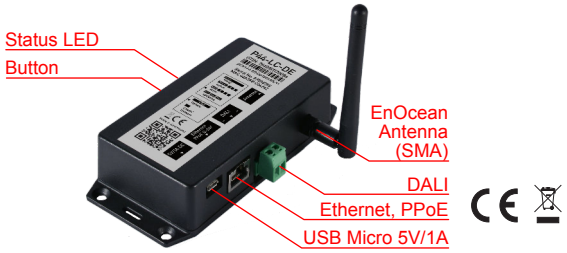
P44-LC-DE



English

plan44.ch Light Controller for DALI, EnOcean and hue

Function and Intended Use

The P44-LC-DE light controller contains a DALI bus interface, an EnOcean TCM310 radio module and an embedded Linux module with Ethernet.

With the P44-LC-DE Light Controller, small and medium-sized lighting controls can be set up with up to 64 DALI luminaires (monochrome, with adjustable white tone and full colour), Philips "hue" LED lamps (via the "hue" bridge) and any number of EnOcean radio buttons to operate the luminaires.

If required, the P44-LC-DE lighting controller can later be upgraded to a fully-fledged digitalSTROM bridge via a software upgrade if an existing P44-LC-DE based lighting installation is to be upgraded to a complete digitalSTROM system.

A P44-LC-DE installation can be integrated into other SmartHome systems such as Home Assistant, Apple, Alexa etc. via the built-in *matter* bridge (beta).

Safety Instructions

⚠ Warning: High voltage: Contacting or touching the electrical wires (230V AC) may cause electrical shock and injury. Before installing the device, test that DALI bus is correctly wired and isolated from 230V AC.

⚠ Only trained experts are authorised to install and commission the device. Country-specific regulations must be adhered to.

⚠ The device may only be operated in dry, closed rooms and must not be used directly or indirectly for health or life-saving purposes or for purposes where a device failure could lead to danger for people, animals or material property.

⚠ The device is to be mounted such that it is protected from access by unauthorized persons as well as from dust and debris entering the venitilation slots.

⚠ The device produces heat. The device must be installed in a way such that there is sufficient air circulation to dissipate the heat to the environment and keep the device from overheating.

Installation

1. Mount the device at a suitable location.
   ⚠ The device contains an EnOcean radio interface which does not function or functions inadequately if the device is mounted inside metallic shields (switch cabinet, etc.).
2. Screw on the antenna for EnOcean radio.
3. Connect to a local area network (LAN) via Ethernet cable so that the device can be configured via a web interface from a computer/tablet.
   ⚠ Once the device is configured, it will also work without a LAN connection. However, timer functions are only possible with a LAN+Internet connection, as the device retrieves the time via the Internet (ntp).
4. Connect the DALI bus (**check insulation from the mains beforehand!**) to the device using the green plug-in terminal supplied.
   ⚠ The device already contains the power supply for the DALI bus. It must **not be combined with separate DALI power supplies, operating or control devices which have their own bus supply**, otherwise the device will be damaged and may have to be replaced. **Before connecting the device, please check that there is no voltage on the DALI bus!**
5. Connect power supply (supplied USB 5V power supply or via Ethernet cable with separately available passive PoE kit P44-DSB-PPoE).
   ⚠ Power must **never be supplied simultaneously via PPoE and USB power supply unit** - the power supply unit or the P44-LC device could be damaged.
6. The control LED lights up yellow as soon as the power supply is connected.
7. As soon as the device is fully operational, the LED lights up green, with occasional short yellow flashes during activity (e.g. reception of a signal from a wireless pushbutton or sensor).

Calling the Web Interface

In order to find the IP address of the P44-LC more easily in the LAN, the P44-LC announces services via *Bonjour* and *UPnP*.

Under macOS: Use "Bonjour Bookmarks" in Safari (before version 11) or the AppStore app "LocalSites" to call the web interface directly.

Under Windows: The P44-LC appears in the "network environment", via the context menu the web interface can be called directly.

Under Linux: Use the package "avahi-discover" or the commandline-tool "avahi-browse".

General: The P44-LC receives its IP address via DHCP from the local router of the LAN. In the router's web interface, there is usually a list of devices on the LAN showing their IP addresses.

⚠ The web interface is protected against unauthorized access via a login. The username is "*p44lcadmin*", the default password is also "*p44lcadmin*". **It is strongly recommended to change the password** (in the *System* section of the P44-LC web interface).

⚠ If required, the IP configuration can be set manually via the web interface, but this should only be done in justified special cases.

Firmware Update

To ensure that the device has the latest firmware, a firmware update should be carried out after commissioning:

1. The device must be ready for operation and have access to the Internet via a local network with DHCP.
2. Press the *Check for new Firmware Version...* button in the *System* section of the web interface.
3. When a new firmware version is available, it is displayed and can be loaded and installed at the push of a button. This may take a few minutes or longer with a very slow Internet connection.
4. The LED on the device flashes yellow/red during the entire firmware upgrade.

⚠ **Never disconnect the power supply during the update process!** Otherwise, the system software may be damaged and the device must be replaced. Any interruptions to the Internet connection, on the other hand, are harmless and only result in the update having to be repeated.

Operating Principle

The P44-LC works with "zones" (usually a room or part of a room) and "scenes" (lighting scenes).

Luminaires and control elements (push-buttons) can each be assigned to a zone. All push-buttons in a zone automatically act as light switches/dimmers for all luminaires in a zone without further configuration.

Via the web interface, the luminaires in a zone can be individually adjusted in brightness and, if available, light colour to create a specific lighting mood in the room zone. The lighting scene can then be saved as a "scene". Up to 20 room scenes plus various special scenes can be stored per room. The first 4 scenes can be called up directly from any push button by 1 to 4 clicks.

Please read the following sections for details:

- about **Hardware setup** (the lights and push-buttons to be controlled)
- about **Assignment to zones/rooms**
- on **Light switching and dimming**
- on how to **Define scenes**
- about **Advanced Functions**

Hardware Setup

Please use the *Hardware* page in the P44-LC web interface to set up the lights and switches. In the list you can see all connected or learned-in devices. At the beginning this list is empty, you only see the headers for the supported connection types (DALI, EnOcean, hue, Evaluator).

⚠ The ⓘ *button* can be used to call up further detailed information and functions for each device/connection type. In particular, you can give each device a name (*Rename key...*). Devices can also be renamed directly using the pencil icon in the *Name* column.

⚠ A click on the eye symbol on luminaires causes the luminaire in question to flash a few times to identify the luminaire.

Add or Remove DALI Devices

The P44-LC automatically detects and configures DALI control gear (fluorescent ballasts, LED dimmers) at start-up. If the operating devices have already been configured by another DALI control device, existing short addresses (internal numbering of the DALI devices) are taken over. The P44-LC automatically assigns new short addresses to brand-new control gear which do not yet have a short address assiged.

⚠ For stable operation, **100% DALI-compliant control gear** with a **unique serial number is recommended.** Unfortunately, there are devices, also from well-known manufacturers, that **do not** have a unique identifier and are therefore prone to appear in the system swapped after address conflicts on the DALI bus.

⚠ If several DALI operating devices with the same short address are connected (e.g. if brand-new devices from other installations are not taken over), an **address conflict** arises. In this case, the P44-LC does not display DALI devices and reports an error (red text in the hardware overview).
In this case, **a complete bus scan** must be **triggered manually:** ⓘ *button* on the DALI header in the hardware overview → *Scan for Devices...* → *Service-only scans* → *Force full re-scan of all devices*.
After address conflicts have been resolved, please check the names and room layouts of the devices; swapped representation can happen with DALI control gear without a unique serial number.

⚠ Use the *DALI bus diagnostics...*-function (ⓘ *button* in the DALI title line in the device list) for troubleshooting DALI bus problems.

DALI RGB(W) Lamps and Groups

The P44-LC can integrate DALI dimmer devices as multi-channel RGB(W) colour lamps, or group several dimmers into a single luminaire:

1. Press the *+Group* button in the device list on the DALI header.
2. In the dialog box that appears, select the type of group (color lamp or dimmer group) and the dimmers to be used.
3. Press the *Create ... device* key. In the device list, a (colour) lamp appears instead of the individual dimmers.

The combined device can also be resolved into independent dimmers: Press the ⓘ *button* and press the *Ungroup* button in the dialog that appears.

Add or Remove EnOcean Button

1. Press the *Device Learn in/out...* button in the *Hardware* section of the web interface.
2. Bring the EnOcean rocker key close to the P44-LC within 20 seconds (closer than 30cm, preferably hold it directly to the housing).
   ⚠ If it is not possible to bring the button close, it can also be read in remotely with *Learn buttons w/o proximity check...*. There is, however, the possibility that another button may be accidentally taught in, which is operated randomly in the vicinity.
3. Press the EnOcean button.
   ⚠ To teach-in EnOcean buttons with encryption, a simple keystroke is not enough - instead, an encrypted teach-in process must be started. Depending on the make of push-button, the key caps must be removed and the teach-in process started with a special "encryption rocker", or for push-buttons with separate up/down buttons, with a special push-button combination. Please refer to the button's instruction manual for details.
4. An acknowledgement message appears when the push-button has been learned in or out.

⚠ EnOcean rocker switches appear as two independent two-way switches.

⚠ EnOcean push-buttons with only one rocker are technically also 2-fold rocker switches (the difference is only the key cap, which is exchangeable) and therefore also appear as 2 push-buttons in the device list. If required, the inactive second button can be removed via the *Remove Device...*-button in the ⓘ *dialog*.

Add or Remove other EnOcean Devices

1. Refer to the component documentation for information on how the learning action is triggered. Some components have their own learning button for this, others have a marked area on the housing where a magnet must be held briefly to trigger the learning action.
2. *Press* the Device *Learn in/out...* button in the *Hardware* page of the web interface.
3. Trigger learning action on the component within 20 seconds.
4. An acknowledgement message appears if the component has been learnedin or unlearned.

⚠ If no acknowledgement or timeout message appears, the component is not (yet) supported by the P44-LC, or the radio link to the P44-LC is too long or is disturbed by obstacles (concrete walls, etc.).

On the plan44 website you will find the current list of supported devices.

Connect hue lights via hue bridge

The P44-LC can control Philips "hue" luminaires and Zigbee Light-Link luminaires from third-party manufacturers if they are 100% hue compatible.

⚠ A Philips hue bridge must be connected in the local network so that hue luminaires can be controlled.

⚠ The hue luminaires must be connected to the hue bridge using the official hue app before they can be controlled via the P44-LC.

⚠ Hue sensors and buttons cannot be used as input elements for the P44-LC (but can still be used independently for direct hue operation).

A Philips hue-Bridge is connected as follows:

1. Press the Device *Learn in/out...* button in the *Hardware* section of the web interface.
2. Press the button in the middle of the hue-Bridge within 20 seconds.
3. An acknowledgement message appears when the hue-Bridge has been successfully connected (or, if it was already connected before, removed).
4. All hue lights known to the hue-Bridge appear in the hardware overview.

⚠ If new lights are added to a hue bridge later, they will appear automatically after max 60min, or immediately if you press the ⓘ *key* on the hue header, then *Scan for devices...* and then *Look for new devices only*.

Assignment to Zones/Rooms

After connecting / teaching-in the devices, as described in the previous section, all devices are in a common zone *[global]*. This means that all light buttons first function as switches/ dimmers for all luminaires together.

To create separate switchable/dimmable zones (rooms, room parts), assign the devices to different zones on the *Hardware* page:

1. Open the properties of the device with the ⓘ *button*.
2. Select the new zone from the drop-down menu under the title *Zone* and close the properties with *Close*.
   ⚠ If there is no suitable zone yet, select *New Zone...* and enter a (preferably short) name for the zone, and then press *Create Zone*.
3. In the column *Zone* of the device list you can see the assignment of the devices to the zones.

⚠ To rename or delete zones (only possible for zones that are not assigned to a device), select *Edit Zones…* from the drop-down menu.

A separate zone should be created for each group of luminaires to be operated separately - normally at least one zone per room; in larger rooms there can also be several zones.

Light Switching and Dimming

Without further settings, all push-buttons assigned to a zone function as light switches/ dimmers for all luminaires in the same zone:

- A short press on a button switches the light on (scene *preset1*) or off (scene *off*). With rockers, one side always switches on, the other always switches off.
- If a button is pressed longer, the light is dimmed.
- Double-, triple- or quadruple-click can be used to call up further scenes (*preset2,3,4*) (see next section for details).

Define Scenes

The *Lights* page is used for direct operation of the luminaires via the web interface and for defining the scenes.

A zone can be selected in the pop-up menu at the top.

Immediately below, all luminaires in the selected zone appear with appropriate sliders (brightness, colour settings if necessary). The luminaires can be controlled directly via these controllers.

The scenes are displayed in the list below. By default there is the scene *off*, which switches off all lights, as well as the scenes *preset1..4*, which set 100%, 75%, 50% and 25% brightness without configuration.

The scenes can be called up via the *Call* button (or via push-button, see above).

To define or change a scene, proceed as follows:

1. Set the desired brightness / colour of the individual luminaires with the sliders in the upper range.
2. The button *Save...* at the corresponding scene in the list, and then confirm with *Yes, save Scene*.
3. Optional: Use the pencil symbol in the *Name* column to give the scene a name that explains the application (e.g. "Work", "Watch TV" etc.).

⚠ The *Extended* button can be used to display additional scenes for extended functions:

- Additional *preset11..44* scenes that can be used to store special, less frequently used lighting situations.
- *area* scenes. When saving, only those luminaires are recorded which are switched on. This allows areas to be formed within a zone that can be controlled separately from the lighting of the entire zone.
- More scenes for special states like *standby*, *deep off*, etc. Not all these scenes have a function of their own, but are partly only available for compatibility with a later extension into a digitalSTROM system.

⚠ To call up the extended scenes (*preset11..44*, *area1..4*) directly with buttons, the button function can be changed on the *hardware page* via ⓘ *button* under *Button Function* for individual buttons.

Extended Functions

Matter integration

To activate and configure the *matter* bridge (beta), please consult the respective online information: plan44.ch/p44-techdocs/en/matter/readme.

Optimizers

If many luminaires are switched or dimmed together, the P44-LC can automatically create scenes and groups at DALI or hue level for frequently used lighting settings to ensure that switching and dimming work smoothly without delay. The Optimizer can be switched on under *Optimize scene calls and/or dimming* using the ⓘ *button* on the title bar of DALI or hue. Normally, you use *Automatically create optimizations based on usage statistics* - this automatically determines the most frequently used scenes/dimmer groups.

Automation / Time control

On the *Triggers* page, you can set up automations. A new trigger is created with the button *+ New Trigger...* and consists of a *condition* (trigger condition) and one or more *actions*.

The *Condition* is a logical (true/untrue) formula that can contain the following elements, among others:

- *is_time(hh:mm)* is true for one minute exactly at the specified time *hh:mm.*
- *after_time(hh:mm)* is true as of the specified time
- *is_weekday(w1,w2,...)* is true on the specified weekdays *w1,w2,...* 0 and 7 mean Sunday, 1..6 corresponds Monday to Friday. Instead of numbers you can also use *mon*, *tue*, *wed*, *thu*, *fri*, *sat*, *sun*.
- *between_yeardays(d1,d2)* is valid from day *d1* of the year up to and including day *d2*. The days can be defined as nth day of the year, day/month in the form *dd.mm.* (Period at the end is important!) or with English month name abbreviations like *11.Nov*.

There can be parentheses and logical operations *&* (and) *|* (or) *!* (not). For time specifications, *sunrise()*, *sunset()*, *dusk()*, *dawn()* can be used for sun position dependent switching times.

For example, the expression…

between_dates(1.Apr,15.Sep) & is_weekday(1,2,3,4,5) & is_time(sunset()-2:30)

…would trigger in the summer half of the year, on weekdays, two and a half hours before sunset.

The *action* is a script consisting of one or more semicolon separated instructions in the form *scene('scenename')* or *scene('scenename',seconds)* to call a scene by name, optionally with a fade time in seconds. The link "Script+Expressions reference" gives an overview of further possibilities.

Advanced Programming

Information on advanced programming options can be found at https://plan44.ch/p44-techdocs/en. There is a user forum at https://forum.plan44.ch.

Remote Access

On the *System* page, you can use the *Remote Access...* button to set up access to the device from the Internet (pagekite reverse proxy via plan44.ch server).

All you need to do is allow TCP port 22282 for outgoing connections to the internet (this is usually the case by default), and set a non-standard web interface password.

Technical Data

Designation:	P44-LC-DE
GTIN:	7640161170094
Manufacturer:	plan44.ch, CH-8048 Zurich, plan44.ch/automation
Dimensions:	138mm * 62mm * 31mm
Weight:	approx. 160g
Operating temp.:	0..+50 °C, only in dry/closed rooms
Network:	10/100 MBit/s Ethernet (RJ45 8P8C)
Power supply:	External power supply, USB, 5V/1A or PPoE 12-24V
Power consumption:	typ. 260mA @ 5V (1.3W)
Antenna:	external rod antenna
Frequency:	868.300 Mhz (ASK)
Radio standard:	EnOcean 868MHz: ISO/IEC 14543-3-10
Radio signal:	typ. 3dBm @ 868MHz
Regulations:	EMC 2014/30/EU, RED 2014/53/EU, RoHS 2011/65/EU, REACH (EC) No 1907/2006
Declaration of Conformity:	plan44.ch/downloads/P44-LC-DE_DoC.pdf

Subject to technical changes without notice. Current information see website plan44.ch

Guarantee

plan44.ch guarantees fault-free operation of this device according to the specification for 24 months after delivery by plan44.ch. Opening the device, other interference with the device, or incorrect installation/configuration will invalidate the guarantee.

Deutsch

plan44.ch light controller für DALI, EnOcean und hue

Sicherheitshinweise

⚠ Lebensgefahr: Berühren der elektrischen Hausinstallation unter Spannung (230 V AC) kann zum Tod oder zu schwersten Verbrennungen führen.
Vor der Installation dieses Gerätes prüfen, ob der DALI Bus korrekt verdrahtet und vom Niederspannungsnetz isoliert ist.

⚠ Nur geschultes Fachpersonal darf das Gerät installieren und in Betrieb nehmen. Landesspezifische Vorschriften sind einzuhalten.

⚠ Das Gerät darf nur in trockenen und geschlossenen Räumen betrieben und nicht zu direkt oder indirekt gesundheits- oder lebenssichernden Zwecken benutzt werden oder zu Zwecken, bei denen ein Ausfall des Gerätes zu Gefahren für Menschen, Tiere oder Sachwerten führen kann.

⚠ Das Geräts ist vor Zugriff durch Unbefugte sowie vor Fremdkörpern, die durch Lüftungsöffnungen eindringen könnten, geschützt zu installieren.

⚠ Das Gerät entwickelt im Betrieb Wärme. Bei der Installation ist darauf zu achten, dass diese Wärme ausreichend über die Luftzirkulation abgegeben werden kann und das Gerät nicht überhitzt.

Français

plan44.ch digitalSTROM bridge pour DALI, EnOcean, hue

Instructions de sécurité

⚠ Danger de mort! Tout contact avec une installation intérieure électrique sous tension (230 V AC) peut entraîner des blessures graves, voire même la mort. Avant d'installer cet appareil, vérifier que le bus DALI est correctement câblé et isolé de 230V AC.

⚠ Seuls des spécialistes formés sont autorisés à installer cet appareil et à le mettre en service. Respecter les directives nationales en vigueur.

⚠ L'appareil ne doit être utilisé que dans des locaux secs et fermés et non à des fins (directement ou indirectement) à risque pour la santé ou pouvant entraîner la mort, ni à des fins pour lesquelles une panne de l'appareil peut présenter un danger pour les personnes, les animaux ou les biens matériels.

⚠ L'appareil doit être installé de manière qu'il soit protégé contre les accès par des personnes non autorisées de même que de la poussière et de débris d'entrer dans les fentes de venitilation.

⚠ L'appareil produit de la chaleur. L'appareil doit être installé de manière à permettre une circulation d'air suffisante pour dissiper la chaleur a l'environnement pour eviter la surchauffe de l'appareil.

Italiano

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Avviso di sicurezza

⚠ Pericolo di morte! Toccare un impianto elettrico interno sotto tensione (230 V AC) può causare la morte o ustioni gravi. Prima di installare questo dispositivo, controllare che il bus DALI sia correttamente cablata e isolato da 230V AC.

⚠ Il dispositivo deve essere installato e messo in funzione solo da personale tecnico specializzato e appositamente formato. Osservare le direttive specifiche vigenti a livello nazionale.

⚠ il dispositivo deve essere attivato solo in ambienti chiusi e asciutti e non deve essere utilizzato né direttamente né indirettamente per la protezione della vita o della salute o per qualsiasi altra finalità per cui un guasto del dispositivo stesso possa determinare un pericolo per persone, animali o beni materiali.

⚠ Il dispositivo deve essere installato protetto dall'accesso di persone non autorizzate e contro corpi estranei che possono entrare attraverso le aperture di ventilazione.

⚠ Il dispositivo produce calore. Il dispositivo deve essere installato in modo tale che vi sia sufficiente circolazione d'aria per dissipare il calore all'ambiente per evitare il surriscaldamento del dispositivo.