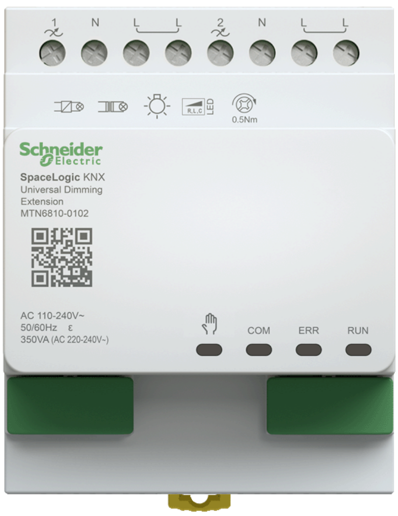
SpaceLogic KNX / Universal Dimmer Master

Dimmer Switch Blind Secure 3300/1.0

Application Description

MTN6710-0102S / MTN6810-0102 / MTN6805-0008
Release date 04/2024



Legal Information

Table of Contents

Safety information 9

For Your Safety 10

- Qualified Personnel 10

ETS Operation 11

- Requirements for Safe Operation 11
- Special Features of the ETS Software 11
  - Restoring Defaults 11
  - Express Settings 11
  - Extended Settings 11
  - Dependent Functions and Parameters 11
- Appropriate ETS Version 12
- User Interface 12

General Information about the Application 13

- Components and Programming Environment 13
- Overview of Application Functions 14

KNX Data Secure 19

- Protecting the Project Configuration via the ETS 19

General Settings 21

- Device Protection and Cyber Security 21
- Selection of the SpaceLogic KNX Extensions 21
- Defining Channel Functions 23
  - Dimming 25
  - Switch 25
  - Blind 25
  - Roller Shutter 26
- Enabling Central Functions 26
  - Group Objects for Central Function 27
  - Enabling a Central Function for Each Output 27
  - Central Function Delay Times 27

Extended Settings 29

- Energy Saving 29
- Device Safety 29
  - Group Objects for Central Safety 29
  - Safety Function Priority 30
- Device Health 30
  - Cyclic Sending Live Signal 30
  - Failure Indicator 30
- Operating Hours and Switching Cycle Counter 31
  - Operating Hours 31
  - Switching Cycle Counter 32
- Global Settings for Scenes 33
  - Scene Names 33
  - Enable Scene Learning 33
  - Enable Description Text Field for Scenes 33
- Delay for Central Functions 33
- Global Settings for Feedback 33
- Sending Delay after Bus Voltage Recovery 34

Manual Operation Settings 34
Activation of Manual Operation 34
Enable Button for Manual Operation via Object 35
Group Objects for Manual Operation 35
Suspend Manual Operation Automatically 35
Send Status of Manual Operation via Object 35
Global Settings for Dimming 36
Same Dimming Time at Central Function and Scenes 36
Priority of Functions for Dimming 36
Connected Nominal Voltage 37
Global Settings for Switching 37
Activation of the Collected Status Response 37
Priority of Functions for Switching 39
Global Settings for Roller Shutter and Blind 39
Weather Alarm Function 39
Priority of Functions for Roller Shutter and Blind 40
Calibration 40
PIN Code for Firmware Update 41
Express Settings for Dimming 42
Basic Functions for Dimming 42
Group Objects of the Express Setting Dimming 42
Switching (1 Bit) 43
Switch-ON Behavior (via Switch Object) 43
Status Response for Switching 43
Dimming (4 Bits) 43
Dimming Object Switches Channel 44
Value Dimming (1 Byte) 45
Value Object Switches Channel 45
Status Response for Brightness Value 45
Name of the Channel Dimming 46
Switch Object Behavior 46
Dimming Curve 46
LED Lamps 46
Halogen Lamps 47
Incandescent Lamps 47
User-defined Dimming Curve 48
Dimming Range 51
Minimum Brightness 52
Maximum Brightness 52
Always Start at 50% Brightness (ESL/CFL) 52
Dimming Operation Mode 52
Automatic Load Detection (RC Mode/RL Mode) 53
Special Dimming Mode (RL-LED) 53
Operating Hours Limit 55
Scenes 55
Enabling Scenes 56
Group Objects for Scene 56
Number of Scenes 56
Time Delay for Scene Processing 57
Calling and Saving Scene Values 57
Overwrite Scene Values during Download 58

Priority 58
Same Dimming Time for Central Function and Scenes 58
Central Function Dimming 58
Enabling a Central Function for Each Output..58
Activating Extended Settings for Dimming 59
Extended Settings for Dimming 60
Dimming Times 60
Group Object of Dimming Times 60
Time Settings 61
Staircase Lighting Time Function (Staircase Timer) 61
On-delay and Off-delay 66
Locking and Priority Settings 70
Group Object for Priority Function 71
Behavior After Bus Voltage Recovery 71
Locking Function 71
Safety and Alarm Settings 73
Safety Function Dimming...73
Alarm Function 74
Failure and Download Behavior 76
Express Settings for Switching 79
Name of the Channel for Switching 79
Switching Mode...79
Switching 79
Blinking 81
Contact Mode..85
Contact Mode Normally Opened 85
Contact Mode Normally Closed...85
Status Response 86
Scenes 86
Enable Scenes 86
Group Object for Scene..86
Number of Scenes 87
Time Delay for Scene Processing..87
Calling and Saving Scene Values 87
Overwrite Scene Values during Download...88
Priority 89
Central Function Switching...89
Enabling a Central Function for Switching Output 89
Status Response 89
Activating Extended Settings for Switching 89
Extended Settings for Switching..90
Time Settings 90
Staircase Lighting Time Function (Staircase Timer) 90
On-delay and Off-delay 95
On-delay 96
Off-delay 96
Type of Delay 96
Interrupting a Delay Function 98
Priority 98
Logic, Locking and Priority Settings...98

Logic Function 98
Functions with Higher Priority..102
Priority Function (Priority Control)..102
Locking Function 104
Safety and Alarm Settings 106
Safety Function Switching 106
Alarm Function 107
Failure and Download Behavior 108
Express Settings for Blind/Roller Shutter 111
Blind/Roller Shutter Control 112
Group Objects for Express Settings – Blind/Roller Shutter.................... 114
Name of the Channel 114
Drive Running Time 115
Same Running Times for Up and Down 115
Different Running Times for Up and Down 115
Pause Time before Reverting (Pause on Reverse) 116
Slat Control (for Blind only).. 116
Slat Rotation Time 116
Setting the Blind Type (for Blind only) 118
Slat Position after Movement 122
Locking Manual Mode..123
Group Objects for Lock of Manual Mode 123
Scenes 123
Enabling Scenes..124
Group Objects for Scene 124
Number of Scenes 124
Time Delay for Scene Processing..125
Calling and Saving Scene Values 125
Overwrite Scene Values during Download..126
Priority 126
Central Function for Blind 127
Enable Central Function for Each Drive 127
Group Objects for Central Function 127
Status Response 127
Group Objects of Status Response for Blind/Roller Shutter 128
Status of Height 128
Status of Slats (for Blind only) 128
Status of Moving 128
Automatic Status 128
Group Objects of Status Response of Automatic Mode 129
Activating Extended Settings for Blind/Roller Shutter 129
Extended Settings for Blind/Roller Shutter..130
Extended Drive Timing..130
Idle Time until Upward Movement 130
Startup Delay 131
Deceleration Delay..131
Additional Start-up Time on Opening the Slat (for Blind only) 131
Automatic, Locking and Calibration Settings 132
Automatic Mode..132
Locking Function 134
Movement Range Limits..137

Calibration 140
Safety and Alarm Settings 144
Safety Function Blind 144
Alarm Function 145
Weather Alarm Function 147
Failure and Download Behavior 151
Express Settings for Roller Shutter 153
Group Objects for Express Settings for Roller Shutter 153
Name of the Channel 153
Roller Shutter Control Drive Time 154
Locking Manual Mode 154
Group Objects for Lock of Manual Mode 155
Scenes 155
Group Objects for Scene 155
Central Function Roller Shutter 155
Group Objects of the Central Function 156
Status Response 156
Group Objects of Status Response for Roller Shutter 156
Activating Extended Settings for Roller Shutter 156
Extended Settings for Roller Shutter 158
Extended Drive Timing 158
Automatic, Locking and Calibration Settings 158
Automatic Mode 158
Locking Function 160
Movement Range Limits 161
Calibration 162
Safety and Alarm Settings 162
Safety Function Roller Shutter 162
Alarm Function 163
Weather Alarm Function 164

Safety information

Important information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that accompany this symbol to avoid possible injury or death.

DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

Failure to follow these instructions will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

For Your Safety

DANGER

RISK OF FATAL INJURY FROM ELECTRIC SHOCK, EXPLOSION OR ARC.

Safe electrical installation must be carried out by qualified professionals.

Qualified professionals must demonstrate an in-depth knowledge of:

- Connecting to installation networks
- Connecting multiple electrical appliances
- Installation of electric cables
- Connection and setup of KNX networks
- Commissioning KNX installations
- Safety standards, local connection rules and regulations

Failure to follow these instructions will result in death or serious injury.

The devices and the associated ETS application must not be used to control safety-related applications.

Qualified Personnel

This document is aimed at personnel who are responsible for setting up, installing, commissioning and operating the device and the system in which it is installed.

Detailed expertise gained by means of training in the KNX system is a prerequisite.

ETS Operation

Tables with describe parameter settings in ETS.

The main setting items are on the left.	The specific parameters and their value settings are on the right.	
Extended settings	**Device safety**	
	Device safety	At object value "1"
		At object value "0"
		Disabled
	Cycle time surveillance for Safety object (0 ... 255, unit = 1 s, 0 = inactive)	0

Requirements for Safe Operation

Knowledge of the basic rules for operating programs using Windows® is a prerequisite for operation.

The ETS is the software for the KNX system, and is not manufacturer-specific.

Knowledge of ETS operation is required. This also includes selection of the correct sensor or actuator, transferring it to the line and commissioning it.

Special Features of the ETS Software

Restoring Defaults

You can set the factory-specified defaults using the **Default parameters** service button in the ETS.

You can use the **Default** and **Default parameters** service buttons to switch all parameters back to the settings on delivery (following consultation). The ETS will then permanently delete all manual settings.

Express Settings

You can use the **Express settings** to call up pre-set functions. Later, you simply connect group addresses to the functions.

Extended Settings

With the **Express settings**, you can configure individual functions with extensive options if required

Dependent Functions and Parameters

Many functions are affected by how other functions are set. This means that dependent functions can only be seen and selected in the ETS when the upstream function is enabled.

- If you de-select functions or change parameters, previously connected group addresses may be removed in the process.
- The values of some parameters only become active once the functions influenced by these parameters are activated.

Appropriate ETS Version

The application is compatible with **ETS5 and later versions**.

Earlier versions, such as ETS3 and ETS4, are not supported.

Application files (knxproj) are optimized for the specific ETS version. If you attempt to load an ETS4 application into ETS5, it will result in unnecessary conversion time.

User Interface

In the ETS, the device parameters are opened using the **Edit parameters** service button.

The user interface is divided into 2 sections: The tabs are on the left and the parameters on the right, together with their values.

General Information about the Application

With this software application, you can program the SpaceLogic KNX Dimmer Master. The device can switch and dim ohmic, inductive or capacitive loads. The dimmer is also designed for dimmable LED and energy-saving lamps. You can find information on the connectible loads under Express Settings for Dimming, page 42 and in the user manual.

The dimmer controls the brightness of the connected lamps. You can set the control functions individually for each output channel of the dimmer.

You can add up to two KNX Universal Dimming Extension or Switch/Blind Extensions to the device. This results in the following combinations:

Master	Extension 1	Extension 2	Outputs
MTN6710-0102S	-	-	2 x dimming
MTN6710-0102S	MTN6810-0102	-	4 x dimming
MTN6710-0102S	MTN6810-0102	MTN6810-0102	6 x dimming
MTN6710-0102S	MTN6810-0102	MTN6805-0008	4 x dimming and 8 x switching or 4 x blind
MTN6710-0102S	MTN6805-0008	MTN6810-0102	4 x dimming and 8 x switching or 4 x blind
MTN6710-0102S	MTN6805-0008	MTN6805-0008	2 x dimming and 16 x switching or 8 x blind

The basic settings of the device are set on the **General settings** tab. Here you define the device configuration from master and extensions. You can then also specify the functions of the outputs here. (General Settings, page 21). The functions of the outputs are parametrized on the **Express settings** and **Extended settings** tabs of the outputs for dimming, switching, roller shutter and blind.

Express Settings for Dimming, page 42

Express Settings for Switching, page 79

Express Settings for Blind/Roller Shutter, page 111

Express Settings for Roller Shutter, page 153

Extended Settings for Dimming, page 60

Extended Settings for Switching, page 90

Extended Settings for Blind/Roller Shutter, page 130

Extended Settings for Roller Shutter, page 158

You can use the **Extended settings** of the device to configure the global settings of the devices as needed. (Extended Settings, page 29).

Components and Programming Environment

The device is commissioned using KNX-certified software. The application and the technical descriptions are updated regularly and you can find them on the Internet.

This application runs in conjunction with ETS software version 5 or higher.

NOTICE

ETS5 FUNCTION PARTIAL DOWNLOAD SHALL NOT BE USED.

To program the application safely after changes of parameters and group addresses, please use only:

- **Full download** [**Ctrl** + **Shift** + **L**]
- **Download Application** [**Ctrl** + **Shift** + **Alt** + **D**]

Overview of Application Functions

You can set the following functions for the actuator:

General Settings, page 21

Select SpaceLogic KNX Extensions 1 and 2	MTN6810-0102 Universal Dimming
	MTN6805-0008 Switch/Blind
Select channel functions of the master for each output (dimming)	Enabled
	Disabled
Select channel functions of the extensions for each output	Disabled
	Switch
	Roller shutter
	Blind
Central functions	Disabled
	Enabled
	Enabled/Delayed

Extended Settings, page 29

Energy saving	LEDs on the device can be set to standby after (0...255, unit = 1 min, 0 = always on)
Device safety	Disabled
	At object value “1”
	At object value “0”
Device health	Cyclic sending live signal (0...255, unit = 1 s, 0 = inactive)
	Enable outputs for failure indication (Disabled/Enabled)
Operating hours and switching cycle counter	Master operating hours (Disabled/Enabled)
	Extension 1/2 operating hours (Disabled/Enabled)
	Extension 1/2 switching cycle counter (Disabled/Enabled)
Global settings for scene	Naming of the scenes: (The values on the bus are always 0 – 63)
	Enable learning of scenes
	Enable description text field for scenes
Delay for central functions (Only if central function is enabled with delay)	Delay of central functions all channels (0...255, unit = 100 ms)
	Time between central functions per channel (0...255, unit = 100 ms)
Global settings for feedback	Delay of status response for all channels (0...255, unit = 100 ms)
	Time between status response per channel (0...50, unit = 100 ms)
Sending delay	Sending delay after bus voltage recovery (0...255, unit = 1 s)

Extended Settings, page 29

Manual operation settings	Activation of manual operation on the device is Not allowed/Allowed
	Enable button for manual operation via object
	Suspend manual operation automatically
	Send status of manual operation via object
Global settings for dimming	Same dimming time at central function and scenes
	Priority of functions
	Connected nominal voltage
Global settings for switching	Collected Status response
	Priority of functions
Global settings for roller shutter and blind	Weather alarm functions (Disabled/Enabled)
	Priority of functions
	Calibration
PIN Code for Firmware Update	
Device information	Firmware Master
	Firmware Extension 1/2
	Uptime Master (days/hours/min/sec)

Express Settings for Dimming, page 42

Name of the channel	
Switch-on behavior (via Switch object)	Max. brightness
	Selectable brightness
	Last brightness (Memory)
Execute selected switch-on behavior	Only if status is Off/Always
Switch object behavior	Normal/Inverted
Dimming curve	LED lamps
	Halogen lamps
	Incandescent lamps
	User defined
Always start at 50 % brightness	Disabled/Enabled
Dimming operation mode	Automatic (RC mode/RL mode)/Special (RL-LED mode)
Operating hours limit (1...200 000, unit = hour)	
Dimming object switches channel	Not/Only On/Only Off/On and Off
Value object switches channel	Not/Only On/Only Off/On and Off
Scenes	Disabled/Enabled
Central function	Disabled/Enabled
Status response switching	Disabled/Enabled
Status response value	Disabled/Enabled
Extended settings for dimming	

Extended Settings for Dimming, page 60

Dimming times	Enable objects for dimming time (Disabled/Enabled)
Time settings	Staircase lighting time (Disabled/Fix/Variable)
	On-delay time (Disabled/Enabled)
	Off-delay time (Disabled/Enabled)
Locking & Priority settings	Higher priority function (Disabled/Locking/Priority function)
	Logic function
Safety and alarm settings	Safety function (if Device safety in Extended settings is enabled)
	Alarm function
	Failure and download behavior

Express Settings for Switching, page 79

Name of the channel	
Switching mode	Switching/Blinking
Contact mode	Normally opened/closed
Scenes	Disabled/Enabled
Central function	Disabled/Enabled
Status response	Disabled/Enabled
Extended settings for switching	

Extended Settings for Switching, page 90

Time settings	Staircase lighting time (Disabled/Fix/Variable)
	On-delay time (Disabled/Enabled)
	Off-delay time (Disabled/Enabled)
Logic, Locking & Priority settings	Higher priority function (Disabled/Locking/Priority function)
	Logic function
Safety and alarm settings	Safety function (if Device safety in Extended settings is enabled)
	Alarm function
	Failure and download behavior

Express Settings for Blind/Roller Shutter, page 111

Name of the channel	
Blind control	Use the same time for up and down
	Up/Down time (same or different)
	Pause time before reverting
Slat control	Slat rotation time
	Steps that shall be executed during slat rotation
	Movement of the existing blind
	Slat position after movement in %
Lock of manual mode	Disabled/Enabled
Scenes	Disabled/Enabled

Express Settings for Blind/Roller Shutter, page 111	
Central function	Disabled/Enabled
Status of height	Disabled/Enabled
Status of slat	Disabled/Enabled
Status of moving	Disabled/Enabled
Extended settings for blind	

Extended Settings for Blind/Roller Shutter, page 130	
Extended drive timing	Idle time until upward movement
	Startup delay
	Deceleration delay
	Additional startup time when opening slat upwards/downwards
Automatic, Locking & Calibration settings	Automatic mode (Disabled/Enabled)
	Locking function
	Movement range limits
	Calibration
Safety and alarm settings	Safety function (if Device safety in Extended settings is enabled)
	Alarm function
	Weather alarm function
	Failure and download behavior

Express Settings for Roller Shutter, page 153	
Name of the channel	
Roller shutter control	Use same time for up and down
	Up/Down time (same or different)
	Pause time before reverting
Lock of manual mode	Disabled/Enabled
Scenes	Disabled/Enabled
Central function	Disabled/Enabled
Status of height	Disabled/Enabled
Status of moving	Disabled/Enabled
Extended settings for roller shutter	

Extended Settings for Roller Shutter, page 158

Extended drive timing	Idle time until upward movement
	Startup delay
	Deceleration delay
Automatic, Locking & Calibration settings	Automatic mode
	Locking function
	Movement range limits
	Calibration
Safety and alarm settings	Safety function (if Device safety in Extended settings is enabled)
	Alarm function
	Weather alarm function
	Failure and download behavior

KNX Data Secure

The KNX standard has been extended by KNX Data Secure to protect KNX installations from unauthorized access. KNX Data Secure reliably prevents the monitoring of communication and manipulation of the installation. KNX Data Secure describes the encryption at telegram level so that communication via objects is encrypted and therefore secure.

Encrypted telegrams are longer than the previously used unencrypted telegrams. For secure programming via the KNX bus, it is therefore necessary for the interface (e.g. USB) and any line couplers to support these „KNX long frames“.

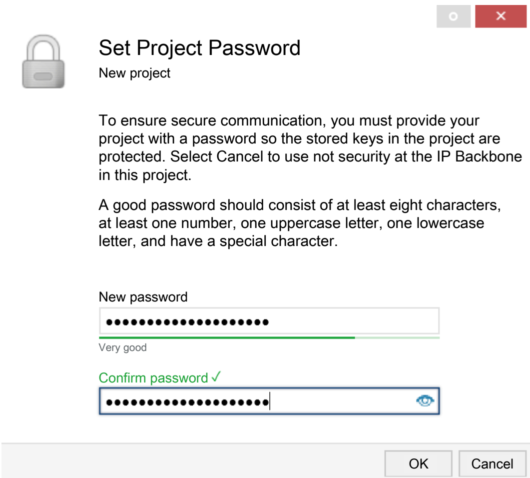
Special conditions must be observed when using secure devices in the ETS. Please refer to the relevant web pages on the KNX website https://www.knx.org

Protecting your data is a top priority. Use the options in the ETS and KNX Data Secure to protect your data, configuration and installations from unauthorized access.

Protecting the Project Configuration via the ETS

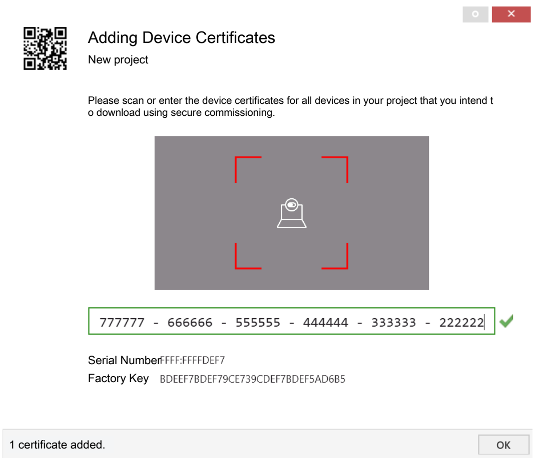
In the ETS, you can define a project password that protects the devices and configuration data from unauthorized access.

1. Find your project in the **Overview** tab of the ETS.
2. Click the **Details** > **Security** > **Add device certificate** and set your project password.



NOTE: A good password should consist of at least 8 characters in the project window, consisting of a number, an upper case letter, a lower case letter and a special character. Never use weak PIN codes, e.g., 1234, 0000.

3. Scan or enter the device certificates for all devices in your project that you intend to download using secure commissioning > click **OK**



NOTE: The certificate consists of the serial number and the security key FDSK (Factory Default Setup Key). The FDSK is only used for initial commissioning and is replaced by the ETS during the first download. This prevents unauthorized persons from gaining access to the installation despite knowing the FDSK.
The FDSK is printed on the device label both as a QR code and in text form.

Background information on the encryption process

- Read or enter the FDSK into the ETS.
- The ETS then generates a device-specific tool key.
- When configuring the device, the ETS sends the tool key to the device. The transmission is encrypted and authenticated with the FDSK.
- From this point on, the device only accepts the tool key for communication and the FDSK can only be used to reset the device to the delivery status. All safety-relevant data is deleted during this reset. Therefore, **please keep the FDSK in your project documents**.
- The ETS then generates runtime keys, which are required for protected group communication. The transmission is encrypted and authenticated with the tool key.

General Settings

You can define the basic configuration of the device on the **General settings** tab.

Device Protection and Cyber Security

The SpaceLogic KNX Switch/Blind Master has a micro USB B interface. This is intended for diagnostic and updating the firmware of the device. A 4-digit PIN code should be set in the ETS application to prevent unauthorized persons from manipulating the firmware (Cyber Security).

This is requested before a firmware update with the Schneider Electric “Device Firmware Update Tool”. Without this PIN, an update is not possible. You have 3 attempts to enter a valid access code. If the code is not entered correctly, the service port is disabled for 1 hour or the device needs to be restarted (power reset or device reset).

General settings	Device protection information: No valid PIN Code for Firmware Update! Please enter a valid PIN code in the extended settings before downloading your configuration!

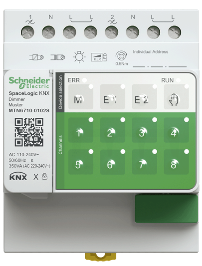
The PIN code is entered on the **Extended settings** tab (PIN Code for Firmware Update, page 41). Weak PINs are forbidden (e.g., 1234, 1111, 2222, ...).

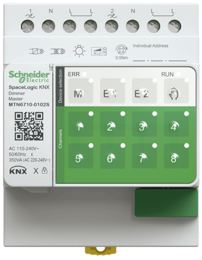
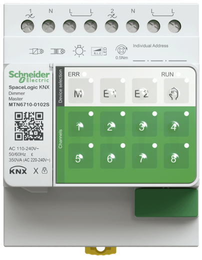
Selection of the SpaceLogic KNX Extensions

The **SpaceLogic KNX Dimmer Master** is a KNX device to which you can connect two SpaceLogic KNX extensions.

You can choose one of the following extensions:

- **MTN6810-0102, SpaceLogic KNX Universal Dimming Extension**
- **MTN6805-0008, SpaceLogic KNX Switch/Blind Extension**

Master	Extension 1	Extension 2	Outputs
 MTN6710-0102S			2 x dimming
 MTN6710-0102S	 MTN6810-0102		4 x dimming

Master	Extension 1	Extension 2	Outputs
 MTN6710-0102S	 MTN6810-0102	 MTN6810-0102	6 x dimming
 MTN6710-0102S	 MTN6810-0102	 MTN6805-0008	4 x dimming and 8 x switching or 4 x blind
 MTN6710-0102S	 MTN6805-0008	 MTN6810-0102	4 x dimming and 8 x switching or 4 x blind
 MTN6710-0102S	 MTN6805-0008	 MTN6805-0008	2 x dimming and 16 x switching or 8 x blind

The distribution of functions between channels is freely selectable and depends on your requirements.

General settings	**SpaceLogic KNX Extension selection**	
	Type of Extension 1	**Disabled**
		MTN6810-0102 Universal Dimming
		MTN6805-0008 Switch/Blind
	Type of Extension 2	**Disabled**
		MTN6810-0102 Universal Dimming
		MTN6805-0008 Switch/Blind

Selecting **MTN6810-0102 Universal Dimming** adds **Extension 1**.	
The 2 new dimming outputs with tabs, parameters, channels and channel functions are now available in the application.	
Extension 1 is displayed as an image to the right of the master.	

Selecting **MTN6805-0008 Switch/Blind** adds **Extension 1**.	
The 8 new outputs with tabs, parameters, channels and channel functions are now available in the application.	
Extension 1 is displayed as an image to the right of the master.	

Selecting **MTN6810-0102 Universal Dimming** as **Extension 2** adds the second dimming extension.	
For **Extension 2**, the new outputs are now displayed with tabs, parameters, channels and channel functions.	
Extension 2 is displayed as an image to the right of **Extension 1**.	

Selecting **MTN6805-0008 Switch/Blind** as **Extension 2** adds the second switch/blind extension.	
For **Extension 2**, the new outputs are now displayed with tabs, parameters, channels and channel functions.	
Extension 2 is displayed as an image to the right of **Extension 1**.	

Defining Channel Functions

Each dimming output can be can be defined as the channel function **Enabled** or **Disabled**.

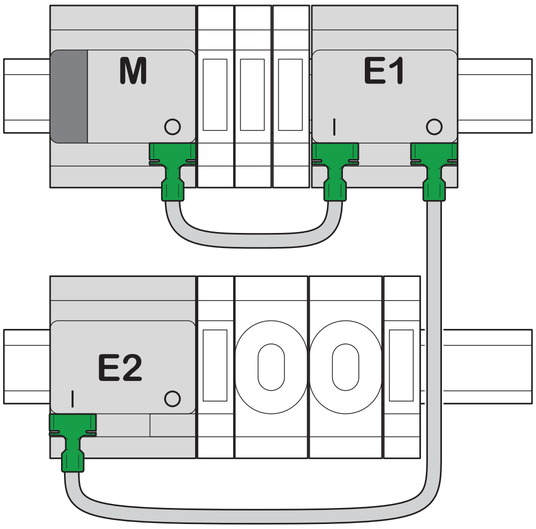
With an **MTN6805-0008**, **SpaceLogic KNX Switch/Blind Extension**, each output can be operated in the function **Disabled** or **Switch** or **Blind** or **Roller shutter**. In blind and roller shutter operation, two outputs are grouped together to form a single channel. The output contacts of the relays are then electronically interlocked. This means that you cannot switch on both contacts of a motor channel simultaneously. This applies to control via bus telegrams and to manual operation on the device.

NOTICE

CHECK BEFORE COMMISSIONING:

The load connections and the order of the devices (Master > Extension 1 > Extension 2) must correspond to your ETS programming.

- Connect blind motors to the blind channels specified in the ETS.
- Connect loads to the switching channels specified in the ETS.
- If the Extension is planned as Extension 1 (E1), connect it directly to the Master.
- If the Extension is planned as Extension 2 (E2), then connect it to Extension 1.



An extension cannot be put into operation if the order of the devices does not correspond to your programming in the ETS.

General settings	**Channel function for Master**	
	Dimming Output 1	Disabled
		Enabled
	Dimming Output 2	Disabled
		Enabled

After activation of Extension 1

MTN6810-0102 Universal Dimming

General settings	**Channel function for Extension 1**	
	Dimming Output 1	Disabled
		Enabled
	Dimming Output 2	Disabled
		Enabled

MTN6805-0008 Switch/Blind

General settings	**Channel function for Extension 1**	
	Output 1-8	Disable **Switch**
		Roller shutter
		Blind

After activation of Extension 2

MTN6810-0102 Universal Dimming

General settings	**Channel function for Extension 2**	
	Dimming Output 1	Disabled
		Enabled
	Dimming Output 2	Disabled
		Enabled

MTN6805-0008 Switch/Blind

General settings	**Channel function for Extension 2**	
	Output 1-8	Disable **Switch**
		Roller shutter
		Blind

Dimming

To dim electrical consumers, you can switch the channel function of the device to **Dimming** mode.

General settings	**Channel function Master / Extension 1 / Extension 2 Output 1-2**	
	Dimming Output 1-2	**Enabled**
Master/Ext. 1/2 Output 1-2: Dimming	Express settings for dimming	...

Express Settings for Dimming, page 42

Switch

To switch electrical loads, you can switch the channel function of the device to **Switch** mode.

General settings	**Channel function Extension 1 / Extension 2 Output 1-8**	**Switch**
Ext. 1/2 Output 1-8 -Switch: Switching	Express settings for switching	...

Express Settings for Switching, page 79

Blind

To control blinds, you can switch the channel function of the device to **Blind** mode.

General settings	**Channel function Extension 1 / Extension 2 Output 1-8**	**Blind**

Ext. 1/2 Output 1+2; 3+4; 5+6; 7+8: Blind	Express settings for blind	...

Express Settings for Blind/Roller Shutter, page 111

Roller Shutter

To control roller shutter, you can switch the channel function of the device to **Roller shutter** mode.

General settings	**Channel function Extension 1 / Extension 2 Output 1-8**	**Roller shutter**
Ext. 1/2 Output 1+2; 3+4; 5+6; 7+8: Roller shutter	Express settings for Roller shutter	...

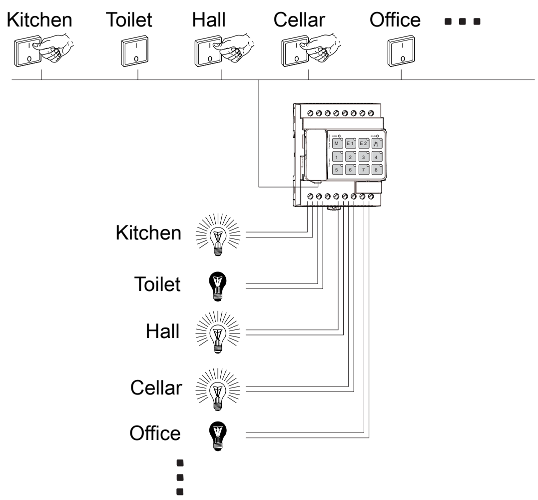
Express Settings for Roller Shutter, page 153

Enabling Central Functions

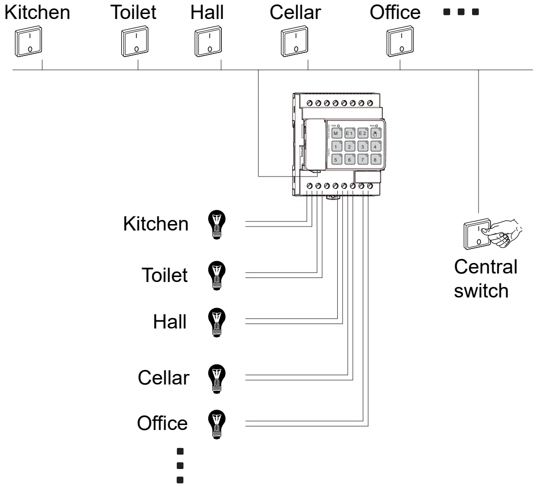
The central function allows you to switch multiple output switching channels simultaneously with a telegram via the **Central – Switch object**.

This functionality is available, for example, if you want to switch off all lamps at the press of a button when leaving the house and switch on all lamps at the press of a button when cleaning the house or in the event of an alarm.

Decentralized control without central function:



Centralized control with central function:



Dimming, switching, blind and roller shutter each have a separate **central object** with a corresponding **central object**. In order to use the **central function** for the individual dimming, switch/blind/roller shutter channels, you must first enable the global function on the **General settings** tab.

General settings	Central functions	**Disabled** Enabled Enabled/Delayed

Following enabling, the group objects appear and all outputs are enabled for the central function.

Group Objects for Central Function

No.	Name	Object function	Length	Behavior	Data Type
1	Central	Switch	1 bit	Received	1.001 Switch
2	Central	Move up/down roller shutter	1 bit	Received	1.008 Up/Down
3	Central	Move up/down blind	1 bit	Received	1.008 Up/Down
6	Central	Switch for dimmer	1 bit	Received	1.001 switch

Enabling a Central Function for Each Output

The **central function** for each output/drive is enabled or disabled on the **Express settings for Dimming/Switching/Roller shutter/Blind** tabs.

Central Function for Blind, page 127

Central Function Dimming, page 58

Central Function Roller Shutter, page 155

Central Function Switching, page 89

Central Function Delay Times

The delay times for all channels together are parameterized on the **Extended settings** tab.

Extended settings	Delay of central functions all channels (0...255, unit = 100ms)	0
	Time between central functions per channel (2...255, unit = 100 ms)	5

The central function has the same priority as the normal switching function. Receiving a new object value via the **central object** has the same effect as receiving a new object value for the switch object of the output.

Extended Settings

In the **Extended settings**, you can configure global device functions for the master and the extensions.

Energy Saving

The status LEDs of the channels on the master can be switched off automatically after a period of between 1 minute and 255 minutes. In this way, you do not illuminate the switch cabinet unnecessarily. Pressing a button reactivates the LEDs for the preset time.

Extended settings	Energy saving	
	LEDs on the device can be set to standby after (0...255, unit = 1 min, 0 = always on)	0

Device Safety

This parameter activates the central safety object.

For each channel, a channel parameter can be used to determine whether and how this channel should respond to the safety object. The object value for the device safety function can also be set.

The device then waits for a telegram from an external sender within the set cycle time. If such a telegram is not received within the monitoring time, it is then possible to decide for each channel what should happen.

Dimming: Safety Function Dimming, page 73

Switch: Safety Function Switching, page 106

Blind: Safety Function Blind, page 144

Roller shutter: Safety Function Roller Shutter, page 162

Extended settings	**Device safety**	
	Device safety	At object value "1"
		At object value "0"
		Disabled
	Cycle time surveillance for Safety object (0 ... 255, unit = 1 s, 0 = inactive)	0

After enabling device safety function, the **Safety** group object appears.

Group Objects for Central Safety

No.	Name	Object function	Length	Behavior	Data Type
23	Central	Safety	1 bit	Received	1.005 Alarm

Safety Function Priority

The safety function has the highest priority.

Device Health

Cyclic Sending Live Signal

With the setting **Cyclic sending live signal** > 0, the central sign of life object is activated (**live signal**).

If activated, the device cyclically sends the value “1” with the cycle time set. This information is only a sign of life from the KNX master. Here, for example, the device can be monitored in a visualization.

Extended settings	**Device health**	
	Cyclic sending live signal (0...255, unit = 1 s, 0 = inactive)	**0**

Group Objects for Live Signal

No.	Name	Object function	Length	Behavior	Data Type
26	Central	Live signal	1 bit	Sending	1.017 Trigger

Failure Indicator

The failure indicator of the device can be activated in the ETS. Failure indication is carried out using two group objects.

Extended settings	**Device health**	
	Enable outputs for failure indication	**Disabled**
		Enabled

Group Objects for Failure Indicator

No.	Name	Object function	Length	Behavior	Data Type
27	Master	Fault - Internal	1 bit	Sending	1.001 Switch
28	Master	Fault - External	1 bit	Sending	1.001 Switch

The **Fault – Internal** object signals internal device faults detected during the self-test. The Schneider-Electric **Device Firmware Update Tool** can be used to diagnose the fault with the integrated diagnostics function.

The **Fault – External** object signals external installation faults. The Schneider-Electric **Device Firmware Update Tool** can be used to diagnose the fault with the integrated diagnostics function.

Operating Hours and Switching Cycle Counter

With the **Operating hours and switching cycle counter** function, you can turn on the counting of the operating hours of the dimmer master/extension and the number of switching cycles of the relay of the switch/blind actuator (if you choose switch/blind as one of the extensions).

You can enable/disable the counting function for each device separately.

If you enable **Operating hours and switching cycle counter**, group objects for this function appear in the newly created object folder **Operating hours and switching cycle counter**.

Extended settings	**Operating hours and switching cycle counter**	
	Master/Extension 1/2 operating hours	**Disabled**/Enabled
	Extension 1/2 switching cycle counter	**Disabled**/Enabled

Operating Hours

You can enable the **Operating hours** counter function only for the dimmer. You enable this function for each device separately – master and extension.

If you enable the **operating hours** counter, the hours are counted (by seconds), and this value is stored in memory.

The actual value can be read for each relay via the 4-byte **Operating hours**object.

You set the operating hours counter as follows:

1. Go to **Extended settings** > **Operating hours and switching cycle counter** > **Master/Extension operating hours** > **Enabled**.
2. Set the expected lifetime of the device for each dimmer channel as follows: Go to **Master/Extension output – Dimming** > **Dimming** > **Operating hours limit**.
3. Set the expected lifetime of your load:
   1 – 200 000 (unit = hour).

- If the 1-bit **Life time exceeded** object sends 1, the lifetime of the device has been exceeded.
- The **Operating hours** object and the current value of the **Lifetime exceeded** object are transmitted after each device reset.
- The **Operating hours** object is sent when its value is incremented by 3600 seconds since the last transmission.
- The **Operating hours** object is set (but not sent) when its value is incremented by 60 seconds.
- The 1-bit **Reset operating hours** object is used to reset the counter of operating hours to zero. Additionally, the **Lifetime exceeded** object is set to zero.

Group Objects for Operating Hours Counter

No.	Name	Object function	Length	Behavior	Data Type
31	Master/Extension 1/2 Output 1/2	Operating hours	4 bytes	Sending	13.100 time lag (s)
32	Master/Extension 1/2 Output 1/2	Lifetime exceeded	1 bit	Sending	1.005 alarm
33	Master/Extension 1/2 Output 1/2	Reset operating hours	1 bit	Receiving	1.015 reset

The **Lifetime exceeded** object: If the number of operating hours exceeds the value set in the **Operating hours limit** parameter, the output sends value 1. The output has value 1 until you reset the operating hours with the **Reset operating hours** object.

If the **Reset operating hours** object receives value 1, the operating hours for the load are reset, and the object **Lifetime exceeded** is set to value 0.

Switching Cycle Counter

You can enable the **Switching cycle counter** counter function only for the switch/ blind extension.

If you enable **Switching cycle counter**, all switching actions of a relay are counted and stored persistently in the memory. The actual value can be read for each relay via a 2-byte **Switching cycle counter** group object.

You have to enable the visibility of group objects in the **Extended settings** for your device. You can enable the visibility separately for each extension device.

Extended settings	**Operating hours and switching cycle counter**	
	Extension 1 switching cycle counter	**Disabled**/Enabled
	Extension 2 switching cycle counter	**Disabled**/Enabled

Group Objects for Switching Cycle Counter

If you enable the **Switching cycle counter**, group objects for each relay appear in the special object folder **Switching cycle counter**.

No.	Name	Object function	Length	Behavior	Data Type
39	Extension 1/2 Output #	Switching cycle counter	2 bytes	Sends/Reads	2 byte unsigned value

By default only C-Flag and R-Flag are set to avoid high bus traffic.

The firmware checks the internal counters cyclically every 10 seconds. If the value changes, it is sent via the **Switching cycle counter** object.

You can read the actual values via group objects. If you want to get to know the values without reading, you have to set the T-Flag for the object.

Global Settings for Scenes

Scene Names

This parameter is used to define the scene numbering view for the user in the ETS. Either **Scene address 1 – 64** or **Scene address 0 – 63**. The values on the bus are always 0 – 63.

Extended settings	**Global settings for scene**	
	Naming of the scenes (The values on the bus are always 0-63)	**Scene address 0 – 63**
		Scene address 1 – 63

Enable Scene Learning

The parameter **Enable learning of scenes?** is activated as standard and the learning of scenes is thus allowed. This can be disabled globally.

Extended settings	**Global settings for scene**	
	Enable learning of scenes?	**Yes**
		No

Enable Description Text Field for Scenes

A description text can be stored for each scene. This provides clarity for the different scenes. This function can be switched off globally here.

Extended settings	**Global settings for scene**	
	Enable description text field for scenes	**Yes**
		No

Delay for Central Functions

Enabling Central Functions, page 26

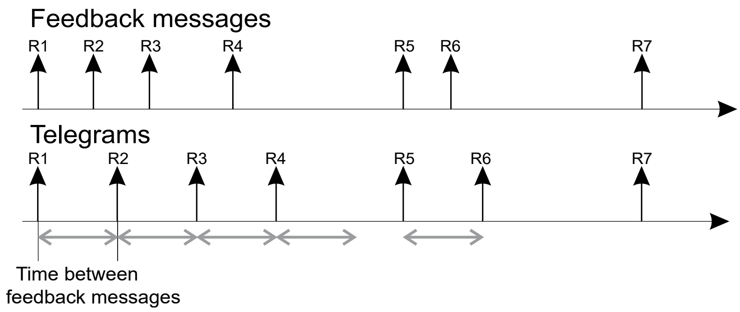
Enabling a Central Function for Each Output, page 27

Central Function Delay Times, page 27

Global Settings for Feedback

Here you can set the delay of the feedback of this device and the time interval between multiple feedback telegrams.

If there is only one telegram to be sent, it is sent as set in the parameter **Delay of status response for all channels**. If more than one response is active, the other responses will be sent at the delay time intervals set by the parameter **Time between responses per channel**.



Extended settings	Global settings for feedback	
	Delay of status response for all channels (0...255, unit = 100 ms)	**0**
	Time between status response per channel. (0...50, unit = 100 ms)	**0**

Sending Delay after Bus Voltage Recovery

It is possible to set a global sending delay for all telegrams after bus voltage recovery.

Once the bus voltage has been recovered, all send activities of the device are delayed.

Extended settings	Sending delay	
	Sending delay after bus voltage recovery (0...255, unit = 1 s)	**0**

Manual Operation Settings

On the front side of the master, there is a channel button for each channel and a corresponding yellow LED for indicating the channel status (channel status LED).

In addition to the channel buttons, the device also has device selection buttons (**M** for the master; **E1** for Extension 1; **E2** for Extension 2). With these buttons, you first select the device (Master/Extension 1/Extension 2) whose status you want to display or which you want to operate. Manual operation is performed after pressing the **Manual push-button** and then a channel button.

Activation of Manual Operation

Manual operation can be disabled on the device in the ETS. This means that operation on the device is no longer possible.

Extended settings	Manual operation settings	
	Activation of manual operation on the device is	Not allowed
		Allowed

Manual operation is allowed as a standard.

Enable Button for Manual Operation via Object

Switching to manual operation control via the **Manual push-button** is only possible if the object **Enable button for manual operation via object** has the value “1”. If the object has the value “0”, toggling to manual operation is disabled. If toggling is disabled by a telegram, the device also automatically deactivates manual operation.

The value of the object **Enable button for manual operation via object** can be parameterized after bus voltage recovery. The value “1” enables the **Manual push-button** and the outputs can be operated on the device. The value “0” disables the **Manual push-button** after bus voltage recovery.

Extended settings	**Manual operation settings**	
	Enable button for manual operation via object	**No**
		Yes
	Object value after bus voltage recovery	**0 (Manual push-button disabled)**
		1 (Manual push-button enabled)
		As before bus voltage failure

Group Objects for Manual Operation

No.	Name	Object function	Length	Behavior	Data Type
15	Master keypad	Enable button for manual operation	1 bit	Received	1.003 Enable

Suspend Manual Operation Automatically

You can set a time limit for manual operation when toggling to it. To do so, set the parameter **Suspend manual operation automatically** to **Yes**

Then set the parameter **Suspend manual operation after 1...48 in hours** to the desired time after which the device automatically resets manual operation. You can read the current operating status from the manual operation LED and you will receive feedback via the **Status of manual operation** object if you have enabled this function.

Extended settings	**Manual operation settings**	
	Suspend manual operation automatically	**No**
		Yes
	Suspend manual operation after (1...48, unit = 1 hour)	**2**

Send Status of Manual Operation via Object

In addition to the possibility of enabling manual operation via the **Enable manual operation** object, it is also possible to send the status of the manual operation via the **Status of manual operation** object. You can read the current operating status from the manual operation LED and you will receive feedback via the **Status of manual operation** object if you have enabled this function.

Extended settings	Manual operation settings	
	Send status of manual operation via object	**No**
		Yes

Once **Send status of manual operation via object** has been enabled, the group object appears.

Group Object for Manual Operation Status

No.	Name	Object function	Length	Behavior	Data Type
16	Master keypad	Status of manual operation	1 bit	Send/Read	1.001 Switch

Global Settings for Dimming

The global settings for the dimming functions are defined here.

Same Dimming Time at Central Function and Scenes

The function **Same dimming time** causes a dimming process with several dimming channels to start simultaneously and to end at the same time. You can use this function for scenes and central functions.

Extended settings	Global settings for dimming	
	Same dimming time for central function and scenes	**No**
		Yes
	Same dimming time for central function and scenes(6s - 59.999 min)	**6 s**
	Control same dimming time via bus	**No**
		Yes

The group object appears after the enabling **Control same dimming time via bus**.

Group Objects for Dimming Time for Scenes and Central Function

No.	Name	Object function	Length	Behavior	Data Type
8	Central	Dimming time for scenes and central	2 bytes	Received	7.004 time (100 ms)

With a telegram, the same dimming time for scenes and central function can be set or modified via the object (2 byte DPT 7.004 time (100 ms)) between 0 ms and 99:59:9 ms, e.g., using a button. This allows you to specify the length of the dimming time from different places according to the desired situation.

Priority of Functions for Dimming

The global priorities for dimming are defined here. The safety function has the highest priority. The other priorities can be selected here.

Extended settings	Global settings for dimming	
	Priority of functions	**Safety > Alarm > Lock/Prio > All other**
		Safety > Lock/Prio > Alarm > All other

Connected Nominal Voltage

Extended settings	Global settings for dimming	
	Connected nominal voltage	**220-240 V~**
		110-127 V~

This voltage information is required to ensure optimum zero crossing detection (synchronization with higher/lower voltage level) of the mains voltage.

Global Settings for Switching

The global settings for the switching functions are defined here.

Activation of the Collected Status Response

The **collected status response** can be activated on the device in the ETS.

Extended settings	Global settings for switching	
	Collected status response	**Disable**
		Enable
	Assign channel status to 1bit value	**Normal behavior (Pressed = 1, Released = 0)**
		Inverted
	Delay time sending (0...255, unit = 1 s)	60

With the **collected status response** object, you can send the status responses coded bit-by-bit via a 4-byte telegram with a time delay.

Each device (Master / Extension 1 / Extension 2) has its own **collected status response** object.

The **collected status response** is intended to save group addresses and to reduce the bus load, e.g., in the case of a **Central Off** telegram, the 8 channels are grouped together to form a single **collected status response**.

The 4-byte object has the following structure. The upper two bytes indicate which status bit is valid (“1” = valid, “0” = invalid). The lower two bytes indicate the statuses (pressed or released) of the channels.

Byte 4	0	Not used
	1	Not used
	2	Not used
	3	Not used
	4	Not used
	5	Not used
	6	Not used
	7	Not used

Byte 3	0	Valid output 1
	1	Valid output 2
	2	Valid output 3
	3	Valid output 4
	4	Valid output 5
	5	Valid output 6
	6	Valid output 7
	7	Valid output 8
Byte 2	0	Not used
	1	Not used
	2	Not used
	3	Not used
	4	Not used
	5	Not used
	6	Not used
	7	Not used
Byte 1	0	Status output 1
	1	Status output 2
	2	Status output 3
	3	Status output 4
	4	Status output 5
	5	Status output 6
	6	Status output 7
	7	Status output 8
Byte 4	0	Not used
	1	Not used
	2	Not used
	3	Not used
	4	Not used
	5	Not used
	6	Not used
	7	Not used

Example:

Master with 8 switching channels, channels 2 and 6 are pressed:

00000000 11111111 00000000 00100010.

You can define or invert the value of the **collected status response** (pressed = 1, released = 0 or pressed = 0, released = 1) via the parameter **Assign channel status to 1-bit value**.

Once the set sending delay has expired, the current status of the output channels is sent to the bus.

Group Objects for Collected Status

No.	Name	Object function	Length	Behavior	Data Type
10 – 12	Master/Extension 1/ 2	Collected status	4 bytes	Send/Read	27.001 bit-combined info On/Off

Priority of Functions for Switching

The global priorities for switching are defined here.

The safety function has the highest priority.

The other priorities can be selected here.

Extended settings	**Global settings for switching**	
	Priority of functions	**Safety > Alarm > Lock/Prio > all other**
		Safety > Lock/Prio > Alarm > all other

Global Settings for Roller Shutter and Blind

The global settings for roller shutter and blind are defined here.

Weather Alarm Function

The **weather alarm function** can be activated for all roller shutter/blind channels in the ETS.

There are now 5 different weather alarms available, together with their group objects.

The monitoring of the signals of the activated weather sensors can be carried out cyclically. The device then expects a telegram from the relevant sensor within the cycle time set. If such a telegram is not received within the monitoring time, the associated weather alarm is nevertheless triggered for safety reasons (if, for example, the sensor or the cable connection between sensor and blind channel is defective and no message would be sent in the event of a genuine alarm).

Extended settings	**Global settings for roller shutter and blind**	
	Weather alarm function	**Disabled**
		Enabled
	Monitoring time for wind alarm 1	**Disabled**
		1 s ... 12 h
	Monitoring time for wind alarm 2	**Disabled**
		1 s ... 12 h
	Monitoring time for wind alarm 3	**Disabled**
		1 s ... 12 h
	Monitoring time for rain alarm	**Disabled**
		1 s ... 12 h
	Monitoring time for frost alarm	**Disabled**
		1 s ... 12 h

Priority of Weather Alarms

The global priorities for the weather alarms are defined here.

Extended settings	Global settings for roller shutter and blind	
	Priority of weather alarms	**Wind alarm >Rain alarm >Frost alarm**
		Wind alarm > Frost alarm > Rain alarm
	Monitoring time for wind alarm 1	Rain alarm > Wind alarm > Frost alarm
		Rain alarm > Frost alarm > Wind alarm
	Monitoring time for wind alarm 2	Frost alarm > Rain alarm > Wind alarm
		Frost alarm > Wind alarm > Rain alarm

This priority setting applies to all blind and roller shutter channels for which the weather alarm function is enabled.

The reactions to a weather alarm only become active if no weather alarm with a higher priority is already active.

If a weather alarm is reset and another weather alarm with a lower priority is active at that time, the reactions of the alarm with the lower priority are now executed.

Group Objects for Weather Alarms

No.	Name	Object function	Length	Behavior	Data Type
18	Central	Wind alarm 1	1 bit	Received	1.005 Alarm
19	Central	Wind alarm 2	1 bit	Received	1.005 Alarm
20	Central	Wind alarm 3	1 bit	Received	1.005 Alarm
21	Central	Rain alarm	1 bit	Received	1.005 Alarm
22	Central	Frost alarm	1 bit	Received	1.005 Alarm

Priority of Functions for Roller Shutter and Blind

The global priorities for roller shutter and blind are defined here. The **safety function** has the highest priority. The other priorities can be selected here.

Extended settings	Global settings for roller shutter and blind	
	Priority of functions	**Safety > Alarm > Weather alarms > Lock > All other**
		Safety > Alarm > Lock > Weather alarms > All other
		Safety > Weather alarms > Alarm > Lock > All other
		Safety > Weather alarms > Lock > Alarm > All other
		Safety > Lock > Alarm > Weather alarms > All other
		Safety > Lock > Weather alarms > Alarm > All other

Calibration

The device calculates the current position of a drive from the running times you have set for the drive and from the control commands it executes. This calculation must be performed because there is no feedback from the drive regarding its position. Even if you have set the running times very precisely, the internally calculated height position will deviate slightly from the actual height position after a number of movements. This is due to mechanical tolerances and weather conditions (temperature fluctuations, frost, rain, etc.).

The device can reset these deviations by means of reference runs. For this purpose, it moves the drives to the upper or lower end position. After the reference run, the internal position calculation starts again from a fixed value. Any deviations that have arisen in the meantime are thus eliminated.

NOTE: The **calibration** function is especially important if you work a lot with position commands and high positioning accuracy is required. If the drives are controlled exclusively using the basic functions and position commands do not matter, then you do not need this function.

The **calibration** function can be activated here in the ETS for all roller shutter/ blind channels.

Extended settings	**Global settings for roller shutter and blind**	
	Calibration	**Disabled**
		Enabled

A reference run can be triggered by a group object or after a certain number of movements.

Group Object for Calibration

No.	Name	Object function	Length	Behavior	Data Type
17	Central	Calibration	1 bit	Received	1.010 Start/Stop

The channel-specific settings for the **calibration** function can be found in Extended Settings for Blind/Roller Shutter, page 130 and Extended Settings for Roller Shutter, page 158.

PIN Code for Firmware Update

For security reasons, you have to set a valid 4-digit PIN code to block unauthorized updates of the device firmware.

The PIN code defined in the ETS has to be entered in the Schneider-Electric **Firmware Update Tool** before downloading the firmware. This prevents unauthorized firmware update of the device via the USB interface.

Extended settings	**PIN Code for Firmware Update**	
	Please enter PIN Code for Firmware Update	**1234**
	(4 digits, 0 ... 9)	

PIN codes that are insecure or too simple cannot be selected.

You will receive the following message:

No valid PIN Code for Firmware Update! Please enter a valid PIN Code before you download your configuration!

Express Settings for Dimming

On the **Express settings for dimming** tab, define basic settings and activate or deactivate other functions.

Basic Functions for Dimming

The application provides three basic functions for controlling the brightness of the connected lamps:

- **Switching**
- **Relative dimming**
- **Value dimming**

When you enable the dimming output, other parameters and group objects are displayed.

General settings	Channel function Master / Extension 1 / Extension 2 Output 1-2	
	Dimming Output 1-2	**Enabled**
Master/Ext. 1/2 Output 1-2: Dimming	Express settings for dimming	...

Three group objects appear for each output channel to control these basic functions:

- **Switch object** (1 bit) for the **switching** function
- **Dimming object** (4 bits) for the **relative dimming** function
- **Value object** (1 byte) for the **value dimming** function

Group Objects of the Express Setting Dimming

No.	Name	Object function	Length	Behavior	Data Type
55	Master Output 1 name of the channel	Switch	1 bit	Received	1.001 switch
56	Master Output 1 name of the channel	Dimming	4 bits	Received	1.007 dimmer step
57	Master Output 1 name of the channel	Value	1 byte	Received	5.001 Percent (0...100%)
70	Master Output 1 name of the channel	Feedback switch	1 bit	Sending	1.001 switch
71	Master Output 1 name of the channel	Feedback value	1 byte	Sending	5.001 Percent (0...100%)

The dimming time for the respective function is preset and can be adjusted in the **Extended settings for dimming**(Dimming Times, page 60)

Moreover, two group objects are displayed for each output channel, reporting the current switching state and brightness value:

- **Status feedback switch** object (1 bit) for the **switching state feedback** function
- **Status feedback value** object (brightness value 1 byte) for the **brightness value feedback** function

Switching (1 Bit)

If the **switch** object receives a telegram with the value "1", the output will be switched on. In the default settings, the dimming time for switching on is 0,6 s at 100%. The output is switched off with an object value of "0".

The value that is approached when switching on using the switch object, can be defined by means of parameters.

Switch-ON Behavior (via Switch Object)

Master/Ext. 1/2 Output 1-2: Dimming	Express settings for dimming	
	Switch-ON behavior (via switch object)	**Max. brightness**
		Last brightness (Memory)
		Selectable brightness
	Initial brightness in %	**100** (1-100)

Possible settings:

- **Max. brightness**
  The output channel is set to the value which you have set in the parameter **(B) Maximum brightness in %**.
- **Selectable brightness**
  For this value, an additional parameter appears. **Initial brightness in %** The output is switched to the set initial brightness with a “1” telegram. The value of the initial brightness should not exceed the maximum dimming value. The maximum output brightness is always limited by the maximum dimming value. Higher values for the initial brightness are ignored. If the selected initial brightness is less than the minimum dimming value, this value is also ignored. In this case, the minimum dimming value is used as the starting value.
- **Last brightness (memory)**
  After a “1” telegram, the output is reset to the last brightness value it had before switching off.

Status Response for Switching

Master/Ext. 1/2 Output 1-2: Dimming	Express settings for dimming	
	Status response for switching	Disabled
		Enabled

The value of the **signal** object of a channel always corresponds to the current output state (ON or OFF).

Dimmed corresponds to the ON setting. Every time the state changes from OFF to ON or vice versa, the current object value is sent to the bus.

Dimming (4 Bits)

You can use the **relative dimming** function to dim the output up or down relative to its current value. The **step value** of the brightness change and the dimming direction are defined by the telegram value.

Telegrams for the relative dimming function are received via the **dimming** object. After a relative dimming telegram has been received, a new nominal value is calculated using the current value, the received dimming direction and the received step value.

The preset dimming time for relative dimming to 100% is 5.4 s.

Example:

A: Minimum brightness in % = 22%, current output value = 25%

Dimming brighter telegram with a step value of 12.5%	→	New nominal value: 25% + 12.5% = 37.5%
Dimming darker telegram with a step value of 25%	→	New calculated nominal value: 37.5% – 25% = 12.5%
		Actual value: 22% (A: Minimum brightness in %)

The limit values **A: Minimum brightness in %** and **B: Maximum brightness in %** cannot be violated in the case of relative dimming.

Dimming Object Switches Channel

You can use the parameter **Dimming object switches channel** to determine the other functions of an output channel when a relative dimming telegram is received.

Master/Ext. 1/2 Output 1-2: Dimming	Express settings for dimming	
	Dimming object switches channel	Not
		Only on
		Only Off
		On and Off

Possible settings

- **Not**
  This parameter setting prevents switching on and off, for example, the channel remains off or at the minimum dimming value.
- **Only On**
  The output channel can only be switched on by relative dimming telegrams. If it is switched on and the setpoint falls below **A: Minimum brightness in %** using relative dimming telegrams, the output remains switched on at the minimum dimming value.
- **Only Off**
  The output channel cannot be switched on by relative dimming telegrams. If it is switched on and the setpoint falls below **A: Minimum brightness in %** using relative dimming telegrams, the output is switched off.
- **On and Off**
  The output channel can only be switched on by relative dimming telegrams. If it is switched on and the setpoint falls below **A: Minimum brightness in %** using relative dimming telegrams, the output is switched off.

NOTE: The setting **Always start at 50% brightness (ESL/CFL)** for compact fluorescent lamps influences the switch-ON behavior (Always Start at 50% Brightness (ESL/CFL), page 52).

Value Dimming (1 Byte)

The **value dimming** function is used to set the required brightness directly. To do this, the value object of the output channel sends the desired brightness value as a percentage between 0% and 100%. The value range is divided up into 255 brightness levels. A level has a step value of approximately 0.4%. The telegrams for dimming with absolute values have a 1-byte data format (0 to 255).

The desired brightness values must lie within the limits which are defined by the minimum and maximum dimming values. If the brightness value exceeds the maximum dimming value, the maximum dimming value will be set as the output value. If the brightness value is lower than the minimum dimming value, this will be set as the output value.

The preset dimming time for **value dimming** from 0% to 100% is 0.6 s.

Value Object Switches Channel

You can establish the settings for switching the dimming output on and off via the **value dimming** function using a parameter.

Master/Ext. 1/2 Output 1-2: Dimming	Express settings for dimming	
	Value object switches channel	Not Only on Only Off **On and Off**

Possible settings

- **Not**
  This parameter setting prevents switching, i.e. the channel remains at the current value.
- **Only On**
  The output channel can be switched on by value telegrams. If it is switched on and the value object receives the value 0%, the output remains switched on at the value **Minimum brightness in %**.
- **Only Off**
  The output channel cannot be switched on by value telegrams. If it is switched on and the value object receives the value 0%, the output is switched off.
- **On and Off**
  The output channel can be switched on by value telegrams. If it is switched on and the value object receives the value 0%, the output is switched off.

NOTE: The setting **Always start at 50% brightness (ESL/CFL)** for compact fluorescent lamps influences the switch-ON behavior (Always Start at 50% Brightness (ESL/CFL), page 52).

Status Response for Brightness Value

Master/Ext. 1/2 Output 1-2: Dimming	Express settings for dimming	
	Status response for value	Disabled **Enabled**

The value of the signal object of a channel always corresponds to the current output value. The object value is sent in the following cases:

- A dimming process is terminated.
- The minimum or maximum dimming value has been reached.
- A dimming process was stopped by manual operation.

Name of the Channel Dimming

You can assign a separate name for each channel, e.g. "*Light Hall Ground Floor*". This individual name is appended to the fixed channel name, e.g. "**Master Output 1 - Dimming**". The full name of the channel is then, e.g. "*Master Output 1 – Dimming Light Hall Ground Floor*".

The name of the channel now appears on the parameters, channels and associated group objects.

Master/Ext. 1/2 Output 1-2: Dimming	Express settings for dimming	
	Name of the channel	*Light Hall Ground Floor*

Switch Object Behavior

You can define the behavior of the **switch** object for each channel.

Master/Ext. 1/2 Output 1-2: Dimming	Express settings for dimming	
	Switch object behavior	**Normal**
		Inverted

It can be operated normally or inverted.

Dimming Curve

You can use the dimming curves to adjust the control properties of a channel to the physical characteristics of different lamps.

The following dimming curves can be selected:

Master/Ext. 1/2 Output 1-2: Dimming	Express settings for dimming	
	Dimming curve	**LED lamps**
		Halogen lamps
		Incandescent lamps
		User-defined
-User-defined dimming curve	User-defined dimming curve	

LED Lamps

The following dimming curve is stored for LED lamps:

Dimming curve: LED lamps

You will find the parametrized dimming range on the Y-axis.

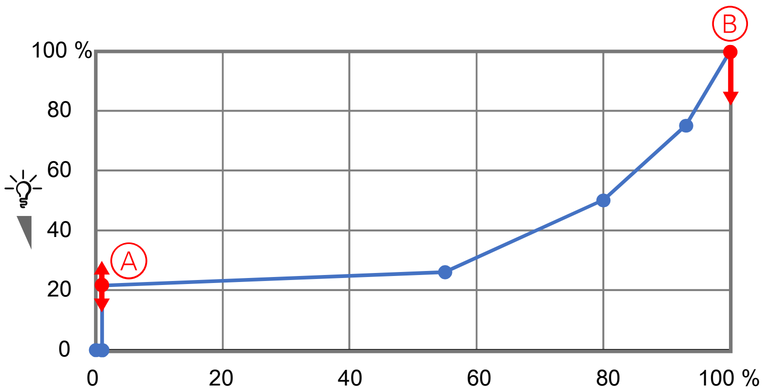
The minimum brightness (Minimum Brightness, page 52) and maximum brightness (Maximum Brightness, page 52) can be limited.

The KNX value range (0-100%) is located on the X-axis.

Halogen Lamps

The following dimming curve is stored for halogen lamps:

Dimming curve: Halogen lamps



You will find the parametrized dimming range on the Y-axis.

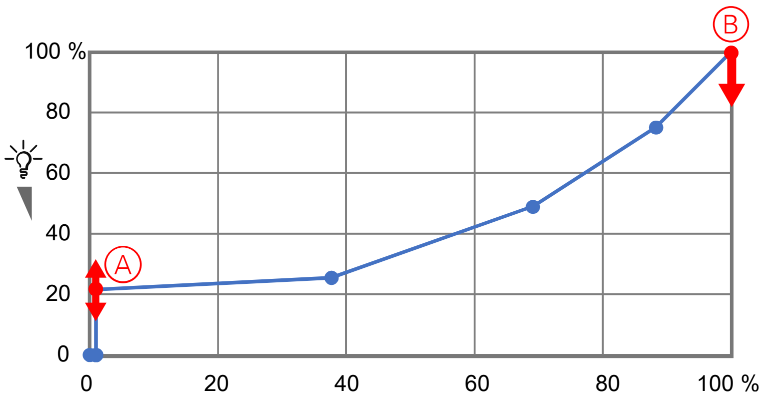
The minimum brightness (Minimum Brightness, page 52) and maximum brightness (Maximum Brightness, page 52) can be limited.

The KNX value range (0-100%) is located on the X-axis.

Incandescent Lamps

The following dimming curve is stored for incandescent lamps:

Dimming curve: Incandescent lamps



You will find the parametrized dimming range on the Y-axis.

The minimum brightness (Minimum Brightness, page 52) and maximum brightness (Maximum Brightness, page 52) can be limited.

The KNX value range (0-100%) is located on the X-axis.

User-defined Dimming Curve

A **user-defined dimming curve** can be stored for special lamps or dimming behavior.

Master/Ext. 1/2 Output 1-2: Dimming	Express settings for dimming	
	Dimming curve	User-defined
-User-defined dimming curve	User-defined dimming curve	
	Number of additional steps	**1** (0-3)

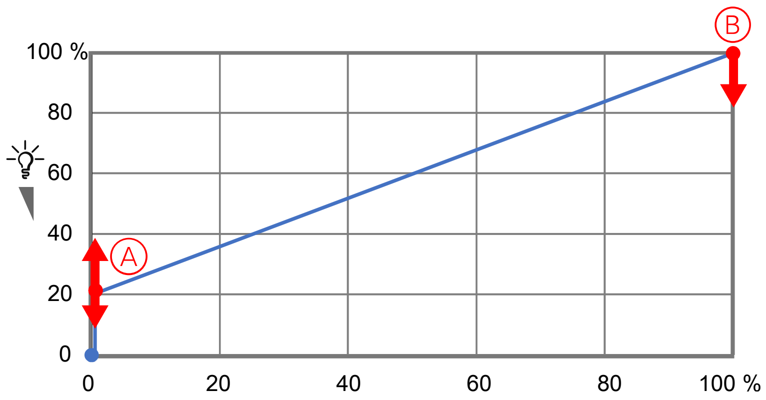
The number of steps (points) in the curve can be set from 0 to 3.

Number of Additional Steps = 0

Here you receive a linear dimming curve that is limited by the minimum brightness (Minimum Brightness, page 52) and maximum brightness (Maximum Brightness, page 52).

Master/Ext. 1/2 Output 1-2: Dimming	User-defined dimming curve	
-User-defined dimming curve	Number of additional steps	0
	A: Minimum brightness in %	**22**
	B: Maximum brightness in %	**100**

Dimming curve: User-defined dimming curve with number of additional steps = 0



You will find the parametrized dimming range on the Y-axis.

The minimum brightness (Minimum Brightness, page 52) and maximum brightness (Maximum Brightness, page 52) can be limited.

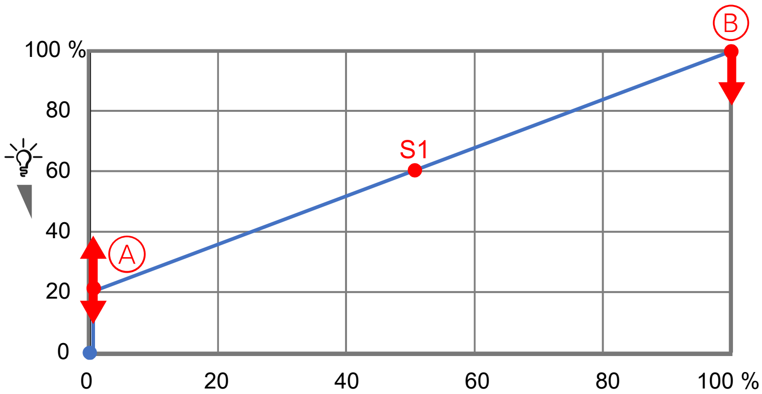
The KNX value range (0-100%) is located on the X-axis.

Number of Additional Steps = 1

Master/Ext. 1/2 Output 1-2: Dimming	User-defined dimming curve	
-User-defined dimming curve	Number of additional steps	1

	A: Minimum brightness in %	**22**
	(S1) step 1: KNX value	**50**
	(S1) step 1: Brightness value	**60**
	B: Maximum brightness in %	**100**

Dimming curve: User-defined dimming curve with number of additional steps = 1



You will find the parametrized dimming range on the Y-axis.

The minimum brightness (Minimum Brightness, page 52) and maximum brightness (Maximum Brightness, page 52) can be limited.

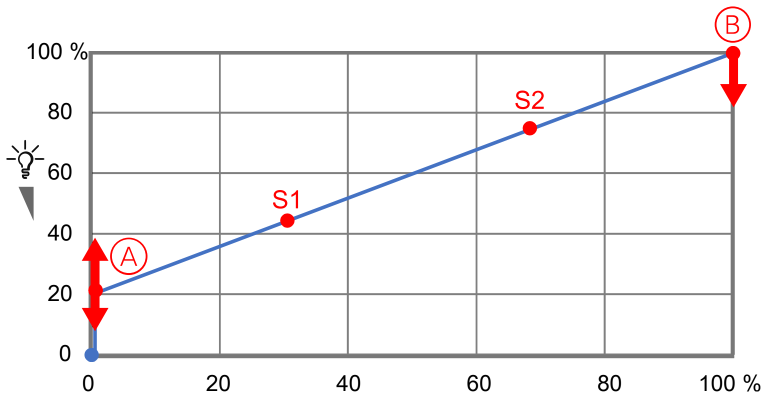
The KNX value range (0-100%) is located on the X-axis.

The additional step S1 is defined by the coordinates KNX value (S1) and brightness value (S1). The brightness value should always be greater than the previous value and less than the next value. The dimming curve must always rise and must not fall in certain segments.

Number of Additional Steps = 2

Master/Ext. 1/2 Output 1-2: Dimming	User-defined dimming curve	
-User-defined dimming curve	Number of additional steps	2
	A: Minimum brightness in %	**22**
	(S1) step 1: KNX value	**33**
	(S1) step 1: Brightness value	**48**
	(S2) step 2: KNX value	**66**
	(S2) step 2: Brightness value	**74**
	B: Maximum brightness in %	**100**

Dimming curve: User-defined dimming curve with number of additional steps = 2



You will find the parametrized dimming range on the Y-axis.

The minimum brightness (Minimum Brightness, page 52) and maximum brightness (Maximum Brightness, page 52) can be limited.

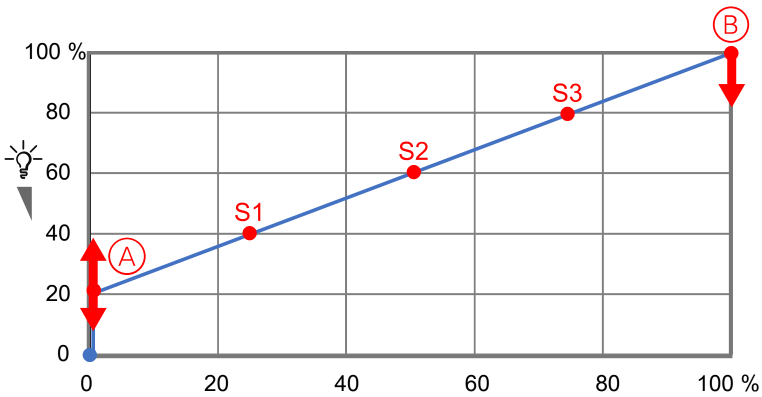
The KNX value range (0-100%) is located on the X-axis.

The additional steps S1 + S2 are defined by the coordinates KNX value (S1/S2) and brightness value (S1/S2). The brightness value should always be greater than the previous value and less than the next value. The dimming curve should always rise and must not fall in certain segments.

Number of Additional Steps = 3

Master/Ext. 1/2 Output 1-2: Dimming	User-defined dimming curve	
-User-defined dimming curve	Number of additional steps	2
	A: Minimum brightness in %	**22**
	(S1) step 1: KNX value	**26**
	(S1) step 1: Brightness value	**42**
	(S2) step 2: KNX value	**50**
	(S2) step 2: Brightness value	**60**
	(S3) step 3: KNX value	**75**
	(S3) step 3: Brightness value	**80**
	B: Maximum brightness in %	**100**

Dimming curve: User-defined dimming curve with number of additional steps = 3



You will find the parametrized dimming range on the Y-axis.

The minimum brightness (Minimum Brightness, page 52) and maximum brightness (Maximum Brightness, page 52) can be limited.

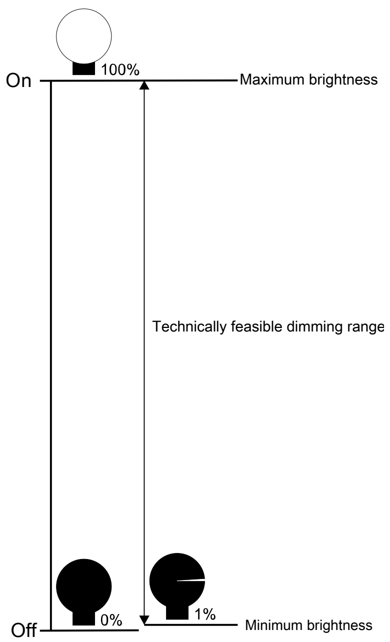
The KNX value range (0-100%) is located on the X-axis.

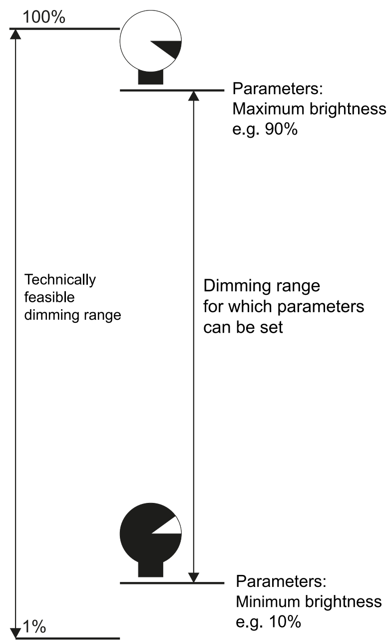
The additional steps S1 + S2 + S3 are defined by the coordinates KNX value (S1/S2/S3) and brightness value (S1/S2/S3). The brightness value must always be greater than the previous value and less than the next value. The dimming curve must always rise and must not fall in certain segments.

Dimming Range

The technical **dimming range** is defined by the range between the minimum and maximum brightness of a lamp, and can be set with the aid of a dimmer.

The minimum brightness value that can be set corresponds to a dimming value of 1%, and the maximum brightness value that can be set corresponds to a dimming value of 100%.





The **dimming range** can be limited further using the software application. This limit can be set individually for each output channel.

Dimming curves can be selected for different lamps.

Minimum Brightness

Faults such as flickering may occur at minimum brightness values. The brightness of the lamps may have fallen below the minimum value. In this case, increase the minimum dimming value.

If lamps can only be dimmed slightly, check whether the minimum dimming value has been set too high (range 1-25%).

Maximum Brightness

In some situations, it may not be possible to discern changes to the brightness at maximum brightness values, or the lighting may generally be too bright. In such cases, you can reduce the maximum dimming value.

If lamps can only be dimmed slightly, check whether the maximum dimming value has been set too low (range 76-100%).

Always Start at 50% Brightness (ESL/CFL)

Compact fluorescent lamps often need a minimum voltage for the ignition process. In order to ensure reliable starting, a minimum brightness can be set for after they have been switched on.

Master/Ext. 1/2 Output 1-2: Dimming	Express settings for dimming	
	Always start at 50% brightness (ESL/CFL)	**Disabled**
		Enabled

This setting ensures that 50% brightness is switched on for approximatelly two seconds in order to ignite the lamp. The brightness is then altered to the required dimming value.

Example

The memory function is selected. This function ensures that, where possible, the previous brightness value is restored when the lamp is switched on again. The minimum dimming value is 20%.

Action	Result
Switch off at 30% brightness (1 bit)	Lighting is switched off
Switch on (1 bit)	Switch on at 50% brightness
Automatic brightness correction	Dim down to 30% after approx. 2 s
Send 10% dimming value (1 byte)	Dim down to 20% (min. dimming value)

Dimming Operation Mode

The device is a types of universal dimming actuator and detects connected loads automatically. Load detection determines whether an inductive, capacitive or ohmic load is connected. However, there is also the option of selecting an alternative operating mode for special LED or energy-saving lamps (ESL/CFL) using the ETS parameters.

LED	Light emitting diode
ESL	Energy saving lamp
CFL	Compact fluorescent lamp

In order to ensure that different loads are adjusted optimally, further settings can be altered for each channel. You can adapt the starting behavior on switching on to the ESL/CFL ignition process. (Always Start at 50% Brightness (ESL/CFL), page 52)

The dimming range can generally be adapted individually for each channel for all loads (Dimming Range, page 51).

For information on special dimming curves for LED, halogen and incandescent lamps or user-defined, see Section Dimming Curve, page 46.

In this section you will learn about automatic load detection and the alternative dimming operation mode "Leading edge phase LED, ESL/CFL (RL-LED)", and find out which combinations of different loads are permitted.

The following dimming operating modes can be selected:

- **RC operating mode** = trailing edge phase (automatic)
- **RL operating mode** = leading edge phase (automatic)
- **RL-LED operating mode** = leading edge phase LED, ESL/CFL (can be set via ETS)

Load detection is only possible if the voltage and frequency are within the permissible range and there is no short circuit or overload.

Master/Ext. 1/2 Output 1-2: Dimming	Express settings for dimming	
	Dimming operation mode	**Automatic (RC mode/RL mode)**
		Special (RL-LED mode)

Automatic Load Detection (RC Mode/RL Mode)

In general, the connected loads are detected automatically for each channel. The load detection for each channel is performed as soon as the loads are connected and the mains voltage has been switched on.

The load is also checked with respect to inductive properties during continuous operation, and switched to RL operating mode if necessary.

NOTE: Loads may only be exchanged when the mains voltage is switched off.

Special Dimming Mode (RL-LED)

Normally, trailing edge phase (RC) is set automatically for LED or energy-saving lamps (ESL/CFL).

You can also dim special lamps in leading edge phase mode (RL-LED). To do this set the dimming mode in the ETS.

You should select this mode in the following cases:

- If the manufacturer of the light expressly recommends the leading edge phase or RL operating mode.
- If the lowest dimming value in the automatically selected operating mode is still too bright, and this operating mode is not prohibited by the manufacturer of the light. Switching to dimming operation mode RL-LED is particularly useful if the dimming range was previously deemed too small (Dimming Range, page 51).

The setting is activated once the application has been loaded. The inductive properties of the load are also checked in this operating mode, and the system will switch to the RL operating mode if necessary.

Load detection is normally performed when switching on or dimming (value > 0) for the first time after the mains voltage has been restored.

NOTE: Loads may only be exchanged when the mains voltage is switched off.

Using LED and ESL/CFL Lamps

- Do not use LED lamps in conjunction with energy-saving lamps (ESL/CFL). If possible, use lamps from the same manufacturer and of the same type in order to achieve satisfactory dimming properties.
- The max. power of each channel is generally lower for LED or energy-saving lamps than for other loads. The maximum loads and derating based on the ambient temperature and devices configuration is defined in the user manual.
- In **Special (RL-LED)** mode, the values are significantly reduced once again.
- The max. power depends heavily on the LEDs and energy-saving lamps used. If the load is too high, the actuator dims to minimum brightness or switches off directly. If this happens, reduce the number of lights.

Loads per Channel

- Incandescent and halogen lamps (ohmic load).
- Low-voltage halogen lamps with dimmable, wound transformers (inductive load).
- Low-voltage halogen lamps with dimmable, electronic transformers (capacitive load).
- combination of ohmic and inductive loads: Halogen and incandescent lamps, halogen lamps with wound transformers.
- combination of ohmic and capacitive loads: Halogen and incandescent lamps, halogen lamps with electronic transformers, LED or ESL/CFL.
- Dimmable ESL/CFL.
- Dimmable LED lamps.

More detailed information on the minimum and maximum permissible loads can be found in the “Technical data” section of the user manual. More information on dimmable LED and energy-saving lamps can be found here.

⚠ CAUTION

THE DEVICE CAN BE DAMAGED.

Read the user manual carefully. The following safety information refer exclusively to the selection of the load.

- Only operate the device according to the specifications listed in the technical data.
- Only connect dimmable transformers to the dimmer when you use transformers.
- Do not connect a combination of capacitive and inductive loads to one channel.
- Do not connect a combination of LED or ESL/CFL lamps and inductive loads such as wound transformers to one channel.
- Do not use dimmers on socket outlets. The risk of overload and connecting unsuitable devices is too high.

Operating Hours Limit

Operating Hours, page 31

Scenes

You can use the **scene** functions when you wish to give the user the option of modifying different room functions simultaneously **via just one bus telegram**. Loading a room scene allows you, for example:

- Dim the room lighting to a required value,
- move the blinds into a required position,
- set the heating control to daytime operation,
- and switch on the power supply to the socket-outlets in a room.

Since these functions have different telegram formats and the telegram values can also have different meanings (e.g. value "0" means OFF for lighting and OPEN for blinds), the same setting would require many different telegrams without the scene function.

The scene function allows you to integrate the actuator into a scene controller. There are memory slots for up to **16 different scene values** for each output channel.

Each of these 16 scene memories can be assigned to one of **64 possible scene numbers** (0 – 63 or 1 – 64).

You can save brightness values as scene values in the form of percentages. If the actuator receives a telegram which loads a scene number, the assigned output channel will be dimmed to the saved brightness level. The brightness values for the individual scenes saved during commissioning can be overwritten by the user at a later point if changes are required.

For telegram values from "0" to "63", the brightness values saved for this scene number will be loaded and the dimmer outputs set accordingly.

For telegram values from "128" to "191", the current brightness values of the assigned dimming outputs will be saved as new scene values for the transmitted scene number.

Enabling Scenes

Master/Ext. 1/2 Output 1-2: Dimming	Express settings for dimming	
	Scenes	**Disabled**
		Enabled
– Scenes settings	**Scene settings**	

Group Objects for Scene

No.	Name	Object function	Length	Behavior	Data Type
62	Master Output 1 name of the channel	Scene	1 byte	Received	18.001 scene control

Number of Scenes

Master/Ext. 1/2 Output 1 – 8: Dimming	**Scene settings**	
Scenes settings	Required number of scenes	**1** (1 – 16)

You can use the **scene** function to include multiple channels in a scene control.

Up to 16 different scenes are available for each output channel.

Each of the 16 scenes can be disabled again.

Master/Ext. 1/2 Output 1 – 2: Dimming	**Scene settings**	
Scenes settings	Scene 1 (1-16)	Disabled
		Enabled
	Scene 1 Description	
	Scene 1 Address (0-63)	**Scene address 0 - 63**
	Dependent: Global Settings for Scenes, page 33	
	Scene 1 Address (1-64)	Scene address 1 - 64
	Dependent: Global Settings for Scenes, page 33	
	Scene 1 brightness in %	**50** (1 – 100)

For clarity, a short description can be stored for each scene.

Each of these scenes can be assigned one of 64 possible scene addresses 0 to 63 (corresponding to telegram values 0-63) or 1 to 64 (corresponding to telegram values 0-63). This depends on the global settings for scenes.

Global Settings for Scenes, page 33

You can store the switching states (pressed, released) as scene values for each output channel.

Time Delay for Scene Processing

To avoid high power-on currents when switching to a complex scene, you can parameterize a time delay for each output channel.

Master/Ext. 1/2 Output 1 – 2: Dimming	**Scene settings**	
Scenes settings	Time delay for scene processing (0...255, unit = 100 ms)	**0**

Calling and Saving Scene Values

The scene values for the output relays are called using the **Scene** object. After receiving a scene telegram, the device evaluates the sent scene address and switches the outputs to the saved scene values.

If the **scene** object receives a scene telegram with learning bit “1”, then for all scenes assigned to the received scene address, the current switching state is saved as the new scene value.

NOTE: If a scene address within a channel is assigned to multiple scenes (incorrect parameterization), only the last scene found with this scene address is called or saved. You can avoid this by assigning different scene addresses within a channel.

Telegram format

Telegrams for the scene function have the data format: L X D D D D D D.

L = learning bit

X = not used

DDDDDD = called scene address

If the learning bit in a telegram has the value “0”, then the relay states saved for the scene address are called and set.

If the learning bit receives the value “1”, then the current output states are saved as new scene values for the received scene address.

Examples:

Telegram value	Binary	Hexadecimal	Scene address
0	0000 0000	00	Call scene address 0
1	0000 0001	01	Call scene address 1
29	0001 1101	1D	Call scene address 29
57	0011 1001	39	Call scene address 57
63	0011 1111	3F	Call scene address 63
128 (0+128)	1000 0000	80	Learning scene address 0
129 (1+128)	1000 0001	81	Learning scene address 1
157 (29+128)	1001 1101	9D	Learning scene address 29
185 (57+128)	1011 1001	B9	Learning scene address 57
191 (63+128)	1011 1111	BF	Learning scene address 63

Overwrite Scene Values during Download

Master/Ext. 1/2 Output 1 – 2: Dimming	**Scene settings**	
Scenes settings	Overwrite scene values of actuator during download	**Enabled**
		Disabled

If you have enabled the parameter "**Overwrite scene values in actuator during download**", the scene values saved in the device will be overwritten with your preset values on downloading.

If you do not want to overwrite the values in the device when downloading, you must disable the parameter. In this case, the parameterized scene values are only written to the device memory during the first download. If an application download is then carried out, the scene values in the device memory are retained.

Priority

The **scene** function has the same priority as the normal **switching** function via the "**switch object**". This should be taken into account with regard to the priority of the higher-level functions.

Same Dimming Time for Central Function and Scenes

In the global (**extended**) settings, you can activate the same dimming time for central function and scenes. (Same Dimming Time at Central Function and Scenes, page 36).

After general activation of the same dimming time, you can link the scene function of an output channel with this function.

Master/Ext. 1/2 Output 1 – 2: Dimming	**Scene settings**	
Scenes settings	Same dimming time	**Disabled**
		Enabled

Central Function Dimming

Enabling a Central Function for Each Output

Master/Ext. 1/2 Output 1 – 2: Dimming	**Express settings for dimming**	
	Central function	**Enabled**
		Disabled

The global settings and explanations of the **central** function can be found in the chapter Enabling Central Functions, page 26.

Activating Extended Settings for Dimming

To activate the **extended settings** for dimming, you must enable them here.

Master/Ext. 1/2 Output 1 – 2: Dimming	Express settings for dimming	
	Extended settings for dimming	**No** Yes

Extended Settings for Dimming

On the **Express settings for dimming** tab, activate the **Extended settings for dimming**.

Master/Ext. 1/2 Output 1 – 2: Dimming	Express settings for dimming	
		No
		Yes
-Dimming times	Dimming times	
-Time settings	Staircase lighting time	
	On-delay time	
	Off-delay time	
-Locking & Priority settings	Priority function	
	Locking function	
-Safety and alarm settings	Safety function	
	Alarm function	
	Failure and download behavior	

Dimming Times

Master/Ext. 1/2 Output 1 – 2: Dimming	Dimming times	
-Dimming times	Objects enabled for dimming time	**Disabled**
		Enabled
	Time for switching (1 bit) (0.6 s...99:59.9 min)	**0.6 s**
	Time for dimming (4 bits (0.6 s...99:59.9 min)	**5.4 s**
	Time for values (8 bits) (0.6 s...99:59.9 min)	**0.6 s**
	Time for priority (1 bit) (0.6 s...99:59.9 min)	**1.2 s**
	Time for scenes (1 bit) (0.6 s...99:59.9 min)	**9.6 s**

Group Object of Dimming Times

No.	Name	Object function	Length	Behavior	Data Type
64	Master Output 1 name of the channel	Time for switch	2 bytes	Received	7.004 time (100 ms)
65	Master Output 1 name of the channel	Time for dimming	2 bytes	Received	7.004 time (100 ms)
66	Master Output 1 name of the channel	Time for value	2 bytes	Received	7.004 time (100 ms)

No.	Name	Object function	Length	Behavior	Data Type
67	Master Output 1 name of the channel	Time for priority	2 bytes	Received	7.004 time (100 ms)
68	Master Output 1 name of the channel	Time for scenes	2 bytes	Received	7.004 time (100 ms)

Time Settings

Staircase Lighting Time Function (Staircase Timer)

This function is used to switch on a consumer, for example, the light in a staircase, via a bus telegram (dimming up) and automatically switch it off again after a set duration (dimming down). Therefore, no manually or automatically generated bus telegram is required for switching off. The actuator carries out the switching off operation independently and under time control.

Two types of staircase lighting time function are available:

Master/Ext. 1/2 Output 1 – 2: Dimming	Staircase lighting time	
	Staircase lighting time	**Disabled**
		Fix
Time settings		Variable

Group Objects of Staircase Lighting Time

No.	Name	Object function	Length	Behavior	Data Type
61	Master Output 1 name of the channel	Staircase fix	1 bit	Received	1.010 Start/Stop
61	Master Output 1 name of the channel	Staircase variable	2 bytes	Received	7.005 Time (s)

Staircase Lighting Time Fix

With **Staircase lighting time fix**, you can parameterize a fixed staircase lighting time for each channel. The staircase lighting time can be parameterized between 5 seconds and 1 hour. This function makes the **Staircase fix** object (1 bit) available to you.

Master/Ext. 1/2 Output 1 – 2: Dimming	**Staircase lighting time fix**	
– Time settings	Manual switching off	**Active**
		Not active
	Time extension	**Not retriggerable**
		Retriggerable
		Retriggerable and adding
	Max. number of additions	**2** (2 - 5)
	Duration time	**2 min** (5 s - 1 h)
	Switch-Off Prewarning	**Disabled**
		Enabled

	Warning starts (5...255, unit = 1s) before end	**30** (before end)
	Note: Staircase duration time must be longer or equal than prewarning start time.	

Staircase Lighting Time Variable

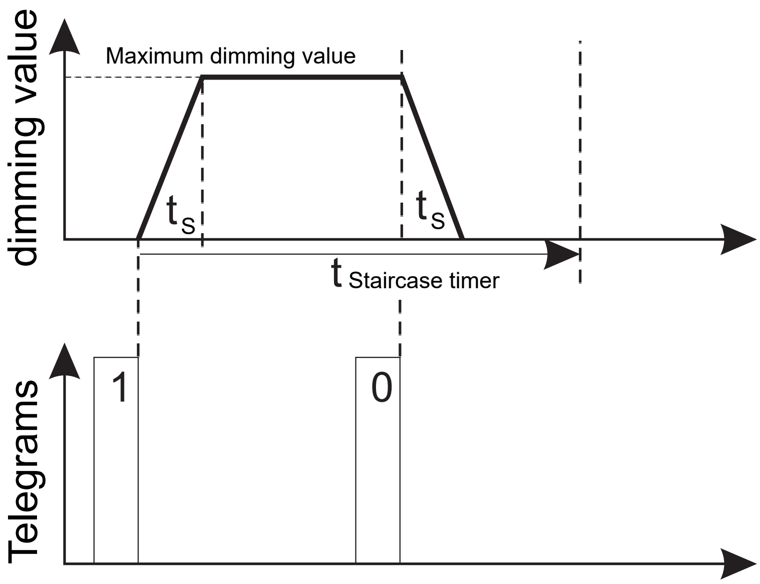
With **Staircase lighting time variable**, a time between 0 s and 65 535 s is defined via the object **Staircase variable** (2 bytes DPT 7.005 time (s)), e.g., using a button. This enables you to specify the length of the staircase lighting time from different places depending on the desired situation.

Master/Ext. 1/2 Output 1 – 2: Dimming	**Staircase lighting time variable**	
– Time settings	Manual switching off	**Active**
		Not active
	Time extension	**Not retriggerable**
		Retriggerable
		Retriggerable to the higher value
		Retriggerable and adding
	Max. number of additions	**2** (2 - 5)
	Switch-Off Prewarning	**Disabled**
		Enabled
	Warning starts (5...255, unit = 1s)	**30** (before end)
	Note: Staircase duration time must be longer or equal than prewarning start time.	

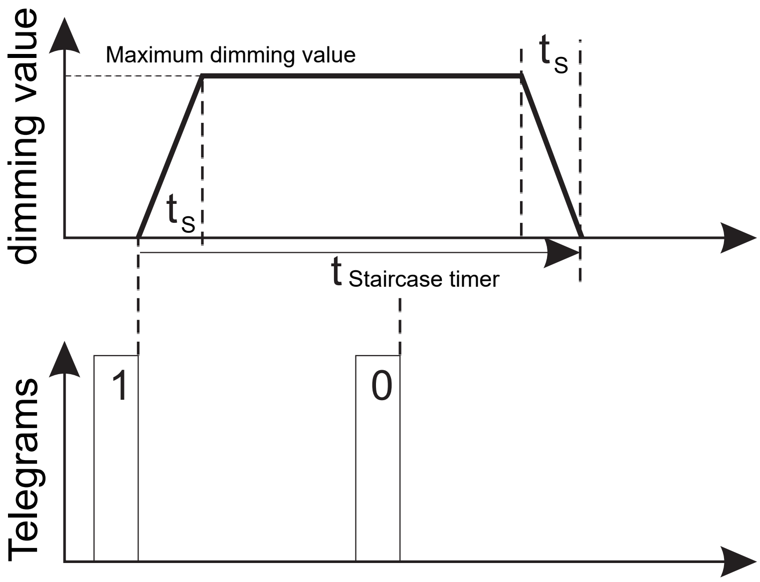
Manual Switching off

Both **staircase lighting time** functions enable you to switch off the staircase lighting time prematurely. After receiving the object value **0**, the output is dimmed to the **Off** position. TS is the time for switching (1 bit) with default 0.6 s.

Manual switching off = Active (“0” telegram)



Manual switching off = Not active (“0” telegram)



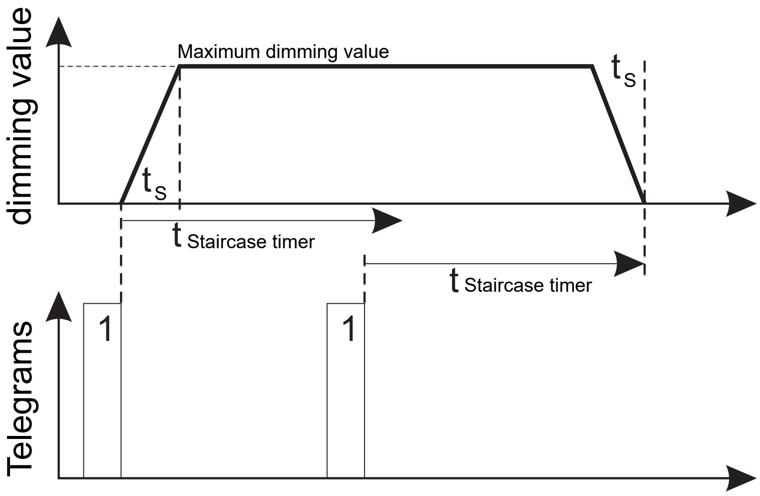
A telegram with the object value **0** has no effect. The set **staircase light time** continues to run normally until the end.

Time Extension

If you want to restart the staircase lighting time before it has elapsed or add up the staircase lighting time, you must select the staircase lighting time **Retriggerable** or **Retriggerable and adding** or **Not retriggerable**.

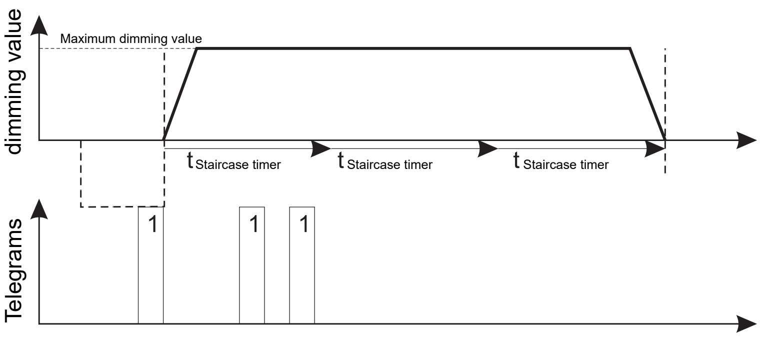
The staircase lighting time is then restarted or added using another “1” telegram.

Time extension = Retriggerable



Once a new telegram with the object value “1” has been received, the staircase lighting time is restarted.

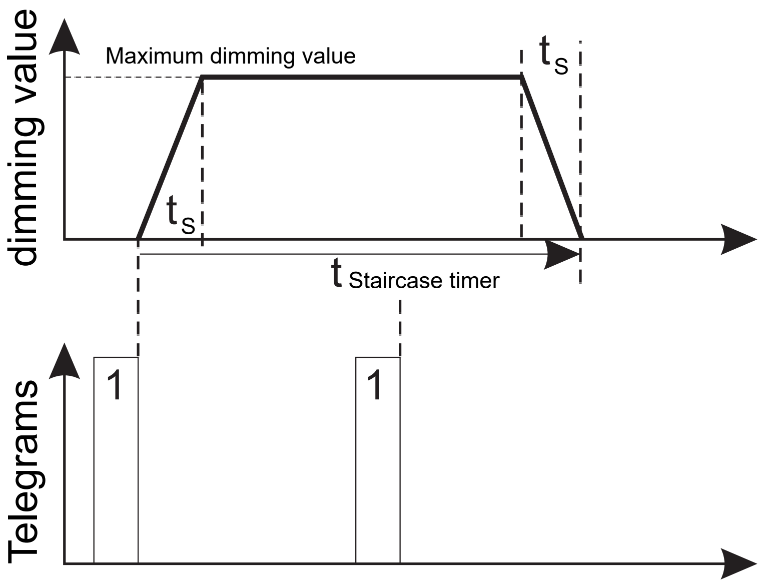
Time extension = Retriggeable and adding



Once one or more new telegrams with the object value "1" have been received, the staircase lighting time is added to the previous staircase lighting time. The number of additions can be set. You can parametrize a maximum of 5 additions of the staircase lighting time.

For example, you can add up the staircase lighting time by pressing a separate button several times.

Time extension = Not retriggerable

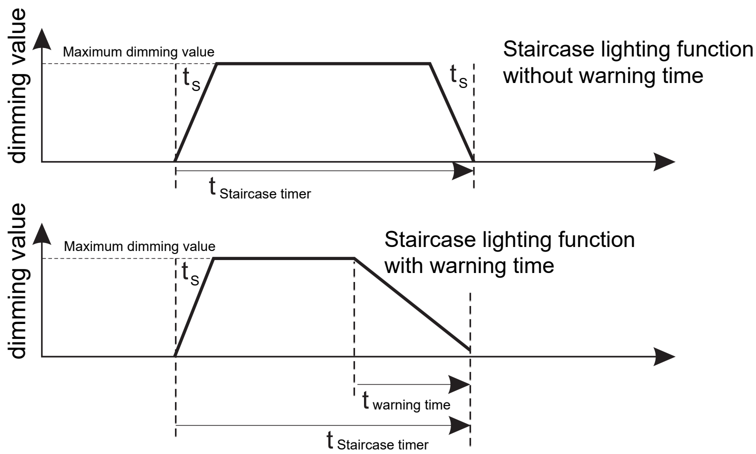


However, if the staircase lighting time is not retriggerable, the output will switch off/ dim at exactly the moment the time elapses. If the **Manual Switching off** function is activated, the staircase lighting time can be terminated prematurely with a "0" telegram.

Prewarnings

If you have activated **Switch-OFF Prewarning** for staircase timer then you can set a warning time as a period between 5 s and 255 s (= 4 min 15 s). This warning time determines how long the dimming-down procedure should last.

Staircase lighting time function with Switch-off Prewarning



Staircase Lighting Time Function in Combination with On-delay and Off-delay

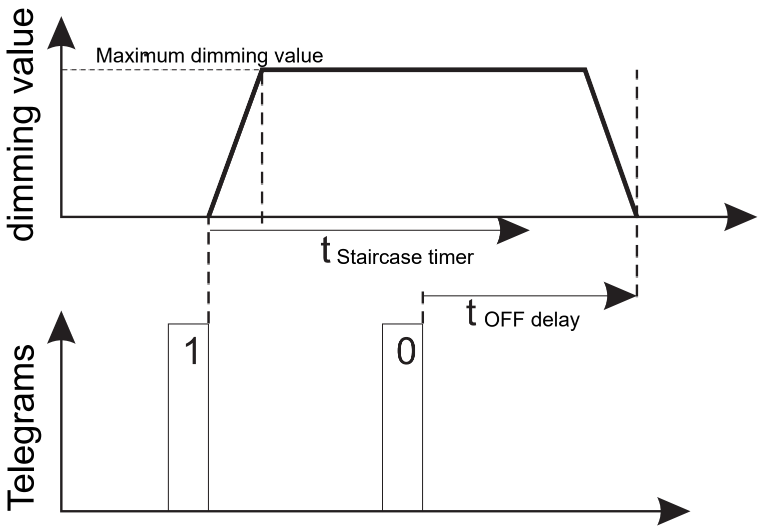
Combining a staircase lighting time function with an on-delay results in a delayed start of the staircase lighting function.

The result of combining a staircase lighting time function with an off-delay depends on how you have defined the staircase lighting time function:

In the case of the staircase lighting time function with **manual switching off** (“0” telegram), the off-delay is started if a premature switch-off telegram is received on the “**staircase lighting time** object”. Once the off-delay time has elapsed, the output is switched off.

In the case of the staircase lighting time function without **manual switching off**, receipt of a switch-off telegram on the “**staircase lighting time** object” has no effect. The staircase lighting time function continues to the end and then switches off the output. An off-delay cannot be set.

Staircase lighting time function with off-delay



For staircase lighting time functions with **manual switching off** and warnings activated, the staircase lighting time function is immediately deactivated with a warning when an “Off” telegram is received. The off-delay elapses. No warning is generated.

Priority

If the output of the actuator is switched to a new switch position by a higher priority function during an ongoing staircase lighting time, the relay switches to the new position immediately. The most recent switching telegram is saved and delay times and staircase lighting times continue.

On-delay and Off-delay

Due to the delay functions, the change of relay states is not carried out immediately after receipt of a telegram, but only after the set delay time has elapsed:

After the object value “1” has been received, the on-delay delays the switching of the output from the **Off** state to the **On** state.

After the object value “0” has been received, the off-delay delays the switching of the output from the **On** state to the **Off** state.

You can also use both functions together with a single channel.

On-delay

Master/Ext. 1/2 Output 1 – 2: Dimming	On-delay time	
Time settings	On-delay time	Enabled **Disabled**
	Works on Switch object	**Yes** (Yes/No)
	Works on Dimming object	**Yes** (Yes/No)
	Works on Value object	**Yes** (Yes/No)
	Works on Staircase object	**No** (Yes/No)
	Works on Scene object	**No** (Yes/No)

	On-delay mode	**Not retriggerable**
		Retriggerable
	Output during On-delay	**Switched off**
		At minimum brightness
	On-delay time	**1 s** (0 ms – 1 h)

Off-delay

Master/Ext. 1/2 Output 1 – 2: Dimming	Off-delay time	
	Off-delay time	Enabled
Time settings		**Disabled**
	Works on Switch object	**Yes** (Yes/No)
	Works on Value object	**Yes** (Yes/No)
	Works on Staircase object	**No** (Yes/No)
	Works on Scene object	**No** (Yes/No)
	Off-delay mode	**Not retriggerable**
		Retriggerable
		Retriggerable and adding
	Max. number of additions	**2** (2 – 5)
	Off-delay time	**1 s** (0 ms – 1 h)

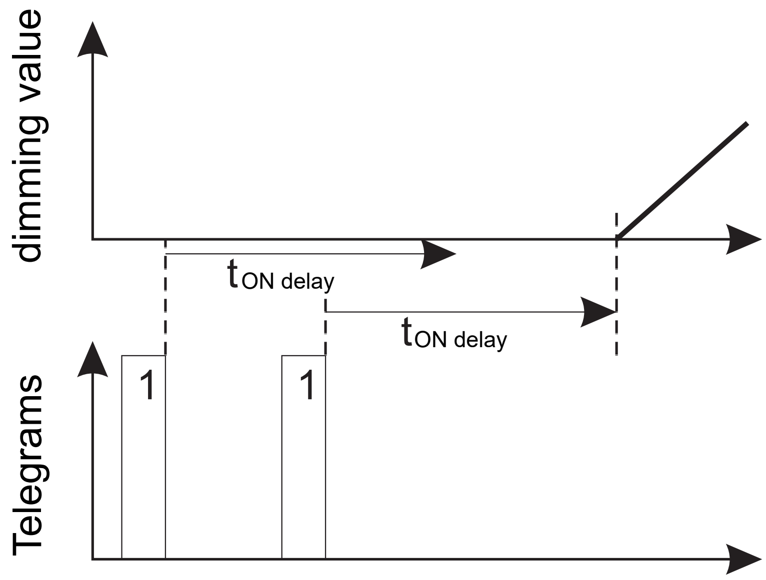
Works on Object

For each channel, you can parametrize whether the delay affects the switch object, dimming object or value object, or multiple objects in combination.

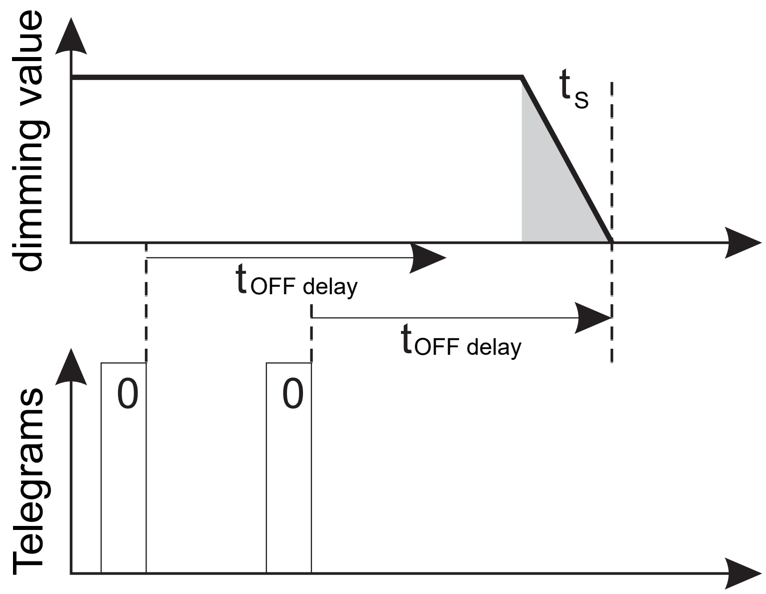
Type of Delay

Delay times can be parametrized for each channel. You can use parameters to define the set delays as **Retriggerable** or **Not retriggerable**. In the case of a **retriggerable on-delay**, the delay time is restarted when a "1" telegram is received. In the case of **retriggerable off-delays**, the delay time is restarted when a "0" telegram is received.

Retriggerable on-delay ("1" telegram)



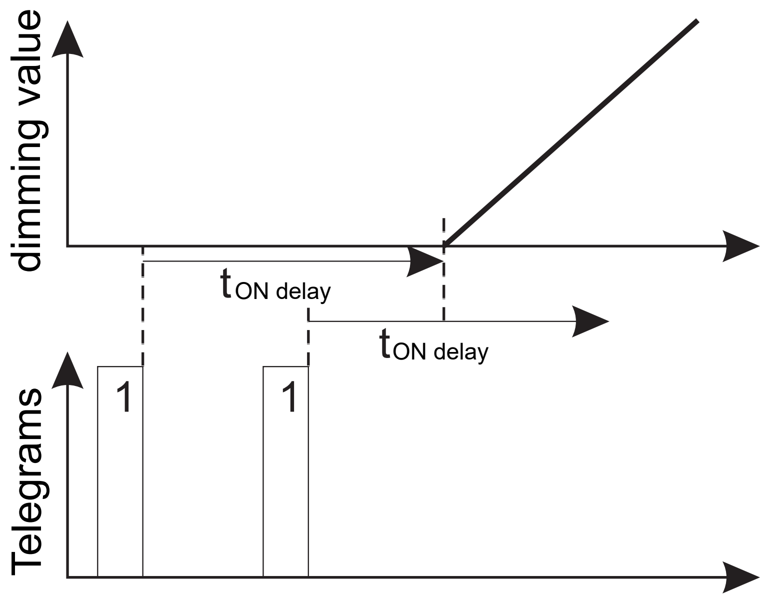
Retriggerable off-delay ("0" telegram)



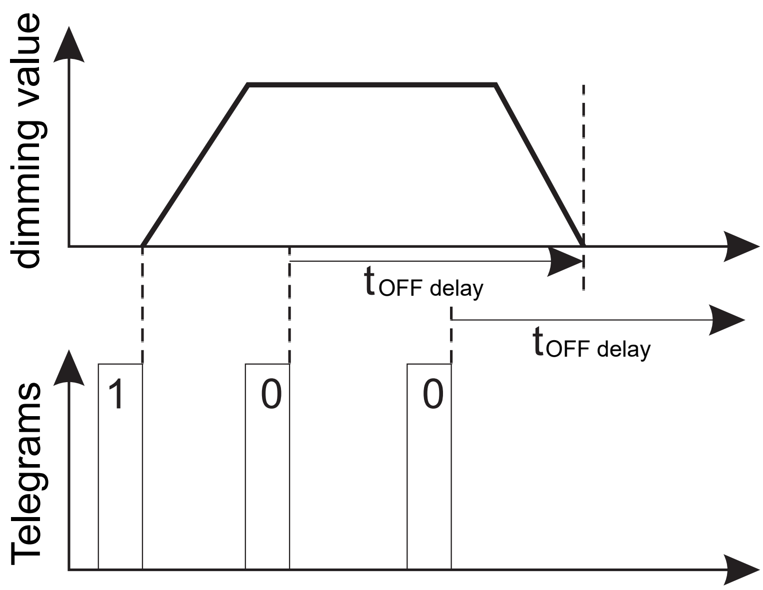
Moreover, for the off-delay, you can also select **Retriggerable and adding**. The delay time is added when the same telegram value is received, e.g., using a separate button. You can define the maximum number of additions.

In the case of not retriggerable delays, by contrast, the relay will switch off at exactly the moment the time elapses.

Not retriggerable on-delay



Not retriggerable off-delay



Interrupting a Delay Function

If a delay function is started by receiving a new object value and the output channel receives a telegram with the opposite object value during the current delay time, the delay function is canceled. The output is not switched/dimmed:

- Receipt of the object value "0" interrupts an active on-delay.
- Receipt of the object value "1" interrupts an active off-delay.

Priority

If the output of the actuator is switched to a new state by a higher-level function during an active delay time, the output switches/dims immediately.

Locking and Priority Settings

The following functions are available:

Master/Ext. 1/2 Output 1 – 2: Dimming	**Priority function**	
– Locking & Priority settings	Higher priority function	**Disabled**
		Priority function
		Locking function

If you have chosen the priority function (known in other devices as priority control), a new group object called **Priority** is available for this channel.

Master/Ext. 1/2 Output 1 – 2: Dimming	**Priority function**	
– Logic, Locking & Priority settings	Higher priority function	Priority function
	Behavior at the start of "On priority"	No reaction
		Switch Off
		Switch On at selectable brightness
	Brightness at start of "On priority" in %	**100** (1-100)
	Behavior at start of "Off priority"	No reaction
		Switch Off
		Switch On at selectable brightness
	Brightness at start of "Off priority" in %	**100** (1-100)
	Behavior at end of priority	No reaction
		Switch Off
		Follows previous function
		Switch On at selectable brightness
	Brightness after end of priority in %	**100** (1-100)
	Behavior after bus voltage recovery	**Disabled**
		Enabled, On
		Enabled, Off
		As before bus voltage failure

The object values of the priority object have the following meaning:

Value bit 1	Value bit 2	Behavior of output
1	1	Activate priority, output state "On"
0	1	Deactivate priority, output state dependent on the parameter **Behavior at end of priority**
1	0	Activate priority, output state "Off"
0	0	End of priority, output state dependent on parameter **Behavior at end of priority**

The priority is enabled if the value "1" is received on bit 1. The assigned output is then switched/dimmed, depending on bit 2, to "On" (bit 2 = "1") or "Off" (bit 2 = "0").

An active priority is terminated again by a new telegram with the value "0" on bit 1. As long as a priority function is active, the channel concerned cannot be controlled by the "switch object" and the advanced functions (central function, time functions, scene function).

After the end of a priority, the behavior of the output is determined by the parameter **Behavior at end of priority**.

The setting **Follows currently valid state** has the following effect:

During the active priority, all switching commands of subordinate functions are tracked by the application and the switching state is tracked internally. In this way, at the end of the priority, the switching state can be set that would currently have been set without the priority.

Group Object for Priority Function

If you have chosen the **priority function** (known in other devices as priority control), a new group object called **Priority** is available for this channel.

No.	Name	Object function	Length	Behavior	Data Type
59	Master Output 1 & (name of the channel)	Priority	2 bit	Received	2.001 Prio. switching

Behavior After Bus Voltage Recovery

Using the parameter **Behavior after bus voltage recovery**, you can define the reaction of the channel to bus voltage recovery and the output state:

Disabled
Priority remains deactivated. The switching state of the channel results from the other higher-level functions or from the set switching behavior after bus voltage recovery.

Enabled, Off
The priority is automatically activated on bus voltage recovery and the output is switched to "Off".

Enabled, On
Priority is automatically activated on bus voltage recovery and the output is switched to "On".

As before bus voltage failure
The priority is brought to the state it had before the bus voltage failure. If the priority was previously active, the output is switched to the state it had previously.

Locking Function

You can use the locking function to switch off a specific channel or to switch/dim it to a value and lock it in that position. The state of the output channel cannot be changed by other control commands as long as the lock is active.

You can enable the locking function individually for each switching channel.

Master/Ext. 1/2 Output 1 – 2: Dimming	**Locking function**

– Logic & Priority settings	Higher priority function	Locking function
	Locking	**At object value "1"**
		At object value "0"
	Behavior at start of locking	**No reaction**
		Switch Off
		Switch on at selectable brightness
	Brightness at start of locking in %	**100** (1-100)
	Behavior at end of locking	**No reaction**
		Switch Off
		Follows previous function
		Switch on at selectable brightness
	Brightness at end of locking in %	**100** (1-100)
	Behavior after download	**Disabled**
		Enabled
		As before download
	Behavior after bus voltage recovery	**Disabled**
		Enabled
		As before bus voltage failure

Once the locking function has been enabled, a new group object called **Lock** is available for the switching channel. You can activate and deactivate a channel lock using the **locking object**.

If the **locking object** receives a telegram with the object value that you set for the parameter **Lock**, all other channel functions are disabled. You can define the reaction using the parameter **Behavior at start of locking**.

If the locking object receives a telegram with the object value opposite of that for activation, the lock is canceled and the output adopts the state that you defined in the parameter **Behavior at end of locking**.

The locking function always switches without a delay. During a lock, the most recent switching telegram is saved.

Lock Behavior after Download

After a download, the lock function is also set as in the case of bus voltage recovery. The parameter **Behavior after download** determines which state is set.

If the **Behavior after download** parameter is set to **As before download** , the locking function is activated as previously set and the output is controlled accordingly.

Lock Behavior after Bus Voltage Recovery

Disabled:
The locking function is not activated after a bus voltage recovery, regardless of the state it had before the bus voltage failure.

Enabled:

After a bus voltage recovery, the locking function becomes active and the output is switched to the state that you defined via the parameter **Behavior at start of locking**. If you have set the value **No reaction** here, the output is locked in its current state.

As before bus voltage failure:
The locking function is brought to the state that was active before the bus voltage failure. If the locking function was active, the output is controlled by its settings in the parameter **Behavior at start of locking**.

Safety and Alarm Settings

Safety Function Dimming

The global safety function is activated on the **Extended settings** tab with the parameter **Device safety** and the global settings are parametrized there ().

The effect of the safety function can be parametrized here for each channel. You can enable the safety function individually for each switching channel.

Master/Ext. 1/2 Output 1 – 2: Dimming – Safety and alarm settings	**Safety function**	
	Safety function	**Disabled**
		Enabled
	Behavior at start of safety	**No reaction**
		Switch Off
		Switch on at selectable brightness
	Brightness at start of safety in %	**100** (1-100)
	Behavior at end of safety	**No reaction**
		Switch Off
		Follows previous function
		Switch on at selectable brightness
	Brightness at end of safety in %	**100** (1-100)
	(Cycle time surveillance for Safety object > 0)	
	Behavior at exceeding cycle time	**No reaction**
		Switch Off
		Switch on at selectable brightness
	Brightness on exceeding cycle time in %	**100** (1-100)

The **safety function** is activated if the **safety object** receives a telegram with the object value that you defined with the parameter **Device safety** ().

You can define the reaction using the parameter **Behavior at start of safety**.

If the **safety object** receives a telegram with the object value opposite of that for activation, the **safety function** is canceled and the output adopts the state that you defined in the parameter**Behavior at end of safety**.

The device then waits for a telegram from an external sender within the globally set cycle time. If such a telegram is not received within the monitoring time, the parameter **Behavior at exceeding cycle time** is used to determine what is to happen.

Group Objects for Central Safety

No.	Name	Object function	Length	Behavior	Data Type
23	Central	Safety	1 bit	Received	1.005 Alarm

Priority

The **safety function** is a 1-bit group object with the highest priority. This means that this object takes precedence over the following group objects:

Alarm object / Lock object / Priority object Priority of Functions for Switching, page 39

Scene object

Central switch object

Staircase fix / Staircase variable object

Switch object

Alarm Function

In the case of an alarm, the **alarm function** can be used to set each output to a desired alarm state. The output is disabled for further operation. Only a higher-level function with a higher priority can still be used to switch the output to a different state.

You can activate the **alarm function** individually for each output channel. The **alarm function** can be parametrized here for each channel.

Master/Ext. 1/2 Output 1/2: Dimming – Safety and alarm settings	**Alarm function**	
	Alarm function	**Disabled**
		Enabled
	Alarm	**At object value "1"**
		At object value "0"
	Behavior at start of alarm	**No reaction**
		Switch Off
		Switch on at selectable brightness
	Brightness at start of alarm in %	**100** (1-100)
	Behavior at end of alarm	**No reaction**
		Switch Off
		Follows previous function
		Switch on at selectable brightness
	Brightness after end of alarm in %	**100** (1-100)
	Behavior after bus voltage recovery	**Disabled**
		Enabled
		As before bus voltage failure

Group Objects of the Alarm Function

No.	Name	Object function	Length	Behavior	Data Type
60	Master Output 1 & (name of the channel)	Alarm	1 bit	Received	1.005 Alarm

Object Values for Alarm

The alarm function is activated if the **alarm object** receives a telegram with the object value that you defined with the parameter **Alarm**. The reaction is defined by the parameter **Behavior at start of alarm**.

If the **alarm object** receives a telegram with the object value opposite of that for activation, the **alarm function** is canceled and the output adopts the state that you defined in the parameter **Behavior at end of alarm**.

At object value “1”:
The object value “1” switches on the **alarm function**. If the object value “0” is received, the **alarm function** is switched off again.

At object value “0”:
The object value “0” switches on the **alarm function**. A telegram with the object value “1” deactivates the function again.

Behavior of the Alarm after Bus Voltage Recovery

Disabled:
The alarm function is not activated after a bus voltage recovery, regardless of the state it had before the bus voltage failure.

Enabled:
After a bus voltage recovery, the alarm function becomes active and the output is switched to the state that you defined via the parameter **Behavior at start of alarm**.

As before bus voltage failure:
The alarm function is brought to the state that was active before the bus voltage failure. If the alarm function was active, the output is controlled by its settings in the parameter **Behavior at start of alarm**.

Priority

The **alarm function** is a 1-bit group object with high priority. The device safety function has the highest priority. The priority order for switching can be defined globally (Priority of Functions for Switching, page 39). The **alarm object** takes precedence over the following group objects:

- The priority relative to the **locking object** / **priority object** is defined centrally for switching:
- **Scene object**
- **Central switch object**
- **Staircase fix / Staircase variable object**
- **Switch object**

Failure and Download Behavior

You can enable this function individually for each dimming channel. The behavior of the dimming output in the case of a bus voltage failure / bus voltage recovery and application download is defined.

Master/Ext. 1/2 Output 1/8: Dimming	**Failure and download behavior**	
– Safety and alarm settings	Failure and download behavior	**Disabled**
		Enabled
	Output after bus voltage failure	No reaction
		Switch Off
		Switch on at selectable brightness
	Brightness after bus voltage failure in %	**100** (1-100)
	Output on bus voltage recovery	**As before bus voltage failure**
		No reaction
		Switch Off
		Switch on at selectable brightness
	Brightness after bus voltage recovery in %	**100** (1-100)
	Output at end of download	**As before download**
		No reaction
		Switch Off
		Switch on at selectable brightness
	Brightness after download in %	**100** (1-100)

Output Behavior after Bus Voltage Failure

If the bus voltage falls below 18 V, the output can be switched to a parametrized state. The output can be defined as either **Switch off** or **Switch on** at selectable brightness, or remain in the state it had before the failure (**No reaction**). At the same time, the current state of the output is saved in the device.

Possible settings:

- **No reaction**
  The output channel remains at its current brightness value. If time functions (staircase lighting time function, on-delay, off-delay) are currently active, they are canceled.
- **Switch Off**
  The output channel is switched off.
- **Switch on at selectable brightness**
  The initial brightness is determined by another parameter. The selectable brightness can be set between 1% and 100%.

NOTICE

BEHAVIOR OF BLIND AND SHUTTER OUTPUTS HAS CHANGED.

The Dimmer Master does not have enough power to move all blind and shutter channels into position or to move them up or down. Only the following options are available here:

- Relay state after bus voltage failure: **No reaction**
- Relay state after bus voltage failure: **Stop**

Behavior of the Output after Bus Voltage Recovery

In the case of bus voltage recovery, the output can adopt a parametrized state.

Possible settings:

- **No reaction**
  The output channel remains at its current brightness value.
- **Switch Off**
  The output channel is switched off.
- **Switch on at selectable brightness**
  The initial brightness is determined by another parameter. The selectable brightness can be set between 1% and 100%.
- **As before bus voltage failure**
  With the parameter **As before bus voltage failure**, the output adopts the state that was saved in the device at the time of the bus voltage failure. Any subsequent manual switchings are overwritten.

Priority

The reaction to the behavior set here for bus voltage recovery has a low priority. If a function with a higher priority is activated for the output directly after bus voltage recovery, the settings described below apply to these functions.

States caused by higher-priority functions (higher-level function) take precedence over behavior after bus voltage recovery.

Behavior after Download

After the ETS download, the output can adopt a parametrized state.

If an internal defect or a faulty download results in a state in which the application is not operational, the device will not react.

If you wish to activate the behavior after ETS download for an output channel, you must set the parameter **Output at end of download**.

Possible settings:

- **No reaction**
  The output channel remains at its current brightness value.
- **Switch Off**
  The output channel is switched off.
- **Switch on at selectable brightness**
  The initial brightness is determined by another parameter. The selectable brightness can be set between 1% and 100%.
- **As before download**
  The output executes the behavior set before the download. Any subsequent manual switching is overwritten. If a higher-level function (priority or lock) is active, the behavior you defined for these functions will be executed.

Priority

States caused by higher-priority functions take precedence over behavior after ETS download.

Express Settings for Switching

On the **Express settings for switching** tab, define basic settings and activate or deactivate other functions.

To switch electrical loads, you can set the channel function of the device to **Switching** mode. The operating mode is selected for each output on the Defining Channel Functions, page 23 tab.

General settings	Channel function Extension 1 / Extension 2 Output 1-2	**Switching**
Ext. 1/2 Output 1-2 -Switch: Switching	Express settings for switching	...

Name of the Channel for Switching

You can assign a separate name for each channel, e.g. “Light Hall Ground Floor”. This individual name is appended to the fixed channel name, e.g., “**Extension 1 Output 1 - Switch**”. The full name of the channel is then “Extension 1 Output 1 - Switch Light Hall Ground Floor”.

The name of the channel now appears on the parameters, channels and associated group objects.

Ext. 1/2 Output 1-2 -Switch: Switching	Express settings for switching	
	Name of the channel	*Light Hall Ground Floor*

Switching Mode

Switching

You can choose between the switching modes **Switching** and **Blinking**. In **Switching** mode, the relay opens and closes depending on the KNX telegram and the setting for the contact mode.

Ext. 1/2 Output 1-8 -Switch: Switching	Express settings for switching	
	Switching mode	**Switching**
		Blinking
	Contact mode	**Normally opened**
		Normally closed

The settings for **Output 1** are described below, but apply equally to all outputs.

If you select switching mode **Switching** for output 1 on the extension, an ETS channel with the name **Extension 1 Output 1 - Switch +Name of the channel** will be created. All the group objects for this output are located there.

Group Objects for Switching Express Settings

No.	Name	Object function	Length	Behavior	Data Type
143	Extension Output 1 & (name of the channel)	Switch	1 bit	Received	1.001 Switch
149	Extension Output 1 & (name of the channel)	Feedback	1 bit	Sending	1.001 Switch

Contact Mode Normally Opened

The settings for Output 1 are described below, but apply equally to all outputs.

Ext. 1/2 Output 1-8 -Switch: Switching	Express settings for switching	
	Contact mode	**Normally opened**
		Normally closed

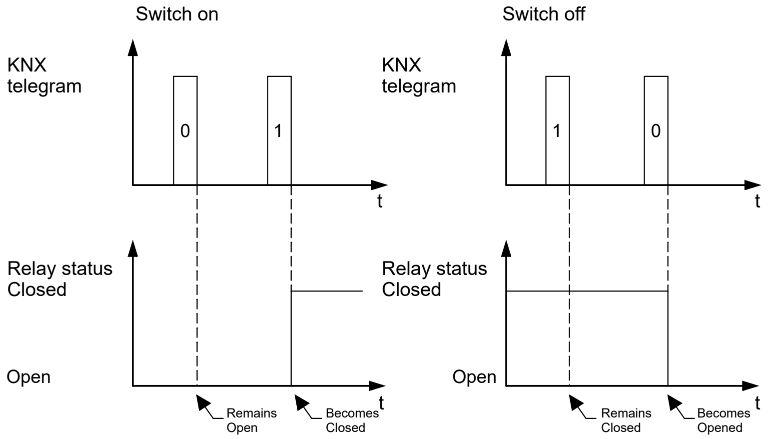
If the **switch object** receives a telegram with the value “0”, the contact is opened. If a telegram value of “1” is received, the contact is closed.

The settings “**Pressed**” and “**Released**” are used for the different switching states of the output contacts.

In relay mode “**Normally opened**”:

- Pressed = contact closed
- Released = contact opened

*Switching (**Normally opened** mode)*



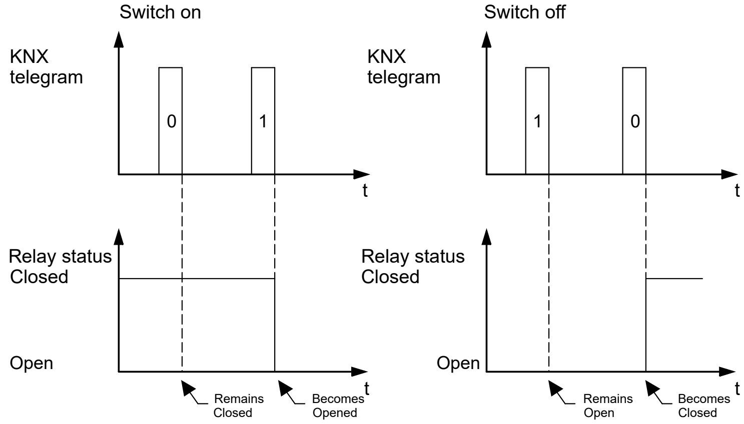
Contact Mode Normally Closed

If the **switch object** receives a telegram with the value “0”, the contact is closed. If a telegram value of “1” is received, the contact is opened. The settings “**Pressed**” and “**Released**” are used for the different switching states of the output contacts.

In relay mode **Normally closed**:

- Pressed = contact opened
- Released = contact closed

*Switching (**Normally closed** mode)*



Status Response

Depending on the parameterization, each channel can return a status response.

The following parameter settings are available for this:

Normal behavior (Pressed = 1; Released = 0)

Inverted (Pressed = 0; Released = 1)

Blinking

The switching mode **Blinking** alternately opens and closes the relay. You can define the blinking behavior for each channel.

The blinking speed is defined using the parameter **Blinking interval**. The blinking cycle starts with a closed relay.

Furthermore, you can set the ratio between closed and open relay during a blinking time in 3 steps. You can reduce the blinking intervals to a defined number to protect the relay.

Additionally, you can specify the state to which the relay will be switched after the defined number of blinking intervals.

IMPORTANT: Short switching times must not be parameterized under load (see technical data of the switching output).

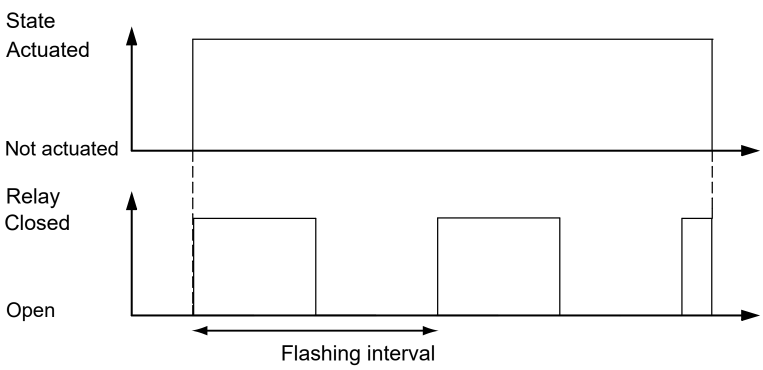
Ext. 1/2 Output 1-8 -Switch: Switching	Express settings for switching	
	Switching mode	Blinking
	Behavior at pressed/released	**Blinking / relay opened**
		Blinking / relay closed
		Relay opened / blinking
		Relay closed / blinking
	Blinking interval	**5 s**
		(5 s - 60 s)
	Proportion open/closed	**Equal (50/50%)**
		Short open / long closed (20/80%)
		Long open / short closed (80/20%)
	Defined number of blinking intervals (0...255, 0 = permanent blinking)	20
	Behavior after defined number of blinking intervals	**Relay is closed**
		Relay is opened

Behavior at Pressed/Released

- **Blinking/relay opened**

With **pressed** (telegram value “1”), the relay starts blinking. With **released** (telegram value “0” during blinking), the relay stops blinking and the relay is opened.

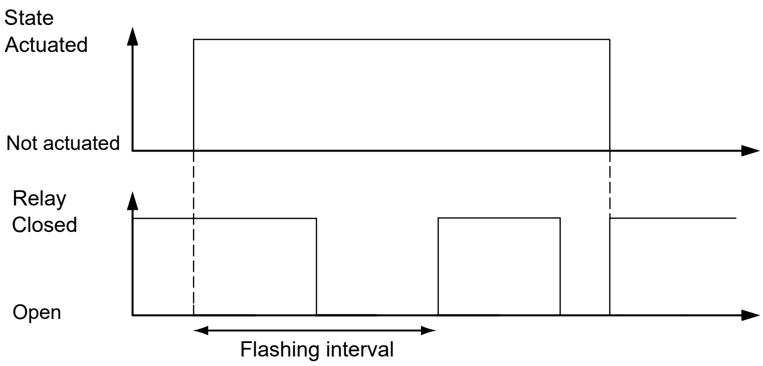
Blinking/relay opened



- **Blinking/relay closed**

With **pressed** (telegram value “1”), the relay starts blinking. With **released** (telegram value “0” during blinking), the relay stops blinking and the relay is closed.

Blinking/relay closed

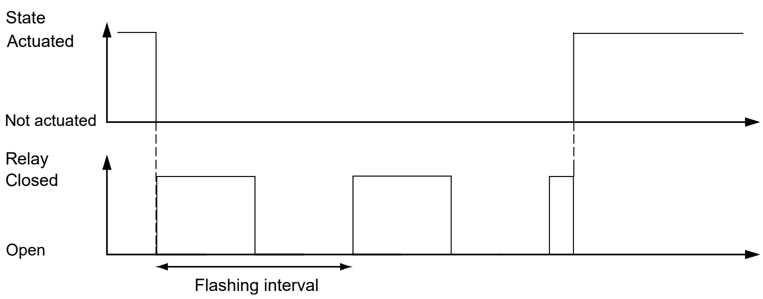


- **Relay opened/blinking**

With **pressed** (telegram value “1”), the relay stops blinking and the relay is opened. With **released** (telegram value “0” during blinking), the relay starts blinking.

The blinking cycle starts with a closed relay immediately after the download. Following the download, the switch object is released.

Relay opened/blinking

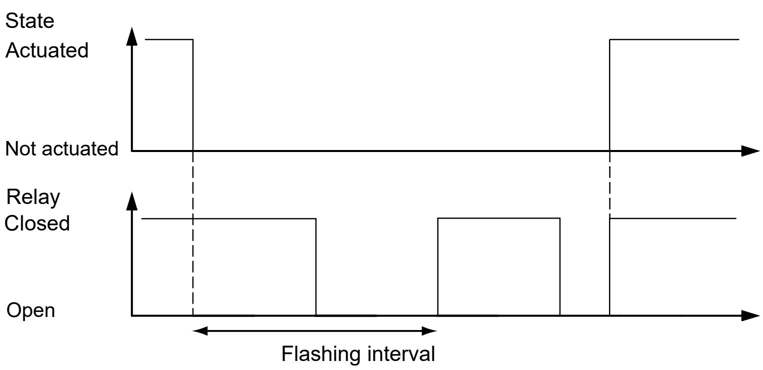


- **Relay closed/blinking**

With **pressed** (telegram value “1”), the relay stops blinking and the relay is closed. With **released** (telegram value “0” during blinking), the relay starts blinking.

The blinking cycle starts with a closed relay immediately after the download. Following the download, the switch object is released.

Relay closed/blinking



Blinking Interval

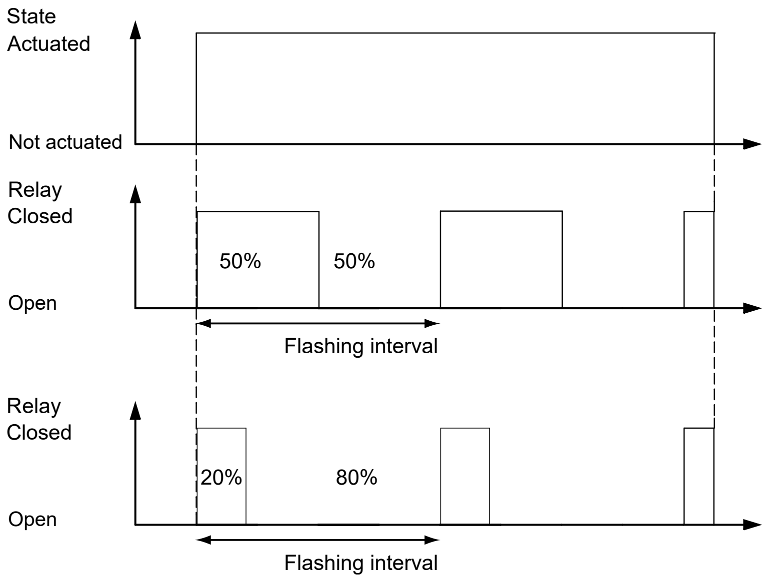
The blinking speed is set here. A blinking interval (on/off) can be set between 5 and 60 seconds.

Proportion Open/Closed

You can parameterize the ratio between closed and open relay during a blinking time.

You can select whether the relay is to be open/closed equally (**Equal**) during a blinking interval (50%/50%) or **short open/long closed** (20% / 80%) or **long open/short closed** (80%/20%).

Proportion open/closed



Defined Number of Blinking Intervals

You can reduce the blinking intervals to a defined number (0...255) to protect the relay.

With “0”, the number of blinking intervals is unlimited, so the relay blinks permanently.

Behavior after Defined Number of Blinking Intervals

You can specify the state to which the relay will be switched after the defined number of blinking intervals.

Either **Relay is closed** or **Relay is opened**.

Status Response

Depending on the parameterization, each channel can return a status response. The following parameter settings are available for this:

Normal behavior (Pressed = 1; Released = 0)

Inverted (Pressed = 0; Released = 1)

NOTE: At the beginning of the blinking interval, a one-off “1” signal is sent as feedback to the bus. After the end of the blinking interval, a one-off “0” telegram is sent to the bus. Or inverted.

Group Objects for Switching Express Settings

No.	Name	Object function	Length	Behavior	Data Type
143	Extension Output 1 & (name of the channel)	Switch	1 bit	Received	1.001 Switch
149	Extension Output 1 & (name of the channel)	Feedback	1 bit	Sending	1.001 Switch

Contact Mode

Contact Mode Normally Opened

The settings for Output 1 are described below, but apply equally to all outputs.

Ext. 1/2 Output 1-8 -Switch: Switching	Express settings for switching	
	Contact mode	**Normally opened**
		Normally closed

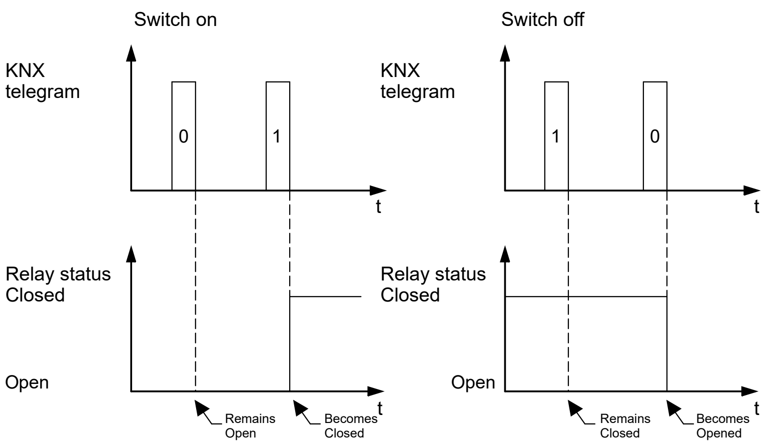
If the **switch object** receives a telegram with the value “0”, the contact is opened. If a telegram value of “1” is received, the contact is closed.

The settings “**Pressed**” and “**Released**” are used for the different switching states of the output contacts.

In relay mode “**Normally opened**”:

- Pressed = contact closed
- Released = contact opened

*Switching (**Normally opened** mode)*



Contact Mode Normally Closed

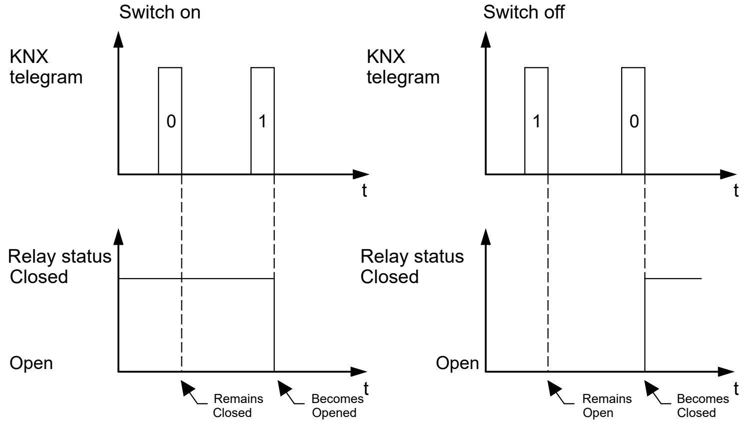
If the **switch object** receives a telegram with the value “0”, the contact is closed. If a telegram value of “1” is received, the contact is opened. The settings “**Pressed**” and “**Released**” are used for the different switching states of the output contacts.

In relay mode **Normally closed**:

- Pressed = contact opened

- Released = contact closed

*Switching (**Normally closed** mode)*



Status Response

Depending on the parameterization, each channel can return a status response.

The following parameter settings are available for this:

Normal behavior (Pressed = 1; Released = 0)

Inverted (Pressed = 0; Released = 1)

Scenes

If you want to change multiple room functions simultaneously at the press of a button or with a command, you can do so using the scene function.

You can use a scene, for example, to switch on the room lighting, set the heating control to daytime operation and turn on the power supply for the sockets of a room.

Enable Scenes

/Ext. 1/2 Output 1-8 -Switch: Switching	Express settings for switching	
	Scenes	**Disabled** Enabled
-Scenes settings	Scene settings	

Group Object for Scene

No.	Name	Object function	Length	Behavior	Data Type
148	Extension Output 1 & (name of the channel)	Scene	1 byte	Receives	18.001 Scene control

Number of Scenes

Ext. 1/2 Output 1-8 -Switch: Switching	**Scene settings**	
Scenes settings	Required number of scenes	**1** (1 – 16)

You can use the scene function to include multiple channels in a scene control. Up to 16 different scenes are available for each output channel.

Each of the 16 scenes can be disabled again.

Ext. 1/2 Output 1-8 -Switch: Switching	**Scene settings**	
Scenes settings	Scene 1 (1-16)	Disabled
		Enabled
	Scene 1 Description	
	Scene 1 Address (0-63)	**Scene address 0 - 63**
	Dependent: Global Settings for Scenes, page 33	
	Scene 1 Address (1-64)	Scene address 1 - 64
	Dependent: Global Settings for Scenes, page 33	
	Scene 1 switching state	**Released**
		Pressed

For clarity, a short description can be stored for each scene.

Each of these scenes can be assigned one of 64 possible scene addresses 0 to 63 (corresponding to telegram values 0-63) or 1 to 64 (corresponding to telegram values 0-63). This depends on the global settings for scenes.

Global Settings for Scenes, page 33

You can store the switching states (pressed, released) as scene values for each output channel.

Time Delay for Scene Processing

To avoid high power-on currents when switching to a complex scene, you can parameterize a time delay for each output channel.

Ext. 1/2 Output 1-8 -Switch: Switching	**Scene settings**	
Scenes settings	Time delay for scene processing (0...255, unit = 100 ms)	**0**

Calling and Saving Scene Values

The scene values for the output relays are called using the **Scene** object. After receiving a scene telegram, the device evaluates the sent scene address and switches the outputs to the saved scene values.

If the **scene** object receives a scene telegram with learning bit “1”, then for all scenes assigned to the received scene address, the current switching state is saved as the new scene value.

NOTE: If a scene address within a channel is assigned to multiple scenes (incorrect parameterization), only the last scene found with this scene address is called or saved. You can avoid this by assigning different scene addresses within a channel.

Telegram format

Telegrams for the scene function have the data format: L X D D D D D D.

L = learning bit

X = not used

DDDDDD = called scene address

If the learning bit in a telegram has the value “0”, then the relay states saved for the scene address are called and set.

If the learning bit receives the value “1”, then the current output states are saved as new scene values for the received scene address.

Examples:

Telegram value	Binary	Hexadecimal	Scene address
0	0000 0000	0	Call scene address 0
1	0000 0001	1	Call scene address 1
29	0001 1101	1D	Call scene address 29
57	0011 1001	39	Call scene address 57
63	0011 1111	3F	Call scene address 63
128	1000 0000	80	Learning scene address 0
129	1000 0001	81	Learning scene address 1 (129-128)
157	1001 1101	9D	Learning scene address 29 (157-128)
185	1011 1001	B9	Learning scene address 57 (185-128)
191	1011 1111	BF	Learning scene address 63 (191-128)

Overwrite Scene Values during Download

Ext. 1/2 Output 1-8 -Switch: Switching	Scene settings	
Scenes settings	Overwrite scene values of actuator during download	**Enabled** Disabled

If you have enabled the parameter “**Overwrite scene values in actuator during download**”, the scene values saved in the device will be overwritten with your preset values on downloading.

If you do not want to overwrite the values in the device when downloading, you must disable the parameter. In this case, the parameterized scene values are only written to the device memory during the first download.

If an application download is then carried out, the scene values in the device memory are retained.

Priority

The **scene** function has the same priority as the normal **switching** function via the "**switch object**". This should be taken into account with regard to the priority of the higher-level functions.

Central Function Switching

Enabling a Central Function for Switching Output

The central function is enabled or disabled here for each switch output.

Ext. 1/2 Output 1-8 -Switch: Switching	**Express settings for switching**	
	Central function	**Enabled**
		Disabled

The global settings and explanations of the central function can be found in the chapter Enabling Central Functions, page 26.

Status Response

Depending on the parameterization, each channel can return a status response.

The following parameter settings are available for this:

Normal behavior (Pressed = 1; Released = 0)

Inverted (Pressed = 0; Released = 1)

Activating Extended Settings for Switching

To activate the advanced settings for switching, you must enable them here.

Ext. 1/2 Output 1-8 -Switch: Switching	**Express settings for switching**	
	Extended settings for switching	**No**
		Yes

Extended Settings for Switching

On the **Express settings for switching** tab, activate the **Extended settings for switching**.

Ext. 1/2 Output 1-8 -Switch: Switching	Express settings for switching	
	Extended settings for switching	**Disable**
		Enable
– Time settings	Staircase lighting time	
	On-delay time	
	Off-delay time	
– Logic, Locking & Priority settings	Priority function	
	Logic function	
– Safety and alarm settings	Safety function	
	Alarm function	
	Failure and download behavior	

Time Settings

Staircase Lighting Time Function (Staircase Timer)

This function is used to switch on an appliance, e.g., the light in a staircase, via a bus telegram and automatically switch it off again after a set duration. Therefore, no manually or automatically generated bus telegram is required for switching off. The actuator carries out the switching off operation independently and under time control.

Two types of staircase lighting time function are available:

Ext. 1/2 Output 1-8 -Switch: Switching	**Staircase lighting time**	
– Time settings	Staircase lighting time	**Disabled**
		Fix
		Variable

Following enabling of the corresponding staircase lighting time function, the relevant group object appears.

Group Objects of Staircase Lighting Time

No.	Name	Object function	Length	Behavior	Data Type
147	Extension Output 1 name of the channel	Staircase fix	1 bit	Received	1.010 Start/Stop
147	Extension Output 1 name of the channel	Staircase variable	2 bytes	Received	7.005 Time (s)

Staircase Lighting Time Fix

With **Staircase lighting time fix**, you can parameterize a fixed staircase lighting time for each channel. The staircase lighting time can be parameterized between 5 seconds and 1 hour. This function makes the **Staircase fix** object (1 bit) available to you.

Ext. 1/2 Output 1-8 -Switch: Switching	**Staircase lighting time fix**	
– Time settings	Manual switching off	**Active**
		Not active
	Time extension	**Not retriggerable**
		Retriggerable
		Retriggerable and adding
	Max. number of additions	**2** (2 - 5)
	Duration time	**2 min** (5 s - 1 h)
	Number of prewarnings	**0** (0 - 5)
	Warning starts (5...255, unit = 1s) before end	**20** (5 - 255)
	Hint: Staircase duration time must be longer or equal than prewarning start time.	

Staircase Lighting Time Variable

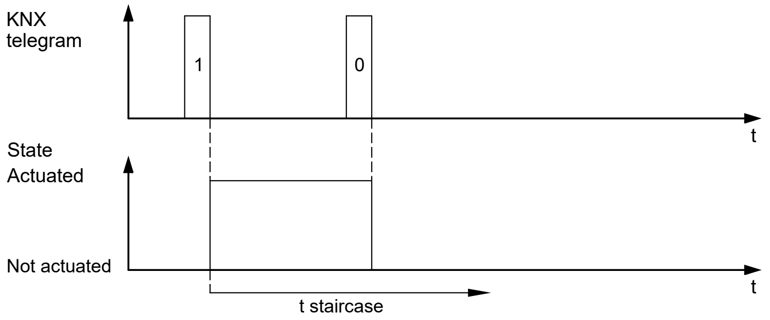
With **Staircase lighting time variable**, a time between 0 s and 65 535 s is defined via the object **Staircase variable** (2 bytes DPT 7.005 time (s)), e.g. using a button. This enables you to specify the length of the staircase lighting time from different places depending on the desired situation.

Ext. 1/2 Output 1-8 -Switch: Switching	**Staircase lighting time variable**	
– Time settings	Manual switching off	**Active**
		Not active
	Time extension	**Not retriggerable**
		Retriggerable
		Retriggerable to the higher value
		Retriggerable and adding
	Max. number of additions	**2** (2 - 5)
	Number of prewarnings	**0** (0 - 5)
	Warning starts (5...255, unit = 1s) before end	**20** (5 - 255)
	Hint: Staircase duration time must be longer or equal than prewarning start time.	

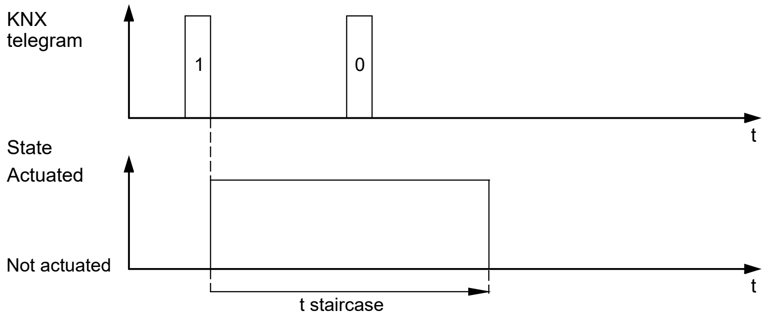
Manual Switching off

Both staircase lighting time functions enable you to switch off the staircase lighting time prematurely. After receiving the object value **0**, the output is switched to the **released** position.

Manual switching off = Active ("0" telegram)



Manual switching off = Not active ("0" telegram)

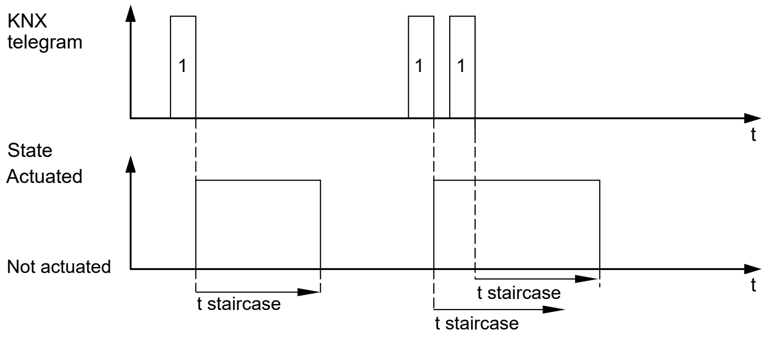


A telegram with the object value **0** has no effect. The set staircase light time continues to run normally until the end.

Time Extension

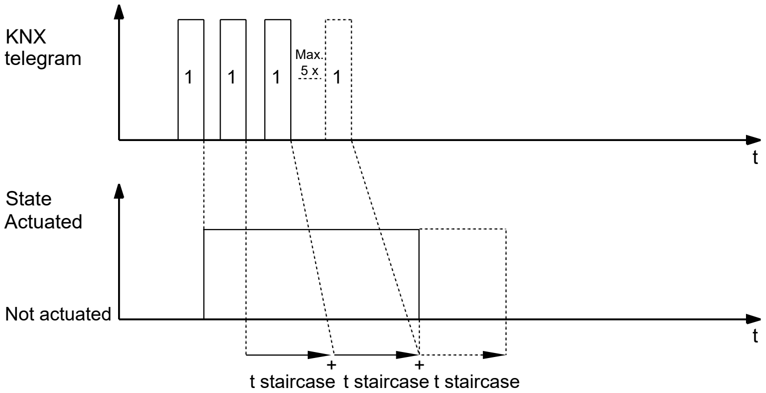
If you want to restart the staircase lighting time before it has elapsed or add up the staircase lighting time, you must select the staircase lighting time **Retriggerable** or **Retriggerable and adding** or **Retriggerable to the higher value**. The staircase lighting time is then restarted or added using another "1" telegram.

Time extension = Retriggerable



Once a new telegram with the object value "1" has been received, the staircase lighting time is restarted.

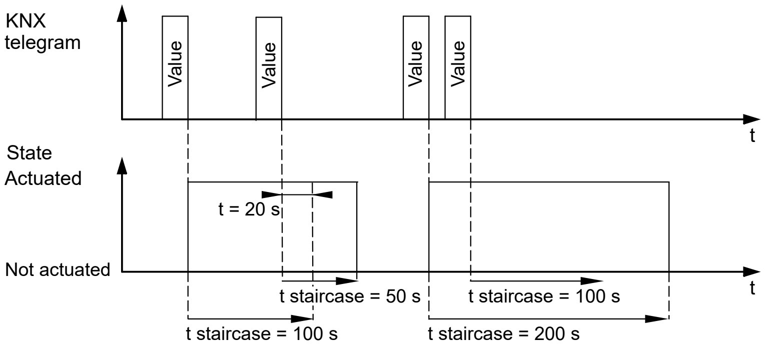
Time extension = Retriggeable and adding



Once one or more new telegrams with the object value “1” have been received, the staircase lighting time is added to the previous staircase lighting time. The number of additions can be set. You can parameterize a maximum of 5 additions of the staircase lighting time.

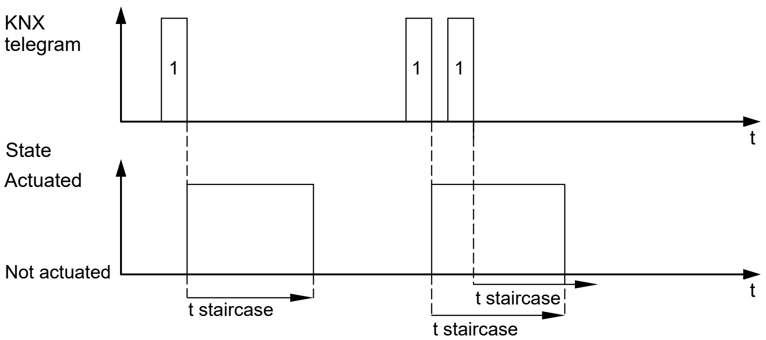
For example, you can add up the staircase lighting time by pressing a separate button several times.

Time extension = Retriggerable to the higher value (only for staircase lighting time = variable)



Once a new telegram has been received, the staircase lighting time is restarted with the higher value.

Time extension = Not retriggerable



However, if the staircase lighting time is not retriggerable, the relay will switch off at exactly the moment the time elapses.

If the **Manual switching off** function is activated, the staircase timer can be ended with a “0” telegram.

Prewarnings

To ensure that you are warned before the end of the staircase lighting time, you can parameterize a defined number (0-5) of prewarnings.

With the prewarnings, the user can be informed about the imminent end of the function by briefly switching off the lighting system shortly before the end of a staircase lighting time. He can then restart the staircase lighting by pressing a button (retriggering). If he does nothing, the function continues normally.

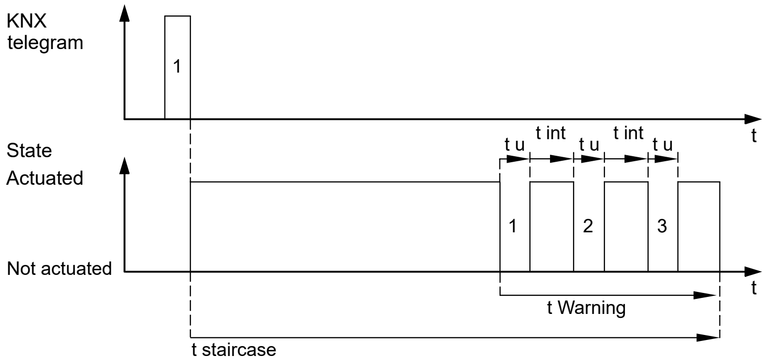
You can set this using the parameter **Number of prewarnings**. With the value “0”, the warning function is disabled. To enable the prewarnings, select the number of warning pulses. The first warning starts at the remaining staircase lighting time ($t_{Warning}$) set via the parameter **Warning starts before end**.

With every prewarning, the output contact is switched to “released” state for the fixed duration of 500 ms (t_u). If you have activated more than one warning, the waiting time (t_{zv}) between the warning pulses is calculated using the following formula:

$$\text{Wait time between prewarnings } (t_{zv}) = \frac{\text{Remaining staircase lighting time } (t_{warning}) - (\text{number of prewarnings x 500 ms } (t_u))}{\text{Number of prewarnings}}$$

If a continuous staircase lighting time function is interrupted by premature termination, no prewarning is given

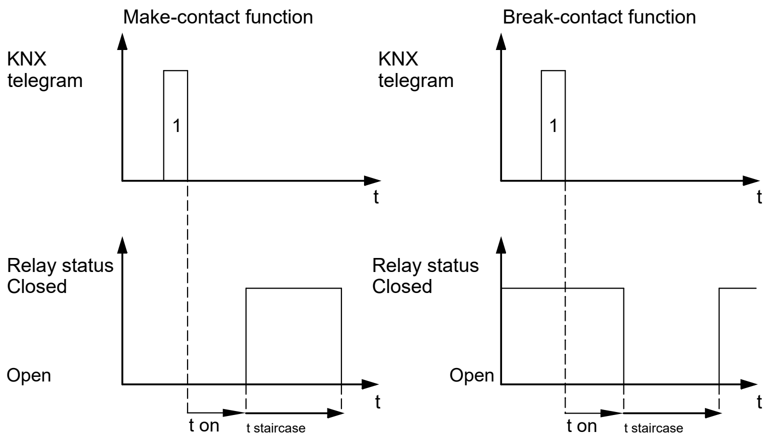
Prewarning (number of prewarnings=3)



Staircase Lighting Time Function in Combination with On-delay and Off-delay

Combining a staircase lighting time function with an on-delay results in a delayed start of the staircase lighting function.

Staircase lighting time function with on-delay

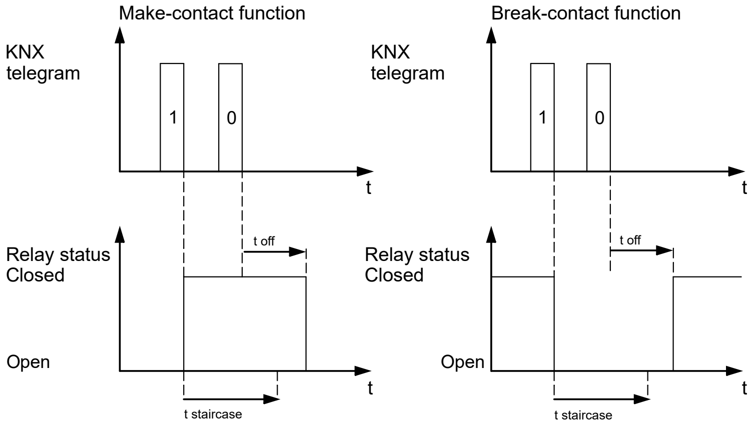


The result of combining a staircase lighting time function with an off-delay depends on how you have defined the **staircase lighting time** function:

In the case of the staircase lighting time function with **manual switching off** (“0” telegram), the off-delay is started if a premature switch-off telegram is received on the “**staircase lighting time object**”. Once the off-delay time has elapsed, the output is switched off (released).

In the case of the staircase lighting time function without **manual switching off**, receipt of a switch-off telegram on the “**staircase lighting time object**” has no effect. The staircase lighting time function continues to the end and then switches the output relay directly to the “released” state. An off-delay cannot be set.

Staircase lighting time function with off-delay



For staircase lighting time functions with **manual switching off** and warnings activated, the staircase lighting time function is immediately deactivated with a warning when an “Off” telegram is received. The off-delay elapses. No warning is generated.

Priority

If the output of the actuator is switched to a new switch position by a higher priority function during an ongoing staircase lighting time, the relay switches to the new position immediately. The most recent switching telegram is saved and delay times and staircase lighting times continue.

On-delay and Off-delay

Due to the delay functions, the change of relay states is not carried out immediately after receipt of a telegram, but only after the set delay time has elapsed:

After the object value “1” has been received, the on-delay delays the switching of the relay contact from the **released** state to the **pressed** state.

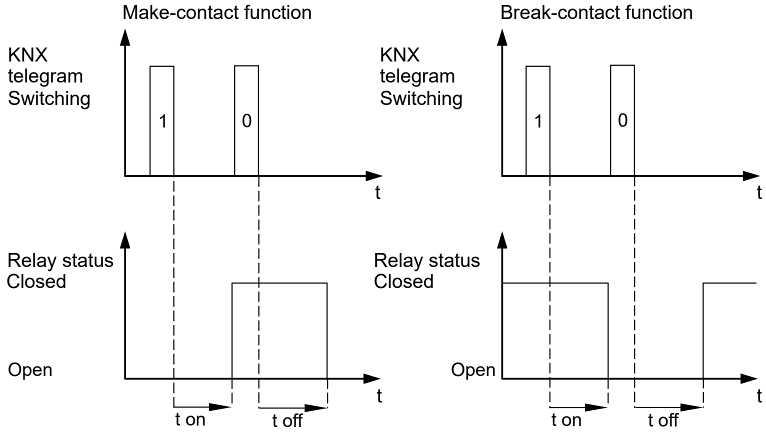
After the object value “0” has been received, the off-delay delays the switching of the relay contact from the **pressed** state to the **released** state.

You can also use both functions together with a single channel.

Objects

For each channel, you can parameterize whether the delay affects the switch object, staircase lighting time object or scene object, or multiple objects in combination.

On-delay and off-delay (normally opened/normally closed)



On-delay

Ext. 1/2 Output 1-8 -Switch: Switching	**On-delay time**	
– Time settings	On-delay time	Enabled
		Disabled
	Works on Switch object	**Yes** (Yes/No)
	Works on Staircase object	No (Yes/No)
	Works on Scene object	No (Yes/No)
	On-delay mode	**Not retriggerable**
		Retriggerable
	On-delay time	**1 s** (0 ms-1 h)

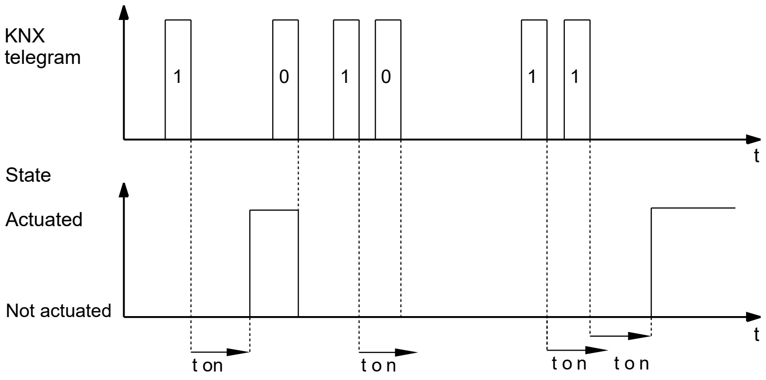
Off-delay

Ext. 1/2 Output 1-8 -Switch: Switching	**Off-delay time**	
– Time settings	Off-delay time	Enabled
		Disabled
	Works on Switch object	**Yes** (Yes/No)
	Works on Staircase object	No (Yes/No)
	Works on Scene object	No (Yes/No)
	Off-delay mode	**Not retriggerable**
		Retriggerable
		Retriggerable and adding
	Max. number of additions	**2** (2-5)
	On-delay time	**1 s** (0 ms-1 h)

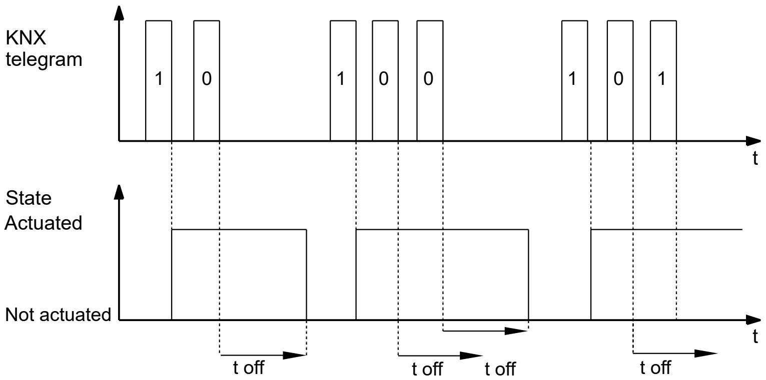
Type of Delay

Delay times can be parameterized for each channel. You can use parameters to define the set delays as **Retriggerable** or **Not retriggerable**. In the case of a retriggerable on-delay, the delay time is restarted when a “1” telegram is received. In the case of retriggerable off-delays, the delay time is restarted when a “0” telegram is received.

Retriggerable on-delay (“1” telegram)

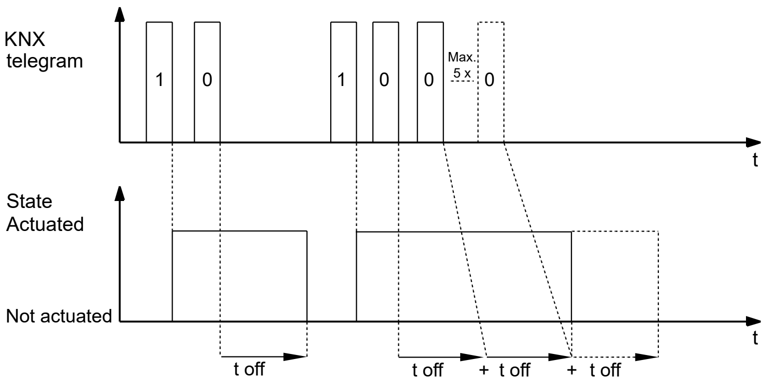


Retriggerable off-delay (“0” telegram)



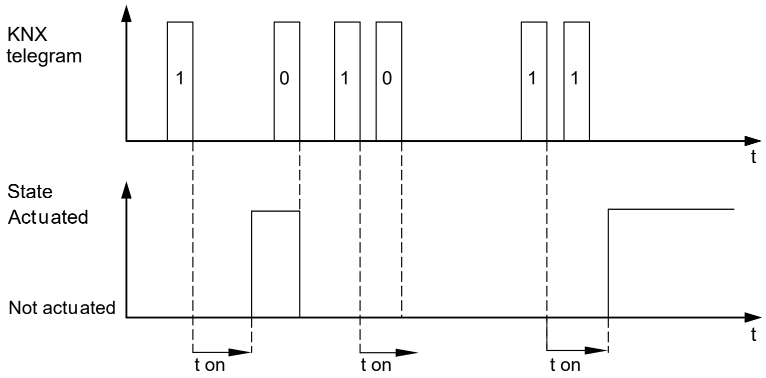
Moreover, for the off-delay, you can also select **Retriggerable and adding**. The delay time is added when the same telegram value is received, e.g. using a separate button. You can define the maximum number of additions.

Retriggerable off-delay and adding (“0” telegram)

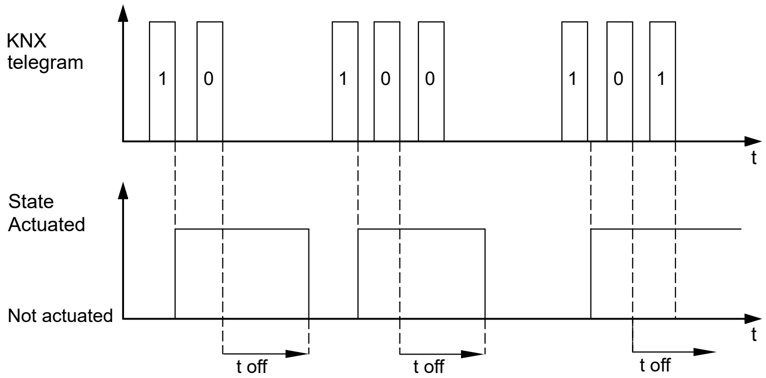


In the case of not retriggerable delays, by contrast, the relay will switch off at exactly the moment the time elapses.

Not retriggerable on-delay



Not retriggerable off-delay



Interrupting a Delay Function

If a delay function is started by receiving a new object value and the output channel receives a telegram with the opposite object value during the current delay time, the delay function is canceled. The relay is not switched:

- Receipt of the object value “0” interrupts an active on-delay.
- Receipt of the object value “1” interrupts an active off-delay.

Priority

If the output of the actuator is switched to a new state by a higher-level function during an active delay time, the output switches immediately.

Logic, Locking and Priority Settings

Logic Function

With this functionality, the **Switching** object and the **Logical input** object can be logically linked to one another.

The logic function can be activated (enabled) in the ETS.

Ext. 1/2 Output 1-8 -Switch: Switching – Logic, Locking & Priority settings	**Logic function**	
	Logic function	**Disabled** Enabled

	Type of logic operation	**OR**
		AND
		XOR
	Value of logic operation object after bus voltage recovery or download	**0**
		1
	Value of logic object	**Normal**
		Inverted

An **AND**, **OR** or **XOR** logic operation can be set. A parameter is used to define the preset value of the logic object after bus voltage recovery and download.

For example, in the case of an OR logic object preset with the value “1” after bus voltage recovery, the output remains activated until a “0” telegram is received on the “logic object”. A parameterized behavior after bus voltage recovery is only adopted after the logic operation has been terminated.

Group Objects of Logic Function

No.	Name	Object function	Length	Behavior	Data Type
143	Extension Output 1 & (name of the channel)	Switch	1 bit	Received	1.001 Switching
144	Extension Output 1 & (name of the channel)	Logical input	1 bit	Received	1.002 Boolean

AND Logic Operation

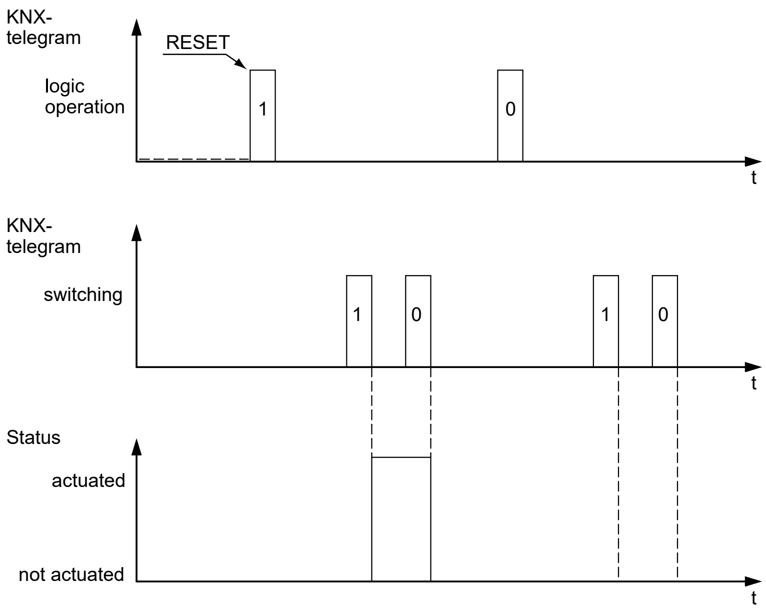
As long as the “**logical input object**” has the value “1”, switching can be carried out as usual using the address of the “**switch object**”. Set staircase lighting times will continue to be observed. Switching off via the “logic object” takes effect immediately.

Object Logical input	Object Switching	Result
0	0	0
0	1	0
1	0	0
1	1	1

Example:

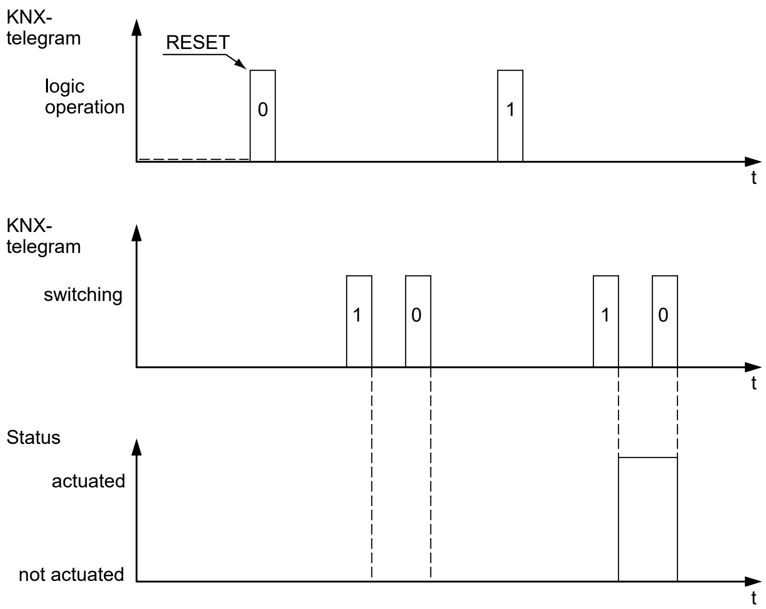
An AND logic operation can be used to create a power-on lock. This means that as long as the value of the “logic object” is “0”, the “switch object” cannot be used for switching on. If the value of the “switch object” is “1”, switching on is carried out automatically if the value of the logic object changes from 0 to 1.

AND logic operation;
Value of logic object after bus voltage recovery: 1



The logic object is preset with the value "1" after a RESET (bus voltage recovery and download). This enables switching to be carried out as usual using the switch object. The power-on lock is not active until a "0" telegram has been received via the logic object.

AND logic operation;
Value of logic object after bus voltage recovery: 0



The parameter setting causes the "logic object" to be set to the value "0". After a RESET, the actuator does not switch the output until a "1" telegram has been received on the "logic object".

OR Logic Operation

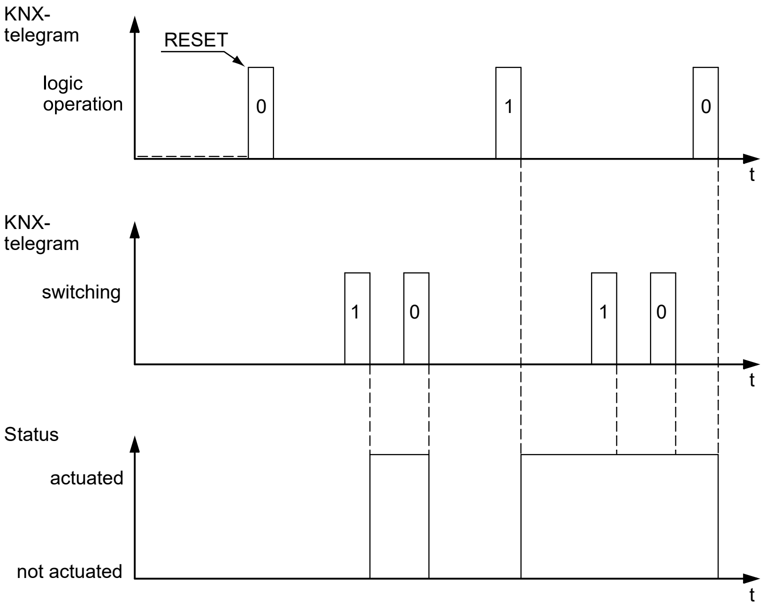
As long as the "logic object" has the value "0", switching can be carried out as usual using the address of the "switch object". Set staircase times continue to be observed. Switching on via the "logic object" takes effect immediately.

Object Logical input	Object Switching	Result
0	0	0
0	1	1
1	0	1
1	1	1

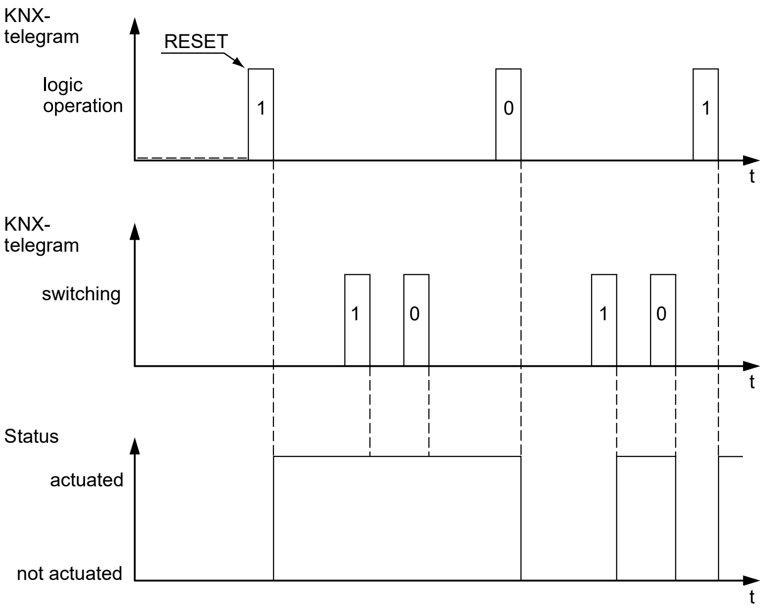
Example:

An OR logic operation can be used to implement a power-off lock or Central ON function (e.g. light for cleaning buildings). If the value of the "switch object" is also set to "1" locally, the relay remains switched on when the power-off lock is withdrawn (value change of logic object from 1 to 0).

OR logic operation;
Value of logic object after bus voltage recovery: 0



OR logic operation;
Value of logic object after bus voltage recovery: 1



The logic object is preset to the value "1" after a RESET. The actuator will switch on the output immediately. The OR logic function is only reset by a "0" telegram on the logic object.

XOR Logic Operation

As soon as the values of the “logic object” and the “switch object” differ from one another, the output is switched to **Pressed**. If the values are the same, the output is **Released**.

Object Logical input	Object Switching	Result
0	0	0
0	1	1
1	0	1
1	1	0

Functions with Higher Priority

The order of priority of the various functions is set on the **Extended settings** tab of the device.

Priority of Functions for Switching, page 39

In the ETS, the higher priority function can be activated.

Ext. 1/2 Output 1-8 -Switch: Switching – Logic, Locking & Priority settings	**Priority function**	
	Higher priority function	**Disabled**
		Priority function
		Locking function

Priority Function (Priority Control)

If you have chosen the priority function (known in other devices as priority control), a new group object called **Priority** is available for this channel.

Ext. 1/2 Output 1-8 -Switch: Switching – Logic, Locking & Priority settings	**Priority function**	
	Higher priority function	Priority function
	Behavior at end of priority	**Follows current value**
		Pressed
		Released
	Behavior after bus voltage recovery	**Disabled**
		Enabled, released
		Enabled, pressed
		As before bus voltage failure

The object values of the priority object have the following meaning:

Value bit 1	Value bit 2	Behavior of output
1	1	Activate priority, switching state "Pressed"
0	1	Deactivate priority, switching state dependent on the parameter **Behavior at end of priority**
1	0	Activate priority, switching state "Released"
0	0	End of priority, switching state dependent on parameter **Behavior at end of priority**

The priority is activated if the value “1” is received on bit 1. The assigned output relay is then switched, depending on bit 2, to “Pressed” (bit 2 = “1”) or “Released” (bit 2 = “0”).

An active priority is deactivated by a new telegram with the value “0” on bit 1. As long as a priority function is active, the channel concerned cannot be controlled by the “switch object” and the advanced functions (central function, time functions, scene function).

After the end of a priority, the behavior of the output relay is determined by the parameter **Behavior at end of priority**.

The setting **Follows currently valid state** has the following effect:

During the active priority, all switching commands of subordinate functions are tracked by the application and the switching state is tracked internally. In this way, at the end of the priority, the switching state can be set that would currently have been set without the priority.

Group Object for Priority Function

No.	Name	Object function	Length	Behavior	Data Type
145	Extension Output 1 & (name of the channel)	Priority	2 bit	Received	2.001 Prio. switching

Behavior After Bus Voltage Recovery

Using the parameter **Behavior after bus voltage recovery**, you can define the reaction of the channel to bus voltage recovery and the switching state:

Disabled
Priority remains deactivated. The switching state of the channel results from the other higher-level functions or from the set switching behavior after bus voltage recovery.

Enabled, released
The priority is automatically activated on bus voltage recovery and the switching state is switched to **Released**.

Enabled, pressed
The priority is automatically activated on bus voltage recovery and the switching state is switched to **Pressed**.

As before bus voltage failure
The priority is brought to the state it had before the bus voltage failure. If the priority was previously active, the output relay is switched to the state it had previously.

Locking Function

You can use the locking function to set a specific channel to pressed/released and lock it in this position. The state of the output channel cannot be changed by other control commands as long as the lock is active. You can enable the locking function individually for each switching channel.

Ext. 1/2 Output 1-8 -Switch: Switching	**Locking function**	
– Logic, Locking & Priority settings	Higher priority function	Locking function
	Locking	**At object value "1"**
		At object value "0"
	Behavior at start of locking	**No reaction**
		Pressed
		Released
	Behavior at end of locking	**No reaction**
		Pressed
		Released
		Follows current value
	Behavior after download	**Disabled**
		Enabled
		As before download
	Behavior after bus voltage recovery	**Disabled**
		Enabled
		As before bus voltage failure

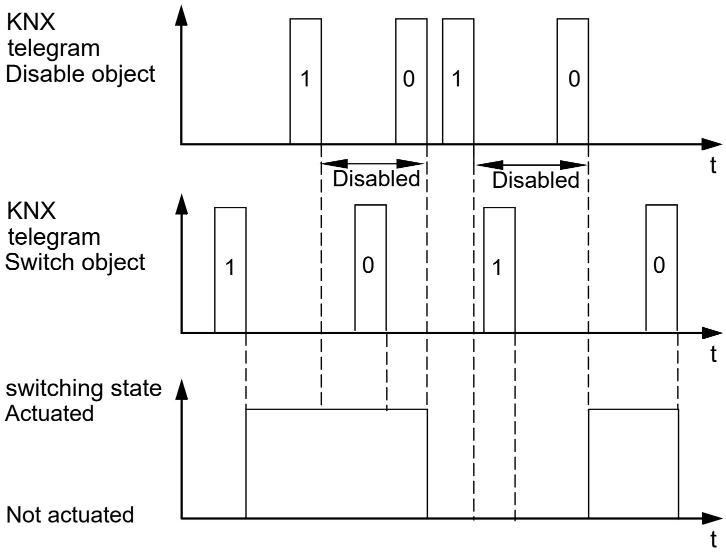
Once the locking function has been enabled, a new group object called **Lock** is available for the switching channel. You can activate and deactivate a channel lock using the **locking object**.

If the **locking object** receives a telegram with the object value that you set for the parameter **Lock**, all other channel functions are disabled. You can define the reaction using the parameter **Behavior at start of locking**.

If the locking object receives a telegram with the object value opposite of that for activation, the lock is canceled and the output relay adopts the state that you defined in the parameter **Behavior at end of locking**.

The locking function always switches without a delay. During a lock, the most recent switching telegram is saved and delay times and staircase lighting times continue.

Lock at object value "1"; Behavior at start of locking = no reaction; Behavior at end of locking = Follows current value; relay operation: Normally opened



Group Objects of Locking Function

No.	Name	Object function	Length	Behavior	Data Type
145	Extension Output 1 & (name of the channel)	Lock	1 bit	Received	1.003 Enable

Lock Behavior after Download

After a download, the lock function is also set as in the case of bus voltage recovery. The parameter **Behavior after download** determines which state is set. If the parameter **Behavior after download** is set to the value **As before download**, the locking function is activated as before and the relay is switched accordingly.

Lock Behavior after Bus Voltage Recovery

Disabled:
The locking function is not activated after a bus voltage recovery, regardless of the state it had before the bus voltage failure.

Enabled:
After a bus voltage recovery, the locking function becomes active and the output is switched to the state that you defined via the parameter **Behavior at start of locking**. If you have set the value **No reaction** here, the output is locked in its current state.

As before bus voltage failure:
The locking function is brought to the state that was active before the bus voltage failure. If the locking function was active, the output is controlled by its settings in the parameter **Behavior at start of locking**.

Safety and Alarm Settings

Safety Function Switching

The global safety function is activated on the **Extended settings** tab with the parameter **Device safety** and the global settings are parameterized there.

The effect of the **safety function** can be parameterized here for each channel. You can enable the **safety function** individually for each switching channel.

Ext. 1/2 Output 1-8 -Switch: Switching – Safety and alarm settings	**Safety function**	
	Safety function	Disabled
		Enabled
	Behavior at start of safety	**No reaction**
		Pressed
		Released
		Blinking (5s cycle)
	Behavior at end of safety	**No reaction**
		Pressed
		Released
		Follows current value
	(Cycle time surveillance for Safety object" > 0)	
	Behavior at exceeding cycle time	**No reaction**
		Pressed
		Released
		Blinking (5s cycle)

The safety function is activated if the **safety object** receives a telegram with the object value that you defined with the parameter **Device safety** (). The reaction is defined by the parameter **Behavior at start of safety**.

If the **safety object** receives a telegram with the object value opposite of that for activation, the safety function is canceled and the output relay adopts the state that you defined in the parameter **Behavior at end of safety**.

The device then waits for a telegram from an external sender within the globally set cycle time. If such a telegram is not received within the monitoring time, the parameter **Behavior at exceeding cycle time** is used to determine what is to happen.

Group Objects for Central Safety

No.	Name	Object function	Length	Behavior	Data Type
23	Central	Safety	1 bit	Received	1.005 Alarm

Priority

The safety function is a 1-bit group object with the highest priority. This means that this object takes precedence over the following group objects:

Alarm object / Lock object / Priority object Priority of Functions for Switching, page 39

Logical input object

Scene object

Central switch object

Staircase fix / Staircase variable object

Switch object

Alarm Function

In the case of an alarm, the **alarm function** can be used to set each output to a desired alarm state. The output is disabled for further operation. Only a higher-level function with a higher priority can still be used to switch the output to a different state.

You can activate the alarm function individually for each output channel.

The alarm function can be parameterized here for each channel.

Ext. 1/2 Output 1-8 -Switch: Switching	**Alarm function**	
– Safety and alarm settings	Alarm function	**Disabled**
		Enabled
	Alarm	**At object value "1"**
		At object value "0"
	Behavior at start of alarm	**No reaction**
		Pressed
		Released
		Blinking (5s cycle)
	Behavior at end of alarm	**No reaction**
		Pressed
		Released
		Follows current value
	Behavior after bus voltage recovery	**Disabled**
		Enabled
		As before bus voltage failure

Group Objects of the Alarm Function

No.	Name	Object function	Length	Behavior	Data Type
146	Extension Output 1 & (name of the channel)	Alarm	1 bit	Received	1.005 Alarm

Object Values for Alarm

The alarm function is activated if the **alarm object** receives a telegram with the object value that you defined with the parameter **Alarm**. The reaction is defined by the parameter **Behavior at start of alarm**.

If the **alarm object** receives a telegram with the object value opposite of that for activation, the **alarm function** is canceled and the output adopts the state that you defined in the parameter **Behavior at end of alarm**.

At object value “1”:
The object value “1” switches on the **alarm function**. If the object value “0” is received, the **alarm function** is switched off again.

At object value “0”:
The object value “0” switches on the **alarm function**. A telegram with the object value “1” deactivates the function again.

Behavior of the Alarm after Bus Voltage Recovery

Disabled:
The alarm function is not activated after a bus voltage recovery, regardless of the state it had before the bus voltage failure.

Enabled:
After a bus voltage recovery, the alarm function becomes active and the output is switched to the state that you defined via the parameter **Behavior at start of alarm**.

As before bus voltage failure:
The alarm function is brought to the state that was active before the bus voltage failure. If the alarm function was active, the output is controlled by its settings in the parameter **Behavior at start of alarm**.

Priority

The alarm function is a 1-bit group object with high priority. The device safety function has the highest priority. The priority order for switching can be defined globally (Priority of Functions for Switching, page 39). The **alarm object** takes precedence over the following group objects:

- The priority relative to the **locking object** / **priority object** is defined centrally for switching: Priority of Functions for Switching, page 39
- **Logical input object**
- **Scene object**
- **Central switch object**
- **Staircase fix / Staircase variable object**
- **Switch object**

Failure and Download Behavior

You can enable this function individually for each switching channel. The behavior of the switch output in the case of a bus voltage failure / bus voltage recovery and application download is defined.

Ext. 1/2 Output 1-8 -Switch: Switching	**Failure and download behavior**	
– Safety and alarm settings	Failure and download behavior	**Disabled**

	Enabled
Relay state after bus voltage failure	**No reaction**
	Pressed
	Released
Relay state after bus voltage recovery	**As before bus voltage failure**
	Pressed
	Released
Relay state at end of download	**As before download**
	Pressed
	Released

Relay Behavior after Bus Voltage Failure

If the bus voltage falls below 18 V, the relay can be switched to a parameterized state. The relay state can be defined as either **pressed** or **released** or remain in the state it had before the failure (**No reaction**). At the same time, the current switching position of the relay is saved in the device.

Possible settings:

No reaction:
The relay contact remains unchanged in its current position. If time functions (staircase lighting time function, on-delay, off-delay) are currently active, they are canceled.

Pressed:
In the case of a normally opened contact, the relay is closed; in the case of a normally closed contact, the relay is opened. Running time functions are deactivated.

Released:
In the case of a normally opened contact, the relay is opened; in the case of a normally closed contact, the relay is closed. Running time functions are deactivated.

Relay Behavior after Bus Voltage Recovery

In the case of bus voltage recovery, the relay can adopt a parameterized state.

Possible settings:

Pressed:
In the case of a normally opened contact, the relay is closed; in the case of a normally closed contact, the relay is opened.

Released:
In the case of a normally opened contact, the relay is opened; in the case of a normally closed contact, the relay is closed.

As before bus voltage failure:
With the parameter “As before bus voltage failure”, the relay adopts the state that was saved in the device at the time of the bus voltage failure. Any subsequent manual switchings are overwritten.

Priority

The reaction to the behavior set here for bus voltage recovery has a low priority. If a function with a higher priority is activated for the switching channel directly after bus voltage recovery, the settings described below apply to these functions.

Relay states caused by higher-priority functions (higher-level function) take precedence over behavior after bus voltage recovery.

Example:

OR logic operation with parametrized value of the logic object after bus voltage recovery = 1, prevails and switches the output.

Behavior after Download

After the ETS download, the relay can adopt a parameterized state.

If an internal defect or a faulty download results in a state in which the application is not operational, the device will not react. The output relays remain in their last position.

If you wish to activate the behavior after ETS download for an output channel, you must select a “**relay state at end of download**” for each channel.

Possible settings:

As before download:
The relays execute the behavior set before the download. Any subsequent manual switching is overwritten. If a higher-level function (logic operation, priority control or lock) is active, the behavior you defined for these functions will be executed.

Pressed:
In the case of a normally opened contact, the relay is closed; in the case of a normally closed contact, the relay is opened.

Released:
In the case of a normally opened contact, the relay is opened; in the case of a normally closed contact, the relay is closed.

Priority

Relay states caused by higher-priority functions take precedence over behavior after ETS download.

Example:

OR logic operation with parametrized value of the logic object after bus voltage recovery = 1, prevails and switches the output.

Express Settings for Blind/Roller Shutter

On the **Express settings for blind / roller shutter** tab, you can set basic settings and enable or disable other functions.

To control blinds/roller shutters, you can set the channel function of the device to the operating mode **Blind or roller shutter**. Now, two outputs will always be merged into a single blind / roller shutter channel. Please install the drives according to the installation instructions.

The operating mode is selected for each output on the Defining Channel Functions, page 23:

General settings Ext. 1/2 Output 1+2 / 3+4 / 5+6 / 7+8 Blind	Channel function for Extension 1 / Extension 2	Blind
	Output 1+2 / 3+4 / 5+6 / 7+8	
	Express settings for blind	...

General settings Ext. 1/2 Output 1+2 / 3+4 / 5+6 / 7+8 Roller shutter	Channel function for Extension 1 / Extension 2	Roller shutter
	Output 1+2 / 3+4 / 5+6 / 7+8	
	Express settings for roller shutter	...

Please install the drives according to the installation instructions. When connecting the motor, note the correct direction of rotation for movement up/down.

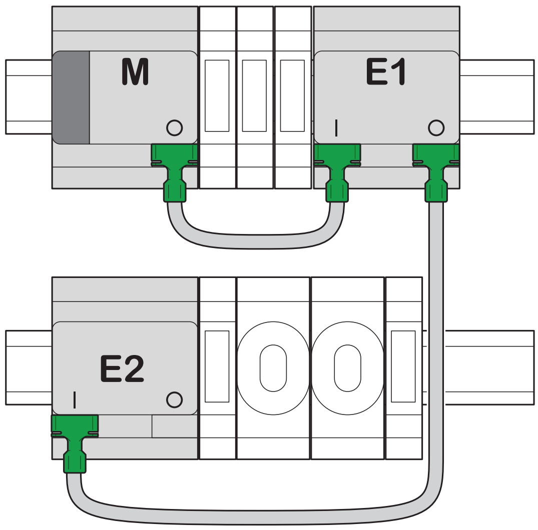
There are many different blind variants for indoor and outdoor use. The channel enables the control of a blind / roller shutter motor with max. 1000 VA. Only one motor may be connected per channel. The motor must have an end position switch.

NOTICE

CHECK BEFORE COMMISSIONING:

The load connections and the order of the devices (Master > Extension 1 > Extension 2) must correspond to your ETS programming.

- Connect blind motors to the blind channels specified in the ETS.
- Connect loads to the switching channels specified in the ETS.
- If the Extension is planned as Extension 1 (E1), connect it directly to the Master.
- If the Extension is planned as Extension 2 (E2), then connect it to Extension 1.



An extension cannot be put into operation if the order of the devices does not correspond to your programming in the ETS.

Blind/Roller Shutter Control

The **Express settings** can be used to move the connected drive manually to the desired position. Four group objects are available for this purpose: “**Movement in manual mode**” and “**Stop/step in manual mode**” (for roller shutters: “**Stop in manual mode**”). For positioning: “**Height position in manual mode**” and for blind only “**Slat position in manual mode**”.

- **Move drive**:
  The object “**Movement in manual mode**” is responsible for moving the blind or roller shutter up and down. The drive moves down if the value “1” is received and up if the value is “0”.
- **Running time**:
  Drive Running Time, page 115
  The activated output remains active until the set running time has expired.
- **Pause on reverse for change of direction**:
  Pause Time before Reverting (Pause on Reverse), page 116
  If a control command in the opposite direction of motion is received while the drive is moving, the drive stops and waits for the defined pause on reverse time before starting to move in the new direction of motion.
- **Stop drive**:
  A drive that is in motion is stopped on receiving a bus telegram for the object **Stop/step in manual mode** (for roller shutters: “**Stop in manual mode**”). The value received for the object is irrelevant here.

- **Slat tracking (for blind only)**:
  Slat Position after Movement, page 122
  Once the drive has been stopped, the slats will be rotated to the desired position according to the settings for the parameter "**Slat position after movement**".
- **Rotate blind slats (for blind only)**:
  In the case of blinds, the opening angle of the slats can be adjusted gradually using the object "**Stop/step in manual mode**". For this, the drive must be at rest. If the group object receives the object value "1", the slats are closed by one step; if the value "0" is received, they are opened.

  If a step command is executed and the slats reach one of their movement range limits or are already in a limit position, the drive will briefly move in the desired direction. The duration of this motion also corresponds to the set step time. If the direction is changed from one step command to the next, the device will once again observe the pause on reverse as the wait time between the steps.

Manually moving to the height position and slat opening angle (blind) using absolute position commands

With this function, you can set a height position for blinds / roller shutters and the slat opening angle for blinds directly and manually using a percentage value. The desired percentage value always refers to the possible movement range 0-100% that you have set by defining the running times. You thus set an absolute height position for the entire movement range.

After receiving a new positional value, the device calculates a proportional travel time from the current position and the new desired position and moves the drive in the corresponding direction of motion for the duration of this travel time. The new position is buffered again. The accuracy of the position settings depends on the accuracy of your drive running time settings.

After a number of positioning movements, there are slight deviations between the actual position and the calculated position for physical and mechanical reasons. You can reset these deviations by means of reference movements (Calibration, page 140).

If a reference movement is required before a new positioning movement, the device initiates it before the movement to the new command position (Calibration, page 140).

The group objects "**Height position in manual mode**" and "**Slat position in manual mode**" (for blind only) are available for setting the absolute positional values.

- **Set height position**:
  The object **Height position in manual mode** is responsible for the height position of the blind or roller shutter. Limit position 0% means that the blind / roller shutter is at the top. Limit position 100% means that the blind / roller shutter is at the bottom.
- **Rotate slats to opening position (for blind only)**:
  You can use the object "**Slat position in manual mode**" to set the slat opening angle directly. In slat position 0%, the slats are horizontally open, or closed at the top, while 100% means they are closed at the bottom. The actual opening angle of the slats depends on the type of blind used. Setting the Blind Type (for Blind only), page 118.

When a new positional value is received, the channel calculates a running time needed to reach the new position from the current position. The drive is then moved to the new position for the calculated duration. The direction of motion is derived from the calculation.

If the device receives a new positional value during a positioning movement and the calculation results in the same direction of motion, the drive continues moving to the new command position.

- **Pause on reverse for change of direction**:
  If a new positioning command is received during a drive motion or slat adjustment and the calculation results in the opposite direction of motion, the drive stops and waits for the defined pause on reverse time before starting the new positioning movement.
- **Slat tracking (for blind only)**:
  If the height position of the blind is changed and the blind reaches the desired position, the slat tracking function is executed and the slats are rotated to the desired position.

If, for example, you select the channel function **Blind / roller shutter** for output 1 +2 on the extension, an ETS channel with the name **Extension Output 1+2 - blind / roller shutter + name of the channel** is generated. All the group objects for this channel are located here.

Group Objects for Express Settings – Blind/Roller Shutter

No.	Name	Object function	Length	Behavior	Data Type
143	Extension Output 1 +2 name of the channel	Movement in manual mode	1 bit	Received	1.008 Up/Down
144	Extension Output 1 +2 name of the channel	Stop/step in manual mode (blind)	1 bit	Received	1.007 Step
144	Extension Output 1 +2 name of the channel	Stop in manual mode (roller shutter)	1 bit	Received	1.007 Step
145	Extension Output 1 +2 name of the channel	Height position in manual mode	1 byte	Received	5.001 Percent (0...100%)
146	Extension Output 1 +2 name of the channel	Slat position in manual mode (blind)	1 byte	Received	5.001 Percent (0...100%)
158	Extension Output 1 +2 name of the channel	Feedback for height	1 byte	Sending	5.001 Percent (0...100%)
159	Extension Output 1 +2 name of the channel	Feedback for slat (blind)	1 byte	Sending	5.001 Percent (0...100%)
163	Extension Output 1 +2 name of the channel	Feedback for moving	1 bit	Sending	1.010 Start/Stop
164	Extension Output 1 +2 name of the channel	Feedback for last direction	1 bit	Sending	1.008 Up/Down

Name of the Channel

You can assign a separate name for each channel, e.g. "Blind Kitchen". The name of the channel now appears on the parameters, channels and associated group objects.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/Roller shutter	Express settings for blind/roller shutter	
	Name of the channel	*Blind Kitchen*

Drive Running Time

The individual running times for the blind / roller shutter can be determined very well with a stopwatch.

If the running times to be set are too short to be measured with the stopwatch, first set an approximate value. Test the behavior of the drive or of the slats by means of positioning commands (for blind only). If the desired positions are not fully reached, correct the running times upwards. If the positions are overshot, correct the running times downwards. Check your corrections with new positioning commands. Perform multiple tests, as the small deviations only become visible or detectable after several motions.

In addition to the aforementioned deviations, environmental factors (temperature, rain, etc.) also cause deviations in the motion behavior of the drives. Since the drives cannot signal their current position and the current position is always calculated, the channel cannot detect these deviations. In order to be able to continue to position the drive accurately, it is helpful to return the drives to a fixed starting position by means of regular reference movements. In this way you can achieve satisfactory positional accuracy for a long time.

Further information can be found in the section Calibration, page 140.

The factory setting for the running time is 2 minutes, with up and down movement parameterized the same.

This duration is required for the drive to move from one end position (blind / roller shutter is fully open or fully closed) to the opposite end position. After the set running time, the relay of the corresponding channel is automatically switched off (even if the drive has not yet reached its end position with the values set here). If necessary, check whether the drive manufacturer has provided information about running times.

Same Running Times for Up and Down

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 Blind/roller shutter	Express settings for blind/roller shutter	
	Blind control / roller shutter control	
	Use same time for up and down	**Yes**
	Up/Down time (5s...99:59.9 min)	**02:00.0**

Different Running Times for Up and Down

If the parameter **Use same time for up and down** is deactivated, different running times can be set for up and down. The **Running time: Up** should be parameterized slightly longer so that the end stops are always reached, even in the case of low temperatures or a heavy blind / roller shutter.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 Blind/roller shutter	Express settings for blind/roller shutter	
	Blind control / roller shutter control	
	Use same time for up and down	No

	Up time (5s...99:59.9 min)	**02:00.0**
	Down time(5s...99:59.9 min)	**02:00.0**

The **Running time: Up** should be parameterized slightly longer so that the end stops are always reached, even in the case of low temperatures or a heavy blind / roller shutter.

This type of running time allowance should be taken into account due to the physical fact that drives take longer for upward movements than for downward movements due to the effect of gravity on the blind / roller shutter. Since this time deviation can be very short, you have to execute multiple movements to become aware of this behavior. It is useful to move the drive from 10% to 90% and back to 10% several times. If you notice that the drive does not completely reach the upper end position after these movements, you can increase the "**Running time: Up**".

Pause Time before Reverting (Pause on Reverse)

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 Blind/roller shutter	Express settings for blind/roller shutter **Blind control / roller shutter control**	
	Pause time before reverting (2...255, unit = 100 ms)	**5**

If the channel for a drive that is currently in motion receives a motion command in the opposite direction, it first turns off both output relays for this channel. Before turning on the relay for the new direction of motion, it waits for the set **Pause time before reverting**.

The channel observes the pause on reverse even if it is to rotate the slats in different directions when executing two step commands (for blind only).

NOTICE

THE DRIVE MAY BE DAMAGED.

The drive may be damaged if the pause times are too short. Be sure to refer to the specifications in the data sheet of the drive manufacturer when setting the values.

Slat Control (for Blind only)

Slat Rotation Time

The **Slat rotation time** is the time during which the slat performs a complete movement from 0% to 100% (or vice versa). The adjustment range for the opening angle is dependent on the type of blind used. Setting the Blind Type (for Blind only), page 118

	Blind type: Downwards closed / upwards horizontal	**Blind type: Downwards tilted / upwards horizontal**	**Blind type: Downwards closed / upwards closed**	**Blind type: Downwards tilted / upwards closed**
Slat position 0 %	Horizontal open	Horizontal open	Top closed	Top closed
Slat position 100 %	Bottom closed	Bottom closed	Bottom closed	Bottom closed

Ext. 1/2 Output 1+2 / 3+4 / 5+6 / 7+8 Blind/roller shutter	Express settings for blind/roller shutter	
	Slat control	
	Slat rotation time (open/closed) (0.1 s...25 s)	**01:00**
	Steps that shall be executed during slat rotation (1...10)	**10**

If the slat rotation time to be set is too short to be measured with the stopwatch, first set an approximate value. Test it by sending step telegrams.

Step commands can be used to rotate the blind slats. The opening angle of the slats can be changed in small steps, e.g. to prevent dazzle caused by a change in the position of the sun.

Depending on the **Slat rotation time** in one direction of motion, you can use the step time to provide the user with a certain number of steps for opening or closing the slats. The number of possible steps varies with the slat running time.

If the slat running time is 2.5 s, for example, you have a maximum of 15 steps available for moving through the entire slat opening range in one direction (2.5 s / 166 ms = 15 steps).

If you only wish to provide the user with 5 slat steps in this case:

2.5 s / 5 steps = 0.5 s step time

Procedure for measuring short slat running times:

- Set an approximate time and select a large number of steps. This results in the step time. Example:
  Slat running time = 1 s
  Number of steps = 10; => Step time = 100 ms.
- Move the slats to the closed position (slat position 100%). For blind types with operating position, this is the lower end position.
- Count step commands: now send step commands until the blind moves upwards, and count the steps required.
- Example: The blind requires 5 steps to move through the slat adjustment range. With the sixth step, the blind moves upwards.
- With the set values for the step time (default step time: 100 ms), the following slat running time is calculated: 100 ms x 5 steps = 0.5 s.
- You can now enter this value as the slat running time.

Procedure for measuring long slat running times:

- Move the slats to the closed position (slat position 100%). For blind types with operating position, this is the lower end position.
- Send an “Up” motion command.
- Before opening the blind, the drive rotates the slats into the open position (0%). Measure the time for this rotation.
- Stop the drive after the rotation.
- For blind type: **Downwards tilted / upwards horizontal** and blind type: **Downwards tilted / upwards closed** (with operating position), note that the closed slat position is only set in the lower end position. You must then also add the time for the rotation from the operating position to the closed position.

NOTE: For blinds types 1 and 3 (without operating position), your setting for the slat running time affects the opening angle after a movement, since the selected opening angle (percentage value for the automatic slat position) is converted into a proportional rotation time for the slats. The same applies to the slat tracking function after a movement.

Setting the Blind Type (for Blind only)

If you wish to program the slat control for a blind, you should define your blind type before starting the parameterization.

The application distinguishes between four different types of blinds, which you can recognize by the position of their slats during the movement. Two of these types have a mechanically defined operating position. They can be recognized seen from the tilted slat position during a downward movement. The operating position limits the possible opening angle of the slats, unless the blind is in its lower end position.

This is done using the parameter **Movement of the existing blind**.

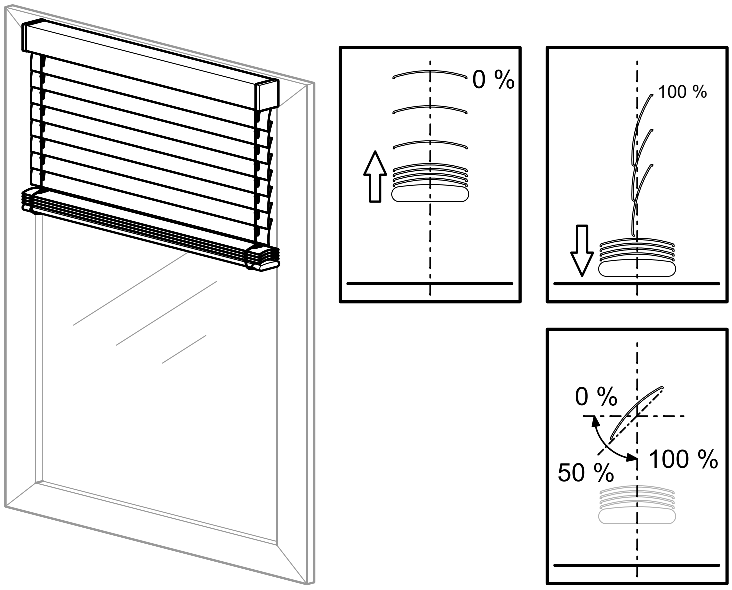
Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 Blind	Express settings for blind	
	Slat control	
	Movement of the existing blind	**Downwards closed / upwards horizontal**
		Downwards tilted / upwards horizontal
		Downwards closed / upwards closed
		Downwards tilted / upwards closed

Blind Type: Downwards Closed/Upwards Horizontal

(Without operating position)

- Upward movement:
  Slats in horizontal open position (slat position 0%)
- Downward movement:
  Slats closed downwards (slat position 100%)
- Possible adjustment range for the opening angle of the slats:
  0-100%

Downwards closed/upwards horizontal



The parameter **Slat position after movement in %** allows you to define the behavior of the slats after a movement for the channel. If you set the parameter to **Operating position**, you can set an opening angle to be adopted by the slats after every downward movement.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 Blind	Express settings for blind	
	Slat control	
	Movement of the existing blind	**Downwards closed / upwards horizontal**
	Slat position after movement in %	**Last slat position**
		No reaction
		Operating position
	Operating position of slat in %	**50**

The preset value of 50% corresponds to a slat opening angle of about 45°. Since this position is set on a time-controlled basis, please refer also to the section Slat Rotation Time, page 116.

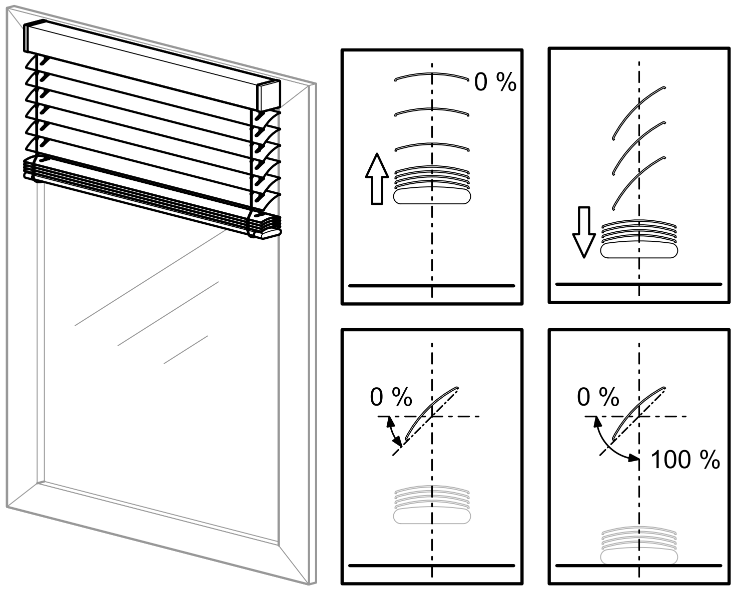
NOTE: Unless otherwise indicated in the following instructions, the examples refer to this type of blind.

Blind Type: Downwards Tilted/Upwards Horizontal

(With operating position)

- Upward movement:
  Slats in horizontal open position (slat position 0%)
- Downward movement:
  Slats tilted down in the operating position (slat position in operating position)
- Possible adjustment range for the opening angle of the slats:
  0% to the operating position if blind not in lower end position
  0-100% if blind in lower end position

Downwards tilted/Upwards horizontal



The parameter **Slat position after movement in %** allows you to define the behavior of the slats after a movement for the channel.

Ext. 1/2	Express settings for blind	
Output 1+2 / 3+4 / 5 +6 / 7+8		
Blind		
	Slat control	
	Movement of the existing blind	Downwards tilted / upwards horizontal
	Slat position after movement in %	**Last slat position**
		No reaction
		Operating position
	Existing slat position during downwards movement in %	**50**

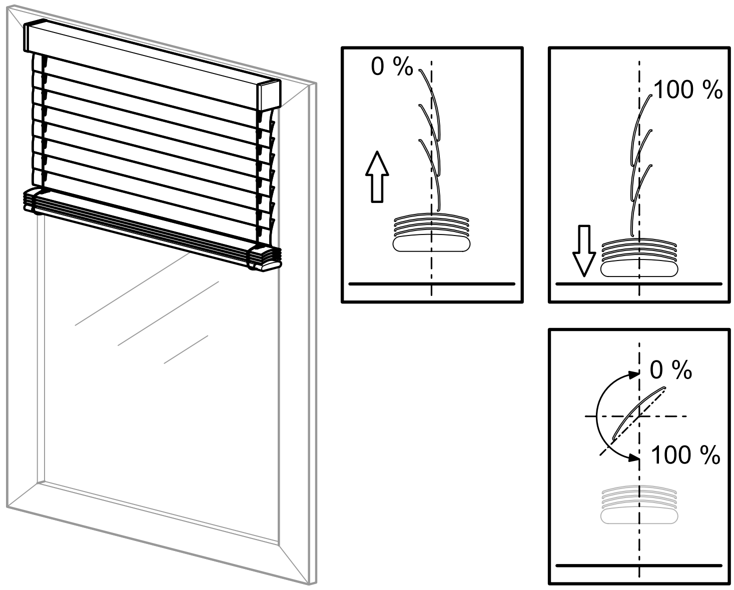
You can use the parameter **Existing slat position during downwards movement in %** to set the opening angle for the operating position.

Blind Type Downwards Closed/Upwards Closed

(Without operating position)

- Upward movement:
  Slats closed upwards
  (slat position 0%)
- Downward movement:
  Slats closed downwards
  (slat position 100%)
- Possible adjustment range for the opening angle of the slats:
  0-100%

Downwards closed/Upwards closed



The parameter **Slat position after movement in %** allows you to define the behavior of the slats after a movement for the channel. If you set the parameter to **Operating position**, you can set an opening angle to be adopted by the slats after every downward movement.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 Blind	Express settings for blind	
	Slat control	
	Movement of the existing blind	Downwards closed / upwards closed
	Slat position after movement in %	**Last slat position**
		No reaction
		Operating position
	Operating position of slat in %	**75**

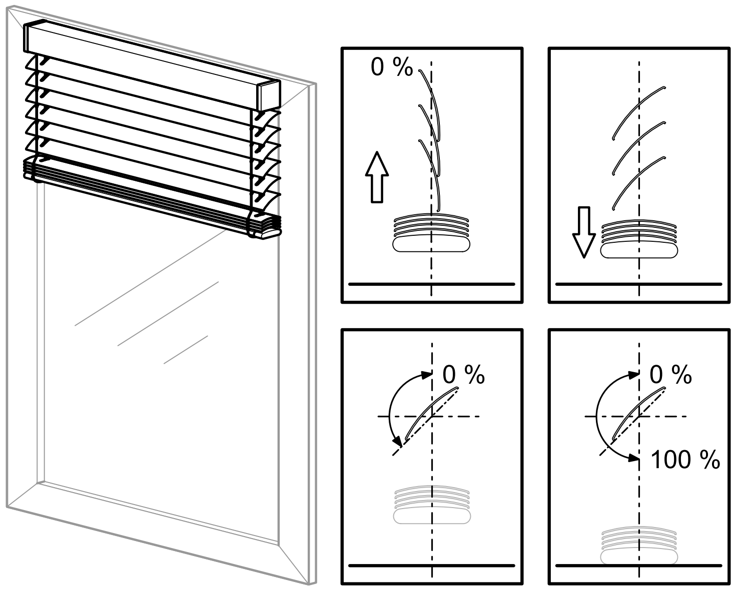
The preset value of 75% corresponds to a slat opening angle of about 45°. Since this position is set on a time-controlled basis, please refer also to the section Slat Rotation Time, page 116.

Blind Type: Downwards Tilted/Upwards Closed

(With operating position)

- Upward movement:
  Slats closed upwards (slat position 0%)
- Downward movement:
  Slats tilted down in the operating position (slat position in operating position)
- The slats are closed on reaching the lower end position
  (slat position 100%)
- Possible adjustment range for the opening angle of the slats:
  0% to the operating position if blind not in lower end position
  0-100% if blind in lower end position

Downwards tilted/Upwards closed



The parameter **Slat position after movement in %** allows you to define the behavior of the slats after a movement for the channel.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 Blind	Express settings for blind	
	Slat control	
	Movement of the existing blind	Downwards tilted / upwards closed
	Slat position after movement in %	Last slat position
		No reaction
		Operating position
	Existing slat position during downwards movement in %	**75**

You can use the parameter **Existing slat position during downwards movement in %** to set the opening angle for the operating position.

Slat Position after Movement

With every blind movement, the position of the slats also changes, depending on the direction of motion. After the movement, the slats stay in this new position. With this application, however, you can automatically move or reset the slats to a desired position after a movement.

Using the parameter "**Slat position after movement**", you can define the behavior of the slats after a movement for each blind channel.

The following parameters are available for this:

- **No reaction** (stay in the current position)
- **Operating position** (move to operating position)
- **Last slat position** (move to the slat opening angle that the blind had before the start of the movement)

The slat opening angle you have defined is set after each positioning movement of the blind or after a manual motion command terminated by a stop telegram.

After a bus voltage failure or a download, the last slat position is not clearly defined, so the last slat position is assumed to be the operating position.

Locking Manual Mode

You can control the connected drives via the group objects the for manual operating options or via automatic control. There are two options available for the manual operating options:

- Move manually to height position and slat opening angle (for blind only) via Up/Down/Step/Stop commands
- Move manually to height position and slat opening angle (for blind only) using absolute position commands

If you want to stop manual operation temporarily, you can enable lock of manual mode for each output channel:

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 Blind/roller shutter	Express settings for blind/roller shutter	
	Locking manual mode	**Disabled** Enabled
	Manual locking	**At object value "1"** At object value "0"

Depending on the setting, manual operation is disabled or enabled when a new telegram value is received:

- "**Manual locking**" = "at object value "0"
  If "**Manual locking**" = "0": manual operation disabled (manual locking active)
  If **Manual locking** = "1": manual operation enabled (manual locking inactive)
- "**Manual locking**" = "at object value "1"
  If "**Manual locking**" = "0": manual operation enabled (manual locking inactive)
  If "**Manual locking**" = "1": manual operation disabled (manual locking active)

Group Objects for Lock of Manual Mode

No.	Name	Object function	Length	Behavior	Data Type
147	Extension Output 1 +2 name of the channel	Locking manual mode	1 bit	Received	1.003 Enable

Scenes

If you want to change multiple room functions simultaneously at the press of a button or with a command, you can do so using the scene function.

You can use a scene, for example, to switch on the room lighting, set the heating control to daytime operation and control the blinds.

Without the scene function, you would have to send a separate telegram to each actuator to get the same setting, since these functions can not only have different telegram formats, but also the telegram values have different meanings (e.g. value "0" for lighting OFF and for OPEN blind).

Enabling Scenes

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind / roller shutter	Express settings for blind/roller shutter	
	Scenes	**Disabled** Enabled
-Scenes settings	**Scene settings**	

Group Objects for Scene

No.	Name	Object function	Length	Behavior	Data Type
155	Extension Output 1 +2 name of the channel	Scene	1 byte	Received	18.001 scene control

Number of Scenes

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind / roller shutter	**Scene settings**	
Scenes settings	Required number of scenes	**1** (1 – 16)

You can use the scene function to include multiple channels in a scene control. Up to 16 different scenes are available for each output channel.

Each of the 16 scenes can be disabled again.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind / roller shutter	**Scene settings**	
Scenes settings	Scene 1 (1-16)	Disabled **Enabled**
	Scene 1 Description	
	Scene 1 Address (0-63) Dependent: Global Settings for Scenes, page 33	**Scene address 0 - 63**
	Scene 1 Address (1-64) Dependent: Global Settings for Scenes, page 33	Scene address 1 - 64
	Scene 1 height in %	**0** (0-100)
	Scene 1 slat position in %	**0** (0-100)

For clarity, a short description can be stored for each scene.

Each of these scenes can be assigned one of 64 possible scene addresses 0 to 63 (corresponding to telegram values 0-63) or 1 to 64 (corresponding to telegram values 0-63). This depends on the global settings for scenes.

Global Settings for Scenes, page 33

You can store height positions and also, for blinds, slat opening angles as scene values. When the actuator receives a telegram calling a scene number, the drive is moved to the saved position and the slats are rotated. The scene positions you store during start-up can be overwritten later by the user if he wants to change them.

Time Delay for Scene Processing

To avoid high power-on currents when switching to a complex scene, you can parameterize a time delay for each output channel. (Especially in the case of many motors).

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind / roller shutter	**Scene settings**	
Scenes settings	Time delay for scene processing (0...255, unit = 100 ms)	**0**

Calling and Saving Scene Values

Scene values for the output relays are called using the object “**Scene**”. After receiving a scene telegram, the device evaluates the sent scene address and controls the channels to the saved scene values.

If a reference movement is required before the drive is moved to the scene position, the reference movement is executed first and the drive then moves to the requested scene position.

Calibration, page 140

If the “**scene object**” receives a scene telegram with learning bit “1”, then for all scenes assigned to the received scene address, the current height position and, in the case of blind drives, the current slat position are saved as the new scene value.

NOTE: Note: If a scene address within a channel is assigned to multiple scenes (incorrect parameterization), only the last scene found with this scene address is called or saved. You can avoid this by assigning different scene addresses within a channel.

Telegram format

Telegrams for the scene function have the data format: L X D D D D D D.

L = learning bit

X = not used

DDDDDD = called scene address

If the learning bit in a telegram has the value “0”, then the relay states saved for the scene address are called and set.

If the learning bit receives the value “1”, then the current output states are saved as new scene values for the received scene address.

Take the scene address (0-63) and add 128 to get the value for learning the scene.

Examples:

Telegram value	**Binary**	**Hexadecimal**	**Scene address**
0	0000 0000	00	Call scene address 0
1	0000 0001	01	Call scene address 1
29	0001 1101	1D	Call scene address 29
57	0011 1001	39	Call scene address 57
63	0011 1111	3F	Call scene address 63
128 (0+128)	1000 0000	80	Learning scene address 0
129 (1+128)	1000 0001	81	Learning scene address 1
157 (29+128)	1001 1101	9D	Learning scene address 29
185 (57+128)	1011 1001	B9	Learning scene address 57
191 (63+128)	1011 1111	BF	Learning scene address 63

Overwrite Scene Values during Download

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind / roller shutter	**Scene settings**	
Scenes settings	Overwrite scene values of actuator during download	**Enabled** Disabled

If you have enabled the parameter “**Overwrite scene values in actuator during download**”, the scene values saved in the device will be overwritten with your preset values on downloading. If you do not want to overwrite the values in the device when downloading, you must disable the parameter. In this case, the parameterized scene values are only written to the device memory during the first download. If an application download is then carried out, the scene values in the device memory are retained.

Priority

The scene function has the same priority as the normal blind / roller shutter function with control over the 4 group objects:

“**Movement in manual mode**” and “**Stop/step in manual mode**” (for roller shutters: “**Stop in manual mode**”)

For positioning: “**Height position in manual mode**” and “**Slat position in manual mode**” (for blind only).

This should be taken into account with regard to the priority of the higher-level functions.

Central Function for Blind

Enable Central Function for Each Drive

The central function is enabled or disabled here for each drive.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind / roller shutter	Express settings for blind / roller shutter	
Scenes settings	Central function	**Enabled** Disabled

The global settings and explanations of the central function can be found in the chapter **General settings** (Enabling Central Functions, page 26).

Using the central function, you can simultaneously open or close multiple blind channels with a telegram via the object **Central – Move up/down blind**.

Group Objects for Central Function

No.	Name	Object function	Length	Behavior	Data Type
2	Central	Move up/down roller shutter	1 bit	Received	1.008 up/down
3	Central	Move up/down blind	1 bit	Received	1.008 up/down

Status Response

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind / roller shutter	Express settings for blind / roller shutter	
	Status of height	**Enabled** Disabled
	Status of slat (for blind only)	**Enabled** Disabled
	Status of moving	**Enabled** Disabled

Each blind channel can provide different status responses, depending on how it is enabled. The status response group objects are available and can be disabled.

Group Objects of Status Response for Blind/Roller Shutter

No.	Name	Object function	Length	Behavior	Data Type
158	Extension Output 1 +2 name of the channel	Feedback for height	1 byte	Sending	5.001 Percent (0...100%)
159	Extension Output 1 +2 name of the channel	Feedback for slat (blind)	1 byte	Sending	5.001 Percent (0...100%)
163	Extension Output 1 +2 name of the channel	Feedback for moving	1 bit	Sending	1.010 Start/Stop
164	Extension Output 1 +2 name of the channel	Feedback for last direction	1 bit	Sending	1.008 Up/Down

Status of Height

The current position of the drive is provided as a value between 0-100%. The corresponding status object "**Feedback for height**" sends the value on the bus if the drive has reached a fixed position after a movement.

Status of Slats (for Blind only)

The current angle of rotation of the blind slats is provided as a value between 0-100%.

The corresponding status object "**Feedback for slat**" sends the value on the bus if the drive/slat has reached a fixed position after a movement.

Status of Moving

The status object "**Feedback for moving**" sends the movement status of the drive. This information is sent directly.

- **Sends a "1" when the movement/drive is started**
- **Sends a "0" when the movement/drive is stopped**

The status object "**Feedback for last direction**" sends the value for the last direction of movement of the drive.

- **Sends a "1" if the drive has been moved down or the slat has been closed by one step**
- **Sends a "0" if the drive has been moved up or the slat has been opened by one step**

Automatic Status

Once the function "**Status of automatic locking**" has been enabled, a new group object is available for the channel.

Group Objects of Status Response of Automatic Mode

No.	Name	Object function	Length	Behavior	Data Type
160	Extension Output 1 +2 name of the channel	Feedback for automatic mode	1 bit	Sending	1.003 Enable

The feedback object sends a "1" if automatic locking is active.

The feedback object sends a "0" if automatic locking is inactive.

Activating Extended Settings for Blind/Roller Shutter

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter	Express settings for blind/roller shutter	
	Extended settings for blind/roller shutter	**No** Yes

To activate the extended settings for blind/roller shutter, you must enable them here.

Extended Settings for Blind/Roller Shutter

On the **Extended settings for blind/roller shutter** tab, you can defined additional settings and enable or disable additional functions.

On the **Express settings for blind/roller shutter** tab, activate the **Extended settings for blind/roller shutter**.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter	Express settings for blind/roller shutter	
	Extended settings for blind/roller shutter	**No** Yes
-Extended drive timing	Idle time until upward movement	
	Startup delay	
	Additional startup time	
-Automatic, Locking & Calibration settings	Priority function	
	Logic function	
-Safety and alarm settings	Safety function	
	Alarm function	
	Failure and download behavior	

Extended Drive Timing

For special drives and blinds, you can adjust the drive times by means of additional parameters.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter	**Extended drive timing**	
-Extended drive timing	Idle time until upward movement (0...255, unit = 10 ms)	**0**
	Startup delay (0...255, unit = 10 ms)	**0**
	Deceleration delay (0...255, unit = 10 ms)	**0**
	Additional startup time when opening slat downwards (0...255, unit = 10 ms)	**0**
	Additional startup time when opening slat upwards (0...255, unit = 10 ms)	**0**

Idle Time until Upward Movement

If the blind used has an idle time in the closed lower position between pulling on the main strap and the first upward movement, you can compensate for this delay in this way.

The idle time can also be used when using a roller shutter to compensate for the roller shutter opening.

Example:

A value = 10 gives an idle time of 10 x 10 ms = 100 ms

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter	**Extended drive timing**	
-Extended drive timing	Idle time until upward movement (0...255, unit = 10 ms)	**0**

Startup Delay

Some motors do not bring full power directly when switched on, but only after a few milliseconds. You can use the time setting for the start-up delay to compensate for this.

A value = 10 gives a start-up delay of 2 x 10 ms = 20 ms

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter	**Extended drive timing**	
-Extended drive timing	Startup delay (0...255, unit = 10 ms)	**0**

Deceleration Delay

There are some motors that continue running for several milliseconds after they are switched off. This can also be caused by large and heavy blinds/roller shutters. If you notice this behavior, you can compensate for it using the setting for the deceleration delay.

A value = 6 gives a deceleration delay of 6 x 10 ms = 60 ms.

In this way, the motor will be switched off 60 ms earlier.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter	**Extended drive timing**	
-Extended drive timing	Deceleration delay (0...255, unit = 10 ms)	**0**

Additional Start-up Time on Opening the Slat (for Blind only)

Some types of blinds require an additional start-up supplement before the first reaction of the slats when opening the slats due to the tensioning and releasing of the slat straps. This depends on the current slat position. The following parameters can be used to set a start-up supplement for the upper and lower slat positions.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter	**Extended drive timing**	
-Extended drive timing	Additional startup time when opening slat downwards (0...255, unit = 10 ms)	**0**
	Additional startup time when opening slat upwards (0...255, unit = 10 ms)	**0**

With these parameters for **Additional startup time when opening slat downwards**, set the start-up delay for an upward movement until the slat is rotated when the slats are in the open position (0%) (the previous blind movement was an upward motion).

Additional startup time when opening slat upwards: the start-up delay until the slat is rotated, which you define here, is always taken into account when opening the blind if the slat is in the closed position (100%) (the previous blind movement was a downward movement).

Automatic, Locking and Calibration Settings

Automatic Mode

In addition to manual control of the blind / roller shutter drives (via the group objects for the manual operating options), the software application also provides you with another set of group objects for automatic control.

Automatic control can be performed by other bus devices, e.g. presence detectors or light controllers, or via a building control system. Once you have activated automatic control for a channel, you can initially position the connected drive with equal priority using manual control or automatic control. The drive reacts identically on receiving control telegrams from one of the two types of control.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter	**Automatic, Locking & Calibration settings**	
-Automatic, Locking & Calibration settings	**Automatic mode**	
	Automatic mode	**Disabled** Enabled

In order to use the **automatic mode**, you must first activate the function in the ETS. Once **automatic mode** has been enabled, new group objects are available for the channel.

Group Objects of Automatic Mode for Blind/Roller Shutter

No.	Name	Object function	Length	Behavior	Data Type
148	Extension Output 1 +2 name of the channel	Movement in automatic mode	1 bit	Received	1.008 Up/Down
149	Extension Output 1 +2 name of the channel	Stop/step in automatic mode (blind)	1 bit	Received	1.007 Step
149	Extension Output 1 +2 name of the channel	Stop in automatic mode (roller shutter)	1 bit	Received	1.007 Step
150	Extension Output 1 +2 name of the channel	Height position in automatic mode	1 byte	Received	5.001 Percent (0...100%)
151	Extension Output 1 +2 name of the channel	Slat position in automatic mode (blind)	1 byte	Received	5.001 Percent (0...100%)

The group objects for manual operation and automatic mode have equal priority. The drive always executes the command it received last on one of the objects.

Using parameter settings and objects, you can modify the operation of the two control options. You also have the possibility of defining the reciprocal influence of manual control and automatic control.

Lock of Automatic Mode

If operation with equal priorities for manual operation and **automatic mode** is not always suitable for your application, you can disable and re-enable **automatic mode** using an additional object as required:

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter -Automatic, Locking & Calibration settings	**Automatic, Locking & Calibration settings**	
	Automatic mode	
	Lock of automatic mode	**Disabled** Enabled
	Automatic locking	**At object value "1"** At object value "0"
	Status of automatic locking	**Disabled** Enabled
	Behavior on deactivating automatic locking via object	**No reaction** Accept current automatic position

Once the function “**Lock of automatic mode**” and “**Status of automatic locking**” has been enabled, new group objects are available for the channel.

- The feedback object sends a “1” if automatic locking is active.
- The feedback object sends a “0” if automatic locking is inactive.

Group Objects of Automatic Mode Lock

No.	Name	Object function	Length	Behavior	Data Type
152	Extension Output 1 +2 name of the channel	Lock of automatic mode	1 bit	Received	1.003 Enable
160	Extension Output 1 +2 name of the channel	Feedback for automatic mode	1 bit	Sending	1.003 Enable

Depending on the setting, the **automatic locking** is activated or deactivated when a new telegram value is received:

- “**Automatic locking**” = “**at object value 0**”
  If “**Automatic locking**” = “0”: **automatic locking** is active.
  If “**Automatic locking**” = “1”: **automatic locking** is inactive.
- “**Automatic locking**” = “**at object value 1**”
  If “**Automatic locking**” = “0”: **automatic locking** is inactive.
  If “**Automatic locking**” = “1”: **automatic locking** is active.

In addition, you can set the behavior of the drive to the end of **automatic locking**.

Furthermore, you can separately define the response of automatic control on receiving a manual control telegram.

Defining Dependency between Automatic Function and Manual Control

You can use the following parameter to define the reaction of the automatic function on receiving a control telegram from the manual operating options (**Movement in manual mode**, **Stop/step in manual mode**, **Height position in manual mode**, **Slat position in manual mode**, and calling up scenes):

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter -Automatic, Locking & Calibration settings	**Automatic, Locking & Calibration settings**	
	Automatic mode	
	Reaction in automatic mode on receipt of a manual object value	**Automatic mode remains enabled**
		Automatic mode temporarily disabled
	Deactivation time for automatic mode	**1 min** (1 min - 24 h)

Permanent deactivation of the automatic function can only be canceled by a telegram terminating automatic locking via the automatic locking object. The action you set in the parameter "Behavior on deactivating automatic locking via object" will be executed.

Once a temporary deactivation has elapsed, the drive remains in its current position until the next control telegram.

Locking Function

Using the **locking function**, you can move a blind / roller shutter to a desired locking position. The state of the output channel cannot be changed by other control commands as long as the lock is active. Only a higher-level function with a higher priority can still be used to move the drive to a different position.

You can enable the locking function individually for each output channel.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter -Automatic, Locking & Calibration settings	**Locking function**	
	Locking function	**Disabled** Enabled
	Lock	**At object value "1"** At object value "0"
	Status of locking signal	**Disabled** Enabled
	Behavior at start of locking	**No reaction** Stop Up Down Move to position
	Height position at start of locking in %	**0** (0 – 100)
	Slat position at start of locking in %	**0** (0 – 100)
	Behavior at end of locking	**No reaction** Up Down Move to position prior locking Accept current automatic position
	Behavior after download	**Disabled** Enabled As before download
	Behavior after bus voltage recovery	**Disabled** Enabled As before bus voltage failure

Once the **Locking function** and **Status of locking signal** have been enabled, new group objects are available for the channel.

You can activate and deactivate a channel lock using the locking object.

Group Objects of Locking Function

No.	Name	Object function	Length	Behavior	Data Type
153	Extension Output 1 +2 name of the channel	Lock	1 bit	Received	1.003 Enable
161	Extension Output 1 +2 name of the channel	Feedback for drive locking	1 bit	Sending	1.003 Enable

If the locking object receives a telegram with the object value that you set for the parameter **Lock**, all other functions for the channel are disabled. You can define the reaction using the parameter **Behavior at start of locking**.

If the locking object receives a telegram with the object value opposite of that for activation, the lock is canceled and the drive adopts the state that you defined in the parameter **Behavior at end of locking**.

The **Feedback for drive locking object sends** a “1” if the lock is active.

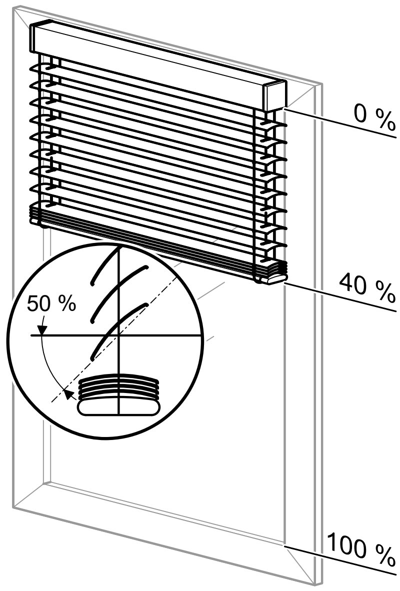
The **Feedback for drive locking** object sends a “0” if the lock is inactive.

Behavior of the Drive at Start of Locking

Set how the drive is to behave when the locking function becomes active:

- **No reaction**: Finish the actual task.
- **Stop**: The drive stops immediately (remains in its current position).
- **Up**: The drive moves to the upper end position.
- **Down**: The drive moves to the lower end position.
- **Move to position**: The drive moves to the defined position for height and slat (for blind only).

Behavior at start of locking = move to position; height position at start of locking = 40%; slat position at start of locking = 50%



Once the drive has performed the desired action, it remains in this position and cannot be operated while the locking function is active. Only when a function with a higher priority becomes active will the reaction defined there be executed.

Behavior at the End of Locking

If the locking function has been switched off again by a new object value, you can operate the drive normally again. If the drive is to perform an automatic action after the locking function has been terminated, you can define it with this parameter:

- **No reaction**: the drive remains in its current position.
- **Up**: the drive moves to the upper end position.
- **Down**: the drive moves to the lower end position.
- **Move to position prior locking**: the drive returns to the position it had before the locking.
- **Accept current automatic position**: this setting is only useful if the automatic function is active. The drive moves to the last automatic position requested.

Lock Behavior after Download

After a download, the lock function is also set as in the case of bus voltage recovery. The parameter **Behavior after download** determines which state is set.

If the **Behavior after download** parameter is set to **As before download** , the locking function is activated as previously set and the output is controlled accordingly.

Lock Behavior after Bus Voltage Recovery

Disabled:
The locking function is not activated after a bus voltage recovery, regardless of the state it had before the bus voltage failure.

Enabled:
After a bus voltage recovery, the locking function becomes active and the output is switched to the state that you defined via the parameter **Behavior at start of locking**. If you have set the value **No reaction** here, the output is locked in its current state.

As before bus voltage failure:
The locking function is brought to the state that was active before the bus voltage failure. If the locking function was active, the output is controlled by its settings in the parameter **Behavior at start of locking**.

Movement Range Limits

For certain applications, e.g. in the case of open tilting windows or window boxes for flowers in the summer, it may be helpful or necessary to limit the possible movement range of a drive temporarily or permanently.

NOTICE

BLINDS/ROLLER SHUTTERS CAN BE DAMAGED.

- The blinds/roller shutters may move outside the movement range limits and into any open windows. For this reason, consider where the reference movement is to be made (Calibration, page 140).
- After a download or bus voltage recovery, a reference movement is made after initialization, even if the **General reference movement** function is disabled. The blinds/roller shutters may move outside the movement range limits and into any open windows. (Calibration, page 140)
- After a download or bus voltage recovery, the movement range limitation may be disabled because no activation telegram has been received.
- For this reason, consider where the reference movement is to be made: The reference movement after initialization is generally carried out towards the upper end position. A reference movement to the lower end position is only carried out if the parameter **Reference position** is set to **lower**.
- Functions with a higher priority, such as **safety function** or **alarm function**, can also control blinds/roller shutters outside the movement range limitation.

If movement range limitation is active, manual operation, automatic functions or scene calls can only move the drive within the defined limit. The limitation also applies to motion commands from functions a lower priority. Only a higher-level function with a higher priority can still be used to move the drive to a different position outside the limit. This must be taken into account if the movement range is to be limited due to an obstacle. Obstacles in operation must be avoided.

You can activate the limits of the movement range individually for each output channel (enabled).

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter -Automatic, Locking & Calibration settings	**Movement range limits**	
	Movement range limits	**Disabled** Enabled
	Limit movement range	**Immediately after bus voltage recovery** At object value "1" At object value "0"
	Feedback for range limitation	**Disabled** Enabled

After the function “**Movement range limits**” has been enabled, the parameter “**Limit movement range**” appears. Here you can define when and how the function is activated for the channel.

- **Immediately after bus voltage recovery**: the function becomes active immediately after bus voltage recovery or after a download. The drive can only move between the limits. Only a function with a higher priority can move the drive to a position outside the limit.
- **At object value “1”**: the object value “1” activates the limit. If the object value “0” is received, the entire movement range is enabled again.
- **At object value “0”**: the object value “0” activates the limit.

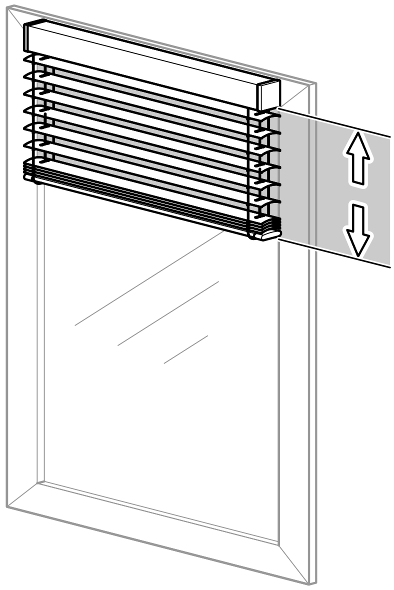
A telegram with the object value “1” deactivates the limit. In the case of activation by an object value, an additional group object “**Activate movement range limits**”, which can be used to switch the limit on and off, appears for this channel.

You can set the limits of the movement range using other parameters:

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter -Automatic, Locking & Calibration settings	**Movement range limits**	
	Limit movement position	Limit range at upper position **Limit range at lower position**

If limitation is active, the drive will only move between the limits. The limitation applies to all motion commands from manual operation, automatic functions, scenes, and motion commands from functions with a lower priority. It is possible to limit either the upper position or the lower position.

Limit range at lower position with upper limit = 0% (fix) and lower limit = 25%



If limitation is active, the drive will only move between the limits.

If the drive is outside the limits when movement range limitation is activated, it is automatically moved to the nearest limit and stops there.

If a drive reaches its movement range limits, this can be signaled to the bus via a status feedback object. Functions that depend on it, e.g. opening a window, can now be executed.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter -Automatic, Locking & Calibration settings	**Movement range limits**	
	Limit movement position	**Limit range at lower position**
	Upper limit value in % (fix)	0
	Lower limit value in %	**100** (0-100)
	Limit movement position	Limit range at upper position
	Upper limit value in %	**100** (0-100)
	Lower limit in % (fix)	0

The movement range limitation function is often selected in summer when solar radiation is strong, so that it does not heat up rooms or dazzle people. The drive can no longer be moved manually all the way up, but in the event of a storm the weather alarm will move the blind to the safe position.

Group Objects of Movement Range Limits

No.	Name	Object function	Length	Behavior	Data Type
156	Master Output 1+2 name of the channel	Activate movement range limits	1 bit	Received	1.003 Enable
162	Master Output 1+2 name of the channel	Feedback for range limitation	1 bit	Sending	1.003 Enable

Drive Behavior after the End of Movement Restriction

If the limitation of the movement range is determined by object values and a new object value cancels an active limitation, then you can operate the drive normally again. If the drive is to perform an automatic action in this case, you can define it with the following parameter:

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter	**Movement range limits**	
-Automatic, Locking & Calibration settings	Behavior at the end of movement restriction	**No reaction** Up Down Move to position prior to movement restriction Accept current automatic position

Values to be set:

- **No reaction**: the drive remains in its current position.
- **Up**: the drive moves to the upper end position.
- **Down**: the drive moves to the lower end position.
- **Move to position prior to movement restriction**: the drive returns to the position it had before the movement restriction.
- **Accept current automatic position**: this setting is only useful if the automatic function is active. The drive moves to the last automatic position requested.

Calibration

The calibrating function is activated centrally on the **Global settings for roller shutter and blind** tab with the parameter **Calibration**. If the function has been activated globally, the following group object is available for all channels and each channel can use the calibrating function: Group Object for Calibration, page 41.

The device calculates the current position of a drive from the running times you have set for the drive and from the control commands it executes. This calculation must be performed because there is no feedback from the drive regarding its position. Even if you have set the running times very precisely, the internally calculated height position will deviate slightly from the actual height position after a number of movements. This is due to mechanical tolerances and weather conditions (temperature fluctuations, frost, rain, etc.).

The blind channel can reset these deviations by means of reference runs. For this purpose, it moves the drives to the upper or lower end position. After the reference run, the internal position calculation starts again from a fixed value. Any deviations that have arisen in the meantime are thus eliminated.

NOTE: The calibration function is especially important if you work a lot with position commands and high positioning accuracy is required. If the blind is controlled exclusively using the basic functions and position commands do not matter, then you do not need this function.

Operating Principle

A reference movement can be triggered by a telegram on the central calibration object or after a certain number of movements. After a reference movement has been triggered, the drive moves to the desired reference position (end position). If you have set both end positions as reference positions, the drive will move to the nearest end position, depending on its current position.

In order to ensure that the drive reliably reaches the desired end position, the actuator adds a running time allowance of 5% of the total running time to the calculated travel time for each reference movement.

NOTE: If a weather alarm or other higher-level function is activated during a calibrating function, the calibrating function is canceled and the higher-level function is executed.

Per channel:

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter -Automatic, Locking & Calibration settings	**Calibration**	
	Calibration	**Disabled** Enabled

Trigger of Calibration

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter -Automatic, Locking & Calibration settings	**Calibration**	
	Trigger of calibration	**Number of movements** Value "1" on calibration object No. of movements or calibration object
	Delay of calibration via object (0...255, unit = 1 s)	**0**
	Number of movements until calibration	**7** (1-20)

Triggering a reference movement after a number of movements

The channel adds up the total number of movements, irrespective of the control command that triggered the movements. Once the defined number of movements has been reached, the drive first performs a reference movement before the next positioning command. It then moves to the requested position. After the reference movement, the movement counter is reset.

Trigger reference movement via group object

If the object "" receives the value "1", a reference movement is started for all assigned channels. In order not to overload the power supply of the blind system, you can select a "" for each channel. If a new value "1" is received on the object during this delay time, the delay time is restarted. The object value "0" has no meaning.

Trigger reference movement after a number of movements or via group object

It is also possible to select a logic operation from the number of movements or the calibration telegram.

Reference Position

After a reference movement has been triggered, the drive moves to the desired parameterizable **reference position** (end position). If you have set both end positions as **reference positions**, the drive will move to the nearest end position, depending on its current position.

Ext. 1/2	**Calibration**	
Output 1+2 / 3+4 / 5 +6 / 7+8		
-Blind/roller shutter		
-Automatic, Locking & Calibration settings	Reference position	**Upper**
		Lower
		Upper and lower

Automatic Calibration

Each time the drive moves to the defined end position due to a positioning command, the calibrating function is performed. This means that a running time allowance of 5% of the total running time is added to the calculated travel time required by the drive to ensure that the drive reliably reaches the desired end position. Once the end position has been reached, the movement counter is also reset.

Ext. 1/2	**Calibration**	
Output 1+2 / 3+4 / 5 +6 / 7+8		
-Blind/roller shutter		
-Automatic, Locking & Calibration settings	Automatic calibration	**Upper**
		Lower
		Upper and lower

Position after Calibration via Object

The height position after the reference movement can be defined using the parameter “**Position after calibration via object**”. If a movement is to be made to a “**new position**”, set the height and, in the case of blinds, also the opening angle of the slats, in the movement range form 0% to 100%.

If the channel receives an absolute positioning command during the reference movement, it sets the desired position after the reference movement. In this case, the settings in the parameter “**Position after reference movement via object**” have no effect. All other control commands interrupt the calibrating function. The drive reacts to the received control commands.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter	**Calibration**	
-Automatic, Locking & Calibration settings	Position after calibration via object	**Position prior reference movement** Remain in reference position New position
	Height position after calibration in %	**0** (0-100)
	Slat position after calibration in %	**0** (0-100)

Reference Movement after Initialization

The reference movement after a download or bus voltage recovery serves to obtain an exact starting position for further positioning movements.

NOTE: The reference movement after initialization is always carried out, even if the function "**General reference movement**" is disabled.

The reference movement is triggered by an absolute positioning command. These include, for example, receiving a value on the objects "**Height position in manual mode**" or "**Height position in automatic mode**", the calling of scenes, or movement to an absolute position in the case of weather alarm, alarm or lock. If, after initialization, the object "**Move object in manual mode**" receives a value that moves the blind / roller shutter to the upper end position, the actuator automatically evaluates this movement as a reference movement.

The reference movement after initialization is generally carried out towards the upper end position. If you have enabled sending of the status messages "**Feedback for height**" and/or "**Feedback for slat**" , this automatically sends the current status.

Reference Movement with Movement Range Limitation

NOTICE

BLINDS/ROLLER SHUTTERS CAN BE DAMAGED.

- The blinds/roller shutters may move outside the movement range limits and into any open windows. For this reason, consider where the reference movement is to be made (Calibration, page 140).
- After a download or bus voltage recovery, a reference movement is made after initialization, even if the **General reference movement** function is disabled. The blinds/roller shutters may move outside the movement range limits and into any open windows. (Calibration, page 140)
- After a download or bus voltage recovery, the movement range limitation may be disabled because no activation telegram has been received.
- For this reason, consider where the reference movement is to be made: The reference movement after initialization is generally carried out towards the upper end position. A reference movement to the lower end position is only carried out if the parameter **Reference position** is set to **lower**.
- Functions with a higher priority, such as **safety function** or **alarm function**, can also control blinds/roller shutters outside the movement range limitation.

Movement Range Limits, page 137

Safety and Alarm Settings

Safety Function Blind

The global **safety function** is activated on the **Extended settings** tab with the parameter **Device safety** and the global settings are parameterized there.

The effect of the **safety function** can be parameterized here for each channel. You can enable the **safety function** individually for each drive.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter	**Safety function**	
-Safety and alarm settings	Safety function	**Disabled**
		Enabled
	Behavior at start of safety	**No reaction**
		Stop
		Up
		Down
		Move to position
	Height position at start of safety in %	**0** (0-100)
	Slat position at start of safety in %	**0** (0-100)
	Behavior at end of safety	**No reaction**
		Up
		Down
		Move to position prior safety
		Accept current automatic position
	Behavior at exceeding cycle time	**No reaction**
		Stop
		Up
		Down
		Move to position
	Height position on exceeding cycle time in %	**0** (0-100)
	Slat position on exceeding cycle time in %	**0** (0-100)

The safety function is activated if the **safety object** receives a telegram with the object value that you defined with the parameter **Device safety** (). You can define the reaction using the parameter **Behavior at start of safety**.

- **No reaction**: Finish actual task.
- **Stop**: The drive remains in its current position.
- **Up**: The drive moves to the upper end position.
- **Down**: The drive moves to the lower end position.
- **Move to position**: The drive moves to the defined position for height and slat (for blind only).

If the safety object receives a telegram with the object value opposite of that for activation, the safety function is canceled and the output relay adopts the state that you defined in the parameter **Behavior at end of safety**.

- **No reaction**: The drive remains in its current position.
- **Up**: The drive moves to the upper end position.
- **Down**: The drive moves to the lower end position.
- **Move to position prior safety**: The drive returns to the position it had before the safety telegram.
- **Accept current automatic position**: This setting is only useful if the automatic function is active. The drive moves to the last automatic position requested.

The device then waits for a telegram from an external sender within the globally set cycle time. If such a telegram is not received within the monitoring time, the parameter **Behavior at exceeding cycle time** is used to determine what is to happen.

- **No reaction**: The drive remains in its current position. Block for new commands, but finish actual task.
- **Stop**: Block for new commands, and the drive remains in its current position.
- **Up**: The drive moves to the upper end position. Block for new commands.
- **Down**: The drive moves to the lower end position. Block for new commands.
- **Move to position**: The drive moves to the defined position for height and slat (for blind only). Block for new commands.

Group Objects for Central Safety

No.	Name	Object function	Length	Behavior	Data Type
23	Central	Safety	1 bit	Received	1.005 Alarm

Priority

The **safety function** is a 1-bit group object with the highest priority. This means that this object takes precedence over the following group objects:

- **Alarm object / Weather alarm objects / Lock object**
  Priority of Functions for Roller Shutter and Blind, page 40
- **Scene object**
- **Central Move up/down blind / roller shutter objects**
- **Blind / roller shutter automatic objects**
- **Blind / roller shutter manual objects**

Alarm Function

In the case of an alarm, the **alarm function** can be used to set each channel to a desired alarm state. The output is disabled for further operation. Only a higher-level function with a higher priority can still be used to switch the output to a different state.

You can activate the **alarm function** individually for each output channel.

The **alarm function** can be parameterized here for each channel.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter -Safety and alarm settings	**Alarm function**	
	Alarm function	**Disabled** Enabled
	Alarm	**At object value "1"** At object value "0"
	Behavior at start of alarm	**No reaction** Stop Up Down Move to position
	Height position at start of alarm in %	**0** (0-100)
	Slat position at start of alarm in %	**0** (0-100)
	Behavior at end of alarm	**No reaction** Up Down Move to position prior alarm Accept current automatic position
	Behavior after bus voltage recovery	**Disabled** Enabled As before bus voltage failure

Group Objects of the Alarm Function

No.	Name	Object function	Length	Behavior	Data Type
60	Master Output 1 & (name of the channel)	Alarm	1 bit	Received	1.005 Alarm

Object Values for Alarm

First select the object value that is to switch on the **alarm function**:

- **At object value “1”**: object value “1” switches on the alarm function. If the object value “0” is received, the alarm function is switched off again.
- **At object value “0”**: object value “0” switches on the **alarm function**. A telegram with the object value “1” deactivates the function again.

The **alarm function** is activated if the **alarm** object receives a telegram with the object value that you defined with the parameter **Alarm**. The reaction is defined by the parameter **Behavior at start of alarm**.

- **No reaction**: Finish actual task.
- **Stop**: The drive remains in its current position.
- **Up**: The drive moves to the upper end position.
- **Down**: The drive moves to the lower end position.
- **Move to position**: The drive moves to the defined position for height and slat (for blind only).

Once the drive has performed the desired action, it remains in this position and cannot be operated while the **alarm function** is active. Only when a function with a higher priority becomes active will the reaction defined there be executed.

If the **alarm** object receives a telegram with the object value opposite of that for activation, the **alarm function** is canceled and the output relay adopts the state that you defined in the parameter **Behavior at end of alarm**.

- **No reaction**: the drive remains in its current position.
- **Up**: the drive moves to the upper end position.
- **Down**: the drive moves to the lower end position.
- **Move to position prior alarm**: the drive returns to the position it had before the alarm telegram.
- **Accept current automatic position**: this setting is only useful if the automatic function is active. The drive moves to the last automatic position requested.

Behavior of the Alarm after Bus Voltage Recovery

Disabled:
The alarm function is not activated after a bus voltage recovery, regardless of the state it had before the bus voltage failure.

Enabled:
After a bus voltage recovery, the alarm function becomes active and the output is switched to the state that you defined via the parameter **Behavior at start of alarm**.

As before bus voltage failure:
The alarm function is brought to the state that was active before the bus voltage failure. If the alarm function was active, the output is controlled by its settings in the parameter **Behavior at start of alarm**.

Priority

The **alarm function** is a 1-bit group object with high priority. The **device safety** function has the highest priority.

The priority order for blind / roller shutter can be defined globally Priority of Functions for Roller Shutter and Blind, page 40. The **alarm** object takes precedence over the following group objects:

- **Weather alarm objects / Lock object**
  Priority of Functions for Roller Shutter and Blind, page 40
- **Scene object**
- **Central Move up/down blind / roller shutter objects**
- **Blind / roller shutter automatic objects**
- **Blind / roller shutter manual objects**

Weather Alarm Function

The weather alarms are activated globally on the **Extended settings** tab with the parameter **Global settings for roller shutter and blind**, and the global settings are parameterized there.

There are now 5 different weather alarms available, together with their group objects.

The monitoring of the signals of the activated weather sensors can be carried out cyclically. The device then expects a telegram from the relevant sensor within the cycle time set. If such a telegram is not received within the monitoring time, the associated weather alarm is nevertheless triggered for safety reasons (if, for example, the sensor or the cable connection between sensor and blind channel is defective and no message would be sent in the event of a genuine alarm).

Extended settings	**Global settings for roller shutter and blind**	
	Weather alarm function	**Disabled**
		Enabled
	Monitoring time for wind alarm 1	**Disabled**
		1 s ... 12 h
	Monitoring time for wind alarm 2	**Disabled**
		1 s ... 12 h
	Monitoring time for wind alarm 3	**Disabled**
		1 s ... 12 h
	Monitoring time for rain alarm	**Disabled**
		1 s ... 12 h
	Monitoring time for frost alarm	**Disabled**
		1 s ... 12 h

The effect of the **weather alarm functions** can be parameterized here for each channel. You can enable the **weather alarm function** individually for each drive.

Ext. 1/2	**Weather alarm function**	
Output 1+2 / 3+4 / 5 +6 / 7+8	Weather alarm function	**Disabled**
-Blind / roller shutter		Enabled
-Safety and alarm settings		

With the **weather alarms functions**, you can protect the blinds or roller shutters against adverse weather effects such as wind, rain and frost. In the event of an alarm for one of these 5 possible weather events, the drives move into a safe position and stay there for the duration of the event (depending on the priorities of the other higher-level functions).

New parameters appear for the detailed setting of the **alarm functions** for three wind alarms, one rain alarm and one frost protection alarm.

Ext. 1/2	**Weather alarm function**	
Output 1+2 / 3+4 / 5 +6 / 7+8	React on wind alarm 1	**No**
-Blind / roller shutter		Yes
-Safety and alarm settings	React on wind alarm 2	**No**
		Yes
	React on wind alarm 3	**No**
		Yes
	Use AND logic for wind alarms	**No**
		Yes
	Reaction on wind alarm(s)	**Up**
		Down
		Move to position

	Reaction on rain alarm	**Disabled**
		Stop
		Up
		Down
		Move to position
	Reaction on frost alarm	**Disabled**
		Stop
		Up
		Down
		Move to position

First select how the drive is to react to an active **weather alarm**. To protect against damage in the case of excessive wind speeds, you can individually assign one of the three wind sensor signals 1, 2 or 3 to each channel. With the respective activation, the three signals of the **wind alarms** are logically "OR" linked or linked by means of the AND parameter.

When a **weather alarm** becomes active, the drive performs one of the following reactions according to your settings:

- **Disabled**: The weather alarm function is not active.
- **Stop**: The drive remains in its current position (stops).
- **Up**: The drive moves to the upper end position. The weather alarm function is switched on and the alarm function is active.
- **Down**: The drive moves to the lower end position. The weather alarm function is switched on and the alarm function is active.
- **Move to position**: The drive moves to the defined safety position. The weather alarm function is switched on and the alarm function is active.

Once the drive has performed the desired reaction, it remains in this position and cannot be operated while the **weather alarm** is active. Only when a function with a higher priority becomes active will the reaction defined there be executed.

If the drive is to move to a specific safety position, you can define this position using parameters:

Ext. 1/2	**Weather alarm function**	
Output 1+2 / 3+4 / 5 +6 / 7+8	Height position at weather alarm in %	**0** (0-100)
-Blind / roller shutter	Slat position at weather alarm in %	**0** (0-100)
-Safety and alarm settings		

This safety position is valid for all three **weather alarms** if you have selected the parameter value **Move to position** as the reaction to a **weather alarm**.

Priority of Weather Alarms

The global priorities for the weather alarms are defined here.

Extended settings	**Global settings for roller shutter and blind**	
	Priority of weather alarms	**Wind alarm >Rain alarm >Frost alarm**
		Wind alarm > Frost alarm > Rain alarm
	Monitoring time for wind alarm 1	Rain alarm > Wind alarm > Frost alarm
		Rain alarm > Frost alarm > Wind alarm
	Monitoring time for wind alarm 2	Frost alarm > Rain alarm > Wind alarm
		Frost alarm > Wind alarm > Rain alarm

This priority setting applies to all blind and roller shutter channels for which the weather alarm function is enabled.

The reactions to a weather alarm only become active if no weather alarm with a higher priority is already active.

If a weather alarm is reset and another weather alarm with a lower priority is active at that time, the reactions of the alarm with the lower priority are now executed.

Group Objects for Weather Alarms

No.	Name	Object function	Length	Behavior	Data Type
18	Central	Wind alarm 1	1 bit	Received	1.005 Alarm
19	Central	Wind alarm 2	1 bit	Received	1.005 Alarm
20	Central	Wind alarm 3	1 bit	Received	1.005 Alarm
21	Central	Rain alarm	1 bit	Received	1.005 Alarm
22	Central	Frost alarm	1 bit	Received	1.005 Alarm

Drive Behavior after End of Weather Alarm

Once the sensor values of the weather sensors have returned to the normal measuring range, the **weather alarms** are deactivated again. You can define a reaction to be performed by the drive as soon as there is no longer any **weather alarm** active:

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind / roller shutter -Safety and alarm settings	**Weather alarm function**	
	Behavior at end of all weather alarms	**No reaction**
		Up
		Down
		Move to position prior weather alarm
		Accept current automatic position

The drive then performs the following functions:

- **No reaction**: the drive remains in its current position. The alarm function is terminated.
- **Up**: the drive moves to the upper end position. The alarm function is terminated.
- **Down**: the drive moves to the lower end position. The alarm function is terminated.
- **Move to position prior weather alarm**: the drive returns to the position it had before the weather alarm. The alarm function is terminated.
- **Accept current automatic position**: this setting is only useful if the automatic function is active. The drive moves to the last automatic position requested. The alarm function is terminated.

Failure and Download Behavior

You can enable this function individually for each drive. The behavior of the drive in the case of a bus voltage failure / bus voltage recovery and application download is defined.

NOTICE

BEHAVIOR OF BLIND AND SHUTTER OUTPUTS HAS CHANGED.

The Dimmer Master does not have enough power to move all blind and shutter channels into position or to move them up or down. Only the following options are available here:

- Relay state after bus voltage failure: **No reaction**
- Relay state after bus voltage failure: **Stop**

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind / roller shutter -Safety and alarm settings	**Failure and download behavior**	
	Failure and download behavior	**Disabled** Enabled
	Relay state after bus voltage failure	**No reaction** Stop
	Relay state after bus voltage recovery	**Stop** Up Down Move to position As before bus voltage failure
	Height position at bus voltage recovery in %	**0** (0-100)
	Slat position at bus voltage recovery in %	**0** (0-100)
	Relay state at end of download	**Stop** Up Down Move to position As before download
	Height position at end of download in %	**0** (0-100)
	Slat position at end of download in %	**0** (0-100)

Relay Behavior after Bus Voltage Failure

If the bus voltage falls below 18 V, the drive can be switched to a parameterized state. The drive can either be defined as stopped (**Stop**) or remain in the state it had before the failure (**No reaction**). At the same time, the current position of the relay is saved in the device.

Possible settings:

- **No reaction**: the drive remains in its current state, i.e. it remains stationary or it continues to execute a current movement until the running times have elapsed.

- **Stop**: the drive stops immediately.

Relay Behavior after Bus Voltage Recovery

In the case of bus voltage recovery, the relay can adopt a parameterized state.

Possible settings:
- **Stop**: the drive stops immediately.
- **Up**: the drive moves to the upper end position.
- **Down**: the drive moves to the lower end position.
- **Move to position**: the drive moves to the defined position for height and slat (for blind only).
- **As before bus voltage failure**: With the parameter "**As before bus voltage failure**", the relay adopts the state that was saved in the device at the time of the bus voltage failure. Any subsequent manual switchings are overwritten.

Priority

The reaction to the behavior set here for bus voltage recovery has a low priority.

If a function with a higher priority is activated for the drive directly after bus voltage recovery, the settings described below apply to these functions.

Relay states caused by higher-priority functions (higher-level function) take precedence over behavior after bus voltage recovery.

Behavior after Download

After the ETS download, the channel can adopt a parameterized state. If an internal defect or a faulty download results in a state in which the application is not operational, the device will not react. The output relays remain in their last position.

If you wish to activate the behavior after ETS download for a drive, you must parameterize a "**relay state at end of download**" for each channel.

Possible settings:
- **Stop**: the drive stops immediately.
- **Up**: the drive moves to the upper end position.
- **Down**: the drive moves to the lower end position.
- **Move to position**: the drive moves to the defined position for height and slat (for blind only).
- **As before download**: the drive remains in its current state after a download.

Priority

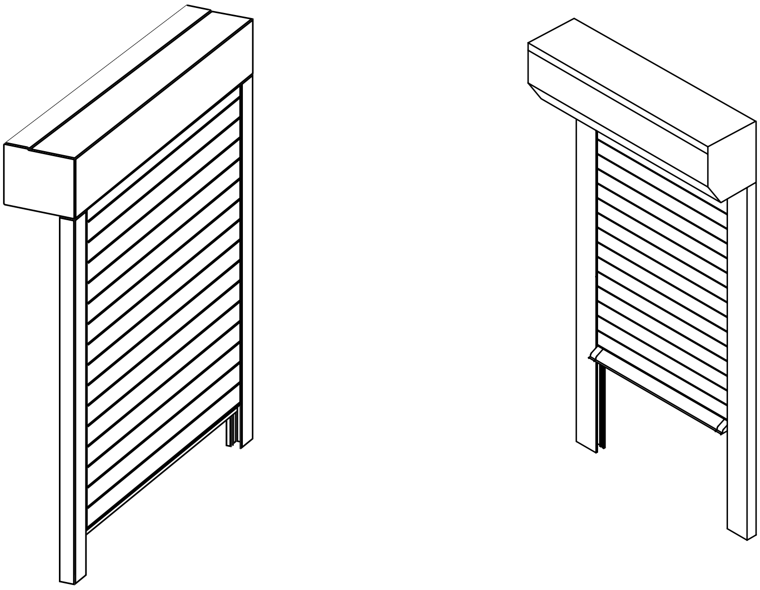
Relay states caused by higher-priority functions take precedence over behavior after ETS download.

Example:
OR logic operation with parameterized value of the logic object after bus voltage recovery = 1, prevails and switches the output.

Express Settings for Roller Shutter

Roller shutter protects residents, furnishings and plants against too much sun and UV radiation. The roller shutter prevents the excessive heating of rooms from exposure to sunlight. The protection offered by roller shutters against external noise is also not to be underestimated.

In the cold season, the layer of air between window and shutter has an insulating effect. This can additionally save heating costs.



Roller shutters behave in a similar manner to blinds. They lack the slat control functions. For this reason, we refer to the description of the individual functions in the chapter Express Settings for Blind/Roller Shutter, page 111.

Group Objects for Express Settings for Roller Shutter

No.	Name	Object function	Length	Behavior	Data Type
143	Extension Output 1 +2 name of the channel	Movement in manual mode	1 bit	Received	1.008 Up/Down
144	Extension Output 1 +2 name of the channel	Stop in manual mode (roller shutter)	1 bit	Received	1.007 Step
145	Extension Output 1 +2 name of the channel	Height position in manual mode	1 byte	Received	5.001 Percent (0...100%)
158	Extension Output 1 +2 name of the channel	Feedback for height	1 byte	Sending	5.001 Percent (0...100%)
163	Extension Output 1 +2 name of the channel	Feedback for moving	1 bit	Sending	1.010 Start/Stop
164	Extension Output 1 +2 name of the channel	Feedback for last direction	1 bit	Sending	1.008 Up/Down

Name of the Channel

Name of the Channel, page 114

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Roller shutter	**Express settings for roller shutter**	
	Name of the channel	*Roller shutter Kitchen*

Roller Shutter Control Drive Time

Drive Running Time, page 115

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Roller shutter	**Express settings for roller shutter**	
	Roller shutter control	
	Use same time for up and down	**Yes**
	Running time: Up/Down (5s...99:59.9 min)	**02:00.0**
	Pause time before reverting (2...255, unit = 100 ms)	**5**

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Roller shutter	**Express settings for roller shutter**	
	Roller shutter control	
	Use same time for up and down	No
	Running time: Up (5s...99:59.9 min)	**02:00.0**
	Running time: Down (5s...99:59.9 min)	**02:00.0**
	Pause time before reverting (2...255, unit = 100 ms)	**5**

Locking Manual Mode

Locking Manual Mode, page 123

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Roller shutter	**Express settings for roller shutter**	
	Locking manual mode	**Disabled** Enabled
	Manual locking	**At object value "1"** At object value "0"

Group Objects for Lock of Manual Mode

No.	Name	Object function	Length	Behavior	Data Type
147	Extension Output 1 +2 name of the channel	Locking manual mode	1 bit	Received	1.003 Enable

Scenes

Scenes, page 123

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Roller shutter Scenes settings	**Express settings for roller shutter**	
	Scenes	**Disabled** Enabled
	Scene settings	
	Required number of scenes	**1** (1-16)
	Overwrite scene values of actuator during download	Disabled **Enabled**
	Time delay for scene processing (0...255, unit = 100 ms)	**0**
	Scene 1 (1-16)	Disabled **Enabled**
	Scene 1 Description	
	Scene 1 Address (0-63) Dependent: Global Settings for Scenes, page 33	**Scene address 0 - 63**
	Scene 1 Address (1-64) Dependent: Global Settings for Scenes, page 33	Scene address 1 - 64
	Scene 1 height in %	**0** (0-100)

Group Objects for Scene

No.	Name	Object function	Length	Behavior	Data Type
155	Extension Output 1 +2 name of the channel	Scene	1 byte	Received	18.001 scene control

Central Function Roller Shutter

Central Function for Blind, page 127

The global settings and explanations of the **central function** can be found in the chapter Enabling Central Functions, page 26.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Roller shutter	**Express settings for roller shutter**	
	Central function	**Enabled**
		Disabled

Group Objects of the Central Function

No.	Name	Object function	Length	Behavior	Data Type
2	Central	Move up/down roller shutter	1 bit	Received	1.008 up/down

Status Response

Status Response, page 127

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Roller shutter	Express settings for roller shutter	
	Status of height	**Enabled**
		Disabled
	Status of moving	**Enabled**
		Disabled

Group Objects of Status Response for Roller Shutter

No.	Name	Object function	Length	Behavior	Data Type
158	Extension Output 1 +2 name of the channel	Feedback for height	1 byte	Sending	5.001 Percent (0...100%)
163	Extension Output 1 +2 name of the channel	Feedback for moving	1 bit	Sending	1.010 Start/Stop
164	Extension Output 1 +2 name of the channel	Feedback for last direction	1 bit	Sending	1.008 Up/Down

Activating Extended Settings for Roller Shutter

To activate the **extended settings for roller shutter**, you must enable them here.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Roller shutter	**Express settings for roller shutter**

	Extended settings for roller shutter	**No** Yes

Extended Settings for Roller Shutter

Extended Settings for Blind/Roller Shutter, page 130

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter	Express settings for blind/roller shutter	
	Extended settings for blind/roller shutter	**No** Yes
-Extended drive timing	Idle time until upward movement	
	Startup delay	
	Additional startup time	
-Automatic, Locking & Calibration settings	Priority function	
	Logic function	
-Safety and alarm settings	Safety function	
	Alarm function	
	Failure and download behavior	

Extended Drive Timing

Extended Drive Timing, page 130

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter	**Extended drive timing**	
-Extended drive timing	Idle time until upward movement (0...255, unit = 10 ms)	**0**
	Startup delay (0...255, unit = 10 ms)	**0**
	Deceleration delay (0...255, unit = 10 ms)	**0**

Automatic, Locking and Calibration Settings

Automatic, Locking and Calibration Settings, page 132

Automatic Mode

Automatic Mode, page 132

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Roller shutter	**Automatic, Locking & Calibration settings**

-Automatic, Locking & Calibration settings	**Automatic mode**	
	Automatic mode	**Disabled**
		Enabled

Group Objects of Automatic Mode of Roller Shutter

No.	Name	Object function	Length	Behavior	Data Type
148	Extension Output 1 +2 name of the channel	Movement in automatic mode	1 bit	Received	1.008 Up/DOWN
149	Extension Output 1 +2 name of the channel	Stop in automatic mode (roller shutter)	1 bit	Received	1.007 Step
150	Extension Output 1 +2 name of the channel	Height position in automatic mode	1 byte	Received	5.001 Percent (0...100%)

Lock of Automatic Mode

If operation with equal priorities for manual operation and **automatic mode** is not always suitable for your application, you can disable and re-enable **automatic mode** using an additional object as required:

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Roller shutter	**Automatic, Locking & Calibration settings**	
-Automatic, Locking & Calibration settings	**Automatic mode**	
	Lock of automatic mode	**Disabled**
		Enabled
	Automatic locking	**At object value "1"**
		At object value "0"
	Status of automatic locking	**Disabled**
		Enabled
	Behavior on deactivating automatic locking via object	**No reaction**
		Accept current automatic position

Once the function “**Lock of automatic mode**” and “**Status of automatic locking**” has been enabled, new group objects are available for the channel.

- The feedback object sends a “1” if automatic locking is active.
- The feedback object sends a “0” if automatic locking is inactive.

Group Objects of Automatic Mode Lock

No.	Name	Object function	Length	Behavior	Data Type
152	Extension Output 1 +2 name of the channel	Lock of automatic mode	1 bit	Received	1.003 Enable
160	Extension Output 1 +2 name of the channel	Feedback for automatic mode	1 bit	Sending	1.003 Enable

Reaction on Receipt of Manual Object Value

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Roller shutter -Automatic, Locking & Calibration settings	**Automatic, Locking & Calibration settings**	
	Automatic mode	
	Reaction in automatic mode on receipt of a manual object value	**Automatic mode remains enabled** Automatic mode disabled Automatic mode temporarily disabled
	Deactivation time for automatic mode	**1 min** (1 min - 24 h)

Locking Function

Locking Function, page 134

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter -Automatic, Locking & Calibration settings	**Locking function**	
	Locking function	**Disabled** Enabled
	Lock	**At object value "1"** At object value "0"
	Status of locking signal	**Disabled** Enabled
	Behavior at start of locking	**No reaction** Stop Up Down Move to position
	Height position at start of locking in %	**0** (0 – 100)
	Slat position at start of locking in %	**0** (0 – 100)
	Behavior at end of locking	**No reaction** Up Down Move to position prior locking Accept current automatic position
	Behavior after download	**Disabled** Enabled As before download
	Behavior after bus voltage recovery	**Disabled** Enabled As before bus voltage failure

Group Objects of Locking Function

No.	Name	Object function	Length	Behavior	Data Type
153	Extension Output 1 +2 name of the channel	Lock	1 bit	Received	1.003 Enable
161	Extension Output 1 +2 name of the channel	Feedback for drive locking	1 bit	Sending	1.003 Enable

Movement Range Limits

Movement Range Limits, page 137

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter -Automatic, Locking & Calibration settings	**Movement range limits**	
	Movement range limits	**Disabled** Enabled
	Limit movement range	**Immediately after bus voltage recovery** At object value "1" At object value "0"
	Feedback for range limitation	**Disabled** Enabled

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Blind/roller shutter -Automatic, Locking & Calibration settings	**Movement range limits**	
	Limit movement position	**Limit range at lower position**
	Upper limit value in % (fix)	0
	Lower limit value in %	**100** (0-100)
	Limit movement position	Limit range at upper position
	Upper limit value in %	**100** (0-100)
	Lower limit in % (fix)	0
	Behavior at the end of movement restriction	**No reaction** Up Down Move to position prior to movement restriction Accept current automatic position

Group Objects of Movement Range Limits

No.	Name	Object function	Length	Behavior	Data Type
156	Extension Output 1 +2 name of the channel	Activate movement range limits	1 bit	Received	1.003 Enable
162	Extension Output 1 +2 name of the channel	Feedback for range limitation	1 bit	Sending	1.003 Enable

Calibration

Calibration, page 140

The calibrating function is activated centrally on the **Global settings for roller shutter and blind** tab with the parameter **Calibration**.

See Calibration, page 40 and Group Object for Calibration, page 41.

Safety and Alarm Settings

Safety Function Roller Shutter

Safety Function Blind, page 144

The global **safety function** is activated on the **Extended settings** tab with the parameter **Device safety** and the global settings are parameterized there.

Ext. 1/2 Output 1+2 / 3+4 / 5 +6 / 7+8 -Roller shutter	**Safety function**	
-Safety and alarm settings	Safety function	**Disabled** Enabled
	Behavior at start of safety	**No reaction** Stop Up Down Move to position
	Height position at start of safety in %	**0** (0-100)
	Slat position at start of safety in %	**0** (0-100)
	Behavior at end of safety	**No reaction** Up Down Move to position prior safety Accept current automatic position

	Behavior at exceeding cycle time	**No reaction**
		Stop
		Up
		Down
		Move to position
	Height position on exceeding cycle time in %	**0** (0-100)

Group Objects for Central Safety

No.	Name	Object function	Length	Behavior	Data Type
23	Central	Safety	1 bit	Received	1.005 Alarm

Alarm Function

Alarm Function, page 145

Ext. 1/2	**Alarm function**	
Output 1+2 / 3+4 / 5 +6 / 7+8		
-Blind/roller shutter		
-Safety and alarm settings	Alarm function	**Disabled**
		Enabled
	Alarm	**At object value "1"**
		At object value "0"
	Behavior at start of alarm	**No reaction**
		Stop
		Up
		Down
		Move to position
	Height position at start of alarm in %	**0** (0-100)
	Behavior at end of alarm	**No reaction**
		Up
		Down
		Move to position prior alarm
		Accept current automatic position
	Behavior after bus voltage recovery	**Disabled**
		Enabled
		As before bus voltage failure

Group Objects of the Alarm Function

No.	Name	Object function	Length	Behavior	Data Type
154	Extension Output 1 & (name of the channel)	Alarm	1 bit	Received	1.005 Alarm

Weather Alarm Function

The weather alarms are activated globally on the **Extended settings** tab with the parameter **Global settings for roller shutter and blind**, and the global settings are parameterized there.

Weather Alarm Function, page 147

Extended settings	**Global settings for roller shutter and blind**	
	Weather alarm function	**Disabled**
		Enabled
	Monitoring time for wind alarm 1	**Disabled**
		1 s ... 12 h
	Monitoring time for wind alarm 2	**Disabled**
		1 s ... 12 h
	Monitoring time for wind alarm 3	**Disabled**
		1 s ... 12 h
	Monitoring time for rain alarm	**Disabled**
		1 s ... 12 h
	Monitoring time for frost alarm	**Disabled**
		1 s ... 12 h
	Priority of weather alarms	**Wind alarm->Rain alarm->Frost alarm**
		Wind alarm->Frost alarm->Rain alarm
		Rain alarm->Wind alarm->Frost alarm
		Rain alarm->Frost alarm->Wind alarm
		Frost alarm->Rain alarm->Wind alarm
		Frost alarm->Wind alarm->Rain alarm

Ext. 1/2	**Weather alarm function**	
Output 1+2 / 3+4 / 5 +6 / 7+8	React on wind alarm 1	**No**
-Roller shutter		Yes
-Safety and alarm settings	React on wind alarm 2	**No**
		Yes
	React on wind alarm 3	**No**
		Yes
	Use AND logic for wind alarms	**No**
		Yes
	Reaction on wind alarm(s)	**Up**
		Down
		Move to position
	Reaction on rain alarm	**Disabled**
		Stop
		Up
		Down
		Move to position
	Reaction on frost alarm	**Disabled**
		Stop
		Up

		Down
		Move to position
	Height position at weather alarm in %	**0** (0-100)
	Behavior at end of all weather alarms	**No reaction**
		Up
		Down
		Move to position prior weather alarm
		Accept current automatic position

Group Objects for Weather Alarms

No.	Name	Object function	Length	Behavior	Data Type
18	Central	Wind alarm 1	1 bit	Received	1.005 Alarm
19	Central	Wind alarm 2	1 bit	Received	1.005 Alarm
20	Central	Wind alarm 3	1 bit	Received	1.005 Alarm
21	Central	Rain alarm	1 bit	Received	1.005 Alarm
22	Central	Frost alarm	1 bit	Received	1.005 Alarm

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