tbs electronics

THE POWER OF QUALITY

Expert

Modular

Description

Defining the amount of energy available in a battery is a complex task since battery age, discharge current and temperature all influence the actual battery capacity. All Expert battery monitors are equipped with high performance measuring circuits, which in combination with complex software algorithms, are used to exactly determine the remaining capacity of your battery.

The Expert Modular is our latest generation, highly advanced battery monitor. It consists of an intelligent shunt and a remote control and display unit. The shunt has a Grid Optimized footprint for perfect integration with our DC Modular products.
This advanced battery monitor not only shows the true state of charge of your battery system. It also offers a large amount of additional features to optimally supervise your battery system and control external equipment.

The Expert Modular is compatible with lead based and Lithium batteries (LiFePO4). This battery monitor can monitor up to three battery banks.
The inputs for battery bank 2 and 3 can also be configured for other purposes, like midpoint voltage measurement, keyswitch input, setup lock or backlight control. The Expert Modular can measure DC currents up to 600Amps (500Amp continuous) and voltages up to 70Vdc.
So any lead- or lithium based battery bank from 12V up to 48V can be monitored.

The installation time is minimal, requiring only one supply wire to the intelligent shunt base and a single 'QuickLink' cable between the shunt base and the control/display unit (CDU).

Additionally, the battery minus cable must be interrupted in order to insert the shunt into the high current circuit.
The fused supply wire and the QuickLink cable are both included in the package, avoiding the need for a separate connection kit.

Features

- Read your battery bank like a fuel gauge
- Provides critical information about the status of your battery bank
- Very simple 'plug and play' installation
- Displays voltage, current, consumed amphours, remaining battery capacity, time remaining and power
- Extensive alarm programming capability
- Three battery inputs
- Large display with backlight
- Very small installation depth of display unit
- Programmable alarm relay
- Perfect integration with TBS DC Modular products
- QuickLink communication port
- History event storage
- Active shunt supports two display units or can also run stand alone
- Splash proof front panel of display unit
- CE and automotive certified (EN50498)
- 24 month warranty

Applications

- Electric Vehicles
- Marine applications
- Solar power systems
- Industrial systems
- Electric forklifts
- Mobile entertainment systems
- Service vehicles
- Recreational vehicles
- Remote sites

Standard included active 600A shunt

Expert Modular highlights

Special fiber reinforced base material offers excellent high temperature properties, good chemical resistance and high strength.

Voltage sense input for (main) battery bank 1. Also positive supply input for Expert Modular.

Voltage sense inputs for battery banks 2 and 3. Or assignable to other functions.

Potential free 5A/30Vdc (1A/70Vdc) programmable alarm relay contact to control external equipment.

Active shunt module

Ultra low loss custom made shunt module can handle 500A continuously.

Stainless steel studs, nuts and washers for optimal corrosion resistance.

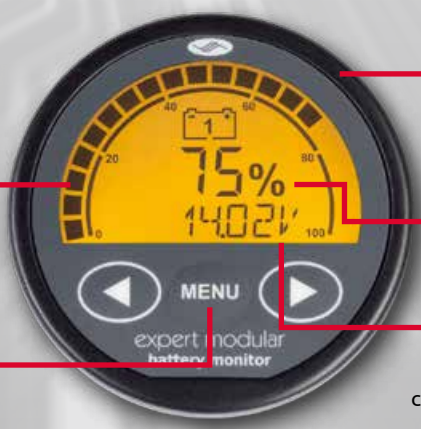
Dual QuickLink port for connection to the Control & Display Unit or other accessories.

Input port for optional battery temperature sensor.

Multi purpose indicator provides status, error and battery state of charge information (3 colours).

Large circular bar graph provides a clear battery state of charge indication. Smart display animations indicate whether the battery is being charged or discharged and by which intensity.

Simple three button interface allows easy parameter readout selection in normal operating mode and intuitive navigation through the setup menus.



Control & Display Unit

Compact round Control & Display Unit with splash proof front panel, large backlit display and only 36 mm installation depth.

Permanent large digit battery state of charge (%) indicator.

Second parameter row allows an additional parameter to be shown along with state of charge (%). During setup, this row will also show a clear textual explanation of each function.

Expert Modular readout examples

Standard view The image above shows the normal operating mode with the second parameter row disabled. This results in a clean display area that only shows the battery state of charge (%) and the bar graph. A perfect mode for less technical end users.

Second parameter row
By enabling the second parameter row, the user can scroll through the following battery parameters: Volt, Amp, Ah, time remaining, temperature and Watts. The second parameter row can be set to automatically hide after a while, or to stay present permanently.

Easier setup During function setup, status or history readout, each parameter is clearly explained using scrolling text in the display. This will make it a lot easier to browse through the Expert Modular menu, without having to consult a list of parameter numbers.

Alarm indications When an alarm is activated (for example due to a low battery state of charge), the alarm bell icon will be lit and an explanation about the type of alarm will scroll through the display. An audible alarm can be enabled as well for additional attention.

Accessories

QuickLink to USB Communication Kit
art # 5092130
This kit enables you to control, readout and configure the Expert Modular from your Windows PC. Another possibility is to use the PC as a datalogger to record all measured parameters for further analysis.

QuickLink to RS-232 Communication Kit
art # 5092030
This kit enables you to control, readout and configure the Expert Modular from your Windows PC. Another possibility is to use the PC as a datalogger to record all measured parameters for further analysis.

QuickLink to Bluetooth Communication Kit art # 5092230
This kit enables you to control, readout and configure the Expert Modular from an iOS or Android based mobile phone via Bluetooth. The Dashboard Mobile app is available in the Apple App Store and Google Play.

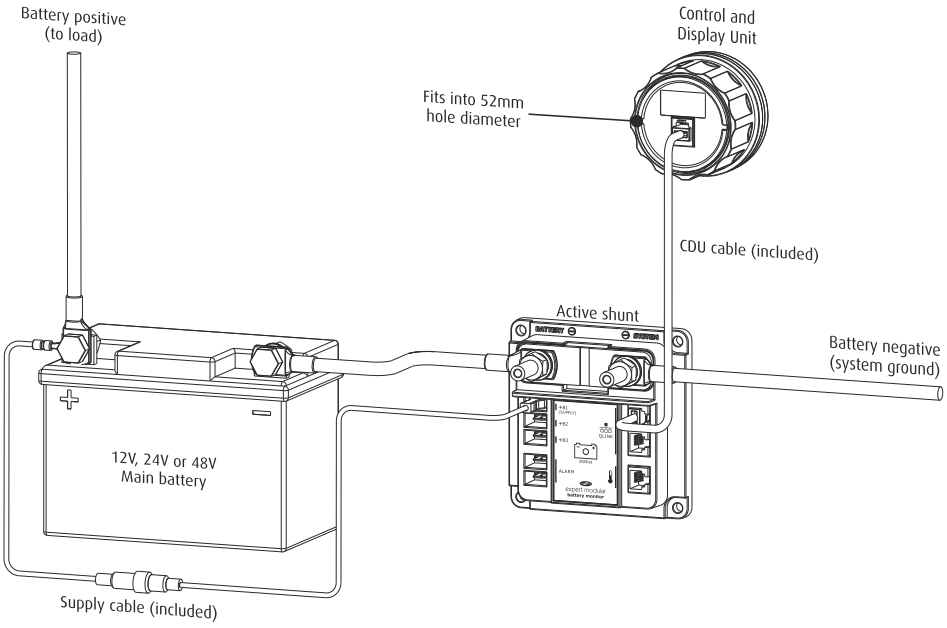
QuickLink Alarm Output Expander Kit
art # 5093120
This kit adds two additional alarm relays to the Expert Modular and can be used in case a system requires each alarm type to be assigned to a separate relay.

QuickLink to NMEA2000 Communication Kit
art #5092530
This kit enables you to readout the Expert Modular battery monitor through an NMEA2000 network and creates the possibility to show extensive battery bank data on any NMEA2000 compatible display.

Temperature Sensor Kit 3 m
art # 5055310
By connecting the temperature sensor kit to your Expert Modular, the exact temperature of your battery can be determined, resulting in even more precise battery monitoring. Also available in 10 m length.

Wiring diagram

Example diagram of a single battery setup. Notice the small amount of cables that are needed to get the Expert Modular up and running. The supply and CDU cables are both included. Also included but not shown in this picture are rubber caps to cover unused I/O ports against polution.



Technical specifications

Parameter		Expert Modular art # 5056030
Supply voltage range		7..70Vdc
Supply current (@ 12V/ 24V/48V)		10mA / 6mA / 5mA
Input voltage range main battery (+B1)		7..70Vdc[1)]
Input voltage range second and third battery (+B2, +B3)		1..70Vdc
Input current range		-600..+600A[2)]
Battery capacity range		10..10000Ah
Operating temperature range		-20..+50°C
Storage temperature range		-30..+70°C
Readout resolution:	Voltage (0..70V)	± 0.01Vdc
	Current (0..10A)	± 0.01A
	Current (10..100A)	± 0.1A
	Current (100..600A)	± 1A
	Amphours (0..10000Ah)	± 0.01Ah - 10Ah (variable)
	Power (0..42kW)	± 0.01W - 1kW (variable)
	State-of-charge (0..24hrs)	± 1%
	Time remaining (0..24hrs)	± 1 min
	Time remaining (24..240hrs)	± 1 hr
	Temperature (-20°C..+50°C)	± 0.5°C
	Maintenance hours (0..100000hrs)	± 1 hr
Voltage measurement accuracy		± 0.3%
Current measurement accuracy		± 0.4%
Display unit dimensions		Ø64 mm (front diameter) / Ø51.5 mm (body diameter) / 36 mm (depth)
Display unit weight		70 gr
Shunt dimensions (length x width x height)		100 x 100 x 64.5 mm
Shunt weight		260 gr
Protection class (Display + Shunt)		IP20 (display front panel only IP65)
Standards		CE certified meeting EMC Directive 2014/30/EU, LVD 2014/35/EU complying with EN60335-1, EN50498 Automotive EMC, RoHS 2011/65/EU

Note: the given specifications are subject to change without notice.

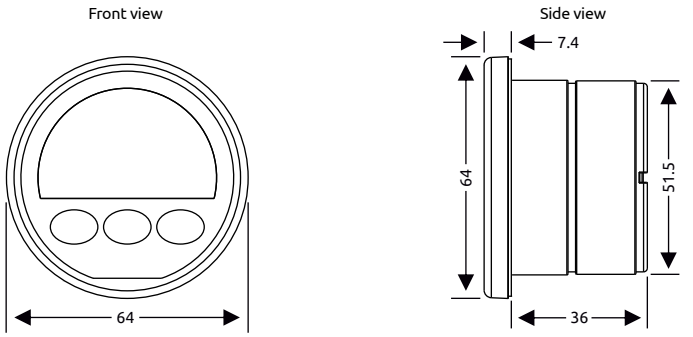
[1)] When input +B1 is only used for supply and +B2 for main battery voltage measurement, the input voltage range for the main battery is 1..70Vdc

[2)] +/- 600A is the maximum rating for 20 minutes. The continuous input current range is +/- 500A

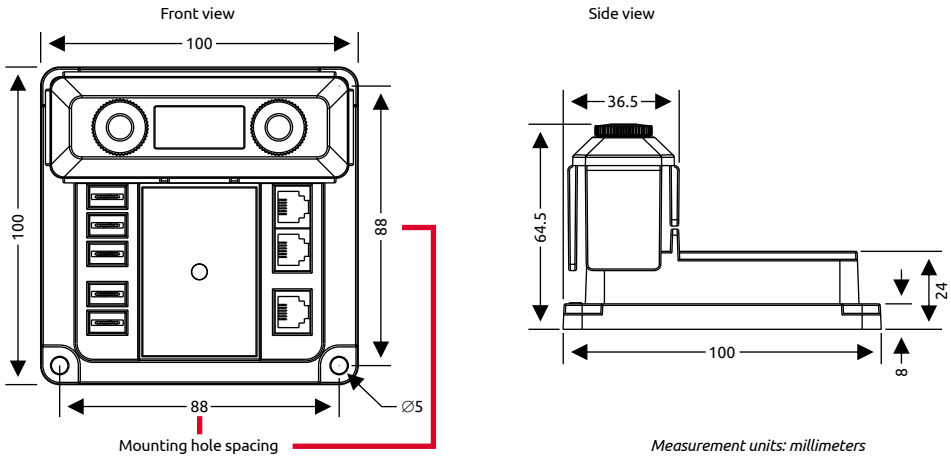
The Expert Modular active shunt base has a Grid Optimized footprint. This enables perfect system integration with busbars and fuseholders from the TBS DC Modular product lineup. The picture on the left shows a nice solution to avoid stacking all battery negative return cables on the single "System side" stud of the shunt.

GRID OPTIMIZED FOOTPRINTS

Dimensions (Display)



Dimensions (Shunt)



Measurement units: millimeters

Basic application diagram