



## THE ULTIMATE BATTERY CONTROL AND PROTECTION SYSTEM



### Product Description

The **BCAN** is an integrated battery **Monitor, Controller** and **Data-logger**, designed to be installed on batteries of any type, voltage and capacity.

It measures and logs all relevant operating parameters of the battery and it communicates in real time through **CANBUS, PWM** or **RS-232** interfaces, allowing a complete integration with the vehicle Control System, the Charger and other accessories.

These are the main parameters measured by the BCAN:

- Total battery voltage
- Half battery voltage
- Current (Integrated Hall-effect sensor)
- Temperature (Submersible probe)
- Electrolyte level (Submersible probe)
- Ah charged/discharged per cycle
- Ah charged/discharged in total
- State of Charge (SOC)
- Number of cycles

All the measured values are saved in **Micro-SD card**.

Physical characteristics:

- Robust enclosure, made of acid and oil resistant materials (IP54)
- Dust-proof and vibration proof
- Sealed connections
- High-voltage isolated CANBUS interface
- Very Easy to install and configure

### Interfaces

The **BCAN** can be interfaced with external devices like vehicle ECU and chargers. All the parameters, events and alarms are made available through CANBUS and RS232 interfaces.

These are the main warning messages:

- Undervoltage / Overvoltage
- Unbalanced battery voltage
- Low electrolyte Level
- Over-current during operation
- Over-current during charge
- Low / High temperature

All the threshold are customizable by the user, through a simple PC based interface (BCAN Configurator)

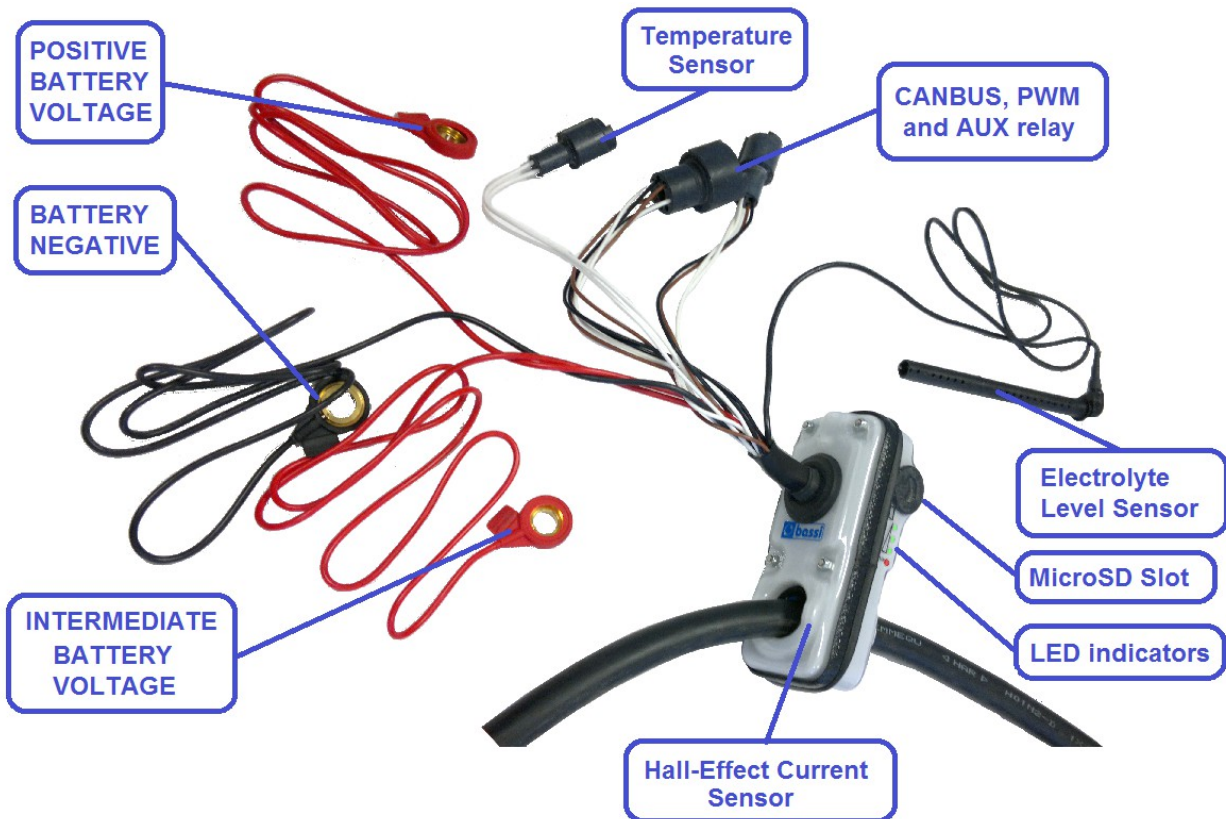
The **BCAN** can manage the entire charge process, by controlling battery chargers through CANBUS and/or PWM signals.

A built-in auxiliary relay provides an additional level of protection and can be used as a remote alarm signal.

### Typical Applications

- Forklifts and other Industrial Vehicles
- Airport Ground Support Equipment
- Stand-by power batteries

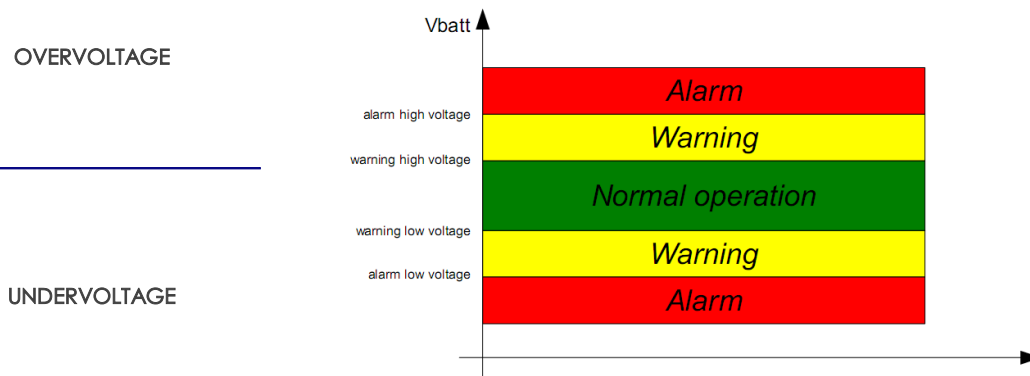
## Connections and peripherals



## Technical Specifications

INPUT	
Voltage	Battery nominal voltage from 12V to 120V
FEATURES	
SERIAL INTERFACE	RS-232 @ 115200 Kb/s
CAN-BUS	J1339 compliant protocol. See the User Manual for the specifications
STORAGE	1GB MicroSD allows data-logging of the entire battery life (using appropriate settings)
PWM	Intended to control compatible battery chargers
Auxiliary Relay	The Normally-Closed contact opens in case of alarms. Intended to provide an additional level of protection to the battery

## ALARMS



### ELECTROLYTE LEVEL

The BCAN generates Warning/Alarm messages if the battery electrolyte level drops below a minimum threshold.

### HIGH CURRENT ON CHARGE

BCAN keeps track of the current on charge and on discharge. If the value goes over the limit specified on the configuration file, an alarm is generated.

### HIGH CURRENT ON DISCHARGE

### OVERTEMPERATURE

BCAN uses the same algorithm as shown for the voltage tracking. In case of overtemperature or undertemperature it can keep track of it by generating a warning and an alarm.

### UNDERTEMPERATURE

## MECHANICAL AND ENVIRONMENTAL

### DIMENSIONS (W x H x D mm)

128x55x52 (mm)

### ENCLOSURE TYPE

Plastic enclosure  
Oil and Acid resistant

### COOLING

Natural

### ENVIRONMENTAL PROTECTION

IP54

### AMBIENT TEMPERATURE

OPERATION: -10 / +50 °C  
STORAGE: -20 / +70 °C

## USER INTERFACE AND CONNECTIVITY

**RS-232** port (real time control)

**Micro SD card** (mass memory for data-logging)

### USER INTERFACE PC SOFTWARE

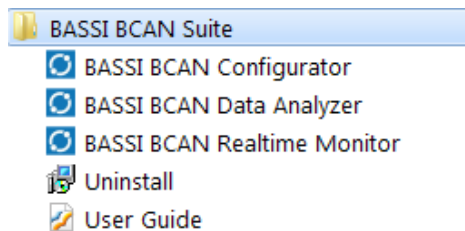
**BASSI BCAN Suite**, compatible with Microsoft Windows XP/Vista/7, composed by:

- BCAN *Configurator* (Easily configure alarm thresholds and options)
- BCAN *Real-time Monitor* (View BCAN measurements in real-time)
- BCAN *Data Analyzer* (Analyze, Plot and Export data off-line)

## REFERENCE STANDARDS

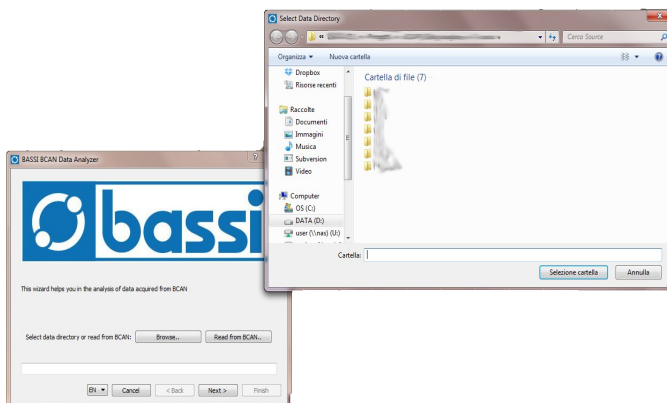
QUALITY	ISO 9001:2008
MARKING	CE
EMC	IEC EN 61000-6-2, IEC EN 61000-6-4
SAFETY	IEC EN 50178, IEC EN 62040-1

## The BCAN Suite



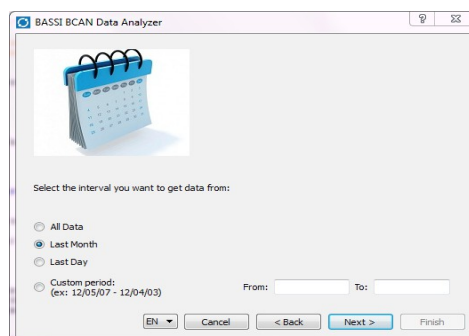
The BCAN Suite is a complete tool set that allows you to control, manage and configure your BCAN device.

1. **BCAN DATA ANALYZER:** a simple wizard interface will drive you through the entire analysis process:

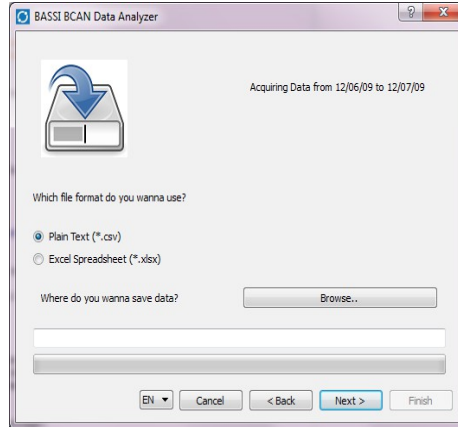


- OFF-line analysis of data taken from SD Card
- Serial acquisition directly from BCAN

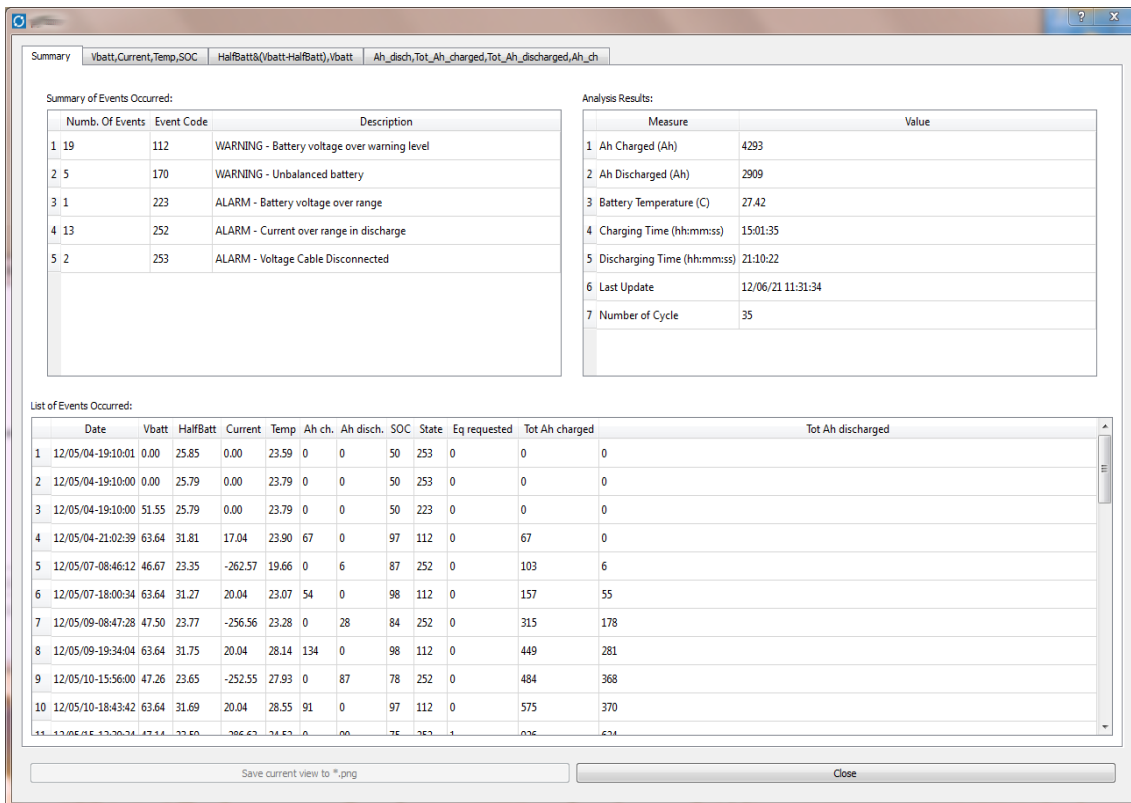
- Selection of the time period to be analyzed



- Selection of the file format to be generated:
  - CSV (Comma Separated Values)
  - XLSX (Microsoft Excel)



- An integrated interface shows the complete set of data, for an immediate understanding of the performances of the system



Numb. Of Events	Event Code	Description
1	112	WARNING - Battery voltage over warning level
2	170	WARNING - Unbalanced battery
3	223	ALARM - Battery voltage over range
4	252	ALARM - Current over range in discharge
5	253	ALARM - Voltage Cable Disconnected

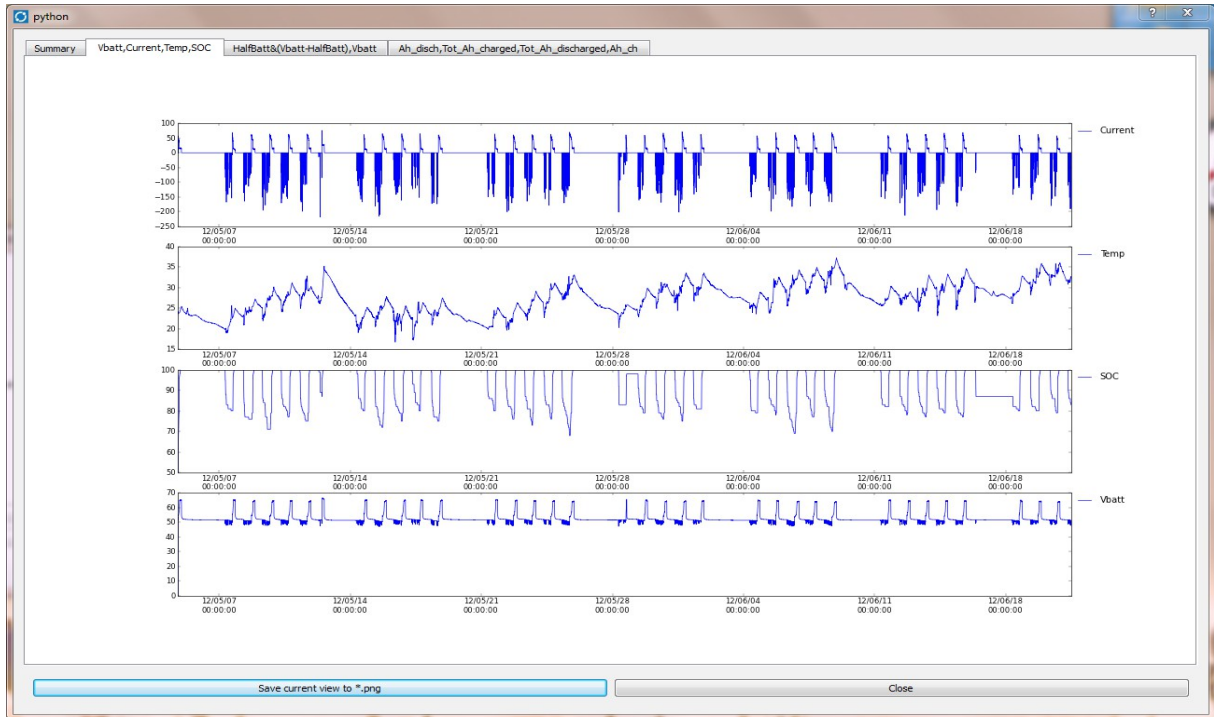
  

Measure	Value
1 Ah Charged (Ah)	4293
2 Ah Discharged (Ah)	2909
3 Battery Temperature (C)	27.42
4 Charging Time (h:mm:ss)	15:01:35
5 Discharging Time (h:mm:ss)	21:10:22
6 Last Update	12/06/21 11:31:34
7 Number of Cycle	35

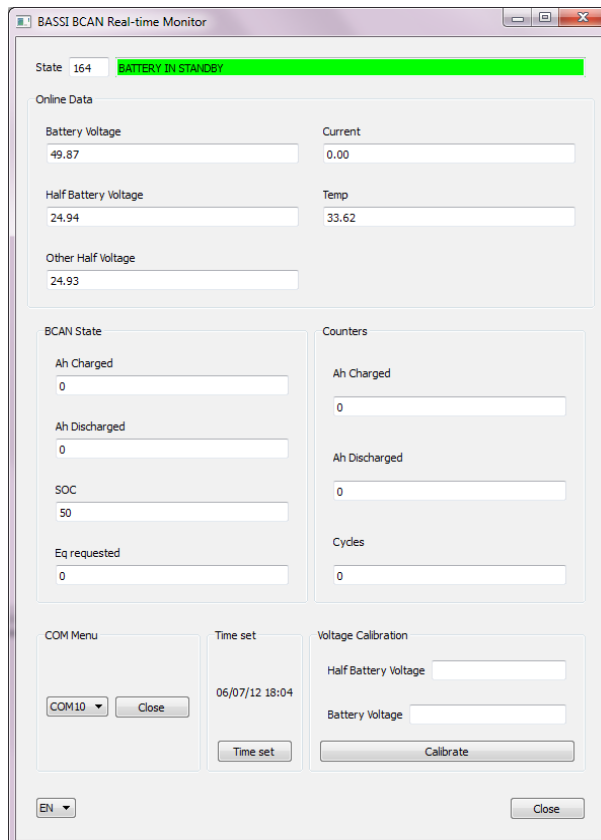
  

Date	Vbatt	HalfBatt	Current	Temp	Ah ch.	Ah disch.	SOC	State	Eq requested	Tot Ah charged	Tot Ah discharged
12/05/04-19:10:01	0.00	25.85	0.00	23.59	0	0	50	253	0	0	0
2 12/05/04-19:10:00	0.00	25.79	0.00	23.79	0	0	50	253	0	0	0
3 12/05/04-19:10:00	51.55	25.79	0.00	23.79	0	0	50	223	0	0	0
4 12/05/04-21:02:39	63.64	31.81	17.04	23.90	67	0	97	112	0	67	0
5 12/05/07-08:46:12	46.67	23.35	-262.57	19.66	0	6	87	252	0	103	6
6 12/05/07-18:00:34	63.64	31.27	20.04	23.07	54	0	98	112	0	157	55
7 12/05/09-08:47:28	47.50	23.77	-256.56	23.28	0	28	84	252	0	315	178
8 12/05/09-19:34:04	63.64	31.75	20.04	28.14	134	0	98	112	0	449	281
9 12/05/10-15:56:00	47.26	23.65	-252.55	27.93	0	87	78	252	0	484	368
10 12/05/10-18:43:42	63.64	31.69	20.04	28.55	91	0	97	112	0	575	370

- Intuitive visualization of all logged data (Voltages, Current, Temperature, SOC, AH, partials and totals)

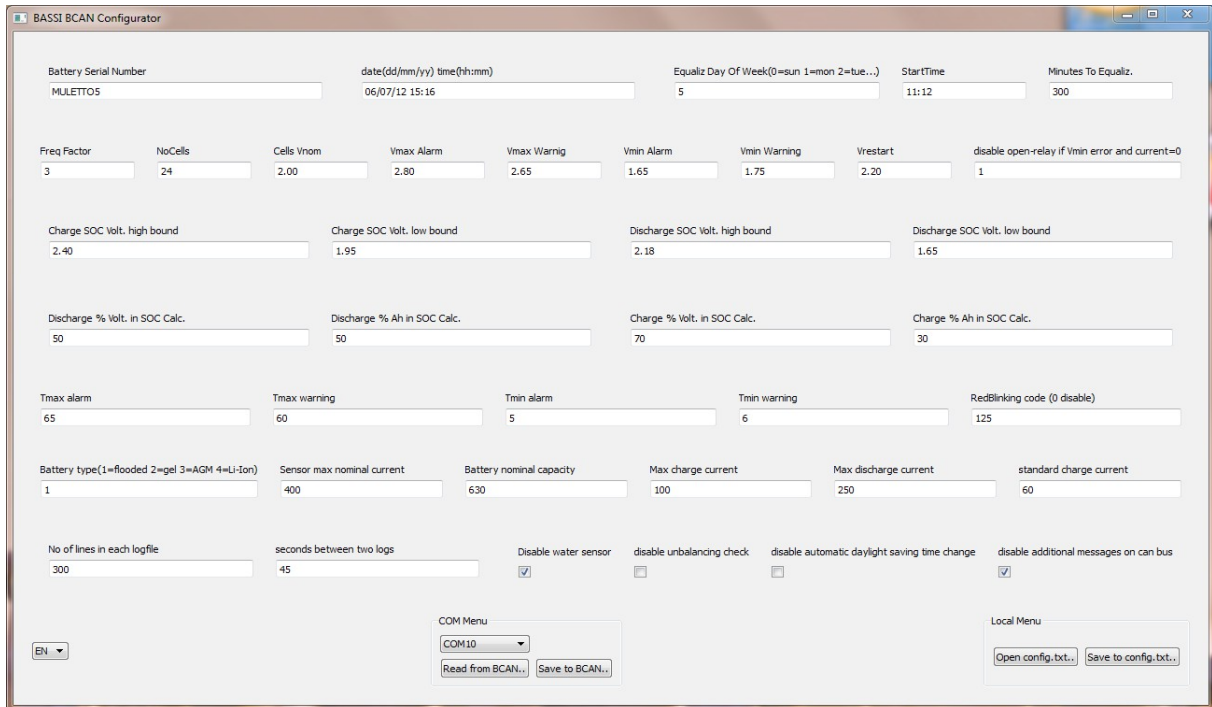


2. **BCAN REAL TIME MONITOR:** connect to your BCAN and see all measurements in real time. The quickest tool to verify the proper operation and configuration of your BCAN module



The screenshot shows the 'BASII BCAN Real-time Monitor' window. At the top, the 'State' is '164 BATTERY IN STANDBY'. Below this, the 'Online Data' section contains several input fields: Battery Voltage (49.87), Current (0.00), Half Battery Voltage (24.94), Temp (33.62), and Other Half Voltage (24.93). The 'BCAN State' section includes Ah Charged (0), Ah Discharged (0), SOC (50), and Eq requested (0). The 'Counters' section includes Ah Charged (0), Ah Discharged (0), and Cycles (0). At the bottom, there are sections for 'COM Menu' (COM10), 'Time set' (06/07/12 18:04), and 'Voltage Calibration' (Half Battery Voltage and Battery Voltage fields with a 'Calibrate' button). A 'Close' button is at the bottom right.

### 3. BCAN CONFIGURATOR: easily configure the BCAN alarm thresholds and data-logging options



The screenshot shows the BASSI BCAN Configurator software interface. The window title is "BASSI BCAN Configurator". The interface is divided into several sections for configuring different parameters:

- General Information:** Battery Serial Number (MULETTO5), date(dd/mm/yy) time(†h:mm) (06/07/12 15:16), Equaliz Day Of Week(0=sun 1=mon 2=tue...), StartTime (11:12), Minutes To Equaliz. (300).
- Alarm Thresholds:** Freq Factor (3), NoCells (24), Cells Vnom (2.00), Vmax Alarm (2.80), Vmax Warnig (2.65), Vmin Alarm (1.65), Vmin Warning (1.75), Vrestart (2.20), disable open-relay if Vmin error and current=0 (1).
- SOC Voltage Bounds:** Charge SOC Volt. high bound (2.40), Charge SOC Volt. low bound (1.95), Discharge SOC Volt. high bound (2.18), Discharge SOC Volt. low bound (1.65).
- SOC Percentage:** Discharge % Volt. in SOC Calc. (50), Discharge % Ah in SOC Calc. (50), Charge % Volt. in SOC Calc. (70), Charge % Ah in SOC Calc. (30).
- Temperature:** Tmax alarm (65), Tmax warning (60), Tmin alarm (5), Tmin warning (6), RedBlinking code (0 disable) (125).
- Currents:** Battery type(1=Flooded 2=gel 3=AGM 4=Li-Ion) (1), Sensor max nominal current (400), Battery nominal capacity (630), Max charge current (100), Max discharge current (250), standard charge current (60).
- Logging and Diagnostics:** No of lines in each logfile (300), seconds between two logs (45), Disable water sensor (checked), disable unbalancing check (unchecked), disable automatic daylight saving time change (unchecked), disable additional messages on can bus (checked).
- COM and Local Menus:** COM Menu (COM10), Local Menu (Open config.txt..., Save to config.txt...).

*The information contained in this publication is subject to variations without notice.*

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