

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 which allow for remote control.

- + Back EMF Protection up to PSU's Nominal Voltage
- + PV Simulation and Adjustable Resistance
- + <1.5ms for 10 - 90% Load Step
- + Configurable OCP, OVP and OTP
- + Adjustable Voltage Ramps
- + 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 | 15kW | 15.3kW | 0 - 500V | 0 - 525V | 0 - 90A | 0 - 94.5A | 43.6kg |
| LAB-AUTO 1500-30 | 15kW | 15.3kW | 0 - 1500V | 0 - 1575V | 0 - 30A | 0 - 31.5A | 43.6kg |
| LAB-AUTO 1500-60 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.

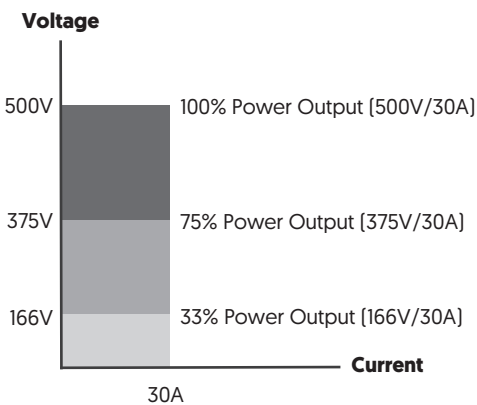
³ The LAB-AUTO 1500-60 is comprised of 2 x LAB-AUTO 1500-30 in parallel connection.

AUTORANGING POWER SUPPLIES

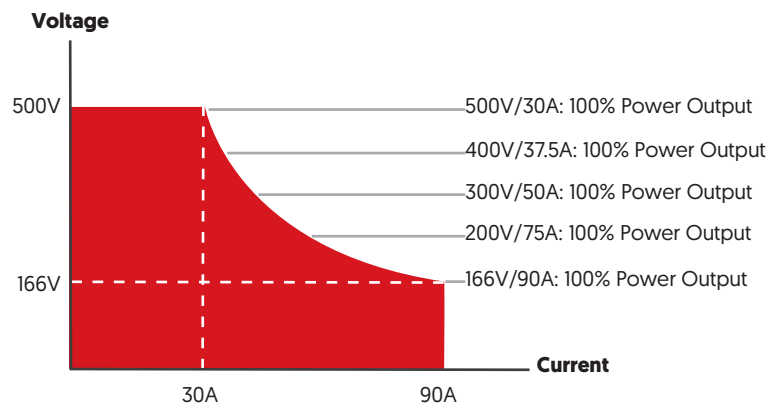
Every LAB-AUTO features an autoranging output. This allows many more voltage/current combinations at nominal power than a traditional DC source. An example of the difference is shown below using a LAB-AUTO 500-90.

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.

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 | |
|-----------------------------------|-------------------------------|
| Oversvoltage Protection | 0-110% of V_{NOM} |
| Programming Resolution | 5 digits |
| Programming Accuracy ⁷ | $\pm 0.1\%$ of rated voltage |
| Meter Resolution | 5 digits |
| Meter Accuracy ⁷ | $\pm 0.1\%$ of rated voltage |
| Line Regulation ⁸ | $\pm 0.02\%$ of rated voltage |
| Load Regulation ⁹ | $\pm 0.05\%$ 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 | $\pm 0.2\%$ of rated current |
| Meter Resolution | 5 digits |
| Meter Accuracy ⁷ | $\pm 0.2\%$ of rated current |
| Line Regulation ⁸ | $\pm 0.05\%$ of full scale value |
| Load Regulation ¹¹ | $\pm 0.15\%$ 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 | $\pm 0.5\%$ 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 $\pm 5^\circ\text{C}$

⁹ CV : Constant Input (Full input range), current changes 10% -90%

¹¹ CC : Constant Input (Full input range), voltage changes 10%-100%

⁸ Constant load (0-100%), Input changes between 180-264VAC or 342-460VAC

¹⁰ Time for output voltage recover within +/-1% of rated value when load changes from 10%-90%

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.



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

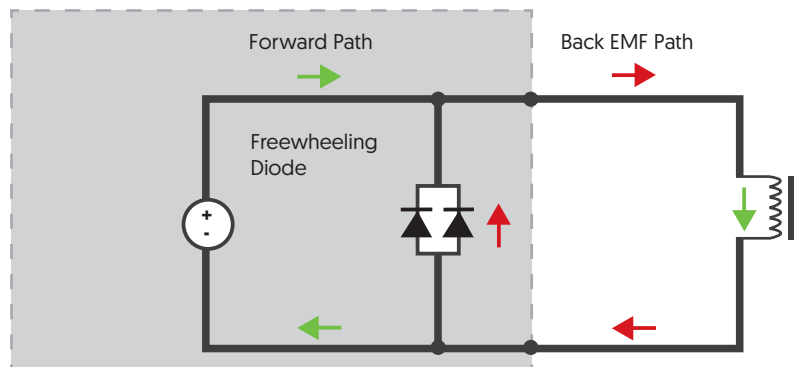
SAFETY & PROTECTION

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 unintentionally 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.



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