Conext™ Battery Monitor Quick Start Guide

865-1080-01

http://solar.schneider-electric.com

A Introduction

The Conext Battery Monitor is a meter for 24 V & 48 V batteries designed for use in off-grid power systems as a wall-panel/DIN-rail mount device. It features a local display to selectively show the voltage, current, consumed amp-hours, remaining capacity, and remaining hours. The Battery Monitor connects with other Xanbus devices such as Inverters, Solar Charge Controllers, Automatic Gen Start & System Control Panel via Xanbus ports to provide accurate information about the state of the connected battery. The Battery Monitor is wired to the battery through two ports, an analog signal port and BTS (Battery Temperature Sensor).

Important Safety Information

This Guide is intended for any qualified personnel who need to operate, configure, and troubleshoot the Conext Battery Monitor. Certain configuration tasks should only be performed by a certified technician or electrician.

Qualified personnel have training, knowledge, and experience in:

- Installing electrical equipment
- Applying appropriate installation codes
- Applying a certified technician or electrician when performing electrical work
- Selecting and using Personal Protective Equipment (PPE)
- Understanding and using Hazard Alert symbols

No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

1. Before using this product, read all instructions and cautionary markings on the unit, the battery, and all appropriate sections of this manual.

2. Use of accessories not recommended or sold by the manufacturer may result in a risk of fire, electric shock, or injury to persons.

3. The manufacturer recommends that all wiring be done by a certified technician or electrician to ensure adherence to the local and national electrical codes applicable in your jurisdiction.

4. By using the device, you agree that it is not intended for use in hazardous environments requiring fail-safe performance. The device is not intended to be stand-alone electrical safety equipment, and not to replace a properly installed motor disconnect or fuse. Do not use this device as an emergency disconnect device. Do not use the device in hazardous environments.

5. Do not operate the equipment if it has been damaged in any way.

6. Do not store or discard the equipment if it has been damaged in any way.

7. Do not operate the equipment if it has been damaged in any way.

8. Do not connect the equipment if it has been damaged in any way.

9. Do not connect the equipment if it has been damaged in any way.

10. To reduce the risk of electrical shock, do not use the equipment near water or in damp environments. Do not use with a wet hand or in rain.

WARNING

Failure to follow these instructions can result in damage to equipment.

B Inside the Box

- Pre-scaler board (Not shown: battery sense cable (9.8 ft. / 3m))
- Battery shunt (500A/50mV)
- DIN rail clip
- Modbus connector
- Not shown: mounting hardware

C Features

- Navigation buttons
- Mini-USB port
- MicroSD card slot
- USB 2.0 A to Mini-B Cable
- Network terminator
- Pre-scaler cable (orange)
- Battery Temperature Sensor (BTS)

D Mounting Templates

For Indoor Use Only.

For monitoring lead-acid batteries with a nominal voltage up to 48VDC, maximum terminal voltage is 48 V batteries designed for use in off-grid power systems as a wall-panel/DIN-rail mount device. It features a local display to selectively show the voltage, current, consumed amp-hours, remaining capacity, and remaining hours. The Battery Monitor connects with other Xanbus devices such as Inverters, Solar Charge Controllers, Automatic Gen Start & System Control Panel via Xanbus ports to provide accurate information about the state of the connected battery. The Battery Monitor is wired to the battery through two ports, an analog signal port and BTS (Battery Temperature Sensor).
Install the Pre-Scaler board onto a wall with two screws (not included), as shown below. Choose a location that is near the battery and easily accessible.

NOTE: Ensure that terminals are covered after installation and wiring steps are completed.

Use the two screws provided to secure the shunt to your chosen location, as shown below. The maximum allowable distance between the Battery Monitor and the shunt is 30m.
F Cable Connections

To wire the Battery Monitor:
1. Connect the battery sense cable wires to the battery terminals, as shown above.
2. Wire the battery shunt to the battery, as shown above.
3. Install 2A (313/3AG) fuses as close to the battery terminals as possible, as shown above.

Battery sense cable

Pre-scaler board

Battery shunt

SYSTEM BATTERY

V+ (Red wire)

V– (Black wire)

Vm+ (Brown wire)

Vm (Grey wire)

Va2- (Yellow wire)

Va1+ (Orange wire)

I+ (Blue wire)

H Menu Navigation

NAVIGATION BUTTONS
Use the navigation buttons on the Conext Battery Monitor to scroll through menu screens, check battery status and change configuration settings.

LEFT (Select)
RIGHT

MAIN MENU
Enter the Main menu by holding LEFT for three seconds, until MAIN appears on the display screen. From the Main menu, you can navigate to different menus, including the Function menu (see Function Menu, below).

For information about other menus, see the Conext Battery Monitor Owner’s Guide available at https://solar.schneider-electric.com/product/conext-battery-monitor.

FUNCTION MENU
From the Main menu, enter the Function menu by pressing RIGHT twice, until Func appears on the display screen.

Use LEFT and RIGHT buttons to browse through the different Functions. Press Func to view the selected Function value.

DISPLAY MODE
Access the Display Mode from any menu item by pressing LEFT for three seconds. This will save any Function value changes to internal memory. When no navigation buttons are pressed for 90 seconds while operating in the Function menu, the Battery Monitor will automatically return to the Display Mode without saving any Function value changes.

G Synchronize

SYNCHRONIZE
Hold the LEFT and RIGHT buttons until SYNCHRONIZE flashes on the display screen.

NOTE: Before synchronizing the Battery Monitor to a state of charge of 100%, charge the batteries completely and allow the batteries to remain in float state for two hours or longer after first installation.
### Configuration using the Conext System Control Panel

The Conext System Control Panel (SCP) provides remote configuration and monitoring capability for the Battery Monitor and all other Xantrex-enabled devices in the network.

### Essential Settings

<table>
<thead>
<tr>
<th>Function</th>
<th>Default</th>
<th>Min</th>
<th>Max</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1.0</td>
<td>Float Voltage</td>
<td>F2.2</td>
<td>10V</td>
<td>Battery charger's float voltage, which is the last stage of the charging process.</td>
</tr>
<tr>
<td>F1.2</td>
<td>Discharge floor</td>
<td>F2.2</td>
<td>1%</td>
<td>99% Reference point at which the battery needs to be recharged. When SOC&lt; this value the Charge battery indicator flashes, the line remaining shows 0.0 if SOC bar is empty.</td>
</tr>
<tr>
<td>F2.0</td>
<td>Battery Capacity</td>
<td>F2.2</td>
<td>20Ah</td>
<td>Battery's capacity in Amp-hours (Ah)</td>
</tr>
<tr>
<td>F2.2</td>
<td>Nominal Discharge Rate</td>
<td>F2.2</td>
<td>100</td>
<td>The discharge rate (in hours) at which the battery manufacturer rates the battery's capacity.</td>
</tr>
<tr>
<td>F2.3</td>
<td>Nominal Temperature</td>
<td>F2.2</td>
<td>20°C</td>
<td>The temperature at which the battery manufacturer rates the battery's capacity.</td>
</tr>
<tr>
<td>F3.1</td>
<td>Shunt Amp Rating</td>
<td>F2.2</td>
<td>500A</td>
<td>Amp rating of connected shunt.</td>
</tr>
<tr>
<td>F3.2</td>
<td>Short-Circuit Rating</td>
<td>F2.2</td>
<td>9000A</td>
<td>Amp rating of connected shunt.</td>
</tr>
<tr>
<td>F3.3</td>
<td>Battery temperature</td>
<td>F2.2</td>
<td>5°C</td>
<td>Select display between °C/°F.</td>
</tr>
<tr>
<td>F3.5</td>
<td>Setup Lock</td>
<td>F2.2</td>
<td>OFF</td>
<td>Set to OFF all push buttons on physical unit is locked.</td>
</tr>
</tbody>
</table>

### Advanced Settings

<table>
<thead>
<tr>
<th>Function</th>
<th>Default</th>
<th>Min</th>
<th>Max</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1.5</td>
<td>Time remaining averaging filter</td>
<td>0</td>
<td>2</td>
<td>Represents the effect of reducing battery capacity at higher discharge rates.</td>
</tr>
<tr>
<td>F2.1</td>
<td>Temperature coefficient</td>
<td>F2.2</td>
<td>0.5%</td>
<td>Represent the percentage that battery's capacity changes with temperature.</td>
</tr>
<tr>
<td>F2.4</td>
<td>Peukert's exponent</td>
<td>F2.2</td>
<td>1.25</td>
<td>Represent the percentage that battery's capacity at higher discharge rates.</td>
</tr>
<tr>
<td>F2.5</td>
<td>Self-discharge rate</td>
<td>F2.2</td>
<td>2%</td>
<td>Represent the percentage that battery's capacity at higher discharge rates.</td>
</tr>
<tr>
<td>F2.6</td>
<td>Charge Efficiency Factor</td>
<td>F2.2</td>
<td>0.5%</td>
<td>Ratio between the energy removed from a battery during discharge &amp; the energy used during charging to restore original capacity.</td>
</tr>
</tbody>
</table>

### Modbus Settings

Modbus settings on your Battery Monitor are not configurable via the Function menu. These settings can be configured with a Conext System Control Panel, ComBox or Conext Configuration Tool.

<table>
<thead>
<tr>
<th>Modbus Setting</th>
<th>Default</th>
<th>Min</th>
<th>Max</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS485 Address</td>
<td>20</td>
<td>1</td>
<td>255</td>
<td></td>
</tr>
<tr>
<td>RS485 Baud Rate</td>
<td>9600</td>
<td>115200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RS485 parity</td>
<td>Even</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RS485 Stop Bits</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

### Compatible Products by Schneider Electric

- **Conext XW+ 5548 NA / Conext XW+ 6848 NA**
- **Conext SW 2524 230 / Conext SW 4024 230**
- **Conext BM 00 : Adv**
- **Conext BM 00 : Meters**
- **Conext MPPT 80 600**
- **Conext MPPT 60 150**

### Technical Specifications

#### Battery Monitor

- **Supply Voltage**: 18 to 66 VDC
- **Supply Current**: 80 mA @ VIN=48 VDC, 150 mA @ VIN=24 VDC
- **Power Consumption**: ~4W
- **Input Voltage Range (main batt.)**: 0 to 70VDC
- **Input Voltage Range (aux. batt.)**: 2 to 70VDC
- **Input Current Range**: -9999 to +9999A
- **Battery Capacity Range**: 20 to 9999Ah
- **Operating Temperature Range**: -20 to +50°C
- **Backlight off, logging disabled**

#### Resolution

- **Voltage**: 0 to 70 (+0.1 V)
- **Current**: 0 to 200A / 200 to 9999A (+0.5A / +1A)
- **Amp-Hours**: 0 to 200Ah / 200 to 9999Ah (+0.5Ah / +1Ah)
- **State-of-charge**: 0 to 100% (+0.1%)
- **Time Remaining**: 0 to 24h / 24h to 240hrs (+ 1 minute / + 1 hr)
- **Temperature**: -20 to +50°C (+ 0.5°C)

#### Accuracy

- **Voltage Measurement**: +/- 0.3%
- **Current Measurement**: +/- 0.4%

#### Connections

- **Battery Shunt, Shunt/Temp Sensor**: RJ45 / RJ12 (cables included)
- **USB 2.0 – Device**: Connector, USB min-B, Protocols: MSD (data extraction)

#### Network

- **Protocol**: Xantrex / Connections: RJ45
- **USB 2.0**: Protocol: MSD (data extraction)

#### Modbus

- **Isolated RS-485, 2-wire serial**
- **Data Logging**: 10 data points every 10 minutes for 10 years
- **Display**: Backlit LCD
- **Front-panel Interface**: 3 menu buttons, 1 power button
- **Battery string-imbalance detection**: Two-point sensing
- **Temperature Sensor (included)**: 78°C
- **Warranty**: 2 to 5 years (depending on country)

#### Mechanical Specifications

- **Dimensions**: 8.5 x 8.5 x 9.0 cm
- **Weight**: 0.2kg
- **IP Rating/Mounting Location**: IP 20, NEMA 1, Indoor Only
- **Storage Temperature Range**: -30 to +60°C
- **Part Number**: 865-1080-01

#### Battery Interface Kit with Shunt

- **Connection to Battery**: 380m cable with ring-terminals
- **Connection to Battery Monitor**: 560m CAT5 cable RA4S
- **Shunt**: 960 mA @ 50V
- **Shunt Dimensions**: 8.7 x 4.5 x 3.5 cm
- **Shunt Weight**: 0.15 kg

### Regulatory Standards


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