victron energy
BLUE POWER

Smart BMS 12-200

Accubeheersysteem (Battery Management System)

[en] This manual is also available in HTML5.

Inhoudsopgave

1. Veiligheidsvoorzorgsmaatregelen

⚠️

- De installatie moet strikt voldoen aan de nationale veiligheidsvoorschriften in overeenstemming met de vereisten voor behuizing, installatie, kruipruimte, verwijdering, ongevallen, markeringen en segregatie voor de toepassing door de eindgebruiker.

- De installatie dient uitsluitend door gekwalificeerde en opgeleide installateurs te worden uitgevoerd.

- *[en] Carefully study the product manuals of all connected devices before installing them.*

- Schakel het systeem uit en controleer op gevaarlijke spanningen vóórdat u een aansluiting wijzigt.

- Open de LiFePO4-accu niet.

- Ontlaad een nieuwe LiFePO4-accu niet voordat deze eerst volledig is geladen.

- Laad een LiFePO4-accu alleen op binnen de opgegeven limieten.

- Monteer de LiFePO4-accu niet op zijn kop of op de zijkanten.

- Controleer of de Li-Ionaccu beschadigd is tijdens het transport.

2. *[en] Introduction*

2.1. Algemene beschrijving

[en] The Smart BMS 12-200 is an all-in-one battery management (BMS) system for Victron Lithium Battery 12,8V Smart batteries. It has been specifically designed for 12V systems with a 12V alternator such as in vehicles and boats and supports up to 5 batteries in parallel (BTVs are simply daisy-chained).

[en] It combines a Current Limiter, Battery Combiner and Battery Protector in a robust and compact solution and lets you safely connect any size 12V alternator (and starter battery) through its dedicated alternator connection. At the same time, it protects the alternator (and wiring), provides alternator current limiting and one-way traffic from the alternator into the battery, this so any size alternator (and starter battery) can be safely connected to the lithium battery and the starter battery is protected from excessive discharge.

[en] A dedicated power System+ port allows the direct connection of DC loads,chargers or inverters and inverter/chargers to charge the lithium battery or to supply DC loads with up to 200A. The power port works in both directions and the BMS ensures that it will cut-off loads in case of imminent cell under voltage to protect the battery and also enables charging through this port.

[en] The Smart BMS 12-200 monitors and protects each individual battery cell within the battery and will disconnect the alternator, charge sources or DC loads in case of low/high battery cell voltage or high temperature.

[en] The BMS is equipped with Bluetooth for monitoring and configuration via our VictronConnect app, a remote on/off terminal to shut down the BMS (and the system) via a remote switch and a pre-alarm contact to issue a warning signal before the BMS disconnects the batteries from the system.

2.2. *[en] Features and functionality*

*[en] **Alternator/Starter Batt+ port alternator and battery protection***

[en] The input current on the Alternator/Starter Batt+ port is electronically limited to approximately 90% of the fuse rating. A 100A fuse, for example, will therefore limit the input current to approximately 90A. (For fuse ratings and corresponding current limit please see the table in the Installation chapter [7]).

[en] Current can flow to the lithium battery only if the input voltage (corresponds to the voltage of the starter battery) exceeds 13V. In addition, no current can flow back from the lithium battery to the starter battery, which prevents the lithium battery from being deeply discharged.

[en] Choosing the right fuse will also:

1. *[en] Protect the lithium battery against excessive charge current (important in case of a low capacity battery).*

2. *[en] Protect the alternator against overload in case of a high capacity lithium battery bank (most 12V alternators will overheat and fail if running at maximum output during more than 5 minutes).*

*[en] **System+ power port to connect loads and additional chargers***

• *[en] The System+ port can be used to either charge or discharge the lithium battery (i.e. via an additional charger, an inverter or inverter/charger connected directly to this port) with a maximum continuous current of 200A in both directions.*

• *[en] The BMS interrupts the battery charge/discharge if there is a risk of imminent cell under- or overvoltage or low/high temperature.*

*[en] **Remote on/off terminal***

• *[en] The remote on/off terminal can be used to interrupt charging via the Alternator port and charging and discharging via the System+ port, while the BMS functionality will remain active regardless of the remote on/off state.*

• *[en] Depending on the Remote on/off function setting made via the VictronConnect app, it can also be used as system on/off switch (Charge and Load disconnect port will also be disabled) either by using a physical switch or a relay contact between L and H terminal or by using the soft switch in the VictronConnect app. Alternatively, terminal H can be switched to battery plus, or terminal L can be switched to battery minus.*

> *[en] Note that it is mandatory to install either an on/off switch between L and H of the remote on/off terminal or the wire loop (default) for correct operation. Alternatively, terminal H can be switched to battery plus or terminal L to battery minus.*

[en] **LED indicators**

- *[en]* The BMS has a number of LED indicators that show the status of the BMS and the various inputs and outputs. See *Appendix C [15]* for a complete overview of all LED indicators.

[en] **Lithium battery protection**

- *[en]* Excessive input voltage and transients are regulated down to a safe level.

- *[en]* The Smart BMS will stop charging in case of cell over voltage or over temperature.

- *[en]* It has three outputs, similar to the smallBMS:

1. *[en]* **Load disconnect**
   - *[en]* Can be used to control the remote on/off input of a *BatteryProtect*, inverter, *DC-DC converter* or other loads that have remote on/off port functionality.
   - *[en]* Normally the Load disconnect output is high and becomes free-floating when cell undervoltage is imminent (default 2.8V, adjustable in battery). Maximum current: 10mA

2. *[en]* **Pre-alarm**
   - *[en]* The pre-alarm output can be used to issue a visible or audible warning when the battery voltage is low and will trip with a minimum delay of 30 seconds before the Load disconnect output is disabled due to cell undervoltage.
   - *[en]* The output may be used to drive a relay, LED or Buzzer and can be configured as continuous or intermittent signal.
   - *[en]* Its output is normally free floating and becomes high in case of imminent cell undervoltage (default 3,1V, adjustable in battery). Maximum current: 1A (not short circuit protected).

3. *[en]* **Charge disconnect**
   - *[en]* The Charge disconnect output can be used to control the remote on/off port of a charger, such as the *Phoenix Smart Charger IP43*, a *Cyrix-Li-Charge* relay, a *Cyrix-Li-ct Battery Combiner* or a *BatteryProtect*. Note that the Charge disconnect output is not suitable to power an inductive load such as a relay coil.
   - *[en]* The output is normally high and becomes free floating in case of imminent cell overvoltage or overtemperature. Maximum current: 10mA

> *[en]* In some cases an interface cable such as a non-inverting or inverting on/off cable may be required, see *Appendix A [11]*.

2.3. *[en] What's in the box*

- *[en]* Smart BMS 12-200

- *[en]* Ground wire with 10mm eye terminal

- *[en]* 2-pin plug with pre-installed wire loop

- *[en]* 3-pin plug for load/charge disconnect and pre-alarm

- *[en]* Megafuse 200A pre-installed

- *[en]* ATO fuse holder with 2x 7.5A fuse

3. Installation and configuration

3.1. Belangrijke waarschuwing

⚠️ Li-ionaccu's zijn duur en kunnen worden beschadigd als gevolg van te diepe ontlading of overlading.

[en] The shutdown due to low cell voltage by the BMS should always be used as a last resort to be on the safe side at all times. We recommend not letting it get that far in the first place and instead either shutting down the system automatically after a defined state of charge (this can be done with a BMV whose relay can control the remote on/off port of the BMS via an adjustable SoC value) so that there is always enough reserve capacity in the battery, or to use the remote on/off function of the BMS as a system on/off switch.

Schade als gevolg van een te hoge ontlading kan optreden als kleine belastingen (zoals alarmsystemen, relais, reservestroom van bepaalde belastingen, terugstroom van acculaders of laadregelaars) de accu langzaam ontladen wanneer het systeem niet in gebruik is.

In geval van twijfel over mogelijke reststroom afgifte dient u de accu te isoleren door de accuschakelaar te openen, de accuzekering(en) te trekken of de accuplus los te koppelen wanneer het systeem niet in gebruik is.

Restontlaadstroom is met name gevaarlijk als het systeem volledig is ontladen en de accu bijna leeg is. Na uitschakelen door lage celspanning blijft er een capaciteitsreserve van ongeveer 1 Ah per 100 Ah accucapaciteit resterend in de accu. De accu wordt beschadigd als de resterende capaciteitsreserve uit de accu wordt getrokken. Een reststroom van 10 mA kan bijvoorbeeld een 200 Ah-accu beschadigen indien het systeem langer dan 8 dagen in ontladen toestand blijft.

[en] Immediate action (recharge the battery) is required if a low cell voltage disconnect has occurred.

3.2. Dingen om te overwegen

3.2.1. DC-belastingen met externe aan/uit-aansluitklemmen

• *[en] DC loads that are not connected to the System+ port must be switched off or disconnected if there is a risk of cell undervoltage in order to prevent deep discharge. The Load disconnect output of the Smart BMS can be used for this purpose.*

• *[en] The Load disconnect output is normally high (equal to battery voltage) and becomes free floating (= open circuit) in case of imminent cell undervoltage.*

• *[en] DC loads with a remote on/off terminal that switches the load on when the terminal is pulled high (to battery plus) and switches it off when the terminal is left free floating can be controlled directly with the Load disconnect output. See Bijlage A [11] for a list of Victron products with this behavior.*

• *[en] For DC loads with a remote on/off terminal that switches the load on when the terminal is pulled low (to battery minus) and switches it off when the terminal is left free floating, the Inverting remote on-off cable can be used. See Bijlage A [11].*

Opmerking: controleer de reststroom van de lading wanneer deze in UIT staat. Na uitschakelen van de lage celspanning blijft er een capaciteitsreserve van ongeveer 1 Ah per 100 Ah accucapaciteit over in de accu. Een reststroom van 10 mA kan bijvoorbeeld een 200 Ah-accu beschadigen indien het systeem langer dan 8 dagen in ontladen toestand blijft.

3.2.2. DC-belasting: ontkoppelen van de belasting met een BatteryProtect

Een BatteryProtect ontkoppelt de belasting wanneer:

• ingangsspanning (= accuspanning) is gedaald onder een vooraf ingestelde waarde, of wanneer -

• de externe aan/uit-terminal wordt leeggetrokken.

### 3.2.3. De LifePO$_4$-accu opladen met een extra acculader

- *[en] Battery chargers that are not connected to the System+ port must interrupt the charging process in case of imminent overvoltage or overtemperature of the cells. The Charge disconnect output of the Smart BMS can be used for this purpose.*

- *[en] The Charge disconnect output is normally high (equal to battery voltage) and switches to open circuit state in case of imminent cell overvoltage.*

- *[en] Battery chargers with a remote on/off terminal that activates the charger when the terminal is pulled high (to battery plus) and deactivates when the terminal is left free floating can be controlled directly with the Charge disconnect output. See the Bijlage A [11] for a list of Victron products with this behavior.*

- *[en] Alternatively, a **Cyrix-Li-Charge** can be used. The Cyrix-Li-Charge is a unidirectional combiner that inserts in between a battery charger and the lithium battery. It will engage only when charge voltage from a battery charger is present on its charge-side terminal. A control terminal connects to the Charge disconnect of the Smart BMS.*

3.2.4. Accu

- Bij meerdere accu's in parallel en/of serieconfiguratie moeten de twee M8 circulaire connector koordsets van elke accu in serie verbonden worden (in een keten). Sluit de twee resterende kabels aan op de Smart BMS.

victron energy
BLUE POWER

3.3. Systeemvoorbeelden

[en] Below you will find a selection of system examples. Note that there are many other possibilities. It is mandatory to study Appendix A [11] as there can be different types of cable interfaces within a product group to control chargers, inverters and inverter/chargers from the Load and Charge disconnect outputs of the BMS.
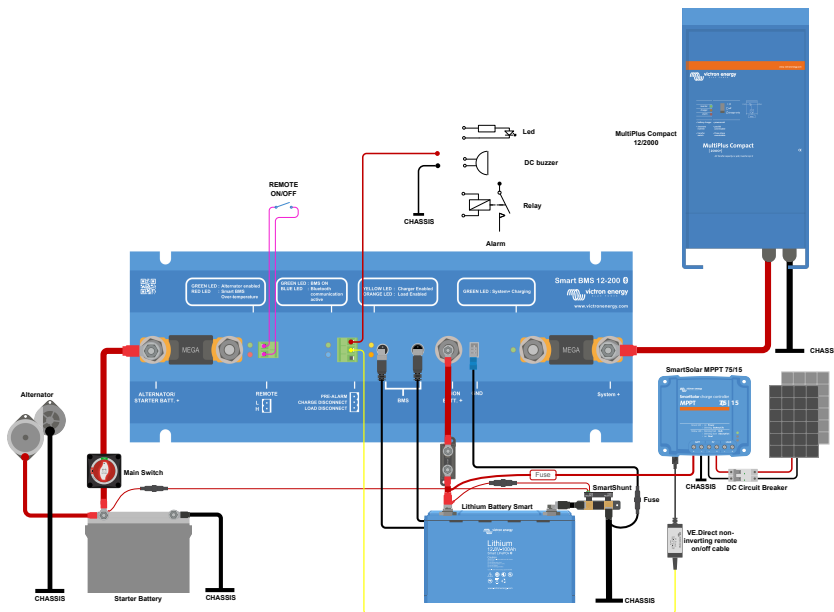
Afbeelding 1: Toepassingsvoorbeeld met een MultiPlus en een MPPT

[en] This is a typical system example for smaller RVs and Boats, which has a MultiPlus Compact 12/2000 connected to the System+ port. In case of low cell voltage the System+ port disconnects the MultiPlus and prevents the Multi from further discharging the battery. A SmartSolar MPPT 75/15 connected directly to the lithium battery is controlled by the BMS via a VE.Direct non-inverting remote on/off cable. In the event of high cell voltage or high temperature, the Charge disconnect output will stop the MPPT from charging. In addition, the system includes a SmartShunt to monitor the lithium battery.
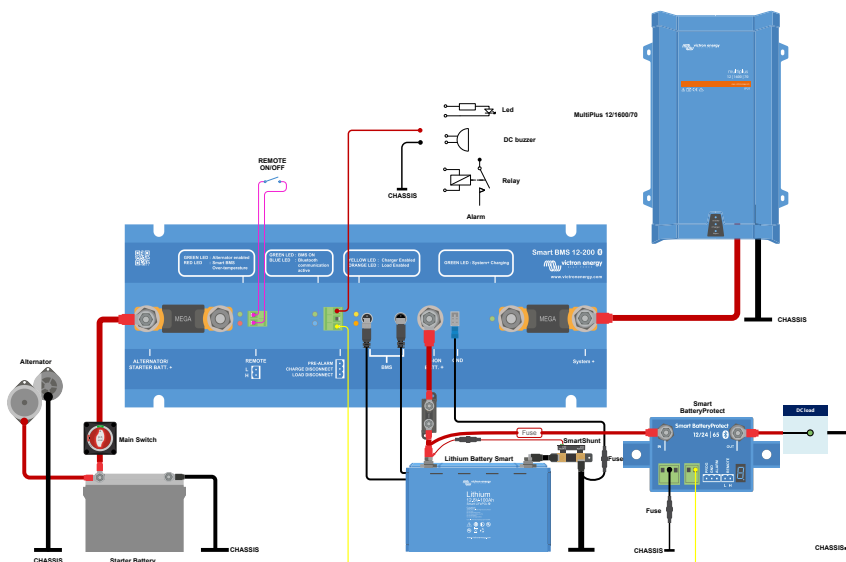
Afbeelding 2: Toepassingsvoorbeeld met een MultiPlus en een BatteryProtect

[en] Another example where a Multi is connected directly to the System+ port, eliminating the need to control it via the Charge and Load disconnect output, saving additional wiring. A Smart BatteryProtect controls DC loads. The Load disconnect port of the BMS switches off the OUT port of the BatteryProtect in the event of a low cell voltage, thus preventing the lithium battery from further discharging. In addition, the system includes a SmartShunt to monitor the lithium battery.
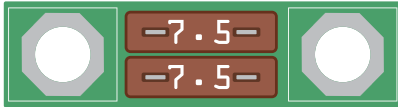
3.4. Installatie-instructies

[en] Before installation, make proper system design considerations to avoid unnecessary connections and to keep cable lengths as short as possible. See also the System examples [6] chapter.

1. Monteer de Smart BMS bij voorkeur op een verticaal oppervlak, voor optimale koeling.

2. Bepaal de zekeringswaarde (zie afbeelding en tabel 1). De zekering fungeert als shunt, waardoor de Smart BMS de ingangsstroom beperkt volgens de waarde van deze zekering. Voor zekering en overeenstemmende stroombeperking, zie tabel 1.

3. Het kiezen van de juiste zekering zal oververhitting van de alternator en/of DC-bekabeling beletten.

4. Ontkoppel de bekabeling van de minpool van de startmotoraccu.

5. Trek de REMOTE aan/uit-aansluiting uit het contact om ongewenst schakelen van de Smart BMS te voorkomen.

6. Installeer en verbind de zekeringen en alle bekabeling, laat de min-pool van de Li-ion accu's en de start-accu losgekoppeld. **Zorg ervoor dat de M8 moeren van de zekeringen goed vastgedraaid zijn.**

7. Leid de accucontrolekabels door de Li-ionaccu's en sluit deze aan op de Smart BMS.

8. Verbind de GND-bekabeling met de min van Li-ion accu's en de startmotoraccu.

9. Steek de REMOTE aan/uit-aansluiting opnieuw in de Smart BMS.

10. *[en] The Smart BMS is now ready for use.*

De Smart BMS is nu klaar voor gebruik.

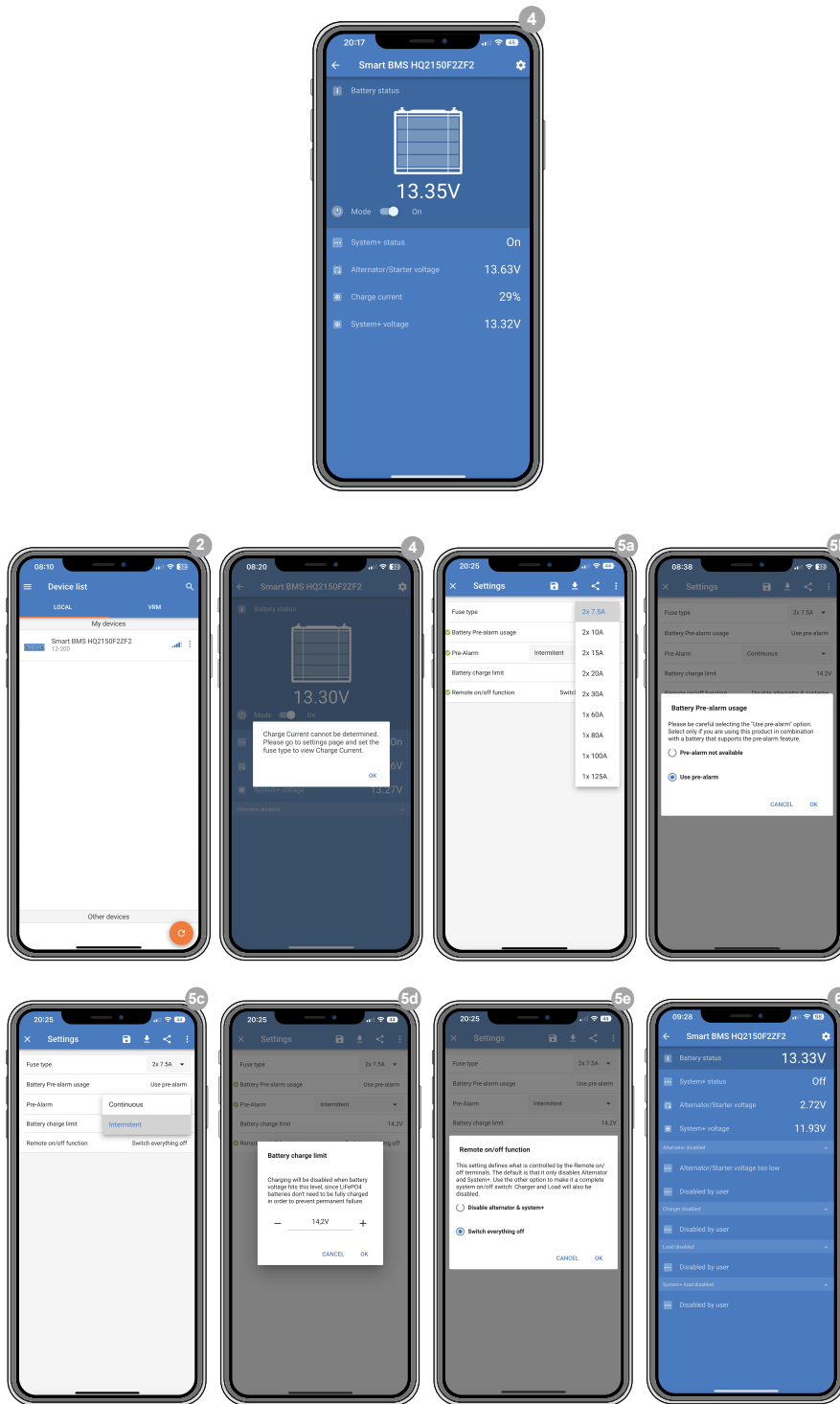| *[en] Fuse rating*	*[en] Max alternator charge current*	
[en] 125A	*[en] 100A*	
[en] 100A	*[en] 90A*	
[en] 80A	*[en] 60A*	
[en] 60A	*[en] 50A*	
[en] 2 x 30A	*[en] 40A*	
[en] 2 x 20A	*[en] 25A*	*[en] If the required alternator charge current is less than 40A, please use the supplied ATO fuse holder with an appropriate ATO fuse pair according to the table.*
[en] 2 x 15A	*[en] 20A*	
[en] 2 x 10A	*[en] 12A*	
[en] 2 x 7.5A	*[en] 9A*	

3.5. [en] Configuration

3.5.1. [en] Smart BMS settings

[en] The Smart BMS is configured via Bluetooth and the VictronConnect app. See the VictronConnect manual for download and installation details. The following steps describe the configuration process and options:

1. [en] Power up the Smart BMS according to the Installation chapter [7].

2. [en] Open VictronConnect. The Smart BMS will appear on the Device list either under My devices or Other devices (the latter when connecting for the first time).

3. [en] Tap on the Smart BMS. The pairing dialogue will start (default PIN code is 000000).

4. [en] Once connected, the Battery status page is displayed, showing the lithium battery voltage, the soft switch state, System+ status (on or off), Alternator/Starter voltage, System+ voltage and the alternator charge current percentage, followed by BMS status messages. When connecting for the first time, a popup message appears asking you to set the fuse type in the Settings menu to also be able to see the charge current (in percentage).

5. [en] Tap the cog wheel in the top right to open the Settings menu and set the following:

   a. [en] **Fuse type:**

   [en] Set the correct fuse type rating as explained in the Installation chapter [7]. Make sure it matches with the physically installed fuse.

   b. [en] **Battery Pre-alarm usage:**

   [en] In case of a lithium battery without pre-alarm feature, change the Battery Pre-alarm usage to 'Pre-alarm not available', otherwise leave the default setting 'Use pre-alarm'.

   c. [en] **Pre-alarm:**

   [en] Choose between continuous and intermittent pre-alarm.

   d. [en] **Battery charge limit:**

   [en] Set the Battery charge limit (range: 13.0V..15.3V) to a value at which charging should be deactivated. Normally this value should be 14.2V for a Victron Lithium Battery Smart. As soon as this value is reached, the battery charge is stopped by deactivating the alternator/starter battery+ input. The input will turn on again when the battery voltage is 0.5V below the battery charge limit for 10 (consecutive) seconds.

   e. [en] **Remote on/off function:**

   [en] This setting defines what is controlled by the remote on/off terminals. The default is that it only disables Alternator and System+. Use the 'Switch everything off' option to make it a complete system on/off switch.

6. [en] The configuration of the Smart BMS is now complete and the status is displayed. Depending on the system status, additional information is shown.

3.5.2. *[en] VictronConnect status display*

4. Specificaties

Smart BMS 12 V/200 A	
[en] Alternator port - maximum charge current	100 A (met een 125 A zekering)
[en] System+ port - max charge and discharge current	200 A
Piekontladingsstroom	400 A
Ingangsstroom om te starten met laden	> 13 V
Stroomverbruik, afstandsbediening ingeschakeld	17,5 mA (exclusief Laaduitgangsspanning en Oplaad uitgangsspanningsstroom)
Stroomverbruik, afstandsbediening uitgeschakeld	6,5 mA (BMS-functionaliteit nog steeds actief) *[en] 4.5mA (BMS functionality disabled)*
Laadontkoppeling uitgangsspanning	Normaal hoog (Vbat – 0,1 V) Bronstroomlimiet: 10 mA (beveiligd tegen kortsluiting) Zinkstroom: 0 A (uitgang zwevend)
Oplaadontkoppeling uitgangsspanning	Normaal hoog (Vbat – 0,1 V) Bronstroomlimiet: 10 mA (beveiligd tegen kortsluiting) Zinkstroom: 0 A (uitgang zwevend)
Pre-alarm uitgangsspanning	Normaal laag Hoog (Vbat) in geval van alarm, max. 1 A (niet bestand tegen kortsluiting)
Externe (of systeem) aan/uit: Afstandsbediening L en Afstandsbediening H	Gebruiksmodi: 1. AAN wanneer de L- en H-aansluitklemmen met elkaar verbonden zijn 2. AAN wanneer de L-klem getrokken wordt naar accu minus (V < 5 V) 3. AAN wanneer de H-klem hoog is (V > 3 V) 4. UIT in alle andere omstandigheden
ALGEMEEN	
Bedrijfstemperatuurbereik	-40 °C tot +60 °C
Vochtigheid, maximaal/gemiddeld	100 % / 95 %
Bescherming, elektronica	IP65
DC-voedingsaansluiting AB, LB, accupluspool	M8
[en] Mounting torque	*[en] 10Nm*
DC-connector accu minus	Faston vrouwelijk, 6,3 mm
BEHUIZING	
Gewicht	2 kg
Afmetingen (hxbxd)	65 x 120 x 340 mm
NORMEN	
Emissie	EN 61000-6-3, EN 55014-1
Immuniteit	EN 61000-6-2, EN 61000-6-1, EN 55014-2
Automotive richtlijn	ECE R10-5

5. Bijlage

5.1. Bijlage A

1. *[en] Loads which can be controlled directly by the Load disconnect output of the Smart BMS:*

   • *[en] Inverters:*

   [en] All Phoenix inverters VE.Direct and Phoenix Inverters Smart. Connect the Load disconnect output of the BMS to terminal H of the 2-pole connector of the inverter.

   • *[en] DC-DC converters:*

   [en] All Tr type DC-DC converters with remote on/off connector and Orion 12/24-20. Connect the Load disconnect output of the BMS to the right hand terminal of the 2-pole connector.

   • *[en] BatteryProtect and Smart BatteryProtect:*

   [en] Connect the Load disconnect output of the BMS to terminal 2.1 (right hand terminal) for the BatteryProtect and H pin of the 2-pole connectorfor the Smart BatteryProtect.

   • *[en] Cyrix-Li-Load:*

   [en] Connect the Load disconnect output of the BMS to the control input of the Cyrix.

2. *[en] Loads for which an inverting remote on-off cable is needed (article number ASS030550100 or -120):*

   • *[en] Phoenix VE.Bus inverters and VE.Bus Inverter Compact rated at 1200VA or more*

3. *[en] Solar charge controllers which can be controlled directly by the Charge disconnect output:*

   • *[en] BlueSolar MPPT 150/70 and 150/80 CAN-bus:*

   [en] Connect the Charge disconnect output of the BMS to the left hand terminal of the 2-pole connector (B+).

   • *[en] SmartSolar MPPT 150/45 and higher, 250/60 and higher*

   [en] Connect the Charge disconnect output of the BMS to the right hand terminal (marked +) or the left hand terminal (marked H) of the 2-pole connector.

4. *[en] Solar charge controllers for which a VE.Direct non-inverting remote on-off cable is needed (article number ASS030550320):*

   • *[en] BlueSolar MPPT models except the BlueSolar MPPT 150/70 and 150/80 CAN-bus*

   • *[en] SmartSolar MPPT up to 150/35*

5. *[en] Battery Chargers:*

   • *[en] Phoenix Smart IP43 Chargers:*

   [en] Connect the Charge disconnect output of the BMS to terminal H of the 2-pole connector.

   • *[en] Skylla TG battery chargers:*

   [en] Use a non-inverting remote on-off cable (article number ASS030550200).

   • *[en] Skylla-i battery chargers:*

   [en] Use a Skylla-i remote on-off cable (article number ASS030550400).

   • *[en] Other battery chargers:*

   [en] Use a Cyrix-Li-Charge or connect the charger to the primary side of the Smart BMS.

6. *[en] MultiPlus:*

   • *[en] MultiPlus 500VA – 1600VA & MultiPlus Compact 800VA – 2kVA*

   [en] If these MultiPlus models are not connected directly to the System+ port, they can also be controlled from the Load disconnect and Charge disconnect outputs by using the Smart BMS CL 12-100 to MultiPlus cable (article number ASS070200100). This cable must be wired to the remote on/off connector of the MultiPlus.

- *[en] When used with the MultiPlus 500VA-1200VA models, connect the black wire to the ON terminal and the red wire to the (+) terminal.*

- *[en] When used with the MultiPlus 1600VA model, connect the black wire to the left terminal and the red wire to the right terminal.*

- *[en] When used with the MultiPlus Compact 800VA-2kVA models, connect the black wire to the middle terminal and the red wire to the right (IN) terminal.*

[en] Both, the Load disconnect and Charge disconnect outputs of the BMS, must be in 'High' state in order for the MultiPlus to operate. After shutdown due to low battery voltage, run the alternator or use a battery charger on the primary side of the BMS to reset the system. The MultiPlus will then switch on and start charging (if connected to an AC power source).

- *[en] **MultiPlus-II and MultiPlus 3kVA or more:***

[en] For more info on how to configure the MultiPlus to work with the Smart BMS 12-200 please refer to the document on our website: https://www.victronenergy.com/upload/documents/Manual-Connecting-other-lithium-battery-systems-to-Multis-and-Quattros-EN.pdf

- *[en] The Load disconnect and Charge disconnect outputs will be wired to the MultiPlus with two inverting remote on-off cables (article number ASS030550100).*

5.2. Bijlage B

Fout-/Waarschuwingscodes

E-B30: IJkingsstoring

Interne storing – ijking gegevensstoring/ontbrekend

> Neem contact op met de dealer voor ondersteuning — fout kan niet door de gebruiker worden gecorrigeerd en Smart BatteryProtect moet worden vervangen.

E-B31: Configuratiestoring

Interne storing - configuratie gegevensstoring/ontbrekend

> Om de Smart BMS uit deze toestand te herstellen:
>
> 1. Reset het apparaat naar de fabrieksinstellingen via Instellingen > Meer opties > Resetten naar fabrieksinstellingen
>
> 2. Koppel alle stroom los en wacht 3 minuten voordat u weer aansluit
>
> 3. Configureer het apparaat indien nodig

E-B32: Accu BMS-kabel niet verbonden of defect

Verwijderde of defecte Battery BMS-kabel (met M8 cirkelvormige aansluiting) gedetecteerd

Wanneer BMS-kabels niet verwijderd of defect zijn. Dit kan gebeuren wanneer de vooralarmfunctie is ingeschakeld terwijl gebruik wordt gemaakt van accu's die deze functie niet ondersteunen.

> 1. Controleer of de accu de vooralarmfunctie ondersteunt. Indien niet:
>
> 2. Ga naar de instellingenpagina en schakel de vooralarmfunctie uit.

E-B33: Referentievoltage storing

Interne storing - referentievoltage storing/ontbrekend

> Neem contact op met de dealer voor ondersteuning - De fout kan niet door de gebruiker hersteld worden en Smart BMS dient vervangen te worden

A-A12: Kortsluiting

De kortsluitbeveiliging wordt geactiveerd in het geval van kortsluiting, een overbelastingstoestand of overmatige inschakelstroom.

> 1. Controleer of er een mogelijke kortsluiting is.
>
> 2. Controleer of de belastingsstroom de huidige consumptie van Smart BMS niet overschrijdt.
>
> 3. Controleer op losse aansluitingen /aansluitingen met een hoge weerstand en zorg voor een juiste bedrading in de installatie.

A-B11: Onder-spanning

De onderspanningsbeveiliging wordt geactiveerd in het geval dat de accu geen ontlading toestaat

> 1. Schakel/ontkoppel de belastingen en laad de accu op
>
> 2. Controleer het laadsysteem en de accu op een goede werking

A-B15: Overtemperatuur

Bescherming tegen overtemperatuur wordt geactiveerd bij overmatige interne temperatuur

1. Zorg ervoor dat de juiste zekeringwaarde is geselecteerd. Het kiezen van de juiste zekering zal ook oververhitting van de alternator en/of DC-bekabeling beletten.

2. Controleer op losse aansluitingen /aansluitingen met een hoge weerstand en zorg voor een juiste bedrading in de installatie

3. Installeer de Smart BMS-unit niet op een locatie waar deze wordt blootgesteld aan hoge temperaturen of stralingswarmte. Verplaats de Smart BMS naar een koelere plaats of zorg voor extra actieve koeling

W-B12: Waarschuwing onder-spanning

Dringende interventie vereist om het uitschakelen van het systeem te voorkomen

1. Schakel/ontkoppel de belastingen en laad de accu op

2. Controleer het laadsysteem en de accu op een goede werking

5.3. *[en] Appendix C*

[en] LED indicators (from left to right)

1. *[en] Green: Alternator charging*

2. *[en] Red: Over-Temperature protection of the Smart BMS*

3. *[en] Green: Smart BMS is active*

4. *[en] Blue: blinking – Bluetooth broadcasting, ON – connection established*

5. *[en] Yellow: Charge disconnect output is enabled*

6. *[en] Orange: Load disconnect output is enabled*

7. *[en] Green: Charging from System+ port enabled*
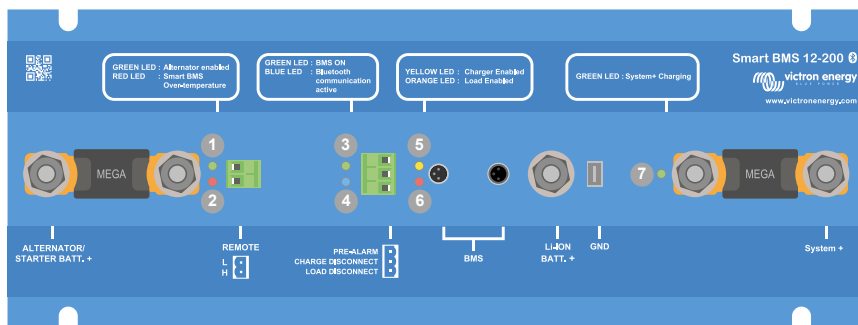
5.4. *[en] Dimensions Smart BMS 12-200*