



# FUSION<sup>®</sup>

**On-line Intelligent Hotel Automation System**

GRMS WITH  
ONLINE ELECTRONIC LOCK  
**SPECIFICATIONS**



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## 1. General System Overview

The Hotel rooms, suites & apartments should be equipped with online GRMS having the following Facilities and Characteristics:

### FACILITIES

- Access by online wireless electronic lock with proximity RFID card, NFC ready;
- Room Card holder/reader or IR motion detector to detect the guest presence;
- Courtesy light automatically switched ON opening the entry door;
- Help alarm for bathroom;
- Burglar alarm on unauthorized access to the room;
- A/C Control with energy saving by temperature set referred to Unsold/Sold room and guest presence;
- Do Not Disturb & Make Up Room commands and signals, and doorbell facility;
- Lighting: Switching off of the room lights in absence of guest or staff;
- Room Lights: controlled On & Off or dimmed by light panels or standard switches.

### CHARACTERISTICS

- The Electronic Lock should be installed in the entry door and connected wireless to the Main Room Unit;
- The Access Control must be online via the network of the Guest Room Management System;
- The Corridor Service Panel should be wall or flush-mounted according to the designer;
- Access Control must be achieved through RFID proximity technology NFC Ready;
- The Room Service Panel, including bell, DND and MUR should be wall or flush-mounted according to the designer ;
- The guest room door must be selected after approval of the Client/ID and the Guest Room Access Control System supplier;
- Enclosure and detachable pre-wired mounting plate with all required wired accessories must be an integral part of the GRMS and Access Control solution;
- The room Intelligent Card Holder should (when used) should include DND/MUR activation and de-activation functions;
- Access panel, can include lighting room number and DND/MUR lighting signals to match the in room related controls as per clients preference;
- Corridor Service Panel, DND/MUR switches must match the in-room switches as per clients preference;
- All switches of the panels are to be soft touch with serigraphic coloured according to Customer/Designer;
- Each light panel button should be capable to be programmed for single or multiple lights control (pre-set scenarios);
- Switches must be color customizable;
- Switch icons must be customizable as per Customer/ID preference and approval;
- Each button on Lighting panel must have the ability to be programmed for multi-functionality and accommodate multiple lighting scenarios;
- The electrical devices of GRMS must be equipped with easy removable connecting terminal that enable a faster installation and an easier maintenance;
- The online GRMS should be user friendly for guests, and ease for management remote access.

### 1.1 GRMS Online Electronic Lock (OLEL)

Upon hotel check-in, a key card is generated at the front desk in the guests' name by the PMS interfaced with GRMS through the Card Coder.

The guest card shall be valid to the related room for the scheduled period. Approaching the valid card to the reader, the Electronic Lock will open. The unlock will last 5 seconds to allow the door opening. In case the door will not be opened during the scheduled time, it will close again and should be repeated the card reading operation.

The access of the room must generate an online log with below details:

1. Room number;
2. Key card/s (up to 4) identification;
3. Time stamp;
4. Date stamp.

The access control system must also keep information of the below from the PMS:

1. Guest check-in;
2. Guest check-out;
3. Guest room number.

The On Line Electronic Lock should give and receive the following information

1. Card code transmission to MUR;
2. Door opening command from MUR after code verification;
3. Low battery Warning;
4. Unlatched lock;
5. Burglar alarm (external opening without valid card);
6. DND activated will Inhibit the access by personnel card (except Top Master).

The Corridor Service panels should be glass or polycarbonate with lighting signals for DND and MUR including the call button. Wall or flush mounted.

When the "Do-not-disturb" signal is activated either from the bedside console or the internal room service panel, the related signal will light and the chime should be deactivated.

The "Make-up-room" indication is activated by the button of the bedside panel or internal room service panel. Make-up-room and Do-not-disturb should not light at the same time. DND has priority for an occupied room the Do-not-disturb should reset pushing off the button on the room panels or by the PMS check-out.

The GRMS and Access Control Systems must be from a single manufacturer.

The GRMS system must be certified to be interfaced with the most common PMS.

## 1.2 Guest welcome and Energy Saving

Energy saving is very important in the modern green tendency. So the energy saving in the room is fundamental. However any solution to economy, should not in any way affect the customer comfort. The saving is related to the guest presence in the room.

### 1.2.1 Guest Welcome

Opening the room entry door with the card, the room will be immediately set to welcome the guest with a "courtesy light" switched on at the inside entrance. Furthermore, depending on the light control equipment, could be switched on a pre-set welcome light scene.

### 1.2.2 Presence detected by the card holder/reader

Entering the room, the guest should insert the card in the card holder and after that, after verification, will switch the room to Comfort condition. Once the key card has been withdrawn from the card holder, with a delayed time from 0 to 60 seconds, the room will be switched to stand by.

### 1.2.3 Presence detected by IR motion detectors

It is based on a combination between the door access contact and one or more IR motion detectors installed inside the room and bathroom controlled by a proper algorithm to minimize any misunderstanding. Once the entry door is open and closed, the detectors will explore the room and bathroom (if equipped with detector), with no motion for a period (10 – 20 min.) the room will be switched to stand by.

## 1.3 A/C Control

The room temperature control panel should be embedded with a built-in temperature sensor and temperature numeric display. The temperature of each room can be centrally set at three levels: room not sold, room sold but guest out, room sold and guest inside and will be selected automatically according with the room status. The air speed will be automatically selected according with the Delta T between the stand-by status and the comfort-status to minimise the delay to comfort status. The display will be dimmed down automatically whenever there is no further input 5 seconds after last use. The Eco command allows the guest to trust the hotel management following an energy program, the Eco mode set a temperature following the hotel eco rules allowing the use of light and power supply when the guest is inside the room.

The room temperature set by the server, should be done generally, by groups or individually by authorized personnel. The temperature probe could also be positioned outside the temperature control panel, when needed.

#### **1.4 Lighting: Dimming & Switching On-Off**

The lighting can be controlled by soft touch switches with backlight/icons automatically switched off if not used and lighting on when pushing any button.

- Lighting: switching On & Off;
- Lighting: dimming in guest rooms. The lighting control should be programmable to achieve On/Off and dimming functionalities.

#### **1.5 Bedside Panel**

The bedside panel with soft touch switch allows multiple controls according with the electrical project. The bedside console shall have suitable approved icons to facilitate the facilities identification. The control panel buttons should be illuminated at touch.

- Lighting: On & Off;
- Lighting: dimming pre-set Lighting Scenes;
- Do Not Disturb & Make Up Room;
- Master on/off.

#### **1.6 Hotel Operators Guest Room Management System Software**

The hotel operators will be able to remotely control the hotel rooms /suites by using the Guest Room Management Software installed in a PC workstation. The Guest Room Management Systems communicate via TCP-IP to the Main Unit located in the Hotel Operators IT room (or displaced into the structure) for maintenance and control of each area via the Guest Room Management System. The GRMS software must have an online access control interfaced to leading PMS systems.

The GRMS software can run on pc clients, the pc clients must be connected to the existing tcp-ip network.

## 2. System Description

The purpose of this criteria is to establish the standard for design and of the GRMS.

The GRMS shall be microprocessor-based. Network Transmission Protocol to the central GRMS server is based on bus485 or TCP/IP.

The GRMS shall be configured and will comprehend of the following:

- GRMS manufacturer must issue a letter of certification stating that both GRMS and Electronic lock are part of a real integrated project and not a combination of 3rd part product integration;
- GRMS Electronic Lock with wireless connection to Room Control Unit;
- GRMS capacitive non-mechanical glass touch switch AC Thermostats;
- GRMS capacitive non-mechanical glass touch switch Corridor Service Panel;
- GRMS Key Card Holder/Reader with capacitive non-mechanical buttons for DND and MUR;
- GRMS Lighting & Dimming capacitive non-mechanical glass touch switches;
- GRMS Room Control Unit (RCU) with wireless unit to connect the Electronic Lock;
- GRMS server and client Software. All software and licences must be included for the management system/server;
- All the room devices must be supervision by a microprocessor unit that read and reveal in real time the correct working status.

### 2.1 Electronic lock specification

The electronic lock must meet the below technical specification as minimum:

- Magnetic latch with automatic sintered steel bolt released when you close the door, called Twin Lock;
- Available for flush or rebated door;
- Adjustable striker with 4 positions,  $\pm 1.5$  mm
- Lock with anti-panic exit opening function at room side;
- Emergency mechanical half cylinder hidden under the antenna cover;
- Single electronic device in hall way side and in room side
- DND button at room side device acting the access inhibition and interfaced with DND signals
- Possibility to know in real time: the latch status (open – closed), the battery level and DND status;
- Possibility to choose among a wide range of brand of handle, necessary passed screw and with handle fixed together with the base;
- Possibility to choose between different kind of finishing of the locks and the covers;
- Wireless transmission, battery supply with 3 lithium AA batteries;
- Card read technology NFC ISO/IEC 14443-3 type A, 13.56 MHz frequency;
- Wireless technology IEEE 802.15.4/2.4 GHz with Jennic connection;
- Temperature for use  $-10/+55^{\circ}\text{C}$ ;
- CE marked as EN12209 and EN14846;
- Fire Resistance EI60 according with EN1634-1.

### 2.2 Corridor Service Panel (CSP)

The CSP is capable to indicate the following status: Do-not-disturb and Make-up-room. It shall have bell button and the occupancy-signal. The bell button should be muted when Do-not-disturb is activated.

For a sold room the Do-not-disturb condition status should only reset when the guest de-activates from the in room control button.

### 2.3 GRMS A/C Thermostat

The GRMS capacitive non-mechanical touch glass A/C Thermostat to match wiring accessories as per the client's requirements shall have a button to activate control of the air-con fan speed for on/off, low, medium and high with LED indication for each status. It shall also have the respective buttons and slide for temperature adjustment.

The GMRS shall directly control 0.10V valves for 4 pipes air-conditioning system. The GRMS shall control the FCU chilled water valve to achieve temperature control. All temperature control shall be achievable within a  $\pm$  one degree Celsius resolution. The GRMS shall be capable of providing multiple temperature setting levels without the use of external conventional thermostats. The GRMS/access control system must have an interface with leading PMS providers like Fidelio to achieve the below functionalities:

#### Un-sold vacant room

- Under this mode, the temperature set point is positioned automatically at the value by the software management setting. The FCU valve and the fan speed shall be ruled by the Temperature distance between real temperature and the rented status temperature, to maintain close to the rented room temperature, achievable in time. Just Check-in Room;

- Upon guest checking in at the Reception, the room A/C shall be automatically switched to a “Fast Comfort” mode or client preferred level to pre-cool the room within 10 minutes. This is achieved by automatically switching the Air-con fan speed to “high” and control valve to open so as to reach a fast-cool temperature set point.

The GRMS/access control manufacturer must list a released interface part number with PMS systems like Fidelio and Opera.

#### **Sold/empty room**

- When the room is sold but guest is not in the room. The Air-con can if required to be automatically controlled to maintain at hotel setback temperature. Air-con fan speed shall switch to “low”;

#### **Guest comfort mode**

- The desired temperature level is set by the guest in the room. The Air-con fan speed shall remain as according to the guest’s setting while the control valve shall be automatically adjusted to achieve and maintain the new set point;
- The Eco save mode;
- The Eco command allows the guest to trust the hotel management saving energy program, the Eco mode set a temperature following the hotel eco rules allowing the use of light and power supply when the guest is inside the room.

The guest shall be able to set room temperature by touching the thermostat , the limit from top to lower temp° is set by GRMS software, the range set can depend on external temperature or by seasonal pre-set.

The GRMS shall also have the capability to fix the lower and upper temperature limits.

- Multi-set point temperature control;
- 3 speed fan control (high/medium/low);
- On & Off control;
- Numeric display shows the room temperature or set level.

## **2.4 Process management**

On a management perspective, it must be possible to monitor, control and manage all of the access control system from the central control unit per room or either as a group. The central control unit uses a simple graphical user interface to manage the software features. The GRMS must displayed all the room installed and each room status.

Through the ready integration with Property Management System (PMS), the System must present real time information to employees from the reception/administration to notify them of various In-Room occurrences: the presence of a customer; the triggering of the Do not disturb function, an Alarm from the bathroom, room to be cleaned, cleaning in progress and when ‘The room is Ready’ for housekeeping. This information will enable employees to react in a more efficient manner.

The Central Access Control Unit must record all access control system activity. The information can be displayed and printed upon request. All alarms and malfunctions are instantly displayed on all screens containing the guest room management software.

A room access must be recorded by all types of personnel and any lost key must be blocked from use without visiting each lock. Being an ON-LINE system where many categories of Keys can be enabled (Guest, Maintenance Personnel, Commis, Director, Housekeeping, etc) and automatically tracked. Any unauthorized entry must be immediately indicated with an alarm.

## **2.5 GRMS Lighting Control**

- Lighting: switching On & Off;
- Lighting: dimming in guest rooms. The lighting control should be programmable to achieve On/Off and dimming functionalities;
- Individual capacitive non-mechanical glass touch smart switch to match client preferred wiring accessories to control the respective lights as shown in the drawings. Capacitive non-mechanical glass touch smart switches to be included;
- When the guest access the room by approaching the key card at the electronic lock the pre-set courtesy lights will be turned on;
- Serigraphic labelling/font with LED indication required for all switches to highlight scenes and individual light circuit control;
- Scenes;
- Light circuit dimming control which is integrated into the same capacitive non-mechanical glass touch switch of specified circuits (e.g. bedroom).



## 2.6 Bedside Panel

The capacitive non-mechanical touch buttons allow to select the lights and related functions (ON/OFF or Dimming). The bedside console shall have suitable approved icons to facilitate the function identification.

- Lighting: On & Off;
- Lighting: dimming;
- Pre-programmed Lighting Scenes;
- Do Not Disturb & Make Up Room or Shutter Up - Down;
- Master off.

## 2.7 GRMS Room Control Unit (RCU)

The RCU, as intelligent supervision room device, must be a single unit, capable to achieve the following functionalities:

- Access Control connecting the On-Line wireless electronic lock;
- Card Holder or multiple PIR management;
- Issue commands and DND/MUR/Help communication;
- Courtesy Light;
- All light circuits on/off;
- Room temperature setback and control by the guest;
- FCU speed control;
- Controlling ON/OFF or modulating fluid valve, low voltage or 230V;
- Auxiliary programmable input;
- Auxiliary programmable output;
- The RCU shall include the entire power supply unit, microprocessor controller, all electronics and various relay control modules interfacing with the 230V AC and networked to the Building main BUS;
- Locate Room Unit within the guest room cupboard, concealed behind a hinged access panel. Integrate the control modules with the room distribution board;
- The RCU shall be designed to be fully modular, according with din standard. It shall be expandable cost-effectively without having to replace or modify the original equipment;
- All the modules shall be standardized such that it shall be replaceable and interchangeable with modules and panels in other rooms;
- All modules shall be housed in a box with ventilation louvres. It shall be designed with proper knock-out holes for cable entry conduits to be fastened to the chassis. There shall be cable entry access holes on top and bottom sides of the chassis. Printed Circuit Boards (PCB) and all other components shall be non-flammable, non-toxic, fire-retardant, CE mark. Every module, including the power supply unit (incoming transformer) and each relay control module shall be fuse-protected on the incoming live cable with appropriate fuse rating;
- Relays for switching AC loads (example lighting) shall be at least 5 or more Amp current rating. Alternative lower amp rating relays shall not be accepted;
- All connectors to the RCU shall be plug to facilitate the replacement. Should be positioned to allow easy access during cable termination and maintenance;
- The RCU must guarantee all the primary functions for the customer (room access, room energy, FCU, lighting control) even in case of lost connection with the central unit;
- It shall also incorporate the "power failure last status" feature. When power is resumed after a power failure, the last status of all lighting, power and air-con in the guest room will be restored accordingly. If no light was ON in the guest room before power shut down, upon power return, no lights shall be turned on in the room;
- Power switching contacts must be compatible with a supply voltage is 230VAC, single phase, 50Hz and able to withstand prospective short circuit current;
- Networked via the Convergent Network to Guest Room Management Server (GRMS);
- All RU installed shall be suitable for continuous and satisfactory operation under ambient condition from 5 to 50 degree Celsius and a relative humidity of up to 100% (non-condensing).

## 2.8 System Network

The room to room ICU connectivity for every 126 rooms will be achieved through RS485 cable and will be converted to an IP stream at the floor IDF room by the use of RS485/IP interfacing unit. Each group of 126 rooms will connect the IP network backbone.

## 2.9 GRMS server and client software

The GRMS software shall be an integral part of the GRMS and access control product and shall be able to select, monitor and control the operational conditions of each guest room, real-timely, from the GRMS Engineering Workstation.

It shall include but not limited to the following:

- Ambient temperature;
- Fan speed status;
- Normal Setback temperature for vacant check-out and check-in room;
- Synchronized Master and Slave Clock;
- Unscheduled occupancy alert;
- Room status monitoring;
- Software integration to PMS system;
- When a guest checks-in at the reception, upon assigning a guest room number to the guest, the system shall automatically switch on the air-con in the room to a Fast Comfort Mode to pre-cool the room before the guest enters it or the guest may choose at reception their preferred temperature and lighting modes;
- Upon guest check-out, the system shall automatically command that room to Ultra-save Mode for maximum energy conservation;
- Normal Setback for unsold room, vacant sold room, occupied sold room;
- Energy saving (automatic or manual) for unsold room, vacant sold room or occupied sold room. The temperature set point can be set to gradually rise at 0.5 degree Celsius per hour until it reaches a maximum of 2 degree Celsius. The temperature set point reverts to previous value when the Night Shedding period ends;
- Software shall allow guest rooms to have preferred HVAC centrally activated or deactivated (room-by room or by block of rooms selected) from the front office check-in counter upon guest registration;
- It shall allow guest rooms to be centrally activated or deactivated on the network by the engineer upon request;
- Security integrity with multi-level password control shall be designed to be suitable for hotel operational and functional purposes.

## 2.10 GRMS Enclosure

- GRMS solution must include the supply of an IP rated GRMS Enclosure panel;
- GRMS solution must include the supply and install complete with all required wired accessories like single terminal block, double terminal block, fuse terminal block, din-rails and cable management.

### 2.10.1 GRMS Switching and Dimming Module

- GRMS solution must include dimming module compatible to drive 0-10V trailing edge/ leading edge loads;
- Each relay for switching shall be able to withstand a maximum of 5A current carrying capacity;
- Din rail mount.

### 3. Work included

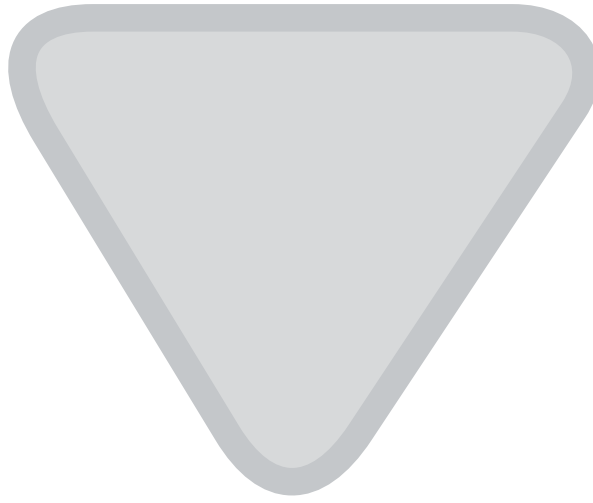
This section supplements the main contract conditions and forms part of every section of the Electrical trade and shall be read in conjunction with all sections of the specification to also include the following:

- Provide all labour, materials, products, equipment and services to design, supply and install the Guest Room Management System as specified in these specifications;
- Refer to all other specification sections that form part of the package procurement documentation including the room schedules;
- The system shall utilize the latest hardware and software technology and shall meet the specific needs as set out in this document;
- The system shall have the capacity to support multiple users;
- The systems shall be economical and cost effective in terms of its operation, maintenance and personnel required for manning. It must also be energy efficient;
- It must be durable and capable of sustained used throughout its life cycle;
- Compliance statements are mandatory for the entire document and it's various sections and all sub-sections.

### 4. Reference standards

- All electrical installations shall be carried out in accordance with the best International standards and Codes of Practice specifically with the current issue and the requirements of the local supply authority;
- The entire installation shall be installed and tested in accordance with the relevant International Standards and any requirements of the local supply authority;
- Compliance statements are mandatory for the entire document and it's various sections and sub-sections;
- Room/Guest Management System installation will be carried out in accordance with the best International Standards and Codes of Practice. The entire installation shall be installed and tested in accordance with the relevant International Standards. The equipment offered shall conform to CE standards with respect to electromagnetic compatibility;
- Room/Guest Management System and Access Control System should be from a European Manufacturer supporting EU standards;

The rooms for handicapped people shall have the bathroom alarm with acoustic signal inside the room with related reset and a lighting indication on the access panel.



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