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Product Manual

ise smart connect KNX Hue

Order No. 1-0002-003
Valid for application software v4.3 and firmware version v4.0

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1 Product description

1.1 Functions

- Operation of Philips Hue[1] via KNX.
- The ise smart connect KNX Hue establishes a connection between one or several Philips Hue Bridges and the KNX.
- Up to 25 Philips Hue lights can be controlled with a ise smart connect KNX Hue using up to five Philips Hue Bridges.
- Control with the usual KNX operating devices, separately from the smartphone app.
- Separate control of up to 25 Philips Hue lights through switching and dimming.
- Triggering Philips Hue scenes using the KNX
- Signal flashing from Philips Hue lights over a selectable time period
- The RGB colour codes can be controlled on an individual basis.
- Convenient toggling between entire light scenarios or separate control with the KNX operating elements.
- Implementation of light effects with the scene and time functions.
- Easy connection of visualisation systems and facility management systems.
- Changes made using an app or computer are reported on the KNX (on/off, dim, light colour).
- An integrated data network switch (two RJ45 connections) simplifies the connection of multiple IP devices. This enables multiple ise smart connect KNX Hues or other IP devices in the distribution to be connected without the aid of other active components.
- Supports accelerated transmission from the ETS to the ise smart connect KNX Hue via a direct IP connection.
- The ise smart connect KNX Hue is best configured using the latest version of the ETS4 or ETS5. The application accesses ETS functions not supported by earlier ETS versions. This is why previous versions of ETS cannot be used for configuration.

[1] Philips and Hue are registered trademarks of Koninklijke Philips N.V.

1.2 A bright moment: Philips Hue meets KNX!

Take a summer mood captured at the sea with a smartphone and recreate it at home, program your own sunrise or set the right stage for your house party. Using the Hue wireless illumination system from Philips, you can individualize lighting and thereby increase the quality of your life. The only downside for all KNX users was the lack of perfect integration into the KNX system. All settings needed to be configured on a special app in a laborious fashion.

The new ise smart connect KNX Hue now provides the solution. Thanks to the innovative KNX adapter, each dimmer or switch can control up to 25 Hue lights in up to five Hue Bridges via the KNX. The LED technology in the light sources opens up a broad spectrum of light tones, from warm to vibrant. Customised RGB codes can be specified for each individual light. You can use the KNX operating element to conveniently choose between entire light scenarios or separate operation. The scene and time functions enable you to implement user-specific light effects and sequences.

The connection of KNX and Philips Hue creates new possibilities.

- Door contacts control room lighting.
- If you select the "Fireplace mood" light scenario, the lighting is adjusted accordingly and the shutters are lowered.
- The doorbell is signalled by a Hue light and can be set to silent.
- Situation-dependent RGB values of the outside lighting upon pressing the doorbell (e.g. on Halloween).
- Light intensity control depending on the sunlight level: bright on cloudy days and off in case of bright sunshine so that pleasant brightness always fills the room.
- The light follows you where you go. By combining Philips Hue and ise smart connect KNX Hue, you can have plenty of brightness as you go through the house thanks to the use of motion/presence detectors. After getting up in the morning, the light will follow you to the bathroom and into the living room, where you can begin your day with a cup of coffee.

1.3 Definitions and explanation of terms

- **Hue Bridge**
  Philips base station to connect LED lights to the WLAN router: the Hue Bridge and Hue lights are connected wirelessly using Zigbee. The ise smart connect KNX Hue uses the Philips Hue Bridge to control the Hue lights using IP. Up to five Hue Bridges can be controlled with a ise smart connect KNX Hue.

- **Hue light**
  All the LED light sources in the Hue series, including the LightStripes and the Friends of hue. The Hue Lux can be used with the application software version 3.1 or higher. No systems which contain a Hue Lux can be operated with earlier versions.

- **Hue Lux**
  Hue Lux lights produce a pure white light. The brightness control and the alarm effect are useful for such lights, but the colour control is not.

  The ise smart connect KNX Hue also supports the controller for Hue Lux lights with communication objects to control colours with the application software version 3.1 or higher.

  Since white is produced as an additive mix between red, green and blue at the same intensity, the ise smart connect KNX Hue interprets each change in the colour control as a change in brightness. The respective highest RGB code is taken as the basis for interpretation. You will find instructions in the description of the communication object concerned (see Chapter 5.4.4 Communication objects to control the Hue lights).

- **RGB colours**
  The RGB colour model describes individual colours as a mixture of a quantity of red, green and blue light based on the three-colour theory. Any required colour can be created by mixing the three primary colours. A numerical value is used to define the red portion R, green portion G and blue portion B of the colour.

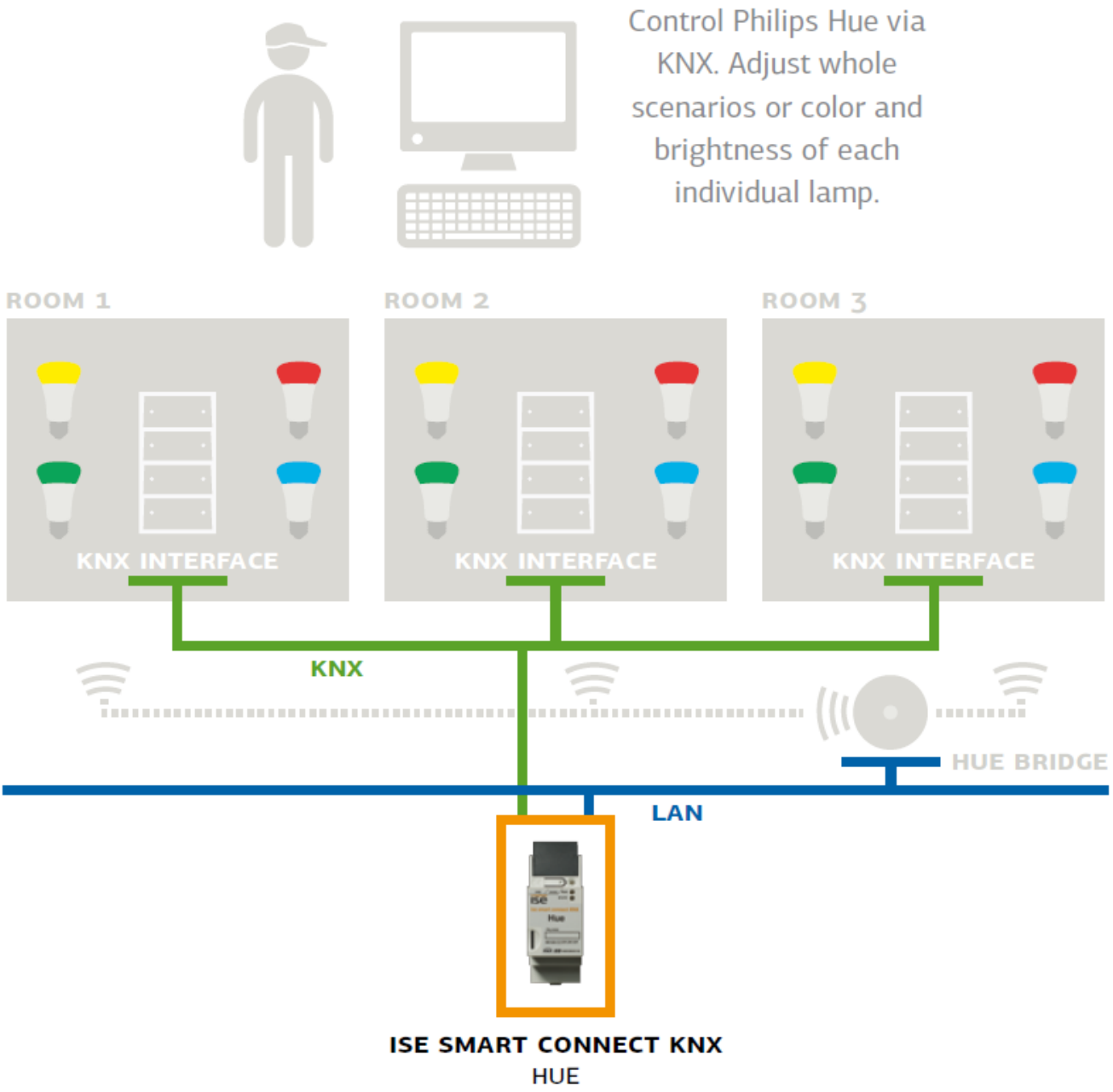
- **Light scene**
  A light scene combines light colour and brightness for one or more Hue lights, saved for repeated use. As you will see below, each state of a Hue light (including simply "off") is designated as a light scene.

- **Alarm effect**
  The alarm effect is a time-limited state change in a light. The standard example is uniform change in brightness. From the original state to brighter to darker and then back to the original state. The colour of the light does not change here.

- **Dynamic effect**
  A dynamic effect consists of the light running through a state change until the user stops the changes.
  An example of this would be the colour change sequence. Here, the entire RGB colour space is run through in an endless loop.

2 Application example Comfort solution in the living environment

2.1 Function schematic



2.2 Comfort solution in the living environment

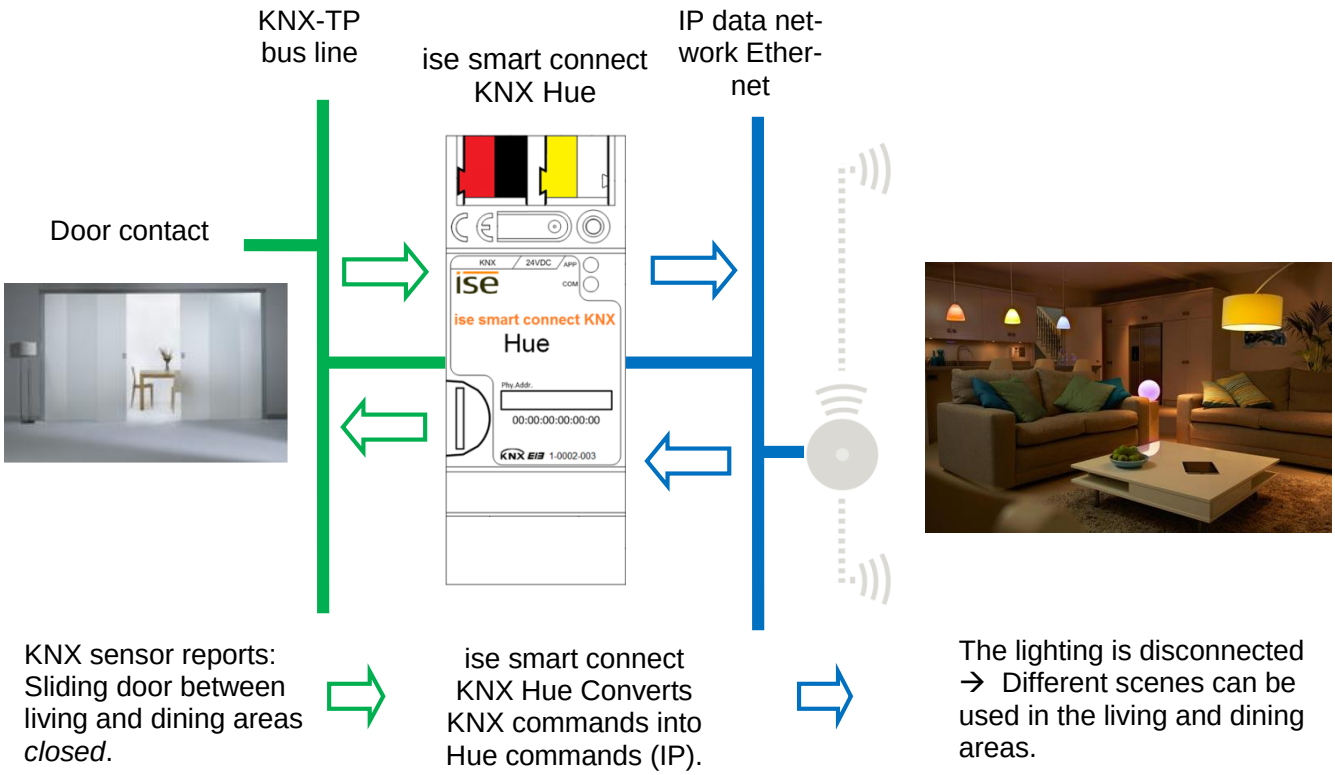
Philips Hue offers you wireless digital home lighting, allowing you to amplify or complement your existing room lighting quickly and flexibly at any time.

All you need is an E27 or GU 10 base for replacing a common light bulb or halogen lamp. The Light Strips require even less (just a socket outlet). This enables you to implement the following Comfort solutions with minimal installation effort.

2.2.1 Door contact controls room lighting

In this application, a door contact connects with the KNX to influence the light scene in the rooms in question.
If the door is opened, the rooms become a visual unit. The ise smart connect KNX Hue enables the use of the same light scene in both rooms.

If the door is closed, the ise smart connect KNX Hue cancels this connection. Both rooms can be lit independently of one another again.



Is the door open?	The same light scene is used in both rooms.
Is the door closed?	Each room can be lit differently (again).
	Note: To use light scenes and room groups, you need optional logic modules which ensure the same light scene and restore the previous light scene after termination.

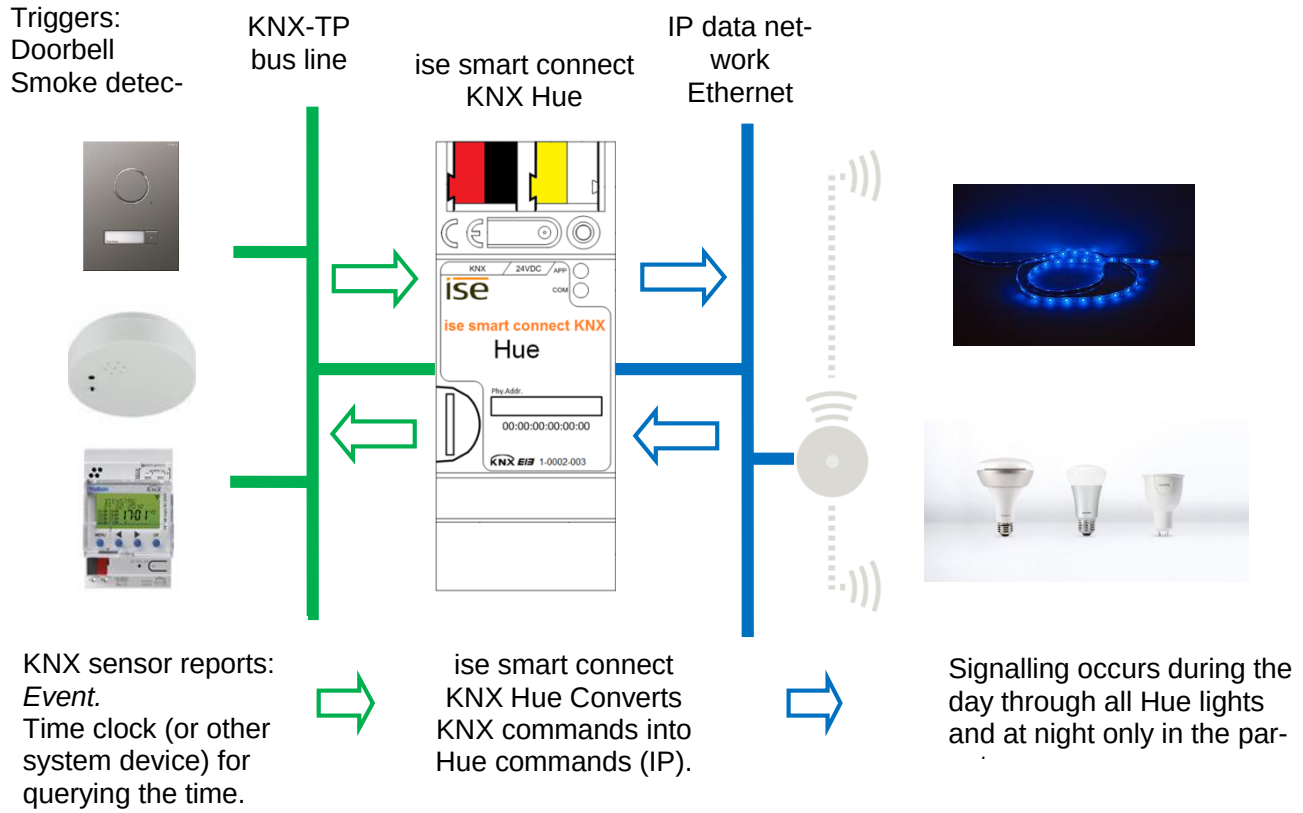
2.2.2 Philips Hue signals important events visually

By coupling it with KNX, the Philips Hue becomes an optical signal transmitter for many applications. Define the respective event (doorbell, smoke detector, motion detector, door or window contact etc.) and the location and type of signalling. Since the Philips Hue can be easily installed (you only need a socket outlet or E27 socket), you can set up and use the lights anywhere as an additional signalling option at any time.

Naturally, different results can be signalled visually with the same light. Differentiate the trigger through the type of signalling (colour, flashing etc.) and thus supplement an acoustic signal or replace it completely.

Two versions are possible:

- Visual signalling (e.g. as an alarm effect) always occurs using the defined lights and an acoustic signal.
- Visual signalling replaces an audible signal, producing an alarm effect in the event of a fire, for example. If necessary, this can occur only in the "parent zone" depending on the time and the event. This prevents children being disturbed by the doorbell.



2.2.3 ise smart connect KNX Hue makes operation more convenient

Operating convenience

Operating Philips Hue with the light switch

By combining the Philips Hue and ise smart connect KNX Hue, you can control your lighting comfortably as you pass by. It's quick, and there no need to look for a remote control. Never be annoyed again because of a flat battery in your smartphone or tablet PC.

- Scenario selection and brightness control are given their fixed places in the KNX light switch (which means you'll no longer "lose" the lighting mood while switching).
- Operate the Philips Hue even without glasses, e.g. after a shower.

Naturally, that's not all you can do with the light switch. At the same time, operation can be carried out from all KNX-compatible visualisation panels.

The light follows you where you go

By combining Philips Hue and ise smart connect KNX Hue, you can have plenty of light as you go through the house thanks to the use of motion/presence detectors.

After getting up in the morning, the light will follow you to the bathroom and into the living room, where you can begin your day with a cup of coffee.
The light is switched off in rooms which you have left.

Party at the push of button

The ise smart connect KNX Hue switches to party mode upon reception of a signal from the building bus. The same light scene is created in all rooms by pushing the "Party" button. Outside lighting, e.g. on the terrace, is also controlled accordingly. Naturally, individual Hue lights can be excluded from this for effect lighting if the whole house is used as a party zone.

Sleeping comfort

Wake up your loved ones with your own sunrise
Put children to sleep with decreasing brightness

The *Wake up* scene selects the *Sunrise* scene and gently increases the brightness. For this purpose, you can use all of the room lighting or just a single light.
The *Go to sleep* scene does the opposite: Select a scene and lower the brightness by and by.

Scenes like this are called up at the push of the light switch, using the house visualisation, wirelessly from a smartphone or automatically through a time program.
If you wish, you can even link scenes to the real sunrise and sunset!

2.2.4 The ise smart connect KNX Hue controls home technology

The HueApp controls home technology

The opposite also holds true: Controlling home technology using the Hue App

Do you operate your Hue system using the smartphone app? How would you like it if, when you call up the *Fireplace mood* scene, the shutters are lowered, heating is regulated to the comfort temperature and the front doorbell is switched off at the same time? The *House party* scene can provide bright lighting and a changeover to cooling mode.
Select scenes which operate your home technology using the ise smart connect KNX Hue.

Note: Optional logic modules are required for using light scenes and actuators.

2.2.5 The ise smart connect KNX Hue increases security

Hue lights and ise smart connect KNX Hue make your home more secure.
Automated light control offers a wide variety of possibilities.

On holiday

Light in the house keeps uninvited guests away (occupied-home simulation)

Why just switch lights on and off to simulate an occupied house? Integrate individual light scenes and shutter control into the occupied-home simulation.

Prevention

The Philips Hue notifies you of unclosed doors and windows

Leave your house without a care. Intelligent door and window sensors let you know whether your windows and doors are closed. The Philips Hue enables you to use a red light to signal: "Attention, windows are still open" before you even leave the house.
ise smart connect KNX Hue makes it possible.

The Philips Hue reminds you to "deactivate" the alarm system

You enter your house. The Philips Hue reminds you to not forget to deactivate your alarm system. For example, a light in the entrance area can be dimmed up as long as the alarm system is activated.

At home alone?

The Philips Hue warns of/reports unexpected visits

(Literal motion detection):
When it's dark, the Philips Hue can notify you in good time of movement outdoors with an alarm effect in every room before the doorbell is even pressed.

The Philips Hue will scare them away

Hear suspicious noises outdoors?
Pressing the light switch (e.g. in the bedroom) switches on the lighting on the house. The lighting in different rooms inside the house is then switched on in succession. Several people in the house will then respond to the noises.

Assistance

The Philips Hue signals the need for assistance

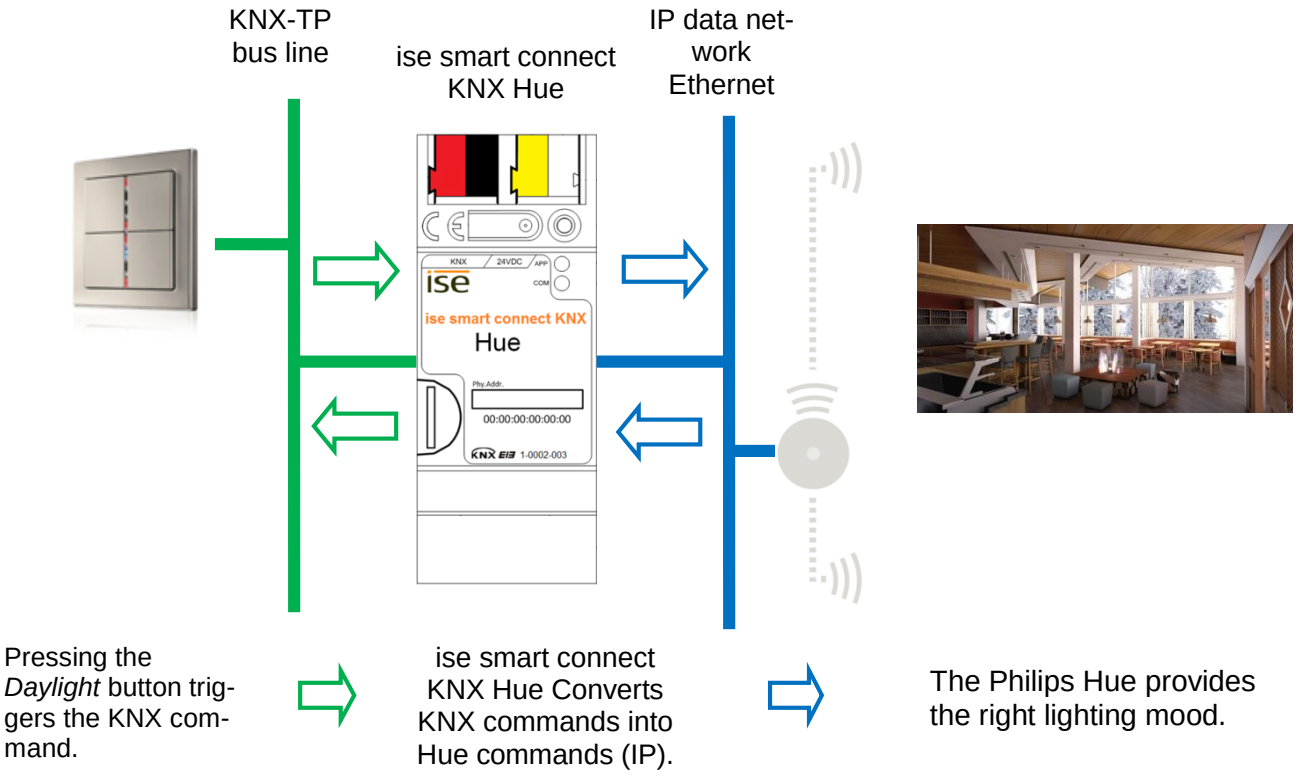
You can use a motion detector, placed under the bed, for example, to signal that a person with special needs has got out of bed. You can then go provide assistance if necessary.

3 Commercial application scenarios

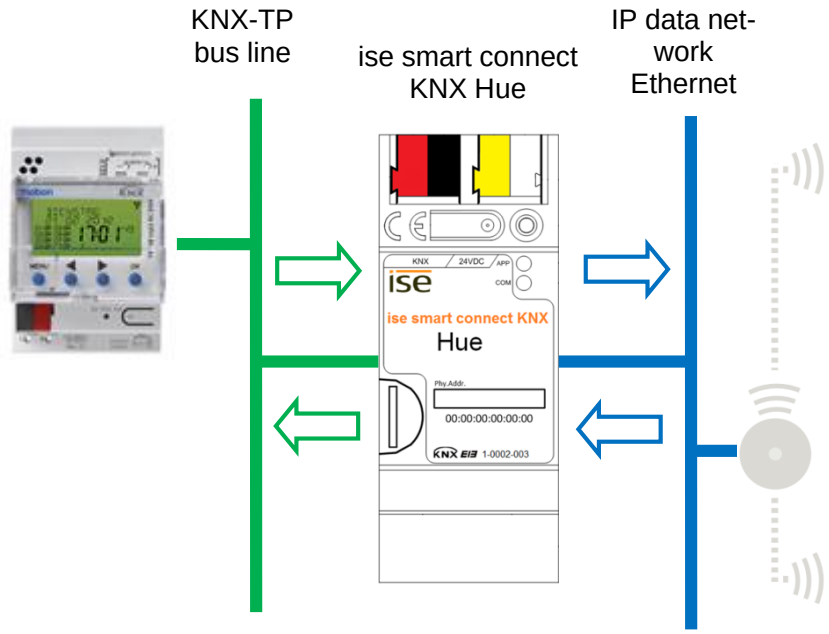
3.1 Lighting mood suitable for daylight

The ise smart connect KNX Hue can present lighting moods at the push of a button or at set times. With this application, you can illuminate your rooms just the right way.

3.1.1 Example configuration with a push button



3.1.2 Example configuration with time switching



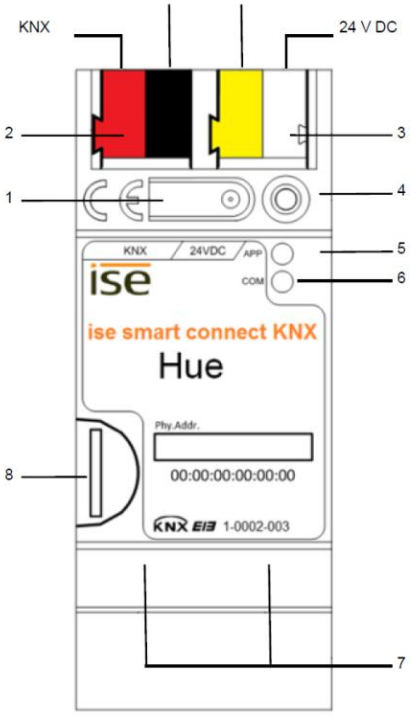
Requirements for light scenes can also be triggered under time control.

ise smart connect KNX Hue Converts KNX commands into Hue commands (IP).

The Hue provides the right lighting mood.

4 Installation, electrical connection and operation

4.1 Device design



Dimensions:
Width (W):
36 mm (2 HP)
Height (H):
90 mm
Depth (D):
74 mm

Figure 1: ise smart connect KNX Hue

1	Programming button for KNX	Switches the device to the ETS programming mode or vice versa.
2	KNX connection (twisted pair)	On left: (+ / red) On right: (–/black)
3	Connection for power supply	DC 24–30 V, 2 W (at 24 V) On left: (+ / yellow) On right: (–/white)
4	KNX programming LED (red)	Red: Device is in ETS programming mode
5	LED *APP* (green)	Green: Normal operation Off/ flashing: See 6.3.1 / 6.3.2 for start or diagnosis code
6	LED *COM* (yellow)	Yellow: Normal operation (brief dark phases indicate KNX telegram traffic) Off/ flashing: See 6.3.1 / 6.3.2 for start or diagnosis code
7	Ethernet connection	LED 10/100 speed (green) On: 100 Mbit/s Off: 10 Mbit/s LED link/ACT (orange) On: Connection to IP network Off: No connection flashes: Data reception on IP

8 MicroSD card holder No function.

4.2 Safety notes

Electrical devices may only be installed and mounted by a qualified electrician. In doing so, the applicable accident prevention regulations must be observed. Failure to observe the installation instructions can result in damage to the device, fire or other dangers.

DANGER!
Electric shock if live parts are touched. Electric shock may lead to death.
Isolate connection cables before working on the device. Cover up live parts in the vicinity!

Please see the installation instructions enclosed with the device for more information.

4.3 Mounting and electrical connection

Mounting the device

- Snap it on to the top-hat rail as per DIN EN 60715, vertical mounting;
  network connections must face downward.

ℹ A KNX data rail is not required; the connection to KNX-TP is established using the accompanying bus connection terminal.

ℹ Observe temperature range (0 °C to +45 °C); do not install over heat-emitting devices and ensure sufficient ventilation/cooling if necessary.

Connecting the device

- Connect the KNX-TP bus line to the KNX connection of the device using the included KNX bus connection terminal. The bus line must be led to near the device terminal with the sheathing intact! Bus line leads without sheathing (SELV) must be installed isolated in such a way that they are securely protected from all non-safety-low-voltage lines (SELV/PELV) (comply with ≥ 4 mm spacing or use cover; see also VDE regulations on SELV (DIN VDE 0100-410/"Secure isolation", KNX installation specifications)!
- Connecting the external power supply to the power supply connection (3) of the device using a KNX device connection terminal, preferably yellow/white.
  Polarity: left/yellow: (+), white/right: (–).

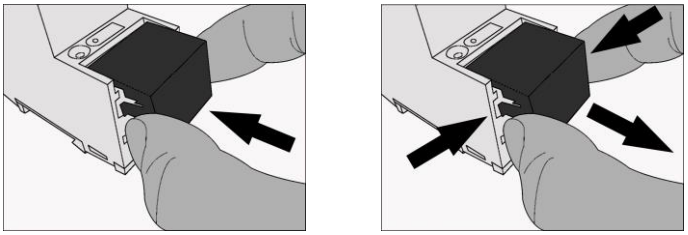
  Note: If the "non-choked" auxiliary power output of a KNX power supply is used as an auxiliary energy source, you must ensure that the overall current consumption (including all KNX-TP devices) on the line segment does not exceed the rated voltage of the power supply.
- Connection of one or two IP network lines to the device (7) network connection.

Mounting/removing a cover cap

A cover cap can be mounted for protection of the KNX bus and power supply connections from dangerous voltage, particularly in the connection area.

The cap is mounted with an attached bus and power supply terminal and a connected bus and power supply line to the rear.

- Mounting the cover cap: The cover cap is pushed over the bus terminal until you hear and feel it lock into position (comp. Figure 2A).
- Removing the cover cap: The cover cap is removed by pressing it slightly on both sides and pulling it off towards the front (comp Figure 2B).



A B

Figure 2: Mounting/removing a cover cap.

5 Configuration

Configuration of the ise smart connect KNX Hue is divided into the following steps:

Preparations:		**For explanations, see**
1	Mount device, connect it to KNX bus connection and auxiliary voltage.	→ Chapter 4
2	Set up the Hue lights using the Philips Hue software.	→ Philips Hue documentation
3	Install the ise smart connect KNX Hue on the same IP network as the Philips Hue Bridge and make settings in the router of the IP network if necessary.	

Configuration via ETS:

After installing the device and connecting the bus, power supply and Ethernet, the device can be commissioned. The preparatory configuration is carried out using the Engineering Tool Software, ETS, available from the KNX Association, see www.knx.org.

1	Create the ise smart connect KNX Hue as a device in the ETS.	→ Section 5.1
2	Assign physical address as usual corresponding to the KNX topology.	
3	Set IP address, IP subnet mask and standard gateway address for the ise smart connect KNX Hue or select *Obtain an IP address automatically (from a DHCP server)*.	→ Section 5.3
4	General parameters for setting the ise smart connect KNX Hue.	→ Section 5.4.1
5	Connect group addresses to group objects as usual.	→ Section 5.4.3 → Section 5.4.4
6	The ise smart connect KNX Hue is now ready to start up by pressing *Programme ETS*; then test functions.	
7	Register the ise smart connect KXN Hue on one or several Hue Bridges and assign the Hue lights to the KNX communication objects on the device website	→ Section 6.9 → Section 6.10

5.1 Configuration step 1 − Create ise smart connect KNX Hue as device in the ETS

If you haven't already done so, import the ETS device application for the ise smart connect KNX Hue into the ETS device catalogue once, using the *Import Products* function on the ETS start page, for example.

You can download the ETS application from our website under www.ise.de free of charge.

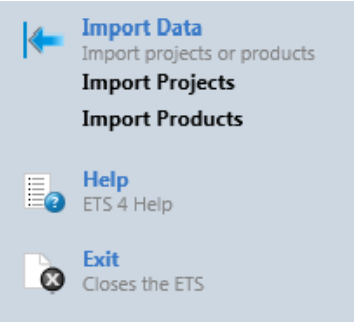


Figure 3: Product import via the ETS start page.

The other explanations in this document refer to

Hardware		Application software	
Device**:**	**ise smart connect KNX Hue**	Application:	ise smart connect KNX Hue
Manufacturer:	**ise GmbH**	Version**:**	**V4.3**
Order No.	**1-0002-003**		
Version:	**V1.0**		
Design:	**DRA (series installation)**		

If you already have an ETS project with a previous database entry, you can also update the application program. To do this, drag the new database entry to the project and then select the device with the old database entry. Now select "*Information"* in the device "*Properties"* and then select the "*Application"* tab (ETS 4.2) or the "*Application program*" tab (ETS 5).
You can now use the "*Update application program*" button (ETS 4.2) or the "*Update*" button (ETS 5) to replace the old database entry. Existing links with group addresses are not lost. The newly added device can now be deleted again.
In ETS 4.2, you require a special license for this. From ETS 5, this is possible with every license.

5.2 Configuration step 2 – Assigning a physical address

In the ETS, assign the device a physical address as usual corresponding to the KNX topology.

5.3 Configuration step 3 – Setting the IP address, subnet mask and address of the standard gateway

In addition to the physical address on the KNX network, the ise smart connect KNX Hue must also be assigned an address on the IP data network. This includes the following information:

- IP address
- Subnet mask
- Default gateway address

This can occur in two ways, either

- Automatically by obtaining the data from a DHCP server (e.g. integrated in the router of the data network) or
- Manual setting in the ETS.

Proceed as follows for this purpose:

1. Select the device in the ETS.

2. Display the device properties in the sidebar on the ETS as shown in Figure 4.

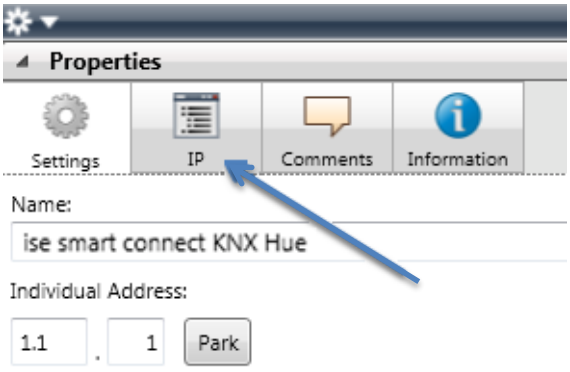


Figure 4: Device properties dialogue of the ETS.

3. Select the *IP* tab as per Figure 5. Then select either

   ⊙ *Obtain an IP address automatically (default)*

   The address data are automatically obtained from a DHCP server on the data network.

   or

   ⊙ *Use the following address*

   and enter the data manually.
   You can usually obtain the permissible IP address range and the subnet mask and standard gateway from the router configuration interface.

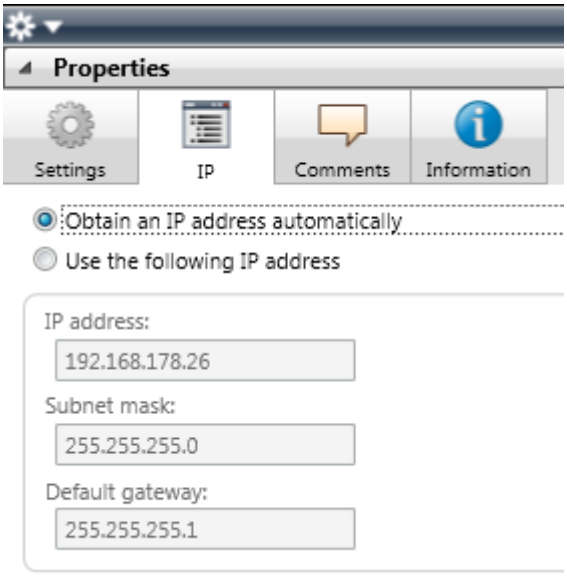


Figure 5: Setting of the IP address data of the device on the "IP" tab in the sidebar of the ETS.

If the ⊙ *Obtain an IP address automatically* setting is used, a DHCP server must issue the ise smart connect KNX Hue a valid IP address.

If a DHCP server is not available for this setting, the device starts up after a waiting time with an AutoIP address (address range from 169.254.1.0 to 169.254.254.255).

As soon as a DHCP server is available, the device is automatically assigned a new IP address.

5.4 Setting general parameters.

5.4.1 Parameter page *General*

The default value of each parameter is marked in **bold**.

Parameter	Entry/Selection	Remarks
Dimming speed	Slow **Normal** Fast	Determines the speed at which the brightness changes with the relative brightness change ("Dim"). With "Fast", the brightness reaches the target value especially early, and with "Slow", it takes somewhat longer. This option can also influence absolute brightness changes. It can be set separately for each light.
Number of lights	1, 2, **3**…25	Enables you to configure the number of lights which can be controlled on the ise smart connect KNX Hue. The communication objects are made visible accordingly. 1 to 25 lights can be selected.

5.4.2 Light parameter tab

There is a parameter page for each light to configure light behaviour.

Parameter	Entry/Selection	Remarks
Switch-on brightness	5% 10% . . . **100%** Memory value	Determines the switch-on brightness for the light concerned. You can select the "Memory value" and a percentage between 5% and 100% in 5% increments. In the case of "Memory value", the light is switched on with the last brightness value before it was switched off. This value can be changed on the device website (compare Chapter 6.10 Configuration of lights using the website).
Dimming behaviour in absolute brightness	Dimming Jumping **Philips Hue behaviour**	Determines the behaviour of the light concerned when an absolute brightness is received (communication object: Set brightness – Light "n"). Dimming: the target value is approached at the configured dimming speed. Jumping: the light adopts the target value immediately. Philips Hue behaviour: the target value is approached at a speed defined by the Philips Hue system (400 ms). This corresponds to the switching behaviour on the Philips Hue smartphone app. This value can be changed on the device website (compare Chapter 6.10 Configuration of lights using the website).

5.4.3 Communication objects for controlling the Philips Hue Bridge

The following communication objects are available for the connection of group addresses at the ise smart connect KNX Hue:

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
1	Bridge connection status	Read	1 bit	1.002	CR-T-
Rubric:	Connections	Data type:		Boolean	
Function:	Indicates whether a connection has been established with all configured Philips Hue Bridges. "Not connected" is displayed if no Philips Hue Bridge has been configured.				
Description:	1 = Connected, 0 = Not connected.				

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
2	All lights control	Write	1 bit	1.001	C-W--
Rubric:	Switching	Data type:		On/Off	
Function:	Switches all connected lights on or off				
Description:	1 = On, 0 = Off 1-bit object for switching all connected Hue lights on/off (max. 25).				

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
3	System status	Read	1 byte	20.*	CR-T-
Rubric:	Error diagnosis	Data type:			
Function:	Current system status or status for communication with the configured Philips Hue Bridges				
Description:	Possible status messages:				

Code	Meaning
0	OK. No error
1	One or more Hue Bridges cannot be reached Check whether the configured Philips Hue Bridges are switched on and available in the network
4	Registration necessary on one or more Hue Bridges Renew registration on the Philips Hue Bridge concerned (see 6.9 Registering the HueApp on one or more Philips Hue Bridge)
5	One or more Hue lights cannot be reached If devices are switched off to save energy, this is not an error; in other situations, check the configured lights on the Hue smartphone app.
6	The firmware is incompatible. Install an update
8	No Hue Bridge configured. Configure at least one Philips Hue Bridge (see 6.9 Registering the HueApp on one or more Philips Hue Bridge)

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
4	Scenes control	Write	1 byte	18.001	C-W--

Rubric:	Scene	Data type:	Scenes control
Function:	Activates the scene based on the Scene number field		

Description:

Scenes added to the Philips Hue app can be activated. You can assign the Philips Hue scenes to the KNX scene numbers on the device website (see Chapter 6.11 Configuring lights on the website).

Important note: A configured Philips Hue scene is triggered on all registered Philips Hue Bridges on which it exists. Scenes which are present more than once on a Philips Hue Bridge – in different rooms, for example – are triggered accordingly.

Important note: Teaching Hue scenes in as per the KNX standard is not supported for technical reasons. This function is reserved for upgrades at a later stage.

5.4.4 Communication objects to control the Hue lights

Up to 25 Hue lights can be controlled. The Hue lights are assigned to communication objects using the light configuration page on the device website (see Chapter 6.10) Communication objects are generated for 3 lights by default (see Chapter 5.4.1 Parameter page *General*).
The Philips Hue Bridge polls the values for state communication objects every three seconds. Any changes are updated on KNX. Once the command is successfully sent to the Philips Hue Bridge, the corresponding state is updated immediately for actions implemented using the KNX, such as switching lights.

The object number is composed by inserting the light number concerned (n) into the formula (f).
The numbers 1 through 25 are permissible for the light number (n), based on the maximum number of lights to be controlled.

Example for Light "6" and the *Set colour (5)* function:

n*20+5 Object number is thus: 6*20+5 = 125

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
n f(n) = Obj 1 20*n = 20 2 20*n = 40 3 20*n = 60 4 20*n = 80 5 20*n = 100 6 20*n = 120 7 20*n = 140 8 20*n = 160 9 20*n = 180 10 20*n = 200 11 20*n = 220 12 20*n = 240 13 20*n = 260 14 20*n = 280 15 20*n = 300 16 20*n = 320 17 20*n = 340 18 20*n = 360 19 20*n = 380 20 20*n = 400 21 20*n = 420 22 20*n = 440 23 20*n = 460 24 20*n = 480 25 20*n = 500	Switch light – Light "n"	Write	1 bit	1.001	C-W--
Rubric:	Switching	Data type:	Switching		
Function:	Switches light "n" on or off.				
Description:	1 = On, 0 = Off 1-bit object for switching light "n" on/off. The light is switched on with the previous or configured brightness, depending on the light configuration (Chapter 6.10 Configuration of lights using the website).				

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
	Light state – Light "n"	Read	1 bit	1.001	CR-T-

n	f(n)		Obj
1	20*n+1	=	21
2	20*n+1	=	41
3	20*n+1	=	61
4	20*n+1	=	81
5	20*n+1	=	101
6	20*n+1	=	121
7	20*n+1	=	141
8	20*n+1	=	161
9	20*n+1	=	181
10	20*n+1	=	201
11	20*n+1	=	221
12	20*n+1	=	241
13	20*n+1	=	261
14	20*n+1	=	281
15	20*n+1	=	301
16	20*n+1	=	321
17	20*n+1	=	341
18	20*n+1	=	361
19	20*n+1	=	381
20	20*n+1	=	401
21	20*n+1	=	421
22	20*n+1	=	441
23	20*n+1	=	461
24	20*n+1	=	481
25	20*n+1	=	501

Rubric: Switching

Data type: Switching

Function: Indicates whether light "n" is currently on or off.

Description: 1-bit object for display of the switching condition of light "n". If a "1" is assigned to the object, light "n" is on. If a "0" is assigned to the object, light "n" is off.

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
	Relative brightness – Light "n"	Write	4 bit	3.007	C-W--

n	f(n)		Obj
1	20*n+2	=	22
2	20*n+2	=	42
3	20*n+2	=	62
4	20*n+2	=	82
5	20*n+2	=	102
6	20*n+2	=	122
7	20*n+2	=	142
8	20*n+2	=	162
9	20*n+2	=	182
10	20*n+2	=	202
11	20*n+2	=	222
12	20*n+2	=	242
13	20*n+2	=	262
14	20*n+2	=	282
15	20*n+2	=	302
16	20*n+2	=	322
17	20*n+2	=	342
18	20*n+2	=	362
19	20*n+2	=	382
20	20*n+2	=	402
21	20*n+2	=	422
22	20*n+2	=	442
23	20*n+2	=	462
24	20*n+2	=	482
25	20*n+2	=	502

Rubric: Dimming

Data type: Dimmer step

Function: Fades the brightness of Light "n" up or down.

Description: 4-bit object for relative brightness change between 0.4 and 100% of light "n". It is not possible to dim to 0% (off).

Note: The dimming speed is specified with a corresponding parameter (Section 5.4.1 - Parameter *page General*).

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
n f(n) = Obj 1 20*n+3 = 23 2 20*n+3 = 43 3 20*n+3 = 63 4 20*n+3 = 83 5 20*n+3 = 103 6 20*n+3 = 123 7 20*n+3 = 143 8 20*n+3 = 163 9 20*n+3 = 183 10 20*n+3 = 203 11 20*n+3 = 223 12 20*n+3 = 243 13 20*n+3 = 263 14 20*n+3 = 283 15 20*n+3 = 303 16 20*n+3 = 323 17 20*n+3 = 343 18 20*n+3 = 363 19 20*n+3 = 383 20 20*n+3 = 403 21 20*n+3 = 423 22 20*n+3 = 443 23 20*n+3 = 463 24 20*n+3 = 483 25 20*n+3 = 503	Set brightness – Light "n"	Write	1 byte	5.001	C-W--

Rubric:	Dimming	Data type:	Percent (0 to 100%)
Function:	Sets the absolute brightness of light "n".		
Description:	8-bit object for specification of a brightness of light "n". The light can be issued a value in the range of 0% (0) = switched off to 100% (255) = full brightness. The behaviour can be influenced for this object using the "Dimming behaviour (5.4.2 Light parameter tab) at absolute brightness" parameter or the relevant setting on the device website (compare Chapter 6.10 Configuration of lights using the website).		

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
n f(n) = Obj 1 20*n+4 = 24 2 20*n+4 = 44 3 20*n+4 = 64 4 20*n+4 = 84 5 20*n+4 = 104 6 20*n+4 = 124 7 20*n+4 = 144 8 20*n+4 = 164 9 20*n+4 = 184 10 20*n+4 = 204 11 20*n+4 = 224 12 20*n+4 = 244 13 20*n+4 = 264 14 20*n+4 = 284 15 20*n+4 = 304 16 20*n+4 = 324 17 20*n+4 = 344 18 20*n+4 = 364 19 20*n+4 = 384 20 20*n+4 = 404 21 20*n+4 = 424 22 20*n+4 = 444 23 20*n+4 = 464 24 20*n+4 = 484 25 20*n+4 = 504	Brightness state – Light "n"	Read	1 byte	5.001	CR-T-

Rubric:	Dimming	Data type:	Percent (0 to 100%)
Function:	Displays the light's current brightness value.		
Description:	8-bit object for displaying the brightness of light "n". A value in the range of 0% (0) = switched off to 100% (255) = full brightness is displayed.		

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
n f(n) = Obj 1 20*n+5 = 25 2 20*n+5 = 45 3 20*n+5 = 65 4 20*n+5 = 85 5 20*n+5 = 105 6 20*n+5 = 125 7 20*n+5 = 145 8 20*n+5 = 165 9 20*n+5 = 185 10 20*n+5 = 205 11 20*n+5 = 225 12 20*n+5 = 245 13 20*n+5 = 265 14 20*n+5 = 285 15 20*n+5 = 305 16 20*n+5 = 325 17 20*n+5 = 345 18 20*n+5 = 365 19 20*n+5 = 385 20 20*n+5 = 405 21 20*n+5 = 425 22 20*n+5 = 445 23 20*n+5 = 465 24 20*n+5 = 485 25 20*n+5 = 505	Set colour – Light "n"	Write	3 bytes	232.600	C-W--

Rubric:	Colour	Data type:	232.600 RGB value 3x(0…255)
Function:	Sets the RGB colour value of the light.		
Description:	3-byte object for specification of a colour of light "n". An RGB code can be specified for the light. This may produce a change to the light's brightness or not, depending on how the "Colour conversion" characteristic has been configured on the device website (6.10 Configuration of lights using the website). **Behaviour of a Hue Lux:** The brightness value for the highest colour component is set based on the RGB colour code, irrespective of the configured colour conversion. The RGB status is also set at the brightness value.		

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
n f(n) = Obj 1 20*n+6 = 26 2 20*n+6 = 46 3 20*n+6 = 66 4 20*n+6 = 86 5 20*n+6 = 106 6 20*n+6 = 126 7 20*n+6 = 146 8 20*n+6 = 166 9 20*n+6 = 186 10 20*n+6 = 206 11 20*n+6 = 226 12 20*n+6 = 246 13 20*n+6 = 266 14 20*n+6 = 286 15 20*n+6 = 306 16 20*n+6 = 326 17 20*n+6 = 346 18 20*n+6 = 366 19 20*n+6 = 386 20 20*n+6 = 406 21 20*n+6 = 426 22 20*n+6 = 446 23 20*n+6 = 466 24 20*n+6 = 486 25 20*n+6 = 506	Colour state – Light "n"	Read	3 bytes	232.600	CR-T-

Rubric:	Colour	Data type:	232.600 RGB value 3x(0…255)
Function:	Displays the current RGB value of the light.		
Description:	3-byte object for display of a colour of light "n". The light's colour value is displayed as an RGB code.		

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
	Set "red" colour value – Light "n"	Write	1 byte	5.001	C-W--

n	f(n)		Obj
1	20*n+7	=	27
2	20*n+7	=	47
3	20*n+7	=	67
4	20*n+7	=	87
5	20*n+7	=	107
6	20*n+7	=	127
7	20*n+7	=	147
8	20*n+7	=	167
9	20*n+7	=	187
10	20*n+7	=	207
11	20*n+7	=	227
12	20*n+7	=	247
13	20*n+7	=	267
14	20*n+7	=	287
15	20*n+7	=	307
16	20*n+7	=	327
17	20*n+7	=	347
18	20*n+7	=	367
19	20*n+7	=	387
20	20*n+7	=	407
21	20*n+7	=	427
22	20*n+7	=	447
23	20*n+7	=	467
24	20*n+7	=	487
25	20*n+7	=	507

Rubric: Colour

Data type: Percent (0 to 100%)

Function: Sets the red colour value of light "n" between 0% (0) and 100% (255).

Description:

1-byte object for specification of the red colour value of light "n".

Important note: If the individual communication objects for R/G/B are used for the RGB value, the entire RGB is not transferred to the light until all three individual values have been received or 200 ms have passed so as to avoid incorrect intermediate states.

Behaviour of a Hue Lux: It is not possible to change just one colour (see Chapter 1.3 Hue Lux). A distinction should be made between two cases:

- All three individual values are received within 200 ms:
  The brightness value is set to the highest individual value in the same way that the RGB colour code is set.
- Only one or two individual values are received within 200 ms:
  - The brightness value is increased accordingly if one of these values is higher than the current set value.
  - This input is ignored if both values are lower than the current set value.

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
	Colour value "red" state – Light "n"	Read	1 byte	5.001	CR---

n	f(n)		Obj
1	20*n+8	=	28
2	20*n+8	=	48
3	20*n+8	=	68
4	20*n+8	=	88
5	20*n+8	=	108
6	20*n+8	=	128
7	20*n+8	=	148
8	20*n+8	=	168
9	20*n+8	=	188
10	20*n+8	=	208
11	20*n+8	=	228
12	20*n+8	=	248
13	20*n+8	=	268
14	20*n+8	=	288
15	20*n+8	=	308
16	20*n+8	=	328
17	20*n+8	=	348
18	20*n+8	=	368
19	20*n+8	=	388
20	20*n+8	=	408
21	20*n+8	=	428
22	20*n+8	=	448
23	20*n+8	=	468
24	20*n+8	=	488
25	20*n+8	=	508

Rubric:	Colour	Data type:	Percent (0 to 100%)
Function:	Displays the current red colour value of light "n" between 0% (0) and 100% (255).		
Description:	1-byte object for display of the red colour value of light "n".		

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
	Set "green" colour – Light "n"	Write	1 byte	5.001	C-W--

n	f(n)		Obj
1	20*n+9	=	29
2	20*n+9	=	49
3	20*n+9	=	69
4	20*n+9	=	89
5	20*n+9	=	109
6	20*n+9	=	129
7	20*n+9	=	149
8	20*n+9	=	169
9	20*n+9	=	189
10	20*n+9	=	209
11	20*n+9	=	229
12	20*n+9	=	249
13	20*n+9	=	269
14	20*n+9	=	289
15	20*n+9	=	309
16	20*n+9	=	329
17	20*n+9	=	349
18	20*n+9	=	369
19	20*n+9	=	389
20	20*n+9	=	409
21	20*n+9	=	429
22	20*n+9	=	449
23	20*n+9	=	469
24	20*n+9	=	489
25	20*n+9	=	509

Rubric: Colour

Data type: Percent (0 to 100%)

Function: Sets the green colour value of light "n" between 0% (0) and 100% (255).

Description:

1-byte object for specification of the green colour value of light "n".

Important note: If the individual communication objects for R/G/B are used for the RGB value, the entire RGB is not transferred to the light until all three individual values have been received or 200 ms have passed so as to avoid incorrect intermediate states.

Behaviour of a Hue Lux: It is not possible to change just one colour (see Chapter 1.3 Hue Lux). A distinction should be made between two cases:

> All three individual values are received within 200 ms:
The brightness value is set to the highest individual value in the same way that the RGB colour code is set.

> Only one or two individual values are received within 200 ms:

– The brightness value is increased accordingly if one of these values is higher than the current set value.

– This input is ignored if both values are lower than the current set value.

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
	Colour value "green" state – Light "n"	Read	1 byte	5.001	CR---

n	f(n)		Obj
1	20*n+10	=	30
2	20*n+10	=	50
3	20*n+10	=	70
4	20*n+10	=	90
5	20*n+10	=	110
6	20*n+10	=	130
7	20*n+10	=	150
8	20*n+10	=	170
9	20*n+10	=	190
10	20*n+10	=	210
11	20*n+10	=	230
12	20*n+10	=	250
13	20*n+10	=	270
14	20*n+10	=	290
15	20*n+10	=	310
16	20*n+10	=	330
17	20*n+10	=	350
18	20*n+10	=	370
19	20*n+10	=	390
20	20*n+10	=	410
21	20*n+10	=	430
22	20*n+10	=	450
23	20*n+10	=	470
24	20*n+10	=	490
25	20*n+10	=	510

Rubric: Colour

Data type: Percent (0 to 100%)

Function: Displays the current green colour value of light "n" between 0% (0) and 100% (255).

Description: 1-byte object for display of the green colour value of light "n".

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
	Set "blue" colour value – Light "n"	Write	1 byte	5.001	C-W--

n	f(n)		Obj
1	20*n+11	=	31
2	20*n+11	=	51
3	20*n+11	=	71
4	20*n+11	=	91
5	20*n+11	=	111
6	20*n+11	=	131
7	20*n+11	=	151
8	20*n+11	=	171
9	20*n+11	=	191
10	20*n+11	=	211
11	20*n+11	=	231
12	20*n+11	=	251
13	20*n+11	=	271
14	20*n+11	=	291
15	20*n+11	=	311
16	20*n+11	=	331
17	20*n+11	=	351
18	20*n+11	=	371
19	20*n+11	=	391
20	20*n+11	=	411
21	20*n+11	=	431
22	20*n+11	=	451
23	20*n+11	=	471
24	20*n+11	=	491
25	20*n+11	=	511

Rubric: Colour

Data type: Percent (0 to 100%)

Function: Sets the blue colour value of light "n".

Description:

1-byte object for specification of the blue colour value of light "n" between 0% (0) and 100% (255).

Important note: If the individual communication objects for R/G/B are used for the RGB value, the entire RGB is not transferred to the light until all three individual values have been received or 200 ms have passed so as to avoid incorrect intermediate states.

Behaviour of a Hue Lux: It is not possible to change just one colour (see Chapter 1.3 Hue Lux). A distinction should be made between two cases:

> All three individual values are received within 200 ms:
The brightness value is set to the highest individual value in the same way that the RGB colour code is set.

> Only one or two individual values are received within 200 ms:

– The brightness value is increased accordingly if one of these values is higher than the current set value.

– This input is ignored if both values are lower than the current set value.

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
n f(n) = Obj 1 20*n+12 = 32 2 20*n+12 = 52 3 20*n+12 = 72 4 20*n+12 = 92 5 20*n+12 = 112 6 20*n+12 = 132 7 20*n+12 = 152 8 20*n+12 = 172 9 20*n+12 = 192 10 20*n+12 = 212 11 20*n+12 = 232 12 20*n+12 = 252 13 20*n+12 = 272 14 20*n+12 = 292 15 20*n+12 = 312 16 20*n+12 = 332 17 20*n+12 = 352 18 20*n+12 = 372 19 20*n+12 = 392 20 20*n+12 = 412 21 20*n+12 = 432 22 20*n+12 = 452 23 20*n+12 = 472 24 20*n+12 = 492 25 20*n+12 = 512	Colour value "blue" state – Light "n"	Read	1 byte	5.001	CR---

Rubric:	Colour	Data type:	Percent (0 to 100%)
Function:	Displays the current blue colour value of light "n" between 0% (0) and 100% (255).		
Description:	1-byte object for display of the blue colour value of light "n".		

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
n f(n) = Obj 1 20*n+13 = 33 2 20*n+13 = 53 3 20*n+13 = 73 4 20*n+13 = 93 5 20*n+13 = 113 6 20*n+13 = 133 7 20*n+13 = 153 8 20*n+13 = 173 9 20*n+13 = 193 10 20*n+13 = 213 11 20*n+13 = 233 12 20*n+13 = 253 13 20*n+13 = 273 14 20*n+13 = 293 15 20*n+13 = 313 16 20*n+13 = 333 17 20*n+13 = 353 18 20*n+13 = 373 19 20*n+13 = 393 20 20*n+13 = 413 21 20*n+13 = 433 22 20*n+13 = 453 23 20*n+13 = 473 24 20*n+13 = 493 25 20*n+13 = 513	Switch colour gradient function – Light "n"	Write	1 bit	1.001	C-W--

Rubric:	Colour	Data type:	Switching
Function:	Turns the colour gradient function in Light "n" on or off.		
Description:	1-bit object for switching the colour gradient function of light "n" on/off. Here, the entire RGB colour space is run through in an endless loop. Note: With this loop, the brightness is not changed from the current value. **Behaviour of a Hue Lux:** A colour gradient function is not possible. This CO therefore does not work and is ignored.		

Object		Name	Direction	Data width	DP type	Flags (CRWTU)
	n f(n) = Obj 1 20*n+14 = 34 2 20*n+14 = 54 3 20*n+14 = 74 4 20*n+14 = 94 5 20*n+14 = 114 6 20*n+14 = 134 7 20*n+14 = 154 8 20*n+14 = 174 9 20*n+14 = 194 10 20*n+14 = 214 11 20*n+14 = 234 12 20*n+14 = 254 13 20*n+14 = 274 14 20*n+14 = 294 15 20*n+14 = 314 16 20*n+14 = 334 17 20*n+14 = 354 18 20*n+14 = 374 19 20*n+14 = 394 20 20*n+14 = 414 21 20*n+14 = 434 22 20*n+14 = 454 23 20*n+14 = 474 24 20*n+14 = 494 25 20*n+14 = 514	Colour gradient function state – Light "n"	Read	1 bit	1.001	CR-T-

Rubric:	Colour	Data type:	Switching
Function:	Indicates whether the colour gradient function in Light "n" is active.		
Description:	1-bit object for display of a colour gradient function loop of light "n". If the object is assigned a "1", Light "n" is in a colour gradient function loop. If the object is assigned a "0", Light "n" is not in a colour gradient function loop.		

Object		Name	Direction	Data width	DP type	Flags (CRWTU)
	n f(n) = Obj 1 20*n+15 = 35 2 20*n+15 = 55 3 20*n+15 = 75 4 20*n+15 = 95 5 20*n+15 = 115 6 20*n+15 = 135 7 20*n+15 = 155 8 20*n+15 = 175 9 20*n+15 = 195 10 20*n+15 = 215 11 20*n+15 = 235 12 20*n+15 = 255 13 20*n+15 = 275 14 20*n+15 = 295 15 20*n+15 = 315 16 20*n+15 = 335 17 20*n+15 = 355 18 20*n+15 = 375 19 20*n+15 = 395 20 20*n+15 = 415 21 20*n+15 = 435 22 20*n+15 = 455 23 20*n+15 = 475 24 20*n+15 = 495 25 20*n+15 = 515	Trigger alert flash – Light "n"	Write	1 bit	1.017	C-W--

Rubric:	Alarm	Data type:	Trigger
Function:	Triggers a single alert flash in the light.		
Description:	1-bit object for triggering a one-time "alert light" by light "n". The default alert function of the light is used. Here, the light first becomes steadily brighter and then darker and then returns to the original state. The colour of the light does not change here. The "Alarm" function can be assigned any desired events here.		

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
	Switch alert flash – Light "n"	Write	1 bit	1.001	C-W--

n	f(n)		Obj
1	20*n+16	=	36
2	20*n+16	=	56
3	20*n+16	=	76
4	20*n+16	=	96
5	20*n+16	=	116
6	20*n+16	=	136
7	20*n+16	=	156
8	20*n+16	=	176
9	20*n+16	=	196
10	20*n+16	=	216
11	20*n+16	=	236
12	20*n+16	=	256
13	20*n+16	=	276
14	20*n+16	=	296
15	20*n+16	=	316
16	20*n+16	=	336
17	20*n+16	=	356
18	20*n+16	=	376
19	20*n+16	=	396
20	20*n+16	=	416
21	20*n+16	=	436
22	20*n+16	=	456
23	20*n+16	=	476
24	20*n+16	=	496
25	20*n+16	=	516

Rubric: Alarm

Data type: Switching

Function: Turns the light's alert flash function on or off.

Description: 1-bit object for switching an "alert flash" on or off by Light "n". The light flashes for 15 seconds. If the light was off, it is switched for the duration of the alert flash.

You can use signal scenes for longer flashing (see 6.11.1 Scenes with signal flashing, page 49).

Object					Name	Direction	Data width	DP type	Flags (CRWTU)
	n	f(n)		Obj	Colour temperature control – Light "n"	Write	2 bytes	9.002	C-W--
	1	20*n+17	=	37					
	2	20*n+17	=	57					
	3	20*n+17	=	77					
	4	20*n+17	=	97					
	5	20*n+17	=	117					
	6	20*n+17	=	137					
	7	20*n+17	=	157					
	8	20*n+17	=	177					
	9	20*n+17	=	197					
	10	20*n+17	=	217					
	11	20*n+17	=	237					
	12	20*n+17	=	257					
	13	20*n+17	=	277					
	14	20*n+17	=	297					
	15	20*n+17	=	317					
	16	20*n+17	=	337					
	17	20*n+17	=	357					
	18	20*n+17	=	377					
	19	20*n+17	=	397					
	20	20*n+17	=	417					
	21	20*n+17	=	437					
	22	20*n+17	=	457					
	23	20*n+17	=	477					
	24	20*n+17	=	497					
	25	20*n+17	=	517					

Rubric:	Colour temperature	Data type:	Temperature (K)
Function:	Sets the colour temperature value.		

Description:

2-byte object to set the colour temperature value for Light "n".

The Hue system uses the Mired (micro reciprocal degree) colour temperature as a unit of measurement. The ise smart connect KNX Hue uses a standardised communication object with the kelvin (K) as unit of measurement. The value for the associated status object may vary slightly due to conversion from one unit to another.

By default, the Hue system value range lies between 2000 K (500 Mired) and 6535 K (153 Mired) and between 2200 K and 6535 K for Hue White Ambiance lights. The ise smart connect KNX Hue adjusts values which are above the maximum, setting them to the maximum value, and values which are below the minimum, setting them to the minimum value.

The light is always switched on when the colour temperature is set.

Hue light behaviour without colour temperature: Hue lights, such as the Hue Lux, which do not support a change in the colour temperature merely switch this communication object on without changing the colour temperature.

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
	Colour temperature status – Light "n"	Read	2 bytes	9.002	CR-T-

n	f(n)		Obj
1	20*n+18	=	38
2	20*n+18	=	58
3	20*n+18	=	78
4	20*n+18	=	98
5	20*n+18	=	118
6	20*n+18	=	138
7	20*n+18	=	158
8	20*n+18	=	178
9	20*n+18	=	198
10	20*n+18	=	218
11	20*n+18	=	238
12	20*n+18	=	258
13	20*n+18	=	278
14	20*n+18	=	298
15	20*n+18	=	318
16	20*n+18	=	338
17	20*n+18	=	358
18	20*n+18	=	378
19	20*n+18	=	398
20	20*n+18	=	418
21	20*n+18	=	438
22	20*n+18	=	458
23	20*n+18	=	478
24	20*n+18	=	498
25	20*n+18	=	518

Rubric: Colour temperature

Data type: Temperature (K)

Function: Displays the colour temperature value.

Description:

2-byte object to display the colour temperature status for Light "n".

The Hue system uses the Mired (micro reciprocal degree) colour temperature as a unit of measurement. The ise smart connect KNX Hue uses a standardised communication object with the Kelvin (K) as unit of measurement. By default, the Hue system value range lies between 2000 K (500 Mired) and 6535 K (153 Mired) and between 2200 K and 6535 K for Hue White Ambiance lights.

The colour temperature in a Lamp "n" can also only change when there is a change in colour values or brightness.

Hue light behaviour without colour temperature: This communication object serves no purpose for Hue lights, such as the Hue Lux, which do not support a change in the colour temperature.

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
	Light connection status – Light "n"	Read	1 bit	1.002	CR-T-

n	f(n)		Obj
1	20*n+19	=	39
2	20*n+19	=	59
3	20*n+19	=	79
4	20*n+19	=	99
5	20*n+19	=	119
6	20*n+19	=	139
7	20*n+19	=	159
8	20*n+19	=	179
9	20*n+19	=	199
10	20*n+19	=	219
11	20*n+19	=	239
12	20*n+19	=	259
13	20*n+19	=	279
14	20*n+19	=	299
15	20*n+19	=	319
16	20*n+19	=	339
17	20*n+19	=	359
18	20*n+19	=	379
19	20*n+19	=	399
20	20*n+19	=	419
21	20*n+19	=	439
22	20*n+19	=	459
23	20*n+19	=	479
24	20*n+19	=	499
25	20*n+19	=	519

Rubric:	Connection	Data type:	Boolean
Function:	Indicates whether light "n" is connected to the Hue bridge		
Description:	If a "1" is assigned to the object, the connection is established. If a "0" is assigned to the object, the connection is broken.		

6 Commissioning

6.1 Operation

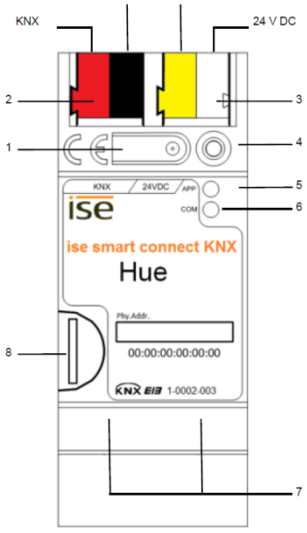


Figure 6: ise smart connect KNX Hue.

1	Programming button for KNX	Switches the device to the ETS programming mode or vice versa.	
2	KNX connection (twisted pair)	On left: (+/red) On right: (–/black)	
3	Connection for power supply	DC 24 to 30 V, 2 W (at 24 V) On left: (+/yellow) On right: (–/white)	
4	KNX programming LED (red)	Red: Device is in ETS programming mode	
5	LED *APP* (green)	Green: Normal operation Off/ flashes: See 6.3.1 / 6.3.2 for start or diagnosis code	
6	LED *COM* (yellow)	Yellow: Normal operation (brief dark phases indicate KNX telegram traffic) Off/ flashes: See 6.3.1 / 6.3.2 for start or diagnosis code	
7	Ethernet connection	LED 10/100 speed (green) On: 100 Mbit/s Off: 10 Mbit/s	LED link/ACT (orange) On: Connection to IP network Off: No connection flashes: Data reception on IP
8	MicroSD card holder	No function	

6.2 Automatic Hue Bridge detection

The ise smart connect KNX Hue searches for available Hue Bridges during start-up and while in operation. The Hue Bridges found are displayed on the device website ready for selection.

6.3 LED status displays

The devices features three status LEDs on the upper housing side and four status LEDs on the network connections.
The LED displays have **different meanings**

- while the device is starting and
- during operation.

6.3.1 LED status display upon device start-up

After the power supply (DC 24 V on the yellow-white connection terminal) is switched on or after a return in voltage occurs, the device indicates its status through the following LED combinations:

LED "*APP*" (green)	LED "*COM*" (yellow)	Meaning	
○ **Off**	○ Off	Error: No power supply! Please check connections and power supply.	✘
○ **Off**	● Yellow	Device starting up.	✓
○…● **Green Flash slowly (approx. 1 Hz)**	● Yellow	Note: The device is fully started up, but not yet configured. An ETS download is necessary.	✘
○…● **Green Flash quickly**	○ Off	Error: Please contact support. The firmware cannot be started.	✘
●…○…●…○…●… **Green** ○…●…○…●…○… **Yellow Flash slowly in an alternating fashion (approx. 1 Hz)**		Error: Please contact support. The newly loaded firmware cannot be started. The system is trying to activate the previous firmware (invalid firmware).	✘

6.3.2 LED status display in operation

Once device start-up is complete, the meaning of the LEDs is as follows:

LED "*APP*" (green)	Meaning
● Green	Normal operation
○ Off	Device in start-up procedure or out of operation: Wait until the start-up procedure is complete or check the power supply
●…○…●…○…●…○ Three slow blinks at 1 Hz, followed by a 2 s pause	Error: One of the following errors has occurred: • No Philips Hue Bridge has been configured • One or more Hue Bridges cannot be reached at present • Registration still needs to be performed on one or more Hue Bridges. Check for the exact cause of the error on the device website or using Communication Object 3. Verify that the Philips Hue Bridges are in operation and check the website to established whether registration has already been carried out (see Section 6.9).
●…○…●…○…●…○…●…○…● Five slow flashes at 1 Hz, followed by a 2 sec pause	Note: One or more Hue lights cannot be reached at present. If devices are switched off to save power, an error is not in effect

LED "*COM*" (yellow)	Meaning
● Yellow	Normal operation: KNX connection is established, no KNX telegram traffic.
●…○…●…○…●…○ Rapid yellow flashing with brief dark phases	Normal operation: KNX connection is established, KNX telegram traffic.
○ Off	Error: Connection to KNX is interrupted. Check the bus connection

6.4 Accelerate transfer: Select transfer path *KNX-TP* or *IP*

Programming (transfer from the ETS to the device) occurs in the programming environment of the ETS. An additional KNX data interface is not required for transfer (bus connection via bus connection terminal). The ETS can reach the device from both the IP side and the KNX-TP side.

Due to considerably shorter transfer times, we recommend downloading from the device's IP page.

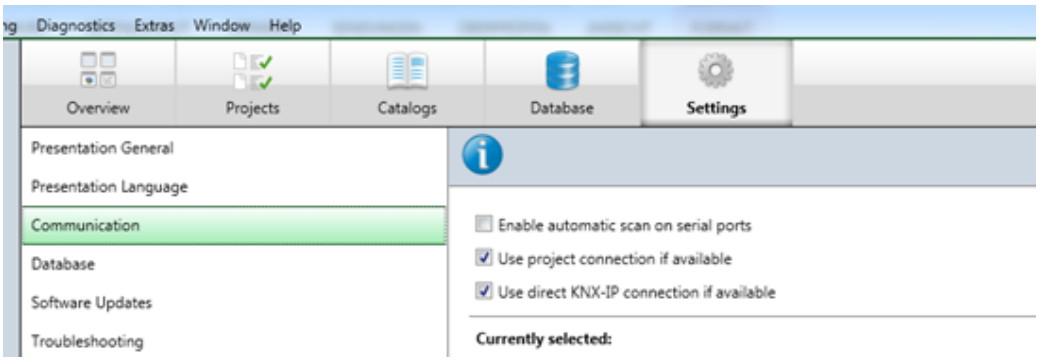


Figure 7: The *Use direct KNX-IP connection if available* setting accelerates the transfer from the ETS to the device.

For transfer of the ETS over the IP side, set the setting

☑ ***Use direct KNX IP connection if available***

on the ETS start page, → *Settings* tab → *Communication* entry.

6.5 Programming the physical address of the device

- Ensure that the device and bus voltage are switched on.
- Ensure that the programming LED (4) is not illuminated.
- Press programming button (1) briefly − Programming LED (4) lights up red.
- Program physical address using the ETS.

After a successful programming procedure,

- LED (4) will go out.
- The ETS shows the completed transfer with a green marking under *History* in the sidebar (normally at the right-hand window edge).
- The ETS sets the commissioning tick on the device for "Adr" and "Cfg".

You can now note down the physical address on the device.

6.6 Transferring application programs and configuration data

After programming the physical address, the application program, parameter settings and group address connections can be transferred to the device.

A connection to the device can be further established via IP or KNX for this purpose.

- For this purpose, select *Programming application program*. The download lasts approx. 15 seconds with a direct IP connection or about 2 minutes if using TP.
- After the download, please wait approx. 15 seconds while the device copies the data and installs the application.
- Commissioning is complete.

6.7 Factory reset

The following physical KNX address is factory pre-set: 15.15.255.
Following the factory reset, the device behaves as in the state of delivery. The device is unconfigured. This can be recognized after starting up the device from the slowly flashing green APP LED (5).

6.7.1 Using the programming button on the device

The device can be reset to the factory settings through a sequence during start-up.

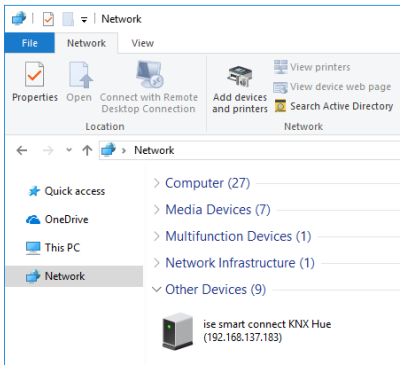
- Make sure that the device is switched off.
- Press and hold programming button (1) and switch on the device.
- Press and hold programming button (1) until the programming LED (4), the RUN LED (5) and the KNX LED (6) flash slowly simultaneously.
- Briefly release the programming button (1), then press and hold it again until the programming LED (4), the RUN LED (5) and the KNX LED (6) flash quickly simultaneously.
- The factory reset is being carried out; release programming button.
- The device need not be restarted following a factory reset.

The factory reset can be cancelled at any time by interrupting the sequence.

6.7.2 Using the website of the device

The factory reset can also be triggered from the website of the device.

- Call up the website of the device. For this purpose, double-click the icon of the device in the *Other Devices* area in the network environment.



- Alternatively, you can also enter the IP address of the device in your browser.
- Select *Factory reset* in the *System* menu.
- Confirm the factory reset when the security prompt appears.
- The next displayed page shows that the factory reset is being carried out. As soon as this is complete, the start page is loaded again.

6.8 Firmware update of the device

6.8.1 Firmware update using the device website

The ise smart connect KNX Hue makes it possible to install firmware updates using the device website. Select *Update firmware* in the *System* menu on the device website to do so. The ise smart connect KNX Hue will now automatically search the update server for a newer version and show the current firmware version and the versions of any available updates. If a newer version is available, the associated description of the version is also displayed.

If the new firmware is incompatible with the configuration of the previous firmware, a corresponding message is displayed. A differentiation is made between the following cases here:

1. The new version provides new functionality. After the update, the device functions with the same range of functions as before. New functions cannot be used until an ETS download of a newer catalogue entry occurs.
2. The new version is completely incompatible with parametrisation in the version currently being used. An ETS download is absolutely necessary. We recommend unloading the ETS application program before the update and configuring the device with a new catalogue entry after the update.

The update can be started using the *Update Firmware* button. Should an incompatibility arise, the update must be confirmed again for security purposes.

6.8.2 Local firmware update without Internet access

Local updates can be performed instead of an online update if there is no Internet connection. This is intended for devices which do not have an Internet connection at their installation site and are only accessible over the local network. You can download a current firmware file from www.ise.de. The firmware file can be selected locally using the Select File button and then started using the Update Firmware button. In this case, the user is responsible for ensuring that the update is compatible (see chapter 6.8.3 "Compatibility of catalogue entry with firmware"). A downgrade to an older version is not possible using this process.

6.8.3 Compatibility of catalogue entry with firmware

The version numbers in the catalogue entry and the firmware use an X.Y format. The main number, X, of the respective version indicates whether the catalogue entry and firmware are compatible. This is the case if both main numbers are identical. The second part of the version number, Y, is not relevant for compatibility. It simply indicates updates within the version.

If new firmware has a higher main number, it cannot be guaranteed that this version is compatible with an old ETS catalogue entry. For this reason, we recommend always unloading the application program from the device before the update and to then only use the new catalogue entry after that.

If the main numbers are the same, it may be necessary to use a new ETS catalogue entry for full functionality. This is not absolutely necessary if the new functions are not used in your project, however.

6.9 Registering the HueApp on one or more Philips Hue Bridges

Figure 8 shows the device's initial start page without registered Philips Hue Bridges. In this case, four lights have been configured in the ETS so that only four fields for configuration are available on the website.

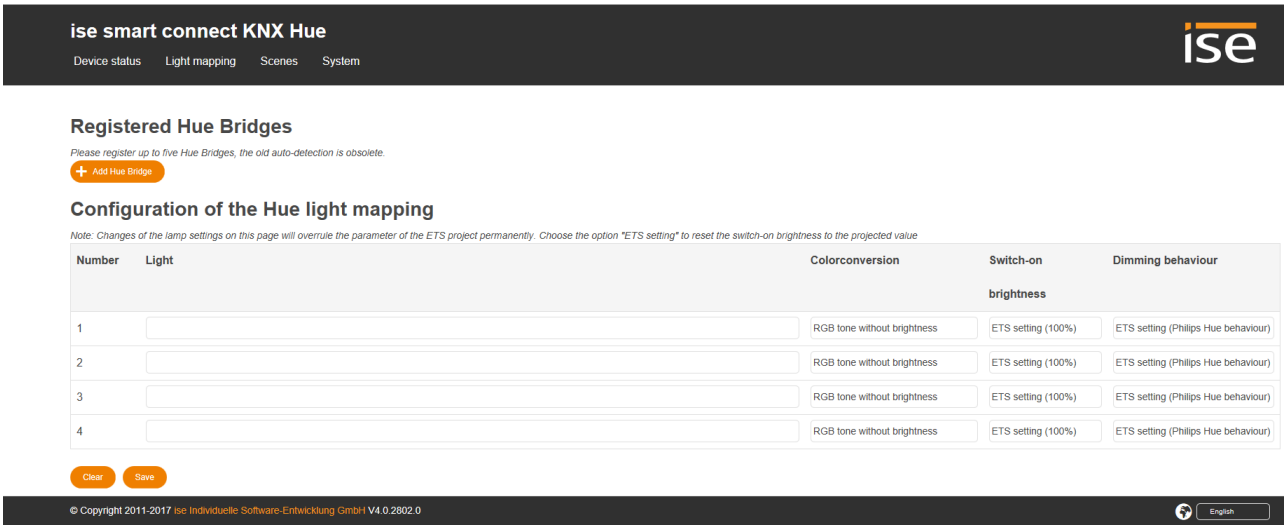


Figure 8: Device website for configuration of the Hue lights with four lights configured in the ETS and unregistered HueApp at the Philips Hue Bridge.

The ise smart connect KNX Hue must be registered on a Philips Hue Bridge to ensure correct operation. You have the option of using the "Add Hue Bridge" button to register on an automatically detected bridge. Alternatively, you can use the IP address to specify a Hue Bridge. You can register up to five Hue Bridges on the device website. Their lights can be controlled with the KNX.

You need to press the link button on the Hue Bridge during registration on a Hue Bridge, so you require physical access to the Hue Bridge.

Figure 9 shows successful registration on the Hue Bridge. If necessary, you can use the cross symbol to remove registration for a Philips Hue Bridge again.

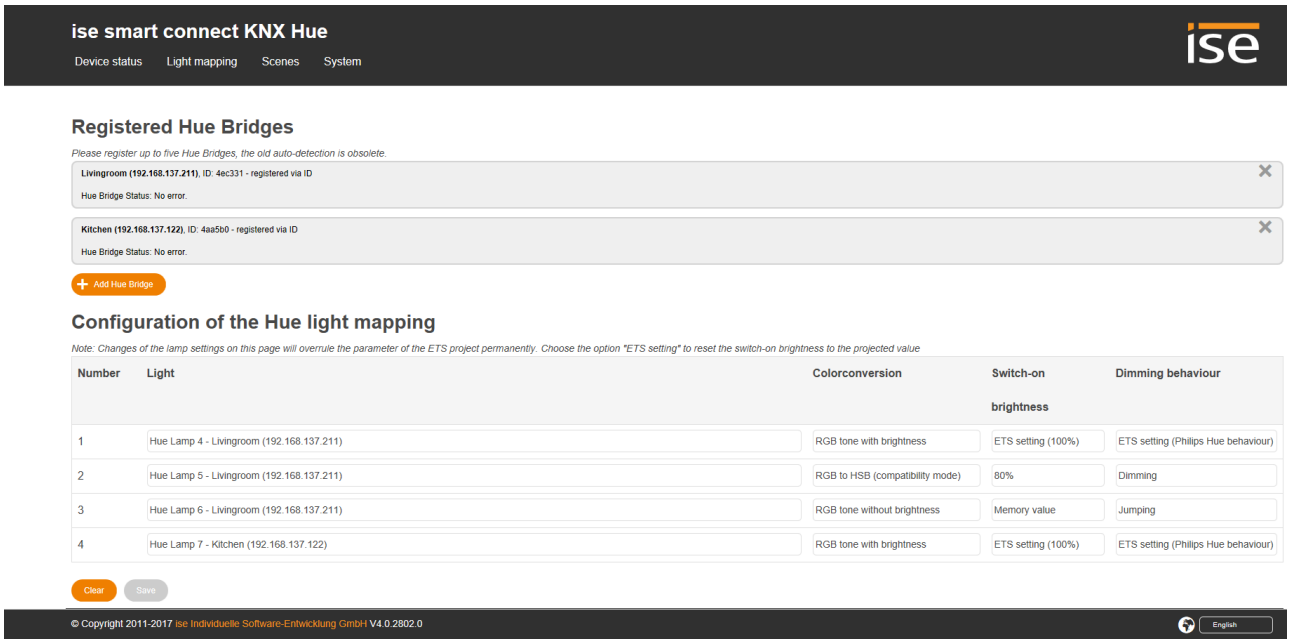


Figure 9: Default device website with the required registration at the Philips Hue Bridge.

6.10 Configuration of lights using the website

The ise smart connect KNX Hue allows you to configure up to 25 Hue lights on registered Philips Hue Bridges. You can select them using the light names known to the Hue Bridges concerned.

You use the device website to make the selection. Chapter 6.7.2 – *Using the website of the* device describes how to open the website.

As soon as the ise smart connect KNX Hue has established a connection with the Philips Hue Bridge, the lights available in the bridge can be used for light assignation. All you need to do here is click on the text field concerned; a list of the available lights will then appear (see Figure 10).

Depending on the Internet browser, the display appears as a drop-down or suggestion list during entry.

The following configurations can be made to the individual lights with version 4.0 and higher:

Name	Description
Colour conversion	You can use colour conversion to control how lights respond to changes in RGB codes. You can select the following settings: **RGB colour tone with brightness (default setting)** The colour tone and brightness are based on the RGB code in this setting. The maximum individual RGB code is used for brightness, i.e. the colour red at 100% 0% 0% is displayed with 100% brightness. This mode is suitable for devices/visualisations which send the required brightness in RGB codes (e.g.: Color Picker in the Gira Homeserver, Gira G1/X1 or Jung SmartVisu Server). **RGB colour tone without brightness** In this setting, only information about the colour tone is taken from the RGB code and then sent to the Hue light. This allows you to use the RGB codes to set different colours without changing the brightness. This mode is suitable for devices/visualisations that control brightness with their own component, which has no impact on the colour. One such device is the Elsner Corlo Touch Color Picker, which sets a colour channel to 100% when selecting a colour, even if the current brightness is set significantly lower. **RGB to HSB (compatibility mode)** This is the conversion process used before version 4.0. There is no adjustment to different light sources during this process. The colour tone and brightness are based on the RGB code in this setting. RGB is converted to xy, except in RGB to HSB mode. During conversion, the RGB colours are corrected to provide the best possible colour for the light source used. This notably produces better green tones. If you have upgraded your device to version 4.0 or higher, all your configured lights are set to "RGB to HSB" by default, which corresponds to the old behaviour.
Switch-on brightness	**Memory value** The light is switched on with the last brightness value before it was switched off.

	5% to 100% A fixed switch-on brightness can be defined in 5% increments. **ETS setting (default setting)** The value parametrised in the ETS is used for the switch-on brightness (compare Chapter 5.4.2 Light parameter tab).
Dimming behaviour in absolute brightness	**Dimming** The required absolute brightness is dimmed at the configured dimming speed. **Jumping** The required absolute brightness is set in the light source as quickly as possible. **Philips Hue behaviour** The same setting is used to configure a brightness as in the mobile Philips Hue app (currently 400ms). This allows lights to respond with a visually appealing glow. **ETS setting (default setting)** The value parametrised in the ETS is used for the switch-on brightness (compare Chapter 5.4.2 Light parameter tab).

The corresponding line is highlighted in yellow as soon as you change a light's configuration. You can used the "Save" button under the table to apply the change.

The "Delete" button clears all light assignations. If you click on "Save" now, the device will delete any saved configuration and generate a default configuration. The default configuration fills the configured KNX light assignations with the lights available in the registered Hue Bridges until all KNX light assignations are taken and/or no more Hue lights are available.

Note: The default configuration is not saved automatically. The default configuration will also change if a Hue Bridge is not available or lights are added or removed.

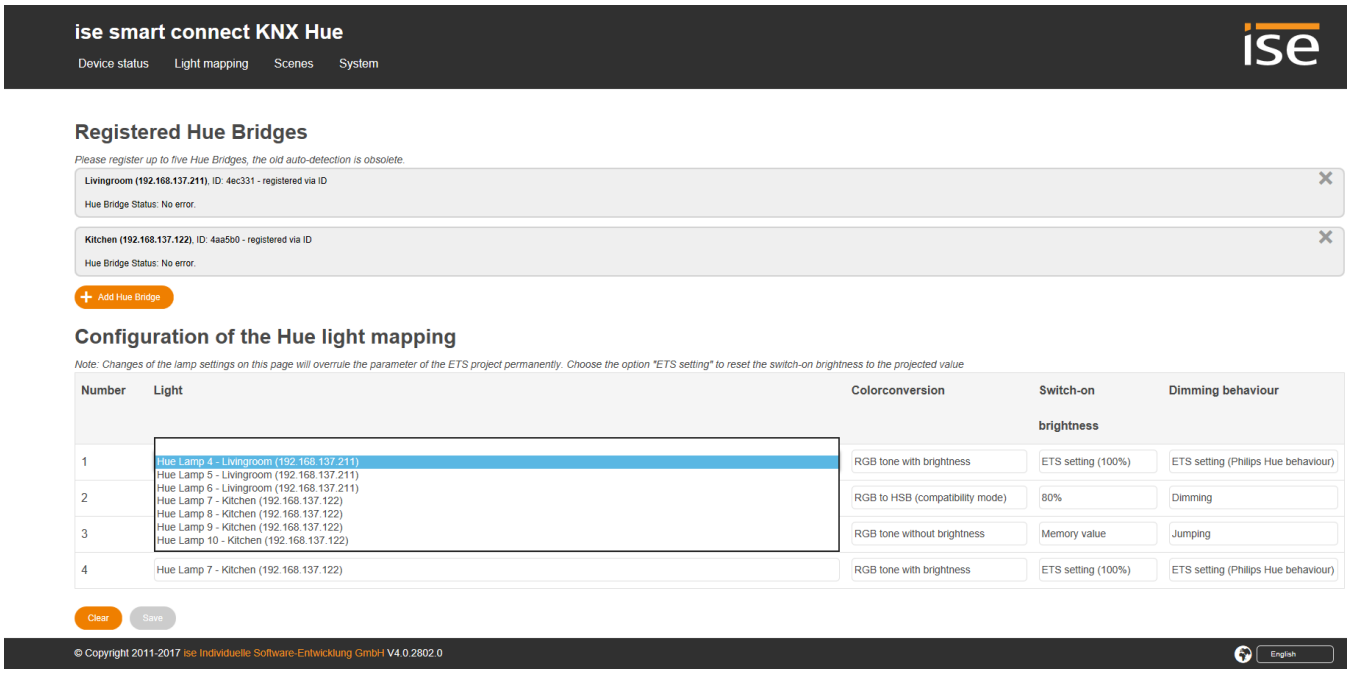


Figure 10: Selection of the available lights in the Philips Hue Bridge.

6.11 Configuring lights on the website

You can manage up to 64 scene configurations using the *Scenes* menu item on the device website. You can use Communication Object 4 to activate them (see Chapter 5.4.3 Communication objects for controlling the Philips Hue Bridge).

This website lists all KNX scene numbers configured on the ise smart connect KNX with their associated scene names in the Philips Hue scenes. The site also indicates the registered bridges that these Philips Hue scenes are available on.

The Philips Hue scenes are created with the Philips Hue mobile app and may also contain lights which have not been explicitly configured on the ise smart connect KNX.

If an existing Hue scene has been subsequently deleted from all available Hue Bridges, a red error message indicates that it has been removed.

Note: A configured Philips Hue scene is triggered on all registered Philips Hue Bridges on which it exists. If you assign the Philips Hue "Doorbell" scene to several Philips Hue Bridges and assign this scene to a bridge in a number of rooms, the scene is triggered in all rooms and all bridges when it is activated by Communication Object 4. You thus have the option to define cross-bridge scenes which you can trigger with a command via the KNX.

You can use the "Add scene" button to assign a Philips Hue scene to a new KNX scene number. The free KNX scene numbers not yet in use are offered in a selection list ready for use. The first available KNX scene number is pre-selected by default. Another list displays all available Philips Hue scene names in alphabetical order. These selection lists are automatically re-generated every 30 seconds and can be updated manually using the update icon. The first Philips Hue scene in the list is pre-selected by default. The list contains all Philips Hue scenes in the registered Philips Hue Bridges. If a scene name exists on more than one bridge, this scene is only listed once.

You can use the "Delete" button (x) at the end of each line to remove existing configurations. The configuration button (cogwheel) beneath allows you to modify the configuration at a later time.

6.11.1 Scenes with signal flashing

Scenes can be configured as signal flash scenes which allow lights to flash in a Hue scene.

The signal flashing finishes automatically when the defined period comes to an end (if "Infinite" has not been selected) or when terminated (before time) by a cancellation scene. If the colour value in a light is changed or changes are made to a light's brightness during an active signal scene, this will affect the lights within signal scenes. This is true for changes triggered by the KNX or the mobile Philips Hue app. If the original state – the light setting immediately before signal flashing commenced – needs to be restored after signal flashing, any changes implemented between the start and finish of the signals are not included when it is restored.

You can make the following settings for signal flashing:

Duration	**5 seconds to 60 minutes or infinite** Defines the time period during which the Philips Hue signal flashing is active after it is triggered. The brightness pulsates from a minimum to a maximum value in all the lights assigned to the scene for the selected time interval. A scene for early termination is automatically when "infinite" signal flashing is configured. An "infinite" scene cannot be added if there is no free scene number available.
Restore to original state	**Yes/No** Once the signal period comes to an end, the settings are restored to their original state before the signal flashing was triggered. Apart from that, the lights remain in the selected Philips Hue scenes. The following rules apply to the original state for scenes which are triggered while another scene is active: If you do not wish to restore an original state in the existing signal scene (Scene 1) and the new signal scene (Scene 2) is intended to restore a state, the settings are restored to the state which existed before the second signal scene was triggered. The lights then take on the colours from "Scene 1". If you wish to restore an original state based on the existing signal scene (Scene 1) and the new signal scene (Scene 2), the original state from "Scene 1" is applied to "Scene 2". The lights then adopt the state before "Scene 1" was triggered after "Scene 2" comes to an end. If you do not wish to apply an original state in the new signal scene, the lights retain the colours from the last scene, irrespective of the preceding scenes.
Early termination with scene no.	**Yes/No** The configured scene number can be used to cancel the scene ahead of time. The early cancellation terminates the signal flashing. The "Restore original state" setting is observed on cancellation.

	The cancellation scene is added automatically and is displayed in the description for the scene no. which initiates the trigger. Early termination cannot be added if there is no free scene number available. This also means that no more scenes can be added with an "infinite" duration in such cases.

7 Technical data

KNX medium	TP
Commissioning mode	S mode (ETS)
KNX supply	DC 21 to 30 V SELV
KNX connection	Bus connection terminal
External supply	
Voltage	DC 24 to 30 V ±10%
Connection	Bus connection terminal, preferably yellow (+)/white (–)
Power consumption	Typically 2 W (at DC 24 V, two Ethernet lines connected)
IP communication	Ethernet 10/100 BaseT (10/100 Mbit/s)
IP connection	2 x RJ45
Supported protocols	ARP, ICMP, IGMP, UDP/IP, DHCP, AutoIP KNXnet/IP as per KNX system specification: Core, Device Management
microSD card	No function
Ambient temperature	0 °C to +45 °C
Storage temperature	-25 °C to +70 °C
Installation width	36 mm (2 HP)
Installation height	90 mm
Installation depth	74 mm
Protection type	IP20 (compliant with EN60529)
Protection class	III (compliant with IEC 61140)
Test marks	KNX, CE

8 Frequently asked questions (FAQ)

- **How can I find my ise smart connect KNX Hue's IP address?**
  Please read about this in Section 6.7.2 – Using the website of the device.

- **Which Hue Bridge version does the ise smart connect KNX Hue support?**
  The ise smart connect KNX Hue supports the Hue Bridge starting with API version 1.15.

- **Can I use more than one ise smart connect KNX Hue with a Hue Bridge?**
  Yes. In this case, each ise smart connect KNX Hue is only responsible for the lights configured at its website.

- **Can I still operate my Hue lights with other apps, e.g. from my iPhone?**
  Yes. Use of the ise smart connect KNX Hue does not limit the operation of your Hue lights. Changes, for example those you make using your smartphone, are forwarded to the KNX accordingly wherever possible.

- **Which actions in the Hue software cannot be simulated with KNX or are not understood by KNX?**
  The ise smart connect KNX Hue cannot switch Hue scenes or alarm functions by itself. Option logic modules or time clocks are required for this purpose.

- **Why do my KNX operating devices not generate the normal response in my Hue lights?**
  - If the Hue lights can be operated using the official Hue application without any problems, please check the LED display for your ise smart connect KNX Hue on the device to rule out a fault (see Section 6.3.2 – LED status display in operation).
  - You are using a Hue Lux in your system and are not using Version 3.1 of the application software. No systems which contain a Hue Lux can be operated with earlier versions.

- **Why can my Hue lights suddenly no longer be operated on the KNX?**
  - If the ise smart connect KNX Hue uses a fixed IP address for the Philips Hue Bridge, please check whether the Hue Bridge's IP address has changed or use the automatically detected bridge serial number. If you use DHCP to assign the IP addresses for your Philips Hue Bridge, please couple the issued IP addresses to the MAC address on the respective Philips Hue Bridge.
  - You are using a Hue Lux in your system and are not using Version 3.1 of the application software. No systems which contain a Hue Lux can be operated with earlier versions.

- **I am unable/no longer able to use the KNX to control my Hue lights.**
  You are using a Hue Lux in your system and receive the "Bridge firmware too old" error message in the log. You can only operate Hue Lux lights with application software Version 3.1. You will receive the error message above if earlier versions are used.

- **Why is the status of a Hue light which is no longer available first set incorrectly on the KNX bus?**
  If the Philips Hue Bridge is switched on, it first assumes that all of your known lights can be reached. Only after that does the bridge check the reachability of the lights and send the correct status to the ise smart connect KNX Hue. This can take several seconds.

- **Why can I control a Hue light via KNX, yet not receive correct status messages?**
  The Hue light may only be assigned to one KNX number on the device website. In case of multiple assignment, status changes of the Hue Bridge are only displayed for the first found KNX number.

- **Does a microSD card need to be inserted into the ise smart connect KNX Hue?**
  No. The SD card slot is not in use.

- **Why doesn't the website work?**
  - Is the software restarting?
    It can take up to three minutes until the website is available again after the parametrisation is downloaded with the ETS. Try to reload the page after a few minutes.
  - Is Javascript activated? Are cookies enabled?
    The website requires Javascript and cookies. Re-set your web browser options to allow Javascript to run and cookies to be saved if necessary.
  - Are you using an up-to-date, supported web browser?
    The answer to the next question contains a list of browsers which will always work.

- **Which web browsers does ise smart connect KNX Hue support?**
  The website was successfully tested with the following browsers in the recent versions:

    - Mozilla Firefox
    - Google Chrome
    - Microsoft Edge
    - Apple Safari

- **Are there software updates for my ise smart connect KNX Hue device?**
  You will find information on software update in Chapter 6.8.1 "Firmware update using the device website".

- **Can I open my ise smart connect KNX Hue's website using an ise smart connect KNX Remote Access?**
  Yes, these ise products are compatible with one another.

  ise smart connect KNX Remote Access is a remote access solution which provides access to local device websites from any location whenever an Internet connection is available.

- **Why does the ETS report the error that it is not possible to write on a protected area when downloading the application program?**
  Please ensure that your ETS version is up to date. The ise smart connect KNX Hue requires the ETS4 version 4.2 or higher or the ETS5 version 5.0.2 or higher.

- **Why does the colour temperature setting function not work?**
  The colour temperatures cannot be changed for some lights such as the Philips Hue Lux. The colour temperature communication object is only able to switch such lights on and nothing else. Use a different light type, such as the Philips Hue, to achieve the desired effect.

- **Why is my ise smart connect KNX Hue restarting?**
  If the device performs another restart, please check whether you used the sign "\" in the device name. This is not allowed and requires a factory reset (see Chapter 6.7 Factory reset).

- **Why are RGB codes sent by the KNX not applied correctly or why do colours take time to change?**
  RGB codes are converted into the CIE colour space and Hue lights are addressed in the xy colour space (CIE colour space). However, the lights do not support the complete colour space, just a specific gamut. A correction is applied to colour values outside this gamut with the best possible colour value within the gamut specified for the light concerned.
  Depending on the light's firmware version, there may be a subsequent change to the colour value if the light is unable to reproduce the specified colour value precisely.

- **How long does it take before changes to Hue lights that I have made on my smartphone are sent to the KNX?**
  The Philips Hue Bridge polls the current state of Hue lights every three seconds. Consequently, it can take up to three seconds before the current state is available from the KNX.
  The current value for the state changes triggered via the KNX are provided by the KNX as soon as the switching command has been successfully sent to the Philips Hue Bridge.

9 Troubleshooting and support

If you have a problem with your ise smart connect KNX Hue and require support, please send an e-mail with a detailed error description and the log file created after the error occurred to support@ise.de. For information on how to download the log files from your ise smart connect KNX Hue, please refer to Section 9.1 – *Downloading log files if a problem* occurs.

9.1 Downloading log files if a problem occurs

If a problem occurs, the log files are required for providing support. They can be downloaded via the website of the device (see Section 6.7.2). To do so, proceed as follows:

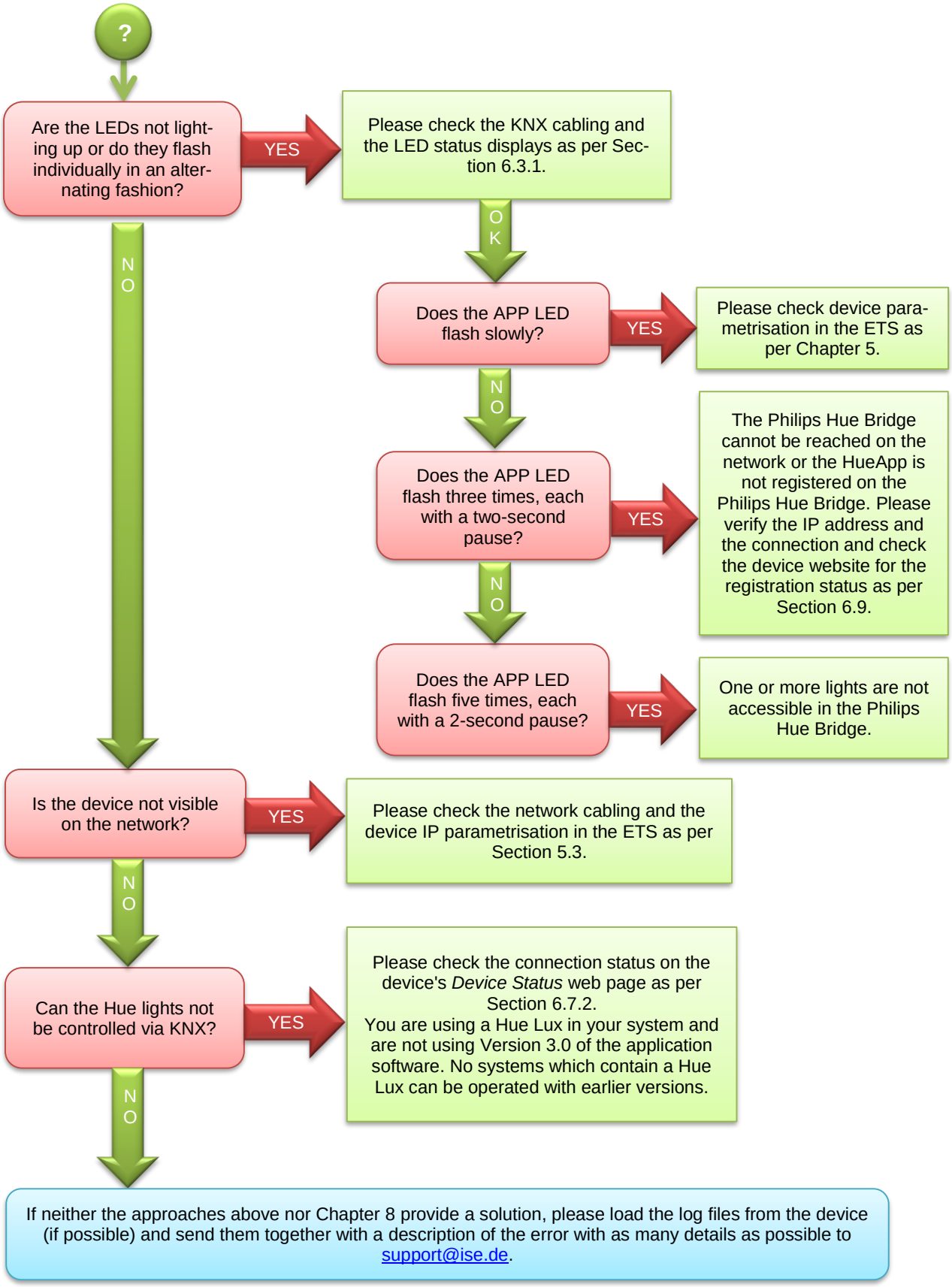
- Call up the website of the device. For this purpose, double-click the icon of the device in the *Other Devices* area in the network environment.
- Select *System/Download log file* in the top menu on the website.
- The dialogue which opens will start downloading the log files. If this does not occur, the provided link can be used.

9.2 Status page of the ise smart connect KNX Hue

You can call up the device status on the website of the ise smart connect KNX Hue (see Section 6.7.2). Among other things, it displays the installed software version and the configuration of the Hue lights in the ise smart connect KNX Hue. Should an error occur, please send us a screen shot of the status page.

9.3 The ise smart connect KNX Hue does not work

The following error tree is intended to solve the most common problems. Should this be unsuccessful, please contact us at support@ise.de.



10 License agreement ise smart connect KNX Hue software

Hereinafter are the contract terms for your use of the software as the "Licensee".
On accepting this agreement and installing the ise smart connect KNX Hue software or putting the ise smart connect KNX Hue into use, you conclude an agreement with ise Individuelle Software und Elektronik GmbH and agree to abide by the terms in this agreement.

10.1 Definitions

Licensor: ise Individuelle Software und Elektronik GmbH in Osterstraße 15, Oldenburg, Germany
Licensee: The legal recipient of the ise smart connect KNX Hue software.
Firmware: Software which is embedded on the ise smart connect KNX Hue hardware and enables operation of the ise smart connect KNX Hue.
ise smart connect KNX Hue software: The ise smart connect KNX Hue software designates all of the software provided for the ise smart connect KNX Hue product, including the operating data. This includes, in particular, the firmware and the product database.

10.2 Object of the agreement

The object of this agreement is the ise smart connect KNX Hue software provided on data media or through downloads, as well as the corresponding documentation in written and electronic form.

10.3 Rights of use of the ise smart connect KNX Hue software

The Licensor grants the Licensee the non-exclusive, non-transferable right to use the ise smart connect KNX Hue software for an unlimited time in accordance with the following conditions for the purposes and applications specified in the valid version of the documentation (which shall be provided in printed form or also as online help or online documentation).
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The licensee is not authorised to apply reverse-engineering techniques to the ise smart connect KNX Hue software or to convert the ise smart connect KNX Hue software into another type. Such techniques include, in particular, disassembly (conversion of the binary-coded computer instructions of an executable program into an assembler language which can be read by humans) or decompilation (conversion of binary-coded computer instructions or assembler instructions into source code in the form of high-level language instructions).

10.4.3 Firmware and hardware

The firmware may only be installed and used on the hardware (ise smart connect KNX Hue) approved by the Licensor.

10.4.4 Transfer to a third party

The ise smart connect KNX Hue software may not be passed on to third parties, nor may it be made accessible to third parties.

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The Licensee requires written approval from the Licensor to create and distribute software which is derived from the ise smart connect KNX Hue software.

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10.5.2 Transfer to a third party

Neither the software nor the data backup copy nor the documentation (which shall be provided in printed form or also as online help or online documentation) may be passed on to third parties at any point in time, in whole or in part, for a charge or free of charge.

10.6 Changes, additional deliveries

The ise smart connect KNX Hue software and the documentation (which shall be provided in printed form or additionally as online help or online documentation) shall be subject to possible changes by the licensor.

10.7 Warranty

The ise smart connect KNX Hue software shall be delivered together with the third party software which is listed on the device website as described in Chapter 11 – *Open Source Software*. No warranty is provided for software from third parties.

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The ise smart connect KNX Hue software and the documentation (which shall be provided in printed form or additionally as online help or online documentation) shall be provided to the licensee in the respective valid version. The warranty period for the ise smart connect KNX Hue software is twenty-four (24) months. The Licensor shall provide the following warranty during this time:

- The software shall be free of material and manufacturing defects when turned over to the customer.
- The software shall function in accordance with the documentation included with it in the respective valid version.
- The software shall be executable on the computer stations specified by the Licensor.

The warranty shall be fulfilled with the supply of spare parts.

10.7.2 Limitation of warranty

Otherwise, no warranty shall be provided for the freedom from faults of the ise smart connect KNX Hue software and its data structures from defects. Nor does the warranty cover defects due to improper use or other causes outside the influence of the Licensor. Any additional warranty claims shall be excluded.

10.8 Liability

The Licensor shall not be liable for damages due to loss of profit, data loss or any other financial loss resulting from use of the ise smart connect KNX Hue software, even if the Licensor is aware of the possibility of such damage.

This limitation of liability is valid for all the Licensee's damage claims, regardless of the legal basis. In any case, liability is limited to the purchase price of the product.
The exclusion of liability does not apply to damage caused by premeditation or gross negligence on the part of the Licensor. Furthermore, claims based on the statutory regulations for product liability shall remain intact.

10.9 Applicable law

This agreement is subject to the laws of the Federal Republic of Germany.
The place of jurisdiction is Oldenburg.

10.10 Termination

This agreement and the rights granted herein shall end if the Licensee fails to fulfil one or more provisions of this agreement or terminates this agreement in writing. The supplied ise smart connect KNX Hue software and the documentation (which is provided in printed form or also as online help or online documentation), including all copies, shall be returned immediately in such a case without the Licensor specifically requesting their return. No claim to reimbursement of the price paid shall be accepted in such a case.
The license to use the ise smart connect KNX Hue software shall expire upon termination of the agreement. The ise smart connect KNX Hue product must be taken out of operation in such a case. Further use of the ise smart connect KNX Hue without a license is precluded.
The commissioning software and visualisation software must be uninstalled and all copies must be destroyed or returned to the Licensor.

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Subsidiary agreements and changes to the agreement shall only be valid in writing.

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