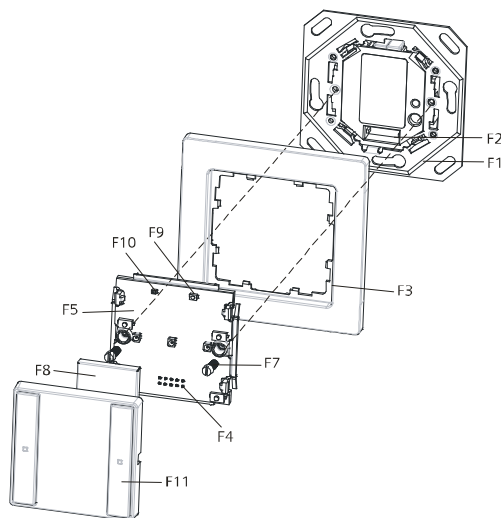


DELTA i-system	wall switch single	UP 221/2	5WG1 221-2AB_2
		UP 221/3,with status LED	5WG1 221-2AB_3
	wall switch double	UP 222/2,	5WG1 222-2AB_2
		UP 222/3,with status LED	5WG1 222-2AB_3
	wall switch triple	UP 223/2,	5WG1 223-2AB_2
	UP 223/3,with status LED	5WG1 223-2AB_3	
	UP 223/4,with temperature sensor	5WG1 223-2AB_4	
	UP 223/5,with IR receiver decoder	5WG1 223-2AB_5	



Product		wall switch, single	wall switch, double	wall switch, triple
<b>without status LED</b>	electro white	5WG1 221-2AB02	5WG1 222-2AB02	5WG1 223-2AB02
	titanium white	5WG1 221-2AB12	5WG1 222-2AB12	5WG1 223-2AB12
	carbon metallic	5WG1 221-2AB22	5WG1 222-2AB22	5WG1 223-2AB22
	aluminum metallic	5WG1 221-2AB32	5WG1 222-2AB32	5WG1 223-2AB32
<b>with status LED</b>	electro white	5WG1 221-2AB03	5WG1 222-2AB03	5WG1 223-2AB03
	titanium white	5WG1 221-2AB13	5WG1 222-2AB13	5WG1 223-2AB13
	carbon metallic	5WG1 221-2AB23	5WG1 222-2AB23	5WG1 223-2AB23
	aluminum metallic	5WG1 221-2AB33	5WG1 222-2AB33	5WG1 223-2AB33
<b>with status LED, scene controller, and room temperature sensor</b>	electro white			5WG1 223-2AB04
	titanium white			5WG1 223-2AB14
	carbon metallic			5WG1 223-2AB24
	aluminum metallic			5WG1 223-2AB34
<b>with status LED, scene controller, and IR receiver decoder</b>	electro white			5WG1 223-2AB05
	titanium white			5WG1 223-2AB15
	carbon metallic			5WG1 223-2AB25
	aluminum metallic			5WG1 223-2AB35



- F1 Bus coupling unit (BTM) UP 117
- F2 Bus Transceiver Interface (BTI) on Bus coupling unit (BTM)
- F3 Design frame (DELTA line, vita, miro)
- F4 Bus Transceiver Interface (BTI) on wall switch module
- F5 Basic push button module
- F6 Transparent frame with buttons
- F7 Mounting screws
- F8 Back cover (white) for labeling insert
- F9 Learning button for switching between normal operating mode and addressing mode for receiving the physical address
- F10 LED for indicating normal operating mode (LED off) and addressing mode (LED on); upon receiving the physical address the device automatically returns to normal operating mode
- F11 switch button

Figure 1: Mounting wall switch DELTA i-system

**DELTA i-system** wall switch single  
wall switch double  
wall switch triple

## Product and Applications Description

The wall switches for the DELTA i-system (DELTA line, DELTA vita, DELTA miro) have one, two or three horizontally arranged pairs of buttons. A labelling field is placed in the middle between these buttons.

These types of wall switches are available:

- Wall switch single, double and triple, with one orientation LED, without status LED.
- Wall switch single, double and triple, with one orientation LED and with one status LED per button.
- Wall switch triple, with one orientation LED, with one status LED per button, scene controller, and room temperature sensor.
- Wall switch triple, with one orientation LED, with one status LED per button, scene controller, and IR receiver-decoder.

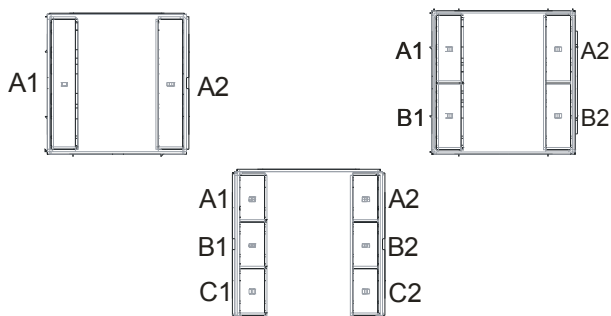
The wall switches are mounted together with the design frame "DELTA line", "DELTA vita", or "DELTA miro" onto a bus coupling unit (BTM). At the same time the electrical connection between the wall switch and the bus coupling unit (BTM) is established via the Bus Transceiver Interface (BTI).

Bus coupling unit (BTM) and the design frame "DELTA line", "DELTA vita", or "DELTA miro" are not included and therefore have to be ordered separately (see current catalog).

### Common functions

#### Switch buttons

Depending on the model a switch provides two to six switch buttons (figure 1: A1, A2, B1, B2, C1, C2), which horizontally function as a switch pair (A to C).



Horizontally aligned buttons may be used as a pair of buttons (e.g. for defined switching/dimming, or control of shutters and blinds, i.e. with the left button light is turned on and with the right button light is turned off), or as single buttons for sending values, single-button switching/dimming or single button control of blinds.

Each individual switch button (A1, A2, B1, B2, C1, C2) may be assigned one of the following functions:

- Switching (on, off, toggle)
- door bell function
- single button dimming
- single button control of solar protection (blinds, roller shades)
- 1-bit scene control (scene 1 or 2: recall / save)
- 8-bit scene / effect control (recall, recall / save)
- Send value (8-bit value, percent)
- Send value (16-bit value, temperature value, brightness value)
- Forced control

Depending on the selected main function another function may be executed either additionally after a time delay (time delay configurable from 100ms to 655s) or alternatively when the button is pressed for a longer period.

When switch buttons are configured as a pair then this button pair may be assigned one of the following functions:

- Dual-button dimming with stop telegram
- Dual-button control of solar protection (blinds, roller shades)
- Send variable percent value
- Send variable 8-bit value
- 1-bit scene control (scene 1 and 2: recall / save)
- 8-bit scene / effect control (recall / save)
- Forced control

Depending on the selected main function another function may be executed additionally after a time delay (time delay configurable from 100ms to 655s).

These options are available as additional or alternative functions for single buttons or button pairs:

- Switching (on)
- Switching (off)
- Send percent value
- Send 8-bit value (0...255)
- Send temperature value
- Send brightness value
- Send 16-bit value (0...65535)

<b>DELTA i-system wall switch, single wall switch, double wall switch, triple</b>
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- 1-bit scene control (scene 1: recall / save)
- 1-bit scene control (scene 2: recall / save)
- 8-bit scene / effect control: recall
- Forced on
- Forced off
- Deactivate forced control

#### Orientation lighting

The orientation light (LED) of the device may be turned on or off continuously or depending on a status object. These configuration options are available for the orientation light (LED):

- LED permanently off
- LED permanently on
- LED indicates IR activity (only for switch with IR receiver)
- LED indicates user operation
- LED indicates long button press
- A binary status object controls the LED for each status value on (=1) or off (=0) respectively to either
  - on
  - off
  - flash, slowly (0,3 Hz)
  - flash, moderately (1 Hz)
  - flash, fast (5 Hz)
- An analog status object (8-bit value [0...255], percent value, 16-bit value [0...65535], temperature value [0°C...40°C], brightness value [0...2000 lux] controls the LED for each of up to three value ranges respectively to either
  - on
  - off
  - flash, slowly (0,3 Hz)
  - flash, moderately (1 Hz)
  - flash, fast (5 Hz)

The brightness of the orientation light is configurable and may be controlled via object (e.g. for night operation).

#### **Additional functions of devices with status LED**

##### Status LED

The same configuration options as for the orientation LED are available for the status LED's of a device.

- LED permanently off
- LED permanently on
- LED indicates IR activity (only for switch with IR receiver)
- LED indicates user operation
- LED indicates long button press
- A binary status object controls the LED for each status value on (=1) or off (=0) respectively to either
  - on

- off
- flash, slowly (0,3 Hz)
- flash, moderately (1 Hz)
- flash, fast (5 Hz)
- An analog status object (8-bit value [0...255], percent value, 16-bit value [0...65535], temperature value [0°C...40°C], brightness value [0...2000 lux] controls the LED for each of up to three value ranges respectively to either
  - on
  - off
  - flash, slowly (0,3 Hz)
  - flash, moderately (1 Hz)
  - flash, fast (5 Hz)

The brightness of the status LED can be configured mutually for all status LED's and can be influenced via object (e.g. for night operation).

To find a switch when its associated status LED is turned off and it is dark, this LED may be configured to cyclically flash briefly.

##### Scene controller

[applies only to UP 22x/4 and UP 22x/5]

The scene controller enables integration of those actuators, which themselves do not provide 8-bit scene control, into 8-bit scene control schemes. Up to eight scene channels (A ... H) are controlled via a single 8-bit scene object. For each channel one of these functions may be selected:

- Switching
- Solar protection control
- Forced control
- 8-bit value
- 16-bit value

Each channel may be assigned to up to eight different scene numbers (1...64).

Scenes are recalled with a short button press and saved with a long button press.

Before saving a scene the actuators belonging to that scene must be set to the desired light levels and switching states.

When receiving a save telegram for an 8-bit scene via the 8-bit scene object the scene controller interrogates the current values and states of the actuators via the corresponding objects and saves these values and states as scene settings for the associated scene number. Saved scene values are only deleted by a new configuration of the device if the parameter "Delete scene memory after bus voltage recovery" is set to "Yes".

<b>DELTA i-system</b> wall switch single wall switch double wall switch triple
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Room temperature sensor

[applies only to UP 22x/4]

The room temperature may be transmitted cyclically or on change of value. To accommodate local circumstances the measured room temperature may be offset by a configurable value.

IR receiver

[applies only to UP 22x/5]

The device offers a 16 channel IR receiver-decoder.

As described for the single buttons / button pairs above, each of the 16 IR channels may be either configured for functions associated with single buttons or a button pair. Likewise, dependent on the selected main functions additional functions may be selected. The 16 channel IR hand-held remote S425/72 allows to fully exploit these possibilities.

The application program already has been loaded in the factory. With the ETS (Engineering Tool Software) the specific parameters and addresses are assigned appropriately, and downloaded into the device.

## Function ex factory:

All switch button pairs are pre-configured for the building site function for switching (left on, right off).

**Application program**

25 C0 BTM wall switch 909301

- Single, double or triple wall switch for
  - switching on / off / toggle
  - bell function (press on, release off)
  - dimming (with one or two buttons)
  - solar protection control (with one or two buttons)
  - send value (8-bit and 16-bit)
  - send variable value (8-Bit)
  - 1-bit and 8-bit scene control
  - forced control
  - second transmission object
- 8 channel scene controller with 8 scenes per channel
- 1 LED as orientation light
- 1 LED per switch button for status annunciation
- room temperature sensor
- IR receiver-decoder for 16 IR channels

This application program applies to all *instabus* wall switches that are mounted on a bus coupling unit (BTM) UP 117.

When expanding the number of switch buttons or the functionality (e.g. from UP 221/\_2 to UP 223/\_5) the prior configuration remains and must only be expanded.

In the same simple fashion switching between design lines (DELTA line / vita / miro, DELTA profil oder DELTA style) is possible.

Configuration and operation of all *instabus* wall switches is identical independent of design and the number of switch buttons

**DELTA i-system** wall switch, single  
wall switch, double  
wall switch, triple

## Installation notes

- The device can be used for permanent installation in dry interior rooms and for insertion in distribution boards or miniature housings.



### WARNING

- The device must be mounted and commissioned by an authorised electrician.
- The device may be mounted in switch and socket combinations if VDE-certified devices are used exclusively.
- The prevailing safety rules must be heeded.
- For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered.

## Technical data

### Power supply

- KNX bus voltage: via bus coupling unit (BTM) UP117
- KNX bus current: 9mA

### Operating elements

- 1, 2 or 3 pairs of horizontally arranged switch buttons
- Number of switching operations: > 20000 per button
- 1 learning push button:  
for toggling between normal mode / addressing mode

### Display elements

- 1 red LED:  
for checking the bus voltage and for displaying normal mode / addressing mode
- 1 LED  
as orientation light in the dark

UP 22x/3, UP 22x/4 and UP 22x/5:

- 1 red LED per switch button for status annunciation

### IR receiver (UP 22x/5)

- Range of IR transmission: approx. 25 m under these conditions:
  - with IR hand-held remote S 425/72 (5WG1 425-7AB72)
  - directed in optical direct line-of-sight
  - up to max. 500 Lux diffuse day-light at reception location

## Connections

10-pin connector (BTI):  
for connection to a bus coupling unit (BTM) UP 117

## Physical specifications

- Housing: plastic
- dimensions (L x W x D):  
55 x 55 x 24 mm (incl. spring)
- weight: approx. 30 g
- Fire load: approx. 740kJ
- installation:  
mounted on bus coupling unit (BTM) UP 117

## Electrical safety

- Degree of pollution (according to IEC 60664-1): 2
- Type of protection (according to EN 60529): IP 20
- Class of protection (according to IEC 61140): III
- Overvoltage category (according to IEC 60664-1): III
- Bus: safety extra-low voltage SELV DC 24 V
- Device complies with: EN 50090-2-2 and IEC 60664-1

## EMC requirements

complies with EN 50090-2-2

## Environmental specifications

- climatic conditions: EN 50090-2-2
- ambient temperature operating: - 5 ... + 45 °C
- ambient temperature non-op.: - 25 ... + 70 °C
- relative humidity (non-condensing): 5 % to 93 %

## Reliability

UP221/x and UP222/x

- Failure rate: 152 fit at 40°C
- UP223/x
- Failure rate: 251 fit at 40°C

## Markings

KNX, EIB, CE

## CE mark

In accordance with the EMC guideline (residential and functional buildings), low voltage guideline

DELTA i-system wall switch single  
 wall switch double  
 wall switch triple

**Location and function of the display and operating elements**

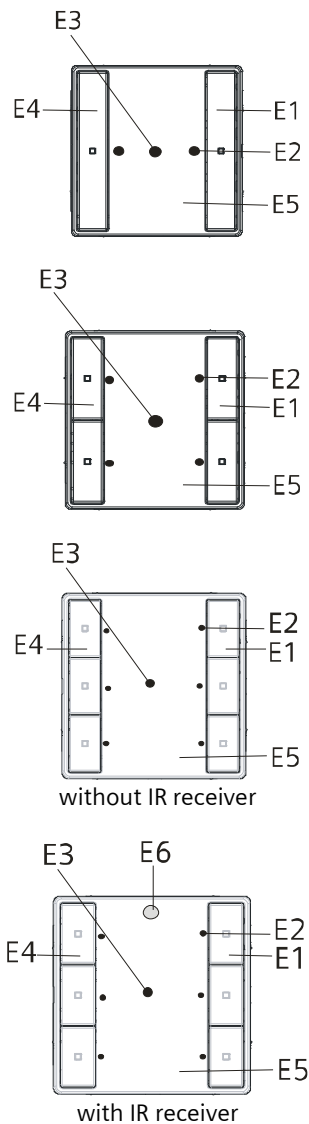


Figure 2: Display and operating elements

- E1 Right button(s)
- E2 LED's for status annunciation  
(not available with UP 22x/2)
- E3 LED for orientation lighting
- E4 Left button(s)
- E5 Labeling field
- E6 IR receiver (UP 22x/5 only)

**Installation and wiring**

General description

The wall switch is slid onto the bus coupling unit (BTM) (F1) together with its design frame (DELTA line / vita / miro) (F3).

The bus coupling unit (BTM) UP 117 (F1) is already mounted into a flush-mount box (see installation instruction of the bus coupling unit (BTM) UP 117).

Bus coupling unit (BTM) and the design frame "DELTA line", "DELTA vita", or "DELTA miro" are not included and therefore have to be ordered separately (see current catalog).

Mounting

- Remove the transparent frame with the buttons (F6) from the wall switch's main module (F5) by inserting a screwdriver laterally into the recesses and lifting the transparent frame upwards from the main module.
- Slip the wall switch's main module (F5) together with the design frame (F3) onto the bus coupling unit (BTM) (F1).
- The electrical connection between the wall switch and the bus coupling unit (BTM) is established via a Bus Transceiver Interface (BTI) (F2 and F4).
- Securely attach the wall switch's main module to the bus coupling unit (BTM) with the screws (F7) delivered in the package. Slip the transparent frame with the buttons back onto the main module.

Unmounting

- Remove the transparent frame with the switch buttons (F6) from the wall switch's main module (F5) by inserting a screwdriver laterally into the recesses and lifting the transparent frame upwards from the main module (figure 4).
- Loosen the screws (F7) securing the wall switch's main module to the bus coupling unit (BTM) (F1).
- Remove the wall switch's main module (F5) together with the design frame (F3) from the bus coupling unit (BTM).

**DELTA i-system wall switch, single  
wall switch, double  
wall switch, triple**

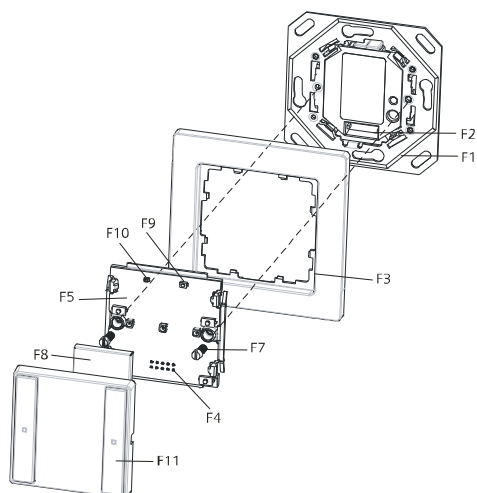


Figure 3: Mounting sequence

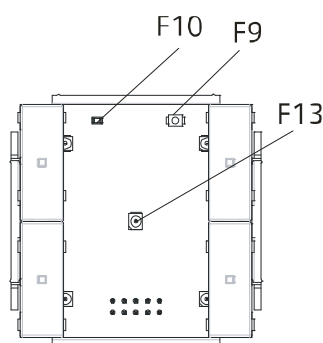
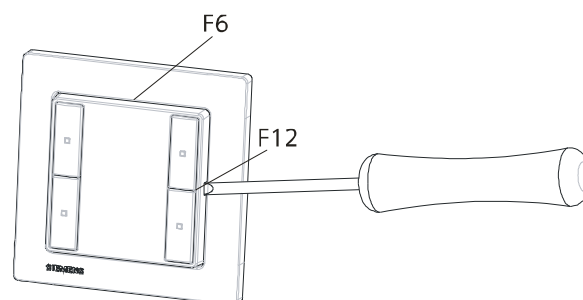
- F1 Bus coupling unit (BTM) UP 117
- F2 Bus Transceiver Interface (BTI) on Bus coupling unit (BTM)
- F3 Design frame (DELTA line, vita, miro)
- F4 Bus Transceiver Interface (BTI) on wall switch module
- F5 Basic push button module
- F6 Transparent frame with buttons
- F7 Mounting screws
- F8 Back cover (white) for labeling insert
- F9 Learning button for switching between normal operating mode and addressing mode for receiving the physical address
- F10 LED for indicating normal operating mode (LED off) and addressing mode (LED on); upon receiving the physical address the device automatically returns to normal operating mode
- F11 switch buttons
- F12 notch
- F13 Orientation light (LED)

#### Labeling

- To insert a label remove the transparent frame with the switch buttons (F6) from the main module (F5). Separate the white label holder (F8) from the transparent frame (F6). Label a transparent plastic labeling medium (e.g. Avery Zweckform No. J4720 for inkjet printers or Avery Zweckform No. L4770 for laser printers) that you insert into the transparent frame (F6) with the white label holder (F8). Slide the transparent frame back onto the main module (F5).

#### Address assignment

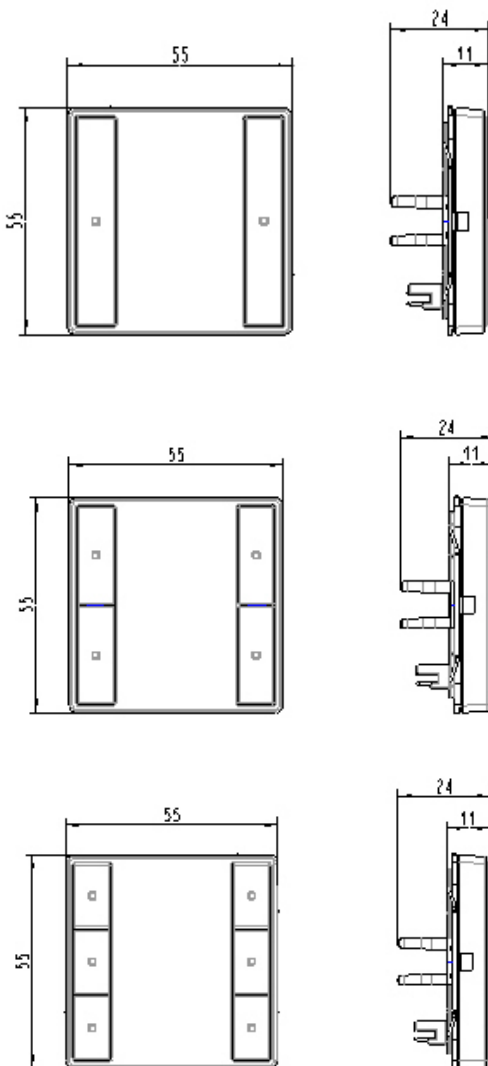
- Remove the transparent frame with the switch buttons (F6) from the base module (F5) by inserting a screwdriver laterally into the recesses and lifting the transparent frame upwards from the base module.
- Press the learning button (F9) on the device to initiate the assignment of the physical address to the device.
- The programming LED (F10) turns on to indicate the programming mode. Upon receiving the physical address the device automatically returns to normal operating mode and the LED turns off.



DELTA i-system wall switch single  
 wall switch double  
 wall switch triple

### Dimension drawing

Dimensions in mm.



### General Notes

- The device must be mounted and commissioned by an authorised electrician.
  - The device may be mounted in switch and socket combinations if VDE-certified devices are used exclusively.
  - The prevailing safety rules must be heeded.
- For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered

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