

## *Excellence in High Voltage* Digital Control System for High Precision Power Supplies

### **Applications: Precise HV control for**

Mass spectrometers

Electron microscopes

Electron Guns

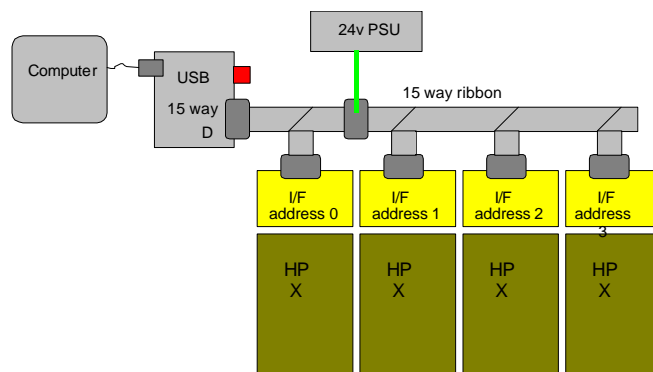
Ion Guns

Surface Science

X-Ray Systems



- High Stability – Very low temp co <5ppm/ °C
- 16 bit monotonic DAC for Voltage Control
- LS & HP Unipolar and Reversible Modules
- Very low noise injection, very high noise immunity
- Optically Isolated Data Path
- Ground loop offsets & noise eliminated.
- 12 Bit Readback of o/p Current, 8 Bit Readback of o/p Voltage
- Ribbon Cable interwiring – easy configuration & reconfiguration
- Safe Operation
- Single USB port for up to 64 PSUs
- Fibre Optic bridge for Ion Gun & Electron Gun applications



This Digital Interface system uses a proprietary bus structure to provide a very low noise, highly stable control for up to 64 of our Precision High Voltage power supply modules, both unipolar, and reversible, via a single USB port.

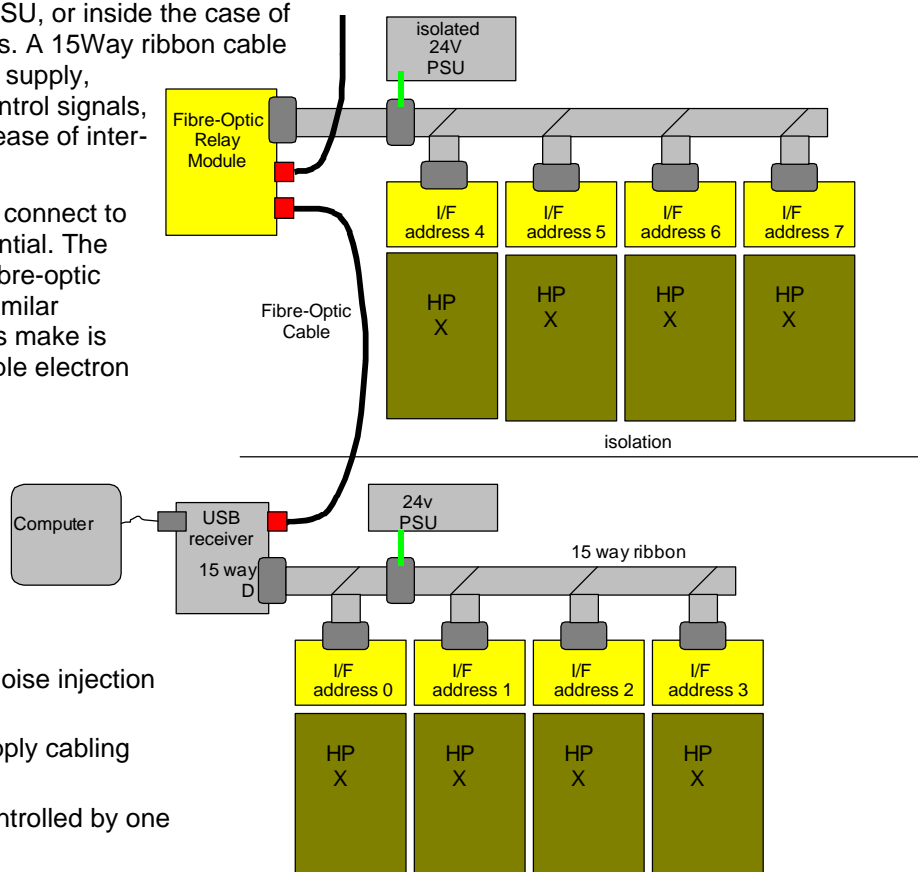
A simple ribbon cable connection scheme to a master interface and a 24V power supply enables a safe, flexible, multichannel high voltage system to be quickly and easily configured, and reconfigured, for such applications as Mass Spectrometers, Electron Microscopes, & Surface Science Equipment

A fibre-optic data path is also available for high voltage isolation, for Electron Gun and Ion Gun applications, where control of a group of power supplies elevated to many kV is easily configured.

Safety is paramount: power is removed from a module, the moment its comms path is broken.

The Digital Control Interface PCB fits directly on the Molex i/p connector of the HP series High Voltage power supply, and is contained within the envelope of the PSU, or inside the case of the LS Precision High Voltage Modules. A 15Way ribbon cable from the USB receiver and 24V power supply, provides both the power and digital control signals, and can be readily daisy-chained, for ease of inter-wiring.

A fibre optic bridge is also available to connect to a group of supplies not at ground potential. The fibre optic relay module receives the fibre-optic coms and relays them on to another similar module if required – as illustrated. This make is very easy to control and monitor multiple electron guns and ion guns.



## FEATURES

Proprietary bus structure for minimal noise injection into the analogue control signals.

Analogue compensation for power supply cabling voltage drops.

Up to 64 Precision supplies can be controlled by one USB PC port.

## SAFETY

Digital On/Off control of supply to each PSU, provides removal of the 'source of energy'.

In the default mode, if the USB connection powers down, or is unplugged, then the high voltage enable bus control line goes low and the high voltage supplies are turned off. This can be disabled by a link in the USB receiver, so that the modules remain at their set levels.

If HV enable is forced low externally by an open collector transistor, then the high voltage supplies are turned off.

The optical link sends idle packets so if these packets are not seen for 2 frames, then the high voltage enable is turned off, and all isolated supplies will be turned off, but this too can be over-ridden with a link.

## ELECTRICAL SPECIFICATION

INPUT VOLTAGE:	+24 volt d.c. $\pm 10\%$ at less than 1A. Negative input terminal common to HV earth return.
DAC:	16 bit Monotonic
DAC & Reference Temp co :	<5ppm/ °C
READBACK:	8 bit HV o/p Voltage readback 12 bit HV o/p Current readback
MAXIMUM NO OF PSUs:	64 can be addressed. Note ribbon cable will need additional power connections for >3 psus
OPERATING TEMPERATURE:	0 °C to +50 °C
STORAGE TEMPERATURE:	-35 °C to +85 °C

## MECHANICAL SPECIFICATION

USB RECEIVER	100mm X 65mm X 25mm
HP & LS Interface Cards	HP - Fits within the envelope of HP Series case    LS – Fits inside the LS case
ISOLATED PSU Card	81mm X 84mm X 25mm

## SOFTWARE

A Template is provided to save re-generating the USB source code, for ease of system integration.

The source code, in Visual Basic can be provided if necessary.

## ORDER CODES

DCG1HPU16S1	Unipolar HP Card, 1kV, 2.5kV, 5kV, 10kV, 15kV	DCG1FFU16S4	– Floating Filament/HW Card
DCG1HPR16S1	Reversible HP Card 1kV, 2.5kV, 5kV, & 10kV	DCG1LSU16S5	– Unipolar or Reversible LS Card
DCG1HPR16S2	Reversible HP Card, 15kV, 20kV, & 30kV.	USB2CAF001	USB receiver + fibre-optic channel
DCG1HPU16S3	Unipolar HP Card, 20kV, 30kV & HF series	USB1CAA001	USB receiver [no fibre-optic channel]
FORM1F001	Fibre Optic Relay Module	USB2CDAA001	– Software Driver CD