

HEIDELBERG, SEPTEMBER 2017

# Webinar KNX Split Unit Gateway SUG/U

BU EPBP GPG Building Automation

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Global Application and Solution Team

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# Agenda

## Split Unit Gateway SUG/U 1.1

- Introduction and device overview
- Application and benefits
- ETS parametrization
- Integration i-bus Tool

# Split Unit Gateway SUG/U 1.1

## Introduction



# Split Unit Gateway SUG/U 1.1

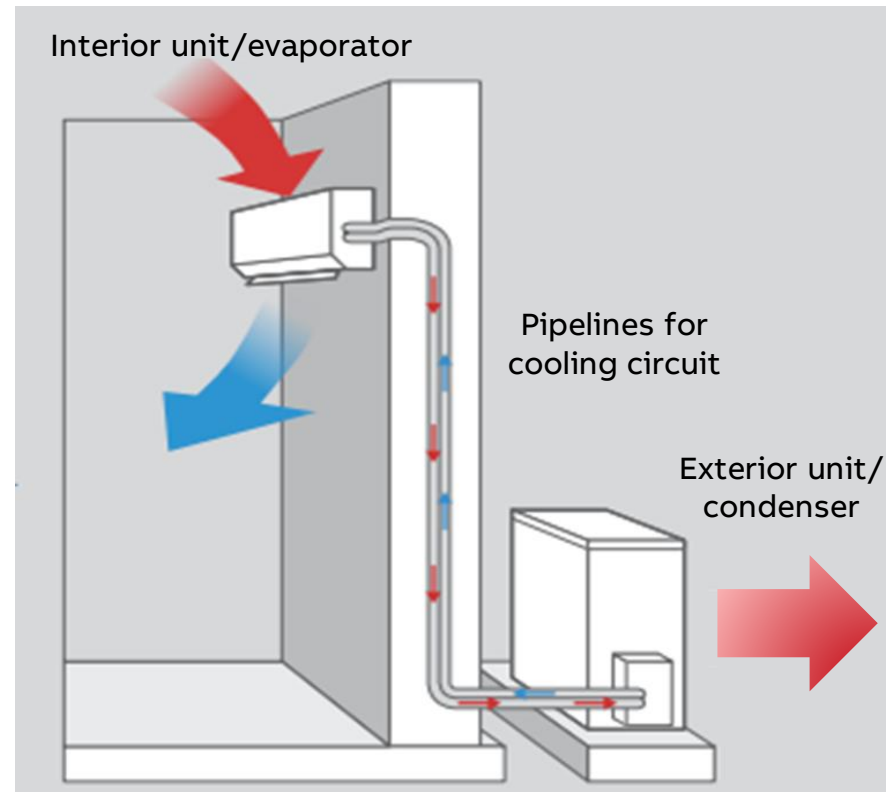
## Overview of air-conditioning systems

### Decentralized building air-conditioning systems

#### Split units

- With a decentralized air-conditioning system in the form of a split unit, the refrigerant is compressed outdoors, while the air-treatment processes (air conveyance, filtering and temperature control) are performed in the room to be cooled
- Many small units only recirculate the room air to cool it
- Some devices draw in a small amount of air ahead of the facade (independently of the building's orientation), blow it into the room and usually discharge the same quantity of exhaust air from the room to the outside

Source: WIKIPEDIA



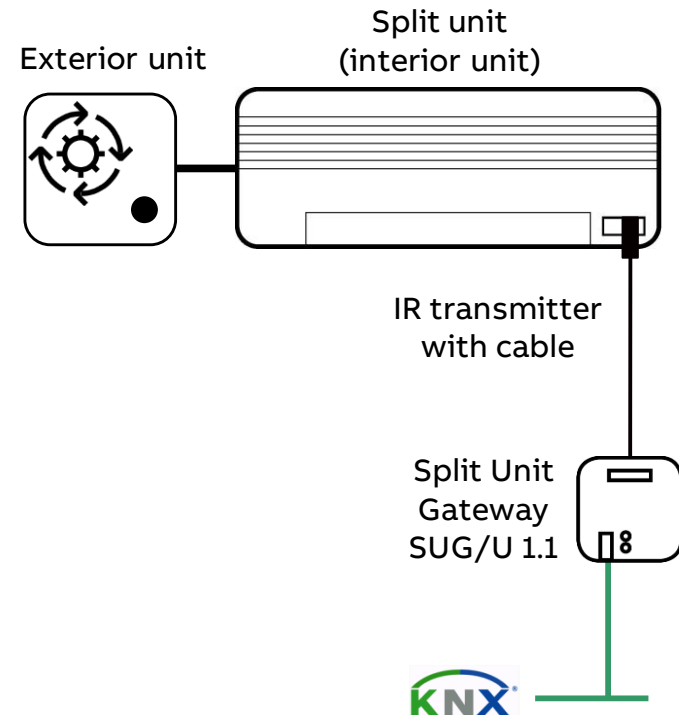
# Split Unit Gateway SUG/U 1.1

## What is a Split Unit Gateway?

Many manufacturers' air-conditioning units, so-called split units, are operated using an infrared remote control from the manufacturer. The Split Unit Gateway now replaces this remote control.

The Split Unit Gateway forms the interface between the KNX system and the air-conditioning systems from many manufacturers, also referred to as split units.

It allows users to integrate the split unit into a KNX system for convenient, energy efficient control.



# Split Unit Gateway SUG/U 1.1

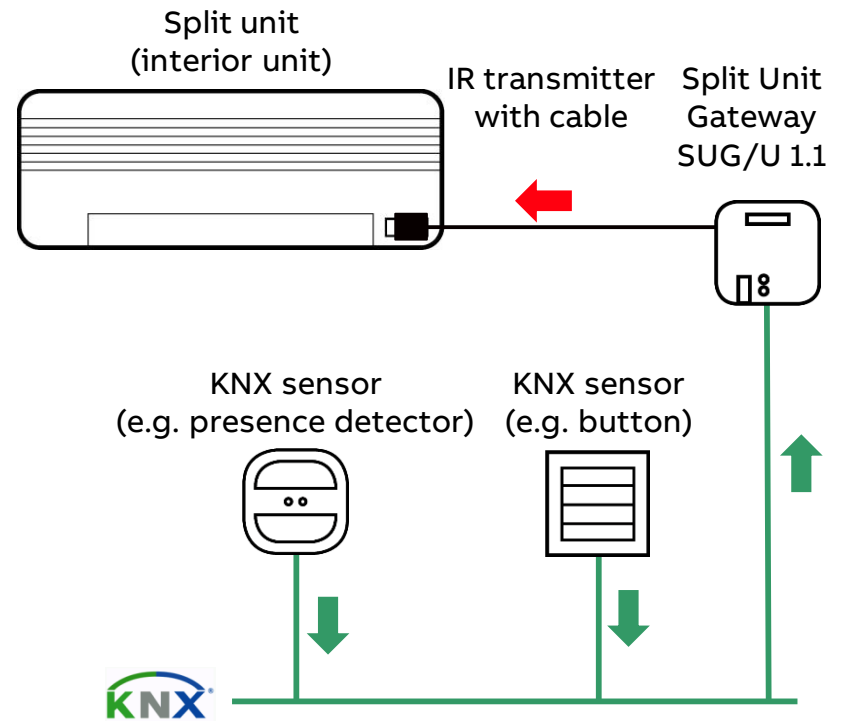
## What is a Split Unit Gateway?

The Split Unit Gateway is installed near the split unit, and the transmitter of the supplied cable is bonded directly to the receiver of the split unit

The device converts KNX telegrams to infrared commands and sends them to the split unit

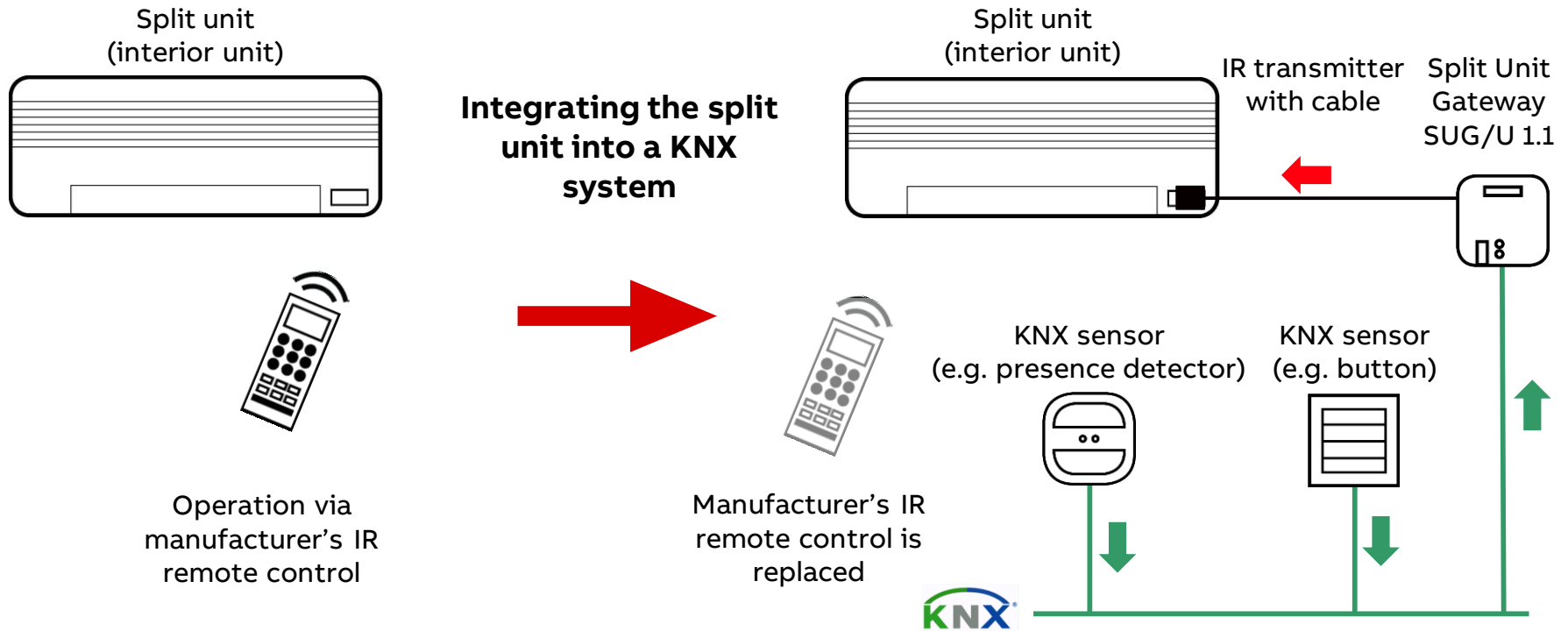
This makes it possible to control the split unit via KNX group commands

The air-conditioning system then no longer receives the commands from a remote control but instead can be operated via any KNX sensors or via a visual display



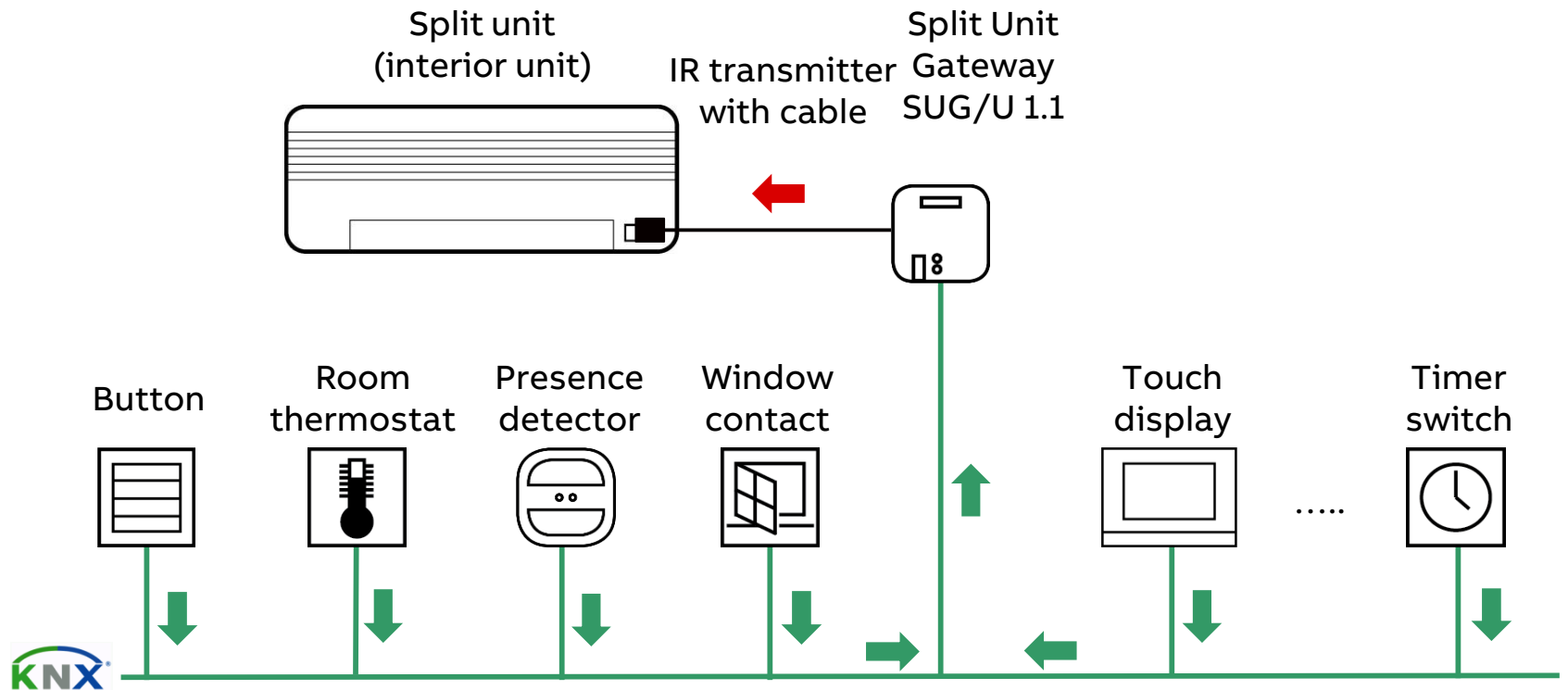
# Split Unit Gateway SUG/U 1.1

## What is a Split Unit Gateway?



# Split Unit Gateway SUG/U 1.1

## Overview



# Split Unit Gateway **SUG/U 1.1**

## Product overview

Flush-mounted device for installation in a flush-mounted or surface box

Dimensions 39 x 40 x 12 mm (H x W x D)

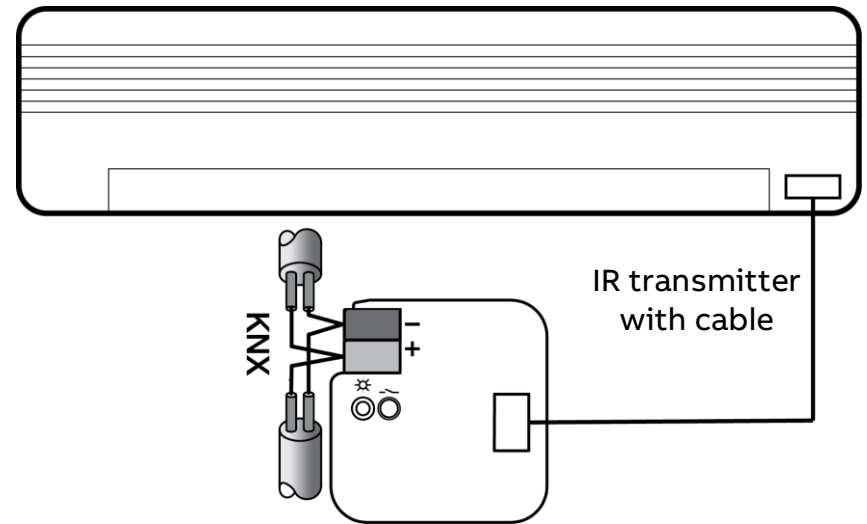
Connection terminal for IR cable and KNX

Length of cable for IR transmitter: 2m

The transmission diode of the supplied IR cable is bonded directly to the receiver of the split unit

Power supply is via the ABB i-bus® KNX; no additional auxiliary voltage is required

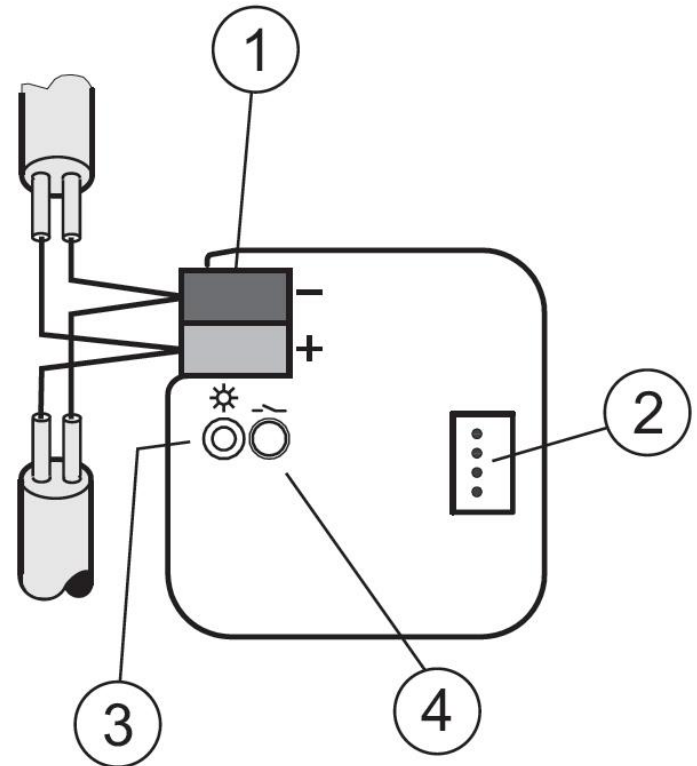
Red LED and button for assignment of the physical address



# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

## Connection diagram, controls/indicators

- (1) KNX connection
- (2) IR cable connection
- (3) Programming LED (red)  
LED lights up when the programming button is pressed, in order to assign a physical address to the bus device
- (4) Programming button  
For assignment of the physical address



# Split Unit Gateway SUG/U 1.1

## Integration into the i-bus® Tool

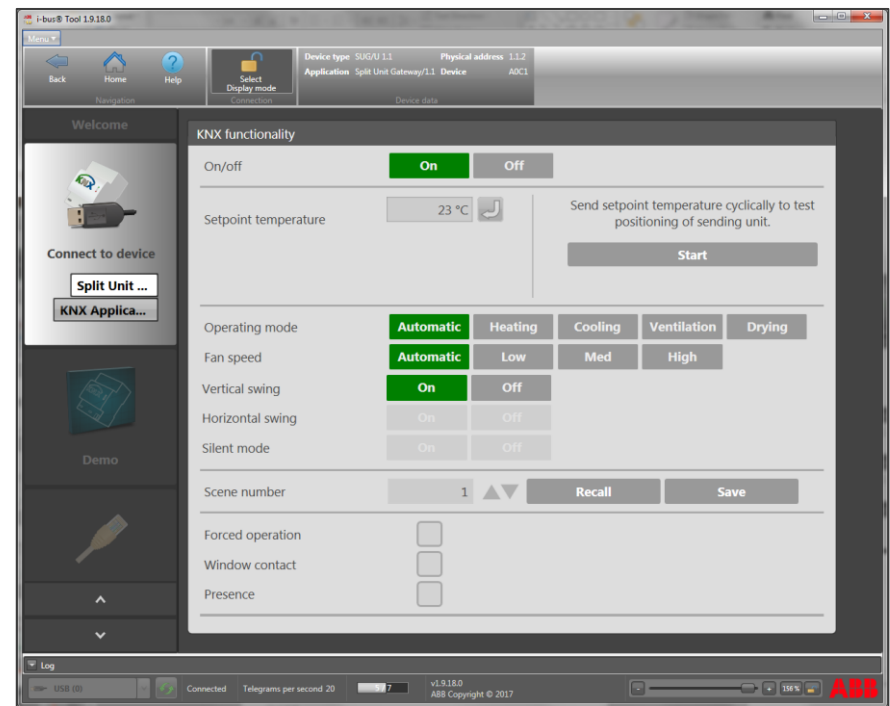
The device possesses an interface to the i-bus® Tool

The i-bus® Tool can be used to read out data and test functions on the connected device

The i-bus® Tool can be downloaded free from the ABB website ([www.abb.com/knx](http://www.abb.com/knx))

ETS is not required for the software tool

A description of the functions is provided in the i-bus® Tool online help



# Split Unit Gateway SUG/U 1.1

## Device functions – software

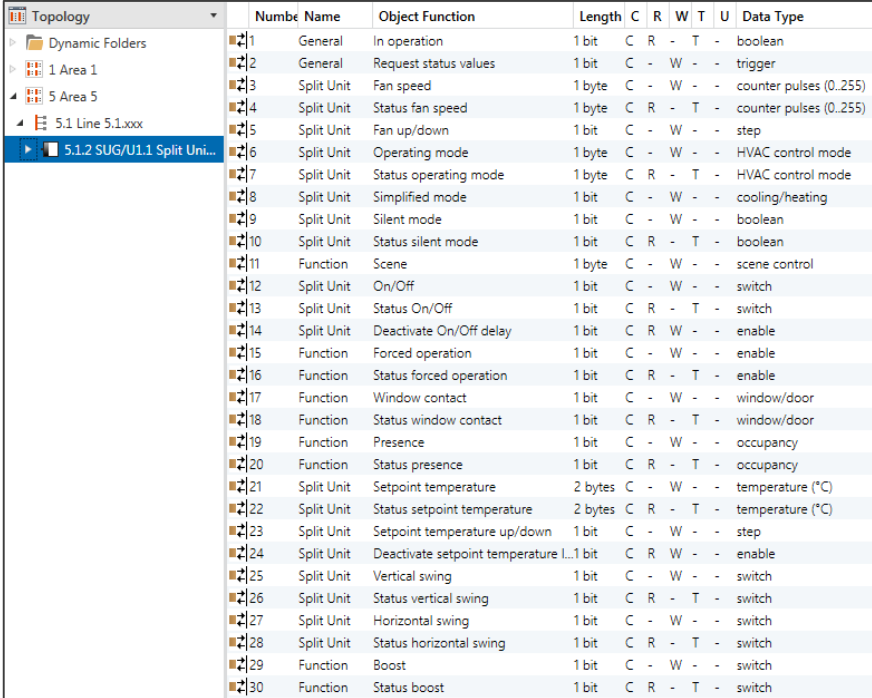
Parameterization is performed using the ETS4 or ETS5 software

The free “ABB SUG/U 1.1” ETS App available from the KNX Online Shop must also be installed

Further parameters\* permit functions such as

- Fan speed control
- Horizontal and vertical swing
- Swing activation
- Specification of setpoint temperature and limitation
- Activation of Silent Mode
- Scene and boost function
- Status messages

\* If the function is supported by the split unit device



Number	Name	Object Function	Length	C	R	W	T	U	Data Type
1	General	In operation	1 bit	C	R	-	T	-	boolean
2	General	Request status values	1 bit	C	-	W	-	-	trigger
3	Split Unit	Fan speed	1 byte	C	-	W	-	-	counter pulses (0..255)
4	Split Unit	Status fan speed	1 byte	C	R	-	T	-	counter pulses (0..255)
5	Split Unit	Fan up/down	1 bit	C	-	W	-	-	step
6	Split Unit	Operating mode	1 byte	C	-	W	-	-	HVAC control mode
7	Split Unit	Status operating mode	1 byte	C	R	-	T	-	HVAC control mode
8	Split Unit	Simplified mode	1 bit	C	-	W	-	-	cooling/heating
9	Split Unit	Silent mode	1 bit	C	-	W	-	-	boolean
10	Split Unit	Status silent mode	1 bit	C	R	-	T	-	boolean
11	Function	Scene	1 byte	C	-	W	-	-	scene control
12	Split Unit	On/Off	1 bit	C	-	W	-	-	switch
13	Split Unit	Status On/Off	1 bit	C	R	-	T	-	switch
14	Split Unit	Deactivate On/Off delay	1 bit	C	R	W	-	-	enable
15	Function	Forced operation	1 bit	C	-	W	-	-	enable
16	Function	Status forced operation	1 bit	C	R	-	T	-	enable
17	Function	Window contact	1 bit	C	-	W	-	-	window/door
18	Function	Status window contact	1 bit	C	R	-	T	-	window/door
19	Function	Presence	1 bit	C	-	W	-	-	occupancy
20	Function	Status presence	1 bit	C	R	-	T	-	occupancy
21	Split Unit	Setpoint temperature	2 bytes	C	-	W	-	-	temperature (°C)
22	Split Unit	Status setpoint temperature	2 bytes	C	R	-	T	-	temperature (°C)
23	Split Unit	Setpoint temperature up/down	1 bit	C	-	W	-	-	step
24	Split Unit	Deactivate setpoint temperature ...	1 bit	C	R	W	-	-	enable
25	Split Unit	Vertical swing	1 bit	C	-	W	-	-	switch
26	Split Unit	Status vertical swing	1 bit	C	R	-	T	-	switch
27	Split Unit	Horizontal swing	1 bit	C	-	W	-	-	switch
28	Split Unit	Status horizontal swing	1 bit	C	R	-	T	-	switch
29	Function	Boost	1 bit	C	-	W	-	-	switch
30	Function	Status boost	1 bit	C	R	-	T	-	switch

# Split Unit Gateway **SUG/U 1.1**

## Overview

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	<b>SUG/U 1.1</b>
Design	Flush-mounted device
Order code	2CDG 110 207 R0011
Launch	available

# Split Unit Gateway SUG/U 1.1

## Product documentation

Product Manual

Technical datasheet

Installation and operating instructions

...

Training & Qualification Database

- Presentation slides
- Webinar recording (English)  
(MP4 file on YouTube)



# Split Unit Gateway SUG/U 1.1

## Technical documents

[www.abb.com/knx](http://www.abb.com/knx)

→ Product category

→ Heating, Ventilation & Air Conditioning

→ Split Unit Gateway SUG/U 1.1

- ETS4 and ETS5 application software
- Product Manual
- Technical datasheet
- Installation and operating instructions
- Text for bid invitation
- Product information
- Presentation slides
- CE declaration of conformity
- . . .



Detailed information for: SUG/U 1.1

This page contains technical data sheet, documents library and links to offering related to this product. If you require any other information, please contact us using form located at the bottom of the page.

Print...  
Print to Pdf...

Data Sheet Documentation

### SUG/U 1.1

#### General Information

Extended Product Type:	SUG/U 1.1
Product ID:	2CDG110207R0011
EAN:	4016779997362
Catalog Description:	SUG/U 1.1 Split Unit Gateway, FM

Long Description: The Split Unit Gateway forms the interface between the KNX system and many manufacturers' air conditioners, so-called split units. The device converts the KNX telegrams into infrared commands and transmits them to the split unit. The transmitter of the supplied cable is bonded directly onto the split unit's receiver. The split unit then no longer receives the commands from a remote control. Instead, it can be operated via any KNX sensors or via a visual display system. The device is put into operation with the ETS, and a free ETS app is available to select the split unit model. Auxiliary voltage is not required.



#### Downloads

Show all (19) >	Agenda ( PDF) [EN] KNX Split Unit Gateway SUG/U 1.1 Summary: Agenda Webinar KNX Split Unit Gateway SUG/U 1.1 (13.09.2017) Course literature - English - 2017-09-04 - 0.06 MB PDF
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Advertisement (2)	
Connection diagram (1)	
Course literature (1)	Application software ETS4/ETS5 ( KNXPROD) [XX] SUG/U 1.1 Summary: No summary available Software - German, English, Spanish, French, Italian, Dutch, Polish, Russian - 2017-08-25 - 0.12 MB KNXPROD

# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

## Functional description of operation

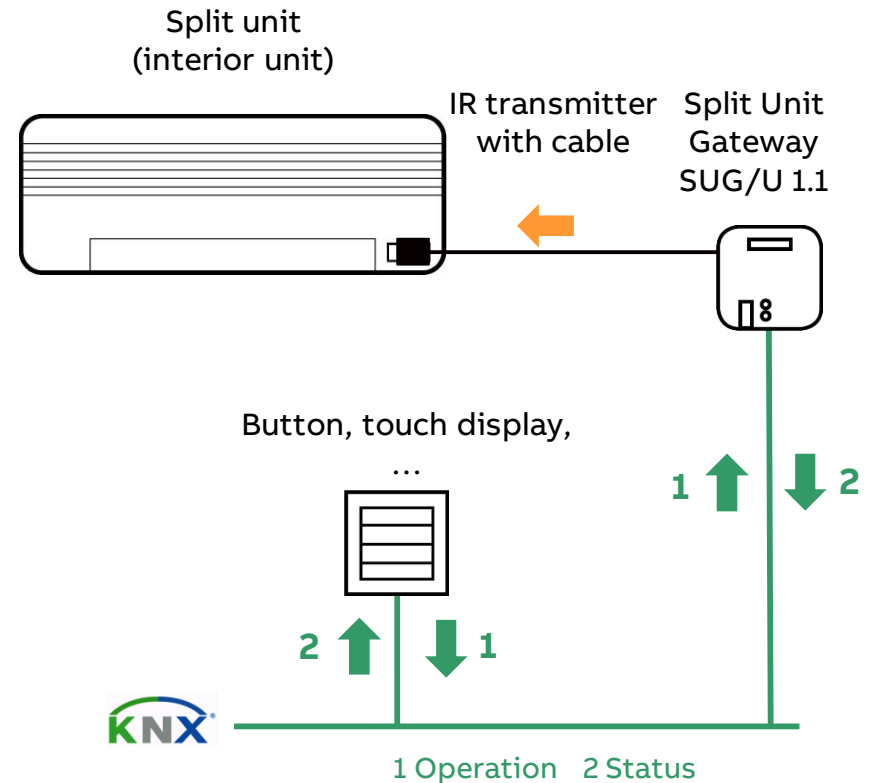
The split unit can be operated via KNX using any operating elements (e.g. buttons, touch display, smartphone)

The Split Unit Gateway sends the respective current status on the KNX

It can be indicated on the rocker switch LEDs

Example: button with four rocker switches

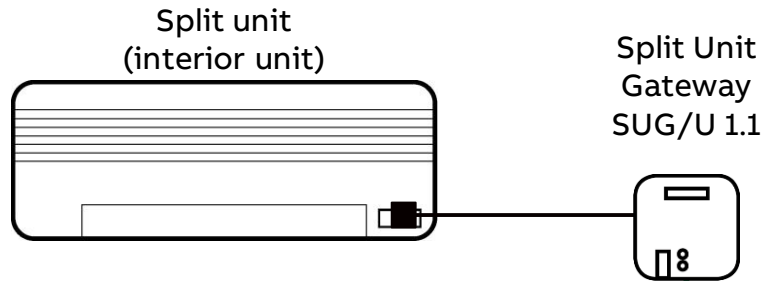
	Object function	Left	Right
Rocker switch 1	On/Off	On	Off
Rocker switch 2	Fan speed	UP	DOWN
Rocker switch 3	Setpoint temperature	19 °C	21 °C
Rocker switch 4	Setpoint temperature	23 °C	24 °C



# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

## Functional description of operation

Rocker switch 1	On/Off
Rocker switch 2	Fan up/down
Rocker switch 3	Setpoint temp. 19 °C and 21 °C
Rocker switch 4	Setpoint temp. 23 °C and 25 °C



Number	Group	Name	Object Function	Length
1	4212	S1.1: Switching	Input / output	1 bit
5	4213	LED1.1: Status	Input	1 bit
10	4213	LED1.2: Status	Input	1 bit
15	4205	S2.1: Switching	Input / output	1 bit
29	4221	S3.1: Value switching	Input / output	2 bytes
43	4221	S4.1: Value switching	Input / output	2 bytes

Number	Group	Name	Object Function	Length
5	4205	Split Unit	Fan up/down	1 bit
6		Split Unit	Operating mode	1 byte
12	4212	Split Unit	On/Off	1 bit
13	4213	Split Unit	Status On/Off	1 bit
21	4221	Split Unit	Setpoint temperature	2 bytes
23		Split Unit	Setpoint temperature up/down	1 bit



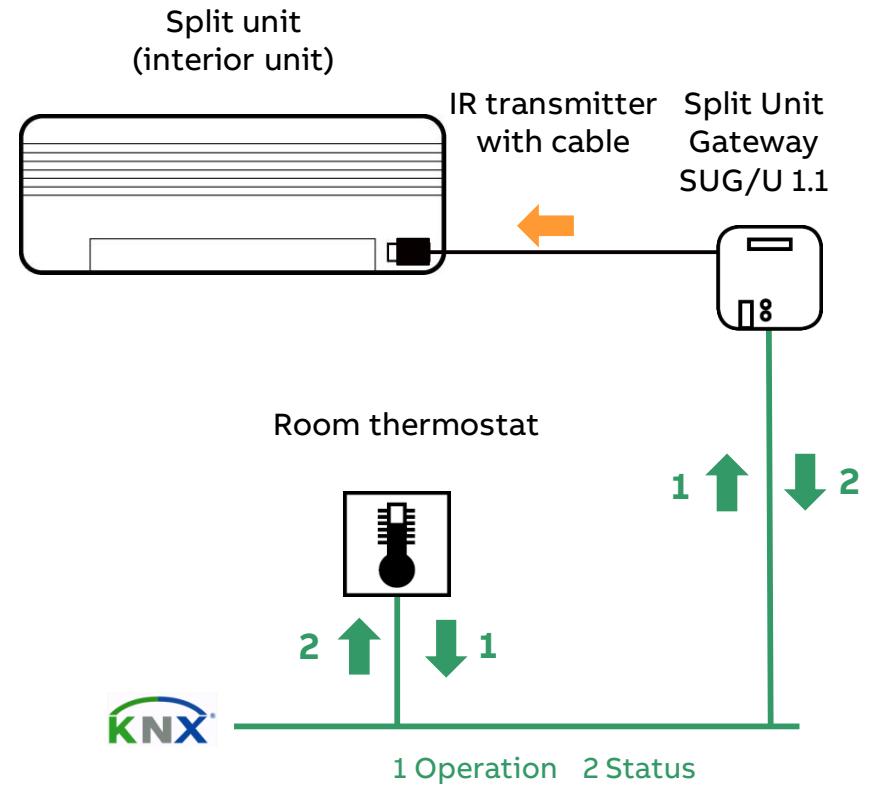
# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

## Functional description of operation

The split unit can be operated via KNX using a room thermostat.

The rocker switches can change the setpoint temperature, switch on/off and increase/decrease the fan speed

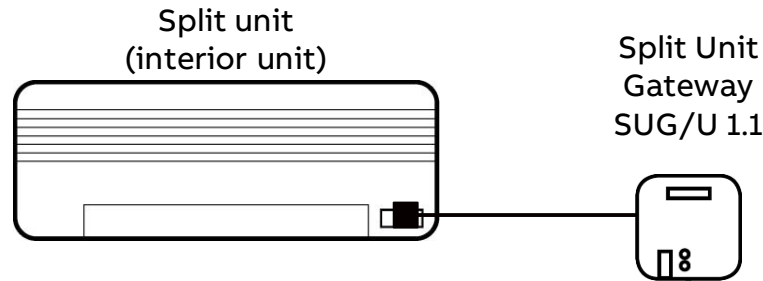
	Object function	Left	Right
Rocker switch 1	On/Off	On	Off
Rocker switch 2	Setpoint adjustment	Up	Down
Rocker switch 3	Fan speed	Up	Down



# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

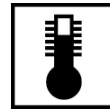
## Functional description of operation

Rocker switch 1	On/Off
Rocker switch 2	Setpoint adjustment
Rocker switch 3	Fan up/down



Nun	Group	Name	Object Function	Length
3		Cooling control value	Output	1 bit
6		Actual temperature	Output	2 bytes
11	4221	actual set value	Output	2 bytes
12		Operating mode	Input / output	1 byte
13		Superimposed operating mode	Input	1 byte
35		Fahrenheit	Input	1 bit
47		Commissioned	Output	1 bit
50	4212	rocker 1	switching	1 bit
74	4205	rocker 3	switching	1 bit
200	4213	LED 1	status	1 bit

Room thermostat



Nun	Group	Name	Object Function	Length
5	4205	Split Unit	Fan up/down	1 bit
6		Split Unit	Operating mode	1 byte
12	4212	Split Unit	On/Off	1 bit
13	4213	Split Unit	Status On/Off	1 bit
21	4221	Split Unit	Setpoint temperature	2 bytes
23		Split Unit	Setpoint temperature up/down	1 bit

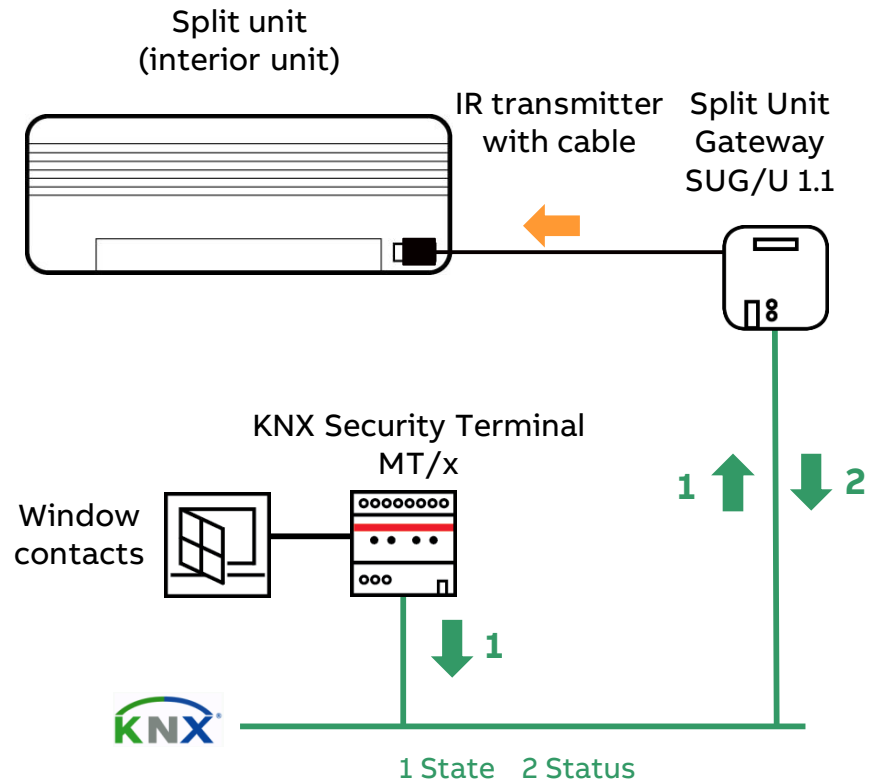
# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

## Functional description of window contact

A window contact (magnetic contact) is connected to an input of a KNX Security Terminal and sends the open/closed state of the window to the Split Unit Gateway

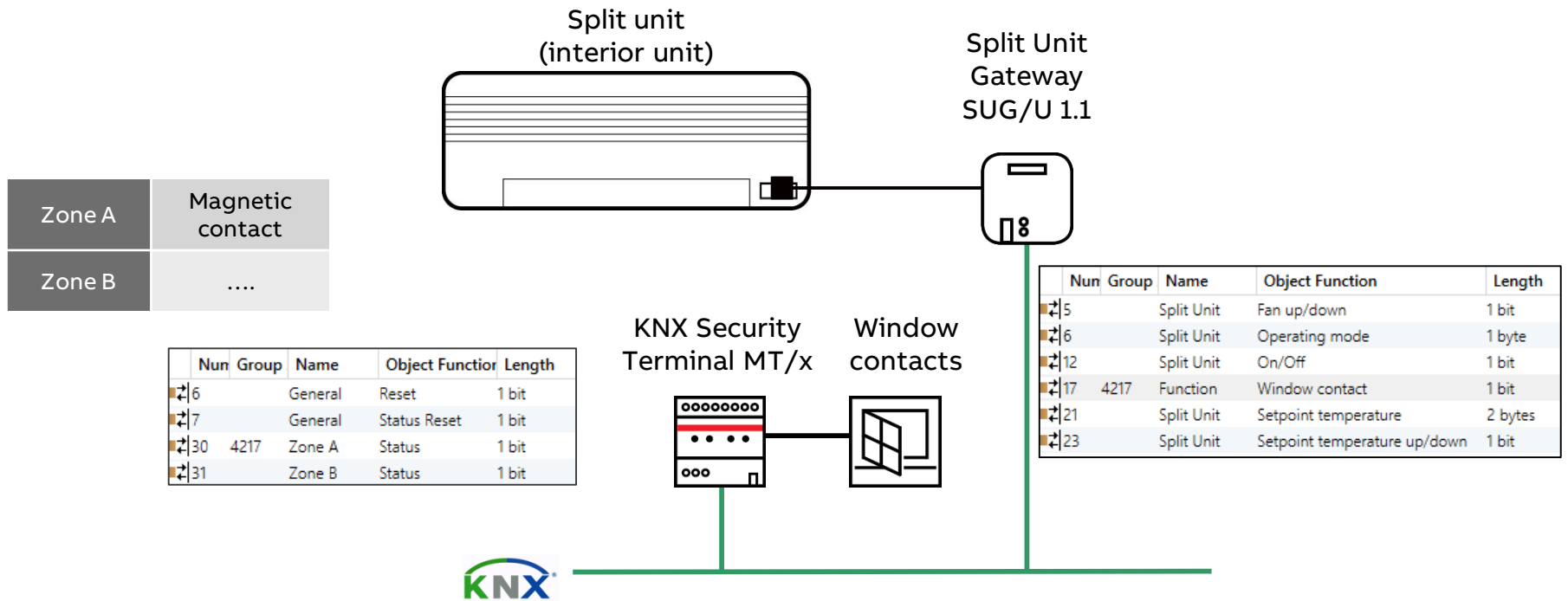
When a window is open, the function “Window contact” is activated with a higher priority and the split unit is switched off (optional OFF delay)

Closing the window deactivates the function, and the split unit can be operated again



# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

## Functional description of window contact



# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

## Functional description of presence

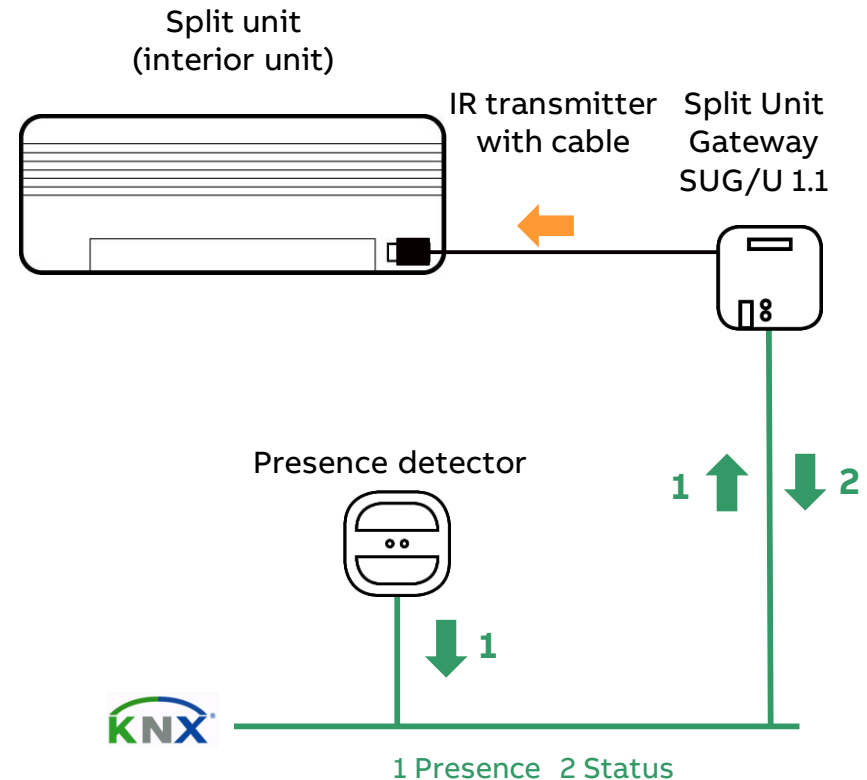
A presence detector automatically detects a person in the room, activates the function “Presence” and the parameterized state is established, e.g.

- Split unit ON, AUTO mode, setpoint temperature 22 °C, fan speed AUTO, ...

After the room is left (including a run-on time), the function “Presence” can be deactivated and the parameterized state is established

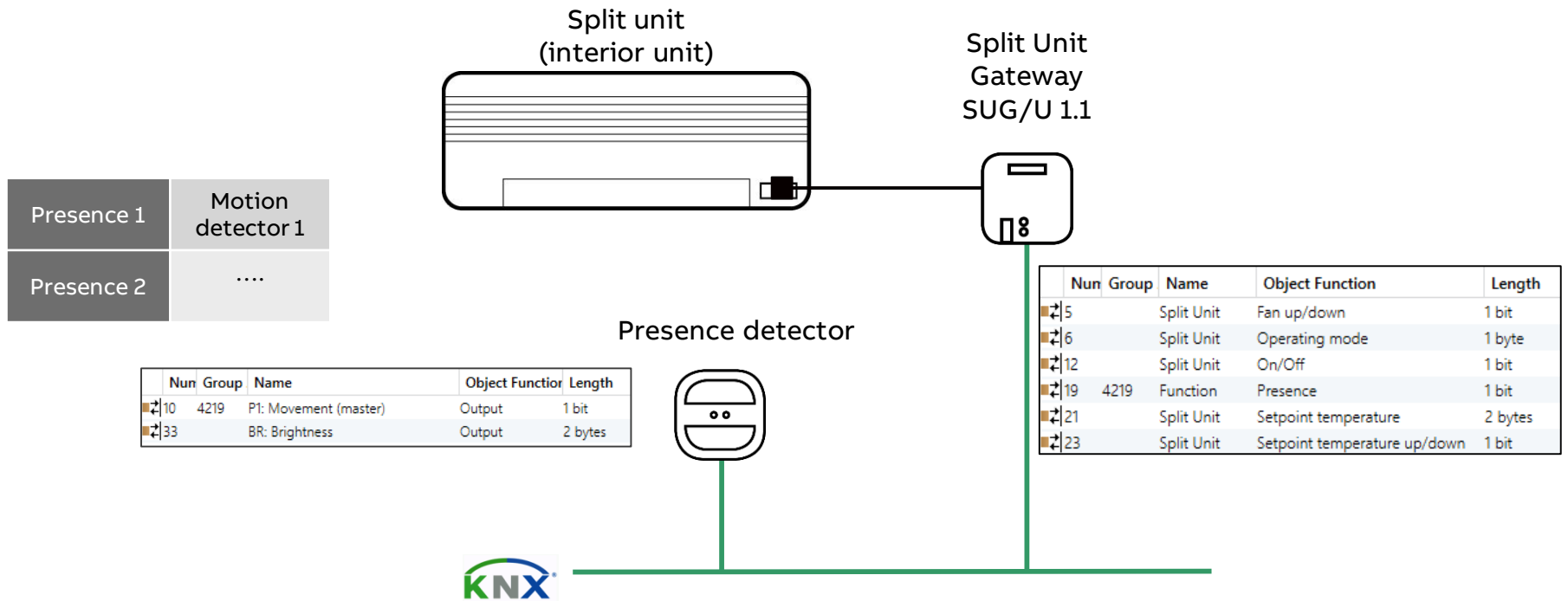
- Split Unit ON/OFF/unchanged

The function “Presence” can also be activated and deactivated via a card reader (e.g. hotel room)



# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

## Functional description of presence



# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

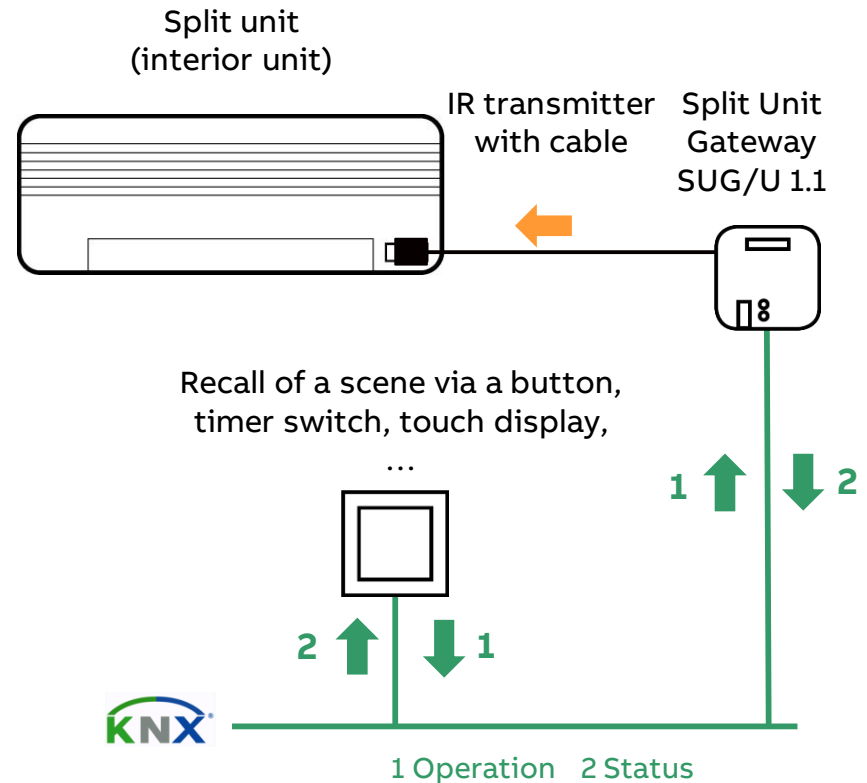
## Functional description of scenes

The function “Scenes” can be used for convenient recall of various scenes, e.g. in a conference/training room

- Welcome scene
- Presentation scene
- Break scene

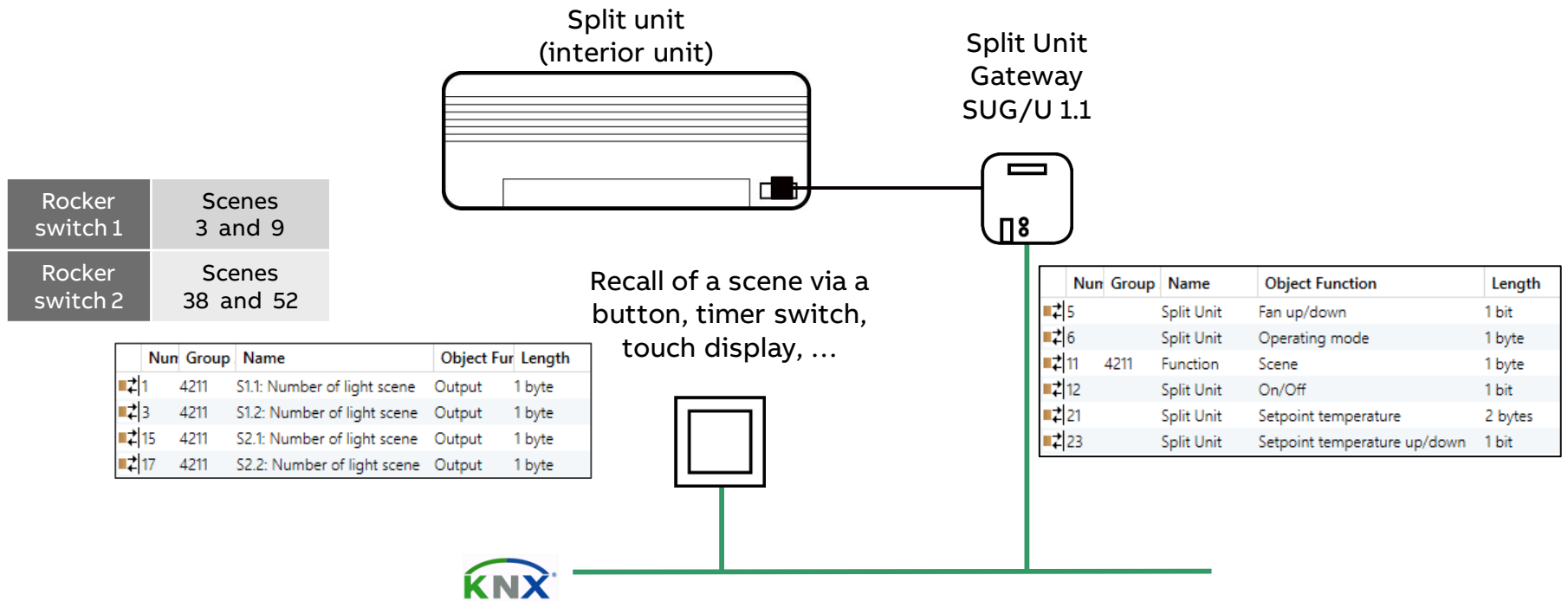
The parameterized state is established as soon as the corresponding scene is recalled

Scene	Welcome	Presenta-tion	Pause	End
Split unit	On	On	Unchan.	Off
Setpoint temp.	21 °C	21 °C	22 °C	-
Operat. mode	Auto	Auto	Ventilat.	-
Fan speed	1	Auto	3	-
Slat adjustment	Start	Unchan.	Start	-



# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

## Function description of scenes



# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

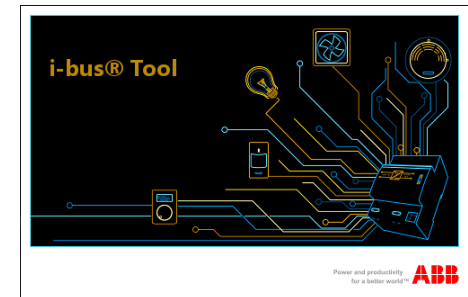
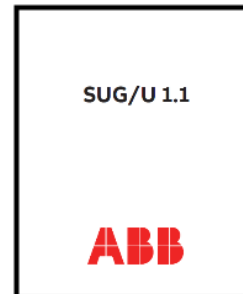
## Commissioning

ETS4 or ETS5 and the current application of the device are required for programming

Ensure that the latest ETS application is used.  
Download from [www.abb.com/knx](http://www.abb.com/knx)

In addition to the ETS application, you will require the “ABB SUG/U 1.1 Configuration” app for commissioning; this can be obtained free from the KNX Online Shop

The device possesses an interface to the i-bus® Tool (reading out data and checking functions)



# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

## ETS App “ABB SUG/U 1.1 Configuration”

Download the ETS App (ABBSUG.etsapp) and the license file (\*.license) from the KNX Online Shop

In the ETS:

- Install the app
- Add license

The app appears in the menu “Extras” → “ABB” → “ABB SUG/U Configuration”

The IR databases of the split unit devices are also installed during this process

The IR database files are updated online in the app

The image contains two screenshots from the ETS software interface. The top screenshot shows the 'Apps' and 'Licenses' panels. In the 'Apps' panel, a red box highlights the 'Install App' button, labeled with a circled '1'. Below it is a table of installed and available apps. In the 'Licenses' panel, a red box highlights the 'Add a license' button, labeled with a circled '2'. Below it is a table of installed licenses. The bottom screenshot shows the 'Extras' menu. A red box highlights the 'Extras' menu item, labeled with a circled '3'. A second red box highlights the 'ABB' sub-menu, labeled with a circled '4'. A third red box highlights the 'ABB SUG/U1.1 Configuration App' option, labeled with a circled '5'.

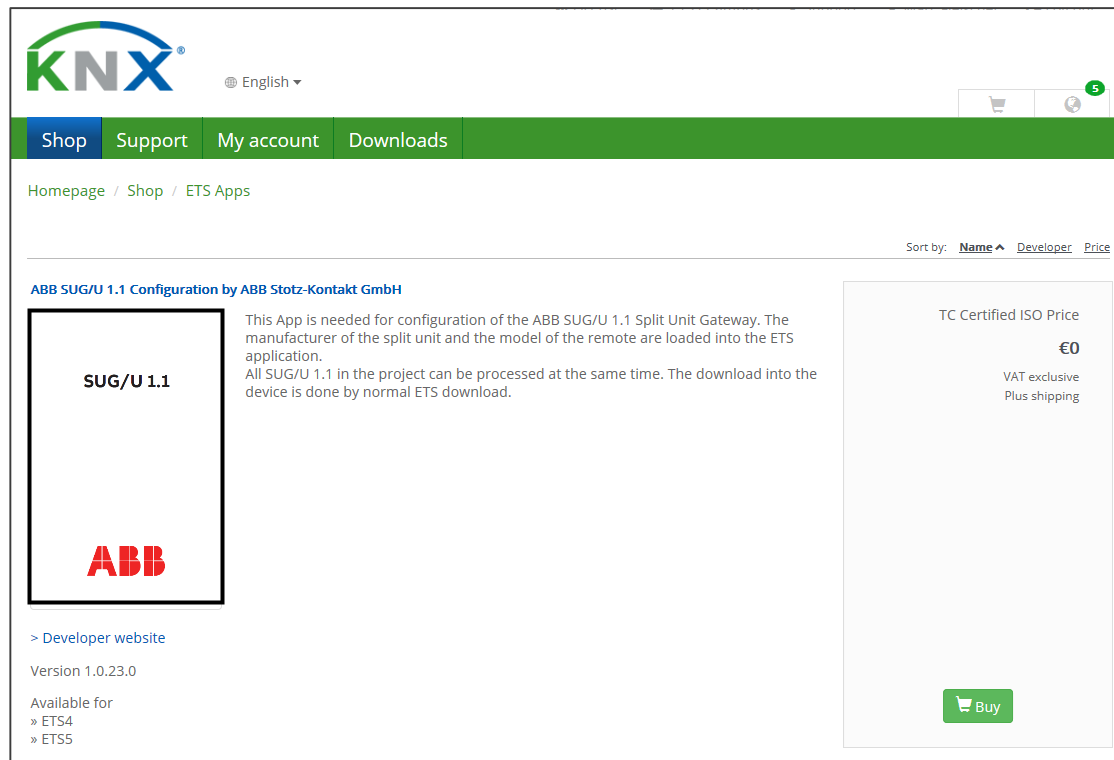
Name	Manufacturer	Version	License
ABB KNX Bus Update	ABB	1.0.37.0	
Compatibility Mode /	KNX Association	5.5.952.23148	
Device Reader	KNX Association		
EibLibIP	KNX Association		
Extended Copy	KNX Association		
IPPDataExchange	Busch Jaeger Elektro		
Label Creator	KNX Association		
Long Term Recorder	KNX Association		
My Products	KNX Association		
My TrainingscenterTo	KNX Association		
Online Catalog	KNX Association		

Name	Manufacturer	Version	License
KNX-F6002			
ETS App Device Reader			
ETS App Training Centre Tool			
ETS5 Professional			
Export for IP-Project			
Extended Copy			
KNX Bus Update			
Labels			
Long-term Recorder			

Name	Manufacturer	Version	License
ABB KNX Bus Update	ABB	1.0.37.0	
ABB SUG/U1.1 Configuration App	ABB		

# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

## ETS App “ABB SUG/U 1.1 Configuration”



The screenshot shows the product page for the ABB SUG/U 1.1 Configuration app on the KNX website. The page features the KNX logo at the top left, a language selector set to English, and a navigation bar with links for Shop, Support, My account, and Downloads. The breadcrumb trail indicates the user is on the ETS Apps page. The product title is "ABB SUG/U 1.1 Configuration by ABB Stotz-Kontakt GmbH". The app is described as being needed for configuration of the ABB SUG/U 1.1 Split Unit Gateway. The price is listed as €0, with VAT exclusive and plus shipping. A "Buy" button is visible at the bottom right of the product details. The app is available for ETS4 and ETS5.

**KNX** English

Shop Support My account Downloads

Homepage / Shop / ETS Apps

Sort by: **Name** Developer Price

**ABB SUG/U 1.1 Configuration by ABB Stotz-Kontakt GmbH**

**SUG/U 1.1**

This App is needed for configuration of the ABB SUG/U 1.1 Split Unit Gateway. The manufacturer of the split unit and the model of the remote are loaded into the ETS application.  
All SUG/U 1.1 in the project can be processed at the same time. The download into the device is done by normal ETS download.

TC Certified ISO Price  
**€0**  
VAT exclusive  
Plus shipping

> Developer website

Version 1.0.23.0

Available for  
» ETS4  
» ETS5

Buy

# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

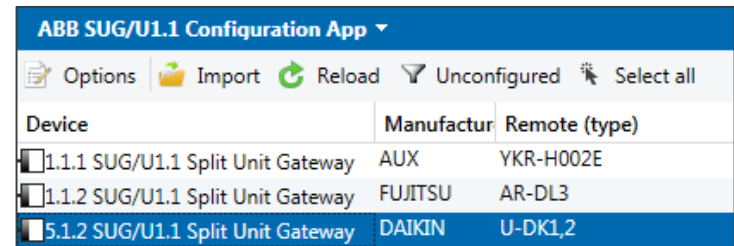
## Commissioning

Add the Split Unit Gateway to the building or topology view

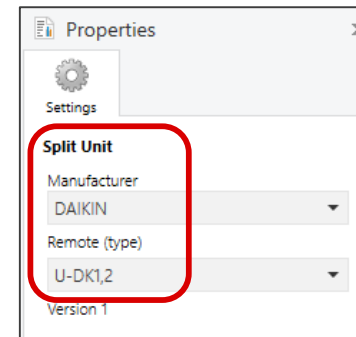
Click on the Gateway and start the app (menu “Extras” → “ABB” → “ABB SUG/U Configuration”)

Click the Gateway in the window of the “ABB SUG/U Configuration” app and select the remote control manufacturer and type in the “Properties” window

The functions supported by the split unit are displayed, and the IR codes of the selected remote control are adopted in the ETS application and parameters



Device	Manufacturer	Remote (type)
1.1.1 SUG/U1.1 Split Unit Gateway	AUX	YKR-H002E
1.1.2 SUG/U1.1 Split Unit Gateway	FUJITSU	AR-DL3
5.1.2 SUG/U1.1 Split Unit Gateway	DAIKIN	U-DK1,2



Properties

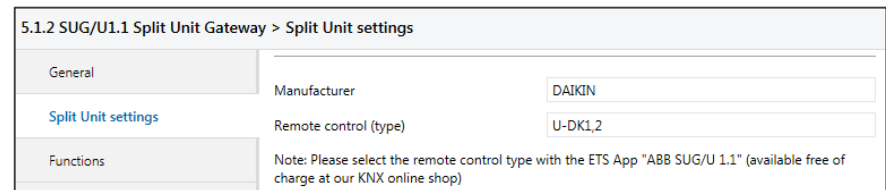
Settings

**Split Unit**

Manufacturer  
DAIKIN

Remote (type)  
U-DK1,2

Version 1



5.1.2 SUG/U1.1 Split Unit Gateway > Split Unit settings

General	Manufacturer	DAIKIN
Split Unit settings	Remote control (type)	U-DK1,2
Functions	Note: Please select the remote control type with the ETS App "ABB SUG/U 1.1" (available free of charge at our KNX online shop)	

# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

## ETS App “ABB SUG/U 1.1 Configuration”

The screenshot shows the ETS software interface for configuring an ABB SUG/U 1.1 Split Unit Gateway. The configuration is divided into several sections:

- (1)** Topology tree: Selects the device '5.1.2 SUG/U1.1 Split Unit Gateway'.
- (2)** Configuration App: Opens the 'ABB SUG/U1.1 Configuration App'.
- (3)** Device list: Shows the selected device '5.1.2 SUG/U1.1 Split Unit Gateway'.
- (4)** Split Unit settings: Sets 'Manufacturer' to 'DAIKIN'.
- (5)** Remote control settings: Sets 'Remote (type)' to 'U-DK1,2'.
- (6)** Operating modes: Configures 'Set point temperature range' (18...36 °C), 'Operating modes' (Automatic, Heating, Cooling, Ventilation, Drying), and 'Fan speeds' (Automatic, Low=1, Medium=3, High=5).
- (7)** General settings: Configures 'Split Unit settings'.

The table on the right lists manufacturers and their corresponding remote control types:

BLUESTAR	APGS02
CANDOR	ARC433A24
CARRIER	ARC433A25
CHIGO	ARC433A46
DAIKIN	ARC433A73
FUJITSU	ARC433B71
HITACHI	ARC470A12
IFB	ARC470A25
LG	ARC479A20
MITSUBISHI	ECGS01-i
OGENERAL	NOMODEL_1
PANASONIC	U-DK1,2
SAMSUNG	U-DK3,4,5
SANYO	U-DK-6
TOSHIBA	U-DK-7
VIDEOCON	U-DK8
VOLAS	U-DK9

# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

## Commissioning

Set the parameters as required depending on the supported split unit functions (see “Parameters” window)

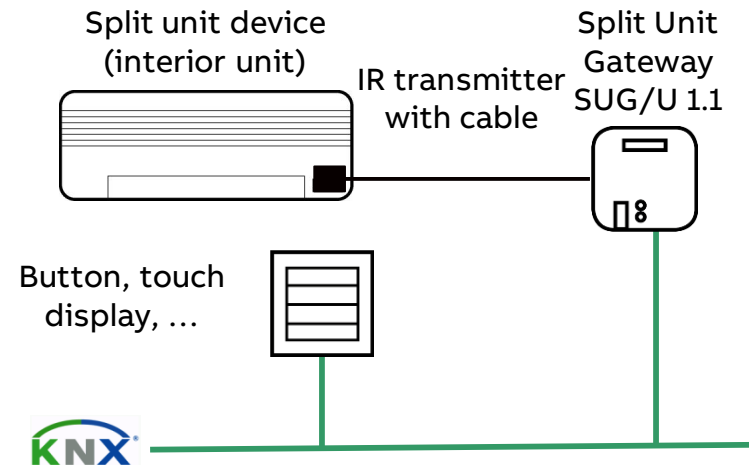
Create group addresses and link with the objects

Program the physical address and load the application

Test the

- Settings and parameters in the Split Unit Gateway (i-bus® Tool)
- Functional implementation  
Control element/sensor – Split Unit Gateway  
– split unit device

5.1.2 SUG/U1.1 Split Unit Gateway > General	
<b>General</b>	
Split Unit settings	Sending delay after bus voltage recovery, download and ETS reset: 2 s
Functions	Limit number of telegrams: <input checked="" type="radio"/> No <input type="radio"/> Yes
Forced operation	Enable group object "In operation", 1 bit: <input checked="" type="radio"/> No <input type="radio"/> Yes
Window contact	



# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

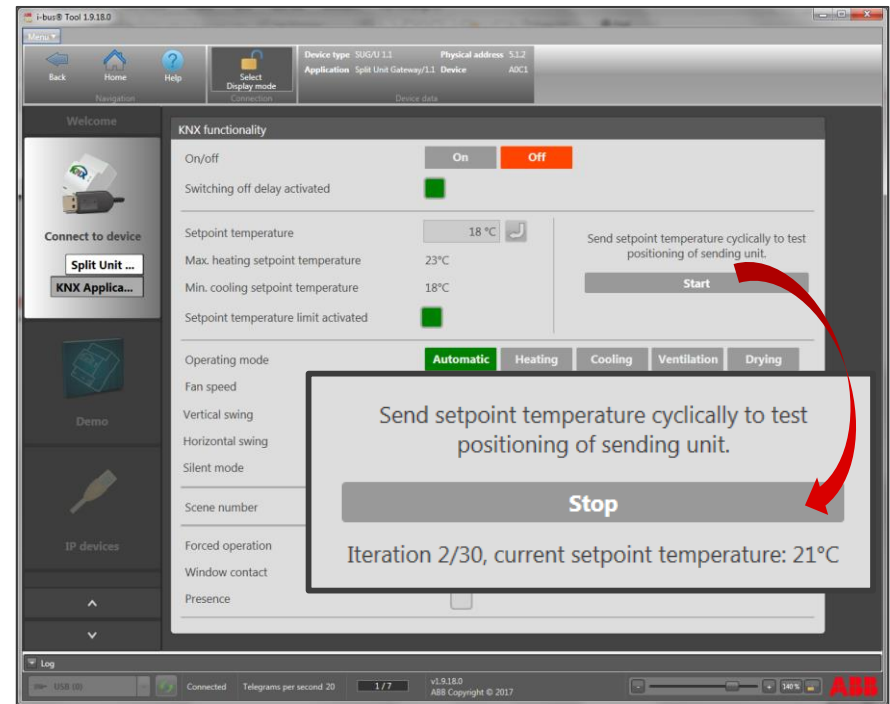
## i-bus® Tool: positioning the IR transmitter

The IR transmitter of the Split Unit Gateway must be correctly positioned on the receiver of the split unit

The function “Send temperature cyclically...” enables cyclical values to be sent, which are then confirmed by the split unit with an acknowledgment tone

This makes it possible to check whether the transmitter is in the correct position before it is affixed

30 telegrams are sent at intervals of 4 seconds (2 minutes)



# ABB i-bus KNX Split Unit Gateway SUG/U 1.1

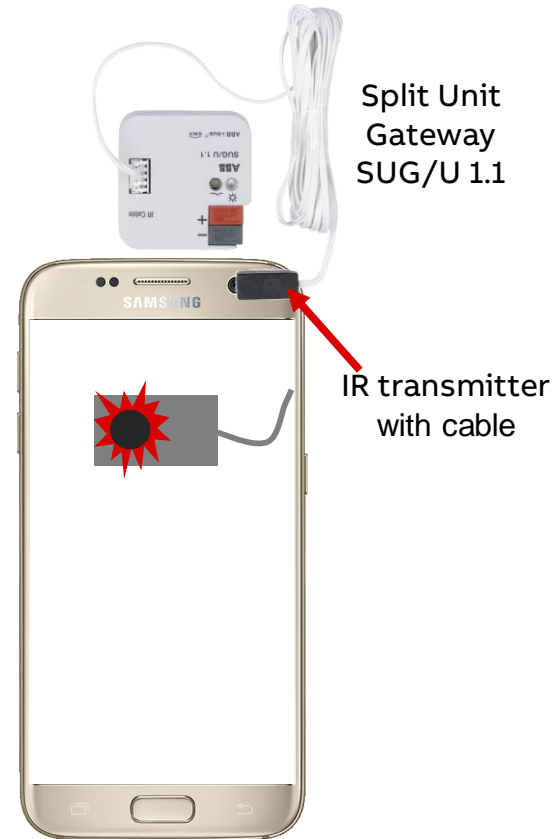
## Testing and troubleshooting: smartphone camera

Important: This test function depends on the smartphone manufacturer and model!

The photo chip in a smartphone senses more than human eye can, and it also detects IR light. Smartphones usually have an IR blocking filter, but the signal from a transmitter held in front of the lens can nevertheless still be seen in camera recording mode.

A light lights up in the smartphone display if IR radiation is present (KNX command to the Split Unit Gateway or with the test function of the i-bus® Tool, “Send temperature cyclically...”)

It is recommended to use the front camera. Its equipment quality is not as high, and it does not possess an infrared filter.



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