

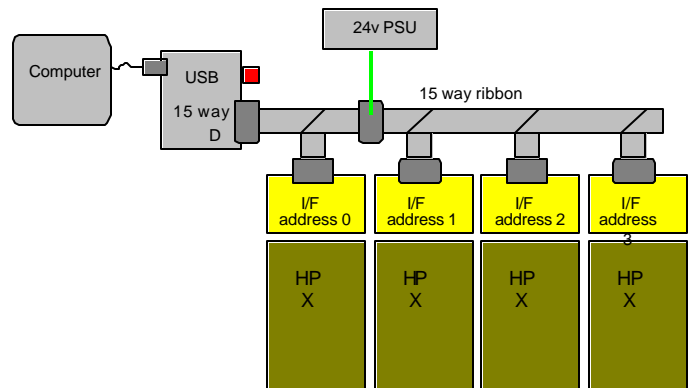
Excellence in High Voltage Digital Control System for High Precision Power Supplies

Applications: Precise HV control for

Mass spectrometers
Electron microscopes
Electron Guns
Ion Guns
Surface Science
X-Ray Systems



- High Stability – Very low temp co <math>< 5\text{ppm}/^\circ\text{C}</math>
- 16 bit monotonic DAC for Voltage Control
- 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



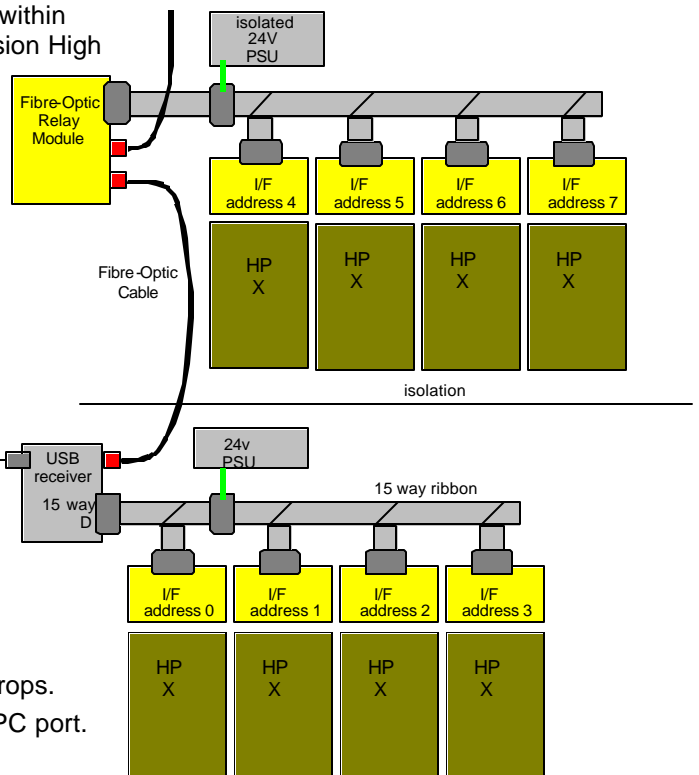
This Digital Interface system uses a proprietary bus structure to provide a very low noise, highly stable control for up to 64 of our Precision High Voltage power supply modules, both unipolar, and reversible, via a single USB port.

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-riden 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 : $< 5\text{ppm}/^\circ\text{C}$

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 TEMP : 0°C to $+50^\circ\text{C}$

STORAGE TEMP : -35°C to $+85^\circ\text{C}$

MECHANICAL SPECIFICATION

USB RECEIVER 100mm X 65mm X 25mm

HP Interface Cards HP - Fits within the envelope of HP Series 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

DCG1HPR16S1 Reversible HP Card 1kV, 2.5kV, 5kV, & 10kV

DCG1HPR16S2 Reversible HP Card, 15kV, 20kV, & 30kV.

DCG1HPU16S3 Unipolar HP Card, 20kV, 30kV & HF series

FORM1F001 Fibre Optic Relay Module

DCG1FFU16S4 – Floating Filament/HW Card

USB2CAF001 USB receiver + fibre-optic channel

USB1CAA001 USB receiver [no fibre-optic channel]

USB2CDAA001 – Software Driver CD