

ORENSEN (AMETEK)

DCR80

The Sorensen DCR80 is a family of highly reliable, phase-controlled SCR programmable DC power supplies within the legacy DCR-B series, encompassing the DCR 80-4.5B, DCR 80-10B, and DCR 80-18B models. Designed for both benchtop and 19-inch rackmount applications, these robust units provide stable, regulated DC power up to 80 V with automatic crossover between Constant Voltage (CV) and Constant Current (CC) modes. They feature extensive remote analog control, remote sensing, and built-in overvoltage protection (OVP).

SPECIFICATIONS

General

Interfaces	Analog remote programming (voltage and resistance); Remote shutdown; Remote sensing
Display	Dual analog meters for voltage and current (standard); 3.5-digit LED digital meters (Option M5)

Physical

Power Supply	115 VAC single-phase (standard), 208/220/230 VAC (optional); 57-63 Hz (standard), 47-53 Hz (optional)
Operating Temperature	0 to 70 °C °C
Dimensions (W×H×D)	89×483×394 mm (80-4.5B) / 133×483×394 mm (80-10B) / 178×483×508 mm (80-18B) mm
Weight	18.1 kg (80-4.5B) / 29.5 kg (80-10B) / 40.8 kg (80-18B) kg

Output Specifications

Rated Output Voltage	0 to 80 VDC
Rated Output Current (DCR 80-4.5B)	0 to 4.5 A
Rated Output Current (DCR 80-10B)	0 to 10 A
Rated Output Current (DCR 80-18B)	0 to 18 A
Maximum Output Power (DCR 80-4.5B)	360 W
Maximum Output Power (DCR 80-10B)	800 W
Maximum Output Power (DCR 80-18B)	1440 W
Line Regulation (Voltage)	±0.05% of maximum output voltage (40 mV) for a ±10% line change
Load Regulation (Voltage)	±0.05% of maximum output voltage (40 mV) for a 0 to 100% load change
Line Regulation (Current)	±0.15% of maximum output current for a ±10% line change
Load Regulation (Current)	±0.15% of maximum output current for a 0 to 95% compliance voltage change
Output Ripple and Noise (RMS)	150 mV RMS
Transient Recovery Time	50 ms typical to return to within 1% of nominal output voltage for a 50% step load change
Temperature Coefficient (Voltage)	0.015% of maximum output voltage per °C
Temperature Coefficient (Current)	0.03% of maximum output current per °C
Maximum Remote Sense Compensation	Up to 3 V total line drop (1.5 V per lead)
Output Drift (8 Hours)	0.1% of maximum output voltage (after 30-minute warmup)
Operating Modes	Constant Voltage (CV) and Constant Current (CC) with automatic crossover

AC Input Specifications

AC Input Voltage Range	115 VAC +10%/-13% standard (options for 208/220/230 VAC)
AC Input Frequency Range	57 to 63 Hz standard (47 to 53 Hz optional via Option M11)
AC Input Phase	Single-phase
AC Input Current (DCR 80-4.5B)	9.5 A RMS maximum @ 115 VAC
AC Input Current (DCR 80-10B)	16 A RMS maximum @ 115 VAC
AC Input Current (DCR 80-18B)	26 A RMS maximum @ 115 VAC

Protection and Diagnostics

Over Voltage Protection (OVP) Range	10 to 90 VDC, adjustable via front-panel screwdriver potentiometer
Over Current Protection	Inherent continuous current limiting (adjustable from 0 to 100% of rated current)
Output Isolation Voltage (to Chassis)	150 VDC maximum (either terminal may be grounded or floated up to this limit)
Unit Shutdown Circuit	Standard shutdown circuit activated by OVP trip, over-temperature, or external signal

Control and Interface

Analog Remote Programming (Voltage)	1000 ohms per volt (standard) or 100 ohms per volt (optional)
Analog Remote Programming (Current)	Resistive programming (resistance coefficient is model-dependent)
External Voltage Programming Ratio	1:1 ratio (1 V output per 1 V programming voltage, or using series programming resistor)
Remote Shutdown / Enable Input	Yes, via contact closure or TTL-compatible voltage level
Parallel Operation	Master-slave parallel configuration supported
Series Operation	Supported (up to a combined output voltage of 200 VDC or 300 VDC depending on isolation limit)

Environmental and Safety

Operating Temperature Derating	Continuous operation at 100% rated current up to 40 °C, derating linearly to 50% rated current at 70 °C
Storage Temperature Range	-40 to +85 °C
Cooling System (DCR 80-4.5B)	Convection cooled
Cooling System (DCR 80-10B & 80-18B)	Forced-air via internal fan

Physical Characteristics

Form Factor	19-inch rackmount or benchtop use
Chassis Height (DCR 80-4.5B)	2U (3.5 in / 88.9 mm)
Chassis Height (DCR 80-10B)	4U (7.0 in / 177.8 mm)
Chassis Height (DCR 80-18B)	4U (7.0 in / 177.8 mm)
Chassis Width	19.0 in / 482.6 mm
Chassis Depth (DCR 80-4.5B & 80-10B)	15.5 in / 393.7 mm
Chassis Depth (DCR 80-18B)	20.0 in / 508.0 mm
AC Input Connections	Rear-panel barrier terminal strip

Analog Programming

Remote Programming Resistance (Voltage)	1000 Ω /V
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Front Panel Controls

Front Panel Voltage Control	10-turn potentiometer
Front Panel Current Control	1-turn potentiometer

Display & Meters

Panel Meter Type	Dual analog meters (standard); digital meters optional (Option M11)
Analog Meter Accuracy	$\pm 2\%$ of full scale

Environmental

Operating Altitude	Up to 10,000 ft (3,000 m)
Non-Operating Altitude	Up to 40,000 ft (12,000 m)
Operating Humidity Range	Up to 95% RH (non-condensing)

Performance

Output Ripple and Noise (Peak-to-Peak) (DCR 80-4.5B)	400 mV
Output Ripple and Noise (Peak-to-Peak) (DCR 80-10B)	400 mV
Output Ripple and Noise (Peak-to-Peak) (DCR 80-18B)	400 mV
Warm-Up Time	30 minutes

Programming & Control

Remote Voltage Programming Resistance Constant	1000 ohms/V
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Controls & Indicators

Front Panel Voltage Control Type	10-turn potentiometer
Front Panel Current Control Type	1-turn potentiometer

TECHNOLOGY

Phase-controlled SCR

APPLICATIONS

Industrial burn-in, laboratory testing, system integration, and general-purpose DC power

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