GENEREX

BACS®

BACS - Battery Analysis & Care System - Europe and North America's most successful Battery Management System - 100% Made in Germany / Made in USA

## Features

♦ **Robust system proven in the field a million times over - with passive balancing for voltage regulation**

♦ **More than 3.4 million installations worldwide — the standard in data centers & critical infrastructures**

♦ **Increases the capacity of batteries by up to 20% and extends the service life by up to 50%**

♦ **Available as ATEX version for Zone 1 and 2 hazardous areas**

♦ **Only system with measurement and display of battery capacity in % (SOC and P_SOC)**

♦ **Determines battery health (SOH) and warns of battery failures and faulty currents**

♦ **Certified according to UL 2900-1 Cybersecurity and UL 62368-1 for electrical safety**

♦ **Halogen-free, fire-retardant cabling with fused measuring circuit up to 1000V and overheating protection**

No.	Volt. [V]	Temp. [°C]	Ri. [mΩ]	Charge [%]	Equalize	Status
1	13.59	24.5	20.94	100%		🟢
2	13.59	25.5	21.67	100%		🟢
3	13.59	25.5	20.65	100%		🟢
4	11.41	26.0	21.70	38%		🟢

Charge in %
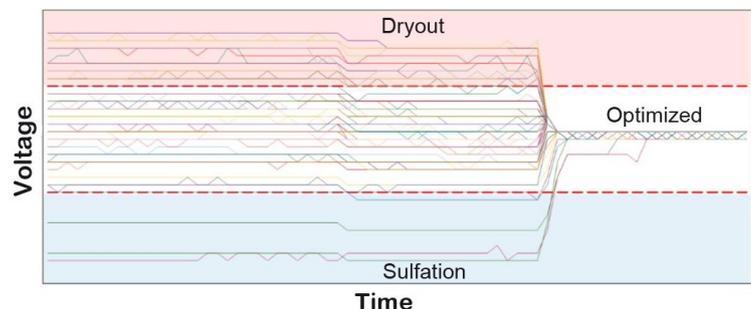
BACS® is the most successful battery management system for stationary applications in the EU and North America with the highest standards for electrical safety and cybersecurity. BACS offers a modern interface for recording and controlling up to 512 batteries and provides long-term recording of battery data for analysis. Simple operation and evaluation of the data with direct recommendations for action allow massive service cost savings with higher operational safety. The core functions of BACS include determining and maintaining the battery state of health (SOH) and capacity (SOC), even with periodic charging curves. BACS guarantees 100% charge and battery stability over the entire service life. The voltage equalization process of passive/active "balancing" known from lithium battery charging technology harmonizes the charging voltage of all batteries to the target value of the charger and ensures that the voltage range of each battery/cell is always optimal. This allows a highly precise and comparable impedance measurement to determine the capacity and battery ageing.

BACS has a service database that archives changes to the battery system and logs the entire "life" of a battery system in accordance with EU BattG 2024. BACS warns of residual currents and "thermal runaway" conditions and can take automated countermeasures. BACS complies with the NERC (North American Electrical Reliability Corp.) guidelines and uses halogen-free, sustainable materials with maximum operational safety, a long service life and avoidance of hazardous substances and conflict minerals.

BACS is based on the "CS141" network computer, which has been used millions of times in UPS systems and has been tested several times by the UL authority as the safest device on the market. In addition to UPS, charger and battery data, BACS uses environmental data (temperature, humidity, hydrogen gas, smoke, fire, etc.) to monitor the power supply components of a data center.

BACS protected batteries

GENEREX

◆

BACS® Modules - Technical Data

Construction	Measuring modules with voltage balancing and battery capacity measuring (SOC and SOH) for application to Lead-Acid, NiCd and Lithium battery technologies LTO, LiFePo; measuring cables featuring built-in fuse for protection against escalation of electrical fault; the most secure system on the market, also available certified for ATEX Zone 1 + Zone 2 and IP65 for Industrial applications
Current Consumption	Normal operation:15 - 40 mA, depending upon operating voltage Sleep Mode: < 1mA
Measuring Precision	Internal resistance: < 2% with balancing < 10 % C40/41 without balancing, < 5% at C20/23/30 without balancing Voltage: < 0.5 % Temperature: < 15 %
Interface	2x RJ10 for BACS battery bus 1x button for addressing Temperature sensor -35 to + 85 °C Optical display LED (alarms red/green, mode red/green)
Housing Dimensions and Weight	ABS housing (UL certified, flame retardant UL94-V0) 55 x 80 x 24 mm = 2,17 x 3,15 x 0,94 in. (W x H x D), 45g. ATEX: Light Grey Copper-free Aluminum with Inspection (190 x 146mm), 4800g incl. 3 Modules and halogen-free cable)
Operating Condition	Temperature 0 - 60°C, max. humidity 90%, not condensing; resistant to dust and condensate
Minimum Lifetime	87,600 hours (10 years)
Optional as ATEX and IP 65	Available as Zone 2: II 3G Ex dc IIC T5 Gb or II 3D Ex tc IIIC T100°C Db IP65 and as ATEX Zone 1: II 2G Ex db IIC T5 Gb or II 2D Ex tb IIIC T100°C Db IP 65 as **BACS C20ex3**, **C30ex3** and **C40ex3** with 3 C Modules.

Module Type	BACS C20	BACS C23	BACS C30	BACS C40	BACS C20ex3/C30ex3/C40ex3
Voltage Range	9.7-17V	9.7-21V	4.8-8.0V	1.2-3.2V	1.2-21V
RI Range	0.5-60mOhms	0.5-60mOhms	0.5-60mOhms	0.02-6mOhms	0.02-60mOhms
Bypass Current	150mA	120mA	300mA	900mA	120-900mA

BACS® Webmanager - Technical Data

BACSKIT_B4-6
BACSKM4-6
with RS485 interface | BACSK4L-6 | BACSK4SC-6 | BACSK4LM-6
with RS485 interface | BACSK4SCM-6
with RS485 interface | BACSK4MINI-6
BACSK4R2-6 | BACS Control Cabinet
BACS_CC2

Processor and memory	ARM Cortex A8 800MHz processor, 512MB RAM
Sensors & Power consumption	Stabilized external power supply supports up to 512 BACS C modules and BACS bus sensors (temperature, humidity, current, AC and DC Ripple, etc.)
Interfaces	3x RS-232 interfaces, 2x battery bus converter outputs internal 1x RJ45, 10/100/1000Mbit Ethernet 1x potential-free contact
Connectivity	SNMP V2+V3, Modem, Modbus / BACnet over IP RSyslog, RADIUS, 802.1X PAE, http / https, API, SFTP TCP/IP v4, TCP/IPv6 Optional: Profibus, LONbus, other Fieldbus options
Display/Signal	3x LED (Manager status, UPS/device alarm, BACS alarm) 1x buzzer with mute button
Dimensions and Weight	130 x125 x 30mm = 5,12 x 4,92 x 1,18 in. (W x L x H); 238 g
Operating condition	Temperature 0 - 60°C, humidity 20 - 95%, not condensing
Minimum Lifetime	20 years +