

# IMMERSION COOLING HOME & INDUSTRY BATTERY WITH INVERTER





# AMOOVO

BATTERY

MORE STRONGER  
SUSTAINABLE SMARTER

## 1. Durability:

- Lifetime program: Omnium insurance and long-term commitment, guaranteeing 100% reparability at our expense.
- Intergenerational: Robust design to withstand the test of time and be passed down to future generations.
- Limited environmental impact: Use of recyclable materials and environmentally friendly manufacturing processes.
- Designed to overcome blackouts: Battery designed to maintain power supply during power outages, ensuring uninterrupted power.

## 2. Cost-effectiveness & Profitability:

- Financial calculation tools: Providing customers with tools to transparently assess return on investment.
- First profitable battery: Innovative design enabling quick profitability of the initial investment.
- Amortization over desired years: Flexibility for customers to plan expenses over their preferred duration.
- Affordable investment for all: Competitive pricing and financing options to make the investment accessible for all budgets.
- Mortgage credit financing: Option to finance battery purchase through a mortgage credit, providing a convenient payment option.
- Reliable value (Amooflex Lifetime program): Longevity and reliability guarantee, offering long-term peace of mind to customers.
- Linear cost management: Transparent and predictable pricing model for simplified budget management.

## 3. High Resistance:

- Stainless steel battery: Robust construction material ensuring exceptional durability and corrosion resistance.
- Suitable for coastal regions: Specific design to withstand harsh marine environments and saline corrosion.
- Extreme resistance (-80°C to +80°C): Ability to operate in a wide range of temperatures, ensuring reliable performance.
- Resistant to dust, sand, wind: Hermetic design preventing particle infiltration and ensuring operation in windy and sandy conditions.
- Thermal insulation: Protection against temperature variations, ensuring stable operation in variable weather conditions.
- Waterproof for indoor/outdoor use: Waterproof design allowing installation indoors and outdoors, with weatherproof protection.
- Designed for floods: Waterproof and robust design allowing the battery to function even in case of flooding, ensuring uninterrupted power supply during natural disasters.

## 4. Performance:

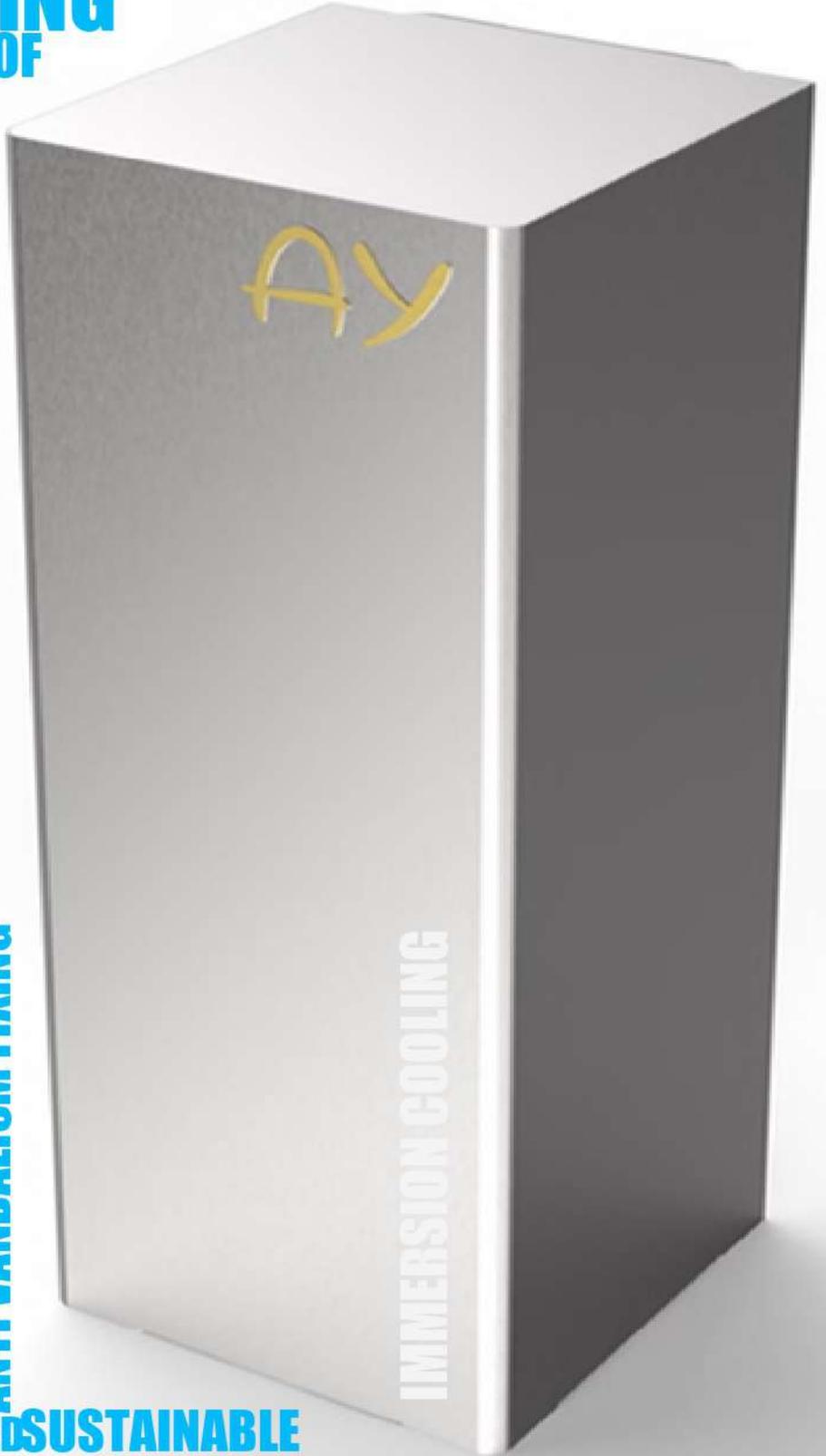
- Compact design: Efficient use of space for convenient installation and easy integration into different environments.
- Less raw material: Optimized resource use to reduce environmental footprint while ensuring maximum performance.
- High energy density: Ability to store a large amount of energy in a compact space, offering extended autonomy.
- Integrated CPU: Advanced technology enabling intelligent battery management and performance optimization.
- Cost-effective scalability: Flexibility for customers to upgrade their system as their needs evolve, without excessive costs.
- Remote upgrade: Ability to remotely upgrade the system, ensuring continuous use of the latest technologies.
- Compatibility with cell technologies: Versatility for customers to choose the best cell technologies based on their specific needs.
- Compatibility with Victron: Integration with Victron innovation, perfect integration and compatibility.

## 5. Prevention/Safety:

- Continuous monitoring: Constant monitoring of the battery's status to quickly detect any anomalies or need for intervention.
- Eliminated fire & explosion risks: Secure and robust design eliminating any risk of overheating or malfunction.
- Household low voltage: Safe operating voltage, suitable for household use without danger to occupants.
- Fire resistance (RF 60 minutes): Fireproof construction ensuring prolonged protection against fires.
- Firefighter protection (low voltage standard): Compliant with fire safety standards, ensuring safe and effective intervention.
- GPS traceability: Tracking feature to quickly locate the battery in case of theft or emergency.
- Anti-theft anchoring: Secure fastening device to prevent theft or unauthorized movement of the battery.

V24.02.22

**FIRE PROOF**  
**VICTRON INTEGRATION**  
**IMMERSION COOLING** BLACKOUT  
**H24 MONITORING**  
**HVAC** SAND PROOF  
 SAFE VALUE  
**PROFITABLE**  
**SCALABLE**  
**INOX** GPS  
**INSULATED**  
**SAFE VOLTAGE**  
**SUPPORT 1M WATER**  
**MINIMALIST DESIGN**  
**MONITORING**  
**MARINE**  
**SODIUM-ION**  
**THERMAL COOL FLUIDS**  
**HIGH ENERGY DENSITY**  
**FROST UNSENSITIVE**  
**WATER RESISTANT**  
**ANTI VANDALISM FIXING**  
**LIFETIME**  
**HANDMADE**  
**25C° STABILISED**  
**SUSTAINABLE**



# AMOOVO



## BATTERY

Model	AY48/640 Immersion cooling
Technology	LFP / SODIUM-ION
Voltage	51.2V
Capacity	640 Ah
Energy	32kWh
Weight	185 kg (AMOOVO delivery service)

Data summary

Technical specifications	
Technology	Immersion LIFEPO4/LFP (Optional: SODIUM-ION -30% Energy density)
Cell configuration	2 X 16S1P
Nominal voltage	51.2 V
Nominal capacity	640 Ah
Nominal energy	31.13kWh (real capacity 32.76Kwh)
Cycle Life	Lifetime AMOOFLEX program - <a href="http://www.amoovo.com/rules">www.amoovo.com/rules</a>
Specific energy	176 Wh/kg
Weight	185 kg (max.43 kg/element) <b>(AMOOVO delivery service)</b>
Discharge	
Discharge cut-off voltage	48.0 V
Recommended discharge current	< 320 A (< 0.5C)
Continuous discharge current	320A (0.5C)
Maximum discharge current (10 s)	400 A (0.6C)
Fuses	2x250 A
Charge	
Charge voltage	57.6 V
Recommended charge current	180 A (< 0.25C)
Continuous charge current	320 A (0.5 C)
Maximum charge current (10 s)	400 A (0.6 C)
Configuration	
Series configuration****	Yes, up to 800 V (16 packs)
Parallel configuration	Yes, up to 64 packs

V24.02.22

\*AMOOVO AY IMMERSION TECHNOLOGY is partially a Victron Technology integration

Environmental	AY48/640 Immersion
Operating temperature charge	-80 to +80°C
Operating temperature discharge	-80 to +80°C
Operating temperature	25C° (+5/-5)
Humidity (condensing)	≤ 100 %
Mechanical	
Power connections	BCA wires / M8 screws
Protection class	IP68 - maximum depth of 1 metres water / protected from dust
Cooling/Thermal Recycling	Immersion liquid cooling / exchanger
Casing/Dimensions ( l x h x w )	550*1100*550 / Stainless Steel 100%
Safety	
Compatible BMS master controller	Amoovo BMS Master
Battery Management System (BMS)	Integrated slave BMS
Communication	CAN-Bus - VeCan - Ethernet - Wifi - Bluetooth
Fire proof	Fire resistance 90 Minutes
Immersion Flluide	Non-flammable / non-toxic / inherently biodegradable/ non ADR logistic
Standards	
EMC: Emission	NEN-EN-IEC 61000-6-3:2021
EMC: Immunity	NEN-EN-IEC 61000-6-2:2019
Low voltage directive	EN-IEC 62368-1:2020
Approvals	
IEC-EN62620*	Accumulators and batteries containing alkaline or other non-acid electrolytes - Lithium batteries and batteries for industrial applications
UN38.3	Requirements for the safe transport of lithium batteries
IEC 62133-2*	Current; Secondary cells and batteries with alkaline or other non-acid electrolytes - Safety requirements for portable gas-tight accumulators and batteries for portable use & Lithium systems;
IEC 62619	Safety requirements for secondary cells and batteries containing alkaline or other non-acid electrolytes as well as secondary lithium cells and batteries
VDE AR 2510-50	Application guide specifying safety requirements for energy storage systems with lithium batteries
IEC 62485-5*	Stationary (Li-ion) secondary batteries and battery systems up to 1.5 kV DC
VDE-AR-E 2510-2*	Stationary electrical storage systems provided for Connection to the low voltage network

\*AMOOVO AY IMMERSION TECHNOLOGY is partially a Victron Technology integration

\*Pending V24.02.22

# AMOOVO



## INVERTER

<b>Model</b>	AYMultiplus 230/48 Immersion cooling
<b>Technology</b>	Hybrid Inverter / Charger
<b>Voltage</b>	48V
<b>Capacity</b>	3000VA / 5000VA (X3 if trifase 400V)
<b>Energy</b>	3Kwh / 5Kwh
<b>Weight</b>	19kg / 30kg

Data summary

<b>Inverter</b>	
DC input voltage range	48V / 38-66V
Output voltage	230 VAC ± 2% / Frequency (400<v if trifase) - 50 Hz ± 0,1% (adjustable 60Hz)
Continius output power	2.840W / 4800W (X3 if trifase) Non-linear load, crest factor 3:1
Max apparent feed-in power	3000VA / 5000VA (X3 if trifase)
Peak power	5.500W / 9000W (X3 if trifase)
Maximum efficiency	95% / 96%
Zero load power	11W / 18W
AES / Search mode	7W / 12W - 2W / 2W
<b>Charger</b>	
AC input voltage range	187-265VAC / Input frequency: 45 – 65 Hz
Charge voltage 'absorption'	57.6V
Charge voltage 'float'	55.2V
Storage mode	52.8V
Max. battery charge current	35 / 70A (X3 if trifase)
<b>General</b>	
Auxiliary output	Yes 32 / 50A (X3 if trifase)
External AC current sensor (optional)	50A or 100A
Programmable relay	Yes: general alarm, DC under voltage or genset start/stop function. AC rating: 230V / 4A, DC rating: 4A up to 35VDC and 1A up to 60VDC
Protection	Output short circuit / overload / battery voltage high / battery voltage low / temperature high / 230 VAC on inverter output / input voltage ripple high
VE.Bus communication port	For parallel and three phase operation, remote monitoring and system integration
General purpose com. port / Remote	Yes 2X com. / Yes Remote On-Off
Operating temp. range / Humidity (condensing)	-80C° / +80C° / Humidity 100% (with condensing)

V24.02.22

\*AMOOVO AY IMMERSION TECHNOLOGY is partially a Victron Technology integration

# AMOOVO



## INVERTER

Enclosure	AYMultiplus 230/48 Immersion cooling
Material & Color	INOX brushed stainless steel
Protection category	IP68
Battery-connection	M8 bolts
230 V AC-connection	Screw terminals 13 mm <sup>2</sup> (6 AWG)
Weigth	19kg / 30kg
Cooling/Thermal Recycling	Immersion liquid cooling / exchanger
Dimensions (hwxwd) mm	550*1100*550 / Stainless Steel 100% (integrated with MPPT in one single pack)
Safety	
Fire proof	Fire resistance 90 Minutes
Immersion Flluide	Non-flammable / non-toxic / inherently biodegradable/ non ADR logistic
Standards	
EMC: Emission / Immunity	EN 55014-1, EN 55014-2 EN-IEC 61000-3-2, EN-IEC 61000-3-3 IEC 61000-6-1, IEC 61000-6-2, IEC 61000-6-3
EMC: Immunity	NEN-EN-IEC 61000-6-2:2019
Low voltage directive	EN-IEC 62368-1:2020
Approvals	
Safety	EN-IEC 60335-1, EN-IEC 60335-2-29, EN-IEC 62109-1, EN-IEC 62109-2
Uninterruptible power supply	Yes / To consult certificate, please send a mail : tom@amooovo.com.
Anti-islanding	Yes / To consult certificate, please send a mail : tom@amooovo.com.
IEC 62619	Safety requirements for secondary cells and batteries containing alkaline or other non-acid electrolytes as well as secondary lithium cells and batteries
VDE AR 2510-50	Application guide specifying safety requirements for energy storage systems with lithium batteries
IEC 62485-5*	Stationary (Li-ion) secondary batteries and battery systems up to 1.5 kV DC
VDE-AR-E 2510-2*	Stationary electrical storage systems provided for Connection to the low voltage network
VDE AR 2510-50	Application guide specifying safety requirements for energy storage systems with lithium batteries
IEC 62485-5*	Stationary (Li-ion) secondary batteries and battery systems up to 1.5 kV DC
VDE-AR-E 2510-2*	Stationary electrical storage systems provided for Connection to the low voltage network
	*Pending V24.02.22

\*AMOOVO AY IMMERSION TECHNOLOGY is partially a Victron Technology integration

# AMOOVO



INVERTER

MORE STRONGER  
SUSTAINABLE SMARTER

## 1. AYMULTIPLUS, ESS (Energy Storage System) functionality

The AYMULTIPLUS is a multifunctional inverter/charger with all the features of the ayMULTIPLUS, plus an external current sensor option which extends the PowerControl and PowerAssist function to 50A resp. 100A. The AYMULTIPLUS is ideally suited for professional marine, yachting, vehicle and land based off-grid applications. It also has built-in anti-islanding functionality, and an increasingly long list of country approvals for ESS application. Several system configurations are possible. For more detailed information see the ESS Design and configuration manual: Tom@amooovo.com.

## 2. PowerControl and PowerAssist - Boosting the capacity of the grid or a generator

A maximum grid or generator current can be set. The AYMULTIPLUS will then take account of other AC loads and use whatever is extra for battery charging, thus preventing the generator or grid from being overloaded (PowerControl function). PowerAssist takes the principle of PowerControl to a further dimension. Where peak power is so often required only for a limited period, the AYMULTIPLUS will compensate insufficient generator, shore or grid power with power from the battery. When the load reduces, the spare power is used to recharge the battery.

## 3. Solar energy: AC power available even during a grid failure

The AYMULTIPLUS can be used in off grid as well as grid connected PV and other alternative energy systems. It is compatible with both solar charger controllers and grid-tie inverters.

## 4. Two AC Outputs

The main output has no break functionality. The AYMULTIPLUS takes over the supply to the connected loads in the event of a grid failure or when shore/generator power is disconnected. This happens so fast (less than 20 milliseconds) that computers and other electronic equipment will continue to operate without disruption. The second output is live only when AC is available on the input of the MultiPlus-II. Loads that should not discharge the battery, like a water heater for example, can be connected to this output.

## 5. Virtually unlimited power thanks to parallel and three phase operation

Up to 6 AYMULTIS can operate in parallel to achieve higher power output. Six 48/5000/70 units, for example, will provide 25 kW / 30 kVA, output power with 420 Amps charging capacity. In addition to parallel connection, three units of the same model can be configured for three phase output. But that's not all: up to 6 sets of three units can be parallel connected for a 75 kW / 90 kVA inverter and more than 1200 Amps charging capacity.

## 6. On-site system configuring, monitoring and control

Settings can be changed in a matter of minutes with VEConfigure software (computer or laptop and MK3-USB interface needed). Several monitoring and control options are available.

## 7. Remote configuring and monitoring

Install a AYCERBO GX to connect to the internet. Operational data can be stored and displayed on our VRM website, free of charge. When connected to the internet, systems can be accessed remotely, and settings can be changed.

V24.02.22

\*AMOOVO AY IMMERSION TECHNOLOGY is partially a Victron Technology integration



Enclosure	AYMPPT RS Isolated SmartSolar Immersion cooling
Material & Colour	INOX brushed stainless steel
Protection category	IP68
Battery-connection	M8 bolts
Power terminals PV input (-Tr version)	2 terminals / 16 mm <sup>2</sup>
Weight	7.9kg / 13.7kg
Cooling/Thermal Recycling	Immersion liquid cooling / exchanger
Dimensions (hwxwd) mm	550*1100*550 / Stainless Steel 100% (integrated with Inverters in one single pack)
Safety	
Fire proof	Fire resistance 90 Minutes
Immersion Fluid	Non-flammable / non-toxic / inherently biodegradable/ non ADR logistic
Standards	
EN-IEC 62109-1	Safety of power converters for use in photovoltaic power systems – Part 1
EN-IEC 62109-2	Safety of power converters for use in photovoltaic power systems – Part 2
Country of Origin	Designed in the Netherland & Belgium / Assembled in Belgium
General	
Synchronised Parallel Operation	Yes, up to 25 units with VE.Can
Programmable relay (*5)	Yes.
Protection	PV reverse polarity/ Output short circuit / Over temperature
Data communication	VE.Direct port, VE.Can port & Bluetooth (*6)
Bluetooth frequency	2402 – 2480 MHz
Bluetooth power	4dBm
General purpose analogue/digital in port	Yes, 2x
Remote on-off	Yes
Operating temperature range	-80C° / +80C°
Humidity (condensing)	Humidity 100% (with condensing)

V24.02.22

**\*AMOOVO AY IMMERSION TECHNOLOGY is partially a Victron Technology integration**

**1. Operating voltage range**

MPPT operating voltage range is constrained by battery voltage - PV VOC should not exceed 8 x battery float voltage. For example, a 52.8 V float voltage results in a maximum PV VOC of 422.4 V. See product manual for further information.

**2. High short circuit**

A higher short circuit current may damage the controller if PV array is connected in reverse polarity.

**3. Power limit**

Max. 450 VOC result in appr. 360 Vmpp, therefore the maximum PV array is appr. 360 V x 20 A = 7200 Wp.

**4. Resistive isolation**

The MPPT RS will test for sufficient resistive isolation between PV+ and GND, and PV- and GND. In the event of a resistance below the threshold, the unit will stop charging, display the error, and send the error signal to the GX device (if connected) for audible and email notification.

**5. Programmable Relay**

Programmable relay which can be set for general alarm, DC under voltage or genset start/stop function. DC rating: 4 A up to 35 VDC and 1 A up to 70 VDC.

**6. Compatibility**

The MPPT RS is currently not compatible with VE.Smart Networks.

**7. Float and absorption**

The Charger set-point (float and absorption) can be set to max 60 V. The output voltage at the charger terminals can be higher, due to temperature compensation as well as compensation for voltage drop over the battery cables. The maximum output current is reduced on a linear basis from full current at 60 V to 5A at 62 V. The equalization voltage can be set to max 62V, the equalization current percentage can be set to max 6%.



# AMOOVO

MPPT

MORE STRONGER  
SUSTAINABLE SMARTER

## 1. Ultra-fast Maximum Power Point Tracking (MPPT) Solar Charge Controller

The MPPT RS SmartSolar is a 48 V Solar charge controller with up to 450 VDC PV input and either 100 A, or 200 A output. It is used in on-grid and off-grid solar applications where maximum battery charging power is required.

## 2. Multiple independent MPPT tracking inputs

With multiple MPPT trackers, you can optimize your solar panel design for maximum performance for your specific location.

## 3. Isolated PV connections for additional safety

Full galvanic isolation between PV and battery connections provide additional overall system safety.

## 4. Wide MPPT voltage range

80 – 450 VDC PV operating range, with a 120 VDC PV startup voltage.

## 5. Light weight, efficient and quiet

Thanks to high frequency technology and a new design this powerful charger weighs only 7.9 kg for the 100 A model. In addition to this it has an excellent efficiency, low standby power, and a very quiet operation.

## 6. Display and Bluetooth

The display reads battery, and controller parameters. The parameters can be accessed with a smartphone or other Bluetooth enabled device. In addition, Bluetooth can be used to set up the system and to change settings with VictronConnect.

## 7. PV Isolation resistance monitoring for peace of mind at higher voltages

The MPPT RS continuously monitors the PV array and can detect if there are faults that reduce the isolation of the panels to unsafe levels.

## 8. VE.Can and VE.Direct port

For connection to a GX device for system monitoring, data logging, and remote firmware updates. VE.Can allows for up to 25 units to be connected together in parallel and synchronize their charging.

## 9. I/O Connections

Programmable Relay, temperature sensor, auxiliary, digital input and voltage sensor connections. The remote input can accept the Victron smallBMS, and other BMS with allow-to-charge signal.

V24.02.22

\*AMOOVO AY IMMERSION TECHNOLOGY is partially a Victron Technology integration



# AMOOVO



**CERBO**

Enclosure	AYCERBO GX Immersion cooling
Material & Colour	INOX brushed stainless steel
Protection category	IP68
Battery-connection	RJ45
Power terminals	wires AWG20
Weigth	0.4kg
Cooling/Thermal Recycling	Immersion liquid cooling / exchanger
Dimensions (hwxwd) mm	78 x 154 x 48 mm / Stainless Steel 100% (integrated with Inverters in one single pack)
Safety	
Fire proof	Fire resistance 90 Minutes
Immersion Flluide	Non-flammable / non-toxic / inherently biodegradable/ non ADR logistic
Standards	
IEC 62368-1	Safety
EN 301489-1	EMC
EN 301489-17	EMC
General	
Synchronised Parallel Operation	Yes, up to 25 units with VE.Can
Programmable relay	Yes.
Protection	PV reverse polarity/ Output short circuit / Over temperature
Data communication	VE.Direct port, VE.Can port & Bluetooth
Bluetooth frequency	2402 – 2480 MHz
Bluetooth power	4dBm
General purpose analogue/digital in port	Yes, 2x
Remote on-off	Yes
Operating temperature range	-80C° / +80C°
Humidity (condensing)	Humidity 100% (with condensing)
	V24.02.22

\*AMOOVO AY IMMERSION TECHNOLOGY is partially a Victron Technology integration

AMOOVO INDUSTRIES ASBL – Belgium – BE0689.990.296 (+32) 87.229.111 Email: Tom@amoovo.com – WhatsApp: +32455130162 – www.amoovo.com



# AMOOVO

CERBO

MORE STRONGER  
SUSTAINABLE SMARTER

## 1. Cerbo GX: communication-centre

This communication-centre allows you to always have perfect control over your system from wherever you are and to maximise its performance. Simply access your system via our Victron Remote Management (VRM) portal, or access it directly, using the optional GX Touch screen, a Multi-Functional Display (MFD) or our VictronConnect app thanks to its Bluetooth capability.

## 2. GX Touch: display accessory

The GX Touch 50 and GX Touch 70 are display accessories for the Cerbo GX. The five inch and seven inch touch screen displays give an instant overview of your system and allows you to adjust settings. Simply connect the display to the Cerbo GX with just one cable. Both GX Touch displays have a waterproof design, a top-mountable setup and are simple to install. The supplied (from serial number HQ2242) protection cover prevents damage from UV light during prolonged exposure to the sun.

## 3. Remote Console on VRM

Monitor, control and configure the Cerbo GX remotely, over the internet. Just like if you were standing in front of the device, using Remote Console. The same functionality is also available on the local network LAN, or using the WiFi Access Point of the Cerbo GX.

## 4. Perfect monitoring & control

Instantly monitor the battery state of charge, power consumption, power harvest from PV, generator, and mains, or check tank levels and temperature measurements. Easily control the shore power input current limit, (auto)start/stop generator(s) or change any setting to optimise the system. Follow up on alerts, perform diagnostic checks and resolve complications remotely.

## 5. Simple mounting and configuration

The Cerbo GX is easily mountable and can also be mounted on a DIN-Rail using the DIN35 adapter small, (not included). Its separate touchscreen can be bolted on a dashboard, eliminating the need to create perfect cut-outs (like with the Color Control GX). Connection is easy via just one cable, taking away the hassle of having to bring many wires to the dashboard. The Bluetooth feature enables a quick connection and configuration via our VictronConnect app.

V24.02.22

\*AMOOVO AY IMMERSION TECHNOLOGY is partially a Victron Technology integration