ETPS
ELECTRONIC TEST & POWER SYSTEMS

LAB-GSSH

HIGH POWER BIDIRECTIONAL DC SUPPLIES

POSITIVE PROBLEM SOLVING

The LAB-GSSH is a high power modular DC system. The modular format means the system can be reconfigured or expanded to meet changing test requirements.

In-built dedicated system comms allow users to switch between various set-ups. Parallel, series, matrix and multi-load configurations are all possible. Each slave module can operate independently providing unrivalled flexibility. Systems are available up to 3MW. Operating in quadrants 1 & 4 the LAB-GSSH can operate as either a DC Source or DC Electronic Load. When load testing the excess sink energy is not wasted as heat. Instead it is inverted from DC to AC and synchronised back to the grid.

- 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
- CC, CV & CP Operating Modes

FURTHER DETAILS

Various standard and optional interfaces are available for remote control. 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. A number of parameters are user adjustable including internal resistance as well as voltage and current slopes. Sense compensation can be programmed and PID controllers adjusted. This helps ensure that the LAB-GSSH can be optimised for particular applications.

Complex waveforms can be created and implemented by the embedded function generator. 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-GSSH and implemented from the front panel.

High system dynamics allow fast switching of quadrants, making the LAB-GSSH ideal for testing high power automotive applications. Behaviour and stability of on-board electric vehicle power systems can be tested under a variety of conditions. Previously recorded test data can be imported and replicated so that a real track driving test can be accurately simulated in the lab. A battery cycling GUI is available which allows users to emulate standard and complex battery charge/discharge algorithms.

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

TECHNICAL DATA

GENERAL	
AC Line Voltage / Current Relationship	3 × 380VAC ± 10% / 34Arms (with 20kW modules), 54Arms (with 32kW modules) 3 × 400VAC ± 10% / 32Arms (with 20kW modules), 51Arms (with 32kW modules) 3 × 415VAC ± 10% / 31Arms (with 20kW modules), 49Arms (with 32kW modules) 3 × 440VAC ± 10% / 29Arms (with 20kW modules), 47Arms (with 32kW modules) 3 × 460VAC ± 10% / 28Arms (with 20kW modules), 45Arms (with 32kW modules) 3 × 480VAC ± 10% / 27Arms (with 20kW modules), 43Arms (with 32kW modules)
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)	Approx 2ms (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)
Connection to UK Grid	ER G59-3 tested

Extended Technical Data is Available on Request

LAB-GSSH
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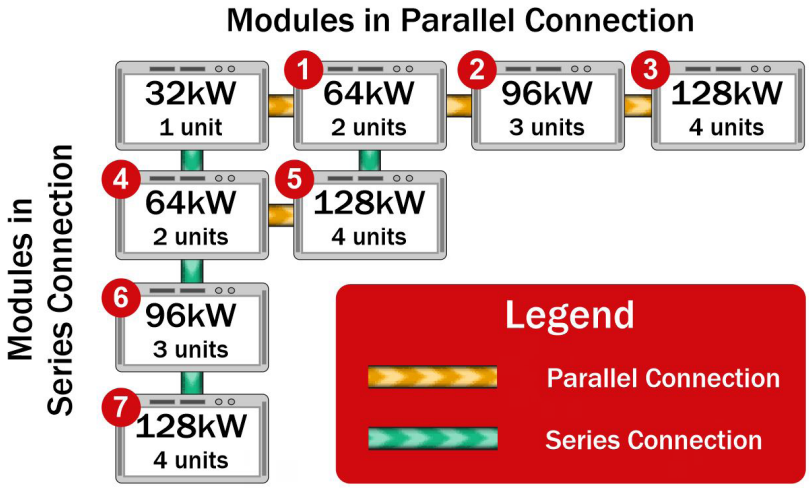

OPERATING RANGE

	LAB-GSS 32-400	LAB-GSS 32-500	LAB-GSS 32-600
Single Module	0 to 400V, 0 to ± 100A	0 to 500V, 0 to ± 80A	0 to 600V, 0 to ± 66A
Configuration 1	0 to 400V, 0 to ± 200A	0 to 500V, 0 to ± 160A	0 to 600V, 0 to ± 132A
Configuration 2	0 to 400V, 0 to ± 300A	0 to 500V, 0 to ± 240A	0 to 600V, 0 to ± 198A
Configuration 3	0 to 400V, 0 to ± 400A	0 to 500V, 0 to ± 520A	0 to 600V, 0 to ± 264A
Configuration 4	0 to 800V, 0 to ± 100A	0 to 1kV, 0 to ± 80A	0 to 1.2kV, 0 to ± 66A
Configuration 5	0 to 800V, 0 to ± 200A	0 to 1kV, 0 to ± 160A	0 to 1.2kV, 0 to ± 132A
Configuration 6	0 to 1.2kV, 0 to ± 100A	0 to 1.5kV, 0 to ± 80A	0 to 1.5kV, 0 to ± 66A
Configuration 7	0 to 1.5kV, 0 to ± 100A	N/A	N/A

SELECTION TABLE

Part Number	Maximum Power	Q1 Source Voltage Range	Q4 Sink Voltage Range	Current Range[1]
LAB-GSSH 20-400-2	40kW[2]	0 - 800Vdc	50 - 800Vdc	0 to ± 126A
LAB-GSSH 32-400-2	64kW	0 - 800Vdc	50 - 800Vdc	0 to ± 200A
LAB-GSSH 32-400-3	96kW	0 - 1200Vdc	50 - 1200Vdc	0 to ± 300A
LAB-GSSH 32-400-4	128kW	0 - 1500Vdc	50 - 1500Vdc	0 to ± 400A
LAB-GSSH 32-400-8	256kW[3]	0 - 1500Vdc	50 - 1500Vdc	0 to ± 800A
LAB-GSSH 20-500-2	40kW[2]	0 - 1000Vdc	40 - 1000Vdc	0 to ± 100A
LAB-GSSH 32-500-2	64kW	0 - 1000Vdc	40 - 1000Vdc	0 to ± 160A
LAB-GSSH 32-500-3	96kW	0 - 1500Vdc	40 - 1500Vdc	0 to ± 240A
LAB-GSSH 32-500-4	128kW	0 - 1500Vdc	40 - 1500Vdc	0 to ± 320A
LAB-GSSH 32-500-8	256kW[3]	0 - 1500Vdc	40 - 1500Vdc	0 to ± 640A
LAB-GSSH 20-600-2	40kW[2]	0 - 1200Vdc	50 - 1200Vdc	0 to ± 80A
LAB-GSSH 32-600-2	64kW	0 - 1200Vdc	50 - 1200Vdc	0 to ± 132A
LAB-GSSH 32-600-3	96kW	0 - 1500Vdc	50 - 1500Vdc	0 to ± 198A
LAB-GSSH 32-600-4	128kW	0 - 1500Vdc	50 - 1500Vdc	0 to ± 264A
LAB-GSSH 32-600-8	256kW[3]	0 - 1500Vdc	50 - 1500Vdc	0 to ± 528A

[1] The maximum current that can be recycled derates as the voltage reduces beneath the lower level. Please contact ETPS for the characterisation.

[2] Composed of 2 * 20kW LAB-GSS modules.

[3] Composed of 8 LAB-GSS modules. Please contact ETPS for a full breakdown of possible module combinations.

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.

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