ICE BLOC®

QCLAD

QCL and actuator driver with temperature controller

BUILD A BETTER LAB WITH ICE BLOC

High performance laser instrumentation with state-of-the-art connectivity and modern accessible interfaces. The new Ice Bloc range has been designed to help you capture, extract and view important experimental data with the aim of making your experiments easier to set up, manage and measure. Choose from a range of laser diode drivers, quantum cascade laser and actuator drivers as well as temperature controllers and digital timers.

INTRODUCING
ICE BLOC QCLAD

Ice Bloc QCLAD is a precision current source, actuator driver and temperature controller for building QCL-based photonic systems in research, experimental and production applications.

Driving the latest generation of low current, high compliance voltage quantum cascade lasers, the QCLAD provides market-leading ultra-low output noise performance with high precision and high resolution current set points. The integrated temperature controller can control a TEC with user-programmable output current, current polarity, voltage limits, PID control parameters and ramp time settings. Additional laser tuning options by diffraction gratings or reflectors can be driven by a variety of closed-loop stepper/piezo motors.

Ice Bloc QCLAD is designed with various mechanisms to protect the laser, and its compact form factor with customisable software interface allows easy integration of Ice Bloc QCLAD into experiments or OEM setups.

- Optimized for driving CW QCL lasers
- Low noise output to drive low current, high compliance semiconductor lasers
- High precision temperature control
- Real time monitoring/logging of current, voltage, temperature and all signals
- 1 x stepper motor & 2 x piezo motor outputs to drive diffraction gratings/reflectors
- External modulation and photodiode inputs
- Ethernet connectivity and web interface

ICE BLOC
FEATURES

SIMPLE WEB BASED CONTROL

Configure and run experiments from a modern web interface which provides easy access to all features and provides rich data visualization. Ice Bloc has a built-in web server, so there is no software to install or dedicated software drivers to download.

FULL SPEED AHEAD - IT'S CONNECTED BY ETHERNET

Ice Bloc is more secure, faster and works over a longer range than other connection technologies. The built-in 2-port Ethernet router makes it easy to connect to your lab's network for fast, secure, local and remote access. This set up means you'll be able to easily control, monitor, diagnose, even upgrade your system, from any computer.

ENGINEERED FOR HIGH PERFORMANCE AND LOW NOISE

Ice Bloc's high-end design and engineering strikes the optimum balance between noise, power and efficiency. All our components and electronics are fully optimised and highly sensitive ensuring you get the precision and power you need in your experiments.

CUSTOM CONTROL, WHENEVER YOU NEED IT

Control Ice Bloc with your own custom software or use any third-party packages including MATLAB, Python and LabVIEW. You can record internal and external measurement values for display or download.

HIGHLY CUSTOMISABLE

We're no strangers to customising devices to meet the exacting experimental requirements of our customers. If you need something different, for example reduced output noise, or a higher output current, we'll create an Ice Bloc to suit you.

Pictured: Ice Bloc user interface (content varies between models)

SPECIFICATIONS

DIODE DRIVER

Output current range	0 – 2.5 A
Output compliance voltage range	0 – 17 V
Output noise density	<2nA/√Hz
	Frequency range 10 Hz – 1 MHz
Current setting resolution	1 mA
Current accuracy	±0.1 %
Current temperature stability	±20 ppm/°C

MODULATION

Slow modulation input

Modulation frequency bandwidth	DC – 100 Hz
Modulation sensitivity	10 m A/V
Input impedance	200 kΩ
Maximum safe input	±5 V

Fast modulation input

Modulation frequency bandwidth	1.6 kHz - 3 MHz
Modulation sensitivity	10 mA/V
Input impedance	50Ω (at high frequencies)
Maximum safe input	±2.5 V

PHOTODIODE INPUTS X 2

Input impedance	10Ω (transimpedance)
Transimpedance gain range	200 V/A – 20kV/A
Maximum safe input	±0.6 V (protected)
Input linear range	±10 mA
Input resolution	24 bits

ANALOGUE INPUTS X 2

Maximum safe input	±5.5 V (protected)
Input linear range	±5 V

AUXILIARY I/O

Interlock

Open circuit voltage	3.3 V
Closed maximum resistance	5.6 kΩ

Emission LED

Output voltage	+5.5 V
Current limiting resistance	360 Ω

PIEZO MOTOR DRIVERS X 2

Output voltage range	0 – 50 V
Piezo drag rate range	0 – 20 mA (current controlled)
Maximum drive frequency	up to 20 kHz

TWO-PHASE STEPPER MOTOR

Max output power per phase	2 W
Output voltage range	0 – 5 V
Output current range	0 – 500 mA
Maximum stepping frequency	up to 2 kHz

POSITION SENSORS

Stepper reference switch

Open circuit voltage	5 V
Closed maximum resistance	9 kΩ

Piezo motor quadrature encoded position switch x 2

Maximum input voltage	+5 V (protected)

TEMPERATURE CONTROLLER

Output voltage range	0 V - 16 V
Output type	Bi-directional, linear
Output current range	0 - 8 A
Temperature set point resolution	0.001 °K - typical value
Temperature control stability	<1 mK
Set point temperature coefficient	<5 ppm / °K
Temperature set point range	-20.15 °C to +79.85 °C
NTC thermistor range	10 kΩ - 100 kΩ
Extended thermistor range	1 kΩ - 1 MΩ

GENERAL

Mains input voltage	100-240 V
	AC 50/60 Hz
	350 VA (typical power:15 W)
Size (W x H x D)	Half rack
	(203 mm) x 2U (89 mm) x 345 mm
	(8" x 3.5" x 13.6")
Weight	4.1 kg
Operating temperature	0 °C to 70 °C
Storage temperature	-20 °C to 85 °C
Relative humidity	<90 % humidity, non-condensing
Indoor/outdoor use	Indoor use only
Altitude	<2000 m
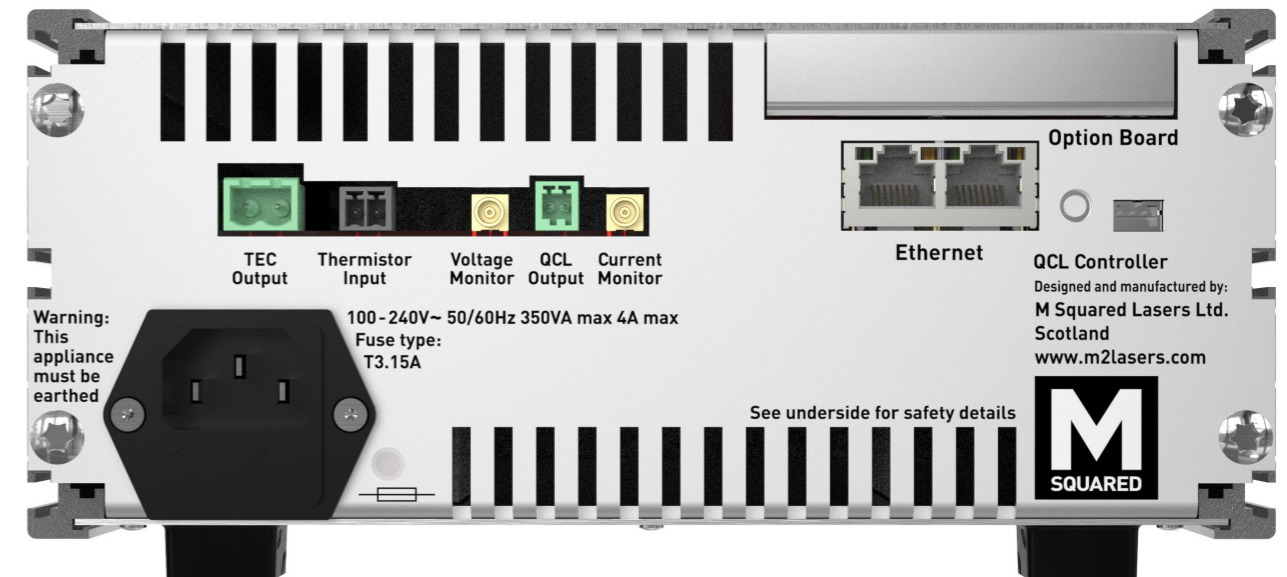
Ice Bloc rear view: Industrial-grade connectors give quick, solder-free connection to photonic system components.

ICE BLOC®

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