Easy3-H

User manual

Table of content

1 Overview

This document describes the Easy3-H user interface and its interactions with the EasyBus3® system.
This graphical interface via an interactive color touch screen 4" is intended to commission, configure, update and diagnostic the EasyBus3® field bus.
EasyBus3® is a proprietary field bus used to control air actuators and sensors, and particularly fire dampers.

For more details about the overall EasyBus3® system, please refer to the related technical documentation.

This document contains mainly 2 chapters:
- <u>Commissioning section:</u> explaining how the configure an installation just after the first power-up.
- <u>Screens navigation and screens details</u>: showing how to navigate through the Easy3-H Graphical User Interface (GUI) and detailing the content of each screen.
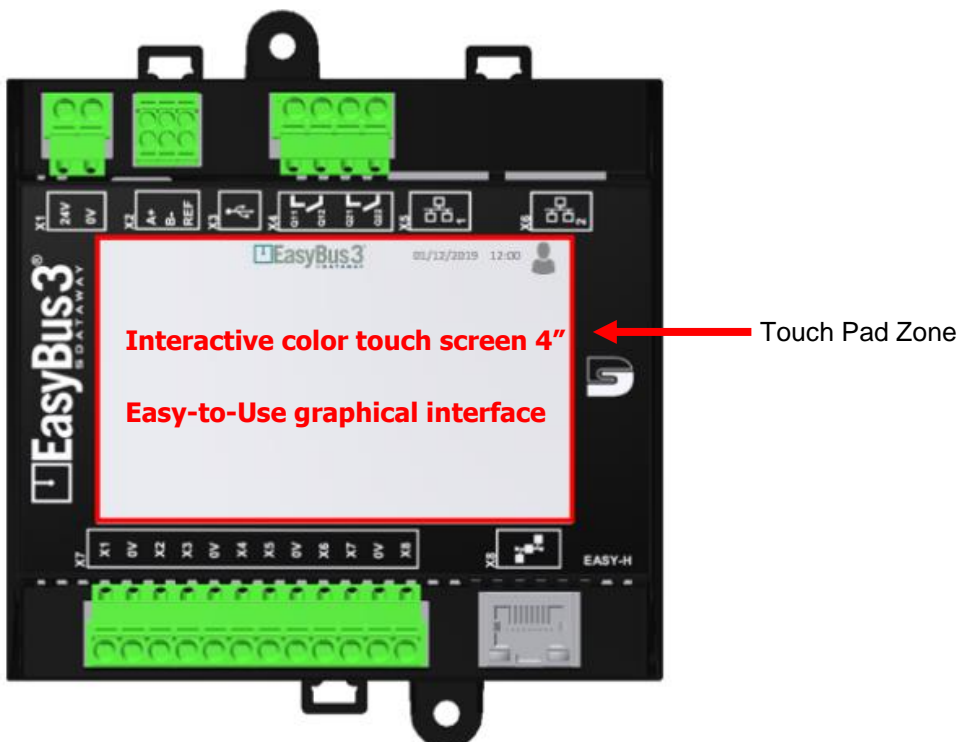
2 Lexicon

Easy3-H: Device with touch screen. Its role is to offer a GUI to an "Easy-Bus Network". It is also the communication gateway with the building automation system.

Easy3-M: Single network Master. It manages a single "EasyBus3® Sub-Net"

Easy3-X*:   Slave device with a specific function such as fire damper control (Easy-B), VAV manager (Easy-V), etc.

EasyBus3® Sub-Net: A single network consisting of one Easy3-M, up to 128 Easy3-X and the cable linking all those devices.

EasyBus3® Network: Broad network consisting of one Easy3-H, up to 3 "EasyBus3® Sub-Net", and the specific cables linking it.

GUI: Graphic User Interface

3 Logos explanation

3.1 User access levels

The current access level is always visible on the top right of all screens. The different access levels are:

Viewer: Read only user access level (no possible action on the system).
By default, the viewer mode is active.
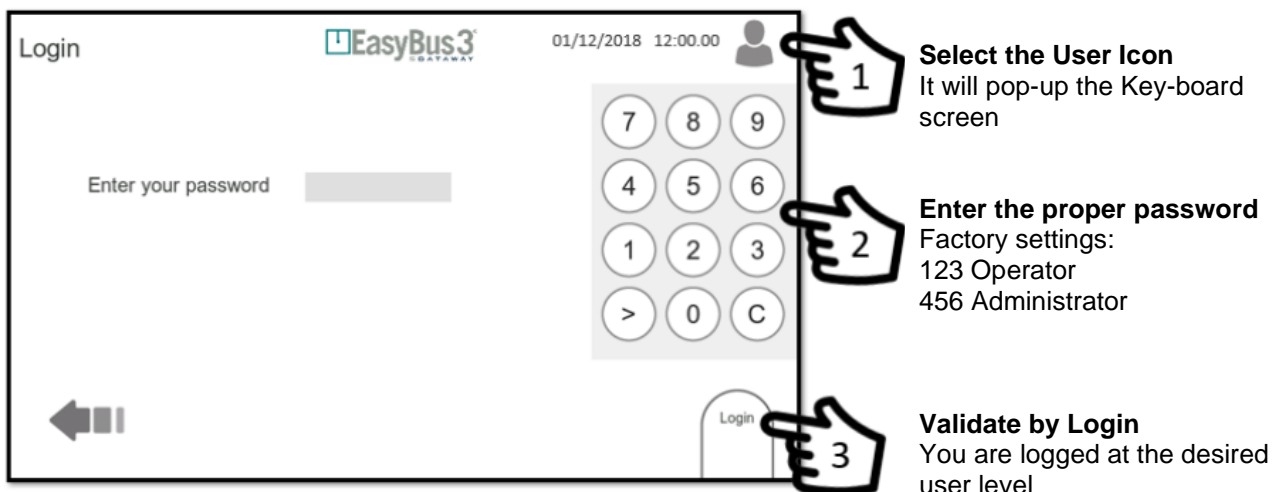
Operator: This level allows the full setting and configuration. It is usually used by commissioning and tests.
To access this level, user needs to tap on the user icon. This action opens the authentication screen. (Factory setting code is: 123)

Administrator: This level allows full access to the system and is reserved for engineers and developers. It gives access to all system functionalities including a factory reset of the system.
To access this level, user needs to tap on the user icon. This action opens the authentication screen. (Factory setting code is: 456)

The default user level is "Viewer". To switch to Operator or Administrator level please follow the procedure describes below:

Select the User Icon
It will pop-up the Key-board screen

Enter the proper password
Factory settings:
123 Operator
456 Administrator

Validate by Login
You are logged at the desired user level

You can exit from Operator & Administrator levels at any moment/screen by pressing once the User logo.

In Operator and Administrator level, after 20 mins without interactions on the screen, the viewer level is automatically activated.

While the system is updating the firmware, the timer is not triggered. The 20 mins timer will be activated at the end of the firmware update.

3.2 Easy3-M representation

Each Easy3-M detected by an Easy3-H in its EasyBus3® Sub- Network is represented by a disk.

The texts shown in the disk are:

Total Slaves in the configuration managed by this Easy3-M

"EasyBus3® Sub-Net" managed by Master 1

In case of error state reported by an Easy3-X, a small red disk will appear on the right side.
The number shown inside this disk is the total number of Easy3-X in error status.
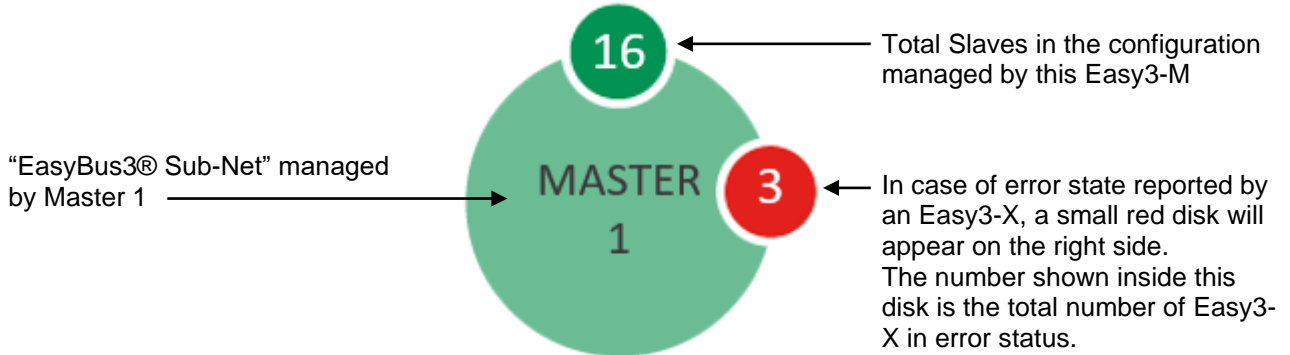
Each Easy3-M can have 5 different Modes:

Not configured

Running: EasyBus Sub-net is running. All Easy3-X are responding correctly.

Force: The Easy3-M is in forced mode. All fire dampers receive an open command.

Error: Easy3-H is not able to communicate with Easy3-M or Easy3-M has an internal failure.

Fire: The Fire mode has been activated. All fire dampers receive a close command.
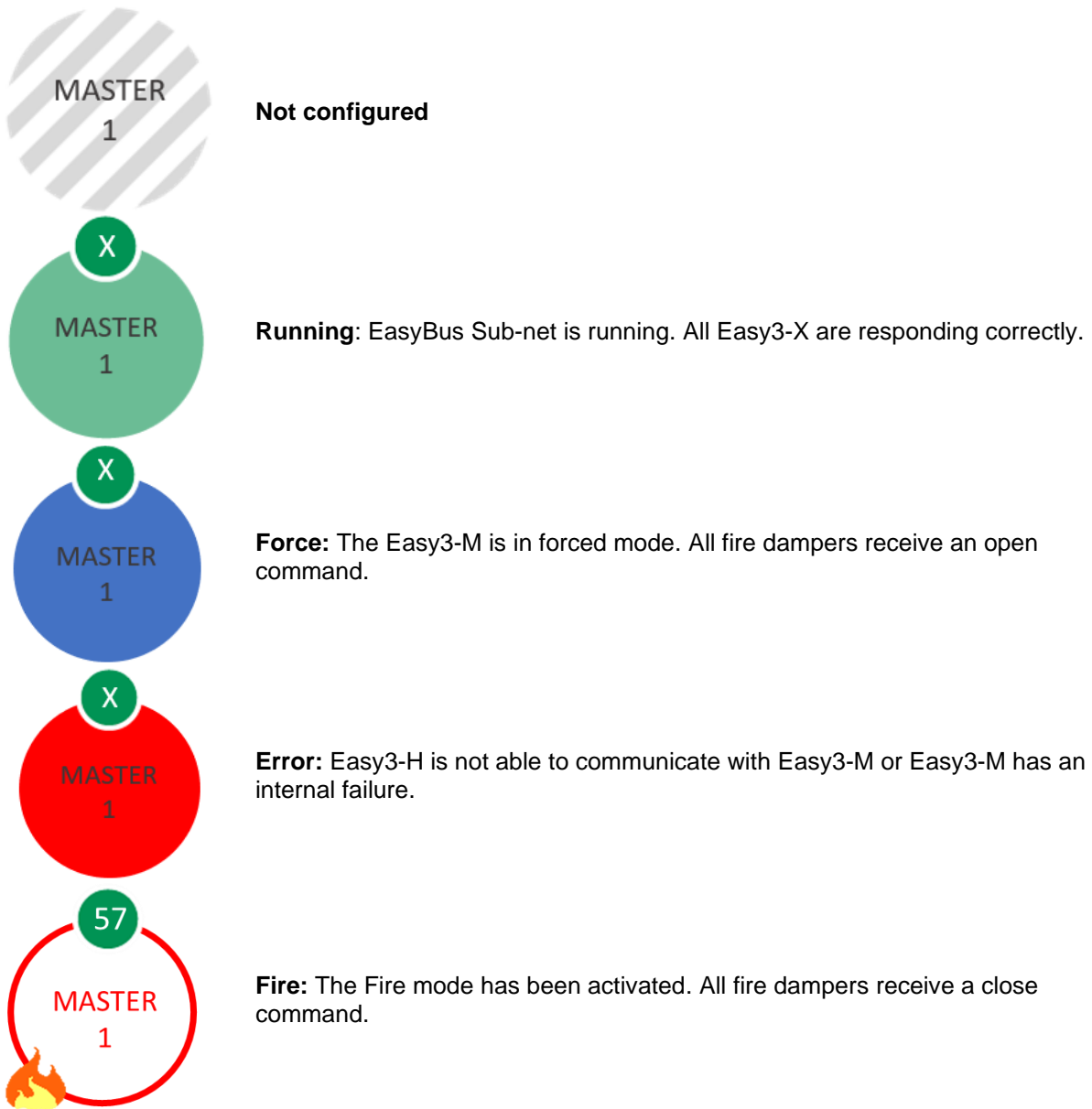
3.3 Easy3-X representation

Each Easy3-X detected by a Master in its EasyBus3® Sub-Net is represented by a disk.

The texts shown in the disk are:
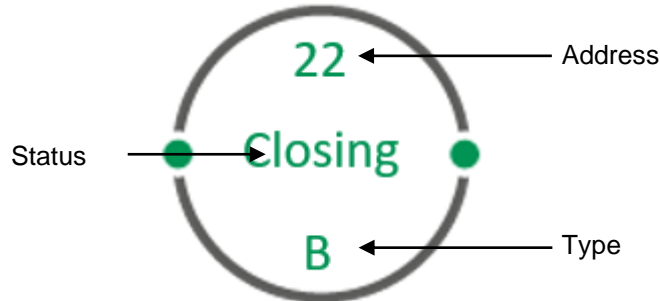
Index:	Easy3-X address.
Status:	Easy3-X current status. Such status depends on the Easy3-X type.
Type:	Easy3-X type. It can be:

- B: Fire damper control with 24VDC
- B230: Fire damper control with 230VAC (*available soon*)
- V: Analog VAV control with 24VDC (*available soon*)
- IO: 4 digital inputs/4 digital outputs (*available soon*)

Each Easy3-X can have 3 different modes:

Not configured: Such status can only appear in case the Easy3-X is added after initial commissioning.
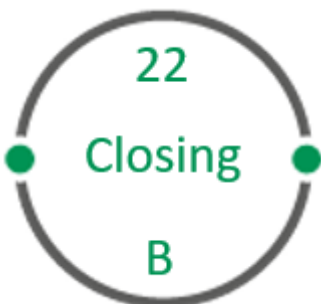
Running: Easy3-X is running normally.
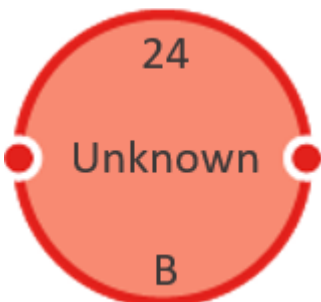
Error: Easy3-X presents one or more problems:
- Not able to communicate with its Easy3-M
- Error specific to the slave type

4 Commissioning

Before proceeding with this operation, the cabling must be done: (please refer to the related technical documentation)
- Easy3-H must be powered
- Easy3-H must be connected to the Easy3-M modules.
- All, or major part of the Easy3-X must be connected on the corresponding EasyBus3® Sub-Net.

1- At Easy3-H power-up, the welcome screen will appear rapidly (10 to 15 seconds) while the system initialization.

Screen Visualization

2- After 10 to 15 seconds, the main screen will appear with as many Easy3-M (Masters) connected on the Easy3-H with a maximum of 3. *Here we have 2*.

Screen Visualization

The grey crosshatching means that both masters are not configured yet.

To be able to commissioned the system, the user must be logged as "Operator" level as a minimum.

Please refer to chapter 3.1 Authentication for detailed information.

4.1 Commissioning & Channel Assignment

EaysBus3® integrates an algorithm to propose the best communication rate and reduce risk of interferences between the different sub-network.

1- Make sure that the EasyBus Sub-Net under commissioning is powered up.

⚠️ **The other ones EasyBus3® Sub-Network must be power down. This is to improve the automatic cross talk avoidance process.**

Screen Visualization

2- Select the "Master 1" button.

Select Master 1

4.1.1 Automatic Channel Assignment

1- The following screen will appear with the "best Channel" proposal.

ℹ️ **It is highly recommended to select this Channel, and then to press "Scan button".**

Screen Visualization
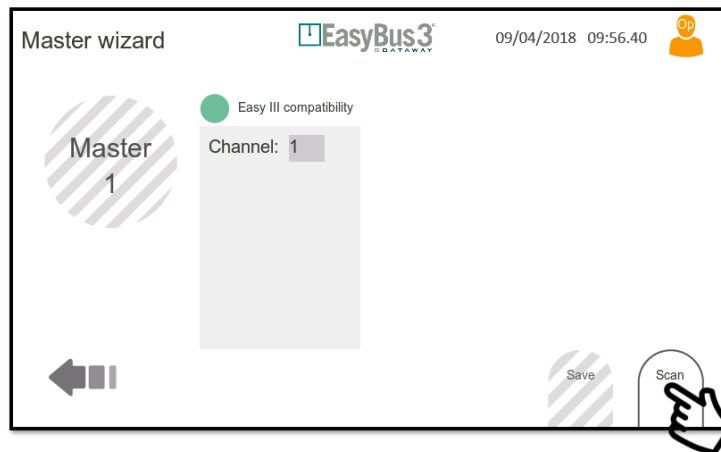
Select Scan

The system will automatically propose the best channel available.
Example with an installation with 3 Masters:
- Master 1 - Channel 1
- Master 2 - Channel 2
- Master 3 - Channel 3

Please continue the commissioning procedure by following the 4.2 instructions (Slaves research)

4.1.2 Manual Channel Assignment

If your installation includes more than one EasyBus3® network, please ensure that the same channel number is not reused by allocating manually a new one:

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 2 – Channel 5	Master 2 - Channel 8	Master 2 – Channel 11	Master 2 – Channel 14
Master 3 - Channel 3	Master 3 – Channel 6	Master 3 - Channel 9	Master 3 – Channel 12	Master 3 – Channel 15

ℹ️ **It is recommended to always use the lowest number channel for Master having a strong load of Easy3-X. A total of 255 Channels are available.**

1- Select the channel Number.

Tap on the Channel number
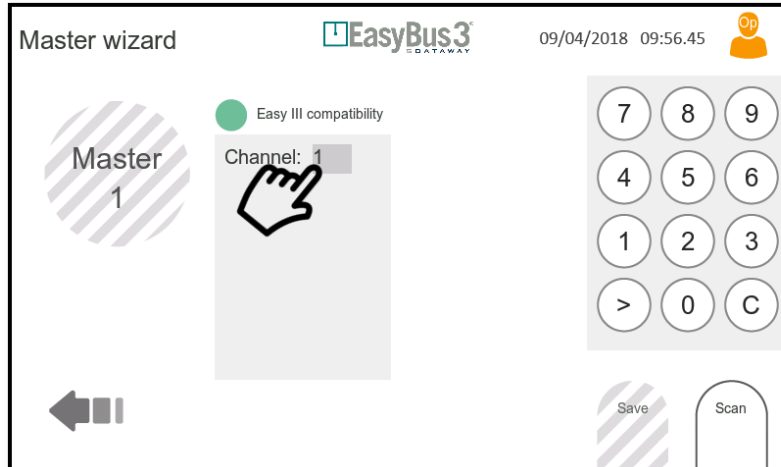
The Key board will appear

2- Modify the channel number and Initiate the Scan process.

Enter the Channel chosen via the KeyBoard (Example 4)
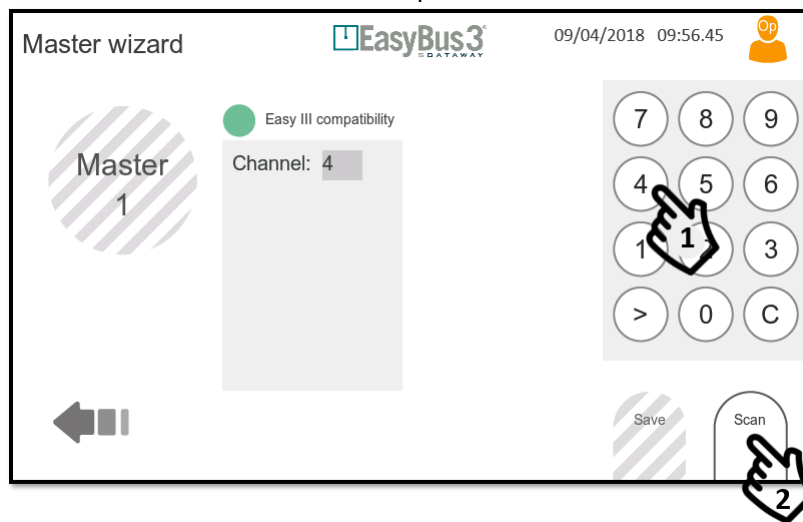
The channel displayed on the screen will be used for the commissioning of the selected Master.

Then Select Scan

Please pursue the commissioning procedure by following the 4.2 instructions (Slaves research)

4.2 Slaves research & Group assignment

The Easy3-M will start scanning its EasyBus Sub-Net identifying all Easy3-X modules connected in its sub-network. The Easy3-X slaves scanning is made in two distinctives waves.

> **The total scanning process can last up to 5 minutes.**
> **The less Easy3-X you have on the sub-network, longer the time to scan is.**

1- The Easy3-M scans its sub-network to retrieve existing Easy3 Slaves

Screen
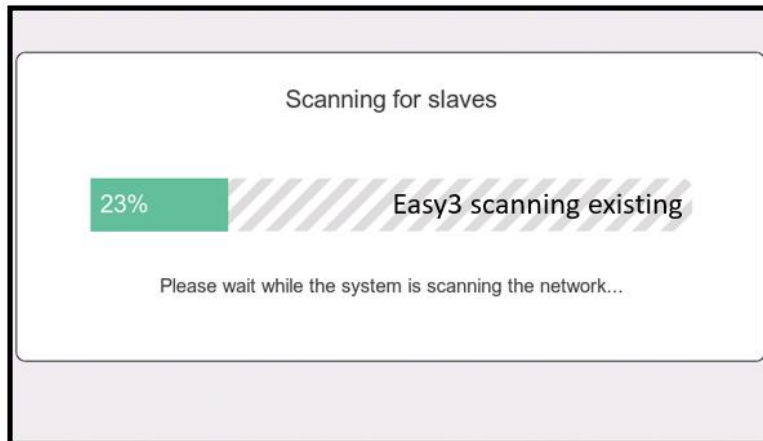
Visualization

Scanning for existing slaves in process

2- At second time, the Easy3-M scans its sub-network to find additional Easy3 Slaves

Screen
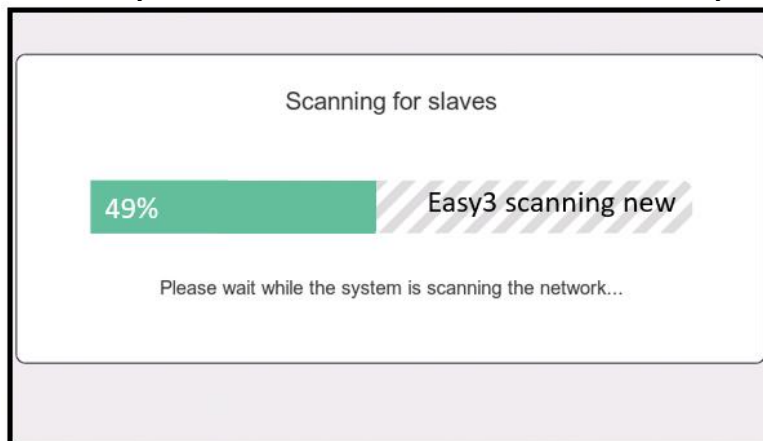
Visualization

Scanning for new slaves in process

3- At the end of this process, the following screen will appear

Screen

Visualization
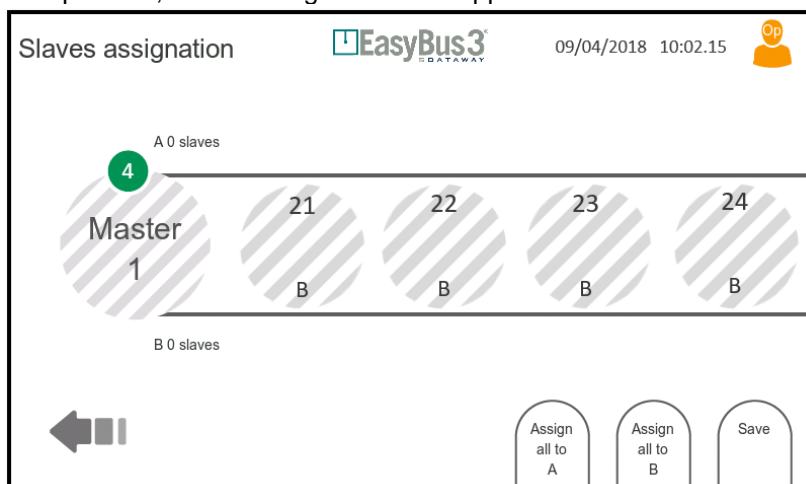
Inside the green circle, you can find the total number of Easy3-X found on the EasyBus Sub-Net.

4.2.1 Manual Slaves group assignment

You can now assign manually & individually each Easy3-X to a group (A or B) by sliding it to its respective group.
Please refer to chapter 5.1 Groups functions for detailed information.

1- Assign manually your selected slaves to a specific group (A or B)
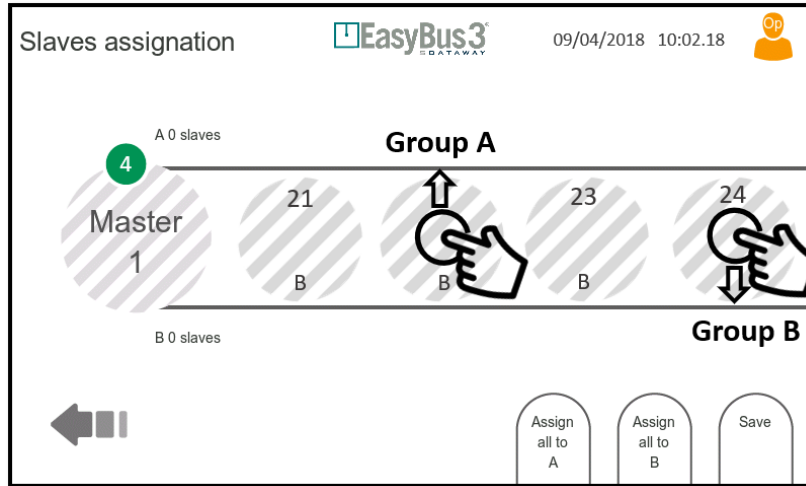
Select an individual slave and assign it:

To Group A: Slide it up

To group B: Slide it down

2- Once the assignment is done, you need to save your configuration

Screen Visualization

Examples: Slave 21; 23 not assigned

Slave 22 assigned to Group A

Slave 24 assigned to group B
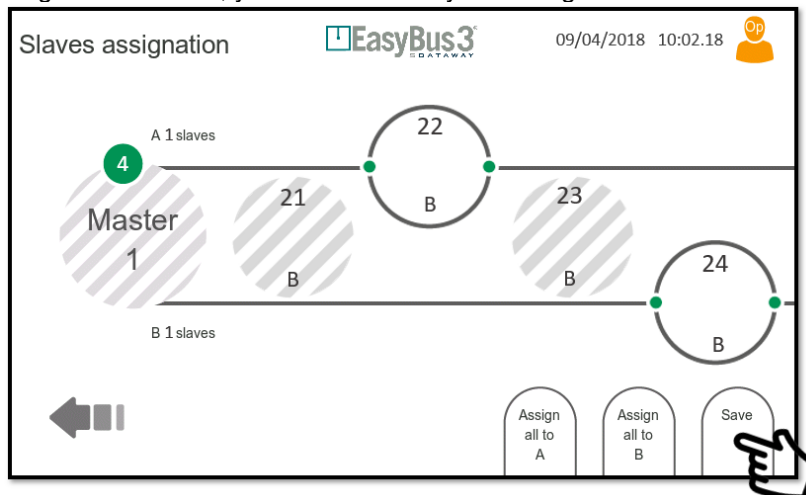
Select SAVE to save the configuration

3- If one or more Easy3-X are not assigned to a group, a pop-up window will appear to notify that they will be assigned automatically to the group A

Screen

Visualization
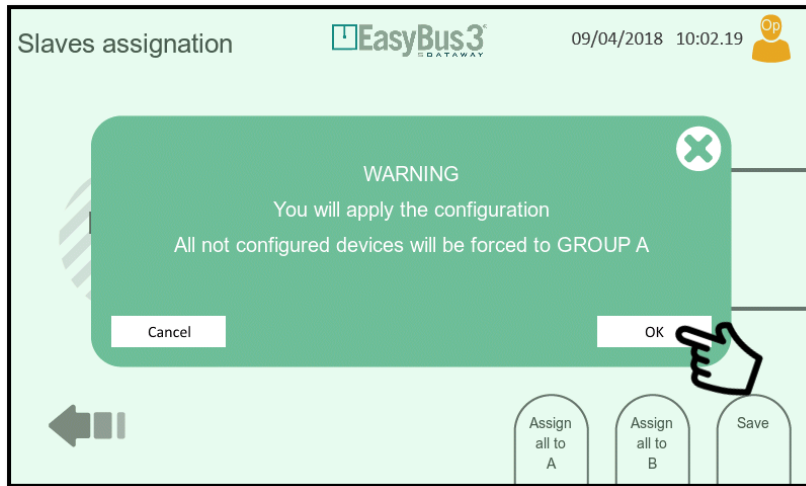
Select OK
All remaining Slaves will be assigned to Group A.

Your slaves Assignment process is ended.
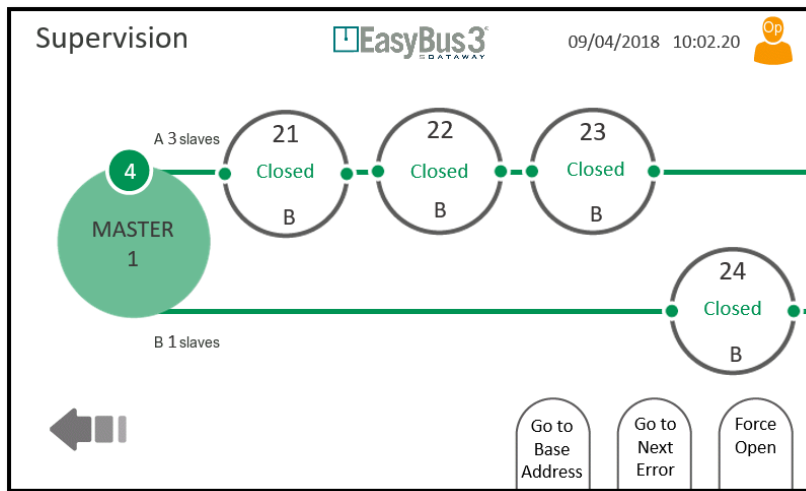
Screen

Visualization

If needed, you can press the button "Force Open" in order to open all Fire Damper controlled by this EasyBus3® Sub-Net.

You can now press the back button in order to go back to the main screen and select the next Easy3-M to configure by repeating the same operation.

4.2.2 Automatic Slaves group assignment

You can also automatically assign all Easy3-X to one group (A or B), by pressing the corresponding button.
Please refer to chapter 5.1 Groups functions for detailed information.

At the end of the scanning process the EaysBus3® propose 3 options:

Screen

Visualization
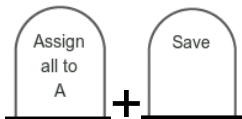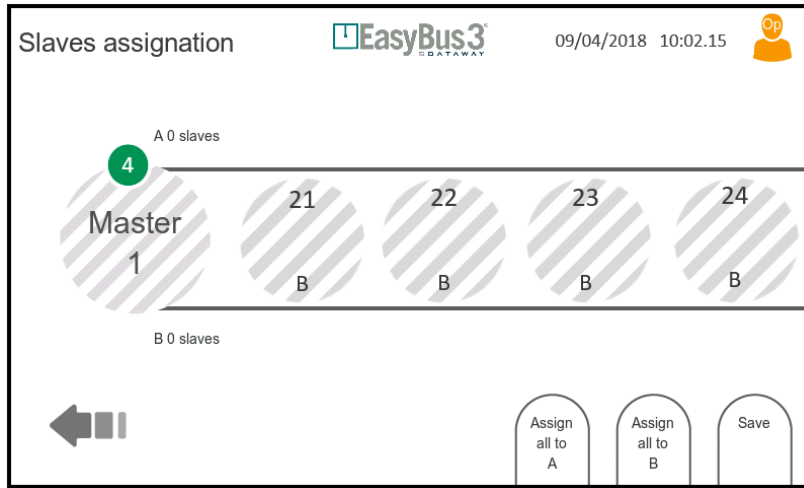
 By clicking in "Assign all to A" all the slaves found will be automatically assigned to Group A
You need to **Save** your configuration to End the process
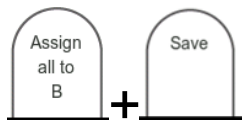
 By clicking in "Assign all to B" all the slaves found will be automatically assigned to Group B
You need to **Save** your configuration to End the process

 By clicking in "Save" all the slaves found will be automatically assigned to Group A.

By Pressing Save a pop-up window will appear to finalize the automatic assignment process.
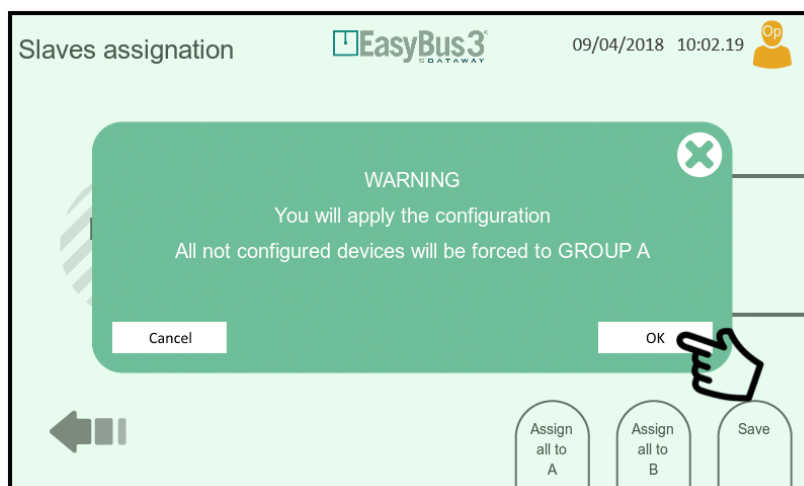
Select OK
All Slaves will be assigned to the selected group.

Your slaves Assignment process is ended.

Screen

Visualization
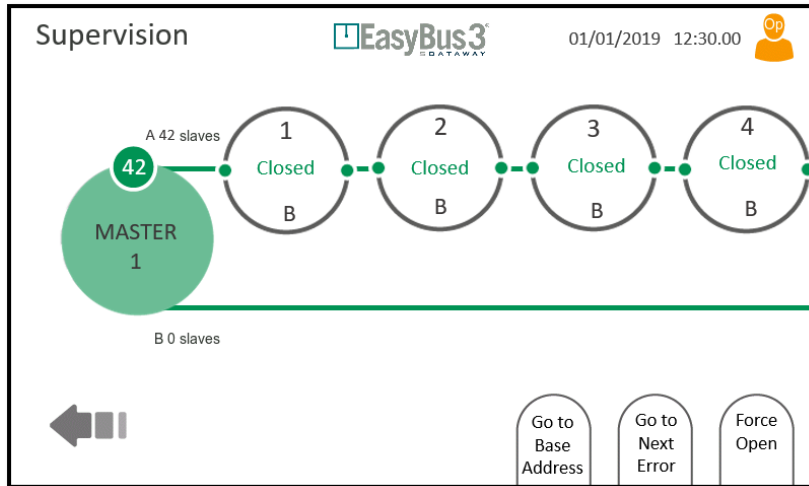
In this example 42 slaves have been assigned automatically to group A

If needed, you can press the button "Force Open" in order to open all Fire Damper controlled by this EasyBus Sub-Net.

You can now press the back button in order to go back to the main screen and select the next Easy3-M to configure by repeating the same operation.

To save time, you can perform an assignment by mixing both automatic and manual assignment.

Example: Push all the slaves to one group via the automatic mode, and select manually the other one(s) you want to put on the other group.

Manual reassignment can be performed at a later stage. Please refer to chapter 8.4 (advanced) by just sliding the selected slave to the appropriate group.

5   Advanced features

5.1   Groups

Each Easy3-X module can be assigned to a group. There are two groups, A and B. The groups can have two different functions, priority or functions. The mode can be configured in the "Master advanced configuration" menu, see section 8.4.

Screen

Visualization
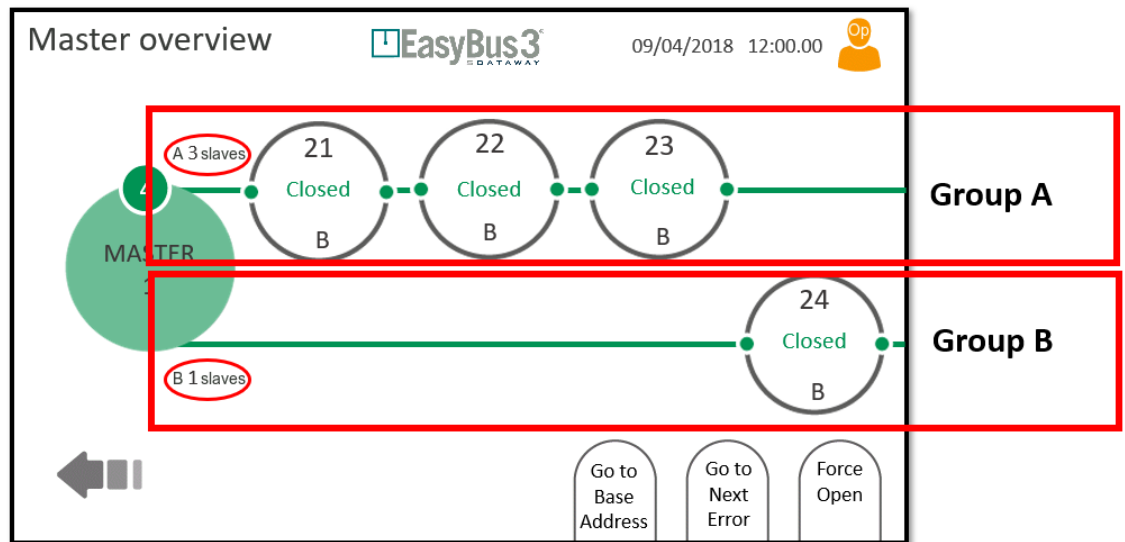
5.1.1   Priority mode

The priority mode is useful with network with a high number of Easy3-X devices. In that situation, the poll cycle time can reach several seconds. If some Easy3-X devices must be polled with a lower latency, they can be assigned to one group and all the other devices to the other. The Easy3-M will then communicate with each group in alternance, the group with the lower number of devices will have the lowest latency.

Example:
The network has 50 Easy3-X modules with the addressed 1 to 50.
Without the priority mode, the cycle time is about 3.5 seconds.
This latency is too high for the first 5 modules, the groups are configured as following:
1 to 5 ➔ Group A
6 to 50 ➔ Group B

The master will communicate with the two groups in alternance:
    A – B – A – B – A – B – A – B – A – etc…
With 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 as the number of slaves has doubled for each group:
Group A: 5 x 2 ➔ Approx. 0.6 seconds
Group B: 45 x 2 ➔ Approx. 5.4 seconds

Assigning small amount of Easy3-X to one group will make its reporting faster.

Refer to Master Configuration content in chapter 8.3.1 for more details about the cycle time visualization.

5.1.2 Function mode

The function mode is useful when some Easy3-X modules must be linked directly to the input / output signals of the Easy3-H. See section 9.5 for more details about the possible configurations.

Example:
The network is connected to two floors. All the Easy3-X of the first floor are assigned to the group A and the Easy3-X of the second floor to the group B.
The I/Os are configured as follow:
I/O 1: input, group A, function "Open"
I/O 2: input, group B, function "Open"
I/O 3: input, group All, function "Fire"
I/O 4: output, group A, function "Open"
I/O 5: output, group B, function "Open"

Then the network can be controlled with the I/O without a building automation system using the Modbus communication. Enabling the I/O 1 will open the Easy3-X devices of the group A. The I/O 4 with be activated with all the status of the Easy3-X from the group A is "Opened". This is the same for the group B with the I/O 2 and 5. If the I/O 3 is activated, this will enable the fire mode and immediately close all the Easy3-X modules.

Note 1: It is not represented in the example, but it is also possible to configure each I/O for one of the three Easy3-M connected to the Easy3-H, or all. The signal polarity can also be configured.

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

6 Screens description

6.1 System start up

6.1.1 Content

A splash screen is displayed about 10 to 15 seconds at the system start up.

During this time, the system is initializing and all Easy3-M are scanned and connected.

6.1.2 Interactions

- None
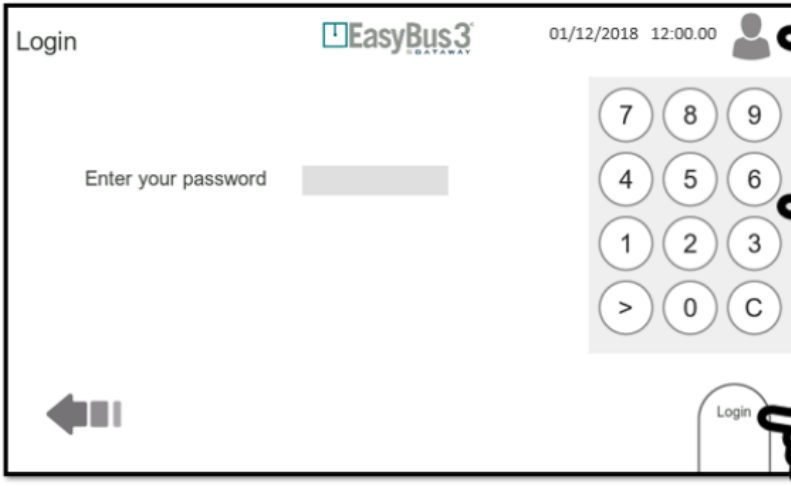
6.2 Authentication

This screen allows to change the user access level.

Please refer to chapter 3.1 User access level for detailed information.

6.2.1 Content

In "viewer" mode, tap on the User Icon it will pop-up this screen

Select the User Icon
It will pop-up the Key-board screen

Enter the proper password
Factory settings:
123 Operator
456 Administrator

Validate by Login
You are logged at the desired user level

6.2.2 Interactions menu

By clicking on "Viewer Mode Icon"
The system gives access to login screen
Please refer to chapter 4.1 User access level for detailed information.

By clicking on "Operator Mode Icon"
The system brings you back to the Master Overview Screen

By clicking on "Administrator Mode Icon"
The system brings you back to the Master Overview Screen

- Entering a password will give access level set with the password.

7 Master overview

7.1 Content

At the end of the initialization process, the EasyBUS3®System shows all connected Easy3-M on the network. It can show up to 3 Easy3-M.

Screen display with 1 Masters

Screen Visualization
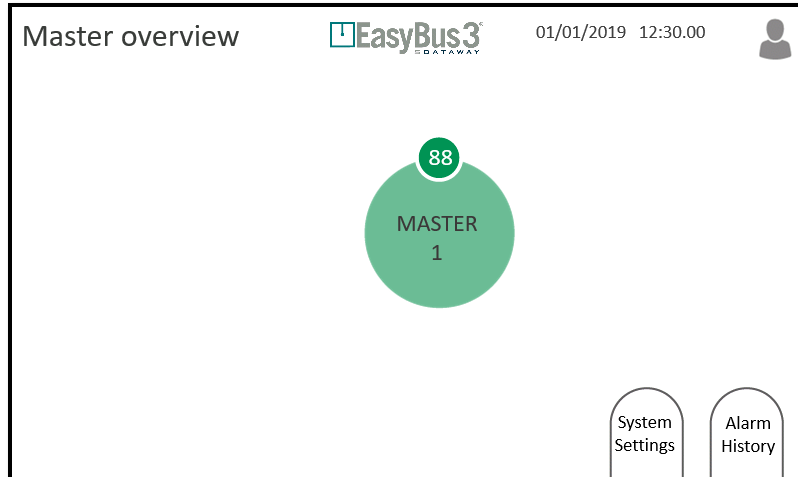
Screen display with 2 Masters

Screen Visualization
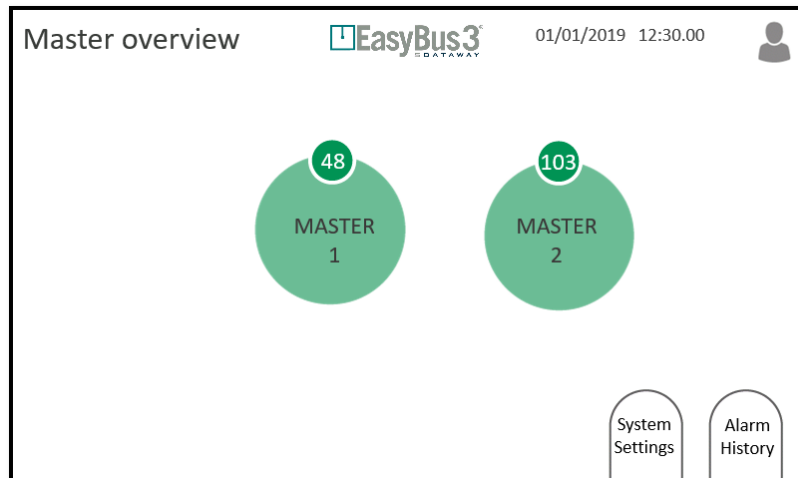
Screen display with 3 Masters

Screen Visualization
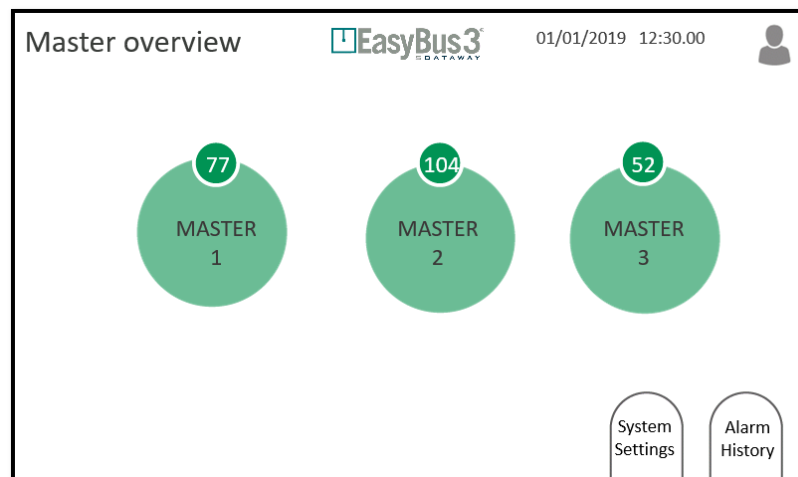
7.1.1   Interactions Menu

By clicking in "Alarm History"
The system gives access to the Alarm History screen.
The list is empty. No error or warning have been registered.
Please refer to chapter 7.2 Alarm History for detailed information
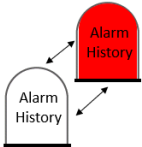
By clicking in the Blinking "Alarm History"
The system gives access to the Alarm History screen.
There is a least an error or a warning information.
Please refer to chapter 7.2 Alarm History for detailed information
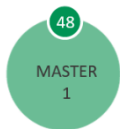
By clicking in the "Master Disk X" (1 to 3)
The system gives access to the respective Master (1 to 3) Supervision screen
Please refer to chapter 8 Master Supervision for detailed information

By clicking in "System Settings"
The system gives access to the system configuration screen
Please refer to chapter 9 configuration screen for detailed information

7.2 Alarm History

7.2.1 Content

The alarm history screen displays all the warnings & error information registered by the system since the last clearing.

1- The Alarm History screen is accessible from the Master Overview Screen.
   If a warning and/or an error have been registered the Alarms History Icon will blink white/ red.
   If no warning and/or an error have been registered the Alarms History Icon will remain white thus the alarm history list is empty.
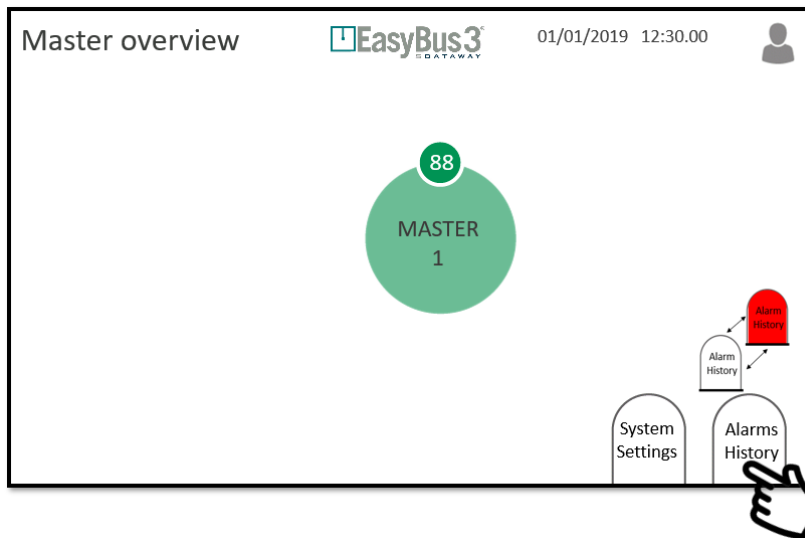
Select Alarm History
The Alarms History screen will appear

2- During the application running, important actions or messages are logged in this screen. It is sorted by:
   - Date/time
   - Type of information:
   - **Warning (Orange line):** Some functionalities are altered, system keeps working in a deteriorated state.
   - **Error (Read line):** Some functionalities and/or modules are Out of order. Part of the system or entire system is out of order.

Screen Visualization

If the list of error is longer that a screen it can be scrolled to access to whole history information

7.2.2   Interactions menu
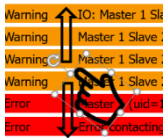
By scrolling your finger up and down in the List
It scrolls through the list to display the whole history information.

By clicking in "Clear All"
In Operator & Administrator mode: The whole list of Warning & Error information displayed in the screen will be deleted.

No Interaction possible
In viewer mode it is not possible to clear the list.

The Warning & error information are also saved in the SD card.

Even if you clear the list, Warning & Error information can be retrieved from the SD card.

Operator & Administrator mode are required to clear the list.

8 Master Supervision

8.1 Content

In this screen you can find all the network information corresponding to the selected Easy3-M and its EasyBus3® Sub-Net.

Screen

Visualization
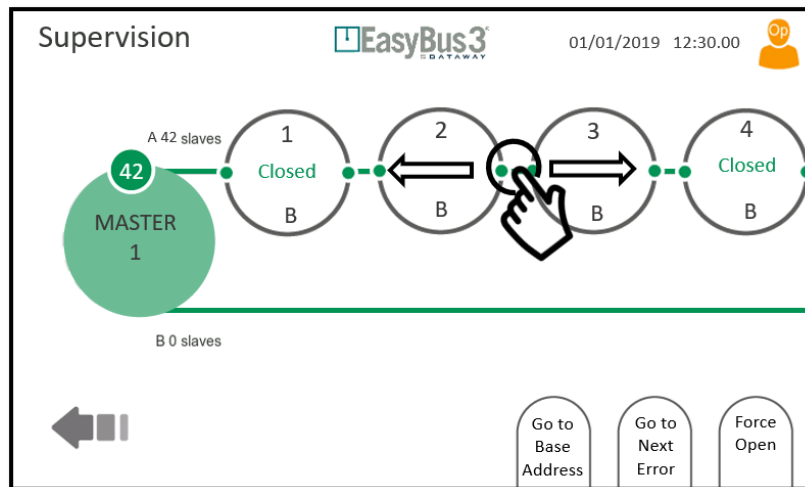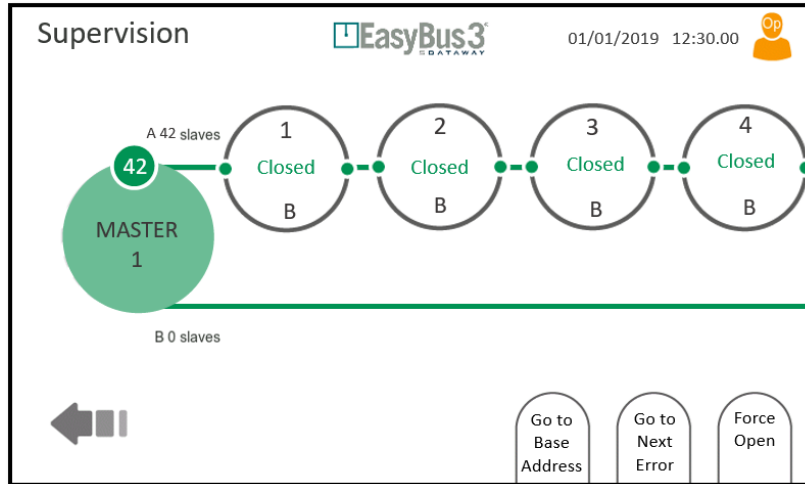
The Group Lines can be slide laterally to browse all Easy3-X in the EasyBus3®.

The 2 lines shown represent the 2 groups (A & B) of Easy3-X with the number of Slaves assigned to each of them.

8.1.1 Interactions menu

By clicking on "Force Open"
The system will automatically open all the fire dampers located on this EasyBus3® Sub-Net.
Please refer to chapter 8.2 Force Open Mode for detailed information
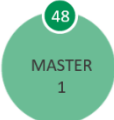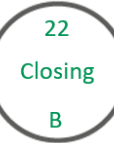
By clicking on "Go to Next Error"
If one of the slaves is in error mode, the system will slide the screen to show you the next Easy3-X in error mode. If there is more than one slave in error mode, you can repeat this operation to identify all of them on this EasyBus3® Sub-Net.

By clicking on "Go to Base Address"
If you have slided the screen previously or used the Function "Go to Next Error", the system will bring you back to the beginning of EasyBus3® Sub-Net.

48 MASTER 1	**By clicking on the "Master disk X" (1 to 3)** The system gives access to the respective (1 to 3) Master configuration screen *Please refer to* chapter 8.3 *Master Configuration for detailed information.*
22 Closing B	**By clicking on a specific "Slave module"** The system gives access to the Slave configuration screen*.*

8.2 Force Open Mode

8.2.1 Content

The EasyBus3® system propose a Force Open mode to open automatically all the fire dampers located on a dedicated Sub-Net.

⚠️ **Note that the fire alarm priority is higher than the force open mode. This means that is a fire alarm is detected, the master will go in "Fire" mode even if the "Force open" mode is active.**

1- The Force Open Mode is accessible from the Master Supervision Screen
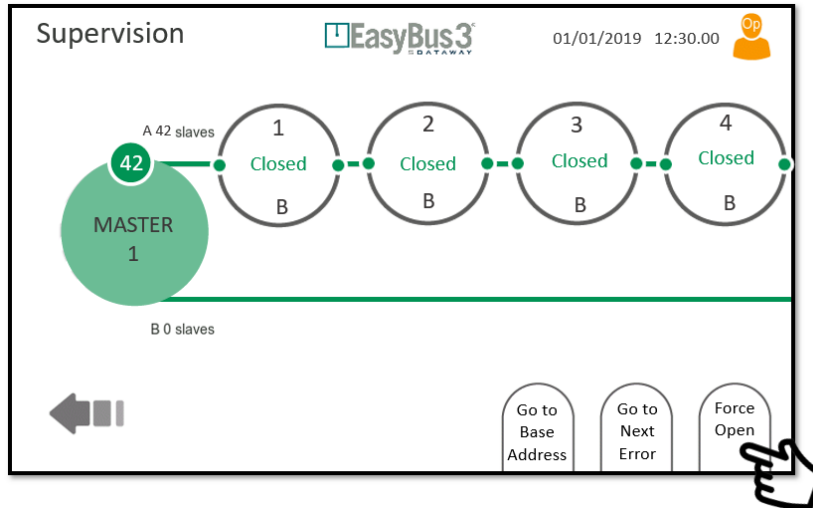
Select Force Open
It will open all the fire dampers on the Sub-Net

2- The Force Open Mode is activated on the selected Master, all the all the fire dampers on the Sub-Net are opens

Screen Visualization
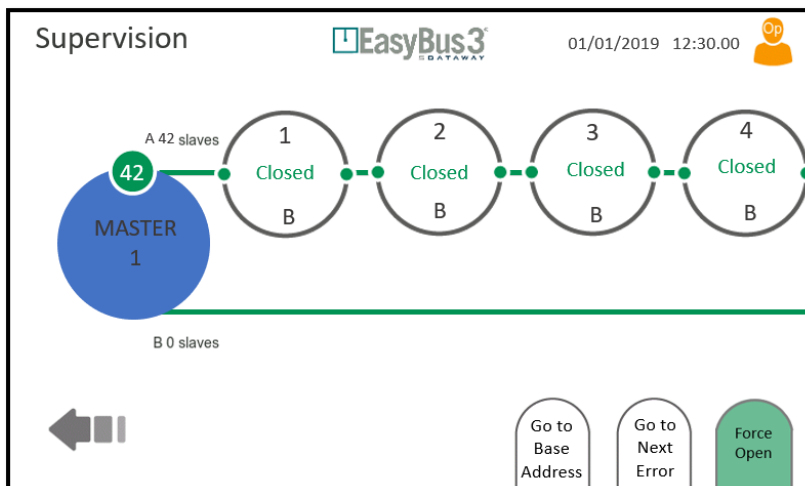
The Master Disk becomes Blue and the logo Force Open green to indicate that the Force Mode is activated.

8.2.2 Interactions menu

By clicking in "Force Open" green icon
It deactivates the Force Open mode. The dedicated EasyBUS3® Sub-Net is back to normal function mode.
In viewer mode it is not possible to de-activate the Force Open mode.

No Interaction possible
In viewer mode it is not possible to activate the Force Open mode.

8.3 Master configuration

8.3.1 Content

In this screen you can find all the detailed information about the Easy3-M selected:

- Status: Running, Error...
- Up time
- Firmware version
- Easy III settings: The channel used by the Master to communicate with the slaves
- Cycle time by Group (A or B) in milli second
- Error number registered by the system
- Signal strength: From Very low to Excellent
- Retry rate: Form Very High to very Low

Screen Visualization
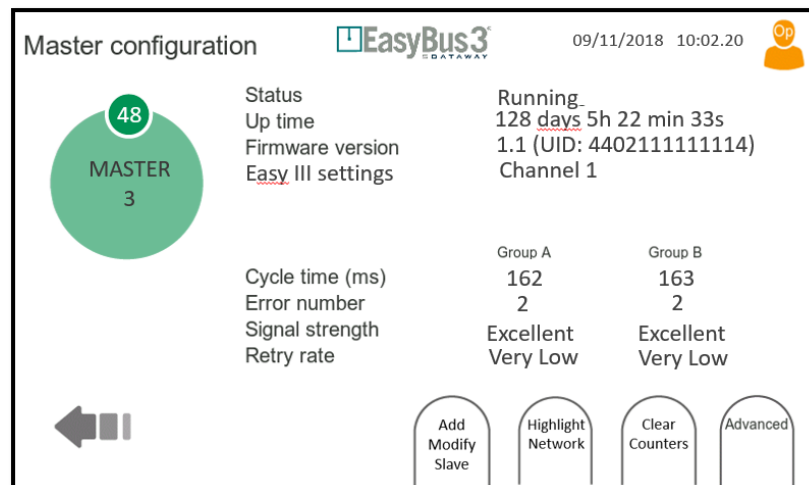
8.3.2 Interactions menu

By clicking on "Advanced"
The system gives access to the Master Advanced Config screen.
Please refer to chapter 8.4 Master advanced configuration for detailed information

By clicking on "Clear Counters"
It Clear all retry and error counters of the selected Master.

By clicking on "Highlight Network" the Icon becomes Green
It will switch ON both LEDs (blinking) in all the Easy3 modules located on theEasyBus3® Sub-Net.
This functionality is very helpful to find and or identify visually a specific EasyBus3® Sub-Net in a building.
To Stop this functionality, click back on the Green Icon.

By clicking on the "Add Modify Slave"
The system gives access to the Master Wizard screen to perform a new scan or change the currently used channel.
Please refer to chapter 4.1 Commissioning & Channel assignment *for detailed information*

8.4 Master advanced configuration

8.4.1 Content

This screen allows the user to visualize and/or change the advanced configuration of the Easy3-M:

Parameters shown for information:

The below information and values are used by the EasyBUS3® algorithm to optimize the time cycle. They cannot be modified.

- Retry cycles: Number of retry for each cycle in case of communication failure.
  By default, de value is 3 cycles
- Timeout before retry: The time to wait before retrying a new communication.
  By default, de value is 1 second.
- Max retry list length: The maximum list of retry in the retry Slave list.
  By default, de value is 5.

Parameters shown for information & Modification:

- Fire error clearing It is the mode of the clearing fire error (automatic / manual). If set to Auto, the master mode will automatically change from "Fire" to "Running" if the fire contact input is released. If set to Manual, the Master will stay in fire mode even if the fire contact is lost. The "Clear Fire" button must be pressed from the Master Supervision screen to restore the "Running" mode.
  By default, the system is set to Manual. It can be modified to Auto.
- Group mode: Determine the system priority logic.
  By default, the system is set to Priority (Group A&B). It can be modified to Function.
  Please refer to chapter 4.1 Commissioning & Channel Assignment for detailed information

Screen Visualization
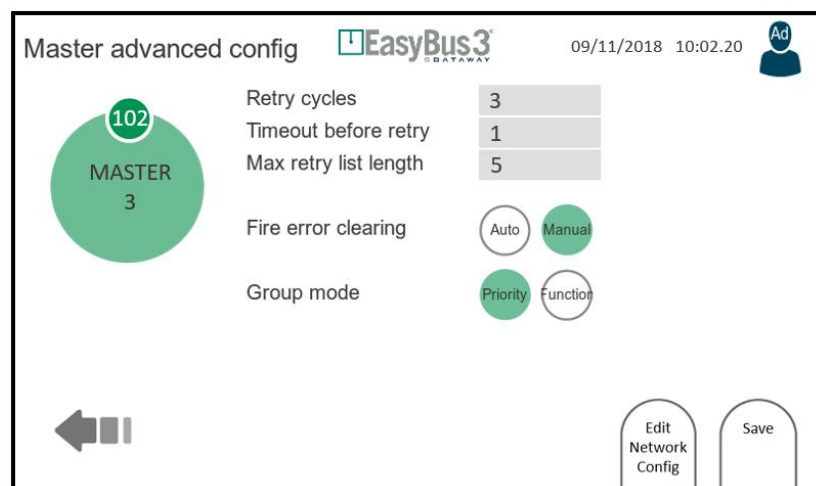
8.4.2 Interactions menu

By clicking on "Save"
The system saves the selected master configuration as per the information shown on the display.

By clicking on "Edit Network Config"
The system gives access to the Slaves Assignation screen.
It allows to modify the Slaves assignation.
Please refer to chapter 5.1 Groups for detailed information

9 System configuration

9.1.1 Content
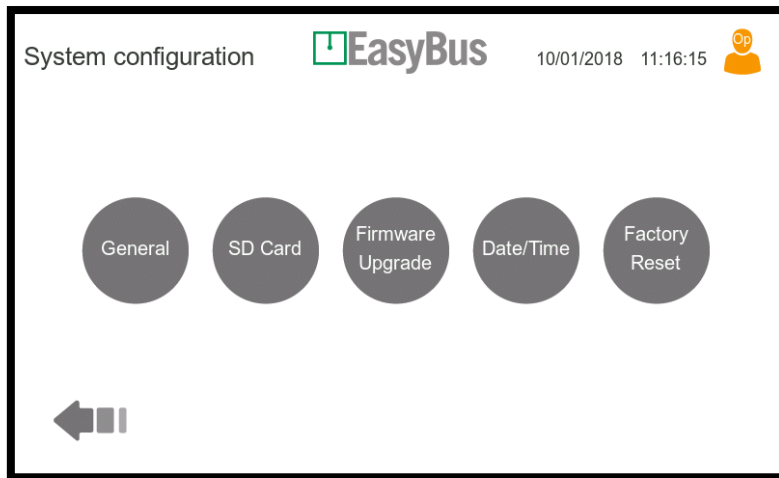
From the "Masters overview" (section 7.1) screen, the button "System settings" open this screen.

This screen shows 5 buttons allowing the whole HMI system configuration:

General configuration (Section 9.2).

SD card configuration (Section 9.7).

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

System date and time settings (Section 9.12).

Factory reset of all the system parameters and the HMI configuration (Section 9.13).

⚠ **Note that the Administrator login level is required for any parameter change of these menus.**

9.1.2 Interactions menu

- None

9.2   General configuration

9.2.1   Content
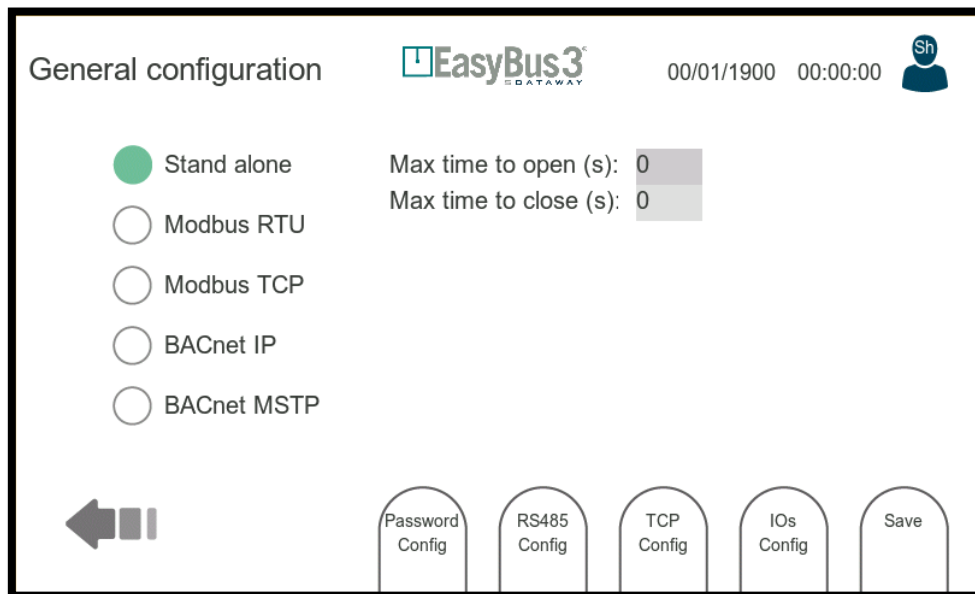
This screen allows the configuration of the general configuration. The parameters are (from top to bottom):
- System mode:
  - Standalone: In this mode, the slaves are only controllable by the Easy3-H I/Os. The Modbus RTU and TCP ports are still active but limited to read operations. Write operations are rejected.
  - Modbus RTU: In this mode, the slaves are controllable by the Modbus RTU port. The Modbus TCP port is still active but limited to read operations (write operation are rejected). In addition, the I/Os are still working excepted the Open/Close command that will be ignored.
  - Modbus TCP: In this mode, the slaves are controllable by the Modbus TCP port. The Modbus RTU port is still active but limited to read operations (write operation are rejected). In addition, the I/Os are still working excepted the Open/Close command that will be ignored.
  - BACnet IP: In this mode, the slaves are controllable by the BACnet IP port. The Modbus RTU port is still active but limited to read operations (write operation are rejected). In addition, the I/Os are still working excepted the Open/Close command that will be ignored.
  - BACnet MSTP: In this mode, the slaves are controllable by the BACnet MSTP port. The Modbus TCP port is still active but limited to read operations (write operation are rejected). In addition, the I/Os are still working excepted the Open/Close command that will be ignored.

The following settings are available only if "Stand alone" mode is active:

- Max time to open (s): Maximum allowed time between a damper open command and the open contact feedback confirmation. This timer is enabled in Standalone mode only.

- Max time to close (s): Maximum allowed time between a damper close command and the closed contact feedback confirmation. This timer is enabled in Standalone mode only.

The following settings are available only if "Modbus RTU" or "Modbus TCP" mode is active:
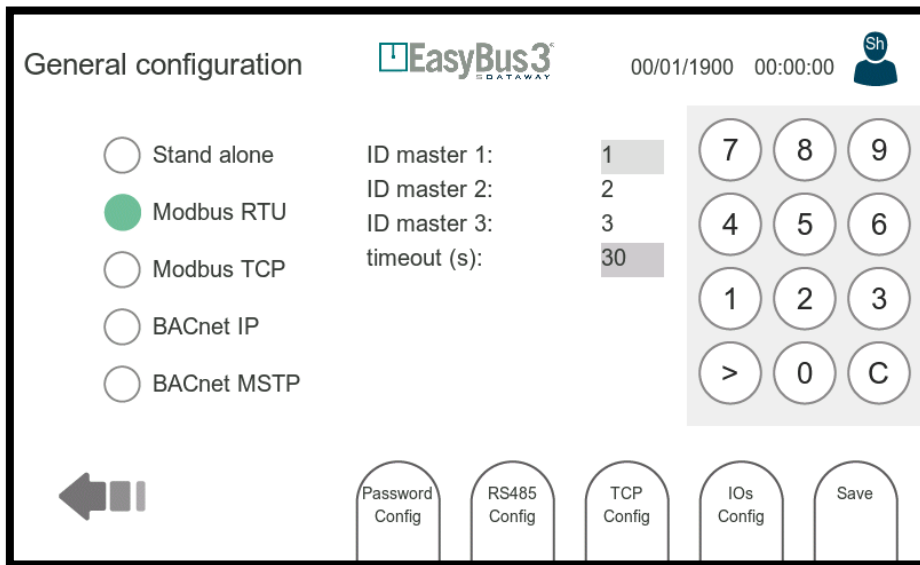
- Modbus ID master 1...3: Modbus unit ID. Each connected Easy3-M Modbus Data Array can be accessed by using the specified Modbus ID. Only the first master ID can be manually set. The others are simply incremented by 1.

- Modbus timeout(s): If no Modbus activity is detected during this time, the related master will be change all write registers into a safe position (for example, fire dampers are closed). This timeout is only active if Modbus TCP or RTU mode is selected.

The following settings are available only if "BACnet IP" mode is active:
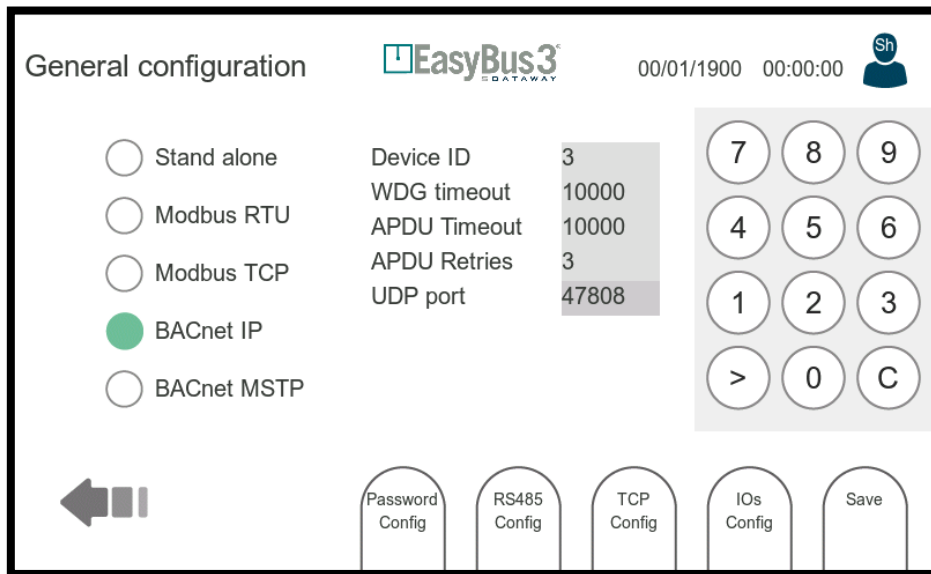
- Device ID: BACnet identification, each device on the bus shall have its own id.
- WDG Timeout: a watchdog has been implemented to control bus disconnection. The timeout is in [s].
- APDU Timeout: Sets the time in milliseconds that the driver will wait for a response from a device after sending a request. This setting only applies to Confirmed COV Notification.
- APDU Retries: Sets the number of times that the driver will retry a request when a response is not received. This setting only applies to Confirmed COV Notifications.

- UDP Port: The default UDP port for BACnet traffic is 47808 (0xBAC0), but depending on the project specification other ports are also possible.

The following settings are available only if "BACnet MSTP" mode is active:
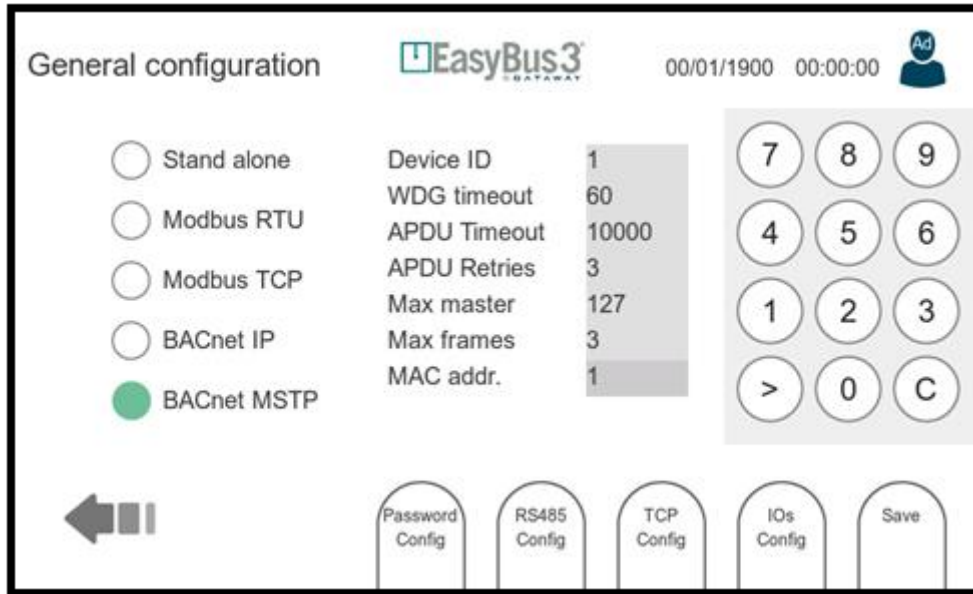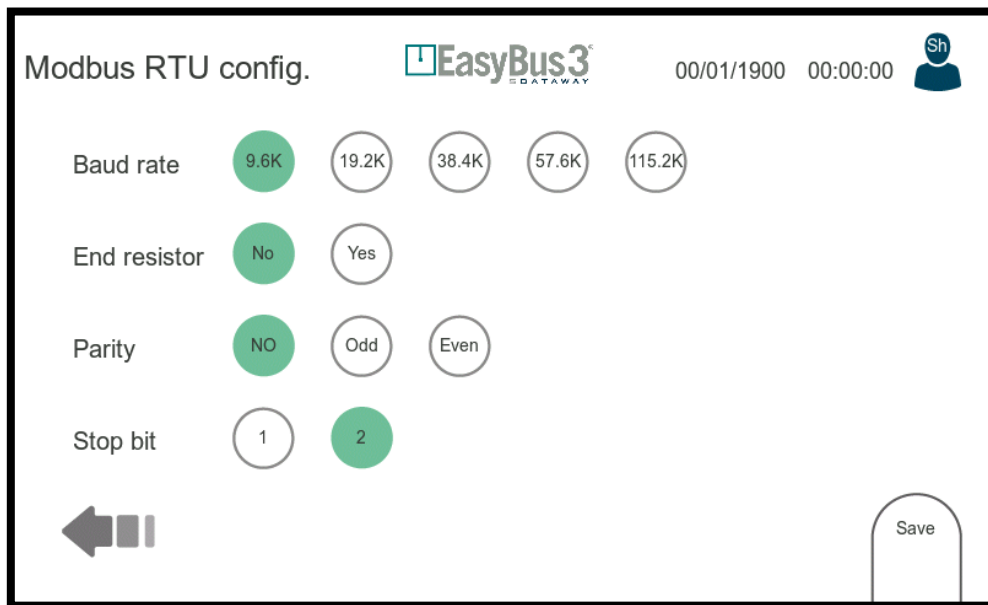
- Device ID: BACnet identification, each device on the bus shall have its own id.
- WDG Timeout: a watchdog has been implemented to control bus disconnection. The timeout is in [s].
- APDU Timeout: Sets the time in milliseconds that the driver will wait for a response from a device after sending a request. This setting only applies to Confirmed COV Notification.
- APDU Retries: Sets the number of times that the driver will retry a request when a response is not received. This setting only applies to Confirmed COV Notifications.
- Max master: Defines the highest allowable address (0..127) for MSTP master nodes on the network. Any address higher than this will not receive the token from the driver. Note that this value must be greater than or equal to the driver's configured MAC Address(es). If the highest address on the network is unknown, set this field to 127.
- frames: Defines the maximum number of information frames the device may send before it must pass the token.
- MAC addr.: MAX address of the device

9.2.2 Interactions menu

- Password config: Access to the Password configuration screen.
- RS485 Config: Access to the configuration of the serial communication screen (Section 9.3).
- Modbus TCP: Access to the Modbus TCP/BACnet IP configuration screen (Section 9.4).
- IOs config: Access to the input / output connector settings (Section 9.5).
- Save: Save and apply the current configuration.

9.3 Modbus RTU/BACnet MSTP configuration

9.3.1 Content

This screen allows the configuration of the Modbus RTU/BACnet MSTP. Modbus RTU/BACnet MSTP is a serial interface. The parameters are (from top to bottom):
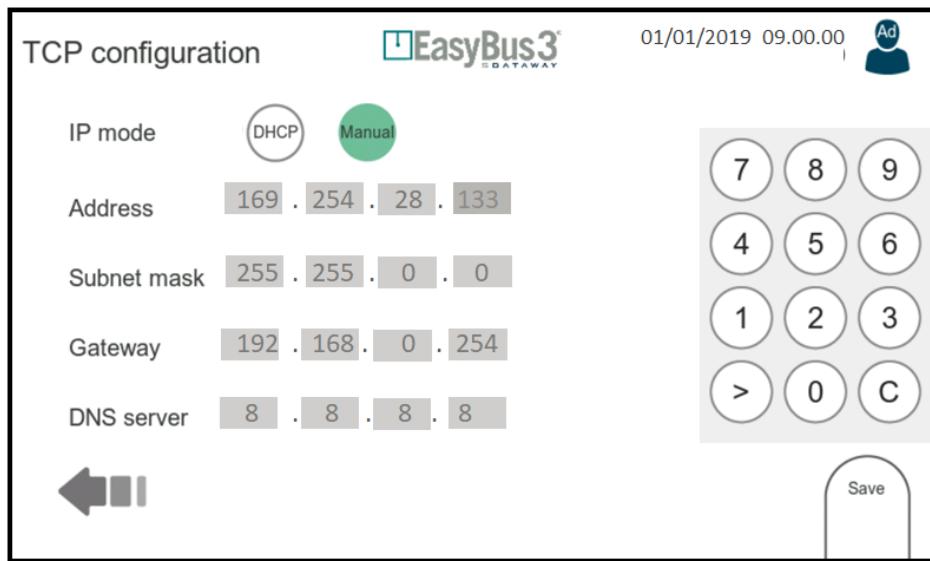
- Baud rate: Communication speed in bps.
- End Resistor: Bus end resistor connected or not.
- Parity: Parity control communication selection.
- Stop bit   Stop bit number selection

9.3.2 Interactions menu

- Save: Save and apply the configuration.

9.4   Modbus TCP configuration

9.4.1   Content

This screen allows the configuration of the Ethernet interface (IP settings). The parameters are (from top to bottom):
- IP MODE: Mode DHCP or manual IP configuration.
- ADDRESS: System IP Address (can be set in Manual mode and read in DHCP mode)
- SUBNET MASK: Subnet mask (can be set in Manual mode and read in DHCP mode)
- GATEWAY: Gateway IP address to go out of the local network (can be set in Manual mode and read in DHCP mode)
- DNS SERVER: Domain Name Server IP address (can be set in Manual mode and read in DHCP mode)

When the user enters text input, a keyboard appears on the right part of the screen. The button > is used to navigate between the different entries.

9.4.2   Interactions menu

- Save: Save and apply the configuration.

9.5   General Input / output configuration

9.5.1   Content
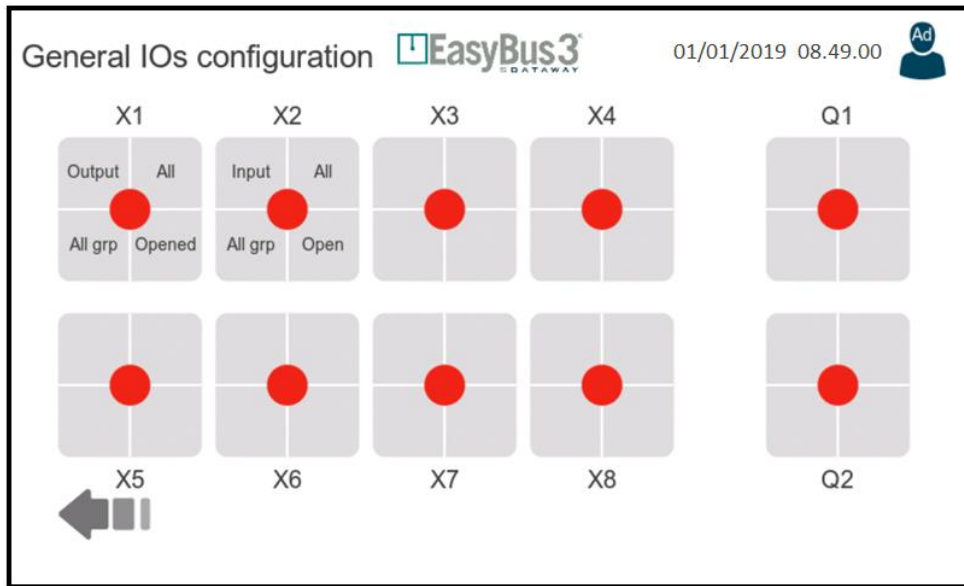
This screen shows the current configuration for all 8 inputs / outputs and the two relays available on the Easy3-H connector.

Each IO can be configured independently. To configure an IO, the user must select it. This will lead to a more detailed screen (Section 9.6).

9.5.2   Configuration representation
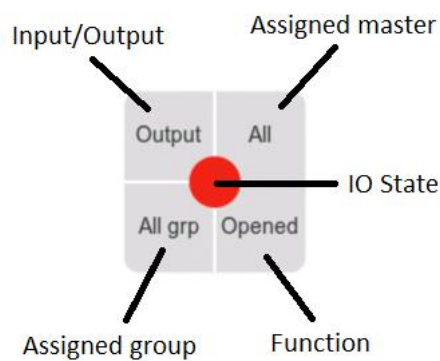
9.5.3   Interactions menu

- None

9.6 Input /Output configuration

9.6.1 Content
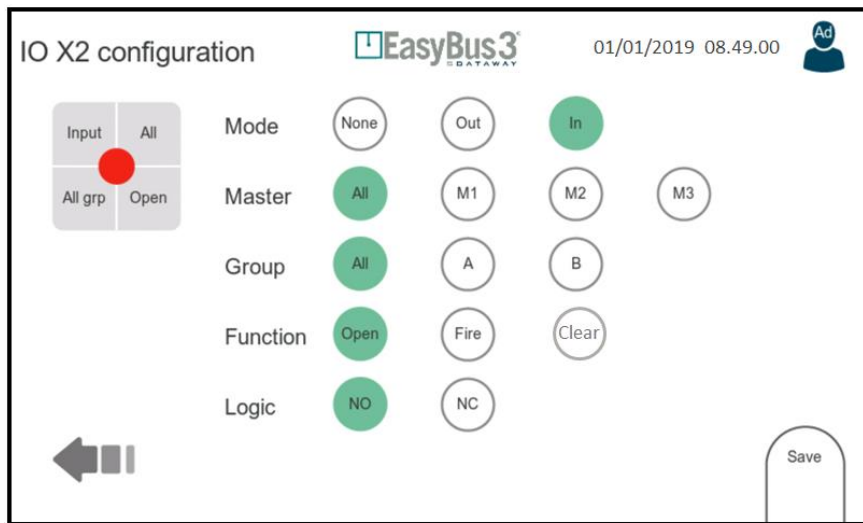
An IO can be configured to be used as an input or an output. The configuration options are depending upon the selected mode.

- **MODE:** Working mode (input / output or disabled)
- **MASTER:** The Easy3-M on which the I/O is assigned.
- **GROUP:** The group on which the I/O is assigned.
- **FUNCTION:** The action to be executed. This action depends on the working mode:
  - If Input is selected, the function can be
    - Open: Used to control the fire damper open command
    - Fire: Used to generate a fire alarm
    - Clear: Used to clear a running fire state
  - If Output is selected, the function can be:
    - Open: Used to signal that all fire dampers are in "Open" state (AND function)
    - Close: Used to signal that all fire dampers are in "Closed" state (AND function)
    - Smoke: Used to signal that at minimum one fire damper is in "Smoke" state (OR function)
    - Error: Used to signal that at minimum one fire damper is in Error state (OR function). Error state can be due to communication malfunction or open/close timeout (only in standalone mode)
- **LOGIC:** The logic mode as normally opened or normally closed.

9.6.2 Interactions menu

- Save: Save and apply the configuration

9.7   Mass storage / SD card configuration

9.7.1   Content
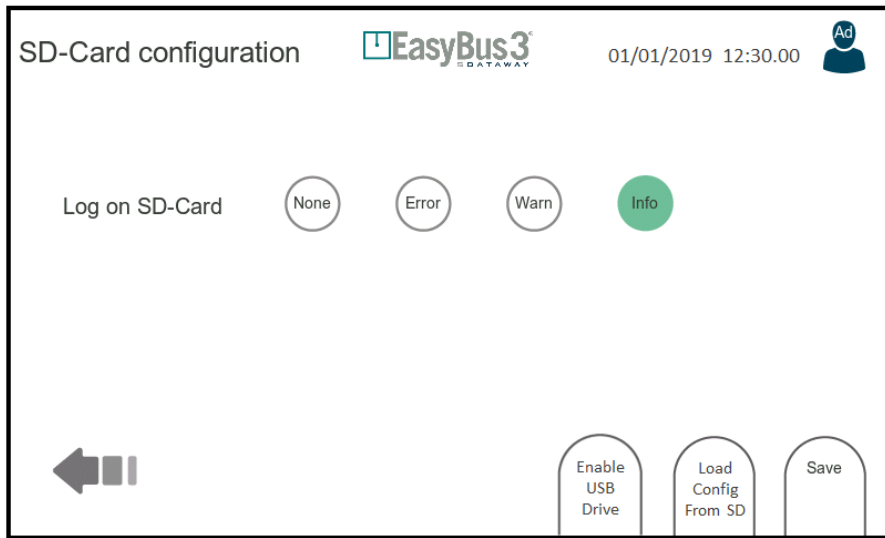
This screen allows the configuration of the SD card usage. (Available on Easy3-H specific slot).

Easy3-H actions and events are logged on the SD card by enabling it (Log on SD-Card).
Actions logged can then be opened by a computer (it is accessible as text files). Different log levels are available:

- Error: Only errors are logged
- Warning: Warnings and errors are logged
- Info: Information, warnings and errors are logged

    Note that even the Administrator access level cannot modify this parameter.

This screen also offers the possibility to load a configuration to the SD card by following these steps:

1. Connect a USB cable between a computer and the USB port of the Easy3-H

2. Click on "Enable USB Drive" button. The button becomes green to confirm the activation of USB Mass storage mode.
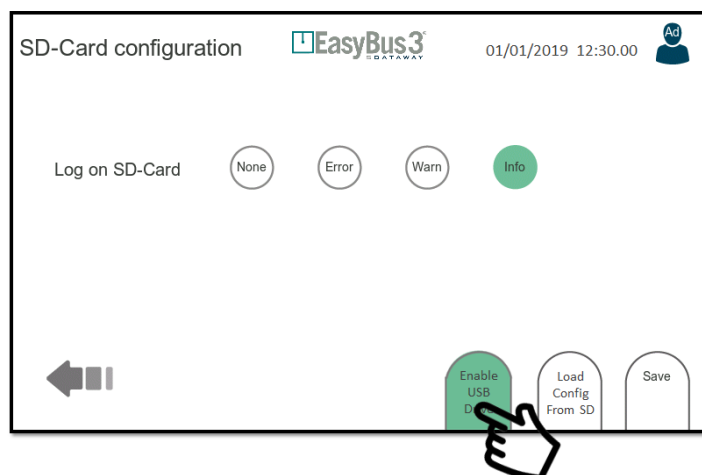
3. A new card reader is recognized by your PC, which gives you a direct access to the SD-Card content of the Easy3-H

Lecteur USB (F:)
29,7 Go libres sur 29,7 Go
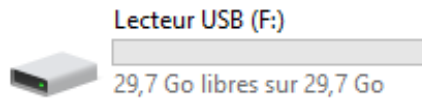
4. Place the config file to load at the root location of the SD-Card file system. The file name must be: "config_active.ini".

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. When the copy process ends, disconnect the USB Cable (this step cannot be ignored!)

6. Click on "Load Config From SD" button

7. Accept the confirmation message

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

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 the Easy3-H. A confirmation message is showed up.

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

SD-Card config file successfully loaded

Enable USB Drive   Load Config From SD   Save
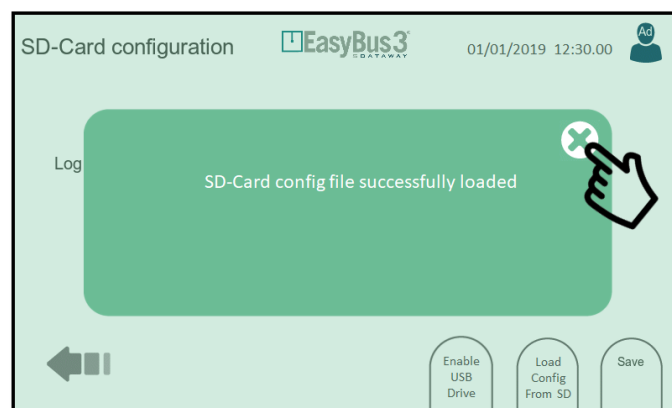
Please note that at each time you will modify the system or masters configuration, the Easy3-H overwrites the config_active.ini file located at the SD-Card root location.

In parallel, another file called "config_yyyy_mm_dd_hh_mn_ss.ini" is created in a folder called "config history". By this way, it is possible to retrieve any configuration created in the past.

It is also possible to easily replace a configured but defective Easy3-H by another brand-new model.

You can remove the existing SD-Card from the defective model, insert it in the new Easy3-H and follow the steps 5 to 7 of the restore procedure above.

9.7.2 Interactions menu

- Enable USB Drive: Enable the USB mass storage mode
- Load config from SD: Load the system configuration to the SD card.
- Save: Save and apply the log parameters to the system.

9.8 Firmware update

9.8.1 Content
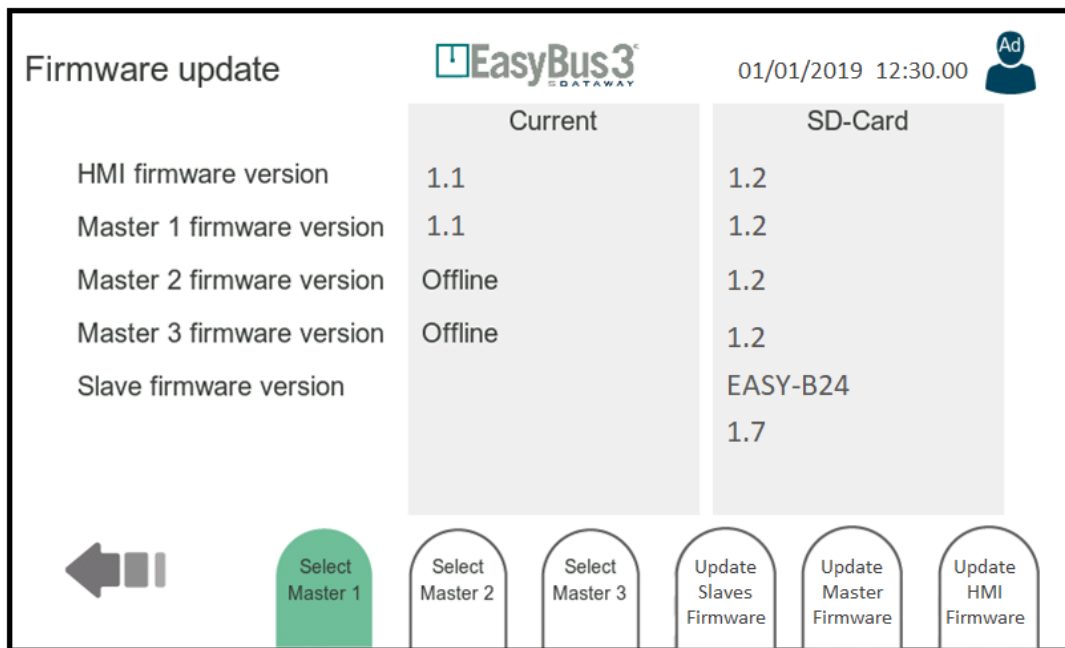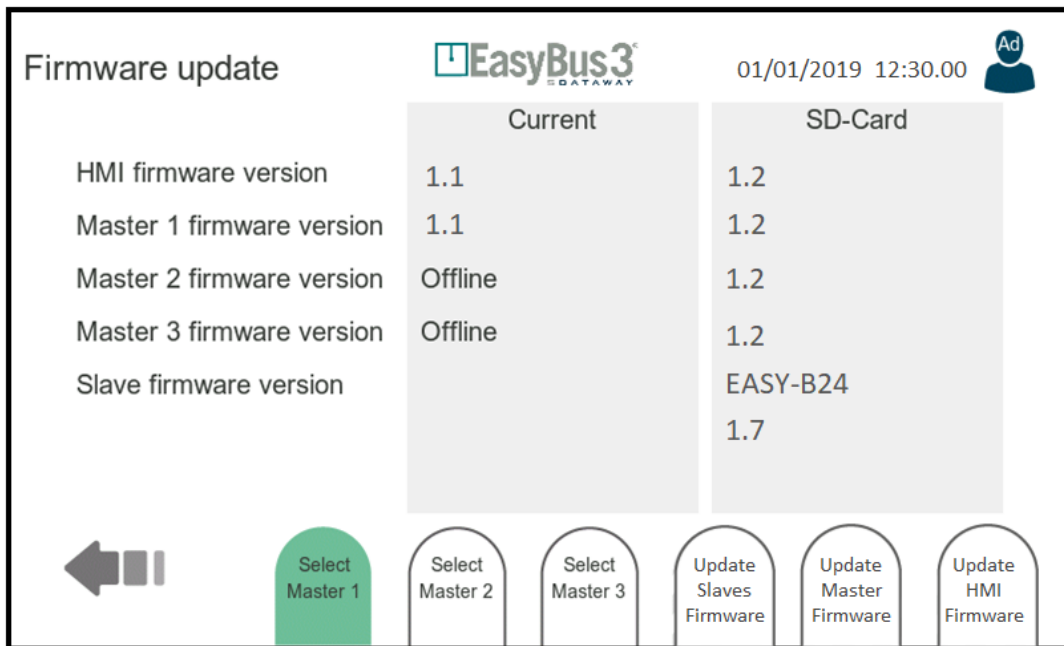
This screen shows the firmware current versions of the Easy3-H and of all connected Easy3-M (Current tab). In addition, it shows the version of the SD-Card present firmware upgrade files (SD-Card tab).

9.8.2 Interactions menu

- Select Master 1...3   Select a master (Used for Master and Slave upgrade process)
- Update Slaves Firmware: Shows the Slaves firmware update screen (Section 9.9)
- Update Master Firmware: Shows the Master firmware update screen (Section 9.10)
- Update HMI Firmware: Shows the HMI firmware update screen (Section 9.11)

9.9   Update slaves firmware

9.9.1 Content

To Upgrade the Easy-slaves firmware, please follow these steps:

1. Connect a USB cable between a computer and the USB port of the Easy3-H

2. Click on "Enable USB Drive" button from the SD-Card configuration page (System settings > SD-Card > Enable USB Drive)

3. A new card reader is recognized by your PC, which gives you a direct access to the SD-Card content of the Easy3-H

4. Place the firmware upgrade file you want to load at the root location of the SD-Card file system.

⚠️ **Note that only one slave type can be upgraded at the same time. For example, only the Easy-B24 commissioned on a master will be upgraded if you place a "Easy-B24-application_Rx.y.hex" file. Please don't copy more than one slave type upgrade file at the same time on the SD-Card.**
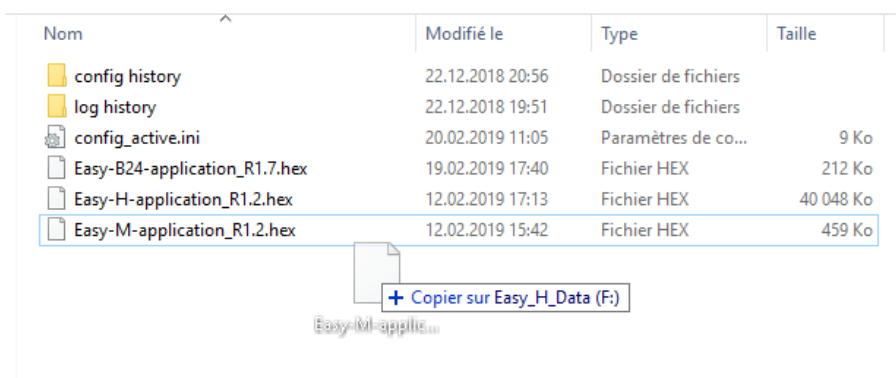
5. When the copy process ends, disconnect the USB Cable (this step cannot be ignored!)

6. Go to the Firmware upgrade menu (System settings > Firmware upgrade) and verify the SD-Card detected slave type and firmware version.

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

> **Note that it is only possible to upgrade one Master network at time. The operation must be repeated for each Master.**

8. Click on Update Slaves Firmware and click "OK" on the confirmation message

9. Wait the upgrade process end. If will take around 20 minutes to upgrade the slaves firmware of a Master.

> **This action can't be cancelled.**
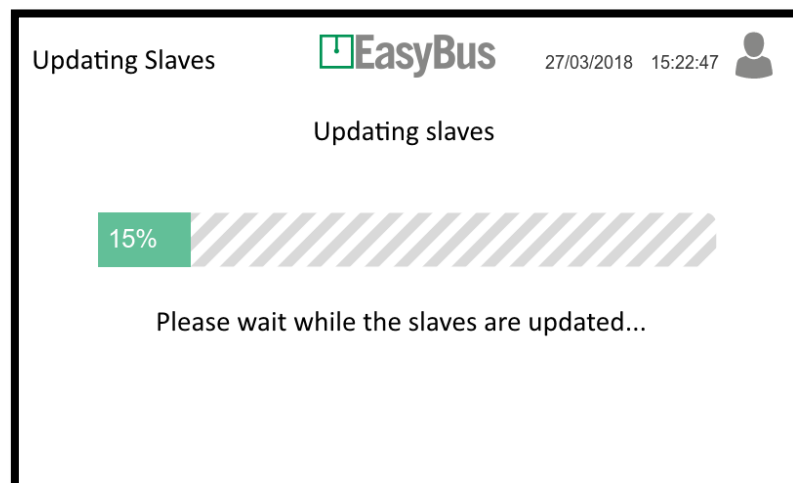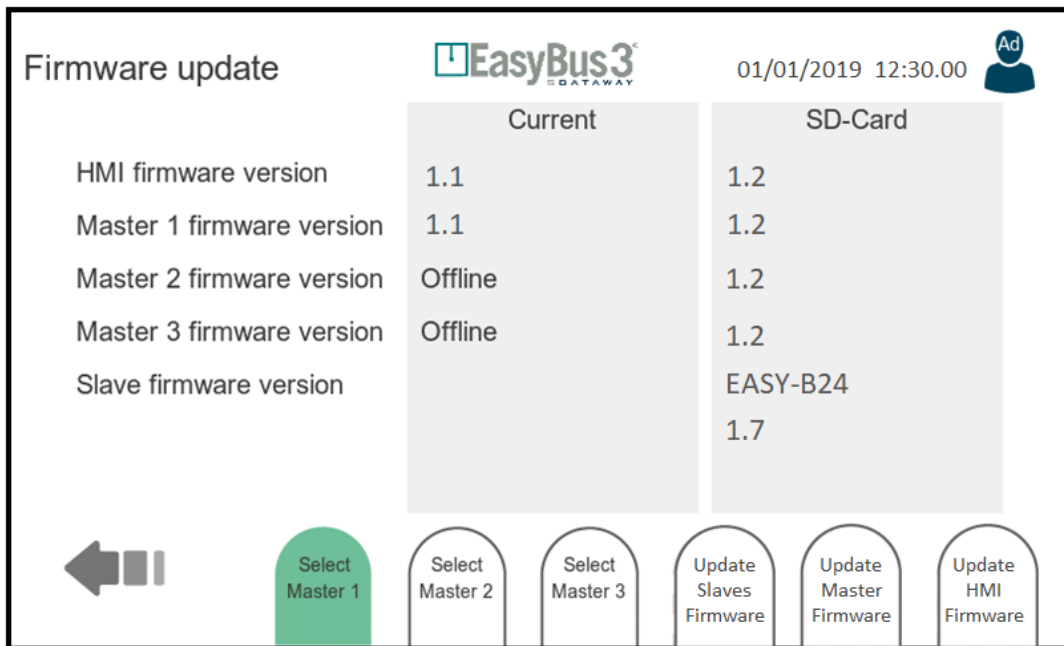
10. At the end of the procedure, a confirmation message is displayed. Click on "OK".

9.9.2 Interactions menu

- None

9.10 Update Easy3-M firmware

9.10.1 Content

To Upgrade the Easy3-M firmware, please follow these steps:

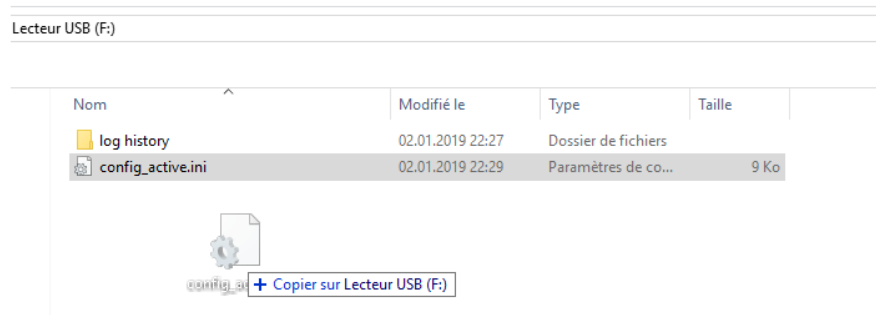11. Connect a USB cable between a computer and the USB port of the Easy3-H

12. Click on "Enable USB Drive" button from the SD-Card configuration page (System settings > SD-Card > Enable USB Drive)

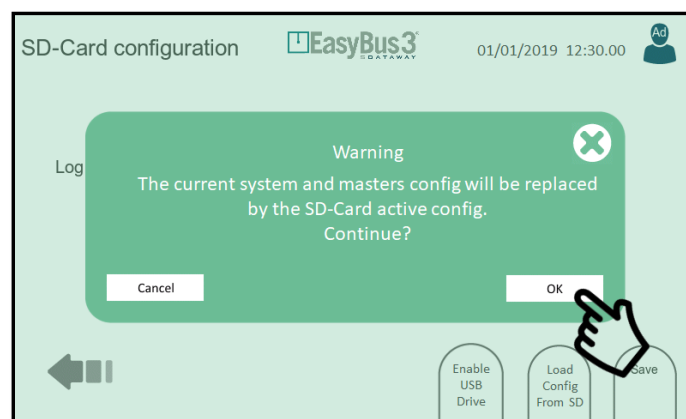13. A new card reader is recognized by your PC, which gives you a direct access to the SD-Card content of the Easy3-H

14. Place the master firmware upgrade file you want to load at the root location of the SD-Card file system.
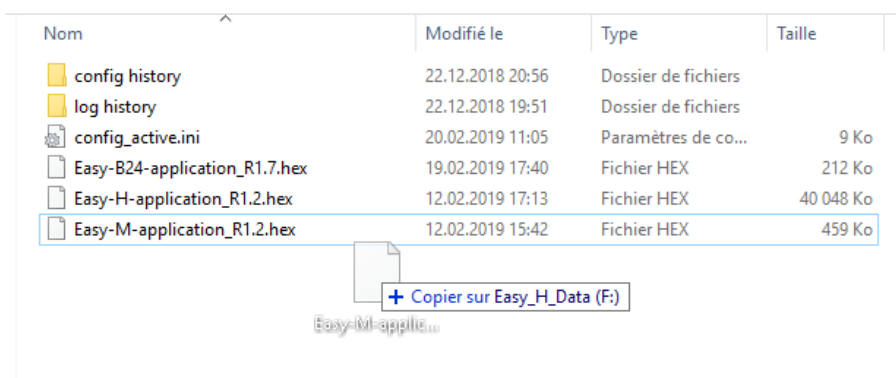
15. When the copy process ends, disconnect the USB Cable (this step cannot be ignored!)

16. Go to the Firmware upgrade menu (System settings > Firmware upgrade) and verify the SD-Card detected master firmware version.

17. Click on Master 1, Master 2 or Master 3 to select the master network where to apply the upgrade.

Note that it is only possible to upgrade one Master at time. The operation must be repeated for each Master.

18. Click on Update Master Firmware and click "OK" on the confirmation message

19. Wait the upgrade process end. If will take around 3 minutes to upgrade the master firmware.

This action can't be cancelled.
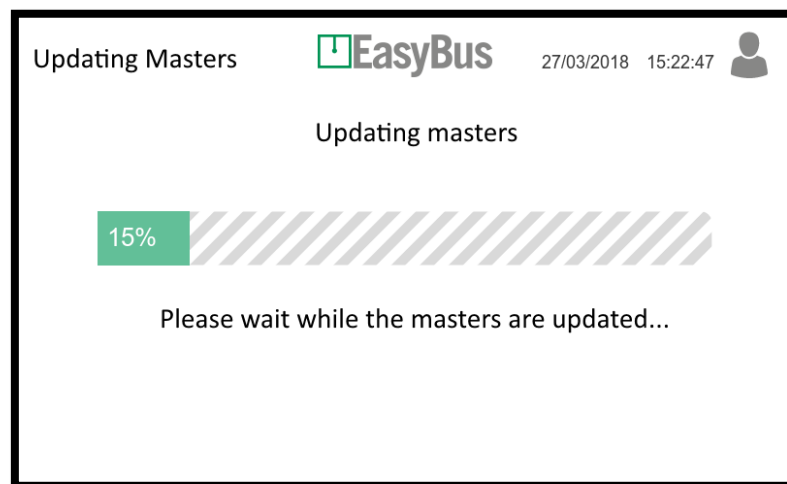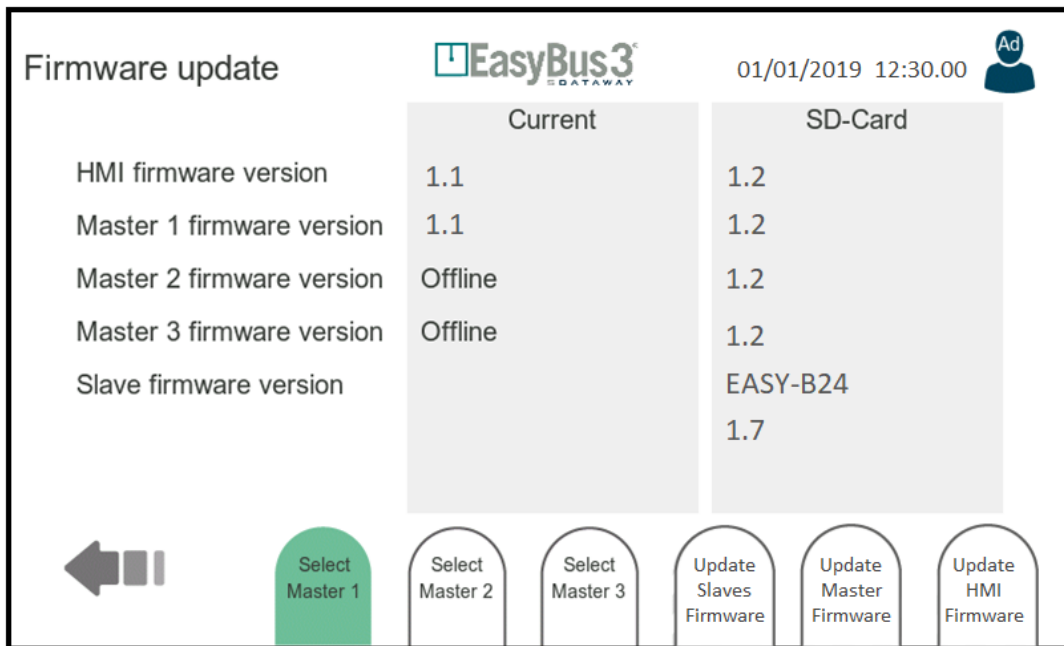
20. At the end of the procedure, a confirmation message is displayed. Click on "OK".

9.10.2 Interactions menu

• None

9.11 Update Easy3-H firmware

9.11.1 Content

To Upgrade the Easy3-H firmware, please follow these steps:

21. Connect a USB cable between a computer and the USB port of the Easy3-H

22. Click on "Enable USB Drive" button from the SD-Card configuration page (System settings > SD-Card > Enable USB Drive)

23. A new card reader is recognized by your PC, which gives you a direct access to the SD-Card content of the Easy3-H

24. Place the HMI firmware upgrade file you want to load at the root location of the SD-Card file system.
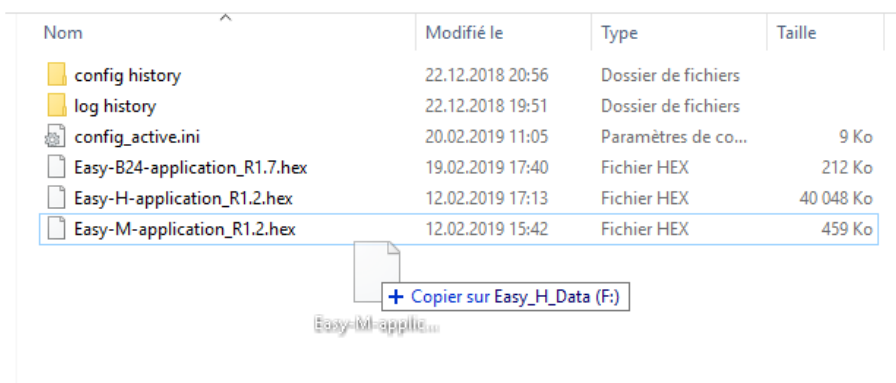
25. When the copy process ends, disconnect the USB Cable (this step cannot be ignored!)

26. Go to the Firmware upgrade file (System settings > Firmware upgrade) and verify the SD-Card detected HMI firmware version.

27. Click on Update HMI Firmware and click "OK" on the confirmation message.

28. At this step, the Easy3-H reboots and goes in firmware upgrade mode.

29. Wait the upgrade process end. If will take around 8 minutes to upgrade the HMI firmware.

⚠️ **This action can't be cancelled.**

30. At the end of the procedure, the Easy3-H reboots normally.

ℹ️ **Note that the old system and masters configuration will automatically being restored after an upgrade process.**

9.11.2 Interactions menu

- None

9.12 Date / Time configuration

9.12.1 Content
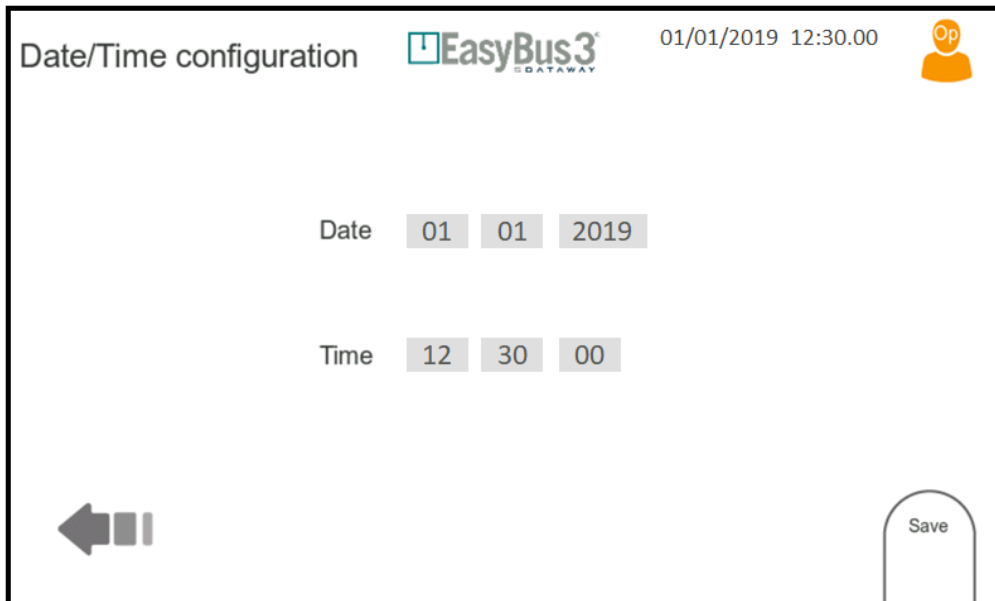
System date and time configuration.

The user can use the keyboard that appears on the right of the screen to enter the date and time parameters.

Note that the date/time configuration is kept during 1 month at maximum if the Easy3-H power is removed. It is necessary to power-on the Easy3-H during minimum 15 minutes to achieve this performance.

9.12.2 Interactions menu

• Save: Save and apply the configuration

9.13 Factory Reset

9.13.1 Content
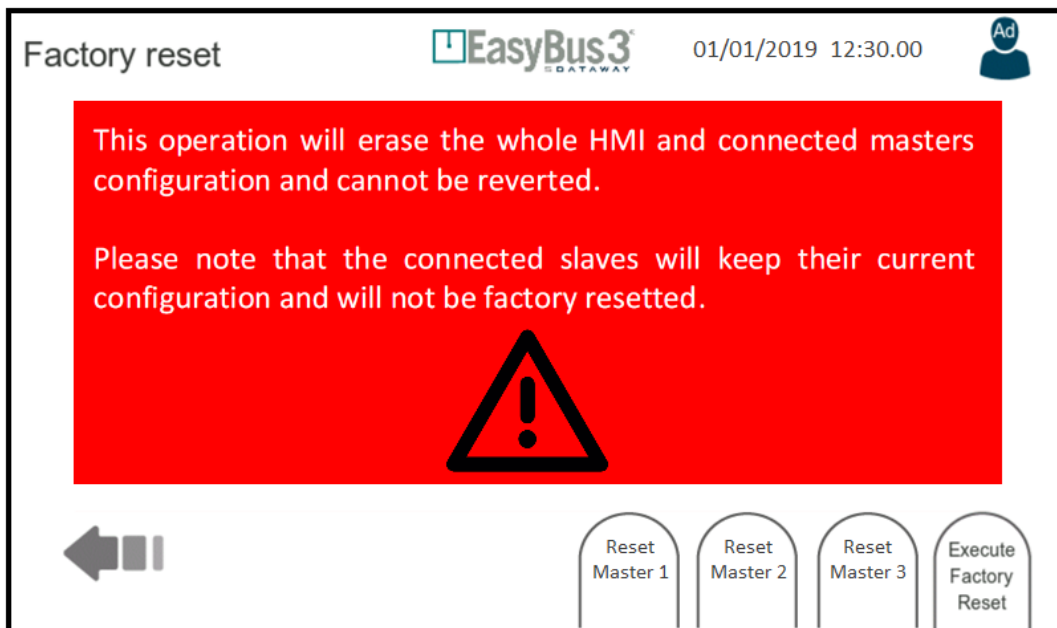
This screen allows the user to ERASE ALL DATA and restore the default factory settings.

9.13.2 Interactions menu

- Reset Master 1:   Erase the Master 1 configuration, a confirmation message is displayed
- Reset Master 2:   Erase the Master 2 configuration, a confirmation message is displayed
- Reset Master 3:   Erase the Master 3 configuration, a confirmation message is displayed
- Execute Factory Reset: Erase all the masters configuration including all Easy3-H System settings. A confirmation message is displayed.

All of these operations cannot be revered.

Note that the SD-Card content is not erased. It is always possible to restore the last system and masters configuration from the SD-Card after a factory reset operation.

10 Modbus communication

10.1 Overview

The Easy3-H device can be controlled and monitored by the building automation system using a Modbus communication link. The communication can be either using RS-485 bus on connector X2 or TCP/IP on connectors X5 or X6.

The Modbus information is exchanged directly with the Easy3-M modules that are linked to the Easy3-H (the Easy3-H acts as a gateway). A Modbus address (or unit id) is assigned to each Easy3-M device.

10.2 Configuration

10.2.1 Modbus RTU

See section 9.3 for all the details about the Modbus RTU configuration panel.

The General configuration panel can be used to assign the Modbus address of the first Easy3-M. The two others are assigned with the next addresses. By default, Modbus address 1 is assigned to Master 1, Modbus address 2 for Master 2 and Modbus address 3 for master 3.

10.2.2 Modbus TCP

See section 9.4 for all the details about the TCP/IP configuration panel.

The General configuration panel can be used to assign the Modbus address of the first Easy3-M. The two others are assigned with the next addresses. By default, Modbus address 1 is assigned to Master 1, Modbus address 2 for Master 2 and Modbus address 3 for master 3.

10.2.3 Timeout

It is possible to configure the Modbus timeout in the general configuration panel, see section 9.2. If the Easy3-H has not received any Modbus request in the specified time, it will consider that the communication is lost and will reset the Easy3-M Modbus registers to a safe value (i.e. close all fire dampers).

The timeout management is independent for the three Easy3-M connected to the same Easy3-H. For example, if the Modbus communication for the first Easy3-M is still active but it is lost for two other Easy3-M, only those two will be reset. The first Easy3-M will continue to work normally.

10.3 Registers map

Easy3-M can be accessed using the Modbus registers described below independently.

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

10.3.1 Generic – Easy3-M information

Addr	Description			
	Master Info Zone			
	Master Zone (R/W)			
0	Command :1= Run, 3 = Fire			
	Master Zone (RO)			
0	Status : 0 = Idle, 1= Run, 2 = Scan, 3 = Fire			
1	Quantity of slaves			
2	Quantity of slaves in error			
3	Fire (0=No fire, 1=fire)			
4	Bus cycle time [ms]			
5	Firmware version			
6	Master unique identifier 1 (1-9952)			
7	Master unique identifier 2 (1-9999)			
8	Reserved			
9	Master Easy3 Channel			
	Easy3-X Info Zone (RO)			
	Easy3-X Type Info + Error status (2 devices/register) (see table Table 2)			
10	Bit 7: addr 2 error	Bits 0..6: addr 2 type	Bit7: addr 1 error	Bits0..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/register)			
202	Error counter addr 2		Error counter addr 1	
203	Error counter addr 4		Error counter addr 2	

265	Error counter addr 128		Error counter addr 127	

Table 1 Easy3-M information registers

Easy3-X	Type Number
None	0
Easy3-V (*available soon*)	4
Easy3-B 24V	5
Easy3-B 230V (*available soon*)	6
Easy-IO (*available soon*)	10

Table 2 Easy3-X types

10.3.2 Easy3-B 24V and Easy3-B 230V

Addr	Description															
	Easy-B Info Zone															
	Commands Zone (R/W): 16 Easy-B / Reg. 1 = Open, 0 = Close															
300	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

307	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113
	Status Zone (RO): 4 Easy-B / Reg. (see Table 4)															
300	Status addr 4				Status addr 3				Status addr 2				Status addr 1			

331	Status addr 128				Status addr 127				Status addr 126				Status addr 125			

Table 3 Easy-B Info Zone

Bit	Description	Value
0	Error status	0: no error, 1: error
1	Closed contact	
2	Open contact	1: Contact detected
3	Sensor contact	

Table 4 Easy-B Status

Note1: The Easy3-B error status bit is also updated when another module type is connected. This table can be monitored to check if any module has an error.

10.3.3 Easy3-V

Addr	Description
	Easy-V Info Zone
	Commands Zone (R/W): 2 Reg. / Easy-V
460	Addr 1 VAV 1 Command (0-1000 = 0-10V)
461	Addr 1 VAV 2 Command (0-1000 = 0-10V)

714	Addr 128 VAV 1 Command (0-1000 = 0-10V)
715	Addr 128 VAV 2 Command (0-1000 = 0-10V)
	VAV 1 + 2 input (RO): 2 Reg / Easy-V
460	Addr 1 VAV 1 input (0-1000 = 0-10V)
461	Addr 1 VAV 2 input (0-1000 = 0-10V)

714	Addr 128 VAV 1 input (0-1000 = 0-10V)
715	Addr 128 VAV 2 input (0-1000 = 0-10V)
	Probe 1 + 2 input (RO): 2 Reg / Easy-V
716	Addr 1 Probe 1 input (0-1000 = 0-10V)
717	Addr 1 Probe 2 input (0-1000 = 0-10V)

970	Addr 128 Probe 1 input (0-1000 = 0-10V)
971	Addr 128 Probe 2 input (0-1000 = 0-10V)

Table 5 Easy-V Info Zone

10.3.1 Easy3-IO

Addr	Description			
	Easy-IO Info Zone			
	Commands Zone (R/W): 4 Easy-IO / reg. (see table 7)			
324	Bit 12..15: Addr 4 cmd	Bit 8..11: Addr 3 cmd	Bit 4..7: Addr 2 cmd	Bit 0..3: Addr 1 cmd
---				
355	Bit 12..15: Addr 128 cmd	Bit 8..11: Addr 127 cmd	Bit 4..7: Addr 126 cmd	Bit 0..3: Addr 125 cmd
	Status Zone (RO): 4 Easy-IO / reg. (see table 8)			
324	Bit 12..15: Addr 4 status	Bit 8..11: Addr 3 status	Bit 4..7: Addr 2 status	Bit 0..3: Addr 1 status
---				
355	Bit 12..15: Addr 128 status	Bit 8..11: Addr 127 status	Bit 4..7: Addr 126 status	Bit 0..3: Addr 125 status

Table 6 Easy-IO Info Zone

Bit	Description	Value
0	Output A	
1	Output B	0: Disable, 1: Enable
2	Output C	
3	Output D	

Table 7 Easy-IO commands

Bit	Description	Value
0	Input A	
1	Input B	0: Disabled, 1=Enabled
2	Input C	
3	Input D	

Table 8 Easy-IO status

11 Communication BACnet

11.1 Presentation

The device Easy3-H can be controlled and monitored by a automation system using BACnet. The communication can be established by RS-485 on the connector X2 or by UDP/IP on the connector X5 or X6.

11.2 Configuration

11.2.1 BACnet MSTP

Consult the section 9.3 to know the detail about the configuration BACnet MSTP.

11.2.2 BACnet IP

Consult the section 9.4 to know all the detail about the configuration BACnet IP (UDP).

11.2.3 BACnet general

It's possible to configure the device BACnet on the configuration menu, consult the section 9.2 to know all the details.

⚠️ Each device must have an unique ID

11.2.4 Loss of communication

To check the loss of BACnet communication, the system use a Watchdog object using three instances.

Object Type	Object name	Values/ Default	Unit	COV Support	Description	Access
Analog input	Bus Watchdog countdown	30	seconds	Yes	Bus watchdog countdown (is reset reset bus watchdog countdown)	r
Binary output	Reset bus watchdog countdown	-	-	Yes	A write command (0 or 1) resets the countdown to 30secondes	w
Binary output	Control Watchdog	-	-	Yes	Activate or deactivate bus watchdog countdown	w

The communication is considered as lost if the object « Reset bus watchdog countdown » has not been rewritten during 30 seconds.

11.3 Object Description

The BACnet objects are defined in three different category. Three instances to control communication loss (Watchdog). Eleven object for each Easy-M detected or master. And for each slave detected three to seven objects are created to control them.

Object Type / Instance(s)	Object name	Values/ Default	Unit	COV Support	Description	Access
AI / 1	Bus Watchdog countdown	30	seconds	Yes	Bus watchdog countdown (is reset reset bus watchdog countdown)	r
BO / 2	Reset bus watchdog countdown	-	-	Yes	A write command (0 or 1) resets the countdown to 30secondes	w
BO / 3	Control Watchdog	-	-	Yes	Activate or deactivate 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	Quantity of slave attached to master	r
AI	Quantity error of slave	0	-	Yes	Quantity of slave with communication error	r
BI	Fire	0	-	Yes	Fire detection for master	r
AI	EasyBus cycle time	0	Milliseconds	Yes	Time between every read slave cycle	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	Unique Id for each master	r
AI	Unique id 2	0	-	Yes	Unique Id for each master	r
AI	Channel Easy 2	0	-	Yes	Channel number for easy 2 master	r
AI	Channel Easy 3	0	-	Yes	Channel number for easy 3 master	r
Slave 4- 14 objects	After scanning the Easy modules will appear and can be control by their specific objects.					

EASY_V

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
Probe_1	Analog input	Read sensor
Probe_2	Analog input	Read sensor
Comm_Err	Binary input	Module error communication

EASY_V_AC

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	Module error communication

EASY_B24

Nom	Type	Description
State	Multi-state input	Module status : Err, Open, Close, Transition
Smoke	Binary input	Smoke detection
CMD	Binary output	Control (open, close)
ClearAlarm	Binary output	Clear alarm

EASY_B230

Nom	Type	Description
State	Multi-state input	Module status : Err, Open, Close, Transition
Smoke	Binary input	Smoke detection
CMD	Binary output	Control (open, close)
ClearAlarm	Binary output	Clear alarm

EASY_ECO and EASY_CO2
- Not implemented

EASY_R

Nom	Type	Description
AlarmDet1	Binary input	Alarm detector 1
AlarmDet2	Binary input	Alarm detector 2
FailureDet1	Binary input	Failure detector 1
FailureDet2	Binary input	Failure detector 2
ResetAl_1	Binary output	Reset alarm 1
ResetAl_2	Binary output	Reset alarm 2
Comm_Err	Binary input	Module error communication

EASY_IO

Nom	Type	Description
InputA	Binary input	Read input A
InputB	Binary input	Read input B
InputC	Binary input	Read input C
InputD	Binary input	Read input D
OutputA	Binary output	Write output A
OutputB	Binary output	Write output B
OutputC	Binary output	Write output C
OutputD	Binary output	Write output D
Comm_Err	Binary input	Module error communication

EASY_MP

Nom	Type	Description
VNom_VAV1	Analog input	Read V nominal 1 [m3/h]
VNom_VAV2	Analog input	Read V nominal 2 [m3/h]
Flow_VAV1	Analog input	Read flow [%]
Flow_VAV2	Analog input	Read flow [%]
Pos_VAV1	Analog input	Read position [%]
Pos_VAV2	Analog input	Read position [%]
Err_Code	Analog input	Read error code
SP_VAV1	Analog output	Write setpoint
SP_VAV2	Analog output	Write setpoint
Min_VAV1	Analog output	Write minimum value
Max_VAV1	Analog output	Write maximum value
Min_VAV2	Analog output	Write minimum value
Max_VAV2	Analog output	Write maximum value
Comm_Err	Binary input	Module error communication

EASY_I

Nom	Type	Description
InputA	Binary input	Read input A
InputB	Binary input	Read input B
InputC	Binary input	Read input C
InputD	Binary input	Read input D
InputE	Binary input	Read input E
InputF	Binary input	Read input F
InputG	Binary input	Read input G
InputH	Binary input	Read input H
Comm_Err	Binary input	Module error communication

12 Contact

For more information please contact your local distributor.

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COMPANY NAME
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Please visit our website to get all the EasyBus3® information and to download the latest version of this manual.

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