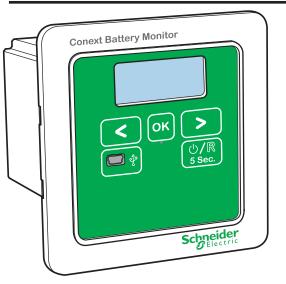
## **Conext™ Battery Monitor Quick Start Guide** 865-1080-01



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 gualified personnel in consultation with your local utility and/or an authorized dealer. Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. Servicing of batteries must only be performed or supervised by qualified personnel with knowledge of batteries and their required precaution

- Qualified personnel have training, knowledge, and experience in:
- Installing electrical equipment
- · Applying applicable installation codes
- Analyzing and reducing the hazards involved in performing electrical work Installing and configuring batteries
- · Selecting and using Personal Protective Equipment (PPE)
- 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 batteries, 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 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. To avoid a risk of fire and electric shock, make sure that existing wiring is in good condition and that wire is not undersized. Do not operate the equipment with
- damaged or substandard wiring.
- 5. Do not operate the equipment if it has been damaged in any way. 6. This unit does not have any user-serviceable parts. Do not disassemble the combiner box except where noted for connecting wiring and cabling. See your warranty for instructions on obtaining service. Attempting to service the unit yourself may result in a risk of electrical shock of fire. Internal capacitors remain charged after all power is disconnected.
- 7. To reduce the risk of electrical shock, disconnect both AC and DC power from the equipment before attempting any maintenance or cleaning or working on any components connected to the equipment. Putting the unit in Standby mode will not reduce this risk.
- 8. The equipment must be provided with an equipment-grounding conductor connected to the AC input ground.
- 9. Do not expose this unit to rain, snow, or liquids of any type. This product is designed for indoor use only. Damp environments will significantly shorten the life of this product and corrosion caused by dampness will not be covered by the product warranty.
- 10. To reduce the chance of short-circuits, always use insulated tools when installing or working with this equipment.
- 11. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with electrical equipment.

#### Read and Save These Instructions - Do Not Discard

This guide contains important safety instructions for the Conext Battery Monitor that must be followed during installation procedures. Read and keep this Quick Start Guide for future reference.

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure

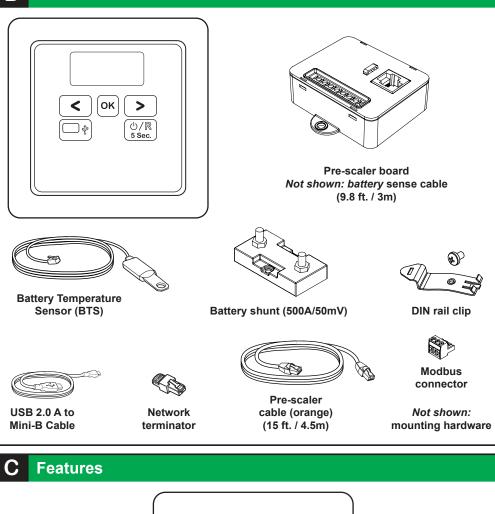
Note: The Conext Battery Monitor is not compatible with Lithium-Ion batteries.

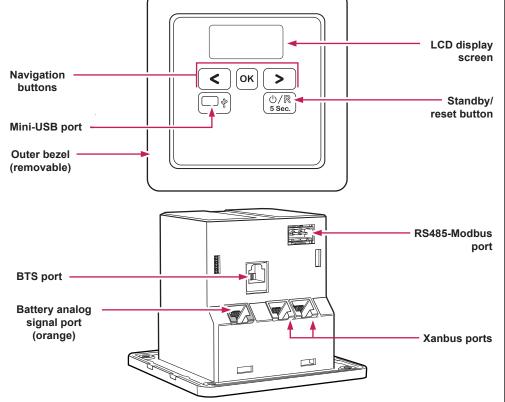
	A A WARNING			
The addition of either symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.	OVERHEATING OF DC TERMINALS AND CABLES Overheating of the DC terminals or DC cables to dangerous temperatures may occur due to improper installation.			
This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.	<ul> <li>Do not put anything between the cable lug and the terminal surface.</li> <li>Do not over-tighten connections; observe all recommended torque values.</li> <li>Do not apply any type of anit-oxidant paste until after the cable connection is tightened.</li> <li>Do not under size cables; install cables sized in accordance with national electrical code requirements.</li> </ul>			
A A DANGER	<ul> <li>DC cables must have crimped copper compression lugs or crimped and soldered copper compression lugs; soldered connections alone are not acceptable. Lugs must be rated for use with fine-stranded cable.</li> </ul>			
	<ul> <li>Do not use coarse-stranded cable; the lack of flexibility may pull DC terminal connections loose.</li> </ul>			
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH     Remove watches, rings, or other metal objects.	Failure to follow these instructions can result in death or serious injury.			
<ul> <li>This equipment must only be installed and serviced by qualified electrical personnel.</li> </ul>	POTENTIAL FIRE HAZARD			
<ul> <li>Keep sparks and flames away from the batteries.</li> </ul>	To reduce the risk of electrical fire, replace fuse with SAME size, type, and rating ONLY.			
Use tools with insulated handles.	Failure to follow these instructions can result in death or serious injury.			
<ul> <li>Wear protective glasses, gloves and boots.</li> <li>Do not lay tools or other metal parts on top of batteries.</li> </ul>	HAZARD OF ELECTRIC SHOCK For monitoring lead-acid batteries with a nominal voltage up to 48VDC, maximum terminal voltage is			
Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.	64VDC.			
See NFPA 70E or CSA Z462.	Failure to follow these instructions can result in injury.			
Never operate energized with covers removed.	OVERHEATING OF SHUNT			
<ul> <li>Energized from multiple sources. Before removing covers identify all sources, de-energize, lock-out, and taq-out and wait 2 minutes for circuits to discharge.</li> </ul>	The shunt is rated 500A, 50mV. Do not exceed these values.			
<ul> <li>Always use a properly rated voltage sensing device to confirm all circuits are de-energized.</li> </ul>	Failure to follow these instructions can result in injury.			
Failure to follow these instructions will result in death or serious injury.				
HAZARD OF ELECTRIC SHOCK AND FIRE • Connect only to Safety Extra Low Voltage (SELV) circuits and power sources.				
All wiring must be done by qualified personnel to ensure compliance with all applicable installation	DAMAGE TO BATTERY MONITOR			
<ul> <li>ordes and regulations.</li> <li>For Indoor Use Only.</li> </ul>	<ul> <li>The shunt must be installed in the negative line. Installing the shunt in the positive line may result in damage to the Battery Monitor.</li> </ul>			
<ul> <li>Do not disassemble. No user serviceable parts inside.</li> </ul>	<ul> <li>Install Battery Monitor in a dry, indoor location away from direct sunlight.</li> </ul>			

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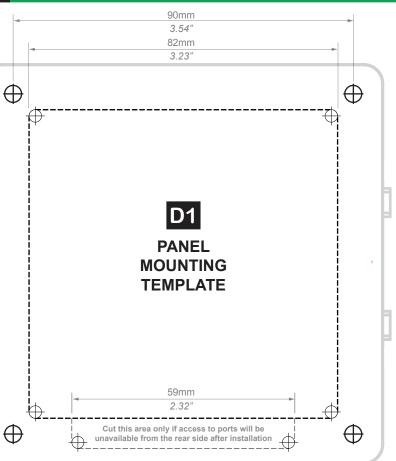


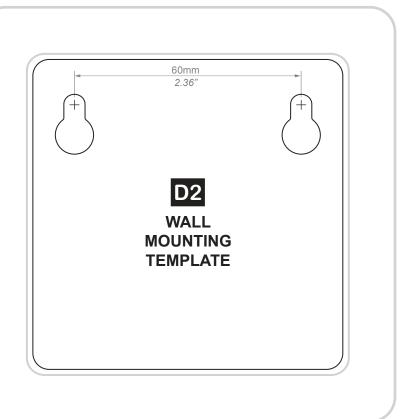
#### **B** Inside the Box

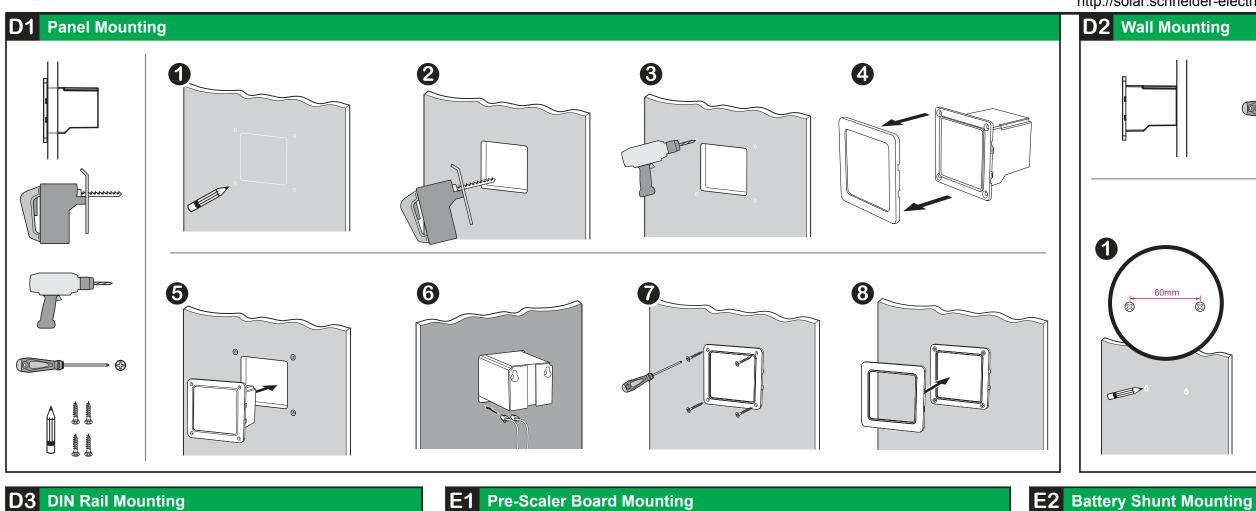


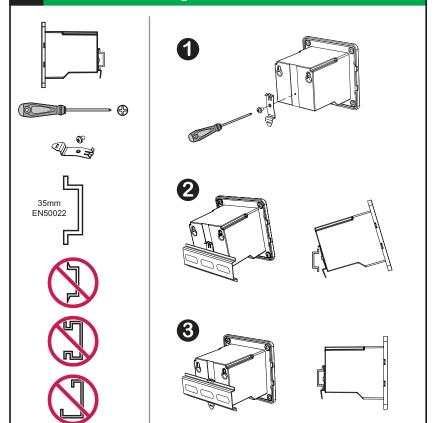


## **D** Mounting Templates

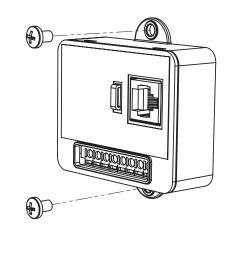


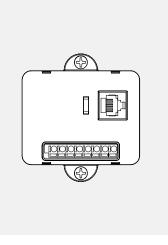


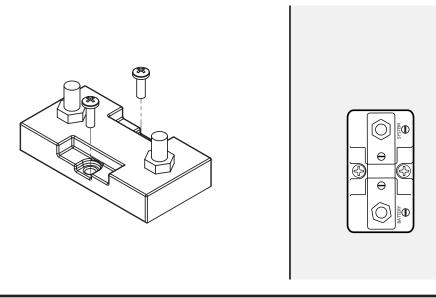




Install the Pre-Scaler board onto a wall with two screws (not included), as shown below. Choose a location that is near the battery and easily accessible.







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Install the battery shunt as close as possible to your battery location near the negative terminal, using the screws included with the shunt; if possible, install the shunt inside your battery enclosure.

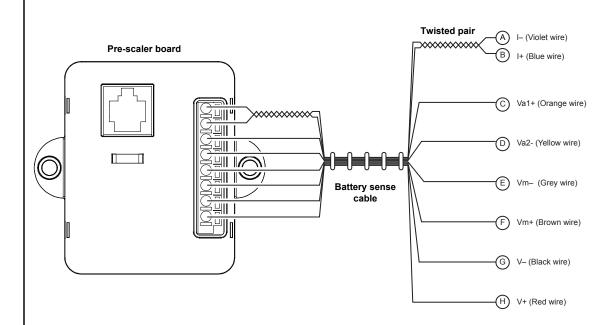
- NOTE: Ensure that terminals are covered after installation and wiring steps are completed.
- Use the two screws provided to secure the shunt to your chosen location, as shown below.
- The maximum allowable distance between the Battery Monitor and the shunt is 30m.

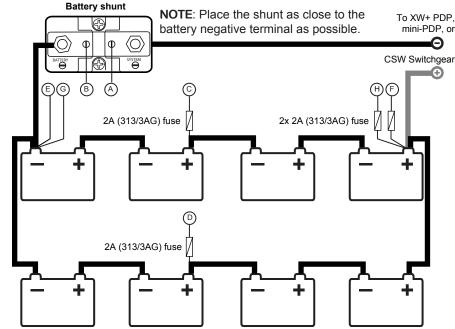
## **Conext<sup>™</sup> Battery Monitor** 865-1080-01

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#### **Cable Connections**

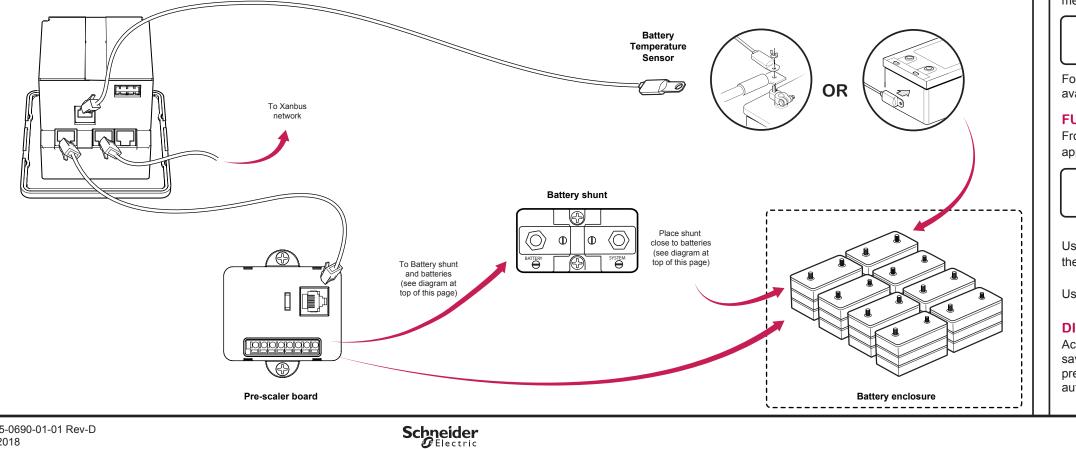
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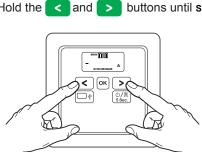




#### To wire the Battery Monitor:

- 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.
- Onnect the Battery Temperature Sensor to the battery bank, as shown below.
- Connect Xanbus cables to your Xanbus network and Pre-scaler cable (orange) to the pre-scaler board, as shown below.





**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.

## H Menu Navigation

**NAVIGATION BUTTONS** 

< OK Left Select MAIN MENU

Enter the Main menu by holding of for three seconds, until 5ERE 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 > twice, until FUnc appears on the display screen.



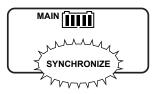
Use < and > buttons to browse through the different Functions. Press or to view the selected Function value.

**DISPLAY MODE** Access the Display Mode from any menu item by pressing or 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



Hold the **C** and **D** buttons until **SYNCHRONIZE** flashes on the display screen.



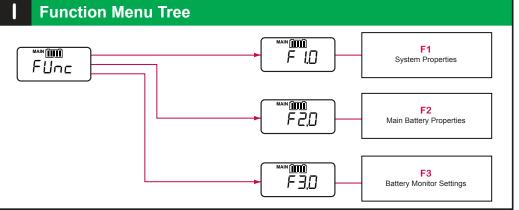
Use the navigation buttons on the Conext Battery Monitor to scroll through menu screens, check battery status and change configuration settings.



	)	
-		



Use < and > to change the value. Press again to return to the Function menu.



## J Essential Settings

Function	Default	Min	Мах	Description	
F1.0 Float voltage	52.8V	16V	64V	Battery charger's float voltage, which is the last stage of the charging process.	
F1.3 Discharge floor	50%	0%	99%	Reference point at which the battery needs to be recharged. When SOC< this value the Charge battery indicator starts flashing, the tim remaining shows 0:00 & SOC bar is empty.	
F2.0 Battery Capacity	200Ah	20Ah	9990Ah	Battery's capacity in Amp-hours (Ah)	
F2.1 Nominal Discharge Rate	20h	1h	20h	The discharge rate (in hours) at which the battery manufacturer rates your battery's capacity.	
F2.2 Nominal Temperature	20°C	0°C	40°C	The temperature at which the battery manufacturer rates the battery's capacity.	
F3.1 Shunt Amp Rating	500A	10A	9000A	Amp rating of connected shunt	
F3.2 Shunt milliVolt Rating	50mV	50mV	60mV	Battery monitor supports only 50mV and 60mV shunts	
F3.3 Backlight mode	30s	OFF/5s	300s/ON	Period of backlight activation in seconds after key-press	
F3.4 Temperature unit	°C	°C	°F	Select display between °C/°F	
F3.5 Setup lock	OFF		ON	When set to "ON", all Push buttons on physical unit is locked	

K Advanced Setti	ngs			
Function	Default	Min	Мах	Description
F1.5 Time remaining averaging filter	· 1	0	2	Represents effect of reducing battery capacity at higher discharge rates.
F2.3 Temperature coefficient	0.50% cap/°C	0.01	1.00%cap/ °C	Percentage that battery's capacity changes with temperature.
F2.4 Peukert's exponent	1.25	1.00	1.50	Represents effect of reducing battery capacity at higher discharge rates. Set to 1 for Lithium- based batteries.
F2.5 Self-discharge rate	3.0% /month	OFF /	25.0% /month	Rate at which the battery loses capacity by itself, when it is not used. Set to OFF for Lithium-based batteries.
F2.6 Charge Efficiency Factor	Au	50%	Au	Ratio between the energy removed from a battery during discharge & the energy used during charging to restore original capacity.

#### 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:

Modbus Setting	Default	Min	Max
RS485 Address	200	1	255
RS485 Baud Rate	19200	9600	115200
RS485 Parity	Even	Odd	None
RS485 Stop Bits	1	1	2
Modbus Byte Order	LSB First	LSB	MSB

apability for the Battery Monitor and all o			Electrical
			Supply Vo
	Conext BM 00 : Basic		Supply Cu
	Capacity	[450Ah]	Power Cor
Conext SCP	Discharge Rate	[20h]	Input Volta Input Volta
Battery Monitor menu	Nominal Temp	[25°C]	Input Curr
	Shunt Amps	[500A]	Battery Ca
Conext BM 00 : Meters	Shunt mV	[50mV]	Operating
Battery 57.4V 31.7A	Self Disch Discharge Floor	[3.0%] [50%]	* (Deeldiet
State of Charge 75%	Float Volt	[52.8V]	* (Backligh
AH Removed -150Ah Time Remaining 03:56 h:m	Float Amps	[2%]	Resolutio
Battery Temp 28°C	Auto Sync Time	[240]	Voltage
Mid Points 23.7V 23.8V	Temp Unit	[Celsius]	Current
Mode [Standby]	Back Light Timer	[30]	Amp-Hour
Synchronize Now (control button)			State-of-cl
Basic Settings			Time Rem
Advanced Settings	Conext BM 00 : Adv		Temperatu
	Peukert Expo	[1.25V]	Accuracy
	Charge Eff Temp Coeff	[Auto] [0.5%]	Voltage M
	Sync Sensitivity	[3]	Current M
	Time Rem Filter	[Faster]	Connectio
	Multi Unit Config —		Battery Vo
	Restore Defaults		USB 2.0 -
	Conext BM 00: RS485 S	Sett	Features
	Address	[001]	
	Baud Rate	[119200]	Network USB 2.0
	Parity	[Even]	000 2.0
	Stop Bits	[0ne]	ModBus
	Byte Order	[LSB]	Data Logg
	<b></b>		Display
			Front-pane
			Battery str
	Conext BM 00 : Multi		Temperatu Warranty
	Dev Name	[BM1]	
	Dev Number	[00]	Mechanic
	DC Conn	[HouseBatt1]	Dimensior
			Weight
			IP Rating/
			Storage T
			Part numb
Compatible Products by S	Schneider Electric		Battery In
			(Included
onext XW+ 5548 NA / Conext XW+ 6848 NA	• Conext MPPT 80 600		Connectio
onext XW +7048 E / Conext XW + 8548 E	Conext SCP     Conext ACS		Connectio
onext SW 2524 230 / Conext SW 4024 230 onext SW 2524 120 / Conext SW 4024 230	<ul> <li>Conext AGS</li> <li>Conext ComBox</li> </ul>		Shunt
onext MPPT 60 150			Shunt Dim Shunt Wei
			Regulator
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## Conext<sup>™</sup> Battery Monitor 865-1080-01

## nical Specifications

er	Conext Battery Monitor
Specifications tage rrent* sumption ge Range (main batt.) ge Range (aux. batt.) ent Range pacity Range Temperature Range	18 to 66 VDC 80 mA @ VIN=48 VDC, 150 mA @ VIN=24 VDC <4W 0 to 70VDC 2 to 70VDC -9999 to +9999A 20 to 9990Ah -20 to +50°C
t off, logging disabled)	
n arge aining re ()	0 to 70 (+0.01 V) 0 to 200A / 200 to 9999A (+0.1A / +1A) 0 to 200AH / 200 to 9990Ah (+0.1Ah / +1Ah) 0 to 100% (+0.1%) 0 to 24hrs / 24240hrs (+ 1 minute / + 1hr) -20 to +50°C (+ 0.5°C)
easurement easurement	+/- 0.3% +/- 0.4%
<b>ns</b> tage, Shunt/Temp Sensor Device	RJ45 / RJ12 ( cables included) Connector: USB min-B, Protocols: MSD (data extraction)
ng I interface ng-imbalance detection re Sensor (included)	Protocol: Xanbus / Connectors: RJ45 Protocol: MSD (data extraction) Connector: USB min-B Isolated RS-485, 2-wire serial 10 data points every 10 minutes for 10 years Backlit LCD 3 menu buttons, 1 power button Two-point sensing 762cm 2 to 5 years (depending on country)
al Specifications	
s /lounting location emperature Range er	8.5 x 8.5 x 9.0cm 0.2kg IP 20, NEMA 1, Indoor Only -30 to +60°C 865-1080-01
erface Kit with Shunt	
n to Battery n to Battery Monitor ensions ght	300cm cable with ring-terminals 500cm CAT5 cable RJ45 500A / 50mv 8.7 x 4.5 x 3.5 cm 0.15 kg
y Standards	
	CE Directive 2004/108/EC, IEC/EN61000-6-3, IEC/EN61000-6-1, FCC Part 15 Class B, Industry Canada ICES-003 Class B