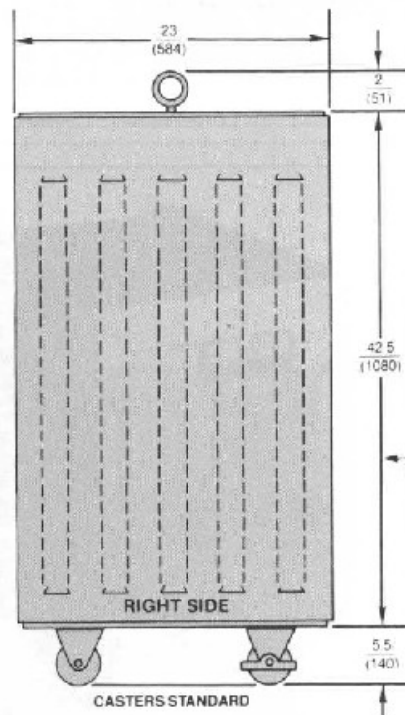
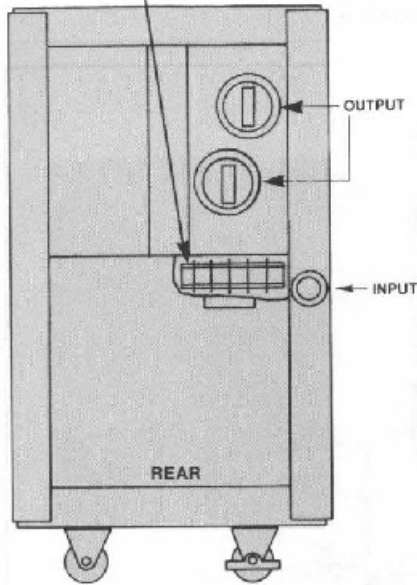
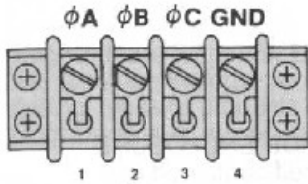
481	218
-----	-----

post lug terminals for #4 strd. to #1 strd.

Note: All dimensions are in inches (mm)

DCR-A Series Dimensional Drawings

CASE III



Input Terminals

4 terminals barrier strip (DCR 40-500A - 12-32BH Screws, DCR 20-1000A - 1/4-28BH Screws)

Model

DCR 20-1000A

DCR 40-500A

Weight

lb.

kg.

973

438

973

438

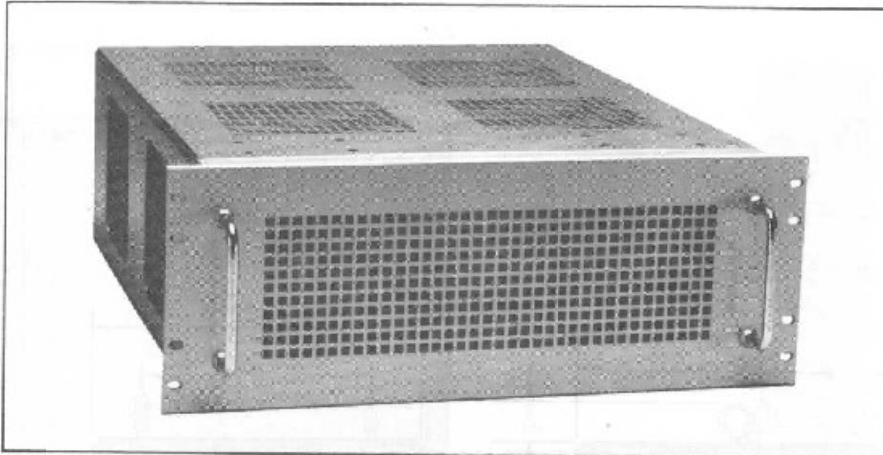
Output Terminals

1/4" Thick x 3" Wide Bus-Bar, with (4) 9/16" Dia. Hole on 1-3/4" x 1-3/4" centers.

1/4" Thick x 3" Wide Bus-Bar, with (4) 9/16" Dia. Hole on 1-3/4" x 1-3/4" centers.

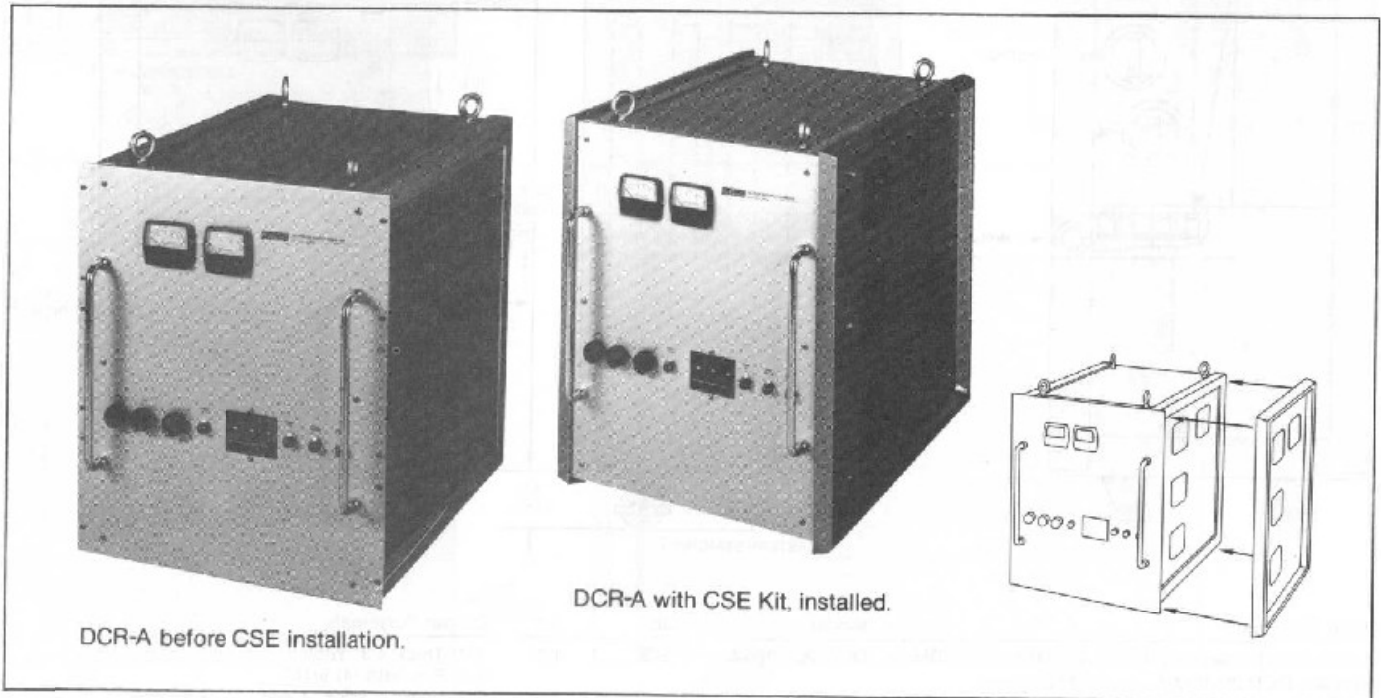
Note: All dimensions are in inches (mm)

DCR-A Series Optional Equipment



DCR-A auxiliary three phase, stepdown input transformer. (380/415/460 Vac to 208/230 Vac @ 8 kW). ST 101 (see drawing on page 41.)

(Below)
CABINET SIDE ENCLOSURE (CSE). For self-contained use the CSE protects personnel from sharp edges and the unit from side damage. The CSE Kit consists of two heavy duty enameled metal enclosures and the necessary hardware.



DCR-A before CSE installation.

DCR-A with CSE Kit, installed.