

# HTP-ESS

## BIDIRECTIONAL HIGH VOLTAGE MODULES



POSITIVE PROBLEM SOLVING **+ =**

**The HTP-ESS series of high voltage cassettes provides users with bidirectional operation. This allows either the sinking or sourcing of current to be programmed.**

The bidirectional functionality is ideal for requirements of electron optical systems and capacitive loads. A CAN interface is provided for remote operation. OPC control and a comprehensive GUI is available that allows control and monitoring of live output values. Specific events can be programmed, for example if a current trip limit is breached the output can be set to ramp down in a controlled manner.

- + Bidirectional Operation - Sinks & Sources Current**
- + Extremely Low Ripple and Noise**
- + Comprehensive Safety Features**
- + Programmable Trip Parameters**
- + Low Cost Crate Options**

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## FURTHER DETAILS

A common floating return helps minimise the voltage noise levels.

A variety of crates are available for housing each HTP-ESS. These range from a 4 slot desktop crate to a 10 slot rackmounting version with front panel display along with USB & ethernet interfaces.

High voltage modules from the HTP-EHS, HTP-EBS and HTP-EDS product families can also be operated from within the same crate.

### TECHNICAL DATA

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Efficiency	>80% [ $V_{IN} = 24V, P_{NOM}$ ]
Ripple & noise	$0.05\% \times V_{NOM}$
Stability	$\Delta V < 0.05\% \times V_{NOM}$ (for 8 hours with constant conditions, after 1 hour warmup)
Voltage Regulation	$\Delta V < 0.1\% \times V_{NOM}$ ( $\Delta V_{IN}, \leq I_0 \leq I_{NOM}$ )
Current Regulation	$\Delta I < 0.1\% \times I_{NOM}$ ( $\Delta V_{IN}, \leq V_0 \leq V_{NOM}$ )
Voltage Repeatability	$< 0.1\% \times V_{NOM}$
Accuracy of voltage measurement	$\pm(0.1\% \times V_{NOM} + 0.5\% \times V_{OUT})$ for one year
Accuracy of current measurement	$\pm(0.1\% \times I_{NOM} + 0.5\% \times I_{OUT})$ for one year
Voltage setting resolution	$2 \times 10^{-5} \times V_{NOM}$
Voltage measurement resolution	$1 \times 10^{-5} \times V_{NOM}$
Current measurement resolution	$1 \times 10^{-5} \times I_{NOM}$
Rate of voltage change	Up to $0.4 * V_{NOM}/s$ (optionally up to $0.75 * V_{NOM}/s$ )
Sampling Rate	>50Hz
Temperature Coefficient	$1 * 10^{-4}/K$
Polarity	Factory fixed, positive or negative
Interface	CAN interface (potential free)
Power requirements	+24V [2.5A] and +5V [0.5A]
HV connector type	96 pin SHV according to DIN 41612 (optional GES)
Protection	Supply voltage, over voltage, over current, over temperature, short circuit, arc
Interlock	Isolated current loop
Mechanical Construction (H x W x D)	6U x 8HP [60.64mm] x 220mm cassette
Weight	Approx. 1.4kg

## SELECTION TABLE

Part Number	Output Voltage Range	Output Current Range	Output Power	Ripple and Noise
HTP-ESSp 100-405	0 to +10kV	0 to $\pm$ 4mA	40W	<5V <sub>p,p</sub>
HTP-ESSn 100-405	0 to -10kV	0 to $\pm$ 4mA	40W	<5V <sub>p,p</sub>
HTP-ESSp 200-205	0 to +20kV	0 to $\pm$ 2mA	40W	<10V <sub>p,p</sub>
HTP-ESSn 200-205	0 to -20kV	0 to $\pm$ 2mA	40W	<10V <sub>p,p</sub>

Different output ranges and application/user specific options are possible. Please contact ETPS Ltd to discuss your requirements.

## OPTIONS

CODE	DESCRIPTION
/GES	GES connectors in place of SHV connector
/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

## MAINFRAMES

Part Number	Slots	Power	Fan	Interface	PSU [Integrated AC/DC]	Dimensions [W x H x D]
HTP-ECH 224	4	300W	Yes	CAN & USB	0 - 1mA	19" x 7U x 350mm
HTP-ECH 238	8	700W	Option	CAN & USB	0 - 1mA	19" x 6U x 450mm
HTP-ECH 43A	10 + 1*	1200W	Yes	CAN	0 - 1mA	19" x 8U x 600mm
HTP-ECH 44A	10 + 1*	1200W	Yes	Ethernet & CAN	0 - 1mA	19" x 8U x 600mm
HTP-MPOD 2H-LX	10	1200W	Yes	Ethernet, CAN & USB	0 - 1mA	19" x 8U x 460mm
HTP-MPODmini	4	600W	Yes	Ethernet, CAN & USB	0 - 1mA	19" x 4U x 460mm

\*Additional slot for communications card

Every effort is made to ensure that the information provided within this technical summary is accurate. However, ETPS Ltd must reserve the right to make changes to the published specifications without prior notice. Where certain operating parameters are critical for your application we advise that they be confirmed at the time of order. ETPS Ltd specialises in modifying its proven platforms to suit your needs. Please contact our office if your requirement is non-standard. Please note that your actual unit may differ from those shown.



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