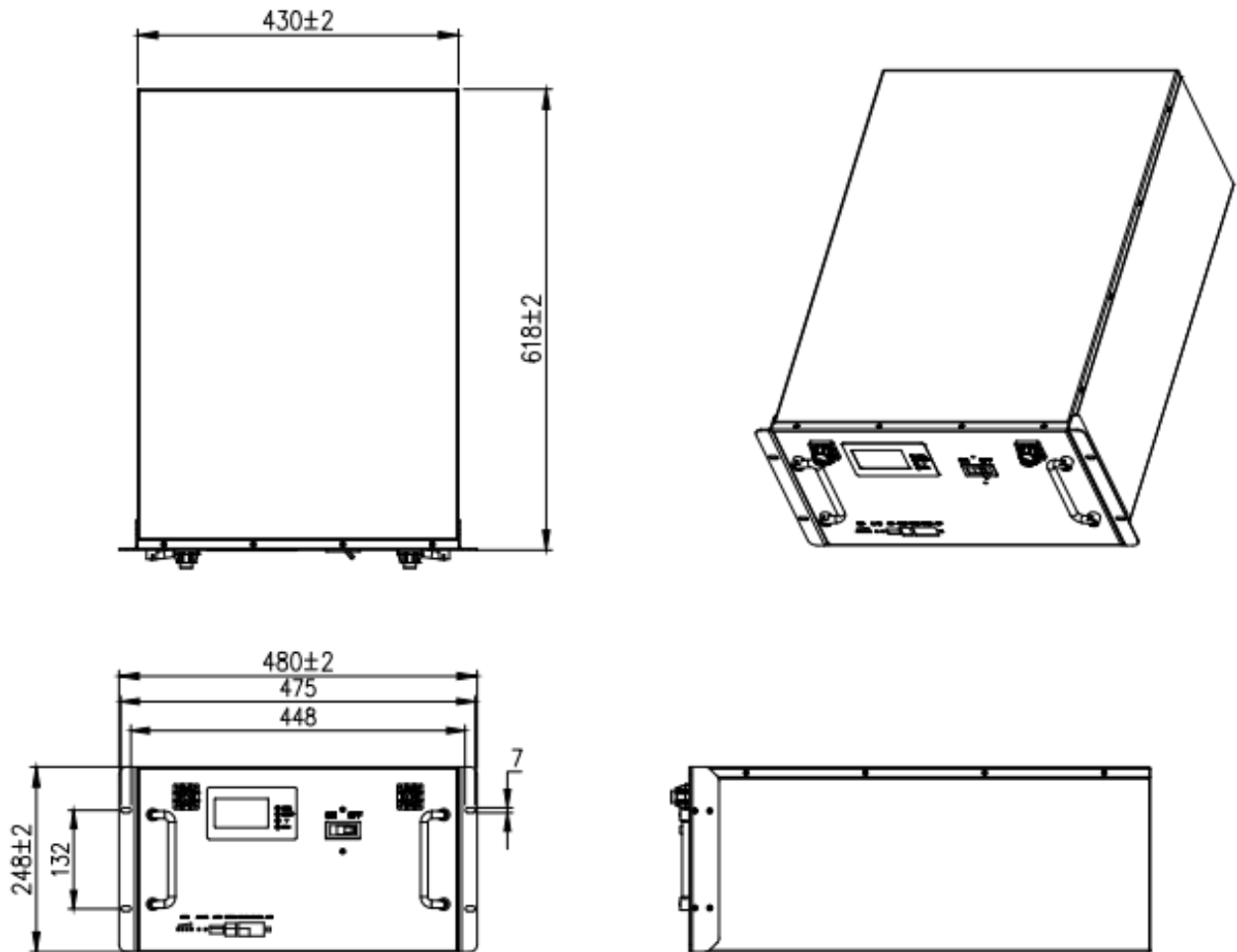


Trophy Battery 48V220E-1

Battery Specification Book and Manual

1. 48V220E-1 product diagram



Trophy Battery 48V220E-1

Battery Specification Book and Manual

2. Functional Description of the Battery Management System (BMS)

2.0 Power On and Off

To Power On the first time:

Turn on the Circuit Breaker

Press the recessed reset button gently for 6 to 7 seconds to power up the battery.

The LEDs will light when the battery powers on.

To Power On subsequent times:

Turn on the Circuit Breaker

Press the recessed reset button gently for 1 to 2 seconds to power up the battery.

The LEDs will light when the battery powers on.

To Power Off: Press and hold the reset button down gently, for 4 to 6 seconds or until the Green State of Charge LEDs flash.

Reset Button Sequences

1 to 3 seconds to Power On (The Circuit Breaker must be on)

4 to 6 seconds to Power Off

6 to 10 seconds to perform a Hardware Reset of the BMS (The Circuit Breaker must be on)

2.1. Standby state

If there are no adverse conditions, such as over-voltage, under-voltage, over-current, short circuit, over-temperature, under-temperature, etc., then the BMS and thus the battery will enter the standby state. In the BMS standby state, the operating light flashes, and the battery can be charged and discharged.

2.2. Over-charge protection and recovery

2.3. Over-discharge protection and restoration

2.4. Regulation of charging current

2.5. Protection of discharge overload and recovery

Trophy Battery 48V220E-1

Battery Specification Book and Manual

2.6. Temperature protection and recovery

2.7 High temperature protection and recovery

2.8. Battery cell Balance function

2.9. Short-circuit protection function

The battery detects and is protected from short circuits.

2.10. LED Indicators

The BMS and Battery has:

6 LED indicators,

4 White LED lights for the current battery State-of-Charge (SOC),

1 Red LED lamp fault indicator during alarm and protection states, and

1 White LED lamp for battery standby, charging and discharging states.

2.11. Hibernation function

The BMS supports both manual and automatic hibernation.

The battery is automatically placed into hibernation to preserve battery power after 48 hours without external charging and discharging.

The BMS goes into hibernation one minute after any condition that causes the battery to go into a protected state.

Pressing and holding the recessed reset button for 6 seconds, will cause the protection state to be reset. The 6 LED lights are turned on in sequence, and the BMS goes into hibernation.

Standby hibernation can be set up through a host computer, such as a PC.

2.12. One-button switch on the machine

The master battery can control the slave batteries when multiple batteries are connected via straight through CAT5 Ethernet cables (RJ-45 cables). This requires all of the batteries to use the proper address codes, as prescribed below.

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Front Panel Switch Settings						
When not communicating with an Inverter						
For Trophy Battery 48V110-1 and 48V220E-1						
On (Up) Position						
Switch Number	1	2	3	4	5	6
Off (Down) Position						
<p>To turn a switch On, move it to the Up Position To turn a switch Off, move it to the Down Position</p>						

Front Panel Address Switch						
Binary Address Scheme						
	Battery Address Master or Only Battery = 1, Slaves 2 to 15, 16th battery is Zero				Victron GX	Inverter Comm
Binary Battery Address Switches 1, 2, 3, and 4	1	2	4	8	On or Off	On or Off

Only One Battery						
When not Communicating with an Inverter						
The First Battery is the Master Battery						
Master or Only Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)

Two Batteries						
When not Communicating with an Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)

Three Batteries						
When not Communicating with an Inverter						

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)

Four Batteries When not Communicating with an Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Five Batteries						
When not Communicating with an Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)

Six Batteries						
When not Communicating with an Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Seven Batteries						
When not Communicating with an Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)

Eight Batteries						
When not Communicating with an Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Nine Batteries When not Communicating with an Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Ten Batteries						
When not Communicating with an Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Eleven Batteries When not Communicating with an Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Twelve Batteries						
When not Communicating with an Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Twelfth (12) Battery	Down (Off)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Thirteen Batteries						
When not Communicating with an Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Twelfth (12) Battery	Down (Off)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Thirteenth (13) Battery	Up (On)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Fourteen Batteries When not Communicating with an Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Twelfth (12) Battery	Down (Off)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Thirteenth (13) Battery	Up (On)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Fourteenth (14) Battery	Down (Off)	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Fifteen Batteries When not Communicating with an Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Twelfth (12) Battery	Down (Off)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Thirteenth (13) Battery	Up (On)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Fourteenth (14) Battery	Down (Off)	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)
Fifteenth (15) Battery	Up (On)	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Sixteen Batteries When not Communicating with an Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Twelfth (12) Battery	Down (Off)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Thirteenth (13) Battery	Up (On)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Fourteenth (14) Battery	Down (Off)	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)
Fifteenth (15) Battery	Up (On)	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)
Sixteenth (16) Battery	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Front Panel Switch Settings For Communicating with a Non-Victron Inverter For Trophy Battery 48V110-1 and 48V220E-1						
On (Up) Position						
Switch Number	1	2	3	4	5	6
Off (Down) Position						
<p>To turn a switch On, move it to the Up Position To turn a switch Off, move it to the Down Position</p>						

Front Panel Address Switch Binary Address Scheme						
	Battery Address Master or Only Battery = 1, Slaves 2 to 15, 16th battery is Zero				Victron GX	Inverter Comm
Binary Battery Address Switches 1, 2, 3, and 4	1	2	4	8	On or Off	On or Off

Only One Battery Communicating with a Non-Victron Inverter The First Battery is the Master Battery						
Master or Only Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Up (On)

Two Batteries Communicating with a Non-Victron Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Three Batteries Communicating with a Non-Victron Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)

Four Batteries Communicating with a Non-Victron Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Five Batteries Communicating with a Non-Victron Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Six Batteries Communicating with a Non-Victron Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Seven Batteries Communicating with a Non-Victron Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)

Eight Batteries Communicating with a Non-Victron Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Nine Batteries Communicating with a Non-Victron Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Ten Batteries Communicating with a Non-Victron Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Eleven Batteries Communicating with a Non-Victron Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Twelve Batteries Communicating with a Non-Victron Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Twelfth (12) Battery	Down (Off)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Thirteen Batteries Communicating with a Non-Victron Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Twelfth (12) Battery	Down (Off)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Thirteenth (13) Battery	Up (On)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Fourteen Batteries Communicating with a Non-Victron Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Twelfth (12) Battery	Down (Off)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Thirteenth (13) Battery	Up (On)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Fourteenth (14) Battery	Down (Off)	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Fifteen Batteries Communicating with a Non-Victron Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Twelfth (12) Battery	Down (Off)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Thirteenth (13) Battery	Up (On)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Fourteenth (14) Battery	Down (Off)	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)
Fifteenth (15) Battery	Up (On)	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Sixteen Batteries Communicating with a Non-Victron Inverter						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Twelfth (12) Battery	Down (Off)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Thirteenth (13) Battery	Up (On)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Fourteenth (14) Battery	Down (Off)	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)
Fifteenth (15) Battery	Up (On)	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)
Sixteenth (16) Battery	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Front Panel Switch Settings						
For Communicating with Victron Cerbo GX BMS CAN Port						
For Trophy Battery 48V110-1 and 48V220E-1						
On (Up) Position						
Switch Number	1	2	3	4	5	6
Off (Down) Position						
<p>To turn a switch On, move it to the Up Position To turn a switch Off, move it to the Down Position</p>						

Front Panel Address Switch						
Binary Address Scheme						
	Battery Address Master or Only Battery = 1, Slaves 2 to 15, 16th battery is Zero				Victron GX	Inverter Comm
Binary Battery Address Switches 1, 2, 3, and 4	1	2	4	8	On or Off	On or Off

Only One Battery						
Communicating with Vitron Cerbo GX						
The First Battery is the Master Battery						
Master or Only Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Up (On)	Up (On)

Two Batteries						
Communicating with Victron Cerbo GX						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Up (On)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Three Batteries Communicating with Victron Cerbo GX						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Up (On)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)

Four Batteries Communicating with Victron Cerbo GX						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Up (On)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)

Five Batteries Communicating with Victron Cerbo GX						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Up (On)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Six Batteries Communicating with Victron Cerbo GX						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Up (On)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)

Seven Batteries Communicating with Victron Cerbo GX						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Up (On)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Eight Batteries Communicating with Victron Cerbo GX						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Up (On)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Nine Batteries Communicating with Victron Cerbo GX						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Up (On)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Ten Batteries Communicating with Victron Cerbo GX						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Up (On)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Eleven Batteries Communicating with Victron Cerbo GX						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Up (On)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Twelve Batteries Communicating with Victron Cerbo GX						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Up (On)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Twelfth (12) Battery	Down (Off)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Thirteen Batteries Communicating with Victron Cerbo GX						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Up (On)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Twelfth (12) Battery	Down (Off)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Thirteenth (13) Battery	Up (On)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Fourteen Batteries Communicating with Victron Cerbo GX						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Up (On)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Twelfth (12) Battery	Down (Off)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Thirteenth (13) Battery	Up (On)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Fourteenth (14) Battery	Down (Off)	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Fifteen Batteries Communicating with Victron Cerbo GX						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Up (On)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Twelfth (12) Battery	Down (Off)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Thirteenth (13) Battery	Up (On)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Fourteenth (14) Battery	Down (Off)	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)
Fifteenth (15) Battery	Up (On)	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

Sixteen Batteries Communicating with Victron Cerbo GX						
Master Battery	Up (On)	Down (Off)	Down (Off)	Down (Off)	Up (On)	Up (On)
Second (2) Battery	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Third (3) Battery	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)	Down (Off)
Fourth (4) Battery	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Fifth (5) Battery	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Sixth (6) Battery	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Seventh (7) Battery	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)	Down (Off)
Eighth (8) Battery	Down (Off)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Ninth (9) Battery	Up (On)	Down (Off)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Tenth (10) Battery	Down (Off)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Eleventh (11) Battery	Up (On)	Up (On)	Down (Off)	Up (On)	Down (Off)	Down (Off)
Twelfth (12) Battery	Down (Off)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Thirteenth (13) Battery	Up (On)	Down (Off)	Up (On)	Up (On)	Down (Off)	Down (Off)
Fourteenth (14) Battery	Down (Off)	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)
Fifteenth (15) Battery	Up (On)	Up (On)	Up (On)	Up (On)	Down (Off)	Down (Off)
Sixteenth (16) Battery	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)	Down (Off)

2.13. CAN and RS485 Communications

Trophy Battery 48V220E-1

Battery Specification Book and Manual

The BMS supports communication to external devices via a CAN Bus Interface at 500,000 Bits per Second. Multiple Protocols can be used.

A PC can be used for battery monitoring, operational control and parameter setting through RS485 communications at 9,600 Bits per Second.

2.14. Computer-Parallel Battery Communication

When the Front Panel address switch are properly set, then one host computer can monitor up to 16 batteries in parallel, provided the battery to battery communication cables are in place.

The Battery to Battery Communication occurs over the RS-485 ports.

View the data in two parallel ways:

1. Connect Host PC computer after the battery RS485 connections are made.
2. After the RS485 connections are made,
the CAN interface may be used to communicate to the inverter.

Note: The Trophy Battery has a very smart BMS.

Communication with Inverters may be difficult at times due to different protocol version, accuracy of the communications protocols, and bit-rate issues.

The battery can manage itself without battery to inverter communications.

2.15. Pre-charging Function (Slow-Start)

The pre-charging function occurs when the battery starts up or when discharging starts.

The pre-charging time can be set (1mS to 5000mS) to deal with various capacitor load scenarios.

This setting also helps preventing the BMS sensing a short circuit condition.

2.16. Charging and Current Regulation

Charging Current Regulation into two modes:

- Active Current Regulation and
- Passive Current Regulation

1. Active current limiting:

With the BMS in the charging state, the BMS always utilizes Current Regulation which actively limits the charging current to 10 Amps.

Trophy Battery 48V220E-1

Battery Specification Book and Manual

2. Passive current limiting:

With BMS in the charging state, if the charging current reaches the charge over-current alarm value (current setting 200A), then Current Regulation limits charging to 10 amps, then the BMS rechecks the charging current every few minutes. When the charging current is within limits, then full charging is enabled.

3. 48V220E-1 system parameters

		Specification	Parameter
Single Cell	1	Product model	EVE Energy 3.2V230AH
	2	Product material system	Lithium iron phosphate + graphite
	3	Rated voltage (V) per cell	3.2
	4	Rated capacity (Amp-Hour)	230
	5	Size (mm)	54*174*207.2mm
	6	Weight (kg)	4.14
Battery	1	Product model	48V220E-1
	2	Product application field	Standby, Solar, UPS, Etc.
	3	Battery Cell configuration	16s1p
	4	Cooling	Natural Cooling, no fan
	5	Rated voltage (V)	51.2 (Works with 48V Equipment)
	6	Rated capacity (AH) of $\pm 5\%$	220
	7	Rated Energy (WH) $\pm 5\%$	11264
	8	Charge and Discharge port (common port or tap)	Common Battery Terminals for Charging and Discharging.
	9	Communication ports	2 RS485/CAN Dual RJ-45 Ports
	10	Display screen	LCD display screen
	11	Maximum number of the series (PCS)	This batter must not be placed in series
	12	Heating function	Yes, Automatic
	13	System charging termination voltage (V)	57.6
	14	System discharge termination voltage (V)	43.2
	15	Single Cell protection voltage (V)	3.65
	16	Single Cell discharge protection (V)	2.5

Trophy Battery 48V220E-1

Battery Specification Book and Manual

17	Charging operating temperature range is (°C)	-0~45
18	Discharge operating temperature range is (°C)	-10~50
20	Continuous charging current (A)	200
21	Continuous discharge current (A)	200
22	Discharge protection overcurrent (A)	210
23	Battery Cycle Life (Under Torture Test Conditions)	<p>Cycle Life, under Torture Test conditions, is greater than 3500 Cycles with capacity retention greater or equal to 80%. Normal Operational Cycle Life is much higher.</p> <p>The Individual Cell Cycle Life Torture Test conditions exceed what can occur when using the battery. These Torture Tests are run without our BMS protecting the cells.</p> <p>Our Battery's BMS prevents these extreme conditions, protecting the battery cells and extending the life of the battery.</p> <p>The Cycle Life Torture Test procedure is: Cell charged at 230 amps to 100% State of Charge, then Cell is allowed to rest for 30 minutes, then discharged at 230 amps to 0% State of Charge (2.5V cell voltage), and Rest for 30 minutes. This is repeated until battery capacity is 80% of the rated capacity.</p> <p>In normal operation, our battery's BMS prevents charging to 100%, discharging to 0%, charging at 230 Amps, and discharging at 230 Amps, thus increasing the cycle life of the battery.</p>
24	Battery box size	(430±2)×(248±2)×(618±2)

Trophy Battery 48V220E-1

Battery Specification Book and Manual

	(width * height * depth) (mm)	
25	Limited Non-Prorated Warranty	10 Years
26	Battery weight tolerance of ± 3 kg	82 KG
remarks		

4. Storage and transportation

4.1 According to the characteristics of the battery, the lithium battery pack should meet the storage environmental conditions in the storage and transportation process, to protect the battery.

4.2 During the storage of lithium battery and transportation, appropriate protection should be provided, to maintain the SOC level of about 50%~70%,
Protect against short circuits and any liquid entering into the lithium battery pack or immersion in liquid (such as water, oil, etc.)

4.3 If not in use temporarily, the battery shall be stored in a dry, clean and well-ventilated warehouse of 10°C to 35°C.

4.4 In the process of loading and unloading, the battery should be handled carefully to prevent damage.

5. Warning and precautions when using batteries

To prevent possible battery damage or safety issues, note the following precautions:

- Do not immerse the battery in sea water or water.
- When stored unused, keep the battery in a cool and dry environment;
- When connecting the battery it must always be positive to positive, negative to negative.
- Do not short circuit the battery.
- Do not transport or store batteries together with any metal.
- Treat the battery gently, do not drop.
- Do not weld the battery case, or puncture the battery in any way.
- Do not use or place batteries in high temperatures (in hot sunlight or very hot cars), which may cause overheating, fire or functional failure and reduced life; long-term storage temperature is 10-45°C.
- Do not expose battery to fire or excessive heat.
- Do not expose batteries to strong static electricity and strong magnetic fields.

Trophy Battery 48V220E-1

Battery Specification Book and Manual

- If the battery leaks, and the electrolyte enters one's eyes, do not rub it.
You should immediately wash the eyes with water, and immediately see a hospital for treatment
- If the battery smells bad, is radiating excessive heat, discoloration, deformation, or any abnormality during use, storage, charging, the battery shall be immediately removed from the device or charger and turned off.
- Do not use AC power to charge the battery.
A special Charger or Inverter designed for 48 Volt Lithium Ferrous Phosphate battery must be used.
- Check the battery voltage and connectors before installation.
- If the battery is stored or is idle for 3 months or longer it is necessary to recharge it to around 70% State of Charge.
- If the battery terminal is dirty, clean with a dry cloth before use.

6. Revision of product specifications

Trophy Battery LLC has the right to revise the product specifications and to correct errors in this document.