FlexiSmoke™

WSC 520 / 540 / 560

Utilization examples

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1 Example A - 1 WSC 520, 4 motor groups in 1 smoke zone

1.1 Description

Using one WSC 520 0ISS to control 4 Motor Groups in one Smoke Zone.
8 MotorLines, ±24V (standard) motors, in all. 2 motor lines are associated with each motor group.

All 4 motor groups are associated with the same smoke zone and each motor group is controlled by a comfort push-button.
2 comfort push buttons are connected to the break glass units and 2 are connected to input terminals on the WSA 5IO module.

The smoke zone fire alarm can be triggered from 2 break glass units and from a signal from the BMS system.
Smoke detectors are connected to the break glass unit.

Set-up overview:

- 1 Smoke zone
- 4 motor groups with 16 standard motors
    - e.g. 12 x WMX 823-3 (1A motor) max total 12A and 4 x WMU 862-1 (2A motor) max total 8A.
- 2 Break glass units
- 4 Keypads for comfort
- 2 smoke detectors

1.2 Hardware connection diagrams

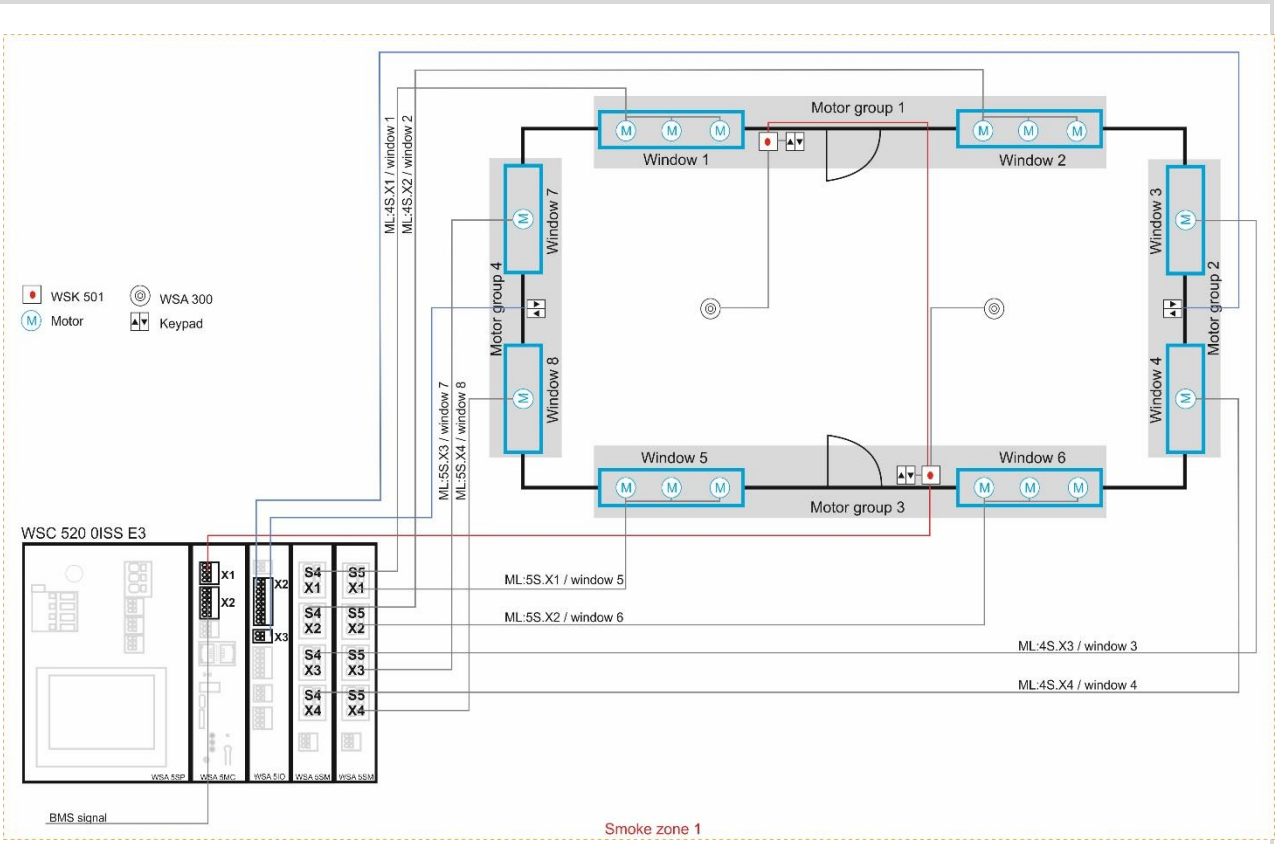


Figure 1 overview of the smoke zone and how the different components are connected to the smoke panel

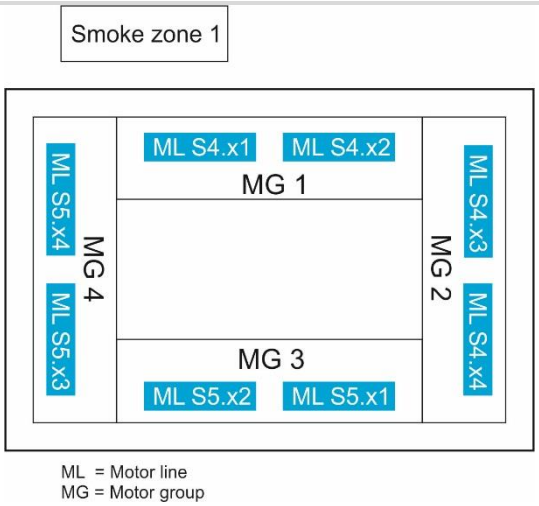


Figure 2 overview of the smoke zone, motor groups and motor lines.

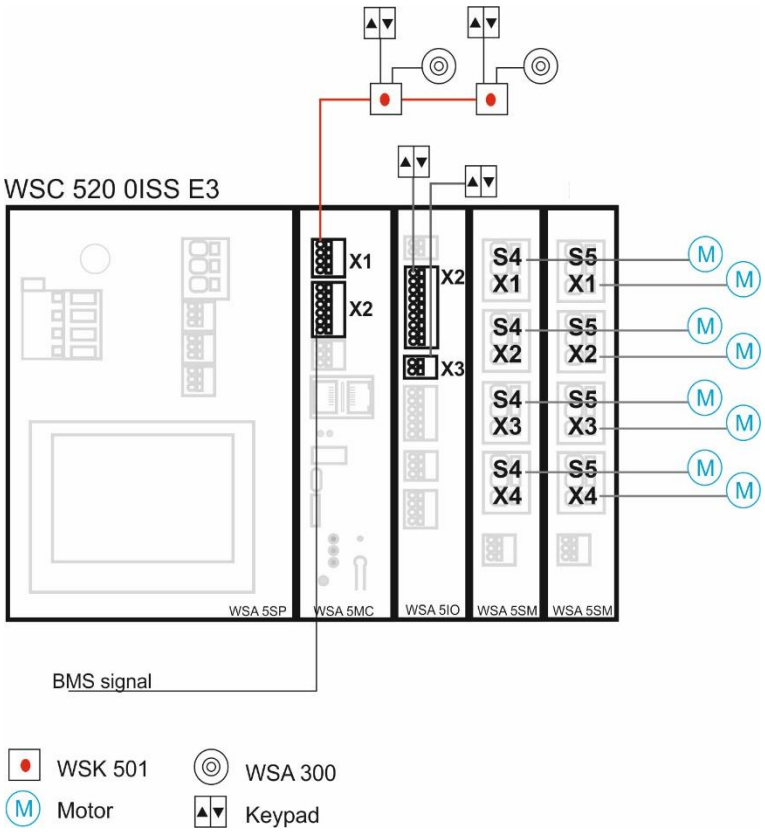
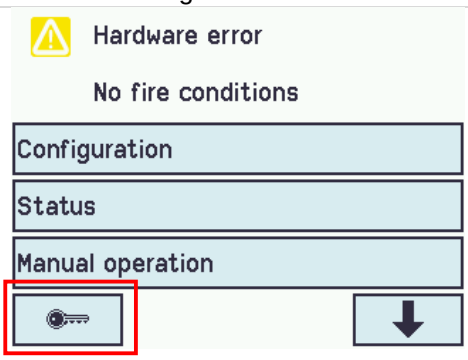
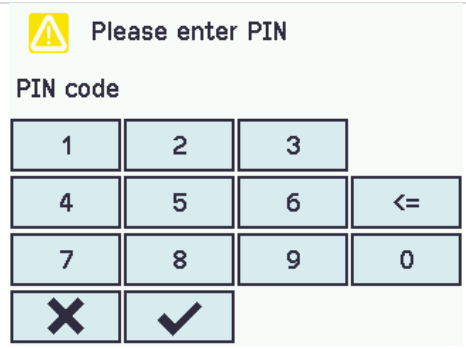
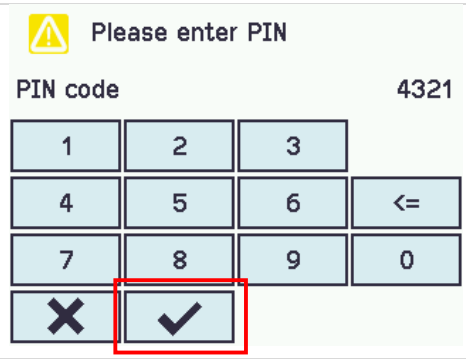
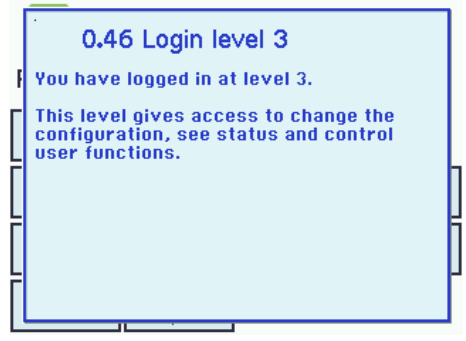


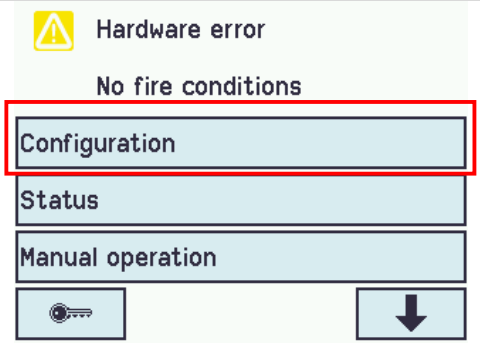
Figure 3 overview of the smoke panel and how the different components are connected it.

1.3 Configuration

1.3.1 Start-up of the FlexiSmoke™

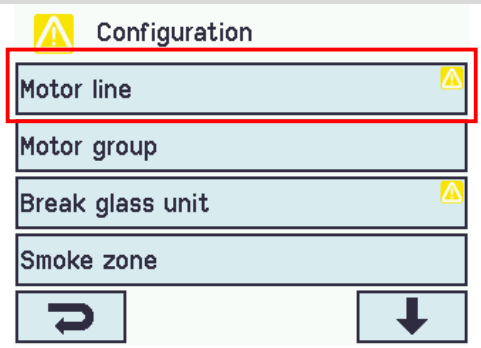
In order to configure the FlexiSmoke™ it must be logged onto with third level rights.

	Warning icon appears since motors, break glass units and comfort keypads have been connected but the panel is not yet configured. Press the “key” button
	
	Enter the PIN code (4321) for level 3. Level 3 allows you to configure the smoke panel. Confirm the PIN code with check mark
	Confirmation of which level you have logged on too.

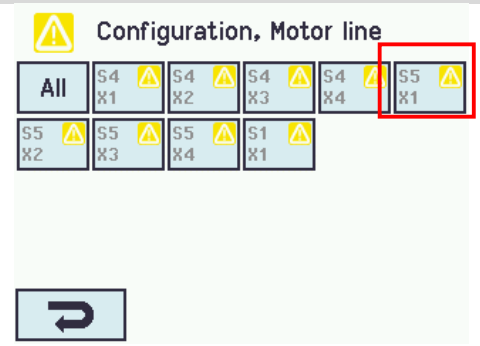


Press “Configuration” in order to start the configuration.

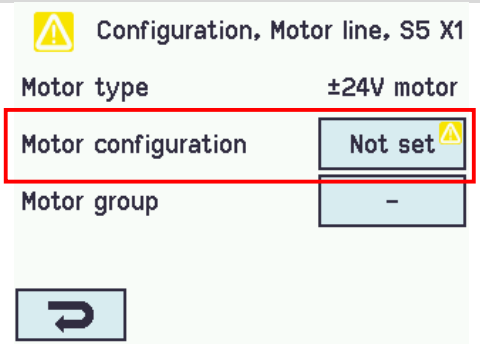
1.3.2 Configuration of motor lines



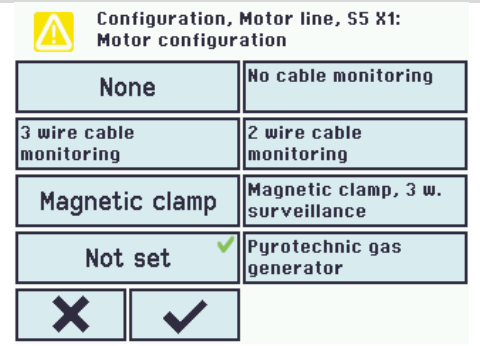
Press “Motor line”.



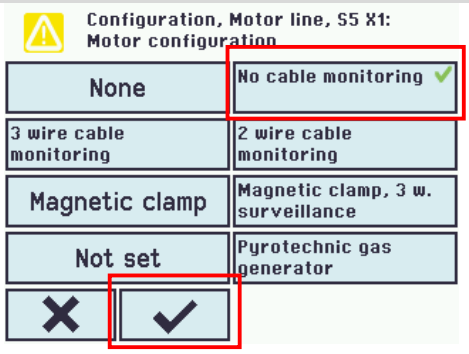
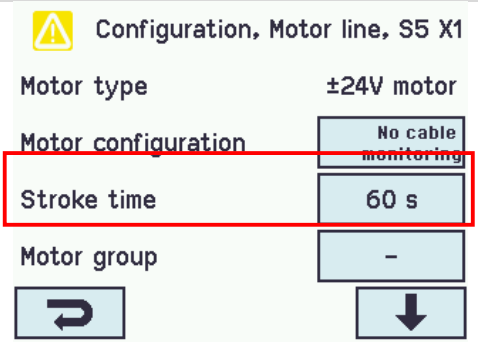
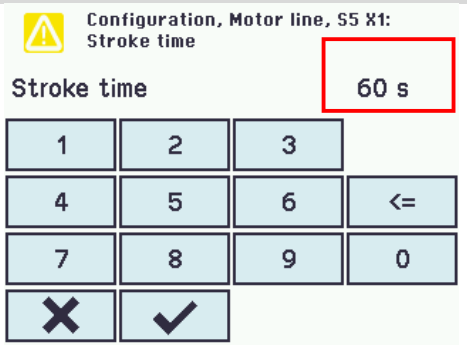
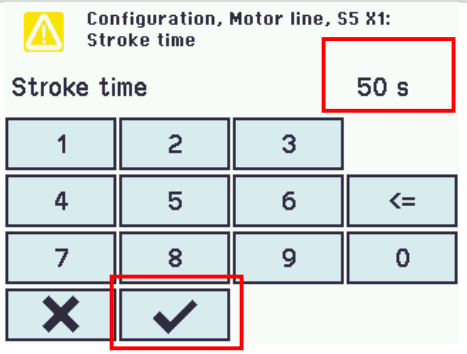
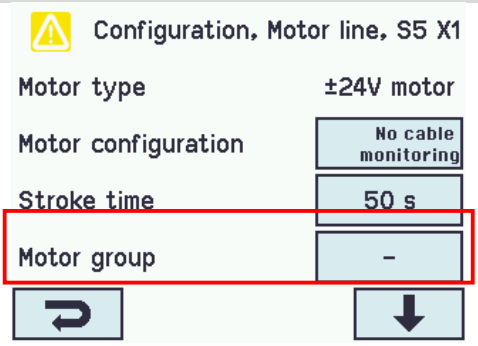
Select the motor line to configure. In this example we select the S5:X1 (Slot 5, motor output #1) motor line.

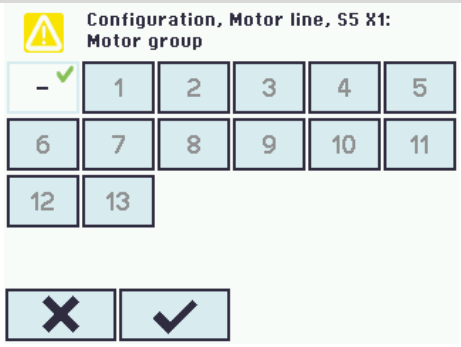
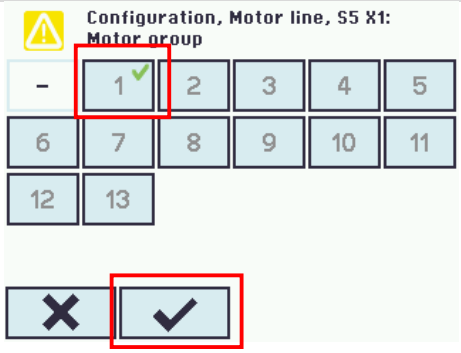
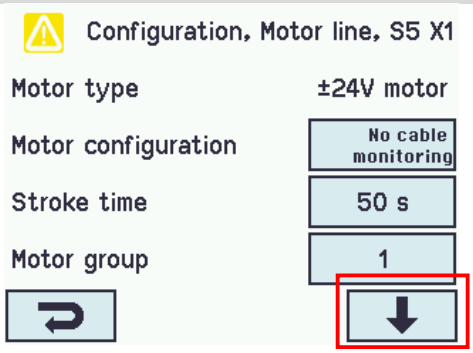
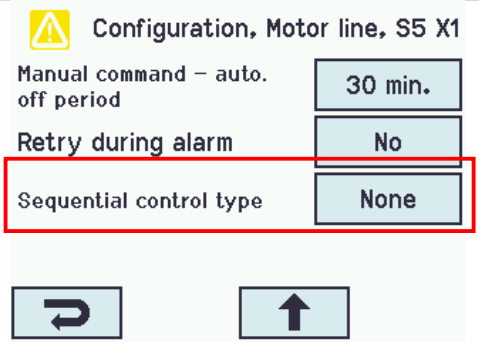
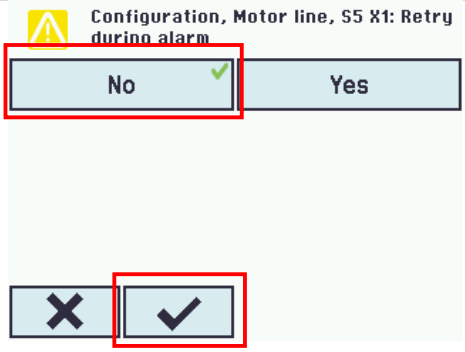


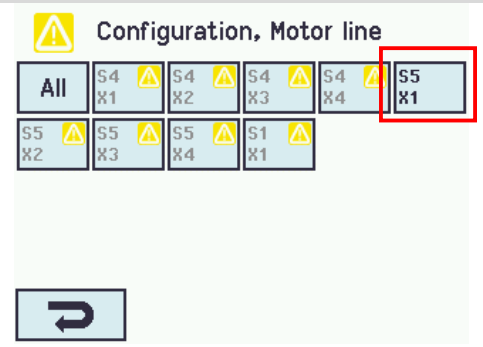
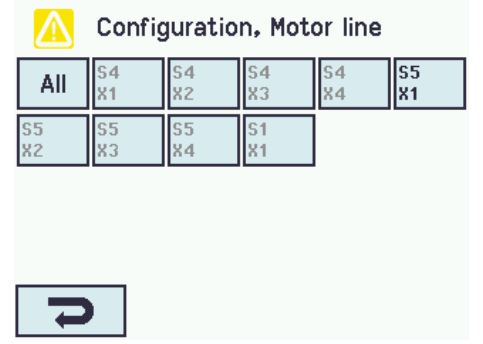
Set the “Motor Configuration”



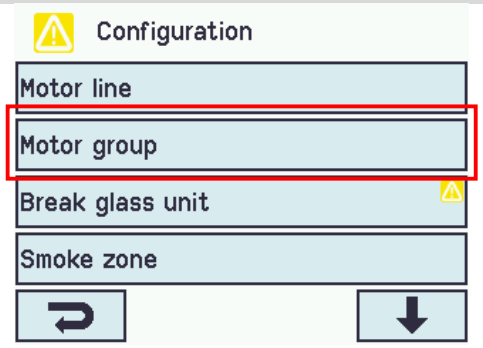
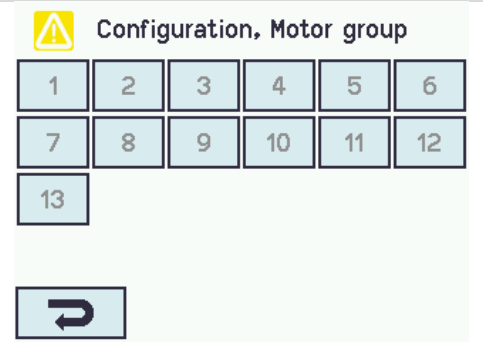
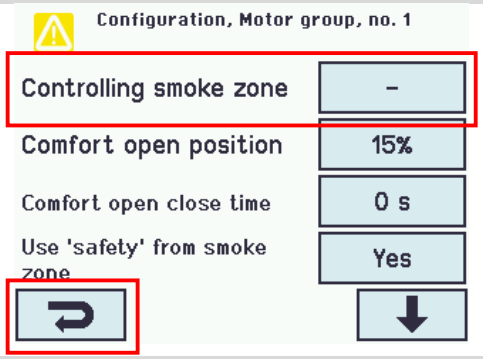
Select the cable monitoring type.

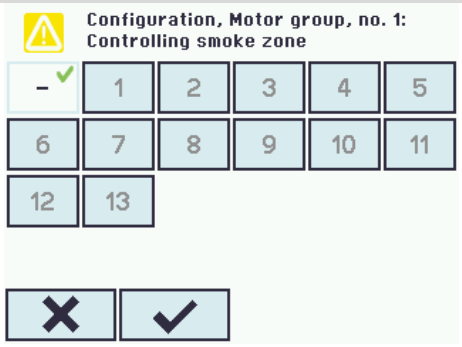
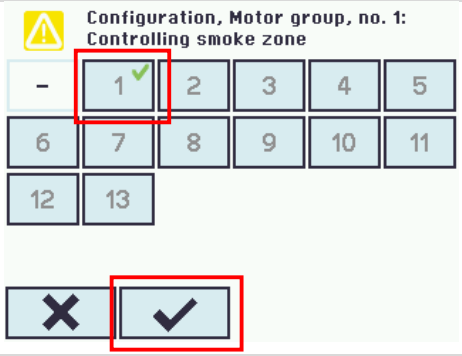
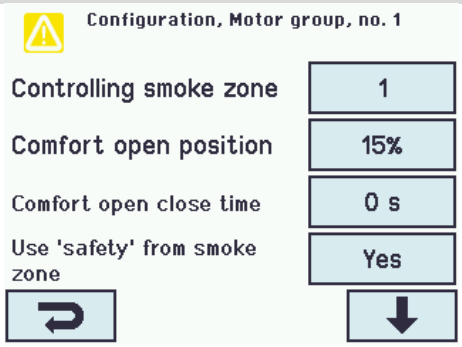
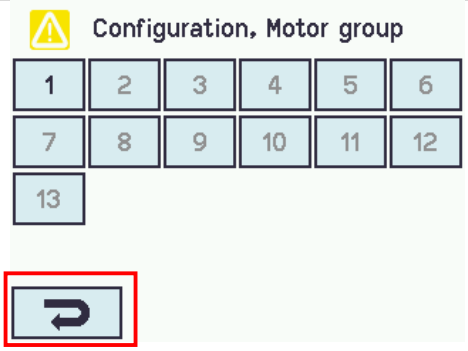
	In this set-up, select “no cable monitoring”. Confirm with check mark.
	Set the stroke time (the “time to open” of the actuators connected on the motor line).
	Enter the stroke time in seconds.
	In this set-up, the stroke time is set to 50 seconds. Confirm with check mark.
	Associate the motor line with a motor group.

	Select the motor group the motor line is to be associated with.
	In this set-up, the motor line is associated with motor group 1. Confirm with check mark.
	Press the arrow down to get further options.
	If required, change the “Retry during alarm” parameter to Yes. Selecting yes will prompt the motor line to repeatedly attempt to reach the ”Max stroke Alarm” position if it failed to do so in the first attempt.
	In this set-up, we select “No”. Confirm with check mark.

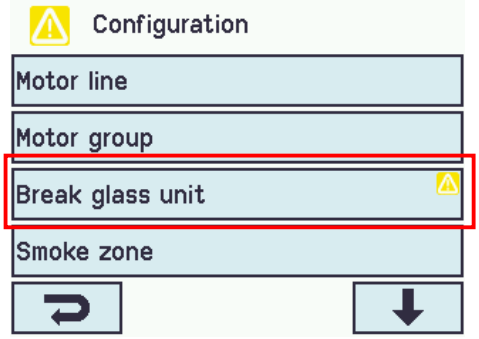
	The first motor line has been configured and the warning icon has disappeared from the configured motor line.
	Continue to configure all motor lines. **Note**: Motor lines not in use must be configured with "Motor configuration" = "None" to clear the warning icons.

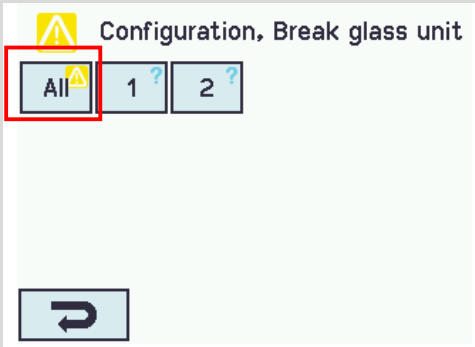
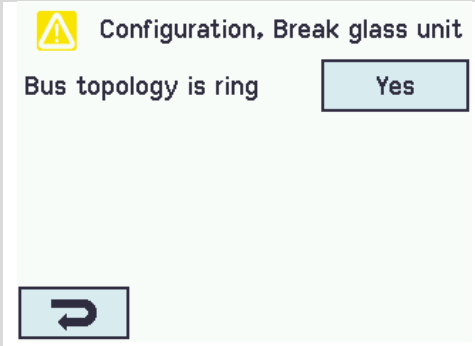
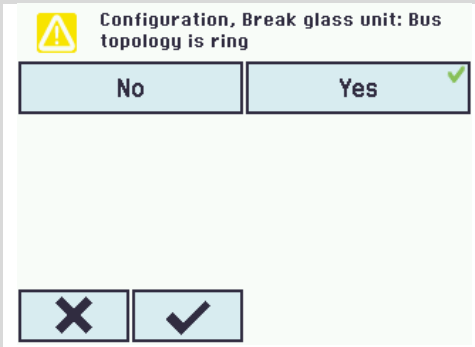
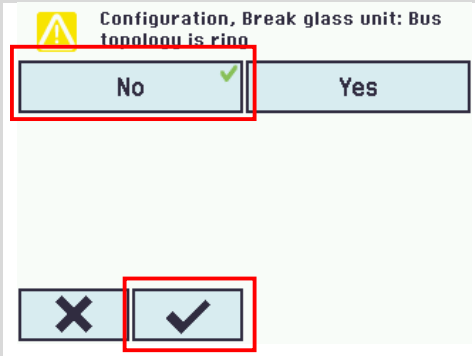
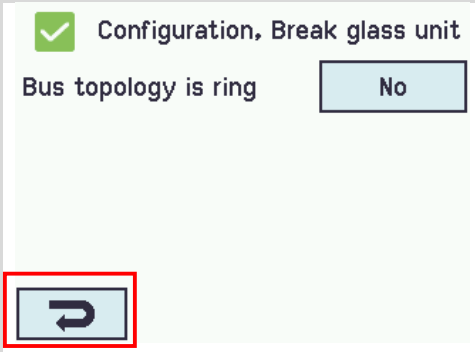
1.3.3 Configuration of motor Groups

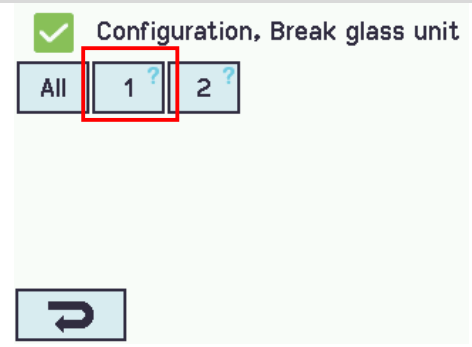
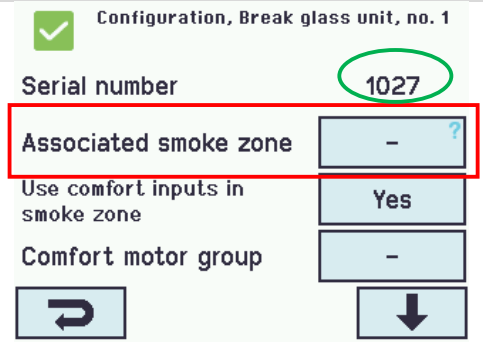
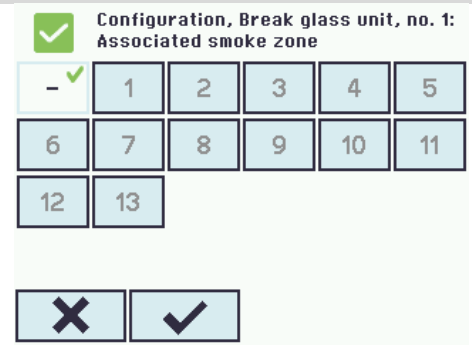
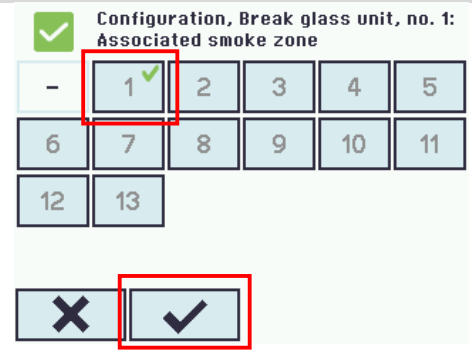
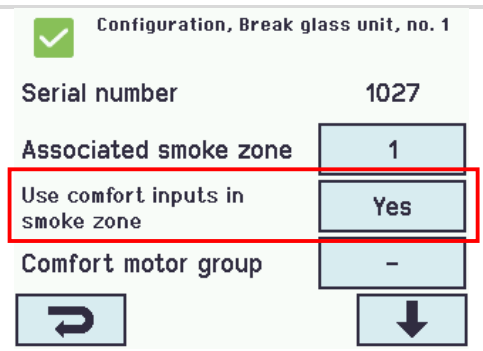
	Press “Motor group”.
	Select the motor group to be configured.
	Associate the motor group no. 1with a smoke zone. Press “Return” to return to the motor group overview.

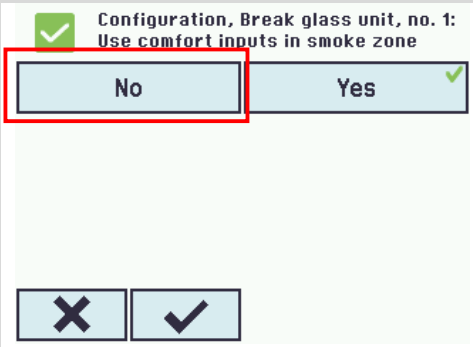
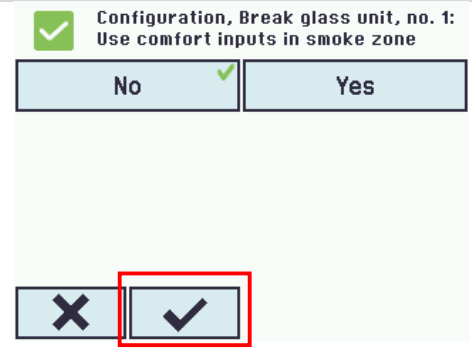
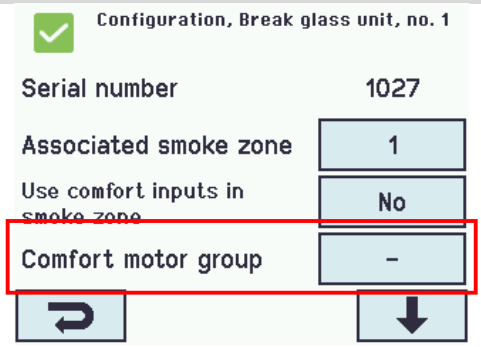
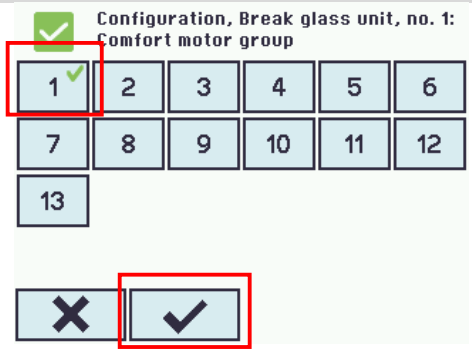
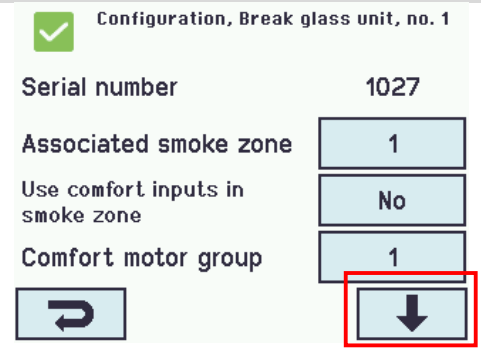
	Select the smoke zone.
	In this set-up, smoke zone 1 is selected. Confirm with check mark.
	
	Continue to associate all 4 motor groups with smoke zone 1. Press “Return” to return to the main menu.

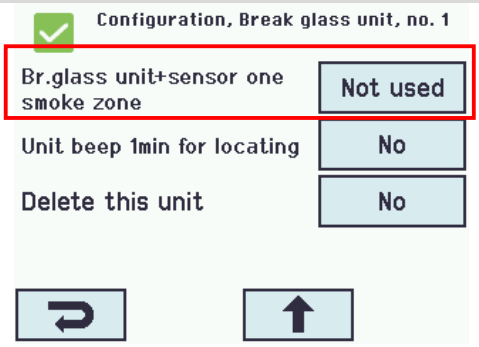
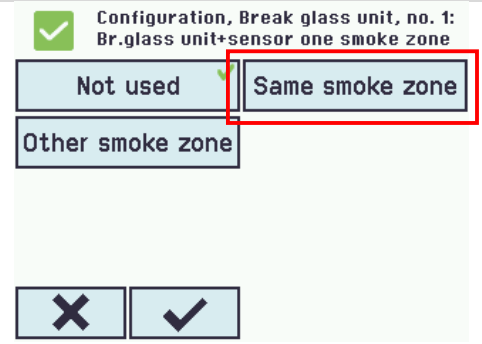
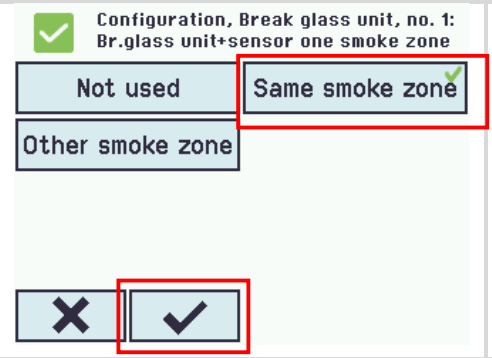
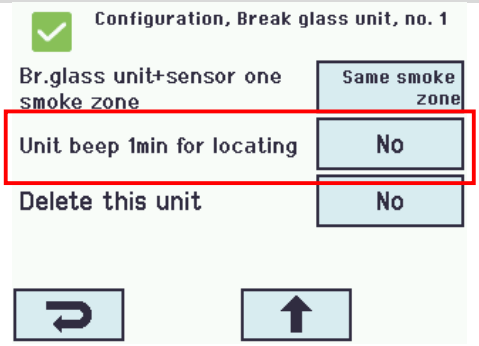
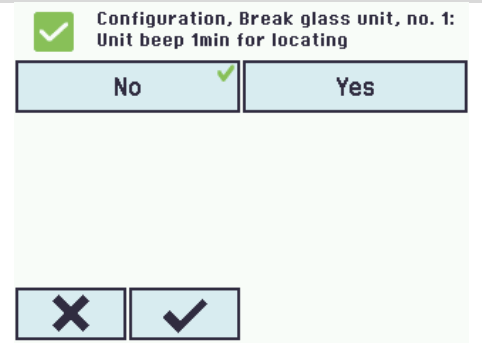
1.3.4 Configuration of break glass unit

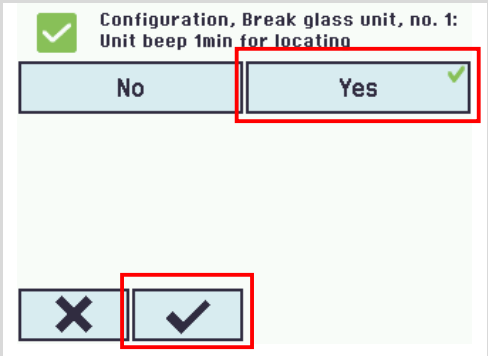
	Press “Break glass unit”.

	Select “All”.
	This configuration applies to all the break glass units and specifies weather all break glass units are connected in a bus topology or not.
	In this setup the bus topology is **not** a ring topology.
	Select “No”. Confirm with check mark.
	Press “Return” to return to the previous menu.

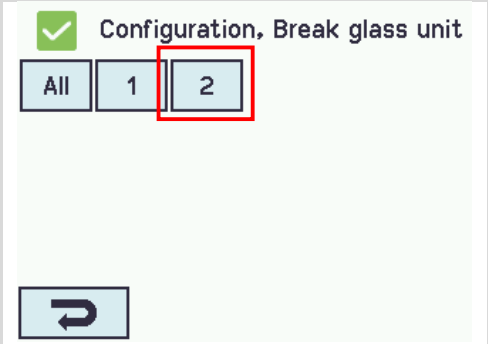
	Select break glass unit 1.
	The unique serial number of the selected break glass unit is shown. Associate break glass unit 1 with a smoke zone.
	
	Press 1 to associate the break glass unit with smoke zone 1. Confirm with check mark.
	Set the "Use comfort inputs in SZ".

	In this set-up, we choose not to associate the comfort input with the smoke zone. We do not wish to operate all the motor groups, associated with this smoke zone, from this comfort input.
	Confirm with check mark.
	Select the motor groups to operate with this comfort input.
	In this set-up, we associate motor group 1 with this comfort input. Confirm with check mark.
	Press arrow down to get further options.

	Set “Keypad + sensor one smoke zone” to “Same smoke zone”. It means that both the smoke detector and the red key in the break glass unit are triggering the alarm in the same smoke zone. In this set-up, there is only one smoke zone.
	In this set-up, the smoke detectors and break glass units are in the same smoke zone.
	Confirm with checkmark.
	If you would like to identify the physical position of break glass unit 1, it is possible to have the break glass unit make a beep. For this you need to activate the "Unit beep 1min for location".
	Select “yes” to activate the beep for 1 min.

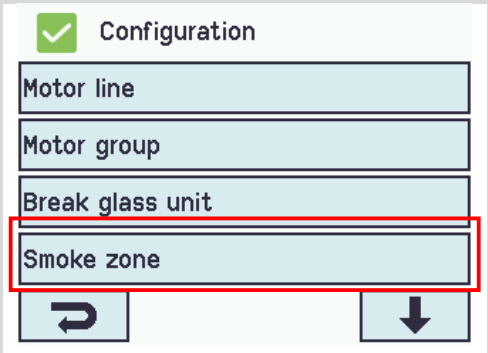


Confirm with checkmark.

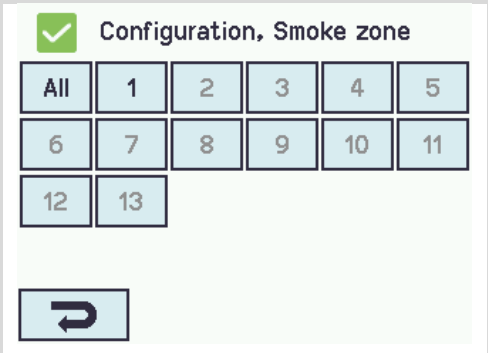


Continue to configure break glass unit 2 in the same way.

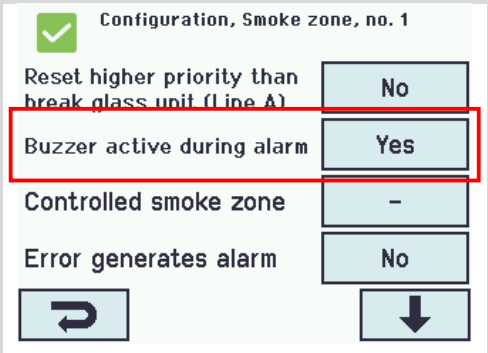
1.3.5 Configuration of smoke zones



To configure the smoke zone press “smoke zone”.

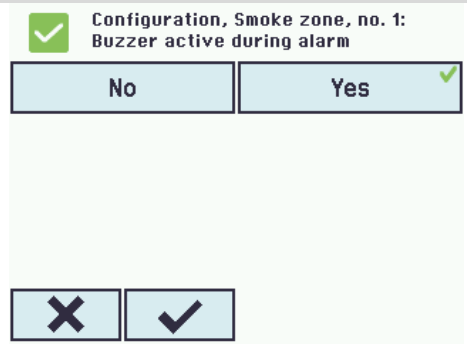
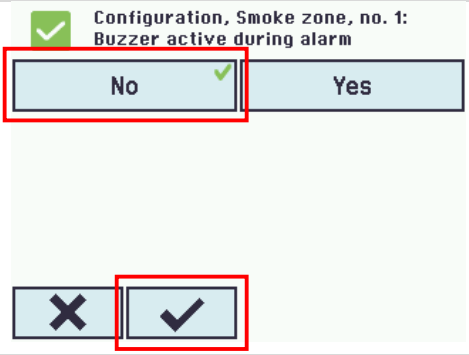
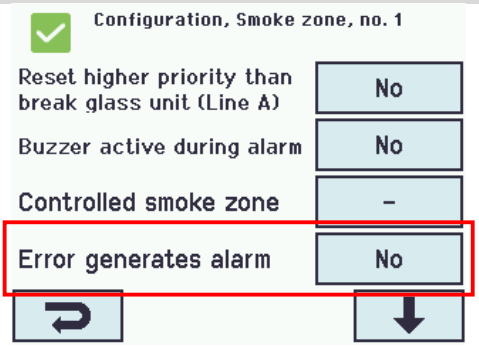


Select the smoke zone to be configured.

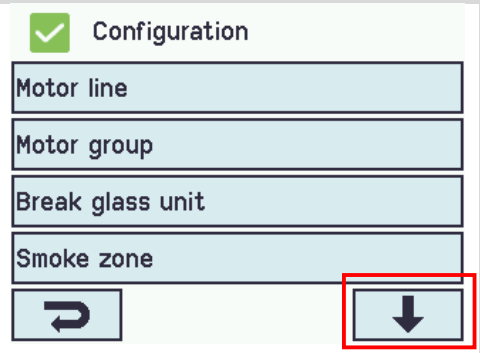
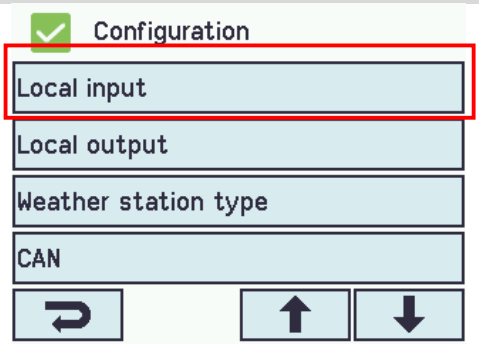


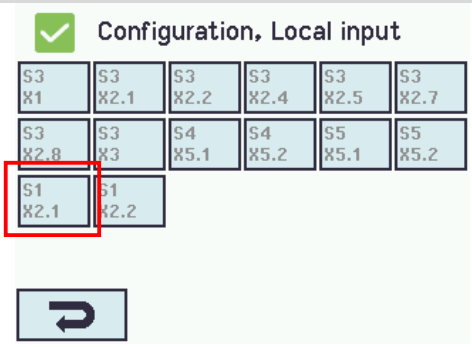
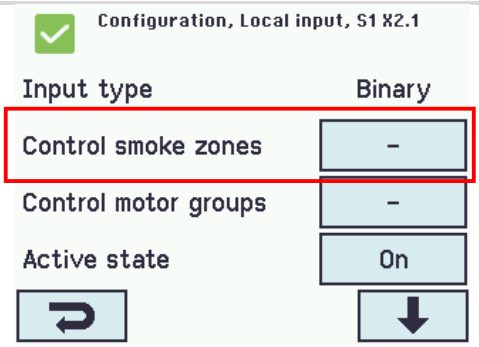
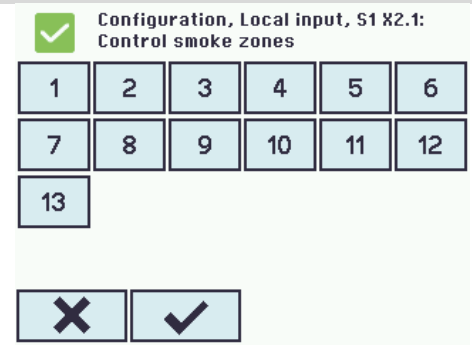
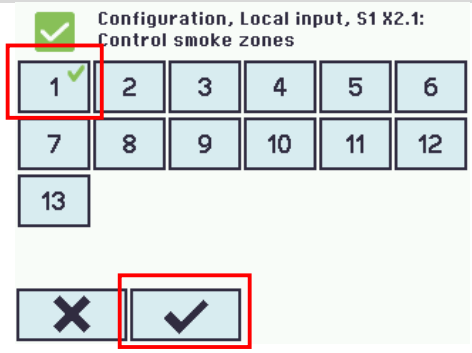
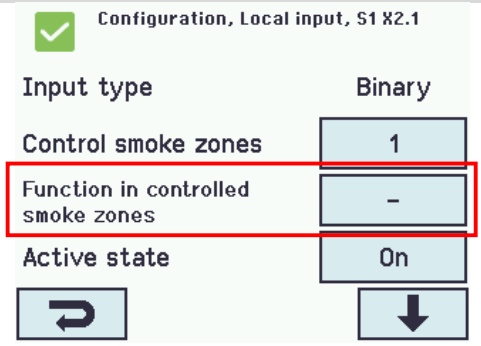
The break glass unit has a buzzer which sounds in case of triggering or error.
“Buzzer active during alarm” allows you to activate or deactivate this function.

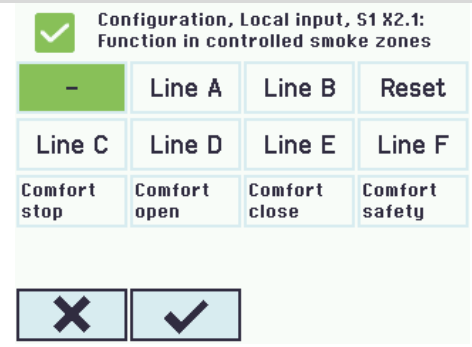
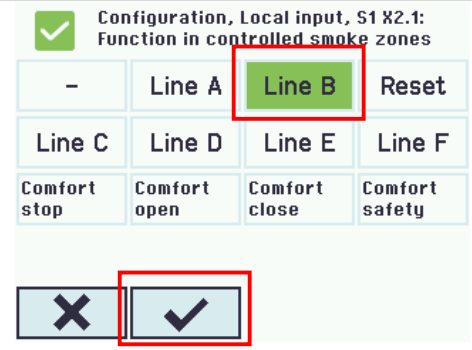
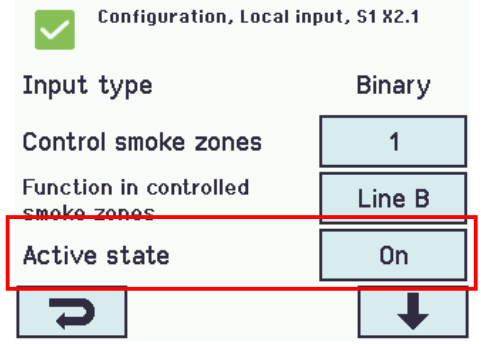
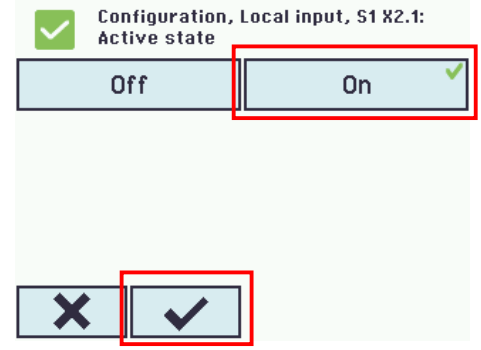
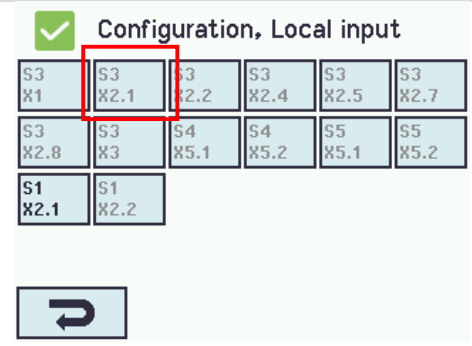
Set the “Buzzer active during alarm” as required.

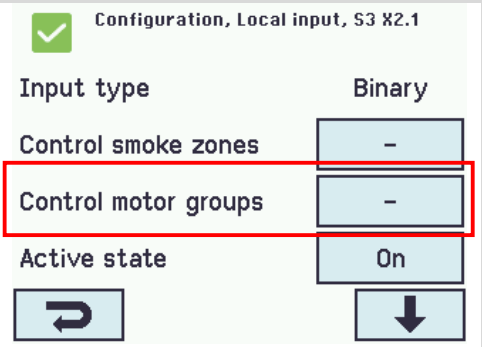
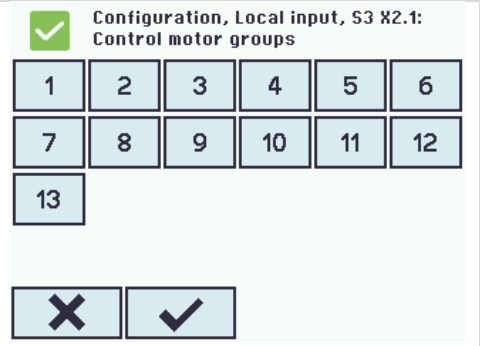
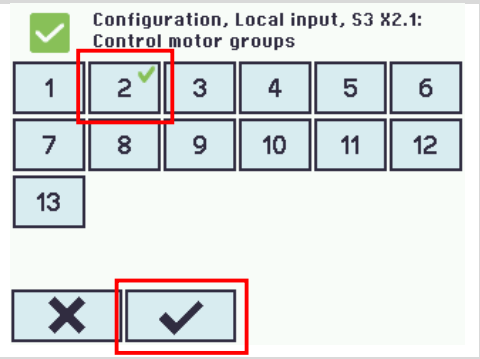
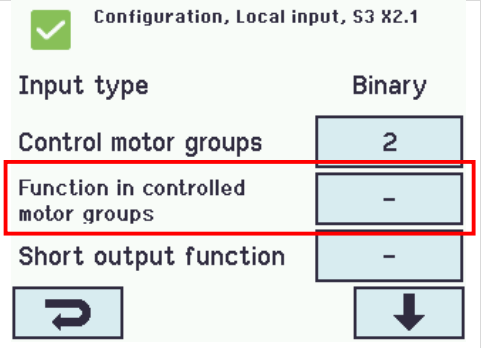
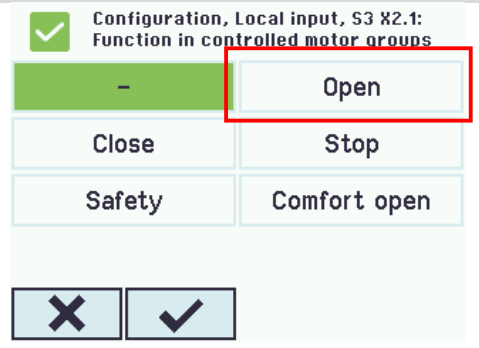
	
	In this set-up, we select “No”. Confirm with check mark.
	Set the “Error generates alarm” as required. If you choose "Yes" the smoke zone alarm will be triggered whenever the unit detects en error. Note: If you have to choose "Yes" do it after you have finished configuring the unit and have resolved all errors indicated by it.

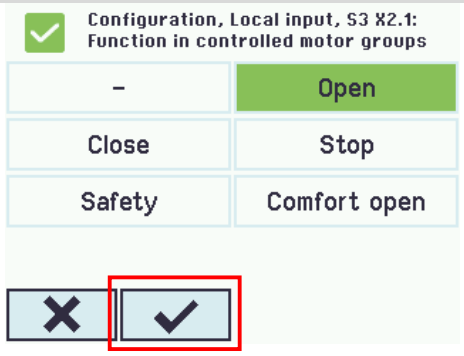
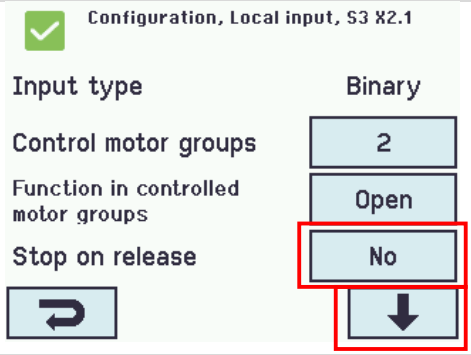
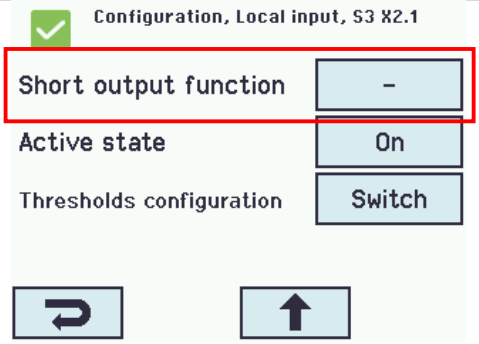
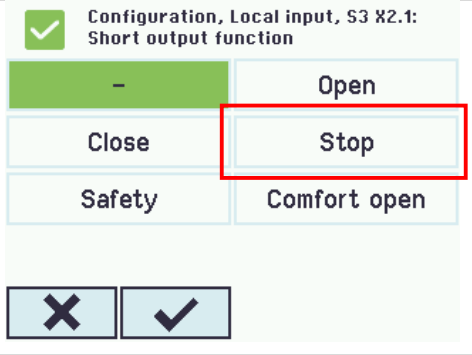
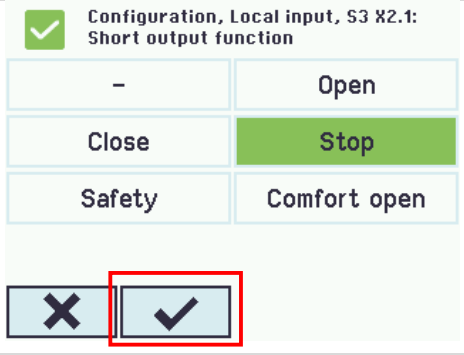
1.3.6 Configuration of local input

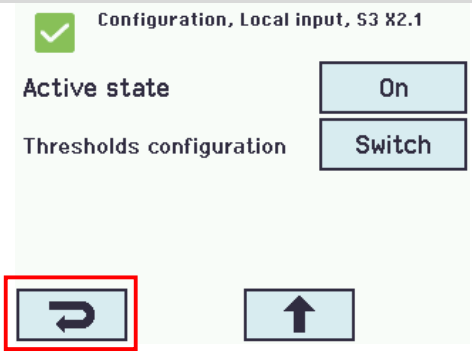
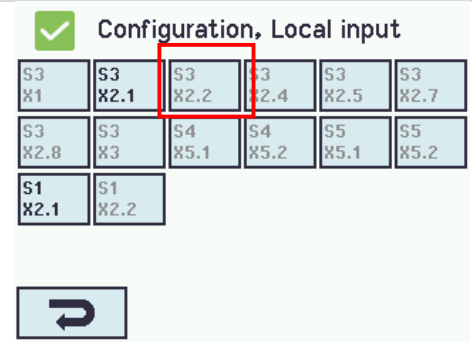
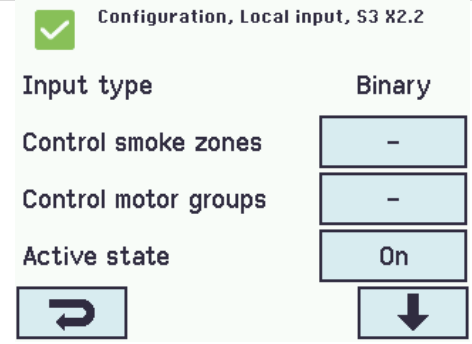
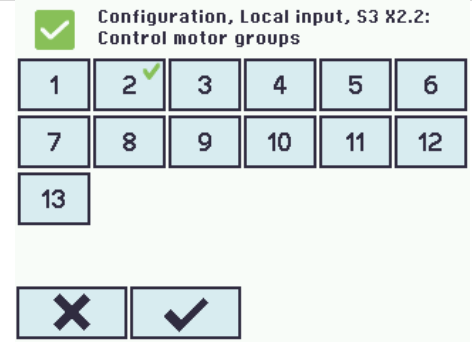
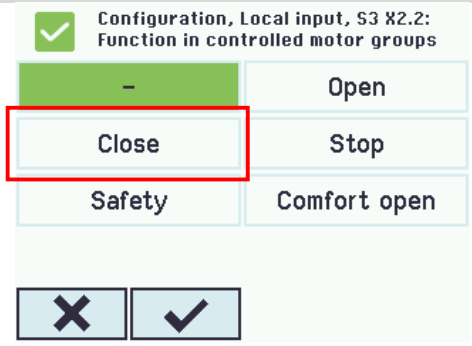
	To configure local inputs, press arrow down to get more options.
	Press local input.

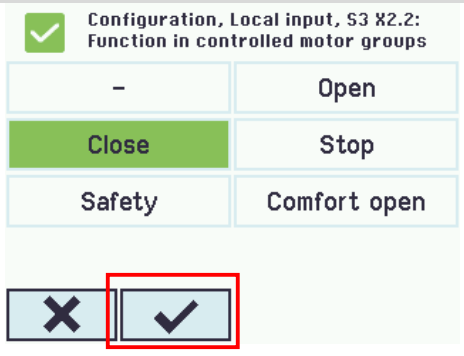
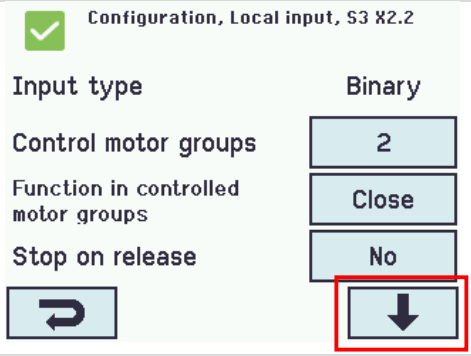
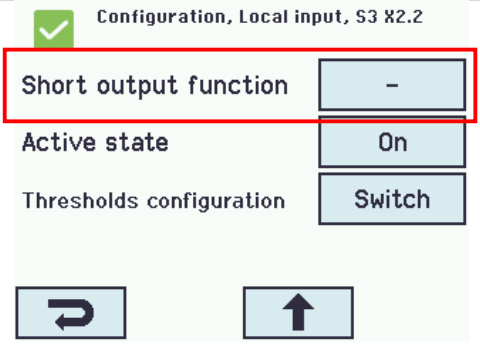
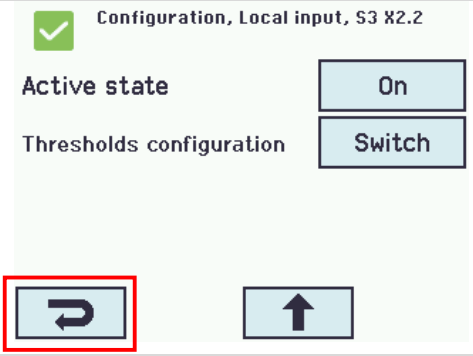
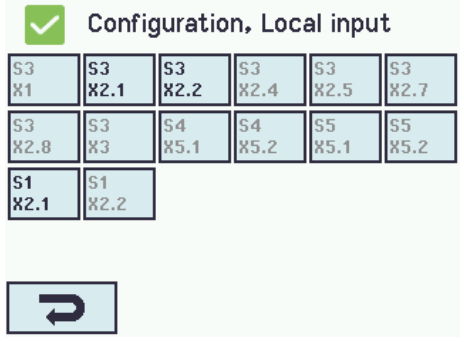
	Select input S1:X2.1 (Slot 1, Input X2.1) to configure the input receiving the alarm signal from the BMS. In this set-up, we have chosen input S1:X2.1, but anyone of the local inputs on the Input-/output module (WSA 5IO), power supply module (WSA 5PS) or the standard module (WSA 5SM) can be used.
	Set the “control smoke zones”.
	Select the control smoke zone, which is to be associated with the local input.
	In this setup smoke zone 1 is selected. Confirm with check mark.
	Set the “function in controlled smoke zones”

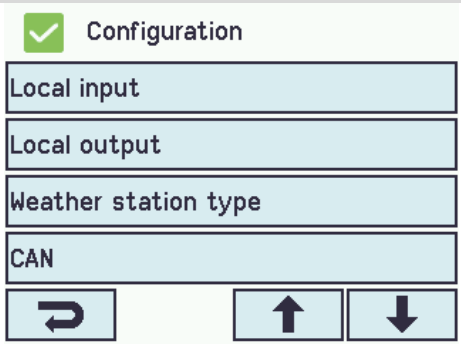
	Select the function. Lines A to F represent Alarm triggering with different priorities. Line A has highest priority and it requires a Reset to deactivate. With all other lines the alarm is only triggered while the signal is active. The alarm is deactivated when the signal is no longer active. No Reset is needed. For detailed description of the different lines see the FlexiSmoke™ WSC 520 / 540 / 560 installation instruction “section 13.5 Smoke zone”.
	In this set-up "Line B" is selected. Other priorities can be selected, e.g. “Line A” if required. Confirm with check mark.
	Set as required the “Active state”, the state of the input that triggers an alarm.
	In this set-up, “On” is selected. This means that Confirm with check mark.
	Select input S3:X2.1 (Slot 3, input X2.1) to configure Open/Stop comfort commands to motor group 3. Note: Motor group 1 and 2 are operated by keypads connected to the 2 break glass units.

	Press “Control motor groups” to select the motor group.
	Select the motor group with which the comfort input S3:X2.1 is to be connected with.
	In this set-up select motor group 2. Confirm with check mark.
	Press “Function in controlled motor groups” to select the function that will be applied to all motor lines in the motor group, when the input is activated.
	Select “Open”

	Confirm with check mark.
	Setting the "Stop on release" parameter to "Yes" configures the Input to generate a "Stop" command when the Input is deactivated. The push button connected to the Input will function in this configuration as a "Keep" push button. In this example we choose **not** to use this option, but to generate a Stop command by a short activation of the Input. Press arrow down for further options.
	Press “short output function” to select the function that will be applied to all motor lines in the motor group, when the input is activated for a short time - as a standard less than 400 ms. If no function is being selected, activating the input will only apply the function selected under "Function in controlled motor groups", independently of how long the input is being activated.
	Select “Stop”.
	Confirm with check mark.

	Press ”Return”.
	Select S3:X2.2 (Slot 3, Input X2.2) to configure Close/stop comfort commands for motor group 2.
	Repeat the steps as just performed for S3:X2.1 for the other inputs.
	
	Press “Function in controlled motor groups” to select the function that will be applied to all motor lines in the motor group, when the input is activated. But this time select “Close” rather than “Open”.

	Confirm with check mark.
	Press arrow down.
	Press “short output function” to select the function that will be applied to all motor lines in the motor group, when the input is activated for a short time (standard less than 400 ms), e.g. a stop command in above mentioned automatic mode. If no function is being selected, activating the input will only apply the function selected under "Function in controlled motor groups", independently of how long the input is being activated. Select “Stop”. Confirm with checkmark
	Press return arrow.
	To configure the input S3:X2.4 and X2.5 (Slot 3, input X2.4 and X2.5), to apply to motor group 4 repeat the steps as carried out with S3:X1 and X2, only setting "Control motor groups" to 4 .



The Smoke panel is now configured according the above described specification and is ready for operation.

2 Example B – 1 WSC 520, 4 motor groups in 1 smoke zone – KNX

2.1 Description

Using the WSC 520 KIMM to control 4 motor groups in 1 smoke zone. 8 MotorLink® motor lines in all, 2 motor lines are associated with each motor group.

All 4 motor groups are associated with the same smoke zone and each motor group is controlled for comfort from KNX.

The smoke zone fire alarm can be triggered from 2 break glass units with a smoke detector connected to each, as well as from the BMS system.

Set-up overview:

- 1 Smoke zone
- 4 motor groups with 16 MotorLink® motors
    - e.g. 12 x WMX 823-3 (1A motor) max total 12A and 4 x WMU 862-1 (2A motor) max total 8A.
- 2 Break glass units
- 4 Keypads for comfort are connected via the KNX bus.
- 2 smoke detectors

See example A for illustration of the room/building overview.

2.2 Hardware connection diagram

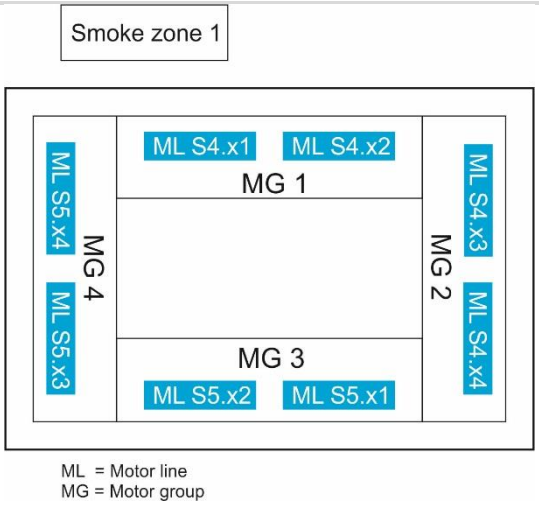


Figure 4 overview of the smoke zone, motor groups and motor lines.

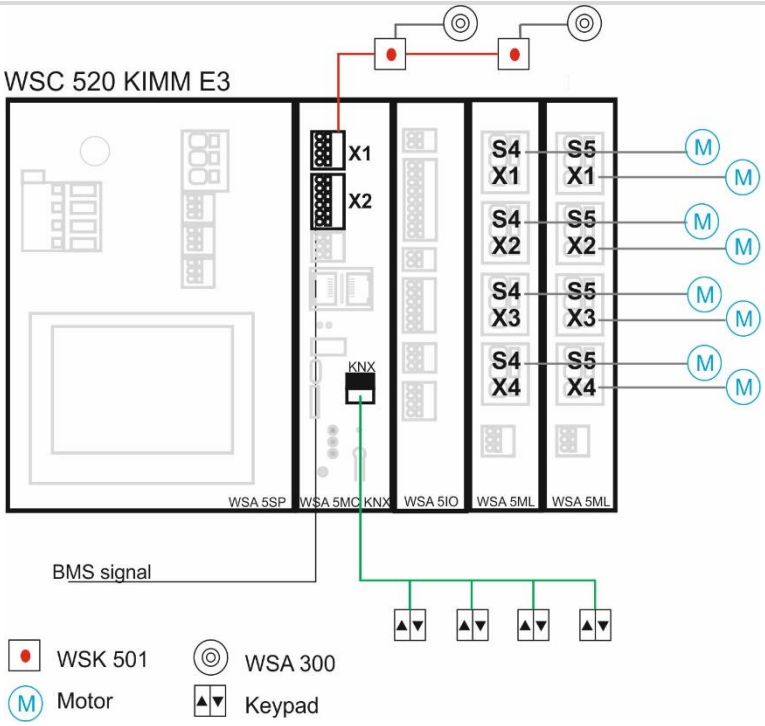
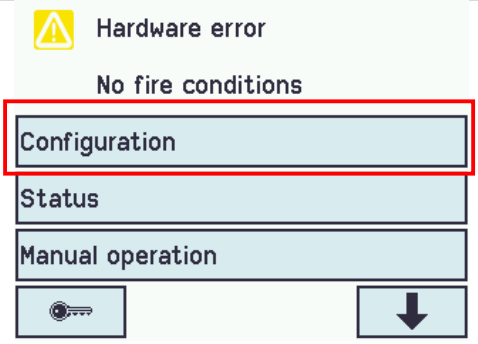
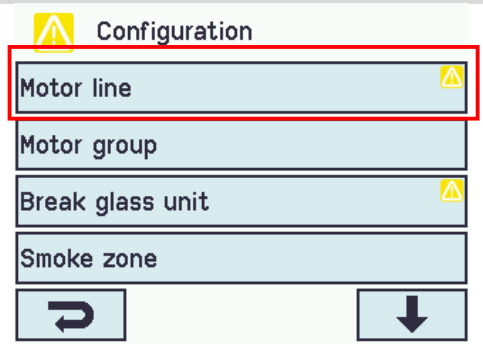


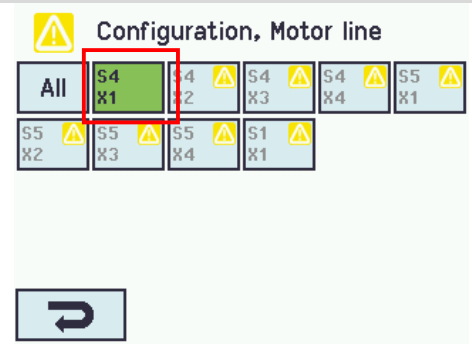
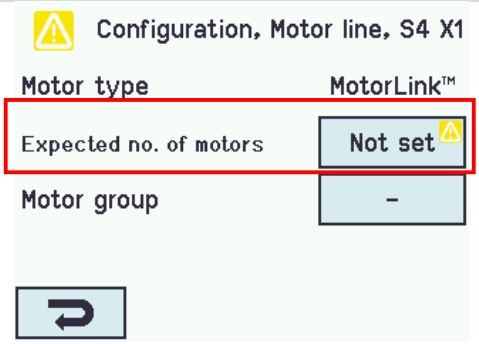
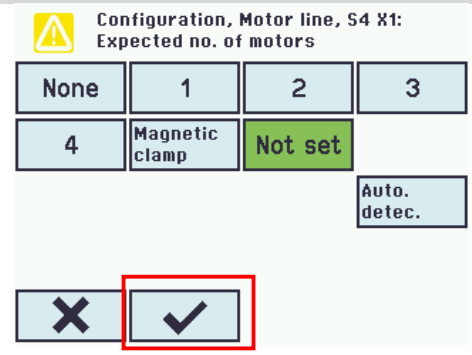
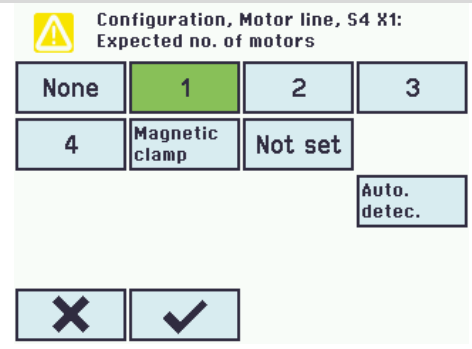
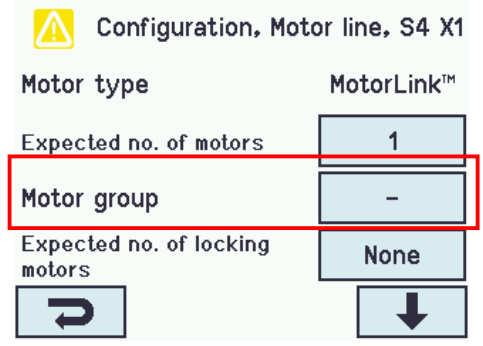
Figure 5 overview of the smoke panel and how the different components are connected it.

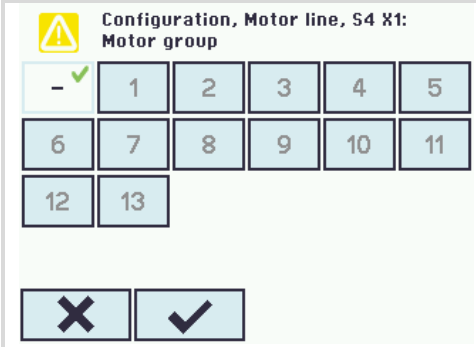
2.3 Configuration

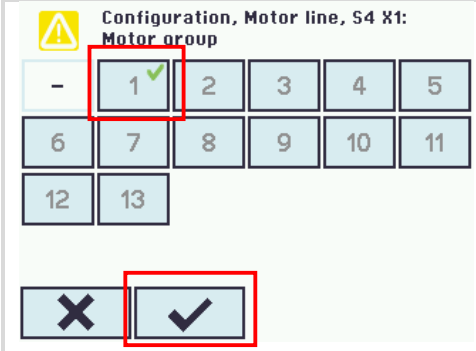
See example A for login settings as well as configuration of the motor groups and the local input receiving the alarm signal from the BMS.

2.3.1 Configuration of motor lines

	Press Configuration to start configuration of the smoke panel.
	Select Motor line.

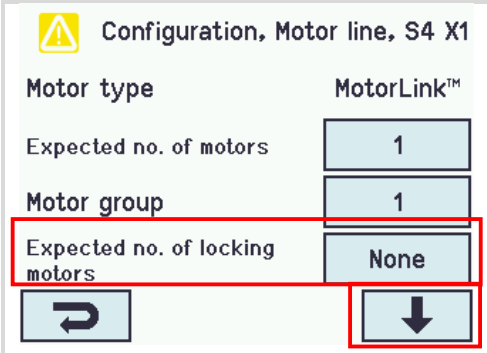
	Select the motor line to be configured. In this case, the S4.X1 (Slot 4. Motor output #1) is green because the motor has been connected and closed.
	Press “expected no. of motors”
	Select the number of motors connected to the motor line and confirm with check mark. FlexiSmoke™ will discover the number of motors connected on the motor line. If no error is detected FlexiSmoke™ will set the value of the parameter to the number of the expected motors. If a discrepancy is detected between the expected and the found number of motors, FlexiSmoke™ will show the “No. of found motors”. This is an error state that needs resolving. The problem is often with cabling and installation boxes between the FlexiSmoke™ and the motors.
	Note; if no motors are discovered the FlexiSmoke™ will set the value to “None” and will not report an error.
	To associate the motor line with a motor group press “Motor group”.





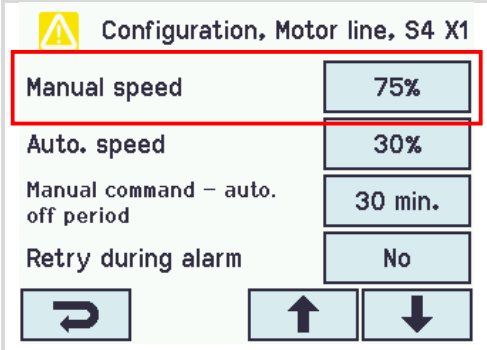
Select the motor group.

Confirm with check mark.



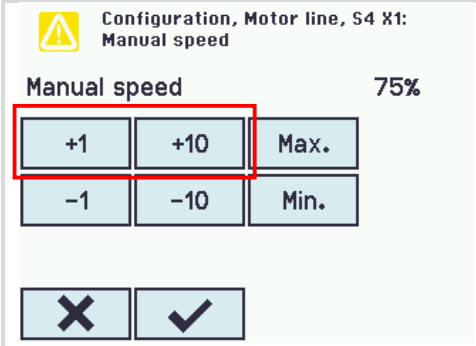
Set the “Expected no. of locking motors” to “None”.
Confirm with check mark.

To e.g. alter the speed press arrow down.

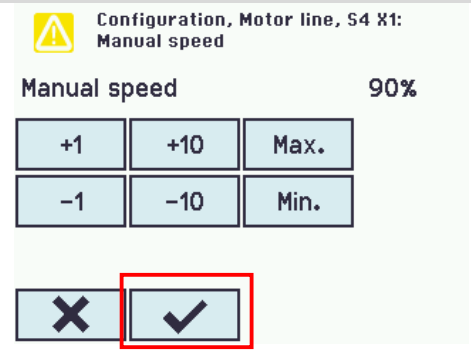
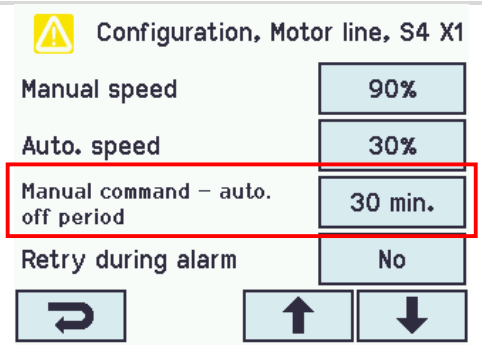
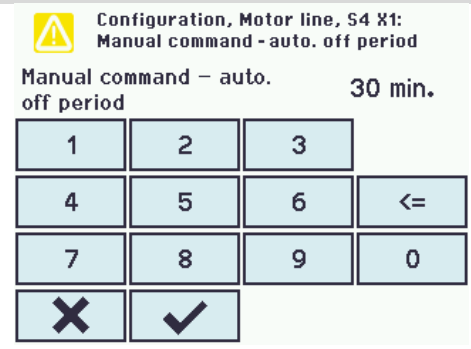
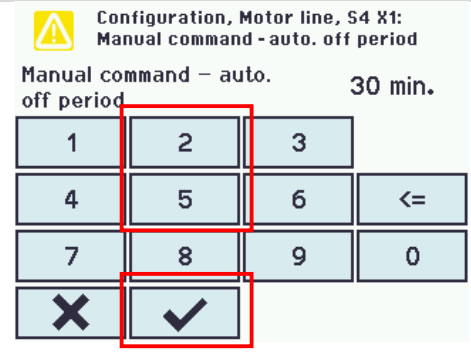
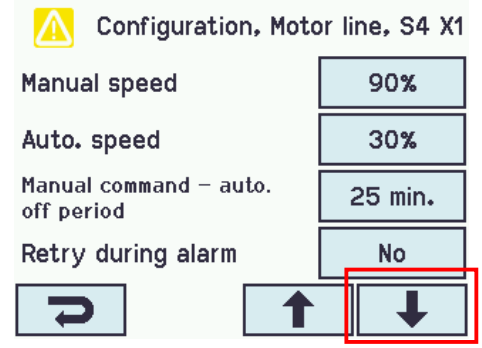


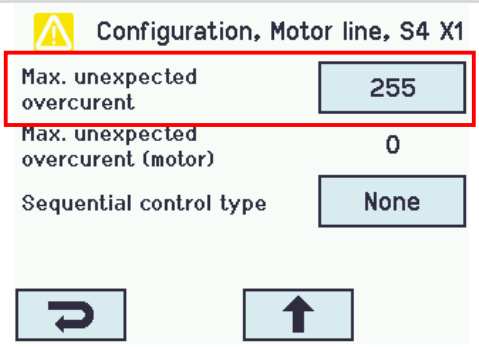
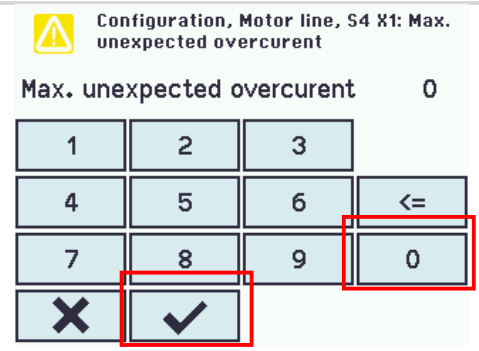
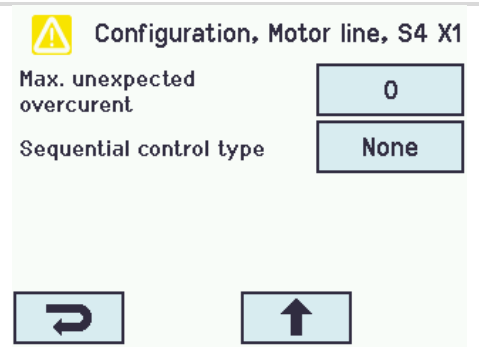
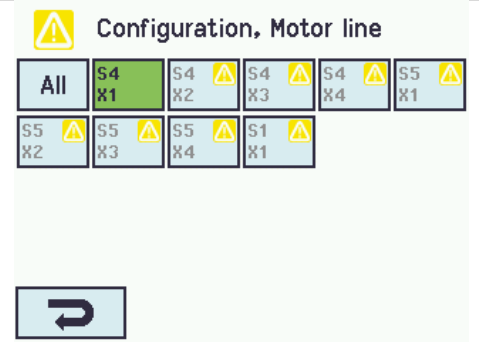
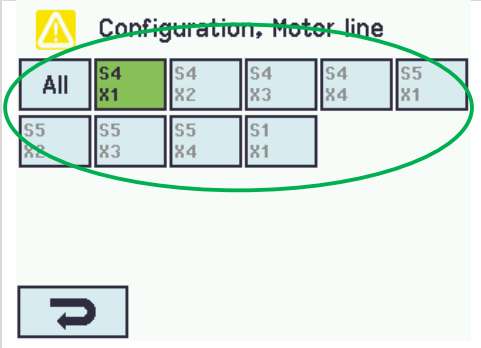
Alter the manual or automatic speed as required.

The faster motors are running the louder they sound. WMa recommends running motors in Auto. with 30% speed to reduce noise to a minimum.

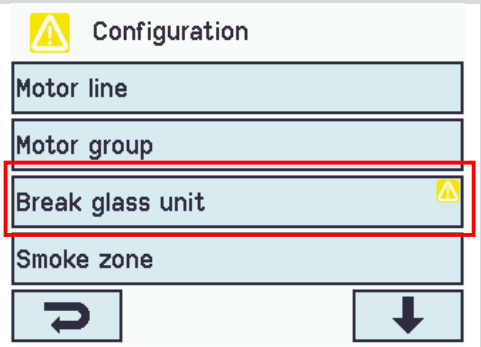
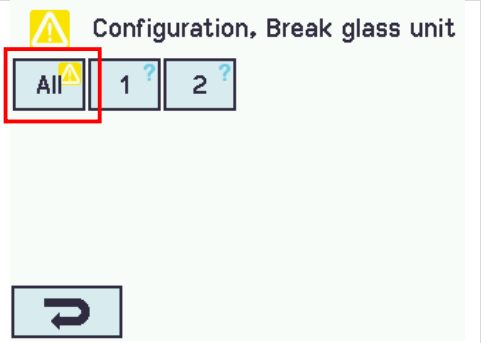
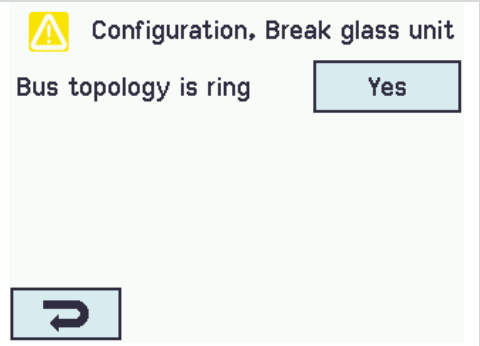
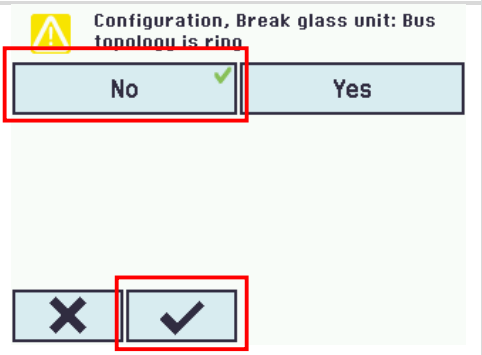
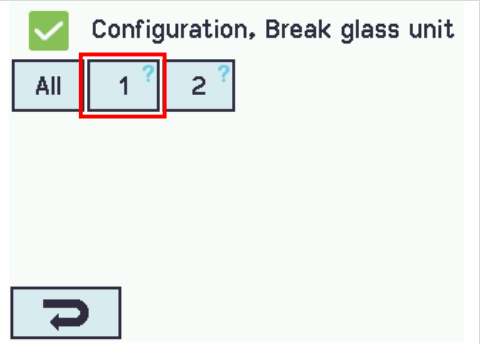


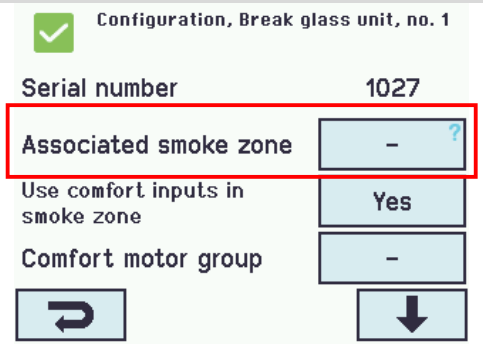
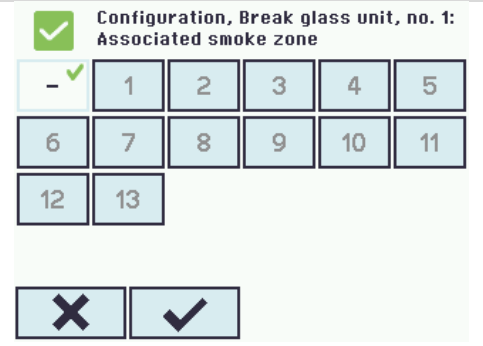
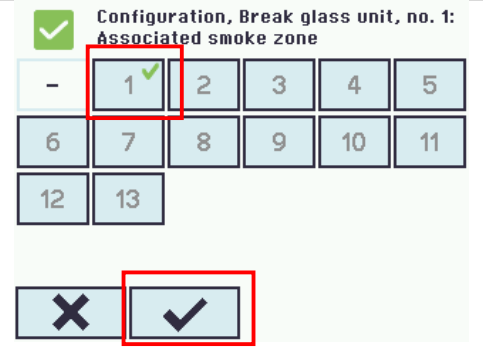
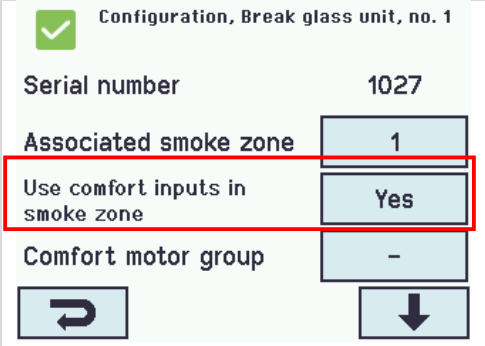
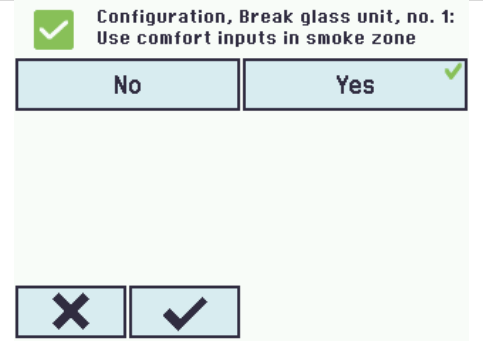
In this setup we increase the manual speed from 75% to 90% by pressing “+1” and “+10”.

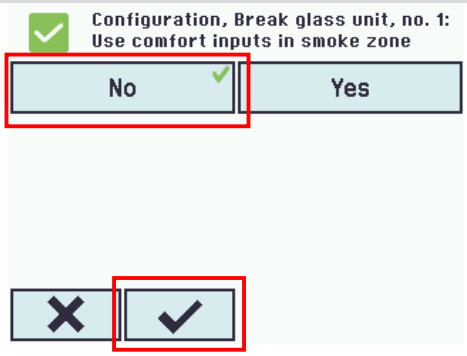
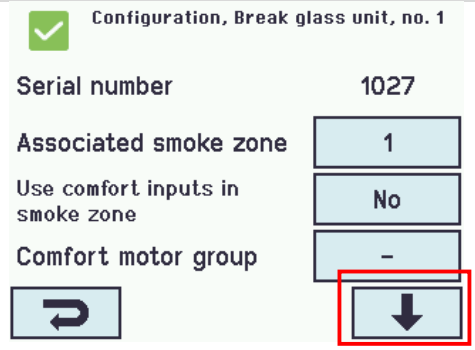
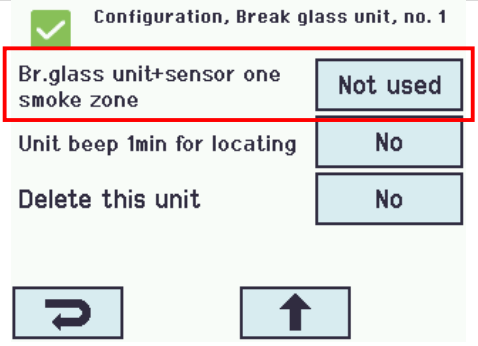
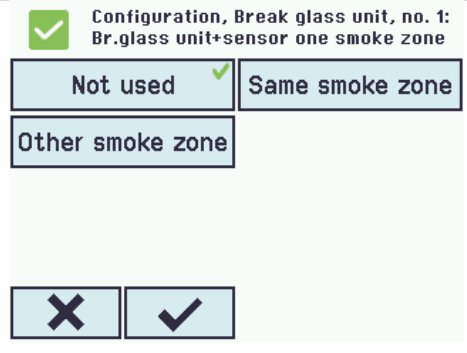
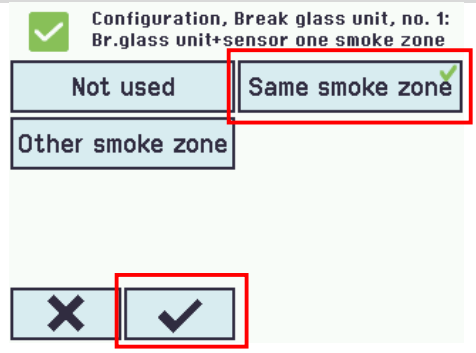
	When the required speed has been set confirm with check mark.
	Alter the “Manual command – auto off period” if required. This is the manual override time in which the FlexiSmoke™ ignores auto. commands to the motor line.
	
	In this set-up, we choose to set the “manual command – auto off period” to 25min. Confirm with check mark.
	Press arrow down for further options.

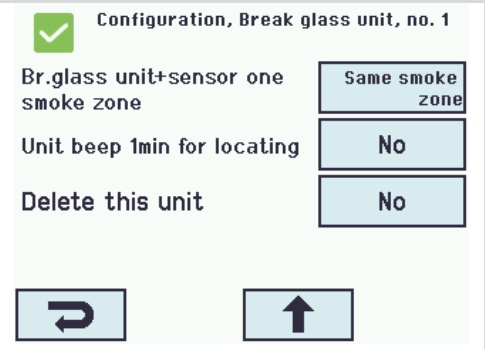
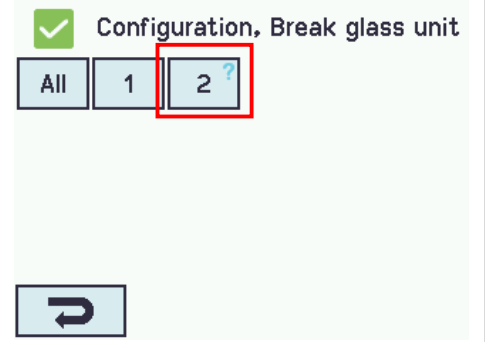
	The “Max. unexpected over current” should be set to 0 after the ML has been opened and closed 5 times and after you ensured that the windows are properly closed. Closing the motor line 5 times gets the motors to establish their Zero (closed) position. Setting the parameter to 0 ensures that the motors will never change their Zero position and always report an error if they receive the command but cannot reach their closed position.
	Confirm with check mark.
	
	Configure the rest of the motor lines in the same way.
	Once all the motor lines have been configured the warning icons will disappear.

2.3.2 Configuration of break glass unit

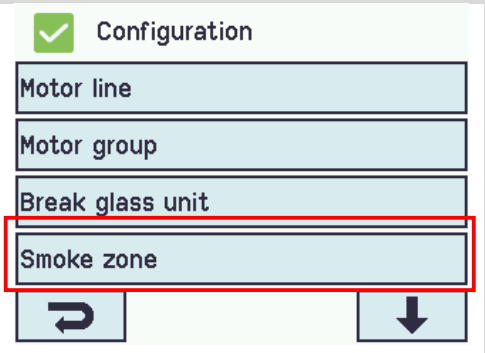
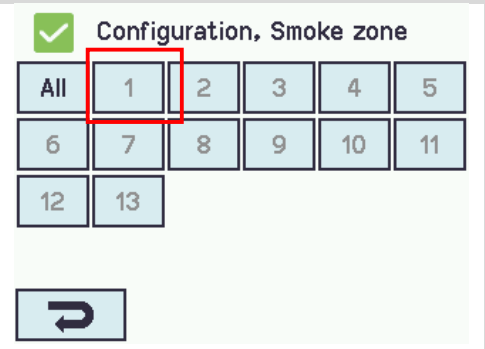
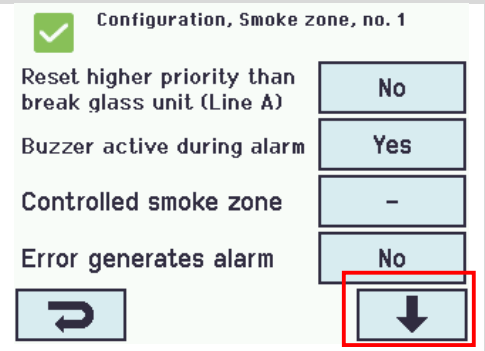
	Press break glass unit.
	Select “All”
	This configuration applies to all the break glass units and specifies weather all break glass units are connected in a bus topology or not.
	In this setting we select “No” for the CAN bus technology. Confirm with check mark.
	Select break glass unit 1 for further configuration.

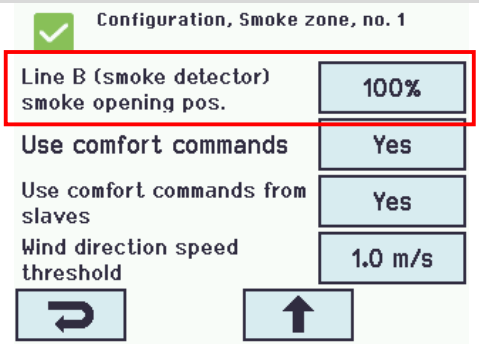
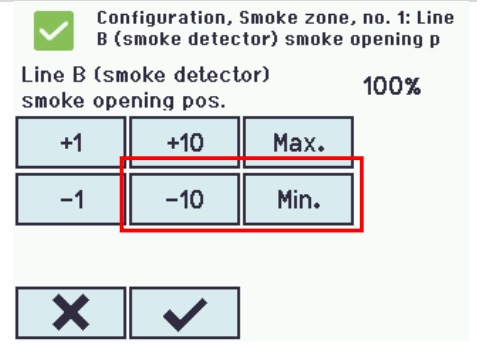
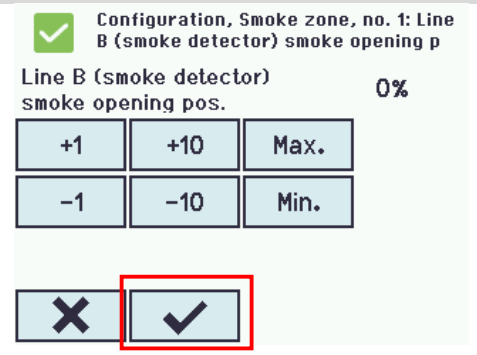
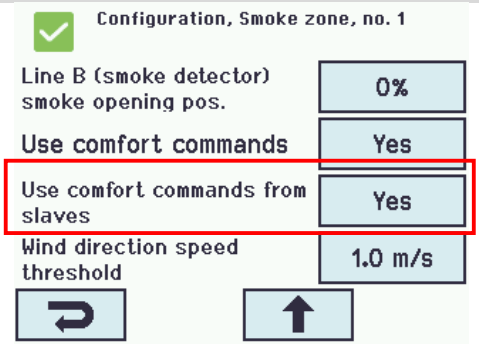
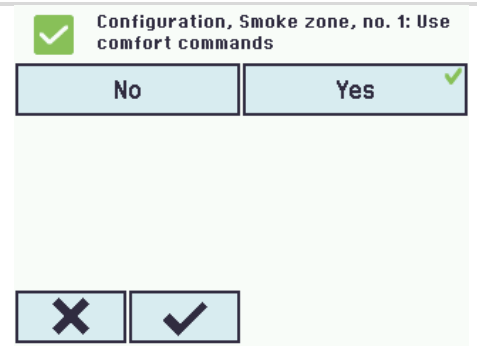
	Associate the break glass unit with the smoke zone.
	
	Press 1 to associate the break glass unit with smoke zone 1. Confirm with check mark.
	Set the "Use comfort inputs in SZ".
	In this set-up, we choose not to associate the comfort input with the smoke zone. We do not wish to operate all the motor groups, associated with this smoke zone, from this comfort input. Confirm with check mark.

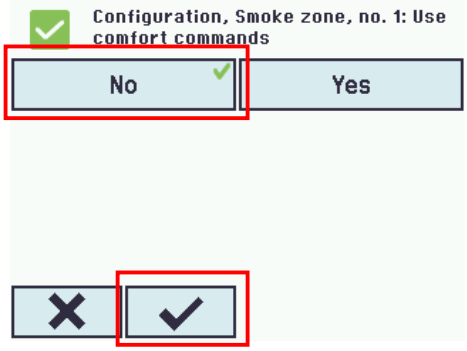
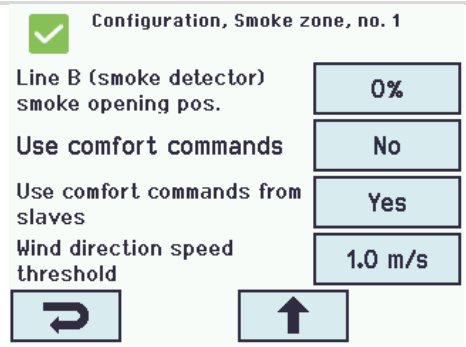
	Confirm with check mark.
	Press arrow down for further options.
	Set “Keypad + sensor one smoke zone” to “Same smoke zone”. It means that both the smoke detector and the red key in the break glass unit are triggering the alarm in the same smoke zone. In this set-up, there is only one smoke zone.
	
	In this set-up, the smoke alarms and the break glass units are in the same smoke zone. Confirm with check mark.

	
	Configure break glass unit 2 with the same values as break glass unit 1.

2.3.3 Configuration of smoke zone

	Press “Smoke zone”.
	Select smoke zone 1
	Press arrow down for further options.

	Set “Line B (smoke detector) smoke opening pos.” In most cases windows must open 100% in Alarm but there are cases where window must be closed (0%) when the smoke detectors trigger the alarm.
	Reduce the “Line B (smoke detector) smoke opening pos.” from 100% to 0% by pressing either “-10” or “Min.”.
	Confirm with check mark.
	Set the “Use comfort commands” to “No”.
	

	Confirm with check mark.
	

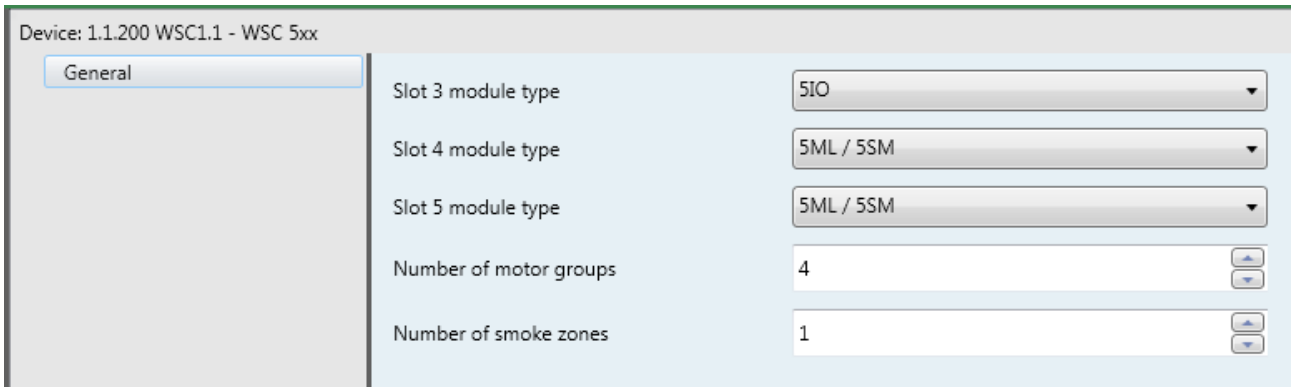
2.3.4 KNX configuration

This Manual assumes that you are familiar with KNX and have experience working with ETS4. Only FlexiSmoke™ specific topics are covered here.

1. Import the ETS4 application of the FlexiSmoke™ (WSA 5MC KNX.knxprod), as well as the ETS application of the push-button of your choice, into your ETS. The ABB US/U2.2 Universal Interface is used in this example.

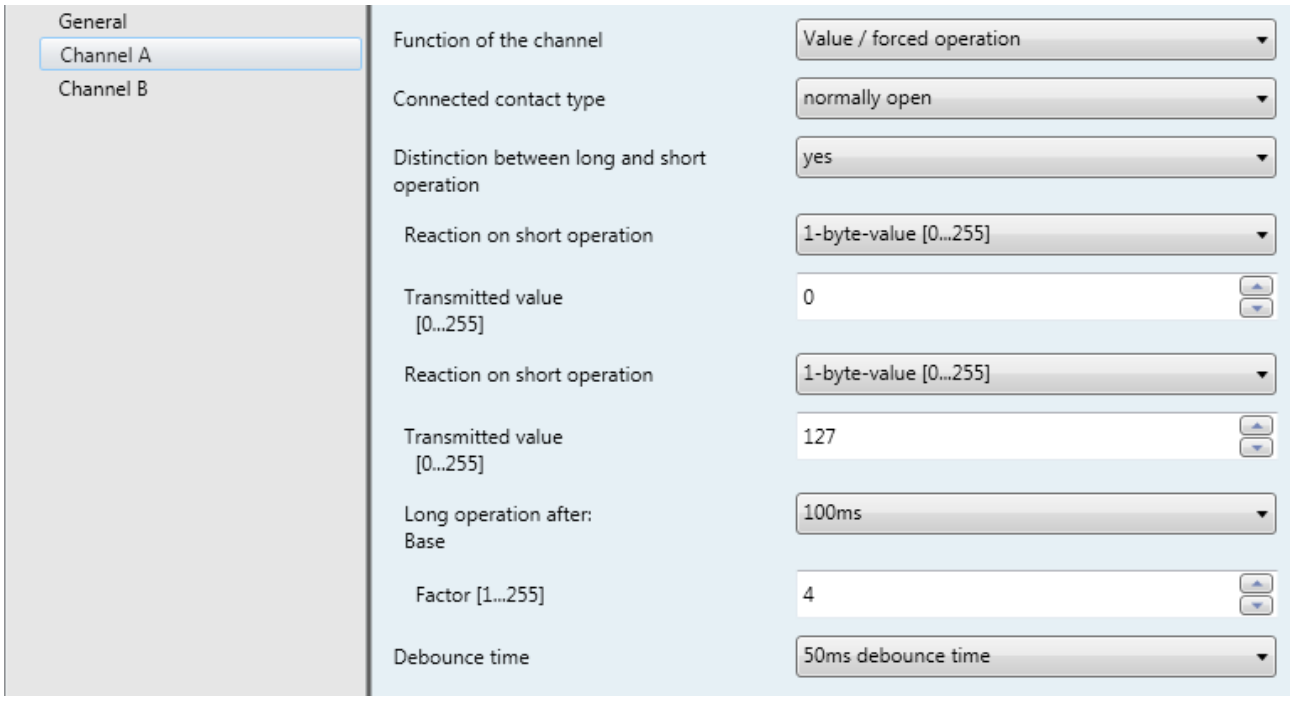
2. Create a Project and add one FlexiSmoke™ device and 4 push-button devices to it.

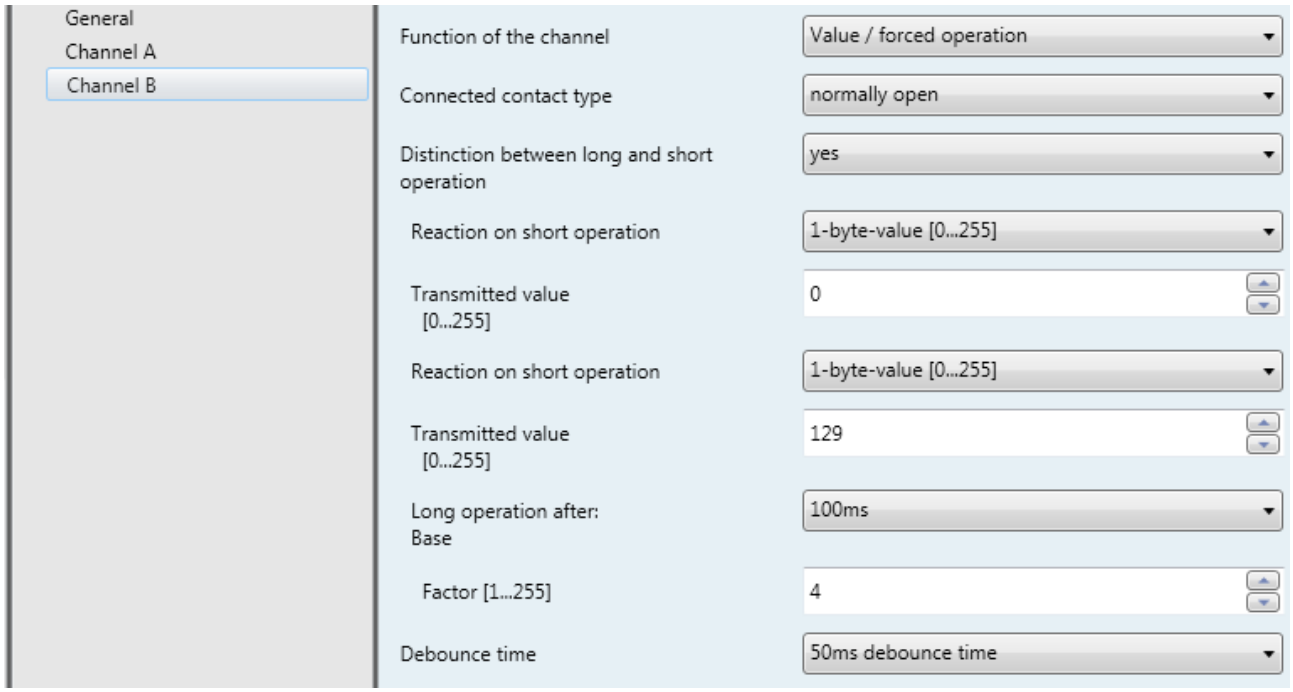
3. Set the FlexiSmoke™ parameters as follows:



4. Set the parameters of the Push-buttons corresponding to the following. The device must be able to send values when keypads are pressed.

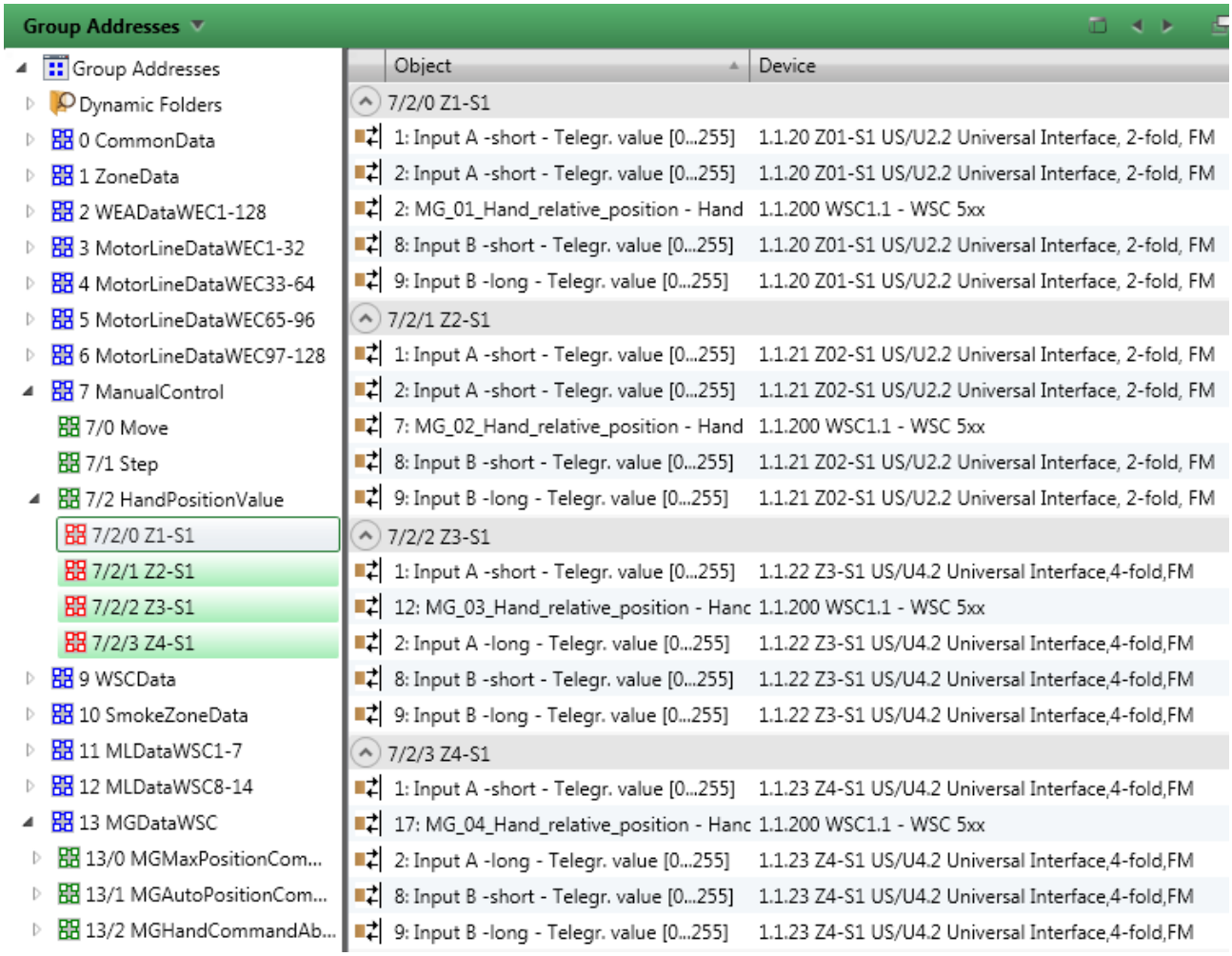
   An Open Command = 127, a Close command = 129, a Stop Command = 0.





5. Create a Group Address for each motor group (MG) and associate the FlexiSmoke™ MG_0x_Hand_relative_position communication object { 2 MG_01_Hand_relative_position } with the relevant push-button device communication objects.

   Depending on the push-button device you use, the populated Group Addresses for the 4 motor groups should look similar to this:



6. Program the FlexiSmoke™ and push-buttons with ETS.

When the FlexiSmoke™ does not show any more errors, it is configured and ready for operation.

3 Example C – 1 WSC 520, 3 motor groups in 1 smoke zone and rain sensor

In contrast to example A and B, does example C not include screen shorts of the different configuration steps, but only a short description of what is to be configured. For a more detailed description of how to carry out the configuration, please refer to example A and/or B.

3.1 Description

Using the WSC 520 KIMM to control 3 motor groups in 1 smoke zone.
8 MotorLink® motor lines in all, 2 motor lines, running façade windows, each façade is associated with 1 motor group. 4 motor lines, running roof windows, are associated with the third motor group.

All 3 motor groups are associated with the same smoke zone and each motor group is controlled for comfort by a keypad.

The smoke zone fire alarm can be triggered from a break glass unit, from 3 Smoke Detectors connected directly to the 5IO module as well as by a signal from the BMS system.

An Error is being signalled to the BMS whenever there is an error/failure in the smoke zone.

A Rain sensor is triggering a 'Safety' signal for closing the roof windows.

Set-up overview:

- 1 Smoke zone
- 3 motor groups with 16 MotorLink® motors
    - e.g. 12 x WMX 823-3 (1A motor) max total 12A and 4 x WMU 862-1 (2A motor) max total 8A.
- 1 Break glass units
- 3 Keypads for comfort
- 1 Rain sensor

3.2 Hardware configuration diagram

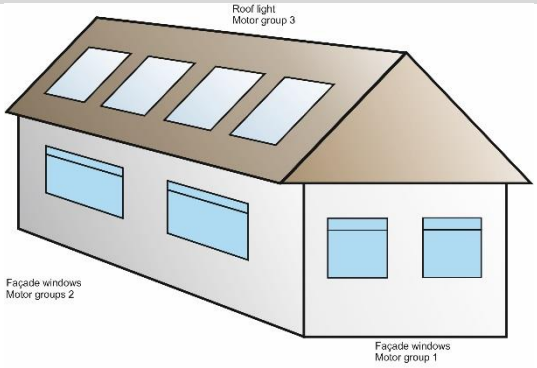


Figure 6 overview of the house and how the windows / motor groups could be located.

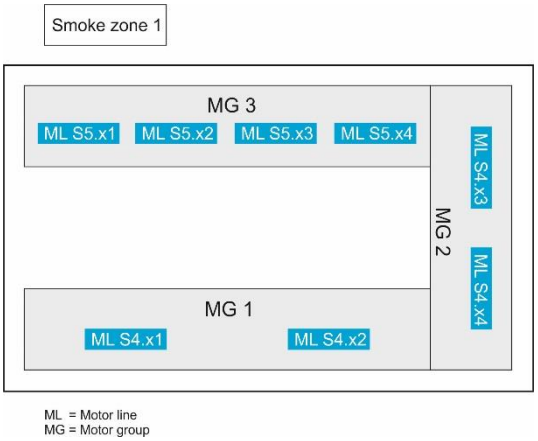


Figure 7 overview of the smoke zone, motor groups and motor lines.

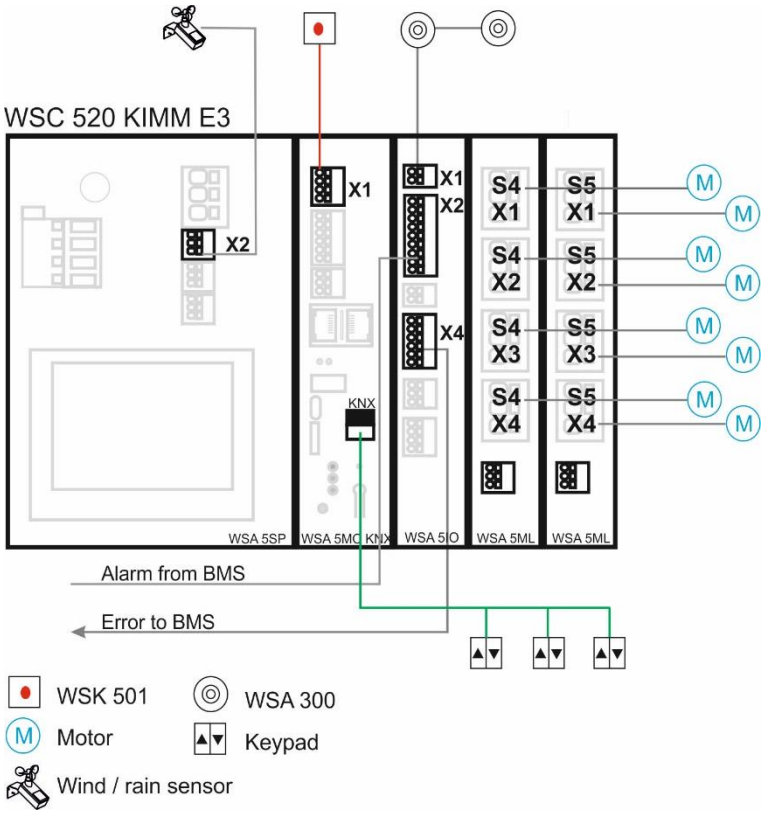


Figure 8 overview of the smoke panel and how the different components are connected it.

3.3 Configuration

See Example 2 for the configuration of the MotorLines, the Motor Groups, the keypads, the alarm signal from the BMS and the Smoke Zone with its Break Glass Unit.

3.3.1 Configuration of local output

3.3.1.1 Configuration of error signal to the BMS

To start the configuration of the local output signal:

Press: “Configuration” → “(error down)” → “Local Output”
Select “S3, X4.1/2”
Set the “Output mode” to “Binary output”
Set the “Controlled by smoke zones” to “1”
Press the “Smoke zone output function” “…” and select “Any error” The binary output will now become active (ON) when Smoke Zone 1 reports an error.

3.3.2 Configuration of local input

3.3.2.1 Configuration of Rain Safety signal

To start the configuration of the local input signal:

Press “Configuration” → “error down” → “Local Input”
Select “S1 X2.2” to configure the digital input connected to the Rain sensor.
Make sure nothing is selected in the “Control smoke zones”. Press “Control motor groups” <> and select “Motor Group 3”.
Press “”Function in controlled motor groups” <> and select “Safety”. Activating the input signal will now send a “Safety” signal to MotorGroup 3 – the roof windows. In the “View all details” → “Motor group” → “3” you can set the “Comfort safety maximum position” in %. Default position is 0%.

3.3.2.2 Configuration of smoke sensors

To start the configuration of the local input signal:

Press “Configuration” → “error down” → “Local Input”
Select “S3 X1” to configure the input of the Smoke detectors.
Press “Control smoke zones <> and select 1.
Press “Function in controlled smoke zones” <> and select “Line B”. “Line B” (fire alarm priority B) is normally used with Smoke detectors but you should consult the buildings smoke ventilation strategy document to determine the appropriate function (priority) for the specific building.

4 Example D – 1 WSC 540, 5 motor groups in 1 smoke zone, rain, wind direction and wind speed sensors, configured for wind direction dependent smoke ventilation

4.1 Description

Using a WSC 540 KIMM KMM0 to control 5 motor groups in 1 smoke zone.
2 motor lines, running façade windows, each façade is associated with 1 motor group.
4 motor lines, running roof windows, are associated with the 2 motor groups, one e.g. facing north and the other facing south.
1 motor line, which runs internal dampers is associated with the fifth motor group.

The motor lines running the façade windows and the internal dampers are connected to section 1 of the WSC 540 panel. The motor lines running the roof windows are connected to section 2 of the panel.

The building requires only one smoke zone that we here will call **Smoke area 1**. To create the smoke area we have to establish a Master-Slave relation between a smoke zone (e.g. Smoke Zone 1) in section 1 and a smoke zone in section 2 (e.g. Smoke Zone 5).

The weather station sensors are connected to section 2 while the Break Glass Unit is connected to section 1.

4.1 Hardware configuration diagram

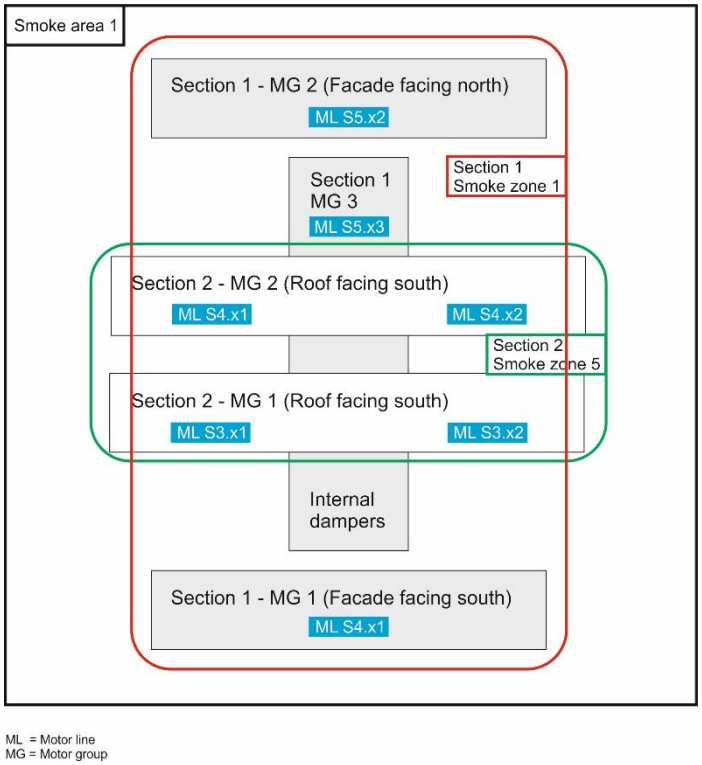


Figure 9 overview of the smoke area, smoke zones, motor groups and motor lines

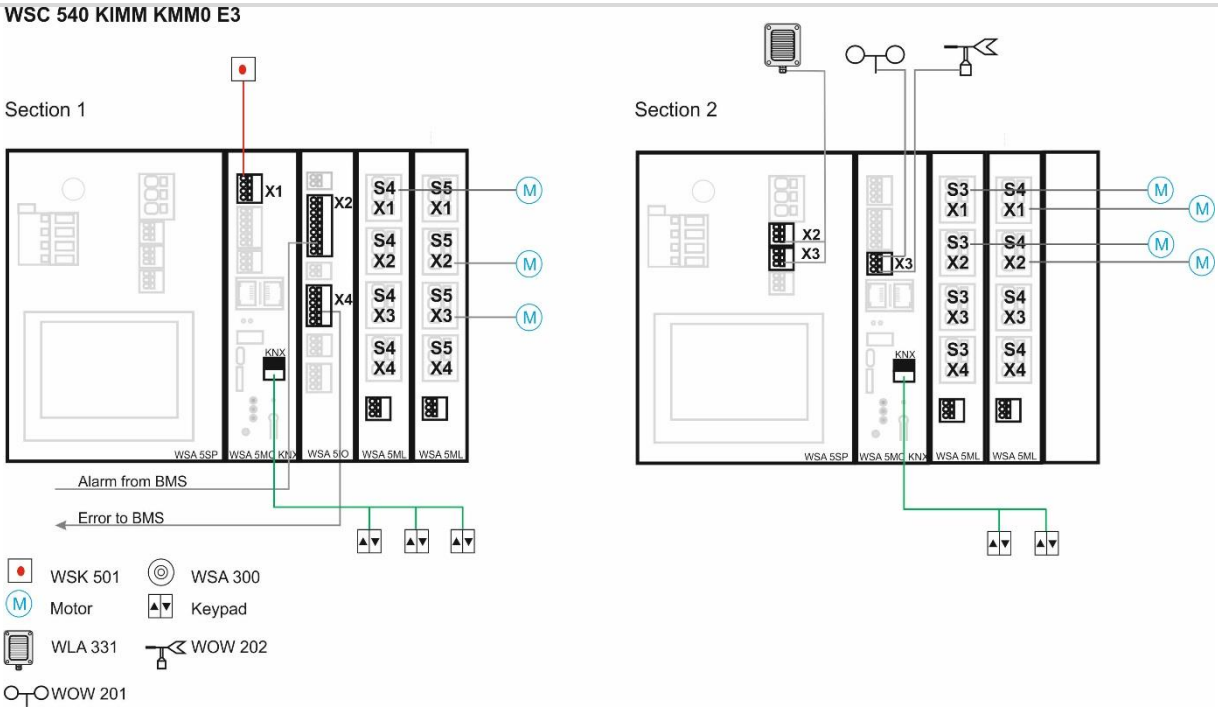


Figure 10 overview of the smoke panel and how the different components are connected it.

4.2 Configuration

See previous examples for the configuration of the motor lines, motor groups, break glass unit, comfort keypads and BMS.

4.2.1 Configuration of the CAN bus

To configure the CAN bus

In section 1

Press “Configuration” → “arrow down” → “CAN”
Set the “MC ID” = 1
Set the “CAN bus mode” = “Independent buses”

In section 2

Press “Configuration” → “arrow down” → “CAN”
Set the “MC ID” = 2
Set the “CAN bus mode” = “Independent buses”

4.2.2 Configuration of Smoke area 1

In section 1 associate

a. motor line S4.x1 with motor group 1.
b. motor line S5.x2 with motor group 2.
c. motor line S5.x3 with motor group 3.

d. motor groups 1, 2 and 3 with smoke zone 1.

e. The break glass unit with smoke zone 1.

In section 2 associate

a. motor line S3.x1 and 3.x2 with motor group 1.
b. motor line S4.x1 and 4.x2 with motor group 2.

c. motor groups 1 and 2 with smoke zone 5.

See previous examples for how to associate motor line with motor groups and motor groups with smoke zones.

Master-Slave configuration:
In section 2

Press “Configuration” → “Smoke zone” → “5” → “arrow down” → “Slave 1 of this smoke zone”
Select “1” to select section ID 1 → “1” again, to select smoke zone 1 on section 1

Smoke area 1 is now configured with Section 2, smoke zone 5 as a Master of Section 1 smoke zone 1.

4.2.3 Configuration of wind direction dependent smoke ventilation

We want all façade windows to open independent of the wind direction but the roof windows should only open if the wind is not coming from the direction the windows are facing. Roof windows, facing north, must close if the wind is from a northerly direction. Otherwise, they must open. In section 2, motor group 1 is facing south and motor group 2 is facing north.

Press “Configuration” → “Motor group” → “1” → “arrow down” → “Wind direction where to close during alarm”
Select “165°”, “180°” and “195°”

Press “Configuration” → “Motor group” → “2” → “arrow down” → “Wind direction where to close during alarm”
Select “345°”, “0°” and “15°”

4.2.4 Configuration of weather station sensors

All weather station sensors are connected to the WSC 540, section 2 in this example.

4.2.4.1 Configuration of the wind direction and wind speed sensors

Consult paragraph 10.2 in the WSC 5xx installation instructions for how to install the WOW 201, WOW 202 and WOW 204 wind sensors.

Press “Configuration” → “arrow down ” → “Weather station type”
Set “Sensor type” = “WOW”

4.2.4.2 Configuring the Input of the Rain signal

To propagate the Rain Safety signal, from one section of the WSC to another, the input of the signal is associated with a smoke zone and a Master-Slave relation is used among all smoke zones, with motor lines that we want to react, to this Safety signal. In this example, the Rain signal Input on section 2, is associated with smoke zone 5. The signal will then be propagated to the motor lines associated with Section 1, smoke zone 1.

The motor line S5.x2 in Section1, which is running the internal dampers, is configured not to react to the Rain Safety signal.

In section 2

Press “Configuration” → “Local Input” → “S1.x2.1”
Set “Control smoke zones” = “5”
Set “Function in controlled smoke zone” = “Comfort safety”

In section 1

Press “Configuration” → “Motor group” → “3” selecting the motor group associated with motor line S5.x2.
Set “Use ‘Safety’ from smoke zone” = “No”

The WSC 540 KIMM KMM0 is now configured and ready for use.

5 Example E – 2 WSC 540, 4 motor groups in 3 smoke zones, Master-Slave and Controlling/Controlled smoke zone configuration

5.1 Description

In a building with a large atrium, all the atrium roof windows must open in case of fire. The façade windows must open only in the part of the building, which is on fire.

Due to cable length limitation, half of the atrium windows are connected to one smoke panel (WSC1), which is located in one part of the building. The other half of the windows are connected to another smoke panel (WSC2), which is located in the other side of the building.

We are using two pcs. WSC 540 0SS0 0SS0 E3 to implement the required system.

Since the windows in the atrium are connected to two different smoke panels, the smoke zones with the atrium windows will be implemented as a Master-Slave configuration, enabling the possibility of creating a smoke area.
The two smoke zones, controlling the façade windows in each part of the building, will both be configured as controlling zones of the atrium smoke zones. When activated the façade smoke zone, can then trigger the atrium smoke zones.

5.2 Hardware connection diagram

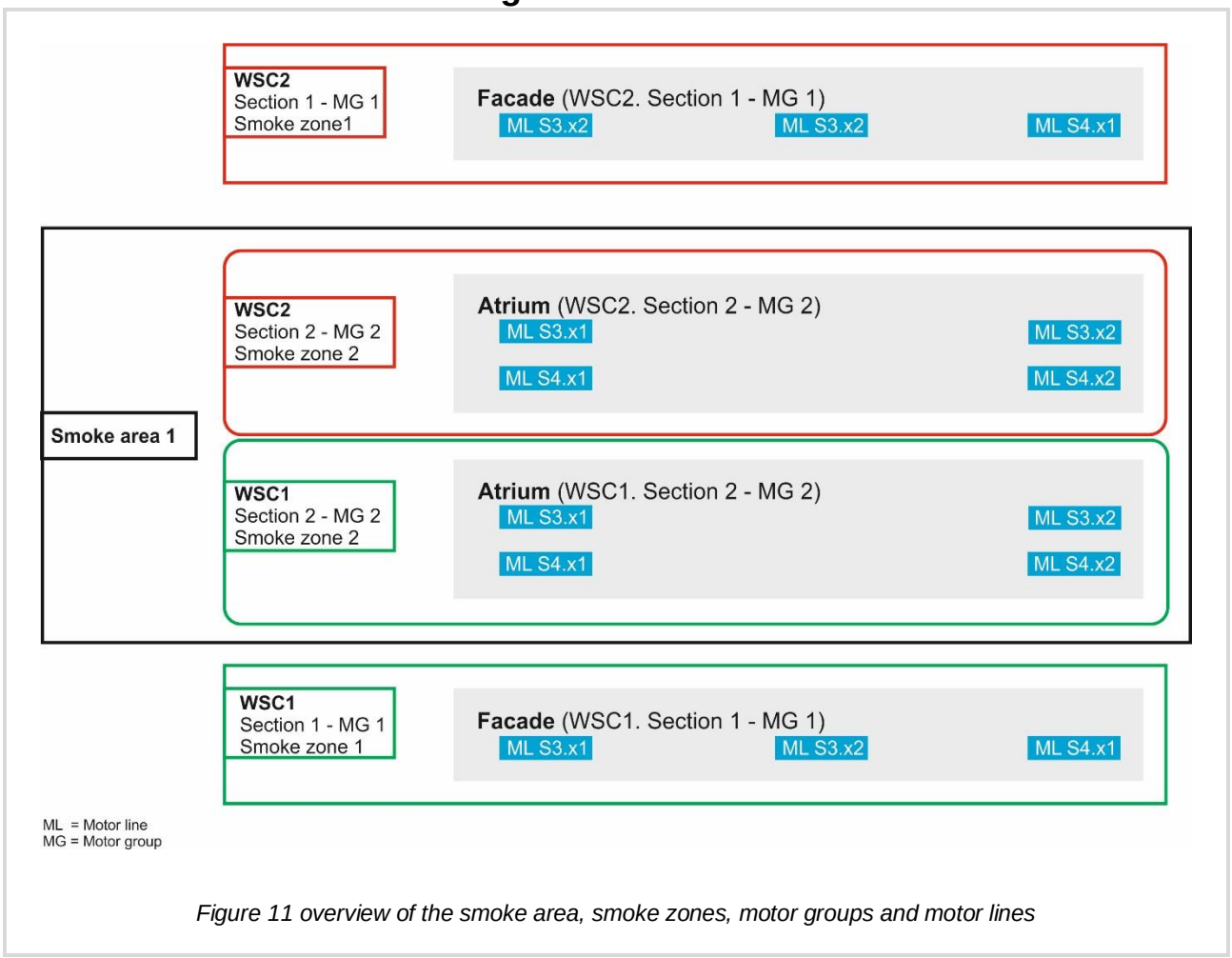


Figure 11 overview of the smoke area, smoke zones, motor groups and motor lines

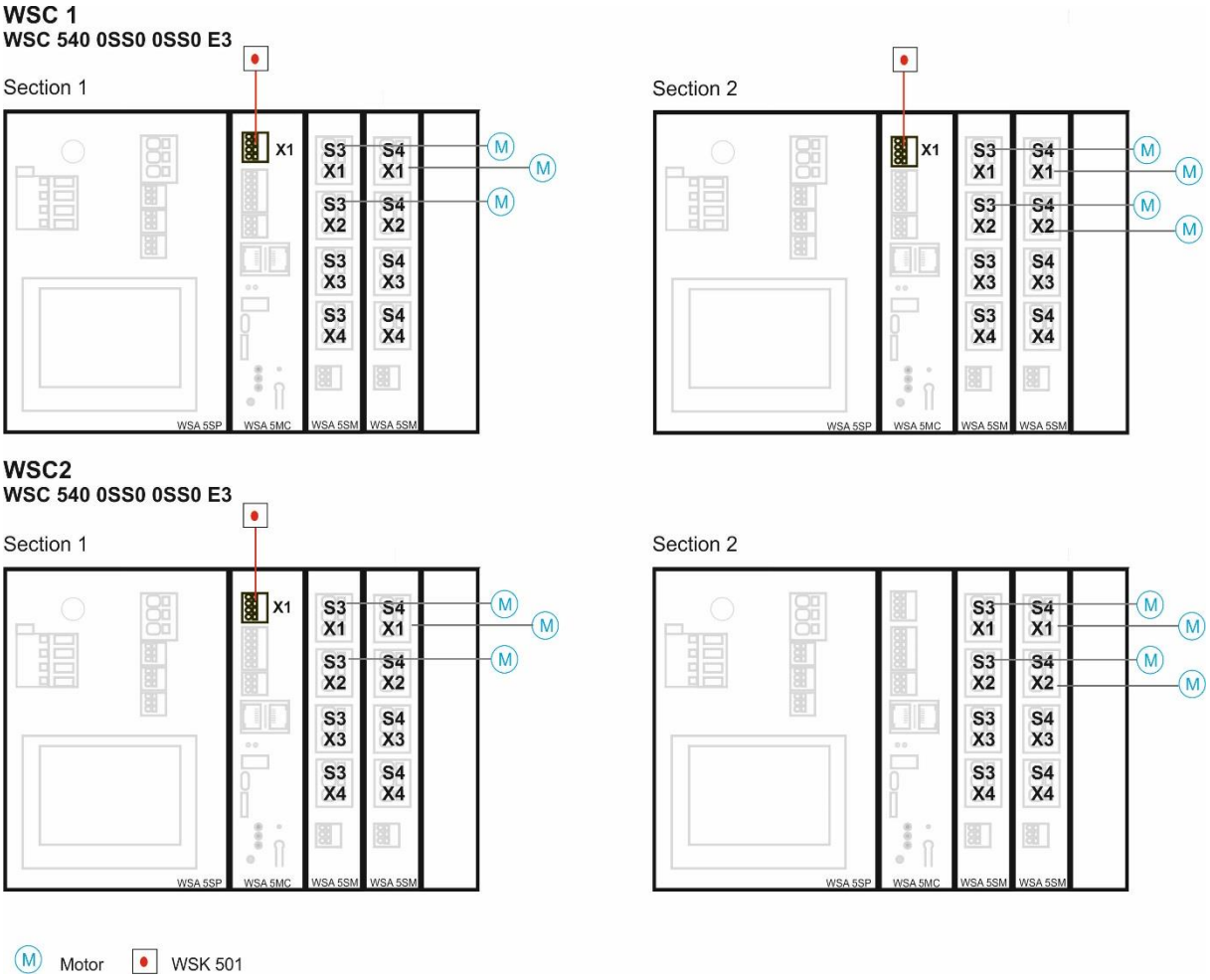


Figure 12 overview of the smoke panels and how the different components are connected to it.

5.3 Configuration

A detailed description of how to use the touchscreen, to configure the different elements (motor lines, motor groups, break glass units, comfort keypads, BMS, rain sensors, weather station etc.), can be found in the previous examples.
In this example, we will only go through what needs to be done in order to meet the system requirements and explain the reasons for the selected configuration.

5.3.1 Configuration of the CAN bus

The CAN ID of a section on a CAN bus, must be unique. Configure, therefor the CAN IDs as follows:
WSC1.Section1 = 1
WSC1.Section2 = 2
WSC2.Section1 = 3
WSC2.Section2 = 4

5.3.2 Basic configuration

Associate motor lines to motor groups, motor groups to smoke zones and break glass units to smoke zones as shown in the hardware illustration above.

5.3.3 Configuration of smoke area 1

The atrium windows are controlled by smoke zone 2 of section 2 of WSC1 and by smoke zone 2 of section 2 of WSC2. To create Smoke area 1, it is necessary to establish a Master-Slave relation between the two smoke zones.

Configure smoke zone 2 in WSC1.Section 2 to be the Master of smoke zone 2 in WSC2.Section 2

5.3.4 Configuration of Controlling/Controlled smoke zone relation

To make it possible for the façade smoke zones to trigger the atrium's smoke area, but not the other way around, we have to use the Controlling/Controlled relation. In this relation, messages go from the controlling zone to the controlled zone but not the other way.

The Controlling/Controlled relation can only be established between zones in the same section and not between zones from different sections. It is therefore necessary to add 2 'virtual' smoke slave zones to smoke area 1. We call these zones virtual, because they do not have any hardware associated with them. They are only needed to be able to establish the Controlling/Controlled relation between the façade smoke zones and the atrium smoke area 1.

5.3.4.1 Configuring 'virtual' slave smoke zones

Configure smoke zone 2 in WSC1.Section 2 to be the master of:
Smoke zone 13 in WSC1.Section 1 (virtual zone)
Smoke zone 13 in WSC2.Section 1 (virtual zone)

Smoke zone 2 in WSC1.Section 2 has now three slaves.

- Smoke zone 13 in WSC1.Section 1 (virtual zone)
- Smoke zone 13 in WSC2.Section 1 (virtual zone)
- Smoke zone 2 in WSC2.Section 2 (actual zone)

5.3.4.2 Configuring Controlling/Controlled relation

Configure Smoke zone 1 in WSC1.Section1 to control smoke zone 13 in the same section.
Configure Smoke zone 1 in WSC2.Section1 to control smoke zone 13 in the same section.

In WSC1.Section1

Press "Configuration" → "Smoke zone" → "1" "Controlled smoke zone"
Set "Controlled smoke zone" = "13"
Set "Function in target smoke zone" = "Line A" and "Reset"

Repeat the configuration in WSC2.Section1

The system is now configured and is ready for operation.

6 List of abbreviations

BGU	Break glass unit
BMS	Building management system
MG	Motor group
SZ	Smoke zone
ML	Motor line