ELECTRONIC TEST & POWER SYSTEMS

LAB-TC

ADVANCED 2kW DC SOURCE

POSITIVE PROBLEM SOLVING

The LAB-TC range is a highly advanced series of programmable DC power supplies. The unit is provided in a flight case for ease of transport.

Constant voltage, current and power operating modes are provided. The internal resistance can be adjusted making the LAB-TC ideal for battery simulation. Remote sense is provided to compensate for the voltage drop in the load lines. All regulation, monitoring and communication tasks are conducted by high performance micro-controllers and digital signal processors. This provides exceptional accuracy, reproducibility and long term stability. The DC source can be controlled via the front panel or analogue and RS-232 interfaces.

- Can be Optimised for Individual Loads
- Adjustable Internal Resistance
- Embedded Function Generator
- Full Digital Regulation

FURTHER DETAILS

The LAB-TC has a 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. The current harmonics of the LAB-TC meet the EN61000-12 regulations for a mains SCE >= 120 value. 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 unit comes with a simple and intuitive TopControl operating GUI as standard. Live values of the power supply are displayed graphically along with any warning and error messages. The software provides a variety of second level parameters, ideal for users who like to optimise their test processes. In standard user mode the operator can remotely program set values, enable voltage output as well as the ability to anlyse different variables including set and actual values via the integrated scope.

The scope function can simultaneously record up to 8 system variables. Recording can be started manually or by a defined trigger event from any variable of the system. All actual and set values (currents/voltages/power/internal resistance) can be recorded. Other recordable items include system temperatures, intermediate DC circuit, low voltage auxiliary power supplies, error related values and variables from the controller section.

LabVIEW and C/C++ is supported if required. The PID parameters of the power supply's controllers can be configured to the needs of particular loads

Complex DC waveforms can be implemented through an embedded function generator. The highly programmable nature of the function generator allows users to plot out exact waveforms. This is often advantageous when emulating a power device with a very specific behaviour profile. For example, when quality testing fuel cell powered equipment, the specific behaviour of a discharging fuel cell can be programmed and replicated.

As well as custom shapes, standard square, sawtooth and sine waveforms can be plotted against time. Voltage/current andvoltage/power relationships can also be programmed where necessary. Parametric programming is possible, where instead of the time axis, an input variable (V_{IN}, I_{IN} or P_{IN}) can be selected.

SELECTION TABLE

Part Number	Max. Power*	Voltage Range*	Current Range*
LAB-TC 2-46	2kW	0 - 46V	0 - 43A

TECHNICAL DATA

GENERAL	
Operating Modes	Constant Voltage (0 - 100% of $_{VMAX}$) Constant Current (0 - 100% of I_{MAX}) Constant Power (5 - 100% of P_{MAX})
Input Voltage	230VAC
Line Frequency	48 - 62Hz
Mains Connection Type	13A IEC C13
Internal Resistance Range	AdjustableΩ_{MAX} = (V_{NOM} / I_{NOM})
Interfaces	Analogue & RS-232
Remote Sense	0 - V_{MAX} + 2%
Efficiency	Up to 95%
Load Regulation (CV, CC)	<± 0.1%
Line Regulation (CV, CC)	<± 0.1%
Response time (10-90%)	<2ms
Over Voltage Protection	0 - 110% of V_{MAX}
Over Current Protection	0 - 110% of I_{MAX}
Output Ripple (300Hz Vrms)	<0.4%
Output Noise (40kHz-1MHz)	<0.1 Vrms
Stability (CV, CC)	<± 0.05%
Operating Temperature	5 - 40°C
Temperature Coefficient (CV)	0.02% per °C
Temperature Coefficient (CC)	0.03% per °C
Temperature Coefficient (CV)	<0.02% of full scale value per°C
Temperature Coefficient (CC)	<0.03% of full scale value per°C
Dimensions (Module Only)	19" × 6U × 495mm (W × H × D), specific flight case dimensions are available on request
Weight (Module Only)	44kg, specific flight case weight is available on request

A more detailed technical summary is available on request

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