ICE BLOC®

ICE BLOC DCS

Digital timing controller and synthesiser

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 DCS

Ice Bloc DCS is a highly versatile sequencing system with multiple high-speed digital I/O, photodiode inputs, analogue outputs and a 4-channel digital synthesiser.

The DCS is ideal for the control of cold atom experiments or similar complex applications that require the precise control of scientific equipment. The DCS is capable of running sequences from start to finish or in a continuous loop. It's customisable software interface allows easy integration with your experiments or OEM setups.

- Full control of cold atom and quantum technology experiments
- FPGA with 4 Channel DDS architecture
- Precision waveform generation and timing control up to 240 MHz
- Drives up to 2 customisable experiment I/O boxes
- Flexibility in analogue and digital channels
- Full laser control of multiple beams
- Reconfigurable and upgradable through software updates
- 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

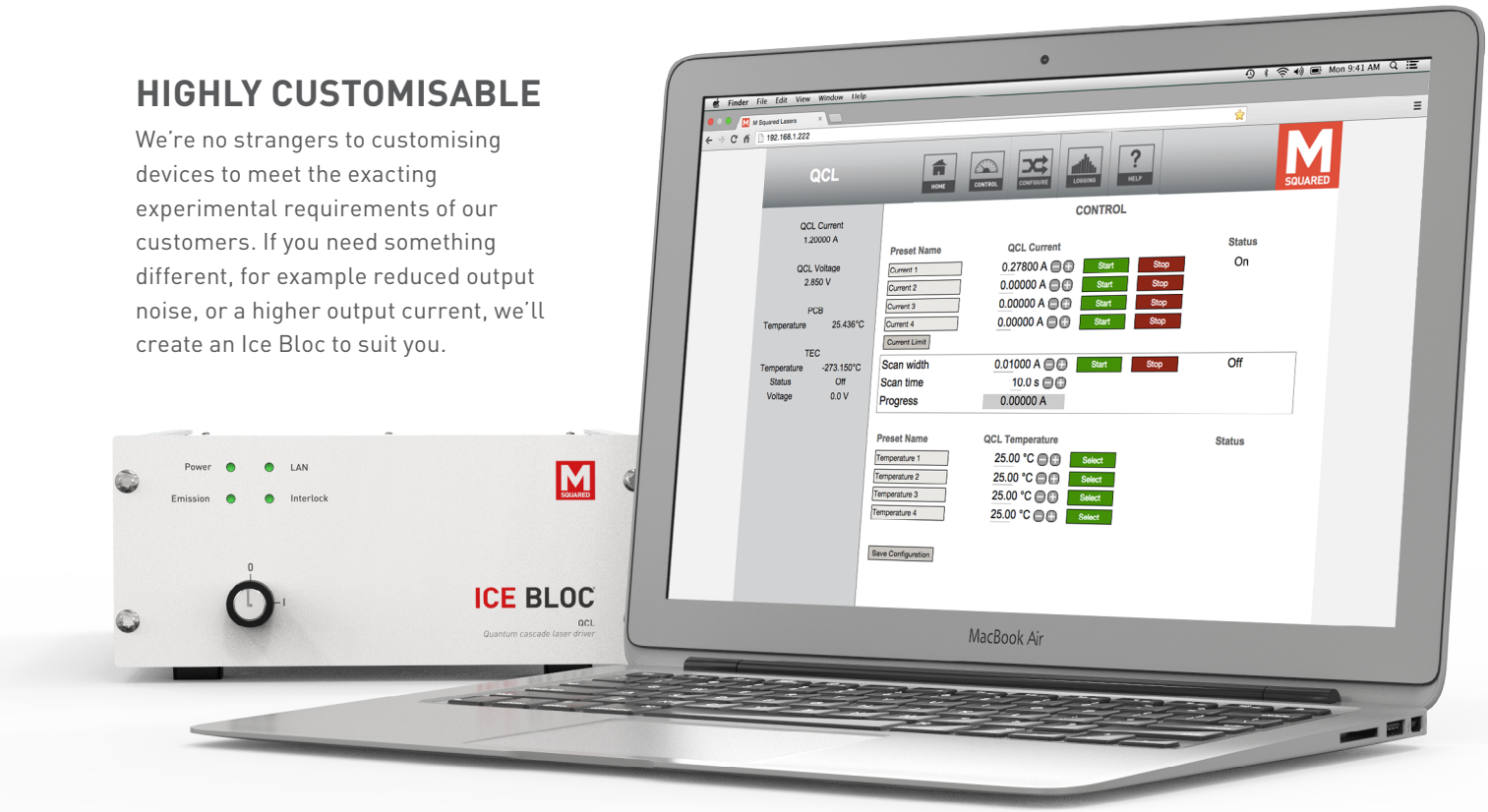
Ice Bloc's high-end design and engineering strikes the optimum balance between noise, power and efficiency. All our components and electronics are fully optimised and highly sensitive ensuring you get the precision and power you need in your experiments.

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

SEQUENCE CAPABILITIES

Number of sequence engines	8
Instruction memory	1024 steps per sequence engine
Sequence step rate	Up to 75 MHz

DIGITAL I/O

Number of channels and connector type	23 (19 SMA and 4 MCX)
High level output	+5 V TTL
Maximum safe input	+5 V TTL (protected)
Digital pulse rise/fall time	10 ns
Minimum digital pulse-length	23 ns
Channel synchronicity	No measurable deviation between channels
Instruction steps	Digital requires 1 read/write step

ANALOGUE OUTPUTS

Number of channels and connector type	8 (4 SMA plus 4 MCX)
Voltage range	0 V to +10 V
Ramp rate	2.4 V/µs
Resolution	16 bit
Waveform capabilities	DC; linear ramp
Instruction steps	Analogue requires 1 read/write step

ANALOGUE INPUTS

Number of channels and connector type	1 SMA (available on request)
Sample rate	1 MSPS
Resolution	12 bit: 1.2 mV at analogue input
Input voltage range	0 V to +5 V

PHOTODIODE TRIGGER INPUTS

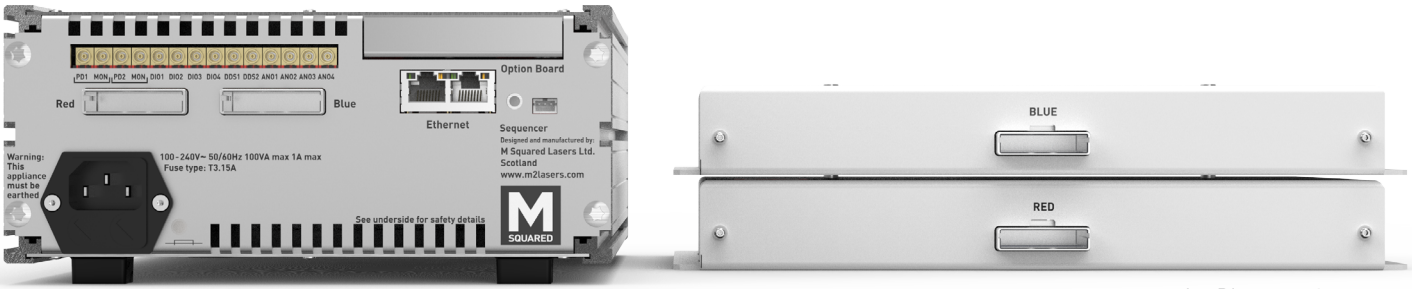
Number of channels and connector type	6 (4 SMA plus 2 MCX with monitor outputs)
Bias control	0 V to +5 V via 1 kΩ to SMA centre pin
Maximum safe input	+5 V
Instruction steps	Photodiode requires 1 read/write step

RF OUTPUTS (DDS)

Number of channels and connector type	4 SMA	
Generated frequency range	1 MHz to 240 MHz	
Minimum frequency step size	1 kHz	
Minimum amplitude step size	0.1 %	
Amplitude step rise/fall time (0 to 100 %)	5.8 µs setup time; 10 ns measured rise time	
Sweep capabilities	Amplitude sweep (frequency sweep available on request)	
Maximum output power (SMA connectors only)	900 mW ±5 % @ 1 MHz	850 mW ±5 % @ 10 MHz
	750 mW ±5 % @ 50 MHz	700 mW ±5 % @ 100 MHz
	500 mW ±5 % @ 150 MHz	
Instruction steps	Set frequency: 10 steps	Set amplitude: 18 steps
	Sweep:18 steps	

GENERAL

Mains input voltage	100 - 240 V AC, 50/60 Hz, 350 VA (Typical power: 30 W with 2 sequencers)
System cable length	3 metre cable between Ice Bloc and breakout units
Ice Bloc size (W x H x D)	Half rack 203 mm x 2U 89 mm x 345 mm (8” x 3.5” x 13.6”)
Breakout unit size (W x H x D)	Sequencer 275 mm x 33.5 mm x 125 mm
Ice Bloc and breakout unit weights	3.5 kg (Ice Bloc) and 0.7 kg (per breakout unit)
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

ICE BLOC®

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