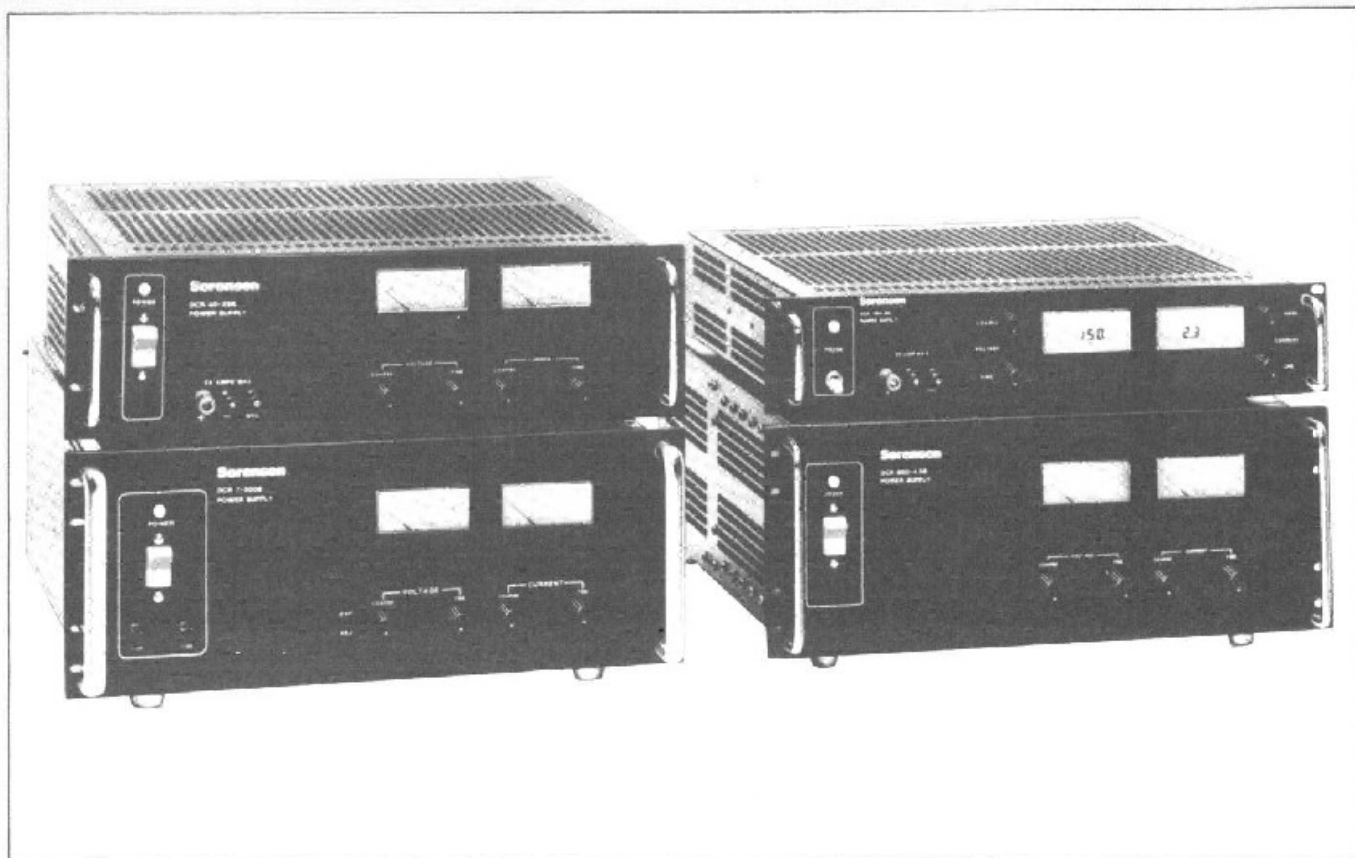


## 500 to 2500 Watt, Single Phase Lab & Industrial Power Supplies DCR-B Series

DCR-B Series high power laboratory and industrial power supplies have input SCR controlled regulator which provides unparalleled reliability along with regulation and transient response performance suitable for nearly all burn-in and test applications.

31 models in 9 voltage ranges offer from 0-7 to 0-600 Vdc with power levels from 400 to 2700 W. Sorensen has over 20 years of industry experience in designing this type of product.

- 31 models in nine voltage ranges from 0-7 Vdc to 0-600 Vdc with power levels from 400 to 2700 watts
- 115 Vac single phase input standard (208/220/230 Vac single phase optional) on all convection cooled models (up to 1800 watts)
- 208 Vac single phase input standard (220/230 Vac optional) on all fan cooled models (over 2000 watts)
- 50/60 Hz operation without derating
- Low ripple and noise
- Excellent voltage and current regulation with automatic crossover. Panel lights indicate operating mode
- Remote voltage and resistance programming in voltage and current modes
- Adjustable current limiting (overload/short circuit protection) with automatic recovery
- Overvoltage protection with crowbar standard, all models
- 0.05% line & load regulation (typical)
- 65-1200 mV rms ripple (model dependent)
- 50 msec transient response—50% change (typical)
- Option M50: LCD digital meters
- Option M35: Polarity switch and load disconnect
- 5-year warranty



**OUTPUT**

**CONSTANT VOLTAGE MODE**

**Voltage Regulation:**

Line and load combined

0-7 and 0-10 Vdc models

0.1% or 5 mV, whichever is greater.

0-20 to 0-80 Vdc models

0.05% or 10 mV, whichever is greater.

0-150 to 0-600 Vdc models

0.05% or 75 mV, whichever is greater.

**Temperature Coefficient:**

0.015%/°C of  $E_o$  max.

**Resistance Programming:**

See model specification chart.

**Voltage Programming:**

Consult instruction manual.

**Stability:**

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

**Remote Sensing:**

Maximum drop per load lead should not exceed 5% of  $E_o$  max. or 3 V, whichever is smaller.

**Transient Response:**

0-10 to 0-600 Vdc models

50 ms (typical) to return to  $\pm 1\%$  band for step load change of 50 to 100% of full load ( $\pm 2\%$  or 20 V model,  $\pm 3\%$  for 10 V model).

0-7 Vdc model

100 ms (typical) to return to  $\pm 3\%$  band for step load change of 67 to 100% of full load.

**CONSTANT CURRENT MODE**

**Current Regulation:**

0.25% of  $I_o$  max. line and load combined. (0.5% for 7 V model)

**Temperature Coefficient:**

0.03%/°C. of  $I_o$  max.

**Current Programming:**

See model specification chart.

**Stability:**

0.15% of  $I_o$  max. for 8 hours after 30 minute warm-up.

**INPUT**

**Voltage:**

103-127 Vac single phase for 400 to 1800 watts models. 187-229 Vac single phase for 2100-2700 watt models.

| Model       | Output Power  |                |      | Constant Voltage Regulation mV <sup>6</sup> | Constant Current Regulation mA <sup>5</sup> | Constant Voltage Ripple (PARD) rms/mV <sup>2</sup> | Constant Current Ripple (PARD) rms/mA <sup>2,3</sup> | Drift (Typ.) <sup>7</sup> |             | V. Prog. V/Full Scale | V. Prog. I/Full Scale |      |
|-------------|---------------|----------------|------|---|---|--|--|---------------------------|-------------|-----------------------|-----------------------|------|
|             | Voltage (Vdc) | Current (A dc) |      |   |   |  |  | % $E_o$ max               | % $I_o$ max |                       |                       |      |
|             |               | 40°C           | 50°C |   |   |  |  |                           |             |                       |                       | 70°C |
| DCR7-300B   | 0-7           | 300            | 225  | 150   | 7   | 1500   | 65   | 2800                      | .1          | .15                   | 0-10 V                | 0-4  |
| DCR10-40B   | 0-10          | 40             | 30   | 20  | 10  | 100  | 65   | 260                       | .1          | .15                   | 0-10 V                | 0-4  |
| DCR10-80B   | 0-10          | 80             | 60   | 40  | 10  | 200  | 65   | 520                       | .1          | .15                   | 0-10 V                | 0-4  |
| DCR10-120B  | 0-10          | 120            | 90   | 60  | 10  | 300  | 65   | 785                       | .1          | .15                   | 0-10 V                | 0-4  |
| DCR20-25B   | 0-20          | 25             | 19.3 | 13  | 10  | 63   | 65   | 82                        | .1          | .15                   | 0-10 V                | 0-4  |
| DCR20-50B   | 0-20          | 50             | 37.5 | 25  | 10  | 125  | 65   | 125                       | .1          | .15                   | 0-10 V                | 0-4  |
| DCR20-80B   | 0-20          | 80             | 60   | 40  | 10  | 200  | 65   | 260                       | .1          | .15                   | 0-10 V                | 0-4  |
| DCR20-115B  | 0-20          | 115            | 86.5 | 58  | 10  | 288  | 65   | 375                       | .1          | .15                   | 0-10 V                | 0-4  |
| DCR40-13B   | 0-40          | 13             | 9.8  | 6.6   | 20  | 33   | 90   | 30                        | .1          | .15                   | 0-10 V                | 0-4  |
| DCR40-25B   | 0-40          | 25             | 19.3 | 13  | 20  | 63   | 90   | 56                        | .1          | .15                   | 0-10 V                | 0-4  |
| DCR40-40B   | 0-40          | 40             | 30   | 20  | 20  | 100  | 90   | 90                        | .1          | .15                   | 0-10 V                | 0-4  |
| DCR40-70B   | 0-40          | 70             | 55   | 40  | 20  | 175  | 90   | 157                       | .1          | .15                   | 0-10 V                | 0-4  |
| DCR60-9B    | 0-60          | 9              | 7    | 5   | 30  | 23   | 125  | 19                        | .1          | .15                   | 0-10 V                | 0-4  |
| DCR60-18B   | 0-60          | 18             | 13.3 | 8.6   | 30  | 45   | 125  | 38                        | .1          | .15                   | 0-10 V                | 0-4  |
| DCR60-30B   | 0-60          | 30             | 23.3 | 16.5  | 30  | 75   | 125  | 63                        | .1          | .15                   | 0-10 V                | 0-4  |
| DCR60-45B   | 0-60          | 45             | 35.8 | 26.5  | 30  | 113  | 125  | 93                        | .1          | .15                   | 0-10 V                | 0-4  |
| DCR80-6B    | 0-80          | 6              | 4.7  | 3.3   | 40  | 15   | 150  | 12                        | .1          | .15                   | 0-10 V                | 0-4  |
| DCR80-12B   | 0-80          | 12             | 9.3  | 6.6   | 40  | 30   | 150  | 23                        | .1          | .15                   | 0-10 V                | 0-4  |
| DCR80-33B   | 0-80          | 33             | 26.5 | 20  | 40  | 83   | 150  | 61                        | .1          | .15                   | 0-10 V                | 0-4  |
| DCR150-3B   | 0-150         | 3              | 2.4  | 1.7   | 75  | 8  | 300  | 6                         | .1          | .15                   | 0-10 V                | 0-4  |
| DCR150-6B   | 0-150         | 6              | 4.7  | 3.3   | 75  | 16   | 300  | 12                        | .1          | .15                   | 0-10 V                | 0-4  |
| DCR150-12B  | 0-150         | 12             | 9.3  | 6.6   | 75  | 32   | 300  | 24                        | .1          | .15                   | 0-10 V                | 0-4  |
| DCR150-18B  | 0-150         | 18             | 14   | 10  | 75  | 45   | 300  | 36                        | .1          | .15                   | 0-10 V                | 0-4  |
| DCR300-1.5B | 0-300         | 1.5            | 1.2  | .8  | 150   | 4  | 700  | 4                         | .1          | .15                   | 0-10 V                | 0-4  |
| DCR300-3B   | 0-300         | 3              | 2.3  | 1.65  | 150   | 8  | 700  | 7                         | .1          | .15                   | 0-10 V                | 0-4  |
| DCR300-6B   | 0-300         | 6              | 4.7  | 3.3   | 150   | 16   | 700  | 14                        | .1          | .15                   | 0-10 V                | 0-4  |
| DCR300-9B   | 0-300         | 9              | 7.3  | 5.5   | 150   | 23   | 700  | 21                        | .1          | .15                   | 0-10 V                | 0-4  |
| DCR600-.75B | 0-600         | .75            | .6   | .4  | 300   | 2  | 1200   | 2                         | .1          | .15                   | 0-10 V                | 0-4  |
| DCR600-1.5B | 0-600         | 1.5            | 1.2  | .83   | 300   | 4  | 1200   | 3                         | .1          | .15                   | 0-10 V                | 0-4  |
| DCR600-3B   | 0-600         | 3              | 2.3  | 1.65  | 300   | 8  | 1200   | 6                         | .1          | .15                   | 0-10 V                | 0-4  |
| DCR600-4.5B | 0-600         | 4.5            | 3.5  | 2.5   | 300   | 12   | 1200   | 9                         | .1          | .15                   | 0-10 V                | 0-4  |

NOTES: 1. 7" units offer convection cooling or fan (F) cooling. 2. Below 60 Hz, ripple and transient response characteristics will deteriorate by a factor of  $(\frac{60}{f})^2$  where f is the input frequency. 3. At full compliance voltage. 4. At 115 Vac. 5. At 208 Vac. (7-inch Fan). 6. With load change (NL-to-FL or FL-to-NL) and a full line-voltage change combined. 7. For 8 hours (after 30-min. warmup) with constant line, load and ambient temperature.

8. To return to  $\pm 1\%$  band on all models except 10 volt ( $\pm 3\%$ ) and 20 volt ( $\pm 2\%$ ) for a step-load change of half load-to-full load or full load-to-half load. 9. With 0 to 95% compliance-voltage change and  $\pm 10\%$  line-voltage change combined. 10. Optional input voltage available 208 Vac  $\pm 10\%$  (except 7-inch fan) (option M1) 220 Vac  $\pm 10\%$  (option M2) 230 Vac  $\pm 10\%$  (option M3)

# DCR-B Series Specifications

## Voltage Options:

190-230 Vac, add M1 to model no.  
200-240 Vac, add M2 to model no.  
210-250 Vac, add M3 to model no.  
Consult factory for modification price.

## Frequency:

49-63 Hz single phase.  
(Ripple and transient response specs apply only at 60 Hz).

## OPERATING DATA

**Ambient Operating Temperature Range:**  
0 to +70°C

**Storage Temperature Range:**  
-40°C to +85°C

## Efficiency:

61-86% depending on model.

## Series Operation:

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

## Parallel Operation:

Master-slave or straight parallel;  
four units maximum in master-slave.

## Overshoot:

No overshoot at turn-on, turn-off or power failure.

## Overvoltage Protection:

Now factory installed on all DCR-B models.

## Remote Shutdown:

Remote relay, transistor or logic switching can be connected to shutdown terminals on back of supply.

## Cooling:

Convection cooled on 400 to 800 watt models, built-in fan on 2100-2700 watt models.

## DCRB ACCESSORIES

### Digital Programmer:

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

### Chassis Slide (Kit):

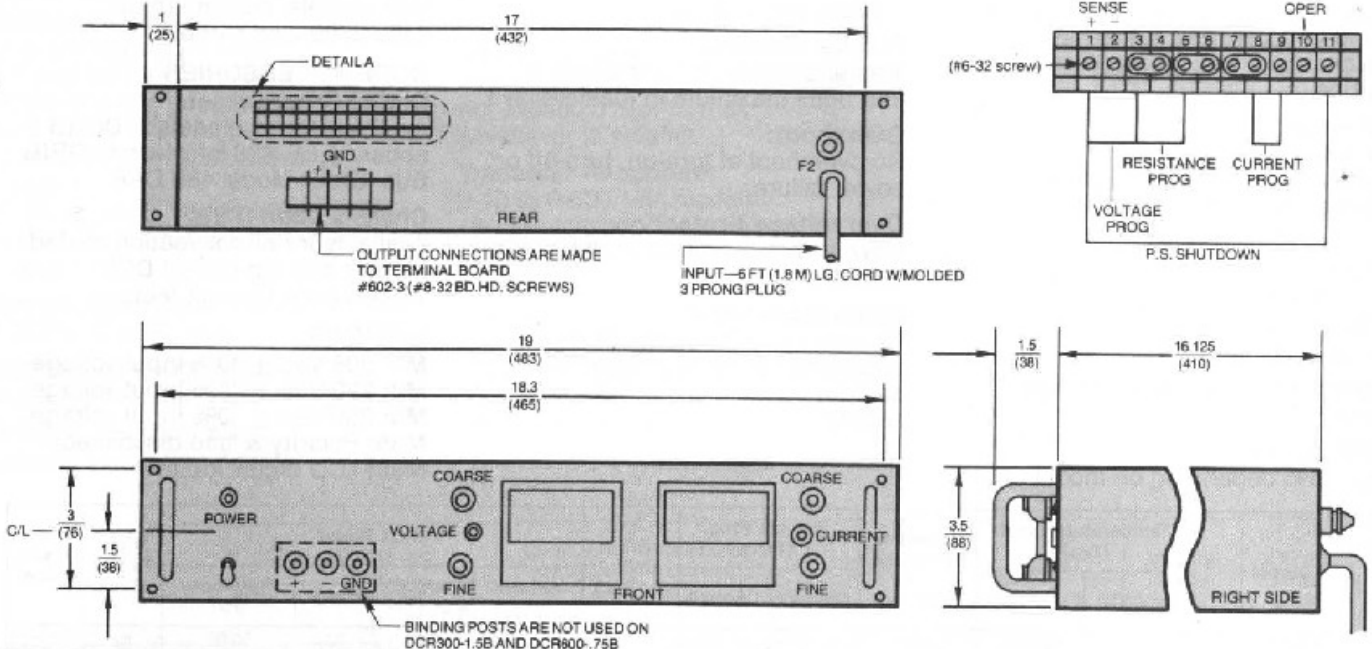
Available for all convection cooled models and fan cooled DCR 7-300B only. Consult factory.

## OPTIONS

**M1:** 208 Vac  $\pm$  10% input voltage  
**M2:** 220 Vac  $\pm$  10% input voltage  
**M3:** 230 Vac  $\pm$  10% input voltage  
**M35:** Polarity & load disconnect  
**M50:** LCD digital meters

| Model       | Temperature Coeff. (Typ.) |         | Transient Response Time ms(Typ.) <sup>8</sup> | Remote Prog. (Typ.) |        | Efficiency % (Typ.) | Input Power                 |                                  |          |                | Power Factor (Typ.) | Case Size <sup>1</sup> |
|-------------|---------------------------|---------|---|---------------------|--------|---------------------|-----------------------------|----------------------------------|----------|----------------|---------------------|------------------------|
|             | (mV/°C)                   | (mA/°C) |   | Ohms/V              | Ohms/A |                     | Voltage (Vac) <sup>10</sup> | Current <sup>4,5</sup> Max (Aac) | Phase    | Frequency (Hz) |                     |                        |
| DCR7-300B   | 1.1                       | 90      | 100   | 1710                | 0.33   | 65                  | 187-229                     | 27.5                             | 1 $\phi$ | 50/60          | .62                 | V                      |
| DCR10-40B   | 1.5                       | 12      | 50  | 1200                | 10     | 61                  | 103-127                     | 8.7                              | 1 $\phi$ | 50/60          | .65                 | I                      |
| DCR10-80B   | 1.5                       | 24      | 50  | 1200                | 5      | 62                  | 103-127                     | 16                               | 1 $\phi$ | 50/60          | .69                 | II                     |
| DCR10-120B  | 1.5                       | 36      | 50  | 1200                | 3.3    | 62                  | 103-127                     | 24.5                             | 1 $\phi$ | 50/60          | .67                 | III                    |
| DCR20-25B   | 3.0                       | 7.5     | 50  | 600                 | 16     | 71                  | 103-127                     | 9.4                              | 1 $\phi$ | 50/60          | .65                 | I                      |
| DCR20-50B   | 3.0                       | 15      | 50  | 600                 | 8      | 69                  | 103-127                     | 20                               | 1 $\phi$ | 50/60          | .62                 | II                     |
| DCR20-80B   | 3.0                       | 24      | 50  | 600                 | 5      | 70                  | 103-127                     | 30                               | 1 $\phi$ | 50/60          | .66                 | III                    |
| DCR20-115B  | 3.0                       | 35      | 50  | 600                 | 3.5    | 70                  | 187-229                     | 26.5                             | 1 $\phi$ | 50/60          | .60                 | IV                     |
| DCR40-13B   | 6.0                       | 3.9     | 50  | 300                 | 30     | 71                  | 103-127                     | 9.8                              | 1 $\phi$ | 50/60          | .65                 | I                      |
| DCR40-25B   | 6.0                       | 7.5     | 50  | 300                 | 16     | 79                  | 103-127                     | 16                               | 1 $\phi$ | 50/60          | .68                 | II                     |
| DCR40-40B   | 6.0                       | 12      | 50  | 300                 | 10     | 78                  | 103-127                     | 26.8                             | 1 $\phi$ | 50/60          | .66                 | III                    |
| DCR40-70B   | 6.0                       | 21      | 50  | 300                 | 6      | 77                  | 187-229                     | 29.6                             | 1 $\phi$ | 50/60          | .58                 | IV                     |
| DCR60-9B    | 9.0                       | 2.7     | 50  | 200                 | 46     | 75                  | 103-127                     | 9.7                              | 1 $\phi$ | 50/60          | .65                 | I                      |
| DCR60-18B   | 9.0                       | 5.4     | 50  | 200                 | 22     | 81                  | 103-127                     | 19                               | 1 $\phi$ | 50/60          | .60                 | II                     |
| DCR60-30B   | 9.0                       | 0.9     | 50  | 200                 | 16     | 84                  | 103-127                     | 27                               | 1 $\phi$ | 50/60          | .68                 | III                    |
| DCR60-45B   | 9.0                       | 13.5    | 50  | 200                 | 9      | 80                  | 187-229                     | 29.0                             | 1 $\phi$ | 50/60          | .56                 | IV                     |
| DCR80-6B    | 12.0                      | 1.8     | 50  | 150                 | 68     | 77                  | 103-127                     | 8.3                              | 1 $\phi$ | 50/60          | .65                 | I                      |
| DCR80-12B   | 12.0                      | 3.6     | 50  | 150                 | 33     | 83                  | 103-127                     | 15                               | 1 $\phi$ | 50/60          | .65                 | II                     |
| DCR80-33B   | 12.0                      | 9.9     | 50  | 150                 | 12     | 81                  | 187-229                     | 27.2                             | 1 $\phi$ | 50/60          | .57                 | IV                     |
| DCR150-3B   | 22.5                      | 0.9     | 50  | 80                  | 134    | 74                  | 103-127                     | 8.2                              | 1 $\phi$ | 50/60          | .65                 | I                      |
| DCR150-6B   | 22.5                      | 1.8     | 50  | 80                  | 66     | 84                  | 103-127                     | 15.5                             | 1 $\phi$ | 50/60          | .60                 | II                     |
| DCR150-12B  | 22.5                      | 3.6     | 50  | 80                  | 33     | 84                  | 103-127                     | 27                               | 1 $\phi$ | 50/60          | .69                 | III                    |
| DCR150-18B  | 22.5                      | 5.4     | 50  | 80                  | 22     | 83                  | 187-229                     | 27                               | 1 $\phi$ | 50/60          | .58                 | IV                     |
| DCR300-1.5B | 45.0                      | 0.45    | 50  | 40                  | 270    | 74                  | 103-127                     | 8.9                              | 1 $\phi$ | 50/60          | .60                 | I                      |
| DCR300-3B   | 45.0                      | 0.9     | 50  | 40                  | 133    | 82                  | 103-127                     | 15.7                             | 1 $\phi$ | 50/60          | .60                 | II                     |
| DCR300-6B   | 45.0                      | 1.8     | 50  | 40                  | 66     | 84                  | 103-127                     | 27                               | 1 $\phi$ | 50/60          | .69                 | III                    |
| DCR300-9B   | 45.0                      | 2.7     | 50  | 40                  | 44     | 83                  | 187-229                     | 27.4                             | 1 $\phi$ | 50/60          | .57                 | IV                     |
| DCR600-.75B | 90.0                      | 0.225   | 50  | 20                  | 530    | 74                  | 103-127                     | 8.9                              | 1 $\phi$ | 50/60          | .60                 | I                      |
| DCR600-1.5B | 90.0                      | 0.45    | 50  | 20                  | 266    | 86                  | 103-127                     | 15.2                             | 1 $\phi$ | 50/60          | .60                 | II                     |
| DCR600-3B   | 90.0                      | 0.9     | 50  | 20                  | 133    | 86                  | 103-127                     | 27.4                             | 1 $\phi$ | 50/60          | .66                 | III                    |
| DCR600-4.5B | 90.0                      | 1.35    | 50  | 20                  | 89     | 85                  | 187-229                     | 26.8                             | 1 $\phi$ | 50/60          | .57                 | IV                     |

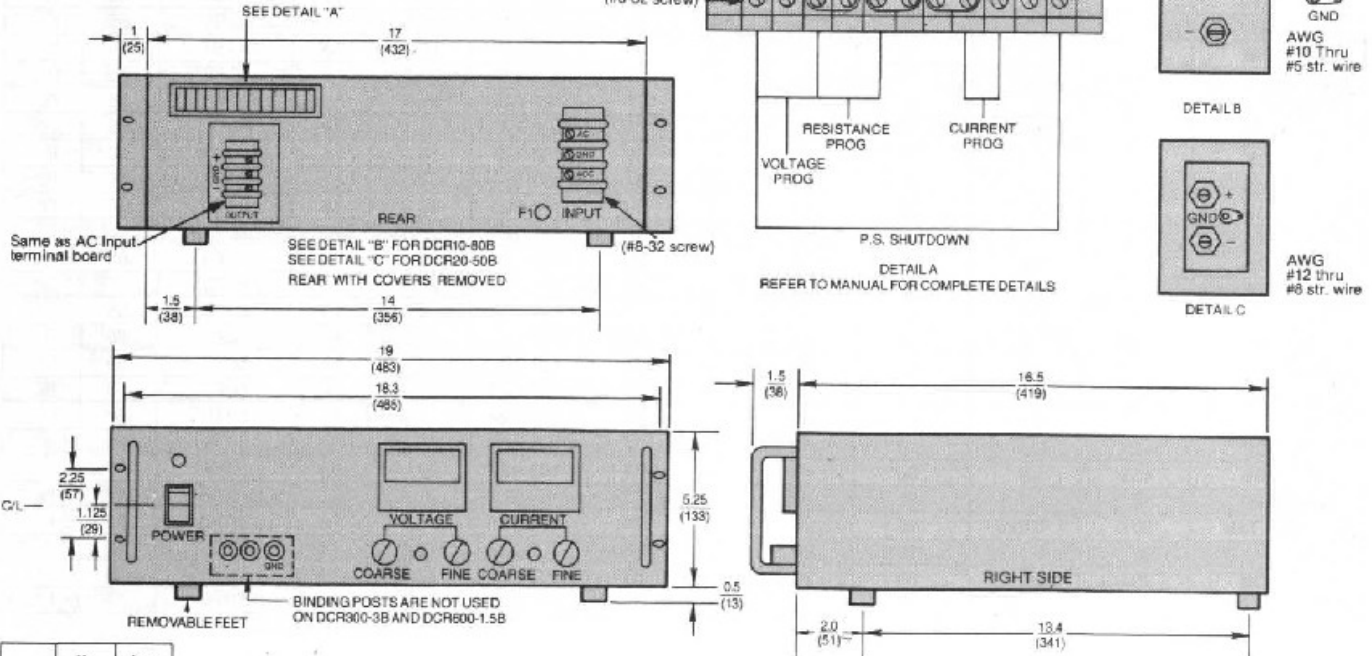
CASE I (3.5" High)  
Convection Cooled



|     |     |      |
|-----|-----|------|
| Wt. | lb. | kg.  |
|     | 40  | 18.1 |

Note: Slide-rail option available.  
Note: All dimensions are in inches (mm)

CASE II (5.25" High)  
Convection Cooled



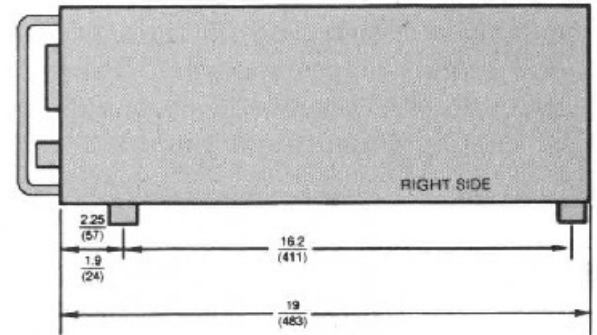
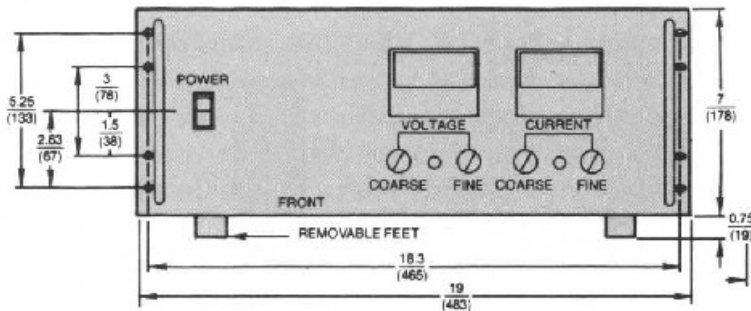
|     |     |      |
|-----|-----|------|
| Wt. | lb. | kg.  |
|     | 70  | 31.7 |

Note: Slide-rail option available. Note: All dimensions are in inches (mm)



# DCR-B Series Dimensional Drawings

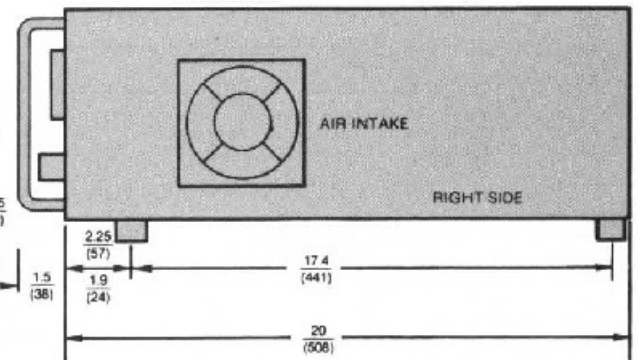
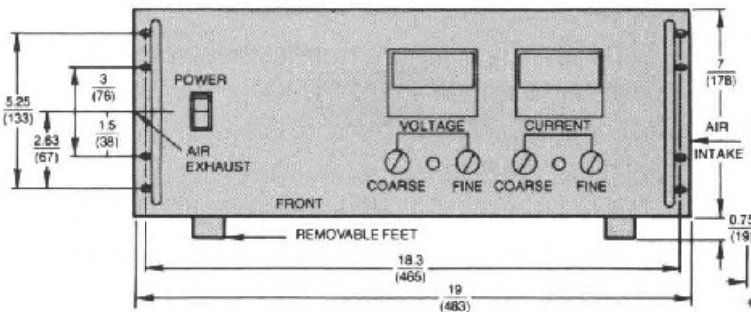
CASE III (7" High) Convection Cooled



| CASE | Weight |      |
|------|--------|------|
|      | lb.    | kg.  |
| III  | 90     | 40.8 |

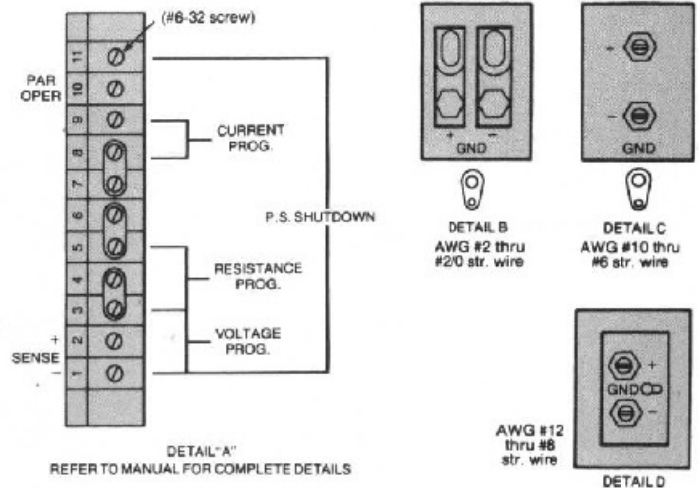
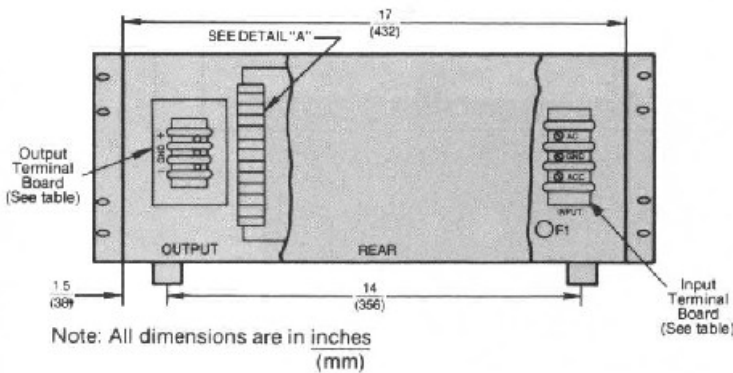
Note: Slide-rail option available.

CASE IV (7" High) Fan Cooled



| CASE | Weight |      |
|------|--------|------|
|      | lb.    | kg.  |
| IV   | 130    | 58.9 |

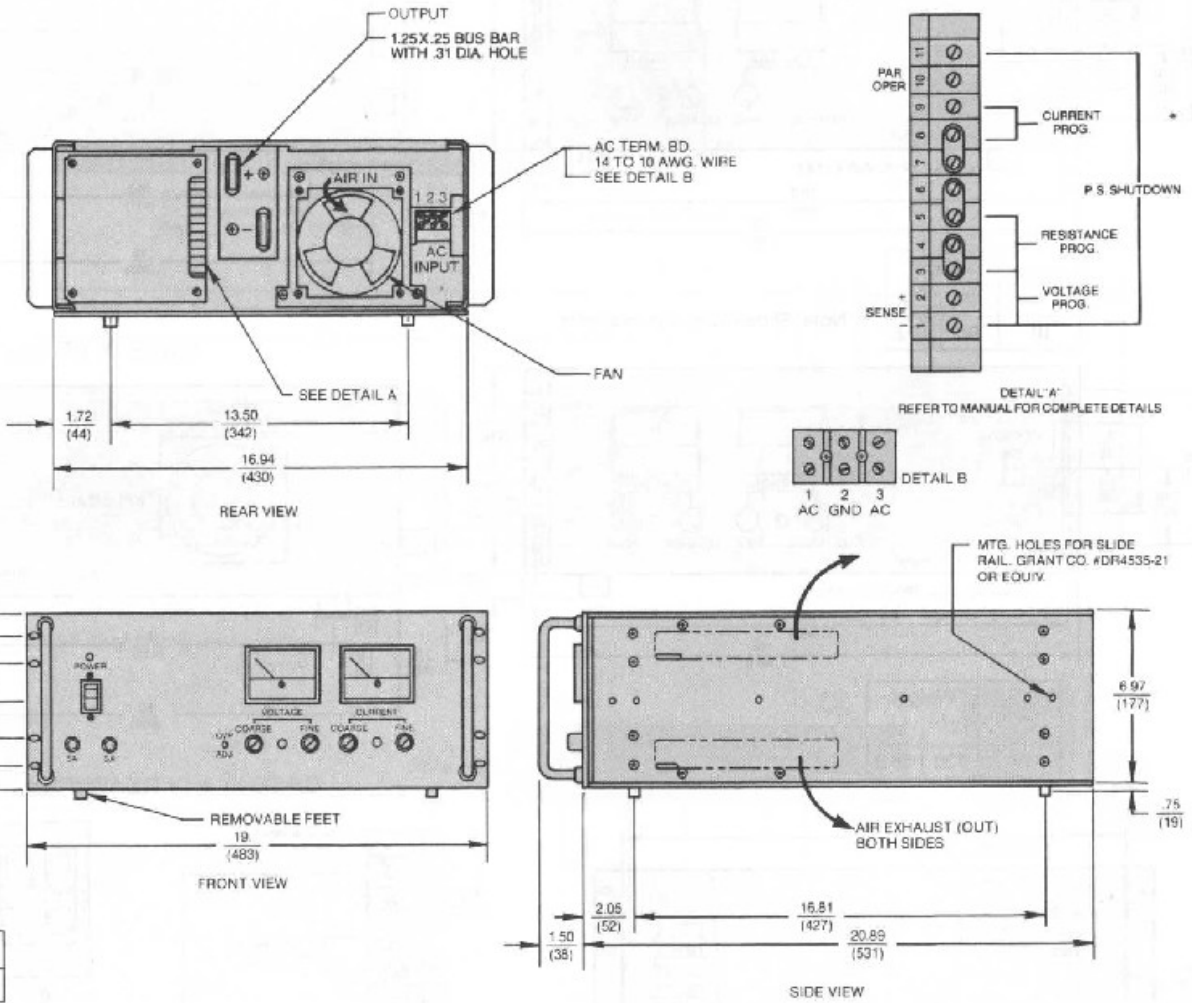
CASE III & IV REAR TERMINAL DETAILS



Input/Output Terminal Data

| Terminal | Model       | CASE III                | Model       | Case IV                  |
|----------|-------------|-------------------------|-------------|--------------------------|
| ac       |             | Term Bd. (#8-32 screw)  |             | Term. Bd. (#10-32 screw) |
| dc       | DCR 10-120B | See Detail B            | DCR 20-115B | See Detail B             |
| dc       | DCR 20-80B  | See Detail B            | DCR 40-70B  | See Detail C             |
| dc       | DCR 40-40B  | See Detail D            | DCR 60-45B  | See Detail D             |
| dc       | All others: | Term. Bd. (#8-32 screw) | All others: | Term. Bd. (#10-32 screw) |

CASE V (7" High)  
Fan Cooled



| Wt. | lb. | kg. |
|-----|-----|-----|
|     | 150 | 68  |

Note: All dimensions are in inches  
(mm)