

# The MasterBus revolution



Mastervolt is your ideal system supplier. The products we supply fit seamlessly together and communicate easily to ensure a top system performance. Optimal operation is also provided by Mastervolt's in-house developed communication and network platform: MasterBus.

## The masterful MasterBus:

- Complete system integration.
- Simple to operate.
- Easy installation.
- Save on installation time and costs.
- Easily expandable.
- Perfect to monitor.
- Ready for the future.

MasterBus is unique for the way a wide range of products, recognisable by the MasterBus symbol, are fitted with the same communication port. This makes available a mine of information on all connected components. Everything becomes clear and easy to operate via one central touch screen panel. Operation from multiple locations is also possible, for example via PC/laptop or SMS. Installation is also incredibly simple and the minimal amount of cabling significantly reduces the chance of failures.

## Reliable

In stark contrast to other networks, the galvanically isolated MasterBus network can simultaneously supply multiple products. Each MasterBus product has an 'intelligence' of its own and can function independently (if one piece of equipment breaks down the rest of the system continues as usual). This feature reduces the dependency of individual products and enhances the overall reliability of your system.



## Flexible

New equipment can easily be added to your existing MasterBus network by simply extending the network. This means the MasterBus network has an enormous degree of flexibility, not just today but also in the future. Moreover, Mastervolt supplies various interfaces with which you can also connect equipment that does not have a MasterBus link. For example, we supply the MasterBus NMEA2000 Interface for the integration of navigation equipment. And the MasterBus Modbus Interface is ideal for linking your central ship management system.

## Complete system

MasterBus is a network that makes use of CANbus technology, which already has a proven track record in the automotive and maritime markets. MasterBus controls the electricity supply for all connected equipment, including the inverter, battery charger, generator and much more besides. This makes possible an intelligent system performance. A practical example: The generator is instructed to start automatically when the batteries are almost empty.

### Easy to install

MasterBus makes an electrical installation far less complex by reducing the number of cables. Each system component has two MasterBus communication ports. As soon as two or more devices are connected to each other via these communication ports they form a local data network - what we call a MasterBus network. As this requires very few communication cables you enjoy considerable savings in space, material costs and installation time.

### Using your PC

The MasterBus USB Interface allows you to monitor, control and configure the entire MasterBus network from a Windows PC or laptop. The galvanic isolation of the interface ensures you safe operation in all situations. The required MasterView software can be easily downloaded from [www.mastervolt.com](http://www.mastervolt.com).

### Central operation

Mastervolt offers various (touch screen) control panels for the display and operation of the connected equipment, giving you a complete overview of the status of your electrical system. Push-button control is at your fingertips and the full colour MasterView System panel allows you to read all information on one central panel. All control panels are suitable for the display, operation and configuration of all connected MasterBus devices.

### Remote control

Communicating with your boat via mobile is no longer a pipe-dream. Using MasterBus and your cell phone you can request information and control onboard equipment via SMS. If desired you can even set the interface to inform your mobile when an alarm goes off onboard.





# MasterBus questions & answers

## What is MasterBus?

MasterBus is a protocol for exchanging information between the connected components within an electric system. MasterBus is also the standard for a plug & play information system for (de)centralised operation, service and monitoring. MasterBus ensures you a simple, logical and reliable energy system.

## What can I do with MasterBus?

The MasterBus system is incredibly flexible and can be designed and extended to any size. Using several handy interfaces, it is also possible to connect all sorts of conventional products to MasterBus. Via the MasterBus USB interface, for example, you can connect a PC or a laptop to the system.

## Can I connect other products to the MasterBus?

Yes, that is possible. Although MasterBus is a Mastervolt-specific protocol, non-Mastervolt products can still be connected to the system. Equipment with maritime standard NMEA2000 connections can be easily connected via the MasterBus NMEA2000 interface. In addition, the MasterBus network can be integrated within your own central system by means of the MasterBus Modbus Interface.

## Is MasterBus an open source?

No, MasterBus is a closed protocol. This allows Mastervolt to guarantee that a MasterBus system works safely and without interference, with a uniform data supply and no unwanted interruptions. Components from other suppliers can be connected via the communication interfaces specially designed by Mastervolt. They ensure a safe and pure transition to the protocol and operate as a firewall against data interference and voltage conflicts. This ensures that the MasterBus network is always safe and reliable.

### What is the basis of MasterBus?

MasterBus hardware is based on CANbus V2.0 technology. The software communication protocol was designed by Mastervolt to maximise the performance of an electrical power system.

### How many products can I connect to a MasterBus?

You can connect a maximum of 63 products within a MasterBus data network.

### What is the maximum cable length?

- 250 m with less than 10 connected products.
- 150 m with up to 25 connected products.
- 100 m with up to 50 connected products.

Or use a MasterBus Repeater.

### What cables should I use?

We advise using the Mastervolt green cables but the MasterBus also works with high quality UTP cables. A Mastervolt DIY kit contains all you need to make the cables for a complete system of any desired length.



### How do I connect a MasterBus?

The MasterBus data network lifeline is the cable, which runs as a chain from component to component. Both ends of the cable should be provided with a Mastervolt Terminator. On each MasterBus product are two equal communication ports for connection. By connecting a MasterBus cable to each of the ports you add the product to the chain. The Terminators at both ends of the cable ensure interference-free operation, prevent reflection of data signals and ensure high communication speeds.

### Do components always have to be connected as a chain?

The MasterBus network requires that all components together create a chain with Terminators at both ends. Circular configurations or branch systems may interrupt the data supply and power supply, damaging the connected equipment.

### What might be the causes of a malfunctioning MasterBus network?

- One or both Terminators are missing on the outside components in the chain.
- One of the cables is not or incorrectly connected: Check whether you see an open communication port.
- One of the plugs is not properly connected to the cable.

### Do I need an additional power supply for MasterBus components?

No. A number of the connected components, such as the MasterShunt and the ChargeMaster, can supply the necessary MasterBus power. Other components such as interfaces and MasterView panels consume this power. The MasterBus cable is simultaneously responsible for data communication and power provision.



**Can I connect different batteries to the same MasterBus circuit?**

Yes. As all power supply sources within a MasterBus circuit are galvanically isolated, all connections are completely safe.

**Do I need additional accessories for the MasterBus system?**

Not for Mastervolt products. All MasterBus products come with the necessary accessories included.

**What happens if the MasterBus data network fails?**

The electrical onboard system will not shut down. Mastervolt components such as the inverter, battery charger and generator will default to normal autonomous operation. You will be able to operate the apparatus itself and still have power onboard. A break in the MasterBus network causes two distribution points that no longer work together, although they still work independently.

**Can I adapt a MasterBus system while it is in operation?**

Yes, that is possible. However, do remember that the communication network is only complete and able to function properly when all connections and Terminators have been added to the network chain again. NB: Events may 'occur' without them reaching the right equipment.

**Why do I have Terminators left over after installing a complete system?**

All MasterBus products are standard supplied with one terminator. As there are only two Terminators required within one system, you may have one or more Terminators left over. Keep them as spares.

# The remarkable simplicity of MasterBus events

## MasterBus: At your service!

Every MasterBus system can be set to your requirements - in essence, it's like welcoming your own personal butler onboard. And MasterBus 'events' are how you train the butler. For example, you can set the generator to start automatically when the batteries are almost empty. Use MasterBus events to configure your system so that each component can activate another.

## Example of an event

In the given example you set the following event: The batteries/battery monitor tell(s) the generator to start.

Say that you use the MasterShunt as a battery monitor within the MasterBus network. In this scenario the MasterShunt is the initiator or the 'source' and the generator is the 'target'. The Commando = start or autostart. The Data = on. By setting multiple events (source, target, commando + data) you can program the entire MasterBus network.

## Digital switching with MasterBus

Another example of a MasterBus event is the use of Digital Switching. The pressing of a light switch, for instance, activates the lighting. The source is the switch, the target the lamp. One source can also be used to control multiple targets, such as the lamps in this example.

## Endless possibilities

Thanks to the underlying communication between all the equipment connected to the MasterBus network, the configuration of events offers you endless possibilities. If you wish, the switch in the example can, for instance, activate not only the lights but also the inverter that provides power to your TV. You might use the MasterShunt, which has an integrated system clock, to set the lights to come on or off at a given time.

Or deploy the 'follow me home' function, which allows you to disembark safely by leaving the lights on for two minutes after you leave. All this and much more besides is available without extra components.

## Summary

Within every MasterBus network all available sources for your connected products can be linked to all available targets. The manuals of the products concerned provide a clear overview of available sources and targets and simplify the configuration of events.



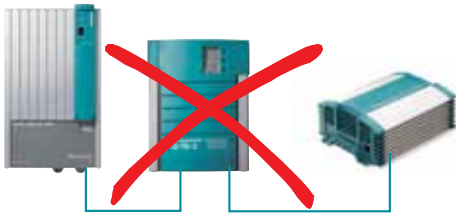


# How to create a **MasterBus** network:

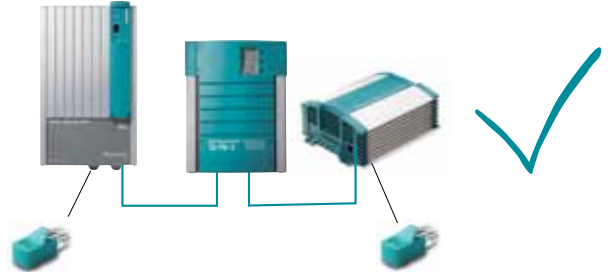
All devices that are suitable for the MasterBus network are equipped with two communication ports. As soon as two or more devices are connected with each other via these ports, they form a local data network. When creating a MasterBus network, follow the guidelines given here:

Connections between your devices can be made by using standard UTP cables (straight). Mastervolt can supply these cables, or you can purchase them at any computer store. The cables supplied by Mastervolt have the familiar green Mastervolt colour.

The electricity needed for the network is supplied by the connected devices. At least one in every four devices in each network must be able to supply power to the MasterBus. For eight devices there must be two power suppliers, etc.



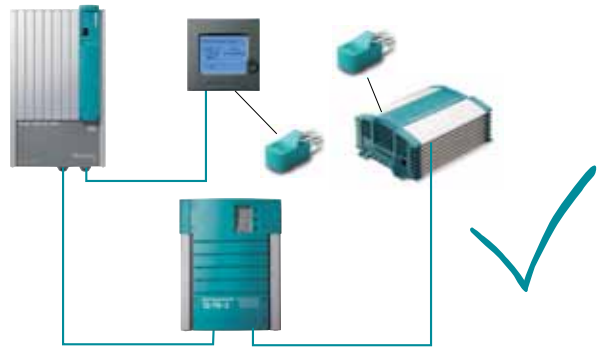
As with all high speed data networks, MasterBus needs a Terminator at both ends of the network.



You need two Terminators to close both ends of the network - communication cables in-between connect a chain of components.



The network should not be circle shaped: The chain ends at both ends with the Terminators.



Do not make T-connections with so-called splitters: A network should always be a chain.





# A masterful overview with the MasterView System

## System monitoring & configuration

One of the keys to relaxed sailing is being able to simply access easily understandable information about your electrical system. Mastervolt has therefore developed sophisticated software in combination with an incredibly user-friendly 10.4-inch colour touch screen: The Mastervolt MasterView System.

## How does it work?

The intelligent MasterBus one-cable system allows you to connect all MasterBus devices to each other, including a generator, inverter and charger, or a load such as a bilge pump, the engine, lighting or air conditioning. The MasterView System provides a clear overview of all relevant information and full control over your electrical system.

To monitor or configure your MasterBus system from your laptop you need a MasterBus USB Interface. This Interface is not required if you use a MasterView System panel.

The entire configuration of your MasterView system takes place on your PC using the same software used by the MasterView System panel. Offline configuration is also an option: Save your settings on a USB stick and copy them to your MasterView System panel. Your original configuration will always be saved so that any accidental settings can easily be reset, while the 'Back to yard' function allows you to undo unwanted settings. Another important benefit is the 'Wizard for product replacement' included in the system software. This function provides support in case of a malfunctioning product or water damage. After the replacement product has been automatically detected by the MasterView system, touch the display, select the 'Replace' button in the pop-up-menu and your system will function as before.

### Ideal for MasterView System

Every Mastervolt product can be monitored, configured and operated via the MasterView System panel using MasterBus interfaces. A large number of Mastervolt products are already suitable for MasterBus, and many more will become compatible in the coming years. Check [www.mastervolt.com/masterbus](http://www.mastervolt.com/masterbus) for the latest overview.

### PC or laptop

A MasterBus USB Interface allows you to control, configure and monitor your entire system from your laptop or PC.



### Home screen

A status overview of all power sources, including shore power, inverters, generators and batteries. Also allows basic control functions such as switching the inverter on or off.



### Digital switching screen

Displays the layout of your yacht and the consumers such as lighting and selected pumps. Loads can be directly controlled using the touch screen panel, which can be tailored to your personal wishes, including the background. Automatic alarm pop-ups show you where an alarm has gone off, even if this is not immediately visible on the screen.



### System overview screen

Diagrammatic representation of your electrical system with visualisations of voltage and animations of power consumption. Incorrect voltage is indicated in red, inactive circuits in grey.





#### **Tank level screen**

Provides the latest data on the contents of up to 20 tanks, with an option to set warning signals for both full and (almost) empty fuel and water tanks. Tank level sensors are linked to the MasterBus network and automatically detected and visualised by the system.

#### **Favourites screen**

Use this screen to custom configure which information and control functions appear. All information available via the MasterBus network can be viewed, where required in more logically laid out pages. For example, you might have an overview page, a page showing the status of your pumps, a page with engine information and another page with NMEA2000 data.

#### **MasterAdjust software**

MasterAdjust software is the predecessor of the MasterView System software and available for download via the Mastervolt website. It allows installers to align all Mastervolt equipment and provides data, parameters and settings per application and per device. In combination with the PC-Link, MasterAdjust software can also 'talk' to products via serial communication such as:

- BTM-I
- BTM-III
- MAC 24/12-20 DC-DC converter
- MAGIC DC-DC converters
- ChargeMaster 12/10, 12/15, 24/6
- Mass Combi 12 V
- Mass Combi 24 V

