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## 1. General overview

### 1.1. Aim of the document

This document defines the main characteristics and specifications for an intelligent Home Automation System able to provide functions and applications related to comfort, security, energy saving and communication for residential and business buildings. The document shall be a guide line for an Automation system with solutions suitable for a secure installation.

Definitions: HA : Home Automation.  
LCP: Lighting control panels.  
SELV: Safety Extra – Low Voltage  
QA: Quality Assurance

### 1.2. General description of the system

Simple, easy and intuitive, the Home Automation system shall be designed to be compatible with every kind of home and lifestyle, helping to make everyday life easier and more comfortable. HA shall be realized with an easy-to-program Bus system for the coordinated management of the functions traditionally controlled using standard devices such as switches, dimmers, timers and video door entry systems. These devices shall be “smart”: able to interact with each other and with “distributed intelligence” (therefore they should not be managed from a single centralized programming unit, so that the failure of any device will not influence the functionality of the system). With HA all the functions are integrated and easily controlled by the user.

HA system shall be “compatible” with Konnex networks (by sharing the same physical bus and interoperating without gateways) to guarantee interoperability with devices manufactured by companies associated with Konnex, the international standard for home and building automation.

Simply by pressing a button the user shall for example set different temperatures, different sets of lighting and music scenarios, configured according to daily needs. This reliable and automatic system shall also be able to communicate via mobile phone, internet, and locally through the existing home network.

The system shall monitor the status of home appliances, promptly reporting alarms.

Safety and security, comfort, energy saving, sound diffusion, communication, CCTV, and video door entry phone shall be integrated into a single system which continually adapts to the user's changing demands. Home automation system shall blend in seamlessly with any interior setting.

### 1.3. System functions

Main system features and capabilities are listed in this section:

- *Comfort*
- *Safety and security*
- *Energy management*
- *Control and supervision*
- *Communication*
- *Sound diffusion and multimedia*
- *Video door entry system*

### **1.3.1.Comfort**

HA system shall upgrade home comfort to a higher level than a standard electrical installation, here some examples:

- Lighting control shall go hand-in-hand with improved comfort and energy saving. With HA system it shall be possible to create custom scenes to meet the customer's needs, such as switching on groups of lights in certain conditions or for special occasions, or switching off all lights when going out. A proper connection shall guarantee solutions from the individual lighting control (on/off or dimming) to the programmable scenarios activation, through the supervisor devices (touch screens and/or keypads).
- Basic operations such as opening and closing rolling shutters or curtains, blinds, doors and gates shall be automated and controlled by HA system in a simple and user-friendly way. The home automation system controls the relative motors on the basis of climatic or weather conditions, detected presence of people, and preset scenes. The system shall therefore play a vital role in homes with elderly or disabled people.
- The climate control system shall be programmed not only according to the room temperature or time, but also according to the presence of guests, the position of the windows, and the temperature in adjacent rooms. It can also be a part of a preset automation scene. Commands shall be centralized or local with LCD thermostats, e.g. subdivided into zones. Furthermore the system components and operational software shall be controlled via mobile phone and internet in order to save energy and improve comfort even in case the house is not occupied for a long period.

### **1.3.2. Safety and security**

The HA system shall help to increase considerably safety and security by integrating all installation components into a single system which maximizes performance and warns the homeowner of impending dangers. HA system shall use a single Bus in order to allow the integration of:

- natural gas/LPG/carbon monoxide, smoke and water leak detectors. Whenever an appropriately calibrated device detects a dangerous situation, it will send an alarm via SMS and at the same time activates devices such as solenoid valves in order to secure the building;
- the security system shall emit an audible alarm and send text messages or phone calls in order to alert the owner or the proper authorities about unwanted intrusions. The security system shall be controlled using suitable devices (digital keypads, transponder keys etc.) and shall be controlled and monitored from a control panel or a 4.3 or 10 inches touch screen.
- Whenever the security system is off, motion detectors shall perform a “motion detector function” for switching lights on or off, at the same way a window sensor shall be used to switch off automatically the air conditioning or central heating in case of some doors or windows have been opened.
- Indoor cameras for setting up a CCTV video surveillance system. Particularly useful in homes with infants or toddlers, enabling parents to keep their children constantly under guard via the control panel monitor or a television screen, using a baby watching function.

### **1.3.3. Control and supervision**

This is where the home automation system shall come into its own compared with conventional lighting and electrical installations. The parameters of the entire system shall be programmed and modified at any time. This means that all the functions installed in the home (burglar alarm, lighting scenes, climate, automations, load control etc.) can be monitored and managed centrally from the control panel, or locally via the touch screen. This centralization of all applications drastically simplifies home automation control and shall help to save energy and don't waste time and resources.

### **1.3.4. Communication**

Home automation system shall communicate with the user in different ways:

- Via mobile/smart phone, tablet and PC (with a simple text message, with a dedicated App or via web-browser); for example, it shall be possible to activate and deactivate the burglar alarm, communicate break-in alerts, set the climate and control the various comfort and lighting scenes. Various technical alarms - for example related to power failures, gas or water leaks - shall also be received via mobile phone. Remote and local supervision shall be feasible with the following OS: iOS, Windows Mobile, Symbian, Black-Berry or Android.

### **1.3.5. Sound diffusion and multimedia**

The home automation system shall integrate a sound diffusion system in order to provide top-quality sound fidelity in the way it relays the digital signal and in the quality of its sound diffusers. It shall have independent audio ports in order to make it compatible with sound sources outside the system, like MP3 readers, iPod and iPhone (connected to the system via flush mounting docking station), and in order to enable different rooms in the house to be tuned in simultaneously in different modes. It shall have the function to make microphone calls throughout the speakers in chosen audio zones and the "Baby Control" function: when the microphone detects a sound higher than a pre-set threshold - for example, a baby crying - the system switches the sound on its diffusers, pausing any transmission that may be in progress and activating any audio zones that may have been turned off. Sound system devices shall be connected between them with the same 2 wires bus of home automation system.

### **1.3.6. Video door entry system**

By incorporating one or more external video call panels into the home automation system, it shall be possible to watch the video coming from the outdoor camera communicating with visitors and control the access to the house. It shall be possible to open the electric door/gate lock, turn on entrance lights and make intercom calls, all via the control panel. Internal panels shall be touch screen color display (4.3" or 10" flush mounting) with the same design as the rest of the electric and electronic devices. Internal panels shall be able to control video door systems and all automation functions from the same interface. The system shall include IP cameras in order to guarantee the viewing of videos through 10" internal panel.

### **1.4. Technical description of the system**

The HA system shall be integrated with wiring devices and shall provide an aesthetically wealth thanks to the numerous combinations of materials, colors, shapes and details.

The system shall provide for the same required function different kinds of device installation: wiring devices integrated (flush mounting), DIN EN50022 modularity (on DIN rail), or shallow electronic devices (controls or detectors). All user interfaces (like keypads and touch panels) shall be flush mounting with a high grade of quality and design.

The HA system must allow to combine the solutions of traditional and digital technology and guarantee an aesthetical, installing and functional integration.

The system shall use for all devices the latest hardware and software technology and shall be customized to meet the specific needs of each home. It supports multiple users.

Regardless of its technical complexity and sophistication, the system must be flexible, user friendly, operationally simple and functionally efficient to suit the users' needs.

The system shall provide wiring devices integrated solutions with a high degree of compatibility with the internal decoration and the ambience of the development and must guarantee a good level of customization.

The system shall guarantee synergies among devices, according to the customer requirements, thanks to the BUS technique and shall be able to communicate to the external world through GSM line or an Internet connection in order to allow the remote control to user.

The system shall provide the possibility to interact with third party systems and to create new customized functionalities, by using any hardware interfaces or just by a software configuration.

The system must be economical and cost effective in terms of operation, maintenance and personnel required for managing; it must be energy efficient, durable and capable to sustain the usage through its life cycle.

The two-wire bus cable shall link in parallel all commands (push buttons, motion detectors, touch screens, IR receivers, etc.) and actuators (on/off controllers, dimming controllers, shutter controllers, etc.) to each other respecting the installation rules indicated by the manufacturer. The specified bus cable shall be an unshielded twisted pair, with multi core conductors and shall be capable of handling information exchange and supplying power to the bus devices.

Any device in the system shall be "smart": no centralized processors or centralized memory storage devices shall be permitted; any local controls or actuators failure must not affect the entire system functionality.

## **2. System requirements**

### **2.1. General requirements**

The HA system shall allow the following applications:

- Reconfiguration of the functionalities through simple reprogramming operations in order to meet the customer's needs; it shall be possible to implement the configuration just by using a panel with a graphic interface and an intuitive menu.
- Easy connection of new components in order to increase the functionalities.
- The HA shall be able to "speak" with KNX products in order to integrate special functions not supported from the system itself.

The HA system must allow to combine traditional and digital technology and guarantee an aesthetical, installing and functional integration with a common design for all interfaces.

### 2.2. Main technical characteristics of the system

All system devices shall be connected to the BUS line that starts from a SELV 29 Vd.c. power supplier. In case of black-out each device shall store the previous status.

The HA system devices shall be fully in compliance with the European product standard EN 50428 “non-automatic control devices for fixed electrical home installations (and similar uses)”

Each of the active devices shall have a built-in configuration push button with a LED. The LED shall lit in the event the push button is pressed and if there is power to the device, thus depicting that the device is communicating in the system.

The specified BUS cable shall be realized with a twisted couple 2 x 0,5mmq, unshielded.

The cable insulation shall be 300/500 V according to the European Normative.

The connection of the cable to each component must be effectuated by extractable terminals which must be protected by appropriated covers; this technique will guarantee a quick maintenance and a rapid installation (plug and play).

Every system shall be interfaced with others in order to obtain advanced functionalities; at the same time each home system will be capable to stand-alone operation.

The HA system shall be installed by competent mechanics and checked out by competent technicians; the responsibility of the HA contractor shall include supervision, configuration and checkout of all the stand-alone subsystems

### 2.3. Included general rules

The works to be performed are described in the Specification and Construction Drawings and cover the supply, delivery to site and installation of the home automation system.

The contractor is required to provide the labor, material, products, equipment and services to design, supply and install the home system as detailed in this Specification and in the schedules and/or drawings.

The contractor shall be accredited by the manufacturer and shall provide copies of factory certification.

The contractor works shall not be limited to the following but shall include:

- *The supply, installation, testing and commissioning of the home automation system and all accessories*
- *Liaison, co-ordination and interfacing work with interior design and mechanical and electrical contractors*
- *All operational and product manuals, working drawings and documentation in both hard and soft copy*
- *Two copies of “User Guide” submitted to lead consultant for distribution to the homeowner at handover.*

The overall design criterion is that the systems have to be reliable, easy to use, highly user friendly, flexible and proven.

The system shall be able to permit future updating and deployments.

Generally installation must be carried out in high standard and accordance to the drawings and requirements, satisfying entirely the lead consultant specifications.

The contractor shall be required to work closely with other parts in the entire project duration.

The installing contractor shall provide a complete set of “as built” drawings of the installed system.

These drawings shall be prepared and verified by the consultant before commissioning the system

The installing contractor will coordinate schedules with the owner so that a complete schedule is available at the time of commissioning.

The installing contractor shall be responsible for schedule updates until the system is handed over to owner.

A soft and hard copy of all programming details, databases and configuration files shall form part of the as installed documentation.

**2.4.Related section**

All sections in the Home Automation Specification are to be read together as a whole.  
In case of different sections having conflicting requirements, refer the conflict to the designer representative for a solution.

**2.5.Enclosures**

Submit the following technical information:

- Manufacturers' data sheets covering the description of the materials, standard and type.
- A detailed design philosophy on the home automation system solution and rooms plants
- Drawing showing typical detail cabling of:
  - *Low Voltage Programmable Intelligent Management system*
  - *Security system*
  - *Touch screen*
  - *Video door entry and Intercom subsystems*
  - *Sound diffusion system*
  - *Control system*
- Software
- A project management schedule and an implementation timeline
- List of material of all proposed devices and equipment
- On site support for cable management, termination and trouble-shooting
- The contractor shall provide a minimum 3 Years Product and Application Assurance Warranty backed by the manufacturer without additional costs, from the date of successful commissioning
- The contractor shall provide resellers' recommended spare parts for emergency replacement

## **2.6. Quality assurance**

Where specific items are called out in the specifications or indicated on the drawing for a specific application, use those product or materials, or approved substitutes. Where no specific call outs are made, use premium products or materials

Supervise the cable system to be installed by a qualified contractor who will be experienced in the nature of such installations.

Confirm that all implementations activities must be recorded and documented on all items installed. Including reference to cable pathways used, final location, identification of cables and equipments. The presentation of all these records shall provide the "As-installed" basis for all future reference to the installation.

The installation phase of this project is the culmination of the planning and design phase with contractor and it is important that the installer documents work practices and quality assurance procedures to check works on site to include the total range of works within the project.

An allocation of time shall be allowed for the lead consultant or representative to witness the certification process.

During the period of the project all aspects of the installation will be monitored for progress and completion in accordance with the project plans provided by the lead consultant and manufacturer. The entire installation shall be 100% tested, with all results documented before acceptance of the installation is granted.

All work shall be performed to the highest possible standard in a thorough and conscientious manner and may be subjected to random quality assurance checks by the manufacturer or lead consultant.

The contractor shall comply with all legislated laws, ordinances, rules and regulations with respect to the performance of the work. Wherever there is a discrepancy of rules or standards, the more stringent standard shall apply and the contractor shall also obtain all permits and licenses where they apply to the work performed.

Both parties (lead consultant and contractor) shall recognize that as the contract progresses, changes may be necessary. All changes will be mutually agreed upon by both lead consultant, contractor and manufacturer representatives and fully documented prior to those changes being implemented

The contractor's personnel shall be consistent with and conform to, legislated laws, regulations, codes, ordinances, insurance rating regulations, in the jurisdiction in which the project is located. This will included but not be limited to, all health, safety, environmental, building and zoning codes, rules and regulations

As stated elsewhere in this specification, the contractor shall certify the installation to meet installation standards

## **2.7. Manufacturers list**

All products used within the system being specified can be supplied from the following list:

- Vimar
- Jung
- Gira
- Crestron
- Lutron



### **3. Product and system features**

The following products and sub-systems shall be integrated in the same architecture: 2 wire bus for an easy installation and maintenance.

#### **3.1. Automation**

Low Voltage programmable Intelligent Management system for lighting, shutters and blinds/curtains automation in the whole home (master bedroom, dressing, bathroom, formal living, guest suite, bathroom, etc.) or building (guest rooms, reception, meeting rooms, toilets, restaurants, etc.); switching of external lights (boundary wall, landscaping, garden and garage). All these functions shall be easily programmable via dedicated control unit or via PC with dedicated software.

##### *3.1.1. Main architectural features*

- The specified bus cable shall be not polarized and shall be laid in the building in the form of a linear, star or tree and mixed structure similar to the power mains. It shall also have insulation up to 300/500V so that it can be pulled in the same conduits with the power mains. Bus cable shall be realized with a twisted couple 2 x 0,5mmq, unshielded
- All the devices shall be connected with the specified not polarized bus cable and must have their own non-volatile memory that stores their designed program; every device constituting the system shall be addressable; addressing shall be in the form of unit address (device address), group address (channel address)
- The network shall be designed in such a way that even in case of a short circuit, the devices are not effected due to over current
- The same BUS line must be used for both the devices communication and power supply; the power supplier must be SELV of 29 Vd.c.
- The connection of the cable to each components must be effectuated by extractable terminals which must be protected by appropriated covers
- All the devices must be virtually configured by a user friendly software interface available on the system control unit
- The system shall provide also IR remote controller
- The system shall provide interfaces able to connect and integrate on/off detectors in order to remote control and command events.
- The system shall be composed mainly by two type of devices:
  - Commands and supervisors, connected only to the BUS cable, able to develop complex operations (general commands, temporized commands, groups and scenarios commands)
  - Actuators, connected both to the BUS cable and to the power line for managing the connected loads
- There shall be the possibility to modify the system parameters from the control unit.
- All the devices must respect the requirements of the European normative which specifically concern them (i.e.: EN50428:2005-05, EN60669-1, EN 60669-2-1, BT, EMC).

##### *3.1.2. General features of commands and actuators*

- The keypads, pushbuttons, thermostats, touch panels and video door touch supervisors must be:
  - modular and installable in flush mounting boxes (blocked with appropriated hooks in order to guarantee an easy uninstalling)

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- With appropriated cover plates, integrated with the chosen aesthetic, selected among different materials (plastic/metal/glass/wood/stone), shapes (squared or rounded), details (internal decorating frame) and colors (white/black/gray/etc...)
- The support frame shall be a rigid network in order to avoid bending
- The keypads shall have an optical indication of the state useful also for their localization and they shall have a plastic cover buttons with or without symbols for the identification of the functionality. Plastic cover buttons shall be also customizable with customer symbols. Keypads could be with or without actuators on-board.
- The actuators shall be modular flush mounting (aesthetically integrated with the entire covers range, installed on the same support frame of keypads) or modular DIN for the installation in panels and DIN boxes. DIN rail actuators shall have local switches in order to manually control the loads in case of bus failure. The actuators must provide an indication of the state of the connected load and related command. The actuators must guarantee the division between the SELV connection to the BUS and the load voltage

### **3.1.3. Product specifications**

Supply, installation and connection of power supply for automation system. Input 120 – 230Va.c. – 50Hz. Output 29Vd.c. SELV. Maximum absorbed current 290mA with 230Va.c.– maximum supplied current 800mA with 29Vd.c.. Execution for fixing on DIN rail – Size: 9 DIN rail modules – installed in the control panel. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of a system control unit. The device allows: configuring the whole HA system by a graphic interface, managing up to 32 scenarios, 16 events, 30 alarm zones. Connected to the single zone thermostat, the control unit works like a time-thermostat, which could manage up to 40 climate zones, with daily and weekly temperature programs. The control unit could be integrated with the video/intercom system or with the CCTV system, making possible to use the same monitor for more integrated subsystems. Assembly in modular flush mounting boxes, size: 4+4 modules. Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of BUS cable, with 300/500V insulation value 2x0,5 mm<sup>2</sup> wires twisted pair, in 2 different colors (white/yellow) to distinguish different lines.

Supply, installation and connection of an actuator device with local command key for the activation of reversal engines – output on two interlocked relays; contacts capacity: 120 - 230Va.c. 4A resistive loads –  $\cos\phi$  0,6 2A movement reducers – to be completed by a 2 modules cover specific for 2 functions commands. Assembly in modular flush mounting boxes, size: 2 modules. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of an actuator device with local command key for the activation of reversal engines – output on two interlocked relays; contacts capacity: 120 - 230Va.c. 8A resistive loads –  $\cos\phi$  0,6 3,5A movement reducers – to be completed by a 1 or 2 modules cover specific for different functions commands. Assembly in modular flush mounting boxes, size: 3 modules. Complementary accessories, connection and cabling to provide a complete and operating system.

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Supply, installation and connection of an actuator device with local command key for the activation of a single load – output changeover relay; contacts capacity: 120 – 230Va.c. 8A resistive – or incandescent lamp - to be completed by a 1 or 2 modules cover specific for one function commands. Assembly in modular flush mounting boxes, size: 2 or 3 modules. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of an actuator device for the activation of a quadruple load, contact capacity: 120 – 230Va.c. 16A resistive – or 10A incandescent lamp, 1A fluorescent re-phased lamps with ferromagnetic or electronic reactor, 3,5A  $\cos\phi$  0,6 motors. The actuator has four push luminous indicator buttons for the loads state and to switch ON – OFF manually (when dedicated manual button selector is activated) the embedded relays. A configuration micro button is present too. Assembly on DIN rail, size: 4 DIN rail modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of an actuator device for the activation of a single load, contact capacity: 120 – 230Va.c. 16A resistive – or 10A incandescent lamp, 1A fluorescent re-phased lamps with ferromagnetic or electronic reactor, 3,5A  $\cos\phi$  0,6 motors. The actuator has a push luminous indicator button for the load state and to switch ON – OFF manually (when dedicated manual button selector is activated) the embedded changeover relay. A configuration micro button is present too. Assembly on DIN rail, size: 2 DIN rail modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of an actuator device for the activation of 2 reversal engines, contact capacity: 120 – 230Va.c. 16A resistive, 3,5A  $\cos\phi$  0,6 motors. The actuator has a number of push luminous indicator buttons for the loads state and to move UP – DOWN – STOP manually (when dedicated manual button selector is activated) the embedded relays. A configuration micro button is present too. Assembly on DIN rail, size: 4 DIN rail modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of a command device for 2 or 3 actuators for single or double load or for 2 or 3 actuators for independent single or double load. It could be configured to manage different scenarios. To be completed by a 2 modules cover specific for one or two functions commands or by 2 one module covers with one or two functions. Assembly in modular flush mounting boxes, size: 2 modules. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of an actuator device for single load - contacts capacity: 120 – 230 Va.c. 6A resistive – or incandescent lamp 6A, 6A ferromagnetic transformers, 3,5A  $\cos\phi$  0,6 motors. The actuator has 1 luminous indicator for the actuator state and 1 micro buttons for the configuration. Assembly on flush mounting boxes, size: 1 modules. Complementary accessories, connection and cabling to provide a complete and operating system.

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Supply, installation and connection of an actuator device for single load - contacts capacity: 120 – 230 Va.c. 16A resistive – or 10A incandescent lamp, 1A ferromagnetic transformers, 3,5A  $\cos\phi$  0,6 motors. The actuator has 1 luminous indicator for the actuator state and 1 micro buttons for the configuration. Assembly on flush mounting modular boxes, size: 2 modules. Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of a two inputs interface for traditional commands. Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of a two configurable inputs interface for magnetic contacts for perimeter protection and for technical alarm detectors. Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of BUS coupling unit. The device makes the communication between two BUS lines possible, according to the configured operating method. The different applications are: PHYSICAL EXPANSION allows increasing the BUS length; LOGICAL EXPANSION allows increasing the number of addresses; ALARM/AUTOMATION INTERFACE allows increasing the alarm and automation subsystems. Assembly on DIN rail, size: 3 DIN rail modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of MASTER dimming actuator 120 – 230Va.c. for 40-500W incandescent lamps and 40-500VA electronic transformers with inductive response. Assembly on DIN rail, size: 3 DIN rail modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of SLAVE dimming actuator 120 – 230Va.c. for 40-500W incandescent lamps and 40-500VA electronic transformers with inductive response. Connected with the MASTER, this device allows dimming more loads by 1 command up to 2500W. Assembly on DIN rail, size: 3 DIN rail modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of MASTER dimming actuator, with 120Va.c. supply voltage, for 40-400VA electronic transformers with capacitive response. Assembly on DIN rail, size: 4 DIN rail modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of SLAVE dimming actuator, with 120Va.c. supply voltage, for 40-400VA electronic transformers with capacitive response. Connected with the MASTER, this device allows dimming more loads by 1 command. Assembly on DIN rail, size: 4 DIN rail modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

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Supply, installation and connection of MASTER dimming actuator 230Va.c. for 40 -1000W incandescent lamps 50 – 60Hz and 40-1000VA ferromagnetic transformers. Assembly on DIN rail, size: 4 DIN rail modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of SLAVE dimming actuator 230Va.c. for 40 -1000W 50 – 60Hz incandescent lamps and 40-1000VA 50 – 60Hz ferromagnetic transformers. Assembly on DIN rail, size: 4 DIN rail modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of MASTER dimming actuator 230Va.c. 40 - 800W 50Hz, 40 – 700W 60Hz incandescent lamps and 230Va.c. 40 - 800VA 50Hz and 40 – 700VA 60Hz ferromagnetic transformers. Assembly on DIN rail, size: 4 DIN rail modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of SLAVE dimming actuator 230Va.c. 40 - 800W 50Hz, 40 – 700W 60Hz incandescent lamps and 230Va.c. 40 - 800VA 50Hz and 40 – 700VA 60Hz ferromagnetic transformers. Assembly on DIN rail, size: 4 DIN rail modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of MASTER dimming actuator 230Va.c. 40 – 700VA 50Hz – 60Hz, electronic transformers. Assembly on DIN rail, size: 4 DIN rail modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of SLAVE dimming actuator 230Va.c. 40 – 700VA 50Hz – 60Hz, electronic transformers. Assembly on DIN rail, size: 4 DIN rail modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of MASTER dimming actuator 230Va.c. 40 – 500VA 50Hz, 40 – 400VA 60Hz electronic transformers. Assembly on DIN rail, size: 4 DIN rail modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of SLAVE dimming actuator 230Va.c. 40 – 500VA 50Hz, 40 – 400VA 60Hz electronic transformers. Assembly on DIN rail, size: 4 DIN rail modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of MASTER dimming actuator 230Va.c. supply voltage with local command key, for 40-300VA electronic transformers, to be completed by a 1 or 2 modules cover specific for one function commands. Assembly in modular flush mounting boxes, size: 3 modules. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of SLAVE dimming actuator 230Va.c. supply voltage with local command key. This device allows dimming more loads by 1 command. To be completed

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by a 1 or 2 modules cover specific for one function commands. Assembly in modular flush mounting boxes, size: 2 modules. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of SLAVE dimming actuator 230Va.c. supply voltage, for 40-300VA electronic transformers, 40-500VA ferromagnetic transformers and 40-500W incandescent lamps. Connected with the MASTER, this device allows dimming more loads by 1 command. Assembly in modular flush mounting boxes, size: 2 modules. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of an IR receiver, which allows controlling the Automation system by an IR transmitter. Assembly in modular flush mounting boxes, size: 2 modules. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of a remote controller, which allows controlling the Automation system with its 14 channels.

Supply, installation and connection of an actuator with 0-10V output for ballast transformers. It allows controlling fluorescent lamps or led lamps driver. Assembly on DIN rail, size: 3 modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

### **3.2.Climate control**

The temperature control system allows to daily or weekly program the heating/cooling system switch on and switch off, in different ways, according to the single zones, thanks to the HA control unit and to the thermostats situated in each zone.

The HA control unit uses the zone thermostat as a temperature probe, and it works as a chronothermostat, for the management of up to 40 climate zones. The control shall be made through actuators that will manage the electric valves with an electric-heat/cold command (not included in the electric supply) and the motor of a 3 speeds Fan Coil unit. It is possible the remote control of the heating system through the GSM communicator or via Internet connection (through web-server).

The temperature control allows the consumption saving thanks to the following functions:

- Possibility to turn off the rooms not used
- Possibility to turn off the rooms where the windows are open
- Possibility to change the speed of fan coil (3 stages)

#### ***3.2.1.Product specifications***

Supply, installation and connection of an electronic zone thermostat, appropriated for flush mounting, size: 2 modules – regulation range 5-30°C for heating, 10-35°C for cooling. Complementary accessories, connection, cabling and programming of required functions to provide a complete and operating system.

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Supply, installation and connection of an electronic zone thermostat for the fan coil control, appropriated for flush mounting, size: 2 modules – regulation range 5-30°C for heating, 10-35°C for cooling. Complementary accessories, connection, cabling and programming of required functions to provide a complete and operating system.

Supply, installation and connection of a 1 output actuator to command up to 64 if configured like a circulation pump. It also allows activating the boiler pump. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of a 4 outputs actuator for the single boiler pump or valve activation, and the fan coil speed regulation. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of a two configurable inputs interface for magnetic contacts. It is possible to configure the automatic temperature system switching on/off in case of open/closed windows. Complementary accessories, connection and cabling to provide a complete and operating system.

### **3.3.Security system**

A security system shall be integrated with the whole HA system. The security system shall have motion detectors and technical alarm detectors. The system shall have the ability to send a remote message in case of alarm.

A burglar alarm subsystem allows to protect the zones with a volumetric and perimeter protection. The activation/deactivation of the alarm system is obtained by a badge or a transponder reader, or by a numeric keypad, placed on the principal access door or on the box door, and an integrated command on the control unit.

The alarm signal comes from a local external auto-fed siren and an internal siren; the remote alarm comes from a telephonic communicator. The subsystem has to be fed from an appropriate power supplier and batteries that must guarantee a 24h operating autonomy. The detectors of the volumetric protection are flush mounting, customizable and aesthetically integrated with the wiring devices.

The burglar alarm subsystem has to be configured and managed by the same HA control unit. It allows differentiating up to 30 monitored zones, which can be matched in 9 different partitions for a specific alarm insertion.

Shall be possible to set a scenario for the alarm activation (e.g. alarm ON / Lights OFF / ...).

#### **3.3.1.Product specifications**

Supply, installation and connection of a alarm system power supplier. Input 120/230Va.c. – 50/60 Hz, output 29Vd.c. SELV. Maximum absorbed energy 290mA, maximum supplied current 800mA. Execution for fixing on DIN rail – size: 9 DIN rail modules – installed in the panel board. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of a system back up unit. Input 29Vd.c., output 29Vd.c. 320mA max. Could be connected up to 4 batteries – 12Vd.c. 2Ah. 12h autonomy with a 240mA output, or 24h autonomy with a 120mA output.

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Execution for fixing on DIN rail – size: 6 DIN rail modules. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of BUS cable, with 300/500V insulation value 2x0,5 mm<sup>2</sup> wires twisted pair, in 2 different colors (white/yellow) to distinguish different lines.

Supply, installation and connection of a system back up unit with inner siren, and an auxiliary battery-holder unit. Input 29Vd.c., output 29Vd.c. 320mA max. Could be connected up to 4 batteries – 12Vd.c. 2Ah – using both the back up unit and the auxiliary unit, to have a 12h autonomy with a 240mA output, or 24h autonomy with a 120mA output.

Assembly in modular flush mounting boxes. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of a transponder reader / activator with LED indication of the system state, size: 2 modules. Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of a touch panel to see, control and command the burglar alarm system. It allows viewing the last alarm, and, by a digital keyboard on the touch display, it is possible to activate/deactivate the system. Assembly in modular flush mounting boxes, size: 4+4 modules. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of a digital numeric keyboard, for the system total or partial activation/deactivation. Assembly in modular flush mounting boxes, size: 2 modules. Complementary accessories, connection and cabling to provide a complete and operating system

Supply of transponder key / card including the programming on the central in order to provide a complete and operating system

Supply, installation and connection of an external auto-fed siren, 12V-2Ah battery – sound strength 105dB(A) at 3 meters – optical indicator with integrated blinker – antifoam grating – tear and opening protection. Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of an internal auto-fed siren – sound strength 80dB(A) at 3 meters. It signals the total or partial activation, and the deactivation of the system. Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of a passive infrared volumetric detector – LED alarm indicator with memory – 10 meters nominal capacity, angular opening until 112°, 17 beams divided in 4 plans, two axis swivelling lens which can be rotated up to 40° horizontally and up to 22° vertically. Assembly in modular flush mounting box, size: 2 modules, or wall mounted. Complementary accessories, connection and cabling to provide a complete and operating system



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Supply, installation and connection of a double technology volumetric detector, passive infrared and microwaves – LED alarm indicator with memory – 8 meters nominal capacity, angular opening until 105°, 23 beams divided in 3 plans. When the alarm system is deactivated, the device could work as a movement detector for the automation system. Assembly in modular flush mounting box, size: 2 modules, or wall mounted. Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of an infrared safety beam device. With a 12Vd.c. input, it could be available in different lengths. Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of BUS coupling unit. The device allow the communication between two BUS according to the configured operative function. The provided function is the ALARM/AUTOMATION INTERFACE, which allows interfacing the alarm and automation subsystems. Assembly on DIN rail, size: 3 modules – installable in panel or derivation boxes. Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of a two configurable inputs interface for magnetic contacts for perimeter protection and for technical alarm detectors. Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of a one configurable input interface for magnetic contacts for perimeter protection and for technical alarm detectors, with a 12V output for those devices which have to be fed. Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of flush mounting magnetic contact for casings. Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of casings magnetic contacts, brass execution at high resistance, suitable for armored doors Assembly. Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of casings magnetic contacts, execution for roller shutters installation. Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of an impact sensor, execution for windows installation. Complementary accessories, connection and cabling to provide a complete and operating system

The technical alarms could be integrated with the burglar alarm through appropriate interfaces, in order to use the same telephonic communicator to send specific alarm messages. The provided alarms are: gas leak detector with interception electric valve; flooding detector, emergency and automatic rearmament of the control unit with alert.

Supply, installation and connection of gas detector, mounted in modular boxes, size: 3 modules. Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of gas electric-valve. Complementary accessories, connection and cabling to provide a complete and operating system

### **3.4. Load and energy management**

The energy management allows the control of the maximum used power in order to avoid a limiting intervention of the energy supplier as consequence of an overload due to the simultaneous usage of more household appliances. The absorbed power is monitored by a unit that, in case of overload, activates some actuators to disconnect the related loads. This load management system allows to automatically interrupt up to 8 loads according to the defined priorities in order to prevent the general turn off for overloading.

The loads absorption has to be managed by the same HA control unit. The control unit allows viewing the instantaneous absorption, which loads are on and which loads are off, and it allows forcing the single load. System supervisors shall be able to visualize The touch supervisor shall monitor consumption in real time and for a given time frame: it shall display consumption logs to assure more aware energy use.

#### ***3.4.1.Product specifications***

Supply, installation and connection of an absorption control device to manage and control actuators feeding socket. Regulation of the contract power from 1 to 10kW – regulation of the engaged power – adapted for DIN rail assembly, size: 4 modules – comprehensive of TA transformer for engaged power reading. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of relay actuator for single load, 16A capacity, key to force the load, adapted for DIN rail assembly, size: 2 modules, installation in control panel or derivation box. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of relay actuator for four loads, 6A capacity, key to force the load, adapted for DIN rail assembly, size: 4 modules, installation in control panel or derivation box. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of a touch panel to see, control and command the actuators of the energy management system. Assembly in modular flush mounting boxes, size: 4+4 modules, with decorating plates (aesthetic coordinated with wiring devices). Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of a touch panel to see the actuators of the energy management system. Assembly in modular flush mounting boxes, size: 3 modules, with decorating plates (aesthetic coordinated with wiring devices). Complementary accessories, connection and cabling to provide a complete and operating system.

### 3.5. Sound diffusion system

The sound system shall be able to create audio systems with high quality digital signal, with up to 4 sound sources in different rooms simultaneously. It shall be integrated with home automation system and it shall be a single or multi-channel system. The sound system shall enable installation of transmitters and receivers everywhere in the electrical system. In each room it shall be possible listening in total freedom of choice and control the favorite music (up to 30 independent listening zones). The sound level shall be programmable for every zone and it shall be possible to make calls from microphone and baby control by means the environmental listening. All the audio functions shall be integrated in scenes and events programs in the automation system (e.g. wake-up function).

The sound system shall consist in the following categories of devices:

- Transmitter devices: they enable transmission of the sound coming from an audio source (e.g. Hi-Fi installation, CD player, portable MP3 player, etc..) to the system receivers. Each transmitter configured in the system occupies one of the 4 available channels and can be connected to any point of the system.
- Audio input with 2 RCA connectors, flush mounting, galvanic decoupling of the audio inputs with respect to the automation bus.
- FM radio tuner with RDS, 2 modules, for DIN rails (60715 TH35). Managed with HA control panels and touch screens, displaying RDS station info (tuning, station, track, etc.). Possibility of having 8 tuning memories and using the internal antenna (Bus) or external antenna with coaxial connector (type F).
- Docking station for iPod, iPhone, flush mounting, to control iPod, iPhone (play/stop, skip+/-). Possibility of charging an iPod, iPhone with low voltage transformer.
- Call microphone, flush mounting, allows the call (selective or general). The front buttons enable activating
- Receiver devices: they shall enable listening to the audio transmitted through one of the channels in the system. These devices shall be also equipped with a high quality audio amplifier that enables direct connection to the acoustic speakers.
  - Control device with two rocker switches and amplifier 1+1 W RMS, flush mounting. Bus or 32 V d.c. power supply (via special auxiliary 32 V power supply) with dedicated input.
  - Output module with amplifier 10+10 W RMS for DIN rail (60715 TH35), power supply 110-230 V~, 50-60 Hz.
- Acoustic speakers: the system has a complete range of acoustic speakers that are flush mounting and surface mounting, for ceilings and light walls.
  - Passive acoustic speaker 10 W RMS 8 Ω flush mounting, 8 modules (4+4).
  - Passive acoustic speaker 3 W RMS 8 Ω flush mounting, 3 modules.
  - Passive acoustic speaker 30 W RMS 8 Ω for false ceilings and light walls. This type of speaker shall be suitable for external installations.
  - Passive acoustic speaker 30 W RMS 8 Ω adjustable surface mounting. It shall be installed on shelves too.
- Accessory modules: devices that, while not having any direct use by the user, are used in the system for its operation or for creating the various possibilities of wiring/construction.
- IR interface to control stereo sources via cable with IR transmitter remote control (not supplied), flush mounting.
- Spring connector for connecting the speaker, flush mounting.

### **3.5.1. Product specifications**

Supply, installation and connection of a power supplier adapted for assembly on DIN rail. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of an analogue RCA interface for bus. Installation in flush mounting modular boxes, size: 2 modules with decorating plates (aesthetic coordinated with wiring devices). Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of a iPod/iPhone docking station with related transformer. Installation in flush mounting modular boxes, size: 2+2 modules with decorating plates (aesthetic coordinated with wiring devices). Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection FM Radio receiver. Installation in DIN rail. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of modular speakers with high quality and fidelity. Installation in flush mounting modular boxes, size: 3 or 4+4 modules with decorating plates (aesthetic coordinated with wiring devices). Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of speaker connectors with springs. Installation in flush mounting modular boxes, size: 1 module with decorating plates (aesthetic coordinated with wiring devices). Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of modular microphone. Installation in flush mounting modular boxes, size: 2 modules with decorating plates (aesthetic coordinated with wiring devices). Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of a 10" touch screen. The device allows to centralize and command all the installed subsystems touching the backlit display on the icons related to the different functions. It allows managing also lights, roller shutters, burglar alarm, energy absorption and activate/deactivate loads, scenarios, temperature, visualization of IP cameras (RTS protocol), infotainment functions (rss feed, web radio, calendar, slideshow, dashboard). Installation in flush mounting modular boxes, size: 4+4 modules with decorating plates (aesthetic coordinated with wiring devices). Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of a touch intercom internal panel with colored display. Assembly in modular flush mounting boxes, size: 4+4 modules with decorating plates (aesthetic coordinated with wiring devices). Complementary accessories, connection and cabling to provide a complete and operating system. It shall control both automation and audio diffusion functions from the same display.

Supply, installation and connection of a video intercom internal panel with colored display. Assembly in modular flush mounting boxes, size: 4+4 modules with decorating plates (aesthetic coordinated with wiring devices). Complementary accessories, connection and cabling to provide a complete and operating system. It shall control both automation and audio diffusion functions from the same display.

### **3.6.Video door entry system**

The video intercom system shall combine advanced technology and pleasing appearance. The system shall be highly flexible and adapt to different installation needs in terms of size and performance levels required. It shall be able to provide intercommunication between more locations inside the house; audible monitoring of the rooms, CCTV, video touch screens.

Different technologies (digital or analogical) are available, to match every installation needs.

By the analogical systems it is possible to realize big installation, without distances bonds.

Thanks to the 2-wire digital system it is possible to integrate the digital video intercom system with the others Home Automation subsystems. In this way it is also easier the installation, it is time saving and the possibility of error in connection is reduced (compared to an analogical installation).

The system shall provide video door entry stations and video internal panels. The system shall include cameras located inside and outside the house for viewing on the HA control unit monitor, or video touch screens. Communication information distribution through structured cabling in order to guarantee the best flexibility in using devices.

The internal panels shall include specific keys to command the electric lock, the external light and the internal intercom function.

#### ***3.6.1.Product specifications***

Supply, installation and connection of a power supplier adapted for assembly on DIN rail. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of an audio/video node adapted for assembly on DIN rail. The device allows integrating up to 4 cameras with its 4 inputs. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of relay actuators to switch on the external lights. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of a Video Intercom module, specific for the different technologies (digital or analogical) which can be installed on the HA control units monitor, to create an integrated system.

Supply, installation and connection of an outdoor call button, aesthetically integrated with the covers range.

Supply, installation and connection of a 10" capacitive video touch screen. The device allows to centralize and command all the installed subsystems touching the backlit display on the

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icons related to the different functions. It allows managing also lights, roller shutters, burglar alarm, energy absorption and activate/deactivate loads, scenarios, temperature, visualization of IP cameras (RTS protocol), infotainment functions (rss feed, web radio, calendar, slideshow, dashboard). Installation in flush mounting modular boxes, size: 4+4 modules with decorating plates (aesthetic coordinated with wiring devices). Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of a video touch intercom internal panel with colored display. Assembly in modular flush mounting boxes, size: 4+4 modules with decorating plates (aesthetic coordinated with wiring devices). Complementary accessories, connection and cabling to provide a complete and operating system. It shall control both automation and video door functions from the same display.

Supply, installation and connection of a video intercom internal panel with colored display. Assembly in modular flush mounting boxes, size: 4+4 modules with decorating plates (aesthetic coordinated with wiring devices). Complementary accessories, connection and cabling to provide a complete and operating system. It shall control both automation and video door functions from the same display.

Supply, installation and connection of a video intercom internal panel with colored display. Adapted for wall mounting assembly. Complementary accessories, connection and cabling to provide a complete and operating system.

Supply, installation and connection of a speaker phone. It makes the intercommunication between different zones possible, and integrates the door opening and stairs light functions

### **3.7. Supervisors**

The HA system shall include touch screens in order to manage the following functions: light and shutter automation, burglar alarm, load management, temperature control, sound diffusion and scenarios.

#### *3.7.1. Product specifications*

Supply, installation and connection of a 10" capacitive touch screen. The device allows to centralize and command all the installed subsystems touching the backlit display on the icons related to the different functions. It allows managing lights, roller shutters, burglar alarm, energy absorption and activate/deactivate loads, scenarios, temperature, video door system, visualization of IP cameras (RTS protocol), infotainment functions (rss feed, web radio, calendar, slideshow, dashboard). Installation in flush mounting modular boxes, size: 4+4 modules with decorating plates (aesthetic coordinated with wiring devices). Complementary accessories, connection and cabling to provide a complete and operating system

Supply, installation and connection of a 4.3" touch screen. The device allows to centralize and command all the installed subsystems touching the backlit display on the icons related to the different functions. It allows managing lights, roller shutters, burglar alarm, energy absorption and activate/deactivate loads, scenarios, temperature. The user interface could be customized with different icons or by giving a specific name to the single zone managed. Installation in flush mounting modular boxes, size: 4+4 modules with decorating plates (aesthetic coordinated with wiring devices). Complementary accessories, connection and cabling to provide a complete and operating system

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Supply, installation and connection of a touch screen. The device allows to locally centralize and command the automation (lights, roller shutters, scenarios) and temperature installed subsystems touching the backlit display on the icons related to the different functions. Installation in flush mounting modular boxes, size: 3 modules with decorating plates (aesthetic coordinated with wiring devices). Complementary accessories, connection and cabling to provide a complete and operating system

### **3.8. Web server**

The system shall have a web server that allows the monitoring of the entire automation system via LAN and Wi-Fi network inside and outside of the home or building. All the functions shall be managed remotely via computer, or using the latest generation smartphone and tablets such as iPad and iPhone.

#### *3.8.1. Product specifications*

Supply, installation and connection of BUS- IP Web Server. The device shall be directly integrated in the BUS line, and it shall allow controlling all automations (lights, motors, video door system, sound diffusion system, burglar alarm system, energy management system, climate control) via IP devices (PC/Laptop/SmartPhone/Tablet and general devices with integrated web-browser). The web-server shall be adapted for assembly on DIN rail (size: 6 modules).

### **3.9. GSM Controller**

The system allows a two-ways remote messages (SMS or vocals) exchange: it sends technical or burglar alarms messages, and it receives messages from the users to control the home automations, temperature, and switch on/off the alarm system. The GSM device has an integrated SIM card reader.

The GSM communicator shall be integrated in the BUS line, to guarantee the system remote control.

#### *3.9.1. Product specifications*

Supply, installation and connection of BUS-GSM communicator. The device could be directly integrated in the BUS line, and it allows controlling the automations, the temperature system, and receiving/sending messages from/to the alarm system. Adapted for assembly on DIN rail (size: 6 modules).

**4. Work execution**

**4.1. Installation**

- Contractor shall design, install, commission, test and provide all necessary facilities to implement the solution into a production environment
- All installation shall be in accordance with the manufacturer's installation instructions, procedures and guidelines
- The cable system shall be designed by the home contractor and will be installed by him who is experienced in the nature of such works
- The authorized contractor selected for this project must adhere to all manufacturers' design, engineering and installation procedures and use components purchased from authorized channels.
- The implementation must be performed by the home contractors own in-house qualified engineers and technicians or appointed specialists, who have undergone the manufacturers installers training course
- QA procedures shall make sure that the installation of cables are correct ensuring that the contractor cable does not have any damage
- Home contractor must provide drawings indicating the cables references, routes and installation points
- All back boxes will be supplied by the contractor
- During the period of the project, all aspects of the installation shall be monitored for progress and completion in accordance with the project plans provided by lead consultant
- The installer shall recognize the importance of notification to the project manager of any problem or item of disruption to the installation schedule. Every effort must be made to keep within the time tables provided by lead consultant

**4.2. Testing**

- All cables must be tested for conformance to the requirements specified in the product specifications
- Results of all acceptance tests performed are to be fully documented and submitted to lead consultant