ELECTRONIC TEST & POWER SYSTEMS

LAB-GSS

GRID-TIED BIDIRECTIONAL DC SUPPLIES

POSITIVE PROBLEM SOLVING +=

The LAB-GSS is able to operate as either a DC Source or an Electronic DC Load. This integrated approach features high dynamics enabling the user to switch quickly between quadrants.

When sinking energy from the unit under test the LAB-GSS automatically inverts the DC to AC and synchronises this output to the grid. A variety of control methods are available. As standard each module is built with isolated analogue and RS-232 interfaces. Front panel control and display along with IEEE 488.2 (GPIB), USB, RS-422, CAN & Ethernet interfaces are optionally available.

- + Stackable up to 1500V / Very High Powers
- + Mains Regeneration of the DC Sink Energy
- + Excellent GUI with Built-in Scope Function
- + Function Generator with V / I Capability
- + Battery cycling and emulation software
- + Adjustable Internal Resistance

FURTHER DETAILS

A comprehensive software program is provided for operation over the serial or LAN interface. Along with standard output settings the GUI gives access to a host of second level parameters. Voltage and current slopes can be set and protection levels tweaked. Enhanced additional capacitance is provided as standard, making the LAB-GSS ideal for constant voltage applications such as battery simulation. Sense compensation can be programmed and PID controllers adjusted. This helps ensure that the LAB-GSS can be optimised for particular applications.

A useful bonus is the built in 8 channel recording scope for seeing what is actually on the output. Trigger events, such as a particular current or power level, can be selected. The time resolution and number of sampling points can also be adjusted. Previous scope traces together with the channel and trigger configurations can be imported back into the GUI for analysis.

The optional embedded function generating engine is an ideal tool for creating and implementing complex waveforms. Standard sine, square and sawtooth shapes can be plotted against time for voltage, current and power outputs. User defined waveforms along with parametric programming is also possible. This allows curves to be set where one output quantity is automatically adjusted depending on the value of another. Waveforms can be exported to the memory of the LAB-GSS and implemented from the front panel.

Another useful feature is that the internal resistance of the LAB-GSS can be adjusted. Additional switchable capacitance is also provided as standard. This makes these bidirectional units ideal for constant voltage applications such as simulating Li-ion and fuel cell stacks along with the cycling of other storage devices such as ultra capacitors and battery packs. Automotive, hybrid and converter drive testing is another important application area for the LAB-GSS.

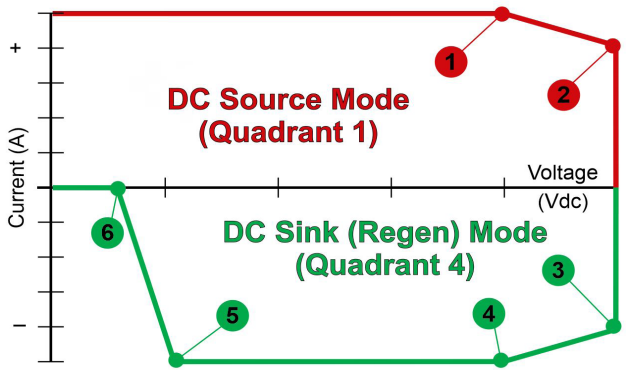
With their compact size and 2 quadrant operation these are very versatile instruments for every modern power testing laboratory. High power systems can be specified. The modular concept means systems can be easily expanded or reconfigured as required. A full cabinet integration service is available on request.

TECHNICAL DATA

TECHNICAL DATA	
AC Line Voltage / Current Relationship	3 × 380VAC ± 10% / 34Arms (20kW units), 54Arms (32kW units) 3 × 400VAC ± 10% / 32Arms (20kW units), 51Arms (32kW units) 3 × 415VAC ± 10% / 31Arms (20kW units), 49Arms (32kW units) 3 × 440VAC ± 10% / 29Arms (20kW units), 47Arms (32kW units) 3 × 460VAC ± 10% / 28Arms (20kW units), 45Arms (32kW units) 3 × 480VAC ± 10% / 27Arms (20kW units), 43Arms (32kW units)
Line Frequency	50Hz ± 0.5Hz for UK (48 - 62Hz possible)
Mains Connection Type	3L + PE (no neutral)
Powerfactor (Q1 Active / Q4 Mode)	≥0.99
Leakage Current (L to PE)	<35mA (protection with ELCB is possible with an additional PE connection)
Isolation (Input to Output & Line to Case)	4000Vrms & 2500Vrms
EMC Emissions and Immunity	EN 61000-6-4 & EN61000-6-2
Islanding for Generation to Public Grid	EN50438 & VDE0126
LVD for Power Installations	EN50178
Voltage Range	0 to 100% of Vmax
Current Range	0 to ± 100% of Imax
Power Range	0 to ± 100% of Pmax
Internal Resistance Range	AdjustableΩ_{MAX} = (V_{NOM} / I_{NOM})
Standard Interfaces	Analogue & RS-232
Optional Interfaces	HMI, USB, IEEE, RS-422, Ethernet, CANmp & CANopen
Voltage Sense Compensation	0 - V_{MAX}
Efficiency	Up to 92%
Load Regulation (CV, CC)	<± 0.1% of full scale value
Line Regulation (CV, CC)	<± 0.1% of full scale value
Temperature Coefficient (CV)	<0.02% of full scale value per°C
Temperature Coefficient (CC)	<0.03% of full scale value per°C
Response Time (Typical 10-90% Load Step Change)	1.1ms (with an ohmic load, at constant line and temperature)
Over Voltage Protection	0 - 110% of V_{MAX}
Over Current Protection	0 - 110% of I_{MAX}
DC Ripple (300Hz)	<0.5%Vpp (<0.1%Vrms) of full scale value
DC Noise (40kHz-1MHz)	<1Vpp (<0.2Vrms)
Stability (CV, CC)	<± 0.05% of full scale value
Recommended Operating Temperature	5 - 40°C (extended with ruggedisation)
Weight	97kg
Connection to UK Grid	ER G59-3 tested
Dimensions	19" × 9U × 634mm (W × H × D), a full cabinet integration service is available on request

Extended Technical Data is Available on Request

LAB-GSS
GRID-TIED BIDIRECTIONAL DC SUPPLIES



SELECTION TABLE

Part Number	Maximum Power	Q1 Source Voltage	Q4 Sink Voltage	Current Range
LAB-GSS 20-400	20kW	0 - 400Vdc	50 - 400Vdc*	0 to ± 63A
LAB-GSS 20-500	20kW	0 - 500Vdc	40 - 500Vdc*	0 to ± 50A
LAB-GSS 20-600	20kW	0 - 600Vdc	50 - 600Vdc*	0 to ± 40A
LAB-GSS 32-400	32kW	0 - 400Vdc	50 - 400Vdc*	0 to ± 100A
LAB-GSS 32-500	32kW	0 - 500Vdc	40 - 500Vdc*	0 to ± 80A
LAB-GSS 32-600	32kW	0 - 600Vdc	50 - 600Vdc*	0 to ± 66A

* The maximum current that can be taken derates as the voltage reduces beneath the lower level. Please see the operating range table below.

OPERATING RANGE

Part Number	Point 1 (Q1)	Point 2 (Q1)	Point 3 (Q4)	Point 4 (Q4)	Point 5 (Q4)	Point 6 (Q4)
LAB-GSS 20-400	317.5V / 63A	400V / 63A	400V / -50A	317.5V / -63A	50V / 63A	20V / 0 A
LAB-GSS 20-500	400V / 50A	500V / 40A	500V / -40A	400V / -50A	40V / -50A	15V / 0A
LAB-GSS 20-600	500V / 40A	600V / 40A	600V / -33.3A	500V / -40A	50V / -40A	30V / 0A
LAB-GSS 32-400	320V / 100A	400V / 80A	400V / -80A	320V / -100A	50V / -100A	20V / 0 A
LAB-GSS 32-500	400V / 80A	500V / 64A	500V / -64A	400V / -80A	40V / -80A	15V / 0A
LAB-GSS 32-600	477.6V / 66A	600V / 53.3A	600V / -53.3A	477.6V / -66A	50V / -66A	30V / 0A

OPTIONS

CODE	DESCRIPTION
/4111	Ruggedisation specification for vehicle mount projects
/HMI	Front panel control and display
/LCAL	Integrated liquid cooling of the power stage
/ISR	Integrated safety relay for shutdown to EN954-1 Cat 3/4
/IRXTS	Maximum adjustable internal resistance range extended to 12,000mΩ
/TFE	Integrated function generating engine with application area (parametric) programming
/SAS	Solar array simulation GUI (includes TFE option)
/BATCONTOL	Dedicated battery charge/discharge GUI with adaptive sampling & temp measurement
/BATSIM	GUI simulating battery characteristics with adjustable parameters
/CAPSIM	GUI simulating the electrical characteristics of capacitors with adjustable parameters
/CANCABLE	Connecting cable for multi-unit operation
/RCU	Remote control unit with up to 40m of cable
/PACOB	Protection against accidental contact of output current bars
/RS232REAR	RS-232 on front and rear panel (time shared mode with RS-232 on front)
/RS422	Differential serial interface (time shared mode with RS-232)
/IEEE	Integrated IEEE488.2 (GPIB) interface. (RS-232 only possible on rear panel)
/CANOPEN	Integrated CAN/CANopen interface. (RS-232 only possible on rear panel)
/CANMP	Integrated CANmp interface. (RS-232 only possible on rear panel)
/OPTOLINK	Rear panel integrated fibre optic interface. (RS-232 only possible on rear panel)
/USB	Integrated USB interface. (RS-232 only possible on rear panel)
/ETH	Ethernet interface with listener and talker functions over a LAN (RS232REAR required)
/FILTER	Front panel air filter & frame arrangement
/CAN+USB	Combined CAN and USB interface
/RPP	Protection against reverse polarity of the load

HIGHLIGHTED FEATURES

RUGGEDISED ADAPTATIONS

Ruggedisation of units to military standards is possible for shipborne & vehicle projects. This ensures suitability in harsh conditions by providing protection against shock, vibration & humidity.

FUNCTION GENERATOR

Complex DC waveforms can be implemented through an embedded function generator. Standard square, sawtooth, sine & user defined shapes can be plotted against time. V/I & V/W relationships can also be programmed.

CABINET INTEGRATIONS

Our design specialists will look to find elegant solutions to integrate systems into set cabinet dimensions. Flight case integrations are also possible to provide mobile power equipment.

INTERFACES

A variety of interfaces are available providing unrivalled flexibility for users. Each system can be configured with multiple interfaces.

“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