SCHAKO

EasyBus®

Control and monitoring system for control technology products of TGA

Table of Contents

Contents

1 Introduction

This manual describes the EasyS-H01 user interface and its interactions with the EasyBus system. With this graphical user interface, the fieldbus level can be started up, configured, updated and checked using an interactive 4-inch colour touch screen.

The EasyBus system is a proprietary fieldbus for controlling, monitoring and supervising actuators/sensors in building automation.

This document mainly consists of 2 chapters:
- Start-up: Instructions for configuration and installation after switching on for the first time.
- Navigation and detail displays: Information on how to navigate through the user interface of the EasyS-H01 (Graphical UserInterface = GUI) and explanations on the content of each screen display.

Interactive 4-inch colour touch screen

User-friendly graphical interface
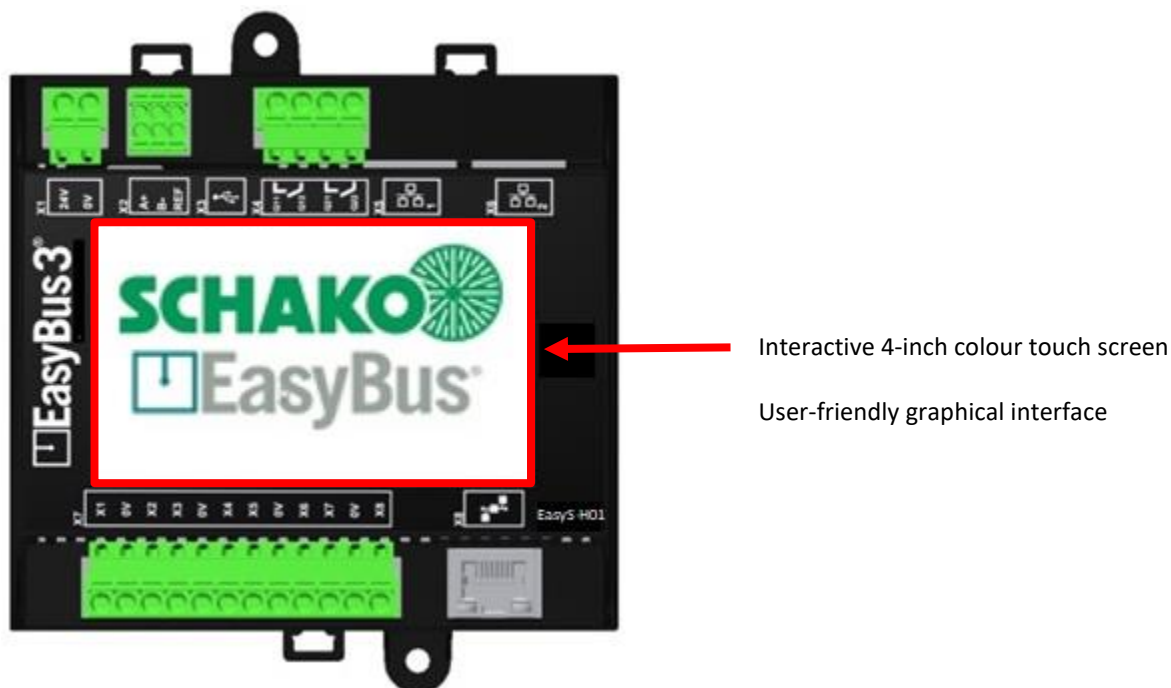
2 Glossary

EasyS-H01	Evaluation unit with touch screen. Provides an "EasyBus network" with a GUI. Also serves as the communication interface to the CPU (EasyS-C96).
EasyS-M01	Single-Network Master. Manages a single "EasyBus subnet".
EasyF-xxx	Slave device with one specific function such as controlling spring return actuators or 3-point actuators (EasyF-B01, EasyF-B11), controlling steady drives (EasyF-V01), etc.
EasyBus subnet	A single network consisting of one EasyS-M01, up to 128 EasyF-xxx and the wired connection of all these devices
EasyBus network	Consisting of an EasyS-H01, up to 3 "EasyBus subnetworks" and the special cables used for the connection
GUI (Graphic User Interface)	Graphical user interface

3 Explanation of the logos

3.1 User access levels

The current access level is shown on all screens in the upper right corner. The following access levels are available:

	Viewer:	Read-only access, no actions can be taken in the system. The viewer mode is activated by default.
	Operator:	All settings and configurations can be made at this access level. It is usually used during start-up and testing. To access this level, the user must tap on the user icon. A request for authentication will appear. (Factory setting: 123)
	Administrator:	At this level, the user has full access to the system, it is reserved for engineers and developers. All functions of the system are available. This also includes resetting the system to factory settings. To access this level, the user must tap on the user icon. A request for authentication will appear. (Factory setting: 456)

The user access level "Viewer" is the default setting. To access the operator or administrator level, please proceed as follows:
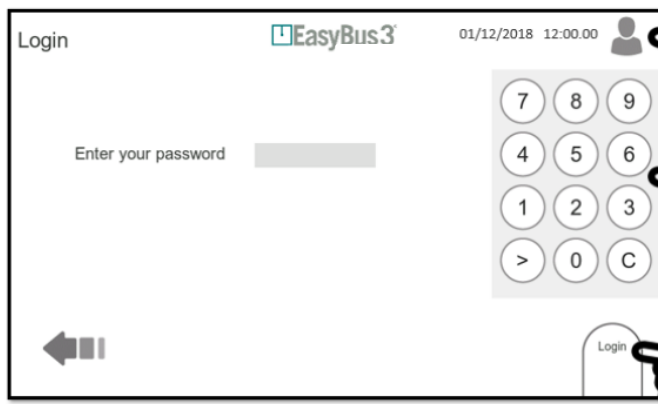
	Tap on the user icon A keypad will appear
	Enter the corresponding password Factory setting: 123 operator 456 administrator
	Confirm with Login You are now logged in at the desired access level

By tapping on the user logo once, you can exit the operator & administrator access levels at any time and from any screen.

If there is no action by the user in the operator and administrator level for 20 minutes, the viewer level is automatically activated.

During the firmware update, the 20-minute timer is not active. The timer will only be activated after the firmware update has been completed.

3.2 EasyS-M01 illustration

Each EasyS-M01 detected by an EasyS-H01 in its EasyBus subnet is shown as a circle.

The following texts are displayed in the circles:

Total number of slaves (EasyF-xxx) in the configuration managed by this EasyS-M01

"EasyBus subnet", managed by master 1

If an error status is reported by an EasyF-xxx, a small red circle appears on the right side.
The number in the circle indicates the total number of EasyF-xxx that have an error status.
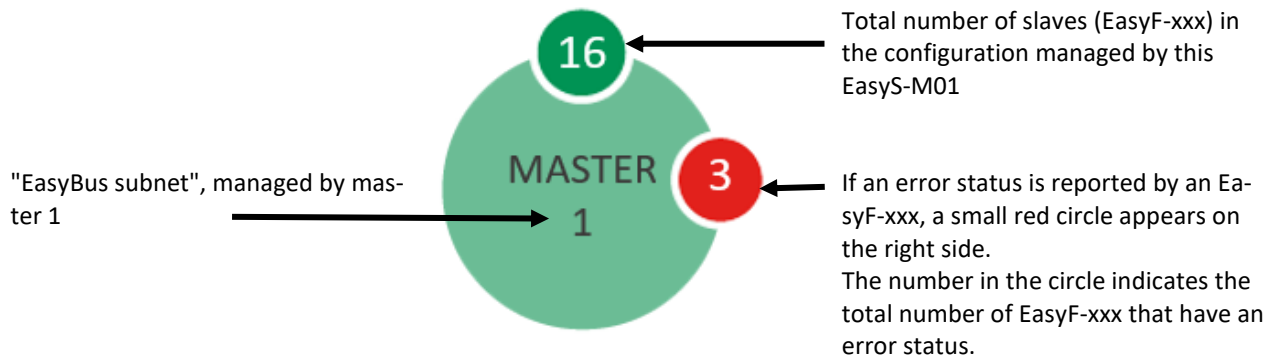
Each EasyS-M01 can be in one of 5 operating modes:

Not configured

Running: The EasyBus subnet is running. All EasyF-xxx are working correctly

Force: The EasyS-M01 is in "forced open" mode. All fire dampers receive the command "open".

Error: EasyS-H01 cannot communicate with EasyS-M01 or there is an internal fault with EasyS-M01.

Fire: The Fire mode has been activated. All fire dampers receive the command "close".
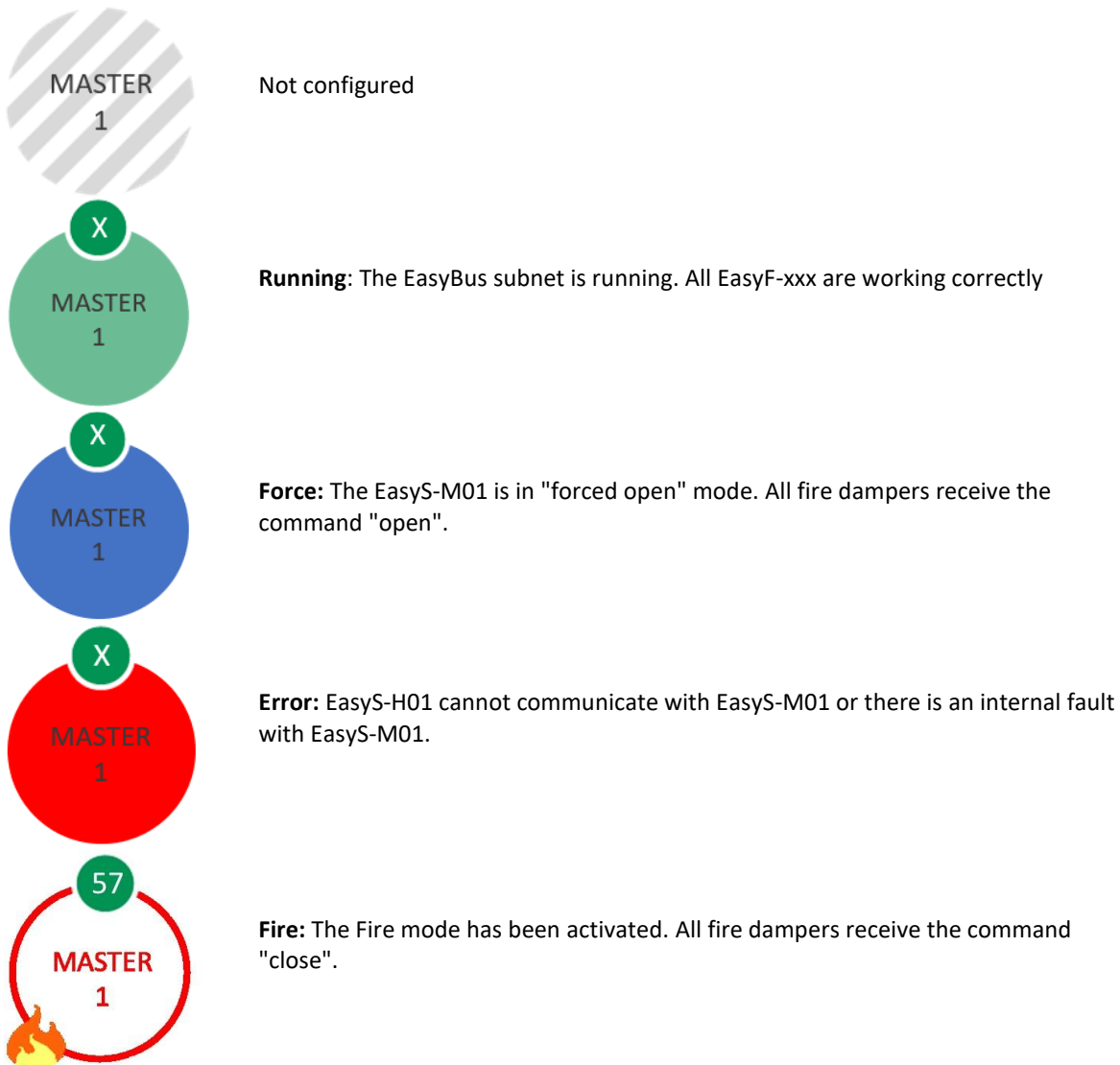
3.3 EasyF-xxx illustration

Each EasyF-xx detected by a master in its EasyBus subnet is shown as a circle.

The following texts are displayed in the circles (example for an EasyF-B01):
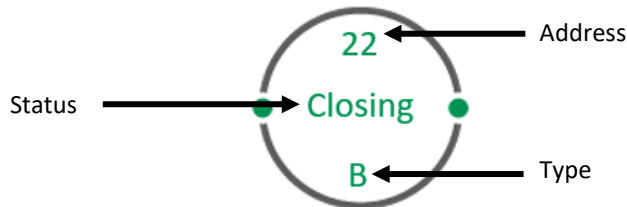
Address: Module address of the respective slave (EasyF-xxx)

Status: Current status, this status depends on the corresponding EasyF-xxx type

Type: EasyF-xxx type. The following models are available:
- B: EasyF-B01   Motor control module for 24 V DC drives
- B230:   EasyF-B11   Motor control module for 230 V AC drives
- V: EasyF-V01   Universal control module for steadily regulating 24 V DC drives
- IO: EasyF-IOM   Four digital inputs + four digital outputs
- I8:   EasyF-I8M   Eight digital inputs
- R: EasyF-RMM   Smoke detection module for two smoke switches type RMS
- VA: EasyF-VAC   Analogue control module for steadily regulating 24 V AC drives
- VM: EasyF-VMP   Control module for steadily regulating 24 V DC drives with MP interface

Each slave (EasyF-xxx) can be in one of 3 operating modes (example for an EasyF-B01):

Not configured:
This status is only possible if the EasyF-xxx was added after the initial start-up.
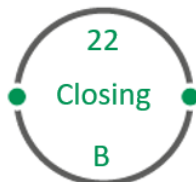
Operating:
The EasyF-xxx is working correctly.
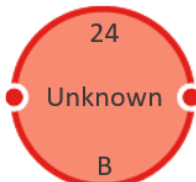
Error:
One ore more problems have occurred on the EasyF-xxx:
- Communication with the corresponding EasyS-M01 not possible
- Specific error of this slave type

4 Start-up

Before carrying out this step, the wiring must be done: (For details, please refer to the technical documentation)
- Switching on the EasyS-H01
- EasyS-H01 must be connected to the EasyS-M01 modules.
- All or most of the EasyF-xxx must be connected to the corresponding EasyBus subnet.

1) After switching on the EasyS-H01, the welcome screen appears after 10 - 15 seconds while the system is initialising.

Screen display

2) After another 10 to 15 seconds, the main window appears with all EasyS-M01s (masters) connected to EasyS-H01. Up to 3 are possible. *In this case there are 2*.

Screen display

The grey hatching indicates that the masters have not been configured yet.

To start up the system, the user must be logged into the system at least at the "operator" access level.

For more information, see chapter 3.1 User access levels.

4.1 Start-up and channel assignment

The EasyBus system uses an algorithm to determine the optimal communication rate and minimises the risk of interference between the different subnetworks.

1) Make sure that the EasyBus subnetwork to be started up is switched on.

⚠️ **The other EasyBus subnetworks must be switched off. This supports the automatic to prevent interferences caused by assignment overwriting.**

Screen display

2) Select the "Master 1" button.

Selecting master 1
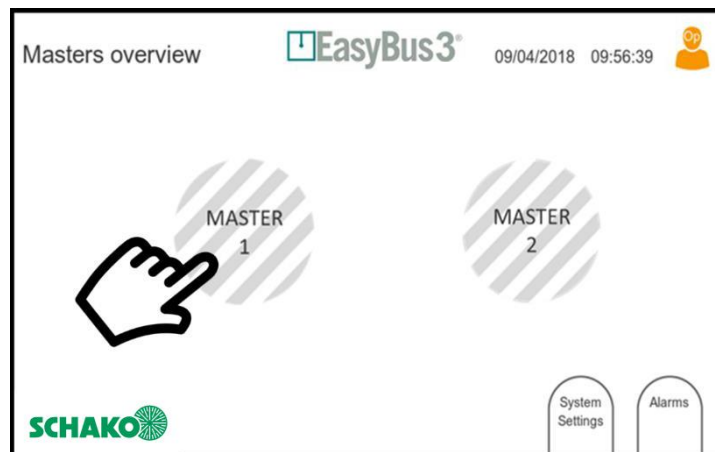
4.1.1 Selection of the slave generation

In the following window, the generation of the slaves installed in the EasyBus subnetwork (EasyF-xxx) can be selected.

Screen display
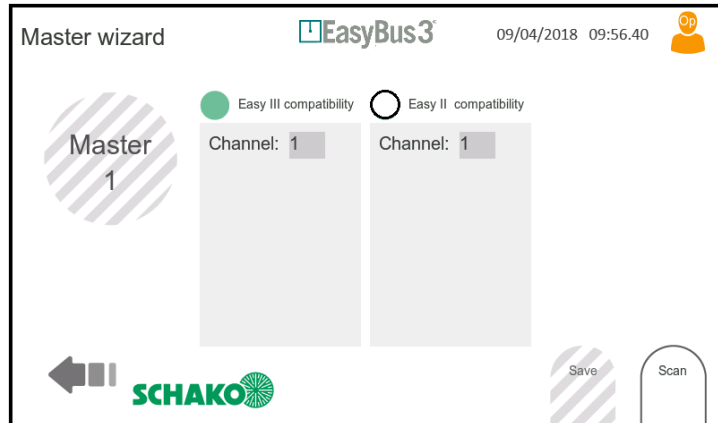
The respective slaves (EasyF-xxx) belong to the following module generations:

Generation III
- EasyF-B01
- EasyF-B11
- EasyF-V01

Generation II
- EasyF-IOM
- EasyF-I8M
- EasyF-VAC
- EasyF-VMP
- EasyF-RMM

The generation of slaves (EasyF-xxx) assigned to the master in its EasyBus subnetwork must be selected or unselected by selecting or deselecting the corresponding compatibility.

Selecting or deselecting the compatibility
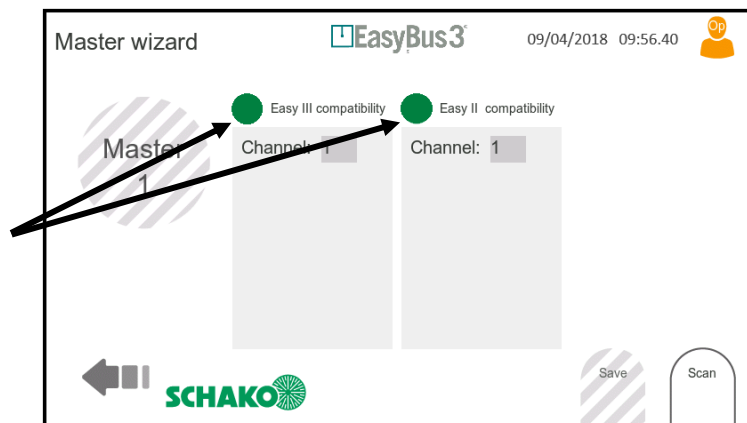
4.1.2 Automatic channel assignment

1) In the following window, the "optimal channel" is suggested.

It is strongly recommended to select this channel and to press the "Scan" button.

Screen display
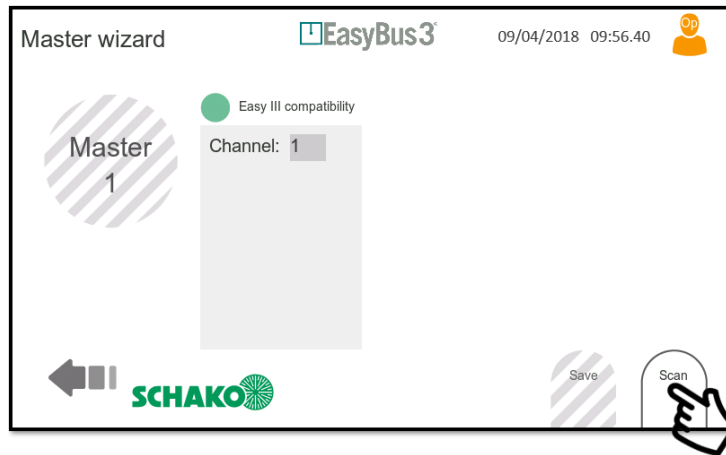
Selecting

The system automatically suggests the best available channel.
Example of an installation with 3 masters:
- Master 1 - channel 1
- Master 2 - channel 2
- Master 3 - channel 3

Please continue the start-up procedure according to the instructions in chapter 4.2 (Determination of the slaves).

4.1.3 Manual channel assignment

If your installation includes more than one EasyBus network, please make sure that the same channel number is not used more than once. In this case, assign the channel number manually:

Network 1	Network 2	Network 3	Network 4	Network 5
Master 1 – channel 1	Master 1 – channel 4	Master 1 – channel 7	Master 1 – channel 10	Master 1 – channel 13
Master 2 – channel 2	Master 1 – channel 5	Master 1 – channel 8	Master 1 – channel 11	Master 1 – channel 14
Master 3 – channel 3	Master 1 – channel 6	Master 1 – channel 9	Master 1 – channel 12	Master 1 – channel 15

It is recommended to always use the channel with the lowest number for the master with most connected EasyF-xxx. A total of 255 channels is available.

1) Select the channel number

Tap on the channel number

The keypad will appear

2) Change the channel number and start the scanning process
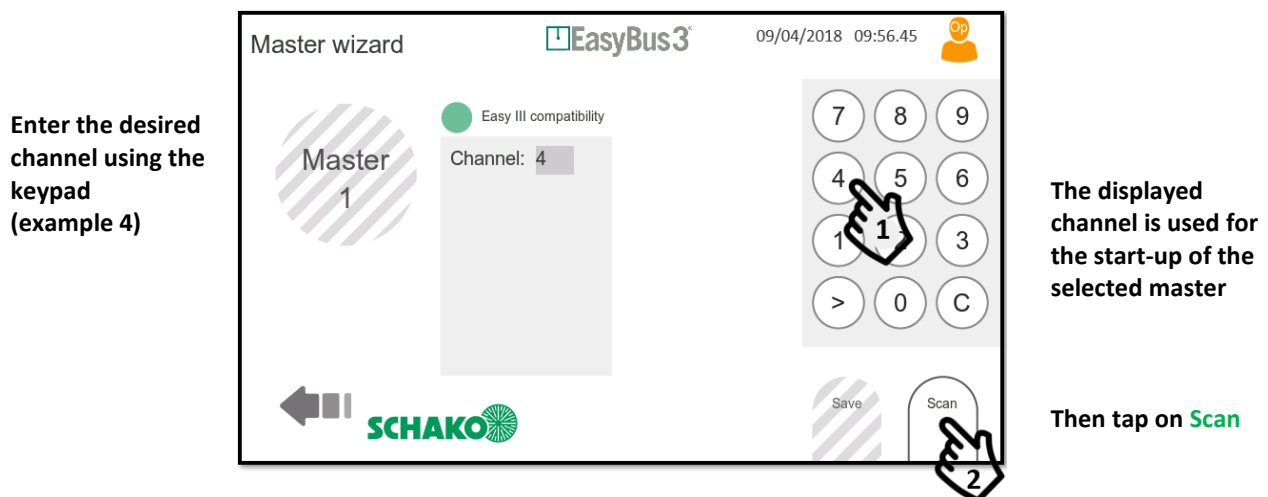
Enter the desired channel using the keypad (example 4)

The displayed channel is used for the start-up of the selected master

Then tap on Scan

Please continue the start-up procedure according to the instructions in chapter 4.2 (Determination of the slaves)

4.2 Determination of the slaves and group assignation

The EasyS-M01 starts the scanning process in the EasyBus subnet to detect all EasyF-xxx modules connected to this subnet. The Easy3-X slaves are scanned in two steps.

The scanning process can take up to 5 minutes.
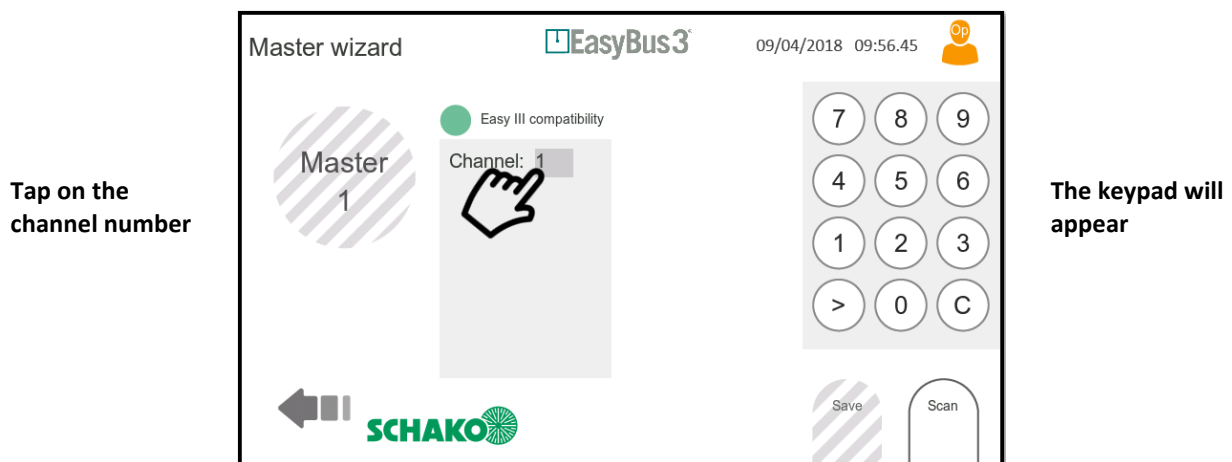**The fewer EasyF-xxx are available in the power supply unit, the longer the scanning process will be.**

1) EasyS-M01 scans the power supply unit to determine existing slaves (EasyF-xxx)

Screen display
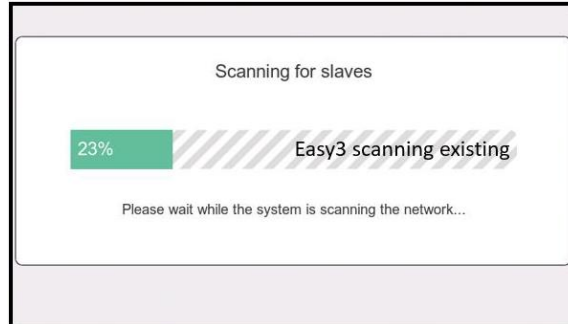
The system searches for existing slaves

2) In the second step, the EasyS-M01 scans the power supply unit again to determine additional slaves (EasyF-xxx)

Screen display
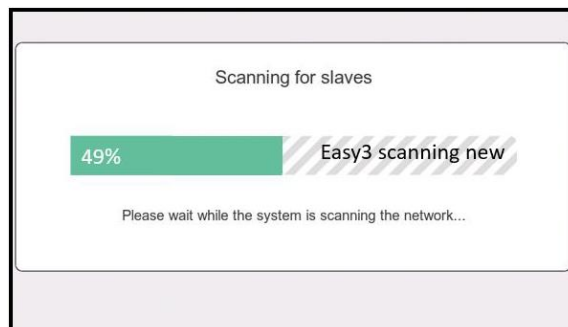
The system searches for further (new) slaves

3) At the end of the process, the following display appears

Screen display
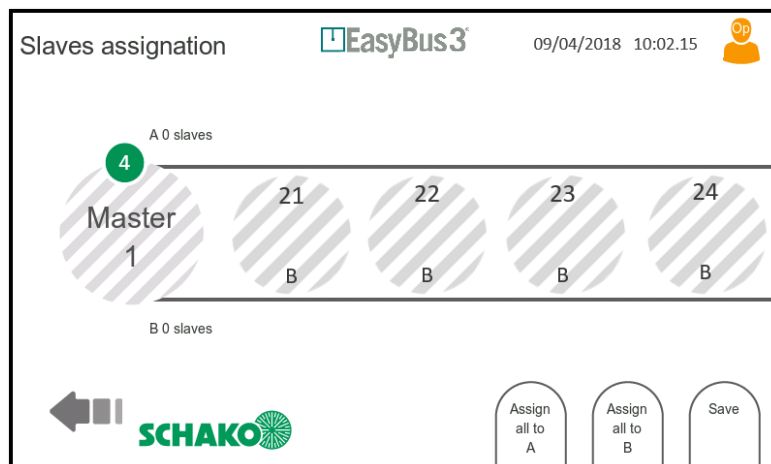
The green circle shows the number of slaves (EasyF-xxx) found in the EasyBus subnet.

4.2.1 Manual slave assignation to groups

You can now manually and individually assign each EasyF-xxx to a group (A or B) by moving it in the corresponding direction.
For more information, see chapter 5.1 Group functions.

1) Manually assign your selected slaves to a specific group (A or B)

Screen display
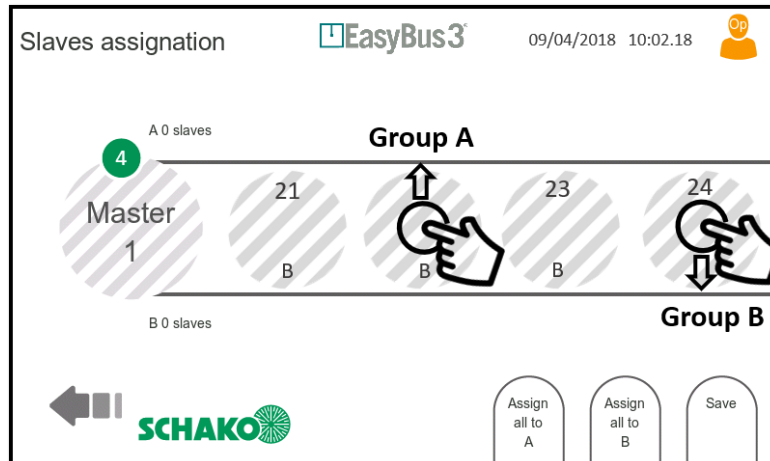
Selecting and assigning a specific slave:

To group A:
Move it upwards

To group B:
Move it downwards

2) After completing the assignation, you need to save your configuration

Screen display

Examples:
Slave 21, 23 not assigned

Slave 22 assigned to group A

Slave 24 assigned to group B
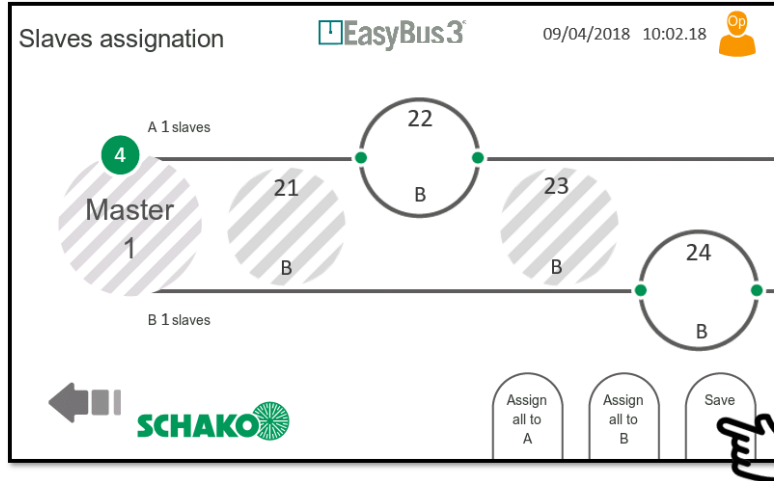
Select Save to store the configuration

3) If one or more EasyF-xxx have not been assigned to a group, the system informs you that these devices will automatically be assigned to group A.

Screen display
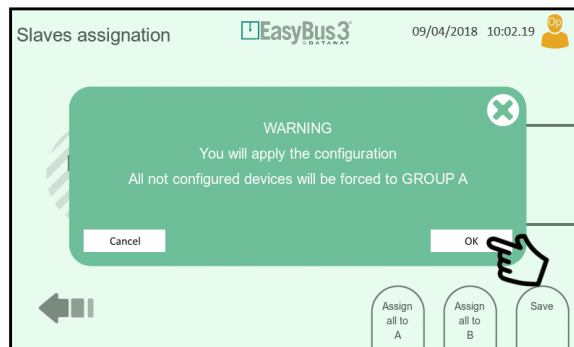
Confirm with OK
All not configured slaves will be forced to group A

The assignation process for the slaves is now finished.
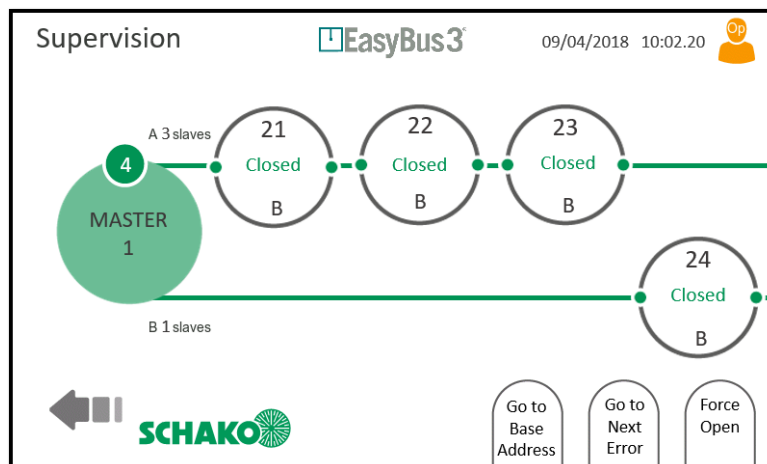
Screen display

If necessary, you can press the "Force Open" button to open all fire dampers controlled via this EasyBus subnet.

Now press the "Back" button to return to the main window. Select the next EasyS-M01 and configure it by repeating the previous procedure.

4.2.2 Automatic slave assignation to groups

By tapping on the corresponding button, you can also automatically assign all EasyF-xxx to a group (A or B).
For more information, see chapter 5.1 Group functions.

At the end of the scanning process, EasyBus gives three options:

Screen   display
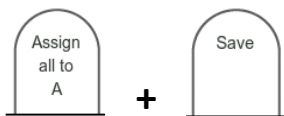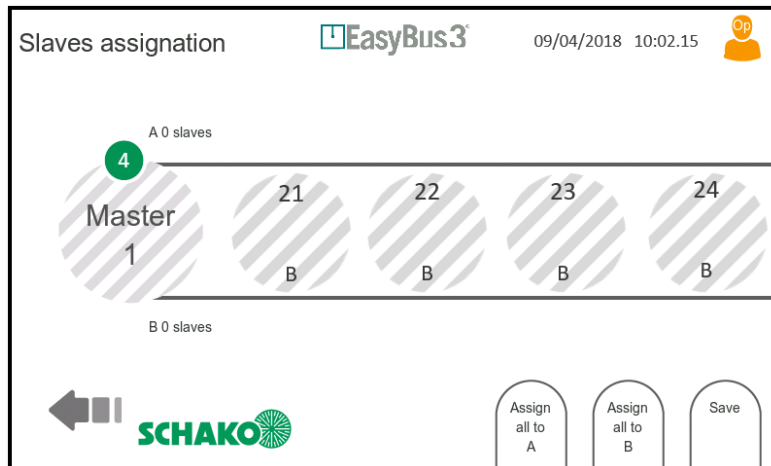
If you click on "**Assign all to A**", all detected slaves will automatically be assigned to group A.
Press **Save** to store your configuration and finish the process
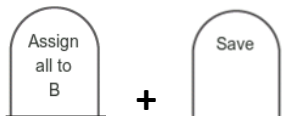
If you click on "**Assign all to B**", all detected slaves will automatically be assigned to group B
Press **Save** to store your configuration and finish the process

If you just click on "**Save**", all detected slaves will automatically be assigned to group A.

After pressing Save, a window appears to complete the automatic assignation process

Screen display
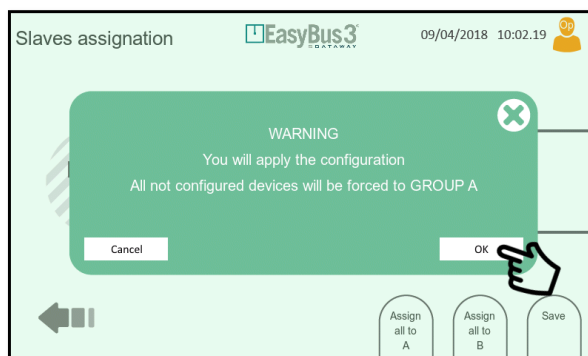
Confirm with OK
All slaves will be assigned to the selected group.

The assignation process for the slaves is now finished.

Screen display
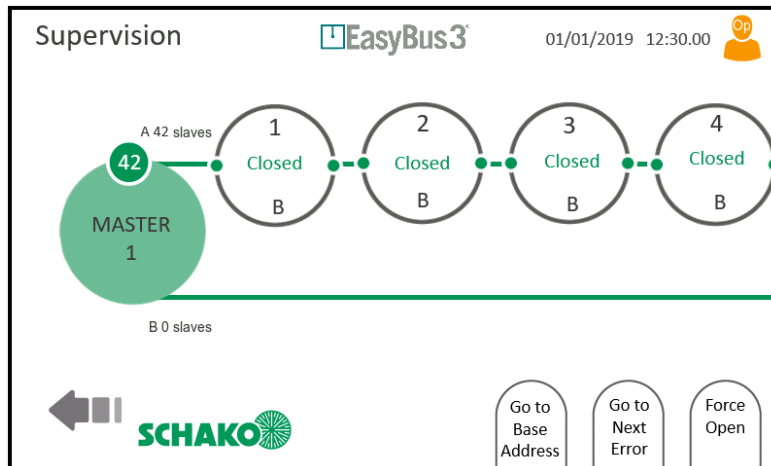
In this example, the 42 slaves have been automatically assigned to group A.

If necessary, you can press the "Force Open" button to open all fire dampers controlled via this EasyBus subnet.

Now press the "Back" button to return to the main window. Select the next EasyS-M01 and configure it by repeating the previous procedure.

To save time, you can assign the slaves partly automatically and partly manually.

Example: Move all slaves to one group via the automatic mode and then manually select those slaves that you want to assign to the other group.

The assignation can be changed subsequently. See chapter 8.4 (Advanced) where it is explained how you move the selected slaves to the desired group.

5 Advanced functions

5.1 Groups

Each EasyF-xxx module can be assigned to a group. The two groups A and B are available. The groups can have different functions or priorities. The mode can be configured in the "Master advanced configuration" menu, see chapter 8.4.

Screen   display
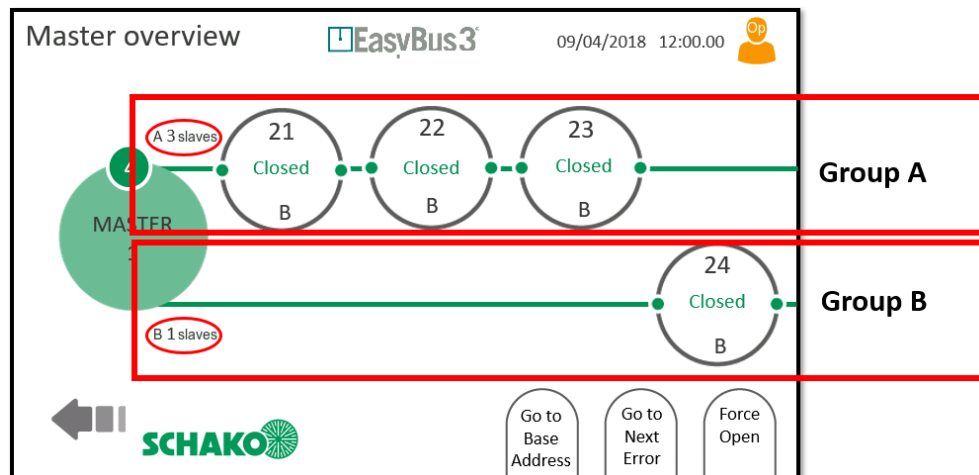
5.1.1 Priority mode

The priority mode is suitable for networks with many EasyF-xxx devices. If some EasyF-xxx devices with a lower latency need to be polled, they can be assigned to a certain group and all other devices to the other group. The EasyS-M01 communicates with both groups alternately, but the group with the fewest devices has also the lowest latency.

Example:
The network contains 50 EasyF-xxx modules addressed 1 to 50.
Without priority mode, the cycle time is about 1.5 seconds.
This latency is too high for the first 5 modules. Therefore, the groups are configured as follows:
1 to 5 ➜ group A
6 to 50 ➜ group B

The master communicates with both groups alternately:
A – B – A – B – A – B – A – B – A – etc…
In the example configuration:
1 – 6 – 2 – 7 – 3 – 8 – 4 – 9 – 5 – 10 – 1 – 11 – 2 – 12 – 3 – etc…

The new cycle time can be estimated because the number of slaves for each group has doubled:
Group A: 5   ➜ approx. 0.2 seconds
Group B: 45 ➜ approx. 1.8 seconds

The fewer EasyF-xxx are assigned to a group, the faster is the polling process.
For more information on the visualisation of the polling time, see Master Configuration in chapter 8.3.1.

5.1.2 Function mode

The function mode is convenient if some EasyF-xxx modules need to be linked directly to the EasyS-H01 input/output signals. For more information on possible configurations, see chapter 9.5.

Example:
The network is spread over two floors. All EasyF-xxx of the first floor are assigned to group A, the EasyF-xxx of the second floor to group B.
The I/Os are configured as follows:
I/O 1: Input, group A, function "opening"
I/O 2: Input, group B, function "opening"
I/O 3: Input, group All, function "fire"
I/O 4: Output, group A, function "open"
I/O 5: Output, group B, function "open"

The network can then be controlled with the I/O without a building automation system using Modbus/Bacnet communication. Activating I/O 1 opens the EasyF-xxx devices of group A. I/O 4 is activated when all EasyF-xxx of group A are open. The same applies to group B with the I/Os 2 and 5. Activating I/O 3 triggers the fire mode and the immediate closing of all EasyF-xxx modules.

Note 1: Even though this case is not shown in the example, it is also possible to configure each I/O for one of the three connected EasyS-M01s. The polarity of the signal can also be configured.

Note 2: It is also possible to assign the same functions to the I/Os in priority mode.

6 Description of the screen displays

6.1 System start-up

6.1.1 Contents

When starting the system, a welcome screen is displayed for 10 to 15 seconds.

During this time, the system is initialised and all EasyS-M01s are scanned and connected.

Screen display

6.1.1 Interactive menus

- none

6.2 Authentication

The user access level can be changed in this window.

For more information, see chapter 3.1 User access levels.

6.2.1 Contents

If you tap on the user icon in the "Viewer" mode, this screen will be shown

Tap on the user icon
A keypad will appear

Enter the corresponding password
Factory setting:
123 operator
456 administrator

Confirm with Login
You are now logged in at the desired access level
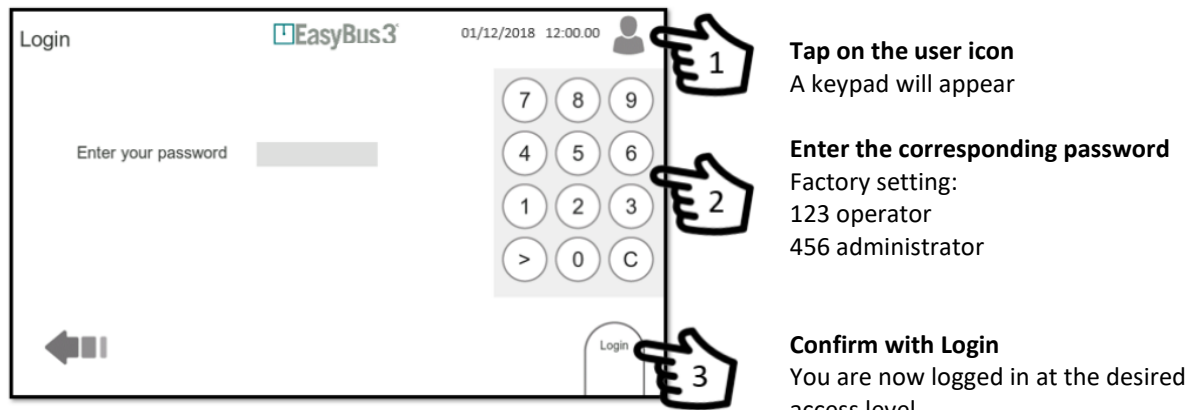
6.2.2 Interactive menu

Clicking on the "Viewer mode" icon
The system displays the login window
For more information, see section 4.1 User access levels.

Clicking on the "Operator mode" icon
The system returns to the display of the master modules

Clicking on the "Administrator mode" icon
The system returns to the display of the master modules

• The password you enter sets the user access level

7 Master illustrations

7.1 Contents

At the end of the initialisation process, the EasyS-H01 displays all EasyS-M01s connected to the network.
Up to 3 EasyS-M01s can be displayed.

Display with 1 master
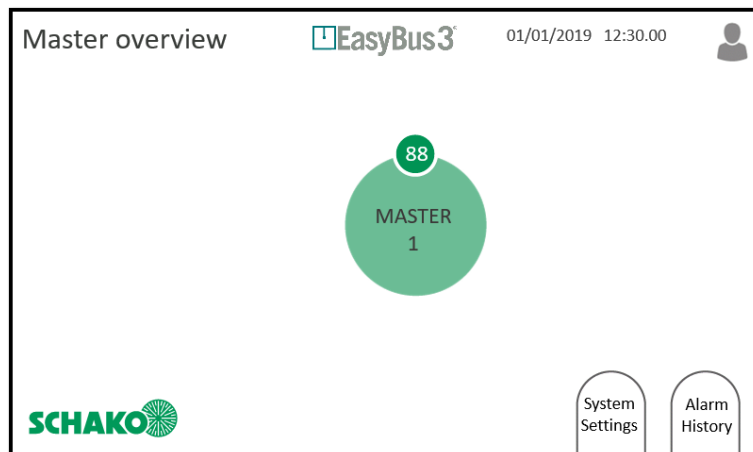
Display with 2 masters
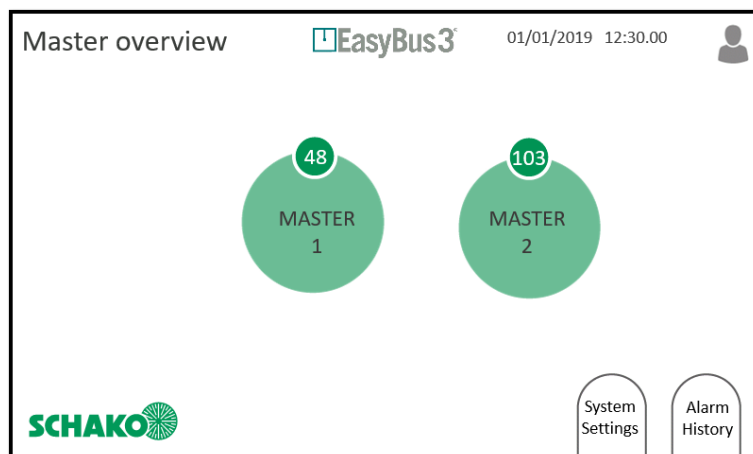
Display with 3 masters
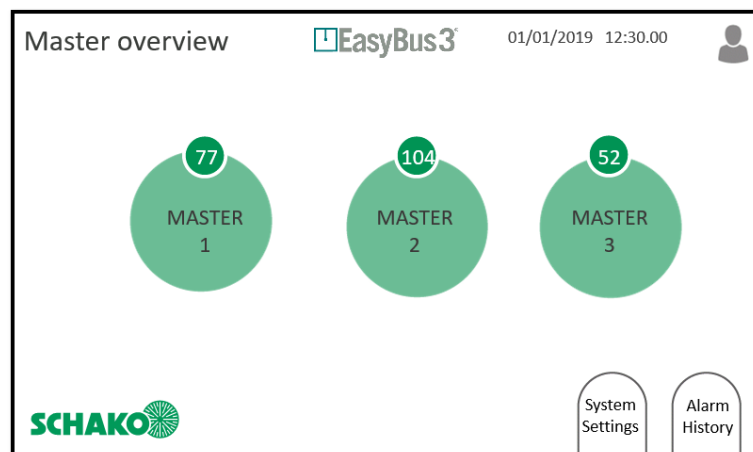
7.1.1 Interactive menu

Clicking on "Alarm History"
The system displays the "Alarm History".
The list is empty. No warnings or errors have been reported.
For more information, see chapter 7.2 Alarm History
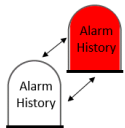
Clicking on the flashing "Alarm History" button
The system displays the "Alarm History".
There is information about at least one error or warning.
For more information, see chapter 7.2 Alarm History

Clicking on "Master" (1 to 3)
The system displays the corresponding "Master Supervision" screen (1 to 3)
For more information, see chapter 8 *Master Supervision*

Clicking on "System Settings"
The system displays the "System configuration" screen
For more information, see chapter 9 "System configuration"

7.2 Alarm History

7.2.1 Contents

The Alarm History screen shows all the information about warnings and errors that the system has recorded since the memory was last cleared.

1) You can access the "Alarm History" screen from the "Master Overview" screen.

When a warning and/or an error is reported, the "Alarms History" icon flashes white / red.
If no warning and/or error has been reported, the "Alarms History" icon remains white and the corresponding list empty.
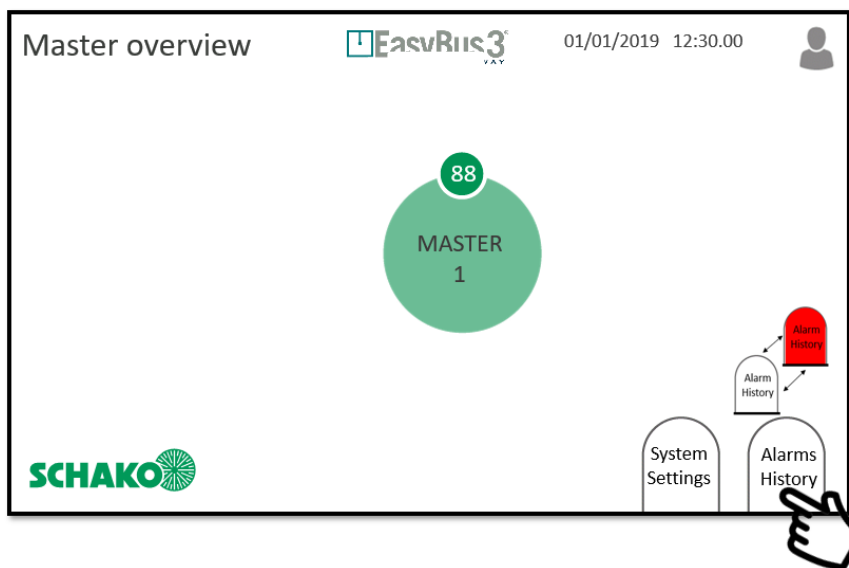
Selecting "Alarm History"
The "Alarms History" window appears

2) While the application is running, important actions and messages are recorded in this window. They are sorted by:
• Date/time
• Type of information:
• **Warning (orange line):** Some functionalities have been changed, the system continues to work but is in a critical state.
• **Error (red line):** Some functionalities and/or modules are inoperative. A part or the whole system is out of operation.

Screen display

Long error lists can be scrolled to display all information.

7.2.2 Interactive menu

Use your finger to move the list up or down
You can scroll through the list to see all the recorded information

Clicking on "Clear All"
In operator and administrator mode: The entire displayed list of warnings and errors is deleted.

No interaction possible
The list cannot be deleted in viewer mode.

The information on warnings and errors is also stored on the SD card.

Even if you delete the list, the information on warnings and errors can be retrieved from the SD card.

The list can only be deleted in operator or administrator mode.

8 Master Supervision

8.1 Contents

On this screen, you will find all network information regarding the selected EasyS-M01 and its slaves in the EasyBus subnet.
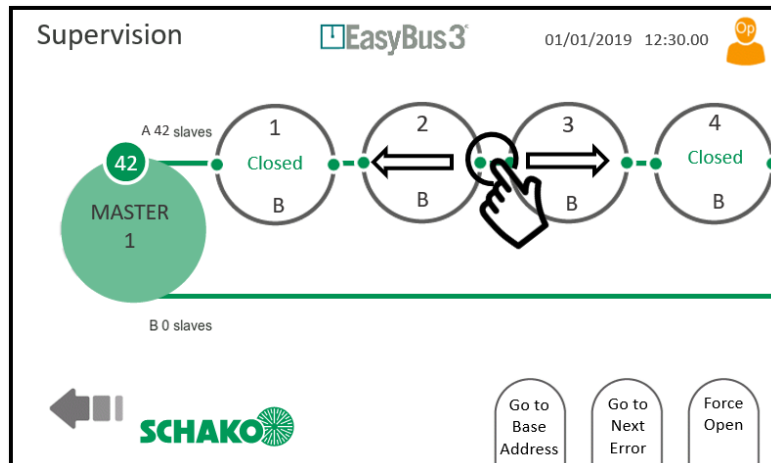
Screen display

The group lines can be moved sideways to display all EasyF-xxx in the EasyBus subnet.

Screen display
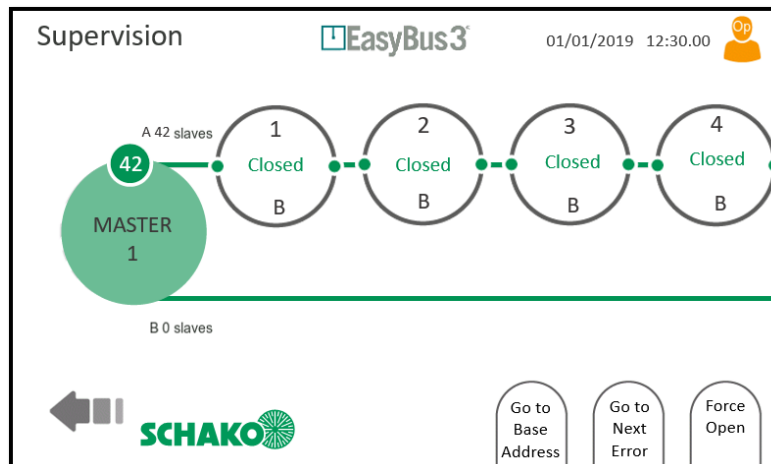
The two displayed lines represent the two EasyF-xxx groups (A and B) with the number of slaves assigned to them.

8.1.1 Interactive menu

Clicking on "Force Open"
The system automatically opens all fire dampers in this EasyBus subnetwork.
For more information, see chapter 8.2 Force Open Mode

Clicking on "Go to Next Error"
If there is an error for one of the slaves, the system shifts the display so that the next faulty EasyF-xxx is displayed. If there is an error for more than one slave, you can repeat this procedure to identify all faulty slaves in this EasyBus subnet.

Clicking on "Go to Base Address"
If you have moved the screen display or used the "Go to Next Error" function, the system will take you back to the beginning of the EasyBus subnet.
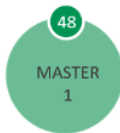
Clicking on "Master" (1 to 3)
The system allows you to access the screen where you can configurate the corresponding master (1 to 3)
For more information, see chapter 8.3 *Master configuration.*
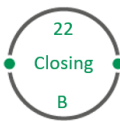
Clicking on a specific "Slave module"
The system allows you to access the screen where you can configurate the slave*.*

8.2 "Force Open" mode

8.2.1 Contents

The EasyBus system features a "Force Open" mode to automatically open all fire dampers located in a dedicated subnet.

⚠️ **Please note that the priority of the fire alarm is higher than the "Force Open" mode. This means that the master switches to the "Fire" mode when a fire alarm is detected, even if the "Force Open" mode is active.**

1) The "Force Open" mode can be accessed via the "Master Supervision" screen.

Screen display
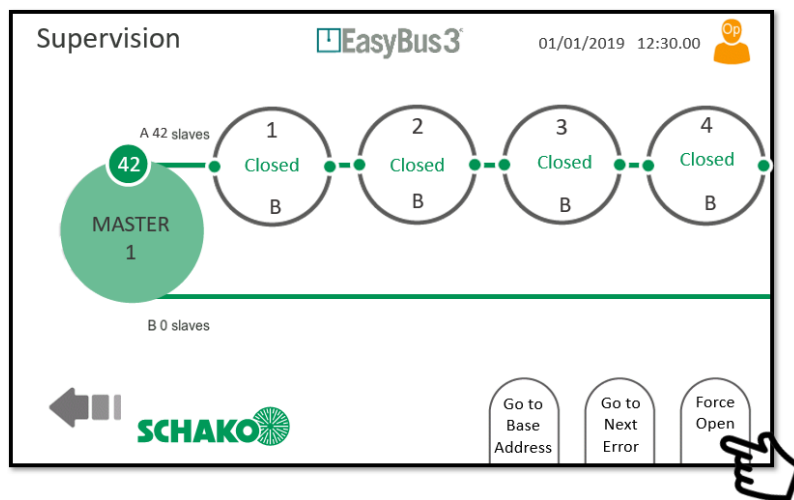
Selecting "Force Open"
This opens all fire dampers in the subnetwork

2) The "Force Open" mode is activated at the selected master, all fire dampers in the subnet are opened

Screen display
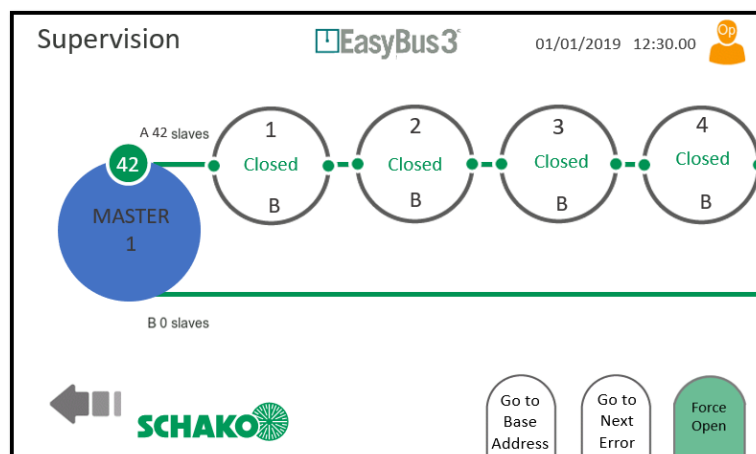
The "Master" circle turns blue and the "Force Open" logo turns green to indicate that the "Force Open" mode is active.

8.2.2 Interactive menu

Clicking on the green "Force Open" icon
The "Force Open" mode is disabled. The dedicated EasyBus subnet returns to the normal function mode.
In viewer mode, the "Force Open" mode cannot be disabled.

No interaction possible
In viewer mode, the "Force Open" mode cannot be activated.

8 Master configuration

8.3.1 Contents

On this screen, you will find all the detailed information about the selected Easy3-M:
- Status: Running, Error...
- Uptime
- Firmware version
- Easy III Settings: The channel used by the master for communication with the slaves
- Cycle time per group (A or B) in milliseconds
- Error Number: Recorded by the system
- Signal strength: From Very Low to Excellent.
- Retry rate: From Very High to Very Low

Screen display
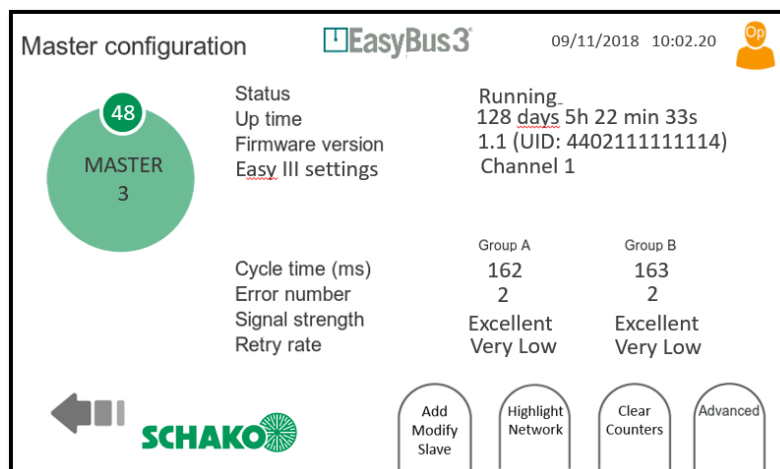
8.3.2 Interactive menu

Clicking on "Advanced"
The system allows you to access the "Master Advanced Config" screen.
For more information, see chapter 8.4 Master Advanced Configuration

Clicking on "Clear Counters"
All recorded retries and errors are deleted for the selected master

After clicking on "Highlight Network", the icon turns green
This causes both LEDs to be switched on (flashing) for all EasyF-xxx modules in the EasyBus sub-net.

This function is extremely useful for finding or visually identifying a specific EasyBus subnetwork in a building.
To deactivate this functionality, click on the green icon again.

Clicking on "Add Modify Slave"
The system allows you to open the Master Wizard to perform a new scan or to change the channel currently in use. *For more information, see* chapter 4.1 Start-up and channel assignment

8.4 Master Advanced Configuration

8.4.1 Contents

On this screen, the user can view and/or change the advanced configuration parameters of EasyS-M01:

Parameters displayed for information purposes:
The following information and values are used by the EasyBus algorithm to optimise the cycle time. They cannot be modified.

- Retry cycles: Number of retries in the event of a communication failure.
  The factory setting is 3 cycles
- Timeout before retry: The waiting time before a new attempt to establish communication is started.
  The factory setting is 1 second.
- Max retry list length: The maximum length of the connection retry list.
  The factory setting is 5.

Parameters displayed for information and setting:

- Fire error clearing: In this mode, fire errors can be deleted (automatically/manually). If "Auto" is selected, the master mode automatically changes from "Fire" to "Running" when the Fire Contact Input is triggered. In "Manual" is selected, the master remains in Fire mode even if the Fire Contact is lost. The "Clear Fire" button on the "Master Supervision" screen must be pressed to return to the "Running" mode.
  The system is preset to "Manual" at the factory. The setting can be changed to "Auto" (automatic).

- Group mode: Defines the priority logic of the system.
  The system is preset to "Priority" at the factory (group A e B). It can be changed to "Function".
  For more information, see chapter 4.1 Start-up and channel assignment

Screen display
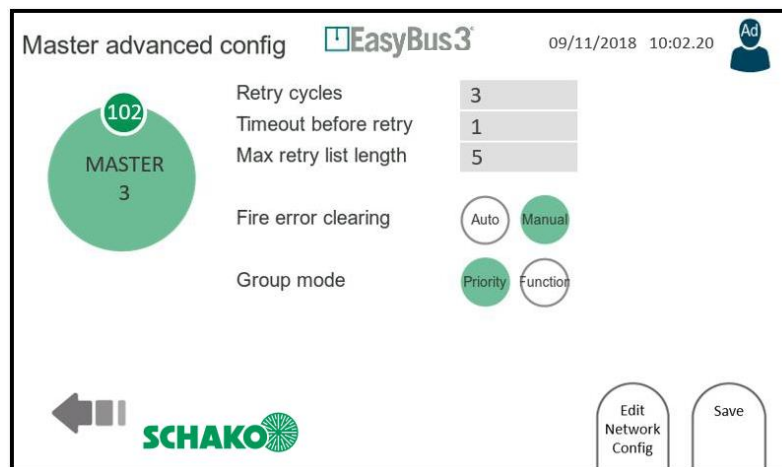
8.4.2 Interactive menu

Clicking on "Save"
The system saves the selected master configuration according to the displayed information.

Clicking on "Edit Network Config"
The system allows you to access the "Slaves Assignation" screen.
Here, the assignment of the slaves can be changed.
For more information, see chapter 5.1 Groups

9 System configuration

9.1.1 Contents

Screen display
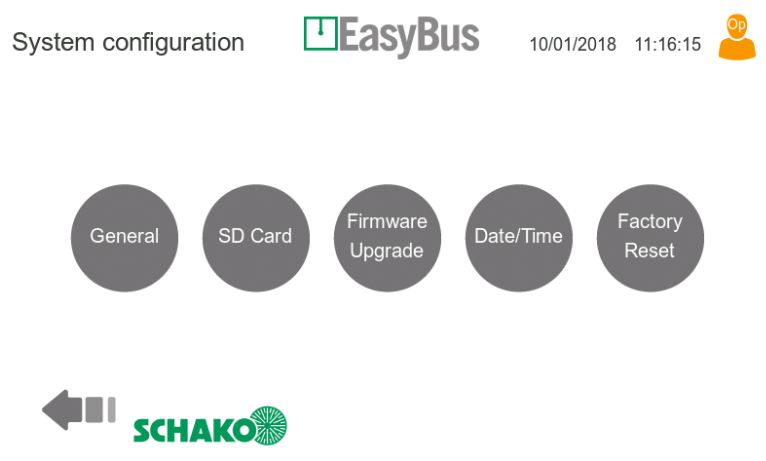
This screen is opened via the "System Settings" button on the "Masters Overview" screen (chapter 7.1).

On this screen, there are 5 buttons that can be used to configure the entire HMI system.

General configuration (chapter 9.2).

SD-Card configuration (chapter 9.7).

Firmware versions and access to firmware upgrades (chapter 9.8).

System data and time setting (chapter 9.12).

Resetting all system parameters and the HMI configuration to factory settings (chapter 9.13).

⚠️ **Please note that the parameters in these menus can only be changed by a user logged in as an administrator.**

9.2 General configuration

9.2.1 Contents

Screen display
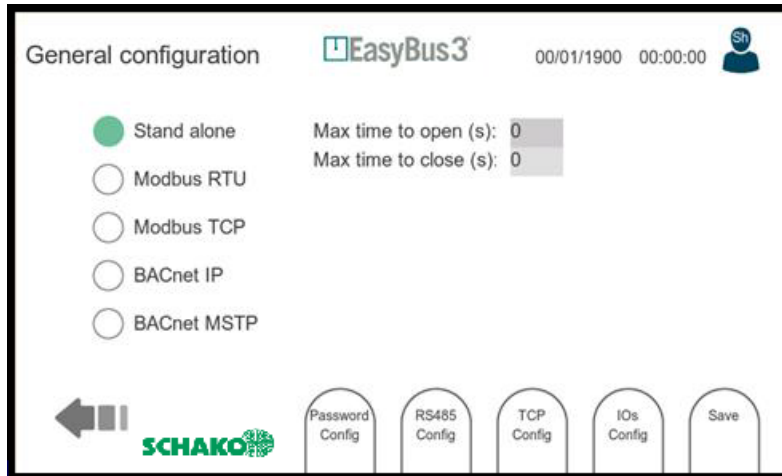
On this screen, the general configuration can be performed. The following parameters are available (from top to bottom):
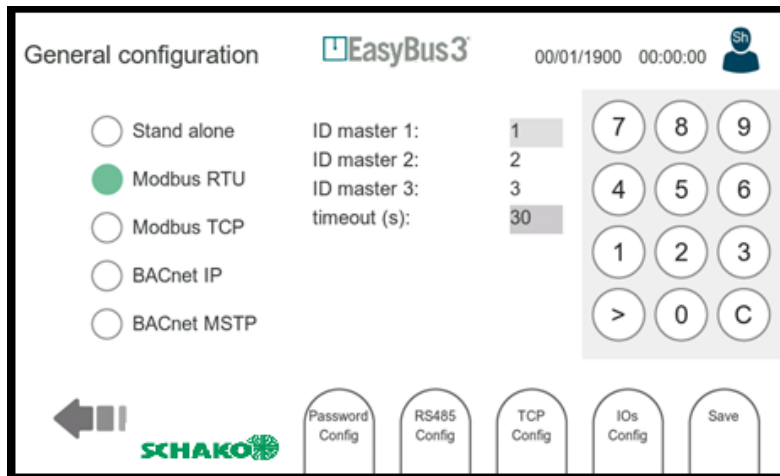
• System Mode:
    o Standalone: In this mode, the slaves can only be controlled via the EasyS-H01 I/Os. The Modbus RTU and TCP ports are still active, but limited to read operations. Write operations are denied.

    o Modbus RTU: In this mode, the slaves can only be controlled via the Modbus RTU port. The Modbus TCP port is still active but limited to read operations (write operations are denied).
    The I/Os are still in operation, only the "Open/Close" command is ignored.

    o Modbus TCP: In this mode, the slaves can only be controlled via the Modbus TCP port. The Modbus RTU port is still active, but limited to read operations (write operations are denied).
    The I/Os are still in operation, only the "Open/Close" command is ignored.

    o BACnet IP: In this mode, the slaves can only be controlled via the BACnet IP port. The Modbus RTU port is still active, but limited to read operations (write operations are denied).
    The I/Os are still in operation, only the "Open/Close" command is ignored.

    o BACnet MSTP: In this mode, the slaves can only be controlled via the MSPT port. The Modbus RTU port is still active, but limited to read operations (write operations are denied).
    The I/Os are still in operation, only the "Open/Close" command is ignored.

The following settings are only available when the "Standalone" mode is active:

• Max time to open (s): Maximum permissible time between a command to open a fire damper and the confirmation of the execution of this command. This timer is only activated in the standalone mode.

• Max time to close (s): Maximum permissible time between a command to close a fire damper and the confirmation of the execution of this command. This timer is only activated in the standalone mode.

The following settings are only available when the "Modbus RTU" or "Modbus TCP" mode is active:

Screen display
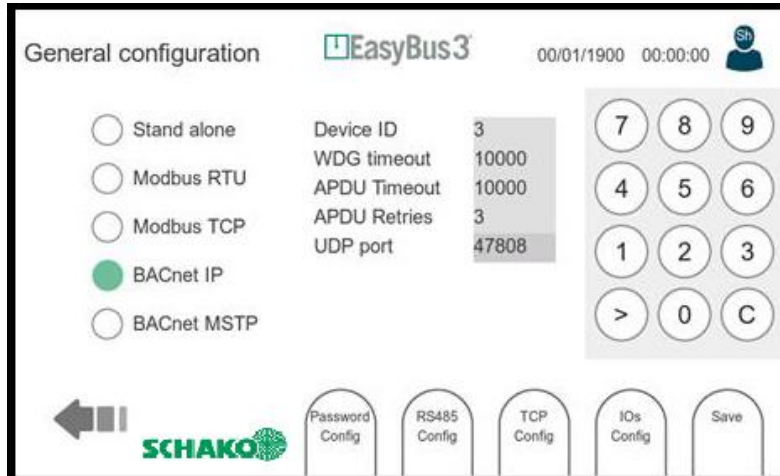
- Modbus ID master 1...3: Modbus Unit ID. Each connected EasyS-M01 Modbus Data Array can be accessed via the specified Modbus ID. Only the first master ID can be set manually. For the others, the number is incremented by 1.
- Modbus timeout(s): If no activity is registered on the Modbus during this time, the corresponding master sets all write registers to a safe position (fire dampers are closed, for example). This timeout is only active when Modbus TCP or RTU is selected.

The following settings are only available when the "BACnet IP" mode is active:

Screen display

- Device ID: BACnet identifier, each device connected to the bus must have a different identifier.
- WDG timeout: A watchdog has been set up to detect BACnet disconnection. The time limit is in seconds.
- APDU timeout: Driver waiting time in milliseconds after sending a COV notification frame asking for confirmation. (Confirmed COV notification).
- APDU retries: Frequency of the driver repeating its notification of value changes during a confirmed subscription (confirmed COV notification).
- UDP Port: The default port for BACnet communication is 47808 (0xBAC0). Other ports are also possible.

The following settings are only available when the "BACnet MSTP" mode is active:

Screen display
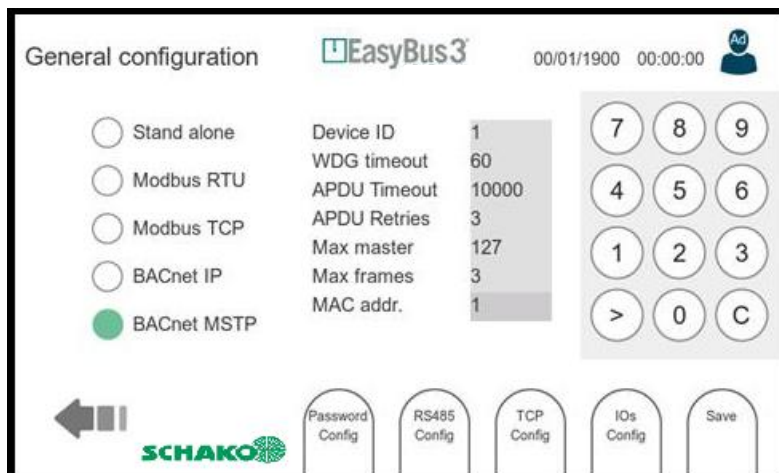
- Device ID: BACnet identifier, each device connected to the bus must have a different identifier.
- WDG timeout: A watchdog has been set up to detect BACnet disconnection. The time limit is in seconds.
- APDU timeout: Driver waiting time in milliseconds after sending a COV notification frame asking for confirmation. (Confirmed COV notification).
- APDU retries: Frequency of the driver repeating its notification of value changes during a confirmed subscription (confirmed COV notification).
- Max master: Highest possible address (0...127) for the "MSTP master node" in the network. A higher address does not receive a token from the driver. This value must be greater than or equal to the MAC address.
- Max frames: Maximum information frames the driver can send before passing the token.
- MAC addr.: MAC address of the device
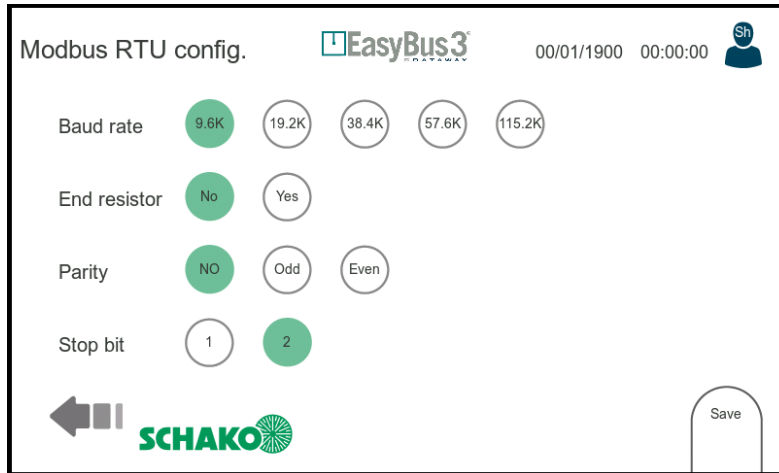
9.2.2 Interactive menu

1. Password config: Access to the password configuration window

2. Modbus RTU: Access to the Modbus RTU configuration window (chapter 9.3).

3. Modbus TCP: Access to the Modbus TCP configuration window (chapter 9.4).

4. IOs config: Access to the input/output connection settings (section 9.5).

5. Save: To save and apply the current configuration.

9.3 Modbus RTU/BACnet MSTP configuration

9.3.1 Contents

Screen display

On this screen, the Modbus RTU/BACnet MTSP configuration can be performed. The Modbus RTU/BACnet MTSP is a serial interface. The following parameters are available (from top to bottom):

- • Baud rate: Transmission speed in bit/s.

- • End Resistor: Terminating resistor connected or not.

- • Parity: Selection of parity.

- Stop bit: 1 or 2 stop bits.

⚠️ **If the EasyS-H01 is part of an EasyBus system and is assigned to an EasyS-C96 controller, the following settings must be selected:**

- - **Modbus RTU**
- - **Baud rate 19.2K**
- - **End resistor NO**
- - **Parity Even**
- - **Stop bit 2**
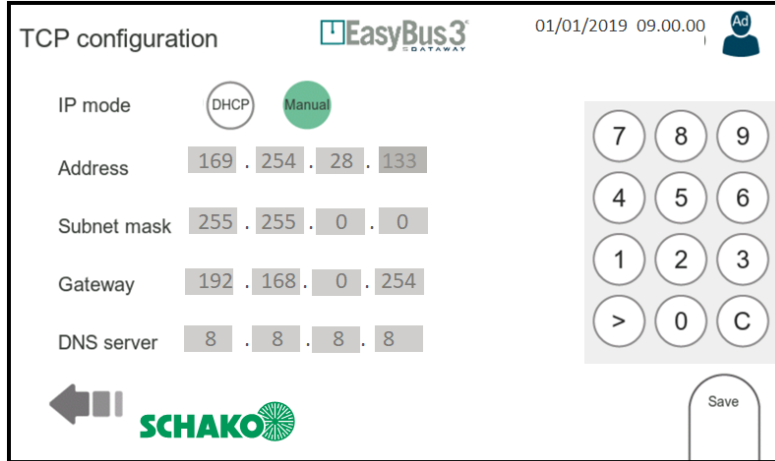
9.3.2 Interactive menu

6. Save: To save and apply the configuration

9.4 Modbus TCP/BACnet IP configuration

9.4.1 Contents

Screen display

On this screen, the Ethernet interface (IP settings) can be configured. The following parameters are available (from top to bottom):

- IP MODE: DHCP mode or manual IP configuration.

- ADDRESS: IP address of the system (can be set in manual mode and read out in DHCP mode)

- SUBNET MASK (can be set in manual mode and read out in DHCP mode)

- GATEWAY: IP address of the gateway to exit the local network (can be set in manual mode and read out in DHCP mode)

- DNS SERVER: IP address of the Domain Name Server (can be set in manual mode and read out in DHCP mode)

For entering the text, a keypad appears on the right side of the window. The > button can be used to switch between the different entries.

9.4.2 Interactive menu

7. Save: To save and apply the configuration

9.5 General configuration of the inputs/outputs

9.5.1 Contents

Screen display
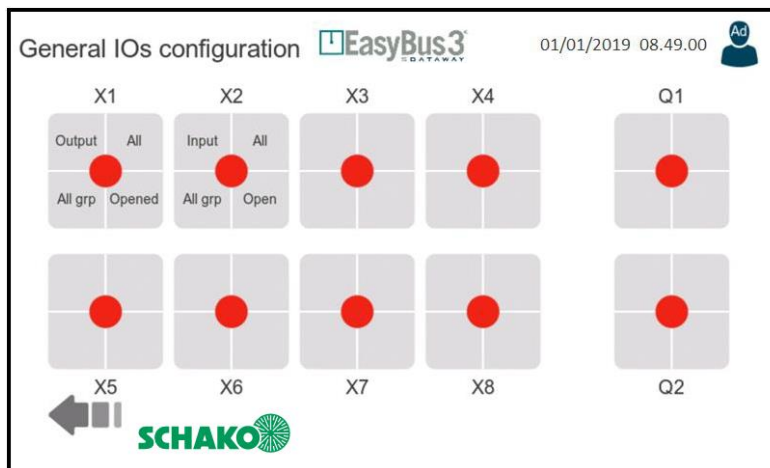
This display shows the current configuration of all 8 inputs/outputs and the two relays available at the EasyS-H01 connection.

Each IO can be configured independently. To configure an IO, it must be selected first. A detail window then appears (section 9.6).

9.5.2 Illustration of the configuration
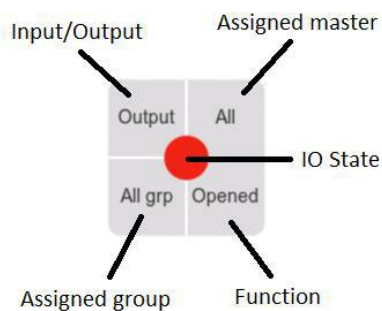
9.5.3 Interactive menu

8. none

9.6 Configuration of the inputs/outputs

9.6.1 Contents

Screen display
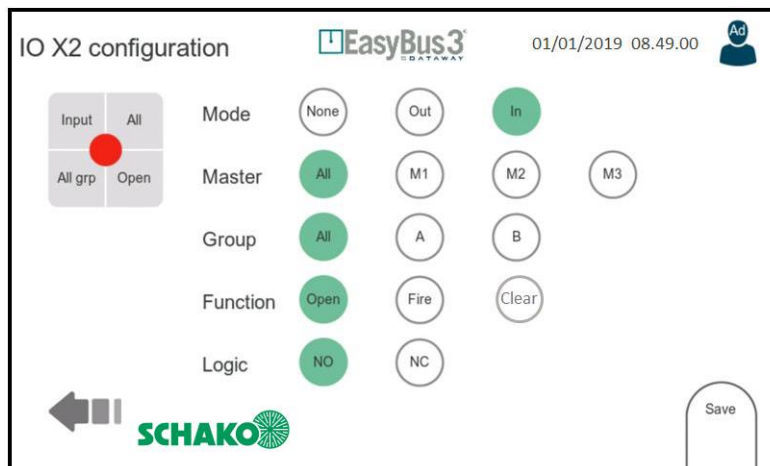
An IO can be configured as an input or an output. The configuration options depend on the selected mode.

- MODE: Working mode (input / output or deactivated)

- MASTER: The EasyS-M01 to which the I/O is assigned.

- GROUP: The group to which the I/O is assigned.

- FUNCTION: The action to be performed. This action depends on the working mode
    - *If "Input" is selected the following functions are available:*
        - o Open: For controlling the "Open fire dampers" command
        - o Fire: For generating a fire alarm
        - o Clear: For clearing a Running Fire State
    - *If "Output" is selected the following functions are available:*
        - o Open: For signalling that all fire dampers are open (AND function)
        - o Close: For signalling that all fire dampers are closed (AND function)
        - o Smoke: For signalling that at least one fire damper is in the "Smoke" state (OR function)
        - o Error: For signalling that there is an error for at least one fire damper (OR function). The cause of the error can be a communication failure or an opening/closing timeout (only in standalone mode)

- LOGIC: The logic mode defines the normal state, NO (normally open) or NC (normally closed)

9.6.2 Interactive menu

- Save: To save and apply the configuration

9.7 Configuration of the data storage / SD card

9.7.1 Contents

Screen display
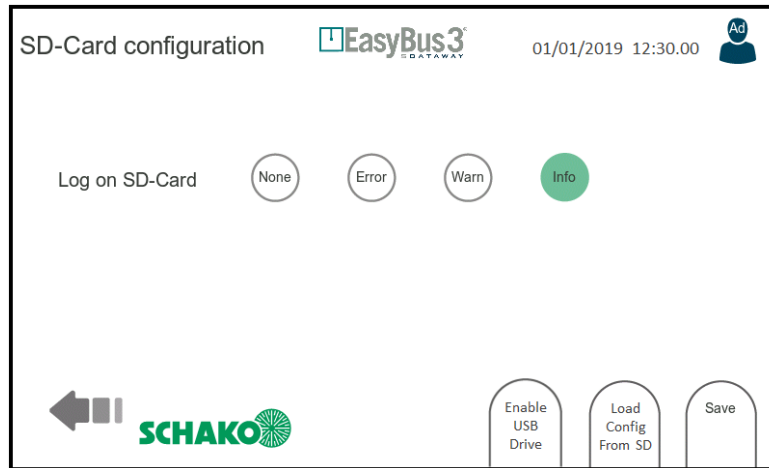
On this screen, the SD card configuration can be performed. (Available at the EasyS-H01-specific slot).

All actions and events are recorded on the SD card of EasyS-H01 (log-on SD card).
The recorded actions can then be read out by a computer (as text files). Different recording levels are available:
- Error: Only errors are recorded
- Warning: Warnings and errors are recorded
- Info: Information, warnings and errors are recorded

Please note that this parameter cannot even be changed at the administrator access level.

On this screen, it is also possible to load a configuration onto the SD card. To do this, proceed as follows:

1) Connect a computer to the USB port of EasyH-01 using a USB cable

2) Click on the "Enable USB Drive" button. To confirm the activation of the USB data storage mode, the button turns green.

Screen display
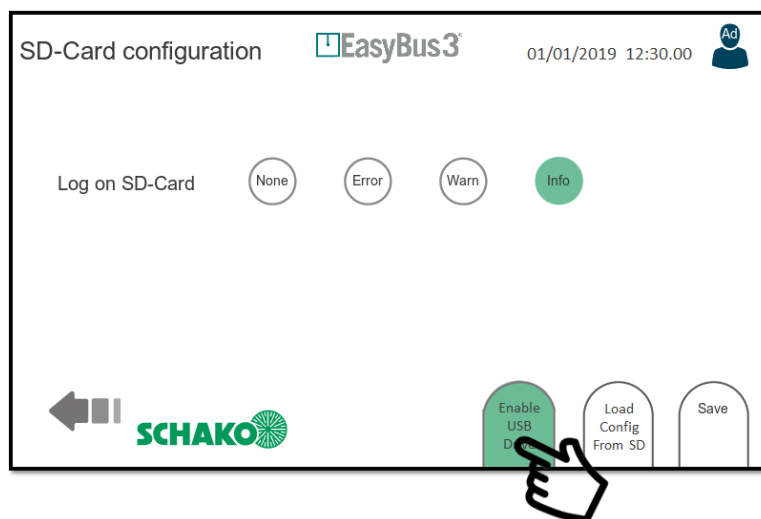
3) A new card reader is recognised by your PC. This gives you direct access to the contents of the SD card of the EasyS-H01

Lecteur USB (F:)

29,7 Go libres sur 29,7 Go
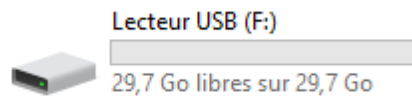
4) Place the config file in the root directory of the SD card file system. The file must be named: "config_active.ini".

Lecteur USB (F:)

Nom	Modifié le	Type	Taille
log history	02.01.2019 22:27	Dossier de fichiers	
config_active.ini	02.01.2019 22:29	Paramètres de co...	9 Ko

config_a + Copier sur Lecteur USB (F:)

5) Disconnect the USB cable when the copying process is finished (this is very important!)

6) Click on the "Load Config From SD" button

7) Confirm the displayed message.

SD-Card configuration   EasyBus3   01/01/2019 12:30.00

Log

Warning
The current system and masters config will be replaced
by the SD-Card active config.
Continue?

Cancel   OK

Enable USB Drive   Load Config From SD   Save

8) After this step, the configuration is loaded into EasyS-H01. A confirmation message appears.
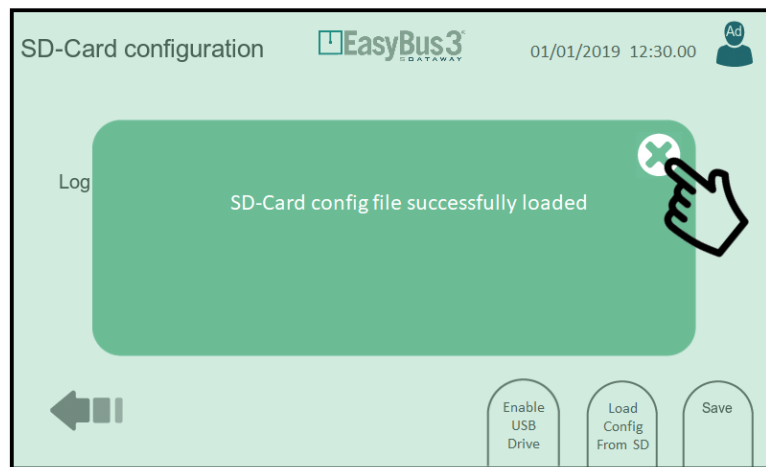
Please note that every time you change the system or master configuration, the EasyS-H01 overwrites the config_active.ini file in the root directory of the SD card.

At the same time, another file called "config_yyyy_mm_dd_hh_mn_ss.ini" is created in the "config history" folder. This makes it possible to recall any configuration created in the past at a later date.

It is also possible to easily replace a configured but defective EasyS-H01 with another new model.

You can remove the existing SD card from the defective model, insert it into the new EasyS-H01 and carry out step 5 to 7 described above.

9.7.2 Interactive menu

• Load config From SD: Loading the system configuration from the SD card.

• Save config From SD: Saving the system configuration on the SD card.

• Save: Saving and applying the recorded parameters to the system.

9.8 Firmware Update

9.8.1 Contents

Screen display
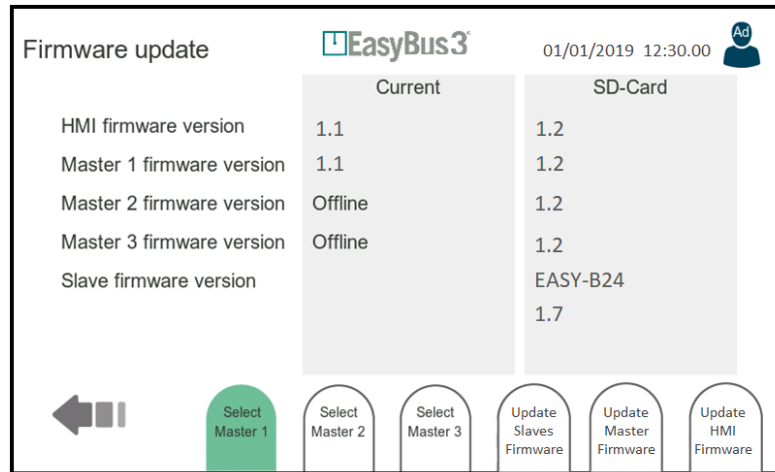
This screen displays the current firmware versions of EasyS-H01 and all connected EasyS-M01s (Current field). The current version of the firmware upgrade files on the SD card is also displayed (SD card field).

9.8.2 Interactive menu

• Select Master 1…3: Select a master (for the upgrade process of master and slave)

• Update Slaves Firmware: Window for updating the firmware of the slaves is displayed (chapter 9.9)

• Update Master Firmware: Window for updating the firmware of the master is displayed (chapter 9.10)

• Update HMI Firmware: Window for updating the firmware of the HMI firmware is displayed (chapter 9.11).

9.9 Slave firmware update

9.9.1 Contents

Screen display
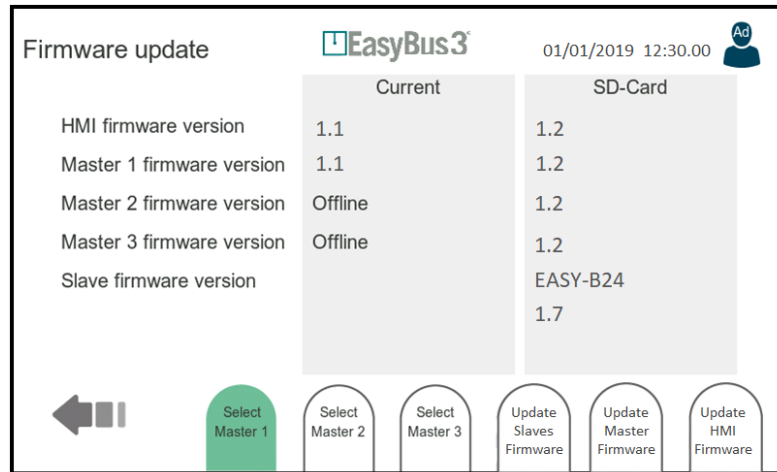
To upgrade the firmware of the Easy slaves, please carry out the following three steps:

1. Connect a computer to the USB port of EasyS-H01 using a USB cable

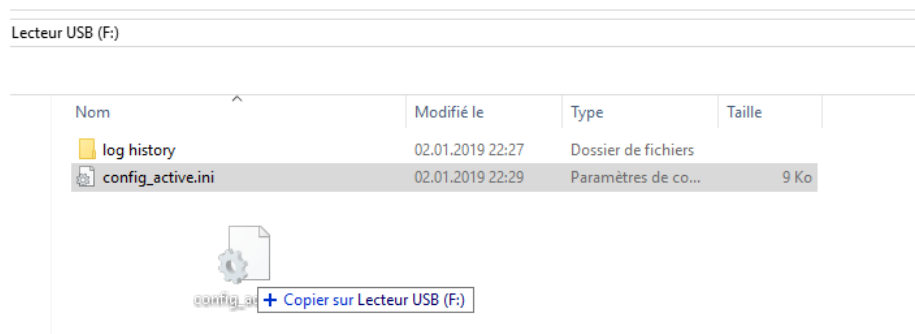2. Click on the "Enable USB Drive" button in the "SD Card Configuration" window (System Configuration > SD Card > Enable USB Drive)

3. A new card reader is recognised by your PC. This gives you direct access to the contents of the SD card of the EasyS-H01

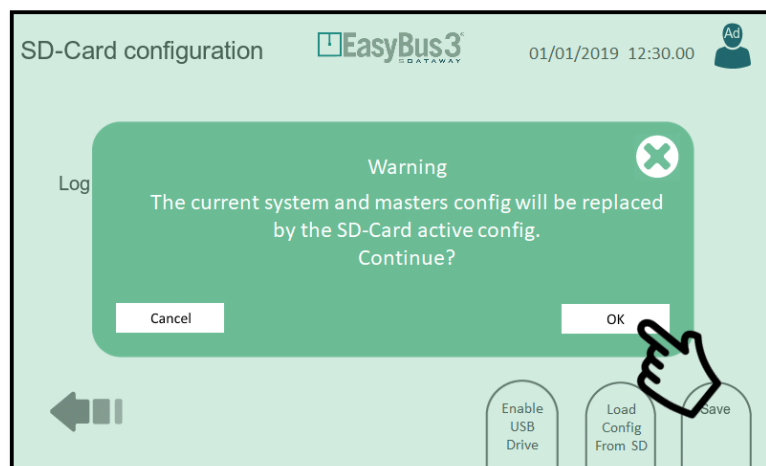4. Place the firmware upgrade file, that you want to load, in the root directory of the SD card file system.

⚠️ **Please note that only one slave type can be updated at a time. For example, only the EasyF-B01 commissioned on a master is updated when you place an "EasyF-B01-application_Rx.y.hex" file. Please never copy more than one upgrade file for a slave type to the SD card at the same time.**

5. Disconnect the USB cable when the copying process is finished (this is very important!)

6. Go to the firmware upgrade file (System Configuration > Firmware Upgrade) and check the slave type and firmware version detected on the SD card.

7. Click on Master 1, Master 2 or Master 3 to select the master network to which you want to apply the upgrade.

Please note that never more than one master network can be updated at the same time. The procedure must be repeated for each master.

8. Click on "Update Slaves Firmware" and confirm the dialogue box with "OK"

9. Wait until the upgrade process is complete. Updating the slave firmware on a master takes about 20 minutes.

⚠️ **This action cannot be aborted.**

Updating Slaves	⬇️EasyBus	27/03/2018 15:22:47	👤

Updating slaves

15% //////////////////////////////////

Please wait while the slaves are updated...

10. A confirmation message appears when the process is finished. Click on "OK".

9.9.2 Interactive menu

9. none

9.10 EasyS-M01 firmware update

9.10.1 Contents

Screen display

To upgrade the firmware of the EasyS-M01, please carry out the following three steps:

1. Connect a computer to the USB port of EasyS-H01 using a USB cable

2. Click on the "Enable USB Drive" button in the "SD Card Configuration" window (System Configuration > SD Card > Enable USB Drive)

3. A new card reader is recognised by your PC. This gives you direct access to the contents of the SD card of the EasyS-H01

4. Place the firmware upgrade file, that you want to load, in the root directory of the SD card file system.

⚠️ **Please note that only one slave type can be updated at a time. For example, only the EasyF-B01 commissioned on a master is updated when you place an "EasyF-B01-application_Rx.y.hex" file. Please never copy more than one upgrade file for a slave type to the SD card at the same time.**

5. Disconnect the USB cable when the copying process is finished (this is very important!)

6. Go to the firmware upgrade file (System Configuration > Firmware Upgrade) and check the slave type and firmware version detected on the SD card.

7. Click on Master 1, Master 2 or Master 3 to select the master network to which you want to apply the upgrade.

Please note that never more than one master network can be updated at the same time. The procedure must be repeated for each master.

8. Click on "Update Slaves Firmware" and confirm the dialogue box with "OK"

9. Wait until the upgrade process is complete. Updating the master firmware takes about 3 minutes.

⚠️ **This action cannot be aborted.**
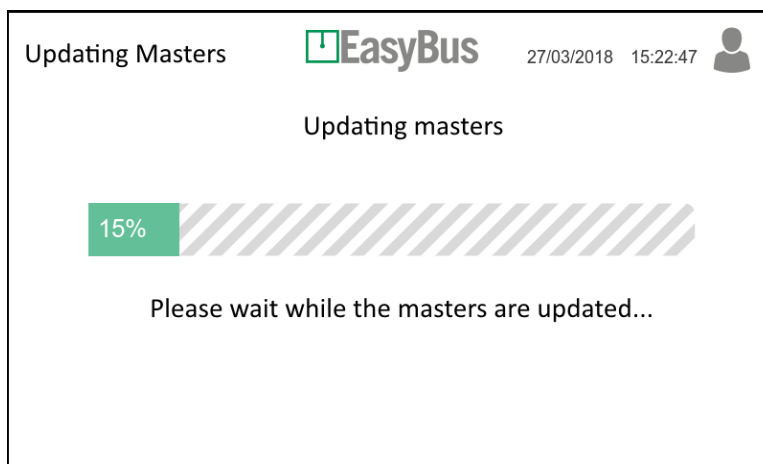
10. A confirmation message appears when the process is finished. Click on "OK".

9.10.2 Interactive menu

10. none

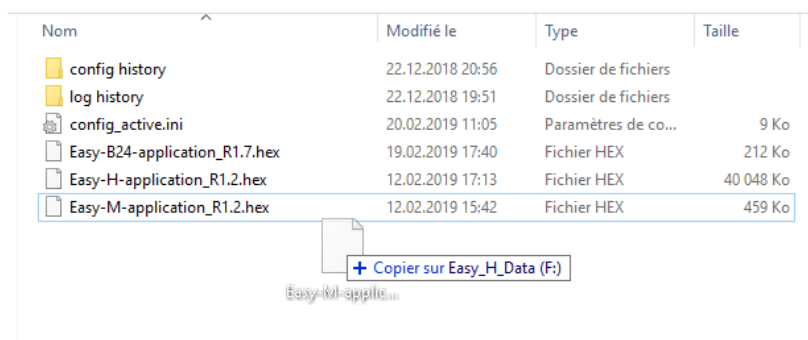## 9.11 EasyS-H01 firmware update

9.11.1 Contents

Screen display
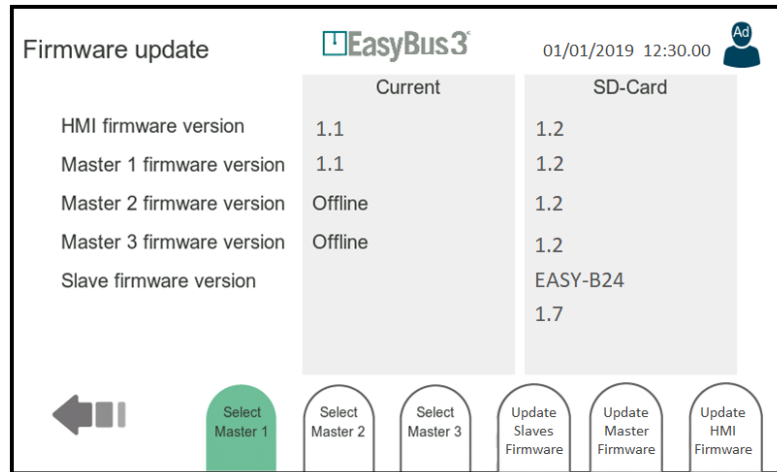
To upgrade the firmware of the EasyS-M01, please carry out the following three steps:

1. Connect a computer to the USB port of EasyS-H01 using a USB cable

2. Click on the "Enable USB Drive" button in the "SD Card Configuration" window (System Configuration > SD Card > Enable USB Drive)

3. A new card reader is recognised by your PC. This gives you direct access to the contents of the SD card of the EasyS-H01

4. Place the firmware upgrade file, that you want to load, in the root directory of the SD card file system.
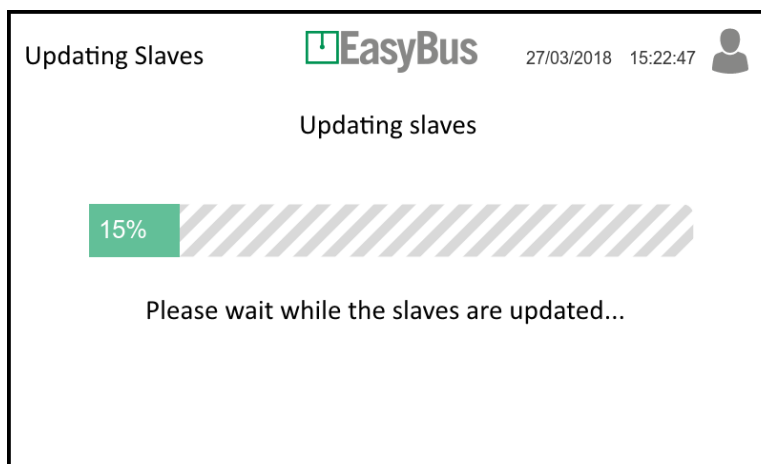

5. Disconnect the USB cable when the copying process is finished (this is very important!)

6. Go to the firmware upgrade file (System Configuration > Firmware Upgrade) and check the slave type and firmware version detected on the SD card.

7. Click on "Update HMI Firmware" and confirm the dialogue box with "OK".

Please note that never more than one master network can be updated at the same time. The procedure must be repeated for each master.

8. At this level, Easy3-H restarts and switches to the firmware upgrade mode.

9. Wait until the upgrade process is complete. Updating the HMI firmware takes about 8 minutes.

⚠️ **This action cannot be aborted.**

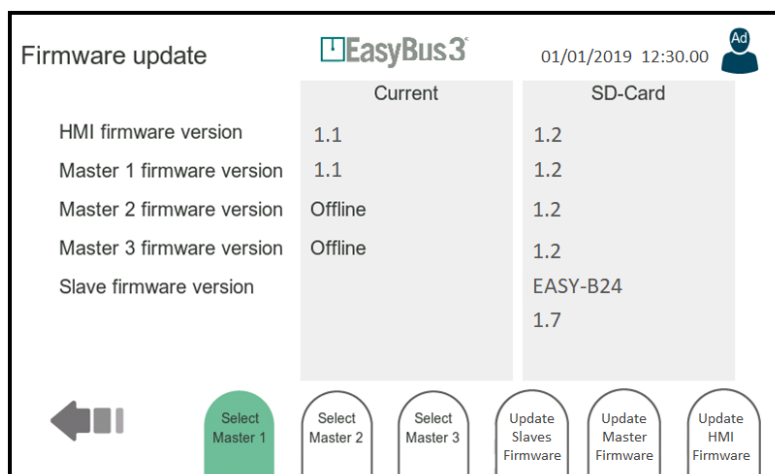10. A confirmation message appears when the process is finished. Click on "OK".

9.11.2 Interactive menu

11. none

9.12 Date and time setting

9.12.1 Contents

Screen display

Configuring the system date and time.

The keypad that appears on the right side of the window can be used to enter the date and time parameters.

Please note that the date/time setting in Easy3-H is retained for a maximum of one month after the power supply has been interrupted.
To obtain this performance, Easy3-H must be charged for at least 15 minutes.

9.12.2 Interactive menu

- Save: To save and apply the configuration

9.13 Factory settings

9.13.1 Contents

Screen display
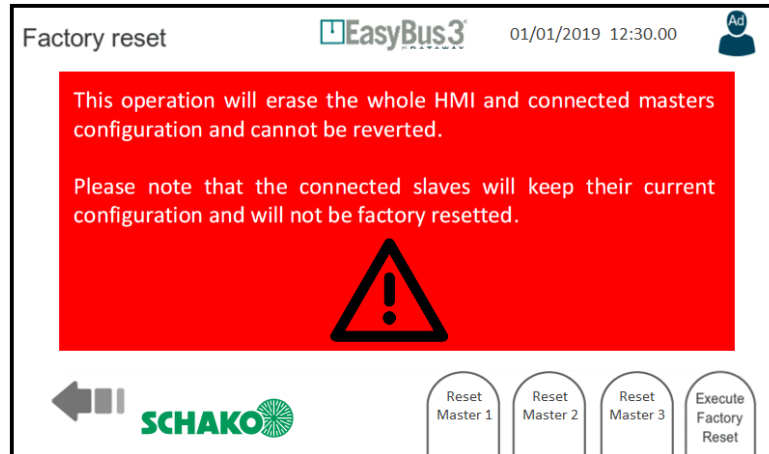
On this screen, ALL DATA CAN BE DELETED and the original factory settings can be restored.

9.13.2 Interactive menu

• Reset Master 1: Deleting the configuration of master 1. A confirmation message is displayed

• Reset Master 2: Deleting the configuration of master 2. A confirmation message is displayed

• Reset Master 3: Deleting the configuration of master 3. A confirmation message is displayed

• Execute Factory Reset: Deleting all configurations of the masters including all Easy3-H system settings.

⚠ **These actions cannot be undone!!!**

10 Modbus communication

10.1 Overview

The EasyS-H01 device can be controlled and monitored by the building automation system using a Modbus communication connection.
For communication, either an RS-485 bus a port X2 or TCP/IP at port X5 or X6 is used

The Modbus information is exchanged directly with the EasyS-M01 modules linked to the EasyS-H01 (EasyS-H01 acts as a gateway). A Modbus address (or Unit ID) is assigned to each EasyS-M01 device.

10.2 Configuration

10.2.1 Modbus RTU

For detailed information on the Modbus RTU configuration, see chapter 9.3.

The "General Configuration" window can be used to assign a Modbus address to the first EasyS-M01. The following addresses are then assigned to the other ones. The following assignment applies by default: Modbus address 1 master 1, Modbus address 2 master 2 and Modbus address 3 master 3.

10.2.2 Modbus TCP/IP

For detailed information on the Modbus TCO/IP configuration, see chapter 9.4.

The "General Configuration" window can be used to assign a Modbus address to the first EasyS-M01. The following addresses are then assigned to the other ones. The following assignment applies by default: Modbus address 1 master 1, Modbus address 2 master 2 and Modbus address 3 master 3.

10.2.3 Timeout

It is possible to configure the Modbus timeout in the "General Configuration" window, see chapter 9.2. If the EasyS-H01 has not received a Modbus request within a certain time, the communication is considered disturbed and the EasyS-M01 Modbus registers are reset to a safe value (i.e. closing of all fire dampers).
Timeout management is done separately for each of the three EasyS-M01s connected to the same EasyS-H01. If, for example, the Modbus communication is still active for the first EasyS-M01, but it is disturbed for the other two, only these last ones will be reset. The first EasyS-M01 continues to operate normally.

10.3 Register interpretation

The EasyS-M01 can be accessed using the Modbus registers, which are explained individually below.

The R/W sections can be read or written using the holding register functions (function codes 3 and 16)
The RO sections can be read using the input register function (function code 4)

10.3.1 General – EasyS-M01 information

Addr.	Description			
	Master Info Zone			
	Master Zone (R/W)			
0	Command: 1= operating, 3 = fire			
	Master Zone (RO)			
0	Status: 0 = idle, 1= operating, 2 = scan, 3 = fire			
1	Number of slaves			
2	Number of faulty slaves			
3	Fire (0=no fire, 1=fire)			
4	Bus cycle time [ms]			
5	Firmware-Version			
6	Unique identifier 1 of the master (1-9952)			
7	Unique identifier 2 of the master (1-9999)			
8	Reserved			
9	Master Easy3 channel			
	Easy3-X Info Zone (RO)			
	Easy3-X type Info + error status (2 devices/registers) (see table 2)			
10	Bit 7: Addr 2 error	Bits 0...6: Addr 2 type	Bit 7: Addr 1 error	Bits 0...6: Addr 1 type
11	Addr 4		Addr 3	

73	Addr 128		Addr 127	
	Easy3-X Retry-Counter (1 device/register)			
74	Retry-Counter Addr 1			
75	Retry-Counter Addr 2			

201	Retry-Counter Addr 128			
	Easy3-X Error-Counter (2 devices/registers)			
202	Error-Counter Addr 2		Error-Counter Addr 1	
203	Error-Counter Addr 4		Error-Counter Addr 3	

205	Error-Counter Addr 128		Error-Counter Addr 127	

Table 1 EasyS-M01 information register

EasyF-xxx	Type number
Not available	0
EasyF-V01	4
EasyF-B01	5
EasyF-B11	6
EasyF-IOM	10

Table 2 EasyF-xxx types

10.3.2 Modbus register EasyF-B01 (24V) and EasyB11 (230V)

- See "EasyH_ModbusRegisters" documentation

10.3.3 Modbus register EasyF-V01

- See "EasyH_ModbusRegisters" documentation

10.3.4 Modbus register EasyF-VAC

- See "EasyH_ModbusRegisters" documentation

10.3.5 Modbus register EasyF-VMP

- See "EasyH_ModbusRegisters" documentation

10.3.6 Modbus register EasyF-RMM

- See "EasyH_ModbusRegisters" documentation

10.3.7 Modbus register EasyF-I8M

- See "EasyH_ModbusRegisters" documentation

10.3.8 Modbus register EasyF-IOM

- See "EasyH_ModbusRegisters" documentation

11 BACnet communication

11.1 Overview

The EasyS-H01 device can be controlled and monitored by the building management system via a BACnet connection. Communication can be established via the RS-485 bus at the X2 or UDP / IP port at the X5 or X6 ports.

11.2 Configuration

11.2.1 BACnet MSTP

For detailed information on the BACnet MSTP configuration, see section 9.3.

11.2.2 BACnet IP

For detailed information on the BACnet MSTP configuration, see section 9.4.

11.2.3 BACnet in general

It is possible to configure the BACnet device in the configuration menu. For more information, please see section 9.2.

11.2.4 Communication loss

To control the loss of communication, the system uses a watchdog object that contains three instances.

Object type	Object name	Values/ default	Unit	COV support	Description	Access
Analogue in-put	Bus Watchdog countdown	30	seconds	Yes	Bus-Watchdog-Countdown	r
Analogue out-put	Reset bus watchdog countdown	-	-	Yes	A write command (0 or 1) resets the countdown to 30 seconds	w
Binary output	Control Watchdog	-	-	Yes	Activate or deactivate the bus watchdog countdown	w

11.3 Object description

The created BACnet objects are defined in three different categories. Three instances to control communication losses (watchdog). Eleven objects for each detected EasyS-M01 or each detected master.
And finally, 3 to 7 objects are created for each detected slave to control the module.

Objekttyp / Instanz (en)	Objektname	Werte/ Standard	Einheit	COV-Unterstützung	Beschreibung	Zugriff
AI / 1	Bus Watchdog countdown	30	secondes	Yes	Bus-Watchdog-Countdown	r
BO / 2	Reset bus watchdog countdown	-	-	Yes	Ein Schreibbefehl (0 oder 1) setzt den Countdown auf 30 Sekunden zurück	w
BO / 3	Control Watchdog	-	-	Yes	Aktivieren oder deaktivieren Sie den Bus-Watchdog-Countdown	w
MASTER 11 objects	Objects below are specific to each master connected					
MSO	Control Master	-	-	No	Stop = 1, Run = 2, Fire = 3	w
MSI	Status Master	0	-	No	Stop = 0, Run, Scan, Fire, All Open Slave	r
AI	Quantity of slave	0	-	Yes	Anzahl der an den Master angeschlossenen Slaves	r
AI	Quantity error of slave	0	-	Yes	Anzahl der Slaves mit Kommunikations-fehler	r
BI	Fire	0	-	Yes	Branderkennung für Master	r
AI	EasyBus cycle time	0	Milliseconds	Yes	Zeit zwischen jedem gelesenen Slave-Zyklus	r
AI	Firmware version	0	-	Yes	Firmware revision number 1104 => 1.4 Offset of 10, 1.4 become 11.4 and it's multiply by 100	r
AI	Unique id 1	0	-	Yes	Eindeutige ID für jeden Master	r
AI	Unique id 2	0	-	Yes	Eindeutige ID für jeden Master	r
AI	Channel Easy 2	0	-	Yes	Kanalnummer für Easy 2 Master	r
AI	Channel Easy 3	0	-	Yes	Kanalnummer für Easy 3 Master	r
Slave 4- 14 objects	Nach dem Scannen werden die Easy-Module angezeigt und können von ihren spezifischen Objekten gesteuert werden.					

11.3.1 BACnet objects EasyF-V01

Nom	Type	Description
Flow_VAV1	Analog input	VAV tatsächlicher Durchfluss 1
Flow_VAV2	Analog input	VAV tatsächlicher Durchfluss 2
SP_VAV1	Analog output	VAV-Sollwert 1
SP_VAV2	Analog output	VAV-Sollwert 2
Probe_1	Analog input	Sensor 1 lesen
Probe_2	Analog input	Sensor 2 lesen
Comm_Err	Binary input	Modulfehlerkommunikation

11.3.2 BACnet objects EasyF-VAC

Nom	Type	Description
Flow_VAV1	Analog input	VAV actual flow 1
Flow_VAV2	Analog input	VAV actual flow 2
SP_VAV1	Analog output	VAV setpoint
SP_VAV2	Analog output	VAV setpoint
Comm_Err	Binary input	Modulfehlerkommunikation

11.3.3 BACnet objects EasyF-VMP

Nom	Type	Description
VNom_VAV1	Analog input	V nominal 1 lesen [m3/h]
VNom_VAV2	Analog input	V nominal 2 lesen [m3/h]
Flow_VAV1	Analog input	Fluss 1 lesen [%]
Flow_VAV2	Analog input	Fluss 2 lesen [%]
Pos_VAV1	Analog input	Position 1 lesen [%]
Pos_VAV2	Analog input	Position 2 lesen [%]
Err_Code	Analog input	Fehlercode lesen
SP_VAV1	Analog output	Sollwert 1 schreiben
SP_VAV2	Analog output	Sollwert 2 schreiben
Min_VAV1	Analog output	Mindestwert 1 schreiben
Max_VAV1	Analog output	Maximalwert 1 schreiben
Min_VAV2	Analog output	Mindestwert 2 schreiben
Max_VAV2	Analog output	Maximalwert 2 schreiben
Comm_Err	Binary input	Modulfehlerkommunikation

11.3.4 BACnet objects EasyF-B01 and EasyF-B11

Nom	Type	Description
State	Multi-state input	Modulstatus: Err, Open, Close, Transition
Smoke	Binary input	Rauchmelder
CMD	Binary output	Steuerung (öffnen, schließen)
ClearAlarm	Binary output	Alarm löschen

11.3.5 BACnet objects EasyF-RMM

Nom	Type	Description
AlarmDet1	Binary input	Alarmdetektor 1
AlarmDet2	Binary input	Alarmdetektor 2
FailureDet1	Binary input	Fehlerdetektor 1
FailureDet2	Binary input	Fehlerdetektor 2
ResetAl_1	Binary output	Alarm zurücksetzen 1
ResetAl_2	Binary output	Alarm zurücksetzen 2
Comm_Err	Binary input	Modulfehlerkommunikation

11.3.6 BACnet objects EasyF-I8M

Nom	Type	Description
InputA	Binary input	Eingang A lesen
InputB	Binary input	Eingang B lesen
InputC	Binary input	Eingang C lesen
InputD	Binary input	Eingang D lesen
InputE	Binary input	Eingang E lesen
InputF	Binary input	Eingang F lesen
InputG	Binary input	Eingang G lesen
InputH	Binary input	Eingang H lesen
Comm_Err	Binary input	Modulfehlerkommunikation

11.3.7 BACnet objects EasyF-IOM

Nom	Type	Description
InputA	Binary input	Eingang A lesen
InputB	Binary input	Eingang B lesen
InputC	Binary input	Eingang C lesen
InputD	Binary input	Eingang D lesen
OutputA	Binary output	Ausgabe A schreiben
OutputB	Binary output	Ausgabe B schreiben
OutputC	Binary output	Ausgabe C schreiben
OutputD	Binary output	Ausgabe D schreiben
Comm_Err	Binary input	Modulfehlerkommunikation

12 Contact

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