Easy shutter actuators 6A - DIN rail mounting

CE

KNX®
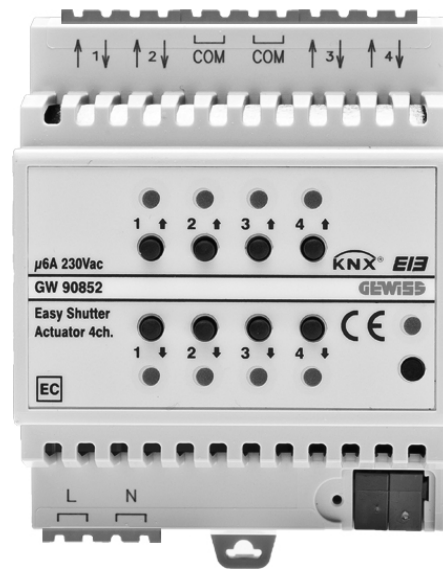
GW90851 GW90852

Technical Manual

Contents

1 Introduction

This manual describes the functions of the **"Easy 2-channel shutter actuator 6A"** and the **"Easy 4-channel shutter actuator 6A"** (GW90851 and GW90852 respectively), and how they are set and configured with the aid of the ETS configuration software.

2 Application

The GW90851 shutter actuator is used to command two separate groups of motors, each with a maximum of two 230V ac motors. The motors belonging to the same group are commanded at the same time.

The GW90852 shutter actuator has 4 independent outputs for commanding 4 separate 230V ac motors. For each output there is a pair of contacts for the command and movement in one direction or the other (the up or down movement of the shutter in question).

The outputs for up and down commands are mechanically interlocked together in order to prevent voltage from being applied at the same time to both.

The GW90851 and GW90852 actuators support both the Easy configuration mode and the System configuration mode (ETS).

2.1 Association limits

The maximum number of communication objects available is 14 for the GW90851 and 28 for the GW90852.
The maximum number of associations that the devices can store is 70.
The maximum number of group addresses is 70.

2.2 Priority of the received commands

The priority of the functions is shown in the following table:

Function	Priority	
Louvre movement / stop / adjustment	1	Low
Scenes	1	
Front keys	1	
Output status on bus voltage recovery	2	
Alarms	3	
Forcing	4	
Output status on bus voltage drop (open contact)	5	High

3 *"Settings"* menu

The database of the device for configuration with ETS software allows you to configure the main operating parameters, and also gives you the possibility to reconfigure the device with the factory parameters for E-mode operation.

If "Easy mode" is selected in **Programming mode** (as shown in Fig. 3.1), no other device configuration parameters are made visible because this value allows you to apply the factory settings for correct easy mode (E-mode) operation.

"ETS mode" allows the visualisation and configuration of the main device operating parameters (S-mode), as explained in the paragraphs below.
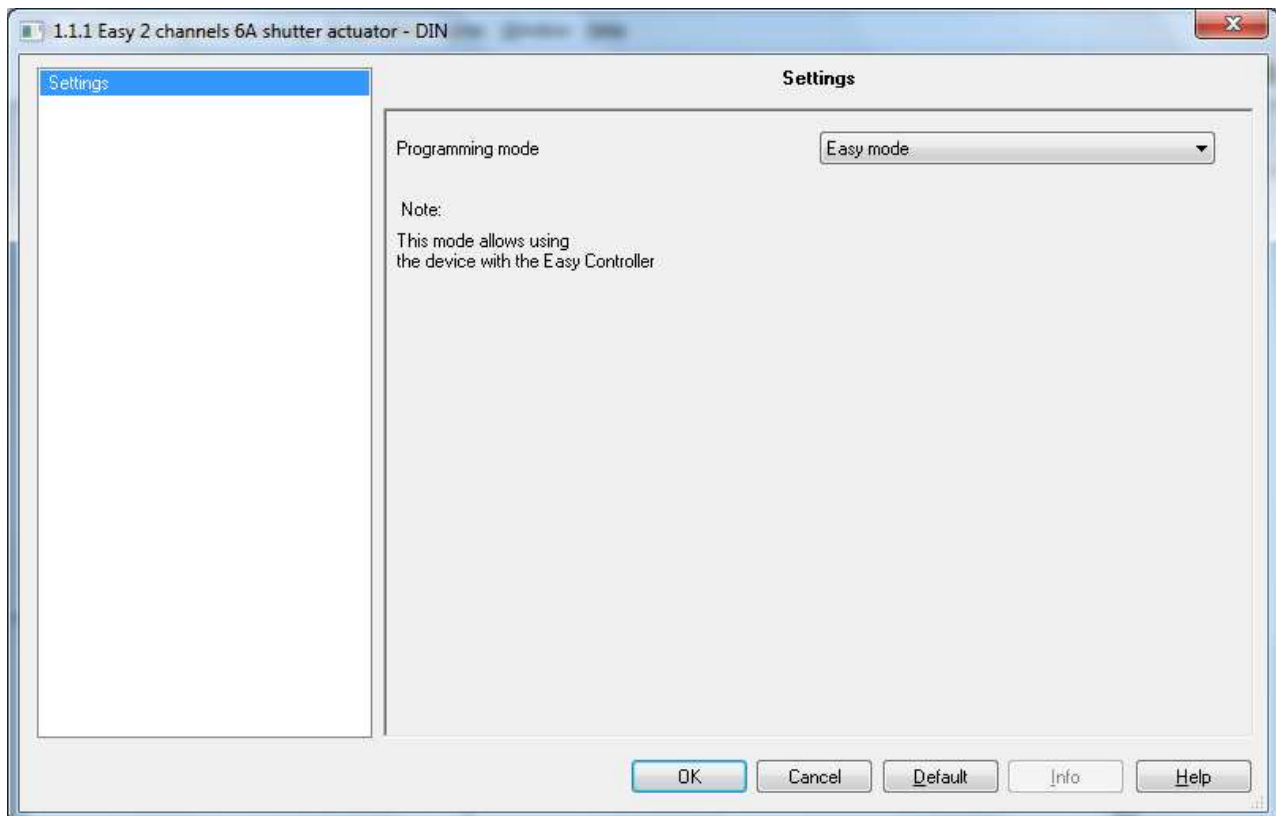

Fig. 3.1

3.1 Parameters

➢ **3.1.1 Programming mode**
Determines the device's programming mode:

- **ETS mode**
  This option must be selected if the device is configured with ETS ("System Mode").

- **Easy mode**
  This option must be selected if the device is to be configured with the Easy controller software.

4 *"Channel x settings"* menu

The **Channel x settings** menu contains the parameters for configuring the operation of the channel selected; figure 4.1 shows the menu for the GW90852 (4 channels).
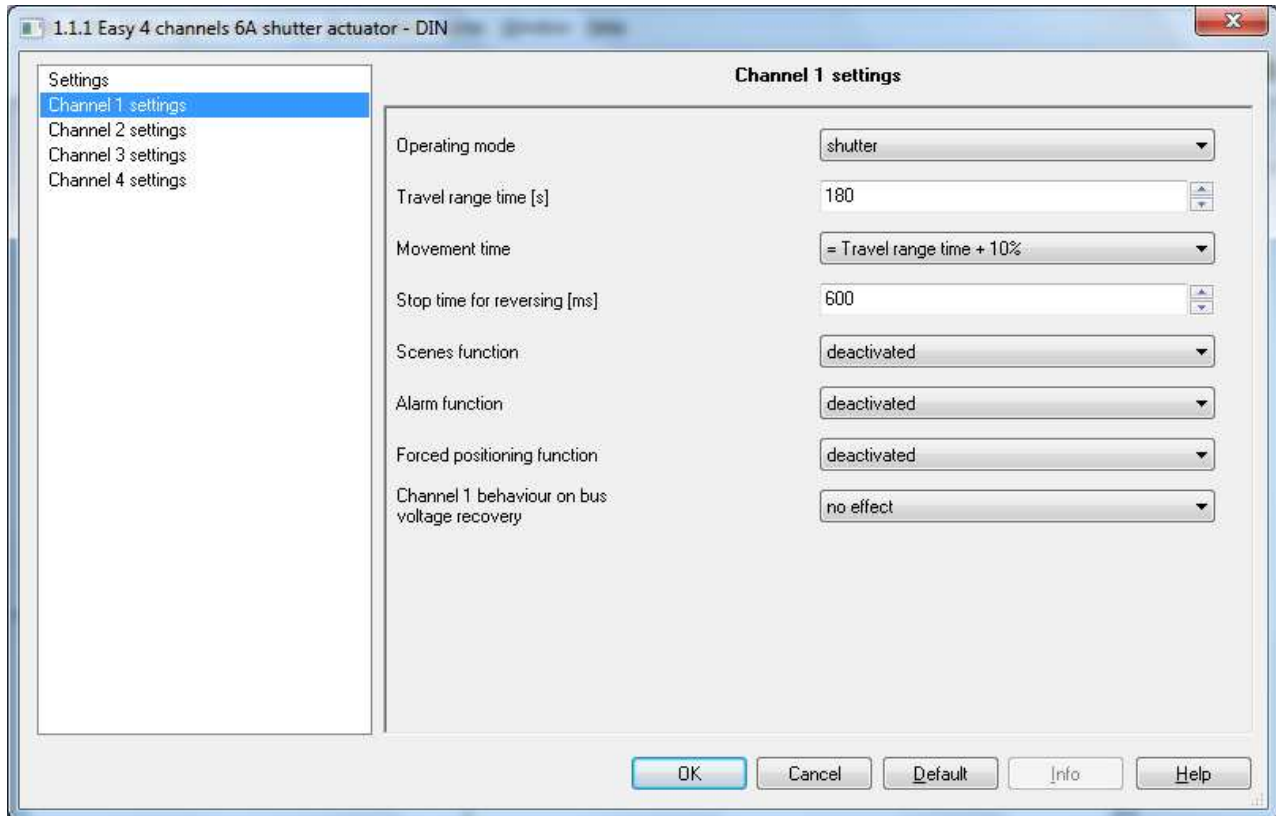

Fig. 4.1

4.1 Parameters

➤ *4.1.1 Operating mode*

Determines the actual type of device operation. The values that can be set are:

- *shutter*

  Enables the device to control the motor that manages the shutters. In this specific case, it will not therefore be possible to control the louvre control steps because the shutters do not have louvres. The parameters available are shown in figure 4.1.

- *venetian blind*

  Enables the device to control the motor that manages the venetian blinds. In this specific case, it is possible to control the louvre control steps because the venetian blinds (unlike the shutters) have louvres.
  The parameters available are shown in figure 4.2; in this case, the image refers to the database of the GW90851.
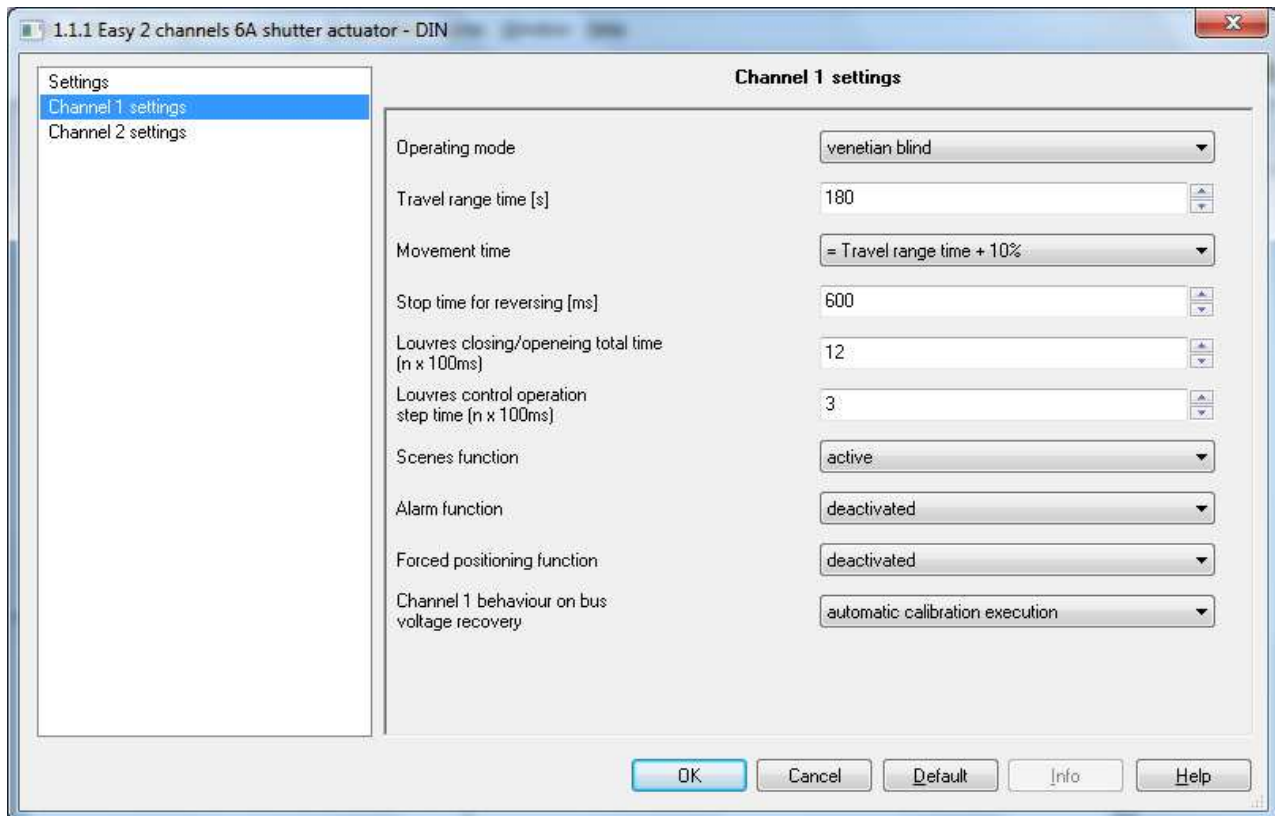
Fig. 4.2

> ## 4.1.2 Travel range time [s]
> Used to set the movement (travel range) time of the shutter or venetian blind. The values that can be set range from 1 (second) to 3000 (seconds); the default value is 180sec.
> This value indicates the travel range time for the shutter/venetian blind, i.e. the time needed to fully raise the shutter, starting from the fully lowered position, and the time needed to fully lower the shutter, starting from the fully raised position. It is very important to set this value correctly, because the intermediate shutter/venetian blind positions are calculated by the device on the basis of the value set for this parameter.
> This time is less than, or equal to, the value set in the **Movement time** item.

> ## 4.1.3 Movement time
> This time is very important, particularly because the motors may become worn over the years and the end stops may alter; the right setting of this value ensures that the shutter/venetian blind can be fully lowered or raised without stopping before it reaches the minimum/maximum level.
> Normally the device continues to power the motor contact even if the limit switch has been reached, to make sure that the load has reached the limit switch position. You can set this time-out value with this parameter, which may have the following values:
> - = Travel range time   0
> - = Travel range time + 2%   1
> - = Travel range time + 5%   2
> - **= Travel range time + 10%   3 (default value)**
> - = Travel range time + 20%   4

➢ *4.1.4 Stop time for reversing [ms]*

To prevent damaging the motor, a delay must be entered between receiving a command for movement in the opposite direction of the current movement and the effective reversal of direction; this time is normally provided by the shutter/venetian blind manufacturer and must be rigourously observed. This parameter is used to set this value in msec (from a minimum of 50 to a maximum of 10000); **600** is the **default value**.

➢ *4.1.5 Louvres closing/opening total time (n x 100msec)*

If the user sets "venetian blind" as the operating mode for the channel in question, this configuration parameter will appear. It is used to set the factor which, multiplied by the base (100 milliseconds), determines the duration of the louvre control, from "fully open" to "fully closed".
The values that can be set range from 1 to 120; **12** is the **default value**.

➢ *4.1.6 Louvres control operation step time (n x 100msec)*

If the user sets "venetian blind" as the operating mode for the channel in question, this configuration parameter will appear. It is used to set the factor which, multiplied by the base (100 milliseconds), determines the motor powering time corresponding to one louvre control step. The values that can be set range from 1 to 120; **3** is the **default value**.

➢ *4.1.7 Scenes function*

Used to activate the communication object from 1 Byte *Ch.x - Scene,* for storing and executing KNX scenes.

➢ *4.1.8 Channel x behaviour on BUS voltage recovery*

This parameter may have the following values:
- **no action**   **0** (**default value**)
- upward movement   1
- downward movement   2
- execution of automatic calibration   3
- percentage position   4

- If **execution of automatic calibration** is set, the shutter will first move to the 'fully UP' position, then return to its previous position; this movement is useful for realigning the shutter in its correct position.

- If "percentage position" is set, you can specify the required value: **0%** (**default value**), 5%, 10%, …, 100%.
  If the operating mode is "venetian blind", then the **Louvres percentage position on BUS voltage recovery** parameter allows you to specify the required value: **0%** (**default value**), 5%, 10%, …, 100%.

  Please note that before moving to the required position, the actuator will autonomously perform a complete upward movement (with a duration equal to the movement time).

4.2 Communication objects

The communication objects enabled from the **Channel x settings** menu (see Fig. 4.3 for the GW90852 database) are shown below.

Number	Name	Object Function	Leng...	C	R	W	T	U	Data Type	Priority
0	Ch.1 - Movement	Up/Down	1 bit	C	-	W	-	-		Low
1	Ch.1 - Shutter stop/Louvres control	Stop/Step	1 bit	C	-	W	-	-		Low
5	Ch.1 - Scene	Execute/Store	1 Byte	C	-	W	-	-		Low
6	Ch.1 - Movement feedback	Increase/Decrease	1 bit	C	R	-	T	-		Low
7	Ch.2 - Movement	Up/Down	1 bit	C	-	W	-	-		Low
8	Ch.2 - Shutter stop/Louvres control	Stop/Step	1 bit	C	-	W	-	-		Low
12	Ch.2 - Scene	Execute/Store	1 Byte	C	-	W	-	-		Low
13	Ch.2 - Movement feedback	Increase/Decrease	1 bit	C	R	-	T	-		Low
14	Ch.3 - Movement	Up/Down	1 bit	C	-	W	-	-		Low
15	Ch.3 - Shutter stop/Louvres control	Stop/Step	1 bit	C	-	W	-	-		Low
19	Ch.3 - Scene	Execute/Store	1 Byte	C	-	W	-	-		Low
20	Ch.3 - Movement feedback	Increase/Decrease	1 bit	C	R	-	T	-		Low
21	Ch.4 - Movement	Up/Down	1 bit	C	-	W	-	-		Low
22	Ch.4 - Shutter stop/Louvres control	Stop/Step	1 bit	C	-	W	-	-		Low
26	Ch.4 - Scene	Execute/Store	1 Byte	C	-	W	-	-		Low
27	Ch.4 - Movement feedback	Increase/Decrease	1 bit	C	R	-	T	-		Low

Fig. 4.3

➢ **4.2.1 Ch.x - Movement**

Used to lower/raise the shutter or venetian blind from the BUS, via the following communication objects:
- object 0 for channel_1
- object 7 for channel_2
- object 14 for channel_3   (only for GW90852)
- object 21 for channel_4   (only for GW90852)

When the device receives a telegram on this communication object, it powers (on the basis of the command received) the contact associated with the movement requested.
The enabled flags are C (communication), W (writing from bus).
The standardised format of the object is *1.008 DPT_UpDown*, the dimension of the object is *1 bit,* and the commands that it receives are *UP/DOWN movement.*

➢ **4.2.2 Ch.x - Stop**

If the **Operating mode** selected is **Shutter**, this object assumes the name **Stop** and is used to stop every type of shutter movement. When the device receives a telegram on the following communication objects, it immediately stops the movement, regardless of the value received (and, of course, if the shutter is actually moving in that moment):
- object 1 for channel_1
- object 8 for channel_2
- object 15 for channel_3   (only for GW90852)
- object 22 for channel_4   (only for GW90852)

The enabled flags are C (communication), W (writing from bus).
The standardised format of the object is *1.007 DPT_Step*, the dimension of the object is *1 bit,* and the commands that it receives are *stop movement'.*

➢ **4.2.3 Ch.x - Shutter stop/Louvres control**

If the **Operating mode** selected is **Venetian blind**, this object assumes the name **Shutter stop/Louvres control**. It is used to stop every type of venetian blind movement and to control the louvre inclination, step by step. When the device receives a telegram on the following communication objects, it immediately stops the movement, regardless of the value received (if the blind is actually moving in that moment) or controls the degree of opening/closure of the louvres (if the blind is not moving) on the basis of the command received:

- object 1 for channel_1
- object 8 for channel_2
- object 15 for channel_3   (only for GW90852)
- object 22 for channel_4   (only for GW90852)

The enabled flags are C (communication), W (writing from bus).

The standardised format of the object is *1.007 DPT_Step*, the dimension of the object is *1 bit,* and the commands that it receives are *stop (if the venetian blind is moving)* or *louvre opening/closure control (if the blind is not moving)*.

➢ *4.2.4 Ch.x - Movement feedback*

Used to signal - via a telegram on the BUS - the movement that the shutter/venetian blind is performing, by means of the following communication objects:

- object 6 for channel_1
- object 13 for channel_2
- object 20 for channel_3   (only for GW90852)
- object 27 for channel_4   (only for GW90852)

When the device has to move the load as a result of any particular condition (arrival of a BUS command, local command, etc.), it immediately sends a telegram on this communication object to signal the movement.

The enabled flags are C (communication), R (reading from bus), T (transmission).

The standardised format of the object is *1.008 DPT_IncreaseDecrease*, the dimension of the object is *1 bit,* and the values it sends are *INCREASE/DECREASE movement feedback*.

➢ *4.2.5 Ch.x - Scene*

With these communication objects, the device can receive - from the BUS – the scene execution and storage commands:

- object 5 for channel_1
- object 12 for channel_2
- object 19 for channel_3   (only for GW90852)
- object 26 for channel_4   (only for GW90852)

With this communication object, each channel is able to store and execute 8 scenes, with values from 0 to 7 specified in the command device.

The enabled flags are C (communication), W (writing from bus).

The standardised format of the object is *18.001 DPT_SceneControl*, and the dimension of the object is 1 *byte*.

5 *"Channel x alarms"* menu

If the **Alarms function** is enabled in **Channel x settings**, you can activate the **Wind alarm function** and/or the **Rain alarm function**; figure 5.1 shows the active functions for channel 1 of the GW90852 database, and the following paragraphs indicate the parameters that are available.
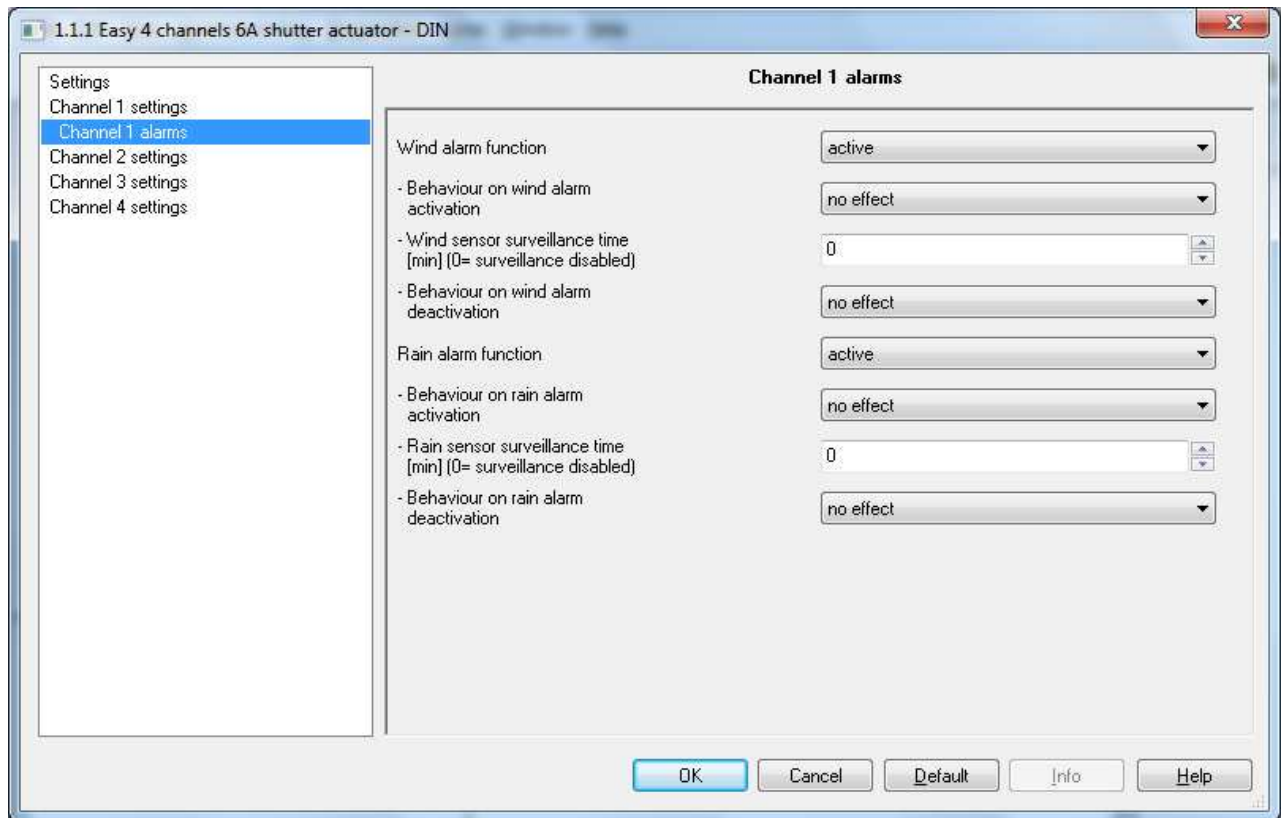

Fig. 5.1

5.1 Parameters

➢ **5.1.1 Wind alarm function**
This option gives you the possibility to enable the *Ch.x - Wind alarm* communication object, with the relative configuration parameters:
• **active**
If active is set, the wind alarm function is enabled.

• **deactivated**
If deactivated is set, the wind alarm function is not enabled.

➢ **5.1.2 Behaviour on wind alarm activation**
This parameter is used to decide how the channel in question must behave when the wind sensor or an interface sends on the bus a value of 1, that is a threshold exceeding value.
The following parameters are available:
• **No effect**
No action is taken.

• **Up movement**
Upward movement is commanded.

- *Down movement*
  Downward movement is commanded.

- *Percentage position*
  It is possible to define the shutter positioning percentage value via the **Percentage position when wind alarm is active** parameter, and that of the louvres if this mode has been set via the **Louvres percentage position when wind alarm is active** parameter.

- *Stop*
  The shutter is stopped in the current position.

➢ *5.1.3 Percentage position when wind alarm is active*

This option is activated when *percentage position* on **behaviour on wind alarm activation** is enabled (as described in the previous paragraph).

- *Percentage position when wind alarm is active*
  It is possible to define the position of the shutter, in 5% steps, when the wind alarm is detected.

- *Louvres percentage position when wind alarm is active*
  It is possible to define the position of the venetian blind, in 5% steps, when the wind alarm is detected.

➢ *5.1.4 Wind sensor surveillance time [min] (0=surveillance disabled)*

This option is activated when *percentage position* on **behaviour on wind alarm activation** is enabled (as described in paragraph 5.1.2).
With this parameter, you can set the time (expressed in minutes) that must elapse before the device activates the relative alarm function if it does not regularly receive the disabled alarm status telegram from the wind sensor. The values that can be set range from 1 (minute) to 60 (minutes); a value of 0 will disable the surveillance function.
It is essential to set the sensor combined with the device so that it regularly communicates the disabled alarm status to the device, at time intervals less than the value set for the item in question. This allows the device to monitor the operating status of the sensor linked to it. In the event of malfunctioning, the device activates the wind alarm function because if it does not receive the disabled alarm information, it assumes that the sensor itself must be faulty.

➢ *5.1.5 Behaviour on wind alarm deactivation*

This parameter is used to decide how the channel in question must behave when the wind sensor or an interface sends on the bus a value of 1, that is a threshold exceeding value.
The following parameters are available:

- *No effect*
  No action is taken.

- *Up movement*
  Upward movement is commanded.

- *Down movement*
  Downward movement is commanded.

- **Back to previous position**
  The shutter returns to the position prior to the alarm.

- **Follows last command received**
  The shutter is commanded based on the last command received, which was not executed because it had a lower priority than the alarm.

- *Percentage position*
  It is possible to define the shutter positioning percentage value via the **Percentage position when deactivating wind alarm** parameter, and that of the louvres if this mode has been set via the **Louvres percentage position when wind alarm is deactivated** parameter.

- *Stop*
  The shutter is stopped in the current position.

➢ *5.1.6 Rain alarm function*

This option gives you the possibility to enable the *Ch.x - Rain alarm* communication object, with the relative configuration parameters:

- *active*
  If active is set, the rain alarm function is enabled.

- *deactivated*
  If deactivated is set, the rain alarm function is not enabled.

➢ *5.1.7 Behaviour on rain alarm activation*

This parameter is used to decide how the channel in question must behave when the rain sensor or an interface sends on the bus a value of 1, that is a threshold exceeding value.
The following parameters are available:

- *No effect*
  No action is taken.

- *Up movement*
  Upward movement is commanded.

- *Down movement*
  Downward movement is commanded.

- *Percentage position*
  It is possible to define the shutter positioning percentage value via the **Percentage position when rain alarm is active** parameter, and that of the louvres if this mode has been set via the **Louvres percentage position when rain alarm is active** parameter.

- *Stop*
  The shutter is stopped in the current position.

➢ *5.1.8 Percentage position with rain alarm active*

This option is activated when *percentage position* on **behaviour on rain alarm activation** is enabled (as described in the previous paragraph).

- *Percentage position when rain alarm is active*
  It is possible to define the position of the shutter, in 5% steps, when the rain alarm is detected.

- *Louvres percentage position when rain alarm is active*
  It is possible to define the position of the venetian blind, in 5% steps, when the rain alarm is detected.

➢ *5.1.9 Rain sensor surveillance time [min] (0=surveillance disabled)*

This option is activated when *percentage position* on **behaviour on rain alarm activation** is enabled (as described in paragraph 5.1.7).
With this parameter, you can set the time (expressed in minutes) that must elapse before the device activates the relative alarm function if it does not regularly receive the disabled alarm status telegram from the rain sensor. the values that can be set range from 1 (minute) to 60 (minutes), and 0 disables surveillance.

It is essential to set the sensor combined with the device so that it regularly communicates the rain alarm status to the device, at time intervals less than the value set for the item in question. This allows the device to monitor the operating status of the sensor linked to it. In the event of malfunctioning on any single one of them, the device activates the rain alarm function because if it does not receive the disabled alarm information, it assumes that the sensor itself must be faulty.

➢ *5.1.10 Behaviour on rain alarm deactivation*

This parameter is used to decide how the channel in question must behave when the rain sensor or an interface sends on the bus a value of 1, that is a threshold exceeding value.
The following parameters are available:

- *No effect*
  No action is taken.

- *Up movement*
  Upward movement is commanded.

- *Down movement*
  Downward movement is commanded.

- **Back to previous position**
  The shutter returns to the position prior to the alarm.

- **Follows last command received**
  The shutter is commanded based on the last command received, which was not executed because it had a lower priority than the alarm.

- *Percentage position*
  It is possible to define the shutter positioning percentage value via the **Percentage position when deactivating rain alarm** parameter, and that of the louvres if this mode has been set via the **Louvres percentage position when rain alarm is deactivated** parameter.

- *Stop*
  The shutter is stopped in the current position.

5.2 Communication objects

The wind alarm and rain alarm communication objects, enabled from the **Channel x alarms** menu (see Fig. 5.2 for the GW90852 database), are shown below.

Number	Name	Object Function	Leng...	C	R	W	T	U	Data Type	Priority
3	Ch.1 - Wind alarm	Alarm input	1 bit	C	-	W	-	-		Low
4	Ch.1 - Rain alarm	Alarm input	1 bit	C	-	W	-	-		Low
10	Ch.2 - Wind alarm	Alarm input	1 bit	C	-	W	-	-		Low
11	Ch.2 - Rain alarm	Alarm input	1 bit	C	-	W	-	-		Low
17	Ch.3 - Wind alarm	Alarm input	1 bit	C	-	W	-	-		Low
18	Ch.3 - Rain alarm	Alarm input	1 bit	C	-	W	-	-		Low
24	Ch.4 - Wind alarm	Alarm input	1 bit	C	-	W	-	-		Low
25	Ch.4 - Rain alarm	Alarm input	1 bit	C	-	W	-	-		Low

Fig. 5.2

➢ 5.2.1 Ch.x - Wind alarm

Thanks to the following communication objects, the device can receive (from the BUS) the alarm status of a wind sensor:
- object 3 for channel_1
- object 10 for channel_2
- object 17 for channel_3   (only for GW90852)
- object 24 for channel_4   (only for GW90852)

The disabled alarm information must be regularly repeated at time intervals less than the surveillance time set as described in paragraph 5.1.4.
The enabled flags are C (communication), W (writing from bus).
The object format is *1.005 DPT_Alarm*, the dimension of the object is *1 bit*, and the commands that it receives are *active/deactivated alarm status*.

➢ 5.2.2 Ch.x - Rain alarm

Thanks to the following communication objects, the device can receive (from the BUS) the alarm status of a rain sensor:
- object 4 for channel_1
- object 11 for channel_2
- object 18 for channel_3   (only for GW90852)
- object 25 for channel_4   (only for GW90852)

The disabled alarm information must be regularly repeated at time intervals less than the surveillance time set as described in paragraph 5.1.9.
The enabled flags are C (communication), W (writing from bus).
The object format is *1.005 DPT_Alarm*, the dimension of the object is *1 bit*, and the commands that it receives are *active/deactivated alarm status*.

6 *"Channel x forced positioning"* menu

If the **Forced positioning function** is enabled in **Channel x settings**, you can activate the **Channel x forced positioning** section; figure 6.1 shows the active functions for channel 1 of the GW90852 database, and the following paragraphs indicate the parameters that are available.
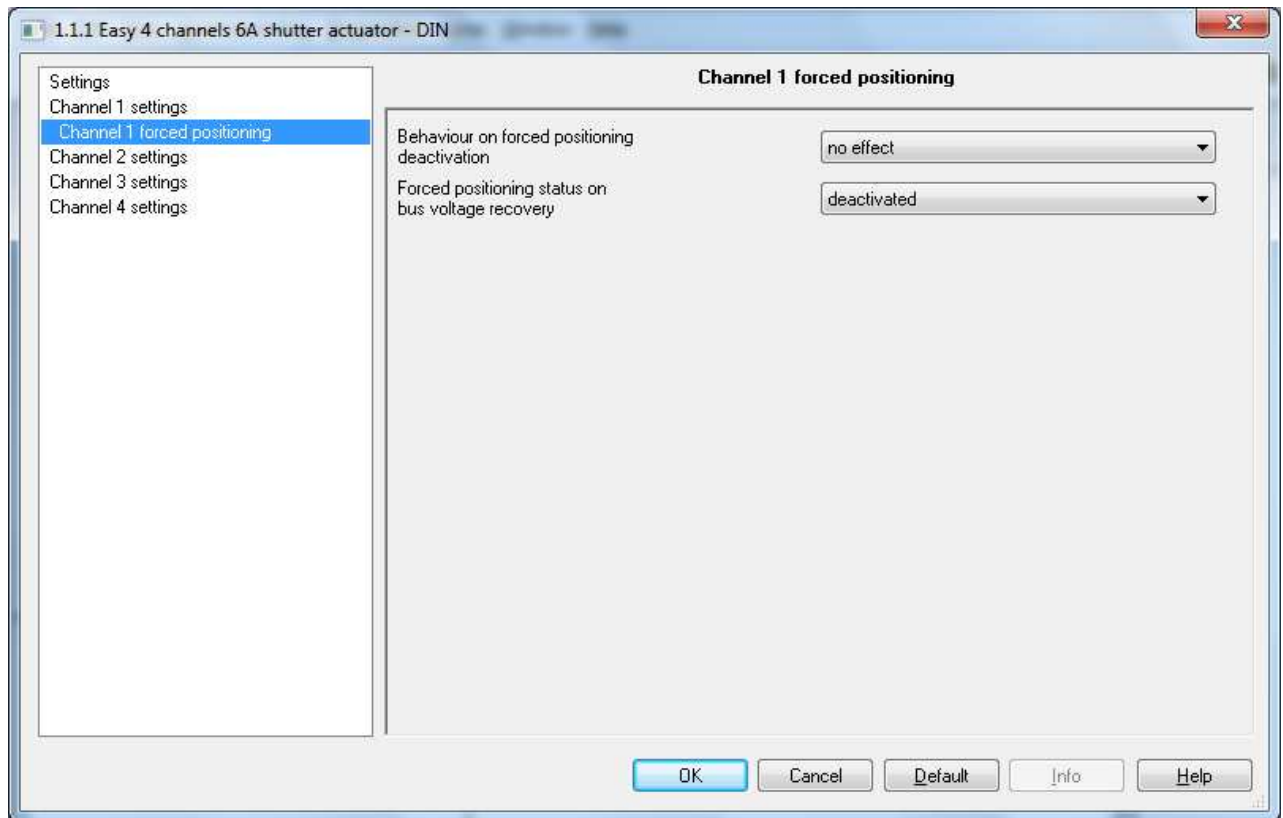

Fig. 6.1

6.1 Parameters

➢ **6.1.1 Behaviour on forced positioning deactivation**
This parameter is used to decide how the channel in question must behave when the forcing of the 2 bits communication object ends *Ch.x - Priority command*.
The following parameters are available:

- **No effect**
  No action is taken.

- *Up movement*
  Upward movement is commanded.

- *Down movement*
  Downward movement is commanded.

- **Back to to previous position**
  The shutter returns to the position it was in prior to the alarm.

- **Follows last command received**
  The shutter is commanded on the basis of the last command received (which was not executed because it had a lower priority than the alarm).

- *Percentage position*

  It is possible to define the shutter positioning percentage value via the **Percentage position when deactivating forced positioning** parameter, and that of the louvres if this mode has been set via the **Louvres percentage position when forced positioning is deactivated** parameter.

- *Stop*

  The shutter is stopped in the current position.

➢ 6.1.2 Forced positioning status on bus voltage recovery

This parameter is used to decide how the channel in question must behave when the forcing of the 2 bits communication object ends *Ch.x - Priority command*.
The following parameters are available:

- *Deactivated*

  When the bus voltage is restored, the forced positioning function is deactivated.

- *As before voltage drop*

  When the bus voltage is restored, the forced positioning function assumes the same value it had prior to the voltage drop.

6.2 Communication objects

The communication objects enabled by the Forced positioning function for each channel in the **Channel x settings** menu (see fig. 6.2 for the GW90852 database) are shown below.

Number	Name	Object Function	Leng...	C	R	W	T	U	Data Type	Priority
2	Ch.1 - Priority command	Forced positioning up/down	2 bit	C	-	W	-	-		Low
9	Ch.2 - Priority command	Forced positioning up/down	2 bit	C	-	W	-	-		Low
16	Ch.3 - Priority command	Forced positioning up/down	2 bit	C	-	W	-	-		Low
23	Ch.4 - Priority command	Forced positioning up/down	2 bit	C	-	W	-	-		Low

Fig. 6.2

➢ 6.2.1 Ch.x - Priority command

Thanks to the following communication objects, the device can receive (from the BUS) the commands for activating UP forcing, activating DOWN forcing, and forcing deactivation:
- object 2 for channel_1
- object 9 for channel_2
- object 16 for channel_3   (only for GW90852)
- object 23 for channel_4   (only for GW90852)

The enabled flags are C (communication), W (writing from bus).
The standardised format of the object is *2.008 DPT_Direction1_Control*, the dimension of the object is *2 bits*, and the command that it receives is *forced positioning up/down, forced positioning disabled*.

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