

VISION 4 « Battery Supervisor »

INSTALLATION MANUAL

For further information, please contact

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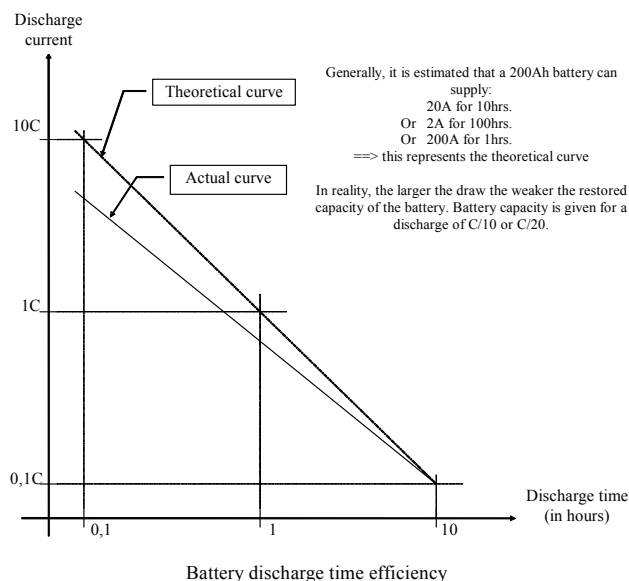
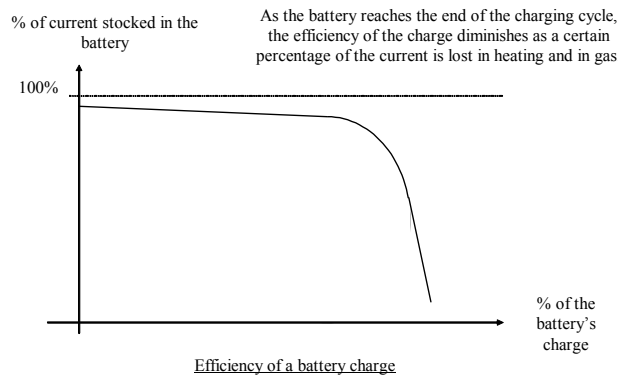
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CHARACTERISTICS OF THE VISION 4 BATTERY SUPERVISOR

- * The VISION 4 is simple to connect and it automatically recognizes if the power supply is 12VDC or 24VDC as soon as it is connected.
- * The VISION 4 can even check the voltage on 4 different battery banks and the current on 2 different battery banks.
- * The VISION 4 incorporates a digital filter which allows it to remain unaffected by phases and faults arising from start up of motors, blown fuses, localized power cuts, etc
- * The VISION 4 safeguards the parameters and configurations in its memory even when it is not connected to a power source.
- * The VISION 4 possesses powerful algorithms which keep track of current value and of the charge & type of battery in order to supply an extremely precise indication of the remaining charge. This means that the VISION 4 is much more than just a simple amp hour counter. In fact, its energy counter functions take into account:
 - During the charge, an output that diminishes in accordance with the charge of the battery.
 - During the discharge, a restored capacity which diminishes in accordance with the draw.
- * Moreover, the VISION 4 is not sensitive to the effects of cycling because it automatically detects floating mode. It remains stable throughout successive charges and discharges.



TECHNICAL SPECIFICATIONS

POWER CHARACTERISTICS

Supply voltage

12 VDC (10 - 15V)
Or 24 VDC (20 - 30V)
Automatically detected

Consumption

Approx 10 mA ("Normal" mode)
Approx 30 mA ("Alarm" mode)

DISPLAY FUNCTIONS

Type of display

Graphic OLED display

Parameters selection

1 button, type "Joystick" on the facade

Displayed parameter	Measure Range	Precision
Voltage battery 1 - 4	8 Vdc to 35 Vdc	± 1%
Current battery 1 & 2 ONLY	± 0 ADC to 500 ADC	± 2%
Temperature batteries 1 & 2 ONLY	-10°C to +100°C	± 2%
Capacity batteries 1 & 2 ONLY	0% to 100%	± 1%
Time	European type	± 1 min. / month

ALARM FUNCTIONS

Default	Alarm threshold		Return to the normal mode	
	12 VDC	24 VDC	12 VDC	24 VDC
Battery under-voltage :				
Factory set-up	11V	23.5V	11.5V	24V
User set-up	from 8V to 13V	from 17V to 25.4V	Threshold +0.5V	Threshold +0.5V
Battery over-voltage	15V	30V	14.5V or 29.5V	
Over- temperature	55°C		50°C	
Remaining capacity	< 20% of nominal capacity		>21%	

➤ Output alarmRelay 1RCT - 1 A max

SECURITY

External delayed fuse of 100 mA on the live line (+Bat)

ENVIRONMENT

Operation temperature-10°C to +50°C / 14°F to 122°F

Storage temperature-20°C to +70°C / -4°F to 158°F

CoolingNatural

Relative humidity 10% à 70% with no condensation

MECHANICAL

AppearancePanel to flush dia. 52mm

Mounting On wall

Fixing4 screws Ø 4 mm

Size 70 x 70 x 32 mm

Weight< 500 g

CONNECTION

All connections Screw contact (1.5-mm² max.)

CURRENT SHUNT

Gauge 150A - 100 mV optional
 or 300 A - 100 mV as standard
 or 500 A - 100 mV optional
 Class 0.5
 Max. overload 1.3 x caliber shunt for 2 minutes
 2 x caliber shunt for 20 seconds
 Size 90 x 45 x 45 mm
 Connecting:
 - Power 2 battery cable terminals - screws Ø 8 mm
 - Instrument 2 battery cable terminals - screws Ø 3 mm

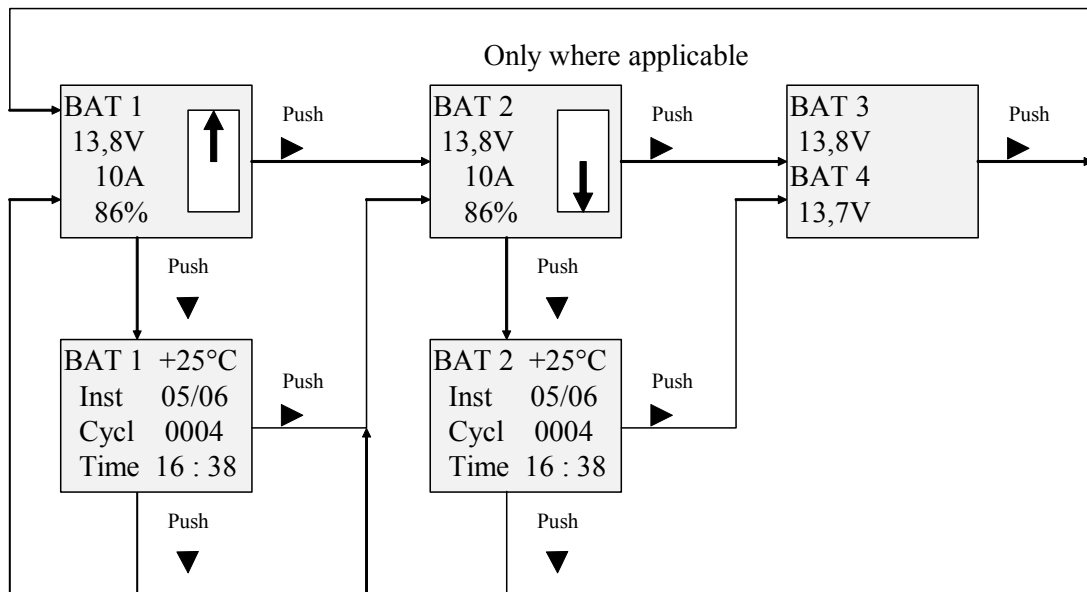
TEMPERATURE SENSOR

Type Negative Temperature Coefficient
 Connector Sensor included in a battery cable terminals - Ø 6 mm
 Mounting On a battery lead connection
 Mounting 1 screw Ø 6 mm
 Connections 2 wires marked out and isolated

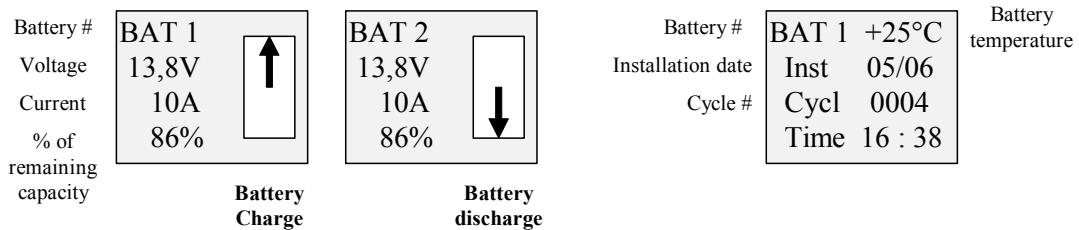
NORMAL & ALARM MODES

NORMAL MODE

➤ The battery supervisor is in “Normal” mode when the device operates without any alarm, displaying the different parameters.



DESCRIPTION OF DISPLAY



“ALARM” MODE

- The device switches to “Alarm” mode in the case of:
 - An under-voltage fault on any of the four battery banks
 - An over-voltage fault on any of the four battery banks
 - An over-temperature fault on bank 1 or 2
 - A under capacity fault on bank 1 or 2

- In this mode, the display blinks and displays the type of default:

BAT 1 (idem BAT2)

- ALARM BAT1 Vbat LO	⇒	Under-voltage alarm battery 1
- ALARM BAT1 Vbat HI	⇒	Over-voltage alarm battery 1
- ALARM BAT1 Temp HI	⇒	Over-temperature alarm battery 1
- ALARM BAT1 Capa LO	⇒	Low battery capacity Alarm battery 1.
- ALARM BAT1 CTN 1	⇒	T° sounder fault battery 1.

BAT 3 (idem BAT 4)

- ALARM BAT3 Vbat LO	⇒	Under-voltage alarm battery 3.
- ALARM BAT3 Vbat HI	⇒	Over-voltage alarm battery 3.

- This mode involves the switching on of a relay. The maximal load, switchable by the relay, is 1A under 36 Vdc
- The device returns automatically to “Normal” mode as soon as the fault has disappeared
- Push «Joystick» to access “Normal” briefly (10 seconds) to allow reading of the different parameters. If the default is still persists, the device will automatically return to “Alarm” mode.

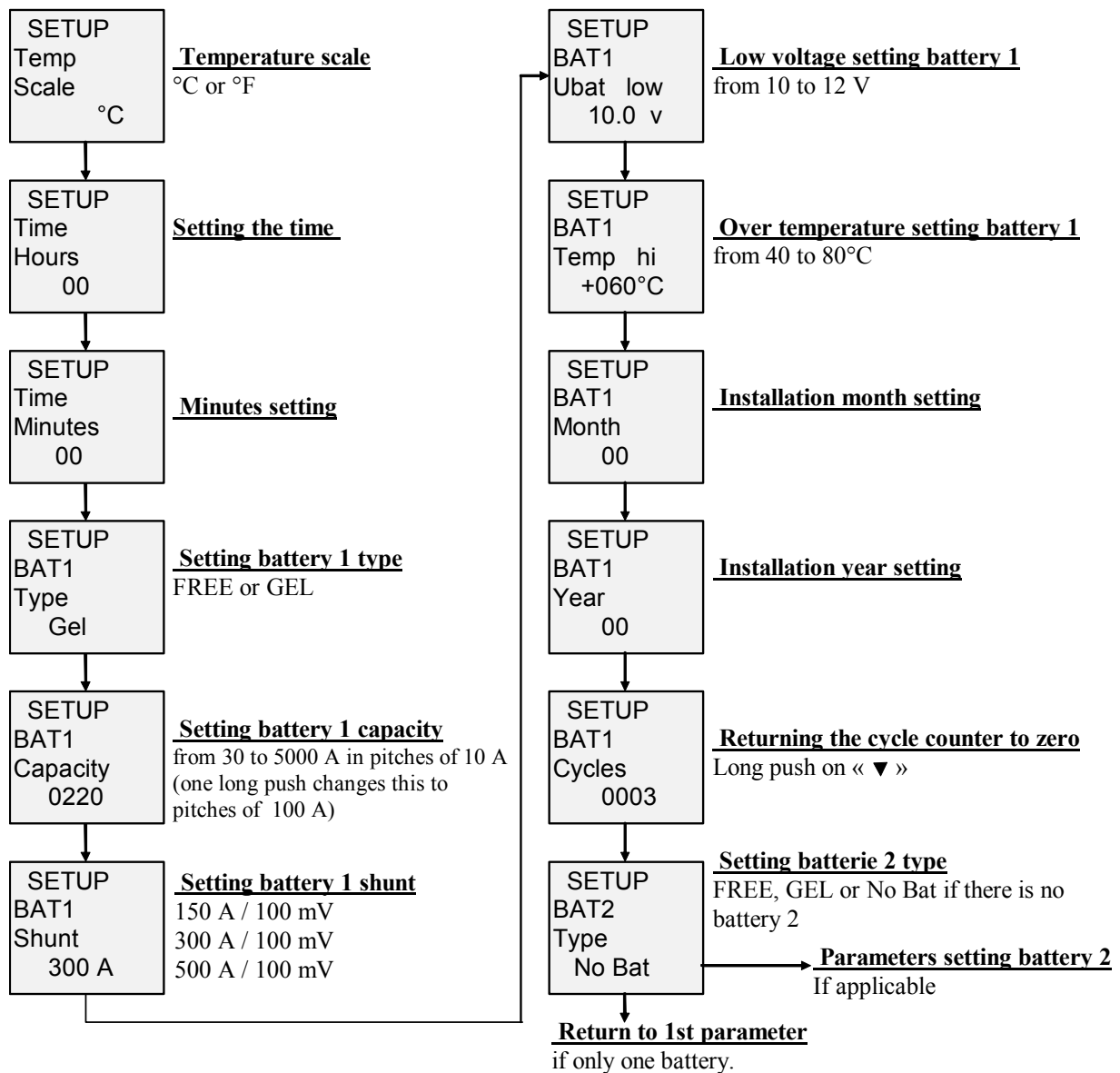
“PROGRAMMING” MODE

- The “PROGRAMMING” mode is activated by pushing “Joystick” for 2 seconds
- The device has a default set-up as follow:
 - Temperature en °C
 - 1 Battery Bank
 - Service battery Capacity340 A
 - Shunt type300 A / 100mV
 - Under-voltage battery alarm11 V
 - Service battery typeElectrolyte (FREE)
- The default set-up operates as long as the user does not enter his own parameters
- At the end of a complete programming sequence the user parameters are saved in a non volatile memory which replaces the default set-up. This set-up will be used automatically when the power is switched on.
- It is necessary to reset the clock after every power shut down.

The device automatically leaves programming mode 45 seconds after the last push on the «Joystick», but without saving the parameters already entered

Modification of the parameters

- Press « ▼ » or « ▲ » to change the value
- Press « ► » to pass to the next parameter
- Press « ◀ » to return to previous parameter
- Long press on the « joystick » to leave the programming mode



INSTALLATION AND CONNECTIONS

Opening your VISION 4 & preparing the installation

- Open the cover panel of the VISION 4 carefully to avoid damage - see photos below. Inside note the 4 screw holes. Drill a 52mm diameter hole on the surface where you intend to install the apparatus. Pass the wires through the hole and screw the panel tightly in place. Clip the cover panel carefully back onto the unit. Clip on the 5 way navigation pad.
- See below for wire connection diagrams.

PRECAUTIONS DURING INSTALLATION

- Any error in the connections (especially a reverse polarity) will lead to permanent damage to the device. It is recommended to take utmost care when connecting.
 - In case of major failure, and for the appliance protection, it is recommended to insert a fuse (temporised 100mA) in the live line (+Bat)
 - It is advised to use wires with a gauge of 1 mm² to connect contacts 1 - 4. Connect the other contact wires with a minimum gauge of 0.5 mm². The use of screen wires is not needed, except if wires are really close to power wires or H.F. cables
 - The external shunt, for the current measure, must be connected to the positive battery lead connection; that is +Bat. An error on the 2 wires between the shunt and the battery supervisor will produce an error on the current sign: a minus sign during the charge and a positive sign during the discharge; thus an error on the energy left in the battery
- * The temperature sensor must be fixed on the most used battery (BAT1 & BAT2).

IMPORTANT

- When first put into use, the meter will always read 0% (the remaining AH capacity), regardless of what the actual remaining capacity of the battery is.
- To bring the unit up to 100%, a discharge/charge of the battery must take place. For example, the battery must be discharged by 30% (to allow the Battery Charger to go into Boost mode) and in recharging, it is best to use the onboard charger. At the end of the first cycle, the end voltage should be at >13.6 Volts.

GLOSSARY OF TECHNICAL TERMS

CAN bus (Controller Area Network bus) A rugged serial bus designed for industrial environments. Introduced by Bosch in 1986 for in-vehicle networks in cars, it is used in myriad applications including factory automation, building automation, aircraft and aerospace as well as in cars, trucks and buses. CAN bus replaced bulky wiring harnesses with a two-wire differential cable.

CAN provides services at layers 1 and 2 of the OSI model and uses a broadcast method for placing frames on the wire. CAN provides low-speed, fault-tolerant transmission of 125 Kbps up to 40 meters, which can function over one wire if a short occurs. Transmission without fault tolerance is provided up to 1 Mbps and 40 meters, and distances up to 1 km are achieved with bit rates of 50 Kbps.

SAE J1939 The Society of Automotive Engineers (SAE) developed the J1939 standard to be the preferred CAN for equipment used in industries ranging from agriculture, construction, and fire/rescue to forestry, materials handling as well as on and off-highway vehicles. It is a high-level protocol that defines how communication between nodes (modules) occurs on the bus. The J1939

network is a **specific** communication system, supporting **specific** sets of applications and a **specific** industry, rather than being generalized.

What kinds of messages are sent on a J1939 network?

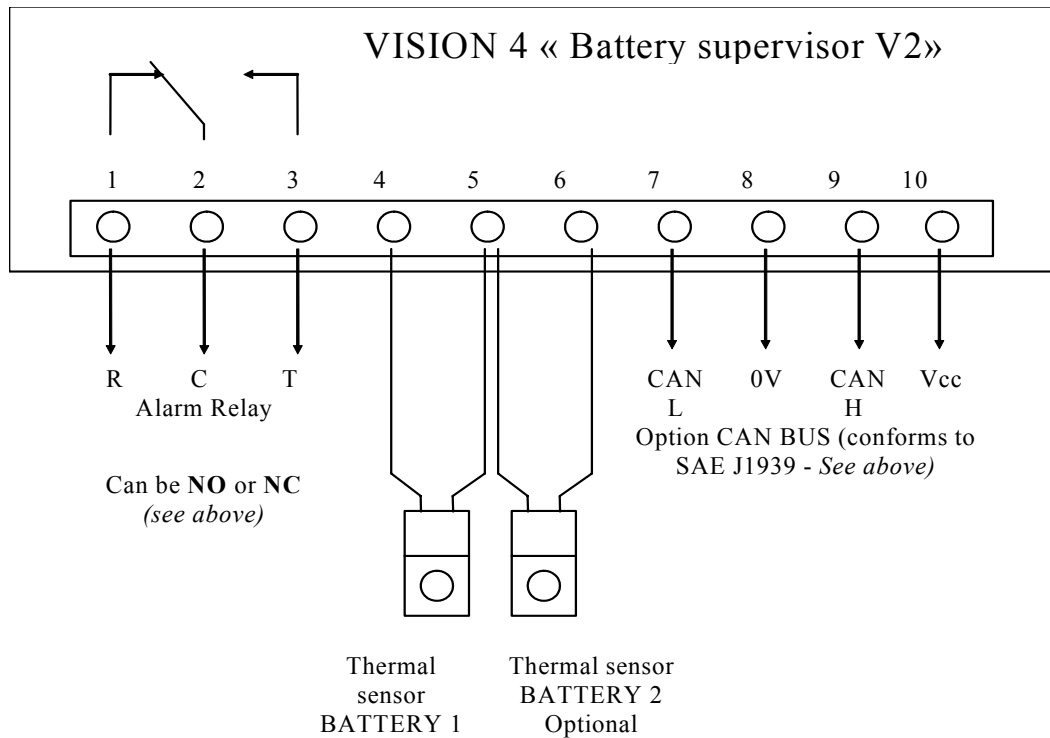
Any electronic control unit (ECU) using J1939 is permitted to transmit a message on the network when the bus is idle. Every message includes a 29-bit identifier, which defines the message priority, what data.

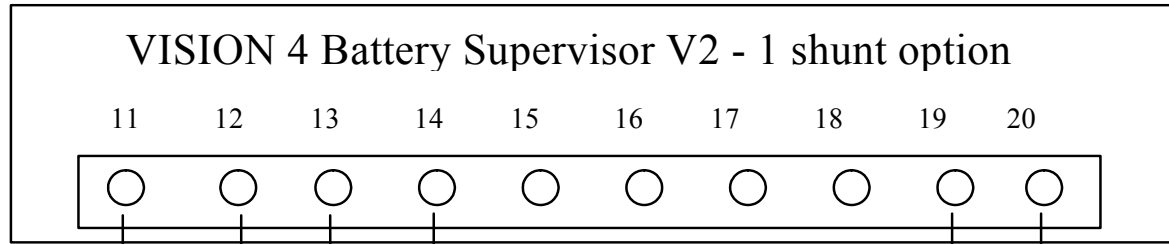
RCT - A relay will switch one or more poles, each of whose contacts can be thrown by energizing the coil in one of three ways:

Normally-open (**NO**) contacts connect the circuit when the relay is activated; the circuit is disconnected when the relay is inactive. It is also called a Form A contact or "make" contact.

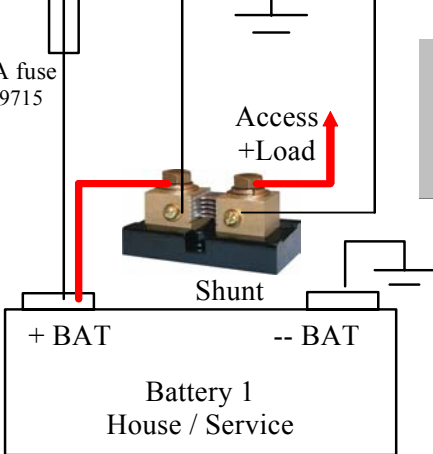
Normally-closed (**NC**) contacts disconnect the circuit when the relay is activated; the circuit is connected when the relay is inactive. It is also called a Form B contact or "break" contact.

VIEW FOR CONNECTIONS 1 - 10



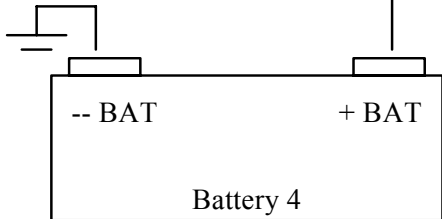
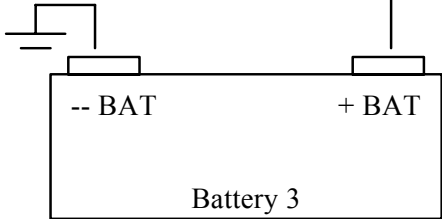


100 mA fuse
code 039715



Battery 2

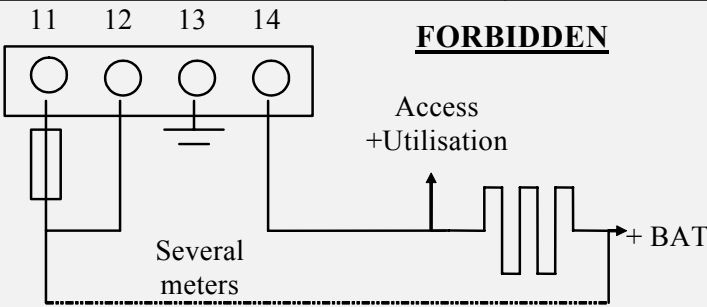
IMPORTANT
In the absence of the additional (optional) shunt, please leave terminals 15-18 unused.



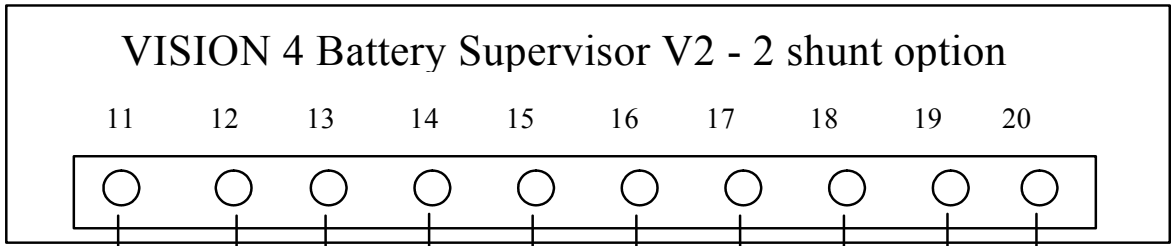
NOTE :

The battery supervisor needs to use a wire from the shunt and from the shunt to terminal # 12 to measure the current **AND a separate wire** connecting to the Access Utilisation (Terminal # 11) for power to the battery supervisor. Although it may look strange, these two wires **MUST BE KEPT SEPARATE AT ALL TIMES** to avoid any interference. The currents are different.

FORBIDDEN



- 11 To "Bat+" Battery 1
- 12 To shunt BAT
- 13 Earth
- 14 To shunt LOAD
- 15 Unused
- 16 Unused
- 17 Unused
- 18 Unused
- 19 To "Bat+" Battery 3
- 20 To "Bat+" Battery 4



100 mA fuse
code 039715

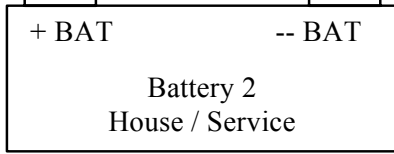
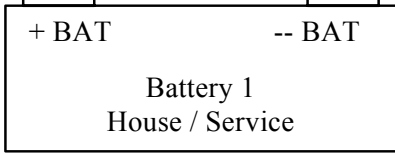
Access
+Load

100 mA fuse
- code 039715

Access
+Load

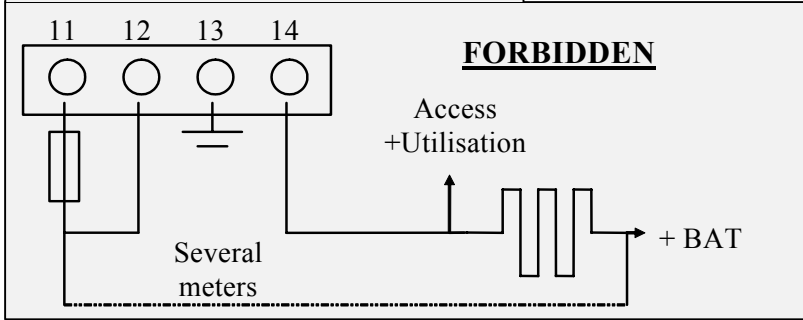
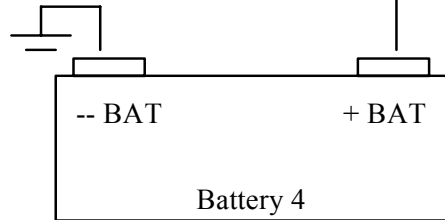
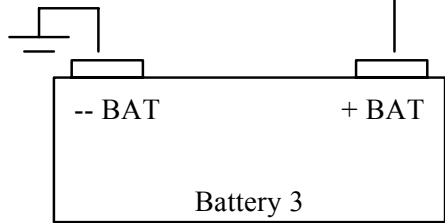
Shunt

Shunt



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- 11 To "Bat+" Battery 1
- 12 To shunt BAT
- 13 Earth
- 14 To shunt LOAD
- 15 To "Bat+" Battery 2
- 16 To shunt BAT
- 17 Earth
- 18 To shunt LOAD
- 19 To "Bat+" Battery 3
- 20 To "Bat+" Battery 4