

SIMARINE PICO

SMART BATTERY MONITORING SYSTEM



QUICK OVERVIEW

Revision 1.0

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INTRODUCTION

SIMARINE PICO Smart Battery Monitoring system sets new standards for battery monitoring in fields of design, functionality, connectivity and ease of use.

The information is displayed on a large 3,5" high resolution optically bonded IPS LCD display with Gorilla Glass cover, anti-reflective and polarization-proof coating to ensure superior visibility and prevent condensation.

The main unit's case is CNC-milled from a single piece of high quality 6082 type anodized aluminum (corrosion-proof).

The display cover is made from thick Gorilla Glass cover with Anti-Reflective and Polarization-proof coating. To improve the overall image quality and to prevent the condensation, the cover glass is optically bonded with high contrast 3.5" inch IPS LCD screen with wide viewing angles and good sun legibility. The casing is water- and dustproof. It complies with the standard IP67.

The system is controlled by four water tolerant Capsense touch buttons under the display or via Mobila App.

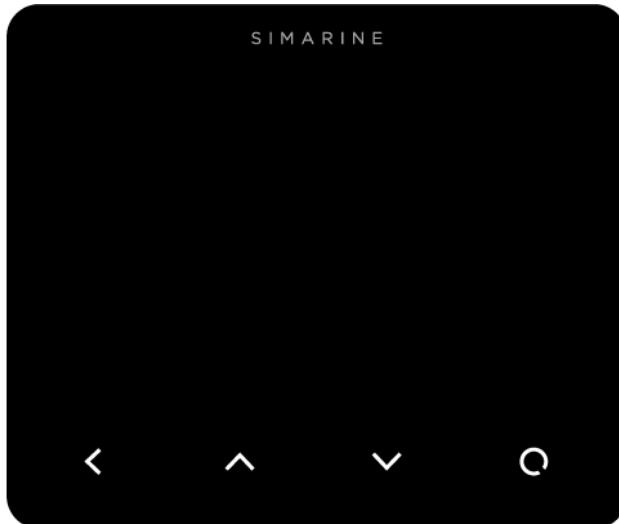
PICO can monitor up to 6 battery banks, 14 tanks, and 20 independent current sensors. We offer precise battery health measurements with our unique Real Time Battery Health™ algorithm.

The PLUS version comes with an integrated barometer with barograph with three sensors technology.

PICO is equipped with a Wi-Fi module to communicate with the PICO application available for Android and iPhone smartphones. The application allows accessing live data, analyzing history data, configuring PICO and perform a firmware upgrade of PICO.

BASIC NAVIGATION

On the bottom of the device, under the display there are four water tolerant Capsense touch buttons:



- **BACK**

Press “BACK” to move on to the previous instance in hierarchical order.

In SETTINGS mode:

Press “BACK” to move on to the previous menu instance in hierarchical order.

- **UP**

Press “UP” to display the next screen.

In SETTINGS mode:

Press “UP” to move the selection onto the item above.

- **DOWN**

Press “DOWN” to display the previous screen.

In SETTINGS mode:

Press “DOWN” to move the selection onto the item bellow.

- **ENTER - Confirm/Settings**

Press and hold “ENTER” to enter the SETTINGS.

In SETTINGS mode:

For items with an arrow on the right:

Press to display additional settings for the highlighted item

For items without an arrow on the right:

Press “ENTER” to confirm/set the highlighted item

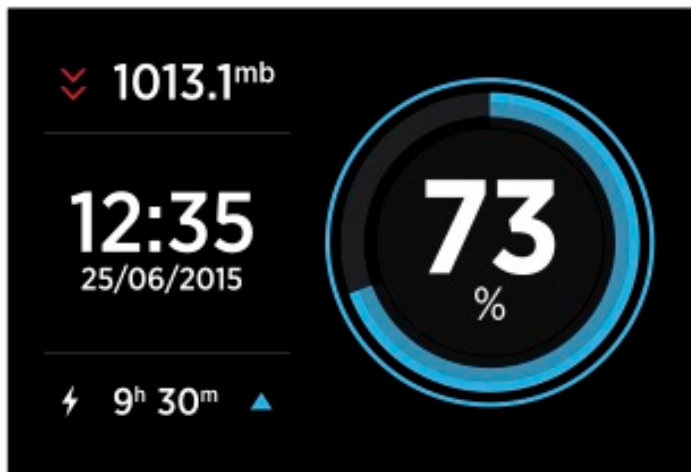
LIVE VIEW MODE

Operating mode presents the following screens:

1. Sleep screen – screensaver
2. Battery and electric currents
3. Fluid Tanks
4. Barograph
5. Battery state of charge graph
6. Battery health data

1. Sleep screen – screensaver

Presents the user with some of the most important data with a brief look on the display.

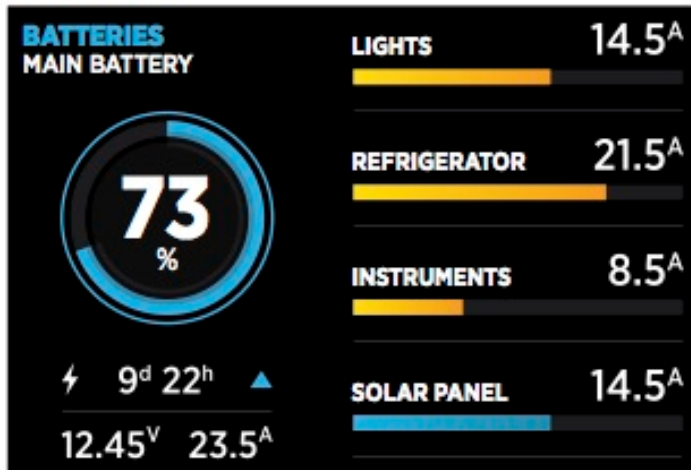


Displays:

- The remaining power of the main batteries in percentage,
- TIME and DATE
- Air Pressure and Air Pressure Trend
- Remaining time before **discharge**/Remaining time before fully **charged**
- Charging indicator
- Current direction



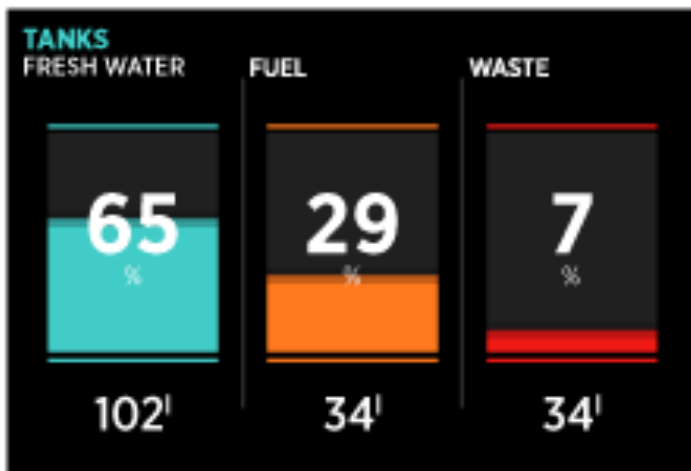
2. Battery and electric currents



Displays:

- The remaining power of a battery in percentage
- Remaining time before discharge/Remaining time before fully charged
- Battery voltage
- Electric current strength (amperage)
- Electrical currents on five channels (consumers and/or generators)
- Charging indicator
- Current direction

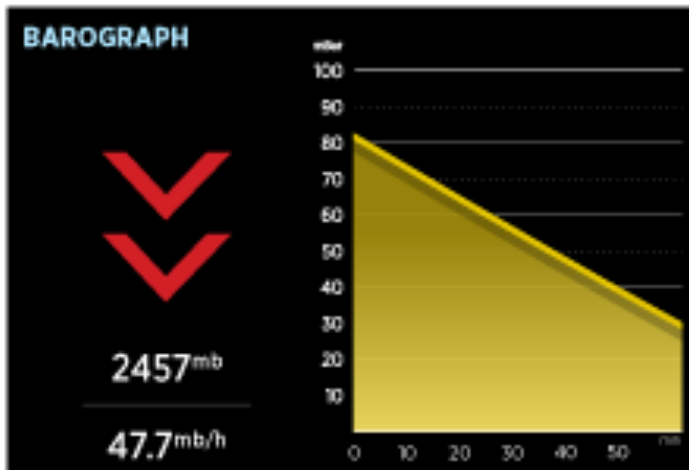
3. Fluid Tanks



Displays:

- The remaining volume of three tanks measuring different types of fluids (Fresh water, Fuel, Waste) in percentage and liter. SIMARINE PICO allows to connect and calibrate any analog or digital volume sensor.

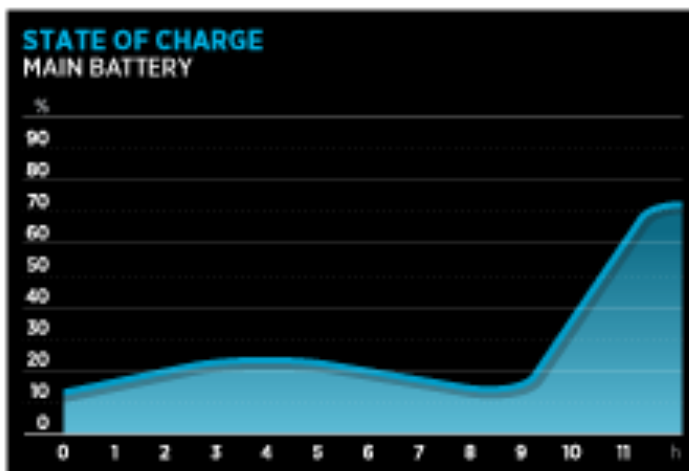
4. Barometer with barograph



Displays:

- current air pressure at the sea level
- current air pressure trend (last 30 min)
- Barograph (changes of air pressure in last 24h)

5. Battery state of charge graph



Displays:

- Battery state of charge in last 24 hours.

6. Battery health data

Displays:

- Battery Name (User Defined)
- Battery Type
- Nominal Capacity
Capacity of a new battery

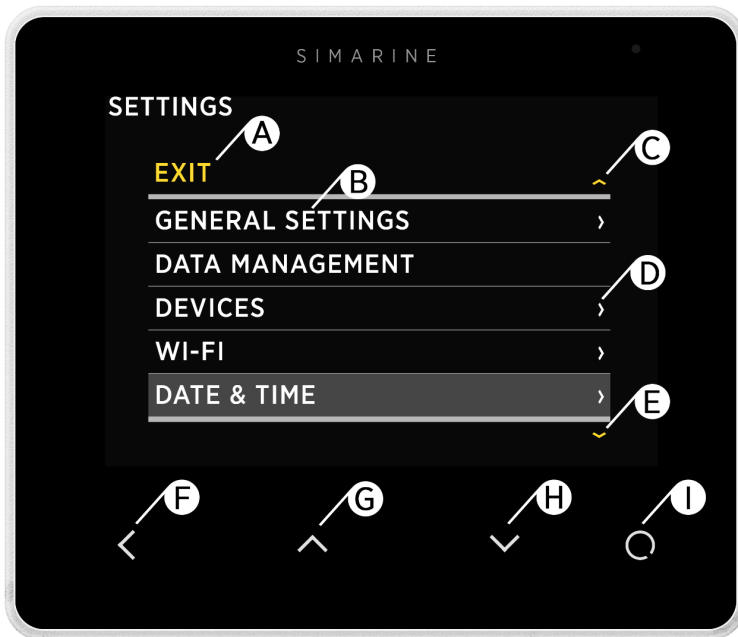


- Measured Capacity
Capacity of the battery after usage based on our Real Time Battery Health™ algorithm
- RTB Health - SIMARINE's Real Time Battery Health™
Battery health/wear level in percentage based on precise battery measurements and our unique Real Time Battery Health™ algorithm
- Peukert constant value

SETTINGS MODE

PICO's menu management is transparent and easy to use. All changes can be done via for buttons or smartphone app.

Press and hold "ENTER" to enter the SETTINGS.



Picture 1: Main settings

Positions and labels explained:

A - Label indicates the current position in menu

B - Currently selected item

C - Arrow indicating there is at least one more menu item in the arrow direction

D - Arrow indicating there is a sub menu available for the given item

E - Arrow indicating there is at least one more menu item in arrow direction

F - Back button - Press to return to the previous setting instance or to leave the settings mode.

G - Up button - Press to navigate Up in the menu, increase the item value.

H - Up button is used to navigate Down in menu, decrease the item value.

I - Enter button, long press activates settings mode, short press commits changes or enters submenu

SYSTEM SPECIFICATION SIMARINE PICO

Display: LCD TFT 3,5" High resolution IPS, Gorilla Glass, anti-reflective coating
 Human interface: 4 Touch buttons, water resistant
 Enclosure: CNC-milled anodized aluminum, water- and dustproof
 Dimensions: HxWxD 98 x 84 x 11 mm

| | |
|---------------------------------------|----------|
| Operating voltage | 6 - 35 V |
| Power consumption at 12V | |
| Operating, wifi on, 100% illumination | 90 mA |
| Operating, wifi off, 70% illumination | 35 mA |
| Stand by, wifi off, 0% illumination | 18 mA |
| Power off, logger still active | 5 mA |
| Number of connections | |
| Battery banks | 6 |
| Current sensor channels | 24 |
| Temperature sensors: | 10 |
| Tank level sensors: | 14 |

Logger capacity: device: (average) 3 month on device; smartphone app: unlimited

SC300 ACTIVE DIGITAL SHUNT

SIMARINE's high precision SC300 active digital shunt is capable of measuring current up to 300A and suitable for maximal power of 3600W at 12V or 7200W at 24V.

| | |
|--------------------------|--------------|
| Operation | |
| Voltage range | 6 - 35 V |
| Temperature range | -20 - +70 °C |
| Power consumption at 12V | |
| Operating | 0,8 mA |
| Current Measuring | |
| Range | 0,01 - 320 A |
| Accuracy | ± 0,6 % |
| Resolution | 0,01 A |
| Sampling rate | 100 ms |
| Maximal current | |
| Continuous | 300 A |



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| | |
|-----------------------------|-----------------------|
| Peak current (<1min) | 400 A |
| Voltage measuring | |
| Range | 0 - 35 V |
| Accuracy | ± 0,2 % |
| Resolution | 1 mV |
| Temperature sensor - NTC 5K | |
| Range | -15 - +80 °C |
| Accuracy | (-10 - +60 °C): 3 % |
| Installation and Dimensions | |
| Dimensions | 118x40x52 mm |
| Connection | M 10 bolts |

SC500 ACTIVE DIGITAL SHUNT

SIMARINE's high precision SC500 active digital shunt is capable of measuring current up to 500A and suitable for maximal power of 7200W at 12V or 14400W at 24V.

| | |
|-----------------------------|--------------|
| Operation | |
| Voltage range | 6-35 V |
| Temperature range | -20 - +70 °C |
| Power consumption at 12V | |
| Operating | 0,8 mA |
| Current Measuring | |
| Range | 0,02 - 600 A |
| Accuracy | ± 0,6 % |
| Resolution | 0,02 A |
| Sampling rate | 100 ms |
| Maximal current | |
| Continuous | 500 A |
| Peak current (<1min) | 800 A |
| Voltage measuring | |
| Range | 0 - 35 V |
| Accuracy | ± 0,2 % |
| Resolution | 1 mV |
| Temperature sensor - NTC 5K | |
| Range | -15 - +80 °C |



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| | |
|-----------------------------|-----------------------|
| Accuracy | (-10 - +60 °C): 3 % |
| Installation and Dimensions | |
| Dimensions | 118x40x52 mm |
| Connection | M 10 bolts |

SCQ25 QUADRO DIGITAL SHUNT MODULE

SIMARINE SCQ25 is a highly versatile shunt module. It is equipped with four shunts to measure voltage and current up to 25A. It is ideal to monitor independent consumer (e.g. refrigerator, instruments, lights) or generator devices (e.g. solar, wind generator) and measure their exact consumption or gain, respectively.

Operating

| | |
|-------------------|--------------|
| Voltage range | 6 - 35 V |
| Temperature range | -20 - +70 °C |

Power consumption at 12V

| | |
|----------------------------|--------|
| Operating | 3,5 mA |
| Current measuring channels | 4 |

Current measuring range

| | |
|---------------|-------------|
| Per channel | 0,01 - 50 A |
| Accuracy | ± 0,6 % |
| Resolution | 0,01 A |
| Sampling rate | 100 ms |

Maximal current

| | |
|--------------------------------|-------|
| Continuous | 25 A |
| Peak current (<1 min) | 35 A |
| Peak current (<5 sec) | 50 A |
| Voltage drop at 25 A | 35 mV |
| Maximal voltage on connections | 35 V |

Operating

| | |
|-------------------|--------------|
| Voltage range | 6 - 35 V |
| Temperature range | -20 - +70 °C |

Power consumption at 12V

| | |
|----------------------------|--------|
| Operating | 3,5 mA |
| Current measuring channels | 4 |



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Current measuring range

| | |
|---------------|-------------|
| Per channel | 0,01 - 50 A |
| Accuracy | ± 0,6 % |
| Resolution | 0,01 A |
| Sampling rate | 100 ms |

Maximal current

| | |
|--------------------------------|-------|
| Continuous | 25 A |
| Peak current (<1 min) | 35 A |
| Peak current (<5 sec) | 50 A |
| Voltage drop at 25 A | 35 mV |
| Maximal voltage on connections | 35 V |

SCQ25T QUADRO DIGITAL SHUNT + TANK MODULE

SIMARINE SCQ25T is our most versatile module. It is equipped with four shunts to measure voltage and current up to 25A. It is ideal to monitor independent consumer (e.g. refrigerator, instruments, lights) or generator devices (e.g. solar, wind generator) and measure their exact consumption or gain, respectively.

Up to five modules can be connected simultaneously to monitor up to 20 current channels.

SIMARINE SCQ25T comes with an integrated tank module with 4 resistance inputs operating from 0 ohm to 150 kohm and three voltage inputs operating from 0 V to 32 V. You can connect any tank or temperature sensor operating in this range.

Operating

| | |
|-------------------|--------------|
| Voltage range | 6 - 35 V |
| Temperature range | -20 - +70 °C |

Power consumption at 12V

| | |
|----------------------------|--------|
| Operating | 3,5 mA |
| Current measuring channels | 4 |

Current measuring range

| | |
|---------------|-------------|
| Per channel | 0,01 - 50 A |
| Accuracy | ± 0,6 % |
| Resolution | 0,01 A |
| Sampling rate | 100 ms |

Maximal current

| | |
|-----------------------|------|
| Continuous | 25 A |
| Peak current (<1 min) | 35 A |



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| | |
|--------------------------------|--------------|
| Peak current (<5 sec) | 50 A |
| Voltage drop at 25 A | 35 mV |
| Maximal voltage on connections | 35 V |
| Operating | |
| Voltage range | 6 - 35 V |
| Temperature range | -20 - +70 °C |
| Power consumption at 12V | |
| Operating | 3,5 mA |
| Current measuring channels | 4 |
| Current measuring range | |
| Per channel | 0,01 - 50 A |
| Accuracy | ± 0,6 % |
| Resolution | 0,01 A |
| Sampling rate | 100 ms |
| Maximal current | |
| Continuous | 25 A |
| Peak current (<1 min) | 35 A |
| Peak current (<5 sec) | 50 A |
| Voltage drop at 25 A | 35 mV |
| Maximal voltage on connections | 35 V |

ST107 TANK MODULE

SIMARINE's ST107 digital tank module is a highly versatile module, which can be used to connect tank sensors, temperature sensors or measure battery's voltage.

It has four resistance inputs operating from 0 ohm - 150 kohm and three voltage inputs operating from 0 V to 32 V. You can connect any tank or temperature sensor operating in this range.

| | |
|--------------------------|--------------|
| Operating | |
| Voltage range | 6 - 35 V |
| Temperature range | -20 - +70 °C |
| Power consumption at 12V | |
| Operating | 2,5 mA |
| Voltage inputs | |
| Range | 0 - 35 V |



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| | |
|-----------------------|-----------------|
| Resolution | 1 mV |
| Accuracy | $\pm 0,2 \%$ |
| Sampling rate | 100 ms |
| Resistance inputs | |
| Range | 0 ohm - 65 kohm |
| Accuracy | $\pm 3,0 \%$ |
| Number of connections | |
| Tank level sensors | 7 |
| Temperature sensors | 4 |