ETPS
ELECTRONIC TEST & POWER SYSTEMS

RENTAL
LAB-AUTO

AUTORANGING DC POWER SUPPLY

POSITIVE PROBLEM SOLVING +=

The LAB-AUTO's autoranging output allows for many more voltage/current combinations than a traditional DC source. Each unit has an extensive feature set.

All units operate from a three phase wide AC input with active PFC. Rental systems are available with outputs up to 30kW. Constant voltage, current and power modes are provided. Control of the system is provided via a large touch screen with 5 digit V, I and W display, as well as by analogue knobs. An isolated analogue and LAN interface are provided for most units, which allow for remote control.

- + Back EMF Protection up to PSU's Nominal Voltage
- + <1.5ms for 10 - 90% Load Step
- + Configurable OCP, OVP and OTP
- + Adjustable Voltage Ramps
- + Adjustable Resistance
- + Active PFC of >0.95

STANDARD MODELS

SELECTION TABLE

Part Number	Nominal Power[1]	Max. Settable Power[2]	Nominal Voltage Range[1]	Settable Voltage Range[2]	Nominal Current Range[1]	Settable Current Range[2]	Weight (Without Flightcase)
LAB-AUTO 500-90-r	15kW	15.3kW	0 - 500V	0 - 525V	0 - 90A	0 - 94.5A	43.6kg
LAB-AUTO 1500-30-r	15kW	15.3kW	0 - 1500V	0 - 1575V	0 - 30A	0 - 31.5A	43.6kg
LAB-AUTO 500-180-r[3]	30kW	30.6kW	0 - 500V	0 - 525V	0 - 180A	0 - 189A	87.2kg
LAB-AUTO 1500-60-r[3]	30kW	30.6kW	0 - 1500V	0 - 1575V	0 - 60A	0 - 63A	87.2kg

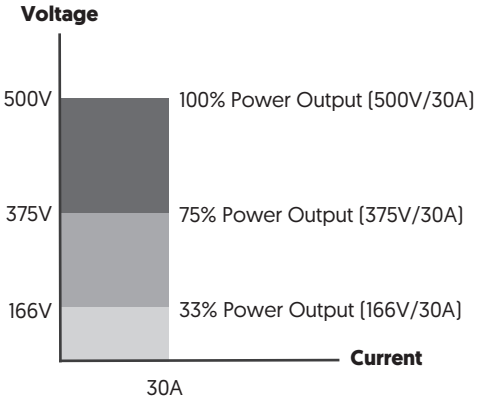
[1] The technical specifications detailed within this datasheet are characterised within the nominal V, I & P ranges of the LAB-AUTO.
[2] The settable V, I & P ranges of the LAB-AUTO is the maximum values that the unit is capable of. When operating between the maximum nominal values and the maximum settable values, the technical specifications may differ from those specified in this datasheet.
[3] This model is comprised of 2 × LAB-AUTOs in parallel connection.

AUTORANGING POWER SUPPLIES

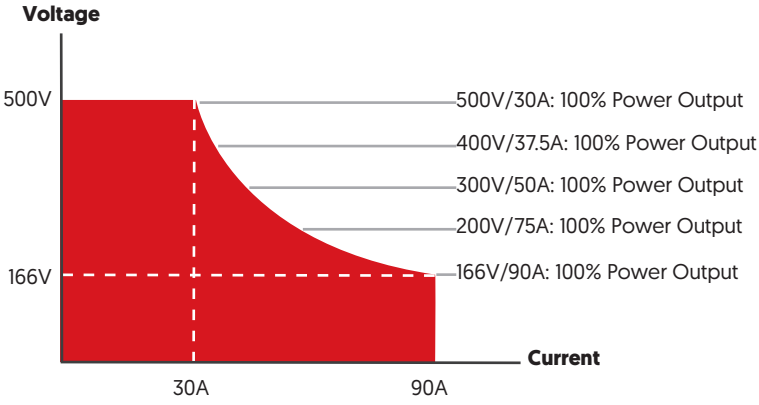
Every LAB-AUTO features an autoranging output. This allows many more voltage/current combinations at nominal power than a traditional DC source. An example of the difference is shown below using a LAB-AUTO 500-90.

Using one autoranging PSU instead of several traditional DC sources saves both cost and bench space. Despite the units offering such a large output range, they are still incredibly power dense. 15kW of output power is provided from 3U of rackmounting height.

TRADITIONAL 15kW/500V DC SOURCE



LAB-AUTO 15kW/500V DC SOURCE



RESISTANCE, RIPPLE & NOISE

TECHNICAL DATA (PER 15KW UNIT)

Part Number	Internal Resistance			Ripple and Noise[5]		
	Range	Resolution	Accuracy[4]	CV (Vpp)	CV (Vrms)	CC (Arms)
LAB-AUTO 500-90	0 - 5.560Ω	0.0001Ω	≤2.3% of max. resistance	<315mV	<63mV	44mA
LAB-AUTO 1500-30	0 - 50.00Ω	0.001Ω	≤2.3% of max. resistance	<2160mV	<360mV	24mA

[4] Accuracy specifications warranted at 23°C ±5°C.
[5] Ripple and noise (rms value) measurement bandwidth up to 300 kHz, ripple and noise (peak value) measurement bandwidth up to 20 MHz.

INPUT

STANDARD FEATURES (PER 15KW UNIT)

TECHNICAL DATA	
Nominal Input Voltage	3 × 208VAC ±10% / 3 × 380VAC ±10% / 3 × 400VAC ±10% / 3 × 415VAC ±10% / 3 × 440VAC ±10%
Input Voltage Range	3 × 180 - 460VAC
Line Frequency	47 - 63Hz
Maximum Input Current	60A per phase (Input 3-phase 180V)
Inrush Current	99A per phase (Input 3-phase 460V)
Maximum Input Power	18kVA
Efficiency[6]	86-95% (varies by unit, for model specific values please contact ETPS Ltd.)
Leakage Current	<3.5mA
Power Factor	Typically 0.95
Temperature Coefficient for Set Values	100ppm/°C of rated output voltage, after a 30 minutes warm-up

[6] Specifications warranted at 0°C - 50°C of ambient temperature and warmed up more than 30 min. Humidity: Under 80% RH, with 2%-100% of rated voltage, 1%-100% of rated current, measured at the output terminals with local sensing.

HIGHLIGHTED FEATURE

ACTIVE POWER FACTOR CORRECTION

LAB-AUTO power supplies have an active Power Factor Correction (PFC) circuit integrated into the input stage as standard. This enhances the overall efficiency of the modules across the output power range when compared to a unit that does not have PFC. In practice, this means a significant lower peak current value, a decrease of RMS value of the phase current and less perturbations of other equipment running on the same grid.

The inbuilt active PFC is also ideal for operating the power supply from a generator. Generators tend to be sensitive against high current peaks, and their voltage controllers may have some stability problems with non-sinusoidal load currents. The PFC feature forms a lowpass filter and therefore, both the repetitive current peaks and also the harmonic content is enhanced. This will help the generator system maintain a stable and reliable output voltage during load step changes.

MEMORY & SEQUENCE

STANDARD FEATURES

TECHNICAL DATA	
Number of Memory Sets	3 sets (operated from front panel)
Maximum Step Number	500 steps per each Sequence
Maximum Sequence Number	16
Step Time Settable Range	0.001 sec - 999999.999 sec

Creation and editing of sequences can be achieved through the LAB-AUTO's operating software, a CSV file, text script or via SCPI commands. A maximum of 16 sequences are permitted. Each Sequence may content up to 500 STEPs, 8000 STEPs in total. A USB port is provided to upload sequences to the LAB-AUTO to execute. The USB port cannot be used to provide remote control and monitoring of the power supply.

STANDARD OPERATING MODES

CONSTANT VOLTAGE FEATURES

TECHNICAL DATA	
Overvoltage Protection	0-110% of V_{NOM}
Programming Resolution	5 digits
Programming Accuracy[7]	±0.1% of rated voltage
Meter Resolution	5 digits
Meter Accuracy[7]	±0.1% of rated voltage
Line Regulation[8]	±0.02% of rated voltage
Load Regulation[9]	±0.05% of rated voltage
Full Load Up	<30ms
Full Load Down	<80ms
No Load Down	<10ms
Transient Response[10]	<1.5ms
Remote Compensation	5V

CONSTANT CURRENT FEATURES

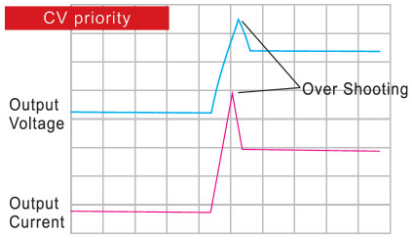
TECHNICAL DATA	
Overcurrent Protection	0-110% of I_{NOM}
Programming Resolution	5 digits
Programming Accuracy[7]	±0.2% of rated current
Meter Resolution	5 digits
Meter Accuracy[7]	±0.2% of rated current
Line Regulation[8]	±0.05% of full scale value
Load Regulation[11]	±0.15% of full scale value

CONSTANT POWER FEATURES

TECHNICAL DATA	
Overpower Protection	0-110% of P_{NOM}
Programming Resolution	5 digits
Programming Accuracy	<1% of rated power
Meter Resolution	5 digits
Meter Accuracy[7]	±0.5% of rated power
Line Regulation[8]	<0.05% of rated power
Load Regulation[12]	<0.75% of rated power

[7] Accuracy specifications warranted at 23°C ±5°C
[8] Constant load (0-100%), Input changes between 180-264VAC or 342-460VAC
[9] CV : Constant Input (Full input range), current changes 10% -90%
[10] Time for output voltage recover within +/-1% of rated value when load changes from 10%-90%
[11] CC : Constant Input (Full input range), voltage changes 10%-100%
[12] CP : Constant Input (Full input range), voltage * current 10%-90%

Users can nominate an operating mode to take priority over others when testing specific types of load. For example, using the Constant Current priority output mode eliminates overshooting when testing a capacitive load or diode.



INTERFACES

LAN INTERFACE

TECHNICAL DATA	
LAN Interfaces	1 x LXI 1.4 for communication
J1 (Auxiliary Control)	Function : Interlock, External output ON/OFF, Shut OFF, Alarm signal output, Output voltage downward signal

ANALOGUE INTERFACE

TECHNICAL DATA	
Status Indication	CV State, CC State, CP State, CR State, ON/OFF State
Voltage Control	0%-100% of rated output voltage in the range of 0V-5V or 0V-10V
Voltage Control Accuracy[13]	±0.2%
Current Control	0%-100% of rated output current in the range of 0V-5V or 0V-10V
Current Control Accuracy[13]	±0.2%
Power Control	0%-100% of rated output current in the range of 0V-5V or 0V-10V
Power Control Accuracy[13]	±0.2%
Monitoring Output	0-5V or 0-10V output for monitoring V/A/W
Monitoring Accuracy[13]	±2%
Reference Output	0-5Vdc or 0-10Vdc (max=5mA), selectable in MENU

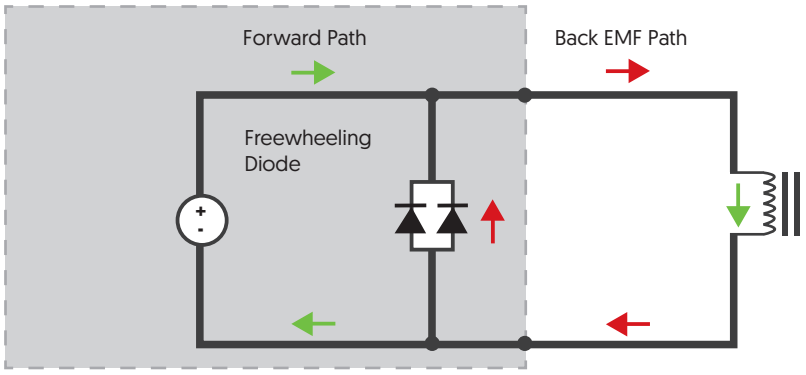
[13] Accuracy specifications warranted at 23°C ±5°C

SAFETY & PROTECTION

STANDARD FEATURES

TECHNICAL DATA	
Isolation: Primary/Case	2500Vdc
Isolation: Primary/Secondary	2500Vdc
Isolation: Secondary/Case (500V Models)	1000Vdc
Isolation: Secondary/Case (1500V Models)	1500Vdc

When the LAB-AUTO is powering an inductive load such as a DC motor, a back EMF may be uninteionally generated when the output voltage is switched off. An inbuilt freewheeling diode protects the power supply against damage by a back EMF.



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.

ETPS
ELECTRONIC TEST & POWER SYSTEMS

Tel: +44 (0) 1246 452909
Sales: 0800 612 95 75
sales@etps.co.uk
www.etps.co.uk

ETPS Ltd
Unit 14, The Bridge
Beresford Way, Chesterfield
S41 9FG

POSITIVE PROBLEM SOLVING