

IPS3

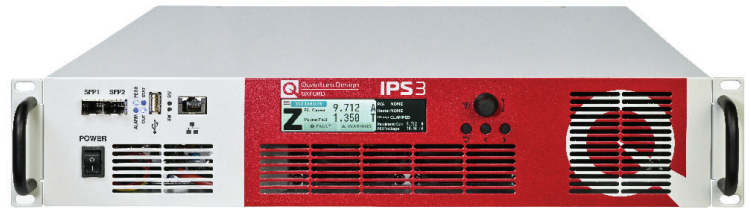
Superconducting Magnet Power Supply



IPS3 Superconducting Magnet Power Supply

The IPS3 is Quantum Design Oxford's latest-generation superconducting magnet power supply.

Built with state-of-the-art electronic circuitry, the IPS3 is designed for performance and reliability, with optimized operation across our **Cryofree®** magnet systems



High Performance

- > Specifically designed for superconducting magnet operation
- > Full four-quadrant operation across all Quantum Design Oxford's standard Cryofree magnets – **Proteox®**, **TeslatronPT** Plus, **TeslatronPT**, **SpectromagPT**
- > Parallel connection for higher current, higher inductance magnets
- > Persistent switch control fully integrated in hardware and software

Full Magnet Control

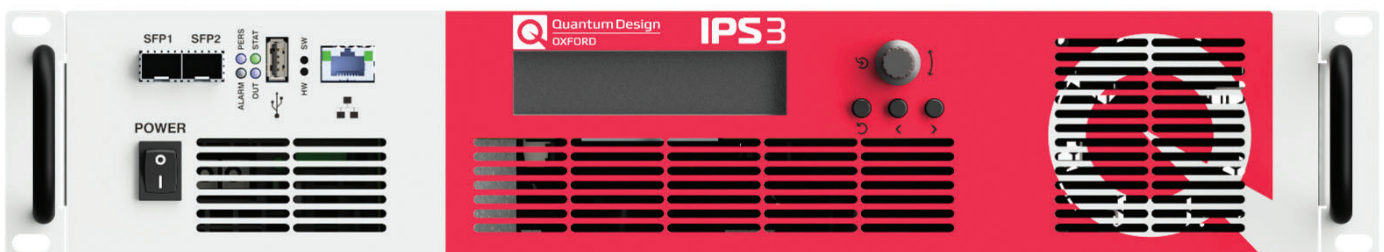
Single-Axis Magnets

- > One single IPS3 unit drives all Quantum Design Oxford's standard Cryofree magnets, with four-quadrant ± 120 A.
- > For higher current and higher inductance magnets, typically 16-20 Tesla and including our high field **Integra** systems, two parallel-connected units give four-quadrant performance up to ± 240 A.

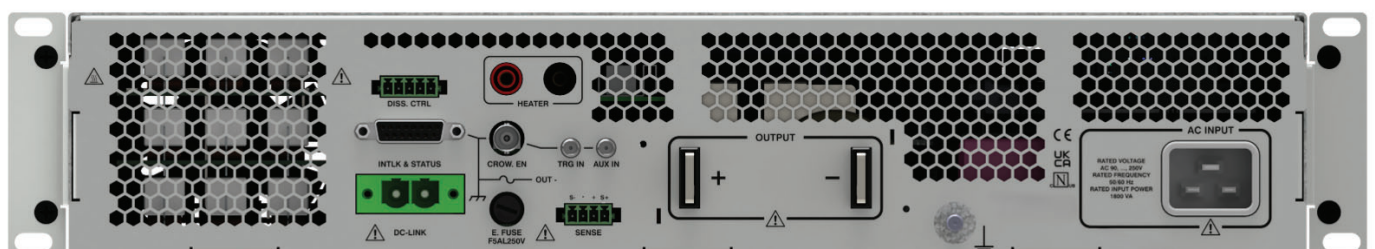
Multi-Axis Vector Magnets

- > Multiple IPS3 units are operated as a group, with each individual unit driving a specific magnet axis
- > Our DECS control software and on-board vector control GUI options enable intuitive magnetic field modulus (B_{mod}) and angle (cylindrical or spherical coordinates) setting

Intuitive, easy-access front panel for manual control and Ethernet connection



A full range of rear-panel outputs and inputs with interlock and trigger options



Performance

Operating Mode	Four-quadrant
Maximum Output Current and Voltage, Per Unit: Single IPS3 unit Two parallel-connected IPS3 units	± 120 A, ± 10 V dc ± 240 A, ± 10 V dc
Output Power per unit, source/supply mode (magnet ramping up)	1200 W, at 230 V ac 800 W, at 120 V ac
Output Power per unit, sink/dissipative mode (magnet ramping down)	600 W
Regulation Mode	Constant Current
Current Setting Resolution	24-bit
Voltage Setting Resolution	24-bit
Output Readback Resolution	24-bit
Setpoint Output Accuracy	$\pm 0.01\%$
Temperature Stability	< 2 ppm/K at 120 A
Long-Term Stability (over 8 hours)	10 ppm at 120 A into $26\text{ m}\Omega + 11\text{ mH}$ load
Voltage Output Ripple	100 mV peak-to-peak

Quantum Design Oxford's vector magnets are specifically designed to allow vector reorientation directly from one vector value to another, without having to return to zero field.

Communication

Front Panel Control	Color display with multi-function navigation switch
Interfaces	Ethernet 10/100/1000 Mbit TCP-IP or UDP
External Signal Inputs/Outputs	4 x external interlock inputs (configurable dry contacts) 1 x status output relay (magnetic) 1 x output relay (solid state) 1 x heater output 1 x trigger input (LVTTTL, TTL) 1 x auxiliary ADC input (± 10 V, 16-bit, 100 ksps)
Auxiliary Parameter Input	Ground leakage current Temperature Auxiliary input

Physical

Mechanical Dimensions (L x W x H)	583.5 x 483.0 x 86.6 mm 583.5 mm (23") x 19" x 2U
Weight (typical)	13.5 kg (29.8 lbs)
Mounting	Optional 19" rack mounting ears (included)
Mains Electrical Input	90 - 264 VAC, 47 - 63 Hz
Operating Ambient Temperature	0 - 50 °C (32 - 120 °F)
Cooling	Forced air convection



Quantum Design Oxford

Tubney Woods, Abingdon
Oxfordshire, OX13 5QX
United Kingdom

www.qd-oxford.com
info@qd-oxford.com

+44 1865 393200

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