THORSTEN REIBEL & JUERGEN SCHILDER – OCTOBER 2024

ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Webinar– Building Academy Smart Buildings

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Agenda

- Introduction
- Range Overview
- Hardware Features
- Software Features and ETS Application
- KNX Data Secure

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Introduction

ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Introduction

History of Binary Inputs

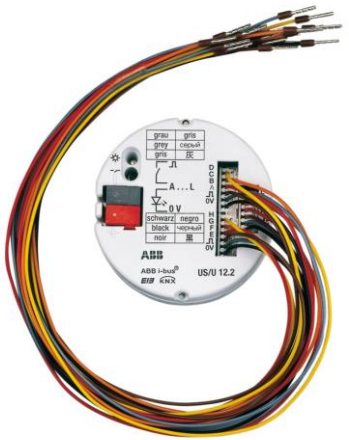

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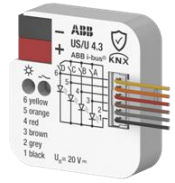
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces
Introduction

ABB i-bus® KNX Inputs

- Inputs serve as an interface for
  - conventional push buttons and switches
  - floating contacts
  - processing binary and analogue signals
- Device Overview
  - Binary Input BE/S
  - Universal Interface US/U
  - Analogue Input AE/S
  - Weather Station WS/S
  - Devices with outputs and binary inputs
    e.g. Room Master RM/S, Room Controller RC/A, Shutter Actuator JRA/S, FanCoil Controller FCC/S, …

Binary Input



Universal Interface

Analogue Input

Room Master with Binary Inputs

Shutter Actuator with Binary Inputs

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces
Introduction

ABB i-bus® KNX Inputs

- Binary Inputs and Universal Interfaces serve as an interface for conventional push buttons and switches
  - Familiar and easy operation
  - Cost-effective solution
    e.g. in combination with Room Master RM/S for guest room solutions
  - More design and operation elements
    - Key card reader in hotel rooms
    - Key switch in a classroom (lights can only be switched on with a key)
  - Harsh environmental conditions
  - Industrial areas
  - Outside buildings (security reasons – do not install KNX cables outdoors)
  - Sensitive indoor areas, no access to bus cable
  - …

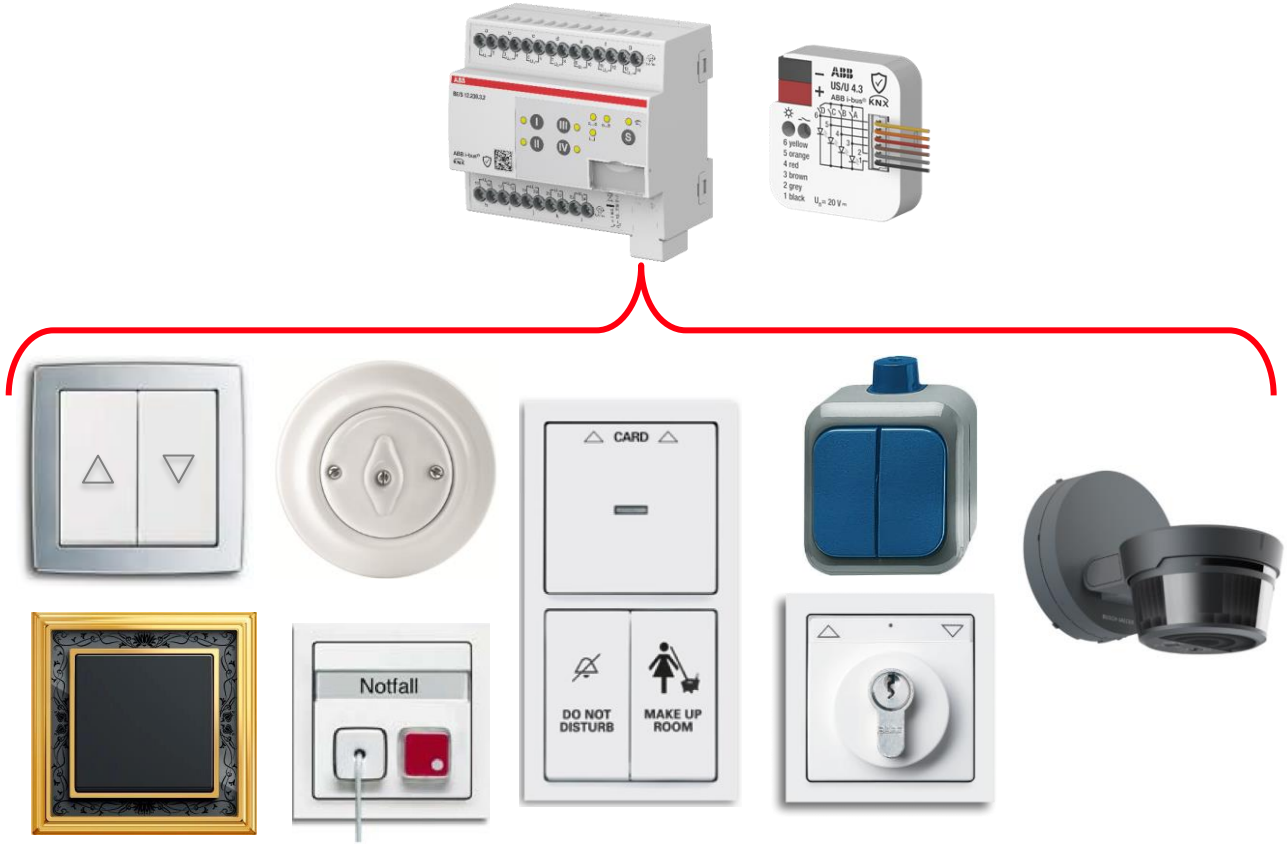

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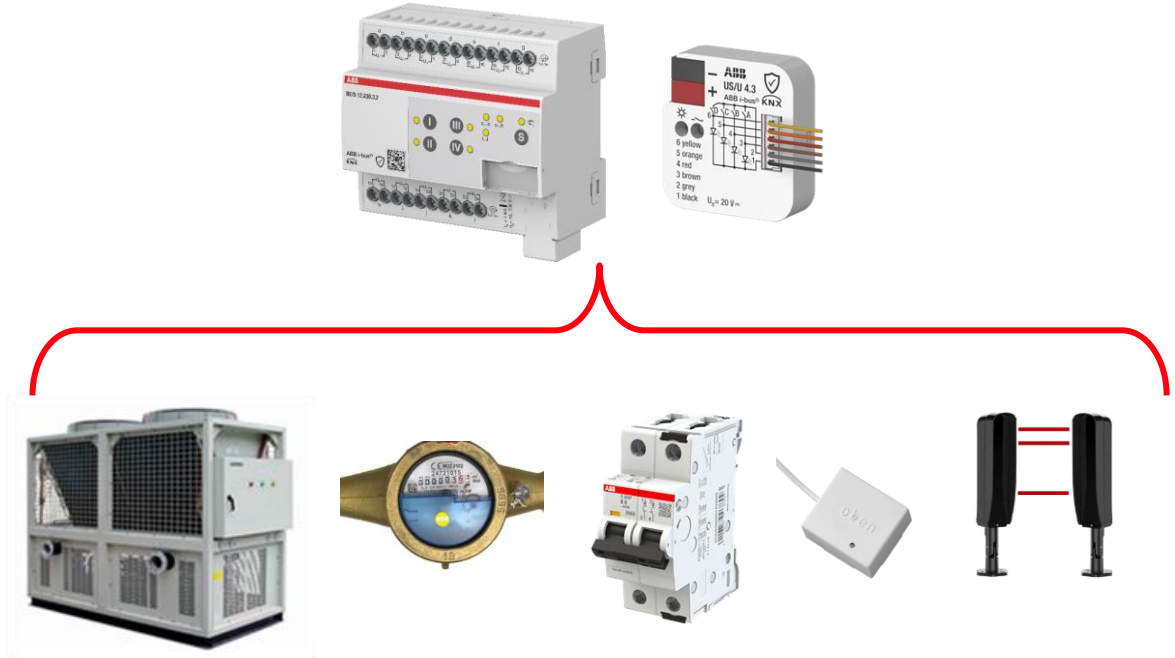
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Introduction

ABB i-bus® KNX Inputs

- Binary Inputs and Universal Interfaces serve as an interface for floating contacts (potential free) and binary signals
  - Fault or alarm signal relay, e.g. in hospitals
  - System status, whether a circuit breaker or residual current device has tripped
  - Monitoring contacts (technical sensors like water detector)
  - On and off state of a machine
  - Signal transfer from third-party systems (digital I/O)
  - Counting (S0)-pulses of meters
  - Special sensors, e.g. light barrier, limit value switch
  - …



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Range Overview

ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Current devices – to be discontinued

- Binary Inputs, 10 – 230 V
  - 4-fold BE/S 4.230.2.1
  - 8-fold BE/S 8.230.2.1
- Binary Inputs, Contact Scanning
  - 4-fold BE/S 4.20.2.1
  - 8-fold BE/S 8.20.2.1
- Universal Interface, flush-mounted (FM)
  - 2-fold US/U 2.2
  - 4-fold US/U 4.2
  - 12-fold US/U 12.2 – still available

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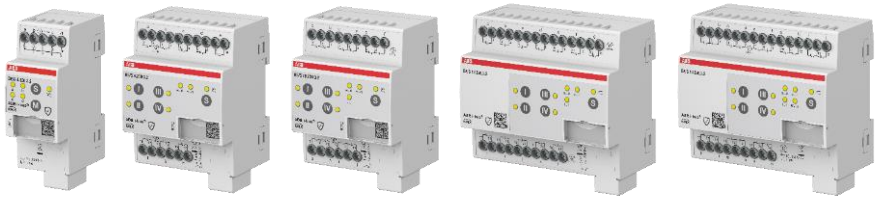
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

New Binary Inputs with 10 … 230 V

- BE/S x.230.3.2
- 4, 8, 10, 12 and 16 inputs
- Keypad for status indication and manual operation
- Optimized functionality, e.g. templates, 2-button operation, logical functions
- KNX Data Secure

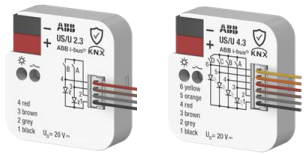


New Binary Inputs with Contact Scanning

- BE/S x.20.3.2
- 4, 10 and 16 inputs
- Keypad for status indication and manual operation
- Optimized functionality e.g. templates, 2-button operation, logical functions
- KNX Data Secure

New Universal Interfaces

- US/U x.3
- 2 and 4 inputs/outputs
- Output for LED control
- Optimized functionality, e.g. templates, 2-button operation, logical functions
- KNX Data Secure



A larger portfolio with a uniform ETS application across all devices

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Product name description

Abbreviation BE/S x.y.3.2

- BE Binary Input
  - /S MDRC
    - x. 4 = 4-fold
      8 = 8-fold
      10 = 10-fold
      12 = 12-fold
      16 = 16-fold
      - y. 20 = with Contact Scanning
        230 = for voltage range from 12 ... 230 V
        - 3. = with Manual operation
          - 2 = Version number

Abbreviation US/U x.3

- US Universal Interfaces
  - /U FM (flush mounting)
    - x. 2 = 2-fold
      4 = 4-fold
      - 3 = Version number

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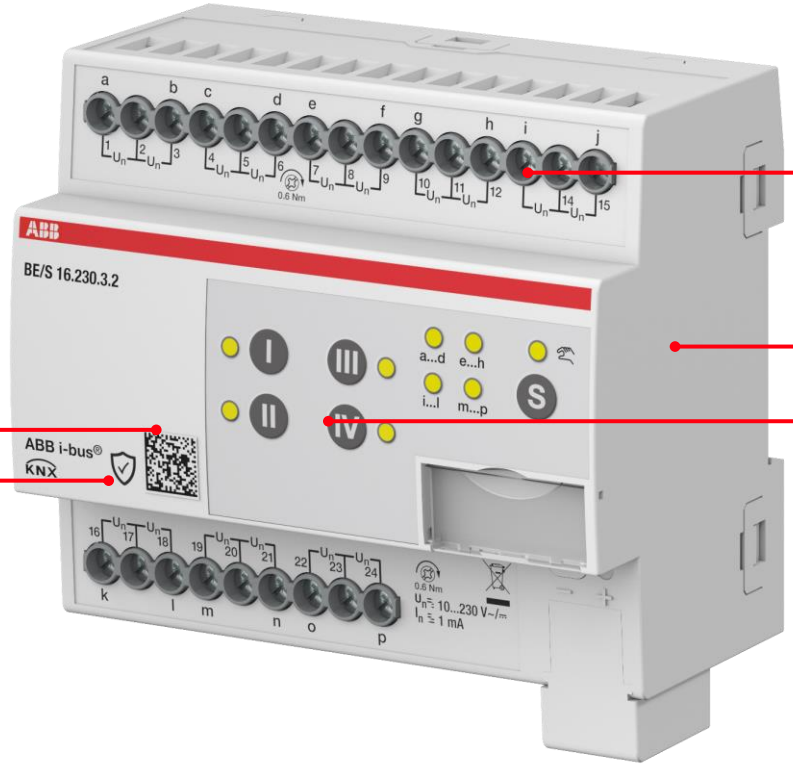
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S x.y.3.2

Traceability with 2D code
Implementing digital service features and diagnostics

KNX Data Secure
Excellent security of the KNX installation with KNX Data Secure



Combi screw-head terminals

Comprehensive Portfolio
A larger portfolio that meets all requirements

New Keypad
Harmonized look and feel over the newest portfolios

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Range Overview

Binary Inputs BE/S x.y.3.2 – device description

- The devices are modular installation devices (MDRC) in proM design
- They are designed for installation in electrical distribution boards and small housings with a 35 mm mounting rail (according to EN 60715)
- The connections at the inputs are made via screw terminal with universal head (PZ1)
  → connection diagram is on the housing
- LEDs indicate the input status
- The devices can be operated manually using the keypad
- Secure through KNX Data Secure
- 2D code for traceability (digital services, diagnostics, …)
- The devices are powered via KNX and requires no additional auxiliary voltage

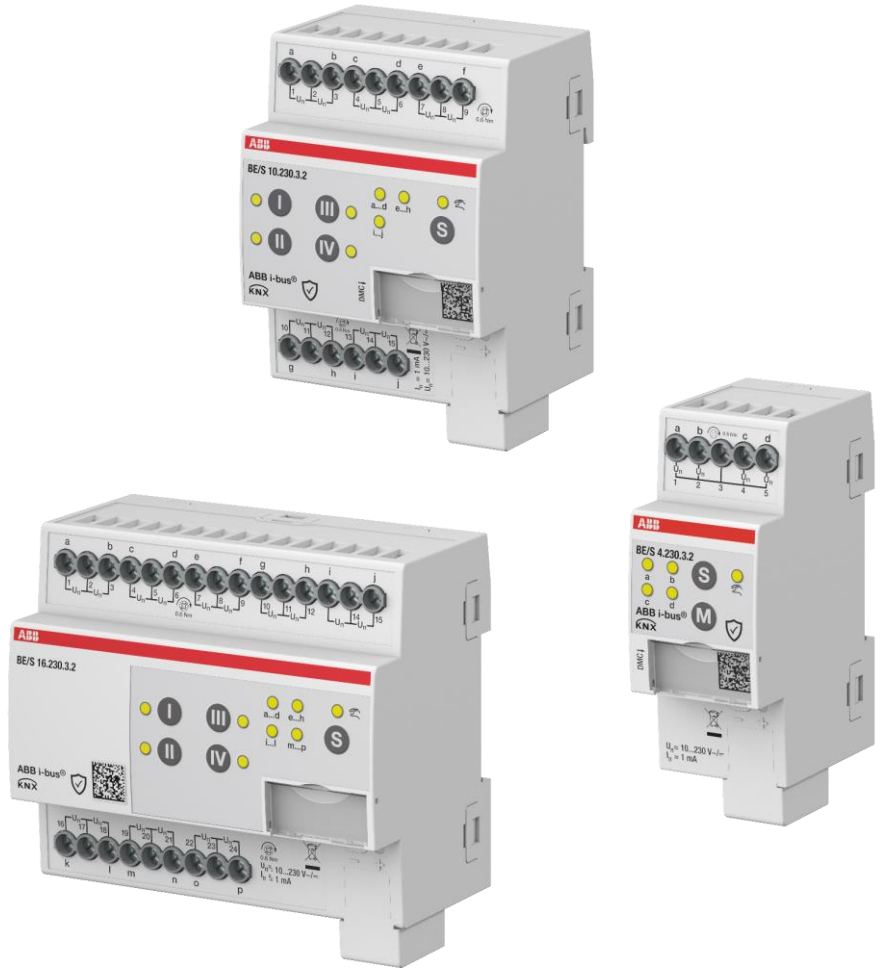

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S x.y.3.2 – device functions

- They are used as an interface for operating KNX systems via conventional buttons/switches or for coupling floating binary signals
  - Device type BE/S x.**230**.3.2 is intended to be used for the acquisition of **10-230 V AC/DC signals**
  - Device type BE/S x.**20**.3.2 is intended to be used for the acquisition of **floating binary signals (potential-free)** with contact scanning
- When the contacts connected to the device inputs are operated, the devices send telegrams on the KNX bus
  - Rising edge (closing the contact) and falling edge (opening the contact)
  - Short and long operation
  - Multiple operation

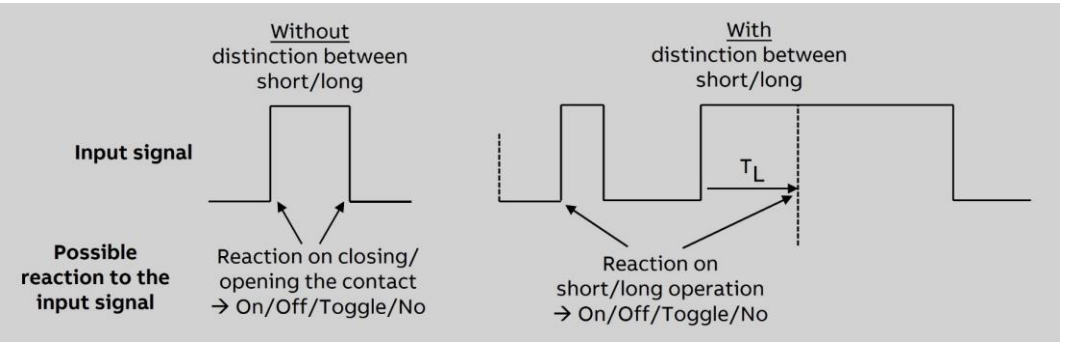

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S x.y.3.2

The following applications are available for each input

- Switch (1-button operation)
- Switch (2-button operation)
- Blind/shutter (1-button operation)
- Blind/shutter (2-button operation)
- Switch/dim (1-button operation)
- Switch/dim (2-button operation)
- Scenes
- Send value/multiple operation
- Fault indicator/logic input
- Switching sequence (1-button operation)
- Switching sequence (2-button operation)
- Pulse counter

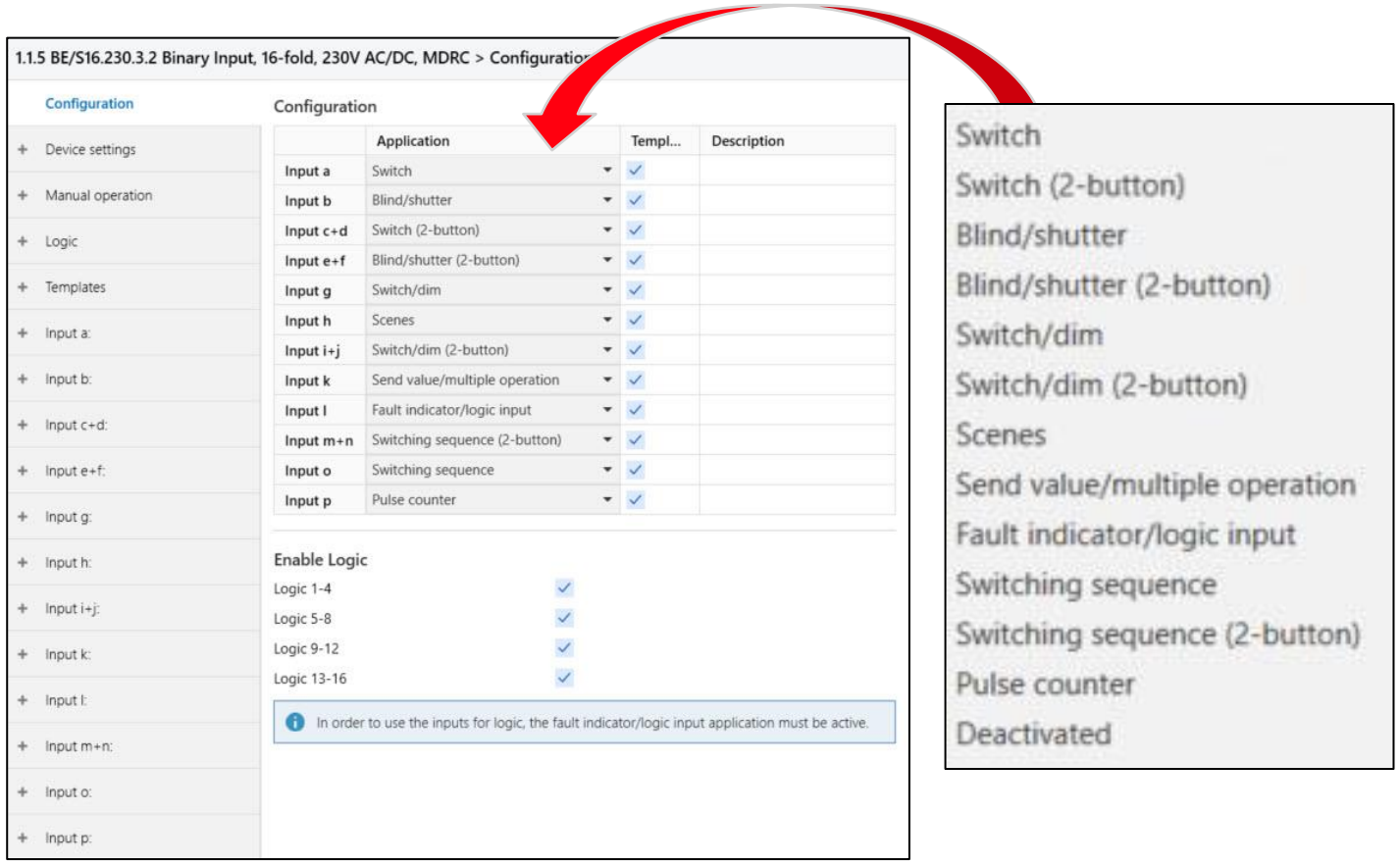

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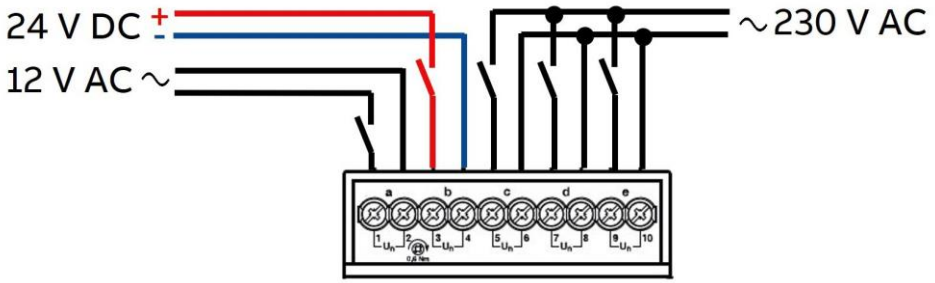
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S x.230.3.2 – mixing signal types at device inputs

On the following device types, each device input can acquire another 10-230 V signal (mixed AC/DC)

- Each input can have a different signal type
  - BE/S 8.230.3.2
  - BE/S 12.230.3.2
  - Example
    Input a: 12 V AC
    Input b: 24 V DC
    Input c: 230 V AC
    Input x: …
- On two neighboring inputs, the same signal type must be present
  - BE/S 10.230.3.2
  - BE/S 16.230.3.2
  - Example
    Input a and b: 12 V AC
    Input c and d: 24 V DC
    Input e and f: 230 V AC



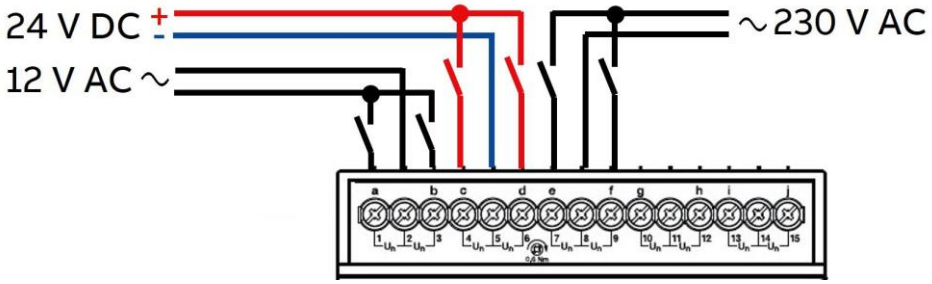


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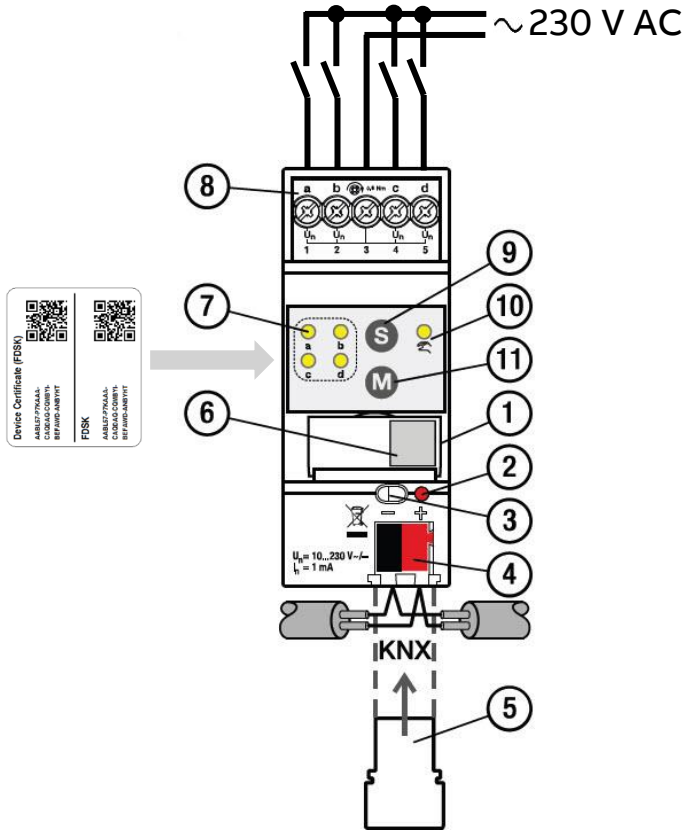
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S 4.230.3.2 with 10-230 V AC/DC

Connection diagram

1. Label carrier
2. Programming LED
3. Programming button
4. KNX bus connection terminal
5. Cover cap
6. 2D code
7. Input status LEDs
8. Binary inputs
9. “S” button
10. LED manual operation
11. “M” input button



The device inputs can acquire different 10-230 V signals (AC or DC); on all four inputs, the same signal type must be present

Example
Input a, b, c and d: 230 V AC
or
Input a, b, c and d: 24 V DC

Note:

- 4 inputs per common connection
- When acquiring AC signals, an RCD circuit can be connected
- When acquiring DC signals, make sure the polarity is correct
  Common: Minus (-), Input: Plus (+)

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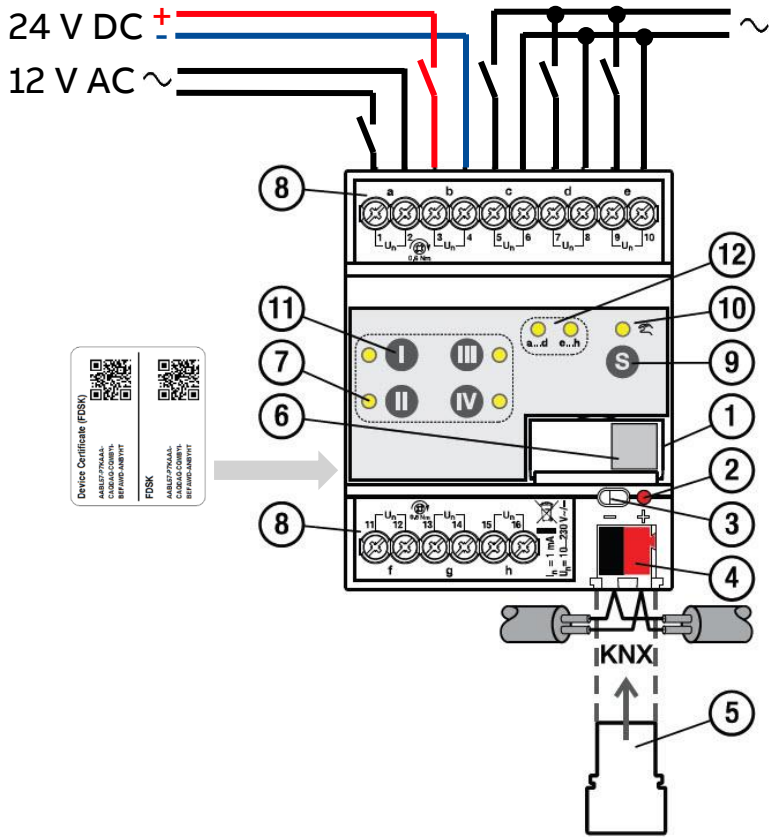
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S 8.230.3.2 with 10-230 V AC/DC

Connection diagram

1. Label carrier
2. Programming LED
3. Programming button
4. KNX bus connection terminal
5. Cover cap
6. 2D code
7. Input status LEDs
8. Binary inputs
9. “S” button
10. LED manual operation
11. “Input” buttons
12. Group status LEDs



Each device input can acquire another 10-230 V signal (mixed AC/DC)

Example
Input a: 12 V AC
Input b: 24 V DC
Input c, d and e: 230 V AC

Note:

- When acquiring AC signals, up to 8 RCD circuits can be connected
- When acquiring DC signals, make sure the polarity is correct
  Common: Minus (-), Input: Plus (+)

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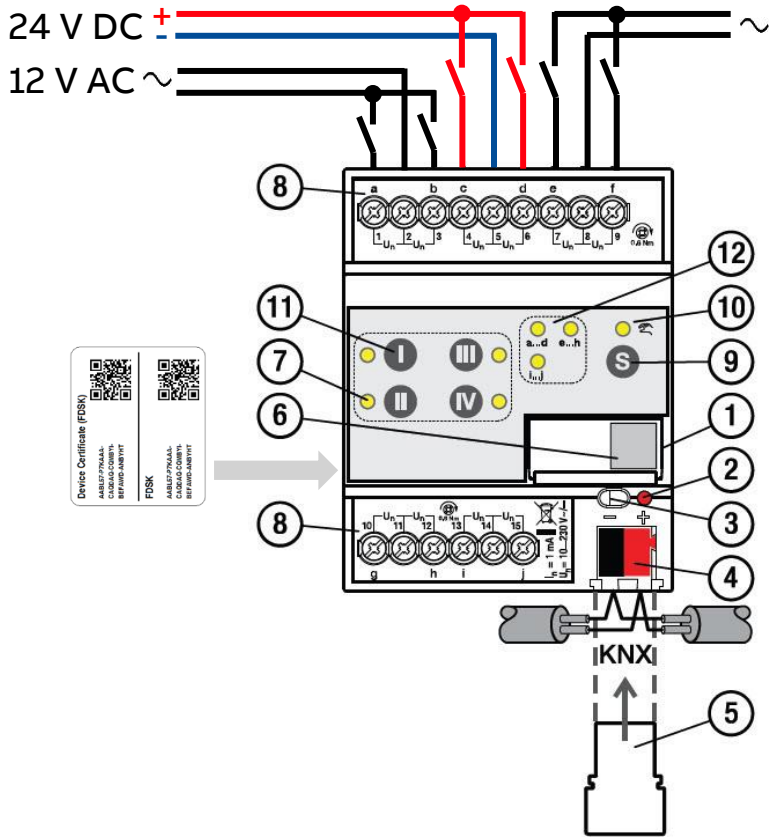
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S 10.230.3.2 with 10-230 V AC/DC

Connection diagram

1. Label carrier
2. Programming LED
3. Programming button
4. KNX bus connection terminal
5. Cover cap
6. 2D code
7. Input status LEDs
8. Binary inputs
9. “S” button
10. LED manual operation
11. “Input” buttons
12. Group status LEDs



The device inputs can acquire different 10-230 V signals (mixed AC/DC); on two neighboring inputs, the same signal type must be present

Example
Input a and b: 12 V AC
Input c and d: 24 V DC
Input e and f: 230 V AC

Note:

- 2 inputs per common connection
- When acquiring AC signals, up to 5 RCD circuits can be connected
- When acquiring DC signals, make sure the polarity is correct
  Common: Minus (-), Input: Plus (+)

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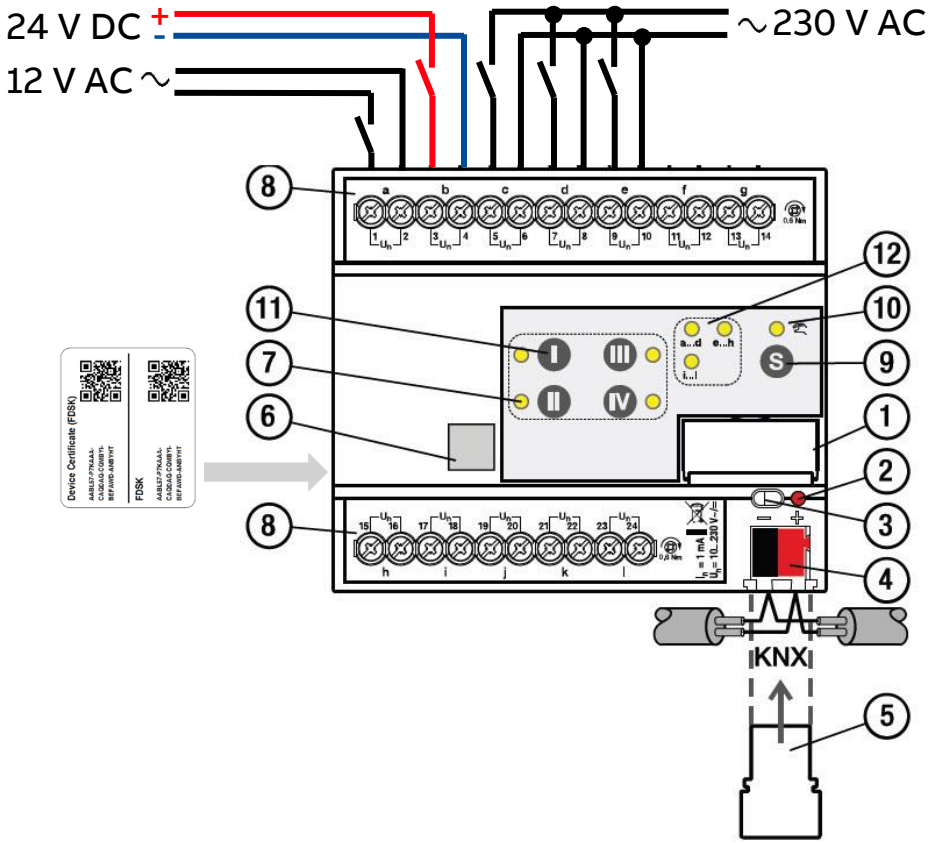
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S 12.230.3.2 with 10-230 V AC/DC

Connection diagram

1. Label carrier
2. Programming LED
3. Programming button
4. KNX bus connection terminal
5. Cover cap
6. 2D code
7. Input status LEDs
8. Binary inputs
9. “S” button
10. LED manual operation
11. “Input” buttons
12. Group status LEDs



Each device input can acquire another 10-230 V signal (mixed AC/DC)

Example
Input a: 12 V AC
Input b: 24 V DC
Input c, d and e: 230 V AC

Note:

- When acquiring AC signals, up to 12 RCD circuits can be connected
- When acquiring DC signals, make sure the polarity is correct
  Common: Minus (-), Input: Plus (+)

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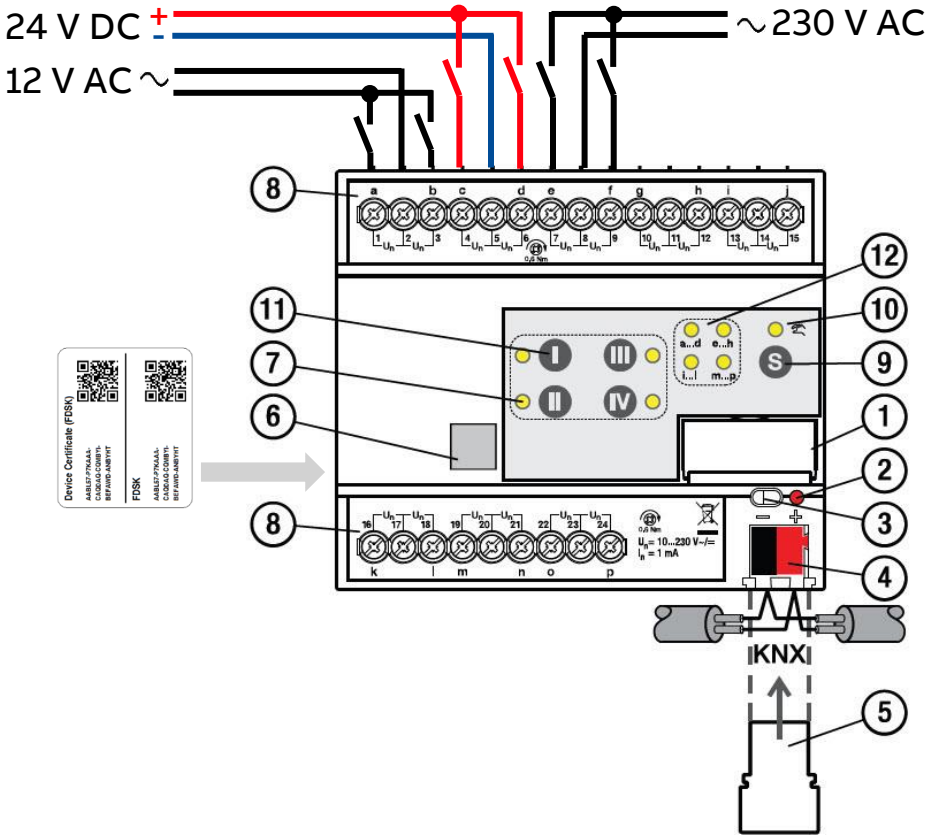
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S 16.230.3.2 with 10-230 V AC/DC

Connection diagram

1. Label carrier
2. Programming LED
3. Programming button
4. KNX bus connection terminal
5. Cover cap
6. 2D code
7. Input status LEDs
8. Binary inputs
9. “S” button
10. LED manual operation
11. “Input” buttons
12. Group status LEDs



The device inputs can acquire different 10-230 V signals (mixed AC/DC); on two neighboring inputs, the same signal type must be present

Example
Input a and b: 12 V AC
Input c and d: 24 V DC
Input e and f: 230 V AC

Note:

- 2 inputs per common connection
- When acquiring AC signals, up to 8 RCD circuits can be connected
- When acquiring DC signals, make sure the polarity is correct
  Common: Minus (-), Input: Plus (+)

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S 4.20.3.2 with Contact Scanning

Connection diagram

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6. 2D code
7. Input status LEDs
8. Binary inputs
9. “S” button
10. LED manual operation
11. “M” input button

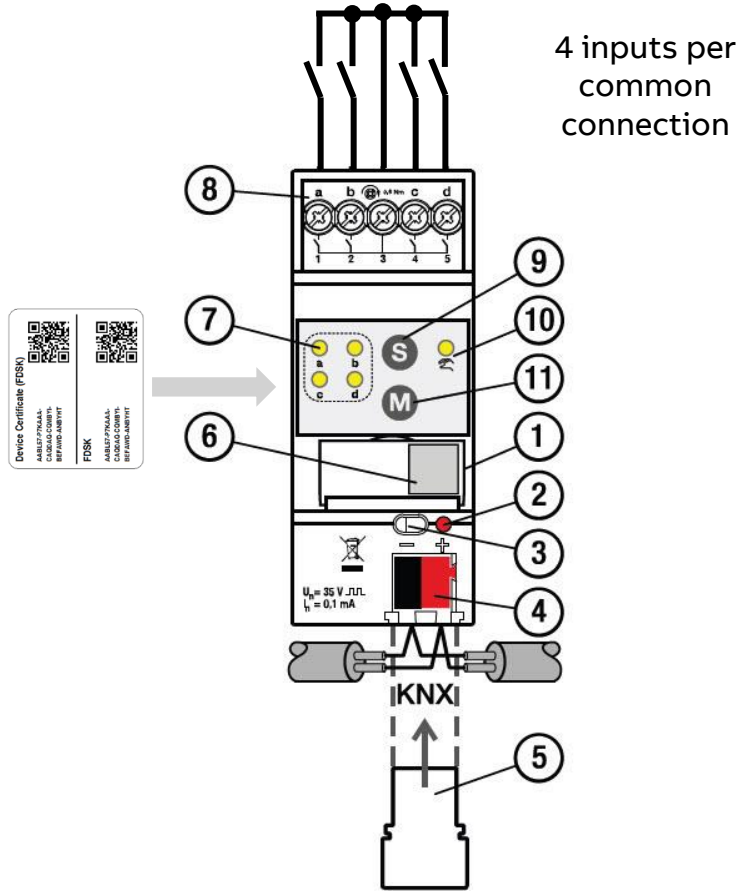

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S 10.20.3.2 with Contact Scanning

Connection diagram

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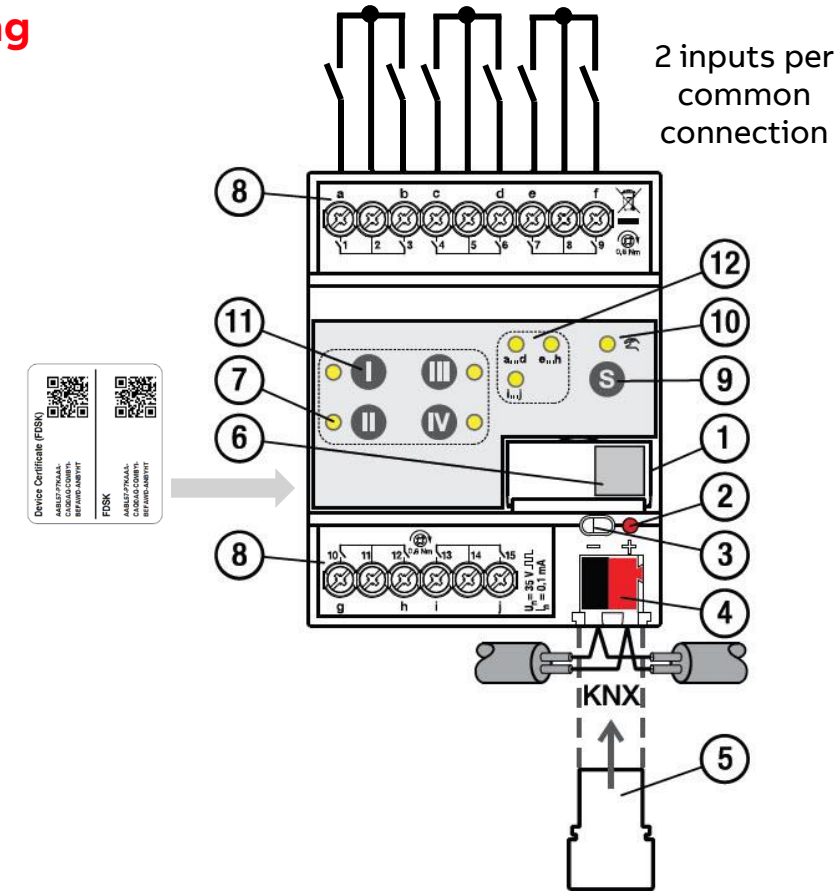

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S 16.20.3.2 with Contact Scanning

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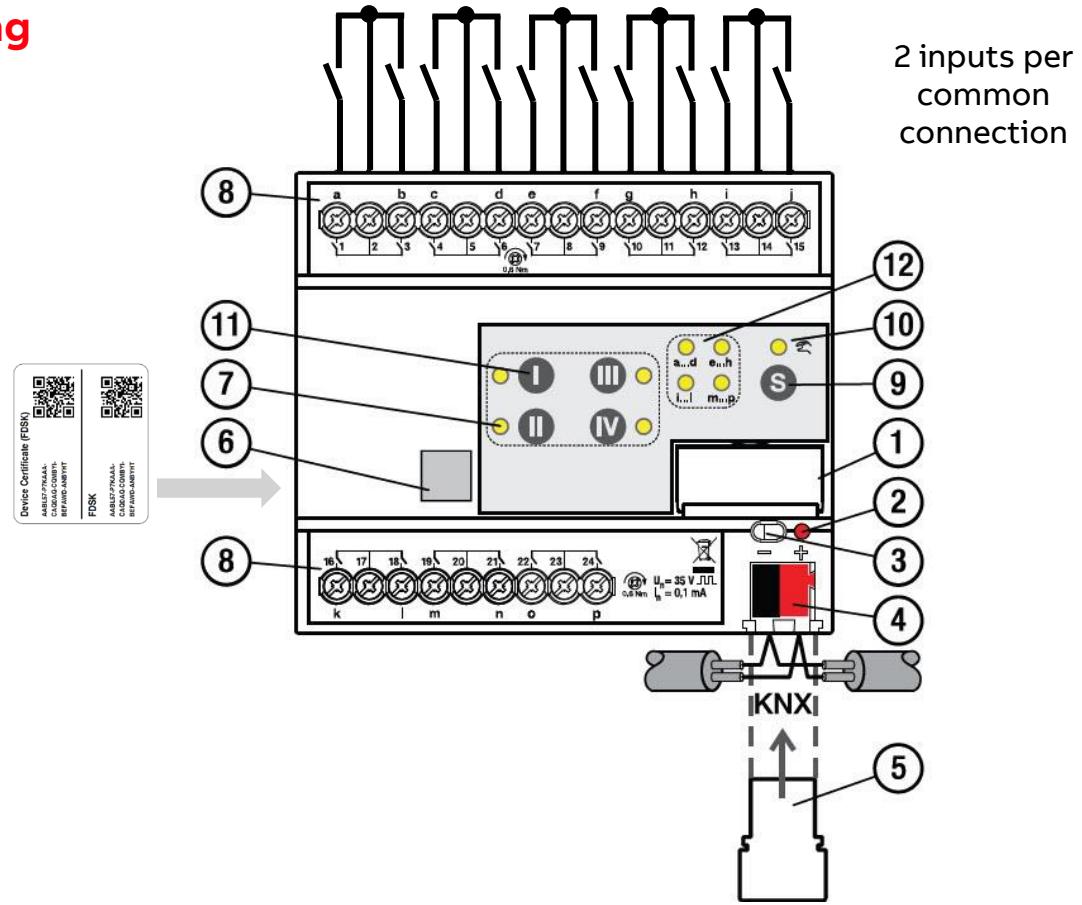

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S x.y.3.2 – Operating and display elements

- Programming button
  -  Assignment of the individual address
- Programming LED
  -  LED On: Device in programming mode

- Note
  - The Binary Inputs are KNX Data Secure devices
  - The individual address can also be programmed via the serial number

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S 4.y.3.2 – Operating and display elements

KNX operation

Operating control/LED	Description/function	Display
 *"S" button / Manual operation* LED	Short button push < 2 s: Selection of input Button push 2 … 5 s: Changeover to *Manual operation*	LED on: *Manual operation* active LED off: *KNX operation* active LED flashing (1 Hz) while button pressed: *Manual operation* not enabled or blocked
 X *Input* status LEDs		LED on: Contact closed LED off: Contact open
 *"M" input* button	Button without function	

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S 4.y.3.2 – Operating and display elements

Manual operation

Operating control/LED	Description/function	Display
 *"S" button / Manual operation* LED	Short button push < 2 s: Selection of input Button push 2 … 5 s: Change to *KNX operation*	LED on: *Manual operation* active LED off: *KNX operation* active
 X *Input* status LEDs	LED briefly flashes once (< 1 Hz): Input was selected via the "S" button	LED on: Contact closed LED off: Contact open LED flashing (1 Hz): Input blocked; Manual operation not possible.
 *"M" input* button	Switching of inputs (simulation of opening/closing the contact)	

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S 8/10/12/16.x.3.2 – Operating and display elements

KNX operation

Operating control/LED	Description/function	Display
 *"S" button / Manual operation* LED	Short button push < 2 s: Selection of group Button push 2 … 5 s: Change to *Manual operation* Long button push > 5 s: Selection of all Inputs	LED on: *Manual operation* active LED off: *KNX operation* active LED flashing (1 Hz) while button pressed: *Manual operation* not enabled or blocked
 X…Y LED *group Input*		LED on: Group selected LED off: Group not selected
 *Input* button	Button without function	
 *Input* status LEDs		LED on: Contact closed LED off: Contact open

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S 8/10/12/16.x.3.2 – Operating and display elements

Manual operation

Operating control/LED	Description/function	Display
 *"S" button / Manual operation* LED	Short button push < 2 s: Selection of group Button push 2 … 5 s: Change to *KNX operation* Long button push > 5 s: Selection of all Inputs	LED on: *Manual operation* active LED off: *KNX operation* active
 X…Y LED *group Input*		LED on: Group selected LED off: Group not selected
 *Input* button	Switching of inputs (simulation of opening/closing the contact) Button I: First input of group (a/e/i/m) Button II: Second input of group (b/f/j/n) Button III: Third input of group (c/g/k/o) Button IV: Fourth input of group (d/h/l/p)	
 *Input* status LEDs		LED on: Contact closed LED off: Contact open

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

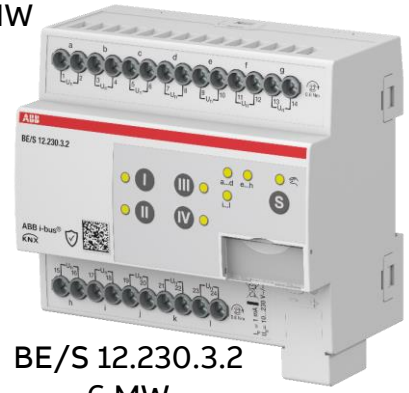
Binary Inputs BE/S x.230.3.2 with 10-230 V AC/DC – technical data

- Number of inputs 4, 8, 10, 12 or 16
- Design MDRC in proM design
- KNX current consumption < 5mA
- Operation −5 … +45 °C
- Connection type: Screw terminal with universal head (PZ1)
- Inputs with 10-230 V AC/DC signals
  - Voltage range 0 … 265 V AC/DC
  - Input current ≤ 1 mA
  - Signal level for 0-signal 0 … 2 V AC/DC
  - Signal level for 1-signal 9 … 265 V AC/DC
  - S0-Puls (DC): t_{OFF} ≥ 30 ms and 30 ms ≤ t_{ON} ≤ 120 ms
  - Cable length between device input and contact (one-way) ≤ 100 m

BE/S 4.230.3.2
2 MW

BE/S 8.230.3.2
4 MW

BE/S 10.230.3.2
4 MW



BE/S 12.230.3.2
6 MW

BE/S 16.230.3.2
6 MW

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S x.20.3.2 with Contact Scanning – technical data

- Number of inputs 4, 10 or 16
- Design MDRC in proM design
- KNX current consumption < 5mA
- Operation −5 … +45 °C
- Connection type: Screw terminal with universal head (PZ1)
- Inputs with contact scanning
  - Scanning current ≤ 0.1 mA
  - Scanning voltage U_n ≤ 30 V DC (pulsed)
  - Cable length between device input and contact (one-way) ≤ 100 m at cross-section 1.5 mm²

BE/S 4.20.3.2
2 MW

BE/S 10.20.3.2
4 MW

BE/S 16.20.3.2
6 MW

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S x.y.3.2 – ordering details

- BE/S x.230.3.2 (10-230 V AC/DC signals)
  - 4-fold BE/S 4.230.3.2 2CDG110279R0011
  - 8-fold BE/S 8.230.3.2 2CDG110280R0011
  - 10-fold BE/S 10.230.3.2 2CDG110281R0011
  - 12-fold BE/S 12.230.3.2 2CDG110282R0011
  - 16-fold BE/S 16.230.3.2 2CDG110283R0011

- BE/S x.20.3.2 (contact scanning)
  - 4-fold BE/S 4.20.3.2 2CDG110276R0011
  - 10-fold BE/S 10.20.3.2 2CDG110277R0011
  - 16-fold BE/S 16.20.3.2 2CDG110278R0011

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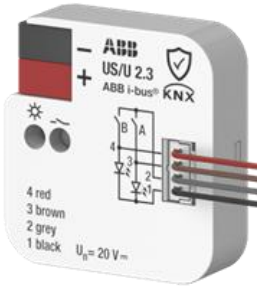
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

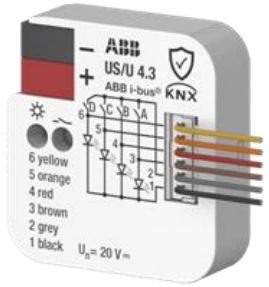
Range Overview

Universal Interfaces US/U x.3 – device description

- The devices are flush mounting devices (FM)
- They are designed for installation in flush mounting box with a diameter of 60 mm
- The devices can be placed behind electrical equipment, e.g. pushbuttons
- The connections at the inputs or outputs are made via plug-in connection cables → connection diagram is on the housing
- The connection terminal and the colors are compatible with Universal Interfaces US/U x.2 (e.g. device replacement)
- The connection cables can be extended up to 10 m
- Secure through KNX Data Secure
- 2D code for traceability (digital services, diagnostics, …)
- The devices are powered via KNX and requires no additional auxiliary voltage



US/U 2.3



US/U 4.3

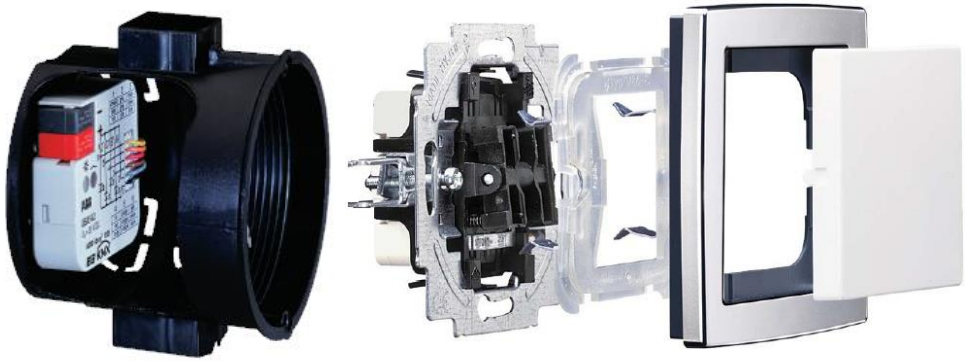


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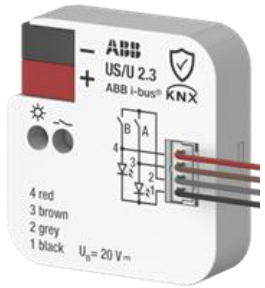
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

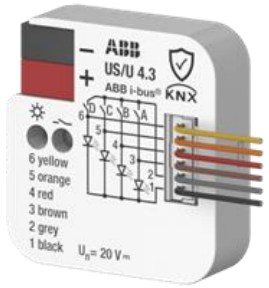
Range Overview

Universal Interfaces US/U x.3 – device functions

- Each channel can be used as either an input or an output
  - The inputs are used as an interface for operating KNX systems via conventional buttons/switches or for coupling floating binary signals (potential-free) with contact scanning
  - The outputs are used to control LEDs (3.3 V DC, max. 5 mA, limited by pre-resistor)
- When the contacts connected to the device inputs are operated, the devices send telegrams on the KNX bus
  - Rising edge (closing the contact) and falling edge (opening the contact)
  - Short and long operation
  - Multiple operation



US/U 2.3



US/U 4.3

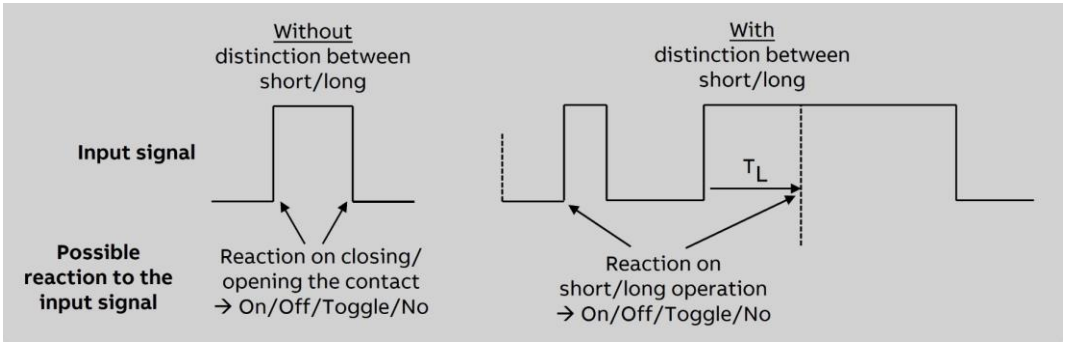


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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Universal Interfaces US/U x.3

The following applications are available for each input

- Switch (1-button operation)
- Switch (2-button operation)
- Blind/shutter (1-button operation)
- Blind/shutter (2-button operation)
- Switch/dim (1-button operation)
- Switch/dim (2-button operation)
- Scenes
- Send value/multiple operation
- Fault indicator/logic input
- Switching sequence (1-button operation)
- Switching sequence (2-button operation)
- Pulse counter
- LED control

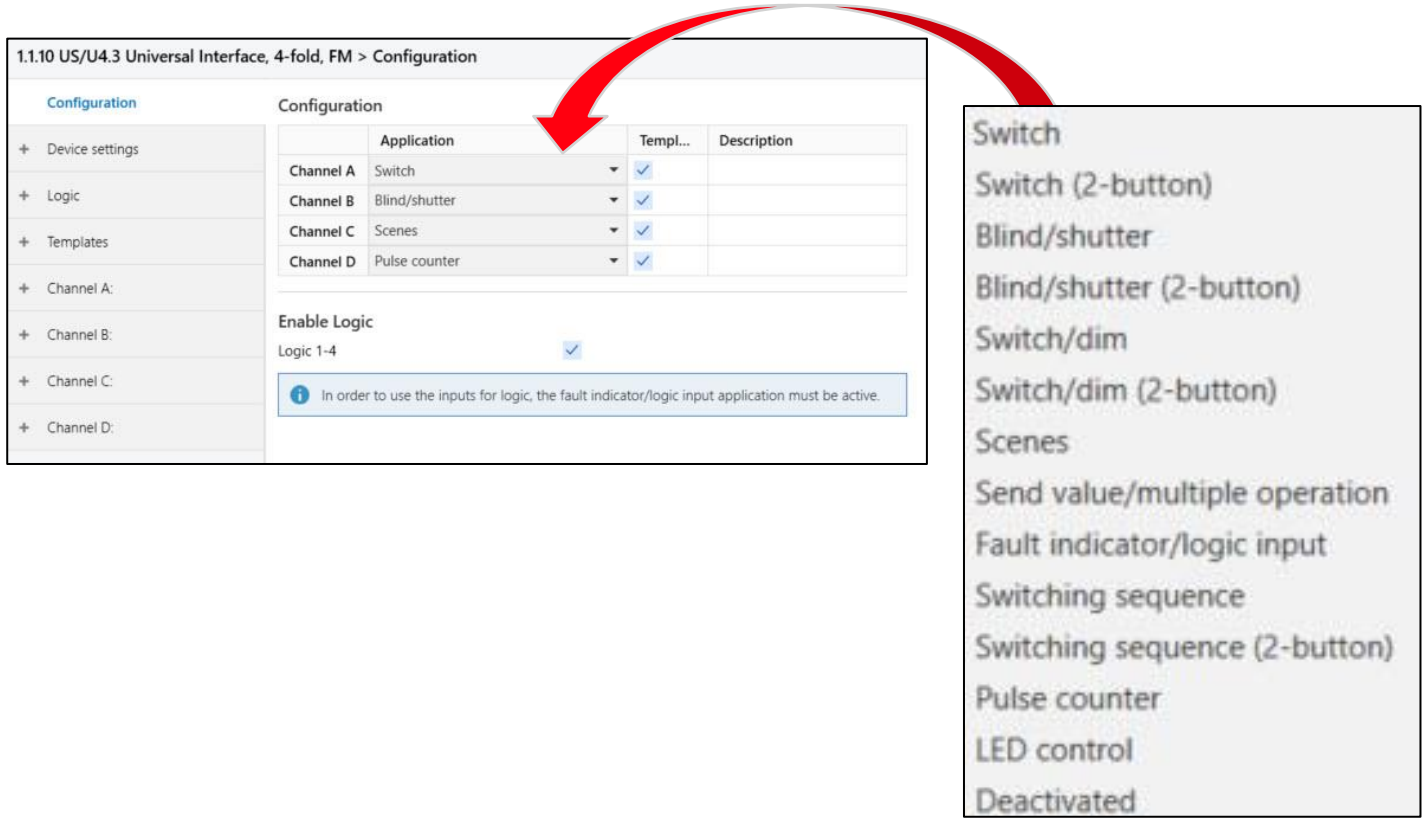

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Universal Interfaces US/U x.3 – device functions

- The channels can also be split between different rooms
- The connecting cables can be extended up to 10 m
- Example “Hotel room”
  - Universal Interfaces (1) – entrance
    Channel “A” – Key card reader
    Channel “B” – Lighting entrance area
    Channel “C” – Lighting main room
    Channel “D” – Lighting bathroom
  - Universal Interfaces (2) – balcony
    Channel “A” – Lighting main room
    Channel “B” – Lighting balcony
    Channel “C&D” – Blinds balcony (2-button operation)
  - Universal Interfaces (3) - bedside
    Channel “A” – Lighting bedside left
    Channel “B” – Lighting bedside right
    Channel “C” – Master switch
    Channel “D” – Emergency call (bathroom)

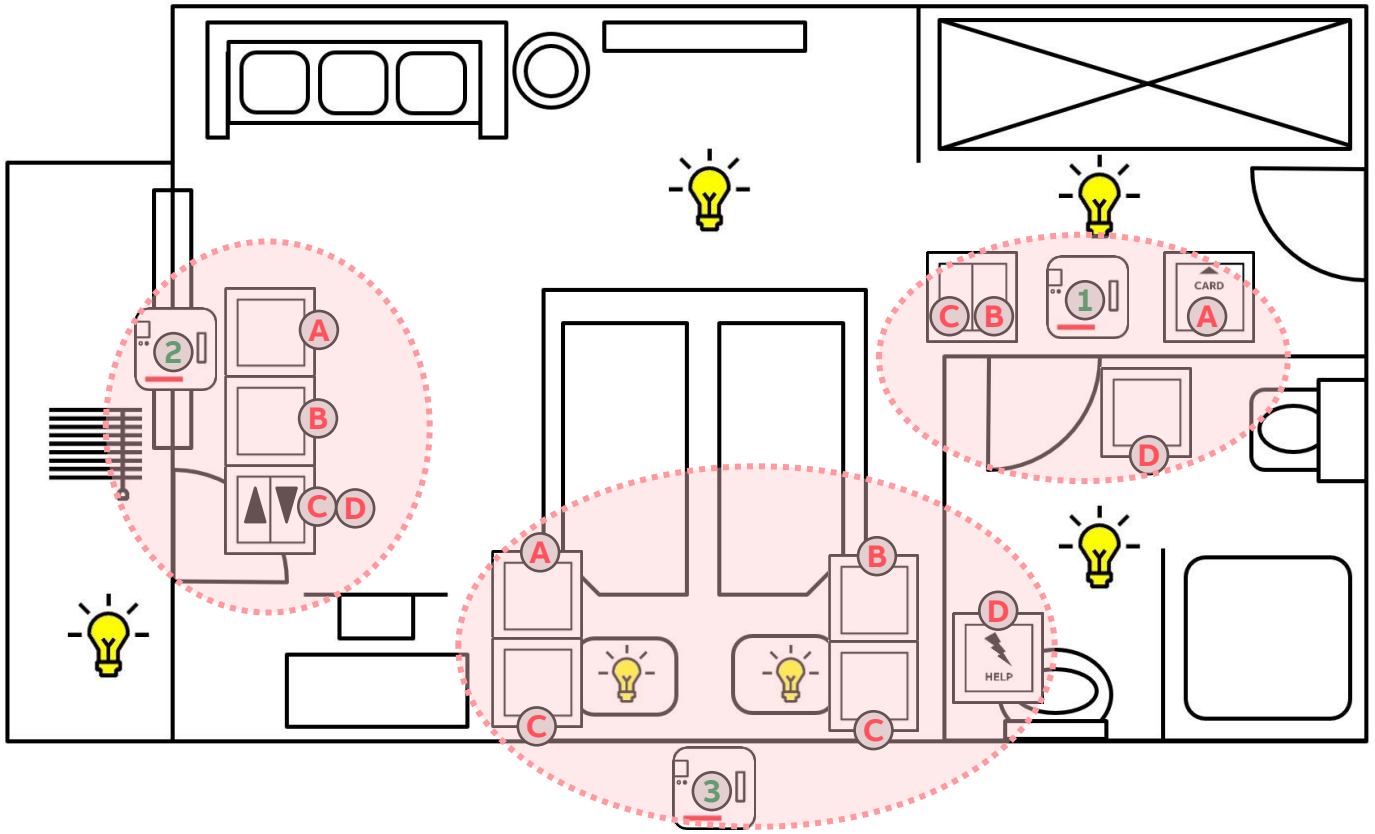

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Universal Interfaces US/U x.3 – connection diagram

Input

1. Labeling field
2. Programming LED
3. Programming button
4. KNX bus connection terminal
5. Device certificate sticker (KNX Data Secure)
6. Binary inputs/LED outputs
   Channel A – brown
   Channel B – red
   Channel C – orange
   Channel D – yellow
7. Binary input
   Common – grey

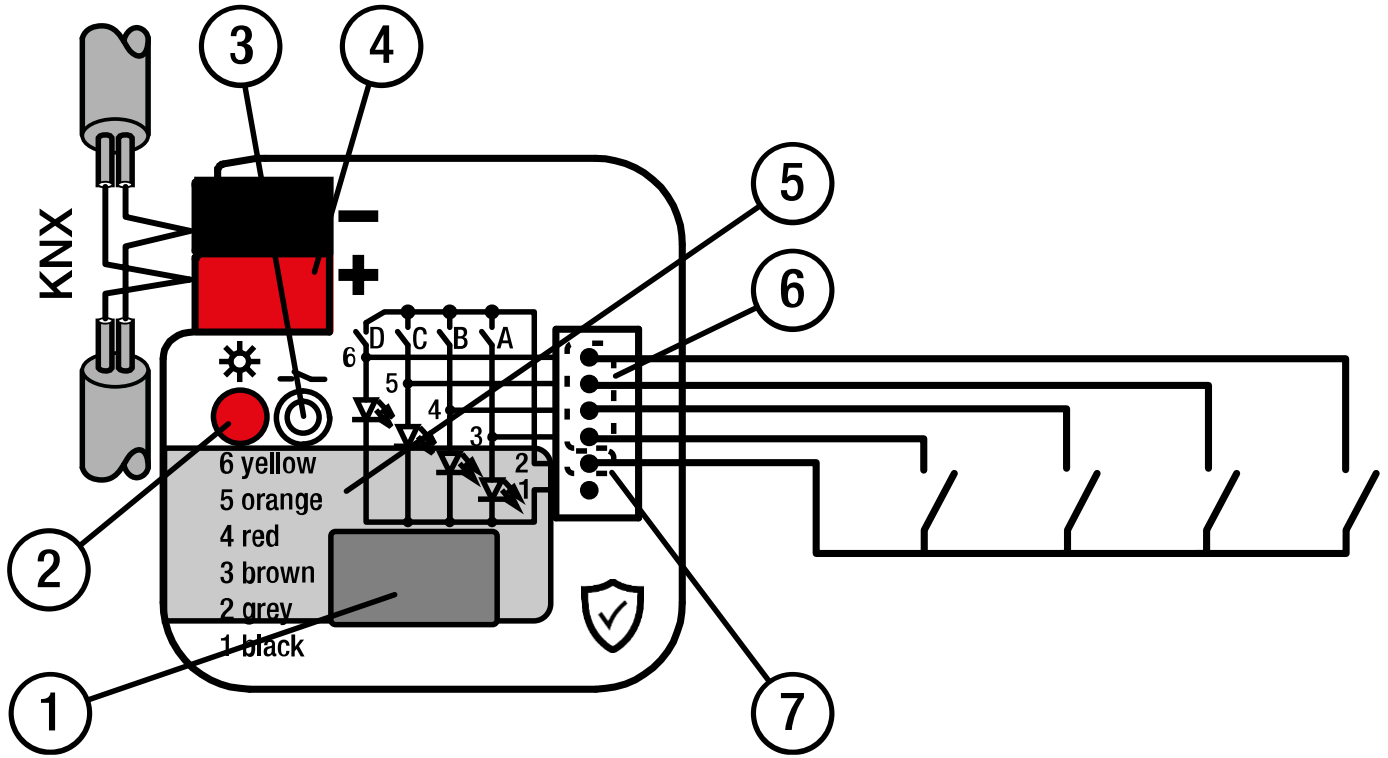

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Universal Interfaces US/U x.3 – connection diagram

Output

1. Labeling field
2. Programming LED
3. Programming button
4. KNX bus connection terminal
5. Device certificate sticker (KNX Data Secure)
6. Binary inputs/LED outputs
   Channel A – brown
   Channel B – red
   Channel C – orange
   Channel D – yellow
7. LED output (-)
   Common – black

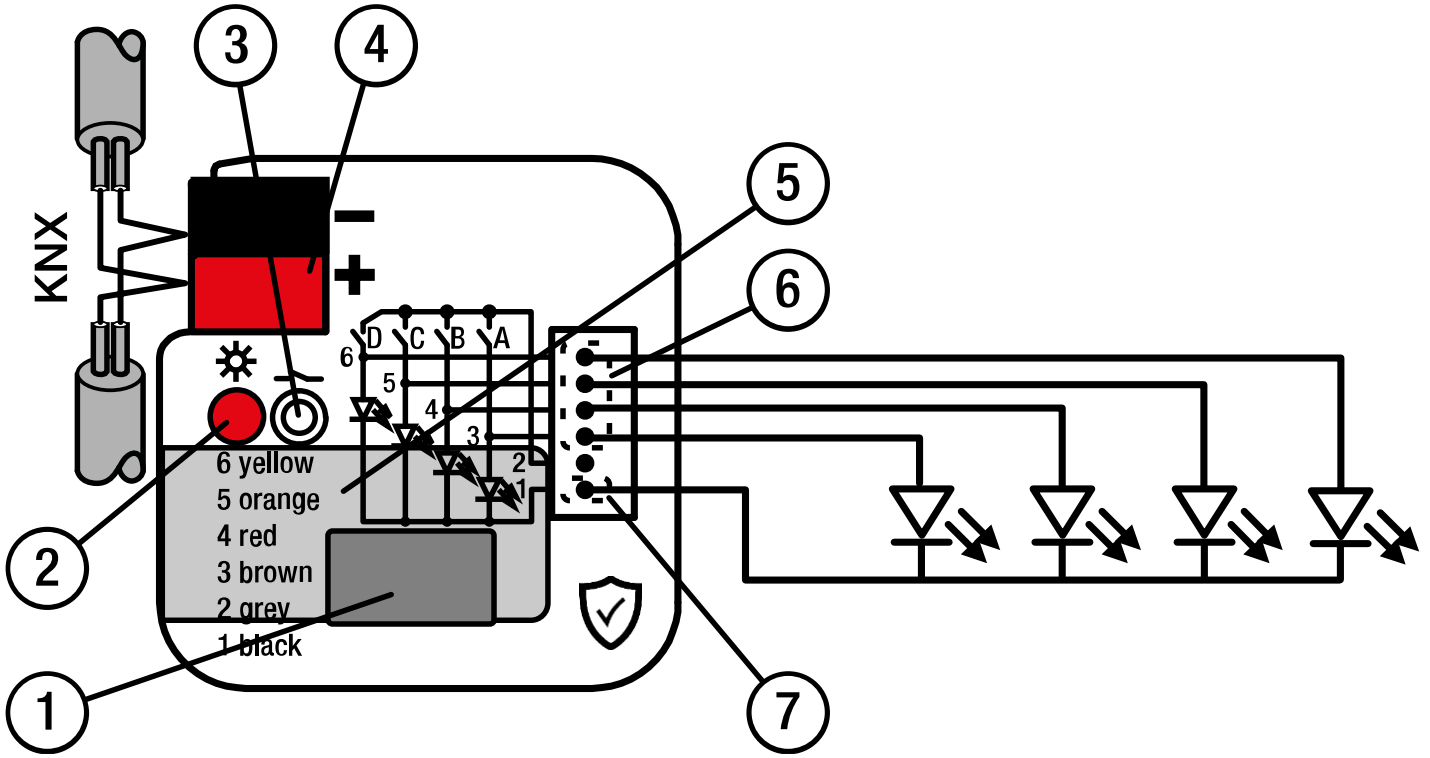

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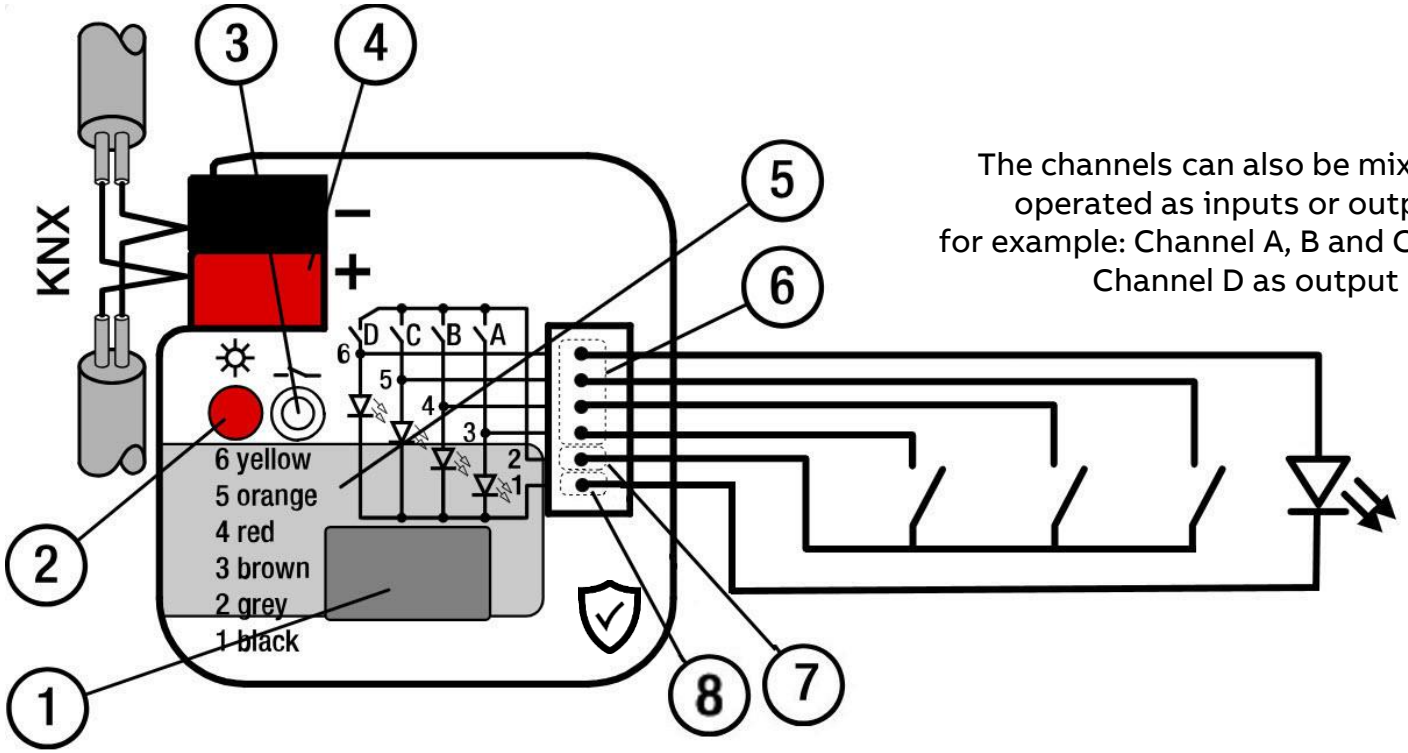
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Universal Interfaces US/U x.3 – connection diagram

Input/Output

1. Labeling field
2. Programming LED
3. Programming button
4. KNX bus connection terminal
5. Device certificate sticker (KNX Data Secure)
6. Binary inputs/LED outputs
   Channel A – brown
   Channel B – red
   Channel C – orange
   Channel D – yellow
7. Binary input
   Common – grey
8. LED output (-)
   Common – black



The channels can also be mixed and operated as inputs or outputs, for example: Channel A, B and C as input; Channel D as output

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Universal Interfaces US/U x.3 – technical data

- Design Flush Mounting
- Dimensions 39 x 12 x 40 mm (H x W x D)
- KNX current consumption < 12 mA
- Operation −5 … +45 °C
- Input
  - Scanning current ≤ 0.5 mA
  - Scanning voltage U_n ≤ 20 V DC
  - Cable length between device input and contact (one-way) ≤ 10 m
- Output
  - Output voltage 3.3 V DC
  - Output current ≤ 5 mA, limited by a pre-resistor

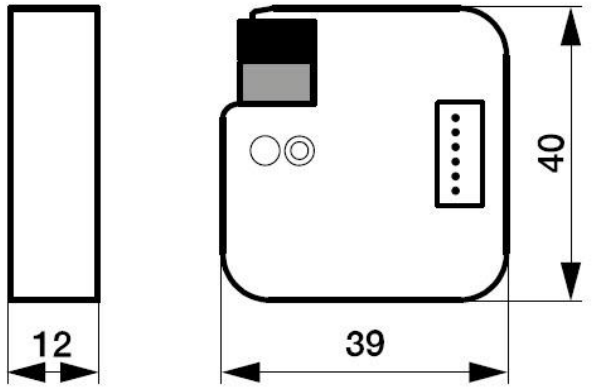

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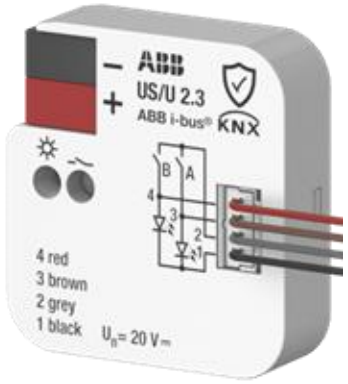
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Universal Interfaces US/U x.3 – ordering details

- Universal interface US/U 2.3
  - 2-fold
  - 2CDG110308R0011



- Universal interface US/U 4.3
  - 4-fold
  - 2CDG110309R0011

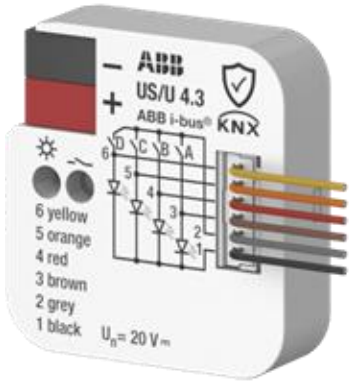


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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Binary Inputs BE/S

Product Type	Product ID	Product Name	Description	MW
BE/S 4.**20**.3.2	2CDG110276R0011	Binary Input, 4-fold, Contact Scanning, Manual Operation, MDRC	**Scans floating contacts (potential-free)** with internally generated scanning voltage	2
BE/S 10.**20**.3.2	2CDG110277R0011	Binary Input, 10-fold, Contact Scanning, Manual Operation, MDRC		4
BE/S 16.**20**.3.2	2CDG110278R0011	Binary Input, 16-fold, Contact Scanning, Manual Operation, MDRC		6
BE/S 4.**230**.3.2	2CDG110279R0011	Binary Input, 4-fold, 10-230V, Manual Operation, MDRC	**Detects AC/DC signals** in the voltage range from 10 ... 230 V	2
BE/S 8.**230**.3.2	2CDG110280R0011	Binary Input, 8-fold, 10-230V, Manual Operation, MDRC		4
BE/S 10.**230**.3.2	2CDG110281R0011	Binary Input, 10-fold, 10-230V, Manual Operation, MDRC		4
BE/S 12.**230**.3.2	2CDG110282R0011	Binary Input, 12-fold, 10-230V, Manual Operation, MDRC		6
BE/S 16.**230**.3.2	2CDG110283R0011	Binary Input, 16-fold, 10-230V, Manual Operation, MDRC		6

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Universal Interfaces US/U

Product Type	Product ID	Product Name	Description
US/U 2.3	2CDG110308R0011	Universal Interface, 2-fold, FM	The Universal Interface can be parametrized as inputs or outputs. **Scans floating contacts (potential-free)** with internally generated scanning voltage. LEDs can be controlled.
US/U 4.3	2CDG110309R0011	Universal Interface, 4-fold, FM	

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Range Overview

Conversion List

Current devices (to be discontinued)		New devices		
Product type	**Ident number**	**Product type**	**Ident number**	**Comments**
BE/S 4.20.2.1	2CDG110090R0011	BE/S 4.20.3.2	2CDG110276R0011	-
BE/S 8.20.2.1	2CDG110092R0011	BE/S 10.20.3.2	2CDG110277R0011	No 1-to-1 replacement
-	-	BE/S 16.20.3.2	2CDG110278R0011	New device
BE/S 4.230.2.1	2CDG110091R0011	BE/S 4.230.3.2	2CDG110279R0011	-
BE/S 8.230.2.1	2CDG110093R0011	BE/S 8.230.3.2	2CDG110280R0011	-
-	-	BE/S 10.230.3.2	2CDG110281R0011	New device
-	-	BE/S 12.230.3.2	2CDG110282R0011	New device
US/U 2.2	GHQ6310074R0111	US/U 2.3	2CDG110308R0011	Output voltage is lower (3.3 V instead of 5 V)
US/U 4.2	GHQ6310070R0111	US/U 4.3	2CDG110309R0011	Output voltage is lower (3.3 V instead of 5 V)
US/U 12.2	2CDG110065R0011	-	-	No replacement

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Software Features and ETS Application

ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

New Software Features

- Consistent ETS application across several portfolios (Binary Inputs, Universal Interfaces, Trevion Keypads)
- Improved usability
  - Templates & naming of channels and group objects
  - Reduced parameter texts & seldomly needed parameters are hidden
  - Parameterization in tables (e.g., Multiple operation)
- 12+1 different applications
  - Switch, Blind/Shutter, Switch/Dim, Scenes, Send value/Multiple operation, Fault indicator, Switching sequence, Pulse Counter
  - 1- and 2-button operation
  - LED control – only for Universal Interfaces US/U
- Logical functions (And, Or, Exclusive Or)
- Improved detection of input signals, even in the presence of interferences
- KNX Data Secure

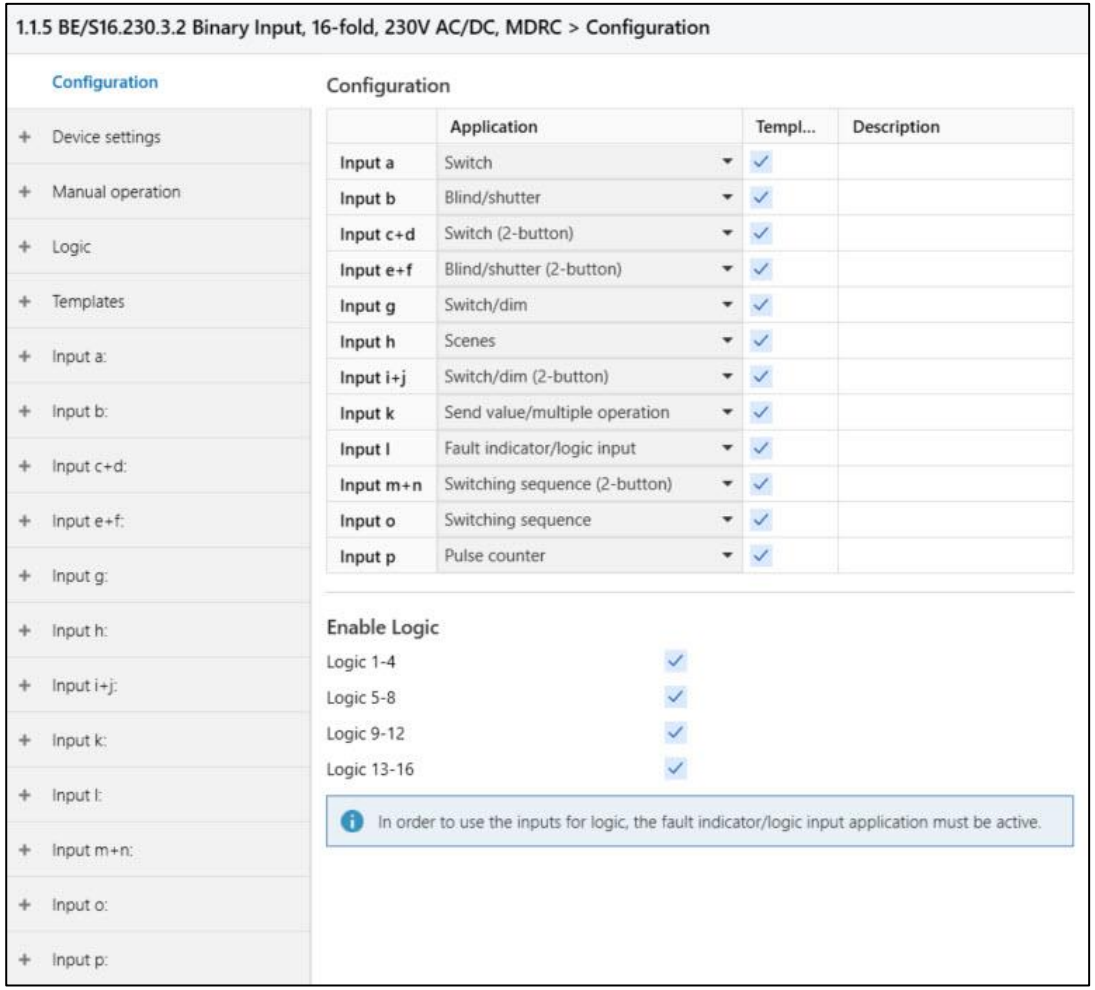

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

New Software Feature “2-button operation”

- In 2-button operation, two adjacent inputs are combined
  - Easy operation for end user
  - No toggling, especially when dimming the light and moving the blinds
- For this reason, 2-button operation is only available for inputs “a+b”, “c+d”, “e+f”, “g+h”, “i+j”, “k+l”, … (depending on the device variant)
- Available for
  - Switch application
    Left rocker side: Input “x” – *ON* and right rocker side: Input “y” – *OFF*
  - Blind/shutter application
    Left rocker side: Input “x” – *UP* and right rocker side: Input “y” – *DOWN*
  - Switch/dim application
    Left rocker side: Input “x” – *ON/brighter* and right rocker side: Input “y” – *OFF/darker*
  - Switching sequence application
    Left rocker side: Input “x” – *Next step* and right rocker side: Input “y” – *Previous step*

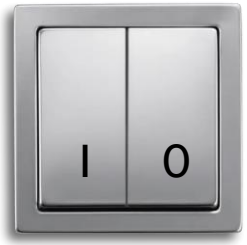

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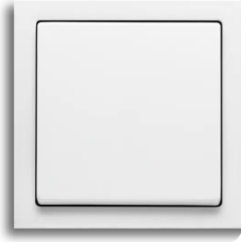
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Comparison “1-button” and “2-button operation”

1-button operation

- Switch/dim application
  - Input “x”
  - Short operation
    “Toggle” (on-off-on-off-on-…)
  - Long operation
    “Change dimming direction”
    “Change dimming direction, brighter when On”
    “Change dimming direction, darker when On”



2-button operation

- Switch/dim application
  - Input “x+y”
  - Input “x” – left button
    - On short operation “On”
    - On long operation “Brighter”
  - Input “y” – right button
    - On short operation “Off”
    - On long operation “Darker”

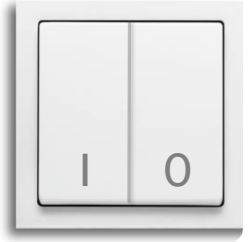


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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Parameter “Configuration”

- Overview of all inputs
  - Define application for each input
  - Usage of the template or set each parameter individually
  - Entering a text description (naming of channels and group objects)

- Additional logical functions
  - The number of logics depends on the number of inputs
  - “AND”, “OR” and “Exclusive OR”
  - The logics can be used
    - Internally for an input with the application “Fault indicator/ logic input”
    - Externally independent of the inputs

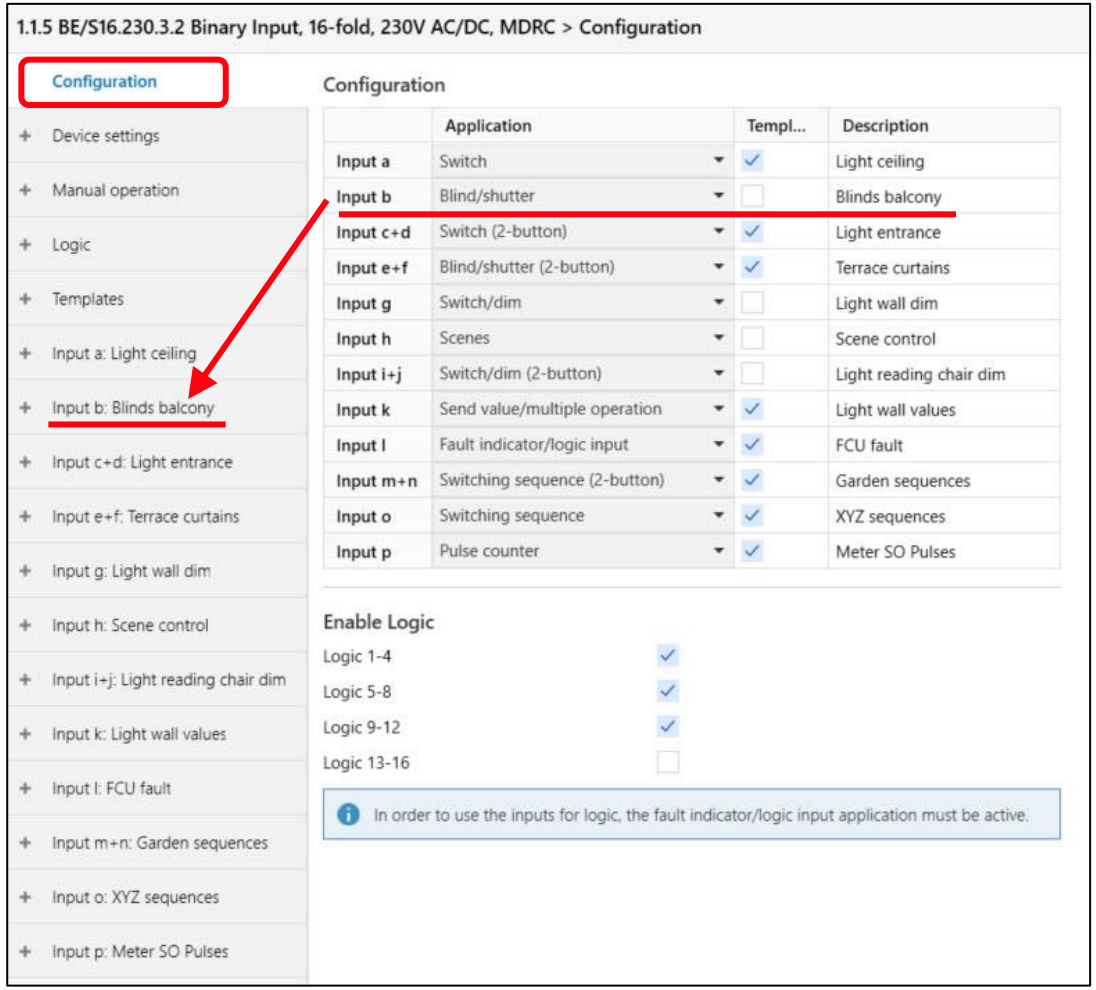

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Parameter “Device Settings”

- Sending delay after KNX voltage recovery
- Set telegram rate limit
  - Maximum number of telegrams in a period
- Enable group object “In Operation”
  - Send “0” or “1” cyclically

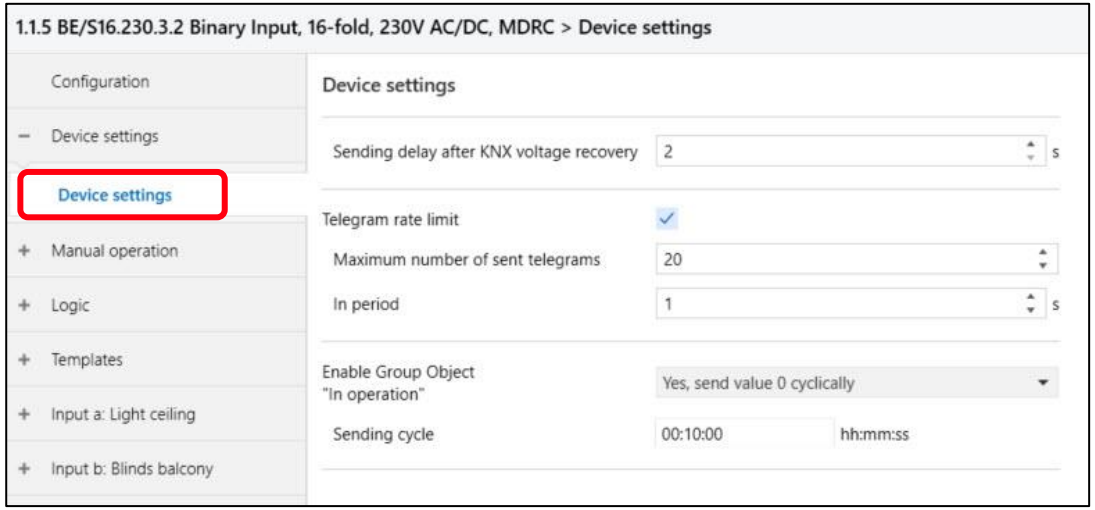

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Parameter “Manual Operation” → only Binary Inputs

- Enable operating state *Manual operation*
- Automatically reset the device to operating state *KNX operation*
  - Automatic reset after time

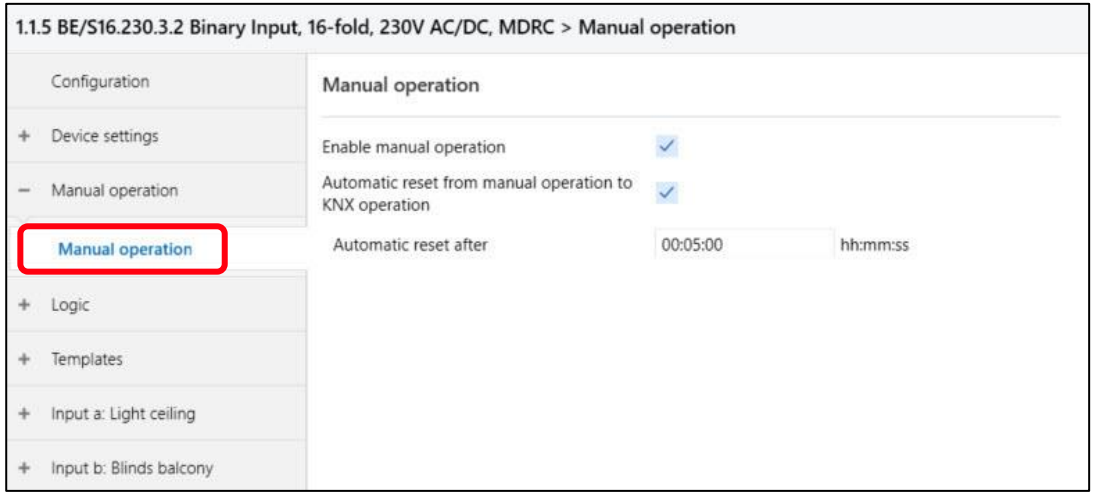

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Parameter “Logic”

- The number of logics depends on the number of inputs
  - 4 logic functions: BE/S 4.x.3.2, US/U x.3
  - 8 logic functions: BE/S 8.230.3.2
  - 12 logic functions: BE/S 10.x.3.2, BE/S 12.230.3.2
  - 16 logic functions: BE/S 16.20.3.2
- Logical functions
  - “AND”
  - “OR”
  - “Exclusive OR”
- The logics can be used
  - Internally for an input with the application “Fault indicator/ logic input”
  - Externally independent of the inputs

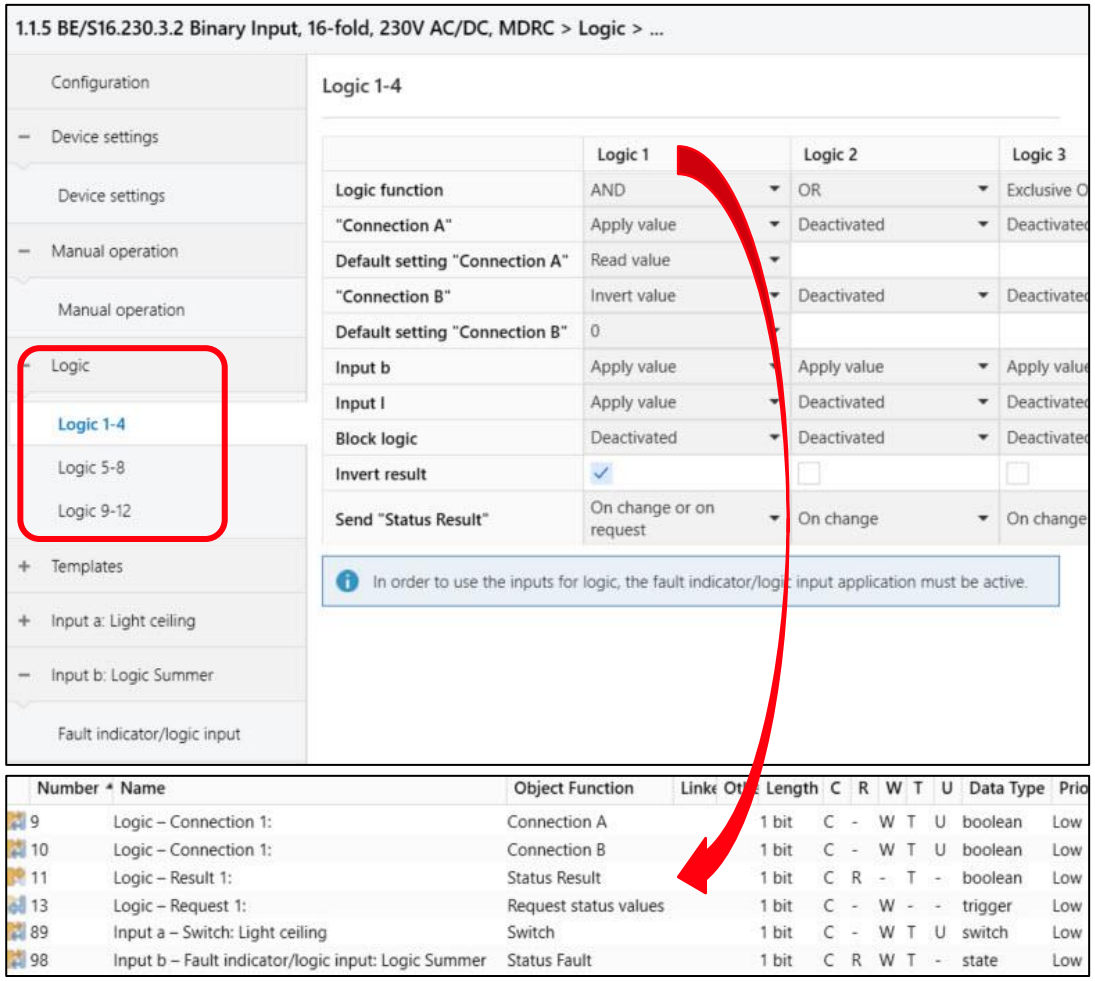

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Parameter “Templates”

- The templates enable faster parameterization, especially for multi-channel devices with the same settings
- For each input you have the choice between using
  - The template settings
  - Individual parameter settings
- The parameterization options in the template and in the parameter windows are identical
- In most cases, the templates are suitable for the most common applications
- The template is divided into parameter menus for each of the 12 applications

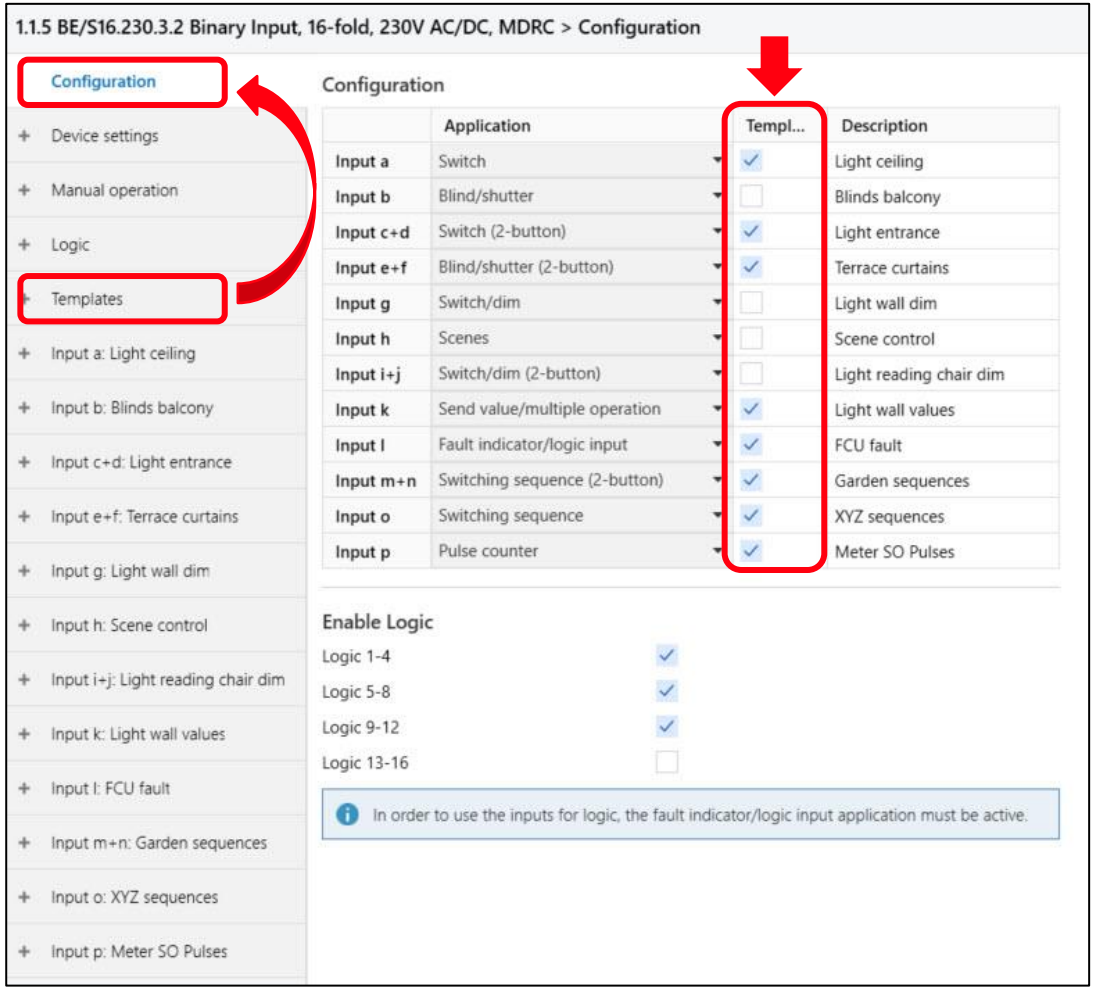

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Parameter "Templates" – using the template settings or individual parameter settings

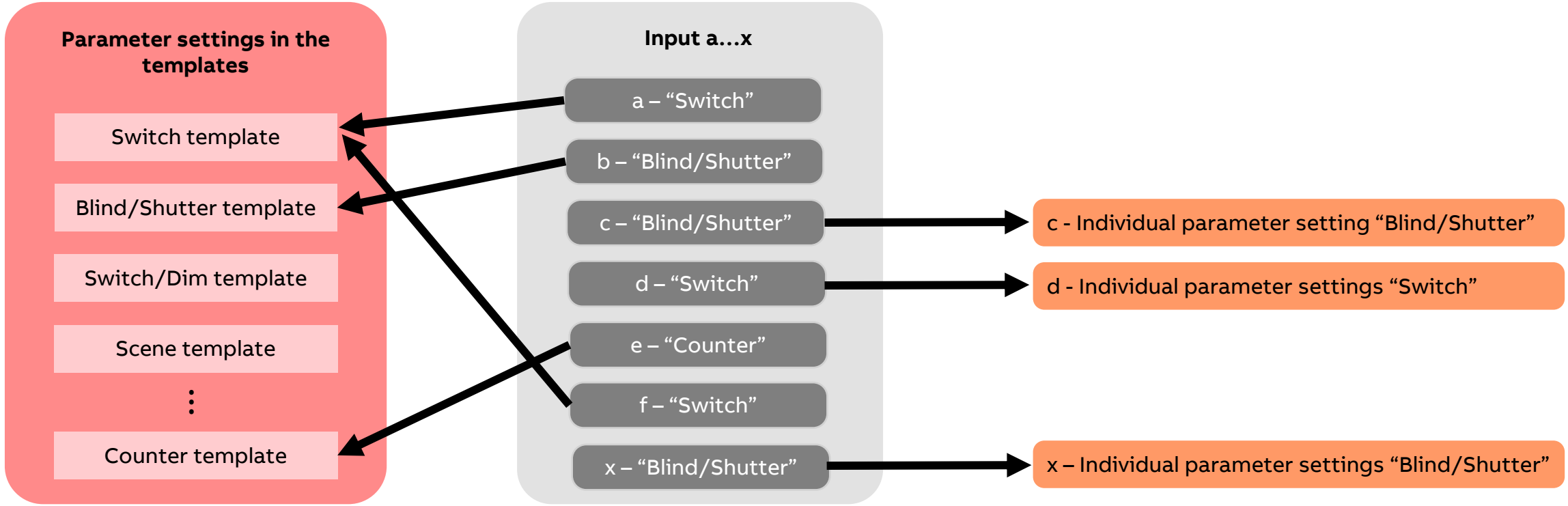

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Parameter “Input x – Extended settings”

Available at all inputs

- Contact type
- Signal type
  - Define which signal type (AC 50Hz, 60Hz, DC) is present on the input
  - Setting the signal type ensures accurate signal evaluation when different 10-230 V signals (mixed AC/DC) are acquired on the inputs
- Interference suppression filter
  - This parameter is used to define the time for suppressing interference on the input
  - An operation is only detected if the signal received on the input remains constant for the time defined
  - In this way, interfering signals or undesirable, multiple edges (e.g. due to the contact bouncing) are detected and filtered out
- Block input
- Manual operation button

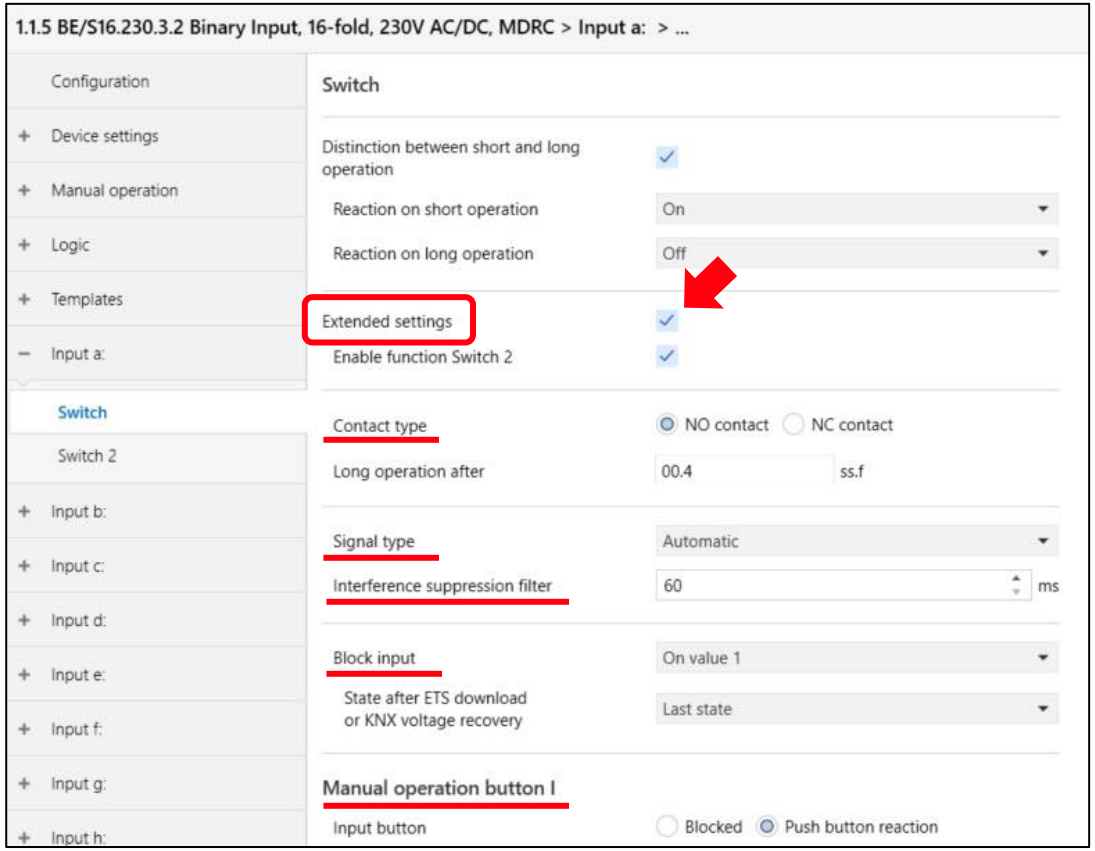

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Parameter “Input x – Switch”

Parameterize input as a switch sensor input in ”1-button operation”

- Distinction between long and short operation
- Reaction on opening/closing the contact or short/long operation
- Send input status after ETS download or KNX voltage recovery
- Extended settings
  - Enable function “Switch 2” (same parameter as “Switch”) → separate group object
  - Signal type
  - Interference suppression filter
  - Block input
  - Manual operation button

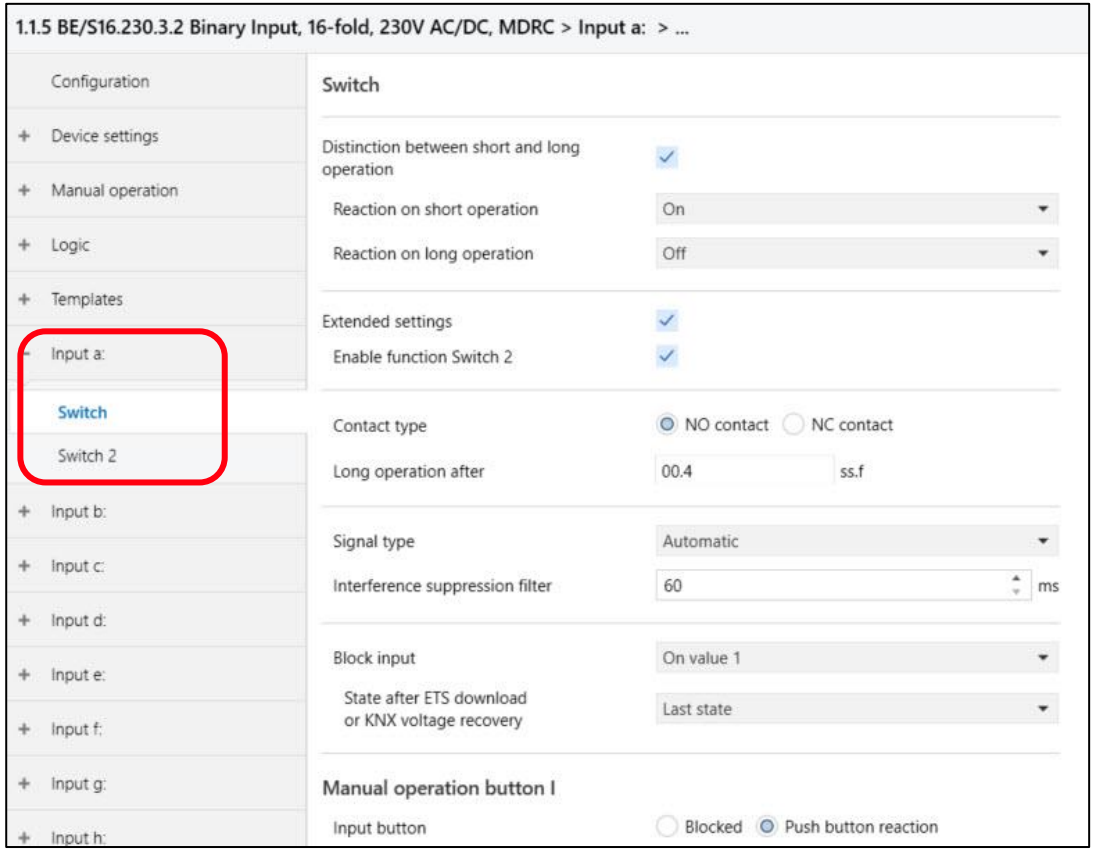

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Parameter “Input x – Switch 2-button”

Parameterize input as a switch sensor input in “2-button operation”

- In 2-button operation, two adjacent inputs are combined (e.g. a+b)
- For this reason, 2-button operation is only available for inputs a, c, e, g, i, k, m and o (depending on the device variant)
- Reaction on operation
- Extended settings
  - Contact type
  - Signal type
  - Interference suppression filter
  - Block input
  - State after ETS download or KNX voltage recovery
  - Manual operation button

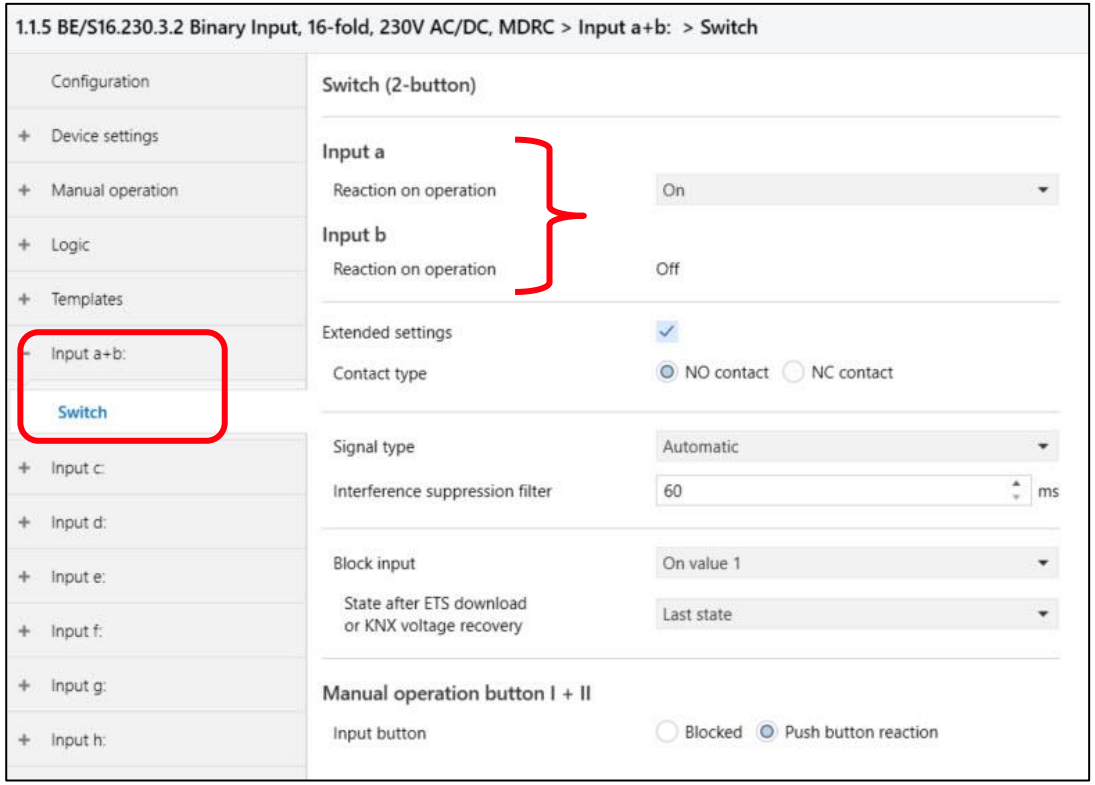

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Parameter “Input x – Blind/Shutter”

Parameterize input for blind or shutter control in “1-button operation”

- Operating mode: Blind or shutter
- Blind/Shutter operation (short/long)
- Extended settings
  - “Movement and Slat” direction change
  - Contact type
  - Long operation after
  - Signal type
  - Interference suppression filter
  - Block input
  - State after ETS download or KNX voltage recovery
  - Manual operation button

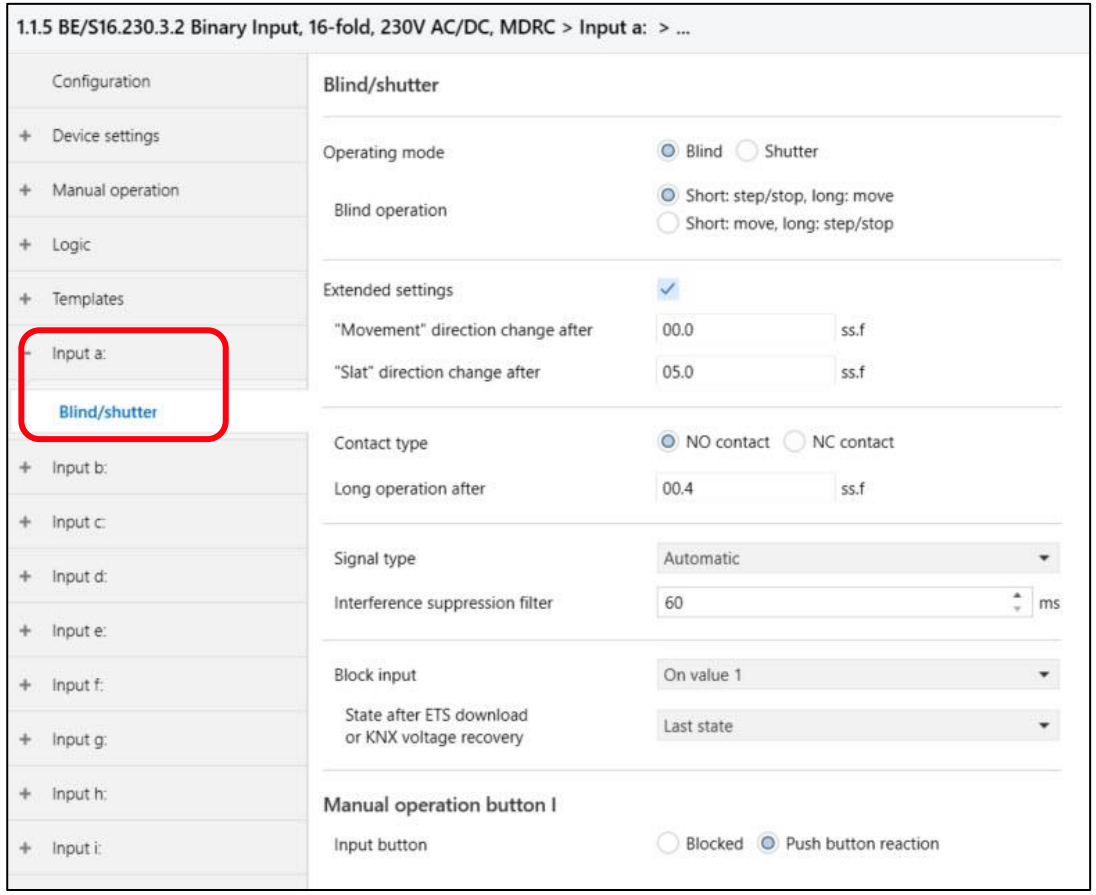

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Parameter “Input x – Blind/Shutter 2-button”

Parameterize input for blind or shutter control in “2-button operation”

- In 2-button operation, two adjacent inputs are combined (e.g. a+b)
- For this reason, 2-button operation is only available for inputs a, c, e, g, i, k, m and o (depending on the device variant)
- Operating mode: Blind or shutter
- Input “x” and “y: Direction of movement
- Extended settings
  - Blind/Shutter operation and stop movement
  - Contact type
  - Long operation after
  - Signal type
  - Interference suppression filter
  - Block input
  - State after ETS download or KNX voltage recovery
  - Manual operation button

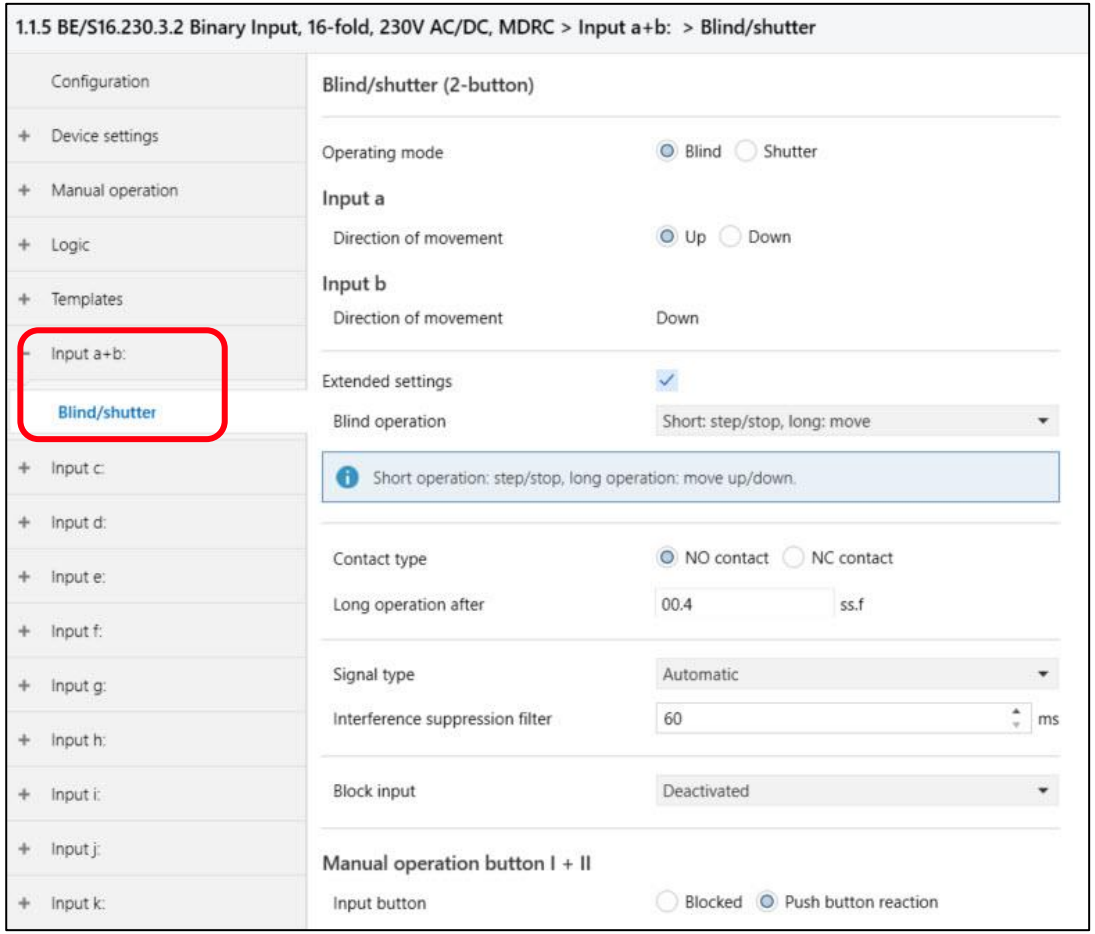

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Parameter “Input x – Switch/Dim”

Parameterize input as a switch/dim sensor input in “1-button operation”

- On short operation
- On long operation
- Extended settings
  - Dimming process
  - Contact type
  - Long operation after
  - Signal type
  - Interference suppression filter
  - Block input
  - State after ETS download or KNX voltage recovery
  - Manual operation button

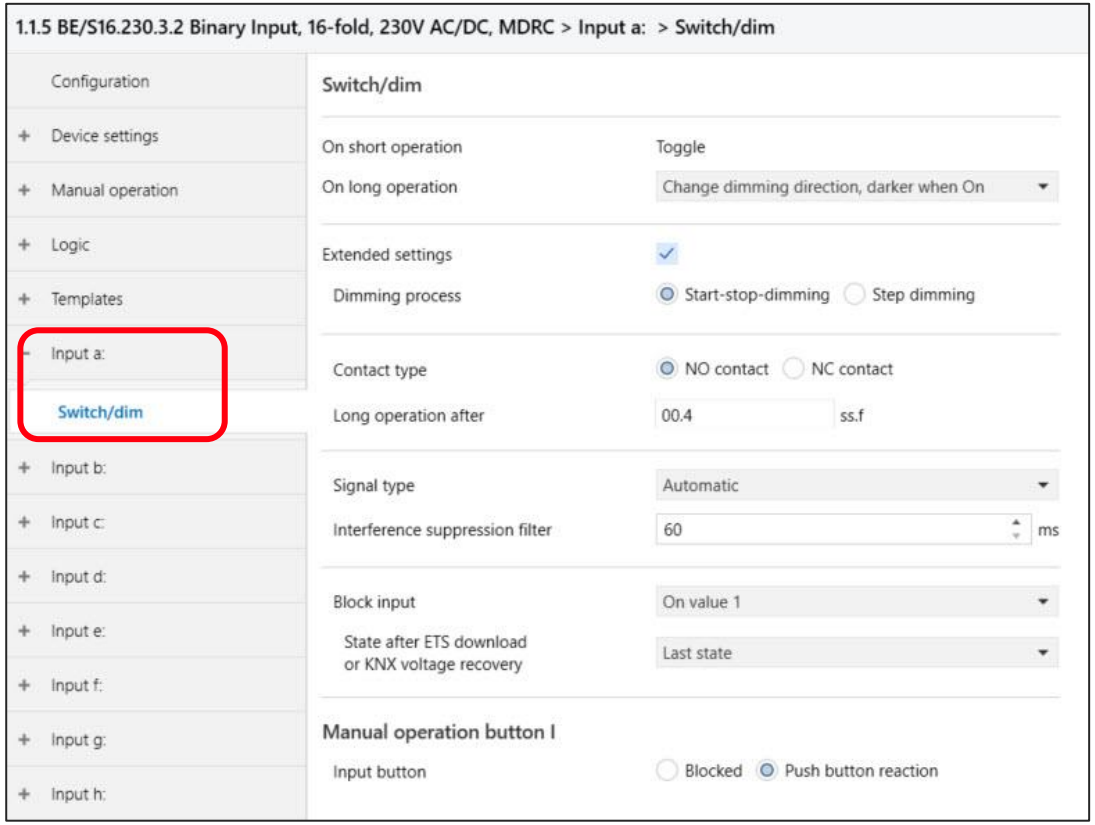

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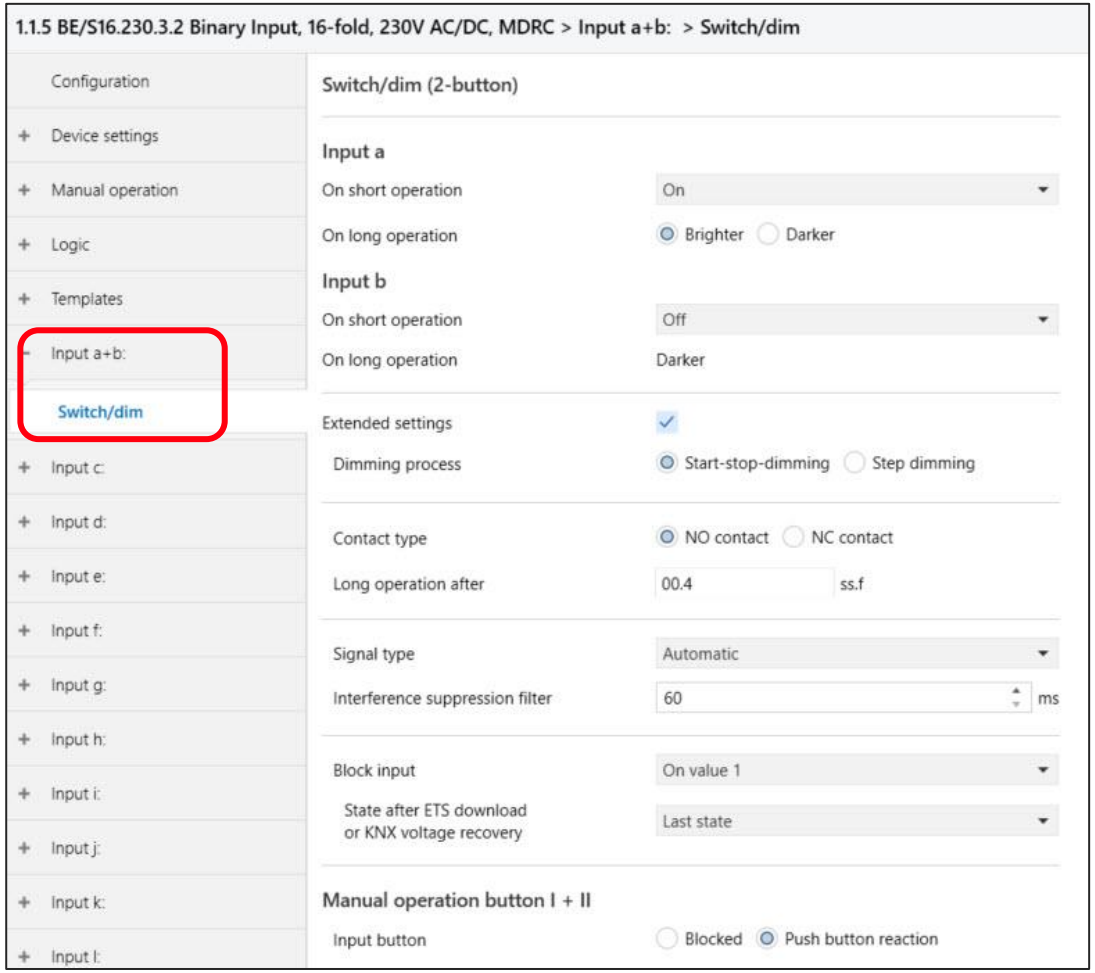
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Parameter “Input x – Switch/Dim 2-button”

Parameterize input as a switch/dim sensor input in “2-button operation”

- In 2-button operation, two adjacent inputs are combined (e.g. a+b)
- For this reason, 2-button operation is only available for inputs a, c, e, g, i, k, m and o (depending on the device variant)
- Input “x” and “y”: Reaction on short and long operation
- Extended settings
  - Dimming process
  - Contact type
  - Long operation after
  - Signal type
  - Interference suppression filter
  - Block input
  - State after ETS download or KNX voltage recovery
  - Manual operation button



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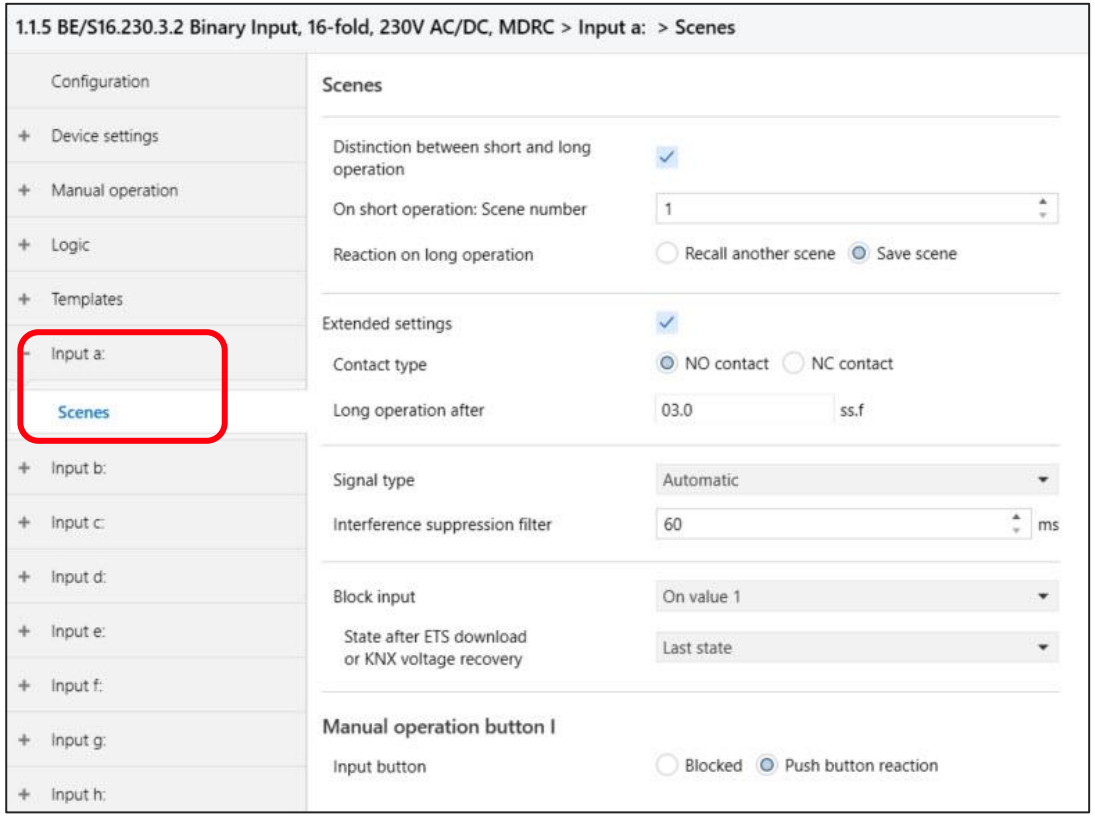
Software Features and ETS Application

Parameter “Input x – Scenes”

Parameterize input to recall or store scenes

- Distinction between long and short operation
- On short operation: Scene number
- Reaction on long operation
- Extended settings
  - Contact type
  - Long operation after
  - Signal type
  - Interference suppression filter
  - Block input
  - State after ETS download or KNX voltage recovery
  - Manual operation button



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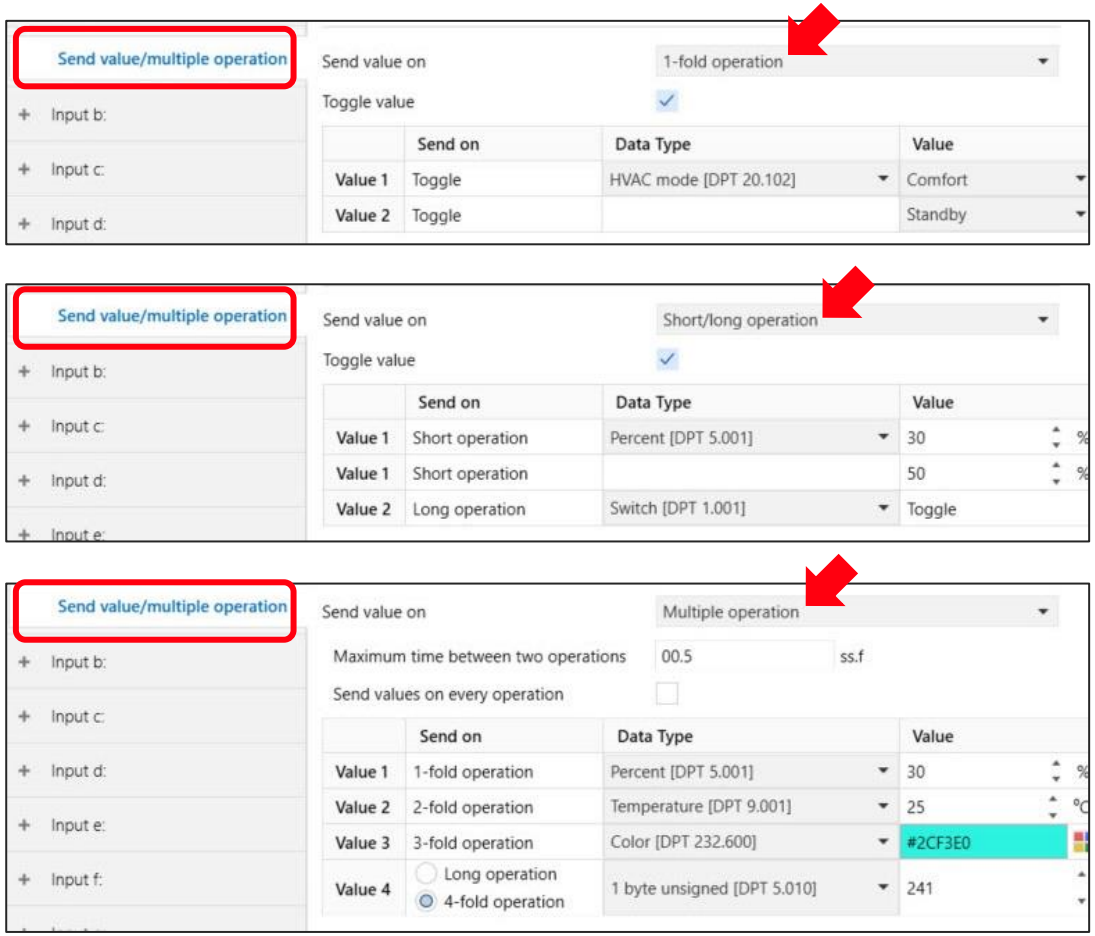
Software Features and ETS Application

Parameter “Input x – Send value/Multiple operation”

Parameterize input to send values

- Send value on
  - 1-fold operation (value 1 and 2)
  - Short/long operation (value 1 and 2)
  - Multiple operation (max 4-fold operation)
- Data types
  - Switch (DPT 1.001)
  - Forced operation (DPT 2.001)
  - Percent (DPT 5.001)
  - 1 byte unsigned (DPT 5.010)
  - 1 byte signed (DPT 6.010)
  - 2 bytes unsigned (DPT 7.001)
  - 2 bytes signed (DPT 8.001)
  - 4 bytes unsigned (DPT 12.001)
  - Temperature (DPT 9.001)
  - Color (DPT 232.600)
  - HVAC mode (DPT 20.102)



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Software Features and ETS Application

Parameter “Input x – Fault indicator/logic input”

Parameterize input as fault indicator/logic input

- Reaction on opening the contact
- Reaction on closing the contact
- Send value of Group Object “Status Fault”
- Send “Status Fault” after ETS download or KNX voltage recovery
- Extended settings
  - Contact type
  - Activate minimum signal duration when opening/closing the contact
  - Signal type
  - Interference suppression filter
  - Block input
  - State after ETS download or KNX voltage recovery
  - Manual operation button

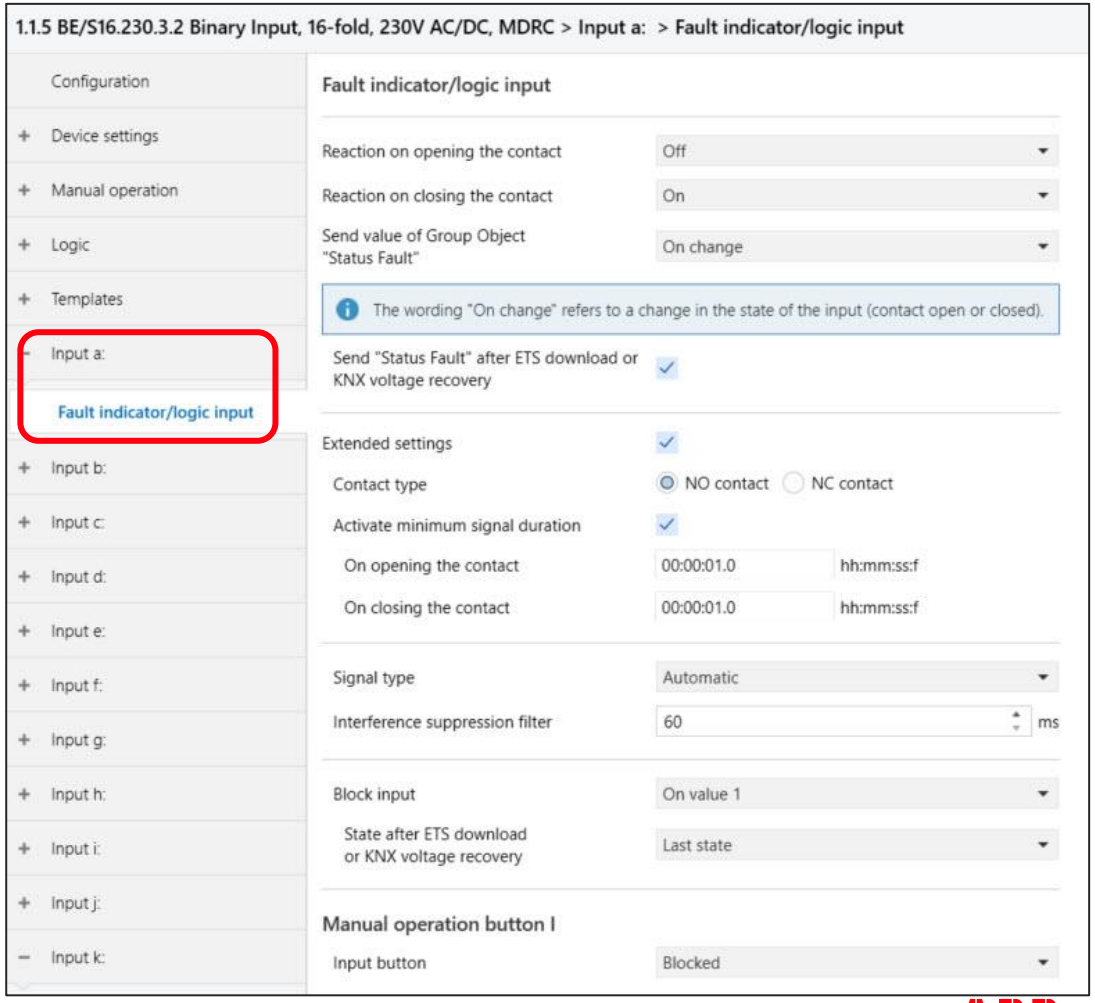

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Parameter “Input x – Switching sequence”

Create and parameterize switching sequence in “1-button operation”

- Function GO 1 … 5 (switch, percent, byte, scene, color or HVAC mode)
- Enable step 1 … 6
- Reaction on long operation
- Reaction after last step
- Send values after evaluation period
- Evaluation period
- Enable Group Object “Reset switching sequence”
- Extended settings
  - Contact type
  - Long operation after
  - Signal type
  - Interference suppression filter
  - …

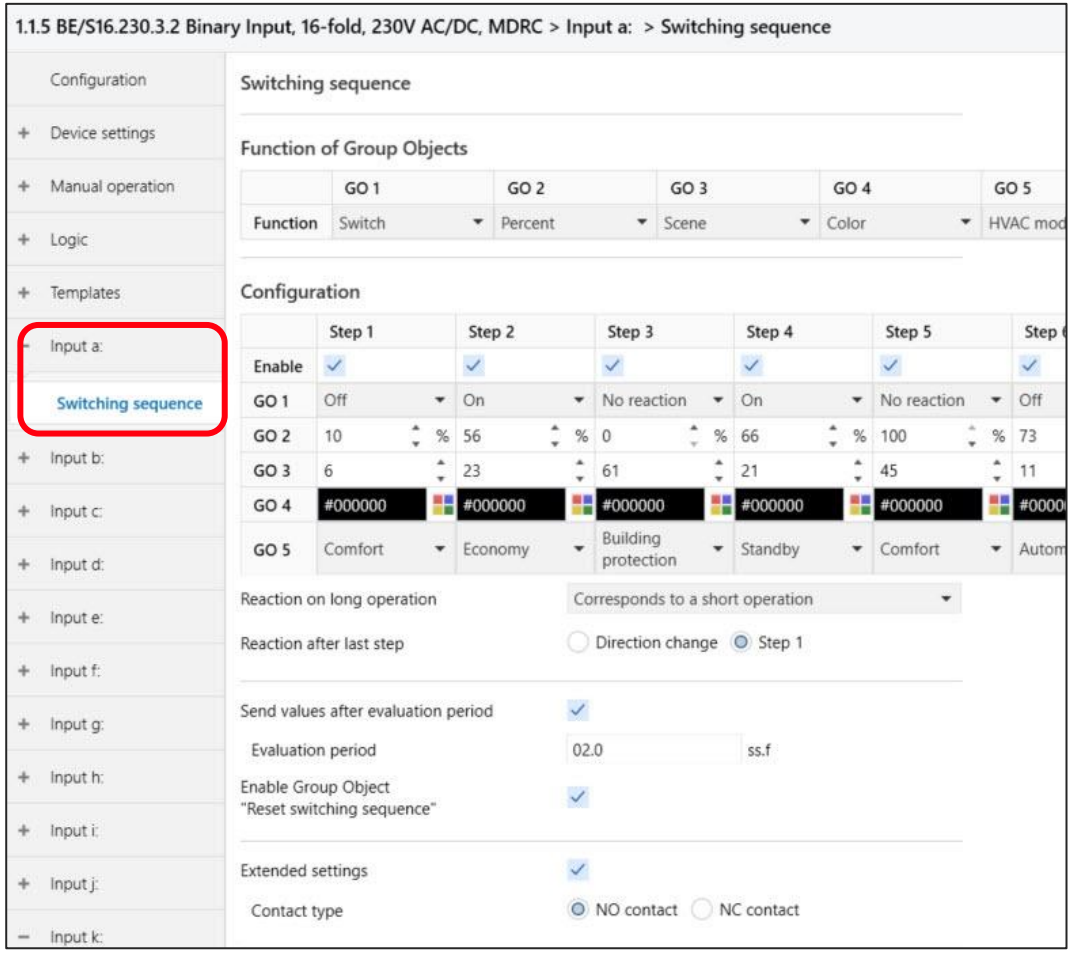

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Parameter “Input x – Switching sequence 2-button”

Create and parameterize switching sequence in “2-button operation”

- In 2-button operation, two adjacent inputs are combined (e.g. a+b)
- For this reason, 2-button operation is only available for inputs a, c, e, g, i, k, m and o (depending on the device variant)
- Function GO 1 … 5 (switch, percent, byte, scene, color or HVAC mode)
- Enable step 1 … 6
- Reaction on long and short operation
- Reaction after last step
- Send values after evaluation period
- Evaluation period
- Enable Group Object “Reset switching sequence”
- Extended settings
  - Contact type
  - …

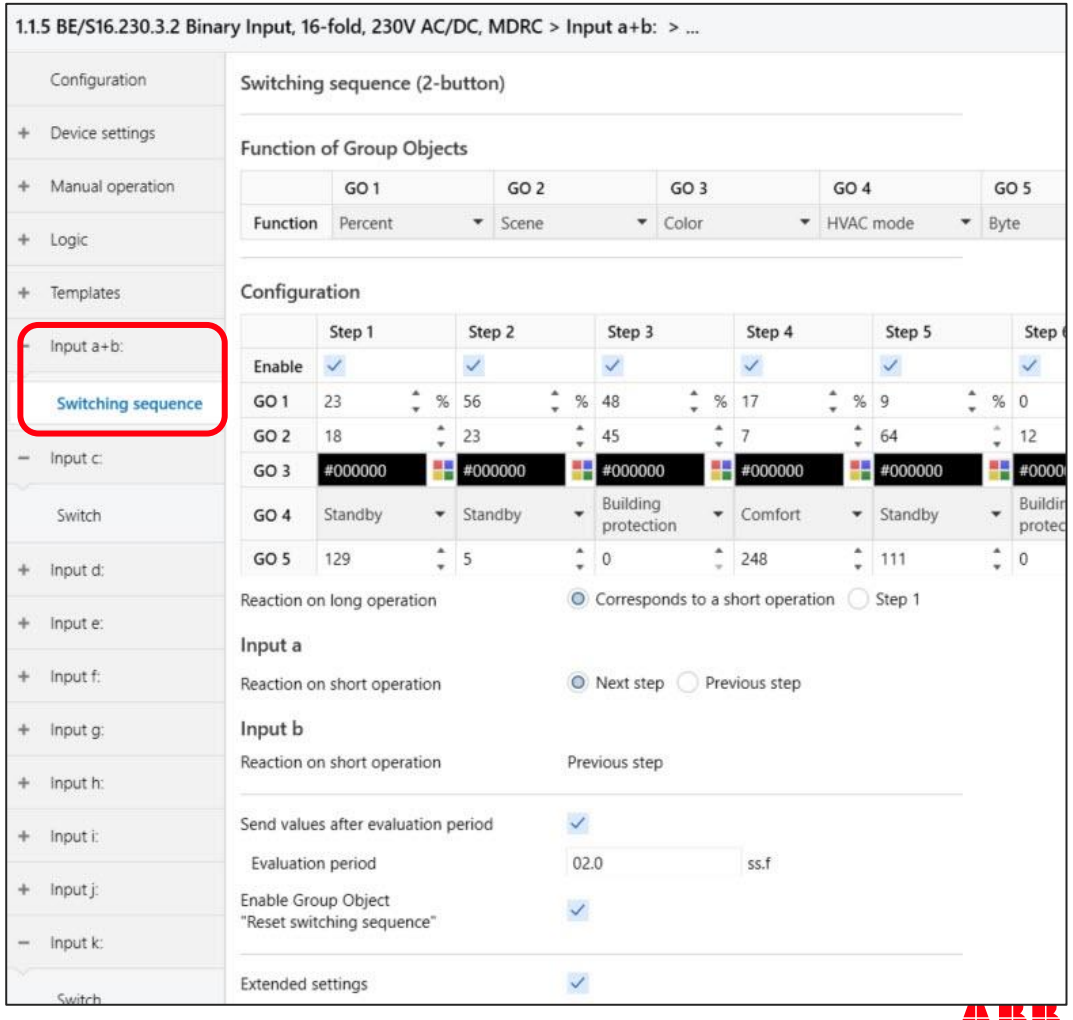

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

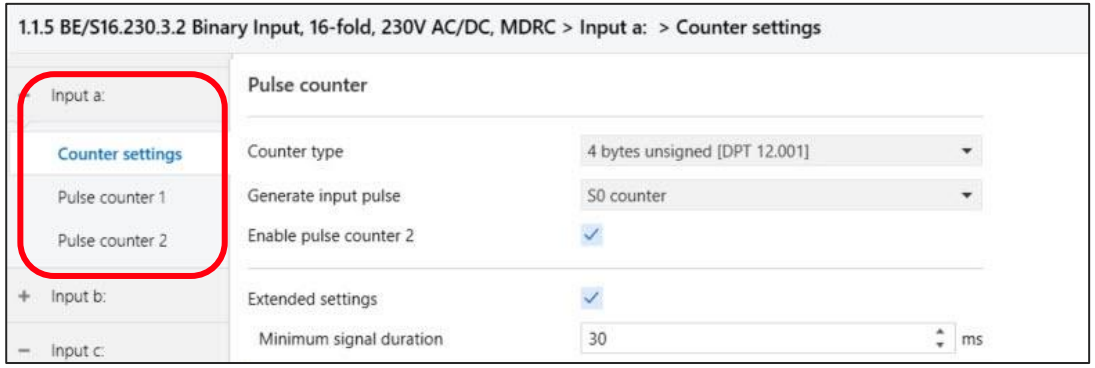
Parameter “Input x – Counter”

Parameterize input as pulse counter input

- Counter type (1 byte signed/unsigned, 2 bytes signed/unsigned, 4 bytes signed/unsigned)
- Generate input pulse (on closing, on opening, on closing or opening, *S0 counter)
- Enable pulse counter 2
- Extended settings (minimum signal duration, …)

- Pulse counter 1 and 2
  - Send value of group object
  - Value is sent from a change of
  - Counter specific settings (initial value, …)
  - Evaluate limit value (limit, reaction on reaching limit value,…)

*only BE/Sx.230.3.2



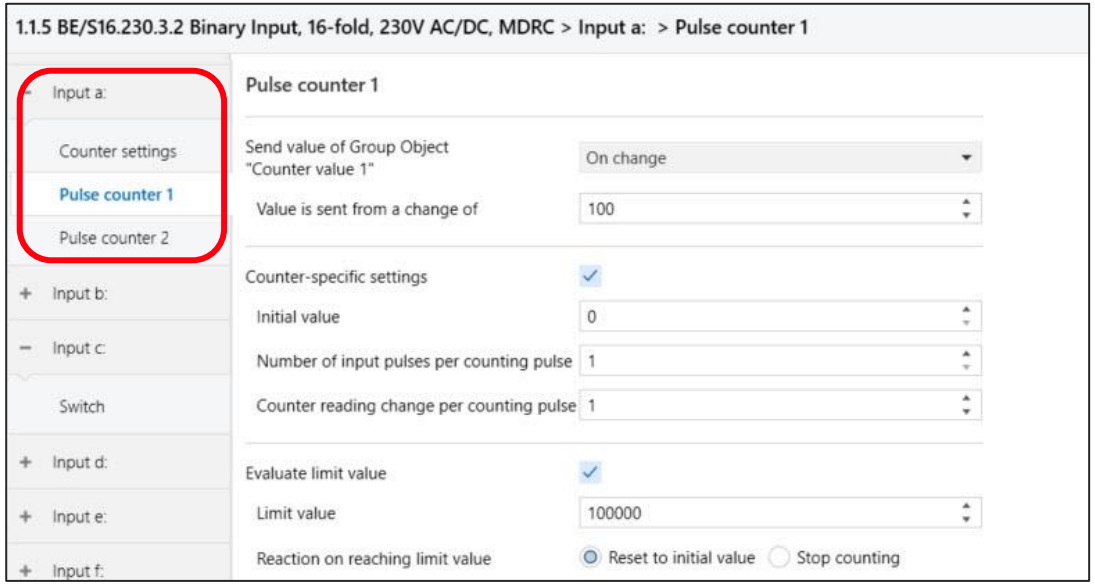


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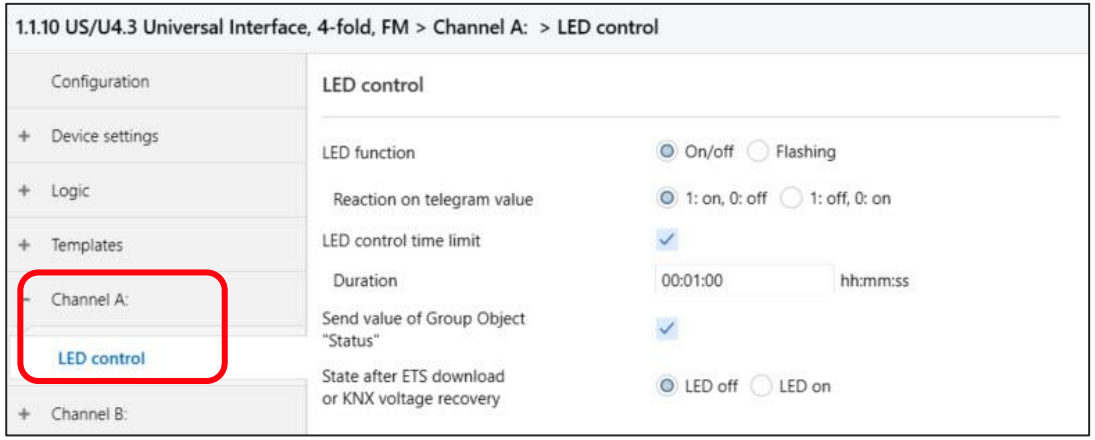
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Parameter “Channel x – LED control” → only Universal Interfaces

Parameterize an output to control an LED

- LED function (on/off or flashing)
- Reaction on telegram value 0/1
- Flashing (time for on and off)
- LED activation time limit
- Send value of Group Object “Status”
- State after ETS download or KNX voltage recovery



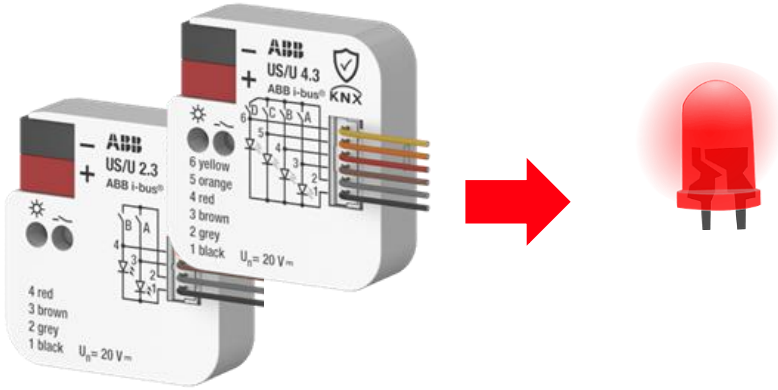


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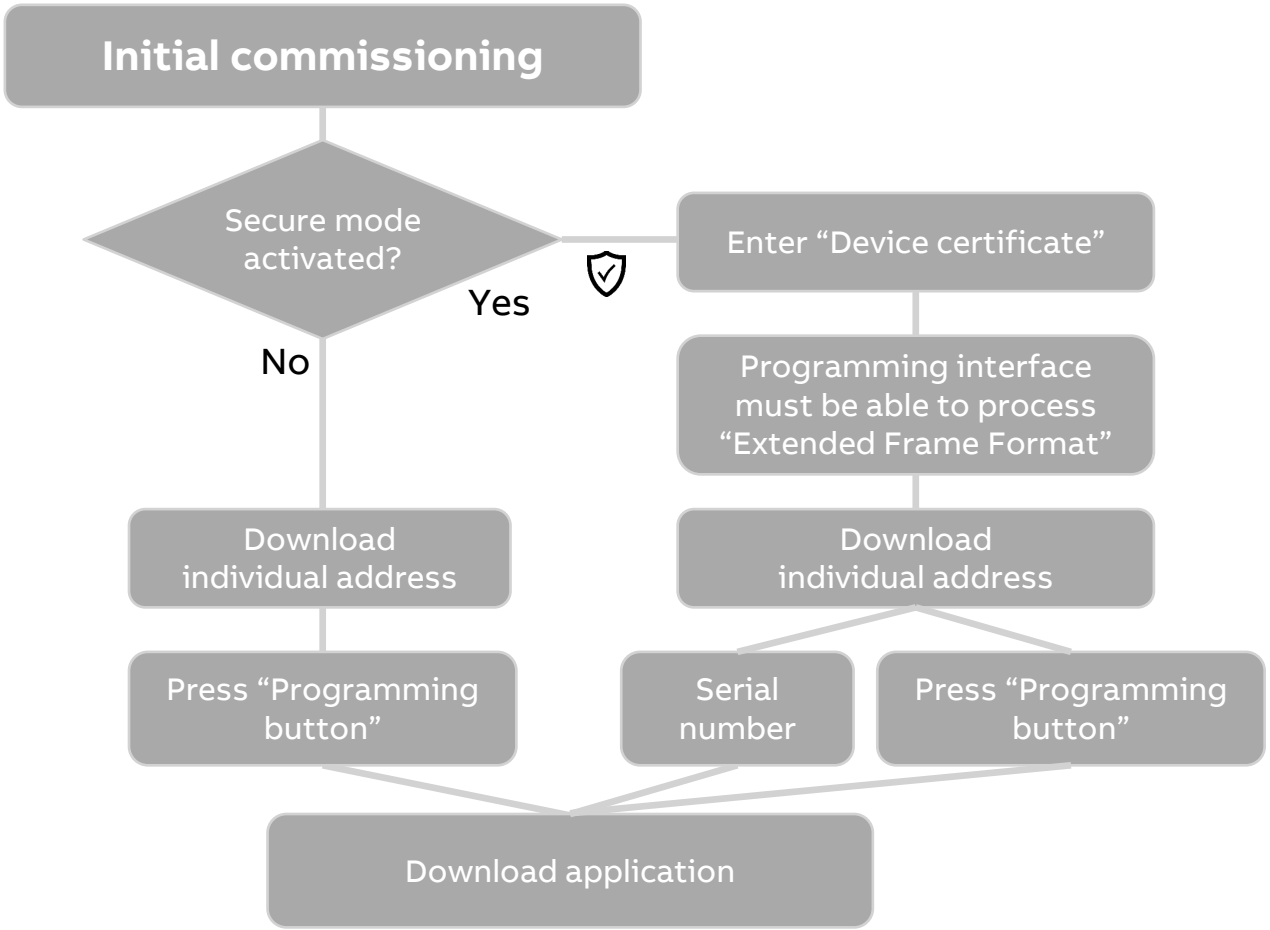
ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Software Features and ETS Application

Commissioning

- Scope of delivery
  - Installation and operating instructions
  - KNX bus connection terminal (red/black)
  - Cover cap (only BE/S)
- Delivery state
  - Individual address 15.15.255
  - Current ETS application is preloaded
  - Manual operation is enabled
- Download
  - Secure mode activated
    The programming interface (USB or IP) must be able to process “Extended Frame Format” (long frames)
  - Individual address
    - Press “Programming button” or
    - Serial number



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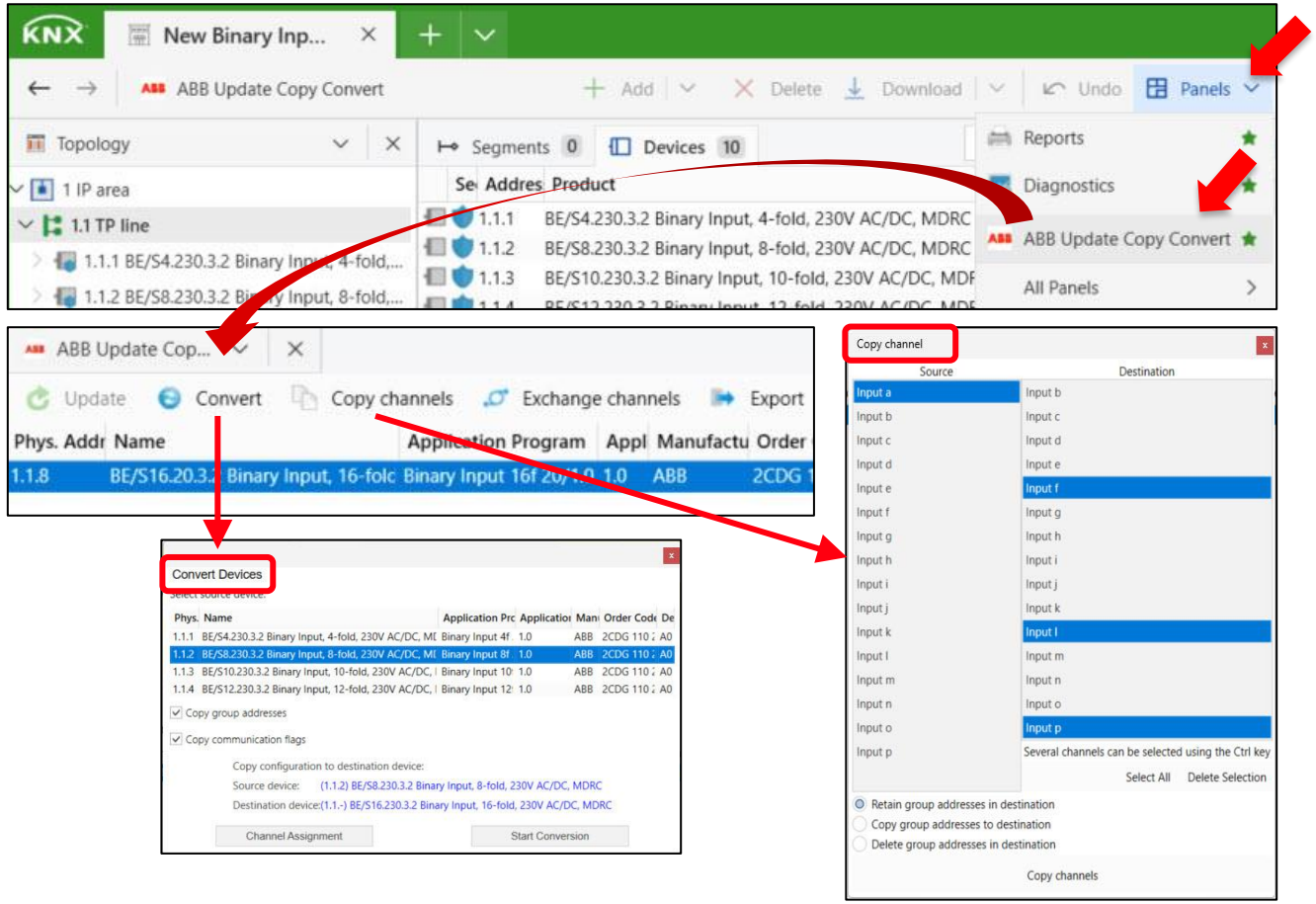
Software Features and ETS Application

ABB ETS App: “Update Copy Convert”

ETS App (free of charge) with a series of useful functions

- Update
  Changes the application program to a later or earlier version while retaining current configurations
- Convert
  Transfers/adopts a configuration from an identical or compatible source device, e.g. 4-fold to 10-fold
- Copy Channels
  Copies a channel configuration to other channels on a multichannel device, e.g “a” to “f”, “l” and “p”
- Exchange Channels
  Exchanges configurations between two channels on a multichannel device
- Import/Export
  Saves and reads device configurations as external XML files



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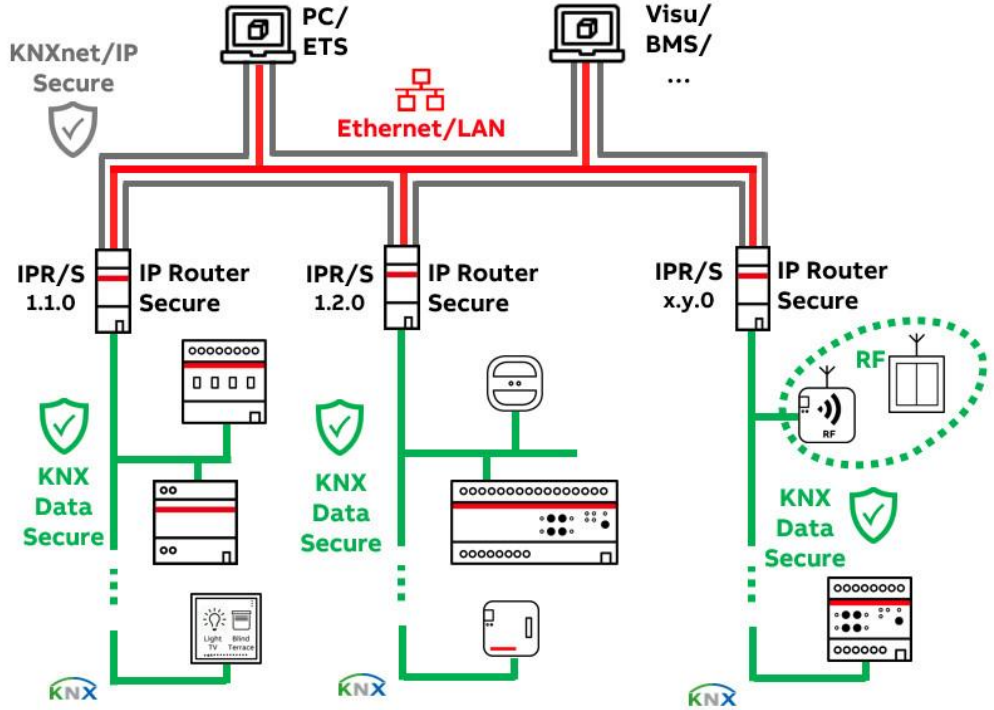
KNX Data Secure

ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

KNX Data Secure

Overview

- KNX Data Secure ensures the encryption of telegrams on twisted pair (TP)
- Each individual group telegram can be encrypted
- Communication between sensors and actuators is secure
- KNX Data Secure is mandatory for KNX RF and recommended for KNX TP
- In a KNX TP/RF system, secure and plain devices can be used in parallel
  → Not all devices have to be secure
- KNX Secure is an upwardly compatible extension and can be seamlessly integrated into existing systems
  → existing devices ignore KNX Secure telegrams
- Secure commission (download of individual address and application)
- Secure devices are protected against unauthorized programming
- A secure device is delivered with a “Device Certificate”: Combination of a unique Factory Device Setup Key FDSK and serial number
  → The installer enters this Device Certificate into the ETS



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KNX Data Secure

Further information

- https://knxsecure.knx.org
  - KNX Secure Position Paper
  - KNX Secure Solutions
  - KNX Secure Checklist
- YouTube https://www.youtube.com/@KNXAssociation

- ABB Training & Qualification Database: https://go.abb/ba-training
  The database contains extensive training content
  Webinar, Learning Sessions, … slides and videos
  - KNX Secure and ABB IP Interface Secure IPS/S 3.5.1 →Link PDF →Link Video
  - KNX Secure and ABB IP Router Secure IPR/S 3.5.1 →Link PDF →Link Video
  - KNX Data Secure → Link PDF → Link Video
  - KNX Data Secure in practice → Link PDF → Link Video
  - Training Presentation “KNX Data Secure” →Link PDF

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KNX Data Secure

Device type	Max. number of group addresses	Max. number of secure group addresses	Max. number of secure partners
BE/S 4.20.3.2	2000	2000	400
BE/S 10.20.3.2	2000	2000	400
BE/S 16.20.3.2	2000	2000	400
BE/S 4.230.3.2	2000	2000	400
BE/S 8.230.3.2	2000	2000	400
BE/S 10.230.3.2	2000	2000	400
BE/S 12.230.3.2	2000	2000	400
BE/S 16.230.3.2	2000	2000	400
US/U 2.3	2000	2000	400
US/U 4.3	2000	2000	400

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Summary

- Comprehensive portfolio – the choice of uniformly designed devices makes it easier to meet all requirements
- More functionality – the extended range of functions is displayed in a simplified form despite the comprehensive functions in the ETS
- More security – with KNX Data Secure, the Binary Inputs and Universal Interfaces enable secure communication on the KNX bus
- Faster commissioning – templates and the same application for all variants significantly reduce the commissioning time
- Cost savings – thanks to faster commissioning and devices with 16 inputs
- Consistency – a consistent ETS application across several portfolios (Binary Inputs, Universal Interfaces, Trevion keypads)
- New hardware platform and digital ready components
  → allows in future feature extensions
- Designed and produced in Germany
  → highest quality standard

	Device	Inputs	Signal	Paired Inputs	M W
	BE/S 4.230.3.2 BE/S 4.20.3.2	4	12 ... 230 V AC/DC Contact Scanning	All inputs All inputs	2
	BE/S 8.230.3.2	8	12 ... 230 V AC/DC	No	4
	BE/S 10.230.3.2 BE/S 10.20.3.2	10	12 ... 230 V AC/DC Contact Scanning	Yes All inputs	4
	BE/S 12.230.3.2	12	12 ... 230 V AC/DC	No	6
	BE/S 16.230.3.2 BE/S 16.20.3.2	16	12 ... 230 V AC/DC Contact Scanning	Yes All inputs	6
	US/U 2.3	2	Contact Scanning	All inputs	-
	US/U 4.3	4	Contact Scanning	All inputs	-

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ABB i-bus® KNX – New Binary Inputs and Universal Interfaces

Product webpage

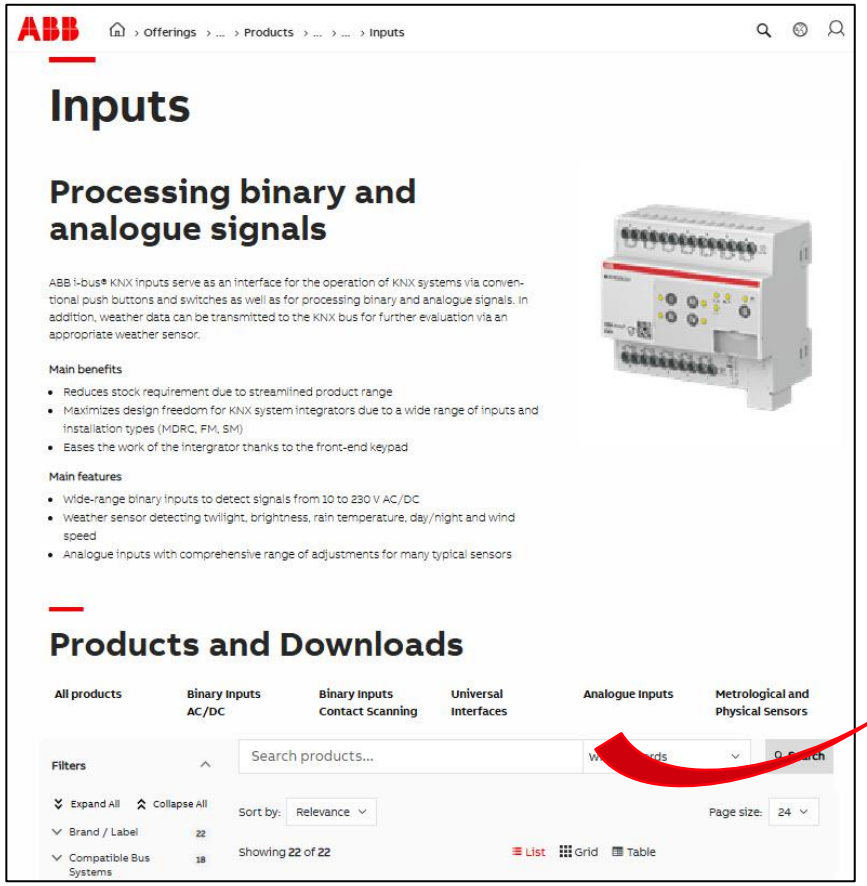
www.abb.com/KNX

→ Product portfolio

→ Inputs

→ Products and Downloads

- ETS Application
- Product Manual
- Installation and Operating Instructions
- Specification Text
- • •



USU_x3_VD-TP_XX_V1-0_9AKK108464A0965.knxprod

BES_xy32_VD-TP_XX_V1-0_9AKK108464A0964.knxprod

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2D code

- The packaging and the front of the device are labeled with a 2D code
- These codes are used for unique identification of the device and include the following information:
  - Link to the product page
  - Order code
  - Device serial number
- The 2D codes can be read using any mobile device with an appropriate 2D code reader
- By scanning the 2D codes with the ABB Product Scanner (available as Android and iOS App), you can open additional digital services

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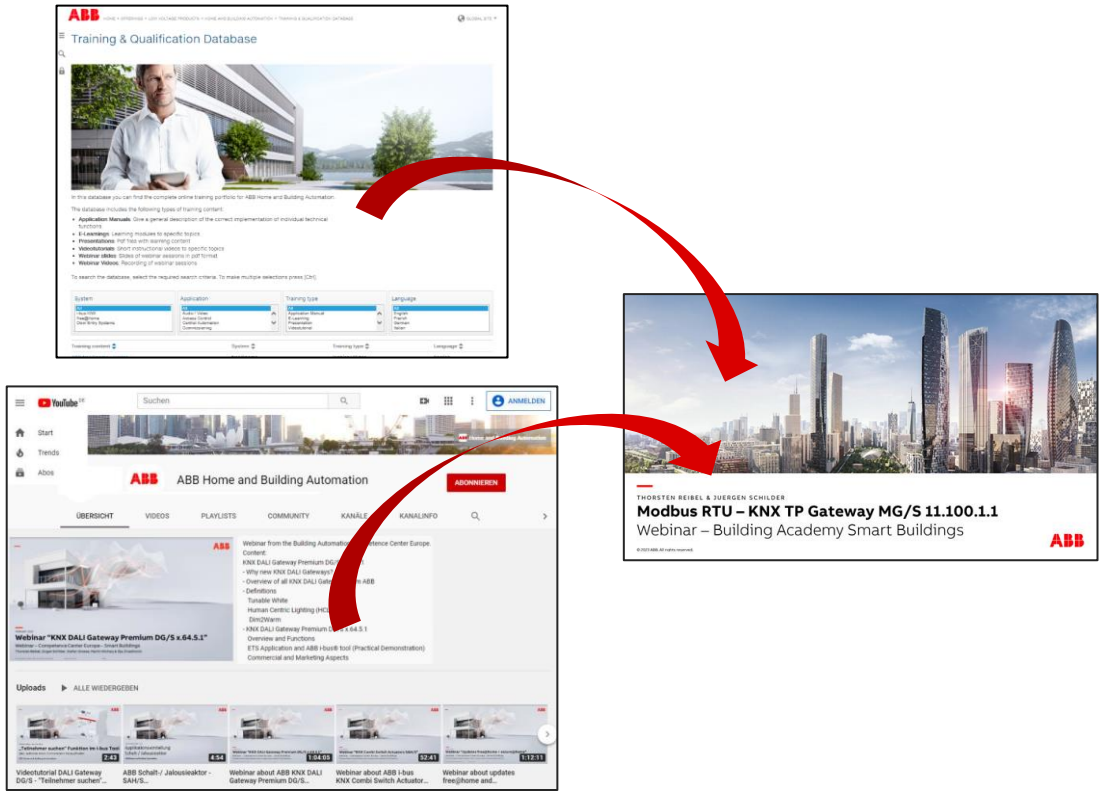
Training Material

Training & Qualification Database

- The database contains extensive training content
  - Presentations
  - Video tutorials
  - Webinar slides and videos
  - and more …
- https://go.abb/ba-training
- www.abb.com/knx (→ Services & Tools → Training and Qualification → Training Database)

YouTube

- Channel “ABB Home and Building Automation”
- https://www.youtube.com/user/ABBibusKNX



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