



USERS MANUAL

MasterBus DDC Interface

Interface for remote operation of a Mastervolt Whisper generator set by the MasterBus network



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1 GENERAL INFORMATION

1.1 GENERAL

The Mastervolt *MasterBus - Digital Diesel Control - interface*, further mentioned as “MasterBus DDC Interface” is an interface for communication between the *MasterBus* network and a Mastervolt Whisper generator set which is controlled by *Digital Diesel Control* (“DDC”). Operation, monitoring and configuration of the generator set can be performed by any *MasterBus* remote control panel, such as the *MasterView Easy* panel, the *MasterView System* panel or a computer in combination with *MasterAdjust software* and a *MasterBus-USB interface*

In addition to a remote control panel, several other *MasterBus* compatible equipment can be added to the *MasterBus* network, which can all be monitored, configured and operated by the same remote control panel. See chapter 6 for more information about *MasterBus*.

1.2 VALIDITY OF THIS MANUAL

This manual serves as a guideline for the safe and effective operation and maintenance of the *MasterBus DDC Interface*.

This manual is valid for the following models:

Part no.	Version	Description
77031600	A	MasterBus DDC Interface

See 1.5 for identification of the product. For other models see other manuals available on our website: www.mastervolt.com.

Keep this manual at a secure place!

The English version has 32 pages.

1.3 GUARANTEE SPECIFICATIONS

Mastervolt guarantees that this product was built according to the legally applicable standards and stipulations. If you fail to act in accordance with the regulations, instructions and stipulations in this user's manual, damage can occur and/or the product will not fulfil the specifications. This may mean that the guarantee will become null and void.

IMPORTANT: Additional warranty agreements, like “Mastervolt system warranty” may contain restrictions which forbid resetting of historical data.

1.4 LIABILITY

Mastervolt can accept no liability for:

- consequential damage due to use of the *MasterBus DDC Interface*;
- possible errors in the manuals and the results thereof;
- use that is inconsistent with the purpose of the product.



Mastervolt cannot be held responsible for damage caused by unattended running of the generator due to the use of the *auto-start/stop mode* or *interval mode* of the *Digital Diesel Control* or by using *event based commands* of the *MasterBus*

1.5 IDENTIFICATION LABEL

The identification label (see figure 1) is located at the front side of the *MasterBus DDC Interface*. Important technical information required for service, maintenance & secondary delivery of parts can be derived from the identification label.

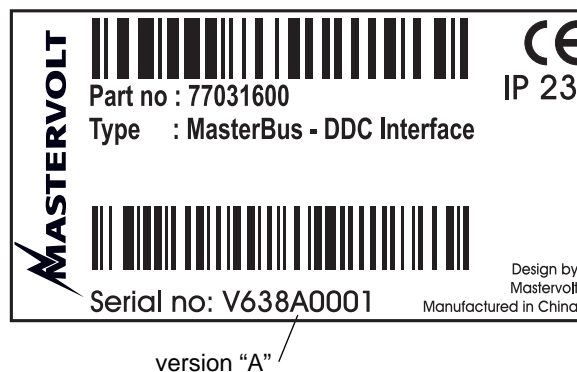


Figure 1: Identification label



Never remove the identification label!

2 SAFETY GUIDELINES AND WARNINGS

2.1 USE OF SYMBOLS

Safety instructions and warnings are marked in this manual by the following pictogram:



A procedure, circumstance, etc which deserves extra attention.



WARNING

A warning symbol draws attention to special warnings, instructions or procedures which, if not strictly observed, may result in damage or destruction of equipment, severe personal injury or loss of life.



DANGER

This danger symbol refers to electric danger and draws attention to special warnings, instructions or procedures which, if not strictly observed, may result in electrical shock which will result in severe personal injury or loss of life.

2.2 USE FOR INTENDED PURPOSE

- 1 The *MasterBus DDC Interface* is constructed as per the applicable safety-technical guidelines.
- 2 Use the *MasterBus DDC Interface* only:
 - in a technical correct condition;
 - in an environment which is protected against rain, moist, dust and condensation (IP 21);
 - observing the instructions in this manual.
 - as an interface between the *MasterBus* network and the *Digital Diesel Control* panel of a Mastervolt Whisper generator set.
- 3 Use of the *MasterBus DDC Interface* other than mentioned in point 2 is not considered to be consistent with the intended purpose. Mastervolt is not liable for any damage resulting from the above.

2.3 SAFETY REGULATIONS AND MEASURES

- 1 Do not work on an electrical system if it is still connected to a current source. Only allow changes in your electrical system to be carried out by qualified electricians.
- 2 Connection and protection must be done in accordance with local standards.

2.4 GENERAL SAFETY AND INSTALLATION PRECAUTIONS

One of the main features of *MasterBus* is the possibility of programming for interactive operation of the connected devices, including automatic starting and stopping of the generator set. This is done by means of *event based commands*. Refer to the contents of this manual for details about programming these *event based commands*.



DANGER

Using *event based commands* the generator can start unexpectedly. When working on the electrical system, the 3 Amp fuse must be removed from the *Local Control Panel* and the battery plus cable must be removed from the battery.

3 INSTALLATION AND INITIAL SETTINGS

3.1 IMPORTANT TO KNOW



WARNING

During installation and commissioning of the *MasterBus DDC Interface*, the Safety Guidelines and Measures are applicable at all times. See chapter 2 of this manual. Among others this means that the generator set may not run and the starter battery must be disconnected

- For its communication, the *MasterBus* network is powered by its connected devices. Therefore, at least one device in the network should have powering capabilities (check the specifications of the *MasterBus* device). Note that one powering device can power a maximum of three non-powering devices. See section 6.2. The *MasterBus DDC Interface* has no powering capabilities, neither do the *MasterBus* remote control panels or the *MasterBus-USB interface*.
- For regular operation and initial settings of the Whisper generator set, the *MasterBus* network should have at least one *MasterBus* remote control panel, such as the *MasterView Easy* panel, the *MasterView System* panel or a computer in combination with *MasterAdjust* software and a *MasterBus-USB interface*

3.2 INSTALLATION

3.2.1 Things you need

Materials:

- ☑ The *MasterBus DDC Interface* (included)
- ☑ Interface communication cable (to connect the *MasterBus DDC Interface* to the *Digital Diesel Control* panel of the generator set; 1 meter / 3ft, included)
- ☑ *MasterBus* communication cable (1 meter / 3ft included)
- ☑ *MasterBus* terminating device (1 pc. included)

3.2.2 Step-by-step installation

The *MasterBus DDC Interface* must be mounted in the vicinity of the *Digital Diesel Control* panel, protected against rain, moist, dust and condensation.

Below stated steps describe a basic installation of the *MasterBus DDC Interface* in combination with a generator set which is provided with a *Digital Diesel Control* panel. If necessary, refer to the installation manual of your specific generator set.

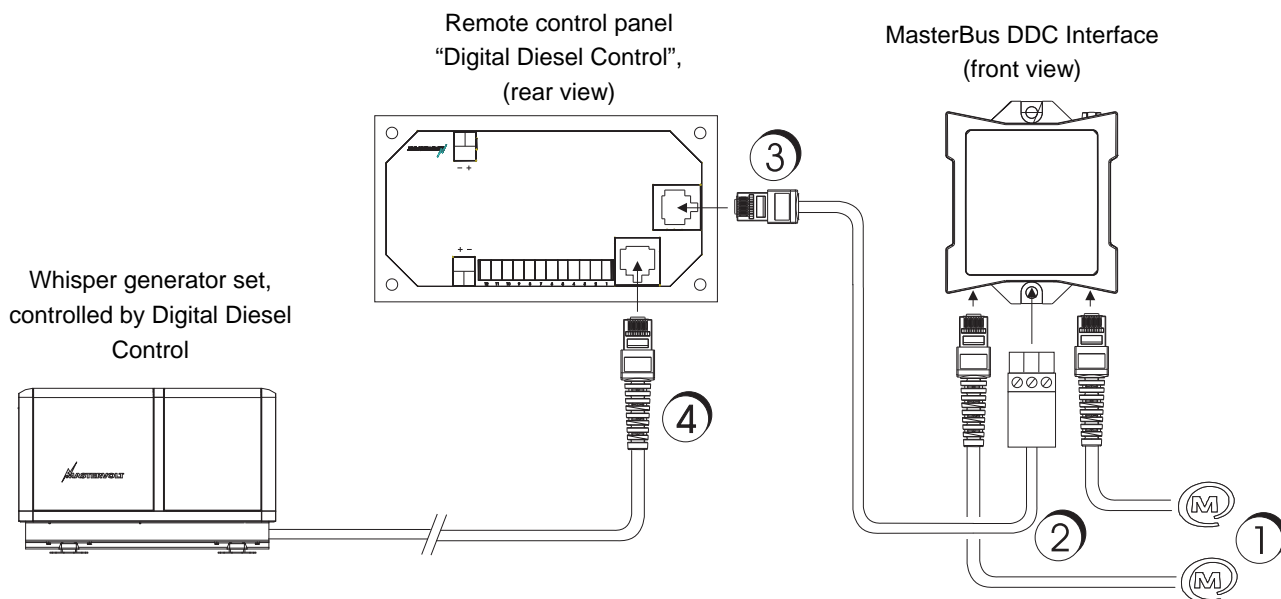


Figure 2: Installation of the MasterBus DDC Interface



Refer to section 6.3 if you want to use two or more generator sets in the same electrical installation.

- 1 Mount the *MasterBus DDC Interface* on a surface or a standard DIN-rail. See section 9.2 for dimensions
- 2 See figure 2. Connect the *MasterBus DDC Interface* to the *MasterBus* network as indicated (reference 1).



Refer to section 6.2 for details about setting up a *MasterBus* network

- 3 Insert the green connector of the interface communication cable into the *MasterBus DDC Interface* (reference 2).
- 4 Insert the other end of the interface communication cable into one of both communication ports (it doesn't matter which one) on the backside of the remote control panel "*Digital Diesel Control*" (reference 3). This panel is in the standard delivery of the generator set.
- 5 Insert the remote control cable that comes from the generator into the other communication port of the remote panel "*Digital Diesel Control*" (reference 4)

3.3 INITIAL SETTINGS AT THE DIGITAL DIESEL CONTROL PANEL

Some functions of the *Digital Diesel Control* system are not supported by *MasterBus* and can only be controlled or monitored by means of the remote panel of the *Digital Diesel Control*. See section 4.2.2 for an overview. To avoid any unexpected starting or stopping of the generator when using the *MasterBus DDC Interface*, it is strongly recommend to disable the following functions on the *Digital Diesel Control* panel:

- the *Autostart* function
- the *Interval mode*



With new delivered Whisper generator sets the *Autostart* function and the *Interval mode* are disabled by default

Take the following steps at the *Digital Diesel Control* panel to check whether the *Autostart* function and the *Interval mode* are disabled (see figure 3). Make sure the generator set is not running (press *Stop*)

- 1 Hold *Select* pressed until SELECT MENU is shown.
- 2 Press *Select* several times shortly to scroll through the *Select menu*
- 3 While scrolling through the *Select menu* check whether AUTOSTART MENU or INTERVAL MENU are shown. If so, refer to chapter 9 and 10 of the operating manual of the *Digital Diesel Control* to disable these functions. If these functions are not shown here, you can be sure that *Autostart function* and the *Interval mode* are disabled

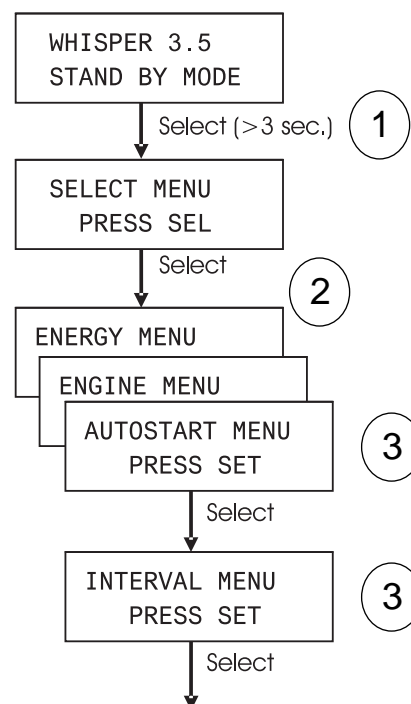


Figure 3

3.4 INITIAL MASTERBUS SETTINGS

After commissioning of the generator set (see installation manual of the generator set) and installation of the *MasterBus-DDC interface*, the generator set will be recognized by the *MasterBus* network automatically. This may take a few seconds.

Before using the generator set for the first time, the correct language and the device name can be adjusted. For this purpose use a computer in combination with *MasterAdjust software* and a *MasterBus-USB interface* is recommended (see section 3.4.1), although it can also be done by using any kind of *MasterBus* remote control panel (see section 3.4.2 when applying a *MasterView Easy* panel).



The clock and language settings of the *Digital Diesel Control* and the *MasterBus* do not synchronize with each other. Therefore these settings must be adjusted manually on both systems.



We recommend modifying the default device name **ONLY** when a conflict may occur between two devices with the same default device name. This will only happen when two similar products are connected to the *MasterBus* network. See section 6.3.

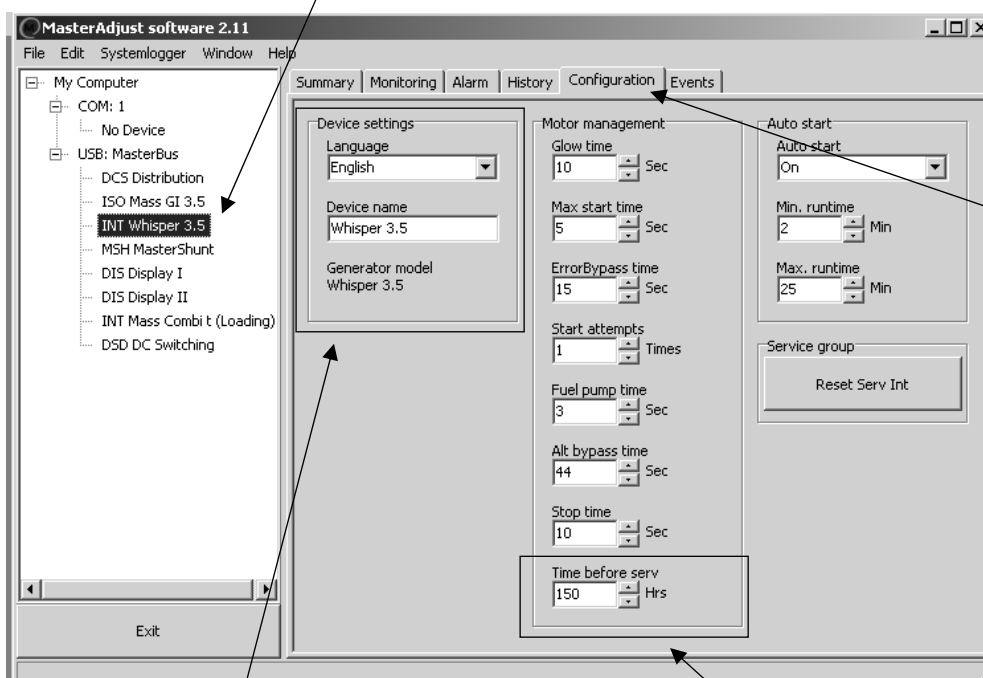


Settings are stored in the memory of the selected device (i.e. the *Digital Diesel Control* of the generator set). This means that disconnecting or switching off the generator will not affect the settings.

3.4.1 Using MasterAdjust software

Follow the steps as numbered below.

- 1 After starting up the *MasterAdjust* software, wait until the Generator set is shown on the list of devices. Then select "INT Whisper xx" (where "xx" stands for the model identification of the generator)



2

Click on the
Configuration tab

3

- At "Device settings" section you can change
- *Language* by selecting from the drop down menu
 - *Device name*. By default the model name of the Whisper generator set is shown. You can change the device name by entering a new name (not recommended)

4



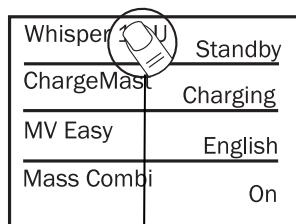
DO NOT CHANGE THIS VALUE FOR NEW INSTALLED GENERATOR SETS.

With previously installed generator sets, *Time before serv* must be adjusted to 150 Hrs.

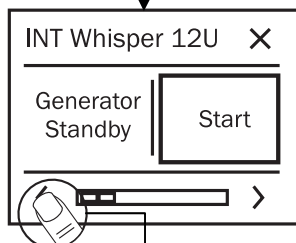
Figure 4: Initial settings using MasterAdjust software

3.4.2 Using the MasterView Easy panel

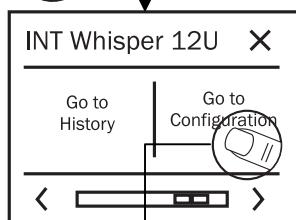
Follow the steps as indicated below:



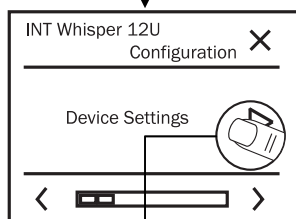
Make sure that the Whisper generator is in *Standby mode* (generator is not running and no failure was detected). From the device list, touch the field which indicates “Whisper”. If any other screen is shown, touch the X in the right upper corner several times until a listing of devices is shown



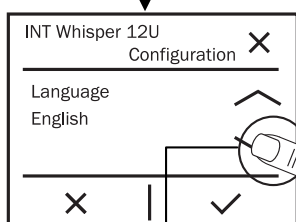
Touch the left pointing arrow < on the menu bar repeatedly until “Go to Configuration” is shown.



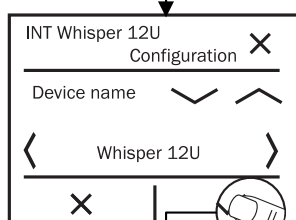
Touch the “Go to Configuration” field. Then “Device Settings” is shown.



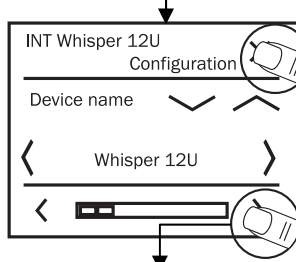
Touch the “Device Settings” field to open the device settings menu.



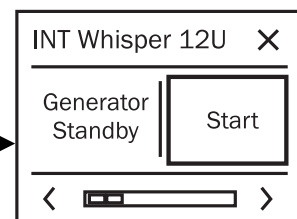
With the first screen you can select the desired language by touching the up/down pointing arrows. After selecting, touch ✓ to confirm. Then touch the right pointing arrow > on the menu bar.



Device name is shown. By default the model name of the applied Whisper generator set is shown. You can change the device name by touching the up/down/left/right pointing arrows (not recommended). Touch ✓ to confirm



New installed generator sets: touch the X in the right upper corner twice to return to the initial screen



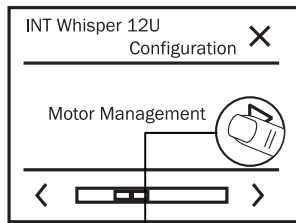
Ready!

Previously installed generator sets: touch the right pointing arrow > on the menu bar (see next page)

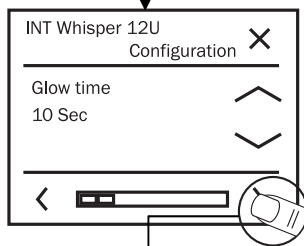


DO NOT CHANGE BELOW SETTINGS FOR NEW INSTALLED GENERATOR SETS!

With new installed generator sets, touch the X in the right upper corner twice to return to the initial screen

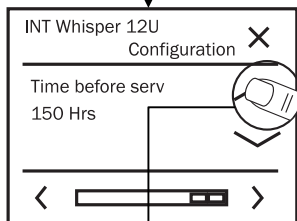


With previously installed generator sets, touch the “Motor Management” field to open the motor management menu

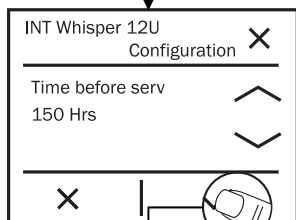


Glow time is shown.

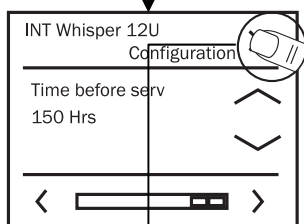
On the menu bar touch the right pointing arrow > repeatedly until *Time before serv* is shown



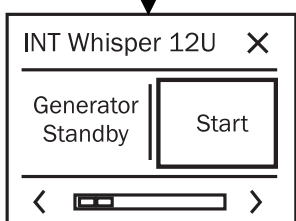
Time before serv must be adjusted to 150 Hrs. Touch the up/down pointing arrows to adjust



Touch ✓ to confirm your setting



Now touch the X in the right upper corner twice to return to the initial screen



Ready!

Figure 5: Initial settings using the MasterView Easy remote panel

4 OPERATION OF THE WHISPER GENERATOR SET

4.1 GENERAL

After finishing the installation and initial settings of the of the *MasterBus DDC Interface* (see chapter 3) the Whisper generator can be operated in several ways

- By means of the *Local Control Panel* on the generator set itself. Refer to the user's manual of the generator set
- Remotely by using the *Digital Diesel Control* panel which is standard delivered with the generator set. Refer to the operating manual of the *Digital Diesel Control*.
- Remotely by means of the *MasterBus* network

This chapter describes the basic operation of the generator by using *MasterBus*.



As the operation and visualisation of each remote control panel differs from the other, we cannot give any detailed information about the use of these panels in combination with the *MasterBus DDC Interface*. Refer to the user's manual of the applied remote control panel for details.

4.2 REMOTE OPERATION BY MASTERBUS

4.2.1 Use of a MasteBus control panel

Mastervolt can supply several remote monitoring and control panels for *MasterBus* (see chapter 8 for an overview of available models). These panels can be used as a central monitoring and control panel for all devices that are connected to the *MasterBus* network, including the generator set.

In addition, the *MasterBus* can also be monitored and controlled by means of a computer in combination with *MasterAdjust* software and a *MasterBus-USB* interface



Switching off the *MasterBus* remote control panel may lead to a *Communication Failure*, causing the generator to stop! (See section 5.4, **Engine failures**)

4.2.2 Restrictions when using the MasterBus DDC Interface

When using the *MasterBus DDC Interface* below functions of the *Digital Diesel Control* system are not available by *MasterBus* and can only be controlled or monitored by means of the remote panel of the *Digital Diesel Control*:

- All functions that are related to the *Display menu* (see operating manual of the *Digital Diesel Control*, chapter 11) including the real time clock. Please note that the clock of the *Digital Diesel Control* does not synchronize with the real time clock of the *MasterBus*
- All functions that are related to the *Service menu* (see operating manual of the *Digital Diesel Control*, chapter 12) except resetting of the maintenance time counter (see sections 4.6 and 5.3, **Service group**)
- Readings of the second battery (BAT2)
- All functions that are related to the *Energy menu* (see operating manual of the *Digital Diesel Control*, chapter 7), including all warning messages
- All functions that are related to the *Autostart* function (see operating manual of the *Digital Diesel Control*, chapter 9);
- All functions that are related to the *Interval mode* (see operating manual of the *Digital Diesel Control*, chapter 10);

4.3 STARTING AND STOPPING

4.3.1 Starting

There are five ways to initiate a start cycle of the generator set:

- Manually, by touching the Start button on the *MasterBus* remote control panel;
- Manually, by touching the Start button on the *Digital Diesel Control* remote control panel;
- Automatically, after a failed start attempt;
- Automatically, triggered by an *Event based command* (see section 5.3, **Auto settings**);
- Automatically, triggered by the *Autostart* function or the *Interval mode* (these functions are not supported by *MasterBus*; see section 3.3).

In all cases the start cycle is similar. The *MasterBus* remote control panel shows all stages of the start cycle (see table below).

Status	Explanation
Pumping	Fuel pump is activated
Glowing	Glowing (pre heat)
Starting	Starting
Running	Running

When the generator was started successfully, the status of the generator set will become *Running*. See section 5.1.2. When the generator set failed to start, all stages of the start cycle are repeated (default: 3 times; see section 5.3, **Motor management** to adjust the settings of the start cycle). When the generator set is still not running OK after the maximum number of start attempts, it is stopped and a failure code is displayed. See section 5.4 for an overview of all possible failure codes.



At all times the start cycle can be interrupted by touching the “GEN Stop” button on the *MasterBus* remote control panel

4.3.2 Stopping

There are six ways to stop the generator set:

- Manually, by touching the “GEN Stop” button on the *MasterBus* remote control panel;
- Manually, by touching the “Stop” button on the *Diesel Control* remote control panel;
- Automatically, triggered by a *Event based command* (see section 5.3, **Auto settings**);
- Automatically, caused by a hardware failure of the generator set (see section 4.5);
- Automatically, after a failed start attempt (see section 4.5.2);
- Automatically, triggered by the *Autostart* function or the *Interval mode* (these functions are not supported by *MasterBus*; see section 3.3)

In all cases the stop cycle is similar. The *MasterBus* remote control panel will show “Stopping”

Status	Explanation
Stopping	Generator is stopped
Standby	Generator is in standby mode
Failure	Generator was stopped due to a failure

See section 5.3, **Motor management** to adjust the settings of the stop cycle (model Whisper 3.5 only; all other models: 10 seconds, fixed). After the generator set was stopped, it returns to the *Stand-by* status (or the *Failure* status if a failure was detected).

4.4 MONITORING AND ACCESS TO SUBMENUS

With all *MasterBus* remote control panels you have access to the following menus:

- *Monitoring* menu. In general, this menu is shown as default, showing the actual status of the generator set, including details about the performance. See section 5.1
- *History* menu, showing details about the use of the generator set in the past. This menu is accessible from the *Monitoring* menu. See section 5.2 for details.
- *Configuration* menu, giving you access to change the settings of the generator set. Also accessible from the *Monitoring* menu. See section 5.3 for details.
- *Alarm* menu, used for displaying and processing of hardware failures that were detected by the generator set. Also accessible from the *Monitoring* menu. See section 5.4 for details.

4.5 FAILURES

If a hardware error is detected or when the generator set is exceeding its specifications, the generator set will be stopped automatically. The failure is made visible by means of a pop-up on the screen of the *MasterBus* remote control panel.

4.5.1 Processing failures

Restarting the generator set is only possible after correcting the failure and accepting the failure message. See figures 6 and 7 for reference. Proceed as follows:

- 1 By touching the "Snooze"-button the pop-up will disappear for a while.
- 2 After touching the "Snooze"-button the origin of this failure is shown as "Last failure". This failure message

is also made visible at the Alarm menu (see section 5.4 for an overview of all possible failure messages) Investigate the cause of this failure by means of the fault finding table in the user's manual of the generator set and take adequate measures to avoid such failures in the future.

- 3 Restarting the generator will remain blocked until you have accepted the displayed failure. Therefore touch the "Accept failure"-button.

Now the generator is ready for a new start. See section 4.3.1 to start the generator set again.



Threshold values of the failures are factory set and can not be adjusted.

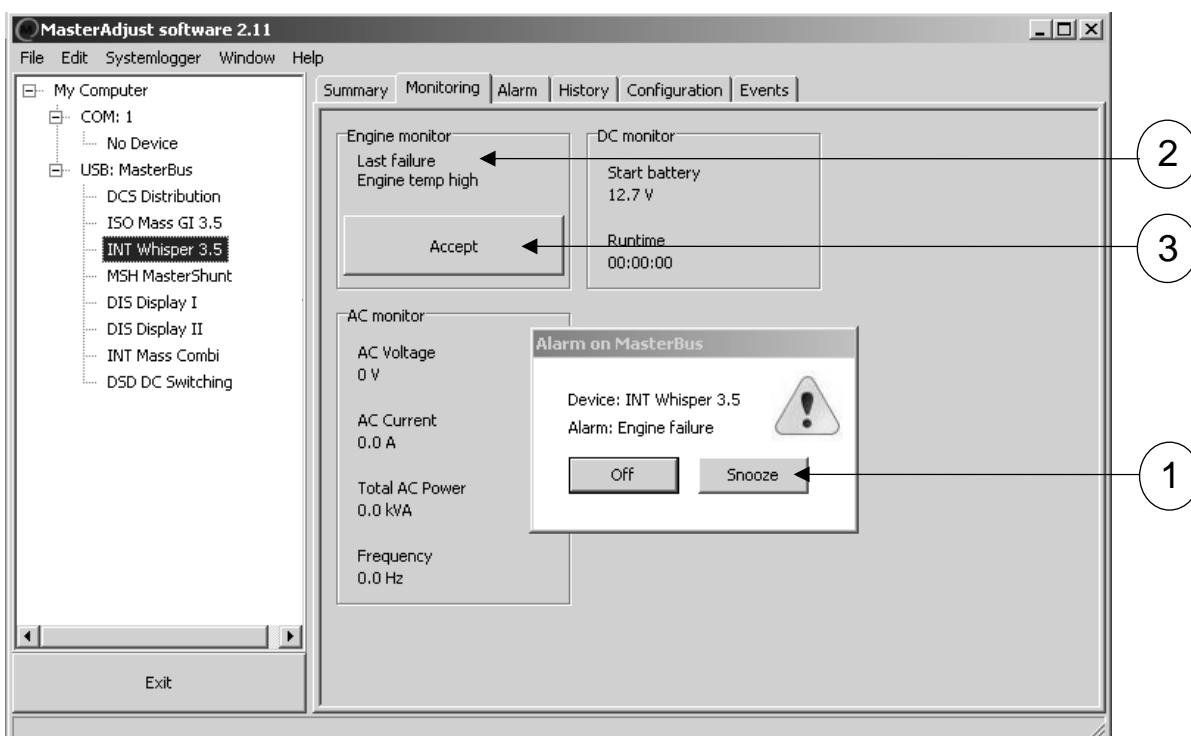


Figure 6: Processing a failure using MasterAdjust software

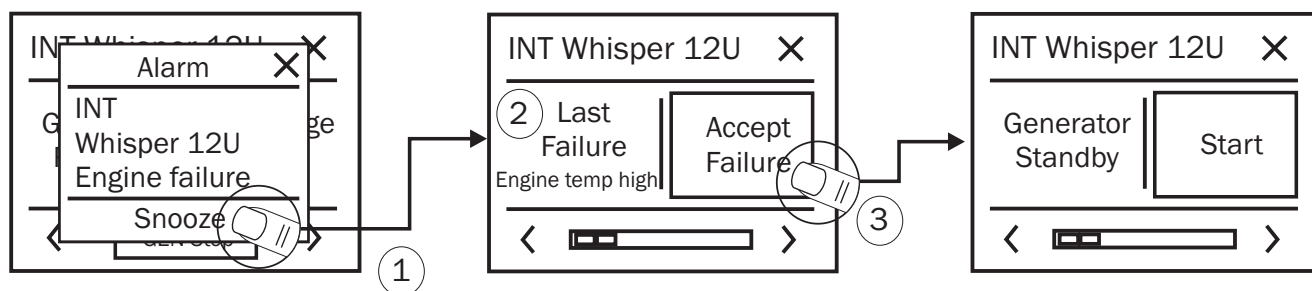


Figure 7: Processing a failure using the MasterView Easy remote control panel

4.5.2 Failure during starting

If the generator set fails to start after a start attempt, the control unit on the generator automatically tries to start the generator again. Note that the maximum number of start attempts is restricted (see section 5.3, **Motor management** for settings).

Activation of the cranking motor is stopped when the following conditions are met:

- The output frequency of the generator set is >25Hz or the generator set produces a battery charging voltage;
- None of the sensor switches on the generator set detects an error.

The measurement of these conditions will be delayed by the *ErrorBypass time* to be sure the generator set is running stable. Factory setting of the *ErrorBypass time*: 15 sec (see section 5.3, **Motor management** for adjustment of this timer).

4.6 GENERATOR MAINTENANCE

Regular service and maintenance should be carried out according to the directions in the user's manual of the Whisper generator set. Refer to the user's manual of the Whisper generator set

4.6.1 Maintenance time counter

The Whisper generator set is equipped with an hour counter to indicate the time before maintenance. It will help you to schedule maintenance.

Default settings of the maintenance time interval

First maintenance	After 50 hrs.
Next maintenance	Every 150 hrs.



WARNING

The maintenance time interval is not only determined by the number of running hours, but also by factors like environmental conditions, average runtime, connected load, etcetera. The hour counter of the Whisper generator set does not take account of these factors.



If you want to change the settings of the maintenance time interval, see section 5.3, **Motor management**.

4.6.2 Reset maintenance time

See chapter 5.3, **Service group** to reset the counter of the maintenance time after the generator set has been serviced.



When resetting the maintenance time counter, make sure that the Whisper generator is in *Standby mode* (generator is not running and no failure was detected).

To check whether you actually did reset the counter of the maintenance time, check the value *Time to service* at the monitoring menu. See section 5.1, **Engine Monitor**. A new maintenance time interval shall be shown here (default: 150hrs.)



As the starting battery of the generator was probably disconnected during generator maintenance, it may be necessary to readjust the real time clock of the *Digital Diesel Control*. See operating manual of the *Digital Diesel Control*, chapter 11

5 MONITORING MENU AND SUBMENUS

5.1 MONITORING

5.1.1 Monitoring menu

This section describes the monitoring functions showing an actual status overview of the generator set and the starter battery. None of the displayed information can be modified.

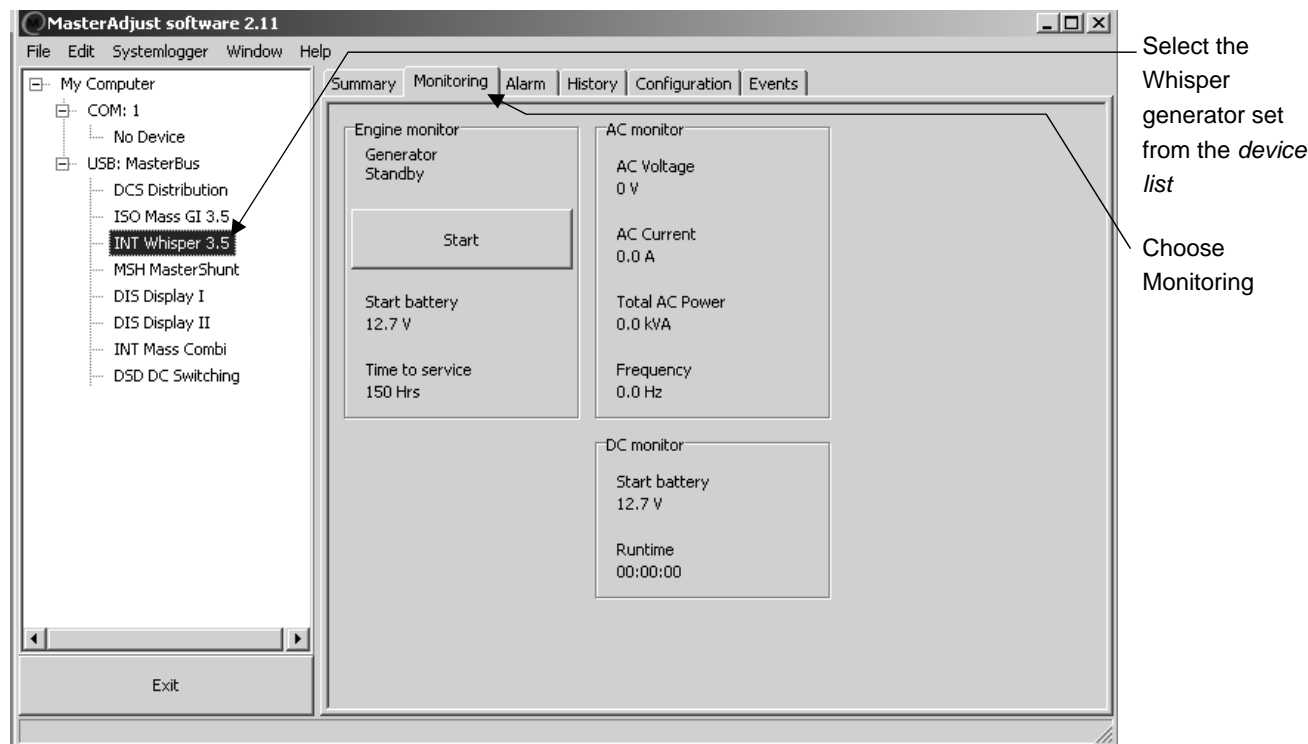


Figure 8: Monitoring menu using MasterAdjust software

Value	Meaning	Remarks
Engine Monitor		
Generator	Status of the generator set	See section 5.1.2 for an overview of all statuses
Start	Start button to initiate the start procedure	Not shown when the generator is running
Start battery	Voltage of the generator's start battery	Not shown when the generator is running
Time to service	Shows the number of hours until the generator set needs to be serviced again. See also section 4.6	Not shown when the generator is running. See section 5.3, Motor management , to adjust the default time of this counter
AC Monitor (Single phase AC output)*		
AC Voltage	AC output Voltage	AC Single phase only
AC Current	AC output Current (Amps)	AC Single phase only
AC Power	Actual load (kVA)	AC Single phase only
Frequency	AC-output frequency	AC Single phase only
AC monitor (split phase)**		
AC Voltage L1	AC output Voltage of phase L1	AC split phase only
AC Current L1	AC output Current (Amps) of phase L1	AC split phase only
AC Power L1	Actual Power (kVA) of phase L1	AC split phase only
AC Voltage L2	AC output Voltage of phase L2	AC split phase only
AC Current L2	AC output Current (Amps) of phase L2	AC split phase only

Value	Meaning	Remarks
AC Power L2	Actual Power (kVA) of phase L2	AC split phase only
AC Power	Total AC Power (kVA) (L1+L2)	AC split phase only
Frequency	AC-output frequency	AC split phase only
AC monitor (three phase)***		
AC Voltage L1	AC output Voltage of phase L1	AC Three phase only
AC Current L1	AC output Current (Amps) of phase L1	AC Three phase only
AC Power L1	Actual Power (kVA) of phase L1	AC Three phase only
AC Voltage L2	AC output Voltage of phase L2	AC Three phase only
AC Current L2	AC output Current (Amps) of phase L2	AC Three phase only
AC Power L2	Actual Power (kVA) of phase L2	AC Three phase only
AC Voltage L3	AC output Voltage of phase L3	AC Three phase only
AC Current L3	AC output Current (Amps) of phase L3	AC Three phase only
AC Power L3	Actual Power (kVA) of phase L3	AC Three phase only
AC Power	Total AC Power (kVA) (L1+L2+L3)	AC Three phase only
Frequency	AC-output frequency	AC Three phase only
DC monitor		
Start battery	Actual voltage of the start battery	
Runtime	Runtime since the latest successful start cycle	

* Only applicable for generators with a single phase AC output (230VAC).

** Only applicable for generators with a split phase AC output (2x 120VAC).

*** Only applicable for generators with a three phase AC output (3x 230/400VAC).

5.1.2 Status overview

The Whisper generator set can have the following statuses.

Status	Meaning
Standby	The generator set is not running and no failure was detected. The generator set is ready for a start.
Standby Automat	Automatic operation mode; the generator is not running and is enabled for automatic starting. See section 5.3 Auto start .
Pumping	A start cycle is in progress (see section 4.3.1)
Glowing	
Starting	
Running	The generator is running; see section 5.1 for monitoring options
Stopping	The generator set is in a stop cycle (see section 4.3.2)
Hydroboost	The generator is running, but the AC alternator is disabled to give full power to the Power Take Off (PTO) connection of the generator set (PTO is available as option on your generator set)
Failure	The generator set was stopped automatically due to a failure (see section 4.5)

5.2 HISTORY MENU

Knowing the history of your generator set can be very useful. It will help you to check if the generator set needs major service maintenance. This can be done by reading the number of successful start attempts compared to the unsuccessful ones. The values mentioned below can not be reset by the user, unless otherwise notified.

See figure below to get access to the History menu; see also section 4.4.

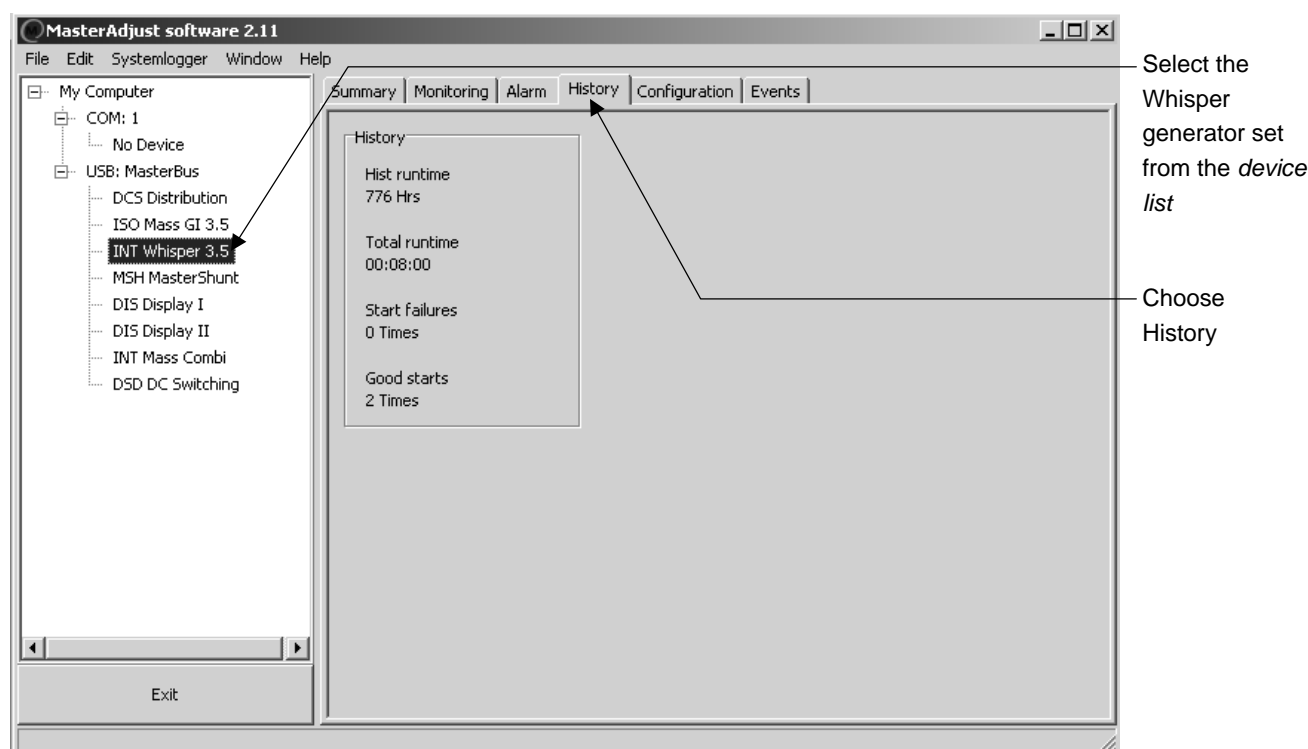


Figure 9: History menu using MasterAdjust software

Value	Meaning	Remarks
Hist Runtime	Hour counter of the generator set	This value cannot be reset
Total Runtime	Shows the cumulative runtime since the latest service maintenance inspection	This value will be reset when the maintenance counter is reset. See section 4.6.2
Start failures	Number of failed start attempts	See section 4.3.1 and 4.5.2 This value can only be reset on the remote panel of the <i>Digital Diesel Control</i> ; See operating manual of the <i>Digital Diesel Control</i> , section 12.2 <i>Clear number of start attempts</i>
Good starts	Number of successful start attempts	See section 4.3.1 This value can only be reset on the remote panel of the <i>Digital Diesel Control</i> ; See operating manual of the <i>Digital Diesel Control</i> , section 12.2 <i>Clear number of start attempts</i>

5.3 CONFIGURATION MENU

The Configuration menu is used to adjust the settings of the generator set in accordance with the electrical installation and the requirements of the user.

Under normal circumstances adjustments at the Configuration menu are not recommended. See section 3.4 if you want to adjust the settings for *Language* and *Device name*

See figure below to get access to the Configuration menu; see also section 4.4.



WARNING!

Invalid settings at the Configuration menu can cause serious damage to the generator set as well as the electrical installation. Adjustments may be undertaken by authorised personnel only!

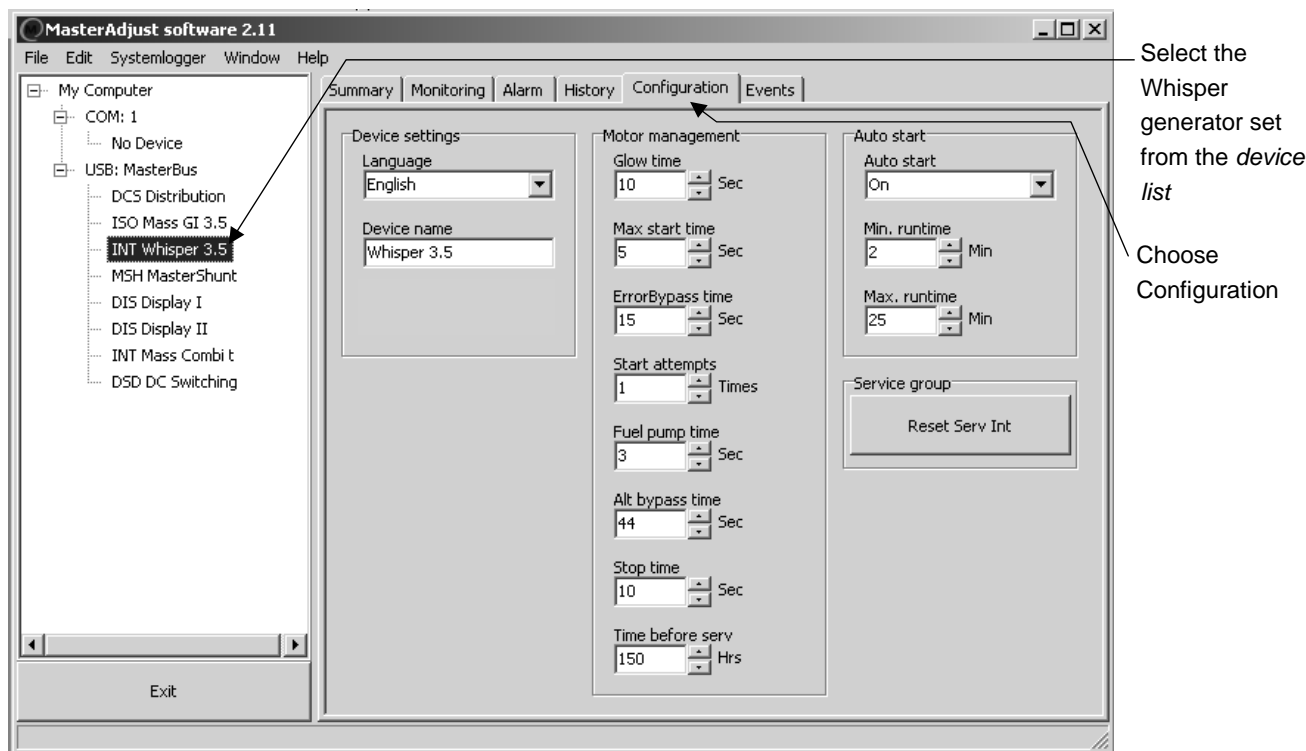


Figure 10: Configuration menu using MasterAdjust software

Value	Meaning	Default setting	Adjustable. range
Device settings			
Language	Language that is displayed on a monitoring device connected to the <i>MasterBus</i> .	English	English, Nederlands, Deutsch, Français, Castellano, Italiano, Norsk, Svenska, Suomi, Dansk.
Device name	Name of this device. This name will be recognized by all devices that are connected to the <i>MasterBus</i> network.	Whisper xx *	All names with a maximum of 16 characters.
Motor management			
Glow time	Pre heat time. For safe operation and longer life span of the generator set it is necessary to glow before starting the generator. Required glow time depends on average ambient temperature in which the generator set is used.	10 sec	1-20 sec.
Max. start time	Adjustment of the maximum run time of the cranking motor.	5 sec	5-15 sec.

Value	Meaning	Default setting	Adjustable. range
ErrorBypass time	To check whether a start attempt was successful, the AC-output voltage, AC frequency and status of the switches is checked This check is delayed by the ErrorBypass time to be sure the generator set is stable in operation.	15 sec	10-30 sec.
Start attempts	If the generator set fails to start after a start attempt, starting of the generator is repeated. This function allows the user to set the maximum number of start attempts.	3	1, 2, 3
Fuel pump time	Adjustment of the operation time of the fuel lift pump prior to the cranking of the engine	3 sec	3-30 sec.
Alt. temp bypass	Delay time for the alternator temperature switch; not applicable for generators with wet exhaust (marine versions)	180 sec	10-180 sec.
Stop time	Time setting for activation of the pull to stop relay (Whisper 3.5 only)	8 sec	5-10 sec.
Time before serv	Under normal circumstances the generator set needs to be serviced for the first time after 50 running hours (fixed value), and then after every 150hrs. However, in some cases a different maintenance interval should be applied. Refer to the user's manual of the generator for detailed information	150 Hrs	100-250 Hrs
Auto start			
Auto start	When using the Autostart function the generator can be started automatically triggered by an event based command. See section 6.4 for details. This setting must be set to "On" if you want to enable the Autostart function.	Off	Off, On
Min runtime	The minimum time that the generator set will keep running after it was started by the Autostart function	60 min	0-65535 min
Max runtime	To avoid an incessant generator run a maximum runtime can be set here.	60 min	0-65535 min
Events**			
Event x source	<i>Event-based command</i> (see section 6.4) Event by the Whisper generator set that should result in an action by one of the other devices on the <i>MasterBus</i> network.	Disabled	(See List of event sources, section 6.4.2)
Event x target	<i>Event-based command</i> (see section 6.4) Selection of device on the <i>MasterBus</i> network that should take action due to an event by the Whisper generator set.		(See Device list)
Event x command	<i>Event-based command</i> (see section 6.4) Action to be taken by the selected device.		(See <i>List of event commands</i> in the manual of the selected device.)
Event x data	<i>Event-based command</i> (see section 6.4) Value of the action to be taken by the selected device.		(See <i>List of event commands</i> in the manual of the selected device.)
Service group			
Reset serv. int	Reset of maintenance time. See section 4.6.2	Off	Off, On

* xx = model identification.

** with some versions of the *MasterAdjust* software the *Events* are shown in a separate menu

5.4 ALARM MENU

At the Alarm menu the *Failure messages* are shown. Refer to the trouble shooting chapter at the user's manual of the generator set. Consult an installer, if you cannot solve the problem by means of this user's manual. See also chapter 7 for trouble shooting.

See figure below to get access to the Alarm menu; see also section 4.4.

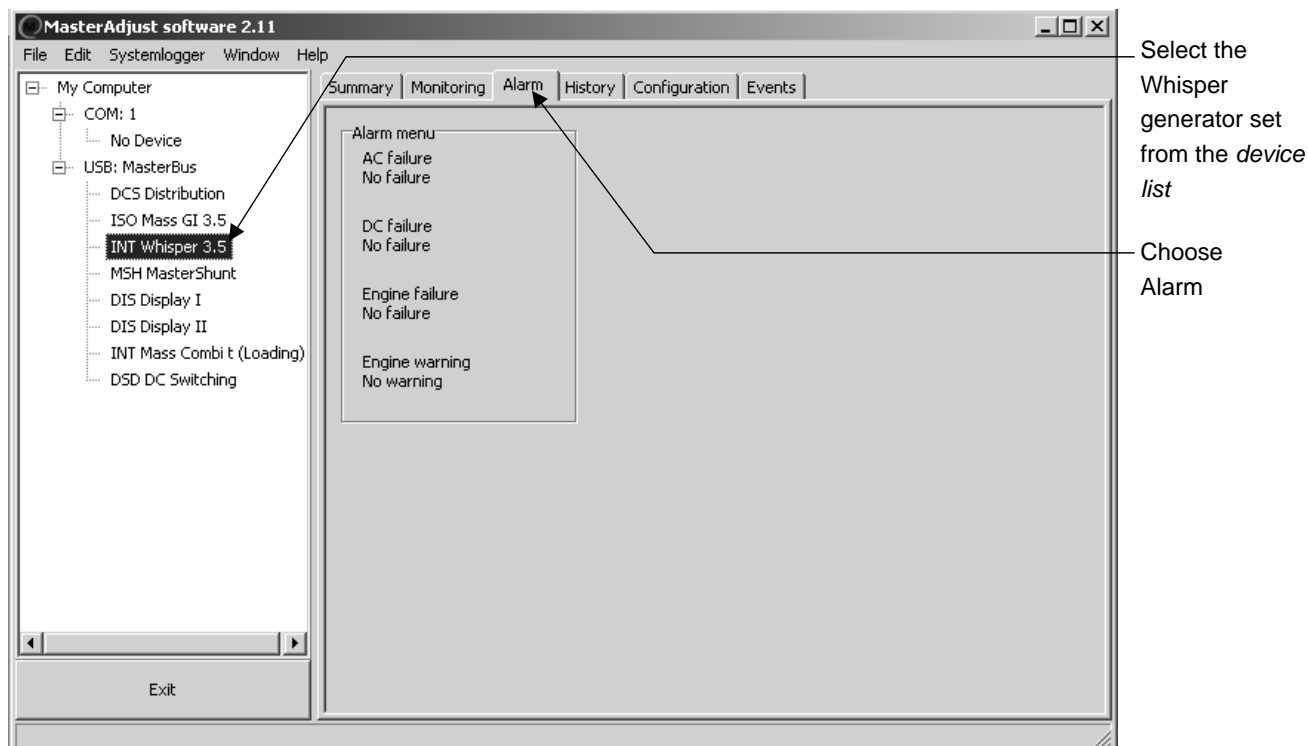


Figure 11: Alarm menu using MasterAdjust software

Failure message	Meaning	Remarks
AC failures		
No failure	None (no failure detected)	
UAC Low	AC output voltage is too low	1)
UAC High	AC output voltage is too high	1)
UAC1 Low	AC output voltage of phase 1 is too low	2)
UAC1 High	AC output voltage of phase 1 is high	2)
UAC2 Low	AC output voltage of phase 2 is too low	2)
UAC2 High	AC output voltage of phase 2 is high	2)
UAC3 Low	AC output voltage of phase 3 is too low	3)
UAC3 High	AC output voltage of phase 3 is high	3)
IAC High	AC output current is too high	1)
IAC1 High	AC output current of phase 1 is too high	2)
IAC2 High	AC output current of phase 2 is too high	2)
IAC3 High	AC output current of phase 3 is too high	3)
FAC Low	AC output frequency is too low	
FAC High	AC output frequency is too high	
DC failures		
No failure	None (no failure detected)	
UDC Bat low	Voltage of the start battery is too low	

Failure message	Meaning	Remarks
Charger failure	Defective charger, charger fuse blown	
Engine failures		
No failure	None (no failure detected)	
Oil pressure low	Oil pressure too low (oil pressure switch tripped)	
Engine temp high	Engine temperature too high (engine temperature switch tripped)	
Exhaust temp hi	Exhaust temperature is too high (exhaust temperature switch tripped)	4)
Alternator temp	Alternator temperature too high (alternator temperature switch tripped)	5)
Communication	Communication error between the generator set and the apparatus that gave a command which resulted in starting of the generator set. For instance connection between the generator set and the <i>MasterBus</i> remote control panel was lost	
Start failure	Start failure (see section 4.5.2)	

Remarks:

- 1) Only applicable for generators with a single phase AC output (230VAC).
- 2) Only applicable for generators with a split phase AC output (2x 120VAC) or a three phase AC output (3x 230/400VAC)
- 3) Only applicable for generators with a three phase AC output (3x 230/400VAC).
- 4) Not applicable for generator sets for mobile applications or keel cooling.
- 5) Not applicable for generator sets for marine applications.

6 ADDITIONAL INFORMATION

6.1 WHAT IS MASTERBUS?



All devices that are suitable for *MasterBus* are marked by the *MasterBus* symbol.

MasterBus is a fully decentralized data network for communication between the different Mastervolt system devices. It is a CAN-bus based communication network which has proven itself as a reliable bus-system in automotive applications. *MasterBus* is used as power management system for all connected devices, such as the inverter, battery charger, generator and many more. This gives the possibility for communication between the connected devices, for instance to start the generator when the batteries are low.

MasterBus reduces complexity of electrical systems by using UTP patch cables. All system components are simply chained together. Therefore each device is equipped with two *MasterBus* data ports. When two or more devices are connected to each other through these data ports, they form a local data network, called the *MasterBus*. The results are a reduction of material costs as only a few electrical cables are needed and less installation time.

For central monitoring and control of the connected devices Mastervolt offers a wide range of panels which show full status information of your electrical system at a glance and a push of a button. Three different panels are available, from the small *Mastervision* compatible 120 x 65mm LCD screen up to the full colour *MasterView System* panel. All monitoring panels can be used for monitoring, control and configuration of all connected *MasterBus* equipment.

Mastervolt also offers several interfaces, making even non-*MasterBus* devices suitable to operate in the *MasterBus* network. For more details about *Masterbus*, see the "Frequently asked questions about *MasterBus*" in the Mastervolt Powerbook.

6.2 HOW TO SET UP A MASTERBUS NETWORK

Each device that is suitable for the *MasterBus* network is equipped with two data ports. When two or more devices are connected to each other through these ports, they form a local data network, called the *MasterBus*.

Keep the following rules in mind:

Connections between the devices are made by standard straight UTP patch cables. Mastervolt can supply these cables. These cables are also commonly available at computer supply stores.

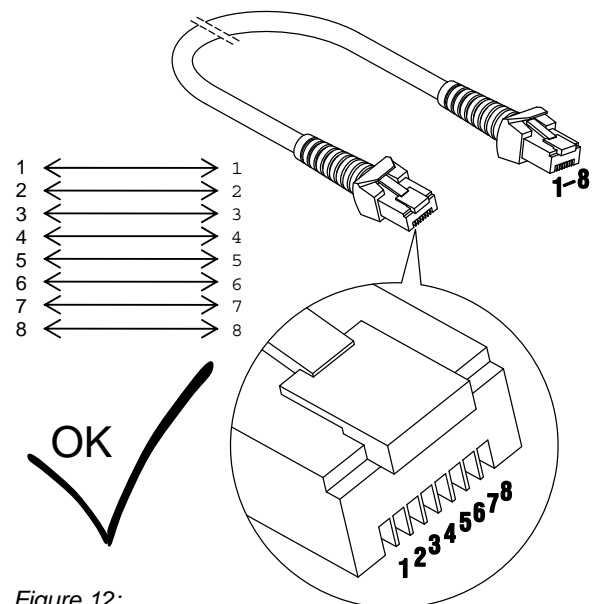


Figure 12:

As with all high speed data networks, *MasterBus* needs a terminating device on both ends of the network

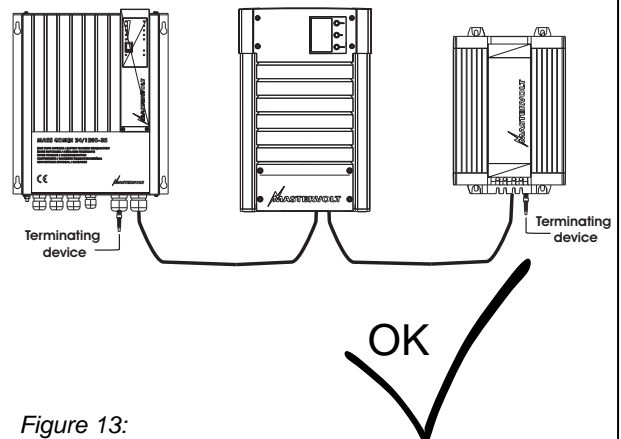


Figure 13:

The electric power for the network comes from the connected devices.

At least one device in the network should have powering capabilities (see specifications).

One powering device can power up to three non-powering devices.

As all powering devices are galvanically isolated, multiple powering devices are allowed

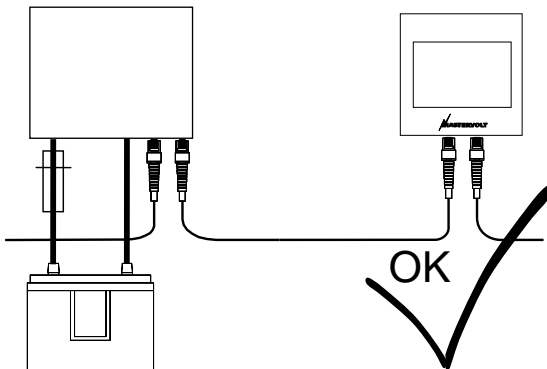


Figure 14:

Do not make ring networks

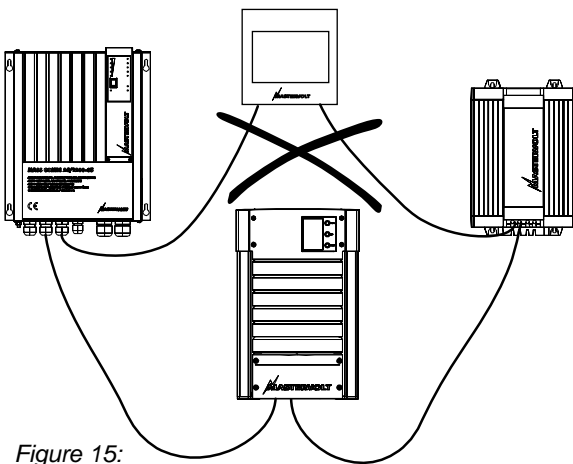


Figure 15:

Do not make T-connections in the network

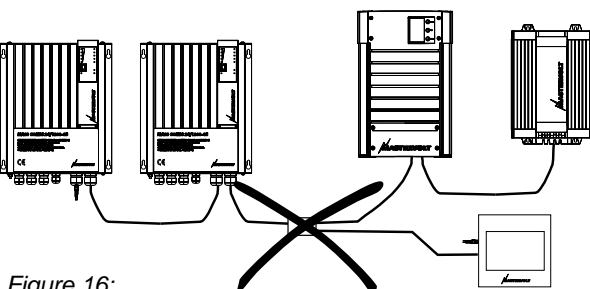


Figure 16:

6.3 EXTENSION OF THE MASTERBUS NETWORK

More devices can be added to the existing network in a very easy way by just extending the network. See section 6.2.

Please mind that equal products by default have the same identification name. To avoid any confusion when connecting two or more equal products to the same *MasterBus* network, you should change the *Device names* of these products. For instance, when using two *MasterView Easy* remote control panels, each panel should have its own *Device name*, such as "Display I" and "Display II". See section 3.4 to change the *Device name*.

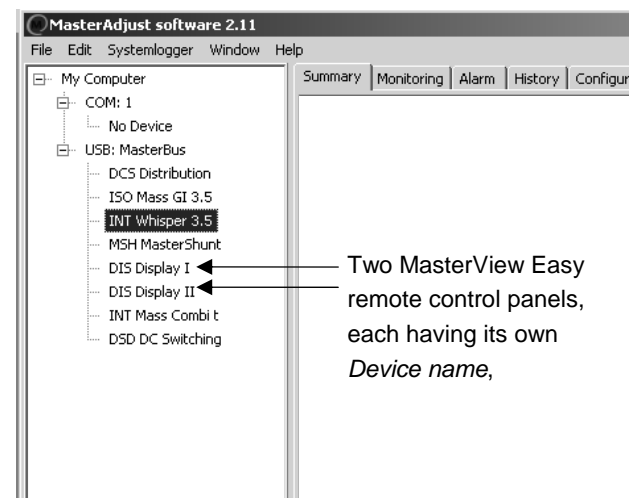


Figure 17:

6.3.1 Installing two or more generator sets



WARNING

Two or more generator sets in the same electrical installation, should NOT be operated by one single *MasterBus* remote control panel. Instead each generator set should be assigned to its own dedicated *MasterBus* remote control panel.

Assigning each generator set its own dedicated *MasterBus* remote control panel can be achieved in either two ways:

- The easiest way is by setting up two independent *MasterBus* networks where each generator set is connected to its own *MasterBus* remote control panel by its own *MasterBus* network. See figure 18. In this way no additional settings are required.

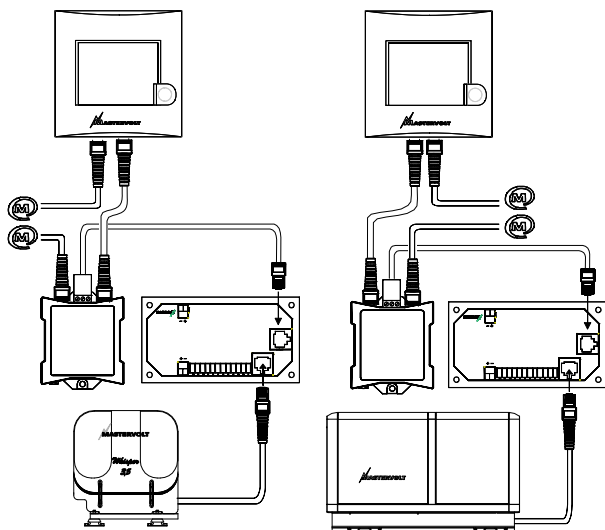


Figure 18:
Two independent MasterBus networks when using two generator sets in the same electrical installation.

- By setting up one MasterBus network with two MasterBus remote control panels. See figure 19. Here each MasterBus remote control panel should be configured as dedicated panel for its corresponding generator set. To do so, see section 6.3.2.

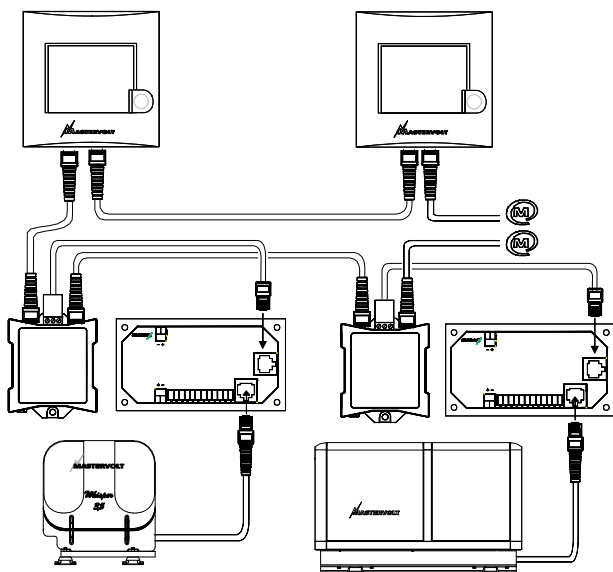


Figure 19:
One MasterBus network with two generator sets. Here each MasterBus remote control panel should be configured as dedicated panel.

6.3.2 Configuration of dedicated MasterBus remote control panels

Below steps should only be taken if you want to set up **one MasterBus network** for **two or more generator sets** with two or more corresponding MasterBus remote control panels. As an example, in the steps below the electrical installation consists of (among others) a *Whisper 3.5* and a *Whisper 6 Ultra*; MasterBus remote control panel #1 will be made dedicated for the *Whisper 3.5* while MasterBus remote control panel #2 will be made dedicated for the *Whisper 6 Ultra*. Configuration for other Whisper models is similar.

- 1 Make sure that none of the Whisper generator sets is running (status = Standby)
- 2 Disconnect the *Whisper 3.5* from the MasterBus network by unplugging its MasterBus cables. Then connect the MasterBus remote control panel #1 directly to the *Whisper 3.5*. Note that the network still needs a device that has powering capabilities and that *terminating devices* should be on both ends of the network.
- 3 Go to the Configuration menu of of MasterBus remote control panel #1
- 4 At "Selected devices" choose "multiple devices".
- 5 At "Device 1 / Select..." choose "*Whisper 3.5*"

Repeat these steps to make MasterBus remote control panel #2 dedicated for the *Whisper 6 Ultra*. After finishing programming, restore the wiring of the MasterBus network to its original configuration.

6.4 EVENT-BASED COMMANDS



DANGER

When using *event based commands* the generator can start unexpectedly. When working on the electrical system, the 3 Amp fuse must be removed from the *Local Control Panel* and the battery plus cable must be removed from the battery.



WARNING

Mastervolt cannot be held responsible for damage caused by unattended running of the generator due to the use of *event based commands*.

With *MasterBus* each device can be programmed to initiate an action at an other connected device. This is done by means of *event based commands*.

6.4.1 List of event commands and data

Below the list of event commands and event data of the *Whisper Generator* is shown. Other devices connected to the *MasterBus* can be programmed to initiate these commands and actions at the *Whisper Generator*.



WARNING

The *Event Command* “Start” is intended for programming of manual starting applications only (such as an additional generator remote control panel). Therefore the *Event Command* “Start” should NEVER be used for automatic starting of the generator set as it denies several critical restrictions such as maintenance time. In case of automatic starting applications you should use the *Event Commands* “Autostart” and “Stop” only.

Event command	Event data	Description
Start	On	The generator set will be started without any restrictions. This command should NEVER be used for automatic starting of the generator set. See WARNING in the text above.
Autostart	On	The generator set will be started but starting is restricted. The generator will not start if: <ul style="list-style-type: none"> • The <i>Autostart</i> function is disabled. See section 5.3, Auto settings • <i>Maintenance time</i> has elapsed. See section 4.6 • A failure has occurred which has not yet been accepted. See section 4.5
	Off	The generator set will be stopped without any restrictions
Stop	On	The generator set will be stopped without any restrictions

6.4.2 List of event sources

Below the list of event sources of the *Whisper generator* is shown. These event sources can be used to initiate an event command and an event action at an other device that is connected to the *MasterBus*.

Event source	Description
Disabled	(no event programmed)
AC present	The generator set is running and stable in operation: the status of the generator set is <i>Running</i> (see section 5.1.2) and the <i>ErrorBypass time</i> has elapsed (see section 5.3, Motor management)
Standby	The generator set is not running: de status of the generator set is <i>Standby</i> (see section 5.1.2)
Failure mode	Generator was stopped due to a failure; see section 4.5
Rated Power	Connected load is more than nominal generator power*
Overload	Connected load is more than maximum generator power. The generator will stop within 5 seconds.
Load >20%	Connected load is more than 20% of the maximum output current of the generator set.
Load >40%	Connected load is more than 40% of the maximum output current of the generator set.
Load >60%	Connected load is more than 60% of the maximum output current of the generator set.
Load >80%	Connected load is more than 80% of the maximum output current of the generator set.

* nominal generator power =70% of maximum generator power

6.5 MASTERADJUST SOFTWARE



At least one of the devices which are connected to the *MasterBus* should have powering capabilities and one powering device can power a maximum of three non-powering devices. See section 6.2. Note that both the *MasterBus-DDC interface* and the *MasterBus-USB interface* have no powering capabilities

MasterAdjust software allows you to monitor, control and configure a *MasterBus* network from a Windows PC or laptop. Use of a *MasterBus-USB interface* for communication between your PC and the *MasterBus* is required. See ordering information. See the user manual of the *MasterBus-USB interface* for detailed information.

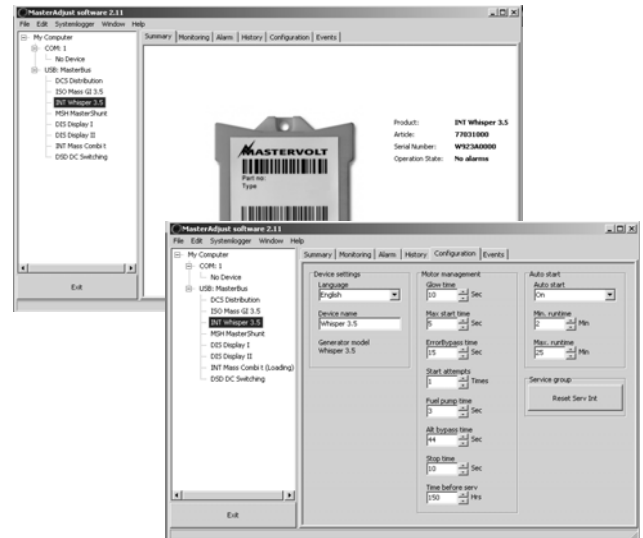


Figure 20: MasterAdjust software

Mastervolt *MasterAdjust* software is available as free to download software on the Mastervolt website (www.mastervolt.com). Features:

- System configuration: to adjust the entire *MasterBus* network and all connected devices in accordance with your personal preferences, including programming of *Event-based commands* (see section 6.4);
- System Monitor: complete actual overview of your entire electrical installation;
- System logger: data logging instrument to retrieve historical data of your electrical installation.

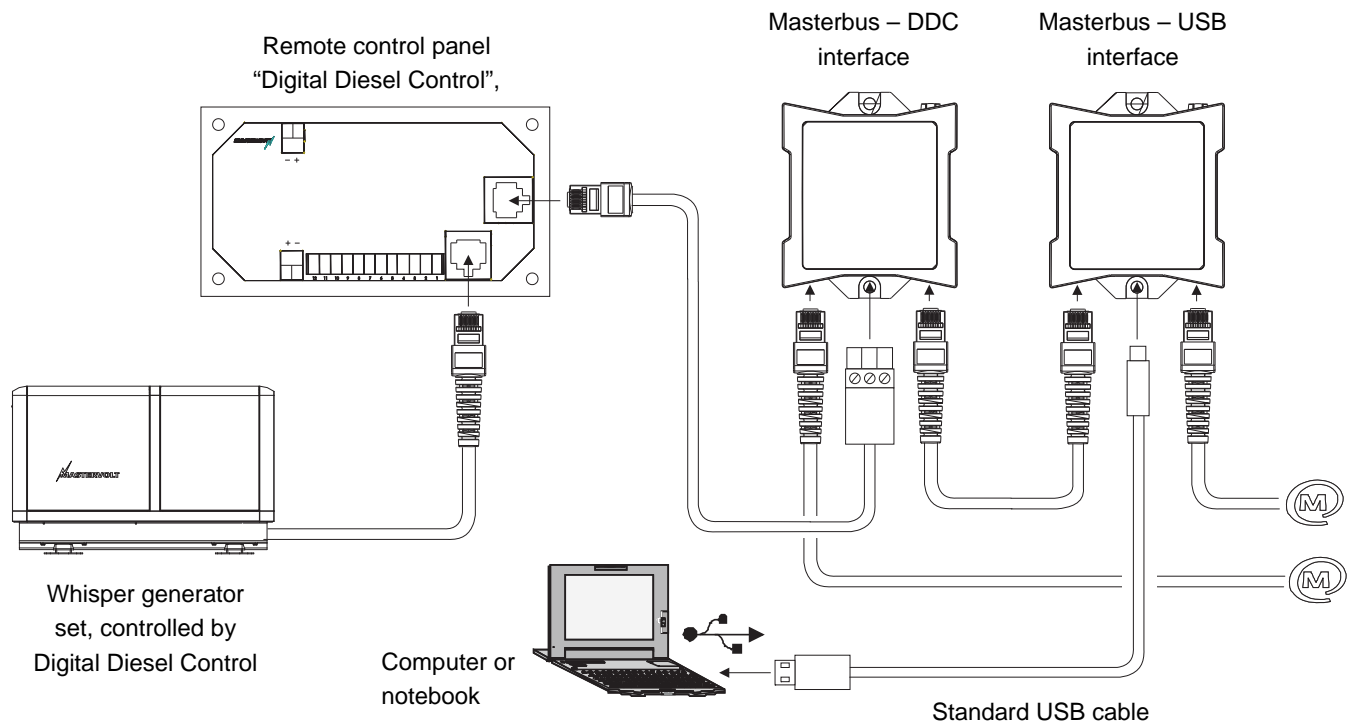


Figure 21: Connection of the MasterBus-USB interface

7 TROUBLE SHOOTING

Contact your local Mastervolt Service Centre if you cannot correct a problem with the aid of the trouble shooting table below. See www.mastervolt.com for an extended list of Mastervolt Service Centres.

Problem	Possible cause	What to do?
General		
<i>MasterBus</i> remote control panel doesn't show any information at all.	<i>MasterBus</i> remote control panel is switched off.	Switch it on. Refer to the user's manual of the remote control panel
	<i>MasterBus</i> network has no or too less devices with powering capabilities (see section 6.2)	Add a device with powering capabilities to the <i>MasterBus</i> network (see section 6.2).
	Error in the wiring.	Check the <i>MasterBus</i> cables. See section 3.2.2 and 6.2.
<i>MasterBus</i> remote control panel shows some information but no data of the Whisper generator set.	Information is shown about an other device that is connected to the <i>MasterBus</i> network.	Select the Whisper generator from the device list See section 5.1.1, figure 8
	Error in the <i>MasterBus</i> wiring.	Check the <i>MasterBus</i> cables. See section 3.2.2 and 6.2.
	Error in the wiring between the <i>MasterBus-DDC interface</i> and the generator set	Check the cabling. See section 3.2.2
	No battery connected to the generator set or faulty fuse.	Check the wiring between the generator set and the battery. Check battery fuse. (see installation manual of the generator set).
	In case of two or more generator sets: each generator set should have its own <i>MasterBus</i> remote control panel.	See section 6.3.1 for details.
Wrong language is displayed at the <i>MasterBus</i> remote control panel	Wrong setting of the language at the <i>MasterBus</i> remote control panel.	See section 3.4 (Initial settings) or 5.3, General for adjustment of the language. Note that the language setting of the <i>Digital Diesel Control</i> does not synchronize with the language setting of the <i>MasterBus</i>
	Wrong setting of the language at one of the connected devices.	Each connected device can have its own language setting. See user's manual of the connected device.
Wrong time is displayed at the display of the <i>Digital Diesel Control</i> remote panel.	Wrong setting.	Refer to the operating manual of the <i>Digital Diesel Control</i> remote panel. Note that the clock of the <i>Digital Diesel Control</i> does not synchronize with the real time clock of the <i>MasterBus</i>
Readings of the second battery (BAT2) are not displayed on the <i>MasterBus</i> remote control panel	This functionality is not supported by the <i>MasterBus-DDC interface</i> (see section 4.2.2)	For monitoring of the other batteries than the generator start battery we recommend using a the <i>MasterShunt 500</i> (see ordering information, chapter 8)
Failures and warnings		
Display shows FAILURE	The generator indicates a failure. The generator set will stop automatically.	See section 4.5
Display still shows FAILURE while problem has been solved	The failure must be accepted first.	Touch "Accept failure". See section 4.5.

Problem	Possible cause	What to do?
WARNINGS displayed on the <i>Digital Diesel Control</i> remote panel are not displayed on the <i>MasterBus</i> remote control panel	The WARNINGS functionality is not supported by the <i>MasterBus-DDC interface</i> (see section 4.2.2)	Representation of WARNINGS and adjustment of warning threshold values are only possible on the <i>Digital Diesel Control</i> remote panel
Automatic operation		
Event based programming is done correctly but generator fails to start.	<i>Autostart</i> function is disabled.	See 5.3, Auto start to enable the <i>Autostart</i> function (<i>Autostart</i> must be set to On).
	<i>Autostart function</i> is disabled if <i>Maintenance time</i> has elapsed.	Maintenance must be executed. See section 4.6.
	<i>Autostart function</i> is disabled caused by a <i>failure</i> .	The failure must be corrected and accepted first. See section 4.5.
Programming of the <i>Interval mode</i> or the <i>Autostart function</i> (starting on low battery) is not possible by means of the <i>MasterBus</i> remote control panel	These functions can only be programmed at the at the <i>Digital Diesel Control</i> remote panel (see section 3.3 and 4.2.2).	Instead of using the <i>Interval mode</i> or the <i>Autostart function</i> of the <i>Digital Diesel Control</i> , we recommend using a <i>MasterBus</i> device that has a timer / low battery alarm functionality (such as the <i>MasterShunt 500</i> , see ordering information, chapter 8)
Engine failures		
Generator does not respond to a command given by a <i>MasterBus</i> remote control panel	Error in the wiring.	Check the <i>MasterBus</i> cables. See section 3.2.2 and 6.2.
	Electrical or mechanical fault.	Refer to the Trouble Shooting section in the user's manual of the Whisper generator set.
	In case of two or more generator sets: each generator set should have its own <i>MasterBus</i> remote control panel.	See section 6.3.1 for details.
After some time the <i>MasterBus</i> remote control panel switches off and the generator stops.	When a <i>MasterBus</i> remote control panel is not operated for 1 day, it will switch off automatically. Switching off this remote control panel will lead to a <i>Communication Failure</i> , causing the generator to stop.	Refer to the configuration section of the user's manual of the <i>MasterBus</i> remote control panel for settings (setting for <i>Auto off</i> must be adjusted to <i>Always on</i>).
The generator suddenly starts or stops.	With previously installed Whisper generator sets the <i>Autostart</i> function or the <i>Interval</i> function may still be enabled	Disabale the <i>Autostart</i> function / <i>Interval</i> function on the <i>Digital Diesel Control</i> remote panel. See section 3.3. See also chapter 9 and 10 of the operating manual of the <i>Digital Diesel Control</i> remote panel.
Maintenance timer		
<i>Time to service</i> setting on the <i>MasterBus</i> remote control panel is not the same as on the <i>Digital Diesel</i> remote control panel	At the Configuration menu <i>Time before serv</i> has not been adjusted to 150 Hrs	See section 3.4 (Initial settings) to adjust <i>Time before serv</i> to 150 Hrs

8 ORDERING INFORMATION

Part number	Description
77040000	MasterBus terminating device*
77040020	MasterBus cable, 0,2m
77040050	MasterBus cable, 0,5m
77040100	MasterBus cable, 1,0m*
77040300	MasterBus cable, 3,0m
77040600	MasterBus cable, 6,0m
77041000	MasterBus cable, 10m
77041500	MasterBus cable, 15m
77042500	MasterBus cable, 25m
77050100	100m / 330ft MasterBus cable (UTP cable)
77050200	50 pcs. modular jacks
77050000	Complete set to assemble <i>MasterBus</i> cables. Delivery includes: 100 meter UTP cable, 50 pcs. modular jacks and crimping tool
--	Interface communication cable* (for communication between the <i>MasterBus DDC Interface</i> and the <i>Digital Diesel Control</i> panel)
77031100	MasterBus Booster, power supply for the <i>MasterBus</i> network (only required if none of the devices connected to the <i>MasterBus</i> has powering capabilities or if the <i>MasterBus</i> network consists of more than three non-powering devices for each powering device)
77010300	MasterView Easy panel
77010400	MasterView System. Full colour LCD System monitor for your onboard electrical system
77020100	MasterShunt 500, battery monitor with system fuse. <i>MasterBus</i> functionality: powering capability for the <i>MasterBus</i> network, low battery alarm function and timers for automatic starting and stopping of generators (by means of <i>Event Based Commands</i>)
---	MasterAdjust software, free download from www.mastervolt.com . See section 6.5
77030100	MasterBus-USB interface, required as interface between your PC and the <i>MasterBus</i> when using <i>MasterAdjust</i> software.

* These parts are standard included with the delivery of the *MasterBus DDC Interface*

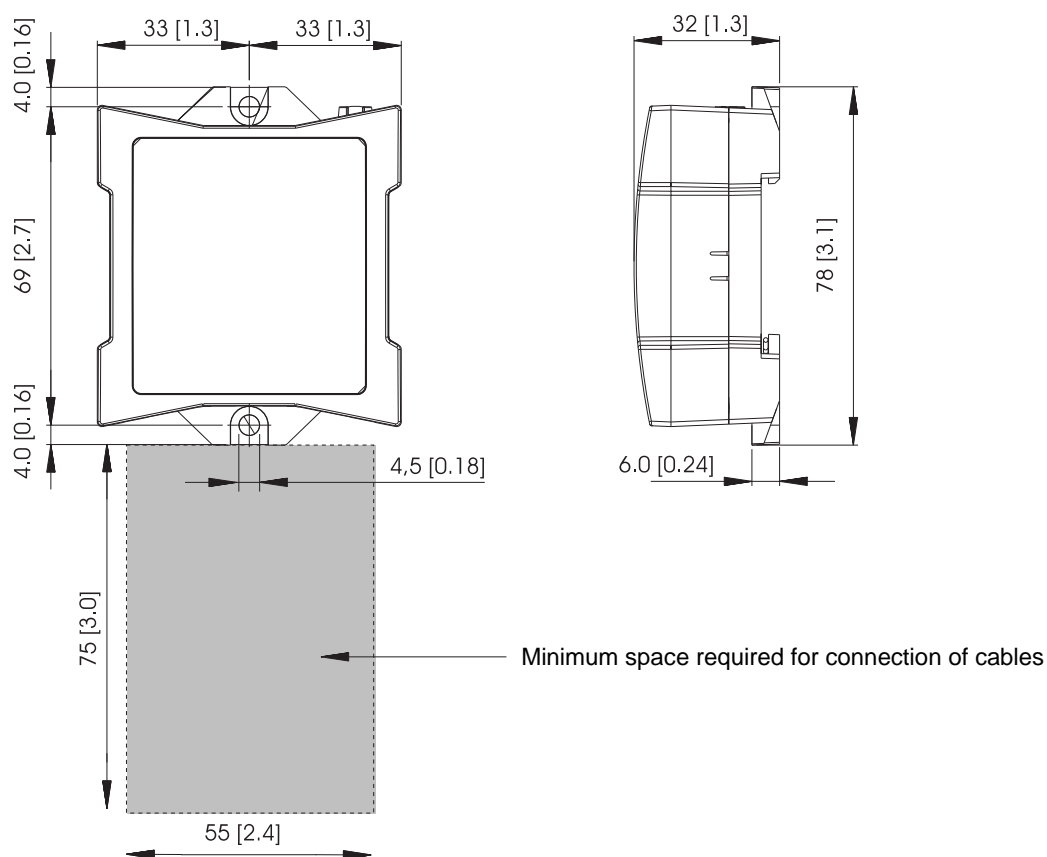
Mastervolt can offer a wide range of products for your electrical installation, including an extended program of components for your *MasterBus* network. Our website www.mastervolt.com shows an overview of all our products and free downloadable software.

9 SPECIFICATIONS

9.1 TECHNICAL SPECIFICATIONS

Model:	MasterBus DDC Interface
Article number:	77031600
Delivery includes:	MasterBus DDC Interface, Interface communication cable, <i>MasterBus</i> communication cable (1 meter / 3ft) <i>MasterBus</i> terminating device, user's manuals
Function of instrument:	Interface for communication between the <i>MasterBus</i> network and a Mastervolt Whisper generator set controlled by <i>Digital Diesel Control</i> ("DDC").
Manufacturer:	Mastervolt Amsterdam, the Netherlands
Available languages:	English, Nederlands, Deutsch, Français, Castellano, Italiano, Norsk, Svenska, Suomi, Dansk
Powering capabilities:	No, needs to be powered via the <i>MasterBus</i> (at least one of the connected devices should have powering capabilities; one powering device can power up to three non-powering devices)
Power consumption:	348 mW
Dimensions:	66 x 78 x 32 mm [2.6 x 3.1 x 1.3 inch]; see figure 22
Weight	Approx. 80 gr [2.8 oz].
Protection degree:	IP 21

9.2 DIMENSIONS



10 EC DECLARATION OF CONFORMITY

Manufacturer Mastervolt
Address Snijdersbergweg 93
 1105 AN Amsterdam
 The Netherlands



Herewith declares that:

Product:
77031600 MasterBus DDC Interface

Is in conformity with the following provisions of the EC

- 2004/108/EC (EMC directive). The following harmonized standards have been applied:
 - Generic emission standard: EN61000-6-3: 2007
 - Generic immunity standard: EN61000-6-1: 2007
- 2006/95/EC (Safety directive), with the following standard:
 - Low voltage standard: EN60950: 2000
- 2002/95/EC (ROHS Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment)
- 2002/96/EC from 27.01.2003 (The Directive on Waste Electrical and Electronic Equipment)

Amsterdam,



P. F. Kenninck,
C. E. O. Mastervolt.



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