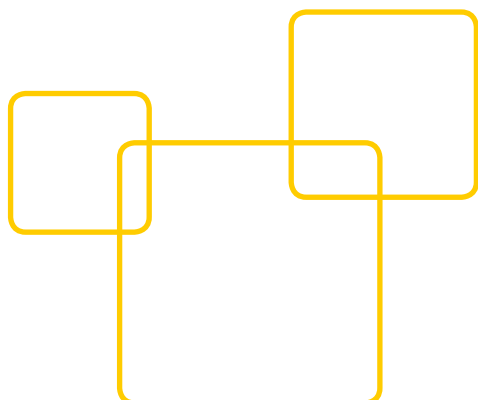


**iMCU Programming using the
iCTI USB Adapter**

Reference No.: 186392



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Appendix A: Remote Protocols

■ GENERAL INFORMATION

Thank you for purchasing the LiCS system made by Vossloh-Schwabe. Please read this manual to familiarise yourself with the system's functions before you begin to use it. This will also help you to make more effective use of it. Once you have read the manual, please keep it in a safe place for easy future reference. Anyone tasked with setting up, commissioning, operating, maintaining and repairing the system must be - suitably qualified and - strictly observe the instructions contained in this manual.

■ LEGAL NOTES

Trademarks

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Programming the iMCU using the iCTI USB Adapter

The iMCU is a multifunctional luminaire controller for street lighting and lighting in the vicinity of buildings. The iMCU can be used to control luminaires operated with magnetic and electronic ballasts fitted with a 1–10 V, DALI or PWM interface. It is individually programmable and updateable and provides all the functions of a light management system. The controller is a standalone application and requires no lengthy installation process. Operation and parameter settings are effected in the simplest form via a GUI. Data transfer is either effected directly using a USB interface or via a hand-held operating unit, which then transfers parameters to the iMCU controller. This ensures that both parameter settings as well as software updates (controller firmware) are easy to implement. Remote parameter settings can also be made using the "Remote Control" function via the existing power supply line without having to open luminaires should subsequent changes be required.



1. Soft- and Hardware Installation

■ 1.1. SOFTWARE INSTALLATION

The current version of the iMCU programming software can be downloaded here:

<http://www.vossloh-schwabe.com/de/home/services/sw-updates.html>

The software runs without installation so that you merely have to load/open the *.exe file to start working. Please unzip the *.zip file into a directory of your choice and if required add a desktop icon.

■ 1.2. HARDWARE INSTALLATION

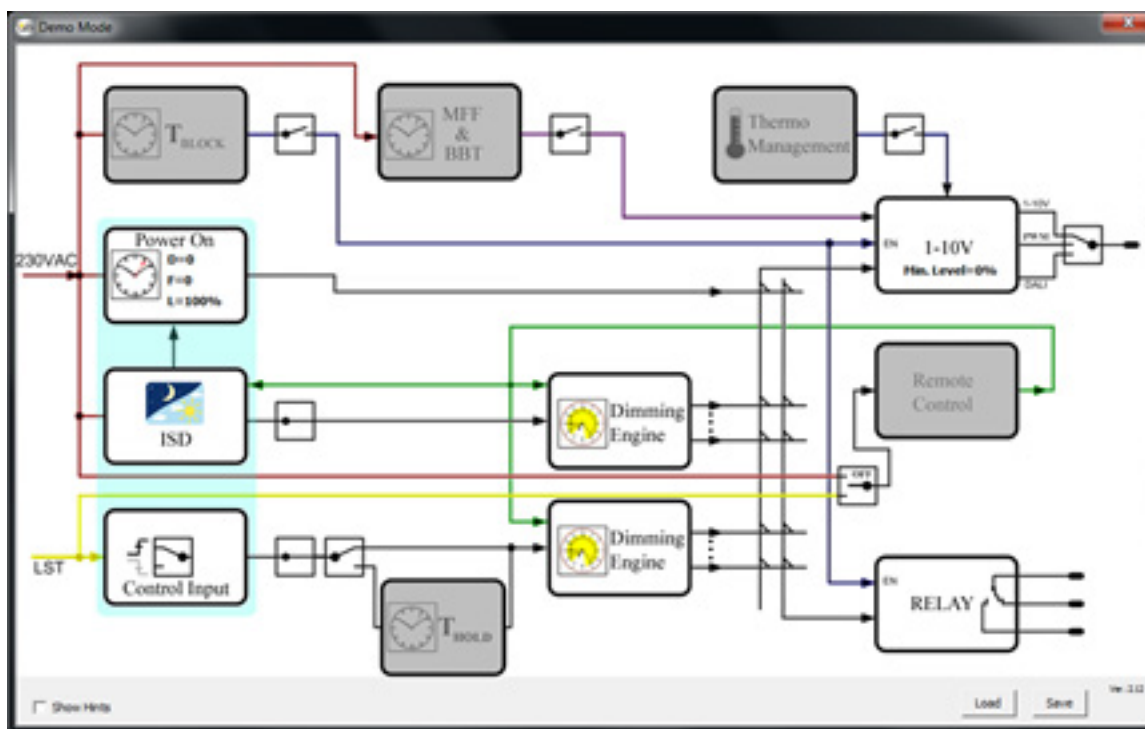
Insert the USB adapter into a vacant USB port. Following automatic installation of the USB drivers, the green LED should begin to flash at short intervals.

The USB drive was successfully tested on Microsoft® operating systems from XP to 8.1. However, if unexpected problems do occur, please contact your system administrator. To date, possible causes of such problems have included blocked USB ports as well as hidden installed USB drivers (search for "hidden devices" Microsoft on the internet), which your IT department/administrator will also be able to find. Removing any such drivers followed by a reinstallation was found to solve the problem.

Depending on the version of the Microsoft® operating system you are running, the automatic installation of the required USB driver can take a few minutes, but should be carried out automatically and if successful will be confirmed with a respective message.

2. Starting the Software

A double click on `imcu_pgm_v*.exe` will then open the iMCU programming tool. Should the iCTI USB drive not have been recognised/correctly installed, a message that the software is in DEMO mode will appear at the top left-hand corner.



Once communication has been established between the PC and the iCTI USB drive, data from the iMCU will be directly extracted, shortly after which the following screen will appear. You will see that the main difference lies in the fact that the 4 programming slots M1 to M4 will now also be shown (see image on the right).

If the program continues to run in DEMO mode, the following problems can be responsible:

- the iCTI USB driver has not been installed.
- the USB port is blocked (consult your IT department).
- AtUsbHid.dll is missing in the installation directory.
- the polarity of the iMCU connection was reversed.

The iMCU component needs to be connected before any parameter settings can be made or a previously defined set of parameters can be imported from the hard disk. A list like the one in the image on the right then appears and all parameters will be extracted from the iMCU and subsequently accepted.

2.1. FUNCTIONS OF THE BUTTON BAR (FILE OPERATIONS)

2.1.1. [Show Hints] A short explanation will be shown when you mouse over the individual programming blocks if this checkbox is enabled.

2.1.2. [FW] When you mouse over the info button, information on the current firmware version for the iMCU, e.g. [Version 1.28], will be shown. If an older version is found in the connected iCTI, an additional "Update!" alert will be shown. In such an event, the current firmware version will be automatically transferred to the iCTI during the next [Transfer]. The firmware is an integral part of the programming software and does not need to be loaded separately.

2.1.3. [Update FW] Regardless of the firmware version the iMCU controller is running, the version will be loaded that is available in the program, which in this case is 1.68. Please note that the downloaded firmware is installed when, following this download, the iMCU controller is connected to the mains. This download is saved to a protected storage area and will only be loaded internally as firmware upon connection to the supply voltage.

2.1.4. [Transfer] All program parameters will be transferred to the selected storage location of the iCTI; the program will be restarted.

2.1.5. [Default] The default settings of all program parameters and iCTI parameters will be restored (after confirmation).

2.1.6. [Load] Loads an already existing parameter file into the program; all program parameters will be overwritten. A dialogue window opens to select the *.vsc parameter file. The pull-down menu on the right also provides the option of loading a firmware file for the iMCU.

2.1.7. [Save] The current configuration will be saved as a parameter file. A dialogue window opens to select the storage location and to specify a file name (*.vsc).

2.1.8. [Info] A short description (8 characters max.) can be added in this field for the parameter file.

3. Parameter Programming

3.1. GENERAL PROGRAMMING COMMANDS

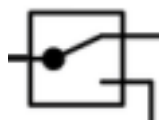
3.1.1. Switches

These switches allow program blocks to be activated or deactivated with a mouse click, or permit you to alternate between functions.

Examples:



Activation of a function block. If the switch is open, the function block will be inactive and will be shown in grey. If the switch is closed, the function block will be activated and settings can be made.



Alternating between function blocks. For instance, the communication protocol of the ballast/driver can be switched from DALI to 1-10 Volt and vice versa.

3.1.2. Confirmation and Help Fields in the Program Blocks



Green tick: accept settings.

Red stop sign: cancel.

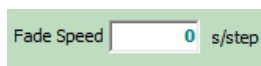
Yellow question mark: help diagram. The help diagram provides a graphic representation of the setting options for the current function block.

3.1.3. Scheduled Functions



All times are set using the slider. The total time period can be set in the pull-down menu. It is not possible to enter a numerical value via the keyboard.

3.1.4. Fading/Transition Times

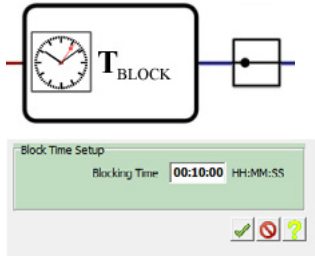


All fading times are set using the slider. The total time period can be set in the pull-down menu. A time period per individual step (%) must be entered for the fading function. It is not possible to enter a numerical value via the keyboard.

Example: Fade Speed 1 s/step means that a transition from 70% to 80% takes 10 seconds and a transition from 0% to 100% takes 100 seconds.

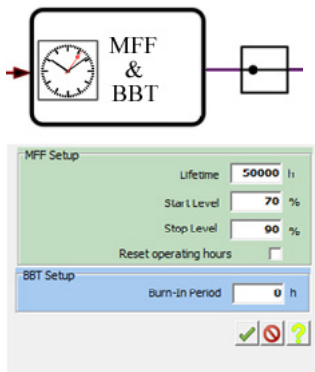
■ 3.2. PROGRAM OR FUNCTION BLOCKS

3.2.1. Blockage Time/T Block



The TBlock function allows you to set a blockage time within which it will not be possible to reduce the output of (dim) a light source after it has been switched on. This function is, for instance, provided for working with high-pressure sodium lamps, which must not be operated in dimming mode for the first few minutes.

3.2.2. Maintenance Factor "MFF" and Burn-In Blockage Time "BBT"



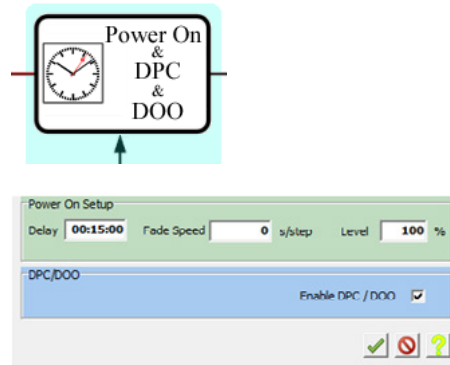
MFF serves to set the maintenance factor to compensate for the decrease in luminous flux of the lamps.

Example: if the manufacturer specifies that the luminous flux of a connected LED module will decrease by 20% over the course of 50,000 hours, the maintenance factor must be set to increase the output of the connected driver by 20% over the course of 50,000 hours.

The [Reset operating hours] checkbox serves to reset the iMCU's operating hour counter. If the checkbox is enabled, the counter will be reset once when the system is next powered up.

A burn-in period for the light source is set with [Burn-in Period]. For example, to facilitate an optimum service life for a high-pressure sodium lamp, its first 100 hours of operation can be set as a burn-in period, within which the lamp will be operated at full capacity only.

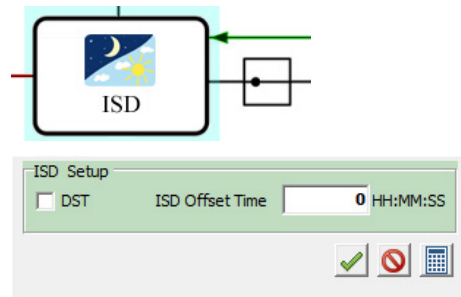
3.2.3. Delayed Power On "Power On & DPC & DOO"



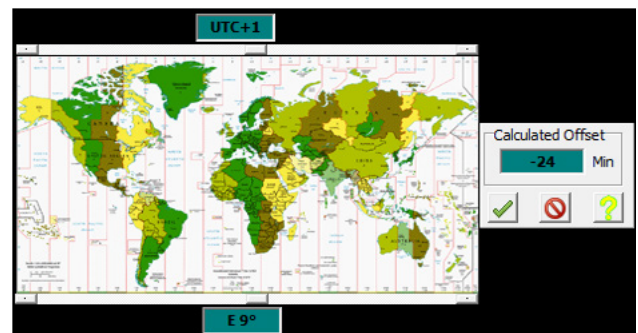
This function serves to set a power on delay, which means that the connected driver will be powered up only after the set time period. The fading value and the lighting level for the power-on point can also be set here.

With DPC/DOO the preset values will also be used to govern premature powering down of the connected ballast/driver.

3.2.4. Astronomical Clock – ASTRO/ISD FUNCTION (Intelligent Switching Time Dimming)

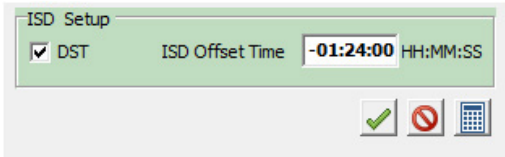


The number of night-time hours always depends on the specific location of the lighting system. To calculate the number of night-time hours, the iMCU features an ASTRO/ISD function. This function uses the exact installation location to set the lighting system. This serves to compensate for any geographical deviations within the time zone during astronomical calculation of power on and off times. The settings are made as follows: Click on the calculator icon to begin entering the installation location.



The time zone is set using the upper slider and geographical longitude using the lower one. The calculated value will then be accepted when you click on "Confirm".

The values shown here are examples for the location Stuttgart, Germany. UTC + 1 hour and a longitude coordinate of 9° E (East) do not actually result in a delay in the twilight period of 1 hour over UTC (Universal Time Coordinated), but in fact to 1 hour and 24 minutes.



Enabling the [DST] checkbox will set the astronomical calculation to daylight saving time. If the box is disabled, standard time will be used for switching purposes.

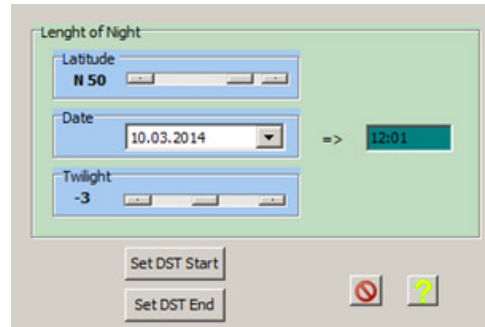
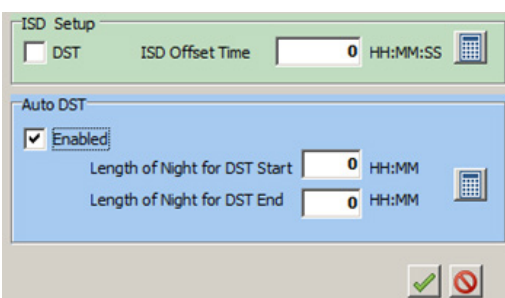
Automatic Change between Standard and Daylight Saving Time

Enabling the Auto DST function will allow the iMCU to change over between standard and daylight saving time automatically. Given precise entries, automatic recognition will occur within approx. +/- 1 calendar week. The exact location is made up of a longitude and a latitude coordinate. The longitude value was already entered for the offset of the UTC switching time.

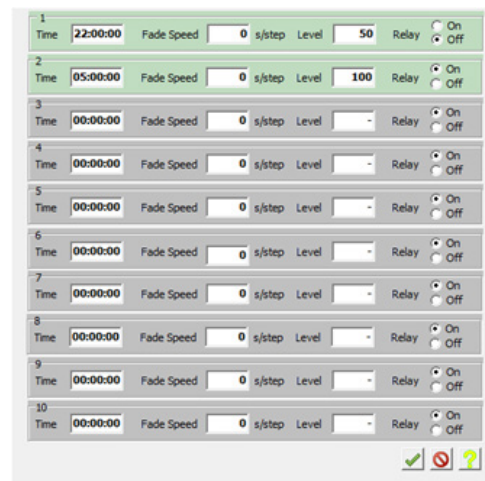
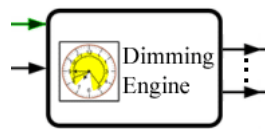
The degree of latitude also exerts a direct influence on the length of the night. After enabling the AUTO DST function, a click on the calculator icon will open a help window to calculate the number of nighttime hours. The actual degree of latitude must be entered here (example: Stuttgart is located just short of the 49th degree of latitude) as well as the currently valid spring and autumn dates on which standard switches to daylight saving time (and vice versa), which coincide with the last weekends in March and October, respectively. As an example: 28.03.2015 = 10:56 h and 24.10.2015 = 13:13 h.

The "Dusk/Twilight" correction factor represents the angle of the sun at which 20 Lux were found to be an ideal lighting level at the power on point during dusk. This value is valid for central Europe and is correctly preset to -3°. If required, adjustments can also be made here: at 0° power on time will shift towards daylight, at -6° towards darkness).

These values can now be accepted with Set DST Start and End, after which the switch will be calculated automatically. Please note that the iMCU will implement this change only a few days after the switching date is reached, usually after a maximum of 1 week.



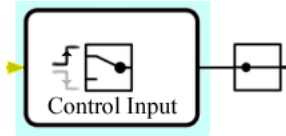
3.2.5. Dimming Levels during Normal Operation/ Dimming Engine 1 (Upper Function Block)



The switching times and dimming levels for normal operation are defined in dimming engine 1. These times must be entered in chronological order. A fading time, dimming level and a switching state for the switching relay can be defined for each switching time.

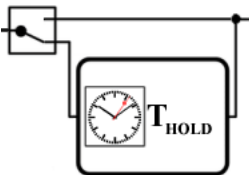
A switching time can be activated by clicking on [Level] and deactivated by placing a mouse click to the right of [Level].

3.2.6. Function of the External Input/Control Input (Lst)



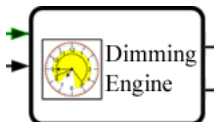
This function block serves to define whether the Lst signal input responds to a rising or a trailing edge. Each mouse click will alternate between the two. The control input can, for instance, be used for systems with a switched phase, as a sensor input or for remote parameter configuration purposes using the remote function!

3.2.7. Holding Time/Time Delay for the External Input – T Hold Function Block



The T Hold function lets you define for how long the signal applied to the Lst will be held. If T Hold is not activated, the system will be switched only for as long as a signal is applied to the Lst. Example: motion sensor at Lst. If T Hold is not activated, the system will be switched only for as long as a signal from the sensor is applied. Setting T Hold to 15 minutes will ensure the switching state is held for 15 minutes.

3.2.8. Dimming Levels of the External Input/Dimming Engine 2 (Lower Function Block)

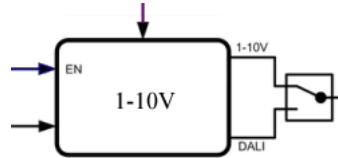


1	Delay	0	Fade Speed	0 s/step	Level	50	Relay	<input type="radio"/> On <input checked="" type="radio"/> Off
2	Delay	0	Fade Speed	0 s/step	Level	-	Relay	<input type="radio"/> On <input checked="" type="radio"/> Off
3	Delay	0	Fade Speed	0 s/step	Level	-	Relay	<input type="radio"/> On <input checked="" type="radio"/> Off
4	Delay	0	Fade Speed	0 s/step	Level	-	Relay	<input type="radio"/> On <input checked="" type="radio"/> Off
5	Delay	0	Fade Speed	0 s/step	Level	-	Relay	<input type="radio"/> On <input checked="" type="radio"/> Off
6	Delay	0	Fade Speed	0 s/step	Level	-	Relay	<input type="radio"/> On <input checked="" type="radio"/> Off
7	Delay	0	Fade Speed	0 s/step	Level	-	Relay	<input type="radio"/> On <input checked="" type="radio"/> Off
8	Delay	0	Fade Speed	0 s/step	Level	-	Relay	<input type="radio"/> On <input checked="" type="radio"/> Off
9	Delay	0	Fade Speed	0 s/step	Level	-	Relay	<input type="radio"/> On <input checked="" type="radio"/> Off
10	Delay	0	Fade Speed	0 s/step	Level	-	Relay	<input type="radio"/> On <input checked="" type="radio"/> Off

The switching times and dimming levels for the external Lst input are defined in dimming engine 2. The respective times are entered one after another. A fading value, dimming level and a switching state for the switching relay can also be defined.

A switching time can be activated by clicking on [Level] and deactivated by placing a mouse click to the right of [Level].

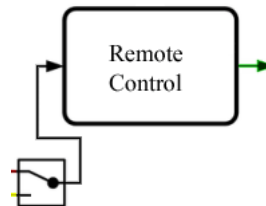
3.2.9. Alternating between Communication Protocols using the Ballast/Driver



Clicking on the switch will alternate between DALI and 1–10 Volt.

Example: as shown in the image = 1–10 V output is active.

3.2.10. Remote Programming – Remote Control



Remote Control, Input=230V

MidNight

MidNightProtect

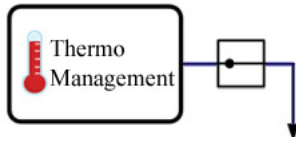
Remote Control, Input=LST

MidNight

RemoteDIM

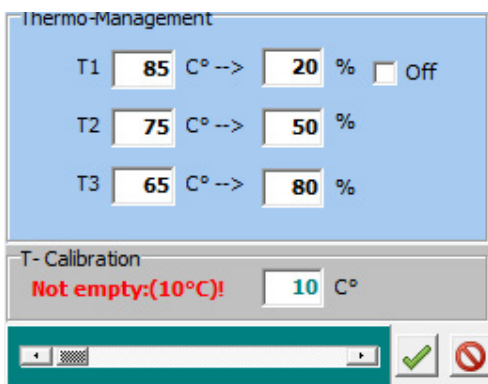
Clicking on the switch will alternate between remote programming via the power supply line and remote programming via the Lst control line. A programming protocol can be selected in the function block. Appendix A provides protocol details.

3.2.11. Thermal Management



When the iMCU reaches a certain operating temperature, the Thermal Management function enables output to be reduced in 3 steps, for instance to protect LED light sources.

Information: the measured value constitutes the iMCU's internal temperature. However, since the temperature in the light source or at the T junction transition to the heat sink can be higher, this should be measured separately if required.



Example:

If the temperature is at 65 °C, output will be reduced to 80%, if it is higher than 75 °C to 50% and if it is at 85 °C down to 20%. Alternatively, the system can also be switched off.

Appendix A: Remote Protocols

Midnight (available for both inputs)

This remote programming protocol lets you change the times defined for dimming engines 1 and 2. Programming itself can be effected using the following Vossloh-Schwabe products: iCTT (186241) or iMICO (186250).

Midnight Protect (only available for the standard phase)

Protective protocol for luminaires that are installed in a Midnight-controlled system, but that are themselves not to be programmed remotely. The Midnight Protect function tests whether data transfer is in progress using the Midnight protocol and if required will switch the luminaire on only after data transfer has been completed.

RemoteDim (only for external input Lst)

With the RemoteDim function, a control signal is applied to Lst. The length of time the signal is applied will trigger different switching processes:

Shorter than 5 seconds: no switching process.

Longer than 5 seconds but less than 55 seconds: the relay will switch on.

A dimming level will be set in relation to the length of time the impulse is applied between 5 and 55 seconds:

5 seconds: 100%

30 seconds: 50%

55 seconds: 5%

or corresponding linear values in between those shown.

55–60 seconds: relay will switch off.

60 seconds or longer: no switching process.

If no control signal is transferred within a minute after powering the lighting system up, the relay will be switched on with a dimming level of 100%.

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

Headquartered in Germany, Vossloh-Schwabe has been a member of the Panasonic Group since 2002 and counts as a technology leader within the lighting sector. This success is based on the quality and efficiency of our products.

The product range covers the entire spectrum of lighting technology components for LED systems with optimally matching control gear, modern light management systems (LiCS) as well as electronic and magnetic ballasts and lampholders.

The future of the company is geared towards smart lighting.

A member of the Panasonic group **Panasonic**

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