

LAB-GSS-HC

HIGH CURRENT BIDIRECTIONAL DC SYSTEMS



POSITIVE PROBLEM SOLVING **+ =**

The LAB-GSS-HC is a series of high current bidirectional DC Sink-Sources operating in quadrants 1 & 4. When used as a DC Power Supply the LAB-GSS-HC provides control V, I & P limits.

When sinking energy from the unit under test the LAB-GSS-HC 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 Very High Currents/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**

LAB-GSS-HC

HIGH CURRENT BIDIRECTIONAL DC SYSTEMS

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-HC 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-HC 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-HC and implemented from the front panel.

Another useful feature is that the internal resistance of the LAB-GSS-HC 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-HC.

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

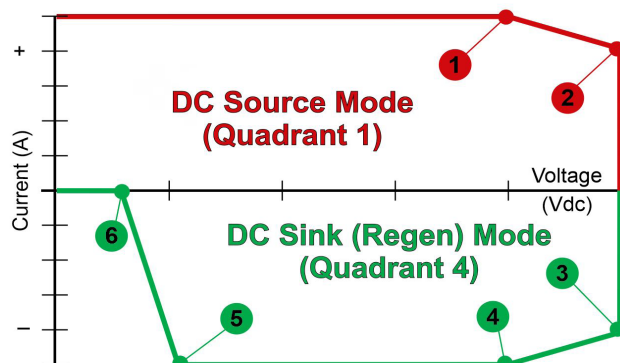
GENERAL

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 V _{max}
Current Range	0 to ± 100% of I _{max}
Power Range	0 to ± 100% of P _{max}
Internal Resistance Range	Adjustable $\Omega_{MAX} = [V_{NOM} / I_{NOM}]$
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 Vpp)	<0.2% F.S. (typical value at nominal ohmic load, line asymmetry <1Vrms)
DC Ripple (≤300Hz Vrms)	<0.05% F.S. (typical value at nominal ohmic load, line asymmetry <1Vrms)
DC Noise (40kHz - 1MHz Vpp)	<0.2V (typical value at nominal ohmic load, line asymmetry <1Vrms)
DC Noise (40kHz - 1MHz Vrms)	<0.05V (typical value at nominal ohmic load, line asymmetry <1Vrms)
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-HC

HIGH CURRENT BIDIRECTIONAL DC SYSTEMS



SELECTION TABLE

Part Number	Maximum Power	Q1 Source Voltage	Q4 Sink Voltage	Output Current
LAB-GSS 20-65	20kW	0 - 65Vdc	6 - 65Vdc*	0 to ± 385A
LAB-GSS 20-130	20kW	0 - 130Vdc	12 - 130Vdc*	0 to ± 192A
LAB-GSS 32-65	32kW	0 - 65Vdc	6 - 65Vdc*	0 to ± 600A
LAB-GSS 32-130	32kW	0 - 130Vdc	12 - 130Vdc*	0 to ± 308A

* 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 20-65	53V / 385A	65V / 308A	65V / -308A	53V / -385A	6V / -385A	2V / 0A
LAB-GSS 20-130	104V / 192A	130V / 154A	130V / -154A	104V / -192A	12V / -192A	4V / 0A
LAB-GSS 32-65	53V / 600A	65V / 492A	65V / -492A	53V / -600A	6V / -600A	2V / 0A
LAB-GSS 32-130	104V / 308A	130V / 246A	130V / -246A	104V / -308A	12V / -308A	4V / 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.

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