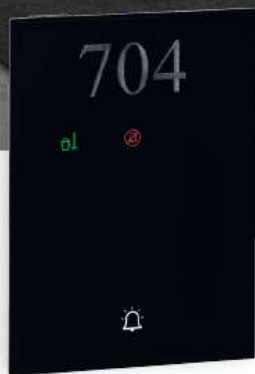


Technical specifications of Guest Room Management System **BACnet IP**



HOTEL GUEST ROOM MANAGEMENT SYSTEM

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GUEST ROOM MANAGEMENT SYSTEM

This document defines and specifies a Guest Room Management System (GRMS) for hotel using BACnet protocol for communication on IP network.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Provide a complete, integrated room automation system using wired technology for the hotel, with open standard BACnet protocol of communication on IP network.

1.2 REFERENCES

- A. All electrical and Room/Guest Management System installation shall be carried out in accordance with the best international standards and codes of practice specifically with the current issue of the IEC 60669-2-1 and the requirements of the local supply authority.
- B. The system shall have been installed and proven in other hotel installations with a sizable hotel site to demonstrate that the system is thoroughly reliable and efficient.

1.3 COMPATIBILITIES

- A. The system shall be a connected solution, compatible with hotel system architecture and interoperable with the other systems of the building (provided that those systems are also compatibles with hotel system architecture and interoperable with the other systems of the building).
- B. Some functionalities shall need an integration with approved BMS (Building Management System) – Legrand GRMS is compatible with Netxautomation BMS, Niagara BMS, Distech Controls BMS. For any other BMS, the compatibility shall be considered by the technical department of Legrand and the integrator.
- C. Some functionalities shall need an integration with approved supervisor. Legrand GRMS is compatible with the Appliance Vayandata on Niagara BMS, Netxautomation template and PCVue. For any other supervisor, the compatibility shall be considered by the technical department of Legrand and the integrator.
- D. Some functionalities shall need an integration with approved PMS operator (Property Management System – Software for booking and invoicing). This integration will be done via a BMS – Legrand GRMS is compatible with many PMS like Fidelio/Opera, MEWS, Protel, Infor... Ask the full list to your Legrand contact. For any other PMS, the compatibility shall be considered by the technical department of Legrand and the integrator.
- E. Some functionalities shall need an integration with approved access control operator. This integration will be done via dry contacts or via a BMS – Legrand GRMS is compatible with access control from Assa Abloy, TESA, SALTO, Dormakaba. For any other access control, the compatibility shall be considered by the technical department of Legrand and the integrator.
- F. Some functionalities shall need an integration with approved smartphone / tablet solution – Legrand GRMS is compatible with Netxautomation smartphone solution (mysmartsuite) and with tablets solution of Digivalet, Comfortclick, BOWO and mySmartJarvis. For any other smartphone / tablet solution, the compatibility shall be considered by the technical department of Legrand and the integrator.
- G. Some functionalities shall need an integration with approved IPTV television. This integration will be done via a BMS or a compatible IPTV tablet solution. The compatibility shall be considered by the technical department of Legrand and the integrator.
- H. Some functionalities shall need an integration with approved HVAC centralized system, VRV/VRF type. The integration will be done via a BMS or an HVAC automat – Legrand GRMS is compatible with HVAC Mitsubishi Electric (Y and R2 technology), Daikin, LG and automats from Distech Controls and CoolAutomation. For any other HVAC system, the compatibility shall be considered by the technical department of Legrand and the integrator.

- I. Some functionalities shall need an integration with approved housekeeping solution – Legrand GRMS is compatible with Roomchecking. For any other housekeeping solution, the compatibility shall be considered by the technical department of Legrand and the integrator.
- J. Each integration shall be described into an application note that defines the use case, the wiring concept and the configuration to realize.

1.4 SUBMITTALS

- A. Technical guide (installation & user guide) of Legrand GRMS: including system architecture and system capacity, datasheets of compatibles products, cabling schemes type, operating modes, system programming, installation process, diagnostic tools, maintenance manual.
- B. Drawings of each room type: Submit the list of products and equipment to be supplied, including proposed locations, clearance and power requirements.
- C. Functional analysis of each room type: List of controls with associated scenarios and controlled circuits.
- D. Submit application notes for advanced functions and integrations with third party system.
- E. Warranty: Submit the Manufacturer's standard two years warranty.

1.5 QUALITY ASSURANCE

- A. Qualifications of Manufacturer: Legrand is a global specialist in electrical and digital building infrastructures; the Group is present in more than 175 countries all around the world. The Manufacturer shall have a minimum of 20 years documented experience manufacturing integrated wiring devices. The Manufacturer shall submit a list of at least 100 completed projects using wiring devices.
- B. Qualifications of system integrator for commercial building: Submit a letter signed by the Manufacturer stating that the system integrator has been trained by the Manufacturer of the integrated guest room management system.
- C. The system shall utilize the latest hardware and software technology and shall meet the specific needs as set out in this document.
- D. The system shall be economical and cost effective in terms of its operation, maintenance and personnel required for manning. It must also be energy efficient.
- E. The Manufacturer must be engaged into CSR process (Corporate Social Responsibility) in order to decrease the ecologic impact of the manufacture and supply of installed products. Use of 15% of recycled plastics, 40% of recycled metals, and no longer using single-use plastic.
- F. The manufacturer must have a greenhouse gas reduction trajectory in line with the 1.5°C max warming target relative to the pre-industrial era, recorded in the Paris agreement, and validated by SBTi (Sciences Based Targets Initiatives) – UN NGO. Greenhouse Gas (GHG) reduction commitment of 10% on scope 1 & 2 (scope 1 : internal GHG emissions / scope 2: GHG emissions from the company's electrical suppliers).
- G. The system must be durable and capable of sustained use throughout its life cycle.
- H. The manufacturer must commit to helping customers reduce and avoid greenhouse gas emissions within their scope 4 (scope 4 : energy efficient product sales).

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials and products in unopened, factory-labelled packages. Store and handle in strict compliance with the Manufacturer's instructions and recommendations. Protect from damage. Possibility of sequence deliveries to avoid delays but minimize on-site storage.
- B. Possibility to deliver materials on site.

1.7 COORDINATION

- A. Coordination meeting of commercial project's stages: Assistance to meeting from prescription until receipt of the site.
- B. Monitoring: Establishment of Manufacturer's assistance cell for the monitoring and advice to installers and system integrators as well as the monitoring of project, including its operational phase.

PART 2 - PRODUCTS

2.1 MANUFACTURER

Allowed Manufacturer: Legrand, 128 avenue de Lattre de Tassigny 87045 Limoges Cedex - France,
Phone number : + 33 (0) 5 55 06 87 87, Website www.legrand.com.
Bticino, Viale Luigi Borri, 231, 21100 Varese VA, Italy,
Phone number : +39 0332 272111, Website www.bticino.com.

2.2 GENERAL

- A. The Hotel rooms and suites consists of a Guest Room Management System (GRMS) for the following functions:
- Lighting : switching On & Off.
 - Lighting : dimming.
 - Motorized curtains/shutters control.
 - HVAC control (Heating, Ventilation, Air Conditioning) – local system (radiator, ceiling/floor heating, fan coil unit) or centralized (VRV/VRF – subject to have an integration with centralized HVAC system). The control will be done by a thermostat.
 - 2P+E and USB socket control.
 - "Do Not Disturb" (DND) and "Make Up Room" (MUR) with status displayed outside the room and in supervision software (subject to have an integration with a supervisor).
 - Room Generic Service (RGS - for example "Pick up laundry"), define by the hotel owner, with status displayed outside the room and in supervision software (subject to have an integration with a supervisor).
 - Presence determined by mechanic/RFID keycard holder or virtual keycard function.
 - Master command from scenario switches.
 - Welcome scenario for guest.
 - Welcome scenario for guest with day/night condition.
 - Welcome scenario for guest with reminding the room status as when he left.
 - Welcome scenario for cleaning staff (subject to have an integration with access control or housekeeping solution).
 - Welcome scenario for technical staff (subject to have an integration with housekeeping solution).
 - Goodbye scenario to set the room in economic mode.
 - Check IN scenario to set the temperature setpoint to comfort (subject to have an integration with PMS).
 - Check OUT scenario (ECO+) to set the room in advanced economic mode (subject to have an integration with PMS).
 - Lighting scene (for example Sleep / Wake up / TV / Reading / All On / All Off / Soft light / ...).
 - Scenario with 1 condition or 2 conditions.
 - "Energy saving" scenario to propose to the guest to reduce his ecologic impact with ECO icon displayed on thermostat.
 - Scenario to control third party system (subject to have an integration with third party system) – for example control of the TV, control of sound level in the bathroom...
 - Night light scenario (lighting path) to allow the guest to move in the room and bathroom in safety way.
 - Scenario triggered by flood sensor, by magnetic contact, by motion sensor, by pull-cord switch.
 - Alarm triggered by flood sensor, by magnetic contact, by motion sensor, by pull-cord switch. The alarm will be acknowledged from the supervisor (subject to have an integration with a supervisor).
 - Switch the thermostat into eco mode when the window is opened.
 - Lock the buttons (controls) to make the cleaning easier or to lock the room control when the keycard is not inserted in the keycard holder.
 - Management of two adjoining rooms or separated by a vestibule, to be rented separately or merged in one room.
 - Management of suites with several entry doors.
 - Management of rooms from fifteen m² to hundreds of m².
 - Integration with a supervision software (BMS) – native compatibility with Appliance Vayandata and Netxautomation template (provided that it has an integration with a supervisor).
 - Room control from smartphone/tablet application (subject to have an integration with smartphone/tablet solution).

- B. Corridor access, external indicator: DND/MUR/RGS and presence/absence indications, doorbell function. When DND function is activated, the bell must be deactivated.
- C. Mechanical, BUS wiring and touch devices compatibles. Each button can be BUS, touch or mechanical.
- D. All wiring devices have the same aesthetic (for switches, thermostat, power sockets, data sockets...).
- E. Choice between several ranges for bus devices: Arteor/Living Now/Celiane/Valena/ART and UX Touch – available in all standards.
- F. Each button must have the ability to be programmed for multi-functionality and accommodate multiple lighting and automation scenarios.
- G. Multi-ergonomics available for each button like short push/long push/release/toggle.
- H. Switch icons must be customizable.
- I. Icons backlit must be controlled by a proximity sensor which increase the brightness when the hand is close and decrease the brightness when the device is in standby, to not illuminate the room during the night.
- J. Safety : Protected shaver socket, step marker lamp for the night, skirting light activated during the night... The room must still work, even after a power cut or in case of communication lost with third party systems.
- K. Entertainment : range of products dedicated multimedia socket with Audio/Video connections and Bluetooth connection, to recharge of technological devices (Smartphone, Tablet, etc...) and to the transmission of WiFi data.
- L. The online GRMS must be user friendly for quest's ease of use and management remote access.
- M. The available supervision functions are the following ones:
 - Supervision and management of functions installed in the hotel.
 - Control and management of the functions inside the rooms and the common areas.
 - Management of the room status (free, occupied, guest presence, etc...).
 - Control of DND/MUR/RGS type notifications.
 - Management of bookings using specific software (PMS – subject to have an integration with PMS).
 - Temperature display and modification of the adjustment values.
 - Programmed scenario activation.
 - Alarm notifications and management of the contacts (window, door, bathroom pull cord, fridge, safe...).
 - Different icons and colors helps the operator to immediately identify the status of the room.
- N. Integration with solutions of other brands: Possibility to consider a new function requesting an integration with a new system, on demand, by the technical department of Legrand and the integrator.

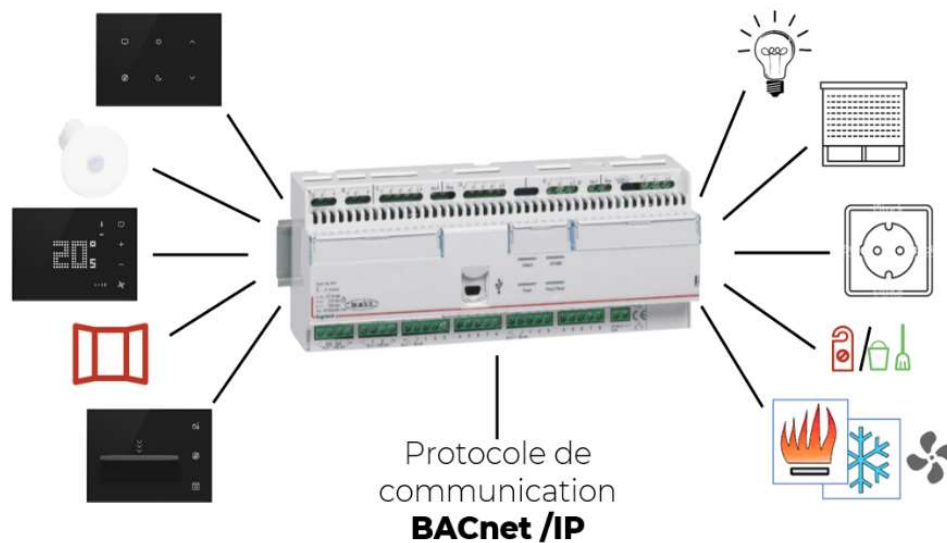
2.3 SYSTEM DESCRIPTION

The BACnet IP Hotel Room Control System can be integrated with the global Legrand hospitality building solutions. The Hotel Room Control System offers a fully integrated Guest Room Control using standard protocol such as BACnet. The room controller IP BACnet will be compatible with BACnet services READPROPERTY (polling) and COV (Change On Value).

The functionality includes the following features in each Guest room:

- Lighting control.
- Curtain control.
- Controlled sockets control.
- Services management DND/MUR/RGS.
- Room temperature control and ventilation.

Each control (mechanical, BUS, touch, sensor, BACnet command...) is a trigger and can play all kind of scenario.



Each feature shall be controlled by the BACnet IP Room Controller.

The system settings will be adapted according to occupancy and booking status. The occupancy status shall be indicated by the keycard switch or virtual keycard. The system will also be capable of receiving the booking status indication from the reservation software (PMS – subject to have an integration with PMS). The system could support changing the reservation status also manually from reception through the BMS (subject to have an integration with supervisor).

2.4 SYSTEM ARCHITECTURE

The System Architecture shall consist of two levels:

- Control level.
- Management level.

The system offered shall be completely modular in structure and freely expandable at any stage. Each level of the system shall operate independently of the next level up as specified in the system architecture. For example, Control Level shall operate independently without support from Management Level.

The system shall be fully consistent with the latest industry standards. To enable efficient functional system integration and to provide maximum flexibility and to respond to changes in the building use, the system offered shall support the use of BACnet, Ethernet TCP/IP and Internet communication technologies.

A. Control level

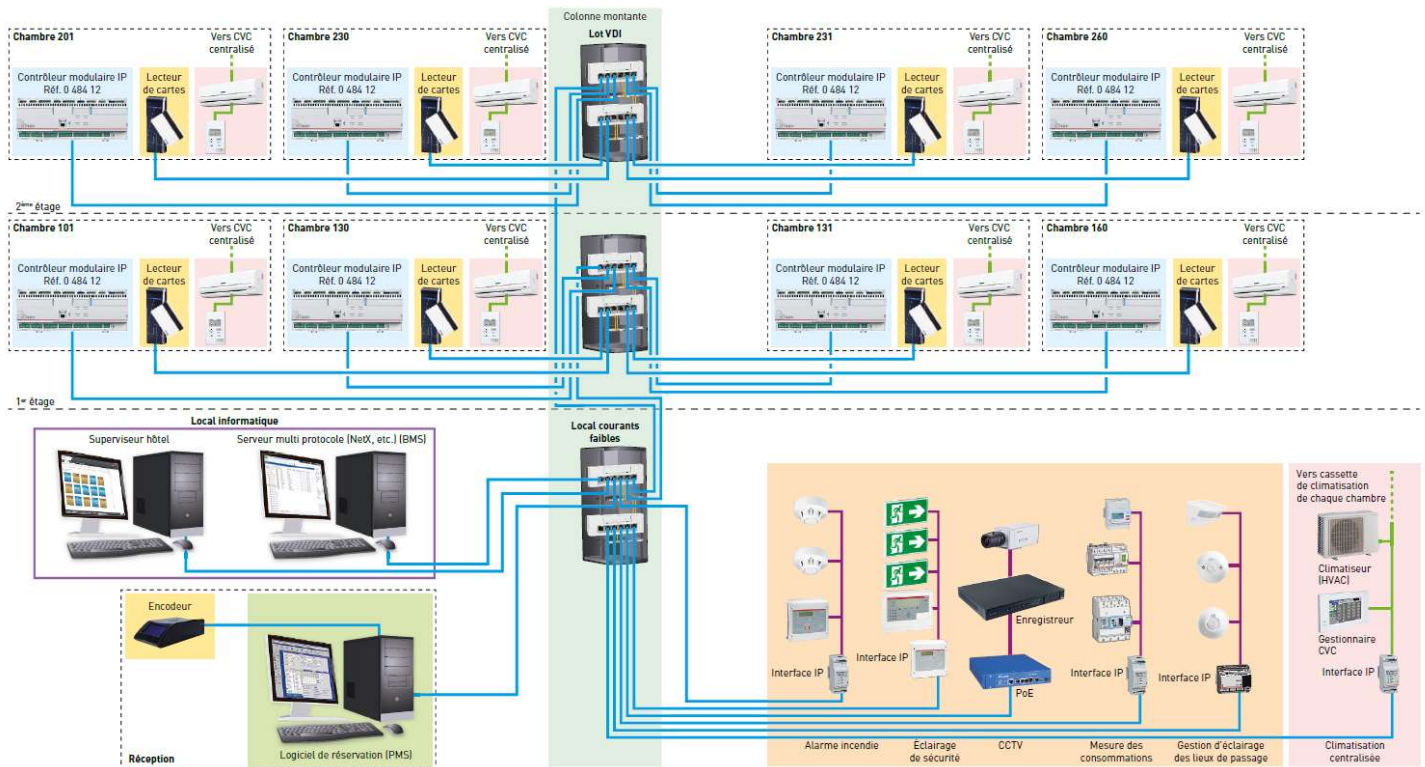
The Control Level consists of a distributed network of smart control nodes, which are connected to IP network. Nodes include all the intelligence of the system.

Each node are capable of handling several different systems in parallel through flexible distribution of I/O points. Nodes shall be capable of operating autonomously independently of Management Level. Each room shall be independent. For example, all systems must be able to react to alarms on the Control Level without interference from upper levels. All communication shall be event based.

B. Management level

Management Level shall provide a uniform view to all systems through the supervision software. To ensure fault-tolerant system functionality, the Management Level shall not be responsible for any controls. The Control Level shall function independently also without the Management level.

All the systems (controls of heating/ventilation/air conditioning, lighting and curtains of common areas, consumption measurements, access controls, SOS alarm, intruder alarms, fire alarms, emergency lighting, CCTV...) shall be integrated with the BMS.



2.5 GUEST EXPERIENCE

The Hotel Room Control System of Legrand improves comfort of guest by creating various scenarios.

1. The system shall create after the check-in a welcome scenario for the guest. The system shall supply the hotel room power when guest is detected by the virtual key card or when he puts the keycard in the wall-mounted keycard holder. It shall trigger on the welcome lighting and open curtains if daytime. The system shall turn on the thermostat in comfort mode.
2. The system shall power-on some outlets. The system shall allow the guest to adapt lighting ambiance by modulating the intensity of lights and adapt the temperature of the comfort mode. The system shall reduce energy consumption in the guest room. It shall be set up independently in each room with the demand response.
3. The system shall create a sleeping scenario. It shall turn off lights and close curtains. This scenario shall be activated from the bedside panel.
4. The system shall increase security and comfort of the guest during the night. The system shall use skirting lights which will detect guest motion and turn on skirting lights between the sleeping area and entrance/bathroom area. The guest does not have to turn on lights to go into the bathroom.
5. The system shall create various scenarios managed by the guest through the bedside panel. Reading scenario: turn on lights on each side of bed. TV scenario: turn on appropriate lights to watch TV. Wake up scenario: gradual illumination of lights then opening curtains...
6. The system shall turn off lights, shall switch the thermostat in the eco-mode and shall close curtains after 30 seconds (it can be modified) with the exit scenario.
7. When the guest comes back to his room, the system shall remind the room in the same status as when the client left for lights, curtains and thermostat.

2.6 STAFF EXPERIENCE

(Subject to have an integration with access control and PMS or housekeeping solution)

1. The system shall create a staff working situation by adapting lights ambiance for cleaning, power-on some outlets and switch the thermostat in eco-mode.
2. A corridor display shall allow the staff to know if the room is occupied, if "Do Not Disturb" service is activated, if "Make Up Room" service is activated and to ring before entering.
3. The staff working situation must help the staff to be more efficient by avoiding waste of time.
4. The touch commands shall be deactivated to be able to be cleaned without control loads.
5. The system shall switch on all lights, to check if some lamps are broken.
6. The "Make Up Room" is activated by the check out scenario, to be sure that the room will be ready before to rent it to another guest.
7. When the room is ready, the system notifies the end of work by turning off the "Make Up Room" icon on the corridor display and the supervisor.

2.7 ROOM GRMS EQUIPMENT

A. Room Controller: the intelligence of the guest room



After receiving a trigger event (event coming from wall-mounted wiring control, BACnet command, thermostat, or sensor), it will control the temperature, lighting, curtains & the power sockets.

The room controller shall be capable of ON/OFF and dimming lighting controls, both for incandescent, fluorescent, and LED lights where applicable. Dimming control compatible with DALI protocol, 0-10V protocol and leading-edge dimming circuit.

The room controller shall control the services "Do Not Disturb", "Make Up Room", "Room Generic Service".

1. BACnet IP Room Controller: To be powered, it must be connected to an external power supply. It is equipped with input terminals and a BUS connection for auxiliary connections. It will be set up using Hotel Room Controller Software (HRCS).
2. Functions of each room controller
 - Room lighting control:
 - 8 circuits of 4,3 A with zero crossing technology.
 - 1 Dali line able to manage up to 64 ballasts in 16 groups for lighting regulation.
 - 4 circuits of 16 A using bi-stable relays with zero crossing technology.
 - Automation Control: 4 circuits of 2 A able to manage curtain, DND/MUR services.
 - Smart scenario to be managed by pushbutton through the short press, long press, release and toggle command.
 - Possibility to add accessory (dimmer, ON/OFF actuator, HVAC actuator, dry contact interface, sensor, bus command) to increase the capacity of the RCU.
 - Status of lighting/curtain/temperature/socket functions: at each state change of an output, BACnet IP room controller sends a BACnet notification to hotel system architecture.
 - Room contact management: technical contact for technical alarm notification : send a BACnet notification BACnet to hotel system architecture (for example, window opened or fridge door opened). If a window is opened, this function may turn off the thermostat for energy saving. Pull-cord switch for SOS alarm notification : send a BACnet notification to hotel system architecture in case of fall in the bathroom.
 - Presence management: the presence of a person in the room is notified by the keycard holder or virtual keycard function. BACnet IP room controller forwards this notification to the corridor display and sends a BACnet notification to hotel system architecture.

- Virtual keycard function, based on occupancy. A dynamic algorithm offers the possibility to control the presence of the guest in the room using motion sensors and the door contact status.
- Possibility to link several room controllers in big suites.
- BACnet command : when the BACnet IP room controller receives a BACnet command, it executes the associated scenario then sends a BACnet notification about the state change of each output impacted by the scenario to hotel system architecture.

3. Configuration tool for Room Controller

- The BACNET Room Controller shall be configured with HRC software with duplication of the configuration for all rooms with same specifications.
- The configuration can be prepared in office in Offline mode to optimize the installation time on site and to validate the room behaviour. Moreover, it allows to several teams of installers to work in parallel.

B. Thermoregulation

BACnet IP Room Controller can manage up to 4 independent regulation areas.

The thermostat acquires the room temperature via built-in sensor and maintain the setpoint by delivering actuator control commands to heating and/or cooling HVAC equipment. Or it can be a local override command to control a third party HVAC system using BACnet protocol on IP network (subject to have an integration with third party HVAC system).

The following control outputs are available:

1. Thermostat



- Flush mounted thermostat with backlit display. It can be used to control the temperature of an individual zone, both if it is an local HVAC system with local actuator or if it is a centralized system.
- It has 4 keys or touch controls that can be used to select the desired temperature, the fan speeds (low, medium, high or auto), and to turn On/Off the HVAC system.
- A master thermostat may have up to 9 slave thermostats and control up to 9 HVAC actuators. The temperature used for the regulation is the average of the measures of each thermostat.
- The thermostat can manage different operating modes: automatic (Eco, Comfort, Antifreeze/Thermal Protection), manual and Off.
- It can also be used in mixed heating/cooling systems if the 2 functions are available at the

same time on the same system.

- It features a temperature probe.
- An input for the connection of a contact line (e.g. window contact) is available on the RCU, to change the operating mode of the thermostat : when you open the window, the thermostat switch to ECO mode or Protection mode.
- It can be used for the management of different types of systems and the adjustment of the fan speed when fan coils are used.
- Possibility of automatic changeover heating/cooling (winter/summer) with compatible systems.
- The thermostat can be embedded on the bedside panel.
- A proximity function can modulate the brightness of the icons : the icons become brighter when the hand is close to the device. Possibility to keep one icon with low illumination to help the guest to find the device in the dark.
- In option, when fan coils are used, the thermostat maintain a low speed for fan during the night, to avoid to wake up the guest while he's sleeping.
- Possibility to manage the fan speed for ventilation function (without sending cold/warm air).
- All the data (ambient temperature/setpoint/operating mode/summer-winter mode/fan speed) are available in BACnet standard on IP network and sent to hotel system architecture system at each state change.
- The thermostat must be controllable (setpoint/operating mode/summer-winter mode/fan speed/displayed unit °C-°F) from hotel system architecture using the BACnet protocol on IP network.
- Easy customization via dedicated web tool: possibility de define the color, to choose the installation mode, and to add the hotel logo.

2. List of available thermo-regulation actuators (to be defined according to the HVAC system)

- Actuator with 8 independent relays for the control of on-off valves, motorised valves (open-close and 3 points), pumps and fan coils with 2 and 4 tubes.
- Actuator with 3 independent relays and 2x 0-10V outputs for the control of fan coils with 2 and 4 tubes with proportional 0-10V valves.
- Actuator with 2x 0-10V outputs for the control of 0-10 proportional valves.
- Actuator with 2 independent relays for single and double loads.
- Actuator with 4 independent relays for single and double and combined loads.
- Centralized HVAC system (VRV/VRF): The thermostat can be connected to Centralized HVAC system via the room controller (subject to have an integration with centralized HVAC system).

3. Energy conservation with the Room Controller system

- The System shall provide optimized energy conservation measures without inconvenience to the guest. At least five setback strategies shall be employed: two when a room is un-rented (either occupied by staff or unoccupied), and two more when a room is rented (either occupied or unoccupied) and one more when the window is opened – subject to have an integration with PMS.
- When the room is unoccupied and fan coils are used, the thermostat uses the low speed for fan in priority to adjust the temperature to the ECO setpoint.
- The System shall obtain rented status automatically from the Property Management System (PMS). No manual data entry shall be required by the hotel to update the room rented status – subject to have an integration with PMS.
- The system can conform to EU-BAC standard (subject to have an integration with HVAC Distech Controls controller and peripherals)

C. Presence / Absence in the room and corridor display

1. Keycard holder



- Key card switch RFID with icon to activate/deactivate the service (DND/MUR/RGS).
- Thanks to the LED backlit slot, the device can be found in the dark and an icon animation shows where to put the keycard. A proximity function can modulate the brightness of the icons : the icons become brighter when the hand is close to the device.
- It works with RFID key card (13,56 MHz frequency key card detection). It is compatible with keycard approved by standard ISO 14443-A and ISO 15693.
- It can send different scenario according to the type of keycard (guest, staff – subject to have an integration with access control or housekeeping solution).
- Easy customization via dedicated web tool: possibility de define the color, the icons, to choose the installation mode, to add text under each icon, and to add the hotel logo.

2. Virtual keycard function



- Combination of occupancy motion sensors and door contact allow to determinate the presence in the guest room via n dynamic algorithm.
- It can send different scenario according to the profile of person who comes (guest, staff – subject to have an integration with access control or housekeeping solution).

3. Functions of keycard holder / virtual keycard

a. Occupancy after check in

- The keycards, or presence detection, trigger the "energizer" control and automatically activate a pre-set lighting configuration, open curtains if daytime, enable all room circuitry and "comfort" mode for climate control.
- Welcome lighting is turned on.
- setpoint is set to predefined comfort level.
- Electricity is enabled in selected power sockets.
- Occupancy room status is updating in the corridor display (bell icon is on).
- Occupancy room status is updating in hotel system architecture.

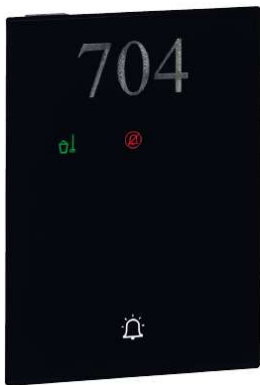
b. Occupancy after absence of occupancy (guest goes to restaurant for example)

- The keycards, or presence detection, trigger the “energizer” control and automatically put the room in the same status as when the guest left – even if a person with another profile (like the staff) when into the room during absence of occupancy (to clean the room for example).
- The lights switched on by the guest is turned on.
- The curtains opens if the guest let them open.
- setpoint is defined to the value set by the guest.
- Occupancy room status is updating in the corridor display (bell icon is on).
- Occupancy room status is updating in hotel system architecture.

c. Absence of occupancy

- The keycard is removed from the keycard holder or no presence detected during a time delay after closing the door.
- Unoccupancy room status is updating in the corridor display (bell icon is off).
- Unoccupancy room status is updating in hotel system architecture.
- The absence of occupancy in the guest room automatically turns off all lights, closes curtains and turn off power sockets in the room after a pre-programmed time delay and switches the room climate control to eco mode.

4. Corridor display



- Corridor indicator with “Do Not Disturb”, “Make Up Room” and “Room Generic Service” notifications.
- Call bell pushbutton icon is turned ON when occupancy.
- A relay controls the doorbell and disable it when “Do Not Disturb” function is activated. In that case, the DND icon blinks if someone presses the bell to notify to the person that the press has been taken into account.
- Easy customization via dedicated web tool: possibility de define the color, the icons, to choose the installation mode, to add text under each icon, to add the hotel logo and to add the room number (up to 5 alphanumeric characters).

D. Service requests

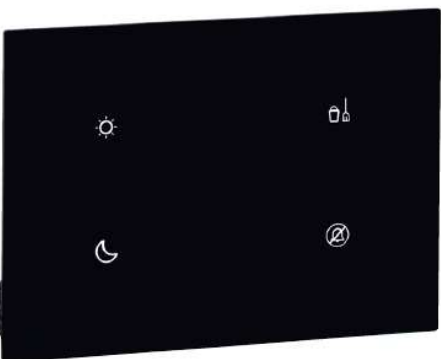
The guest shall be able to initiate the following requests:



- Function MUR (Make Up Room) : if MUR function is activated in the room on the appropriate control, BACnet IP room controller forwards this notification to all devices with MUR icon including the corridor display and sends a BACnet notification to hotel system architecture. The MUR controls are available on the keycard holder and/or scenario controls.

- Function DND (Do Not Disturb) : if DND function is activated in the room on the appropriate control, BACnet IP room controller forwards this notification to all devices with DND icon including the corridor display and sends a BACnet notification to hotel system architecture. The bell is turn off. The DND controls are available on the keycard holder and/or scenario controls.

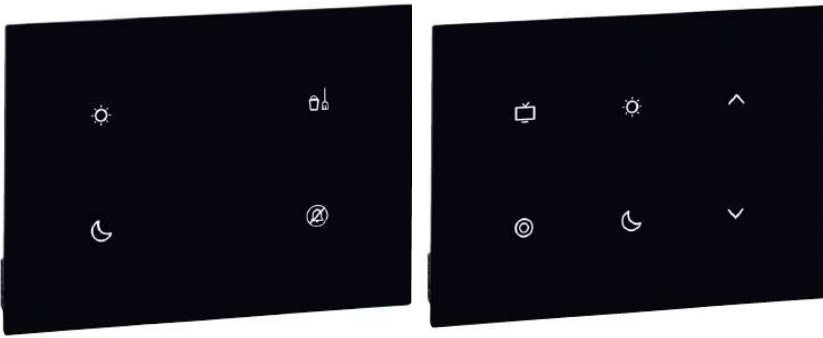
- Function RGS (Room Generic Service) : if RGS function is activated in the room on the appropriate control, BACnet IP room controller forwards this notification on all devices with RGS icon including the corridor display and sends a BACnet notification to hotel system architecture. The RGS function is defined by the owner. It’s an additional service like the service "Pick up laundry". The RGS controls are available on the keycard holder.



- Bell : The system will include a doorbell or a chime for each guest room.

- The interior plate can be manufactured to match the exterior doorbell plate (corridor display).

E. Touch Panel scenario



- The touch panel can be with 1, 2, 3, 4, 5 or 6 scenarios buttons.

- A proximity function can modulate the brightness of the icons : the icons become brighter when the hand is close to the device.

- Easy customization via dedicated web tool: possibility de define the color, the icons, to choose the installation mode, to add text under each icon, and to add the hotel logo.

F. Touch Panel Bedside



- The touch panel Bedside can be with 1,2,3,4,5 or 6 scenarios buttons and thermostat display with touch control. It allows to centralize all the functions in one device. This device is particularly adapted for an installation in bedhead.

- A proximity function can modulate the brightness of the icons : the icons become brighter when the hand is close to the device. Possibility to keep one icon with low illumination to help the guest to find the device in the dark.

- Easy customization via dedicated web tool: possibility de define the color, the icons, to choose the installation mode, to add text under each icon, and to add the hotel logo.

G. Cabling



- The cabling scheme of the Guest Room Management System must be in accordance with the manufacturer's instructions of installation.

-The BUS cable used to connect all the BUS products, must be the BUS cable certified by the Manufacturer.

-The BUS power supply must be adapted to the total consumption of the BUS products.

-In case of very large rooms and/or when the total absorption of all devices exceeds the BUS power supply capacity, it's possible to extend the bus length and to add another BUS power supply, by adding a BUS-BUS interface.

2.8 REMOTE CONTROL AND MONITORING

A. Supervision software

The BACNET IP room controller use BACNET protocol on IP network to be compatible with any supervision software using BACNET protocol. It is natively compatible with Appliance Vayandata (on Niagara BMS – supplied by Btib) and with Netxautomation template.

List of variables which can be supervised/controlled :

- Room presence.
- Room booking status (manual activation or via PMS – provided that it has an integration with PMS).
- Heating/Cooling Mode (winter/summer).
- Ambient temperature.
- Setpoint temperature.
- Fan speed.
- Setting range limit of the thermostat for user.
- Window status.
- Services DND/MUR/RGS.
- SOS alarm.
- Scenarios.

In option :

- Lighting circuits.
- Socket outlets circuits.
- Curtains/shutters circuits.
- Technical alarms.
- Safe (send the status locked/unlocked – provided that it has an integration with a safe).

B. PMS

The PMS can also enable integration of the Guest Room Controls & Monitoring System with BMS – subject to have an integration with BMS and PMS. The PMS allows updating status of the guest room:

- Rented (check IN scenario).
- Unrented and unoccupied (check OUT scenario – eco+ mode).
- Unrented and occupied by the staff (staff working situation).
- Rented and unoccupied (goodbye scenario – eco mode).
- Rented and occupied by the guest (welcome scenario – remind guest room status)
- Rented and occupied by the staff (staff working situation)

C. TABLET/SMARTPHONE

Tablet and/or smartphone can help control the room for more inclusive experience (subject to have an integration with tablet and/or smartphone solution).

Tablet is a tool affiliated with the room. A antitheft system shall help to know, while the guest checks out, if the tablet is still in the room.

The smartphone is that of the guest. It will be working only when the room is rented.

Tablet and smartphone will be able to control all the functions of the room (DND/MUR/RGS services, lighting circuits, power socket circuits, curtains/shutters circuits, HVAC (temperature setpoint, fan speed, ON/OFF), as well as other additional functions like the TV...to be discussed with the tablet/smartphone solution's manufacturer).

PART 3 - EXECUTION

3.1 INSTALLATION

- A. There shall be strict compliance with the Manufacturer's instructions and recommendations. The onset of work shall indicate that the Installer accepts the existing substrates and conditions. System installation shall be coordinated with related and adjacent work.
- B. The system shall be tested for proper operation in accordance with the Manufacturer's commissioning guide. Damaged components shall be repaired or replaced.
- C. The Installer and system integrator shall instruct the Owner's personnel and facility manager in proper operation and maintenance of the system, for the management of the operating site.