

LAB-GSS

BIDIRECTIONAL DC SYSTEMS UP TO 128kW



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 32kW module is built with isolated analogue and RS-232 interfaces. Front panel control and display along other interfaces such as CAN are installed on selected modules.

- + 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
- + Stackable up to 1500V / 128kW
- + Adjustable Internal Resistance

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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 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.

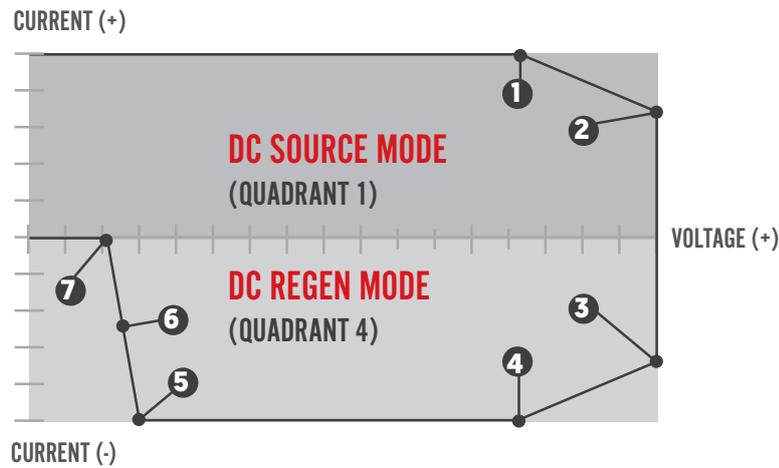
TECHNICAL DATA (PER MODULE)

TECHNICAL DATA	
AC Line Voltage / Current Relationship	3 × 380VAC ± 10% / 54Arms (per 32kW module) 3 × 400VAC ± 10% / 51Arms (per 32kW module) 3 × 415VAC ± 10% / 49Arms (per 32kW module) 3 × 440VAC ± 10% / 47Arms (per 32kW module) 3 × 460VAC ± 10% / 45Arms (per 32kW module) 3 × 480VAC ± 10% / 43Arms (per 32kW module)
Line Frequency	50Hz ± 0.5Hz for UK (48 - 62Hz possible)
Mains Connection Type	3L + PE (no neutral)
Powerfactor (Q1 Active / Q4 Mode)	≥0.99
Protective Conductor Current at 50Hz	<20mA
Touch Current Unweighted	<20mA
Touch Current Weighted	<2mA
Isolation (Line to Case / Logic)	1670Vdc 1s
Isolation (Output to Case / Logic)	2540Vdc 1s
Isolation (Transformer)	4800Vac
Isolation Output to Case	>10MΩ [13.6nF per DC bar]
Isolation Output to Case (-bar and +bar)	+1000Vdc / -1000Vdc
EMC Emissions and Immunity	EN61000-6-4 & EN61000-6-2
Islanding for Generation to Public Grid	EN50438 & VDE0126
LVD for Power Installations	EN50178
Voltage Range	0 to 100% of V _{max}
Current Range	0 to ± 100% of I _{max}
Power Range	0 to ± 100% of P _{max}
Internal Resistance Range	See selection table
Switchable Output Capacitance	0.09mF / 0.9mF
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%V _{pp} (<0.1%V _{rms}) of full scale value
DC Noise (40kHz-1MHz)	<1V _{pp} (<0.2V _{rms})
Stability (CV, CC)	<± 0.05% of full scale value
Recommended Operating Temperature	5 - 40°C (extended with ruggedisation)
Weight (per Module)	97kg, flight case weight is available on request
Connection to UK Grid	ER G59-3 tested
Dimensions (per Module)	19" × 9U × 634mm [W × H × D], flight case dimensions are available on request

Extended Technical Data is Available on Request

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SELECTION TABLE

Part Number	Maximum Power	Q1 Source Voltage	Q4 Sink Voltage	Current Range	Internal Resistance Range
LAB-GSS 32-500	32kW	0 - 500Vdc	40 - 500Vdc*	0 to ± 80A	0 to 6250mΩ
LAB-GSS 64-500	64kW	0 - 500Vdc	40 - 500Vdc*	0 to ± 160A	0 to 6250mΩ
LAB-GSS 64-1000	64kW	0 - 1000Vdc	80 - 1000Vdc*	0 to ± 80A	0 to 6250mΩ
LAB-GSS 96-500	96kW	0 - 500Vdc	40 - 500Vdc*	0 to ± 240A	0 to 6250mΩ
LAB-GSS 96-1500	96kW	0 - 1500Vdc	120 - 1500Vdc*	0 to ± 80A	0 to 6250mΩ
LAB-GSS 128-500	128kW	0 - 500Vdc	40 - 320Vdc*	0 to ± 320A	0 to 6250mΩ
LAB-GSS 128-1000	128kW	0 - 1000Vdc	80 - 500Vdc*	0 to ± 160A	0 to 6250mΩ

* 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

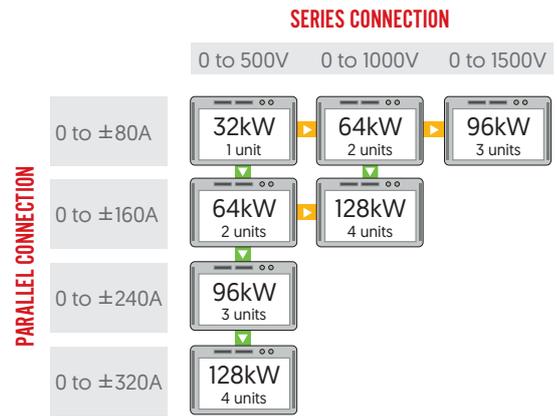
Part Number	Point 1 [Q1]	Point 2 [Q1]	Point 3 [Q4]	Point 4 [Q4]	Point 5 [Q4]	Point 6 [Q4]	Point 7 [Q4]
LAB-GSS 32-500	400V / 80A	500V / 64A	500V / -64A	400V / -80A	40V / -80A	25V / -32A	15V / 0A
LAB-GSS 64-500	400V / 160A	500V / 128A	500V / -128A	400V / -160A	40V / -160A	25V / -64A	15V / 0A
LAB-GSS 64-1000	800V / 80A	1000V / 64A	1000V / -64A	800V / -80A	80V / -80A	50V / -32A	30V / 0A
LAB-GSS 96-500	400V / 240A	500V / 192A	500V / -192A	400V / -240A	40V / -240A	25V / -96A	15V / 0A
LAB-GSS 96-1500	1200V / 80A	1500V / 64A	1500V / -64A	1200V / -80A	120V / -80A	75V / -32A	45V / 0A
LAB-GSS 128-500	400V / 320A	500V / 256A	500V / -256A	400V / -320A	40V / -320A	25V / -128A	15V / 0A
LAB-GSS 128-1000	800V / 160A	1000V / 128A	1000V / -128A	800V / -160A	80V / -160A	50V / -64A	30V / 0A

MODULAR DC SYSTEMS

Up to four LAB-GSS modules are available in our rental range. These can be arranged in series, parallel or matrix array configurations. Each module is able to operate independently, so that systems can be reconfigured, expanded or broken up as needs dictate. Inbuilt system comms allow users to switch between various set-ups.

The modular approach is useful for test houses and research labs who regularly test different sized power devices. Individual modules can be used for the day to day testing of multiple small devices, then grouped together for larger projects.

Our rental systems can be combined in series, parallel or matrix configurations with any LAB-GSS modules you have previously purchased, providing they have the same nominal outputs. Up to 64 modules can be connected in this way. This allows any short term requirements outside of usual operating ranges to be met.



HIGHLIGHTED FEATURES

FLIGHT CASE INTEGRATIONS

All of our LAB-GSS modules come in flight cases with full electrical integrations. A status indicator alerts users of any residual energy on the DC link greater than 15V. This operates even if the mains power is turned off. Another indicator illuminates to show the rotation of the AC input voltage is correct. Panel mounted DC sockets are mechanically keyed and colour coded to eliminate any possible user errors.

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.

INTERFACES

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

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.



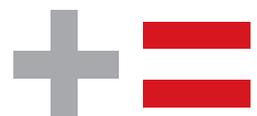
“
WE ARE
POSITIVE
PEOPLE
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ETPS engineer electronic power supply and testing systems. Our problem solving skills provide the spark of innovation to some of the world's leading technology brands.



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