

# HTP-LPX

## HIGH VOLTAGE CAPACITOR CHARGER



POSITIVE PROBLEM SOLVING **+ =**

The HTP-LPx series of High Voltage Sources are specifically built for capacitor charging applications. Outputs of up to 100kV and up to 10kW are provided as standard.

A separate summary is available for a version of the HTP-LPx which provides up to 70kV at 350W in a compact desktop case. The 19" range are built with front panel control and 4 digit LED displays for both voltage and current. Each unit is built with two interfaces as standard (see technical data below). Additional interfaces are available if required. These units utilise patented resonance mode techniques to achieve very high efficiencies.

- + High Voltages up to 100kV, Output Power up to 10kW
- + Extraordinary Control Specifications for Output V and I
- + Patented Resonance Mode Technique
- + High Efficiencies of up to 93%

# HTP-LPX

## HIGH VOLTAGE CAPACITOR CHARGER

## FURTHER DETAILS

Additional interfaces are available if required. These units utilise patented resonance mode techniques to achieve very high efficiencies. The HTP-LPx series are ideal for capacitor charging as they exhibit excellent repetition accuracies at high charge frequencies. If a standard unit is not suitable then different voltage and current outputs are available on request. For ATE applications programmable versions without front panel control are also available.

### SELECTION TABLE

Part Number <sup>1</sup>	Max. Power	Voltage Range	Current Range	Dimensions <sup>2</sup>	Part Number <sup>1</sup>	Max. Power	Voltage Range	Current Range	Dimensions <sup>2</sup>
HTP-LPx 10 307	300W	0 - 1kV	0 - 300mA	1U x 410mm	HTP-LPx 10 308	3kW	0 - 1kV	0 - 3000mA	2U x 410mm
HTP-LPx 20 157	300W	0 - 2kV	0 - 150mA	1U x 410mm	HTP-LPx 20 158	3kW	0 - 2kV	0 - 1500mA	2U x 410mm
HTP-LPx 30 107	300W	0 - 3kV	0 - 100mA	1U x 410mm	HTP-LPx 30 108	3kW	0 - 3kV	0 - 1000mA	2U x 410mm
HTP-LPx 40 756	300W	0 - 4kV	0 - 75mA	1U x 410mm	HTP-LPx 40 757	3kW	0 - 4kV	0 - 750mA	2U x 410mm
HTP-LPx 60 506	300W	0 - 6kV	0 - 50mA	1U x 410mm	HTP-LPx 80 387	3kW	0 - 8kV	0 - 375mA	2U x 410mm
HTP-LPx 80 356	300W	0 - 8kV	0 - 35mA	1U x 410mm	HTP-LPx 120 257	3kW	0 - 12kV	0 - 250mA	2U x 410mm
HTP-LPx 120 256	300W	0 - 12kV	0 - 25mA	1U x 410mm	HTP-LPx 150 207	3kW	0 - 15kV	0 - 200mA	2U x 410mm
HTP-LPx 150 206	300W	0 - 15kV	0 - 20mA	1U x 410mm	HTP-LPx 200 157	3kW	0 - 20kV	0 - 150mA	2U x 410mm
HTP-LPx 200 156	300W	0 - 20kV	0 - 15mA	1U x 410mm	HTP-LPx 300 107	3kW	0 - 30kV	0 - 100mA	3U x 410mm
HTP-LPx 300 106	300W	0 - 30kV	0 - 10mA	1U x 410mm	HTP-LPx 400 756	3kW	0 - 40kV	0 - 75mA	3U x 410mm
HTP-LPx 10 807	800W	0 - 1kV	0 - 800mA	1U x 410mm	HTP-LPx 500 606	3kW	0 - 50kV	0 - 60mA	3U x 410mm
HTP-LPx 20 407	800W	0 - 2kV	0 - 400mA	1U x 410mm	HTP-LPx 600 506	3kW	0 - 60kV	0 - 50mA	3U x 410mm
HTP-LPx 30 257	800W	0 - 3kV	0 - 250mA	1U x 410mm	HTP-LPx 800 386	3kW	0 - 80kV	0 - 38mA	4U x 410mm
HTP-LPx 40 207	800W	0 - 4kV	0 - 200mA	1U x 410mm	HTP-LPx A00 306	3kW	0 - 100kV	0 - 30mA	4U x 410mm
HTP-LPx 60 137	800W	0 - 6kV	0 - 130mA	1U x 410mm	HTP-LPx 10 608	6kW	0 - 1kV	0 - 6000mA	4U x 500mm
HTP-LPx 80 107	800W	0 - 8kV	0 - 100mA	1U x 410mm	HTP-LPx 20 308	6kW	0 - 2kV	0 - 3000mA	4U x 500mm
HTP-LPx 120 656	800W	0 - 12kV	0 - 65mA	1U x 410mm	HTP-LPx 30 208	6kW	0 - 3kV	0 - 2000mA	4U x 500mm
HTP-LPx 150 506	800W	0 - 15kV	0 - 50mA	1U x 410mm	HTP-LPx 40 158	6kW	0 - 4kV	0 - 1500mA	4U x 500mm
HTP-LPx 10 158	1.5kW	0 - 1kV	0 - 1500mA	2U x 410mm	HTP-LPx 50 128	6kW	0 - 5kV	0 - 1200mA	4U x 500mm
HTP-LPx 20 757	1.5kW	0 - 2kV	0 - 750mA	2U x 410mm	HTP-LPx 60 108	6kW	0 - 6kV	0 - 1000mA	4U x 500mm
HTP-LPx 30 507	1.5kW	0 - 3kV	0 - 500mA	2U x 410mm	HTP-LPx 80 757	6kW	0 - 8kV	0 - 750mA	4U x 500mm
HTP-LPx 40 387	1.5kW	0 - 4kV	0 - 380mA	2U x 410mm	HTP-LPx 100 607	6kW	0 - 10kV	0 - 600mA	4U x 500mm
HTP-LPx 80 197	1.5kW	0 - 8kV	0 - 190mA	2U x 410mm	HTP-LPx 200 307	6kW	0 - 20kV	0 - 300mA	4U x 500mm
HTP-LPx 100 157	1.5kW	0 - 10kV	0 - 150mA	2U x 410mm	HTP-LPx 10 109	10kW	0 - 1kV	0 - 10000mA	4U x 500mm
HTP-LPx 120 137	1.5kW	0 - 12kV	0 - 125mA	2U x 410mm	HTP-LPx 20 508	10kW	0 - 2kV	0 - 5000mA	4U x 500mm
HTP-LPx 150 107	1.5kW	0 - 15kV	0 - 100mA	2U x 410mm	HTP-LPx 30 348	10kW	0 - 3kV	0 - 3400mA	4U x 500mm
HTP-LPx 200 756	1.5kW	0 - 20kV	0 - 75mA	2U x 410mm	HTP-LPx 40 258	10kW	0 - 4kV	0 - 2500mA	4U x 500mm
HTP-LPx 300 506	1.5kW	0 - 30kV	0 - 50mA	3U x 410mm	HTP-LPx 50 208	10kW	0 - 5kV	0 - 2000mA	4U x 500mm
HTP-LPx 400 386	1.5kW	0 - 40kV	0 - 38mA	3U x 410mm	HTP-LPx 60 178	10kW	0 - 6kV	0 - 1700mA	4U x 500mm
HTP-LPx 500 306	1.5kW	0 - 50kV	0 - 30mA	3U x 410mm	HTP-LPx 80 138	10kW	0 - 8kV	0 - 1300mA	4U x 500mm
HTP-LPx 600 256	1.5kW	0 - 60kV	0 - 25mA	3U x 410mm	HTP-LPx 100 108	10kW	0 - 10kV	0 - 1000mA	4U x 500mm
HTP-LPx 800 206	1.5kW	0 - 80kV	0 - 20mA	4U x 410mm	HTP-LPx 200 507	10kW	0 - 20kV	0 - 500mA	4U x 500mm
HTP-LPx A00 156	1.5kW	0 - 100kV	0 - 15mA	4U x 410mm					

<sup>1</sup>Replace 'x' in the part number with P for positive or N for negative output <sup>2</sup>Dimensions given are H x D, all HTP-LPx units are provided in a 19" wide rackmounting case

## TECHNICAL DATA

	300W	800W	1.5kW	3kW	6kW	10kW
Polarity	Factory fixed to positive or negative					
Ripple and Noise [f >10Hz]	$<1 \times 10^{-4} \times V_{NOM}$ [ $V_{NOM} \leq 8kV$ ] $<5 \times 10^{-4} \times V_{NOM}$ [ $V_{NOM} > 8kV$ ]		$<3 \times 10^{-3} \times V_{NOM}$	$<5 \times 10^{-3} \times V_{NOM}$	$<9 \times 10^{-3} \times V_{NOM}$	
Stability	0.02%*		0.05%*			
Voltage Regulation [ $\Delta V_{OUT} / \Delta V_{IN}$ ]	0.01% [ $V_{OUT} \geq 5V$ ]					
Temperature Coefficient	$<2 \times 10^{-4} / ^\circ K$					
Supply Voltage	85 - 264VAC, 50/60Hz with PFC		170 - 264VAC, 50/60Hz with PFC		3 x 400VAC $\pm 10\%$ , 50/60Hz	
Efficiency	Up to 93%					
Switching Frequency	30 - 70kHz		80 - 130kHz	70 - 90kHz	60 - 80kHz	
Set / Monitor Voltage	0 - 5V   opt. 0 - 10V					
Protection	Arc error, OVP, short circuit, temperature, overload, INHIBIT, interlock					
ARC Management	ARC		ARCpro			
Standard Interfaces	CAN & USB interface		0-5Vdc isolated analogue & USB interface			
Casing	19" rackmounting (height and depth shown in selection table)					
*for 8 hours, after 30 minutes warmup						

## OPTIONS

CODE	DESCRIPTION
/P	Positive output polarity (factory fixed)
/N	Negative output polarity (factory fixed)
/LT	IEEE 488.2 interface
/ETH	Integrated ethernet interface (300W units only)
/RS232	Integrated RS-232 Interface
/CAN	Integrated CAN interface
/AIO	Isolated 0-10Vdc analogue interface (for models $\leq 800W$ )
/ARC	Extended ARC management functions with the ability to plot V & I values against time, as well as improved full ARC recovery time of >5ms [30 ARCs per second maximum for models $\geq 1.5kW$ below 60kV, 10 ARCs per second maximum for 60kV models]
/ACL	ARC current limitation of $I_{OUT} = <5A$ (for models $\geq 1.5kW$ only)
/2HV	Two HV outputs in parallel (for 10kW models $\leq 10kV$ only)
/2HVC	Two HV outputs in parallel with separate current measurements (for 10kW models $\leq 10kV$ only)
/SPS	Male D-Sub 9 pin connector with 0-10Vdc isolated analogue interface, female D-Sub 9 pin connector with digital control signals 0-24Vdc (for models $\geq 1.5kW$ )
/FILAMENT	In-built 500W filament heating source for x-ray and electron gun applications (adds 2U height, for models $\geq 1.5kW$ only)
/KPS	Unit built with no front panel controls or display. Non-isolated 0-5Vdc analogue interface provided as standard for models $\leq 800W$ , 0-5Vdc isolated analogue & USB as standard for models $\geq 1.5kW$

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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