

# ABB i-bus KNX in Hotel Guest Rooms Functional Specification – Premium



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# 1. General Requirements

- The Intelligent Building Control System shall be designed and developed in accordance with the multi-vendor KNX standard and also in conformity to the following standards:
  - European Standard (CENELEC EN 50090 and CEN EN 13321-1)
  - International Standard (ISO/IEC 14543-3)
  - Chinese Standard (GB/T 20965)
  - US Standard (ANSI/ASHRAE 135)
- Systems which are single vendor based and run on proprietary protocols shall not be accepted. The system shall ensure that devices from different manufacturers are interoperable and compatible thus providing a future proof and flexible installation.
- The system should cover the requirements for hotel guest room management control.
- The system shall be completely decentralized and programmable. Each device will have its own intelligence. The parameters are configured using PC or notebook computer located anywhere in the system topology. Systems using centralized controllers or processors will not be accepted. In case of power failure all the configuration and status information have to be stored and retained in a non-volatile storage. This data shall be pushed back to the device once electrical current is back. System with additional built-in or external battery that needs to be changed periodically for information storage shall not be accepted.
- The communication cable that links all the devices shall have data and power residing on the same medium. It shall also be possible to lay the cable along the power mains. Systems requiring different communication cables for signal transmission and control power between the devices are not acceptable.
- The bus connection terminal of all the devices should have 4 bus connection possibilities for looping or branching of bus cable. The bus cable shall be laid in the building in all possible configurations, i.e. linear, star or tree architecture similar to the power mains. Systems requiring fixed wiring configurations shall not be acceptable. It is thereby possible to disconnect the devices without interrupting the bus line. Systems requiring special tools for crimping, lagging or special installation connectors, e.g. RJ45 bus connections, shall not be acceptable.
- Online programming of any device of the system should be possible without affecting the other devices on the system as well as offline programming prior to dispatching of the material to site. In the event of failure of a device in one line, only the control functions controlled by that device shall be affected and all other devices shall continue to operate normally.
- Each device shall operate via the 21...30 V DC made available on the KNX bus line. The power supply unit should deliver a 640 mA/320 mA/160 mA version depending upon the bus network density.
- The system shall communicate through CSMA/CA with parity checks in order to avoid collision in the bus thereby increasing the system flexibility and bandwidth allocation. Systems which work on polling or master-slave configurations shall not be accepted.

### **1.1. System Description**

- The Guest Room Management System (GRMS) shall be programmed to provide lighting, shading, air-conditioning and courtesy controls for the individual guest room with the possibility of future upgrades.
- The system shall include, but shall not be limited to, the following for each guest room:
  - Room control devices and system components
  - Guest room enclosure
  - Outside courtesy indicator panel
  - Energy saver card holder
  - Room thermostat
  - Window contact
  - Momentary push switches
  - Room call system in rooms for disabled guests (optional)
  - Centralized monitoring/control and interfaces

### **1.2. System Components and Room Master Controller Devices**

- Dedicated integrated controllers shall be provided in individual rooms for controlling lighting (switching and dimming), HVAC, shading, as described in chapter 3. The controllers shall have decentralized intelligence and shall be independent of any centralized controllers/software. For each application, such as HVAC/lighting/shading control, dedicated controllers or channels needs to be used. Systems and/or room controllers relying on non-specialized universal relays and 0...10 V outputs for common control of the latter applications will not be accepted.

### **1.3. Guest Room Enclosure**

- There shall be a dedicated guest room enclosure for the guest rooms, which shall be located next to the DB, as per the site installation requirements. The enclosures shall feature built-in DIN rails for easy installation and access for maintenance. Each guest room shall have one enclosure to house the guest room controller devices for that particular room depending on the number of control points.

### **1.4. KNX Control Elements (Switches) and Further Wiring Accessories**

- KNX control elements shall be used to control various loads in the hotel guest room. The control elements as well as additional wiring accessories, such as sockets, data outlets and conventional push switches, shall be from the same supplier as the Guest Room Management system to ensure uniformity in the finishes inside the room. The control elements shall be appropriately designed and located wherever necessary. All control elements shall be connected to the KNX bus system. Outlets, switches and faceplates shall be in accordance with interior designer's selected finishes.

## 2. Requirements of Guest Room – Premium Configuration (Suite)

### 2.1. Corridor and Entrance

#### 2.1.1. Corridor

- Outside courtesy indicator panel: The outside courtesy indicator panel should have Do not Disturb (DnD) & Make up Room (MuR) indicator with bell push switch. The DnD & MuR indicator shall be activated from the DnD/MuR switch in the hotel room.
- Access reader based on RFID technology
- Wall-mounted LED light indicating the room number

#### 2.1.2. Entrance

- Energy saver card holder in each room located near the guest room entrance for energy efficiency. Insertion of access card into the unit shall activate a “Welcome mode” as detailed in 2.4. The guest shall then have the option of overriding the lighting circuits manually via the push switches. When removing the key card from the holder an “Exit mode” has to be called. The device shall be installed in standard boxes. Devices requiring non-standard back boxes shall not be accepted.
- Ceiling-mounted presence detector controlling the vestibule light
- 2-fold switch to control Do not Disturb (DnD) & Make up Room (MuR) status. The switch shall be interfaced to the KNX bus system via binary inputs of room controller.
- Door contact: Magnetic reed contacts shall be provided for each guest room and interfaced to the KNX bus via binary inputs of a universal interface mounted in back boxes. If the guest room door is opened longer than 5 minutes, for example, an alarm shall be sent to the central Building Management System (BMS).

## 2.2. Sleeping, Living and Study

### 2.2.1. Sleeping

- Bedside right:
  - 4-fold KNX control element to control right bedside reading light, main room lighting and sleeping area shading. Furthermore, one rocker shall be used as (sub-)master switch controlling the lighting of the entire suite.
  - KNX movement detector located at the right bedside to switch the LED night light at night. The LED night light shall be installed at the right bedside, for example.
  - 230 V power outlet, e.g. for loading mobile devices, shall not be switched off when the guest leaves the room. The socket shall be equipped with an integrated USB interface in the socket frame.
- Bedside left:
  - 4-fold KNX control element to control left bedside reading light, main room lighting and sleeping area shading. Furthermore, one rocker shall be used as (sub-)master switch controlling the lighting of the entire suite.
  - KNX movement detector located at the left bedside to switch the LED night light at night. The LED night light shall be installed at the left bedside, for example.
  - 230 V power outlet, e.g. for loading mobile devices, shall not be switched off when the guest leaves the room. The socket shall be equipped with an integrated USB interface in the socket frame.
- Rotary control element with display as defined in chapter 3 for allowing a comprehensive room control. It is recommended to configure several room scenarios to allow a comfortable operation of all loads for the guest. Additional 3-fold KNX control element which shall be mounted in the same frame as the rotary control element with display. Furthermore, it shall be selected in the same design to ensure uniformity of the finishes. The 3-fold KNX control element shall be used to control the sleeping area and bathroom individually. Additionally, the control of the blind/curtain in the sleeping/bathroom area is possible. Alternatively, the rockers of the control elements can be partly used to call predefined room scenarios.
- Window contact (optional): Magnetic reed contact shall be provided for each suite and interfaced to the guest room control devices. In the event balcony/window contact is open, the FCU shall be forced to switch to the standby mode of operation.
- Further sockets and media connection terminals:
  - 2 x 230 V socket outlet for TV
  - 230 V socket outlet for general purpose

### 2.2.2. Living and Study

- Room temperature control unit
- Touch screen device providing a comprehensive guest room control. Therefore, it shall have a capacitive and colored touch screen TFT display allowing the control of lighting, blinds/curtains, HVAC, and further facilities. Furthermore, the device shall be able to control multimedia equipment and shall provide a connection to the internet in order to access RSS feeds etc.
- Sockets and media connection terminals:
  - 2 x 230 V socket outlets above desk
  - 3 x 230 V socket outlets for general purpose
  - 2 x 230 V socket outlet for TV, switchable via room scenarios
  - 230 V socket outlet for minibar
  - Data outlet (cat. 6 data outlet)
  - USB charging outlet for loading mobile devices with 2 USB interfaces
- Window contact (optional): Magnetic reed contact shall be provided for each guest room and interfaced to KNX via universal interface mounted in back boxes. If balcony door/window is openend (if applicable), the Fan Coil Unit shall be forced to switch to standby operation mode.
- Room call system for disabled guests (optional): For handicapped rooms, emergency call system shall be provided and integrated to the room controller. The connection to the bus system is established via the room controller. Emergency push-buttons shall be provided in the toilets and next to the bedside. In case of an emergency call, alarms shall be reported to the central Building Management System (BMS).

### 2.3. Bathroom

- Switches:
  - 2-fold KNX control element (shower area) to switch the ceiling light and the make-up mirror light/mirror light
  - 2-fold KNX control element (WC area) to switch the ceiling light and the make-up mirror light/mirror light
- Sockets:
  - 230 V socket outlet above washstand
  - 230 V/110V socket outlet for power/shaver
  - 230 V socket outlet for hair dryer
  - 230 V socket outlet for general purpose
- Presence detectors in shower and WC area controlling the ceiling light automatically
- Blower: The blower is switched on in combination with the ceiling lighting in the bathroom. After switching of the ceiling light the blower will be switched off with a delay of 5 minutes, for example.
- Under floor heating and/or heated towel bar depending on local climatic conditions. The heating is controlled by the RTC unit; there must be no further guest interaction. The heating is connected to electricity or to the central water heating system. If the bathroom heating system is connected to the central water heating system a KNX electromotor valve drive can be used for opening and closing the valve, dependent on the required room temperature.
- Audio speaker connected to a digital radio, which can be operated and controlled in the bathroom

## 2.4. Room Scenarios and Others

- Welcome mode:
  - The insertion of the guest key card in the appropriate holder activates a predefined “Welcome mode”. The guest shall then have the option to override the lighting circuits manually via the push switches. The welcome mode may include (depending on the needs of the operator):
    - Certain lights shall be switched on and non-essential power sockets energized.
    - RTC unit shall switch to comfort mode (fast cool/fast heat mode) and a specific set point temperature (e.g. 22 °C).
- Exit mode:
  - When the guest leaves the room, the room is set in an energy saving state. This is triggered by removing the key card from the appropriate key card holder or by the occupancy sensor in combination with the door contact. The exit mode may include (depending on the needs of the operator):
    - All lights shall be switched off and non-essential power sockets de-energized.
    - Room thermostat shall switch to standby mode (hotel preset), e.g. 26 °C in cooling mode or 18 °C in heating mode.
- Night lighting:
  - Night lighting allows the guest access the WC during the night without turning on any other lighting which may disturb further persons in the room.
  - Lights are mounted under or beside the bed and in the bathroom, as defined by interior designer.
  - Night lights beside the bed are switched on separately from another, meaning that the left bedside movement detector controls the left night light and the right bedside movement detector controls the right night light.

### 2.4.1. Access Control System

- The access control system for the guest room shall be part of security and not an integral part of the guest room management system.

### 2.4.2. Switchable Socket Outlets

- All sockets shall be switchable. For technical reasons or for guest comfort, some socket outlets are permanently on and do not have to be switchable (as per individual requirements):
  - Minibar
  - Desk sockets
  - Bedside table sockets
  - Cleaning socket



## 3. Control Devices

### 3.1. Power Supply with Enhanced Diagnostics (320 mA/640 mA)

- Produces and monitors the KNX system voltage
- With diagnostic function via KNX or ABB i-bus® Tool
- The voltage output is short-circuit- and overload-proof. The LEDs indicate the bus current consumption and the status of the line or device.
- Diagnostic functions via KNX: Bus voltage  $U_N$ , bus current  $I$ , bus current  $I > \text{rated current } I_N$ , overload  $I > I_{\text{max}}$ , trigger bus reset
- Supply voltage:  $U_s$  85...265 V AC, 50/60 Hz
- KNX voltage output: 1 line with integrated choke
  - Rated voltage:  $U_N$  30 V DC  $\pm 1/-2$  V, SELV
- Power consumption:
  - $< 30$  W (320 mA)
  - $< 55$  W (640 mA)
- Nominal power loss:
  - $< 2.5$  W (320 mA)
  - $< 4$  W (640 mA)
- Output voltage: 30 V DC  $\pm 1/-2$  V, SELV
- Nominal current: 320 mA/640 mA, short-circuit-proof
- Sustained short-circuit current:
  - $< 0.8$  A (320 mA)
  - $< 1.4$  A (640 mA)
- Mains failure back-up time: 200 ms
- Rated current:  $I_N$  320 mA or 640 mA
- Connection:
  - Bus connection: Bus connection terminal
  - Supply connection: Screw terminals
- Type of protection: IP 20, IEC/EN 60 529
- Mounting: 35 mm mounting rail, IEC/EN 60 715
- Width: 4 modules at 18 mm
- Manufacturer: ABB
- Product type (dependent on current): SV/S 30.320.2.1, SV/S 30.640.5.1

### 3.2. Switch Actuator 16 A

- Uses potential-free contacts to independently switch 2, 4, 8 or 12 electrical loads via KNX
- Manual operation and display of the switching status. No separate voltage supply necessary. The Switch Actuators are suitable for switching from resistive, inductive and capacitive loads.
- With only one application program the following functions for each output can be set separately:
  - Current recognition, current value sending and reaction to current threshold values
  - Time functions, on/off delay
  - Staircase lighting function with preliminary warning and changeable staircase lighting time
  - Recall scenes/presets over 8-bit/1-bit commands
  - Logic functions AND, OR, XOR
  - Status response
  - Forced control and safety function
  - Reaction to threshold values
  - Control of electrothermal valve drives (continuous controller)
  - Selection of default position on bus voltage failure and recovery
  - Inversion of outputs
  - Parameterization of single outputs can be exchanged or copied
- Outputs: 2-12 potential-free floating contacts
- Rated current: 16 A
- Switching capacity:
  - According to IEC/EN 60 947-4-1:  
16 A/AC1 (on 230 / 400 V AC)
  - According to IEC/EN 60 669:  
16 A, max. capacitive load 70  $\mu$ F
- Operation: Actuating levers for displaying the switch position and manual operation
- Connection:
  - Load side: Screw terminals with combination head screws for lines, 0.2...6.0 mm<sup>2</sup> unifilar
  - KNX: Screwless bus connector
- Type of protection: IP 20, IEC/EN 60 529
- Mounting: 35 mm mounting rail, IEC/EN 60 715
- Width: 1 module at 18 mm per output channel
- Manufacturer: ABB
- Product type (dependent on number of channels): SA/S 2.16.2.1, SA/S 4.16.2.1, SA/S 8.16.2.1, SA/S 12.16.2.1

### 3.3. Universal Dim Actuator

- KNX multichannel universal dimming actuator for controlling incandescent lamps, 230 V incandescent halogen lamps, low-voltage halogen lamps with conventional or electronic transformers, and dimmable energy-saving halogen lamps
- For dimmable retrofit LED lamps (LEDi)
- Parallel switching of channels for increasing the loads through wire bridges possible
- The outputs can be switched parallel in any combination
- Outputs automatically recognize the connected load
- In addition, the operating mode can be selected manually, with local operation.
- Status indication via LED
- The following applications are provided for the outputs:
  - Switching
  - Dimming
  - Value
  - Error message
  - Enable object
  - Light scene actuator
  - Sequence actuator
  - Staircase lighting
  - Delay
  - Preset
  - Cyclical telegram
  - Flashing
  - Logics (AND, OR, XOR, XNOR, NAND, NOR)
  - GATE
  - Min/max value transducers
  - Set value/hysteresis
  - PWM inverter
  - Priority
- Power supply: 230 V AC  $\pm$  10 %, 50/60 Hz
- Connection:
  - Outputs: Screw terminals, 0.2...6.0 mm<sup>2</sup>
  - Multiple-wire: 0.5...2.5 mm<sup>2</sup>
  - KNX: Bus connection terminal control element: Manual operation of ON brighter/Off darker and channel selection

- Display elements: Outputs status indication via LED
- Outputs: 4 or 6
- Rated power: Max. 210 W/VA, 315 W/VA, 600 W/VA per channel (dependent on used dim actuator type)
- Operating temperature range: -5° C to + 45° C
- Protection: Electronic short-circuit and overload protection
- Mounting: 35 mm mounting rail, IEC/EN 60715
- Width: 8 or 12 modules at 18 mm (dependent on rated power)
- Manufacturer: ABB
- Product type (dependent on number of channels and rated power):  
6197/12-101-500, 6197/13-101-500, 6197/14-101-500, 6197/15-101-500

### 3.4. Blind/Curtain/Shutter Control Actuator with Manual Operation

- To control up to 2/4/8 independent blind and roller shutter drives or ventilation flaps (230 V AC)
  - Manual operation and displaying LEDs for each channel
  - Mutually mechanically interlocked outputs
  - Power supply only via KNX bus voltage
- Software functionality:
  - Copy and change channels
  - Time-delayed switching of drives
  - Sending and switching delay after bus voltage recovery
  - Request status values via object
  - Limited number of telegrams
  - Preferred position on bus voltage failure, recovery, programming and reset
  - Disable/enable manual operation, deactivation by time
  - Safety function (3 x wind alarm, rain alarm, frost alarm with cyclical monitoring, block and forced operation) and reaction on reset of safety function
  - Direct commands available for UP/DOWN, STOP/Slat Adjustment
  - Move to position height/slat 0...255
  - Move to/set preset position 1...4 and 8-bit scene
  - Dead times of blind/shutter adjustable
  - Tensioning function available (for awning and flap adjustment)
  - Limited travel range (adjustable for direct and/or automatic commands)
  - Change on direction and delay times for drives adjustable
  - Automatic sun protection (position height/slat at sun) and sun tracking
  - Heating/cooling automatic with overheat control
  - Status messages: Height/slat 0...255, upper/lower end position, operability, automatic, status information (2-byte, including motor error), controlling ventilation flaps, switch mode with staircase lighting function
- Outputs: 2/4/8 (2 relay outputs UP/DOWN for each channel)
- Power consumption: < 250 mW
- Operating voltage: 21...30 V DC
- U<sub>N</sub> rated voltage: Max. 230 V AC, 45...65 Hz
- I<sub>N</sub> rated current: Max. 6 A
- Operating and displaying elements: 2 LEDs and push-buttons for each channel
- Connection:
  - Outputs: Screw terminals (combination heads)
  - KNX: Screwless bus connection terminal
- Type of protection: IP 20, IEC/EN 60 529
- Mounting: 35 mm mounting rail, IEC/EN 60 715
- Width: 4 or 8 modules at 18 mm
- Manufacturer: ABB
- Product type (dependent on number of channels): JRA/S 2.230.2.1, JRA/S 4.230.2.1, JRA/S 8.230.2.1

### 3.5. Fan Coil Actuator PWM

- Fan Coil Actuator for the usage with KNX bus. It controls via toggle switch and switch control up to three fan speeds. The fan speeds are locked against each other. With electronic outputs, the actuator controls 2 electromotor or 4 electrothermal valves for cooling and heating circuit loops. A further potential-free output is available, e.g. for an additional electrical heater. Furthermore, 3 inputs are available, for contactable temperature sensors or potential-free contacts.
- Manual operation:
  - All contacts, inputs and outputs can be operated manually.
- Commissioning without KNX:
  - Manual operation is optionally possible by connecting an auxiliary voltage to the bus connection terminal (separate KNX device).
- Fan speeds: 3, locked against each other
  - Nominal current: 6 A
- Valve outputs: 4
  - Electronic: 0.5 A
- Additional contact: 1
  - Nominal current: 20 AX (16 A C-Load, AC3)
- Inputs: 3
- Connection:
  - Screw terminal with combination head screws
  - Torque: Max. 0.6 Nm
  - KNX: Bus connection terminal
- Type of protection: IP 20, IEC/EN 60 529
- Mounting: 35 mm mounting rail, IEC/EN 60 715
- Width: 6 modules at 18 mm
- Manufacturer: ABB
- Product type: FCA/S 1.1.1.2 (without manual operation), FCA/S 1.1.2.2 (with manual operation)

### 3.6. Fan Coil Actuator 0-10V

- Fan Coil Actuator for the usage with KNX bus. It controls via toggle switch and switch control up to three fan speeds. The fan speeds are locked against each other. With analog outputs, the actuator controls 2 motor-driven valves for cooling and heating circuits loops. A further potential-free output is available, e.g. for an additional electrical heater. Furthermore, 3 inputs are available, for contactable temperature sensors or potential-free contacts.
- Manual operation:
  - All contacts, inputs and outputs can be operated manually.
- Commissioning without KNX:
  - Manual operation is optionally possible by connecting an auxiliary voltage to the bus connection terminal (separate KNX device)
- Fan speeds: 3, locked against each other
  - Nominal current: 6 A
- Valve outputs: 2
  - Analog: 0...10 V
- Additional contact: 1
  - Nominal current: 20 AX (16 A C-Load, AC3)
- Input: 3
- Connection:
  - Screw terminal with combination head screws
  - Torque: Max. 0.6 Nm
  - KNX: Bus connection terminal
- Type of protection: IP 20, IEC/EN 60 529
- Mounting: 35 mm mounting rail, IEC/EN 60 715
- Width: 6 modules at 18 mm
- Manufacturer: ABB
- Product type: FCA/S 1.2.1.2 (without manual operation), FCA/S 1.2.2.2 (with manual operation)

### 3.1. Room Thermostat Fan Coil with Display

- KNX fan coil room temperature controller with display
- Surface-mounted with integrated KNX bus coupler
- LCD and 5 operating buttons
- Used for single-room temperature control in heating and air-conditioning technology
- The controller is a constant ambient temperature controller for fan convectors (fan coils) in 2-pipe and 4-pipe systems and conventional heating or cooling systems.
- Adjusting range: 10...28 °C
- The ambient temperature controller works in both heating and cooling mode.
- The fan stage can also be selected manually via a button:
  - OFF/Stage
  - 1/Stage
  - 2/Stage
  - 3/Automatic
- Functions:
  - Comfort, standby, night, frost protection, and heat protection modes
  - Actuation of fan convectors (fan coil) in two-pipe and four-pipe systems
  - Actuation of two-point, PWN, or constantly regulated heating and cooling systems
- Control and display elements:
  - One LCD for displaying temperatures, operating modes, fan stages, and fault messages
  - One push-button for manually turning the device on and off
  - One push-button for the selection of the fan stage:
    - OFF/Stage
    - 1/Stage
    - 2/Stage
    - 3/Automatic
  - One push-button for increasing the set temperature
  - One push-button for reducing the set temperature
  - One push-button for switching the temperature unit between Celsius and Fahrenheit
- Connections:
  - KNX line: DP screw/clamp terminals
- Inputs:
  - Measuring range: Temperature: 0 °C to 50 °C
- Type of protection: IP 20, IEC/EN 60 529
- Temperature range: -5 °C to 45 °C
- Mounting: Surface-mounting directly onto the wall and all common flush-mounted socket outlets
- Dimensions (H x W x D): 81 mm x 81 mm x 20 mm
- Manufacturer: ABB
- Product type: 6138/11



### 3.2. Universal Interface

- The device has 2/4/12 channels that can be parameterized as inputs or outputs. It is possible to connect conventional push-buttons, floating contacts or LEDs. The scanning voltage for the contacts and the supply voltage for the LEDs are provided by the device. Series resistors for external LEDs are integrated into the device. The Universal Interface is a flush-mounted device and a low cost solution designed in such a way to fit inside conventional electrical back boxes.
- The following functions can be set for each channel separately:
  - Switching and dimming of lighting
  - Operation of blinds and roller shutters
  - Sending of arbitrary values, e.g. temperature values
  - Control and storing of light scenes
  - Triggering an electronic relay for control of electrothermal valve drive for heating valves
  - Control/flashing of an LED for feedback of an operation
  - Operation of different loads by multiple push-button actions
  - Operation of several loads in a fixed switching sequence
  - Reading out of technical contacts (e.g. relays)
- Input:
  - Scanning voltage: 20 V pulses
  - Input current: 0.5 mA
- Output:
  - Output voltage: 3.3 V DC
  - Output current: Max. 2 mA, limited by series resistor
- Connection:
  - Inputs/Outputs:
    - 4 cables approx. 30 cm long (for 2-fold)
    - 6 cables approx. 30 cm long (for 4-fold)
    - 18 cables approx. 30 cm long (for 12-fold)
    - Each cable can be extended to a maximum of 10 m
  - Bus connection:
    - Bus connection terminal
- Type of protection: IP 20, IEC/EN 60 529
- Mounting: Flush-mounted, combined wall and joint box, 60 mm
- Manufacturer: ABB
- Product type (dependent on number of channels): US/U 2.2, US/U 4.2, US/U 12.2

### 3.3. Standard Control Element with Bus Coupler

- The bus control element forms the basic sensory system of the bus network. It is supplied with the matching bus coupler. The control elements are available in a wide range of colors which suit the interiors of the room/building. Two color LED displays are provided for status illumination and the colors can be changed accordingly. The control elements are available in 1-fold, 2-fold, 4-fold in order to suit the control circuit requirements of the room. Each button/rocker can be programmed individually or as group to perform wide range of functions. The rockers can be labelled according to the functions programmed.
- The basic ranges of functions are:
  - Switching control
  - Dimming control
  - Blinds/shutter control
  - Value transmitter, 2 objects
  - Light scene extension unit
- Power supply: Bus voltage, 21...30 V DC
- Coupling unit to bus: Bus coupler
- Type of protection: IP 20, IEC/EN 60 529
- Mounting: Flush-mounting
- Manufacturer: ABB
- Product type (dependent on number of rockers):  
6125/01 (1-/2-fold), or 6126/01 (2-/4-fold), or 6127/01 (4-/8-fold) & 6120/12-101-500 (bus coupler)

### 3.4. TFT Color Display with Rotary or 3-fold Control Element

- Color display with rotary control element:
  - Backlit color display with 320 x 240 pixels
  - For display and operation of up to 120 KNX functions and display of the KNX color concept
  - Device can be commissioned via micro SD card or via bus
  - Can be combined with power bus/mains adapter
  - Outputs: Switching, Dimming, Blinds, Value, Push-button, Light scene extension unit, Step switch, Short/long operation, RTC operating mode switchover, Push-button switching, Push-button dimming, Push-button blind, Push-button value sender, Push-button step-type switch, Push-button multiple functions (max. 5 channels), Push-button value sender, 2 objects
  - Connection:
    - Power supply: Integrated pressure contacts
  - Control element: Freely programmable control panels
  - Display elements: TFT Display
  - Type of protection: IP 20, IEC/EN 60 529
  - Temperature range: -5 °C to 45 °C
  - Dimensions (L x W x D): 142 mm x 106.6 mm x 11 mm
  - Manufacturer: ABB
  - Product type: 6344
- 3-fold control element:
  - Control element with three replaceable backlit marking symbols for 1-fold, 2-fold and 3-fold carrier for displaying the KNX color concept with integrated logic function
  - The following functions are provided for the application module:
    - Inputs: LED
    - Outputs: Switching, Dimming, Blinds, Value, Push-button, Light scene extension unit, Step switch, Short/long operation, RTC operating mode switchover, Push-button switching, Push-button dimming, Push-button blind, Push-button value sender, Push-button step-type switch, Push-button multiple functions (max. 5 channels), Push-button value sender, 2 objects
  - Connection:
    - Power supply: Integrated pressure contacts
  - Temperature range: -5 °C to 45 °C
  - Dimensions (L x W x D): 71 mm x 106.6 mm x 11 mm
  - Manufacturer: ABB
  - Product type: 6342

### 3.5. Touch Screen Device

- Programmable IP/KNX touch display for room comprehensive control, infotainment and entertainment centre
- With a closed capacitive glass surface and a design strip made of stainless steel (brushed)
- With integrated camera
- Easy control using intuitive navigation concept
- House control: Switching, dimming, blinds, RTC, scene/sequences, timed controls
- Entertainment: Multimedia, remote control RC5 and B&O
- Infotainment: IP telephony, RSS reader, intercom with picture, e-mail, voice and graphic memo, consumption data monitoring
- Door communication: Indoor station for the ABB Welcome system in combination with IP Gateway 83341.
- Safety: Video surveillance with IP cameras, alarm function, message function, presence simulation
- Representation from individual floor plans, room images and operation pages
- 23 cm (9") (or 31 cm/12.1") touch display with 800 x 480 pixels (or 1,280 x 800 pixels)
- Maintenance via remote control over IP
- Control with smartphones and tablets via the ComfortTouch App (Apple iOS /Google Android from Version 4)
- Connection:
  - Inputs: RJ 45 (LAN)
- Control element: Freely programmable touch surfaces
- Display elements: Capacitive touchdisplay 480 x 800 pixel
- Type of protection: IP 20, IEC/EN 60 529
- Temperature range: 0 °C to 45 °C
- Dimensions (L x W x D): 210 mm x 315 mm x 29 mm (or 270 mm x 400 mm x 29 mm)
- Position for installation: Horizontal
- Mounting depth: 60 mm
- Manufacturer: ABB
- Product type (dependent on display size): 8136/09, 8136/12

### 3.6. KNX Presence Detector

- Standard type, for KNX bus
- With integrated bus coupler
- Targeted for connection and disconnection of light bands depending on the room brightness
- Applicable as presence or movement detector
- Control also possible depending on movement
- Constant light switch with up to 2 independent channels
- Constant light switch with max. 2 outputs for brightness-dependent switching of two light bands in the room
- Detector operation with 2 power off stages
- Detector operation with integrated monitoring function
- Configurable as master or slave
- Configurable operating modes: Automatic, automatic activation or deactivation
- Activation text can be changed using an external communication object
- Switch-off delay can be changed using an external communication object
- Ceiling mounting in false ceilings with spring clamps or in solid ceilings in surface-mounting boxes 6131/29-xxx(-500)
- 4 PIR sensors, integrated brightness sensor
- The device can be updated through the bus
- The presence detector is not suited for alarm indications in VdS-compliant alarm systems.
- Detection range (for mounting height 2.5 m, 3 m and 4 m): circular
  - Seated persons Ø: Max. 5 m, max. 6.5 m and max. 9 m
  - Walking persons Ø: Max. 6.5 m, max. 8 m and max. 10.5 m
- Visible height 16 mm
- Manufacturer: ABB
- Product type : 6131/20

### 3.7. KNX Movement Detector Sensor, Standard 180°

- Movement detector with up to 4 channels
- Parallel operation of several watchdogs is possible with cyclical turn-on commands
- Deactivation of a 90° detection area per channel per ETS software
- Twilight sensor and light-on time adjustable per ETS
- Flat design
- Can also be used on the flush-mounted Powernet series/blind actuator
- The following functions are provided for the application module:
  - Outputs: Switching, Value, Light scene actuator, Sequence actuator, Staircase lighting, Delay, Preset, Cyclical telegram, Flashing, Logics (AND, OR, XOR, XNOR, NAND, NOR), GATE, Min/max value transducers, Set value/hysteresis, PWM inverter, Priority
- Connection:
  - Power supply: 10-pole multi-point connector
- Control element: Setting via ETS application
- Type of protection: IP 20, IEC/EN 60 529
- Temperature range: -5 °C to 45 °C
- Detection range: Frontal: 6 m; Lateral: 6 m
- Brightness limit value: 5...150 Lux
- Detection angle: 180 °
- Dimensions (L x W x D): 63 mm x 63 mm x 18 mm
- Position for installation: Vertical
- Mounting height: 1.1 m
- Manufacturer: ABB
- Product type: 6122/01 (movement detector KNX) & 6120/12-101-500 (bus coupler)

### **3.8. Ambient LED Night Light**

- Low brightness night light
- For wall and ceiling modules
- Color temperature: 3,000 K (warm white)
- Not dimmable
- System power consumption: 0.15 W
- Rated voltage: 230 V DC,  $\pm 10\%$
- Current consumption of LED: 40 mA (secondary)
- Secondary: SELV
- Manufacturer: ABB
- Product type (dependent on light direction): 2068/11 (1 direction), or 2068/14 (5 directions) & 2067/13 U (insert)

### **3.9. Card Switch**

- For switching electrical consumers
- SP, with normally open contact (operating current)
- Illuminable
- With N terminal
- Rated voltage: 250 V DC
- Rated current: 10 A
- Manufacturer: ABB
- Product type: 2025 U (insert) & 1792 (cover plate)

### **3.10. “DND/MUR” Switch**

- For flush-mounted switch 2g 1w, 2g push switch
- Marked: “DO NOT DISTURB” & “MAKE UP ROOM”
- Manufacturer: ABB
- Product type: 2000/5 USGL (insert) & 1785/11 (cover plate)

### **3.11. Busch-Digital Radio**

- Standalone RDS stereo FM radio with display for flush-mounted installation
- Reception frequency: 87.50...108.00 MHz
- With external input for iPod or iPhone docking station
- For mono/stereo operation
- 8 radio stations storable
- With time display
- With alarm function
- With automatic switch-off function (automatic sleep mode)
- With extension input to remote-controlled ON/OFF switches
- With integrated antenna
- With additional connection for external antenna
- Permitted speaker impedance: 4...8 Ohm
- Can be installed as 1-fold and in multiple combinations
- Rated voltage: - 230 V DC,  $\pm 10\%$
- Rated frequency: 50...60 Hz
- Type of protection: IP 20, IEC/EN 60 529
- Temperature range: 5 °C to 40 °C
- Manufacturer: ABB
- Product type: 8215 U-500 (insert) & 8252 (cover plate)

### **3.12. Loudspeaker Insert**

- For flush-mounted radio insert
- For flush-mounted Internet radio insert
- With broadband characteristics
- With flat plug connector
- Including speaker connection cable
- Rated output: 2 W (RMS)
- Frequency response: 200...20,000 Hz
- Impedance: 4 Ohm
- Manufacturer: ABB
- Product type: 8223 U-500 (insert) & 8253 (cover plate)



### **3.13. USB Charging Station Insert**

- For charging and supplying mobile terminal devices via USB cables
- With micro USB connecting cable
- Connecting cable joined captive to insert
- Usable cable length (including micro USB plug) approx. 22 cm
- With electronic short-circuit protection
- With electronic overload protection
- Manufacturer: ABB
- Product type: 6474 U-500 (insert) & 6478 (cover plate)

### **3.14. Data-Connection Box, RJ 45, Cat. 6a ISO**

- With down-leading outlet and LSA self-cutting clamps
- RJ-45 terminals for networks according to Cat 6A, Class EA (10 Gbits/s/500MHz)
- Equates to Cat. 6a, Class EA according to ISO/IEC 11801:2011-06
- Terminal marking A and B according to TIA/EIA-568-B.2
- Typ according to IEC/EN 60 603-7-51:2011-01
- Shielding according to DIN EN 55 022, Class B
- Up to 500 MHz on all pairs of wires
- Suitable for 10-Gigabit Ethernet
- Suitable for PoE+ according to IEEE 802.3at  $\geq 1,000$  contact durability
- Flex cable entries from all sides without buckles
- Earthing of housing via 6.3 mm blade terminal at the back possible
- Re-embedded proofed
- Suitable for Mix-and-Match operation
- Suitable for RJ 11, RJ 12 and RJ 45
- For data cables with a diameter of 6...10 mm
- For wires of AWG 24-22
- For trunk systems, flush-mounted wall boxes and underfloor systems
- Manufacturer: ABB
- Product type: 0218/11-101 (insert) & 1803 (cover plate)

### **3.15. SCHUKO® USB Socket Outlet**

- For connecting electrical consumers
- With screwless terminal
- 2-pole (2 P + E)
- For charging and supplying mobile terminal devices via USB cables
- With USB female connector type A
- With electronic short-circuit protection
- With electronic overload protection
- Simultaneous charging via USB connection and use of the SCHUKO® socket outlet
- Rated voltage: 250 V D
- Secondary: 5 V-,  $\pm 5\%$
- Rated frequency: 50 Hz
- Power dissipation: 0.1 W
- Manufacturer: ABB
- Product type: 20 EUCBUSB

### **3.16. Shaver Socket Outlet**

- Rated voltage: 240 V,  $\pm 10\%$
- Output voltage: 115 V,  $\pm 10\%$
- Secondary: 240 V,  $\pm 10\%$
- Rated frequency: 50...60 Hz
- Rated power: 20 VA
- Manufacturer: ABB
- Product type: 2332 UJBS (shaver socket) & 3031 (Flush-mounting wall box)

**Note:**

The information in this Document contains best practice solutions to prescribe KNX installations in a specific application segment, but is of an exemplary nature only. The information may not represent the exact functional requirements with regard to specific local electrical installation requirements. Please note the Document also does not include the specification of legally required primary electrical protection devices i.e., circuit breakers, earth fault devices, etc., as these are highly dependent on national installation regulations.

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Further information and local contacts:

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