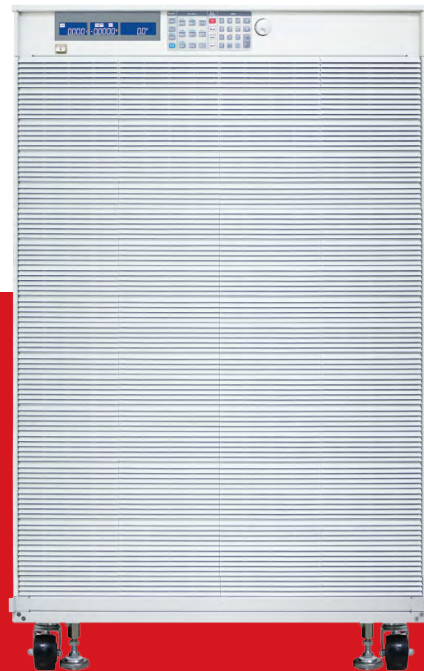


ELP-HIVOLT

HIGH VOLTAGE HIGH POWER DC LOADS



POSITIVE PROBLEM SOLVING **+ =**

The ELP-HIVOLT is a family of precision high voltage DC electronic loads. Up to eight units can be operated in master/slave for high power applications.

Operation from 1250V all the way down to 55V without current derating is possible, allowing one system to test many devices. Standard operating features include OVP & OCP tests, dual voltage and current ranges, 150 state memory as well as CC, CV, CR and CP modes. In dynamic mode adjustable rise, fall and plateau times allow testing of high voltage DC energy, such as renewables. Dedicated short circuit, OCP and OPP tests allow power supply behaviour and protection mechanisms to be characterised.

- + High Voltage Sinks to 1250V
- + 9 Different Operation Modes
- + 5 Digit Displays for V, I & W
- + Short Circuit Test Function
- + Adjustable Slew Rates
- + Front Panel Memory

CONTENTS

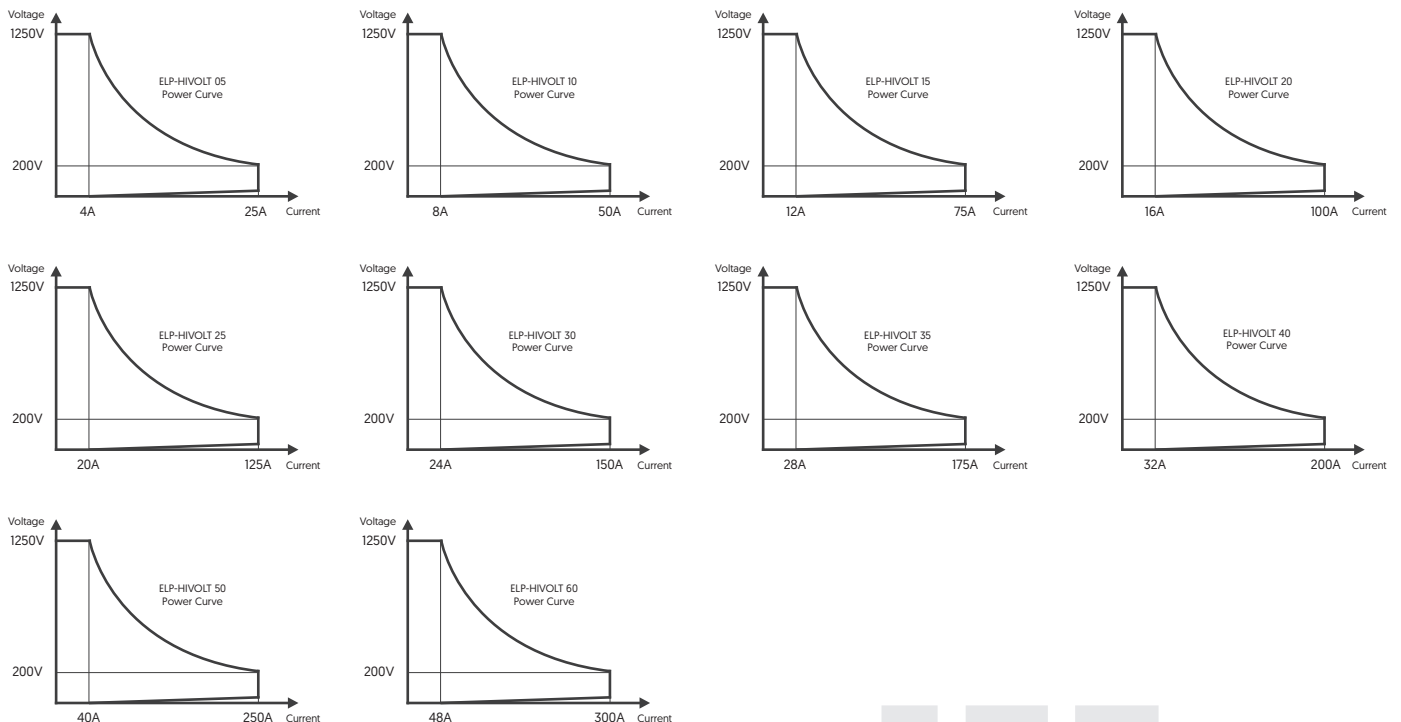
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Part Number	Range 1 Max Power	Range 1 Max Voltage	Range 1 Current	Range 2 Max Power	Range 2 Max Voltage	Range 2 Current
ELP-HIVOLT 05	5kW	1250VDC	0 - 2.5A	5kW	1250VDC	0 - 25A
ELP-HIVOLT 10	10kW	1250VDC	0 - 5A	10kW	1250VDC	0 - 50A
ELP-HIVOLT 15	15kW	1250VDC	0 - 7.5A	15kW	1250VDC	0 - 75A
ELP-HIVOLT 20	20kW	1250VDC	0 - 10A	20kW	1250VDC	0 - 100A
ELP-HIVOLT 25	25kW	1250VDC	0 - 12.5A	25kW	1250VDC	0 - 125A
ELP-HIVOLT 30	30kW	1250VDC	0 - 15A	30kW	1250VDC	0 - 150A
ELP-HIVOLT 35	35kW	1250VDC	0 - 17.5A	35kW	1250VDC	0 - 175A
ELP-HIVOLT 40	40kW	1250VDC	0 - 20A	40kW	1250VDC	0 - 200A
ELP-HIVOLT 50	50kW	1250VDC	0 - 25A	50kW	1250VDC	0 - 250A
ELP-HIVOLT 60	60kW	1250VDC	0 - 30A	60kW	1250VDC	0 - 300A

CHARACTERISED VALUES

Each ELP-HIVOLT is able to operate at maximum current across most of its voltage range. This allows one system to test many different types of devices. When operating below 55V, the maximum amount of current that the load can sink decreases. The values for this derating at low voltages are provided below.

CURRENT										
VOLTAGE	ELP-HIVOLT 05	ELP-HIVOLT 10	ELP-HIVOLT 15	ELP-HIVOLT 20	ELP-HIVOLT 25	ELP-HIVOLT 30	ELP-HIVOLT 35	ELP-HIVOLT 40	ELP-HIVOLT 50	ELP-HIVOLT 60
55V	25.00A	50.00A	75.00A	100.00A	125.00A	150.00A	175.00A	200.00A	250.00A	300.00A
50V	22.73A	45.45A	68.18A	90.91A	113.64A	136.37A	159.09A	181.82A	227.27A	272.73A
45V	20.45A	40.91A	61.37A	81.82A	102.27A	122.73A	143.18A	163.64A	204.55A	245.45A
40V	18.18A	36.36A	54.55A	72.73A	90.91A	109.09A	127.27A	145.45A	181.82A	218.18A
35V	15.91A	31.82A	47.73A	63.64A	79.55A	95.46A	111.36A	127.27A	159.09A	190.91A
30V	13.64A	27.27A	40.91A	54.55A	68.18A	81.82A	95.45A	109.09A	136.36A	163.64A
25V	11.36A	22.73A	34.09A	45.45A	56.82A	68.18A	79.55A	90.91A	113.64A	136.36A
20V	9.09A	18.18A	27.27A	36.36A	45.45A	54.55A	63.64A	72.73A	90.91A	109.09A
15V	6.82A	13.64A	20.46A	27.27A	34.09A	40.91A	47.73A	54.55A	68.18A	81.82A
10V	4.55A	9.09A	13.64A	18.18A	22.73A	27.27A	31.82A	36.36A	45.45A	54.55A
5V	2.27A	4.55A	6.82A	9.09A	11.36A	13.64A	15.91A	18.18A	22.73A	27.27A
1V	0.45A	0.91A	1.36A	1.82A	2.27A	2.73A	3.18A	3.64A	4.55A	5.45A



HIGHLIGHTED STANDARD FEATURES



FRONT PANEL MEMORY

150-state memory is available as standard, which allows quick initialisation and limit-setting of the unit. This makes the ELP-HIVOLT both dependable, and mobile as an on-site load tester.



SEQUENCING FUNCTION

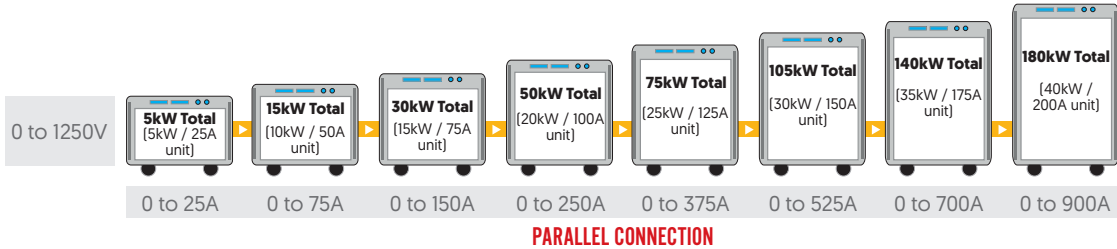
A sequencing function means that stored settings can be implemented against time, enabling the unit to carry out state-dependant and complex test routines without the need for a computer interface.



BATTERY DISCHARGE TESTS

The ELP-HIVOLT series has a total of 5 battery discharge modes. These simplify test set up for users, whilst avoiding conditions which could result in permanent battery damage due to over or under voltage.

MASTER/SLAVE FUNCTIONALITY



Up to eight ELP-HIVOLT units can be arranged in parallel configurations. It is possible to connect 5kW to 40kW models with different nominal values, up to a maximum of 320kW. For example, a 5kW system and a 40kW system can be operated together. The diagram above shows eight different models from the ELP-HIVOLT family operating in parallel together. 50kW and 60kW models can be operated in parallel connection, but only with models of the exact same specifications.

Each unit is able to operate independently, so that systems can be reconfigured, expanded or broken up as needs dictate. This approach is useful for test houses and research labs who regularly test different sized power devices. Individual units can be used for the day to day testing of multiple small devices, then grouped together for larger projects.

OPTIONS

CODE	DESCRIPTION
/9923	Programmable current waveform generator
/BMS	Electronic load fitted with a BMS test option, including two complete test routines
/LT	IEEE488.2 (GPIB) interface card
/RS232	RS-232 interface card
/USB	USB interface card
/LAN	LAN interface card
/801	Digital control interface and panel mount emergency stop
/802	Analogue and digital control interfaces
/803	Analogue and digital control interfaces with panel mount emergency stop
/0001	1m IEEE 488.2 cable
/0002	2m IEEE 488.2 cable
/0003	2m RS-232 cable
/1KAxM	1000A load cable (1m - 5m available, please specify)

HIGHLIGHTED OPTIONS

ANAOLGUE & DIGITAL CONTROL INTERFACES WITH PANEL MOUNT EMERGENCY STOP (/803)

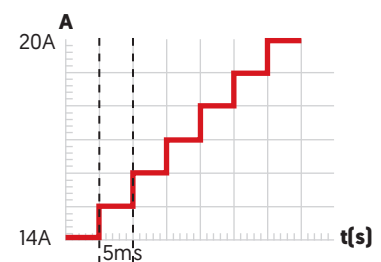
This provides you with a panel mounted emergency stop button should you need to shut down the load quickly. Additionally, this feature allows you to turn the load off from an external signal via a digital interface, as well as tap an alarms signal if the unit is in error state.

You can select operating modes and read status. The /803 option also provides a seperate analogue interface which allows an input from an external source, such as an external waveform generator. The ELP-HIVOLT will track the signal in CC, CV or CP modes, varying its load current proportionally according to the 0-10Vdc signal. You can also monitor the sink voltage and current.

BMS TESTING

The battery management system (BMS) regulates various parameters of the battery, including cell voltage monitoring, state of charge, charge/discharge current and temperature. This protects the battery from operating outside of its safe area, minimising risk of damage.

Two complete test routines are provided for testing and certification. Actual operational parameters can be simulated, such as over charge/discharge current, over/under temperature and response time.



RETROFITABLE INTERFACES

Should remote control be required then LAN, USB, RS-232 or GPIB cards can be specified. Interface cards can also be easily retro-fitted or even swapped in the field by the user, further expanding its capability.



	ELP-HIVOLT 05		ELP-HIVOLT 10		ELP-HIVOLT 15		ELP-HIVOLT 20	
	RANGE 1	RANGE 2	RANGE 1	RANGE 2	RANGE 1	RANGE 2	RANGE 1	RANGE 2
Load Voltage (ON/OFF)	0 - 250V / 0 - 250V							
Min Voltage at Full Current	55V at 25A		55V at 50A		55V at 75A		55V at 100A	
Short Circuit Current	25A		50A		75A		10A	
Max. Power Consumption	600W		1000W		1450W		1900W	
Weight	100kg		130kg		170kg		220kg	
Operating Temperature	0 to 40°C, all measurements taken at 25°C± 5°C, except where noted							
Dimensions (W × H × D)	647 × 573 × 766mm		647 × 573 × 766mm		647 × 728 × 766mm		647 × 885 × 766mm	
Safety & EMC	CE							

CC MODE (AUTOMATIC RANGING APPLIES IN CC MODE)

Range	0 - 2.5A	0 - 25A	0 - 5A	0 - 50A	0 - 7.5A	0 - 75A	0 - 10A	0 - 100A
Resolution	0.04mA	0.4mA	0.08mA	0.8mA	0.12mA	1.2mA	0.16mA	1.6mA
Accuracy	± (0.1% of setting + 0.2% of range)							

CR MODE

Range	60000 - 50Ω	50 - 2.502Ω	30000 - 25Ω	25 - 1.251Ω	20004 - 16.67Ω	16.67 - 0.834Ω	15000 - 12.5Ω	12.5 - 0.627Ω
Resolution	0.3334μS	0.834mΩ	0.6667μS	0.417mΩ	0.9998μS	0.278mΩ	1.3333μS	0.209mΩ
Accuracy	± 0.2% of [setting + range]							

CV MODE

Range	1 - 1250V*							
Resolution	20mV							
Accuracy	± 0.05% of [setting + range]							

CP MODE

Range	0.5kW	5kW	1kW	10kW	1.5kW	15kW	2kW	20kW
Resolution	8mW	80mW	16mW	160mW	24mW	240mW	32mW	320mW
Accuracy	± 0.5% of [setting + range]							

CV + CC MODE

Range	55 - 1250V*	0 - 25A	55 - 1250V*	0 - 50A	55 - 1250V*	0 - 75A	55 - 1250V*	0 - 100A
Resolution	20mV	0.4mA	20mV	0.8mA	20mV	1.2mA	20mV	1.6mA
Accuracy	± 1% of [setting + range]							

CV + CP MODE

Range	55 - 1250V*	5kW	55 - 1250V*	10kW	55 - 1250V*	15kW	55 - 1250V*	20kW
Resolution	20mV	80mW	20mV	160mW	20mV	240mW	20mV	320mW
Accuracy	± 1% of [setting + range]							

MPPT MODE

Algorithm	P&O + Scanning							
Load Mode	CC, CR, CV (MPPT C, R, V)							
Sampling Interval	10ms-2000ms ; resolution 1ms							
P&O Interval	10ms-2000ms ; resolution 1ms							

* Voltages below 55V are only possible at reduced current. For derating values, see the characterised values table on page 2.



	ELP-HIVOLT 05		ELP-HIVOLT 10		ELP-HIVOLT 15		ELP-HIVOLT 20	
	RANGE 1	RANGE 2	RANGE 1	RANGE 2	RANGE 1	RANGE 2	RANGE 1	RANGE 2
Over Power Protection	105%							
Over Current Protection	104%							
Over Voltage Protection	104%							
Over Temp. Protection	Yes							

5-DIGIT VOLTMETER

	0 - 125V	125 - 1250V	0 - 125V	125 - 1250V	0 - 125V	125 - 1250V	0 - 125V	125 - 1250V
Range	0 - 125V	125 - 1250V	0 - 125V	125 - 1250V	0 - 125V	125 - 1250V	0 - 125V	125 - 1250V
Resolution	2mV	20mV	2mV	20mV	2mV	20mV	2mV	20mV
Accuracy	± 0.025% of (reading + range)							

5-DIGIT AMMETER

	0 - 2.5A	2.5 - 25A	0 - 5A	5 - 50A	0 - 7.5A	7.5 - 75A	0 - 10A	10 - 100A
Range	0 - 2.5A	2.5 - 25A	0 - 5A	5 - 50A	0 - 7.5A	7.5 - 75A	0 - 10A	10 - 100A
Resolution	0.04mA	0.4mA	0.08mA	0.8mA	0.12mA	1.2mA	0.16mA	1.6mA
Accuracy	± 0.1% of (reading + range)							

5-DIGIT POWERMETER

	0 - 1kW	0 - 5kW	0 - 1kW	0 - 10kW	0 - 10kW	0 - 15kW	0 - 10kW	0 - 20kW
Range	0 - 1kW	0 - 5kW	0 - 1kW	0 - 10kW	0 - 10kW	0 - 15kW	0 - 10kW	0 - 20kW
Resolution	0.01W	0.1W	0.1W	1W	0.1W	1W	0.1W	1W
Accuracy	± 0.125% of (reading + range)							

DYNAMIC OPERATION

Thigh & Tlow	0.050 - 9.999 / 99.99 / 999.9 / 9999ms							
Resolution	0.001 / 0.01 / 0.1 / 1ms							
Accuracy	1µS / 10µS / 100µS / 1ms + 50ppm							
Slew Rate Range	0.002A-0.125A/µs	0.02A-1.25A/µs	0.004A-0.25A/µs	0.04A-2.5A/µs	0.006A-0.375A/µs	0.06A-3.75A/µs	0.008A-0.5A/µs	0.08A-5A/µs
Slew Rate Resolution	0.0005A/µs	0.005A/µs	0.001A/µs	0.01mA/µs	0.0015A/µs	0.015A/µs	0.002A/µs	0.02A/µs
Minimum Rise Time	Typically 20µs							
Current Range	0 - 2.5A	2.5 - 25A	0 - 5A	5 - 50A	0 - 7.5A	7.5 - 75A	0 - 10A	10 - 100A
Current Resolution	0.04mA	0.4mA	0.08mA	0.8mA	0.12mA	1.2mA	0.16mA	1.6mA

	ELP-HIVOLT 25		ELP-HIVOLT 30		ELP-HIVOLT 35	
	RANGE 1	RANGE 2	RANGE 1	RANGE 2	RANGE 1	RANGE 2
Load Voltage (ON/OFF)	0 - 250V / 0 - 250V					
Min Voltage at Full Current	55V at 125A		55V at 150A		55V at 175A	
Short Circuit Current	125A		150A		175A	
Max. Power Consumption	2350W		2800W		3250W	
Weight	280kg		340kg		390kg	
Operating Temperature	0 to 40°C, all measurements taken at 25°C± 5°C, except where noted					
Dimensions (W × H × D)	647 × 1041 × 766mm		647 × 1197 × 766mm		647 × 1353 × 766mm	
Safety & EMC	CE					

CC MODE (AUTOMATIC RANGING APPLIES IN CC MODE)

Range	0 - 12.5A	0 - 125A	0 - 15A	0 - 150A	0 - 17.5A	0 - 175A
Resolution	0.2mA	2mA	0.24mA	2.4mA	0.28mA	2.8mA
Accuracy	± [0.1% of setting + 0.2% of range]					

CR MODE

Range	12000 - 10Ω	10 - 0.501Ω	9996 - 8.33Ω	8.33 - 0.417Ω	8568 - 7.14Ω	7.14 - 0.357Ω
Resolution	1.6667μS	0.167mΩ	2.0008μS	0.139mΩ	2.334μS	0.119mΩ
Accuracy	± 0.2% of [setting + range]					

CV MODE

Range	1 - 1250V					
Resolution	20mV					
Accuracy	± 0.05% of [setting + range]					

CP MODE

Range	2.5kW	25kW	3kW	30kW	3.5kW	35kW
Resolution	40mW	400mW	48mW	480mW	56mW	560mW
Accuracy	± 0.5% of [setting + range]					

CV + CC MODE

Range	55 - 1250V*	0 - 125A	55 - 1250V*	0 - 150A	55 - 1250V*	0 - 170A
Resolution	20mV	2mA	20mV	2.4mA	20mV	2.8mA
Accuracy	± 1% of [setting + range]					

CV + CP MODE

Range	55 - 1250V*	25kW	55 - 1250V*	30kW	55 - 1250V*	35kW
Resolution	20mV	400mW	20mV	480mW	20mV	560mW
Accuracy	± 1% of [setting + range]					

MPPT MODE

Algorithm	P&O + Scanning					
Load Mode	CC, CR, CV [MPPT C, R, V]					
Sampling Interval	10ms-2000ms ; resolution 1ms					
P&O Interval	10ms-2000ms ; resolution 1ms					

* Voltages below 55V are only possible at reduced current. For derating values, see the characterised values table on page 2.



	ELP-HIVOLT 25		ELP-HIVOLT 30		ELP-HIVOLT 35	
	RANGE 1	RANGE 2	RANGE 1	RANGE 2	RANGE 1	RANGE 2
Over Power Protection	105%					
Over Current Protection	104%					
Over Voltage Protection	104%					
Over Temp. Protection	Yes					

5-DIGIT VOLTMETER

	0 - 125V	125 - 1250V	0 - 125V	125 - 1250V	0 - 125V	125 - 1250V
Range	0 - 125V	125 - 1250V	0 - 125V	125 - 1250V	0 - 125V	125 - 1250V
Resolution	2mV	20mV	2mV	20mV	2mV	20mV
Accuracy	± 0.025% of (reading + range)					

5-DIGIT AMMETER

	0 - 12.5A	12.5 - 125A	0 - 15A	15 - 150A	0 - 17.5A	17.5 - 175A
Range	0 - 12.5A	12.5 - 125A	0 - 15A	15 - 150A	0 - 17.5A	17.5 - 175A
Resolution	0.2mA	2mA	0.24mA	2.4mA	0.28mA	2.8mA
Accuracy	± 0.1% of (reading + range)					

5-DIGIT POWERMETER

	0 - 10kW	0 - 25kW	0 - 10kW	0 - 30kW	0 - 10kW	0 - 35kW
Range	0 - 10kW	0 - 25kW	0 - 10kW	0 - 30kW	0 - 10kW	0 - 35kW
Resolution	0.1W	1W	0.1W	1W	0.1W	1W
Accuracy	± 0.125% of (reading + range)					

DYNAMIC OPERATION

Thigh & Tlow	0.050 - 9.999 / 99.99 / 999.9 / 9999ms					
Resolution	0.001 / 0.01 / 0.1 / 1mS					
Accuracy	1µS / 10µS / 100µS / 1mS + 50ppm					
Slew Rate Range	0.01A-0.625A/µs	0.1A-6.25A/µs	0.012A-0.75A/µs	0.12A-7.5A/µs	0.014A-0.875A/µs	0.14A-8.75A/µs
Slew Rate Resolution	0.0025A/µs	0.025A/µs	0.003mA/µs	0.03A/µs	0.0035A/µs	0.035A/µs
Minimum Rise Time	Typically 20µs					
Current Range	0 - 12.5A	12.5 - 125A	0 - 15A	15 - 150A	0 - 17.5A	17.5 - 175A
Current Resolution	0.2mA	2mA	0.24mA	2.4mA	0.28mA	2.8mA

	ELP-HIVOLT 40		ELP-HIVOLT 50		ELP-HIVOLT 60	
	RANGE 1	RANGE 2	RANGE 1	RANGE 2	RANGE 1	RANGE 2
Load Voltage [ON/OFF]	0 - 250V / 0 - 250V		0 - 250V / 0 - 250V		0 - 250V / 0 - 250V	
Min Voltage at Full Current	55V at 200A		55V at 250A		55V at 300A	
Short Circuit Current	200A		250A		300A	
Max. Power Consumption	3700W		5450W		6200W	
Weight	430kg		510kg		630kg	
Operating Temperature	0 to 40°C, all measurements taken at 25°C± 5°C, except where noted					
Dimensions [W × H × D]	647 × 1509 × 766mm		853 × 1353 × 766mm		853 × 1508 × 766mm	
Safety & EMC	CE					

CC MODE (AUTOMATIC RANGING APPLIES IN CC MODE)

Range	0 - 20A	0 - 200A	0 - 25A	0 - 250A	0 - 30A	0 - 300A
Resolution	0.32mA	3.2mA	0.42mA	4.2mA	0.48mA	4.8mA
Accuracy	± [0.1% of setting + 0.2% of range]					

CR MODE

Range	7500 - 6.25Ω	6.25 - 0.315Ω	5712 - 4.76Ω	4.76 - 0.24Ω	5004 - 4.17Ω	4.17 - 0.21Ω
Resolution	2.6667μS	0.105mΩ	3.5014μS	0.08mΩ	3.9968μS	0.07mΩ
Accuracy	± 0.2% of [setting + range]					

CV MODE

Range	1 - 1250V					
Resolution	20mV					
Accuracy	± 0.05% of [setting + range]					

CP MODE

Range	4kW	40kW	5kW	50kW	6kW	60kW
Resolution	64mW	640mW	84mW	840mW	96mW	960mW
Accuracy	± 0.5% of [setting + range]					

CV + CC MODE

Range	55 - 1250V*	0 - 200A	55 - 1250V*	0 - 250A	55 - 1250V*	0 - 300A
Resolution	20mV	3.2mA	20mV	4.2mA	20mV	4.8mA
Accuracy	± 1% of [setting + range]					

CV + CP MODE

Range	55 - 1250V*	40kW	55 - 1250V*	50kW	55 - 1250V*	60kW
Resolution	20mV	640mW	20mV	840mW	20mV	960mW
Accuracy	± 1% of [setting + range]					

MPPT MODE

Algorithm	P&O + Scanning					
Load Mode	CC, CR, CV [MPPT C, R, V]					
Sampling Interval	10ms-2000ms ; resolution 1ms					
P&O Interval	10ms-2000ms ; resolution 1ms					

* Voltages below 55V are only possible at reduced current. For derating values, see the characterised values table on page 2.



	ELP-HIVOLT 40		ELP-HIVOLT 50		ELP-HIVOLT 60	
	RANGE 1	RANGE 2	RANGE 1	RANGE 2	RANGE 1	RANGE 2
Over Power Protection	105%					
Over Current Protection	104%					
Over Voltage Protection	104%					
Over Temp. Protection	Yes					

5-DIGIT VOLTMETER

Range	0 - 125V	125 - 1250V	0 - 125V	125 - 1250V	0 - 125V	125 - 1250V
Resolution	2mV	20mV	2mV	20mV	2mV	20mV
Accuracy	± 0.025% of (reading + range)					

5-DIGIT AMMETER

Range	0 - 20A	20 - 200A	0 - 26.25A	26.25 - 250A	0 - 30A	30 - 300A
Resolution	0.32mA	3.2mA	0.42mA	4.2mA	0.48mA	4.8mA
Accuracy	± 0.1% of (reading + range)					

5-DIGIT POWERMETER

Range	0 - 10kW	0 - 40kW	0 - 10kW	0 - 50kW	0 - 10kW	0 - 60kW
Resolution	0.1W	1W	0.1W	1W	0.1W	1W
Accuracy	± 0.125% of (reading + range)					

DYNAMIC OPERATION

Thigh & Tlow	0.050 - 9.999 / 99.99 / 999.9 / 9999ms					
Resolution	0.001 / 0.01 / 0.1 / 1mS					
Accuracy	1µS / 10µS / 100µS / 1mS + 50ppm					
Slew Rate Range	0.016A-1A/µs	0.16A - 10A/µs	0.02A-125A/µs	0.2A-12.5A/µs	0.024A-1.5A/µs	0.24A-15A/µs
Slew Rate Resolution	0.002A/µs	0.04A/µs	0.005A/µs	0.05A/µs	0.006A/µs	0.06A/µs
Minimum Rise Time	Typically 20µs					
Current Range	0 - 20A	20 - 200A	0 - 26.25A	26.25 - 250A	0 - 30A	30 - 300A
Current Resolution	0.32mA	3.2mA	0.42mA	4.2mA	0.48mA	4.8mA

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.



“
WE ARE
POSITIVE
PEOPLE
”

ETPS engineer electronic power supply and testing systems. Our problem solving skills provide the spark of innovation to some of the world's leading technology brands.



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