

**Push Button Interface UP 220D31**

**5WG1 220-2DB31**

## Product and Applications Description



The push button interface is a binary input and output devices for installation in in-wall boxes (Ø60 mm, depth: 40 mm).

Each of the four channels may be used either as an input for potential-free switch / push button contacts or as an output for control of a light emitting diode (LED). The required scanning / control voltage is provided by the push button interface (requires no additional power supply).

Up to 4 switches/push buttons with one potential-free contact each or up to two 2-fold push buttons with two potential-free contacts each may be connected to a push button interface.

The connection is carried out via a cable set which is permanently connected to the push button interface. The connecting cables between switches/push buttons and the push button interface may be extended up to 10 m. It must be ensured that twisted cable pairs are used.

Commands can be given to actuators via the connected switches/push buttons, e.g. for defined switching on/off, for dimming fluorescent lamps or for raising/lowering venetian blinds and adjusting the louvres.

Each channel, which is configured as an output, can drive an output current of up to 2 mA for controlling a light emitting diode (LED).

With the ETS the application program is selected, its parameters and addresses are assigned appropriately, and downloaded to the push button interface.

## Application programs

### UP 220/31

07 B0 S4 On-off-toggle/Dim/Shu/Value 982203

A single input (A, B, C, or D) can be configured for one of these functions:

- Switching (on, off, toggle) on rising, falling, or rising and falling edge
- Send value (8-bit value, 16-bit value, 16-bit floating point) on rising, falling, or rising and falling edge
- Switching (on, off, toggle) after short / long push button action
- Send value (8-bit value, 16-bit value, 16-bit floating point) after short / long push button action
- adjustable period for long switch operation can be selected
- cyclical sending possible
- single button dimming
- single button control of solar protection
- single button group control
- 1-bit scene control
- 8-bit scene / effect control
- impulse counting with / without limit value monitoring
  - 8-bit
  - 16-bit
  - 32-bit
- contact status, send binary value (door bell function)
- sending possible on bus voltage recovery
- send condition can be set
- selectable contact type (N.C. / N.O.)

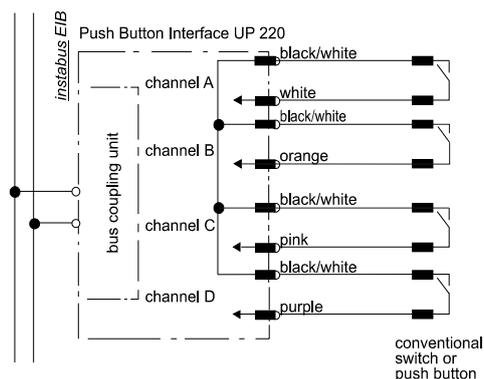
Two consecutive channels (A and B resp. C and D) that were configured as a pair of inputs can be configured for one of these functions:

- Dual-button dimming with stop telegram
- Dual-button dimming with cyclical sending
- Dual-button control of solar protection

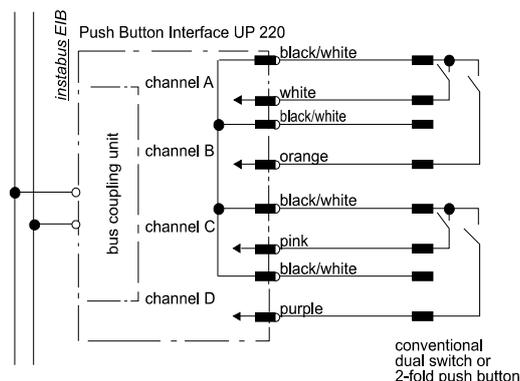
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### Example of Operation

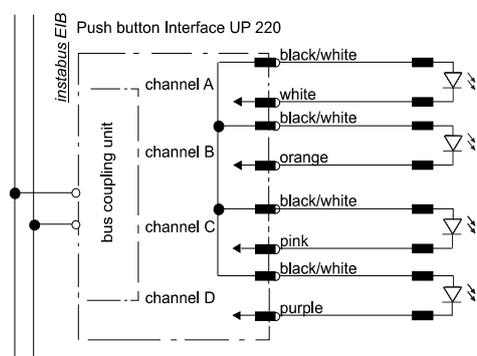
with switches / push buttons



with dual switches / 2-fold push buttons



with light emitting diodes (LED)



### Installation Instructions

- The device may be used for permanent interior installations in dry locations within flush-type boxes.

### WARNING

- The device must be mounted and commissioned by an authorised electrician.
- The device must not be mounted in a box together with 230 V devices and/or 230 V cables.
- The device must not be connected to 230 V.
- Device combinations of a push button connected to the push button interface and 230 V devices (sockets) are not allowed.
- Ensure that there is a safety separation (SELV) of the connected signal cables (including possible extensions) from the other current- and voltage-carrying devices and cables.
- The prevailing safety and accident prevention rules must be heeded.
- The device must not be opened.
- When planning and installing electrical installations, the relevant guidelines, regulations and specifications of the respective country must be observed.

### Commissioning

#### Programming mode

Press the programming key short (< 0,5 s) to enable programming mode. This is indicated by the programming LED.

#### Factory setting

When the programming key is pressed very long (> 20 s) the device is reset to the default factory settings. This is indicated by evenly flashing the programming LED. The flashing stops after 5 seconds.

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## Technical Specifications

### Power supply

- Bus voltage: via KNX/EIB bus line
- KNX bus voltage: DC 24V (DC 21...30V) via KNX/EIB bus line
- KNX bus current when using all channels as inputs: max. 6 mA
- KNX bus current when using all channels as outputs: max. 14 mA
- KNX bus current when inputs or outputs are not operated: max. 5 mA

### Inputs

- input signal voltage: provided by the push button interface. approx. 29 V DC (bus voltage) when the contact is opened
- input signal current: when contact is closed: 0.2 mA DC per channel at moment of closing: pulse 0.1 A
- input signal delay: 50 ms including contact debounce
- duration of input signal: min. 50 ms
- input characteristic: configurable
- signal cable set:
  - length: 280 mm unshielded, may be extended up to 10 m (per channel) with twisted, unshielded cable  
Unused free ends must be insulated!
  - cross-section: approx. 0.22 mm<sup>2</sup> (0.56 mm Ø)

### Outputs

- output signal voltage: provided by the push button interface. approx. DC 4.7V across 1.9kOhm resistor (built-in)  
Connect anode of LED with terminal 1 (black/white), cathode with terminal 2 (colored wire)
- output current: When the output is short-circuited the output current is approx. 2.5mA;  
The connected LED's must be specified for an impulse load of min. 100mA (tp 10µs)

### Control elements

- 1 learning button: for switching between normal operating mode and addressing mode
- for reset the device to the default factory settings and to activate manufacturer specific functions

### Display elements

- 1 red LED: for monitoring bus voltage and for displaying normal mode/addressing mode
- This LED indicated also the reset to the default factory settings and further activated manufacturer specific functions.

### Connections

- signal inputs / LED outputs: cables
- bus line: screwless bus terminal  
Ø 0.6...0.8 mm single-core

### Mechanical specifications

- housing: plastic
- dimensions (L x W x H): 42 mm x 42 mm x 8.5 mm  
around the bus terminal the height is 11mm
- weight: approx. 22 g
- fire load: approx. 710kJ
- installation: in wall boxes, Ø 60 mm, depth: 40 mm

### Electrical safety

- degree of pollution (according to IEC 60664-1): 2
- protection (according to EN 60529): IP 20
- overvoltage class (according to IEC 60664-1): III
- bus: safety extra low voltage SELV DC 24 V
- the device complies with EN 50090-2-2 and EN 60669-2-1

### Electromagnetic compatibility

- complies with EN 50090-2-2

### Environmental specifications

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

### Reliability

- Failure rate: 199 fit at 40 °C

### Markings

EIB, KNX, CE

### CE mark

complies with the EMC directive (residential, commercial and light-industrial environments), and low voltage directive

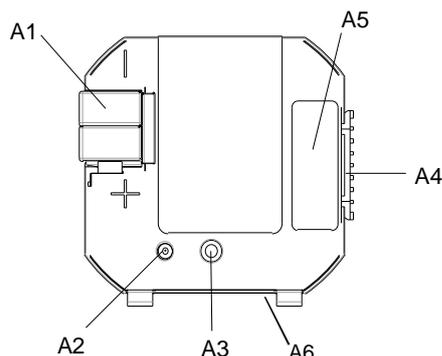
**Push Button Interface UP 220D31****5WG1 220-2DB31****Location and Function of the Display and Operating Elements**

Figure 1: Push button interface UP 220D31, front view

- A1 Bus terminal for solid conductors with 0.6 ... 0.8 mm  $\text{Æ}$
- A2 LED for indicating normal operating mode (LED off) or addressing mode (LED on); it is extinguished automatically once the physical address has been transferred
- A3 Learning button for toggling between normal operating mode and addressing mode for transferring the physical address
- A4 Connection of the cable set
- A5 Circuit diagram of the cable set
- A6 Barcode label with KNX serial number and supplier code

**Mounting and Wiring**General description

The push button interface is built into in-wall boxes,  $\text{Æ}$  60 mm, depth 40 mm. In addition to the push button interface, a standard device insert can be attached to the in-wall box. For mounting several conventional device inserts, several in-wall boxes must be combined via cable glands (only the in-wall box that holds the push button interface requires a depth of 40 mm). The cores of the cable set supplied with the device can be inserted in series-connected in-wall boxes via the cable glands.

Cable set

The cable set consists of cores marked in specific colors with a plug fixed to one end. To allow for easy connection to the screw or plug-in terminals of switches and push buttons, ferrules are fixed to the free ends.

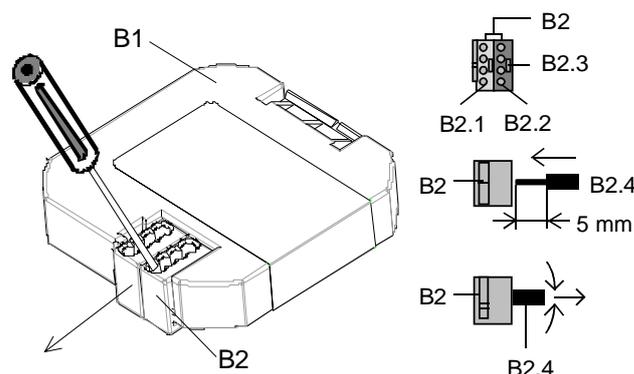


Figure 2: Connecting/disconnecting the bus cable

Removing the bus terminal (Figure 2)

- The bus terminal (B2) consists of two components (B2.1, B2.2) with four terminal contacts each.
- Carefully insert the screwdriver in the wire entry slot of the grey component of the bus terminal (B2.2) and remove the bus terminal (B2) from the device (B1).

**Note**

Do not try to remove the bus terminal from underneath!  
There is a risk of shorting the device!

Clipping on the bus terminal

- Insert the bus terminal in the guide slot of the push button interface and press the bus terminal downwards until it reaches the stop.

Connecting the bus cable (Figure 2)

- The bus terminal (B2) can be used with solid conductors, 0.6 ... 0.8 mm  $\text{Æ}$
- Remove the insulation from the conductor (B2.4) and insert it in the terminal (B2) (red = +, grey = -).

Disconnecting the bus cable (Figure 2)

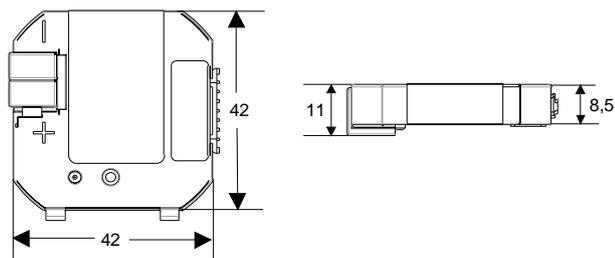
- Disconnect the bus terminal (B2) and remove the conductor (B2.4) of the bus cable while twisting it backwards and forwards.

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**Dimension Diagram**

Dimensions in mm

**Space for notes****General notes**

- The operating instructions must be handed over to the client.
  - Any faulty device is to be sent together with a return delivery note of the local Siemens office.
  - If you have further questions concerning the product, please contact our technical support.
    - ' +49 (911) 895-7222
    - 7 +49 (911) 895-7223
    - \* support.automation@siemens.com
- [www.siemens.de/automation/support-request](http://www.siemens.de/automation/support-request)

**Note:**

This product supports two different operation modes: KNX und PL-Link.  
 This document describes the KNX functionality that can be configured with ETS.  
 For PL-Link refer to documentation for Desigo.