

HTP-EHS-8-F2

HIGH PRECISION FLOATING GND HV MODULES



POSITIVE PROBLEM SOLVING **+ =**

This series of HV cassettes provides up to 16 channels in a compact 6U cassette. The modules provide an incredibly stable output with the lowest possible ripple and noise.

Various crates are optionally available to accommodate between 4 and 10 modules in a desktop or rackmounting case. Crates can include front panel control and display along with ethernet, CAN & USB interfaces. Two current measurement ranges are provided as standard enabling readings into the nA scale. Potentiometers are provided on the front panel for global adjustment of voltage and current limits.

- + Ripple and Noise <5mVpp for Units Below 6kV**
- + Current Measurement Resolution up to 1nA**
- + Very High Stability Typically <100ppm**
- + GUI and OPC Server for CAN Control**
- + Flexible Group and Event Handling**
- + Low Cost Crate Options**

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FURTHER DETAILS

Individual channels can be controlled via the integrated CAN interface. The software allows any number of channels to be grouped together to follow the settings of the channel nominated as the master. Specific group behaviour can be programmed at a given event. One example would be a controlled ramp down should a current limit be breached.

SELECTION TABLE

Part Number	Output Voltage	Output Current	Max Power [Each Channel]	Number of Channels	Output Socket
HTP-EHS 82-05x-106	0 - 500V	0 - 10mA	5W	8 Channels	REDEL
HTP-EHS F2-05x-106	0 - 500V	0 - 10mA	5W	16 Channels	REDEL
HTP-EHS 82-10x-805	0 - 1kV	0 - 8mA	8W	8 Channels	REDEL
HTP-EHS F2-10x-805	0 - 1kV	0 - 8mA	8W	16 Channels	REDEL
HTP-EHS 82-20x-405	0 - 2kV	0 - 4mA	8W	8 Channels	REDEL
HTP-EHS F2-20x-405	0 - 2kV	0 - 4mA	8W	16 Channels	REDEL
HTP-EHS 82-30x-305	0 - 3kV	0 - 3mA	9W	8 Channels	REDEL
HTP-EHS F2-30x-305	0 - 3kV	0 - 3mA	9W	16 Channels	REDEL
HTP-EHS 82-40x-205	0 - 4kV	0 - 2mA	8W	8 Channels	REDEL
HTP-EHS F2-40x-205	0 - 4kV	0 - 2mA	8W	16 Channels	REDEL
HTP-EHS 82-60x-105	0 - 6kV	0 - 1mA	6W	8 Channels	SHV
HTP-EHS F2-60x-105	0 - 6kV	0 - 1mA	6W	16 Channels	SHV
HTP-EHS 82-80x-105	0 - 8kV	0 - 1mA	8W	8 Channels	SHV
HTP-EHS 42-100x-504	0 - 10kV	0 - 0.5mA	5W	4 Channels	KINGS

Replace 'x' in the part number with P for positive or N for negative output polarity.

MAINFRAMES

Part Number	Slots	Power	Fan	Interface	PSU (Integrated AC/DC)	Dimensions [W × H × D]
HTP-ECH 224	4	300W	Yes	CAN & USB	Yes	19" × 7U × 350mm
HTP-ECH 238	8	700W	Option	CAN & USB	Yes	19" × 6U × 450mm
HTP-ECH 43A	10 + 1*	1200W	Yes	CAN	Yes	19" × 8U × 600mm
HTP-ECH 44A	10 + 1*	1200W	Yes	Ethernet & CAN	Yes	19" × 8U × 600mm
HTP-MPOD 2H-LX	10	1200W	Yes	Ethernet, CAN & USB	Yes	19" × 8U × 460mm
HTP-MPODmini	4	600W	Yes	Ethernet, CAN & USB	Yes	19" × 4U × 460mm

*Additional slot for communications card

TECHNICAL DATA

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Potential difference (option /F)	20V channel to channel, 20V channel to C-GND, Common (on request this can be increased to 400V channel to channel and 200V for C to GND)
Ripple & Noise	<5mV _{p-p} (For outputs 6kV - 10kV: < 30mV _{p-p})
Stability	<100ppm
Temperature coefficient	< ± 50ppm/K (on request < ± 10ppm/K)
Hardware Limits	Voltage and current potentiometer per module sets limits for all output channels
Software Limits	Voltage, current limit and current trip point adjustable per channel via interface
Interface	CAN interface (potential free)
INHIBIT	TTL Low for entire module (Option : INH for each channel)
V&I Setting Resolution	Voltage: $2 \times 10^{-5} \times V_{NOM}$ Current: $2 \times 10^{-5} \times I_{NOM}$ (in the setting range $1\% \times I_{NOM} < I_{OUT} \leq I_{NOM}$)
V&I Setting Resolution (option /F)	Voltage: $4 \times 10^{-5} \times V_{NOM}$ Current: $4 \times 10^{-5} \times I_{NOM}$ (in the setting range $1\% \times I_{NOM} < I_{OUT} \leq I_{NOM}$)
Voltage Measurement Resolution	$2 \times 10^{-5} \times V_{NOM}$
Current Measurement Resolution [2 Ranges]	Range 1: $I_{NOM} \geq I_{OUT} > 20\mu A$ then $1 \times 10^{-6} \times I_{NOM}$ Range 2: $20\mu A \geq I_{OUT} > 0$ then 50pA
Accuracy of Voltage Measurement	$\pm (0.01\% \times V_{OUT} + 0.01\% \times V_{NOM})$
Accuracy of Current Measurement [2 Ranges]	Range 1: $\pm (0.1\% \times V_{OUT} + 0.01\% \times I_{NOM})$ Range 2: $\pm (0.1\% \times I_{OUT} + 1nA)$
Rate of Voltage Change	Up to $0.2 \times V_{NOM}/s$ (on request up to $0.75 \times V_{NOM}/s$)
Safety Loop [2 Pole Lemo Connector]	$5mA < I_s < 20mA$ = module ON $I_s < 0.5mA$ = module OFF
Power Requirements	+24V (< 1.7A/3.5A) and +5V (<100/200mA)
HV Connector Type	See selection table
Mechanical Construction	4 or 8 or 16 channels in 6U x 8HP cassette (40.3mm)

OPTIONS

CODE	DESCRIPTION
/P	Positive output polarity (factory fixed)
/N	Negative output polarity (factory fixed)
/F	Single channel floating GND instead of common floating GND (not available for 8kV)
/SHV	SHV connectors in place of REDEL connector
/INH	Inhibit function per channel
/ECH 224	4 slot desktop mainframe (see below for details)
/ECH 238	8 slot rackmounting mainframe (see below for details)
/ECH 43A	10 slot rackmounting mainframe slave to HTP- ECH 44A (see below for details)
/ECH 44A	10 slot rackmounting mainframe with integrated server (see below for details)
/WIFI	Integrated Wi-Fi access point for wireless remote control (for HTP- ECH 44A only)
/ICS	Intelligent remote control and monitoring software (for HTP- ECH 44A only)
/FAN	Fan tray mounted on HTP-ECH 238 mainframe (adds 1.5U to overall height)
/UPS	Uninterruptible Power Supply (for HTP-ECH 238, HTP- ECH 43A and HTP- ECH 44A)
/MPOD 2H-LX	10 slot mainframe with front panel control and display Ethernet, CAN & USB
/MPODmini	4 slot mainframe with Ethernet, CAN & USB

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