

AMPERIS BATTERY MONITOR

The ultimate technology for battery monitoring.



- ✓ Dust-proof and vibration proof
- ✓ HV isolated CANBUS interface
- ✓ Sealed connections
- ✓ Very easy to install and configure
- ✓ Robust enclosure, made of acid and oil resistant materials (IP 54)

Descripción del producto

This Amperis' Battery monitoring Solution 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 monitor:

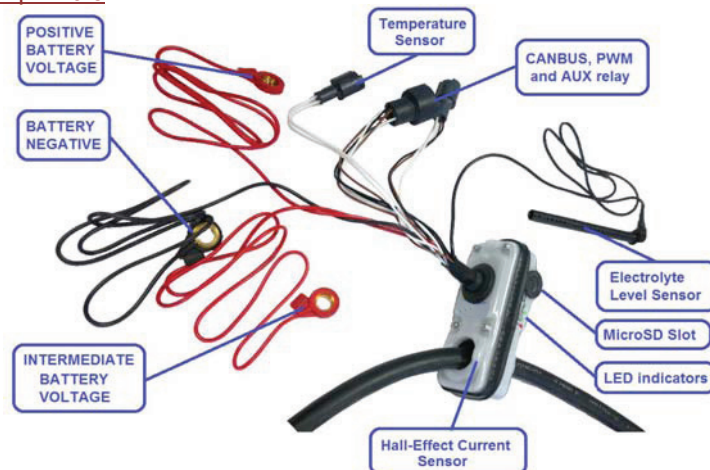
- Total battery voltage
- Half battery voltage
- Current (Integrated Hall-effect sensor)
- Temperature (Submersible probe)
- Electrolyte level (Submersible probe)
- Ah charged/discharged per cycle
- Ah charged/discharged in total
- State of Charge (SOC)
- Number of cycles

**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

Connections and peripherals



Interfaces

The monitor 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 thresholds are customizable by the user, through a simple PC based interface (Configurator Software)

The monitor 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

Specifications

MODEL *Amperis Battery Monitoring System*

INPUT

Voltage Battery nominal voltage from 12V to 120V

FEATURES

SERIAL INTERFACE RS-2332@ 115200 kb/s

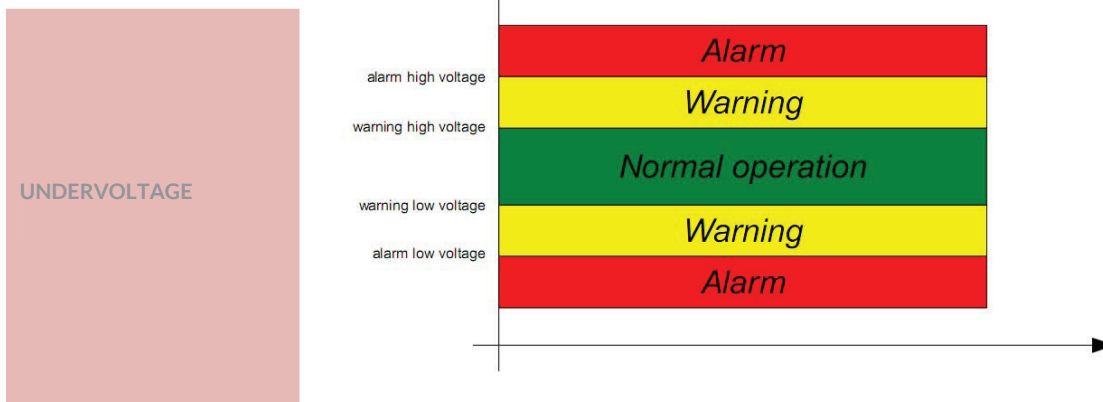
CAN-BUS J1339 compliant protocol.
See the User Manual for the specifications

STORAGE 1GB MicroSD allows data-logging of the entire battery life (using appropriate settings)

AUXILIARY RELAY The Normally-Closed contact opens in case of alarms.
Intended to provide an additional level of protection to the battery

ALARMS

OVERVOLTAGE



ELECTROLYTE LEVEL The System generates Warning/Alarm messages if the battery electrolyte level drops below a minimum thresholt.

HIGH CURRENT ON CHARGE

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

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

UNDERTEMPERATURE alarm.

MECHANICAL AND ENVIRONMENTAL

DIMENSIONS 128X55 (H) X52 (mm)

ENCLOSURE Plastic enclosure, Oil and Acid resistant.

COOLING Natural

PROTECTION DEGREE IP 54

AMBIENT TEMPERATURE Operation: -10/+50 °C
Storage: -20/+70 °C

USER INTERFACE AND CONNECTIVITY

USER INTERFACE RS-232 port (real time control)
Micro SD card (mass memory for data-logging)
AMPERIS PC Suite, compatible with Microsoft Windows XP/Vista/7, composed by:

PC SOFTWARE

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

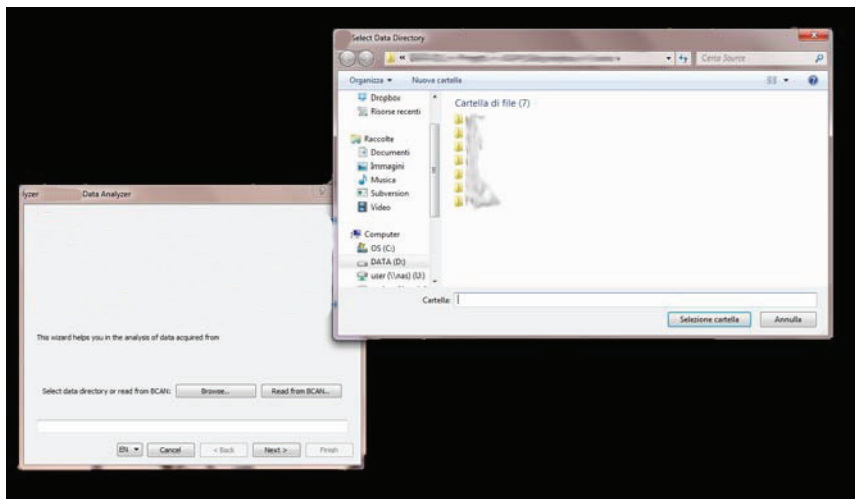
EMC: IEC EN 61000-6-2, IEC EN 61000-6-4

STANDARDS Safety: IEC EN 50178, IEC EN 62040-1
CE marking

Software

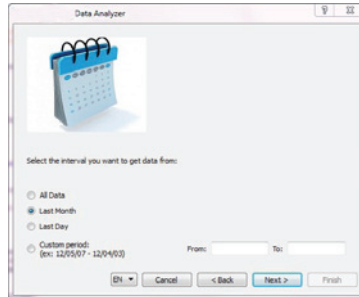
This Suite is a complete tool set that allows you to control, manage and configure your device.:

1. **Data analyzer:** a simple wizard interface will drive you through the entire analysis process:

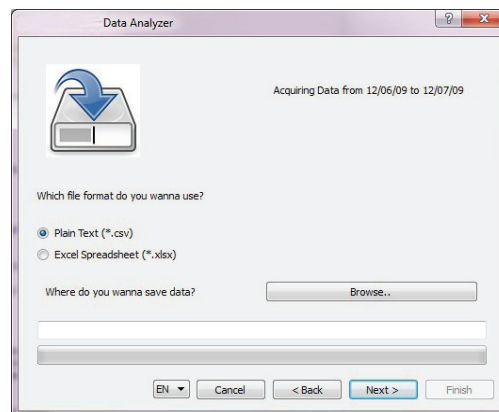


- OFF-line analysis of data taken from SD card.
- Serial acquisition directly from monitor.

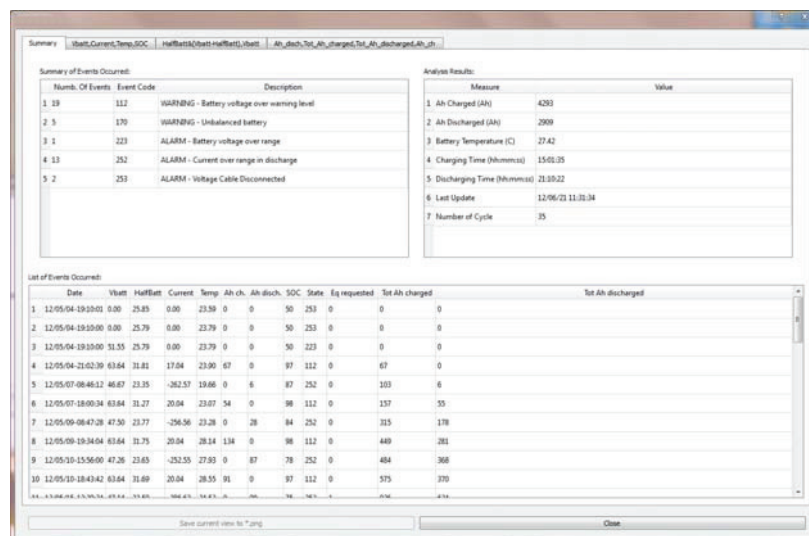
- a. Selection of the time period to be analyzed



- b. Selection of the file format to be generated: CSV o XLSX (Excel)



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



Summary of Events Occurred:										
Numb. Of Events	Event Code	Description								
1	112	WARNING - Battery voltage over warning level								
2	170	WARNING - Unbalanced battery								
3	1	ALARM - Battery voltage over range								
4	13	ALARM - Current over range in discharge								
5	2	ALARM - Voltage Cable Disconnected								

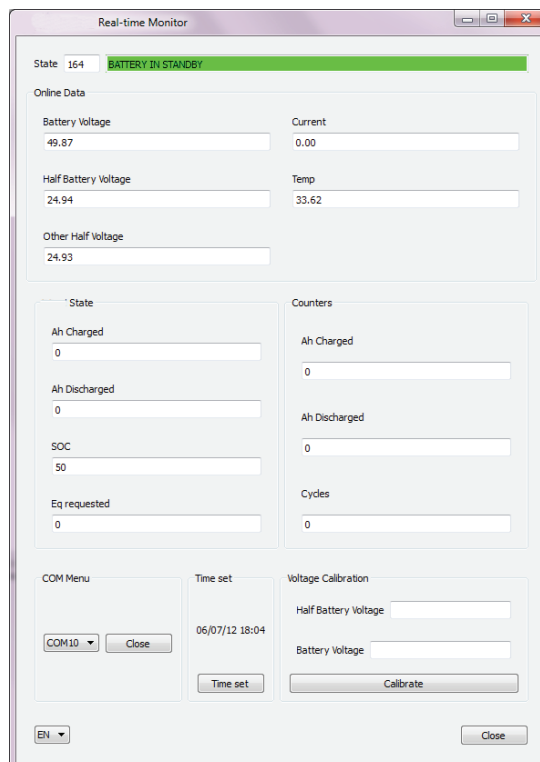
Analysis Results:	
Measure	Value
1 Ah Charged (Ah)	4293
2 Ah Discharged (Ah)	2909
3 Battery Temperature (C)	27.42
4 Charging Time (minutes)	15:03:35
5 Discharging Time (minutes)	21:09:22
6 Last Update	12/06/23 11:31:34
7 Number of Cycle	35

List of Events Occurred:											
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	25.83	0.00	23.39	0	0	50	253	0	0	0
12/05/04-19:10:00	0.00	25.79	0.00	23.79	0	0	50	253	0	0	0
12/05/04-19:10:00	31.55	25.79	0.00	23.79	0	0	50	223	0	0	0
12/05/04-21:02:39	63.64	31.81	17.04	23.90	67	0	87	112	0	67	0
12/05/07-08:46:12	46.67	23.35	-262.57	19.66	0	6	87	252	0	103	6
12/05/07-18:00:34	63.64	31.27	20.04	23.67	34	0	98	112	0	137	35
12/05/09-08:47:28	47.30	23.77	-256.56	23.28	0	28	84	252	0	315	178
12/05/09-19:34:04	63.64	31.75	20.04	28.14	134	0	98	112	0	449	281
12/05/10-13:56:00	47.26	23.63	-252.55	27.80	0	87	78	252	0	484	368
12/05/10-18:43:42	63.64	31.69	20.04	28.55	91	0	87	112	0	575	370

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



- 2. **Real time monitor:** connect to your monitor and see all measurements in real time. The quickest tool to verify the proper operation and configuration of the module.



3. Monitor configurator: easily configure the monitor alarm thresholds and data-logging options.

