ZUMTOBEL

LITECOM

LIGHTING MANAGEMENT SYSTEM

LITECOM

DAYLIGHT LINKING

Legal information

Copyright

Manufacturer

Zumtobel Lighting GmbH
Schweizer Strasse 30
6851 Dornbirn AUSTRIA
Tel. +43-(0)5572-390-0
Fax +43-(0)5572-22826
info@zumtobel.info
www.zumtobel.com

Document number

LITECOM, Daylight linking
9.0 | 10.2022 | en

Table of contents

1   How to use these instructions

We are pleased that you have chosen this *Zumtobel Lighting GmbH* product. So that you can get the most from these instructions, this section provides the following information:

- Signs and icons in these instructions

- Further information

- Target audience of these instructions

- Software version

Signs and icons in these instructions

The following signs and icons are used in these instructions:

Sign/icon	Explanation
1.	Individual steps in the instructions are numbered.
▷	Single-step instructions are indicated by the ▷ icon at the beginning of the line.
➲	After a step has been described, a description of the expected results will follow. These results are indicated by the ➲ icon at the beginning of the line.
—	Requirements which need to be checked before carrying out a step are indicated by —.
i	Notes can be recognised by the **i** icon. In addition, notes are identified by the word **Note** .
[**Bold text**]	Bold text indicates words that are shown on a device display or software user interface.
⚠	Danger and safety instructions are indicated by this icon. Safety and warning information is labelled and classified using the following words: **DANGER** — indicates an immediate danger. This could lead to death or severe injury if not avoided. **WARNING** — indicates a potentially dangerous situation. This could lead to death or severe injury if not avoided. **CAUTION** — indicates a potentially dangerous situation. This could lead to minor injury or damage to property if not avoided. **Attention** — indicates a situation involving potential damage. If it is not avoided, the product or something in the vicinity may be damaged.

Table 1: Signs and icons in these instructions

Further information

Further information on the setup and function of your *LITECOM* system can be found in our product and system documentation.

If you should have any further questions, please contact your sales partner.

General information on our products can be found on our website:
www.zumtobel.com

Target audience of these instructions

This manual is intended for electricians without any special product training who would like to commission and configure daylight linking with sky scanner or one or more light sensors.

Software version

These instructions are based on software version *LITECOM 3.1.0*.

	Note
i	In software version 2.16.6 or lower, daylight linking with sky scanner is only available in Infinity mode.

	Note
i	This manual contains path information which can be used to access the configuration options. The path always starts from the app overview.
	Example: "Path: app overview > **Basic settings** > **Date and time**" means that you should go to the app overview, tap on **Basic settings** and then tap the **Date and time** button.

2   Other available documents

All *LITECOM* manuals can be downloaded from the website:
http://www.zumtobel.com/gb-en/products/litecom.html

Manual	Description
Commissioning and maintenance	This manual is aimed at electricians without any special *Zumtobel* product training and describes how the basic functions can be commissioned. It also describes general maintenance functions.
Shows	This manual is aimed at electricians without any special *Zumtobel* product training and describes how shows can be commissioned and configured.
Special luminaires	This manual is aimed at electricians without any special *Zumtobel* product training and describes how special luminaires (e.g. RGB luminaires, TW luminaires, *SEQUENCE infinity*) can be commissioned and configured.
Blind control	This manual is aimed at electricians without any special *Zumtobel* product training and describes how blind control can be commissioned and configured.
Self-contained emergency luminaires	This manual is aimed at electricians without specific *Zumtobel* product training and describes how emergency lighting functions for self-contained emergency luminaires can be commissioned, configured and monitored in a *LITECOM* system that itself has already been commissioned.
BACnet	This manual is aimed at electricians and system integrators without any special *Zumtobel* product training and describes how BACnet can be commissioned and configured.
REST API & MQTT	This manual is aimed at system integrators without any special *Zumtobel* product training and describes how REST API and MQTT can be commissioned and configured.

Table 2: Other available documents – *LITECOM*

3 Safety instructions

Attention

- The *LITECOM* system may only be used for the application area specified.

- Relevant health and safety regulations must be observed.

- Assembly, installation and commissioning may only be carried out by qualified personnel.

- The *LITECOM* system and connected devices can only be operated when in complete working order.

- The manufacturer is neither liable nor does it accept any guarantee for consequential damage that may occur if these instructions are not followed.

4   Navigation principles

There are different buttons in the web application for commissioning, configuring and operating the system. If a button is tapped, its colour changes briefly.

Button	Description
	Set value (e.g. on the start page) You can enter a specific value in the click area so that all devices have the same control value. If, for example, different control values (80%, 60%) are set for the luminaires and you tap on 50%, all luminaires switch to the control value of 50%. If you tap on the left or right click area, the value you are setting decreases or increases respectively in the entire effective range by one unit. If different control values are saved for the luminaires (80%, 60%, 20%) and you tap on the ☼ button, these control values are increased by one unit (81%, 61%, 21%). This function is not available for all setting options.
− +	Set value (e.g. fade time) Tap these buttons to increase or decrease the value being set. Tap the button to change the value by one unit. Tap and hold the button to change the value, and release when the desired value has been reached. The longer the button is held, the faster the value is changed.
− 12:00 +	Special feature: set the time If the time is tapped, the **Set time** view appears. The hours and minutes can be set separately here.
> ∨	Expand – collapse The arrow indicates that additional information or selection options can be displayed (e.g. devices in a group). Tap the arrow pointing right to expand the information or selection options. The arrow changes so that it is pointing down. Tap the arrow pointing down to collapse the information or selection options. The arrow changes so that it is pointing right again.
✓	Save or confirm Tap this button to save the settings or confirm a message.
	Option not selected – option selected (single choice) This button marks multiple options that are available (e.g. different types of date groups), from which only one can be selected. As soon as an option for a switch is selected, all other switches change to the other option accordingly.
	Option not selected – option selected (multiple choice) This button marks multiple options that are available, from which multiple options can be selected. As soon as an option is selected, it is highlighted.
	Setting not selected – setting selected If an empty button is tapped (e.g. blind position at device level), the button is filled in with colour. One or more control elements (such as sliders) appear below.
	Switch between individual pages of the app overview The number of points corresponds to the number of the pages in the app overview. The point filled in with colour indicates the page currently being displayed. Tap an empty point to go to the corresponding page.
ZUMTOBEL	Tap the logo to access the **Information** view. This page contains manufacturer information, the reference number and version of the web application and information on the licences used.

Table 3: Navigation principles

5   LITECOM and daylight linking

Daylight linking is a way of controlling luminaires whilst taking into account the natural daylight available and the blinds. Controlling the artificial light by adjusting it to the natural daylight achieves optimal lighting quality and saves additional energy.

The amount of available daylight is detected either by a sky scanner or by one or more light sensors:

- Sky scanner: sensor for detecting the available daylight, the outdoor lighting conditions and the position of the sun in the sky (e.g. *LM-TLM*).

> **i**   **Note**
>
> The sky scanner is mounted on the building and the configuration of the blinds in the room is not detected, so when the sky scanner is used, the blinds must be taken into account with daylight linking and configured.
> For more information see Section Global settings 21

- Daylight sensors: sensors for detecting the available daylight in the room (e.g. *ED-EYE*).
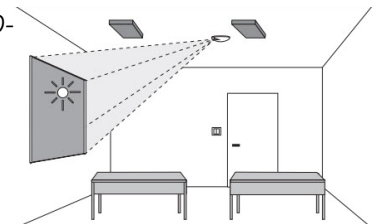
- Ambient light sensors: sensors for detecting the reflected artificial light and daylight in the room (e.g. *ED-SENS mini*).
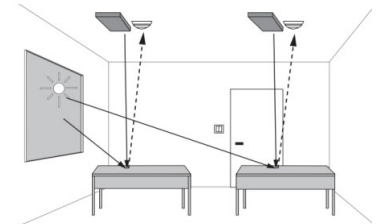
The light sensor does not have to be located in the room where daylight linking will be enabled.

Measurement points are used to control daylight linking for artificial light. The measurement point defines the maximum amount of light a luminaire can output. For each measurement point, the illuminance at the workspace is measured with a luxmeter, once with artificial light set to 100% and once at 0%. These two values and the sensor values currently being measured combine to form one measurement point.

Measured illuminance (100%)

↳ Current sensor value when measuring illuminance with the lighting switched all the way on (blinds open)   = measurement point (MP)

Measured illuminance (0%)

↳ Current sensor value when measuring illuminance with the lighting switched off (blinds open)

> **i**
>
> **Note**
> The value of the light sensor must not change too drastically between the two measurements, i.e. the available daylight in the room must remain the same. Otherwise both measurements must be repeated.

The measurement points are then used to calculate the amount of artificial light required to achieve the required illuminance. The number of measurement points created in a room depends on the following factors:

- Light sensors used: When ambient light sensors are used, only one measurement point can be created, which in turn can have secondary measurement points. At least two measurement points are required when daylight sensors are used.

- Local conditions

- Luminaires installed

Secondary measurement points can be created for daylight linking with ambient light sensors. Secondary measurement points are located in the effective range of the primary measurement point and are used to regulate several areas with one ambient light sensor. For secondary measurement points, the illuminance at the workspace is measured with a luxmeter, once with artificial light set to 100% and once at 0%. If the daylight between the measurements of the primary and secondary measurement points has changed too dramatically, the illuminance at the primary measurement point may need to be measured again at 0% intensity. This value only affects the secondary measurement point selected.

A unique measurement point must be assigned to every luminaire in order to achieve sufficient and also energy-saving lighting levels. When using daylight sensors, luminaires with the same amount of available daylight can be assigned to the same measurement point. This allows you to achieve even illumination of the room without having to create as many measurement points.

A daylight sensor is used in the following example. As a result, two measurement points are needed: one at the workspace below the left luminaire and one below the right luminaire. The measurement points are marked with an X.
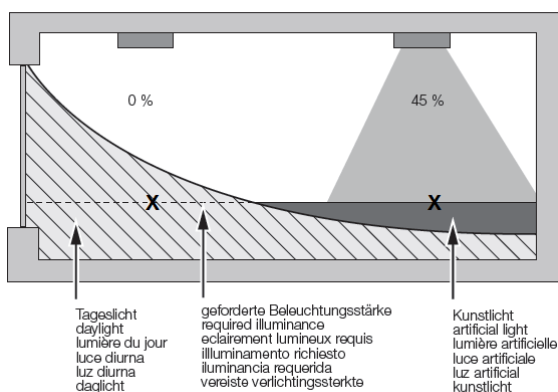
Figure 1: Example of daylight linking with a lot of daylight in the room
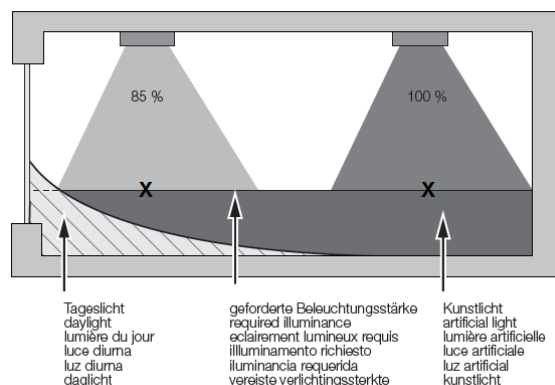
Figure 2: Example of daylight linking with little daylight in the room

The required steps differ depending on whether you want to integrate daylight linking with daylight sensors or ambient light sensors in a *LITECOM* system:

- Integrate daylight linking with sky scanner or daylight sensors in a *LITECOM* system.
  For more information see Section Integrating daylight linking with sky scanner or daylight sensors in a LITECOM system 10.

- Integrate daylight linking with ambient light sensors in a *LITECOM* system.
  For more information see Section Integrating daylight linking with ambient light sensors in a LITECOM system 11.

Integrating daylight linking with sky scanner (e.g. LM-TLM) or daylight sensors (e.g. ED-EYE) in a LITECOM system

> **i** **Note**
>
> In software version 2.16.6 or lower, daylight linking with sky scanner is only available in Infinity mode.

The following steps are required:

- Step 1: Activate the **Daylight linking** app.
  Path: App overview > **LITECOM Store**
  For more information see Section Licensing 12

- Step 2: When a sky scanner is used: check the values from the sky scanner.
  Path: App overview > **System image** > 💡
  For more information see Section Sky scanner 14

- Step 3: When using one or more light sensors: address one or more light sensors.
  Path: App overview > **Addressing** > **Input devices** > **Sensors**
  For more information see Section Light sensors 15

- Step 4: Select the effective range.
  Path: App overview > **Daylight linking** > button for selecting the effective range (top left)
  For more information see Section Overview of the "Daylight linking" app 17

- Step 5: Select the sky scanner or select one or more light sensors.
  Path: App overview > **Daylight linking** > **Sensor**
  For more information see Section Overview of the "Daylight linking" app 17

- Step 6: Assign a blind model to each facade.
  Path: App overview > **Daylight linking** > **Global settings** > **Next...**
  For more information see Section Assigning a blind model to each facade 21

- Step 7: Configure other global settings.
  Path: App overview > **Daylight linking** > **Global settings**
  For more information see Section Configuring global settings 25

- Step 8: Create and configure measurement points.
  Path: App overview > **Daylight linking** > **Measurement points**
  For more information see Section Overview of the "Daylight linking" app 17

- Step 9: Configure a scene for daylight linking and define the required illuminance.
  Path: App overview > **Scenes**
  For more information see Section Scenes and daylight linking 35

> **i** **Note**
>
> Section Examples 37 provides two examples of how to set up daylight linking and configure a scene for daylight linking.

Integrating daylight linking with ambient light sensors (e.g. ED-SENS mini) in a LITECOM system

The following steps are required:

- Step 1: Activate the **Daylight linking** app.
  Path: App overview > **LITECOM Store**
  For more information see Section <u>Licensing</u> 12

- Step 2: Address an ambient light sensor.
  Path: App overview > **Addressing** > **Input devices** > **Sensors**
  For more information see Manual **Commissioning and maintenance**

- Step 3: Select the effective range.
  Path: App overview > **Daylight linking** > **Effective range**
  For more information see Section <u>Overview of the "Daylight linking" app</u> 28

- Step 4: Select an ambient light sensor.
  Path: App overview > **Daylight linking** > **Light sensors**
  For more information see Section <u>Overview of the "Daylight linking" app</u> 28

- Step 5: Define the global settings.
  Path: App overview > **Daylight linking** > **Global settings**
  For more information see Section <u>Global settings</u> 34

- Step 6: Create and configure a measurement point.
  Path: App overview > **Daylight linking** > **Measurement points**
  For more information see Section <u>Overview of the "Daylight linking" app</u> 28

- Step 7: Create and configure a secondary measurement point, if necessary.
  Path: App overview > **Daylight linking** > **Measurement points** > **Secondary measurement points**
  For more information see Section <u>Overview of the "Daylight linking" app</u> 28

- Step 8: Configure a scene for daylight linking and define the required illuminance.
  Path: App overview > **Scenes**
  For more information see Section <u>Scenes and daylight linking</u> 35

6   Licensing

Daylight linking can only be configured if a licence has been activated. You have to activate the licence before you can use the **Daylight linking** app. Two licences are available for daylight linking:

- **Sky scanner**: by activating the licence for daylight linking with sky scanner, you can use a sky scanner or one or more light sensors.
  Path: App overview > **LITECOM Store** > **Sky scanner**

- **Light sensor**: by activating the licence for daylight linking with light sensor, you can use one or more light sensors.
  Path: App overview > **LITECOM Store** > **Daylight linking**

> **i** Note
> In software version 2.16.6 or lower, daylight linking with sky scanner is only available in Infinity mode.

The following steps are required:

- Step 1: Request licence.
  Path: App overview > **LITECOM Store** > **Licensing information**

- Step 2: Activate licence.
  Path: App overview > **LITECOM Store** > **Activate licence**

Figure 3: Overview of licensing

	Function	Brief description
(1)	Licensing information	This page provides information about your licence (article number of the app and reference number or Infinity ID). You need this information to request a licence from your sales partner. You can also see whether the licence has been activated or not. **Note:** If several licences have been activated, the number of enabled devices will be added together.
(2)	Activate licence	You can activate the licence with a licence number here. **Note:** • To access the ordered licence numbers, go to the website litecom.zumtobel.com and enter the reference number (HW-ID) for the *LITECOM CCD* or enter the Infinity ID.

| | | • Multiple licences can be activated. |
| | | • The licence number, number of activated devices and the validity period are shown for each activated licence. |

Table 4: Overview of licensing

7 Preparatory measures

In this section you will find out which preparatory measures are needed before configuring the daylight linking.

7.1 Sky scanner

> **i**
>
> **Note**
>
> When installing the sky scanner *LM-TLM*, ensure that the mark (north arrow) on the sky scanner base is aligned with north.
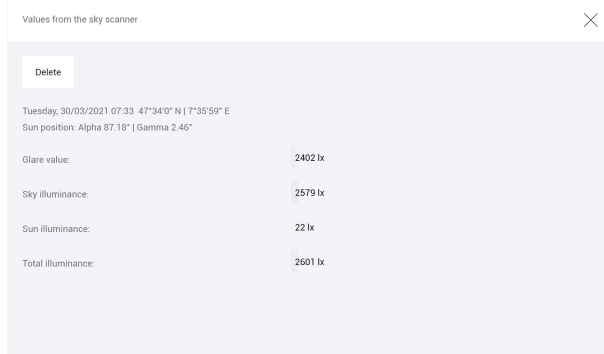
The sky scanner is automatically added to the system image after a restart of the *LITECOM CCD*. Therefore, it does not have to be addressed. In order for the daylight linking to work properly, check the values for the sky scanner.
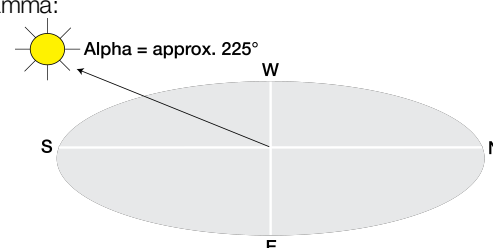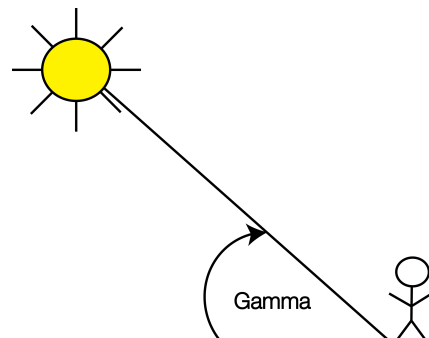
Check values from the sky scanner

Path: App overview > **System image** > ☺

▷ Navigate to the path.

⊃ The **Values from the sky scanner** view is displayed.

Values from the sky scanner	✕
Delete	
Tuesday, 30/03/2021 07:33 47°34'0" N	7°35'59" E	
Sun position: Alpha 87.18°	Gamma 2.46°	
Glare value:	2402 lx
Sky illuminance:	2579 lx
Sun illuminance:	22 lx
Total illuminance:	2601 lx

An overview of the displayed values can be found in the following table:

Parameter	Description
Date, time, geographic coordinates	Specifies the current date, current time and the geographic coordinates.
Sun position	Specifies the current sun position using alpha and gamma: • Alpha specifies the direction (e.g. 90° correspond to East and 180° correspond to South).
Sun position	• Gamma specifies the elevation angle – i.e. the angle between the horizon of the observer and the sun (e.g. at sunrise the elevation angle is 0° as the sun is on the horizon of the observer; if the sun is directly above the observer (at its zenith), the elevation angle is 90°).

Parameter	Description
Glare value	Specifies the value of the current glare. The glare value is calculated from the sensor values of the sky scanner.
Sky illuminance	Portion of the total illuminance from outdoors scattered by the atmosphere from space that occurs at the measuring location.
Sun illuminance	Portion of the total illuminance outdoors that occurs directly at the measuring location.
Total illuminance	Specifies the total illuminance. This parameter is composed from the values of the **Sky illuminance** and **Sun illuminance**.

Table 5: Values of the sky scanner

7.2 Light sensors

▷ Address light sensor.
  Path: App overview > **Addressing** > **Input devices** > **Sensor**

> **i** **Note**
> The test key on the light sensor must be briefly pressed twice to locate the light sensor.

8   Configuration

This section explains how to configure daylight linking .

The configuration process differs depending on whether you want to integrate daylight linking with sky scanner or daylight sensors or with ambient light sensors in a *LITECOM* system:

- Integrate daylight linking with sky scanner or daylight sensors in a *LITECOM* system.
  For more information see Section Sky scanner and daylight sensors 16

- Integrate daylight linking with ambient light sensors in a *LITECOM* system.
  For more information see Section Ambient light sensors 28
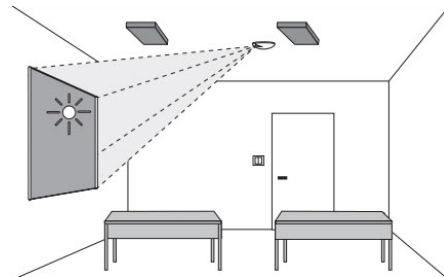
8.1   Sky scanner and daylight sensors

- Sky scanner: sensor for detecting the available daylight, the outdoor lighting conditions and the position of the sun in the sky (e.g. *LM-TLM*).

> **i**
>
> **Note**
>
> The sky scanner is mounted on the building and the configuration of the blinds in the room is not detected, so when the sky scanner is used, the blinds must be taken into account with daylight linking and configured.
> For more information see Section Global settings 21

- Daylight sensor: the daylight is detected by one or more daylight sensors. Daylight sensors are sensors for detecting the available daylight in the room (e.g. *ED-EYE*).

8.1.1   Overview of the "Daylight linking" app

The following contains an overview of the functions in the **Daylight linking** app when using daylight sensors or a sky scanner.
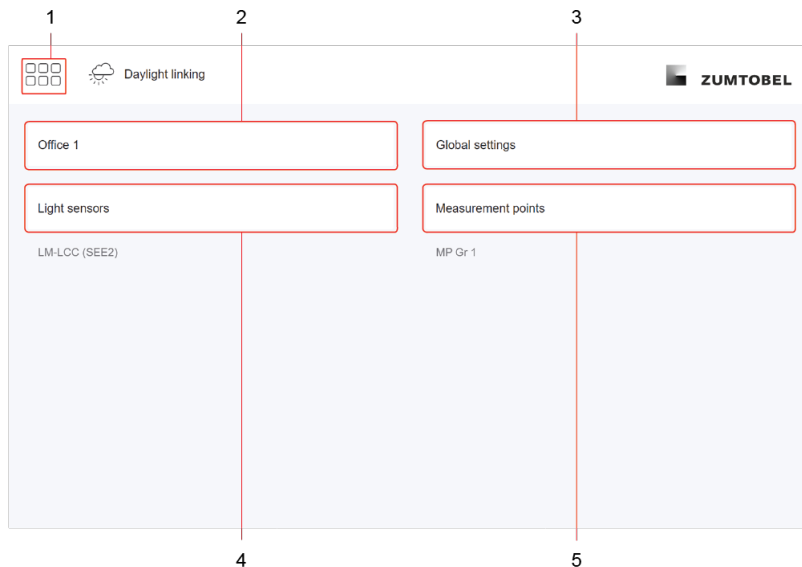
Path: App overview > **Daylight linking**

Figure 4: "Daylight linking" app view

	Function	Brief description
(1)	Return to app overview	The app overview can be accessed via this button.
(2)	Select effective range	Whether a room or group is selected as the effective range depends on the project engineering: • Select a room if the scene in a room is to be controlled via daylight linking using a sky scanner, a single daylight sensor or the average result of several daylight sensors, regardless of the number of groups. • Select a group if the scene in a room should be controlled via daylight linking using a separate light sensor to detect the available daylight in the room for each group. In both cases the daylight sensor does not have to be located in the effective range.
(3)	Configure global settings	Some settings can be applied to all daylight linking, e.g. **Interruption period after manual operation**.
	ℹ **Note** • For more information see Section Global settings 29 • The **Scenes** app provides the option of defining whether the global settings are used. For more information see Section Scenes and daylight linking 35	
(4)	Select sky scanner or select one or more daylight sensors	The daylight is recorded either by a sky scanner or by light sensors. Depending on requirements and the licence that has been activated, select a sky scanner or select one or more daylight sensors. If more than one daylight sensor is selected, the average of the sensor values is used for the daylight linking calculation. The daylight sensor does not have to be located in the room where daylight linking will be enabled. If a daylight sensor is already addressed in the selected effective range, this sensor is automatically added. The sky scanner is automatically available in all effective ranges. Another daylight sensor or the sky scanner can be selected at any time.

	Function	Brief description
		i **Note** - If you have activated the licence for **Daylight linking with sky scanner** beforehand, you can select a sky scanner or one or more light sensors. - If you have activated the licence for **Daylight linking with light sensor** beforehand, you can select one or more light sensors. - Measurement points are specially created for a certain sensor. If you change the light sensor, you must delete existing measurement points and recreate them.
(5)	Create, copy and edit measurement points	Daylight linking is implemented using measurement points. An overview of the functions of the **Edit measurement points** view can be found after this table.

Table 6: Functions in the "Daylight linking" app

The following contains an overview of the functions in the **Edit measurement points** view.

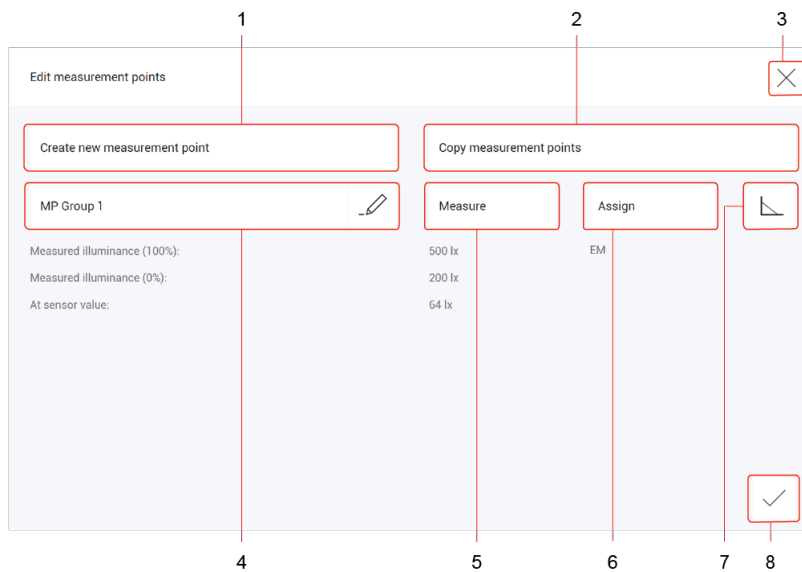Path: App overview > **Daylight linking** > **Measurement points**

Figure 5: "Edit measurement points" view

|	Function	Brief description
(1)	Create new measurement point	Create a new measurement point. During this process, assign the measurement point to a room, group or individual luminaires and blinds. A name is automatically suggested for the measurement point, which can be changed at any time. By default the name consists of the abbreviation **MP** (Measurement Point) and the assignment. Examples: • **MP Luminaire 1**: measurement point assigned to luminaire 1 • **MP Group 3**: measurement point assigned to group 3 **i** **Note** If blinds are to be taken into consideration for daylight linking, assign the luminaires to the measurement point and also the blinds that will influence the luminaires.
(2)	Copy measurement point	Measurement points can be copied from other effective ranges. This is recommended when scenes should be controlled via daylight linking in rooms with a similar setup. The name of the measurement point and measured illuminance are applied. The measurement point only has to be assigned. **i** **Note** This function is only available if measurement points have already been created in other effective ranges.
(3)	Return to the **Daylight linking** view	If you tap the X, the **Daylight linking** view is called up.
(4)	Rename measurement point	Change the name of an existing or copied measurement point.
	Delete measurement point	If a measurement point is deleted, all assignments are also deleted.

	Function	Brief description
(5)	Measure illuminance	Measure the illuminance at the workspace underneath the luminaire with a luxmeter, once at 100% and once at 0% intensity, and enter the measured illuminance values.
		i **Note** The value of the light sensor must not change too drastically between the two measurements, i.e. the available daylight in the room must remain the same. Otherwise both measurements must be repeated.
		Under the **Measure** button, the **At sensor value** parameter shows the sensor value when illuminance is measured at 0% intensity. If the measurement point for a daylight sensor has been corrected manually, the message **Corrected manually** is displayed instead of the measured illuminance.
(6)	Assign measurement point	Measurement points are assigned to either rooms, groups or individual luminaires and blinds. • When a new measurement point is created, the point is assigned. In this case the assignment is displayed under the **Assign** button. The assignment can be changed at any time. • When a measurement point is copied, the assignment is not copied over with it. In this case the measurement point must be assigned in a separate step. Tap the **Assign** button to assign the measurement point. If other measurement points have already been assigned, these are listed in the right-hand column. When saved, existing assignments are overwritten.
(7)	Correct measurement point manually	With daylight sensors, it may be necessary to manually correct the measurement points (e.g. if the required illuminance is not achieved at the workspace). The values can be set or the control characteristic can be changed via a graphical representation.
		i **Note** • To correct measurement points manually, knowledge of control characteristics and day and twilight points is required. • For more information see Section Correcting measurement points manually (for experts) 27
(8)	Return to the **Daylight linking** view	If you tap the tick mark, the changes are saved and the **Daylight linking** view is called up.

Table 7: Functions in the "Edit measurement points" view

8.1.2   Global settings

In this section you will find out how to select the blinds that are taken into consideration in the daylight linking and which global settings are possible.

Assigning a blind model to each facade

> **i**   Note
>
> The use of protective functions is recommended with exterior blinds. Input contacts or the rain or wind speed sensors of the weather station can be used as trigger. Protective functions can be created and configured in the **Protective functions** app.
> More information: Manual **Commissioning and maintenance**

The following steps are required:

- Step 1:Create new facade and assign blinds.
  Path: App overview > **Daylight linking** > **Global settings** > **Next...** > button for displaying the facade overview (left)

> **i**   Note
>
> For more information see Section [Facade overview] 22

- Step 2:Create and configure blind model.
  Path: App overview > **Daylight linking** > **Global settings** > **Next...** > button for configuring the blind model (right)

> **i**   Note
>
> For more information see Section [Blind model] 23

Facade overview

A facade is a group of blinds or windows that point in the same direction. The following contains an overview of the functions of the **Facade overview** view.

Path: App overview > **Daylight linking** > **Global settings** > **Next...** > button for displaying the facade overview (left)
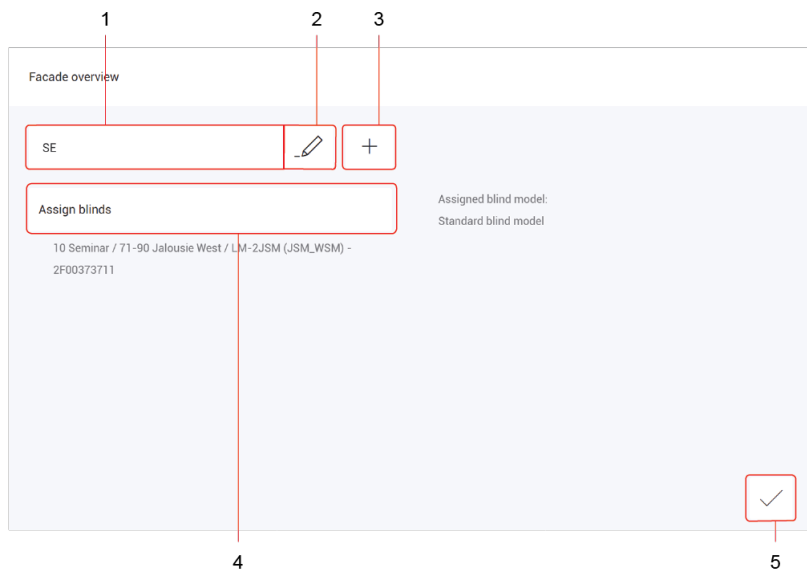

Figure 6: "Facade overview" view

	Function	Description
(1)	Select facade	Select an existing facade to then be able to configure it.
(2)	Rename facade	Change the name of an existing facade.
	Delete facade	When a facade is deleted all settings for the facade are deleted.
(3)	Create new facade	Create a new facade.
(4)	Assign blinds	Assign blinds that point in the same direction to the facade.
(5)	Return to the **Facade and blind model** view	If you tap the tick mark, the changes are saved and the **Facade and blind model** view is called up.

Table 8: Functions in the "Facade overview" view

Blind model

The transmittance data for the respective blind model is needed so that blinds are also taken into consideration in the daylight linking. A blind model is a template containing characteristics relevant for control of a blind. These characteristics include the transmission and the glare protection position.

Path: App overview > **Daylight linking** > **Global settings** > **Next...** > button for configuring the blind model (right)

The following table provides a description of the individual configuration options:

Parameter	Description
Transmission	The transmission defines the capability of a blind to let radiation pass through. The transmission consists of the following parameters: • **Slat position**: Specifies how the slats of a blind are tilted. Expressed as a percentage (%). At 100 % the slats are closed, and at 0 % the slats are open. • **Transmittance**: Specifies the portion of the radiation that is let through by a component. Expressed as a percentage (%). **ⓘ Note** The standard blind model that already contains two entries for the transmission is automatically assigned when creating a facade.
Glare protection position	The glare protection position consists of the following parameters: • **Elevation angle**: Specifies the angle between the horizon of the observer and the sun. Expressed in degrees (°). For example, the elevation angle is 0° if the sun is on the horizon of the observer (e.g. at sunrise). The elevation angle is 90° if the sun is directly above the observer (at its zenith). • **Slat position**: Specifies how the slats of a blind are tilted. Expressed as a percentage (%). At 100 % the slats are closed, and at 0 % the slats are open. **ⓘ Note** The standard blind model that already contains two entries for the glare protection position is automatically assigned when creating a facade.

Table 9: Configurable properties of a blind model

The following contains an overview of the functions of the **Configure blind model** view.

Path: App overview > **Daylight linking** > **Global settings** > **Next...** > button for configuring the blind model (right)
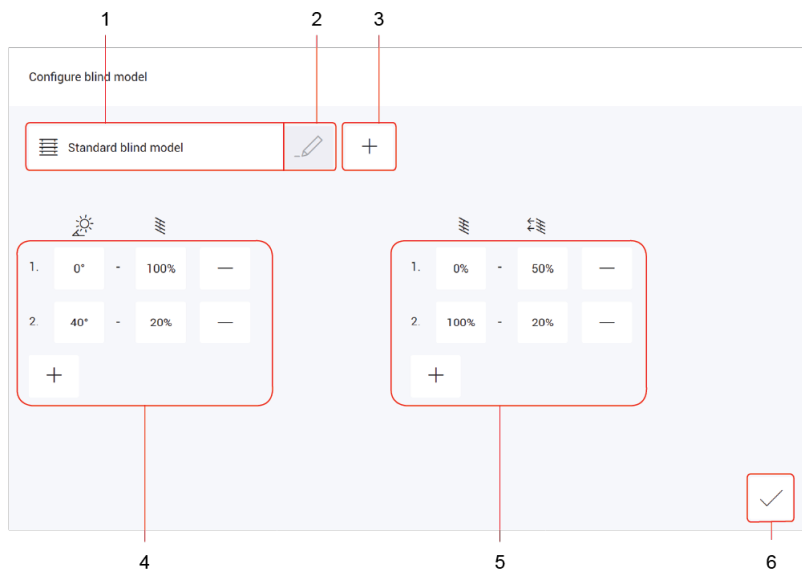

Figure 7: "Configure blind model" view

|	Function	Description
(1)	Select the blind model	Select an existing blind model to be able to configure it afterwards.
(2)	Rename blind model	Change the name of an existing blind model. **i** **Note** The **Standard blind model** cannot be renamed.
	Delete blind model	All settings for the blind model are deleted when the blind model is deleted. **i** **Note** The **Standard blind model** cannot be deleted.
(3)	Create new blind model	Create a new blind model.
(4)	Set glare protection position	Set the **Glare protection position** parameter that consists of the elevation angle of the sun and the slat position. **i** **Note** • When a new blind model is being created, two standard entries are created for the glare protection position. • You can create a new entry. Path: App overview > **Daylight linking** > **Global settings** > **Next...** > button for configuring the blind model (right) > + bottom left • You can edit an entry. Path: App overview > **Daylight linking** > **Global settings** > **Next...** > button for configuring the blind model (right) > button below ☼ or ≣ (left)

	Function	Description
(5)	Set transmission	Set the **Transmission** that consists of slat position and transmittance.
		Note
		• When a new blind model is being created, two standard entries are created for the transmission.
		• You can create a new entry. Path: App overview > **Daylight linking** > **Global settings** > **Next…** > button for configuring the blind model (right) > + bottom right
		• You can edit an entry. Path: App overview > **Daylight linking** > **Global settings** > **Next…** > button for configuring the blind model (right) > button below ☰ (right) or ⇆☰
(6)	Return to the **Facade and blind model** view	If you tap the tick mark, the changes are saved and the **Facade and blind model** view is called up.

Table 10: Functions in the "Configure blind model" view

Configuring global settings

Some settings can be applied to all daylight linking. These settings are enabled for all daylight-linked luminaires as standard. The **Scenes** app provides the option of separately defining whether the global settings are used, however.

Path: App overview > **Daylight linking** > **Global settings**

The following table provides a description of the individual configuration options:

Note

Whether parameters marked with an asterisk (*) can be configured depends on whether the parameter **Never dim off via daylight linking** is enabled. The following table provides an overview of which parameters can be configured.

	☑	☐
Lower dimming limit (daylight linking)	✓	✗
Switch-off intensity	✗	✓
Delay time	✗	✓
Switch-on intensity	✗	✓

Parameter	Description
Never dim off via daylight linking	Option that can be enabled so that the lighting is never dimmed off via daylight linking.
Lower dimming limit (daylight linking)*	Lower limit that further restricts the dimming range for daylight linking and prevents luminaires from being dimmed off completely. The dimming range is a range in which the intensity of the luminaires can be dimmed/brightened. It is restricted to the physical upper and lower limits.
Switch-off intensity*	Intensity level at which the luminaire or lighting is switched off if the intensity reaches this point or drops below it.
Delay time*	Time during which the switch-off intensity must be reached/not reached so that the luminaire/lighting is switched off.

Parameter	Description
Switch-on intensity*	Intensity level at which the luminaire or lighting is switched on if the intensity reaches this point or exceeds it.
Upper dimming limit (daylight linking)	Upper limit that further restricts the dimming range for daylight linking. The dimming range is a range in which the intensity of the luminaires can be dimmed/brightened. It is restricted to the physical upper and lower limits.
Interruption period after manual operation	Time during which daylight linking can be disabled temporarily by manual operation (e.g. pressing a key/switch). Once this time has expired daylight linking is automatically enabled again.
Daylight linking takes over when calculation matches manual operation	Option that can be enabled so that daylight linking takes over again as soon as the intensity calculated by daylight linking matches the intensity set by the user.
Dimming off threshold (for ambient light sensors only)	Percentage by which the required illuminance must be exceeded in order for the luminaire to be dimmed off via daylight linking. This setting prevents the illuminance from dropping below the target value when the luminaires are switched off, which would cause the luminaires to need to be switched on again immediately.

Table 11: Configuration options – Daylight linking; global settings

8.1.3 Correcting measurement points manually (for experts)

It may be necessary to manually correct the measurement points (e.g. if the required illuminance is not achieved at the workspace). The values can be set or the control characteristic can be changed via a graphical representation.

> **i** **Note**
> To correct measurement points manually, knowledge of control characteristics and day and twilight points is required.

Path: App overview > **Daylight linking** > **Measurement points** > ⊾

The measurement points are converted into day and twilight points and represented in a control characteristic. The control characteristic is used to implement daylight linking. This control characteristic determines the required brightness of the artificial light based on the available daylight. The day point represents the ratio between the daylight and artificial light when there is a lot of daylight in the room, while the twilight point represents the ratio between the daylight and artificial light when there is little daylight in the room.

The day and twilight point values can be changed or the control characteristic can be moved in the graphical representation.

Figure 8: "Correct measurement point manually" view
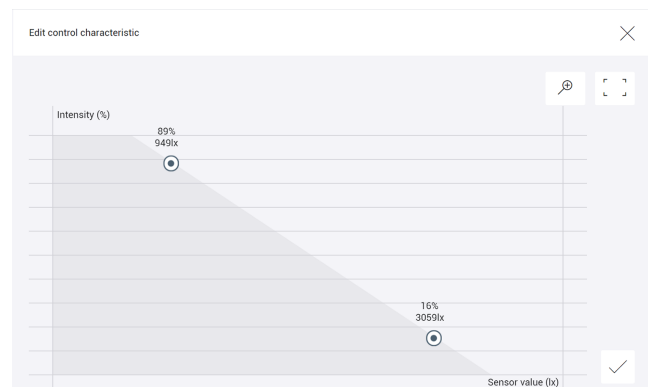
Figure 9: Sample control characteristic

The following table provides a description of the individual configuration options:

Parameter	Description
Simulate with following illuminance	To manually correct a measurement point, an illuminance is required for simulation using the control characteristic.
Intensity (twilight point)	Artificial light level additionally needed to reach the required illuminance. This value is defined when it is dark in the room.
Sensor value (twilight point)	Illuminance measured by the light sensor when there is little daylight in the room.
Intensity (day point)	Artificial light level additionally needed to reach the required illuminance. This value is defined when there is a lot of daylight in the room (but no direct daylight).
Sensor value (day point)	Illuminance measured by the light sensor when there is a lot of daylight in the room.
Edit control characteristic	The control characteristic is displayed and can be changed.
Current sensor value	The current sensor value for the light sensor is displayed. If more than one sensor is selected for the measurement point, the average sensor value is displayed.

Table 12: Configuration options – "Correct measurement point manually" view

8.2 Ambient light sensors
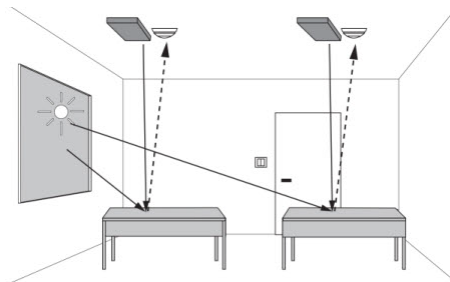
The amount of available daylight is detected by an ambient light sensor. Ambient light sensors detect the reflected artificial light and natural daylight in the room (e.g. *ED-SENS mini*).

8.2.1 Overview of the "Daylight linking" app

The following contains an overview of the functions in the **Daylight linking** app when using ambient light sensors.
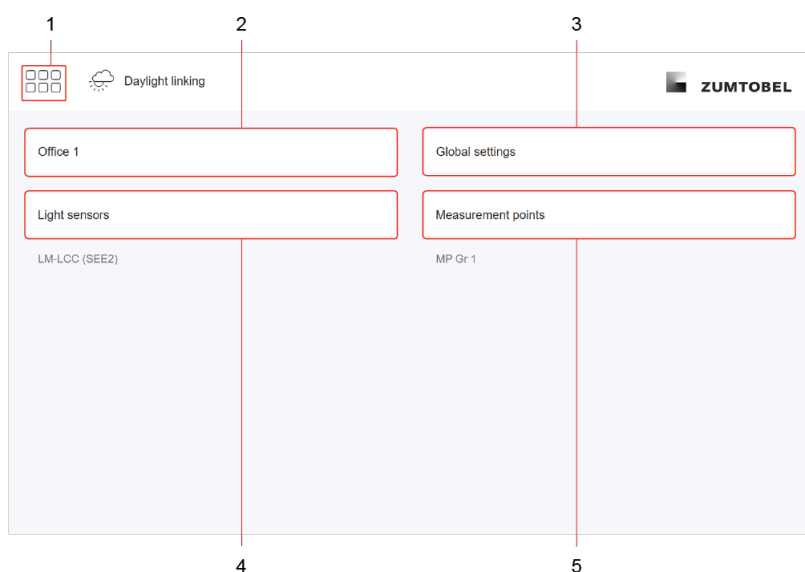
Path: App overview > **Daylight linking**

Figure 10: "Daylight linking" app view

	Function	Brief description
(1)	Return to app overview	The app overview can be accessed via this button.
(2)	Select effective range	Whether a room or group is selected as the effective range depends on the project engineering: • Select a room if the scene in a room is to be controlled via daylight linking using a single ambient light sensor, regardless of the number of groups. • Select a group if the scene in a room should be controlled via daylight linking using a separate ambient light sensor to detect the available daylight in the room for each group. In both cases the ambient light sensor does not have to be located in the effective range.
(3)	Configure global settings	Some settings can be applied to all daylight linking, e.g. **Interruption period after manual operation**.

		Note
	i	• For more information see Section Global settings 34 • The **Scenes** app provides the option of defining whether the global settings are used. For more information see Section Scenes and daylight linking 35

	Function	Brief description
(4)	Select an ambient light sensor	The available daylight is detected by light sensors. With ambient light sensors you can only select one. The ambient light sensor does not have to be located in the room where daylight linking will be enabled. You can select a different ambient light sensor at any time. **i** **Note** Measurement points are specially created for a certain sensor. Before you change the light sensor, you must delete existing measurement points. New measurement points must then be created for the newly selected light sensor.
(5)	Create, copy and edit measurement points	Daylight linking is implemented using measurement points. An overview of the functions of the **Edit measurement points** view can be found after this table.

Table 13: Functions in the "Daylight linking" app

The following contains an overview of the functions in the **Edit measurement points** view.

Path: App overview > **Daylight linking** > **Measurement points**
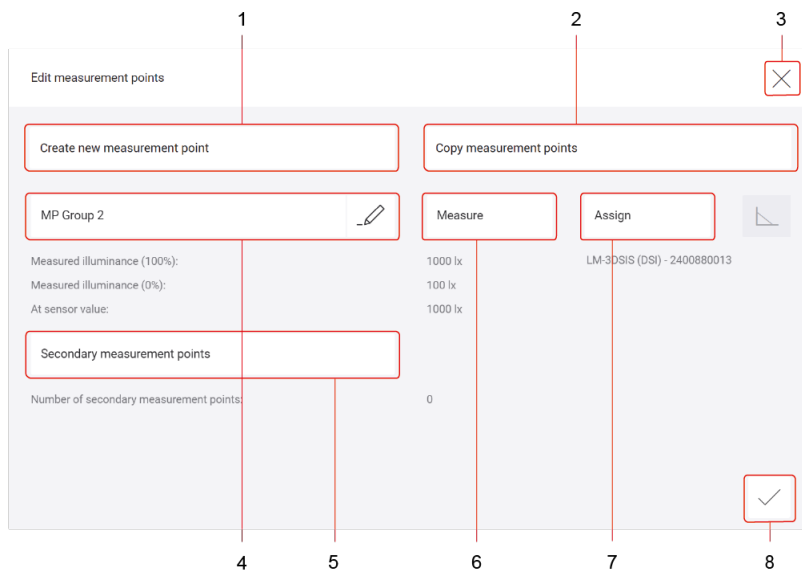
Figure 11: "Edit measurement points" view

	Function	Brief description
(1)	Create new measurement point	Create a new measurement point. During this process, assign the measurement point to a room, individual groups or individual luminaires.
		i **Note** Secondary measurement points are located in the effective range of the primary measurement point. If you want to create secondary measurement points, the primary measurement point must not be assigned to all luminaires in the selected effective range.
		A name is automatically suggested for the measurement point, which can be changed at any time. By default the name consists of the abbreviation **MP** (Measurement Point) and the assignment. Examples: • **MP Luminaire 1**: measurement point assigned to luminaire 1 • **MP Group 3**: measurement point assigned to group 3
(2)	Copy measurement point	Measurement points can be copied from other effective ranges. This is recommended when scenes should be controlled via daylight linking in rooms with a similar setup. The name of the measurement point and measured illuminance are applied. The measurement point only has to be assigned.
		i **Note** • This function is only available if measurement points have already been created in other effective ranges. • Secondary measurement points are copied alongside a primary measurement point.
(3)	Return to the **Daylight linking** view	If you tap the X, the **Daylight linking** view is called up.

	Function	Brief description
(4)	Rename measurement point	Change the name of an existing measurement point.
	Delete measurement point	If a measurement point is deleted, all assignments are also deleted.
(5)	Create secondary measurement points	You can create up to 5 secondary measurement points. Secondary measurement points are located in the effective range of the primary measurement point and are used to regulate several areas with one ambient light sensor.
(6)	Measure illuminance	Measure the illuminance at the workspace underneath the luminaire with a luxmeter, once at 100% and once at 0% intensity, and enter the measured illuminance values. Under the **Measure** button, the **At sensor value** parameter shows the sensor value when illuminance is measured at 0% intensity. The **Measure illuminance** view also shows the algorithm used for daylight linking. **i** **Note** The algorithm for ambient light sensors was developed to improve daylight linking. If ambient light sensors are already part of the system, the old algorithm (v.1) continues to apply to them. As soon as a new sensor is addressed in the system, the new algorithm (v.2) is automatically used. **Algorithm v.1**: the lighting is adapted purely using the value output by the ambient light sensor. **Algorithm v.2**: the difference between the actual value (output by the ambient light sensor) and the target value (control value stored in the scene) is calculated and the lighting is adapted accordingly. To switch from the old to the new algorithm, the corresponding sensor must be deleted and then addressed again.
(7)	Assign measurement point	A measurement point is assigned to either a room, individual groups or individual luminaires. - When a new measurement point is created, the point is assigned. In this case the assignment is displayed under the **Assign** button. The assignment can be changed at any time. - When a measurement point is copied, the assignment is not copied over with it. In this case the measurement point must be assigned in a separate step. Tap the **Assign** button to assign the measurement point. If another measurement point has already been assigned, it is listed in the right-hand column. When saved, the existing assignment is overwritten.
(8)	Return to the **Daylight linking** view	If you tap the tick mark, the changes are saved and the **Daylight linking** view is called up.

Table 14: Functions in the "Edit measurement points" view

The following contains an overview of the functions in the **Secondary measurement points** view.

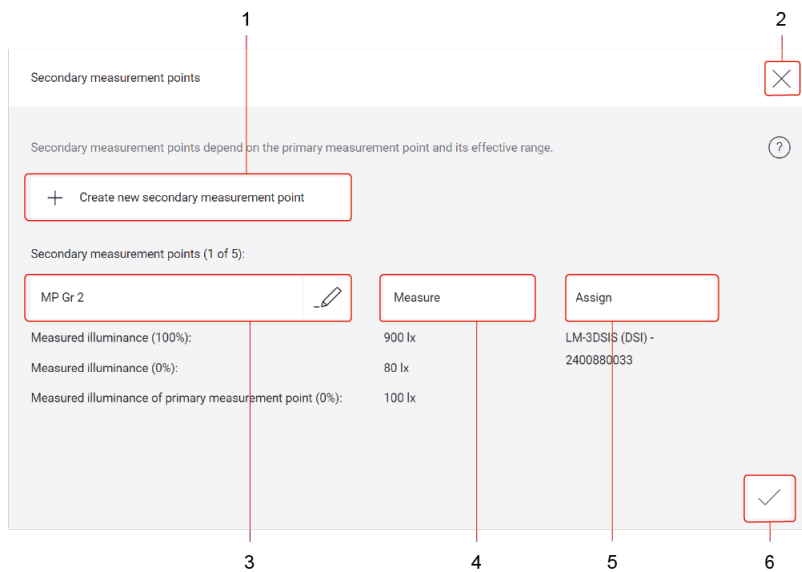Path: App overview > **Daylight linking** > **Measurement points** > **Secondary measurement points**

Figure 12: "Secondary measurement points" view

	Function	Brief description
(1)	Create new secondary measurement point	Create a new secondary measurement point. During this process, assign the secondary measurement point to individual groups or individual luminaires.
		Note • Secondary measurement points are located in the effective range of the primary measurement point. To create secondary measurement points, the primary measurement point must not be assigned to all luminaires in the selected effective range. • As a general rule of thumb, the number of assigned luminaires (primary measurement point and secondary measurement points) times the number of scenes with daylight linking on the luminaires should equal no more than 30. Example: If primary and secondary measurement points are assigned to a total of 15 luminaires, no more than 2 scenes should be created that use daylight linking to control these luminaires.
		A name is automatically suggested for the measurement point, which can be changed at any time. By default the name consists of the abbreviation **MP** (Measurement Point) and the assignment. Examples: • **MP Luminaire 1**: measurement point assigned to luminaire 1 • **MP Group 3**: measurement point assigned to group 3
(2)	Return to the **Edit measurement points** view	If you tap the X, the **Edit measurement points** view is called up.

	Function	Brief description
(3)	Rename secondary measurement point	Change the name of an existing secondary measurement point.
	Delete secondary measurement point	If a secondary measurement point is deleted, all assignments are also deleted.
(4)	Measure illuminance	Measure the illuminance at the workspace underneath the luminaire with a luxmeter, once at 100% and once at 0% intensity, and enter the measured illuminance values. If the daylight between the measurements of the primary and secondary measurement points has changed too dramatically, the illuminance at the primary measurement point needs to be measured again at 0% intensity. This value only affects the secondary measurement point selected. The illuminance measured at the primary measurement point at 0% intensity is displayed below the **Measure** button for parameter **Measured illuminance of primary measurement point (0%)**.
(5)	Assign secondary measurement point	A secondary measurement point is assigned either to individual groups or individual luminaires in the effective range of the primary measurement point. • When a new measurement point is created, the point is assigned. In this case the assignment is displayed under the **Assign** button. The assignment can be changed at any time. • When a measurement point is copied, the assignment is not copied over with it. In this case the primary and secondary measurement points must be assigned in a separate step. Tap the **Assign** button to assign the measurement point. When saved, the existing assignment is overwritten.
(6)	Return to the **Edit measurement points** view	If you tap the tick mark, the changes are saved and the **Edit measurement points** view is called up.

Table 15: Functions in the "Secondary measurement points" view

8.2.2 Global settings

Some settings can be applied to all daylight linking. These settings are enabled for all daylight-linked luminaires as standard. The **Scenes** app provides the option of separately defining whether the global settings are used, however.

Path: App overview > **Daylight linking** > **Global settings**

The following table provides a description of the individual configuration options:

> **Note**
>
> Whether parameters marked with an asterisk (*) can be configured depends on whether the parameter **Never dim off via daylight linking** is enabled. The following table provides an overview of which parameters can be configured.

	☑	☐
Lower dimming limit (daylight linking)	✓	✗
Switch-off intensity	✗	✓
Delay time	✗	✓
Switch-on intensity	✗	✓

Parameter	Description
Never dim off via daylight linking	Option that can be enabled so that the lighting is never dimmed off via daylight linking.
Lower dimming limit (daylight linking)*	Lower limit that further restricts the dimming range for daylight linking and prevents luminaires from being dimmed off completely. The dimming range is a range in which the intensity of the luminaires can be dimmed/brightened. It is restricted to the physical upper and lower limits.
Switch-off intensity*	Intensity level at which the luminaire or lighting is switched off if the intensity reaches this point or drops below it.
Delay time*	Time during which the switch-off intensity must be reached/not reached so that the luminaire/lighting is switched off.
Switch-on intensity*	Intensity level at which the luminaire or lighting is switched on if the intensity reaches this point or exceeds it.
Upper dimming limit (daylight linking)	Upper limit that further restricts the dimming range for daylight linking. The dimming range is a range in which the intensity of the luminaires can be dimmed/brightened. It is restricted to the physical upper and lower limits.
Interruption period after manual operation	Time during which daylight linking can be disabled temporarily by manual operation (e.g. pressing a key/switch). Once this time has expired daylight linking is automatically enabled again.
Daylight linking takes over when calculation matches manual operation	Option that can be enabled so that daylight linking takes over again as soon as the intensity calculated by daylight linking matches the intensity set by the user.
Dimming off threshold (for ambient light sensors only)	Percentage by which the required illuminance must be exceeded in order for the luminaire to be dimmed off via daylight linking. This setting prevents the illuminance from dropping below the target value when the luminaires are switched off, which would cause the luminaires to need to be switched on again immediately.

Table 16: Configuration options – Daylight linking; global settings

8.3 Scenes and daylight linking

Once the basic configuration has been defined for daylight linking in the **Daylight linking** app, configure the scene for daylight linking and define the required illuminance.

Configuring a scene for daylight linking and defining the required illuminance

Path: App overview > **Scenes**

Requirement:

— The level (room or group) selected in the **Scenes** app has been assigned a measurement point.

> **i** **Note**
>
> Example: if you want the intensity of a room to be controlled via daylight linking, a measurement point must be assigned to this room.
>
> Path: App overview > **Daylight linking** > **Measurement points** > **Assign**

1. Navigate to the correct page as indicated in the path.

2. Select the effective range (room), scene and level (room, group or luminaire) for which daylight linking is to be configured.
   ➲ The **Configure scene** view is displayed.
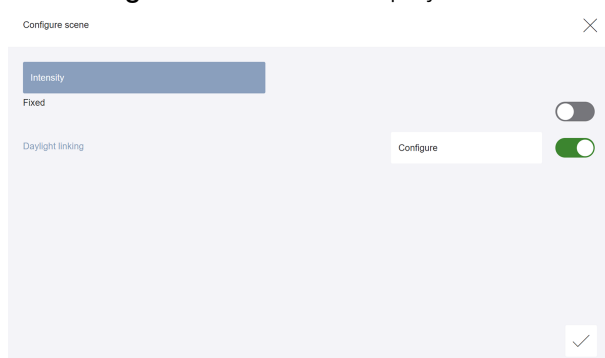
3. Enable the **Daylight linking** option.

4. Tap the **Configure** button.

➲ The **Configure daylight linking** view is displayed.

Configure daylight linking			✕
Required illuminance:	—	500lx	+
Use global settings:		☐	
Never dim off via daylight linking:		☐	
Lower dimming limit (daylight linking):	—	10%	+
Switch-off intensity:	—	10%	+
Delay time:	—	10min	+
Switch-on intensity:	—	12%	+
Upper dimming limit (daylight linking):	—	100%	+
Interruption period after manual operation:	—	2h	+
Daylight linking takes over when calculation matches manual operation:		☐	
Dimming off threshold:	—	150%	+
		✓	

5. Define the required illuminance.

6. Enable the **Use global settings** option or set the configuration options separately.

> **ℹ** **Note**
>
> You can modify the global settings.
> Path: App overview > **Daylight linking** > **Global settings**

Special feature: controlling a SEQUENCE infinity scene via daylight linking

To control the intensity of a *SEQUENCE infinity* via daylight linking, it may be necessary to define a change (as a percentage) for the individual segments of the *SEQUENCE infinity* in relation to the "Left" segment (e.g. if the *SEQUENCE infinity* is installed perpendicular to the window).

1. Enable the **Change to "Left" segment** option by selecting the tick mark.

2. Define the change.

> **ℹ** **Note**
>
> The orientation of the *SEQUENCE infinity* can be corrected at any time.
> Path: App overview > **System image** > **Configure devices**
> For more information see manual **Commissioning and maintenance**

9   Examples

In this section, two examples are used to describe how to create daylight linking with daylight sensors and configure a scene for daylight linking.

9.1   Example 1

The following uses an example to show how measurement points are created for daylight linking (part A) and how scene **Working** is configured for daylight linking (part B).

Two luminaires and one daylight sensor are installed in room **Office 1**. As the luminaires are installed near the window or doors, two measurement points should be created. Scene **Working** should be controlled via daylight linking. The required illuminance is 500 lux. The global settings should be used.
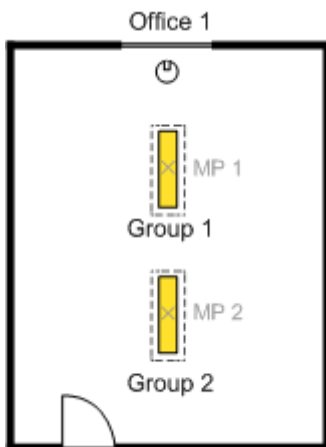
Figure 13: Example 1

The following steps are required:

Part A – "Daylight linking" app

- Step 1: select the effective range.

- Step 2: create measurement point **MP Gr 1**.

- Step 3: measure the illuminance for measurement point **MP Gr 1**.

- Step 4: create measurement point **MP Gr 2** and measure the illuminance.

- Step 5: return to the **Daylight linking** view.

Part B – "Scenes" app

- Step 6: configure the intensity for luminaires at room level for daylight linking and define the required illuminance.

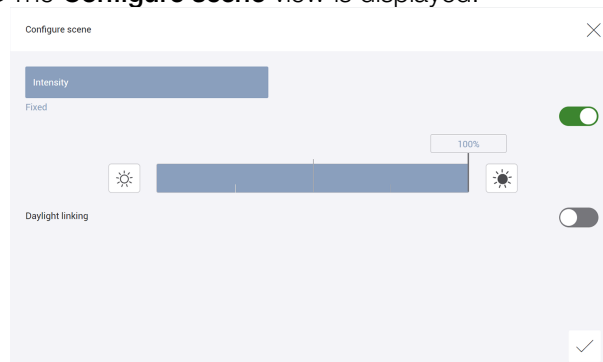## Part A – "Daylight linking" app

Step 1: Selecting effective range

> **i** **Note**
> In this example **Office 1** is selected as the effective range because the scene in this room, regardless of the number of groups, should be controlled via daylight linking using a single daylight sensor.

Requirements:

— The **Daylight linking** app has been activated.

— Room **Office 1** has been created.

— Two luminaires have been addressed in room **Office 1**: one in **Group 1** and the other in **Group 2**.

— One daylight sensor has been addressed in room **Office 1**.

— A luxmeter is available to use.

— The **Daylight linking** app is open.

1. Tap the button for selecting the effective range (top left).
   ➲ The **Select effective range** view is displayed.

2. Select the effective range (**Office 1**).

3. Tap the tick mark.
   ➲ The **Daylight linking** view is displayed.
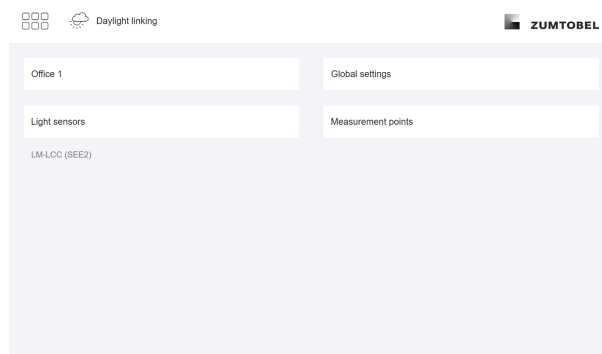
➲ Light sensor is already added.

> **i** **Note**
> As the daylight sensor is addressed in room **Office 1**, it was automatically added.

Step 2: creating measurement point "MP Gr 1"

> **i** **Note**
>
> Even if just one luminaire is located in Group 1 we recommend assigning the measurement point to the group and not the luminaire. If additional luminaires are added to Group 1 later, the measurement point automatically applies to the newly addressed luminaires as well.

1. Tap the **Measurement points** button.
   ⮑ The **Edit measurement points** view is displayed.
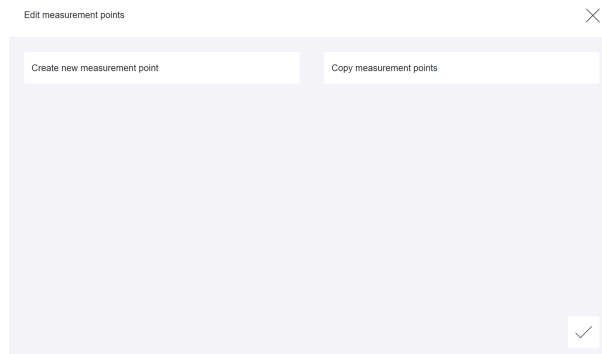
2. Tap **Create new measurement point**.
   ⮑ The **Assign measurement point** view is displayed.
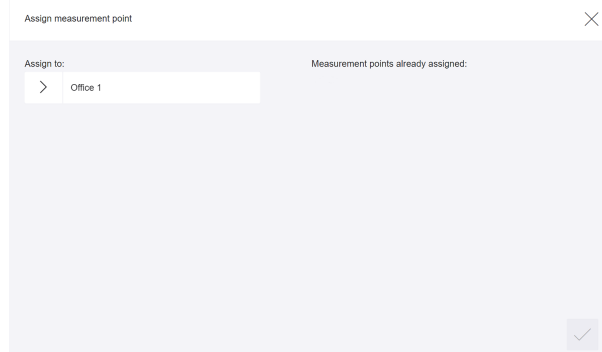
3. Assign the measurement point (**Gr 1**).

4. Tap the tick mark.
   ⮑ The **Enter name for the measurement point** view is displayed.
   ⮑ The name **MP Gr 1** is suggested.

> **i** **Note**
>
> A name is automatically suggested for the measurement point. This name can be changed at any time. By default the name consists of the abbreviation **MP** (Measurement Point) and the effective range. Examples: **MP Luminaire 1**; **MP Gr 3**

5. Tap the tick mark.
➲The measurement point is created.
➲The **Edit measurement points** view is updated.

Edit measurement points			×
Create new measurement point		Copy measurement points	
MP Gr 1 ✎		Measure	Assign ◣
Measured illuminance (100%):		0 lx	
Measured illuminance (0%):		0 lx	
At sensor value:		0 lx	
			✓

Step 3: Measuring illuminance for measurement point "MP Gr 1"

1. Tap the **Measure** button.
➲The **Measure illuminance** view is displayed.

Measure illuminance			×
All luminaires to 100%		All luminaires to 0%	
Wait several minutes before measuring the illuminance with a luxmeter. Enter the measured value and tap "Apply".			
Illuminance:	— 500 lx +	Apply	
Current sensor value:	304 lx		
Daylight linking algorithm:	Ambient light algorithm v.2		
			✓

➲All luminaires switch to control value 100%.

> **i** **Note**
> Depending on the luminaires installed it may take several minutes until constant operating conditions have been achieved.

2. Use a luxmeter to measure the illuminance at the workspace under **Luminaire 1**.

3. Enter the measured value.

4. Tap **Apply**.

5. Tap **All luminaires to 0%**.
➲All luminaires switch to control value 0%.

6. Use a luxmeter to measure the illuminance at the workspace under **Luminaire 1**.

7. Enter the measured value.

8. Tap **Apply**.

9. Tap the tick mark.
   - ➲ The values are saved.
   - ➲ The **Edit measurement points** view is updated.

> **i** **Note**
> Parameter **At sensor value** shows the sensor value when illuminance is measured at 0% intensity.

Step 4: Creating measurement point "MP Gr 2" and measure illuminance

▷ Repeat steps 2 and 3 for measurement point **MP Gr 2**.
   - ➲ Measurement point **MP Gr 2** is created and assigned to Group 2.
   - ➲ The **Edit measurement points** view is updated.

Step 5: returning to the "Daylight linking" view

▷ Tap the tick mark.
   - ➲ The measurement points are saved.
   - ➲ The **Daylight linking** view is displayed.

Part B – "Scenes" app

Step 6: configuring the intensity for luminaires at room level for daylight linking and defining the required illuminance

> **i** Note
>
> In this example the daylight linking intensity is configured at room level. This is possible because each group has been assigned a measurement point in the **Daylight linking** app under **Measurement points** > **Assign**. The advantage of this approach is that the required illuminance only has to be defined once for the entire room and is automatically applied to each group.

Requirements:

— Measurement point **MP Gr 1** has been assigned to **Office 1** > **Group 1**.

— Measurement point **MP Gr 2** has been assigned to **Office 1** > **Group 2**.

— The **Scenes** app is open.

— The **Working** scene has been created.

— Room **Office 1** has been selected.

— The **Working** scene has been selected.

1. Tap the button for intensity at room level.
   ➲ The **Configure scene** view is displayed.

   ➲ **Fixed** is enabled.

2. Enable **Daylight linking**.
   ➲ The **Configure scene** view is updated.
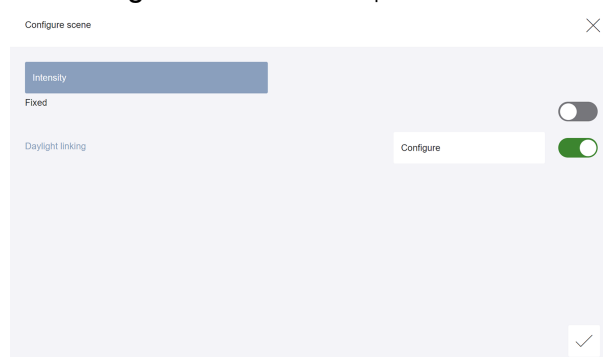
   ➲ **Daylight linking** is enabled.

3. Tap the **Configure** button.

➲ The **Configure daylight linking** view is displayed.

Configure daylight linking	✕
Required illuminance:	— 500lx +
Use global settings:	☐
Never dim off via daylight linking:	☐
Lower dimming limit (daylight linking):	— 10% +
Switch-off intensity:	— 10% +
Delay time:	— 10min +
Switch-on intensity:	— 12% +
Upper dimming limit (daylight linking):	— 100% +
Interruption period after manual operation:	— 2h +
Daylight linking takes over when calculation matches manual operation:	☐
Dimming off threshold:	— 150% +
	✓

4. Edit the setting for daylight linking.

Parameter	Value
Required illuminance	500 lx
Use global settings	☑ **i** **Note** If a room has other requirements (such as a longer **delay time**), the global settings can be disabled and the values changed accordingly.
Never dim off via daylight linking	[global settings are used]
Lower dimming limit (daylight linking)	[global settings are used]
Switch-off intensity	[global settings are used]
Delay time	[global settings are used]
Switch-on intensity	[global settings are used]
Upper dimming limit (daylight linking)	[global settings are used]
Interruption period after manual operation	[global settings are used]
Daylight linking takes over when calculation matches manual operation	[global settings are used]
Dimming off threshold	[not relevant; ignored when daylight sensors are used]

5. Tap the tick mark.

➲ The settings are saved.

6. Tap the tick mark.

➲ Daylight linking is saved for all luminaires in the room.

➲ The **Scenes** view is displayed.

---
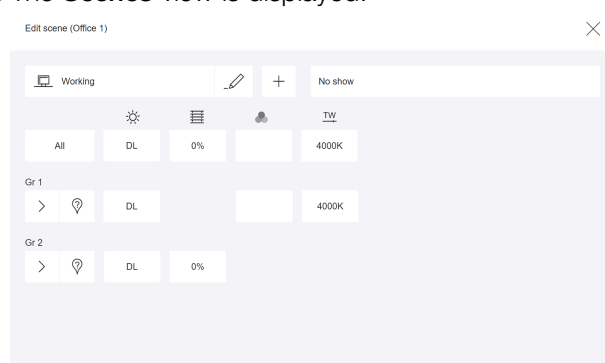
i **Note**

DL stands for **Daylight linking**.

9.2   Example 2

The following uses an example to show how existing measurement points are copied.

Two offices identical in design are located on one floor. Two luminaires and one daylight sensor are installed in room **Office 1**. Four luminaires are installed in room **Office 2**. The measurement points from room **Office 1** should be copied and assigned to room **Office 2**.
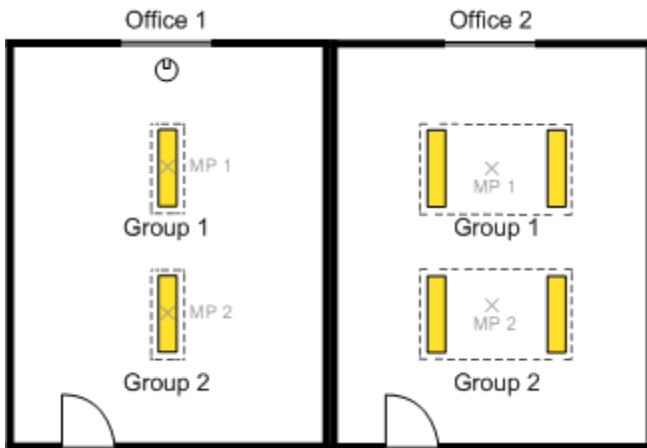
Figure 14: Example 2

The following steps are required:

> **i** **Note**
>
> This example follows on from example 1. Example 1 can be found in Section Daylight linking > Example 1 37.

Part A – "Daylight linking" app

- Step 1: select the effective range.

- Step 2: select a light sensor.

- Step 3: copy measurement points **MP Gr 1** and **MP Gr 2** from room **Office 1**.

- Step 4: assign measurement point **MP Gr 1**.

- Step 5: assign measurement point **MP Gr 2**.

- Step 6: save the measurement points.

Part B – "Scenes" app

- Step 7: configure the daylight linking intensity for luminaires at room level.

Part A – "Daylight linking" app

Step 1: Selecting effective range

Requirements:

— The **Daylight linking** app has been activated.

— Rooms **Office 1** and **Office 2** have been created.

— Two luminaires have been addressed in room **Office 1**: one in **Group 1** and the other in **Group 2**.

— One daylight sensor has been addressed in room **Office 1**.

— Four luminaires have been addressed in room **Office 2**: two in **Group 1** and two in **Group 2**.

— Measurement points **MP Gr 1** and **MP Gr 2** have been created and assigned in room **Office 1**.

— The **Daylight linking** app is open.

1. Tap the button for selecting the effective range (top left).
   ➲ The **Select effective range** view is displayed.

2. Select the effective range (**Office 2**).

3. Tap the tick mark.
   ➲ The **Daylight linking** view is displayed.
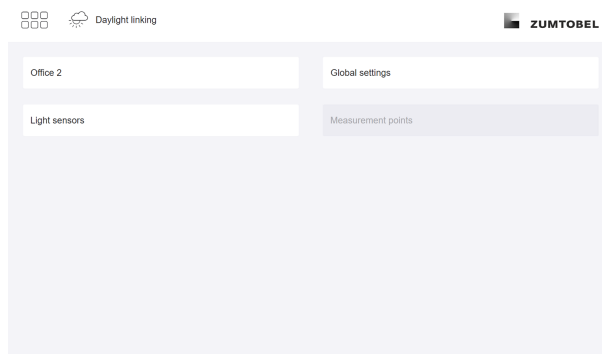
> **i** **Note**
> - As no daylight sensor is addressed in room **Office 2**, the light sensor that is relevant for this room must be added in the next step.
> - The **Measurement points** button is disabled because no daylight sensor has been selected yet.

Step 2: selecting a light sensor

1. Tap the **Light sensors** button.

   ➲ The **Select one or more light sensors** view is displayed.
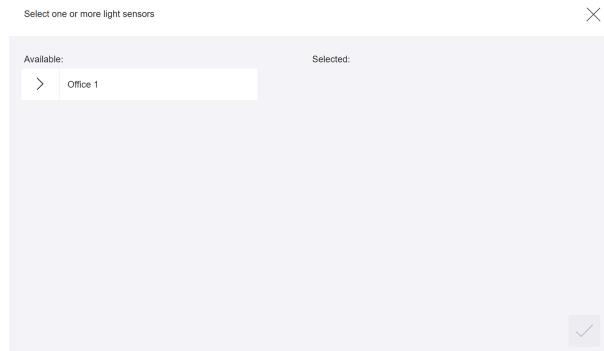
2. Select the daylight sensor.

3. Tap the tick mark.

   ➲ The daylight sensor is added.

   ➲ The **Daylight linking** view is displayed.

Step 3: copying measurement points "MP Gr 1" and "MP Gr 2" from room "Office 1"

1. Tap the **Measurement points** button.

   ➲ The **Edit measurement points** view is displayed.
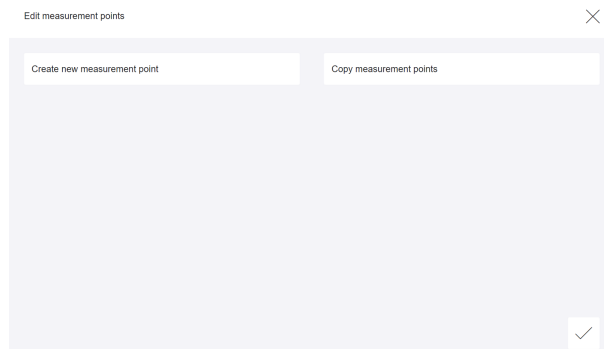
2. Tap **Copy measurement point**.

   ➲ The **Select one or more measurement points** view is displayed.
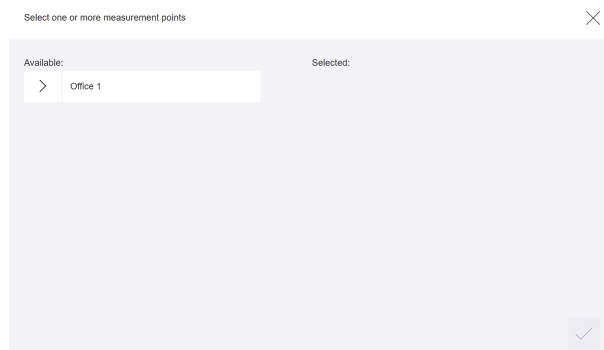
3. Select the measurement points (**MP Gr 1** and **MP Gr 2** from room **Office 1**).

✓

4. Tap the tick mark.

➲ The measurement points are copied. The measured illuminance is applied, but the assignment is not.

➲ The **Edit measurement points** view is updated.

Step 4: assign measurement point "MP Gr 1"

1. Tap the **Assign** button.

➲ The **Assign measurement point** view is displayed.

2. Assign the measurement point (**Gr 1**).

✓ 3. Tap the tick mark.

➲ The **Edit measurement points** view is updated.

Step 5: assign measurement point "MP Gr 2"

▷ Repeat step 4 for measurement point **MP Gr 2**.

➲ Measurement point **MP Gr 2** is assigned to Group 2.

➲ The **Edit measurement points** view is updated.

Step 6: return to the "Daylight linking" view

✓ ▷ Tap the tick mark.

➲ The measurement points are saved.

➲ The **Daylight linking** view is displayed.

Part B – "Scenes" app

Step 7: configuring the daylight linking intensity for luminaires at room level

> **ⓘ** **Note**
>
> - In this example the daylight linking intensity is configured at room level. This is possible because each group has been assigned a measurement point in the **Daylight linking** app under **Measurement points** > **Assign**. The advantage of this approach is that the required illuminance only has to be defined once for the entire room and is automatically applied to each group.
>
> - You can find how to configure the intensity at room level with daylight linking in chapter Daylight linking > Example 1 > Part B – "Scenes" app 42.

10 Appendix

This section contains the following information:

10.1 Factory settings

Standard scenes

As soon as you create a room in your *LITECOM* system, five standard scenes are enabled in the room. The following table contains the defaults for these scenes.

Scene	Absence	Working	Writing	Meeting	Workshop
Icon	⏻	🖥	👤	🪑	🖼
Intensity	0%	100%	40%	16%	7%
Tunable White	3000 K	3000 K	3000 K	3000 K	3000 K
Colour	White	White	White	White	White
Pattern (*SEQUENCE infinity*)	–	–	–	–	–
Light balance (direct/indirect)	50:50	50:50	50:50	50:50	50:50
Blind position	0%	0%	0%	0%	0%
Slat position	0%	0%	0%	0%	0%
Window position	100%	100%	100%	100%	100%
Screen position	0%	0%	0%	0%	0%

Table 17: Standard scenes and their defaults

Standard pattern

The following values are stored for the 10 standard patterns.

Pattern	Left	Centre	Right	Indirect	Curve
All off	0%	0%	0%	0%	–
Direct light	100 %	100 %	100 %	0%	Wave-like
Informal meeting	0%	0%	0%	100 %	Wave-like
Conference	0%	100 %	0%	100 %	Wave-like
Concentrated work	100 %	100 %	100 %	100 %	Wave-like
Orientation left	100 %	0%	0%	0%	Wave-like
Orientation right	0%	0%	100 %	0%	Wave-like
Presentation left	100 %	50%	0%	0%	Wave-like
Presentation right	0%	50%	100 %	0%	Wave-like
Tablet PC	100 %	0%	100 %	100 %	Wave-like

Table 18: Standard patterns and their default values

10.2   Icons

This section contains an overview of all icons shown on the web application.

"Scenes" app

Icon	Description
☼	Intensity
⬤	Colour
TW	Tunable White
☼	Light balance
☰	Blind position
≋	Slat position
▯	Window position
▭	Screen position
...	Different settings are stored for this setting at room, group and device level
DL	Setting is controlled via daylight linking
↻	A show is stored for this setting; the settings can only be changed in the **Shows** app
null	Configuration unknown
⦿	Locate device
▢	Zone
☰🔒	Blind position: no movement with scene recall
▯🔒	Window position: no movement with scene recall
≋🔒	Slat position: no movement with scene recall
▭🔒	Screen position: no movement with scene recall

Table 19: Icons in the "Scenes" app

"System image" app

Icon	Description
☼	Luminaire
⬤	RGB luminaire
TW	TW luminaire
☼	Balance luminaire
ⵙ	Free-standing luminaire
⤳	Relay (luminaire)
☰	Blinds (type 3, type 3+4)
≋	Blinds (type 4)
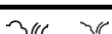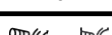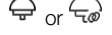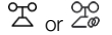
Icon	Description
	Window
	Screen
	SEQUENCE infinity
	Momentary-action switch/standard switch
	CIRCLE control unit
	LM-CIRIA
	Remote control
	Presence detector (generic and *MSensorG3*)
	Light sensor
	CO2 sensor
	Humidity sensor
	Noise sensor (average, maximum and minimum)
	Temperature sensor
	Detection of power consumption
	VOC sensor
	General contact
	Signalling contact, e.g. *LM-4RUKS*
	Rain (input contact or linked input contact)
	Wind (input contact or linked input contact)
	Ice (input contact or linked input contact)
	Emergency luminaire/safety sign luminaire
	Emergency luminaire/safety sign luminaire (lighting management)
	Rocker switch (2x)
	Rocker switch (3x)
	Rocker switch (4x)
	ONLITE BRI
	Sky scanner or linked sky scanner
	Weather station or linked weather station
	DALI-2 master (generic and *MSensorG3*)

Table 20: Icons in the "System image" app

Blind control" app

Icon	Description
	Glare protection position
	Slat position
	Transmittance
	Facade alignment

Table 21: Icons in the "Blind control" app

10.3   Glossary

Term	Explanation
Absence scene	Scene in an area where absence is detected. Any scene can be defined as an absence scene.
Action timeframe	Time during which a function is enabled (e.g. presence linking). The action timeframe can be defined using timeframes and a dead time.
Balance luminaire	Luminaire consisting of at least two lamps, one for direct lighting and one for indirect lighting. For Balance luminaires, the light balance can be changed in addition to the intensity.
Blinds (type 3)	Blinds which can move to different positions. This type of blinds does not have slats or has slats that cannot be adjusted.
Blinds (type 3+4)	Blinds which can move to different positions and have adjustable slats.
Blinds (type 4)	Blinds with slats – the position of the blinds is fixed, but the slats are adjustable.
Building service	Component of the building's technical equipment which is part of the building's infrastructure. In *LUXMATE* building management systems, building services are controlled via modes of operation. A building service can be controlled via more than one mode of operation. Examples of building services are lighting and blinds.
Contrast sensor	Sensor that presents the environment as a contrast image
DALI load	Typical power consumption of a subscriber on the DALI control line.
DALI-2	Expansion of the existing interface log for digital communication between control gears for the lighting system – DALI (*Digital Addressing Lighting Interface*). Expansion for control devices as per *IEC 62386* and addition of new commands and functions. More detailed information can be found on the website of the *Digital Illumination Interface Alliance (DiiA)*.
Delay time	Time during which a specific threshold must be breached in order to trigger a response. The response or the event that follows is only permitted after this time has expired.
Detail control	A way of controlling devices either individually or in groups
Dimming range	A range in which the intensity of the luminaires can be smoothly adjusted. It is restricted to the physical upper and lower limits. Setting a lower and upper dimming limit can limit the dimming range further.
eD device	Sensors, control points, input devices and control units that are used in DALI systems. Each of these devices has its own address (0 to 63) which can be used to operate it individually.

Term	Explanation
End position	Maximum position (e.g. of blinds) defined by a limit switch. There can be an upper and a lower end position.
ExD	Self-contained emergency luminaire with a nominal duration of x hours (e.g. *E1D* = nominal duration of 1 hour), individual monitoring via DALI, central test and adjustable intensity in emergency operation.
Fade time	The time it takes to change from one value (scene, presence value) to another. Example with a scene as a value: If the fade time is, for example, 0 seconds, the change from one scene to the next is immediate. If the fade time is 20 seconds, the outputs will smoothly adjust to gradually switch to the control values for the next scene within those 20 seconds. All outputs reach the desired value simultaneously (once the fade time has expired).
Ice alarm	The ice alarm should stop blinds from moving when ice has formed on them, preventing them from being damaged. It is triggered when the outdoor temperature drops below a certain threshold and a rain sensor has detected precipitation.
Instance	Sub-category of an input device. Each input device can have up to 32 instance types (e.g. light sensor, presence detector, remote control, momentary-action switch, and many more).
Light balance	Ratio of direct to indirect lighting
Light source	System for generating light in a luminaire (e.g. lamp, LED module)
Location	Process for determining where a network or bus subscriber is located or what its address it. How subscribers are located differs from device to device. There are three methods of locating devices: visual, acoustic and tactile.
Mode of operation	Determines which building service is being controlled. Each building service is controlled by at least one mode of operation. Examples of modes of operation are intensity, blind position and slat position.
Momentary-action switch (MAS)	Control point that upon being operated either closes and/or opens a circuit, depending on its wiring, but without "clicking" into place like a standard switch, i.e. once it is released the affected circuit returns to its original state.
Movement range	Defines the capabilities of blinds or a window to move between the end positions, if the blinds/window have an actuator which is able to measure the distance covered and send feedback about the current position of the blinds/window. Setting a lower and upper limit of the movement range can limit the range further.
Pattern	Preset control values for 3 or 4 DALI short *SEQUENCE infinity* addresses, through which activity-related light distributions are created (e.g. concentrated work, presentation, conference)

Term	Explanation
Presence linking	A way of controlling luminaires whilst taking into account the presence of people. Presence is usually detected by presence detectors.
Presence scene	Scene in an area where the presence of at least one person is detected. Any scene can be defined as a presence scene.
Production number	Globally unique identification number of a *LUXMATE* device. The serial number can be determined from the production number.
Rain alarm	The rain alarm should prevent blinds (such as awnings) from being damaged by rain. It is triggered after a rain sensor determines that a defined precipitation level has been exceeded during a specified delay time.
Reference number	Number used to generate and check the licence number.
Required illuminance	Illuminance required at minimum at a specific location (e.g. workspace) so that a person can complete visual tasks effectively and accurately.
RGA address	Address used in *LUXMATE* systems for communication purposes. The RGA address is based on the following address scheme: room address/group address/individual address.
RGB luminaire	Luminaire consisting of three individual lamps (red, green, blue). Coloured light is generated through additive colour mixing.
Run-on time	Time that starts after a certain event (e.g. the last person leaves the room) and after which an action is triggered (e.g. fade time starts, absence scene is recalled). If an event occurs during the run-on time (e.g. someone re-enters the room), the run-on time starts again. A typical application for run-on time is the stairwell function.
Slat position	Specifies how the slats of blinds tilt. Expressed as a percentage (%).
Special luminaire	Luminaire with multiple light sources (such as lamps, LED modules). The *LITECOM* web application can be used to combine the light sources into one luminaire so that they can be controlled together.
Standard switch	Control point that upon being operated either closes or opens a circuit and "clicks" into place as it does so (as opposed to a momentary-action switch).
System extension	Process during which new network or bus subscribers are addressed, which are used in an existing and addressed system. Addressing for previously addressed network or bus subscribers will remain unchanged.
Timeframe	Limited time period between two or more events which already have set times. Example: two timeframes are defined for presence linking (07:00–12:00 and 14:00–18:00). Presence linking is enabled during these timeframes.

Term	Explanation
Tunable White	Option of dynamically changing the light of the LED in the white light range. Colour temperatures from 2700 K to 6500 K, for example, can be variably set using a control. The LED luminaires achieve high colour rendering of at least Ra 80 to Ra 90.
TW luminaire	Luminaire that supports Tunable White pursuant to IEC 62386-209. There are two types of TW luminaire: • Luminaires that consist of at least two individual lamps, one for warm-white and one for cool-white. • Luminaires that have one individual lamp that supports Tunable White.
Visual location	Type of location in which the address of a network or bus subscriber is used to visually locate this subscriber in the field. • A visually located luminaire, for example, responds by switching to the maximum level. • A visually located set of blinds, for example, responds by moving to the lower end position.
Wind alarm	The wind alarm should stop blinds from moving when wind speeds are high, for example, preventing them from being damaged. It is triggered after a wind speed sensor determines that a defined wind speed has been exceeded during a specified delay time.

THE LIGHT