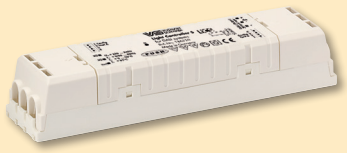
LIGHTING SOLUTIONS



LiCS INDOOR

Technical Manual Light Controller S

Light Control Gear for Intelligent Indoor Lighting

Light Controller S

Manual Version 1.1

LiCS INDOOR

CONTENTS

GENERAL

Introduction

Thank you for purchasing the LiCS system made by Vossloh-Schwabe. Please familiarise yourself with the functions of this product by carefully reading the manual. This will also help you to make the most effective use of the product. When not in use, please keep the manual in a safe place for easy future reference. Anybody who is involved with setting up, commissioning, operating, maintaining and repairing the system must
- be suitably qualified,
- strictly observe the instructions contained in this manual.

Use of Symbols in the Manual

The following symbols are used in the manual to highlight procedures, limitations, precautionary measures and instructions that must be observed for safety reasons.

CAUTION

This symbol alerts you to a precautionary measure which, if ignored, can lead to fatalities, injuries and damage to property. These cautions must be strictly observed to ensure safe use of this product.

IMPORTANT

This symbol alerts you to important information and any limitations that must be observed. Please read these points carefully to ensure fault-free operation of the system or of individual components.

INFO

This symbol alerts you to additional information regarding the operation of the system or of individual components. It is recommended that you read these notes.

Use of Abbreviations in the Manual

- LiCS = Lighting Control Solutions
- DALI = Digital Addressable Lighting Interface
- LL = Light level
- t = Time

LEGAL NOTES

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LIGHT CONTROLLER S

INSTALLATION AND FUNCTIONS

GENERAL PRODUCT DESCRIPTION

The Light Controller S is a light management systems that was developed as a means of controlling and adjusting light systems without needing a PC or a higher-level bus system.

Communication between the Light Controller and the luminaires is based on the standardised DALI protocol.
The light controller complies with all previously adopted parts of the IEC 62386 standard. This standard stipulates that a DALI system may have a maximum of 64 addresses. Die Controller ist für die unabhängige Installation vorgesehen. Die komplette Konfiguration des Beleuchtungssystems lässt sich einfach und ohne PC mit integriertem Dippschalter vornehmen. Any subsequently required system modifications can also be carried out in the same way.

1 independently configurable standard push button can be connected to a single Light Controller S. It is furthermore possible to connect up to 36 MultiSensors to the DALI bus, in which case the maximum 200 mA current load of the Light Controller's bus must not be exceeded (see DALI current consumption of the individual components).

These product features make Vossloh-Schwabe's Light Controller S perfect for a variety of applications, e.g.:

- Offices, industrial settings and storage areas
- Supermarkets
- Public buildings (e.g. schools and hospitals)
- Stairwells, corridors and hallways
- Sanitary facilities

Installation

IMPORTANT

Vossloh-Schwabe LiCS products must be installed and commissioned only by suitably qualified and trained staff.

INFO

Please read this manual carefully prior to installing and commissioning the system to ensure its safe and correct operation. Please keep the manual in a safe place for easy reference in the future.

Power Supply

CAUTION

All equipment must be disconnected from the power supply before any work is performed on it.

CAUTION

Tampering with your LiCS products by opening them involves the risk of incurring a fatal electrical shock (live components) and is therefore prohibited! All repairs must be carried out by the manufacturer.

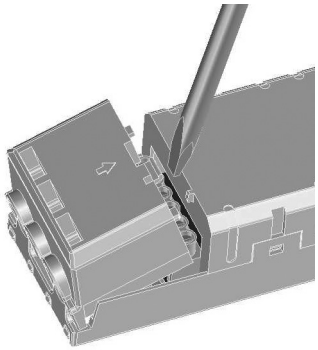
IMPORTANT

The installation instructions provided for the individual LiCS products must be strictly observed. All valid safety-relevant and accident-prevention directives and laws must also be observed.

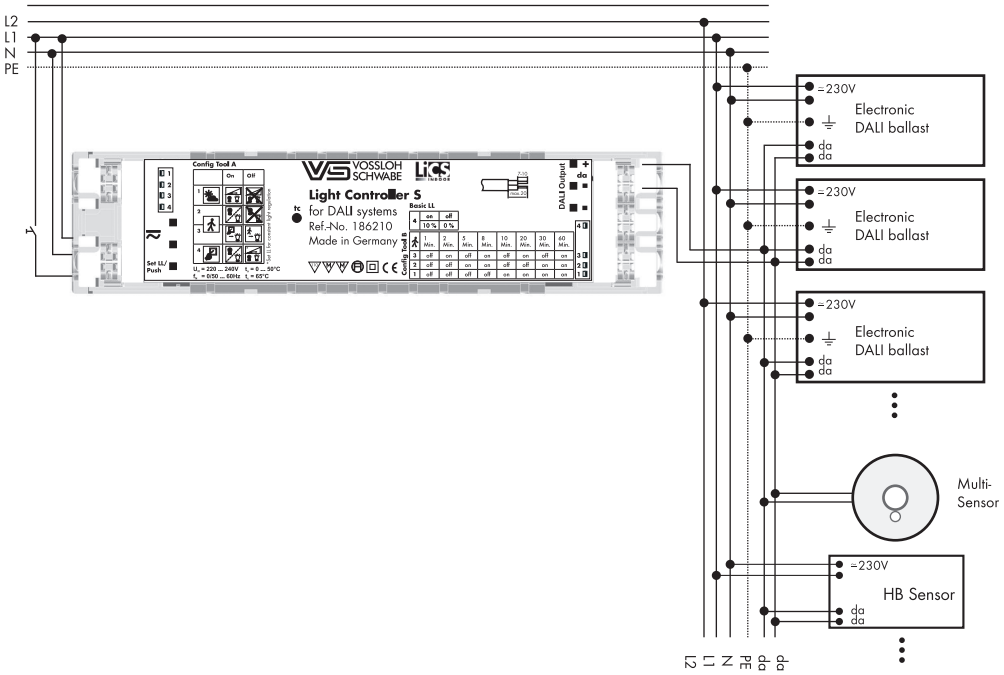
INSTALLATION OF THE LIGHT CONTROLLER

The VS Light Controller S is exclusively designed for independent operation.

- Independent installation, e.g. in the false ceiling
- Easy and time-saving installation as end caps can be locked without tools
- Clearances: Min. 10 cm to walls, ceilings, insulation and other electronic devices, min. 25 cm to heat sources (lamps)
- Support: Solid, no sinking into insulating material
- Fastening: With 4 mm screws



CIRCUIT DIAGRAM



CONNECTION TERMINALS

1 – 3

General:

The integrated connection terminals can be wired using rigid or flexible conductors with a cross-section of 0,75–2,5 mm² and a stripped length of 7–10 mm.

1

= Voltage 230 V

The Light Controller S is a protection-class II device. Voltage connections are designed for use with 220–240V, 0/50–60Hz mains power. The equipment should be protected by fitting a 10 A or 16 A, Type B automatic circuit breaker.

2

= Push

Conventional push buttons can be connected to terminals. Please note that these push buttons must be able to withstand mains voltage as they will also have to be connected to the power supply. If required, several push buttons can be connected to a terminal in parallel; these push buttons would then perform the same function once activated. A maximum cable length of 100 m per push button must not be exceeded.

3

= DA

By default, the DALI bus is delivered with basic insulation only. All DALI lines must therefore be capable of withstanding mains voltage, but may be wired to the individual devices together with the power supply cable, e.g. NYM 5x1.5 mm². The DALI bus input on the controller features three pairs of terminals, which make it easier to connect various components (e.g. DALI ballast, MultiSensor). In total, the requisite number of ballasts and MultiSensors can be connected to the three pairs of terminals. In this regard, the maximum 200 mA current load of the Light Controller bus must not be exceeded (see DALI current consumption of individual components).

For the maximum number of DALI components for a light controller, please refer to the table at the end of the manual (page 12).

The maximum cable length for the DALI bus must not be exceeded during installation.

Conductor cross-section	max. DALI Bus
1,5 mm²	max. 300 m
1 mm²	max. 180 m
0,75 mm²	max. 130 m
0,5 mm²	max. 80 m

Total cable resistance must not exceed a value of 6.2 Ω.

If the power supply and the DALI line are laid in a single cable, a maximum cable length of 100 m must not be exceeded regardless of the conductor cross-section.

IMPORTANT

DALI control gear and DALI bus supply units made by other manufacturers must not be connected to a LiCS DALI system. Only DALI ballasts (any manufacturer) and VS LiCS MultiSensors are permissible. On no account may the DALI control line be used to carry mains voltage or any other external voltage as this can destroy individual system components.

DESCRIPTION OF FUNCTIONS

CONTROLLER BEHAVIOUR DURING COMMISSIONING (DEFAULT SETTINGS)

Once the system has been configured, this push button can be set to perform a different function.

The sensor functions can also be called at the lead-out by connecting a "switch".

If the power supply to the Controller is cut, the status of all devices connected to the DALI system will be shown as “System Failure Level”, which is preset to a default light level of 100%.

PUSH BUTTON AND SENSOR FUNCTIONS

With the help of the Light Controller, different functions can be assigned to the control elements, for which purpose the respective menu items will have to be selected at the device.

Configuration unit A (next to mains terminal)

Switch	Task	Switch position	
		off	on
1	Brightness sensor	Not active	Active
2	Motion sensor	Not active	Active
3		Automatik	Semi-automatic
4	Pushbutton	On/off/dim (push)	On/off

Configuration unit B (next to DALI terminal)

Task	Time	Switch position			
		1	2	3	4
Time setting for motion sensor	1 min.	–	–	–	X
	2 min.	–	–	on	X
	5 min.	–	on	–	X
	8 min.	–	on	on	X
	10 min.	on	–	–	X
	20 min.	on	–	on	X
	30 min.	on	on	–	X
	60 min.	on	on	on	X
Basis light level	0 %	X	X	X	–
	10 %	X	X	X	on

PUSH BUTTONS (FUNCTION AND CONFIGURATION)

1. Push
The push function is a combined ON-OFF-DIM function. A short push of the button switches the respective luminaires ON or OFF. A longer push activates the luminance control (dimmer) function.

➲ **Short push of the button (80 ms < t < 460 ms)**
Alternately switches the lighting on or off.
The last-saved light level will be restored when the system is switched on.

➲ **Long push of the button (t > 460 ms)**
A long push of the button changes the current light level. Every push of the button will reverse the direction of luminance control (dimming direction). Upon reaching the highest or lowest light level, the "dimming" process stops.

After switching the system on, a long push of the button will always increase the light level of the luminaires. If the system is switched off, a long push of the button switches the luminaires to their lowest light level and then increases their luminance.

2. On/Off
When the system is in ON/OFF mode, pushing the button will alternately switch the system on and off, but will not let you change the light level.

Sensors (Function and Configuration)

The VS MultiSensors contain both a motion sensor and a light sensor. After you have integrated the sensors into the system, you will need to activate these functions independently of one another in the Light Controller. The default setting for both sensors is "inactive".

INFO All Sensors have the same function

Light Sensor

The light sensor can be used to keep lighting at a constant level in a room or at the workplace. The sensor thus measures the intensity of the light and, in the event of overly bright or dim levels of natural light, regulates the artificial lighting to suit within the limits provided by the maximum and mimimum light levels of the system. If the measured luminance is still too high upon reaching the minimum light level, the luminaires of the respective group will be switched off after a delay of about 1 minute. The required light level should be checked using a luxmeter at relevant spots in the room. The desired light level (consisting of natural and artificial light) is then achieved by decreasing or increasing the luminance of the artificial light (dimmer function).

INFO If at all possible, the light value (luminance value) should be configured without the influence of external light (after sundown) to ensure the reference value is reliable. After the configuration of the light sensor it is recommended to re-program the "push" function at the push button into the "On/Off" function. Background: Changing the lux value by manual dimming using the push button, will affect the reference value.

IMPORTANT The setting of the reference value is carried out by using the push button's "push" function. The light will be dimmed to a desired luminance intensity. This luminance intensity will now be held constantly.

Motion Sensor

The sensor can be activated in one of two modes.

➲ ON/OFF Mode (Automatic)

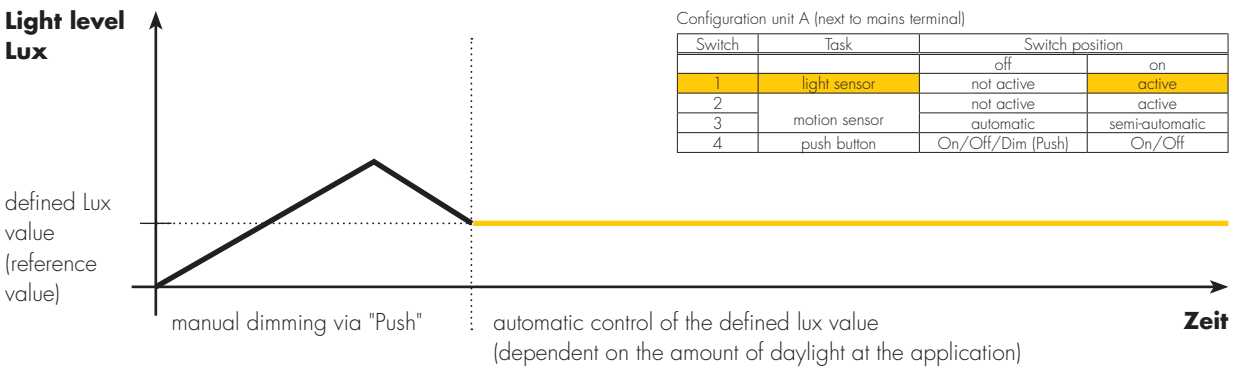
Upon detecting movement, the sensor will switch the system on at 100% light level and start a countdown. Every new detection of movement will restart the countdown from the beginning. Once the countdown has ended (time can be set between 10 seconds and 90 minutes), the lighting system will switch itself off.

➲ OFF Mode (Semi-automatic)

As the sensor does not switch the system on when detecting any movement in this mode, the lighting system has to switched on manually, e.g. by using a push button. After the system has been switched on, the countdown will only be activated if the sensor detects motion. Every further detection within this period will restart the countdown from the beginning. After the countdown has come to an end (times can be set between 10 seconds and 90 minutes), the lighting system will switch itself off.

INFO If the connected sensor has no integrated light sensor or motion sensor (eg MovementSensor HB20), this function must not be activated.

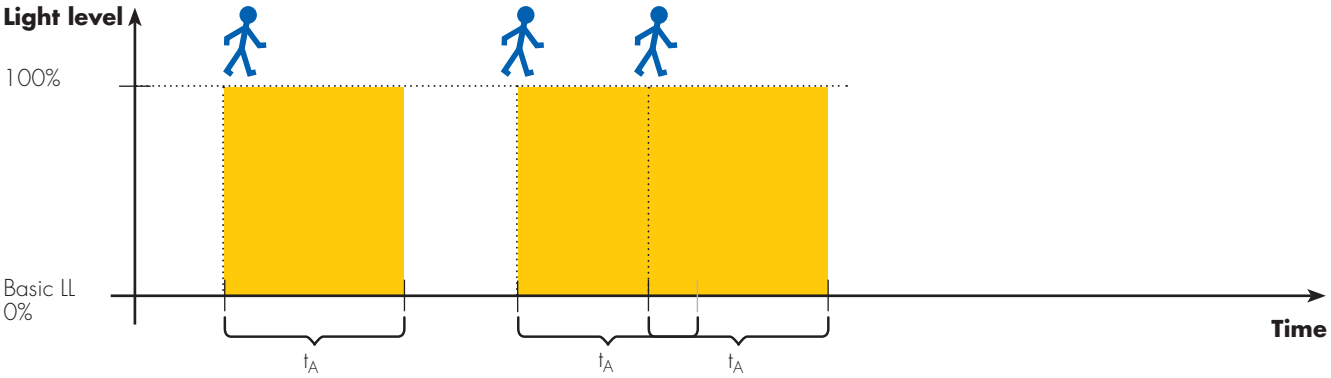
Example with Light Sensor



Configuration unit A (next to mains terminal)

Switch	Task	Switch position	
		off	on
1	light sensor	not active	active
2	motion sensor	not active	active
3		automatic	semi-automatic
4	push button	On/Off/Dim (Push)	On/Off

Example with motion sensor: On/Off-Mode



By integrating the light sensor switch 1 must be switched to position "on".

Matching the diagram above, these two tables show the required configuration at the Light Controller S:

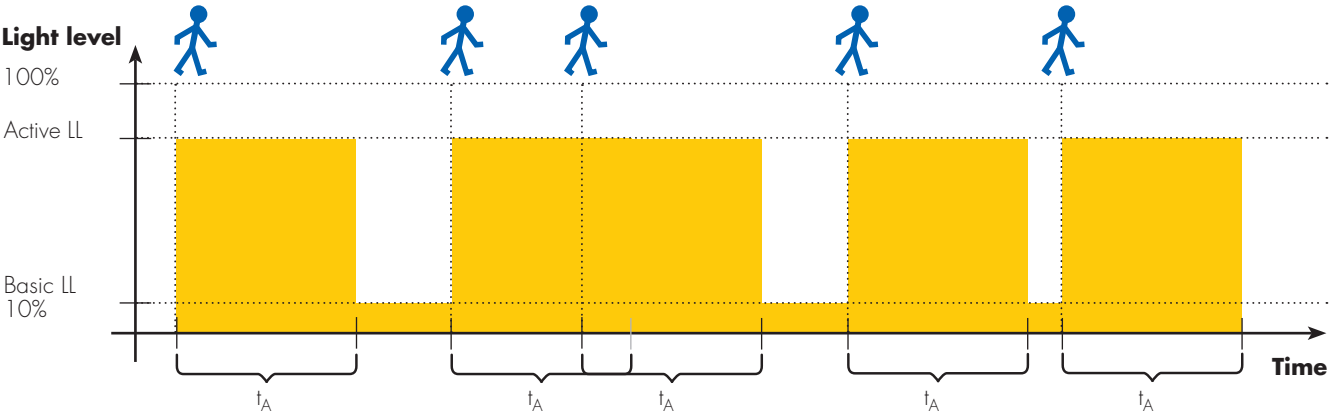
Configuration unit A (next to mains terminal)

Switch	Task	Switch position	
		off	on
1	light sensor	not active	active
2	motion sensor	not active	active
3		automatic	semi-automatic
4	push button	On/Off/Dim (Push)	On/Off

Configuration unit B (next to DALI terminal)

Task	Time	Switch position			
		1	2	3	4
Time setting for motion sensor	1 min.	–	–	–	X
	2 min.	–	–	on	X
	5 min.	–	on	–	X
	8 min.	–	on	on	X
	10 min.	on	–	–	X
	20 min.	on	–	on	X
	30 min.	on	on	–	X
	60 min.	on	on	on	X
Basic light level	0%	X	X	X	–
	10%	X	X	X	on

Example motion sensor with Active LL, Basic LL=10%, t_A



By integrating the light sensor switch 1 must be switched to position "on".

Matching the diagram above, these two tables show the required configuration at the Light Controller S:

Configuration unit A (next to mains terminal)

Switch	Task	Switch position	
		off	on
1	light sensor	not active	active
2	motion sensor	not active	active
3		automatic	semi-automatic
4	push button	On/Off/Dim (Push)	On/Off

= start event (motion sensor)

Configuration unit B (next to DALI terminal)

Task	Time	Switch position			
		1	2	3	4
Time setting for motion sensor	1 min.	–	–	–	X
	2 min.	–	–	on	X
	5 min.	–	on	–	X
	8 min.	–	on	on	X
	10 min.	on	–	–	X
	20 min.	on	–	on	X
	30 min.	on	on	–	X
	60 min.	on	on	on	X
Basic light level	0%	X	X	X	–
	10%	X	X	X	on

BUTTON/SENSOR COMBINATIONS

The Controller makes it possible to use a button/sensor combinations which extends its suitability for use in various applications.

In order to ensure documented and defined Light Controller behaviour, the responses of the Controller were defined for combined sensor/button inputs.

In this regard, the following reasoning was applied:
As soon as any system action is performed (by pushing the button), all automatic processes will be stopped. Automatic functions (sensors) will only be reactivated by when another conscious action is performed.

Possible Combinations:

1. Push Button plus Sensor (Motion)

System status prior to pressing the button	**Sensor active**		**Sensor inactive**	
	Light on	Light off	Light on	Light off
Status after 1x brief push	Sensor inactive Light off	Sensor active Light on	Sensor inactive Light off	Sensor active Light on
Status after 1x long push	Sensor active Light on	Sensor active Light on	Sensor active Light on	Sensor active Light on

2. Push Button plus Sensor (Light)

System status prior to pressing the button	**Sensor active**		**Sensor inactive**	
	Light on	Light off	Light on	Light off
Status after 1x brief push	Sensor inactive Light off	Sensor active Light on	Sensor inactive Light off	Sensor active Light on
Status after 1x long push	Sensor active Light on	Sensor active Light on	Sensor active Light on	Sensor active Light on

3. On/Off Button plus Sensor
System responds as for Push Button plus Sensor: a long push of the button is treated the same as a short push.

Light Controller S

Ref. No. 186210

Supply voltage ..... 220–240 V AC/DC

Frequency ..... 0/50–60 Hz

Power consumption ..... 6.5 W

Ambient temperature t_a ..... 0–50 °C

Degree of protection IP20

Protection class II

DALI output ..... max. 200 mA

No. of DALI devices ..... max. 64 ballasts

No. of MultiSensors ..... max. 36 sensors

Weight ..... 150 g

Dimensions (LxWxH) ..... 175x42x31,5 mm

LIGHT CONTROLLER S

APPENDIX

MAXIMUM QUANTITY OF DALI COMPONENTS FOR ONE LIGHT CONTROLLER

MultiSensors

Electronic ballasts (DALI) and LiCS-Extender	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
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Save Area **Restricted Area**

Whenever an electric light goes on around the world, Vossloh-Schwabe is likely to have made a key contribution to ensuring that everything works at the flick of a switch.

Headquartered in Germany, Vossloh-Schwabe has been a member of the global Panasonic group since 2002 and counts as a technology leader within the lighting sector. Top-quality, high-performance products form the basis of the company's success.

Whether cost-effective standard components or tailor-made product developments are needed, Vossloh-Schwabe can satisfy even the most diverse market and customer requirements. Vossloh-Schwabe's extensive product portfolio covers all lighting components: LED systems with matching control gear units, OLEDs and state-of-the-art control systems (LiCS) as well as electronic and magnetic ballasts and lampholders.

A member of the Panasonic group Panasonic

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