

Superconducting Magnet Controller: SMC120-10



0 to 120 A; ± 10 V

± 120 A, ± 10 V (with optional reversing switch)

Scientific Magnetics range of Superconducting Magnet Controllers include the following features:

- Modular design, allowing master-slave operation for higher current models;
- An integral electronic polarity reversing switch option can be fitted;
- Independently fail safe protected, air cooled and has an internal high stability shunt for greater accuracy;
- IEEE-488 and optically isolated RS232 operation with short-form codes for ease of automatic computer operation and confirmation of the operational status shown by a backlit liquid crystal display on the front panel;
- Adjustable output for persistent switch heater;

- Input for accessory or safety trip signal;
- Fully configurable from the front panel or using the remote interface.

Physical and Electrical Specifications

Physical

- 483 mm wide x 223 mm high x 450 mm deep (19" x 5U case)
- Front handles add extra 50mm to overall depth.
- Support tray required for 19" rack mounting.
- Bench mounting feet add another 15mm to the height.
- Weight per module 30 kg.
- **Mounting:** bench or rack mounting. Allow 150mm behind the SMC for cables and free access to both sides for cooling air.



Front Panel

- **Display:** 4 row x 20 character alphanumeric backlit liquid crystal display. Display gives full details of the current status of the controller.
- **Switches:** 12 momentary make switches for control of all functions and setting of parameters with direct front panel numeric input.
- **Mains switch:** Illuminated rocker type.

Back Panel

- **Mains input:** Filtered IEC CEE22 connector.
- **Current output:** M12 studs, with supplied nuts.
- **DVM output:** Differential via two 4mm sockets. 300 Ω source resistance nominal. 2 mV/A output, calibrated to 0.03%, stable to 10 ppm/°C or better.
- **Interface:** Optically isolated RS232 interface with standard DB9-F connector.
- Isolated IEEE-488 interface.
- **Persistent switch heater output:** Constant current source, 0 - 255 mA, compliance voltage 18 V, galvanically isolated from main current supply.
- **External trip:** Active on externally supplied signal for system protection.
- **Reversing switch (optional):** Input/output signals for control of reversing switches.

Electrical Specifications

Values quoted at room temperature after 20 minutes warm up.

- **Output current:** 0 to rated maximum.
- **Setting resolution:** Can be set to 1 part in 2^{16} maximum; resolution limit of 0.001A via front panel.
- **Accuracy:** 0.015% of rated output.
- **Stability:** 15 ppm/°C or better.
- **Readout resolution:** 0.05 A on front panel display; 0.001 A via interface.
- **Voltage limit Setting:** 0 to rated voltage output, in 0.1 V steps. Accuracy: 2 % of rated output.

Digital Ramp Generator

- Setting range 10 to 100,000s, 0 to full output.
- **Setting resolution:** 65 values, spread logarithmically over 4 orders of magnitude.
- Accuracy: 0.1% of set rate.

Environmental

- **Ambient temperature:** 10 - 40 °C; SMC will suspend ramp if the output stage temperature exceeds 90 °C.
- Mains input is protected by a thermal overload switch.
- **Humidity:** 85% maximum non-condensing.
- **Stray field:** 0.001 T (10 Gauss) maximum at the SMC.

Contact us

You can contact Scientific Magnetics through our website www.scientificmagnetics.com We will be delighted to discuss your requirements for superconducting and cryogenics systems.

