



Hotel – Room Management System Specifications

**Technical specifications for
Hotel GUEST ROOM MANAGEMENT SYSTEM
(HGRMS)**

Packages for BDM

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1. Description of Work

The system shall provide a seamlessly integrated solution for:

- advanced energy saving in the guestrooms
- online and offline access control of guestrooms
- online and or offline access control to the back of house and public areas of the hotel / serviced building
- the advanced control of the HVAC according to room status
- automation of guestroom lighting
- bathroom lighting control based on PIR
- Open Protocol with integration ability to Property Management System
- centralized room status monitoring and override control
- report generation on various room status
- all components of the system shall be online/offline, with central online ability to be logged and controlled by a central server and monitored by multiple workstation clients.
- system must support expandability for not less than 3000 hotel GRMS
- system must have easy add on modules for energy monitoring, service management, card management ++
- the system should log, monitor and log all door bell knocks, door access, light switching, service requests and system usage habits
- System must report any moonlighting unauthorized usage of hotel room which is not officially registered as occupied.
- System must have ability to integrate and use ipad, mini-ipad with launchport and monitoring ability with all the following features that enhance waste-less and paperless environment:
 - Multi lingual selection and auto reset at checkout
 - E-menu (Food, restaurants, room service, mini-bar ++)
 - E-directory (IDD, hotel information, embassies, attracts ++)
 - extended IR TV control with channel presets
 - Curtain and drapes motorized controls
 - Moods presets, and lighting control
 - Temperature control both degrees centigrade & Fahrenheit
 - Alarm Clock with wakeup preset scenario (and Automatic reset on check out)
 - Optional Door camera and Hotel IP camera on room pad
 - World clock with favorites (and reset at check out)
 - Go Green save water guest selection option.
- System must have logical energy saving ability based on door open/close and PIR motion within elapsed preset period; regardless of legitimate card is already inserted and left into the keycard holder slot.



2. Description of the Room Management System

- The system shall be an integrated solution that combines access control with guest room management (lighting control, thermo-regulation control, curtain control, and room services) all in one system.
- The system should make it possible to improve customer service by providing a complete and varied range of functions for monitoring and optimizing services to ensure the highest levels of comfort and safety. (Minimal: MUR, DND, Pick Laundry) with optional additional Services like: (Clean Shoes, Take Back Plates, Re-Fill Mini-Bar, Prepare Bed for sleeping, Maintenance Needed, SOS, Please wait++
- At the same time, it should help to save energy and considerably reduce operating costs.
- On check-in the Room Management system issues the guest a RFID card that gives access to the assigned room until the guest checks out again. The Room Management System registers all room access events centrally in the front office system, and can distinguish whether a guest or a member of the service staff or hotel management entered the room.
- The Room Management System shall provide extensive supervisory functions to increase the security of the guest in the room. Unauthorized door opening, and an emergency assistance alarm in the room can be connected to the Room Management System.
- The various Room Management System functions shall be merged with the hotel room data in the front office software and shall be processed in the background. All functions of the Room Management System shall be operated via the front office system and can be evaluated offline at a later time if required
- Each component of the system should be based on the concept of distributed intelligence, giving management the possibility of managing the complex problems of a hotel from one central control station.
- The system must be easily upgradable to add or modify functionality of hardware without removing nor changing any of the hardware installed
- The system main server proposed should consist of a server that will be accessed through separate workstations. The server should host the core of the application with the database and communication engine, while the workstations should run as thin-clients.
- The proposed system should open protocol, and can be seamlessly integrated to the PMS (property management system) preferred by the operator for minimal functions like: (Room & card#, Check in, check Out date time). Such integration must be enabled using either of: RS-232, RS485, TCPIP, ODBC..etc.



- The system must have ability to install different add on modules that can control, log, monitor and report the following as example:
 - Room Activity and energy saving
 - Service requests
 - Ipad Status (Outside room, Battery full, Low++)
 - System Usage
 - Energy Usage per room: (Notional, Estimated, Fixed)
 - Guest Habits

3. Introduction to the RMS

- a) The Room Management System has to use the existing TCP/IP infrastructure or any other cabling system to network the room control devices. In order to ensure smooth and harmonious implementation, all front of house and back of house RMS modules (including online access control) have to be supplied by the same vendor. The entire system should be designed to carry out the following functions:
- b) Online Access control to the guestrooms and all other restricted rooms/areas of the hotel using a contactless proximity RFID card. The system shall support the latest security standards including Mifare Ultralight C/ Mifare Plus S. Access control shall be based on electric door strike to be compatible with any door locks and must be both NO/NC based.
- c) Automated guestroom control through an integrated bedside panel that controls lighting, room services (Do not Disturb, Make-up Room, Laundry Pick-up).
- d) The system must also allow optional addition for: remote door opening
- e) Centralized control should have the capability of monitoring the following room alarms and notifications or requests as pop-ups and logged action tables including:
 - a. Do not disturb
 - b. Make up room
 - c. Pickup laundry
 - d. Clean shoes
 - e. Refill mini-bar
 - f. Prepare bed for sleeping
 - g. Maintenance needed
 - h. SOS (Panic)
 - i. Room Door Forgotten Open (Alarm)
 - j. Save water & Go Green Requests (Do not Change bed cover and do not change bath towels++)
- f) Centralized control should have the capability of reporting any unauthorized occupancy usage of vacant room the room that is not registered officially with check in flag.



- g) Centralized control should have the capability of:
 - a. (Alerting) in case of safe alarm is triggered in room (optional), and to report Flood alarm in the bathroom (optional)
 - b. Door forgotten open alert (with door closed status ok)
 - c. Window open or closed status (with AC auto switch off ability)
 - d. Disabling certain electrical appliances when the room is empty.
 - e. All the information concerning each individual room should be visible by the operator at Reception by means of a simple graphic representation that illustrates the general conditions and events throughout the hotel.
- h) At Reception, it should be possible to see the following:
 - a. Which rooms currently have a guest inside
 - b. Which rooms are being done up
 - c. Which rooms are ready for new guests
 - d. Which rooms are currently under service or maintenance
- i) At Back office, it should be possible to see the following:
 - a. The alarms and requests have to generate an acoustic signal to call the attention of the operator.
 - b. They must be logged on file in their order of arrival and can also be printed and exported on requests.
- j) When checking in, one or more RFID cards could be encoded for the guest. The code has to be generated in a way to ensure that no two cards can have the same code, and must have building code in such a way that do not allow same room number in same hotel in same city to use the card within same Hotel Chain . The cards should be programmable with minimum 8 different access levels:
 - a. Client A, B, C (the letter defines the access rights of the guest),
 - b. Housekeeping,
 - c. Housekeeping Supervisor,
 - d. Maintenance,
 - e. Security,
 - f. Management.

The key card holder switch should detect the different levels of cards and therefore control the room in relation to that. For example, a guest card would have access to all GRMS modules and functionalities, whereas a housekeeping card would have limited access to in-room functionalities such as blocked thermostat set points. Moreover, the access control reader should display the room status through its indication panel (i.e. still or intermittent LEDs). At checkout these services and access to the room and other common areas of the premises should be disabled.
- k) Offline functionality must be always enabled for both online and offline systems. E.g. the single room unit must continue to function in any case, even if the link to the central server is broken (i.e. server breakdown, network failure, etc.); this ensures that no malfunction can prevent the guests from using their rooms. The stand-alone



- l) functionality of all room functions must be guaranteed as a main feature of the system.
- m) It is crucial that the Room Management System be able to register cards for the access of the guests to the rooms, even if the system is offline or in case of a downed RMS server. Each Room Control Unit must support real time offline logging of up to 3000 events.
- n) Once system is online, the central server unit should download and record each entry and/or attempt to enter where it is saved on files for later checks.

4. Central RMS Server

This unit will serve the following features:

- a. Communication engine for all the room hardware. Through this communication real-time monitoring and control of all room features can be done.
- b. Central logging database for long-term storage of records. All events occurring in the field are recorded as they come in chronological order. For ideal scalability and stability the RMS server system should be based on a SQL database as example.
- c. Analysis engine for table-based and graphical evaluation of staff and guests behavior can be added as optional module.
- d. Reporting tool with predefined reports to analyze staff efficiency and workflows of back of house departments can be added as optional modules.
- e. The system must present standard open code interfaces to allow third party systems (e.g. Property Management System, VOIP telephone system, interactive TV system, fire alarm, emergency power supplies) to interface to make it easy for other system suppliers).
- f. Furthermore, Optional additional modules should enable operators and their privileged teams to access server application through their mobile phones to retrieve real time data, and service requests as they happen from every room.

5. Flexibility and scalability

The smart hotel GRMS must be modular and flexible to expand as to be needed as following:

- a- Able to use Card Holder separately as a system
- b- Ability to use the door bell with service and or access separately as system
- c- Ability to use additional light control, ac control, TV control, curtain control etc. modules selectively
- d- Ability to add bedside controllers, ipad controllers ++





6. The Cabling

The in-room cabling will adopt a any needs like star topology or daisy chain or mix in either open or closed loop formats in which all cables can go from the Room Control Unit (Zone Beast RCU) to all the other field devices (i.e. Bell with card reader, card holder, DDP/thermostat, bedside control panel++). Cables material can use simple cat5, cat5e or cat6 without the use for any end of line terminators or balancers.

7. Public area and Back of House Access Control

The access control to the guestrooms and the back of house as well as all other protected areas should be managed by the same online access control system in order to guarantee a seamless logging of staff and guest activities into the same database, as well as the guaranteed use of the same access cards throughout the premise for both the operator and guests. The system has to support a minimum of 8 user roles, 128 user groups and freely configurable public areas. Each reader has to accept a minimum of 4,000 cards. Card readers have to be available for all purposes like indoor, outdoor, gate barriers and other back of house locations that have to be protected by access control. Besides the daily operations with guests, card readers can be configured to grant access to a group of staff members or guests. This function is required for common areas such as conference rooms, SPA area, swimming pool, car park and Hotel doors that may be used by all hotel guests or by a defined user group. The system registers each access and access attempt and is able to archive the data on a long term basis. Reports are included to provide subsequent evidence of access according to various criteria. The user can produce individual reports via a built-in report generator.

8. Decentralized BUS Structure

- The system must work with or without RCU, the RCU however must be either centrally combined or BUS decentralized in full convenience and flexibility to provide control and efficient room management expandability. Such structure has the task of controlling of room fixtures and devices. It may work either online or offline and it can receive operational data requests from central server as well. The room control unit should be expandable in order to fit the requirement of different typical rooms, in case the required features differ from one room to the other. Features to be supported by the room S-BUS control units or its extension modules are:
 - a. Outputs for lighting control of switching circuits
 - b. Output for lighting with dimming ability
 - c. Ports for low voltage light switches/Panels
 - d. Inputs for monitoring of several room statuses (window contact, door contact).



- e. Outputs for curtain control
- f. Outputs for FCU fan speed control
- g. Outputs for FCU valve actuator control 0-10V
- h. Temperature port
- i. Output for Boiler control
- j. IR Emitter media Control output
- k. Ports for PIR and other occupancy sensors
- l. Inputs for Water leakage and Safe alarm triggers
- m. Ports to integrate to Zone audio or PA
- The data must be stored in a non-volatile memory in the microprocessor so that it is not necessary to reprogram the peripheral units if power is cut off.
- Each unit shall have its dedicated power supply & independent of the other. Systems using common power supplies for multiple room groupings shall not be acceptable. The room modules should be powered from 12-24 VDC/VAC, to ensure compatibility with a central power supply, an eventual backup battery system, as well as a decentralized power supply options can be needed.
- All the connections between room modules and the room unit board are to be made using plug-in S-Connectors to simplify servicing operations. The room unit should give a potential free contact to open any kind of electric lock or door strike that will be installed on the doors, depending on security requirement of project.

9. Main Room Modules

Devices should be customizable as per customer corporate identity requirements.

a. External indication Panel and Card reader with bell

- The following shall be provided in the external indication panel to be mounted outside the room:
 - Do not disturb status display
 - Make Up my Room status display
 - Door-bell function (Auto Disabled in case of DND is ON)
 - Room Signage Back let (Room number)
- The external indication panel should consist of a contactless online proximity RFID card reader that recognizes the data and is endowed with a buzzer for the acoustic signal of the card acceptance or rejection, as well as a signal LED. Indications have to be provided to show whether or not the door can be opened.
- Optionally (can be programmed) If Guest has selected to not be disturbed a service staff card should not be able to open the door. This is to ensure the maximum level of privacy to the guests.





- The card should be read just by passing it near the reader independently of which side of the card is used. Systems with cards that have to be inserted in a slot will not be accepted. This is to avoid that the guest does not enter the room while leaving the card in the outdoor reader.
- The RFID access control is the integral part of the RMS and should not be mounted on the door but on the wall next to the door. It is crucial to be endowed with a battery for time clock to ensure that critical systems like (access control) function normally, without affecting the guest experience, even in the case of a power outage.
- This Bell with Service and Access Panel should have integrated Buzzer that alarms in case of Door forgotten open, and it should also have at least 2 Ports to connect up to 2 addressable Zones of security like Magnetic contact of main door and PIR occupancy sensor at the entrance corridor without the need to Pull wires centrally for long distances, saving time and materials.
- This Panel must be BUS enabled, must be smart and must work totally stand alone, online, or as integral part of complete GRMS or whole Hotel/Building Environment.

b. Key Card Holder with service

- The Key Card Holder should be located near the entrance door and shall trigger room welcome scenes and different programmed features based on the daytime presets. The keycard holder shall assist as possible in energy saving capabilities. The key card holder should at the same time be endowed with the room service buttons for "Do not disturb" , "Make up room" and "Pick up Laundry" requests, as well as a "Master Switch". The room service buttons shall be also used to communicate the automated process of reporting room ready, and other housekeeping workflow. A separate room service panel at the door entrance is to be avoided. If required, the room service features can be duplicated on the bedside panel for guest convenience.
- After opening the door and once the card is placed in the card holder, the guest shall be able to operate all the equipment in the room that is controlled by the system:
 - Power supply to all the equipment will be turned on (power supply to some of the equipment, which is normally off as part of the energy management shall also be turned on)
 - The system shall cool the room to a temperature that was set by the guest or Hotel as Default within a few minutes.
- While leaving the room, once the guest card is extracted, the following shall occur automatically:
 - Power supply to all the power outlets expect to those of fridge and FCU shall be turned off



- All lights shall be turned off gradually except the entrance light, which will remain on for a 20 seconds timeout (length of timeout to be programmable)
- System will automatically regulate the room temperature to the hotel pre- set temperature.
- The grace period during which these functions are performed should be customizable by the hotel operator.
- Key card Holder must also have the ability to work independently and separately as a complete Service request system and energy saving with the following abilities:
 - a- Connection to Client special custom outside Door Panel
 - b- LED driver output for 3 indicators: (DND, MUR, Laundry/Please wait)
 - c- Door Bell Dry Input contact
 - d- Magnetic door contact/PIR detector
 - e- Built in Buzzer alert in case door forgotten open/ajar
- The Keycard Holder should have the functionality to report online the following housekeeping room status update:
 - a- Room clean and ready
 - b- Laundry picked up
 - c- Maintenance is needed in room
- This Panel must be BUS enabled, must be smart and must work totally stand alone, online, or as integral part of complete GRMS or whole Hotel/Building Environment.

c. Power Aux

The power aux is a simple module that should supply enough regulated DC power to drive the GRMS. It shall have 2 Relays one as Master cut off Rated 32A that will ensure total main Phase cut off supply to all lighting and HVAC. The Other relay is 5A rated relay mainly reserved for connection of Door chime.. The Advanced Power Aux Options allow it to function totally alone thanks to the built in simple Logic iii, the 12VDC output, and the 3 Dry inputs that can be used separately to connect as following:

- a- Door bell push
- b- Door Magnetic contact
- c- PIR Motion sensor
- The Aux power MUST ensure the following functionality as stand alone or integrated device similarly:
 - 1- If door is open then closed, logic will check if any motion happened in room within 20 minutes (length of timeout to be programmable), in none then it shall energy save automatically
 - 2- If the Aux is in energy saving mode, then detected any motion inside the room or opening of door, then it shall trigger the power on again direct. The power shall remain on until next door open/close take place.



- 3- In Case of power outage, once power is restored, then energy saving mode shall take place by default, until door is open or any motion is detected in the room. (this default can be altered by programming)
- Such Logic iii shall work regardless of availability of Guest card inserted into the Keycard holder or not. (from common practice, it is noticeable that Guests usually request 2 room cards (for Wife and Husband for example), and always leave one card in the key card holder during day outdoor activities)
- This Panel must be BUS enabled, must be smart and must work totally stand alone, online, or as integral part of complete GRMS or whole Hotel/Building Environment.

d. HVAC (Air Condition Control). Room/Lobby Climate control

The temperature control module (thermostat) should include temperature sensor. The sensor should be easy to connect either as integral part of the Module or into the Ducts of the Room. The HVAC module must have the following Abilities:

- 1- Control Cool in Single or Multi Stage Units for summer
- 2- Control Heat mode for winter
- 3- Control 3Fan speeds as: (Low, Med., High)
- 4- Must have the ability to Work as stand alone with presets and low/High set-points in case the network is down, as well as work on bus or totally online with whole building environment.
- 5- The HVAC Module must have the Capacity to communicate and average the Temperature collected to several devices on bus like:
 - a. Its own sensor
 - b. The DDP wall Thermostat
 - c. The ceiling 9in1/6in1 multi sensor
 - d. Or the 4T multi Port Temp Sensor as to be required.
- 6- The Central Software should have the ability to control and command the HVAC module remotely.
- 7- The HVAC Unit Must be BUS Enabled that supply full 2-way communication ability, and must be small in size in such a way that can be located concealed and away from room environment to avoid any relay triggering Noise for better comfort.
- 8- Optionally: the HVAC Module operation can be logically configured to operate in conjunction with HVAC2 Unit and the server based on user access Card as following minimum set point scenarios:
 - i. "welcome temperature",
 - ii. "comfort temperature",
 - iii. "maintenance temperature",
 - iv. "Room vacant temperature".



- 9- The GRMS should have a digital input Add on (4Z) Module for a window contact as well and should be able to stop the fan coil in case of an open window. The fan coil should start again once the window is closed. The grace periods within which the fan coil stops and starts should be adjustable centrally.
- 9- Each GRMS shall be able to control not less than 9 HVAC modules in case of multi-bedroom suites or apartments. The GRMS supplier should provide the fan coil unit controllers (FCC – HVAC2) in order to provide full standalone functionality of the rooms even in case of fault or offline server issues.

e. Bed side Glass Touch panel

- These units shall be Bus enabled and integral part of the GRMS. It should be both Wall mounted and Table mounted. It must be customizable (with option to customize the design and color, Language, and other prints during ordering). Also must be able to add client logo and name. The Touch Panel must be LED Backlit with Capacitive Touch areas that shall be provided with the following control functions as example:
 - On/Off Lighting Control
 - Lighting Scenes (Wakeup, Watch TV, Read, Sleep, Wash/Dress)
 - Curtain control (Open, Close, Stop)
 - Room Services (DND, MUR, Laundry Pickup)
- The installation shall be simple through Extractable clamps for 3 x 3 BS box, or easy table top base snap on with slide proof rubber at bottom.
- The Bedside Panel must have the automatic ability to Bright up on use, then to dim down when idle to avoid bright room disturbance during night and to help energy save.

f. DDP (Dynamic Display Panel)

- The Dynamic Display Panel must be both Bedside and wall mountable, it must accept menu driven and page driven options. The panel must accept local onsite customization for the following:
 - Changing Displayed Language
 - Add Picture Icons
 - Modify Button Functions
- The DDP panel must have the following abilities to be activated or deactivated as per hotel needs:
 - Lighting
 - Scenes
 - Service



- HVAC
- Music/Media
- Curtains
- Or other Control Needs
- The DDP must have built in thermal couple of thermostat in order to sense the real room temperature. Operation of the thermostat should be intuitive and user friendly. The thermostat shall have the following buttons:
 - Button (On/Off)
 - Button + /- : Temperature Up/Down
 - Button 1,2,3: Fan speed Low, Medium, High
 - Buttons Auto, Cool, Heat
- It should also have the following capabilities:
 - to work as C/F : Celsius /Fahrenheit
 - Ability to display External temperature.
 - Ability to display Time and Date
 - Ability to be calibrated +8-8 degrees
- Optionally: the DDP operation can be logically configured to operate in conjunction with HVAC2 Unit and the server based on user access Card as following minimum set point scenarios:
 - "welcome temperature",
 - "comfort temperature",
 - "maintenance temperature",
 - "room vacant" temperature.
- The GRMS should have a digital input Add on Module for a window contact as well and should be able to stop the fan coil in case of an open window. The fan coil should start again once the window is closed. The grace periods within which the fan coil stops and starts should be adjustable centrally.
- Each GRMS and DDP shall be able to control not less than 9 thermostats in case of multi-bedroom suites or apartments. The GRMS supplier should provide the fan coil unit controllers (FCC – HVAC2) in order to provide full standalone functionality of the rooms even in case of fault or offline server issues.

g. IR Macro (Infra red emitter with macro)

The GRMS should have the ability to control TV channels and other In room Media IR devices like DVD, set top boxes, IPTV ++ using advanced macro driven IR technology. The Bus Enabled IR macro must have the following Features minimum:

- 1- Built in Current Sensor (to check if TV is On/Off)
- 2- Auto IR reset Loop adjustment (in case user used remote or changed TV or Media device status By Hand)
- 3- Must Have ability to drive up to 10 Macros in example:
 - a. Watch TV



- b. Watch DVD
 - c. Browse internet
 - d. Hotel Information Channel
 - e. Listen to Music
 - f. IPTV,
 - g. My Laptop on TV
- 4- Must have Broadcast ability, IR delay ability, upgrade ability,
- 5- Must have ability to store up to 250 IR codes that can be learned using IR learner during Setup and presets programming.

c. 4Z (4 Zone Dry Input Module)

The GRMS should have the ability to add bus enabled "4Z" four zone dry input modules as to be needed at different locations to connect to the corresponding room doors, windows, water leak, smoke/heat, gas sensors.. etc. for energy saving, security, panic, etc. Each module must have broadcast and upgrade ability at any time, and must work both online and offline.

c. Multi Functional 9in1 Sensor

the GRMS must have the ability to add occupancy, and other type of sensors including the 9in1 multifunctional sensor as they feel needed. The 9in1 sensor must have the following built in abilities:

- Motion Triggered Actions
- IR Emitting to control Media, Split IR controlled AC, Mirror/Bath TV ++
- Lux (Light Intensity) Sensor to study room darkness level
- 2Z (2 Zone dry inputs) to connect to door, window magnetic contacts, Smoke, Panic , corridor, and toilet PIR motion sensors, or other
- Temperature Sensor
- Logic control to drive multi level actions with
 - If temperature
 - If motion
 - If lux
 - Other combinations
- IR Receiver that work with GRMS smart Hand Held simple room Remote control.

Each module must have broadcast and upgrade ability at any time, and must work both online and offline.