

Documentation date:
12/12/2019
Printing date: 12/12/2019

Product Manual

ise smart connect KNX Nussbaum

Order No. 1-000E-002

Valid for application software version 2.0 and firmware version 2.0.77



Table of contents

<u>1</u>	<u>Product description</u>	<u>4</u>
1.1	Functions	4
1.2	Nussbaum goes KNX	4
1.3	Definitions and explanation of terms.....	5
1.4	Application scenarios – Comfort solutions with KNX and Nussbaum	5
1.4.1	Your presence controls the heating	5
1.4.2	Adjustment of setpoint room temperature/power level to special situations	5
1.4.3	Monitoring and using status values.....	6
1.4.4	Control cooling	6
<u>2</u>	<u>Installation, electrical connection and operation.....</u>	<u>7</u>
2.1	Device design.....	7
2.2	Safety notes	8
2.3	Mounting and electrical connection	8
<u>3</u>	<u>Configuration.....</u>	<u>10</u>
3.1	Configuration step 1 – Create ise smart connect KNX Nussbaum as device in the ETS.....	11
3.2	Configuration step 2 – Assigning a physical address.....	12
3.3	Configuration step 3 – Setting the IP address, subnet mask and address of the standard gateway.....	12
3.4	Setting general parameters	13
3.4.1	Parameters for the device ise smart connect KNX Nussbaum general	13
3.4.2	Parameters for the base station.....	13
3.5	Connect group addresses to group objects.	14
3.5.1	Thermostat-controlled rooms.....	14
3.5.2	Power level control	16
3.5.3	Base station general.....	19
3.5.4	Gateway general	19
3.5.5	Absence control.....	21
3.5.6	Cooling.....	23
<u>4</u>	<u>Commissioning</u>	<u>24</u>
4.1	Operation	24
4.2	LED status displays.....	25
4.2.1	LED status display upon device start-up.....	25
4.2.2	LED status display in operation	26
4.3	Accelerate transfer: Select transfer path <i>KNX-TP</i> or <i>IP</i>	27
4.4	Programming the physical address of the device	27
4.5	Transferring application programs and configuration data	28
4.6	Device website	28
4.6.1	Logging into the device website.....	29
4.6.2	Configuration of login information for base stations	29
4.6.3	System	30
4.7	Factory reset	31
4.7.1	Using the programming button on the device.....	31
4.7.2	Using the website of the device	31
4.8	Firmware update of the device	31

4.8.1	Local firmware update without Internet access	32
4.8.2	Compatibility of catalogue entry with firmware	32
5	<u>Technical data</u>	<u>33</u>
6	<u>Frequently asked questions (FAQ)</u>	<u>34</u>
7	<u>Troubleshooting and support.....</u>	<u>36</u>
7.1	Downloading log files if a problem occurs.....	36
7.2	The ise smart connect KNX Nussbaum does not work	37
8	<u>License agreement ise smart connect KNX Nussbaum software</u>	<u>38</u>
8.1	Definitions	38
8.2	Object of the agreement.....	38
8.3	Rights of use of the ise smart connect KNX Nussbaum software	38
8.4	Restriction of rights of use	38
8.4.1	Copying, modification and transmission.....	38
8.4.2	Reverse engineering and conversion technologies.....	38
8.4.3	Firmware and hardware.....	38
8.4.4	Transfer to a third party	39
8.4.5	Renting out, leasing out and sub-licensing	39
8.4.6	Software creation	39
8.4.7	The mechanisms of license management and copy protection	39
8.5	Ownership, confidentiality.....	39
8.5.1	Documentation	39
8.5.2	Transfer to a third party	39
8.6	Changes, additional deliveries.....	39
8.7	Warranty	39
8.7.1	Software and documentation	39
8.7.2	Limitation of warranty	40
8.8	Liability	40
8.9	Applicable law	40
8.10	Termination	40
8.11	Subsidiary agreements and changes to the agreement.....	41
8.12	Exception	41
9	<u>Open Source Software</u>	<u>42</u>

1 Product description

1.1 Functions

- Operation of Therm-Control¹ via KNX.
- The ise smart connect KNX Nussbaum establishes the connection between your home automation (KNX) and the Therm-Control system.
- Support of up to five base stations (WiFi module required).
- Control of up to twelve circuits via actors and/or max. eight room thermostats per base station.
- On room thermostat control: Status actual temperature, control and status of setpoint room temperature.
- On actor control: Control and status of power level.
- Control and status of cooling.
- Convenient absence triggering with lowering temperature through your home automation.
- An integrated data network switch (two RJ45 connections) simplifies the connection of multiple IP devices. This enables multiple ise smart connect KNX Nussbaum 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 Nussbaum via a direct IP connection.
- Configuration of the ise smart connect KNX Nussbaum is carried out using the latest version of the ETS 4 or ETS 5. The application accesses ETS functions not supported by earlier ETS versions. This is why previous versions of ETS cannot be used for configuration.

Important note:

If you wish to use the ise smart connect KNX Nussbaum, you must use Therm-Control in version 3 or higher with firmware version 2.8-4.43 or higher, supplied by R.Nussbaum AG.

1.2 Nussbaum goes KNX

The ise smart connect KNX Nussbaum allows you to implement innovative solutions for your intelligent house.

Connecting KNX and Nussbaum opens up new possibilities:

- Your presence and absence control the Therm-Control system.
- Operating devices in every room desired enable convenient access to your Nussbaum system.
- Integration of your Therm-Control in building scenarios.

These and other application examples can be found in more detail in chapter 1.4 "Application scenarios – Comfort solutions with KNX and Nussbaum".

¹ Therm-Control is a registered trademark of R.Nussbaum KG.

1.3 Definitions and explanation of terms

- **Base station**
The component in the Nussbaum heating system through which the actor is controlled. See also the component description in the operating instructions for the Therm-Control.
- **WiFi module**
The component in the Nussbaum heating system that establishes contact between the base station and the end device. See also the component description in the operating instructions for the Therm-Control.
- **Actor**
The component in the Nussbaum heating system that controls the valve drive on one outlet and transmits the circuit return temperature to the base station. See also the component description in the operating instructions for the Therm-Control.
- **Room thermostat**
The component in the Nussbaum heating system that transmits the actual room temperature to the base station and enables a setpoint room temperature to be set. See also the component description in the operating instructions for the Therm-Control.
- **Control software**
The user interface of the WiFi module that can either be called in the browser via the local IP address or in Version 4 via the Nussbaum web portal. See also the component description in the operating instructions for the Therm-Control.

1.4 Application scenarios – Comfort solutions with KNX and Nussbaum

Enhance the existing Comfort functions of your KNX system with smart control of your Therm-Control.

1.4.1 Your presence controls the heating

You won't be at home for a longer period of time. KNX enables you to perform an occupied-home simulation today, allowing you to conveniently activate the alarm system by actuating the "absence switch". With the ise smart connect KNX Nussbaum you can now also switch your Therm-Control system to absence mode. This allows you to reduce the room temperature setpoint values in all rooms and minimise heating. You can optionally enter your time of return. The temperatures will be increased to ensure that the comfort temperature is reached by that point in time.

1.4.2 Adjustment of setpoint room temperature/power level to special situations

You want to adjust the setpoint room temperature or power level for a heating circuit. With the ise smart connect KNX Nussbaum you can temporarily adjust the setpoint values in your Therm-Control system to meet your requirements. This means you can adjust the power level or setpoint room temperature as you would on a room thermostat.

1.4.3 Monitoring and using status values

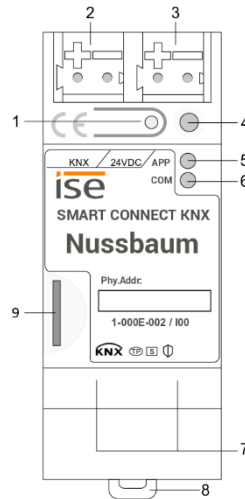
Use the current room temperature measured by a room thermostat in your Therm-Control system in your KNX system to control other KNX devices. Use the ise smart connect KNX Nussbaum error object to trigger a message if there is a fault in your Therm-Control system. This keeps disturbance as low as possible.

1.4.4 Control cooling

Use your Therm-Control system for cooling your rooms instead of heating. You can easily activate the cooling using your visualisation or other KNX devices.

2 Installation, electrical connection and operation

2.1 Device design



Dimensions:

Width (W):

36 mm (2 HP)

Height (H):

90 mm

Depth (D):

74 mm

Figure 1: ise smart connect KNX Nussbaum

1	Programming button for KNX	Switches to the device in the ETS programming mode or vice versa.	
2	KNX connection (twisted pair)	On left: (+/red) On right: (-/black)	
3	Connection 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 Yellow: See 4.2.1 / 4.2.2 for start or diagnosis code	
5	LED APP (green)	Green: Normal operation Off/ flashes: See 4.2.1 / 4.2.2 for start or diagnosis code	
6	LED COM (yellow)	Yellow: Normal operation (brief dark phases indicate KNX telegram traffic) Off/ flashes: See 4.2.1 / 4.2.2 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	Release lever for tophat rail terminal	Used to release the device from tophat rail terminal	
9	MicroSD card holder	No function	

2.2 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.

2.3 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.
- ⓘ A KNX data rail is not required; the connection to KNX-TP is established using the accompanying bus connection terminal.
- ⓘ 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 in tact! 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).

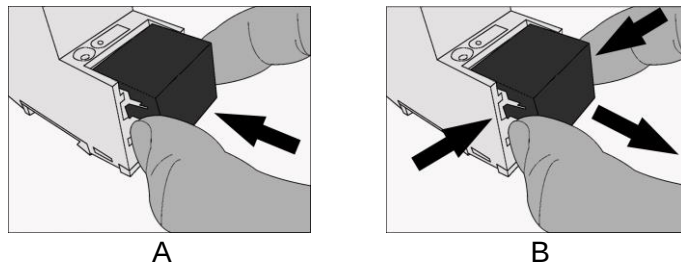


Figure 2: Mounting/Removing a cover cap.

3 Configuration

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

Preparations:	For explanations, see
1 Mount device, connect it to KNX bus connection and auxiliary voltage.	→ Chapter 2.3
2 Install the ise smart connect KNX Nussbaum in the same IP network as the WiFi module for the Therm-Control system.	
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 Nussbaum as a device in the ETS.	→ Chapter 3.1
2 Assign physical address as usual corresponding to the KNX topology.	
3 Set IP address, IP subnet mask and default gateway address of the ise smart connect KNX Nussbaum or select "Obtain an IP address automatically (from a DHCP server)".	→ Chapter 3.3
4 General parameters for setting the ise smart connect KNX Nussbaum.	→ Chapter 3.4.1
5 Carry out the parameterisation for the available base stations.	→ Chapter 3.4.2
6 Connect group addresses to group objects as usual.	→ Chapter 3.5
7 The ise smart connect KNX Nussbaum is now ready for commissioning via "Program ETS".	
8 Login information entry for the base stations on the ise smart connect KNX Nussbaum device website	→ Chapter 4.6.2

Configuration on the device website

For the final configuration of the device, further configuration is necessary on the device website.

- 1 Open the ise smart connect KNX Nussbaum device website with any browser
- 2 Register on the device website with the "Gerätepasswort" sticker on (user name is "admin") → Chapter 4.6.1
- 3 Possible change of password for website login → Chapter 4.6.1
- 4 Configuration of login information for base stations → Chapter 4.6.2
- 5 The device is now ready for operation and the range of functions can be tested.

3.1 Configuration step 1 – Create ise smart connect KNX Nussbaum as device in the ETS

If it has not yet been done, import the ETS device application to the ise smart connect KNX Nussbaum once in the device catalogue of its ETS, for example using the "Import..." function on the start page of the ETS.

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

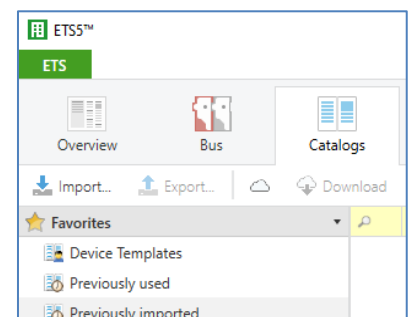


Figure 3: Product import via the ETS start page.

The other explanations in this document refer to

Hardware		Application software	
Device:	ise smart connect KNX Nussbaum	Application:	ise smart connect KNX Nussbaum
Manufacturer:	ise GmbH	Version:	V2.0
Order No.	1-000E-002		
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.

3.2 Configuration step 2 – Assigning a physical address

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

3.3 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 Nussbaum 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 into the data network route) or
- via 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.
3. Select the "IP" tab as per Figure 5. Now select:

☒ *Obtain an IP address automatically (default)*

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

☐ *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.

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

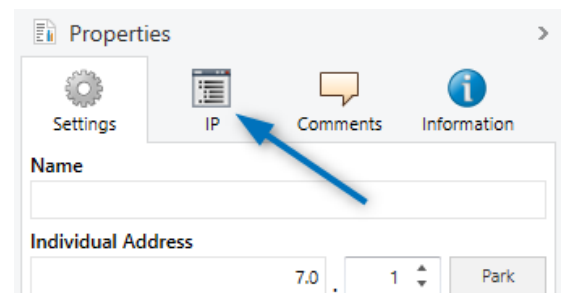


Figure 4: Device properties dialogue of the ETS

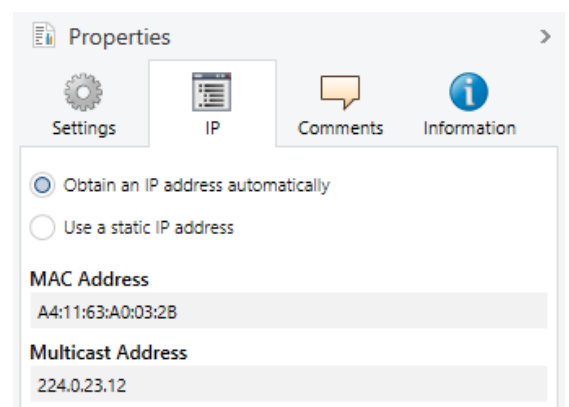


Figure 5: Setting of the IP address data of the device on the "IP" tab in the sidebar of the ETS.

3.4 Setting general parameters

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

3.4.1 Parameters for the device ise smart connect KNX Nussbaum general

Parameter	Entry/Selection	Remarks
General Number of base stations	1..5	Select the number of base stations to be linked to the ise smart connect KNX Nussbaum. Up to five base stations can be linked.
Value for present/absent	0 = present, 1 = absent 1 = present, 0 = absent	Configuration for the meaning of present/absent mode group object.

3.4.2 Parameters for the base station

Up to twelve circuits can be configured per base station. From the twelve circuits, room thermostats can be configured and allocated by ID for up to eight rooms. Actors of circuits without thermostats are controlled by power levels.

Parameter	Entry/Selection	Remarks
Base station <i>N</i> Settings Serial number of the Wifi module	0000000000	Please enter the serial number that is printed on the label of the WiFi module.
Base station <i>N</i> Settings Number of room names	1..12	Select the number of room names controlled by this base station. For this, you can count the number of room names in the control software under "Overview base station". The maximum number is twelve room names per base station.
Base station <i>N</i> Settings Number of room thermostats	0..8	Select the number of room thermostats. For this, you can count the number of room thermostat IDs in the control software under "Overview base station". The maximum number is eight room thermostats.
Room thermostat ID room <i>n</i>		Please enter the corresponding room thermostat ID. You will find the room thermostat IDs in the control software under "Overview base station".
Base station <i>N</i> Settings Power level control <i>X</i>	Actor 1..12	Actors without room thermostat assignment. These actors are controlled via power levels. Assign the corresponding actors to the power level controls. You will find the available actors in the control software under "Overview base station".

3.5 Connect group addresses to group objects.

The ise smart connect KNX Nussbaum offers various communication objects for the control of the Therm-control system. Through parameterisation in the ETS, communication objects are enabled for the room thermostat or power level control of the Therm-Control system.

3.5.1 Thermostat-controlled rooms

For the control and status of thermostat-controlled rooms, the following group objects are available for the connection of group addresses:

The communication objects are repeated for the rooms n (1..8) and base stations m (1..5).

Name	Direction				Data width		DP type	Flags (CRWTU)	
Actual temperature room n	Read				2 bytes		9.001	CR-T-	
Object 		Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7	Room 8
	Base station 1	1	4	7	10	13	16	19	22
	Base station 2	101	104	107	110	113	116	119	122
	Base station 3	201	204	207	210	213	216	219	222
	Base station 4	301	304	307	310	313	316	319	322
	Base station 5	401	404	407	410	413	416	419	422

Rubric: Room thermostat Data type: Temperature (°C)

Function: Shows the actual temperature of the room n of base station m .

Description: Provides the temperature measured by the room thermostat.

Name	Direction	Data width	DP type	Flags (CRWTU)
Setpoint temperature room n	Write	2 bytes	9.001	C-W--

Object 

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7	Room 8
Base station 1	2	5	8	11	14	17	20	23
Base station 2	102	105	108	111	114	117	120	123
Base station 3	202	205	208	211	214	217	220	223
Base station 4	302	305	308	311	314	317	320	323
Base station 5	402	405	408	411	414	417	420	423

Rubric: Room thermostat Data type: Temperature (°C)

Function: Sets the setpoint temperature of the room n of base station m .

Description: Changes the setpoint temperature on the room thermostat.
Valid value range: Determined using the control software.
In the event of values outside of the valid value range, the error *OutOfRangeVal* is sent to object 502.

Name	Direction	Data width	DP type	Flags (CRWTU)
Setpoint temperature room n status	Read	2 bytes	9.001	CR-T-

Object 

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7	Room 8
Base station 1	3	6	9	12	15	18	21	24
Base station 2	103	106	109	112	115	118	121	124
Base station 3	203	206	209	212	215	218	221	224
Base station 4	303	306	309	312	315	318	321	324
Base station 5	403	406	409	412	415	418	421	424

Rubric: Room thermostat Data type: Temperature (°C)

Function: Shows the setpoint temperature of the room n of base station m .

Description: Provides the current setpoint temperature configured on the room thermostat.

3.5.2 Power level control

For the control and status of power level-controlled rooms, the following group objects are available for the connection of group addresses:

The communication objects are repeated for the actors n (1..12) and base stations m (1..5).

Name	Direction	Data width	DP type	Flags (CRWTU)
Power level actor n	Write	1 byte	5.010	C-W--

Object 

	Actor 1	Actor 2	Actor 3	Actor 4	Actor 5	Actor 6	Actor 7	Actor 8	Actor 9	Actor 10	Actor 11	Actor 12
Base station 1	37	42	47	52	57	62	67	72	77	82	87	92
Base station 2	137	142	147	152	157	162	167	172	177	182	187	192
Base station 3	237	242	247	252	257	262	267	272	277	282	287	292
Base station 4	337	342	347	352	357	362	367	372	377	382	387	392
Base station 5	437	442	447	452	457	462	467	472	477	482	487	492

Rubric: Power level Data type: Meter pulse (0 to 255)

Function: Sets the power level for the specified heating circuit of base station m .

Description: Changes the power level on the actor.
Valid value range: 0..10
In the event of values outside of the valid value range, the error *OutOfRangeVal* is sent to object 502.

Name	Direction	Data width	DP type	Flags (CRWTU)
Power level actor n status	Read	1 byte	5.010	CR-T-

Object 

	Actor 1	Actor 2	Actor 3	Actor 4	Actor 5	Actor 6	Actor 7	Actor 8	Actor 9	Actor 10	Actor 11	Actor 12
Base station 1	38	43	48	53	58	63	68	73	78	83	88	93
Base station 2	138	143	148	153	158	163	168	173	178	183	188	193
Base station 3	238	243	248	253	258	263	268	273	278	283	288	293
Base station 4	338	343	348	353	358	363	368	373	378	383	388	393
Base station 5	438	443	448	453	458	463	468	473	478	483	488	493

Rubric: Power level Data type: Meter pulse (0 to 255)

Function: Shows the power level for the specified heating circuit of base station m .

Description: Provides the current power level of the actor.

Name	Direction	Data width	DP type	Flags (CRWTU)
Power level % actor <i>n</i>	Write	1 byte	5.001	C-W--

Object 

	Actor 1	Actor 2	Actor 3	Actor 4	Actor 5	Actor 6	Actor 7	Actor 8	Actor 9	Actor 10	Actor 11	Actor 12
Base station 1	39	44	49	54	59	64	69	74	79	84	89	94
Base station 2	139	144	149	154	159	164	169	174	179	184	189	194
Base station 3	239	244	249	254	259	264	269	274	279	284	289	294
Base station 4	339	344	349	354	359	364	369	374	379	384	389	394
Base station 5	439	444	449	454	459	464	469	474	479	484	489	494

Rubric: Power level Data type: Percent (0 to 100%)

Function: Sets the power level for the specified heating circuit of base station *m*.

Description: Changes the power level in percent on the actor.

Value range 0..10 is shown as 0..100%.

0%	-> Power level 0
1 - 9%	-> Power level 1
10 - 20%	-> Power level 2
21 - 30%	-> Power level 3
31 - 40%	-> Power level 4
41 - 49%	-> Power level 5
50 - 60%	-> Power level 6
61 - 70%	-> Power level 7
71 - 80%	-> Power level 8
81 - 89%	-> Power level 9
90 - 100%	-> Power level 10

Name	Direction	Data width	DP type	Flags (CRWTU)
Power level % actor <i>n</i> (status)	Read	1 byte	5.001	CR-T-

Object 

	Actor 1	Actor 2	Actor 3	Actor 4	Actor 5	Actor 6	Actor 7	Actor 8	Actor 9	Actor 10	Actor 11	Actor 12
Base station 1	40	45	50	55	60	65	70	75	80	85	90	95
Base station 2	140	145	150	155	160	165	170	175	180	185	190	195
Base station 3	240	245	250	255	260	265	270	275	280	285	290	295
Base station 4	340	345	350	355	360	365	370	375	380	385	390	395
Base station 5	440	445	450	455	460	465	470	475	480	485	490	495

Rubric: Power level Data type: Percent (0 to 100%)

Function: Shows the power level for the specified heating circuit of base station *m*.

Description: Provides the percentage value of the current power level of the actor.

Value range 0..10 is shown as 0..100%.

0% -> Power level 0
1 - 9% -> Power level 1
10 - 20% -> Power level 2
21 - 30% -> Power level 3
31 - 40% -> Power level 4
41 - 49% -> Power level 5
50 - 60% -> Power level 6
61 - 70% -> Power level 7
71 - 80% -> Power level 8
81 - 89% -> Power level 9
90 - 100% -> Power level 10

Name	Direction	Data width	DP type	Flags (CRWTU)
Power level up/down actor <i>n</i>	Write	1 bit	1.007	C-W--

Object 

	Actor 1	Actor 2	Actor 3	Actor 4	Actor 5	Actor 6	Actor 7	Actor 8	Actor 9	Actor 10	Actor 11	Actor 12
Base station 1	41	46	51	56	61	66	71	76	81	86	91	96
Base station 2	141	146	151	156	161	166	171	176	181	186	191	196
Base station 3	241	246	251	256	261	266	271	276	281	286	291	296
Base station 4	341	346	351	356	361	366	371	376	381	386	391	396
Base station 5	441	446	451	456	461	466	471	476	481	486	491	496

Rubric: Power level Data type: Switch increment

Function: Increases or decreases the power level for the specified heating circuit of base station *m*.

Description: The power level of the actor is changed in increments within the valid value range 0..10.

3.5.3 Base station general

For general information on the base stations n (1..5), the following group objects are available for the connection of group addresses:

Name	Direction	Data width	DP type	Flags (CRWTU)
Fault	Read	1 bit	1.002	CR-T-
Object 	Base station 1: 97 Base station 2: 197 Base station 3: 297 Base station 4: 397 Base station 5: 497			
Rubric:	Base station	Data type:	Boolean	
Function:	Signals whether there is an error on base station n			
Description:	0 = no fault, 1 = fault present			

Name	Direction	Data width	DP type	Flags (CRWTU)
Update available	Read	1 bit	1.002	CR-T-
Object 	Base station 1: 98 Base station 2: 198 Base station 3: 298 Base station 4: 398 Base station 5: 498			
Rubric:	Base station	Data type:	Boolean	
Function:	Signals whether a software update is available for base station n			
Description:	0 = software up to date, 1 = software update available The base station's firmware can be updated via the control software.			

3.5.4 Gateway general

For diagnostic purposes, the following group objects are available for the connection of group addresses:

Name	Direction	Data width	DP type	Flags (CRWTU)
Fault gateway	Read	1 bit	1.002	CR-T-
Object 	501			
Rubric:	Gateway	Data type:	Boolean	
Function:	Signals whether the gateway has a fault.			
Description:	0 = no fault, 1 = fault present			

Name	Direction	Data width	DP type	Flags (CRWTU)
Last gateway error	Read	14 bytes	16.001	CR-T-
Object  502				
Rubric:	Gateway	Data type:	Character (ISO 8859-1)	
Function:	The last gateway error			
Description:	Possible errors:			
	MissingBaseSta:	At least one base station could not be found. <u>Measure:</u> Check that all base station WiFi modules are correctly connected to the network and the correct WiFi module serial numbers are configured in the ETS (see also Chapter 3.4.2 "Parameters for the base station").		
	CommError:	There is a communication problem with one of the base stations. <u>Measure:</u> Check that all base station WiFi modules are correctly connected to the network.		
	InvalidCreds:	The authentication information for one base station is incorrect. <u>Measure:</u> Make sure that the same authentication information has been configured on the device website for all base stations with password-protected access (see also Chapter 4.6.2 "Configuration of login information for base stations").		
	UnsupportedFW:	The minimum firmware requirement is not met by at least one base station. <u>Measure:</u> Update all base stations at least to version 2.8-4.43.		
	MissingThermos:	At least one of the configured room thermostats could not be found. <u>Measure:</u> Check that all room thermostats configured in the ETS have been linked with the corresponding base stations and that the configured room thermostat IDs are correct (see also Chapter 3.4.2 "Parameters for the base station").		
	MissingActor:	At least one of the configured actors could not be found. <u>Measure:</u> Check that all actors configured in the ETS are available on the corresponding base stations and that the configured actor IDs are correct (see also Chapter 3.4.2 "Parameters for the base station").		
	NoError:	No error has occurred since gateway start.		
	The errors are sorted in descending order of severity. If several errors occur simultaneously, only the most severe error will be reported.			
	If none of the aforementioned errors are present, the following errors may be displayed briefly as a reaction to the previous command:			
	InvalidResp:	An invalid response to a command has been received by one of the base stations. <u>Measure:</u> Please send the log files to our support (see Chapter 7.1 "Downloading log files if a problem occurs").		
	UnsupportedVal:	A value to be processed is not supported. <u>Measure:</u> If this error occurs repeatedly, please send the log files to our support (see Chapter 7.1 "Downloading log files if a problem occurs").		
	OutOfRangeVal:	A received value is outside the permitted value range.		
	UnexpectedErr:	An unexpected error has occurred. <u>Measure:</u> Please send the log files to our support (see Chapter 7.1 "Downloading log files if a problem occurs").		
	FatalError:	An error has occurred that prevents the gateway from working properly. The gateway will be restarted. <u>Measure:</u> Please send the log files to our support (see Chapter 7.1 "Downloading log files if a problem occurs").		

Name	Direction	Data width	DP type	Flags (CRWTU)
Nussbaum fault	Read	1 bit	1.002	CR-T-
Object  503				
Rubric: Global	Data type: Boolean			
Function: Signals whether a superordinate error has occurred on one of the base stations				
Description: 0 = no fault, 1 = fault present				

Name	Direction	Data width	DP type	Flags (CRWTU)
Last Nussbaum error	Read	14 bytes	16.001	CR-T-
Object  504				
Rubric: Global	Data type: Character (ISO 8859-1)			
Function: The last superordinate error				
Description: Possible errors:				
-0:NoError	No error has occurred on any base station since device start-up.			
-3:MissingThs	The connection to at least one room thermostat has been interrupted			
-4:ErrActorBus	Fault on actor bus			
-5:ErrSupply	Fault with flow temperature			
-6:ErrReturn	Fault with return temperature			
-7:NoMoreTherm	No further room thermostats could be registered			
-9:BackupBatt	Back-up battery is missing from the Therm-Control base station			
-21:ConnThermo	No connection to room thermostat			
-22:ThermoBatt	Room thermostat battery low			
-24:WeakConnTh	Weak connection to room thermostat			
For a detailed error description, please see the error page in the control software				

3.5.5 Absence control

For absence control, the following group objects are available for the connection of group addresses:

Name	Direction	Data width	DP type	Flags (CRWTU)
Present/Absent control	Write	1 bit	1.001	C-W--
Object  510				
Rubric: Present/Absent control	Data type: Switching			
Function: Sets the present/absent mode				
Description: Default value: 0 = present, 1 = absent				
The meaning of the value can be parametrised, see Chapter 3.4.1 "Parameters for the device ise smart connect KNX Nussbaum general".				

Name	Direction	Data width	DP type	Flags (CRWTU)
Present/Absent status	Read	1 bit	1.001	CR-T-
Object  511				
Rubric:	Present/Absent control	Data type:	Switching	
Function:	Shows the current present/absent mode			
Description:	Default value: 0 = present, 1 = absent The meaning of the value can be parametrised, see Chapter 3.4.1 "Parameters for the device ise smart connect KNX Nussbaum general".			

Name	Direction	Data width	DP type	Flags (CRWTU)
Absent until date control	Write	3 bytes	11.001	C-W--
Object  512				
Rubric:	Present/Absent control	Data type:	Date	
Function:	Sets the finish date for absence mode			
Description:	The value will be used the next time the absence mode is activated if the date (together with the specified time (object 514)) is at least one day in the future. If this is not the case, the date and time will be ignored.			

Name	Direction	Data width	DP type	Flags (CRWTU)
Absent until date status	Read	3 bytes	11.001	CR-T-
Object  513				
Rubric:	Present/Absent control	Data type:	Date	
Function:	Shows the current finish date set for absence mode			
Description:	The current finish date configured for absence mode.			

Name	Direction	Data width	DP type	Flags (CRWTU)
Absent until time control	Write	3 bytes	10.001	C-W--
Object  514				
Rubric:	Present/Absent control	Data type:	Time of day	
Function:	Sets the finish time for absence mode			
Description:	The value will be used the next time the absence mode is activated if the time (together with the specified date (object 512)) is at least one day in the future. If this is not the case, the date and time will be ignored.			

Name	Direction	Data width	DP type	Flags (CRWTU)
Absent until time status	Read	3 bytes	10.001	CR-T

Object 

515

Rubric: Present/Absent control Data type: Time of day

Function: Shows the current finish time set for absence mode.

Description: The current finish time configured for absence mode.

3.5.6 Cooling

For control cooling, the following group objects are available for the connection of group addresses:

Name	Direction	Data width	DP-type	Flags (CRWTU)
Heating/Cooling control	Write	1 Bit	1.100	C-W---

Object 

516

Rubric: Heating/Cooling control Data type: heating/cooling

Function: Sets the heating/cooling mode.

Description: Default value: 0 = cooling, 1 = heating

Name	Direction	Data width	DP-type	Flags (CRWTU)
Heating/Cooling status	Read	1 Bit	1.100	CR-T-

Object 

517

Rubric: Heating/Cooling status Data type: heating/cooling

Function: Shows the current heating/cooling mode.

Description: Default value: 0 = cooling, 1 = heating

4 Commissioning

4.1 Operation

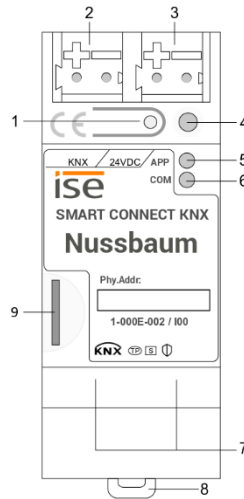


Figure 6: ise smart connect KNX Nussbaum.

1	Programming button for KNX	Switches to the device in the ETS programming mode or vice versa.	
2	KNX connection (twisted pair)	On left: (+/red) On right: (-/black)	
3	Connection 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 Yellow: See 4.2.1 / 4.2.2 for start or diagnosis code	
5	LED APP (green)	Green: Normal operation Off/ flashes: See 4.2.1 / 4.2.2 for start or diagnosis code	
6	LED COM (yellow)	Yellow: Normal operation (brief dark phases indicate KNX telegram traffic) Off/ flashes: See 4.2.1 / 4.2.2 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	Release lever for tophat rail terminal	Used to release the device from tophat rail terminal	
9	MicroSD card holder	No function	

4.2 LED status displays

The device 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.

4.2.1 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 re-
turn in voltage occurs, the device indicates its status through the following LED combinations:

LED "APP" (green)	LED "COM" (yellow)	Meaning	
○ Off	○ Off	No power supply: Please check connections and power supply.	✗
○ Off	● Yellow	Device starting up.	✓
● Green	○ Off	Error – KNX not connected.	✗
○.....● Green Flash slowly	● Yellow	The application is not yet configured, e.g. not yet loaded with the ETS.	✗
● Green	● Yellow	Device booted up and ready for operation.	✓
○.....● Green Flash quickly	○ Off	Error – Please contact support. The firmware cannot be started.	✗
●...○...●...○...●... Green ○...●...○...●...○... Yellow Flash slowly in an alternating fashion		Error – Please contact support. The newly loaded firmware cannot be started. The system is trying to activate the previous firmware (invalid firmware).	✗

4.2.2 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
 Flashes at approx. 1 Hz	<u>Error:</u> Application is not parametrised or not fully parametrised. Check the device parametrisation in the ETS and carry out an application download to the device.
 Three slow flashes followed by a 2 s pause	<u>Error:</u> At least one room thermostat and/or actor was not found. Check that all room thermostats and actors are correctly connected and the correct IDs are configured in the ETS.
 Five slow flashes followed by a 2 s pause	<u>Error:</u> At least one base station was not found. Check that all base station WiFi modules are correctly connected to the network and the correct serial numbers are configured in the ETS.

LED "COM" (yellow)	Meaning
 Yellow	<u>Normal operation:</u> KNX connection is established, no KNX telegram traffic.
 Yellow with brief dark phases	<u>Normal operation:</u> KNX connection is established, KNX telegram traffic.
 Off	<u>Error:</u> Connection to KNX is interrupted. Check the bus connection

4.3 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.

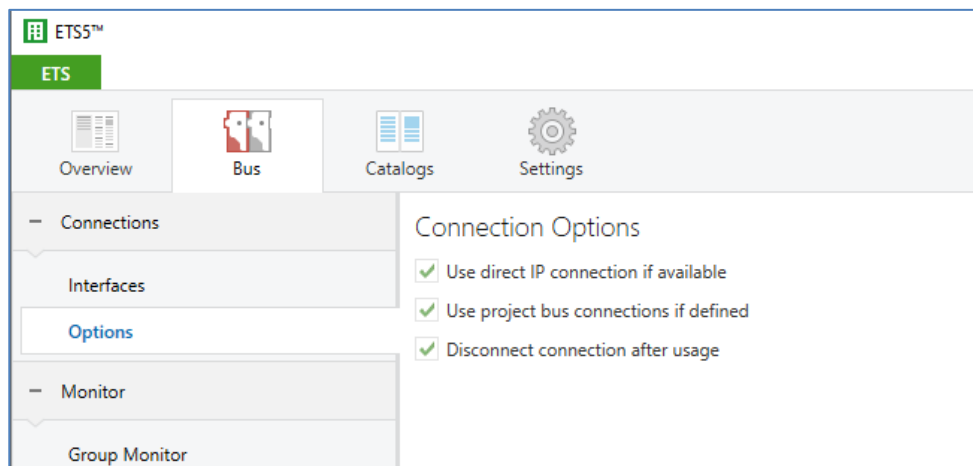


Figure 7: The setting "*Use direct IP connection if available*" accelerates the transfer from the ETS to the device.

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

☒ Use direct IP connection if available.

on the ETS start page → *Bus* tab → *Options* entry.

4.4 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.

4.5 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.

4.6 Device website

To call up the device website, double-click on the device icon in the *Other Devices* area in the network environment (Figure 8). Alternatively, you can also enter the IP address of the device in your browser.

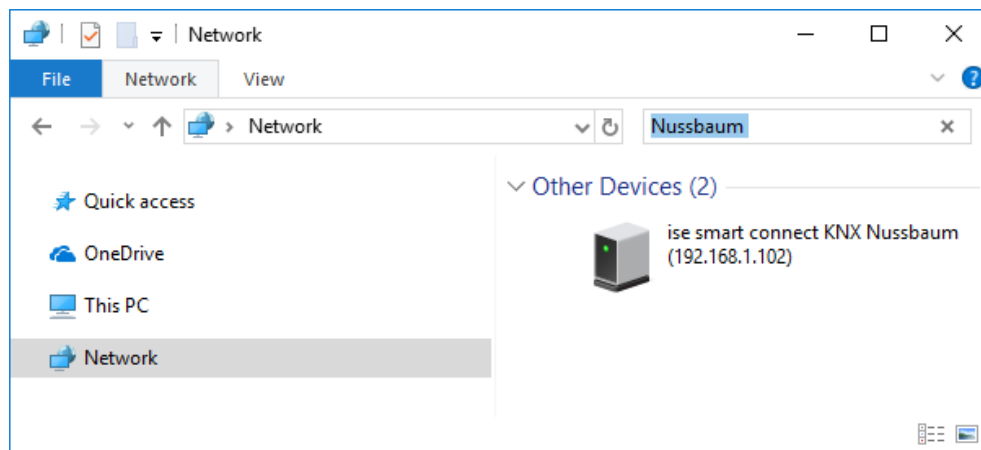


Figure 8: Device in the network environment

4.6.1 Logging into the device website

You first log in to the website (Figure 9) with the "admin" user name and a password. The password for the website login ex works is the "Gerätepasswort" stucked on the housing side of the device. After successful login, it can be customised via the *User* menu in sub-item *Change password*. The device password can be reset through a factory reset (see chapter 4.7 "Factory reset").

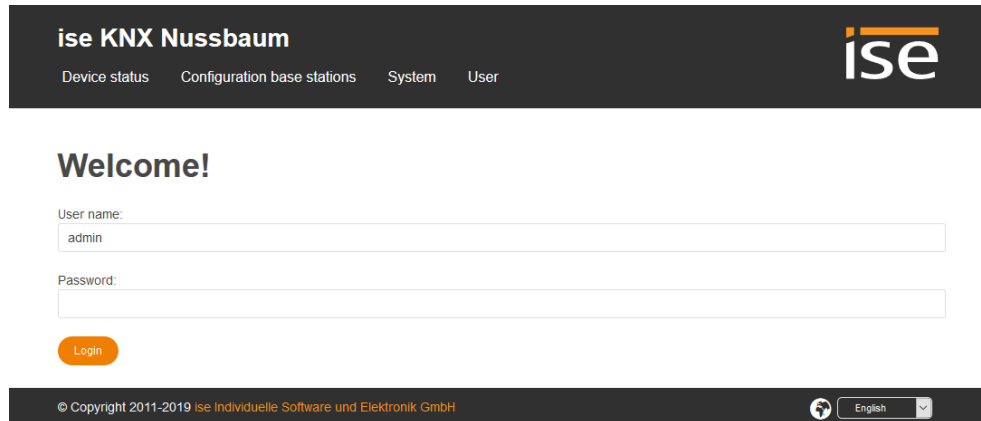


Figure 9: Logging into the device website

4.6.2 Configuration of login information for base stations

If you have set up password protection for a base station in the control software, this login information must also be configured in the ise smart connect KNX Nussbaum in order to ensure it can communicate with the base station.

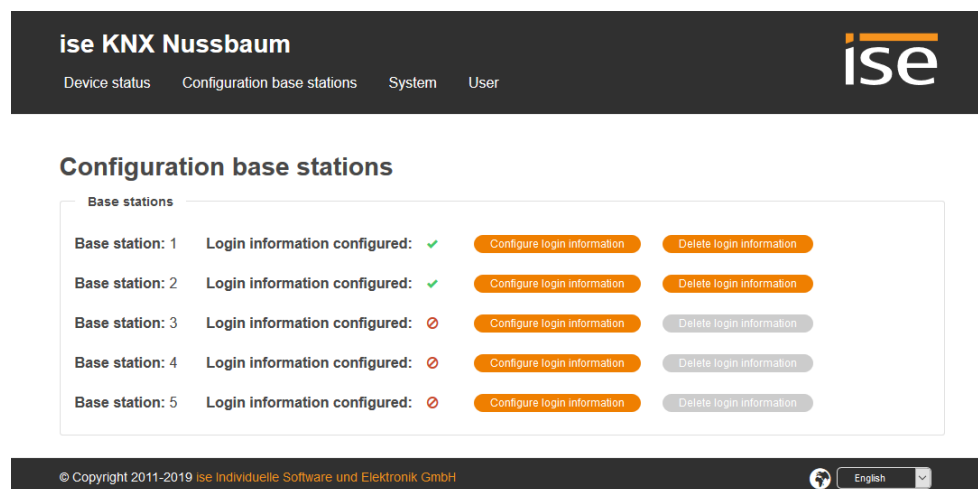


Figure 10: Configuration base stations

Figure 10 shows the device's initial start page after successful login. This can be used to configure the login information for every base station. A "green tick" shows that the login information has been configured for the corresponding base station. No check of whether this information is valid takes place via the device website.

The button "Configure login information" takes you to a modal dialogue (Figure 11) in which you can save the user name and password set up in the control software.

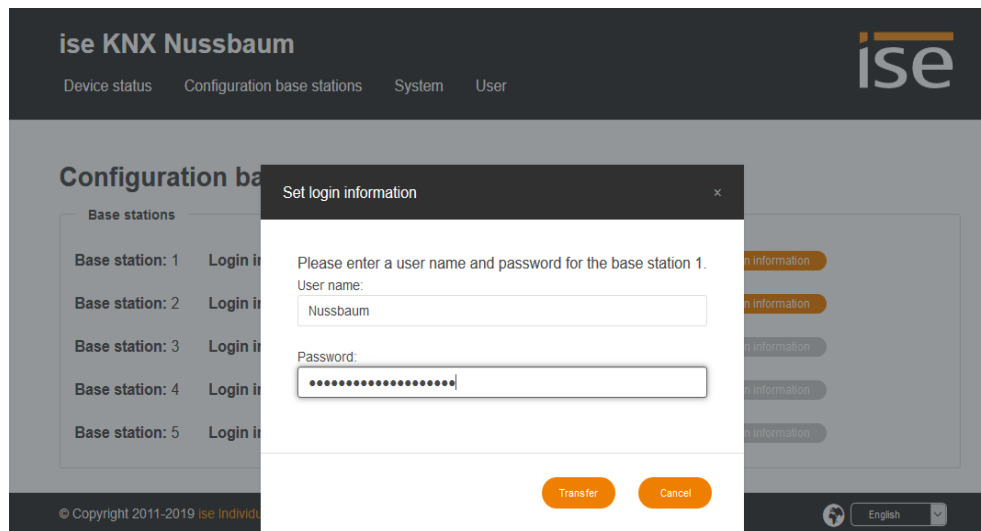


Figure 11: Dialogue “Set login information”

Configured login information can be deleted again via the “Delete login information” button.

4.6.3 System

The *System* menu offers the following sub-items:

- *Download log file:* You can download the log file here for diagnostic purposes in support cases.
- *Restart:* Triggers a device restart.
- *Factory reset:* Triggers a factory reset (see Chapter 4.7 “Factory reset”).
- *Update firmware:* This item enables a firmware update to be executed (see Chapter 4.8 “Firmware update of the device”).
- *Disclaimer:* Displays the disclaimer.
- *Licenses:* Displays the licenses for the software sources used (compare Chapter 9 “Open Source Software”).

4.7 Factory reset

Following the factory reset, the device behaves as in the state of delivery. The physical KNX address is set at 15.15.255 by default. The “Gerätepasswort” sticker on is used as the login password for the device website. Settings made via the device website are removed. The device is unconfigured. This can be recognised after starting up the device from the slowly flashing green APP LED (5).

4.7.1 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.

4.7.2 Using the website of the device

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

- On the status page, select the sub-item *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 login page is loaded again.

4.8 Firmware update of the device

The ise smart connect KNX Nussbaum makes it possible to install firmware updates using the device website. Select the sub-item *Update firmware* in the *System* menu on the device website to do this. The ise smart connect KNX Nussbaum 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.

4.8.1 Local firmware update without Internet access

In addition to online updates, it is possible to carry out local updates without an Internet connection. This is intended for devices which do not have an Internet connection at their installation site and are only accessible via the local network. 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 4.8.2). A downgrade to an older version is not possible using this process.

4.8.2 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. However, this is not absolutely necessary if the new functions are not used in your project.

5 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 $\pm 10\%$
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	Max. 32 GB microSDHC
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 63140)
Test marks	KNX, CE

6 Frequently asked questions (FAQ)

- **How can I find my ise smart connect KNX Nussbaum IP address?**
Please read about this in Chapter 4.7.2 "Using the website of the device".
- **Which version of the Nussbaum Therm-Control base station is compatible?**
Firmware of at least version 2.8-4.42 or higher must be installed on the base station in order to be able to use it with the ise smart connect KNX Nussbaum. If the version is too low, the error "UnsupportedFW" will be issued on communication object 502.
- **What does the error code "InvalidCreds" mean on communication object 502?**
The login information for the corresponding base station is incorrect. Either no login information has been configured or the login information does not match the password protection configured in the Nussbaum control software. Please re-enter the login information as described in Chapter 4.6.2 "Configuration of login information for base stations".
- **Why is the configured date/time for absence ignored?**
When the absence mode is activated, the date and time are checked and need to be at least one day in the future. The system time reported by the base station is used for evaluation. If the date is in the future and is still not used, please check the system time in the control software settings to ensure that the base station is reporting the correct time.
- **Why isn't the device website working?**
 - Is the software restarting?
After the ETS application program is downloaded, it can take up to 3 minutes until the website is available again. Try to reload the page after a few minutes.
 - Is Javascript activated, and are cookies allowed?
 - 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 Nussbaum support?**
The website was successfully tested with the following browsers in their latest version:
 - Mozilla Firefox
 - Google Chrome
 - Microsoft Edge
 - Apple Safari
- **Are there software updates for my ise smart connect KNX Nussbaum device?**
You will find information on software updates in Chapter 4.8 "Firmware update of the device".
- **Can I open my ise smart connect KNX Nussbaum 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 make sure that your ETS version is up to date and that you are using a compatible database entry for the firmware version used. More information on this can be found in Chapter 4.8.2 "Compatibility of catalogue entry with firmware".

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

7 Troubleshooting and support

If you have a problem with your ise smart connect KNX Nussbaum 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 Nussbaum, please refer to Chapter 4.6.3 "System".

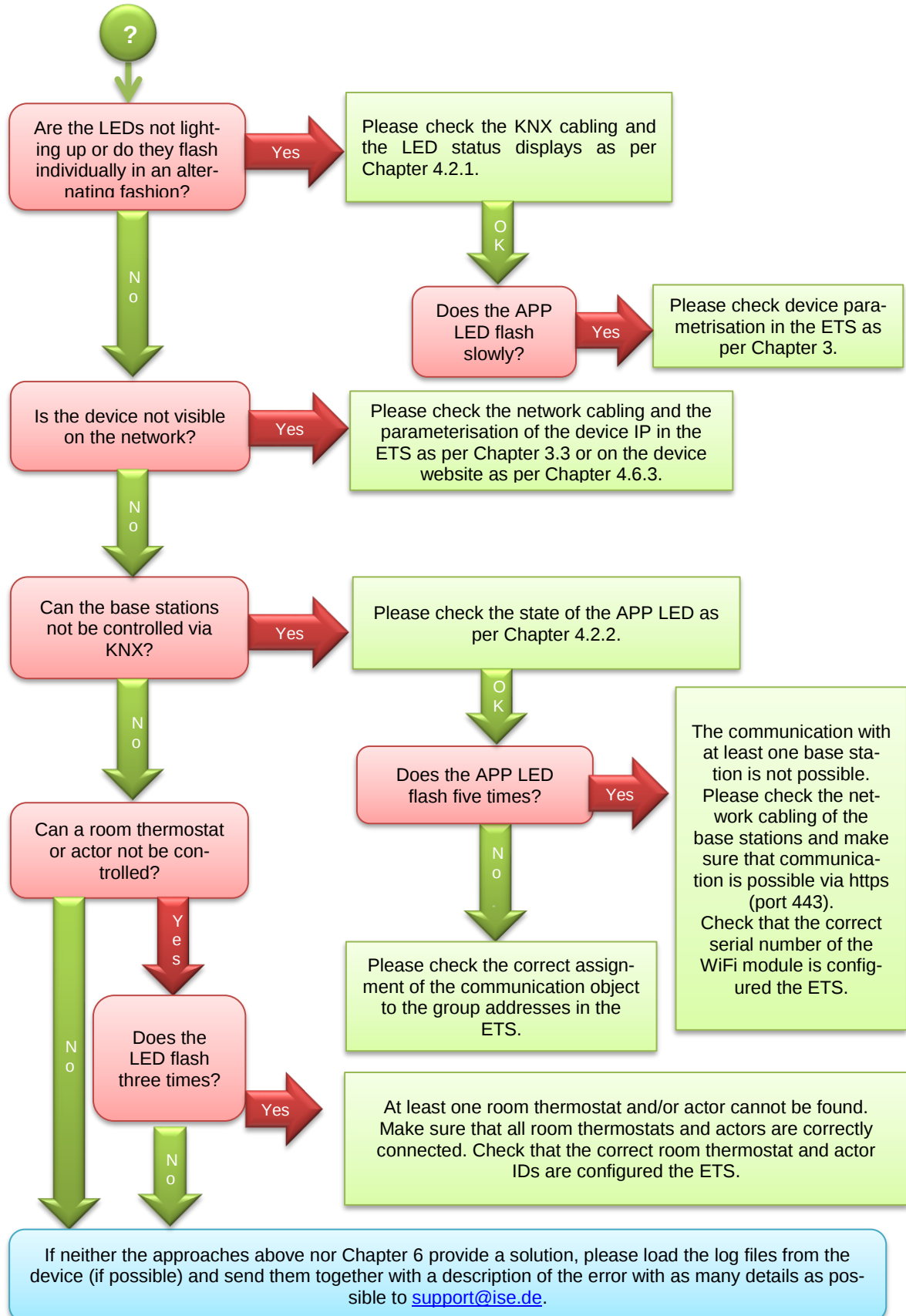
7.1 Downloading log files if a problem occurs

If a problem occurs, the log files are required for providing support. They can be downloaded via the device website (see Chapter 4.6 "Device website"). 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.
- On the status page, select the sub-item *Download log file* in the *System* menu.
- The page which opens begins downloading the log files. If this does not occur, the provided link can be used.

7.2 The ise smart connect KNX Nussbaum 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.



8 License agreement ise smart connect KNX Nussbaum 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 Nussbaum software or putting the ise smart connect KNX Nussbaum into use, you conclude an agreement with ise Individuelle Software und Elektronik GmbH and agree to abide by the terms in this agreement.

8.1 Definitions

Licensor: ise Individuelle Software und Elektronik GmbH in Oldenburg, Osterstraße 15, Germany

Licensee: The legal recipient of the ise smart connect KNX Nussbaum software.

Firmware: Software which is embedded on the ise smart connect KNX Nussbaum hardware and enables operation of the ise smart connect KNX Nussbaum.

ise smart connect KNX Nussbaum Software: The ise smart connect KNX Nussbaum software designates all of the software provided for the ise smart connect KNX Nussbaum product, including the operating data. This includes, in particular, the firmware and the product database.

8.2 Object of the agreement

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

8.3 Rights of use of the ise smart connect KNX Nussbaum software

The Licensor grants the Licensee the non-exclusive, non-transferable right to use the ise smart connect KNX Nussbaum 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).

The Licensee is obliged to ensure that each person who uses the program only does so as part of this license agreement and observes this license agreement.

8.4 Restriction of rights of use

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