SpaceLogic C-Bus Wall Plates User Guide

Information about features and functionality of the device

Release date 07/2024





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Commercial references

Saturn series

	'A' Series			'E' Series	
5082680	5084680	5086680	E5082680	E5084680	E5086680
5082GF	5084GF	5086GF	E5082GF	E5084GF	E5086GF
5082J80	5084J80	5086J80	E5082PW	E5084PW	E5086PW
5082PW	5084PW	5086PW	N/A	N/A	N/A

Saturn Zen series

'A' S	eries	'E' S	eries
R5041ZB	R5043ZB	ER5041ZB	ER5043ZB
R5041ZW	R5043ZW	ER5041ZW	ER5043ZW
R5042ZB	R5044ZB	ER5042ZB	ER5044ZB
R5042ZW	R5044ZW	ER5042ZW	ER5044ZW



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.

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

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.

Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

Safety Precautions

INCORRECT C-BUS CABLE INSTALLATION

The C-Bus network cabling is classified as Separated Extra-Low Voltage (SELV) wiring. To maintain this requirement, the approved C-Bus cable must be used.

- Ensure that adequate separation and/or segregation of the C-Bus cable from other wiring (for example Low Voltage wiring) is maintained throughout the entire installation.
- Ensure the C-Bus network cable is installed in accordance with the SELV wiring rules and regulations of the jurisdiction.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTICE

INCORRECT C-BUS INSTALLATION LOCATION

To prevent the possibility of intentional or unintentional interference with the configuration or operation of the C-Bus installation, this equipment should be installed in a location with appropriate access control.

Failure to follow these instructions can result in equipment damage.

Megger Testing

NOTICE

MEGGER TESTING

Megger testing must never be performed on any cable while connected to the product as it could degrade the performance of the product and/or the network.

Failure to follow these instructions can result in equipment damage.

Cybersecurity

At Schneider Electric, we believe that cybersecurity is an essential prerequisite. We are committed to providing reliable, stable, and secure products to minimize potential network risks and protect the safety of customers, property, and the environment.

Cybersecurity aims to prevent your system, communication networks, and devices from possible attacks, data tampering, or confidential information leakage.

In addition to the direct instructions in this document, observe and follow Schneider Electric's security recommendations. For details and assistance in protecting your installation, you can also contact your local Schneider Electric Industrial Cybersecurity Services organization or visit Cybersecurity Services on the Schneider Electric website.

Cybersecurity Services on the Schneider Electric Website:

Recommended Cybersecurity Best Practices	Proven cybersecurity procedures
Cyber security service	From conception to maintenance: certified experts advise and guide you through a holistic cybersecurity program.
Cybersecurity support portal	Security notifications, reporting a vulnerability, reporting an incident

Secure disposal

If a device needs to be disposed of, perform a factory reset so that all data, project data and programming is deleted from the device.

Make sure that it is secure to prevent its redeployment into your operational system or unauthorized use.

Cybersecurity vulnerabilities/incidents

You can review the Vulnerability Management Policies on Schneider Electric's Cybersecurity Vulnerabilities Portal (https://www.se.com/ww/en/work/support/ cybersecurity/vulnerability-policy.jsp) or report potential cybersecurity vulnerabilities or incidents.

Disclosure

This documentation contains general descriptions and/or technical characteristics of the products contained herein. It is not intended to determine whether these products are suitable for specific applications or to determine their reliability. In order to determine whether the products are fit for any particular application or use, users or integrators must conduct the appropriate risk analysis, evaluation, and testing. Any misuse of the information contained herein will not be the responsibility or liability of Schneider Electric or any of its affiliates. If you have suggestions for improvements or amendments or have found errors in this publication, please notify us.

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The product must be installed and used in accordance with all applicable state, regional, and local safety regulations. In order to ensure safety and compliance with documented system data, only the manufacturer should perform component repairs.

Devices with technical safety requirements must follow the relevant instructions.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage. ©2024 Schneider Electric. All rights reserved.

About the device

The Next Generation Saturn and Saturn Zen wall plates are a completely new electronic hardware and firmware implementation inside the existing Saturn and Saturn Zen (508xNL and R504xNL) designs.

The new versions include full color RGB indicators, temperature and humidity sensor, and upgradable firmware.

The new firmware supports existing features of Saturn and Saturn Zen wall plates, such as switching, dimming, timers, scenes, and corridor linking.

In addition, the new firmware has the following new/enhanced capabilities:

- 4 Lighting Applications
- 4 profiles
- · Per-key setting of ramp rate
- · Per-key setting of indicator on and off state color
- 2 user-definable indicator colors
- 5 dynamically controllable indicator colors
- Enhanced scene capability
 - Multiple Lighting Applications
 - Per-element ramp rates
 - Scene Toggle/Ramp
- Temperature and Humidity measurements via Measurement Application
- High/Low Temperature and Humidity alarms
- Sequences
- Widget linking

Learn Mode is deprecated and will no longer be supported on any new C-Bus devices.

The *Restore to Previous* power recovery option is deprecated and will no longer supported on any new **bus-powered C-Bus input** devices.

Getting Started

The Next Generation Saturn and Saturn Zen wall plates need to be configured using the SpaceLogic C-Bus Commission Software before they can be used.

To configure the units using SpaceLogic C-Bus Commission Software, you will need

- A computer equipped with Windows 10 Professional (64-bit) or newer.
- SpaceLogic C-Bus Commission Software.
- · Functional C-Bus network, consisting of at least:
 - A C-Bus Power Supply
 - A C-Bus interface such as a C-Bus PC-Interface, C-Bus Network Interface, or a C-Bus Automation Controller
 - Key unit to be configured

You may also need a USB Type-C cable if you wish to update the firmware in the key unit.

To download the software click here

Version

This user guide describes functionality of the unit according to the firmware version 1.1.0.

Installation Location

- For indoor use only
- Allow adequate ventilation
- · Do not cover the unit
- Locate the wall plates as close as possible to C-Bus Power supplies to minimize any voltage drop
- · Avoid paint, stickers, or other decorations
- If using the temperature sensor feature, consider the further recommendations mentioned in "Temperature and Humidity Sensors, page 38"



Installing the Device

Refer to the installation instruction supplied with this product.

- Saturn
- Saturn Zen

Using the Device

Widgets and Key Functions

The Next Generation Saturn and Saturn Zen wall plates support up to 16 "Widgets". For those familiar with existing key units, Widgets are a bit like the "Blocks" in the older key units, and a bit like the Widgets in the eDLT, however the capabilities (and rules) are a little different to both (more on that later).

Each Widget's behavior is configured firstly by selecting its Type. For example, you would select a Lighting Widget to do normal Lighting operations like turning a light on/off or dimming it, whereas you would select a Scene Widget to interact with a Scene, or a Shutter Relay widget to operate a blind connected to a C-Bus shutter relay.

The following Widget types are available.

Widget Type	Description
Lighting, page 21	Traditional Lighting Application functions
Timer, page 25	Dedicated timer functions for Lighting Application
Shutter Relay, page 27	Dedicated one, two, and three key functions for Shutter Relays using Level Translation mode
Enable, page 26	Dedicated functions for Enable Application
Fan Control, page 28	Dedicated Widget for single key control of a C- Bus Sweep Fan Controller
Scene, page 18	Scene functions
Sequence, page 20	Sequence functions
Audio, page 34	Native control of audio parameters using the C- Bus Audio Application
Multi-Toggle, page 31	Dedicated widget for simple toggle control of up to 8 Lighting or Enable groups
Linked, page 32	Used to perform an action based upon an event on another Widget
Unused	No function

Once the Widget type is selected and the Key Function is chosen, which defines what action it does when activated by a key.

NOTE: Unlike the old key units, the Key Function is a property of the Widget.

Finally, depending on the Key Function selected, additional parameters may need to be set. For example, a "Preset" Key Function requires you to specify the level you want the preset to set, whereas any of the Key Functions that perform dimming require you to specify the Ramp Rate you would like to use.

Unlike old key units, the same Lighting Group may be used in more than one Widget. This is used where 2 keys are desired to control the same group (for example "On/Up" and "Off/Down" Key Functions) then two Lighting Widgets are used. One with Key Function set "On/Up" and one with Key Function set to "Off/ Down".

The indicator on and off state colors are also a property of the Widget, which means each Widget can have any color defined for each state.

Similar to old key units:

- Key to Widget mapping can be changed.
- A single Key may be mapped to multiple Widgets, or multiple Keys can map to the same Widget (although this rarely makes sense to do).
- Indicator on a physical Key can be controlled by a different Widget to that which the Key is controlling.

Profiles

Profiles allow the function of each key to be changed at run-time, so that the action of any or all of the keys can be different at different times of the day. This can also be used to replicate the "Join Mode" functionality of older key units.

For example, you might have a "Day Mode" Profile, an "After Hours" Profile, a "Function Room" profile, and a "Cleaning" profile for your building. In this scenario, a Conference Room with a 3-key key unit might have the following behaviors set up for these different profiles.

Profile	Key 1	Key 2	Key 3
Day	Meeting Scene Set	Presentation Scene Set	All Off Scene Set
After Hours	Main Lights Toggle Dimmer	Screen Lights Toggle Dimmer	All Off Scene Set
Function Room	Function Room Scene Set	Disabled	Disabled
Cleaning	Cleaning Scene Toggle	Disabled	Disabled

This is achieved by configuring all the different Key Functions required in different Widgets, and then setting up the different mappings of Keys to Widgets in the 4 different profiles.

In the above example, you would set up the 5 Scene Widgets for the 5 different Scenes, and 2 Lighting Widgets for the two different Lighting Groups to be directly controlled:

Widget	Туре	Key Function	Controls
1	Scene	Scene Set	Meeting Scene
2	Scene	Scene Set	Presentation Scene
3	Scene	Scene Set	All Off Scene
4	Scene	Scene Set	Function Room Scene
5	Scene	Scene Toggle	Cleaning Scene
6	Lighting	Toggle Dimmer	Main Lights
7	Lighting	Toggle Dimmer	Screen Lights

Then, set the Key to Widget mapping in the 4 different profiles to enable the desired functions:

Profile	Key 1	Key 2	Key 3
Day	Widget 1	Widget 2	Widget 3
After Hours	Widget 6	Widget 7	Widget 3
Function Room	Widget 4	Not Mapped	Not Mapped
Cleaning	Widget 5	Not Mapped	Not Mapped

Changing the Profile

Once the configuration is set up, the active profile is changed by setting the level of the Enable Group assigned to control the profile. Level 0 selects the first profile, Level 1 selects the second, and so on.

These levels can be given tags (names) when profiles are created in the installation software. Where there are multiple units that are required to change profile together, simply assign the same Enable Group to control the profile in all of them.

As there are 16 Widgets and 4 Profiles, units with 4 keys or less can have 4 completely different sets of key functions across the 4 profiles.

Finally, in addition to customizing the key functions in different profiles, the following features can be enabled or disabled per-profile:

- Nightlight
- Ignore First Keypress
- High Temperature Alarm
- Low Temperature Alarm
- High Humidity Alarm
- Low Humidity Alarm
- Widget Linking

Indicators

Each key contains an RGB (Red, Green, and Blue) LED indicator. The indicator on any key can be assigned to follow the state of any one Widget.

The Widget to Indicator mapping can be defined independently for each Profile.

Color

The on-state and off-state colors can be defined independently for each Widget, from the following list of colors:

Color ID	Color
0	Off
1	White
2	Red
3	Green
4	Blue
5	Cyan
6	Magenta
7	Yellow
8	Orange
9	User 1
10	User 2
11	Dynamic 1
12	Dynamic 2
13	Dynamic 3
14	Dynamic 4
15	Dynamic 5

User Colors

In addition to the 9 predefined color values in the palette, there are two userdefinable colors, which can be set using the color wheel selector in the installation software.

Dynamic Colors

The "Dynamic" color value settings allow the color of indicators assigned that value to be changed at run time to any one of the other 11 colors (Color ID values 0-10) using the level of a C-Bus Lighting group. For example, if indicators are set to Dynamic 1 color, and Group X is assigned to control the Dynamic 1 indicator color then setting the level of the Group X to 5, this would set those indicators to Cyan. If the level of Group X is then set to 10, all these indicators would change to the User 2 color.

Active and Idle Brightness, and Idle Time-out

When a unit has not been operated for some time, it enters to an "Idle" state. In this state, the indicators can be configured to change to a lower brightness and/or to change to a different color ("Nightlight" function).

When a key is pressed, the unit switches to "Active" mode, and the indicator brightness is set to the "Active" brightness setting. When there are no key presses detected for the "Idle Time-out" time (default 15s), the unit enters the "Idle" state where the indicator brightness is set to the "Idle" brightness setting.

Nightlight

If the Nightlight function is enabled, there is also the option to ignore the first keypress when waking from the Idle state (the normal key function for the key pressed to wake the unit from Idle is not performed).

Brightness

There are separate settings for Active and Idle brightness. These settings can be set to fixed values, or they can each be controlled dynamically by their own Lighting Group. This would typically be used to adjust the brightness at different times of day according to a schedule.

For example, it might be desirable for the Idle Brightness of units located in bedrooms to be reduced at night time.

Configure the Device

Configuration and Commissioning of the C-Bus unit is done by the C-Bus connection using the "SpaceLogic C-Bus Commission" software. To download the software click here

The unit can be powered up by the USB-C connection for programming via C-Bus (without an energized mains connection).

Lighting Applications

The Next Generation Saturn and Saturn Zen wall plates support up to 4 Lighting Applications. By default, Application 56 (\$38) is registered as the Primary Lighting Application and the other 3 are unused.

In most installations, a single Lighting Application is sufficient, and this setting will not need to be changed from the default. In larger installations, it might be necessary to change the Primary Lighting Application address and/or add additional Lighting Applications.

If using more than one Lighting Application on any one C-Bus network, it is important to review the **Status Report** setting on all Input units on that network.

Status Report

The Status Report (also known as the "MMI") is a key part of the reliability of the C-Bus System.

It is a system message which is generated by one Input Unit per Lighting Application, per network, and is used to ensure that the states of all the Lighting Groups on that Application are kept in sync between input and output units.

The Status Report message occurs regularly at an interval set by the "Status Report" parameter, which is set by default to once every 3 seconds. All input units are capable of initiating the Status Report, however at any one time, only one unit assumes the role any given Lighting Application on that network.

With the default Status Report setting of 3 seconds, the Status Report messages use approximately 5% of the network bandwidth. If multiple Lighting Applications are used on a single network, the Status Request setting on all Input Units on that network should be increased to a value which is at least 3 times the number of Lighting Applications in use on that network, in order to ensure that the Status Report Messages do not utilize too much network bandwidth, which may result in reduced responsiveness.

Scenes

A Scene refers to a combination of level settings for a selection of Lighting Groups.

Scenes represent brightness settings for a selection of lights. Often these are lights are all in a common area, but Scenes are also commonly used simply to control a large number of groups at once, such as an "All Off" scene which turns everything off and might be triggered when leaving the house.

Example, a meeting room which has two lighting groups. One group above the meeting table and one group along the end wall above the projector screen. In this room, a "Meeting" Scene might set all the lights to 100%, whereas a "Presentation" Scene might set the lights over the meeting table to a lower level such as 50% and turn off the lights adjacent to the projector screen to make it easier to see the screen. Finally, there might be an "All Off" scene to turn everything off.

The Next Generation Saturn and Saturn Zen wall plates support up to 8 Scenes, with storage for a total of up to 64 Scene Items, which can be shared freely amongst the desired number of Scenes. For larger scenes, or where it may be desirable for the end user to edit the scene contents, we recommend defining the scenes in an Automation Controller, and simply using the Key Unit to send the Scene Trigger.

Unlike the old key units, the Next Generation Saturn and Saturn Zen wall plates can have:

- Multiple Lighting Applications per Scene.
- Ramp rates specified per Scene Item.
- Multiple Trigger Groups per key unit.
- Scene Toggle and Scene Dim Key Functions.

NOTE: These Key Functions only work on Scenes which are contained in the unit in which the scene is defined.

Triggering Scenes

A Scene can be triggered by a keypress on a Scene key, and/or by a message received on the "Trigger Control" Application. This message consists of two variables:

- Trigger Group
- Action Selector

This combination of Trigger Group and Action Selector are used to uniquely identify a Scene, and when used with a Scene, the message that sets them is referred to as a "Scene Trigger".

When a Scene is triggered locally by a keypress, all the Lighting Application messages are sent to set the groups in the scene to the levels defined by the scene, as well as the Scene Trigger message. The inclusion of the Scene Trigger message allows any other units on the network to show the status of the Scene, as well as allowing a Scene to be split across multiple units.

When a Scene is triggered by an incoming Scene Trigger message, the Lighting Application messages are sent, but the Scene Trigger does not need to be sent as well.

A Scene in another unit is called a "Remote Scene", and may be triggered by simply sending the Scene Trigger message with the Trigger Group and Action Selector that identifies that Scene.

NOTE: The Scene Toggle, Scene Off, and Scene Dimming functions do not work for Remote Scenes.

Scene Status

A Scene becomes active when it is set by a keypress on a Scene Key, or when a Trigger Control message with matching Trigger Group and Action Selector is received.

A Scene becomes inactive, or "broken", when the level of one of the groups in the scene is changed to a different value, or if a Trigger Control message is received for the same Trigger Group but with a different Action Selector, or finally, if an Indicator Kill message is received for that Trigger Group.

NOTE: Using the Scene Dimming actions in the Scene On/Up or Scene Off/ Down Key Functions changes all the levels in the Scene without breaking the scene.

In the Meeting Room example above, the three scenes are referred to as "Mutually Exclusive", because they all set the same groups to different levels, so only one can be active at any one time.

Mutually Exclusive Scenes should all be given the same Trigger Group, with different Action Selectors. This allows the Scene Indication to accurately reflect the Scene Status to show the currently active scene.

Scenes which are not Mutually Exclusive are therefore, by definition, unrelated, and independent, and therefore should be given different Trigger Groups.

In addition, if the "Scene Repair" option is set for the Scene Widget, the Scene can also become active if the levels of all the groups in the scene are set by some other means to the levels defined by the scene.

NOTE: If a Scene becomes active via the Scene Repair process, no messages are emitted from the unit containing the scene.

Scene Execution

Scenes execute in the order that the scene items are added. If using multiple Lighting Applications in one Scene, when the Scene is executed, each change in Application will result in the unit starting a new message. For most efficient Scene execution, it is recommended that all Groups for each separate Application are entered consecutively.

Sequences

Sequences are a new function. They resemble Scenes to some extent, however rather than sending all the changes at once, they deliberately send them out as a sequence of events. This allows inclusion of commands from C-Bus Applications other than Lighting (such as Audio), as well as the introduction of delays between commands.

This can be used to:

- Create lighting effects such as turning a sequence of lights on in a specific order, with a delay in between, and then turning them off in the reverse order.
- Allow time for other systems to react before performing the next action. For example,
 - allowing time for a gate to open before releasing the hounds, or
 - allowing time for the fireplace to light before turning on the Multi Room Audio and selecting the Barry White playlist

In a similar way to Scenes, Sequences can be triggered by a key event, or by a Trigger message on the Trigger Control Application. In a similar way to Scenes, Sequences sharing a Trigger Group are considered Mutually Exclusive.

When triggered by a Trigger message, only the "Sequence Start" function is available.

When triggered from a key event, there are many additional Key Function options, such as allowing a Sequence to be stopped part way through, toggling the state (where state has a logical opposite state to change to), or running the Sequence in reverse order.

Sequence State

A Sequence is considered Active once it has been triggered, and until either

- It is turned off using a Sequence Key Function.
- Another Sequence with the same Trigger Group is triggered (either in this unit or a different unit).
- If the level of a Lighting, Enable, or Trigger group contained in the Sequence is changed by another unit.
- An indicator kill message is received for the Trigger Group associated with the Sequence.

Lighting Widget

The Lighting Widget provides most of the standard Key Functions for lighting control such as "Toggle", which turns a group on or off from a single key, or "Toggle Dimmer", which does the same but also dims when using a long press.

Each Lighting Widget has a single Key Function, as well as its own independent settings for Ramp Rate, Preset Level, and Indicator Colors.

To set up functionality that uses 2 (or more) keys for the same group (for example, one key to do Off/Down and another to do On/Up), you use multiple widgets with each assigned the desired Key Function and set to the same group.

The following Key Functions are available for use with Lighting Widgets.

Key Function	Description
Toggle	Short press toggles the state of the group between on and off, with an instant ramp.
On	Short press turns group on with an instant ramp, only if currently off.
Off	Short press turns group off with an instant ramp, only if currently on.
Preset	Short press set the group to the preset level with an instant ramp, regardless of current level. If the group is on, a long Press ramps the group to off at the Widget's Ramp Rate.
Toggle Dimmer	Short press toggles the state of the group with an instant ramp. If the group is on, and the key has not been pressed for 15 seconds, a long press ramps the group down at the Widget's Ramp Rate. If the group is on, and the key has been pressed within the last 15 seconds, a long press ramps the group in the opposite direction to the last operation, at the Widget's Ramp Rate. If the group is off, a long press ramps the group up at the Widget's Ramp Rate.
Memory Toggle Dimmer	As per Toggle Dimmer, but when toggling to on state, restores to last active level.
Toggle Dimmer Down	Short press toggles the state of the group with instant ramp. Long press ramps the group down at the Widget's Ramp Rate.
Toggle Dimmer Up	Short press toggles state of the group with instant ramp. Long press ramps the group up at the Widget's Ramp Rate.
Memory Toggle Dimmer Down	As per Toggle Dimmer Down, but when turning on, restores to last active level.
Memory Toggle Dimmer Up	As per Toggle Dimmer Up, but when turning on, restores to last active level.
Dimmer Down	Short press turns the group off with instant ramp, only if currently on. Long press ramps the group down at the Widget's Ramp Rate.
Dimmer Up	Short press turns the group on with instant ramp, only if currently off. Long press ramps the group up at the Widget's Ramp Rate.
Down	Ramps the group down at the Widget's Ramp Rate.
Up	Ramps the group up at the Widget's Ramp Rate.
Soft Down	Short press ramps the group off at the Widget's Ramp Rate. Long press ramps the group down at the Widget's Ramp Rate.
Soft Up	Short press ramps the group on at the Widget's Ramp Rate. Long press ramps the group up at the Widget's Ramp Rate.

Nudge Down	Short press ramps the level of the group down by the nudge amount, with an instant ramp.
Nudge Up	Short press ramps the level of the group up by the nudge amount, with an instant ramp.
Bell Press	Group is turned on with instant ramp (only if off) when the key is pressed and turned off with an instant ramp when the key is released.
Preset on Short Press*	Short Press recalls the preset level with instant ramp.
Preset on Long Press*	Long Press recalls the preset level with instant ramp.
Unused	Key does nothing. Useful for widgets to indicate status only.

* The "Preset on Short Press" and "Preset on Long Press" Key Functions are provided to allow a single key to be configured with two different Preset Levels. In older key units this was done using the Recall1 and Recall2 microfunctions, however as these functions do not work quite the same way in the Next Generation Saturn and Saturn Zen wall plates, to set up such a function, you need to create two widgets with the same group, assign "Preset on Short Press" to one and "Preset on Long Press" to the other, and then map the same key to both.

Status Indication

For all Key Functions other than "Preset", the status of the indicator is based on the state of the group address controlled:

- If the level of the group address is zero, the state is Off, and the indicator will show the Off color defined for the Widget
- If the level of the group address is not zero, the state is On, and the indicator will show the On color defined for the Widget

For the "Preset" Key Function, the status of the indicator is based on the level of the group address controlled:

- If the level of the group address is not equal to the Preset level, the indicator will show the Off color defined for the Widget.
- If the level of the group address is equal to the Preset level, the indicator will show the On color defined for the Widget.

Where a Widget uses a timer function there is an option to indicate that the timer is active by flashing the indicator, in which case:

- If the level of the group address is zero and the timer is running, the indicator will be the Off color, and blink briefly to the On color once per second.
- If the level of the group address is not zero and the timer is running, the indicator will be the On color, and blink briefly to the Off color once per second.

C-Bus Ramp Rates

Lighting Key Functions that perform dimming use pre-defined Ramp Rates to control the rate of change of brightness when dimming.

The Ramp Rate is defined as the time to fade from 0% to 100% (or vice versa), so for example a 4 second ramp will take 2 seconds to reach full brightness if ramping up from a level of 50%.

Typically, a Ramp Rate setting of 4 or 8 seconds is good for use with push button dimming of lights (8 seconds is selected by default). Ramp rates of 8 or 12 seconds are good for controlling Audio functions such as Volume, and longer

Ramp Rates are more useful for effect within scenes. For example a slow fade off /on.

Custom Key Functions

If the predefined Key Functions do not offer the function required, there are four user-definable Custom Key Functions available. These can be defined in the same way as using the "Key Functions" tab with the old key units in C-Bus Toolkit.

Custom Key Functions define the 4 actions (called "Microfunctions") to be taken on each of the 4 possible events that occur when a key is pressed.

Key Events

Every time a key is pressed, either two or three of the following events occur.

Event	Description
Just Pressed	Event occurs as soon as the key is pressed (after the debounce time). This Event occurs for every key press.
Short Release	Event occurs if the key is released before the Long Press time has elapsed. No subsequent events occur. If the key is held for longer than the Long Press time, the Short Release Event does not occur and the Long Press Event occurs instead.
Long Press	Event occurs if the key is still held when the Long Press time has elapsed.
Long Release	Event occurs when the key is released after the Long Press event has been generated.

A Key Function is defined by the combination of the 4 Microfunctions that are performed for these events.

There are 16 standard Microfunctions:

Microfunction	Description		
Idle	No Event		
Store1	Saves current level to Widget's Level parameter.		
Dncycle	Ramps up and down at the Widget's Ramp Rat on alternate presses. First press after minimum of 15 seconds of inactivity will always ramp leve down unless level is at minimum		
MemTog2	Recalls last active level if off, store last active level and turn off if on.		
DnKey	Ramp level to minimum (1) at the Widget's Ramp Rate		
UpKey	Ramp level to maximum (255) at the Widget's Ramp Rate		
Recall2	Sets the level to last active level with instant ramp.		
Retrig	Starts the timer if the level of the group is non- zero. If the unit is not the Active* unit, also generates an instant ramp to the current level.		
Start	Starts/retriggers the timer regardless of group state. If the device is not the active device, or if the timer is already running, also generates an instant ramp to the current level. At the expiry of the timer, the Expiry Level is set with the Expiry Ramp Rate.		

RampOff	Ramps to off at the Widget's Ramp Rate, only if the group is on.
RampRecall1	Ramps to the Preset Level at the Widget's Ramp Rate
Toggle	Sends OFF if currently on, or ON if currently off.
Recall1	Sets the Level to the Widget's Preset level with instant ramp.
OnKey	Sends ON if target level is zero.
EndRamp	If currently ramping, sends instant ramp to current level. If not currently ramping, sends Terminate Ramp.
OffKey	Sends OFF if target level is non-zero.

NOTE: All microfunctions except Idle, Start, and Retrig will cancel a running timer. Therefore, when using Start or Retrig to implement a timer, these microfunctions should either be associated with one of the release events, or followed by an Idle in the corresponding release event.

For example, a standard one-key Toggle Dimmer Key Function, which toggles the state when short-pressed, and dims up or down when held down, has the following Microfunctions:

Event	Microfunction	Description
Just Pressed	ldle	When the key is first pressed, nothing happens, because we don't know yet if it will be a long press or a short press
Short Release	Toggle	If this event happens, we know it was a short press, so we want to toggle the state of the group.
Long Press	DnCycle	If this happens, we know it was a long press, so we want to start ramping. The DnCycle microfunction starts the ramp. If the group is already on and key hasn't been touched for more than 15s then we ramp down, otherwise we ramp in the opposite direction to the last time.
Long Release	EndRamp	When the key is released after the long press, we send a command to stop ramping at the current level.

Active Unit

Where multiple input units (such as key units or sensors) control the same group, the "Active" unit is simply the last unit to send a message to control that group. The "Active" unit status is used internally by the firmware to track which unit is currently running the timer in cases where there may be multiple units set to run timer functions, or also to decide which unit is responsible for status correction if required. It is not important to understand for normal functionality however it can help to understand more complex interactions between multiple units controlling a common group.

Timer Widget

The Timer Widget provides timer functions for Lighting Groups. For example, turning a group on for 10 minutes and then turning it off.

It implements the traditional "Toggle Timer" and "Retrigger Timer" behaviors, which work the same way as previous key units, but offer more flexibility with the ability to specify both the initial and expiry levels as well as the initial and final ramp rates.

In addition, there are several new types of Timer:

- The "Delay Timer" starts a timer but does not emit an initial event, allowing a delayed event without affecting the current state of the Group.
- The "Pulse Timer" is similar to a normal "Retrigger Timer", but the initial event is always emitted, regardless of the Group state.
- The "Toggle Timer with On" works the same as the "Toggle Timer", but also allows the Group to be turned on without a timer by using a long press. This is useful for example a light in a room such as a pantry or a laundry where you normally want a timer to automatically switch the light off after a few minutes, but occasionally you need the light to stay on.

The specific behavior of the Timer Widget is selected by choosing the desired Key Function.

Key Function	Description
Retrigger Timer	If the unit is not currently the Active unit for the group, or if the widget level and the current target level of the group are different, the initial event is generated. At the expiry of the timer, the expiry event is generated. If the group is on, long press turns the group off and cancels the timer.
Toggle Timer	If group is off, short press turns on the group at the specified level with the specified ramp rate and starts the timer. At the expiry of the timer, the expiry event is generated. If the group is on, short press turns the group off with the same ramp as the initial event.
Delay Timer	Short press starts the timer, without generating an event. At the expiry of the timer, the expiry event is generated. Long press does nothing.
Pulse Timer	Short Press sends the initial event, regardless of group state, and starts the timer. Long press does nothing.
Toggle Timer with On	Same as Toggle Timer but Long Press turns group on without starting the timer.

Status Indication

The status of the indicator is based on the state of the group address controlled, and whether the timer is active:

- If the level of the group address is zero, the state is Off, and the indicator will show the Off color defined for the Widget.
 - If a timer is active the indicator will blink briefly to the On color once per second.
- If the level of the group address is not zero, the state is On, and the indicator will show the On color defined for the Widget.
 - If a timer is active the indicator will blink briefly to the Off color once per second.

Enable Widget

The Enable Widget is used for controlling groups on the Enable Control Application. This application is typically used to enable or disable functionality in other units, for example enabling or disabling a sensor, or selecting a Profile.

As such there are a much more limited number of Key Functions used with the Enable Widget.

Key Function	Description		
Toggle	Short press toggles state between on and off with instant ramp.		
On	Turns group on with instant ramp, only if currently off.		
Off	Turns group off with instant ramp, only if currently on.		
Preset	Short press recalls preset level with instant ramp, regardless of current level. Long Press ramps to off if on.		
Preset on Short Press	Short Press recalls the preset level with instant ramp.		
Preset on Long Press	Long Press recalls the preset level with instant ramp.		
Unused	Key does nothing. Useful to indicate status only.		

Status Indication

The status of the indicator is based on the level of the group address controlled:

- If the level of the group address is not equal to the Preset level, the indicator will show the Off color defined for the Widget
- If the level of the group address is equal to the Preset level, the indicator will show the On color defined for the Widget

Shutter Relay Widget

The Shutter Relay Widget is specifically for use with the C-Bus Shutter Relay.

The Shutter Relay widget offers Key Functions for 1-key (Open-Stop-Close-Stop), 2-key (Open-Stop/Close-Stop), or 3-key (Open/Stop/Close) operation for C-Bus Shutter Relays configured for level translation mode.

Key Function	Description
Shutter Toggle	1 key shutter relay control for use with shutter relay level translation mode. Sends recall 98%.
Shutter Open/Stop	Open/Stop for 2 key shutter relay control for use with shutter relay level translation mode. Sends Recall 99%.
Shutter Close/Stop	Close/Stop for 2 key shutter relay control for use with shutter relay level translation mode. Sends Recall 1%.
Shutter Open	Open for 3 key shutter relay control for use with shutter relay level translation mode. Sends On.
Shutter Close	Close for 3 key shutter relay control for use with shutter relay level translation mode. Sends Off.
Shutter Stop	Stop for 3 key shutter relay control for use with shutter relay level translation mode. Sends Recall 2%.

Status Indication

The indicator state for the Shutter Relay Widget is based on the level of the group controlling the shutter relay, which is related to the position of the shutter/blind.

- If the shutter/blind is closed, the level is zero, and the indicator will show the Off color defined for the Widget
- If the shutter/blind is not closed, the level is not zero, and the indicator will show the On color defined for the Widget

It should be noted that for the Shutter Relay Widget, the indicator state relies on the Status Report to synchronize, which means it can take several seconds for the state to assume the correct value after the key is operated. This also means that for correct operation of the indicator for Shutter Relay Widgets, the Key Unit and the Shutter Relay must be on the same C-Bus network (indicators will not work correctly if there are any C-Bus Network Bridges between the Key Unit and the Shutter Relay).

Fan Control Widget

The Fan Control Widget is specifically for use with the C-Bus Sweep Fan Control Relay.

There are no Key Functions to set for the Fan Control Widget. Each Short Press sends a Trigger Control message to trigger the Sweep Fan Control Relay to cycle to the next speed.

The Trigger Group, Action Selector, and Group Address configured should match the settings in the C-Bus Sweep Fan Control relay(s) to be controlled. The Group Address specified is used to indicate the status of the fan.

Status Indication

The indicator state for the Fan Control Widget is based on the level of the group controlling the fan.

- If the fan is Off, the indicator will show the Off color defined for the Widget.
- If the fan is On, the indicator will show the On color defined for the Widget.

IMPORTANT: For correct operation of the indicator for Fan Control Widgets, the Key Unit and the Sweep Fan Control Relay must be on the same C-Bus network (indicators will not work correctly if there are any C-Bus Network Bridges between the Key Unit and the Sweep Fan Control Relay).

Scene Widget

The Scene Widget offers the traditional scene Key Function of Scene Set, as well new

- "Scene Modify" Key Functions Scene Off (which turns off all groups that were turned on in an active scene)
- Scene Toggle (where a single key alternately performs Scene Set and Scene Off)
- Scene On/Up and Scene Off/Down (where a short presses perform the Scene Set/Scene Off and long presses ramp the groups that are on in the scene)

These new "Scene Modify" Key Functions only work on scenes contained within the unit.

Key Function	Description
Scene Toggle	If scene not already active, short press triggers scene. If scene is already active, short press turns off all groups in scene that are on.
Scene Set	Short press triggers scene.
Scene Off	If scene is active, short press turns off all groups in scene that are on. No effect if scene is inactive.
Scene Off/Down	If scene is active, short press turns off all groups in scene that are on. If scene is active, long press ramps all group in scene down at specified ramp rate. No effect if scene is inactive.
Scene On/Up	Short press triggers scene. If scene is active, long press ramps all group in scene up at specified ramp rate.

Status Indication

The indicator state for the Scene Widget indicates when the scene is active:

- If the scene is active, the indicator will show the Off color defined for the Widget.
- If the scene is not active, the indicator will show the On color defined for the Widget.

Refer Scenes, page 18 for more details on how the scene's active status is determined.

Scene Repair

The "Scene Repair" feature can also be enabled. When enabled, Scene Repair will reinstate the "Active" status of the scene if all groups in the scene are returned to the levels as defined by the scene.

This can be useful to achieve correct scene indication where room level scenes are used but are set as part of a larger overall scene.

Sequence Widget

Key Function	Description		
Sequence Toggle	If sequence not already active, short press triggers sequence. If sequence is already activ short press turns off all lighting groups in sequence that are on.		
Sequence Start	Triggers sequence.		
Sequence Off	If sequence is already active, short press turns off all lighting groups in sequence that are on.		
Sequence Reverse Toggle	If sequence not already active, short press triggers sequence. If sequence is already active, short press turns off all lighting groups in sequence that are on, in reverse order.		
Sequence Reverse Off	If sequence is already active, short press turns off all lighting groups in sequence that are on, in reverse order.		
Sequence Stop	If sequence is currently executing, stops execution.		

The Sequence Widget is used for interacting with a Sequence.

Status Indication

The indicator state for the Sequence Widget indicates when the sequence is active:

- If the sequence is active, the indicator will show the Off color defined for the Widget.
- If the sequence is not active, the indicator will show the On color defined for the Widget.

Refer Sequence, page 20 for more details on how the sequence's active status is determined.

Multi-Toggle Widget

The Multi-Toggle Widget is designed specifically to perform a Toggle function on multiple groups.

The state of the Multi-Toggle Widget is,

- off: if all of the groups controlled by the Widget are off
- on: if **any** of the groups controlled by the Widget are on (level)

Having said that, the Toggle function works to Toggle the state of all the groups controlled by the widget to the new state. So if any group controlled by the Widget is on, pressing the Key will send an 'Off' command to all of the groups. Conversely, if all of the groups controlled by the Widget are off, pressing the key will send an 'On' command to all of the groups in the Widget.

A common use case for this would be a master bedroom, where there is a switch at each side of the bed, which controls that side's bedside lamp, as well as the main room lights. There is also a switch by the door, where a key can be assigned to a Multi-Toggle Widget configured to control all of the lights in the room. If, when leaving the room, any of the lights in the room are on, the Multi Toggle key will turn them off.

Status Indication

The indicator state for the Multi-Toggle Widget is based on the state of the widget as defined above.

- If the state is Off, the indicator will show the Off color defined for the Widget.
- If the state is On, the indicator will show the On color defined for the Widget.

Linked Widget

The Linked Widget allows control of a group based on an event on another Widget (the "Control" widget).

The Linked Widget uses a "Linked Event" on the Control Widget to trigger a "Linked Action" on its own group.

Linked Event	Description
Control Widget turns on	Target level of the Control Widget changes from zero to non-zero as a result of a key event
Control Widget turns off	Target level of the Control Widget changes from non-zero to zero as a result of a key event
Timer Expires on Control Widget	A timer started by a key event on the Control Widget expires

Linked Action	Description			
Turn On	If the Linked Widget group is Off, Turn on at the given level with the given ramp rate. No action the Linked Widget group is already On.			
Turn Off	If the Linked Widget group is On, Turn Off with the given ramp rate. No action if the Linked Widget group is already Off.			
Preset	Sets the given level at the given ramp rate, regardless of the state of the Linked Widget group.			
Turn On and Start Timer	If the Linked Widget group is Off, Turn on at the given level with the given ramp rate, and start a timer with the given timer parameters. If the Linked Widget group is already On, only the timer is started.			
Turn Off and Start Timer	If the Linked Widget group is On, Turn off with the given ramp rate, and start a timer with the given timer parameters. If the Linked Widget group is already Off, only the timer is started.			
Start Timer	Start a timer with the given timer parameters.			
Trigger Event	Send a Trigger Event. If the Trigger Group and Action Selector match a local scene or sequence, these are triggered.			
Enable Event	Sets an Enable Group to the Level provided.			

The Control Widget must be a Linked Widget Actions which can also be enabled or disabled per profile.

Example Use Case: Fan Run-On Timer

On a 1-key Key Unit in a Toilet, the key is set up with a Lighting Widget with "Toggle" Key Function to control the light. A Linked Widget can be set up to also turn on the fan when then light is turned on, and a second Linked Widget can be set up to start a timer to turn the fan off after 5 minutes, when the light is turned off.

Widget	Туре	Key Function	Group	
1	Lighting	Toggle	Toilet Light	

Widget	Туре	Group	Control Widget	Linked Event	Linked Action	Result
2	Linked	Toilet Fan	1	Control Widget Turns On	Turn On	When the Toilet Light is turned on, this Linked Widget turns on Toilet Fan
3	Linked	Toilet Fan	1	Control Widget Turns Off	Start Timer (Timer Value =10 mins, Expiry Level = 0)	When the Toilet Light is turned off, this Linked Widget starts a timer to turn off the Toilet Fan in 10 minutes

Audio Widget

The Audio Widget is used to control audio related parameters such as volume, treble, bass, balance, and source for a given zone, using the C-Bus Audio Application.

This Application works natively with the C-Bus Multi-Room Audio system, and is also supported by the C-Bus Automation Controllers where it can be used to integrate with third party Multi-Room Audio systems, to provide simple on-wall control from the C-Bus key unit, avoiding the need for an additional control.

Key Function	Description	
Volume Up	Works like Dimmer Up, but for Volume. Use for 2-key control of Volume.	
Volume Down	Works like Dimmer Up, but for Volume. Use for 2-key control of Volume.	
Volume Cycle	Works like Toggle Dimmer, but for Volume. Use for single key control of Volume.	
Treble Up	Long press increases Treble. Short Press sets Treble to neutral. Use for 2-key control of Treble.	
Treble Down	Long press decreases Treble. Short Press sets Treble to neutral. Use for 2-key control of Treble.	
Treble Cycle	Long Press works like Toggle Dimmer, but for Treble. Short press returns Treble to neutral. Use for single key control of Treble.	
Bass Up	Long press increases Bass. Short Press sets Bass to neutral. Use for 2-key control of Bass.	
Bass Down	Long press decreases Bass. Short Press sets Bass to neutral. Use for 2-key control of Bass.	
Bass Cycle	Long Press works like Toggle Dimmer, but for Bass. Short press returns Bass to neutral. Use for single key control of Bass.	
Balance Left	Long press shifts Balance to left. Short Press sets Balance to centre. Use for 2-key control of Balance.	
Balance Right	Long press shifts Balance to right. Short Press sets Balance to centre. Use for 2-key control of Balance.	
Balance Cycle	Long Press works like Toggle Dimmer, but for Balance. Short press returns Balance to centre. Use for single key control of Balance.	
Next Source	Short press selects next source	
Previous Source	Short press selects previous source	
Preset Source	Short press selects specified source	
Dynamic 1	Short press sends Dynamic 1 message. The function of this depends on the Dynamic 1 function configured in the Matrix Switcher for the currently selected source.	
Dynamic 2	Short press sends Dynamic 2 message. The function of this depends on the Dynamic 2 function configured in the Matrix Switcher for the currently selected source.	

Status Indication

The indicator state for the Audio Widget is dependent on the variable it is controlling.

For Volume:

- If the Volume is zero, the indicator will show the Off color defined for the Widget
- If the Volume is not zero, the indicator will show the On color defined for the Widget

For Treble, Bass, and Balance:

- If the value is at neutral/centre, the indicator will show the Off color defined for the Widget
- If the value is not at neutral/centre, the indicator will show the On color defined for the Widget

For Preset Source:

- If the current source is not equal to the source set by the preset, the indicator will show the Off color defined for the Widget.
- If the current source is equal to the source set by the preset, the indicator will show the On color defined for the Widget.

For all other Key Functions the indicator will always show the On color defined for the Widget.

Corridor Linking

Corridor linking can be useful in office or home locations where there are private spaces such as offices or bedrooms, and a common space is the corridor which links the private spaces together.

Using this method of linking spaces, the common space remains lit while any of the private spaces are On.

When the Lighting group for the private space is turned On, the unit will also turn on the group for the common space.

When the Lighting group for the private space is turned Off, the unit will start a timer to turn off the Lighting group for the common space after a configurable time. If other private spaces sharing the same common space are still occupied, one of them will cancel the timer to ensure that the group for the common space remains on.

When configuring Corridor Linking, the group addresses for the common area ("Corridor Group") and private area ("Office Group") must be specified, and a third group called the "Link Group" must be assigned. This Link Group should be a group assigned specifically for this purpose and should not be used for any other purpose.

Error Reporting and Device Monitoring

The C-Bus Error application enables units to report error conditions.

The reports are monitored by a device such as a SpaceLogic C-Bus Automation Controller, which can:

- display the status to the user
- · allow them to acknowledge reports
- and as well as clear any latched errors

A SpaceLogic C-Bus Automation Controller can also make all of this available to a higher layer such as a BMS via BACnet.

The Next Generation Saturn and Saturn Zen wall plates support notification of the following error conditions:

- Unit Temperature above configurable warning level
- C-Bus Voltage below configurable warning level
- C-Bus Voltage below configurable critical level
- Configuration errors

Errors can be configured to report on a regular basis, and/or upon request via a Trigger message, and/or when a monitored condition changes.

Temperature and Humidity Sensors

The Next Generation Saturn and Saturn Zen wall plates have integrated temperature and relative humidity sensors.

Like other C-Bus sensors, the measured values are broadcast on the Measurement Application. The temperature and humidity measurements can be independently configured to broadcast at regular intervals and/or upon a change of reading.

Alarms

In addition to broadcasting on the Measurement Application,, the Next Generation Saturn and Saturn Zen wall plates also have an Alarm feature.

Alarms are provided for both high and low conditions for both temperature and humidity. Alarms can be set to turn on Lighting Groups when the temperature or humidity crosses the configurable alarm threshold values.

Each of these high/low/temperature/humidity alarms can be enabled or disabled per profile.

NOTE: Once an alarm set threshold has been crossed and the alarm group has been switched on, disabling that alarm event with a Profile change will still allow the alarm group to be switched off when the alarm clear threshold is crossed.

Installation Location

Like all temperature sensors, temperature measurements (and therefore also relative humidity values) are affected by local sources of heat and/or airflow. For example, exposure to the temperature in the wall cavity in which the unit is mounted, or direct airflow from a nearby air-conditioning vent.

If installed in a wall cavity where the temperature is expected to be significantly different to that of the room to be monitored, the influence of the temperature from the wall cavity on the measurement can be minimized by installing insulation behind the unit.

IMPORTANT: Consider these factors into account when setting the Temperature Offset.

Setting the Temperature Offset

In order to achieve accurate temperature and relative humidity* readings, the temperature offset must be set correctly.

To do this, the unit must be installed in its final mounting location and left powered for at least 1 hour in order for the temperature to stabilize.

The temperature of the environment must also be stable, as the reading from the sensor can lag changes in the environment by up to 10 minutes, depending on airflow.

Take a measurement of the temperature near the unit with another measuring instrument of trusted accuracy. If this is the desired reading, then use this value in the installation software to calculate and set the temperature offset required to make the reported reading match desired reading.

*Relative humidity is a measurement of the amount of moisture in the air, relative to the maximum possible amount of moisture that the air can hold at the current

temperature. Accurate relative humidity readings therefore require accurate adjustment of the temperature offset.

Firmware Update

The SpaceLogic C-Bus Commission software will notify if a firmware update is required.

The update requires a connection to the USB-C connector on the rear of the unit, and is performed using the SpaceLogic C-Bus Commission software.

All required firmware files will be included and authenticated as part of the latest SpaceLogic C-Bus Commission software release.

Technical Data

Parameter	'A' Series	'E' Series	
Dimensions (W x H x D)	75 x 118 x 25 mm	87 x 87 x 25 mm	
Protrusion From Wall	10 mm	10 mm	
Weight	54 g	39 g	
Mounting Centres	84 mm	60.3 mm	
Base Depth (into wall)	15 mm	15 mm	
C-Bus Supply Voltage	20 to 36 V d.c.		
	C-Bus Current Consumption 22 mA		
Control Functions	Load switching, dimming, timers, scene control		
Status Indicators	User configurable RGB		
C-Bus Connection	One terminal block to accommodate		
	0.2 mm² to 1.3 mm² (24 to 16 AWG)		
Operating Temperature Range	0 to 45° C		
Operating Humidity Range	10 to 95%, non-condensing		
Product Compliance	CE 24 💩		

Saturn wall plates



Saturn Zen wall plates

A Series

E Series



Compliance information for Green Premium products

Find and download comprehensive information about Green Premium products, including RoHS compliance and REACH declarations as well as Product Environmental Profile (PEP) and End-of-Life instructions (EOLI).

https://checkaproduct.se.com/



General information about Green Premium products

Click the link below to read about Schneider Electric's Green Premium product strategy.

https://www.schneider-electric.com/en/work/support/green-premium/



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