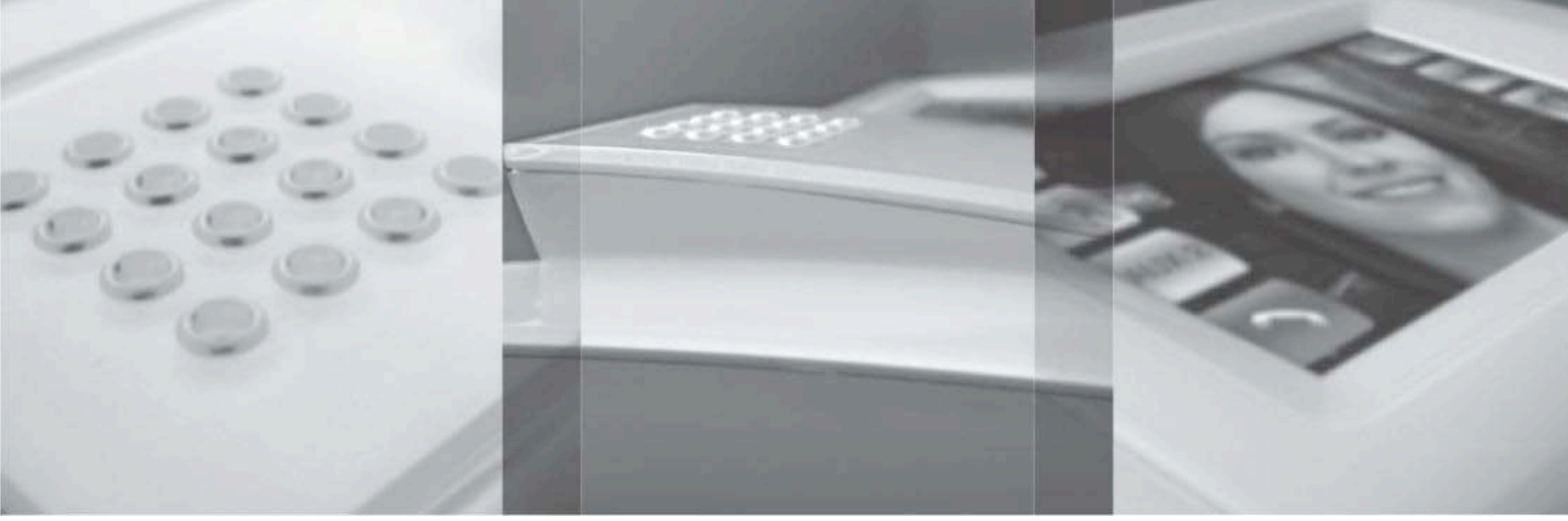

Home automation

MITH

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bpt

INDEX

1. Introduction

1.1 What is Home Automation

From the name itself it emerges that Home Automation has been developed to optimise the resources of the home through automatic electronic devices, so the Home Automation systems use functions thought and used to increase comfort and security. Sometime this term can be confused or used as a synonimous for "building automation," which better describe centralised control system of a building.

Home Automation:

refers to the home spaces where "the user" and "handler" of the system is the person who lives in.
In this meaning, the aim of the Home Automation is to improve the quality of life over a period of 24 hours, automatically managing all the electrical and electronic systems (electrical systems and appliances, heating and air conditioning, sun screens and motorised automations in the house) and offering simple, intuitive interaction tools.

Building Automation:

refers to "collective" sites (medium-large buildings, residential complexes, hotels, hospitals, shopping centres, office blocks and factories) where the user is the person working inside. The aim is, therefore, to centrally manage all the electrical and security appliances in the building; the system's supervision is entrusted to the building manager properly trained about the specific knowledge of how to handle large complex systems.

So a Home Automation system clearly differs from a Building Automation one according to the area it is used in, the functions to be applied and the system's users; it is, therefore, natural that there are different solutions thought and developed for each of them.
Bpt mainly offers an all round solution for Home Automation.

1.1.1 Which systems have to be controlled at home?

In every house there is a certain number of electrical and electronic systems; some are essential to everyday life, so their presence is obligatory, others meet specific needs and are not always included in the initial construction stage. A wise choice at the design stage, however, is to lay out the house electrical system so that further improvements can easely be made without incurring in excessive costs.
The main system is obviously the electrical one that supplies everything that requires electric power.

The hydraulic system is for water and irrigation, while the microclimate inside the house can be achieved thanks to heating systems, air conditioning, dehumidification and air treatment. Personal security is entrusted to burglar alarm systems, video-surveillance and video-entry phone system, while safety is achieved by the installation of alarm systems for gas and water leaks and fire alarms.

Lastly, there is a range of systems linked to entertainment and communication, like the telephone system, the data network, the television system and sound system.

2. Home automation Operating Areas

2.1 - Lighting

Lighting is the end result of the use of natural light flows (mediated by architectural elements) or emitted by artificial sources (equipment that is generally electric) with a view to obtaining certain levels of light (illuminations); the relative technique is known as lighting engineering. Further aims of the lighting can be: to create decorative or exaggerated effects or to furnish. Very often the term lighting is also used as a simplified version of a "lighting system".

2.2 – Awning and Blind Control

The Home automation system allows you to control all kinds of electric openings (roller blinds, sunshades, shutters etc.) both singularly and in coordination with all the other equipment in the house.
Automatic roller shutters with 230 Vac powered motors are frequently found in new constructions. The so called "actuator" is a motor reducer installed inside or to the side of the roller where the shutter winds up and generally the command is give with a simple switch that directly changes over the network voltage.

2.3 - Heating/Air conditioning

The term "indoor comfort" describes that particular state of well-being determined, according to the sensorial perceptions of an individual in a room, by temperature, humidity in the air and the level of noise and brightness in the room itself: it is, therefore, possible to distinguish between heat comfort, acoustic comfort and light comfort.

Indoor comfort is associated with the psychophysical well-being of the people living there (house, office) and is a sensation that depends on certain conditions that can mostly be arranged and therefore come within the designer's responsibilities (for example at the design, building and management stage of a "green building").

Thermal comfort is defined by the American Society of Heating Ventilation and Air-conditioning Engineers (ASHRAE) as that particular state of mind that expresses satisfaction with the surrounding environment.

The research and experiments carried out have highlighted how in residential buildings with poor thermal comfort conditions, the risk of lung problems, especially in children, is very high. Research carried out on buildings for office use show that heat discomfort creates a considerable drop in an individual's level of attention and subsequent performance.

The environmental variations that affect the external and internal climatic conditions of the building and influence heat comfort are:

- Air temperature: measured in °C or °F.
- Relative humidity of the internal air: shows the relationship between the amount of vapour contained in a mass of air and the maximum amount that air mass can contain under the same temperature and pressure conditions. This is, therefore, measured in percentage (%).
- Average radiant temperature: expressed in °C or °F, it is the average of the temperatures on the room's internal walls including the ceiling and floor.
- Air speed: expressed in m/s.

2.4 - Timers

Generally speaking all the Home automation systems allow you to activate the functions foreseen via the so called Human Machine Interface that are more or less conventional such as push buttons, switches, touch-screen panels, remote controls etc.. and require the manual intervention of the user.

One of the "intelligent" system's main characteristics is to guarantee control even in the user's absence: for example, turning on the heating or turning off an irrigation system without being at home or performing actions during the day when it would normally be impossible to do them manually (e.g. while you are asleep). In all these cases, a "timed" management of the system's functions is useful for obtaining real "comfort" very simply.

2.5 - Scenarios

A Home automation system can be used to carry out a single action (for example turning on a lamp or setting the temperature) or to automatically perform a repetitive sequence of operations at different times of the day or autonomously activate functions subsequent to a certain event taking place: this "sequence of operations" is normally defined as "scenario". For example, you can programme a "good morning" scenario containing all the actions normally carried out when you wake up in the morning (turning on the lights, heating, turning off the alarm....).

A distinction can be made between the activation methods:

- √ scenarios where the operations are programmed on a timer and must be carried out at a specific moment of the day or every day (as seen in the previous paragraph)
- √ scenarios where operations are activated as a result of certain events happening that are revealed by the sensors (presence, temperature etc.)
- √ scenarios where the operations are carried out following a command given by the user either "on site", pressing a switch or "remotely" via a GSM communicator.

2.6 – Video entry control

The entry phone, designed in Italy at the start of the 1960s, brought an instant improvement to the quality of home life. Up until that point, calls were made via simple push buttons and internal bell, obliging the owner to open the door to see who was there.

With the arrival of electronics, "phonics units" were inserted inside the push button (consisting of a microphone and speaker) and the first "derivative entry phones" were created that allowed you to hold a conversation with someone outside, while you were still inside the house. The size of the electronic parts at the time, obliged the first builders to create either speaker or speak-listen internal derivatives that were fairly bulky, connected in special boxes flush mounted on the wall. Calls from outside were made via an electro-mechanical beeper located in the derivatives inside the entry-phones.

At a later date, a command for the electric lock was introduced that made access easier, especially in apartment blocks. Lastly, the request to have a derivative entry-phone in several rooms in the house, allowed for the development of the "intercommunication" function.

Even today, after decades, the "basic" functions of the entry-phone system have remained more or less unchanged.

In the 1980s the arrival of the video camera and cathodic piping that were smaller and cheaper, brought about the subsequent addition of a video camera outside, and to the creation of internal derivative video-entry phones (initially speaker or speak-listen) with

further improvements in safety thanks to the possibility of properly identifying the person calling even in the event of audio interference.

2.7 – Irrigation

Irrigation is the combination of technical knowledge aimed at increasing productivity on a piece of land and optimising the use of the water it needs.

Irrigation can also be seen a factor for improving environmental quality and protection considering the relevance of "greenery" in the urban landscape. The garden or the flower parterre in a city square is essential for creating a pleasing environment: the greater the aesthetic value of the green aspect in an area, the greater its economic value.

In order to maintain the lawn, the hedge, the flower bed as best as possible, it has to be watered bearing in mind that the choice of a certain kind of plant or cultural type will lead to specific water needs: being fully aware of these implications is essential to the success of the project.

Irrigation can also be seen as a way to limit the cost of re-planting, contributing to avoiding further investment with the change of season.

2.8 - Load and electricity consumption control

The "load control" function stops the mains switch turning off due to the maximum absorption level being surpassed by preventatively disconnecting one or more of the controlled electric loads.

This function is particularly important in houses that have contracts with the electricity company for a nominal power level much lower than the potential peak consumption: for example, it is very unlikely that an electric boiler can operate at the same time as the fridge, freezer and washing machine without the mains switch intervening.

Generally speaking, the dimensioning of the power requested by an electric system is done by summing the power requested by the more important electrical loads in terms of consumption and multiplying this sum by the "contemporaneity factor" (that normally oscillates between 30% and 70%) that depends on the use made: the "load control" allows for this "contemporaneity factor" to be reduced considerably and therefore allows for a "saving" in the power requested by the system.

In a world where the cost of energy is constantly rising, it becomes essential to have a system that tries to prevent unnecessary waste without modifying the level of well being and daily comfort.

Other "energy saving" functions are often attributed to the pure "load control" that cannot by satisfied fully by a simple list of disconnecting priorities.

The function that guarantees real energy saving is the "consumption control".

2.9 – Burglar Alarm System

The growing spread of micro-criminality means that burglar alarm system has to be included in the "basic" functioning of a Home automation system in order to watch over one's belongings and protect people.

Again in this area, the technological evolution has made it possible to produce burglar alarm systems that are easy to use, sufficiently reliable and not overly invasive in terms of "appearance"; we can easily foresee that the availability of increasingly more powerful microprocessors that will allow for the adoption of more sophisticated software and the use of new physical principles in sensor techniques will bring about significant progress in the coming years.

There are a vast number of choices that can be made to guarantee tranquillity and safety, one of these is to protect your own home from possible break-ins, by installing an innovative, reliable and good quality burglar alarm system.

Given the intrinsic nature of the role it plays, the "sub-system" for burglar alarm should not, under any circumstances be allowed to breakdown and its functioning should not be impeded or partially limited in any way be breakdowns or faults that might occasionally occur in the rest of the system (for example after a simple black-out).

For this reason and in order to comply with specific Italian and European product regulations, the "sub-system" for burglar alarm must be separate from an installation point of view: furthermore, the central unit of the sub-system plays its role autonomously and cannot be influenced by the rest of the Home automation system and the "communication bus" is cabled separately with clever "anti-tampering" devices if necessary to guarantee the maximum safety level foreseen under current legislation.

The previous unavoidable installation necessities, however, should not have any impact on the simple use of the sub-system for burglar alarm by the end user who is very often reluctant to adopt similar protection systems precisely because of the tough interface tools generally made available.

2.10 – Remote control

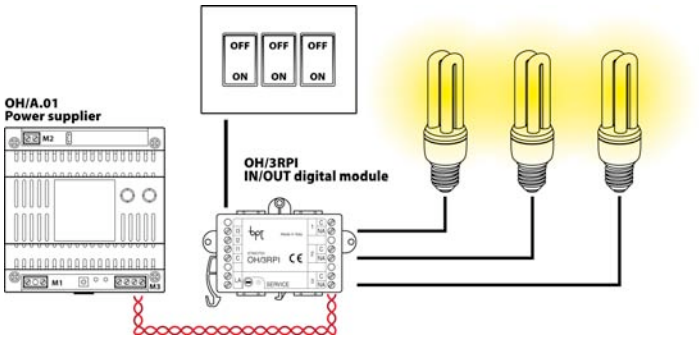
Most people spend most of the day away from home either at work or for "free time" activities. It is, therefore, essential that a Home automation system is fitted with tools that allow the user to operate the system even when they are not at home.
The simplest solution to this kind of need is to create a way to interact with your home via mobile phone or GSM network.

3. System functions

3.1 - Lighting

3.1.1 Manual Command with ON/OFF relay

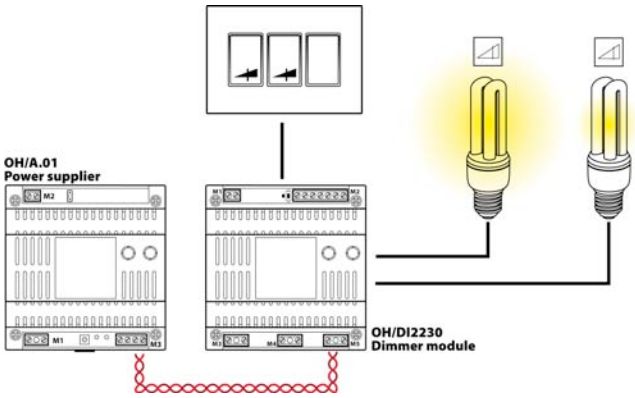
The simplest way of managing the lighting is simply to turn it on and off. The Bpt Home automation system allows you to control each individual light from different activation points and each one of them can act as an ON, OFF or change of status command. Furthermore, each individual light can be part of more or less complex "scenarios".



Example: manual command of 3 lights from 3 separate push buttons

3.1.2 Manual Command with Dimmer

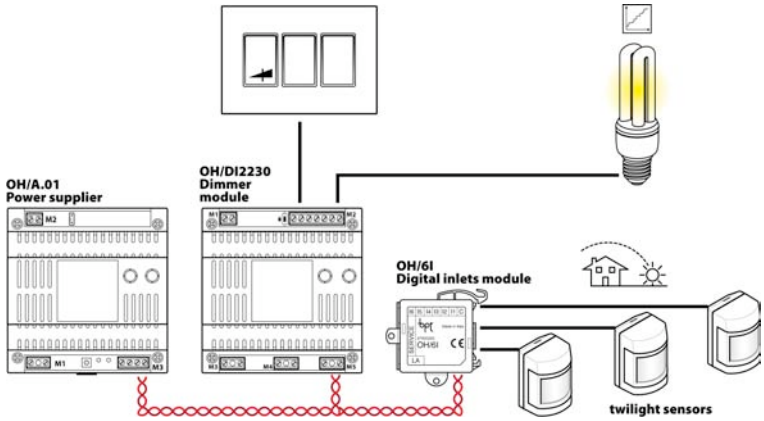
If you wish to obtain a finer regulation of the room's brightness, using the specific Bpt modules, it is possible to dim the system's lighting by setting the percentage of partialisation of the power supply for each lamp in order to obtain excellent visual comfort in any situation. It is possible to use both commercial dimmers as well as specific ones. The lights that can be connected to the system can be incandescent or halogen with either high or low voltage. It is also possible to turn on and/or off the lights in "soft off" mode or, for example, according to the exceeding of a pre-set brightness threshold.



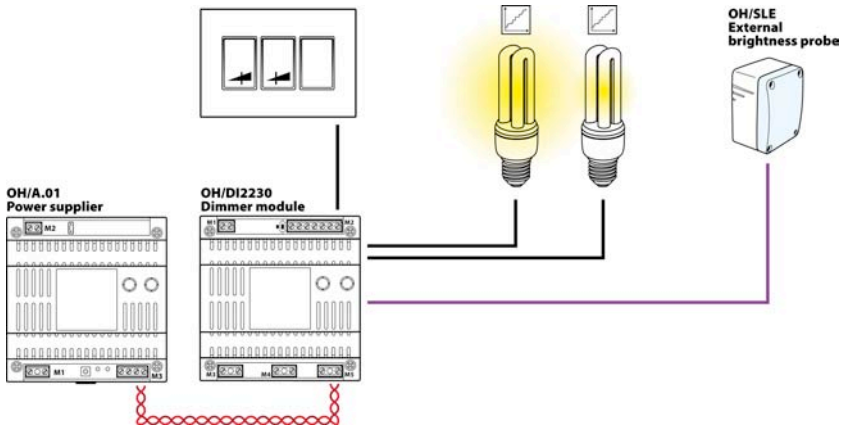
Example: manual dimming control of 2 lights from 2 separate push buttons

3.1.3 Automatic control with Dimmer and "step" logic.

For the comfort of a house, the lights play a primary role and it is from this that the sensation of comfort of those living there, depends greatly; this is why the Bpt Home automation system offers multiple options for automatically regulating the brightness of the lights according to the surrounding parameters measured by external sensors linked to the system via digital or analogical inputs.



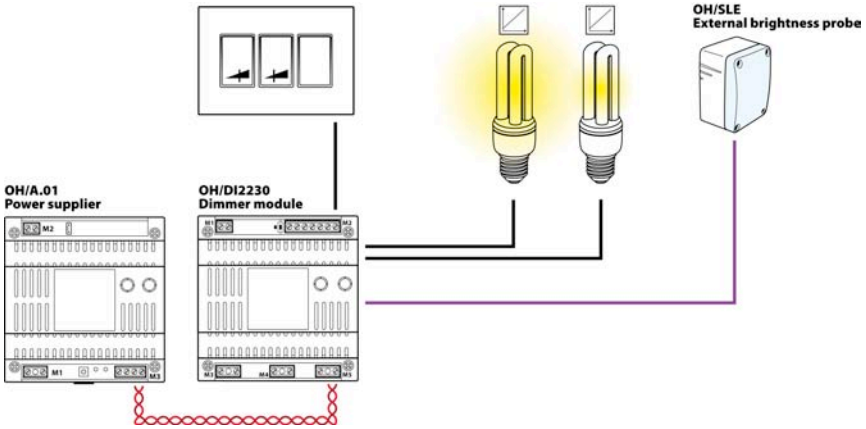
Example: manual dimming control of a light via a push button, with 3 automatic threshold controls with 3 twilight sensors.



Example: manual dimming control of two lights by two separate push buttons with automatic threshold control via analogical brightness sensor.

3.1.4 Automatic control with Dimmer and "linear" logic.

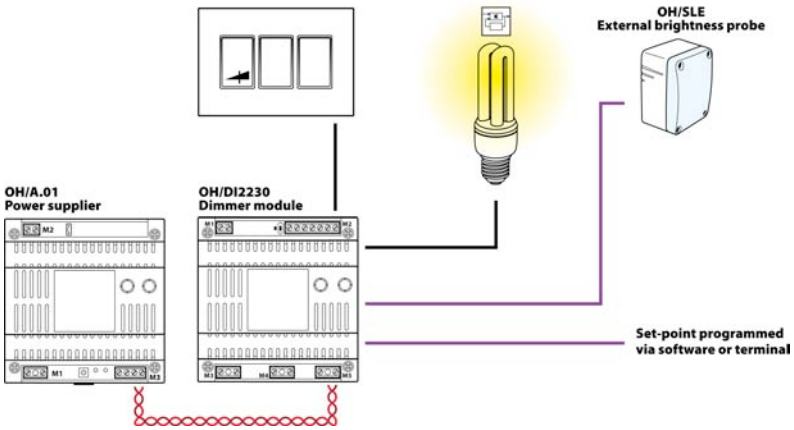
The automatic management methods of the lighting system for Bpt start from the assumption that for each external brightness situation the system can automatically adjust the power supplied to the lights and therefore the level of internal brightness given off by the light fixtures. This is why it is possible to adjust the level of brightness in linearity of the level of external brightness measured by a light sensor with analogical output.



Example: manual dimming control of two lights by two separate push buttons with automatic linear control via analogical brightness sensor.

3.1.5 Automatic feedback control

The way to obtain maximum room comfort with an eye on real electricity saving can be found in feedback. With this method, Bpt allows the system to obtain a level of brightness that is more or less constant according to the levels that an external brightness sensor provides the system with. This method's strong point is that the system reacts to the brightness variations in every situation without creating annoying oscillations to the lights. With this system you always have a comfort positioned between the brightness found in the room and the one requested in order to have a system that is always looking for the best level whatever the situation.



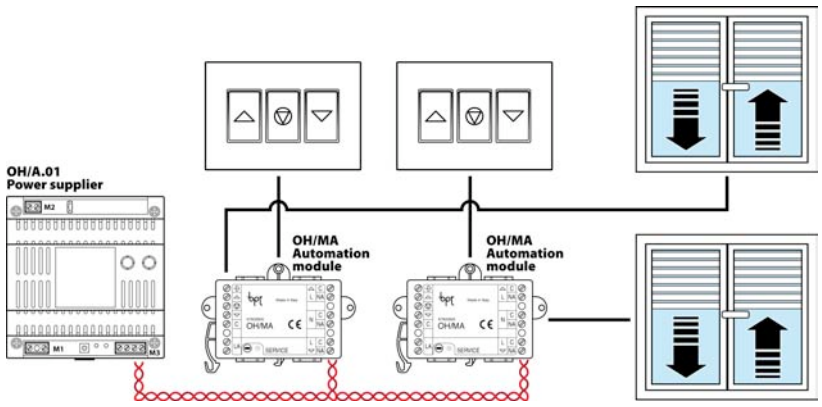
Example: manual dimming control of a light by push button with automatic control via analogical brightness sensor and set-point.

3.2 - Awning and Blind Control

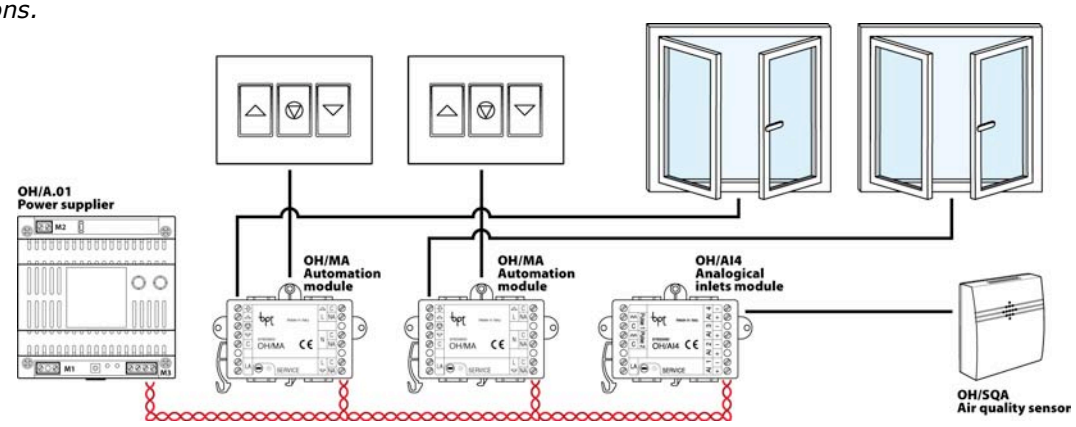
The Bpt Home automation system allows you to control the complete opening and closing of the shutter by lightly pressing the specific push button. By pressing one of the push buttons a second time, it is possible to stop the movement even if it is in an intermediate position.
The push buttons on a Home automation system, powered with a very low safety voltage (SELV), protect against the risk of electrocution.
The BUS connection allows you to control several shutters from a single point and to easily re-position the commands in any box.
A wind meter, a rain sensor or a light meter can control the closing of shutters according to the weather conditions.

3.2.1 Manual open/close management

Bpt dedicates a specific module to this important function with customised software capable of piloting an electric automation.
Thanks to this device, Bpt offers the opening and closing control and the movement block of the connected output.
It will be possible to completely lower the automation by simply pressing the relevant push button or raising and lowering the connected output for a period of time that is the same as the amount of time the relevant push button is pressed for in the "human present" mode.
The module allows you to stop the connected motor by simply pressing the push button connected to the opposite movement or connecting a third push button to the input for stopping.



Example: manual opening and closing of 2 motorised roller shutters via 2 switches with two positions.



Example: manual opening and closing of 2 motorised roller shutters via 2 switches with two positions and automatic opening in the event of organic gas being found in the air.

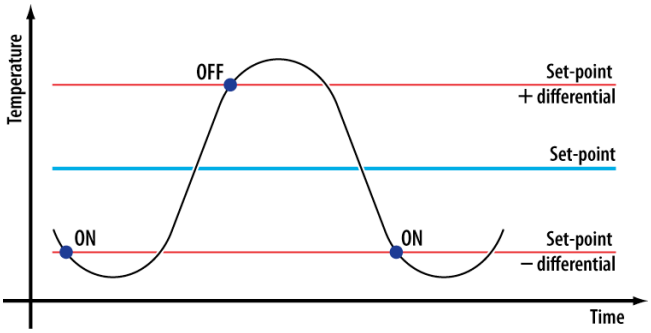
3.3 - Heating/Air conditioning

Bpt offers different applicative solutions for residential thermoregulation systems with a series of specific modules that cover the main installation solutions found on the market.

3.3.2 Control with "temperature differential".

In situations where there is a standard boiler or a condensation one that powers a mono or multizone system with radiators, the Bpt Home automation system offers various control solutions and strategies useful for obtaining a perfect thermal well being according to the different thermal dynamics in the air.

The use of the control with the temperature differential allows for a simple, effective on/off regulation of the boiler depending on the set value.
The boiler is turned on when the room temperature, measured by the relative probe, is lower than the set point value less the set differential; vice versa, the boiler is turned off when the room temperature shown has exceeded the set-point value of a value equivalent to the set differential (see figure).

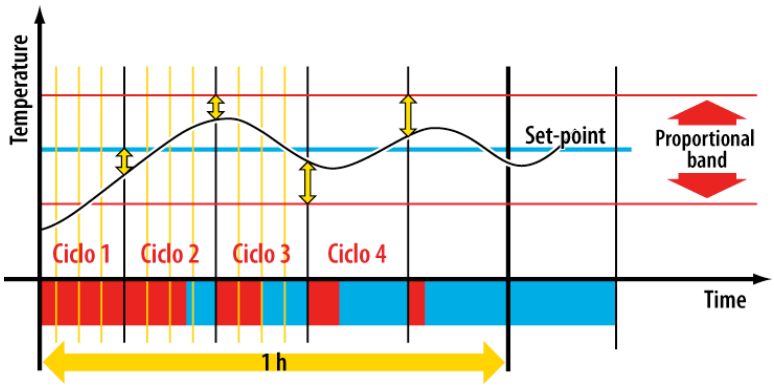


3.3.3 "Proportional-integral" control.

The simplicity of controlling the logic with "temperature differential" on average, creates an oscillation of approximately 0.5°C around the set-point temperature. This oscillation can come close to the temperature level especially when the heat conditions in the zone are either structurally or for covering, unusual.

If a more accurate control is necessary, we recommend you activate the proportional-integral logic (PI). With this more sophisticated control algorithm you can obtain a level of precision compared to the set temperature of a tenth of a degree no matter what the kind of system it is applied to.

The PI control regulates the cycles for turning on and off the boiler according to the difference between the temperature shown and the temperature set; the more the difference between the temperatures reduces, the more the switching on cycles reduce.



The proportional-integral control is particularly advisable under "difficult" conditions or in homes with high dispersion or with low heat inertia (due to particular system structures or unsuitable heat insulation in the house).

In these situations, the proportional-integral control allows for greater regulation accuracy compared to the simple ON/OFF.

A further situation where the proportional-integral control guarantees greater comfort performance can be found in systems where there is different technology for heating / air conditioning.

The advantage of proportional - integral regulation lies in its versatility compared to the different installation situations.

3.3.4 Fan-coil system.

The fan-coil is a terminal used in heating and air conditioning systems, especially in mixed air/water air conditioning systems. For structures, the fan-coils can be divided into " 2 tubes or "4 tubes": the first ones operate exclusively with a single fluid convective, the second ones can work simultaneously both with hot and cold water. The fan removes the air from the environment (to be heated or cooled) bringing it in through an opening at the bottom. Once inside, the air is first filtered and then pushed by the fan towards the heat exchange battery that as a result of forced convection exchanges heat with water: in the case of heating, the heat is removed, in the case of cooling it is yielded.

The Bpt Home automation system allows you to control single-zone and multi-zone fan-coil systems by coordinating the functioning of the different fan-coil units and the apparatus that contribute to creating a thermal zone.

It is possible to control, for example, the electrovalves (even with proportional control) that supply the hot water (for the heating part) and the cold water (for the cooling part) or both. For this kind of system, the Bpt Home automation system also allows for "temperature differential" control and "integral proportional" algorithm, acting on the speeds of the fan-coil units and on the opening of the valves whether they be with proportional control or ON/OFF.

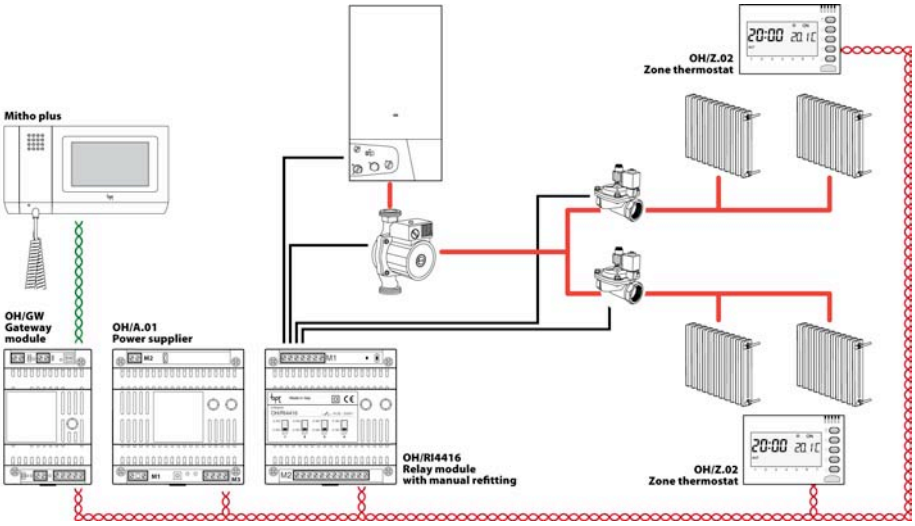
Should the rooms be so large as to require more fan-coil units, the Bpt Home automation system allows for the management of single units like "pairs" of a single one; all the settings will be carried out on this and will be valid for all the others: this means that vast, complex thermal zones can be created by maintaining the same strategy of control without complicating the start up stage.

If one of the systems is responsible for heating or cooling a house, generally speaking 4 tube fan-coil systems are used. This apparatus can easily change from hot to cold and vice versa by opening and closing the hydraulic electrovalves that manage the hot and cold water circuits; the Bpt Home automation system also allows for the management of thermal zones of this kind.

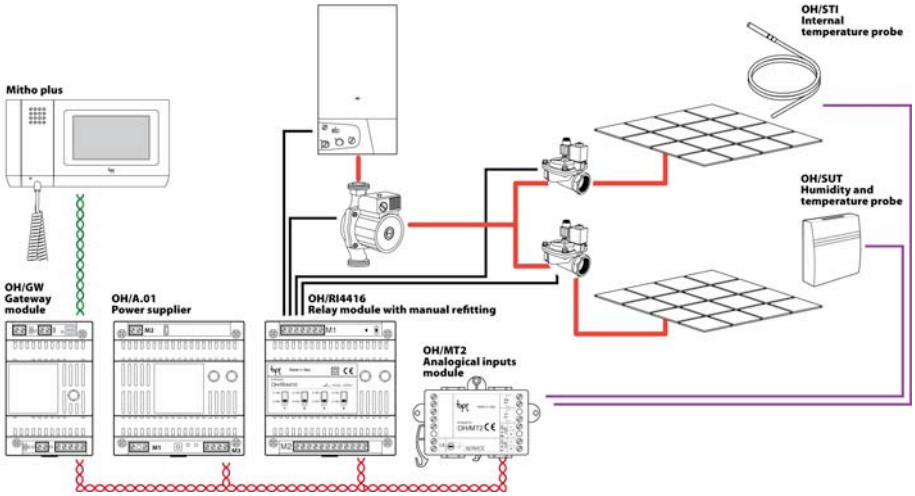
The 4 tube fan-coil units guarantee the supply of both hot and cold depending on the requests made by the temperature sensors.

Furthermore, the Bpt Home automation system allows for the integrated management of heating/cooling systems according to both the environmental and functional variables. For example, it is possible to use simple magnetic contacts for windows that stop the system coming on and thus prevent unnecessary waste.

3.3.5 Control of the heat zones with ON/OFF electrovalves.

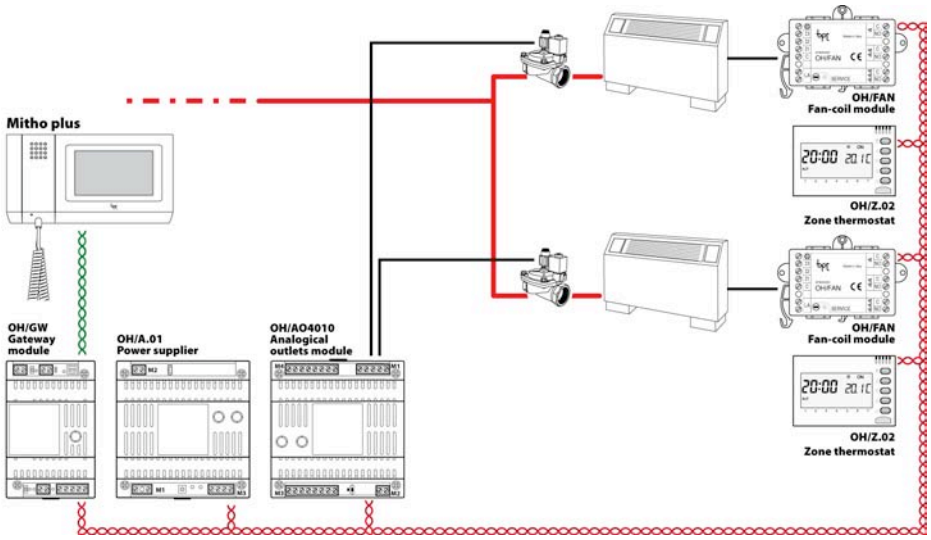


Example: system with 2 radiator heat zones, pump, boiler and hydraulic valves for ON/OFF zone with local manual management of the temperature and weekly profile of the automatic mode.

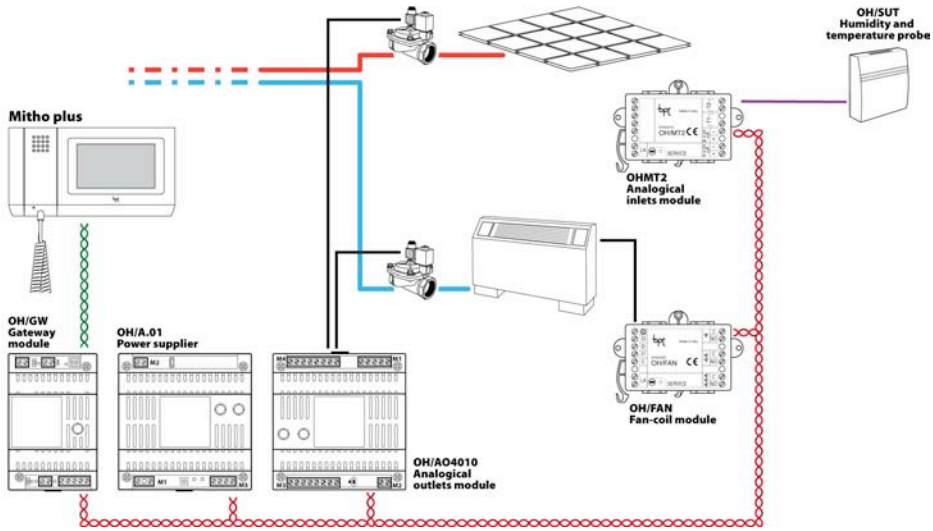


Example: system with 2 heat zones with under-floor heating, condensation boiler, pump and hydraulic valves for ON/OFF zone with weekly profile management of the automatic modes and proportional control programme.

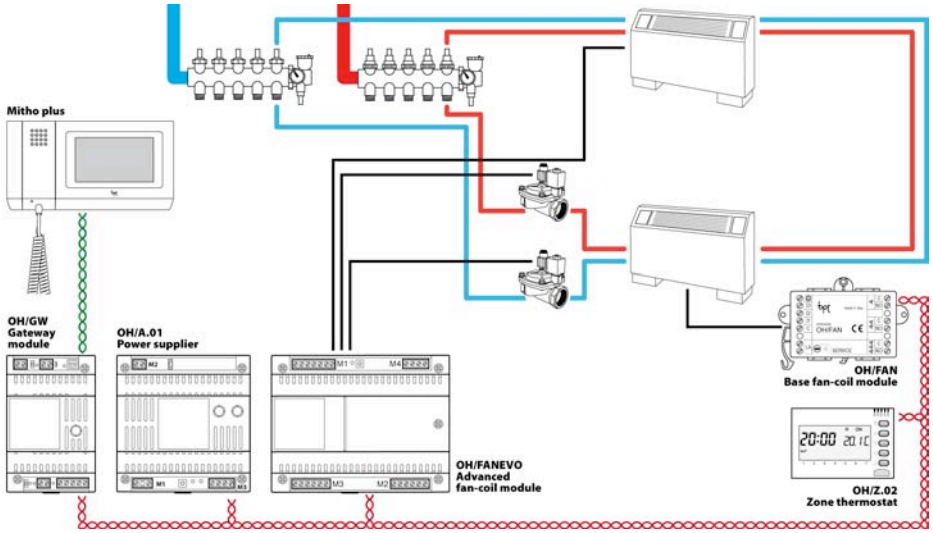
3.3.6 Control of the heat zones with proportional electrovalves.



Example: Heating system with 2 tube 2 fan-coil heat zones and proportional hydraulic zone electrovalves with local manual management of the temperature and speed of the fans and weekly profile of the automatic mode.



Example: System with a mixed thermal zone with underflow heating and cooling with 2 tube fan-coil, proportional hydraulic zone electrovalve and temperature and humidity reading. Local manual management of temperature and speed of the fans and weekly profile of the automatic mode.

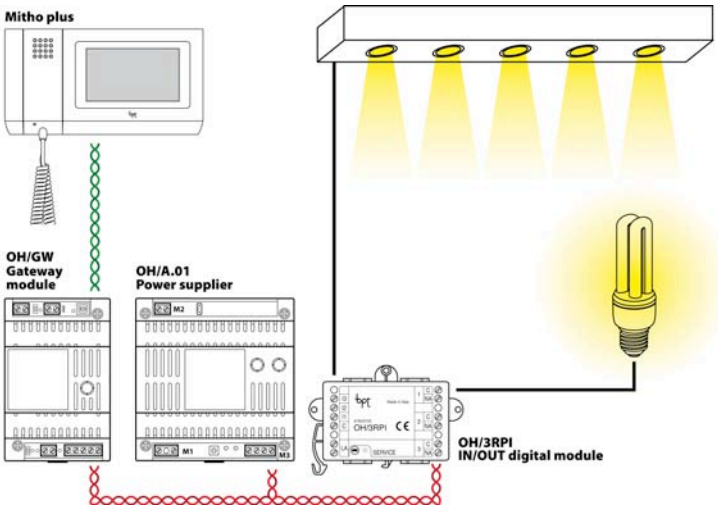


Example: System with heating and cooling with a mixed thermal zone with 2 4 tube fan-coils, proportional hydraulic zone electrovalves. Local manual management of temperature and speed of the fans and weekly profile of the automatic mode.

3.4 - Timers

3.4.1 Timed single actions

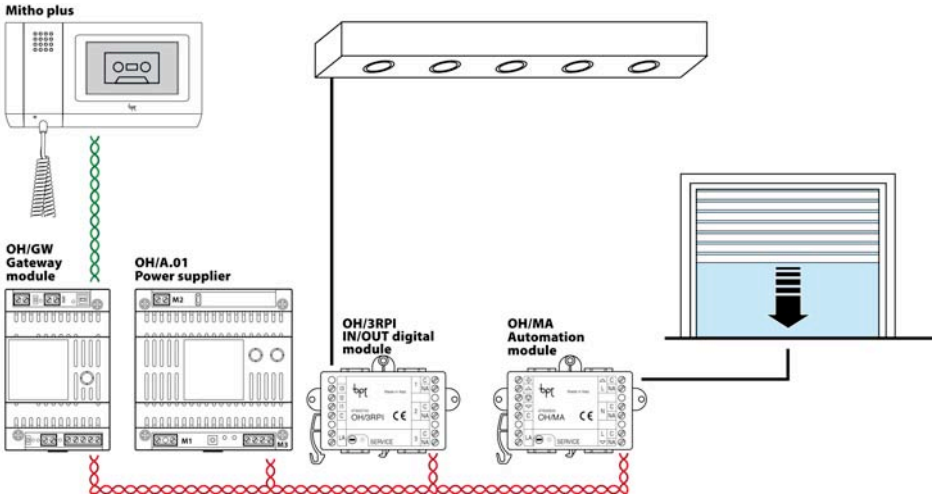
The Bpt Home automation system allows you to associate single activations to "timers" in different ways: for example, managing thermal well-being, diversified daily profiles can be set for an entire week with the precision of a quarter of an hour or for irrigation it is possible to set individual activation times for a series of irrigators with precision to the second. More generally speaking, it is possible to activate individual actions autonomously up to 4 times a day with the option of selecting the activation days.



Example: Controlling the illumination of a shop window or a "time" programmed light inside a shop that comes on by itself.

3.4.2 Timed Scenarios

The potentials of the Bpt Home automation system can be further enhanced if, as well as individual actions, "scenarios" can also be created automatically. For example, the answer machine on the entry phone can be inserted or the burglar alarm turned on or the heating in a specific thermal zone or even set "global scenarios" where all these functions are controlled simultaneously.



Example: "Timed" management of the activation of a NIGHT scenario: turning off the lights, closing the shutters and turning on the entry phone answering machine.

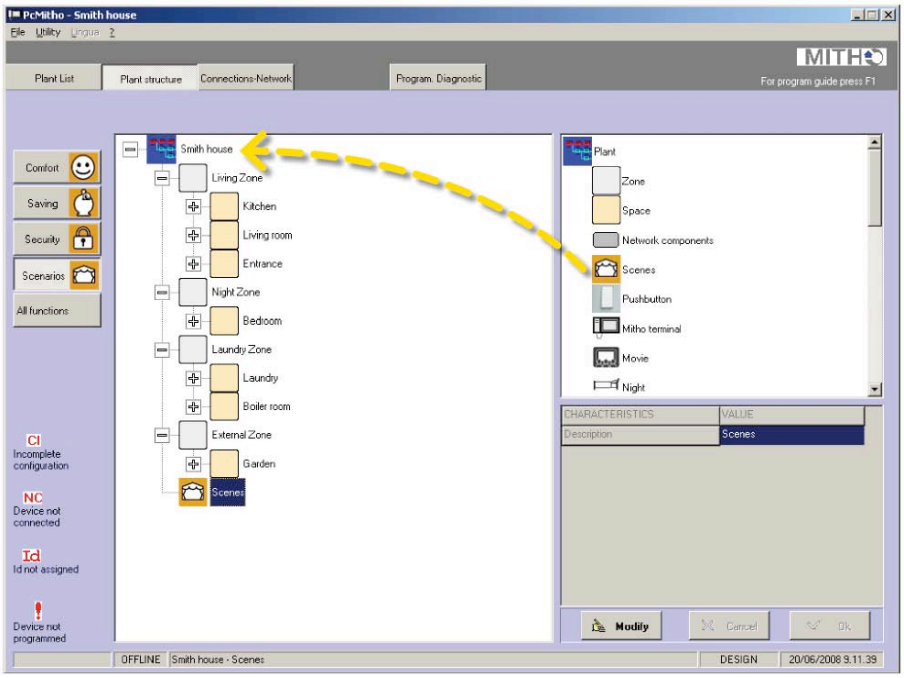
3.5 - Scenarios

The integrated management that the Bpt Home automation system offers is illustrated in the mix of functions that can be carried out in a co-ordinated fashion within the same scenario: functions that are part of any environment (entry phone, safety, automation, lighting, heat management etc.); the functions can be "made up" to create integrated scenarios that can be activated by remote control from a push button or at a pre-set time.

In an automation system for the house, the installer, at the system configuration stage, generally pre-programmes numerous scenarios like, for example, those relating to burglar alarm system. Other "scenarios", however, could arise during the system's lifespan based on the user's needs.

Many Home automation systems do not, however, have simple tools which the end user can use to create "scenarios" as they wish without having to call on the Installer to intervene.
The Bpt Home automation systems' "scenario management" allow the installer to meet the client and user's requests to be able to customise their surroundings autonomously.

3.5.1 Scenarios pre-programmed by the Installer



The installer can easily create an incredible variety of operation sequences using the configuration software, associating with it the activation by "physical push buttons", "virtual push buttons" on a touch-screen, remote control activation or events generated by the timer or sensors connected to the system. This avoids the user having to repeat certain operations or can guarantee that all the "emergency" activations are quickly and automatically carried out in the event of an "alarm".

3.5.2 Scenarios created by the user.

No matter how skilled or sensitive an installer is to the user's requests, when creating scenarios he is not capable of fully meeting with all the user's needs or rather he cannot foresee all possible combinations needed for their "living comfort".

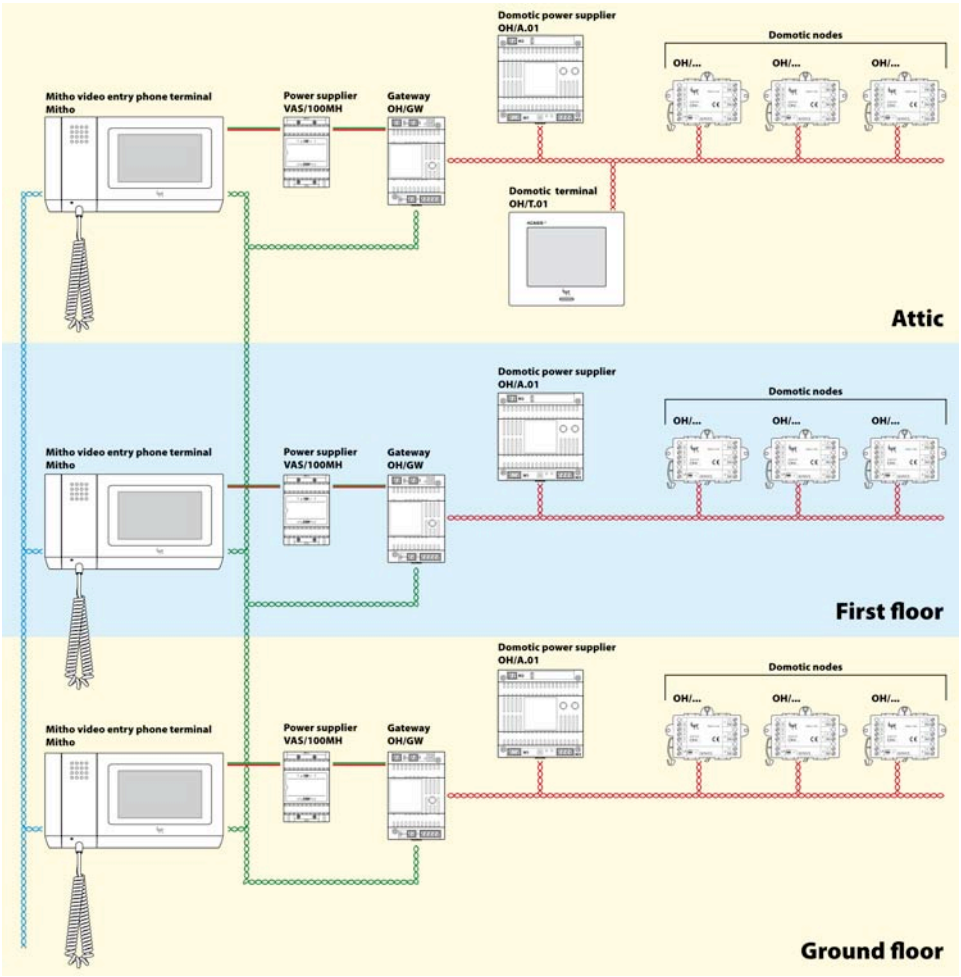
For example, changing the layout of the furniture in a room could alter the effect of a "scenario".

In similar situations, the Bpt Home automation system allows the user to create customised "scenarios" without having to call on a specialised technician to intervene: it is, in fact, possible to "physically" carry out a series of actions within the home (turn on or dim lights, open or close curtains or shutters, turn on burglar alarm systems etc...) that will be recorded and will consist of a "customised scenario" that can be activated via "virtual push buttons" on a touch-screen.

3.6 – Video entry control

Bpt has always been a leader in its sector and in 2008 further improved the video entry control function by integrating it into the Home automation: from a single point in the house it is possible to answer calls from outside, turn on the lights or adjust the temperature in the house or check the status of your system or the weather conditions outside.

The Home automation terminal that can be directly connected to the video entry control column, guarantees all the functions typical of Bpt video entry control apparatus, adding the "zoom" and digital "touch pan" of the pictures of places outside, the option of storing up to 10 video entry phone messages on the answering machine, the availability of polyphonic ring tones and other characteristics that make the Bpt Home automation terminal unique.



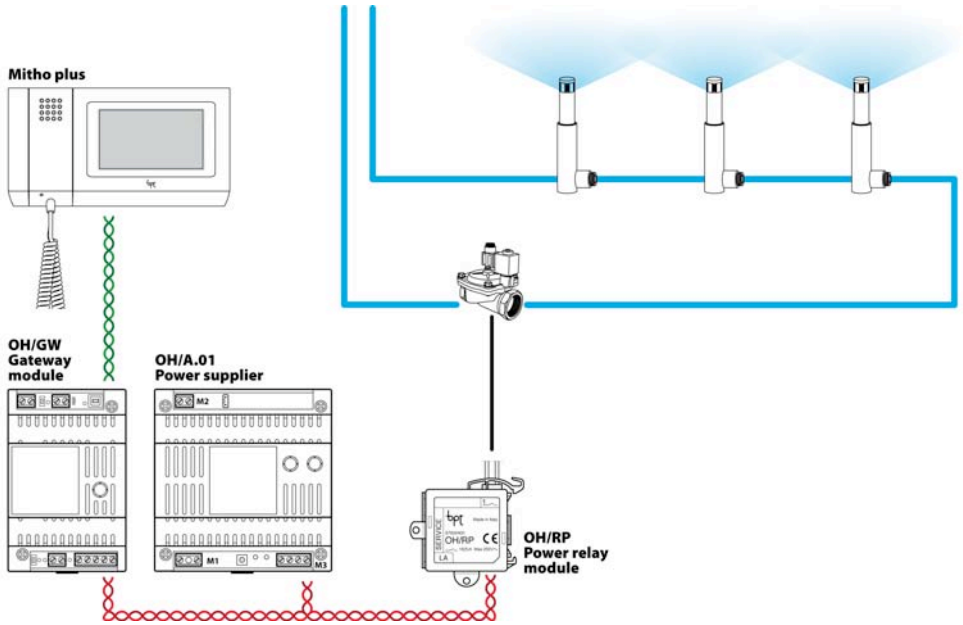
The figure shows an example structure that integrates the vertical video entry control system and horizontal Home automation system.

3.7 – Irrigation

The Bpt Home automation system allows you to save on a prime necessity like water avoiding waste and keeping green areas blooming, integrating the functions of professional irrigation systems.

3.7.1 Irrigation in a single zone

In the case of irrigation in a single zone, that is with a single water supply valve, the function can be seen as a "simple" timer with which to select various open and closing cycles on different days of the week. The irrigation obtained this way is much simpler and more effective for small individual green areas but is separate from the seasonality and can only be activated or disabled by rain gauges.



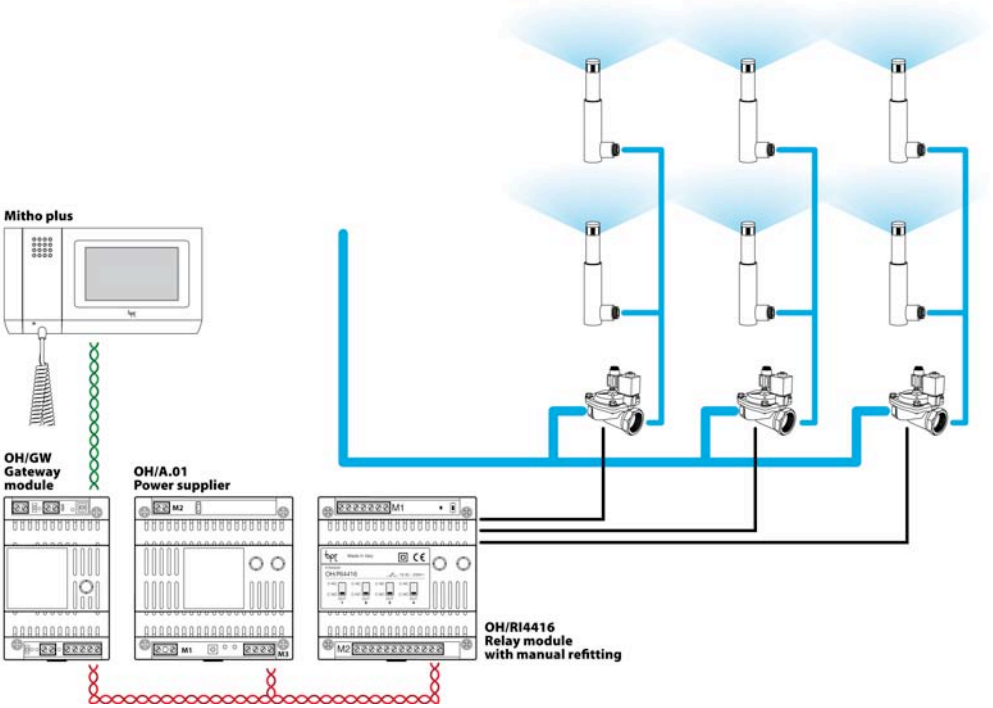
Example: single zone system with watering electrovalve combined with a timer.

3.7.2 Irrigation with specific scenarios.

This second "level" is the best of irrigation technology applied to the world of domestic automation and allows you to manage mono and multizone systems with coordinated opening of the irrigators, to prevent dangerous cavitations on the pumps and breakages to the system and to have a coordinated management of the irrigators and hydraulic valves.

The activation of each individual irrigator belonging to the irrigation scenario can be specifically customised in order to allow for excellent, uniform irrigation without wasting water.

The innovative scenario management also allows you to dynamically change the programmes according to the seasonality by simply changing the watering times. You can force start up, set the start time and seasonal percentage for each scenario; you can intervene on each individual irrigator to set the duration of the irrigation cycles and how long the irrigation can continue for before running the risk of flooding the zone.



Example: three zone system with seasonal variations of the watering times and manual forcing of the start of irrigation

3.8 - Load and electricity consumption control

Unlike a normal Home automation system, Bpt synchronises the turning on of the controlled loads in order to prevent local "black outs" due to overloading, integrating the "load control" with a precise "consumption monitoring"; this way the user can decide how to "manage" the consumption of their own system, set the list of controlled loads, the priority on the basis of which to turn them off and the setting of the "daily consumption profile" on the terminal that is different for each day of the week.

3.8.1 Load control management

In order to implement the "load control" function, all that is required is to install the specific module capable of measuring and transmitting the system's instantaneous consumption data on the bus and make the more important electric loads in actual fact controllable by inserting "in series" simple relay outputs in the electric socket.

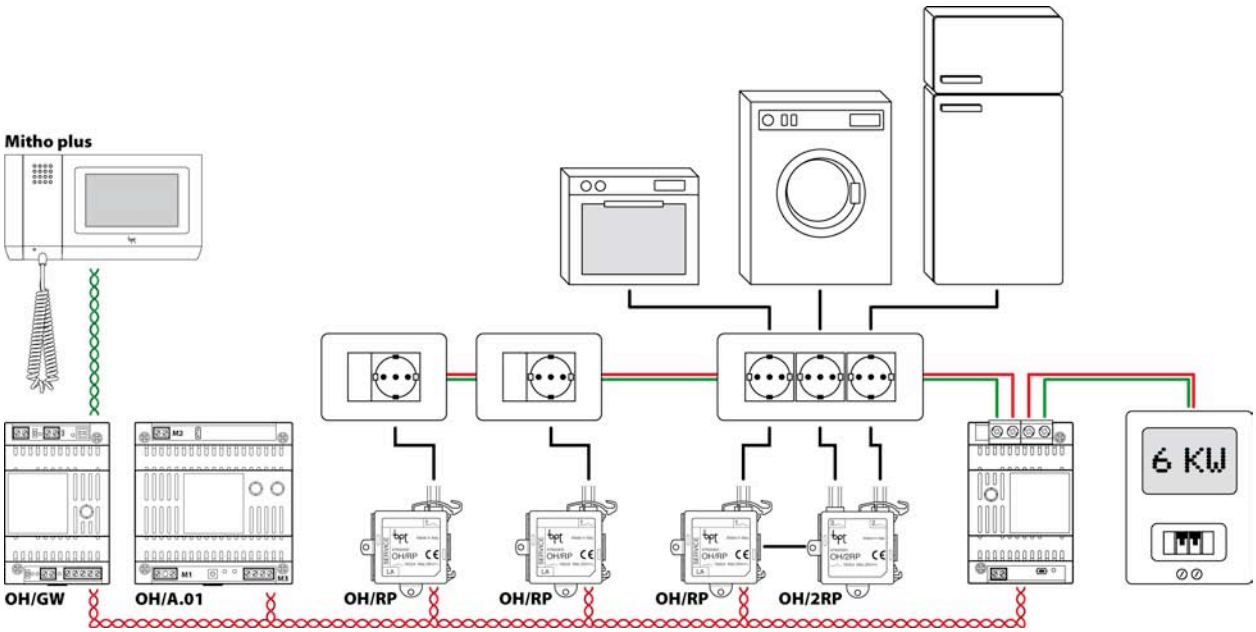
The list of priorities have 100 available positions to allow for the control of all the sockets that contribute to the system's general consumption and to assign up to 4 different periods of time with 4 different priorities for each load.

3.8.2 Consumption management

Thanks to the Bpt Home automation system, it is possible to set a maximum limit of consumption (to the limit equal to the maximum power of the contract signed with the electricity company) and trace a daily profile subdivided into 5 sub-levels.

The user will, therefore, be able to choose what time of day to concentrate or reduce energy consumption: such a flexible management becomes essential when a contract with "time period pricing" has been signed with your electricity company. Lastly, the user can view the actual consumption on his terminal and compare them with the "ideal" profile previously set.

Example: check loads and consumption management with release priority list, 4 time periods with different priorities for each load.



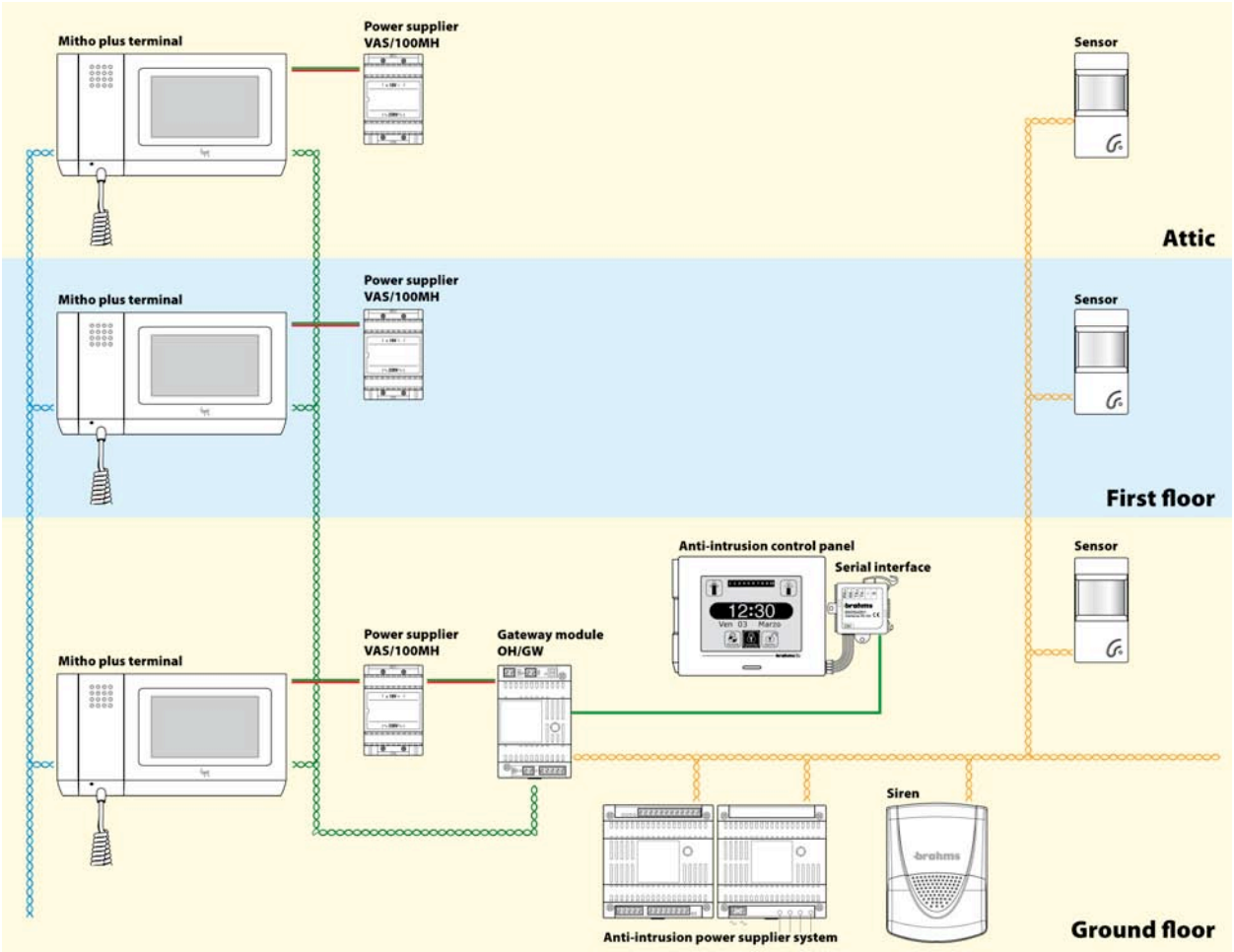
3.9 – Burglar Alarm System

Bpt has chosen to integrate professional Brahms burglar alarm products in their Home automation systems because they guarantee the utmost design flexibility and installation simplicity to any application.

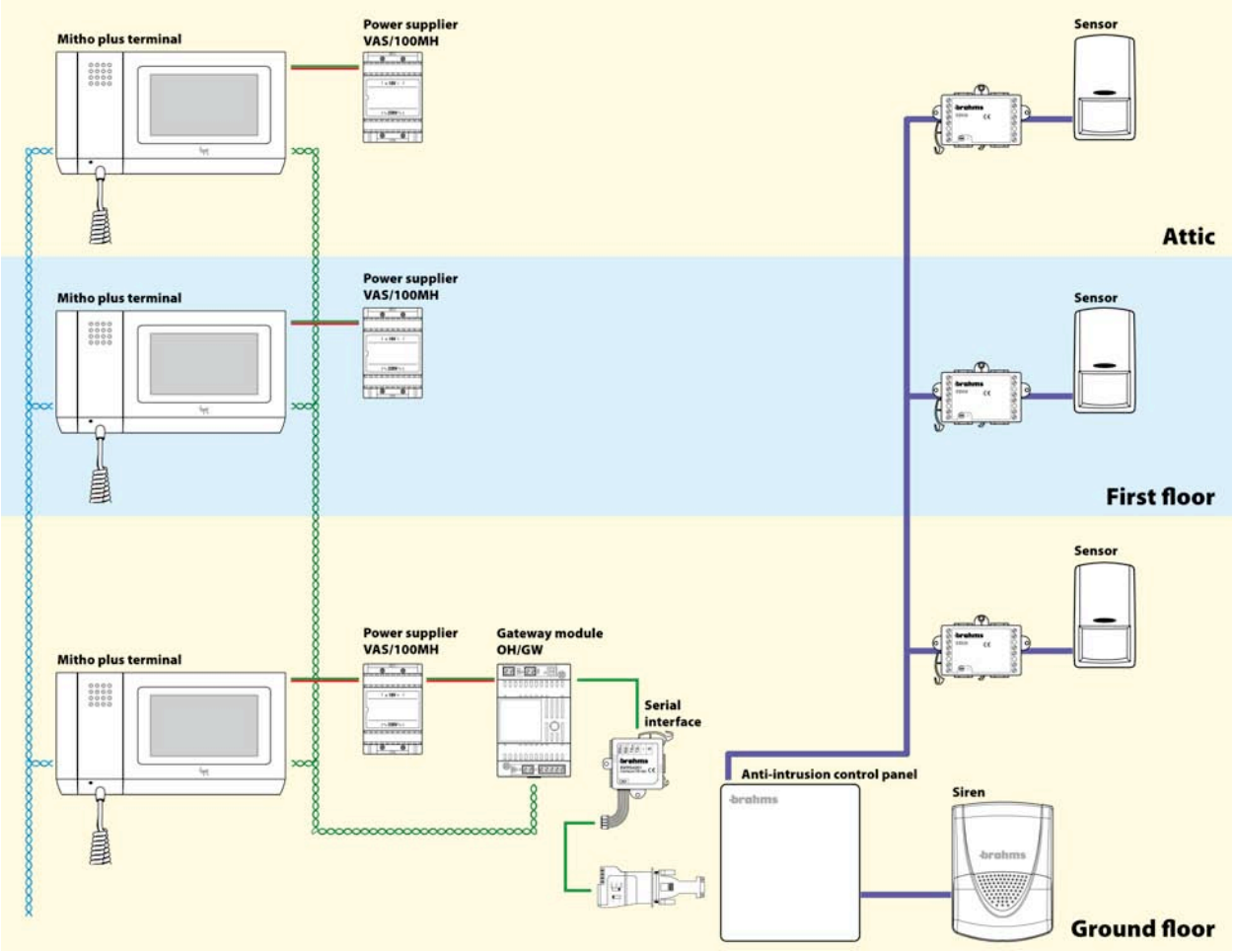
This integration allows the user of the Bpt Home automation system to operate easily and naturally via the same interface used regularly to turn on the lights or answer the entry-phone with the assurance of a clear visibility of everything that is going on around them.

"Scenario" management is also part of safety as it makes it even easier to use: it is the installer's duty, at the configuration stage, to create the proper "area" groupings that will allow for simple, safe management by the user.

3.9.1 Integration with the B2 Brahms system.

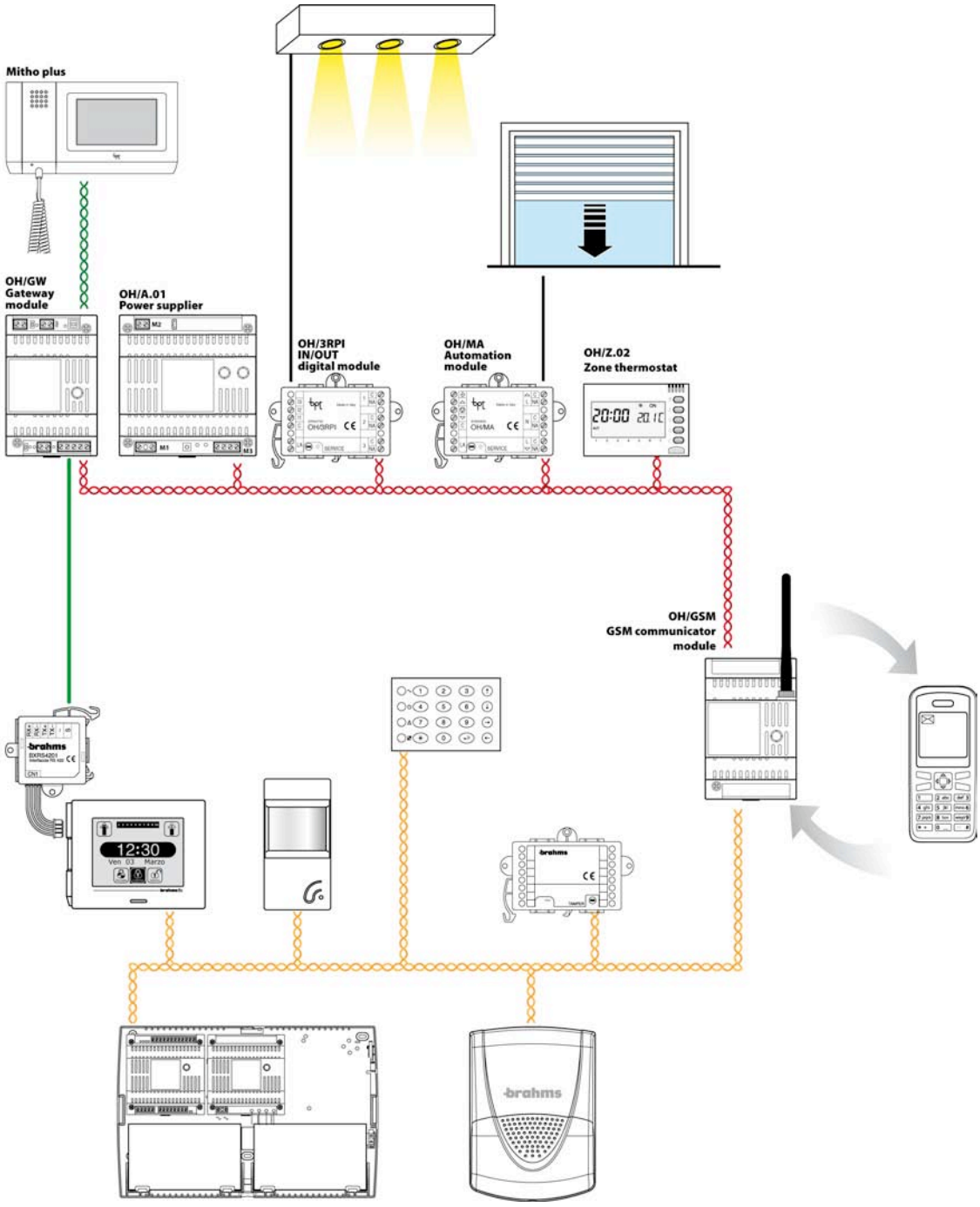


3.9.2 Integration with the B4 Brahms system.



3.10 – Remote control

The Bpt Home automation system supplies the user with the possibility of conversing with their own home via remote control by both controlling the system and commanding the apparatus and receiving event signals by sending a text message.



Example: remote control management of a Home automation system with: the activation of scenarios of lights, shutters and thermal zones, the possibility of changing the temperature set-points and asking about the system's status, turning the burglar alarm system on and off, asking about its status, receiving any alarm signals.

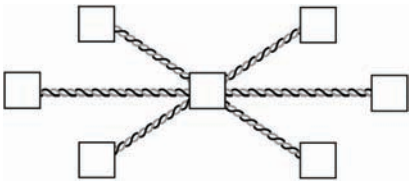
4. Making a project with the Bpt Home automation System

4.1 Signals on the data communication networks

4.1.1 Network configurations

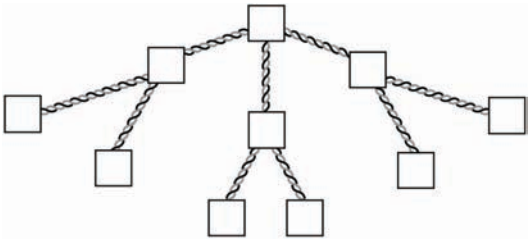
The Bpt Home automation system does not impose any restriction as far as the so called network "topology" is concerned: it is possible to distribute the communication bus by simultaneously using all the most common structures that will shortly be explained in the following paragraphs. It should be pointed out that, within the maximum distances described previously, the system, in any case, guarantees top performance as long as the right transmissive means is used and this translates into a high level of versatility in all the real system situations.

"Star" configuration.



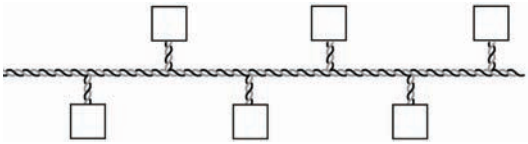
In the "star" communication bus all the devices are connected to a central node known as the "star centre".
It is the simplest and most robust configuration in the face of single node connection breakdowns: in the event of a single branch breakage, the rest of the system continues to operate normally.
The greatest criticalities are in the presence of a single central node (for the high concentration of traffic on it and for the system's weakness with respect to breakages of this part) and the vast amount of cable needed to connect all the network nodes.

"Tree" configuration.



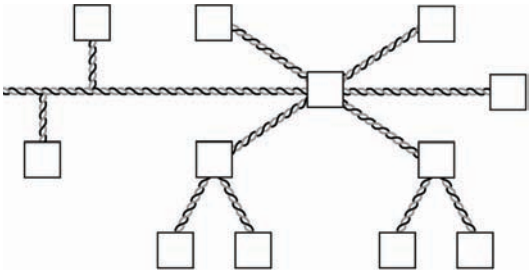
This kind of configuration can be considered a significant variant of the previous one from which advantages are made use of by trying to partially limit certain criticalities. The devices are connected from the "father" node with a branching structure, thus reducing the amount of cable needed and limiting the criticality linked to breakages in the star centre.

"Bus" configuration.



All the devices are connected via a single line of cable in this kind of configuration. The criticality is caused by relative weaknesses in the system with regard to the breakdown on the single node that causes the interruption of communication between all the nodes.

"Free topology" configuration.



This kind of configuration is the combination of the other three and allows you to make the most of the merits by reducing the effects of the respective criticalities.
Even though in the Bpt Home automation system you can freely set up the communication network between the various parts, it is wise to bear in mind the advantages and disadvantages shown above for the various network configurations and not just the possible installation conveniences.

4.1.2 Communication Management Logics

The communications between a system's devices occur via a single physical channel (bus) and this means they have to share the transmissive line and so "strategies" have to be created to regulate the access to it by avoiding "collisions": these "strategies" are included in the so called transmission "protocols".
Due to the fact that the characteristics of the transmission protocols is too extensive a topic to be covered in this document, we will limit ourselves to distinguishing the network communication systems with "Master-Slave" structure and networks with "Multi-Master" networks.

Networks with "Master-Slave" structure.

There is a "master" in this kind of network that adjusts all the communications: no device can access the bus if not explicitly interrogated by the "master" with well defined rules that depend on the process for which the field bus is applied.
The risk of "collisions" is obviously cancelled out with this strong hierarchy system: it would be possible for two devices to compete for the access to the physical means with the potential risk of collision. The downside is that the information transit times are extended to increase the number of nodes and a weakness is introduced to the system because master breakages cause the entire system to break down.

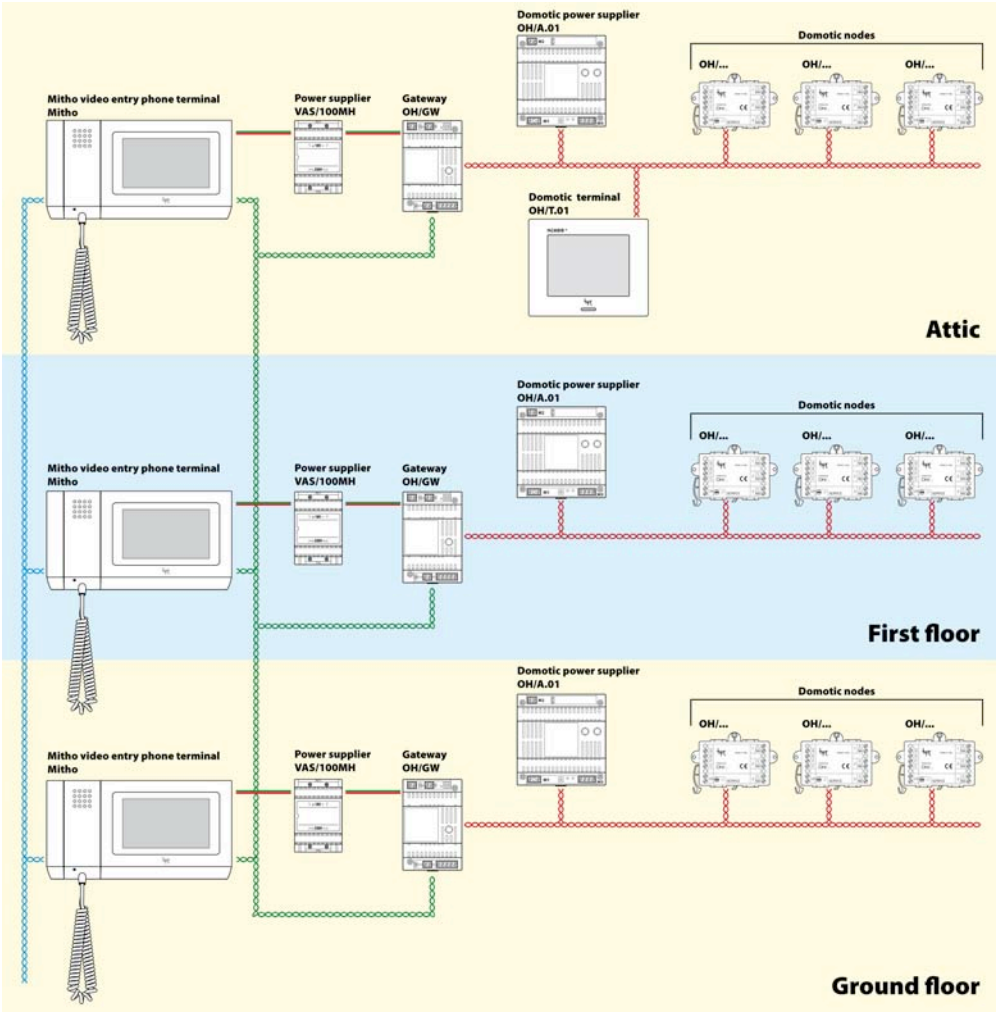
Networks with "Master-Slave" structure.

In this kind of network, each device can potentially communicate with all the others: it is clear, in any case, that algorithms must exist in order to prevent collisions (or to recover any lost information) and regulate access to the bus avoiding the possibility that one or more devices can monopolise the transmissive means preventing others from communicating. "Arbitration criteria" therefore have to be introduced to access the network, for example, giving different priority to each network node (a higher priority to nodes that are vital to the system and so on, a lower one to the others).
This is a much more suitable structure for systems with strong "real-time" requirements like the automation systems in general, that tend to minimalise the latency in the transfer of information.

As far as what has been set out so far is concerned, it is clear that for a Home automation system the solution can only be the adoption of a network with "multi-master" structure; a choice made by the Bpt Home automation systems.

4.2 - System Structure

The structure of the Bpt Home automation system is characterised by one or more automation branches (shown in red in the figure) connected via communication gateway, to the supervision bus (shown in green in the figure) that receives information from the automation sub-systems, burglar alarm system and video entry phone system creating the integrations that function between them. As well as the communication gateway, not strictly necessary supervision terminals can also be connected to the supervision bus, that allow for a more advanced, easy user management than the one that can be created with simple push buttons.



From a structural point of view, the Bpt Home automation system has two main strong points:

1. the "*free topology* " network configuration

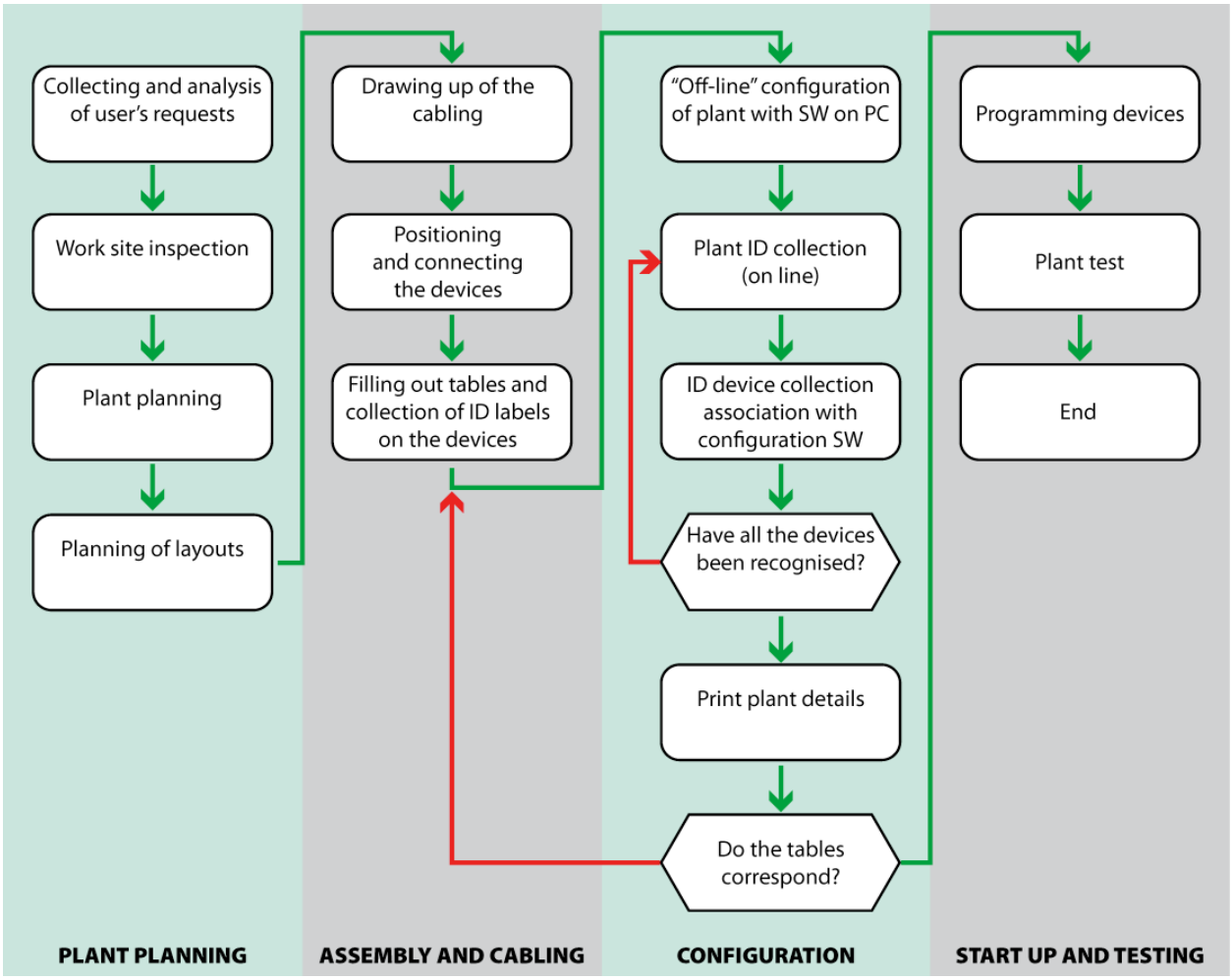
This allows you to create even complex systems without straining the normal electric installation rules guaranteeing maximum versatility in any situation irrespective of the restrictions created by the system design, even a pre-existing one. For example, it is possible to arrange concealed modules inside the connector blocks or centralise part of the devices in "centralised" electric panels in function with the specific circumstance of each system.

2. "*distributed intelligence*" control

Ensures maximum resilience against breakdowns that only limit the functioning of the device that is possibly not working and an incomparable flexibility in the implementation of

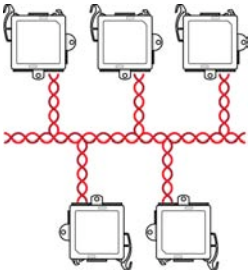
control strategies. In fact, once set up, the devices will function autonomously thanks to the intelligence found inside each one of them.

4.3 Flow chart for creating a project



Generally speaking, each project follows (more or less sequentially) the stages shown in the figure above. In the paragraphs that follow the methods with which it is possible to complete each design stage of a Bpt Home automation system are shown, starting with the planning of the layouts.

4.4 System arrangement



The Bpt Home automation system is a programmable logic system based on the commitment of the input/output devices that communicate and are powered via an unshielded, non polarised twisted pair.

As already mentioned, the "*free topology*" configuration and the "*distributed intelligence*" control give complete freedom to create system designs that translate into the possibility of creating distribution according to the needs of each system.

The device installation methods can be classified in 3 categories: Centralised, Distributed and Mixed.

Whatever the system design choice made by the installer or designer of the electric system, it is strategic to correctly arrange and measure all the elements in play in order to avoid completion delays due to burdensome changes during the work and to allow for any later variations without the need for excessive, costly intervention work, making the most of the flexibility offered by the Bpt Home automation system.

4.4.1 Centralised Installation

The centralised installation is generally adopted when you want to simplify the system structure concentrating all the devices in one point (main electric panel), with a view to making maintenance operations easier, reducing intervention time generated by the distribution in distributed blocks.

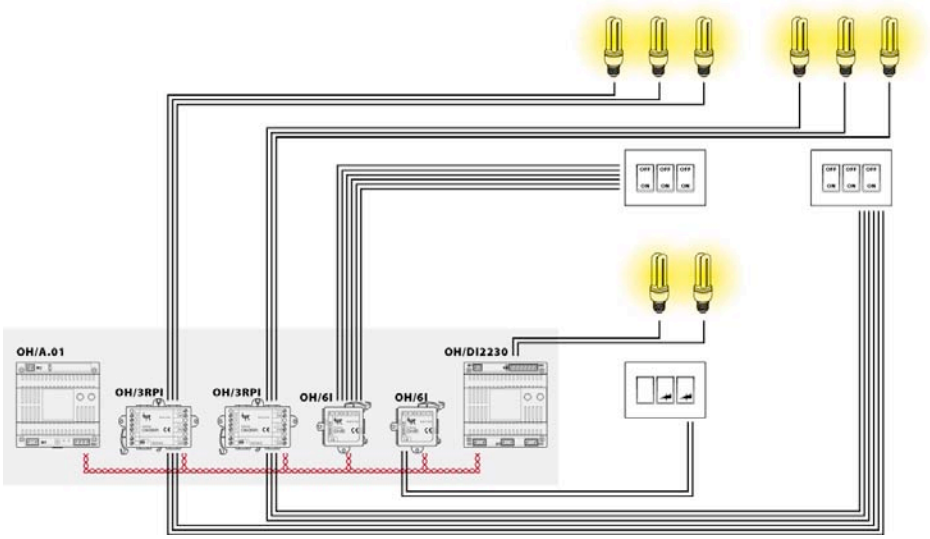
This kind of choice, is the only practical one in the case of pre-existing systems whose cabling is made up of a series of unipolar cables that exit the panel and reach all the loads in the house and all the commands.

Lastly, sometimes the arrangement and the choice of connector blocks does not allow for a delocalised distribution of the devices.

In all these cases it is very simple to install the Home automation system devices inside the main electric panel latching them directly on to the DIN bar.

This kind of installation arrangement becomes strategic for making the laying of the system easier. It is very important to organise separate tubing for the cables that exit the main electric panel going to the loads to be controlled and the signal cables that reach all the command points, avoiding the generation of induced and/or conducted interference. It is also essential to avoid surpassing the maximum distances foreseen between the command point and the input device.

The size of the electric panel is also essential so that all the Home automation system devices and traditional parts can fit in easily, bearing in mind any future expansion to avoid later changes that would cause delays and burdensome maintenance work.

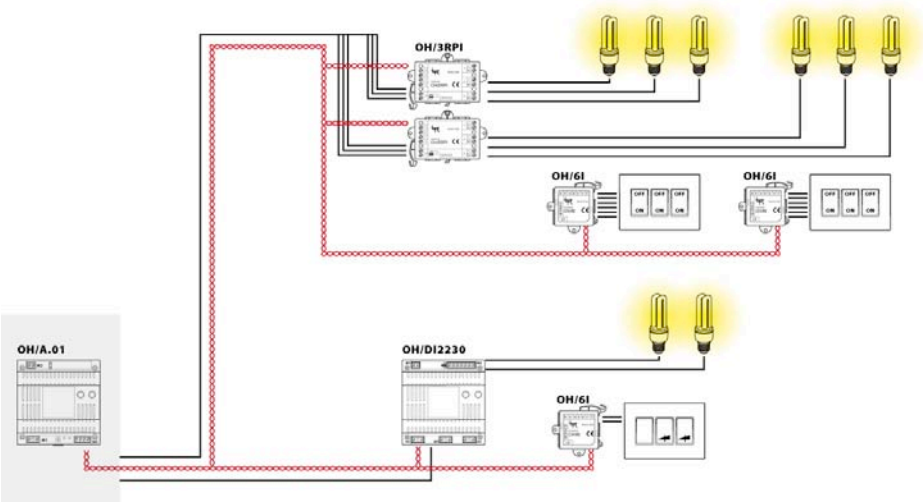


Using the Bpt Home automation system, it is possible to reduce the clutter in the electric panel by using the reduced depth modules such as, for example, the OH/3RPI module to control the lights.

4.4.2 Distributed Installation

The distributed installation allows for a simple drawing up of the cabling because only the bus and cables have to be extended along the entire length of the system to reach all the connector blocks while the command connections are local. It is, therefore, very important to correctly position all the connector blocks and wall boxes to distribute the Home automation system devices properly, respecting the maximum distances subsequently displayed. The "free topology" configuration permitted by the Bpt Home automation system simplifies this kind of choice considerably.

No particular attention is required for the corrugated cables in these installations if the Bpt cable is used for this bus system because it is immune from interference generated by the wires. It is, therefore, enough to arrange for ducts, even small ones, for the cabling distribution. The only specific attention required is the need to arrange for sufficiently spacious connector blocks, at least 12 DIN to insert any line or power supply repeaters.

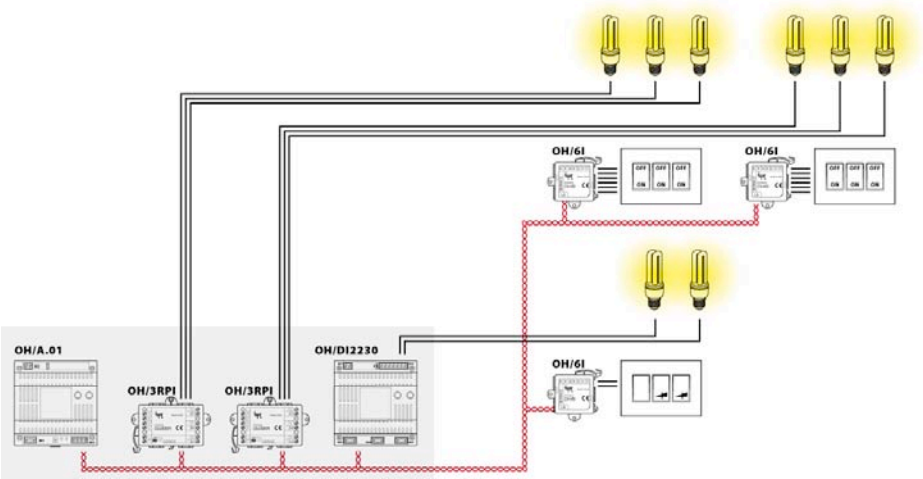


Once the distribution has been analysed and planned, it is essential to create a layout map of all the modules to allow for an immediate identification and localisation in the case of maintenance to reduce intervention times that otherwise would run the risk of increasing pointlessly.

4.4.3 Mixed installation

In the mixed distribution all the "power" is centralised bringing all the cables to the loads in the main electric panel far from the user and the entire part of the commands in low voltage is distributed. This way, the cable passage is made simple by considering the single distribution of the bus and power supply to the distribution blocks as far as the command points (push buttons) are concerned.

No particular installation attention is required in this modality because the flexibility allows you to intervene later on to change the structure; in fact, the limitations of the previous solutions are reduced precisely because you can decide according to the needs of the moment whether to add a distributed module or bring the unipolar cable to the load or command.



It is essential to plan for an adequate sized electric panel to hold all the Home automation devices and traditional parts, good sized connector blocks (at least 12 DIN), to insert line and power supply repeaters if necessary.

4.5 Cables, distances and devices

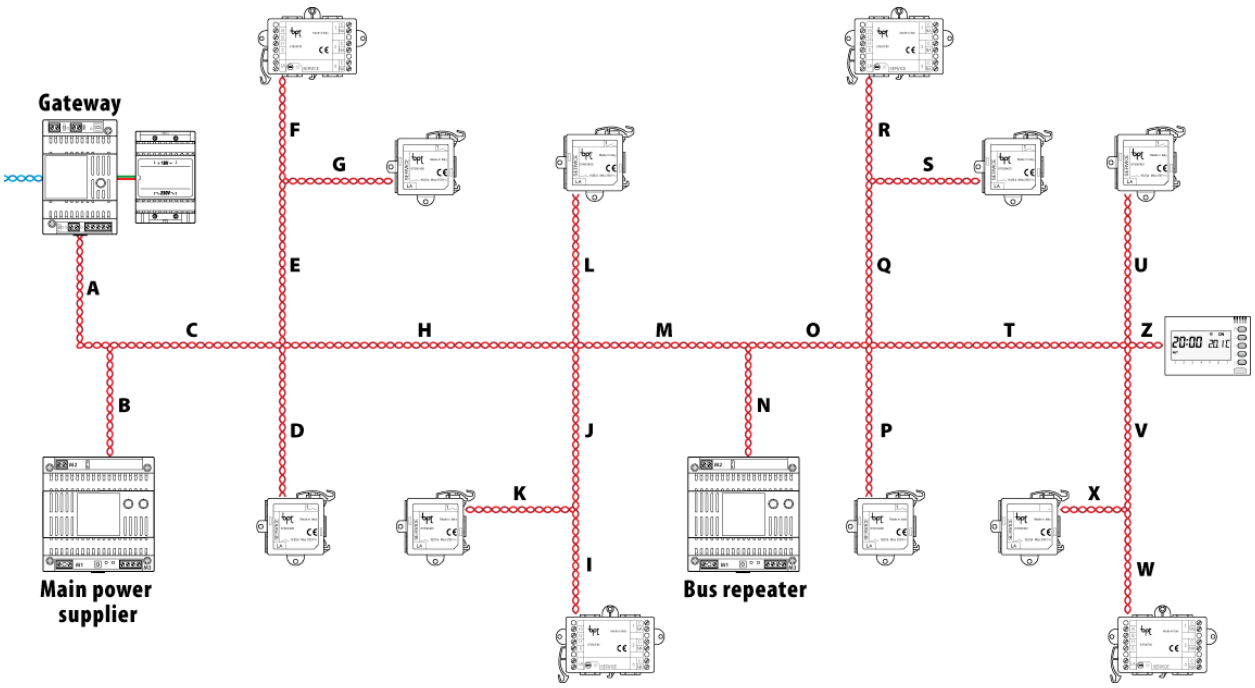
The Bpt Home automation system grants maximum installation freedom via a structure that can be split into separate bus branches, inside each one of which the installer can distribute or centralise the various devices according to the system design's particular needs. In any case, there are some specifications of the physical parts used that have to be taken into consideration.

4.5.1 Maximum amount of extended cable

The maximum overall amount of cable that can be extended per single bus branch is 500 metres. Should you wish to extend further these limits, it is possible to use a line repeater, NH-RBB, that regenerates the signal and doubles the voltage available on the bus to power the devices connected to each other via free distribution with NH-C1D twisted cable (0.38 mm section ^{2} - unshielded).

Sum of Extended Cable

(A+B+C+D+E+F+G+H+I+J+K+L+M+N) MAX 500 m +
(N+O+P+Q+R+S+T+U+V+W+X+Z) MAX 500 m



4.5.2 Maximum distances

The characteristics of the automation bus and the power suppliers allow for maximum distances to be obtained between the power supplier and devices that are further away than 100m. With the use of the NH-RBB repeater, it is possible to double this limit by bringing it to 200 metres. The distances between the repeater and furthest away device should not, however, be more than 100m.

With reference to the previous figure, the following has to be checked:

A+B, B+C+D, B+C+E+F, B+C+E+G, B+C+H+L, B+C+H+J+K, B+C+H+J+I, B+C+H+M+N, N+O+P, N+O+Q+R, N+O+Q+S, N+O+T+U, N+O+T+V+X, N+O+T+V+W, N+O+T+Z **≤ 100 m**

In any case, for any device connected beyond the repeater, the distance from the power supplier should be no more than 200 metres.

4.5.3 Current absorbed by the Devices

The current absorbed by the different devices is another parameter to take into consideration when planning the size of the system because the sum of the absorptions on a single branch should not exceed 600 mA or, if using a NH-RBB repeater, it should not exceed 1.2 A overall. Below is a list of the absorptions of the different modules.

Code	Absorption.
OH/6I	4 mA
OH/4I	4 mA
OH/AI4	7 mA
OH/R.01	5 mA
OH/RI4416	8 mA
OH/RP	4 mA

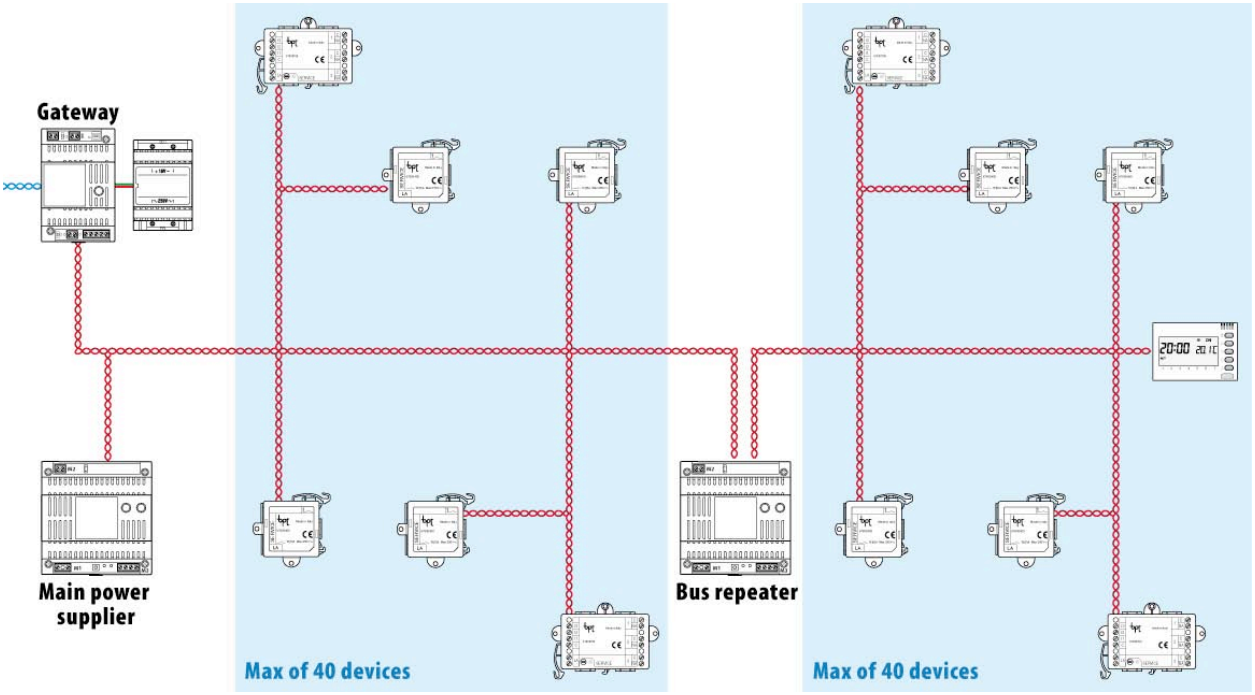
Code	Absorption.
OH/RI	4 mA
OH/3RPI	4 mA
OH/DI2230	7 mA
NH-DIM	7 mA
OH/AO4010	8 mA
OH/MA	4 mA

Code	Absorption.
OH/Z.02	5 mA
OH/MT2	7 mA
OH/FANEVO	8 mA
OH/FAN	4 mA
OH/MPE6KW	8 mA

The maximum number of devices that can be connected on a bus per single branch also depends on the amount of message "traffic" generated on the bus itself.

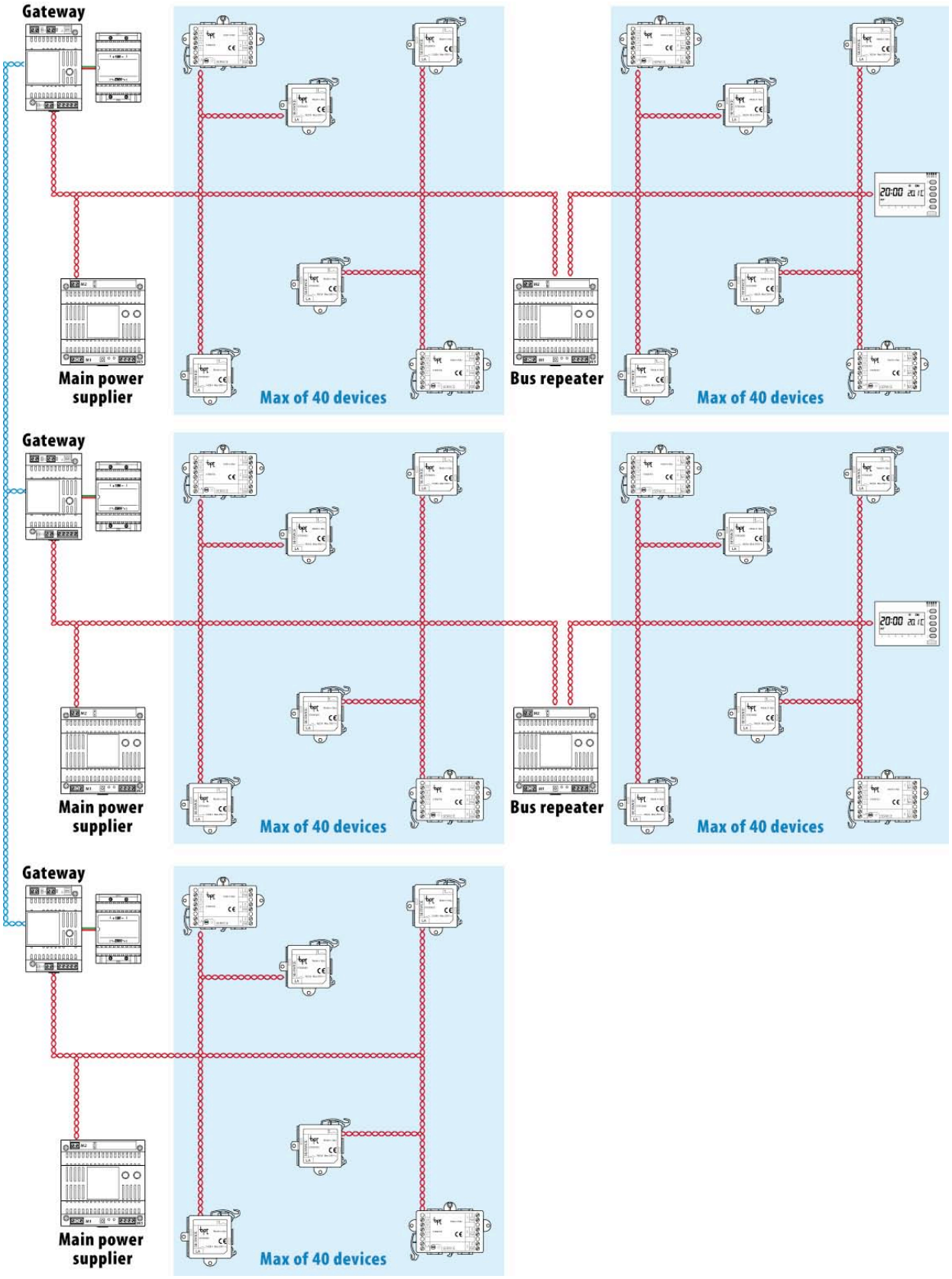
On average, for each branch no more than 40 devices can be connected that double if using a NH-RBB line repeater for a maximum total of 80 devices per branch.

In this case, a proper arrangement of the modules is required: a maximum of 40 modules can be put in place including power suppliers and NH-RBB and at the most another 40 modules after this.



The OH/GW gateway module's function is to section the traffic between the individual branches by filtering both outgoing and incoming messages; this provides greater communication safety and greater installation flexibility.

The use of the OH/GW communication Gateway allows you to increase the number of devices installed in a single system; with this device, it is possible to put several automation branches in communication bringing the total number of devices to 200.



4.6 Installation of system devices

4.6.1 General warnings.

When opening the packaging:

√ Read the instructions carefully before starting installation and carry out the operations in accordance with the manufacturer's specifications.
√ After removing the packaging, make sure that the apparatus is intact
√ The packaging parts (plastic bags, expanded polystyrene, etc..) should not be left within children's reach as they can be dangerous

General rules for installation:

√ Installation, programming, operation and maintenance of the product must be carried out only by qualified and appropriately trained technical staff in compliance with the regulations in force, including adherence to accident prevention
√ Operate in sufficiently well-lit environments that meet health requirements and use instruments, tools and equipment in good condition.
√ Do not install the devices outside or in places where it is subject to dripping or spraying of water.
√ Handle the devices with care: they contain electronic parts that are fragile and sensitive to humidity

Electric connection of the devices:

√ The electric system must conform with regulations in force in the country of installation.
√ Protect the system's power suppliers at source of the network power supply with an omnipolar network switch with at least a 3 mm separation of contacts.
√ Before connecting the system's power suppliers make sure that the data on the plate correspond with those of the distribution network
√ The electronic boards can be seriously damaged by electrostatic charges: whenever they need to be handled, wear suitable anti-static clothing and footwear or, at least, make sure that you remove any residual charge in advance by touching a metal surface connected to the earthing system (for example, the body of a household appliance) with your finger tips.
√ Solder the joints and the terminal part of the wires in order to prevent false alarms caused by rusting of the wires.

Installation completion

√ When installation is complete, always check that the equipment and the system as a whole are working properly.
√ The installer must make sure that the information required by the user is available and is handed over.

Maintenance and Disposal:

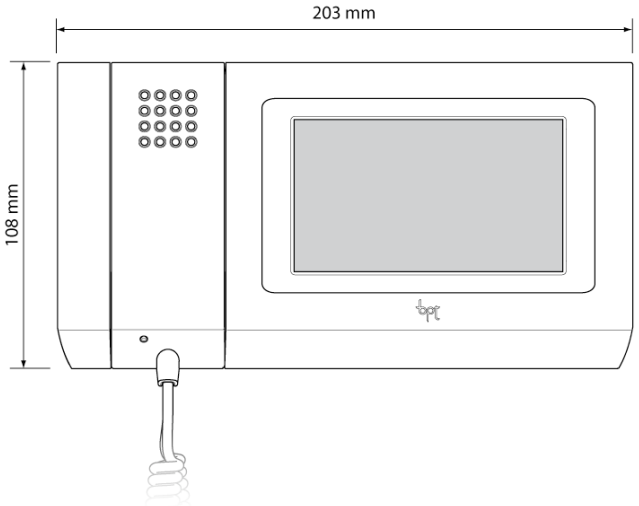
√ Before carrying out any cleaning or maintenance work, unplug the device; if there is a system power supplier, disconnect it by opening the switch located at source.
√ In the device has a fault and/or is not working properly, unplug it from the power supply and do not handle it
√ Always use spare parts supplied by Bpt S.p.A.
√ Disposal must be carried out in accordance with the regulations in force.

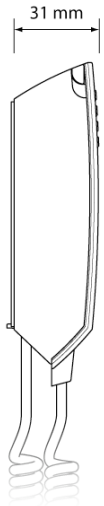
The manufacturer cannot be held responsible for any damage resulting from improper, incorrect or unreasonable use.

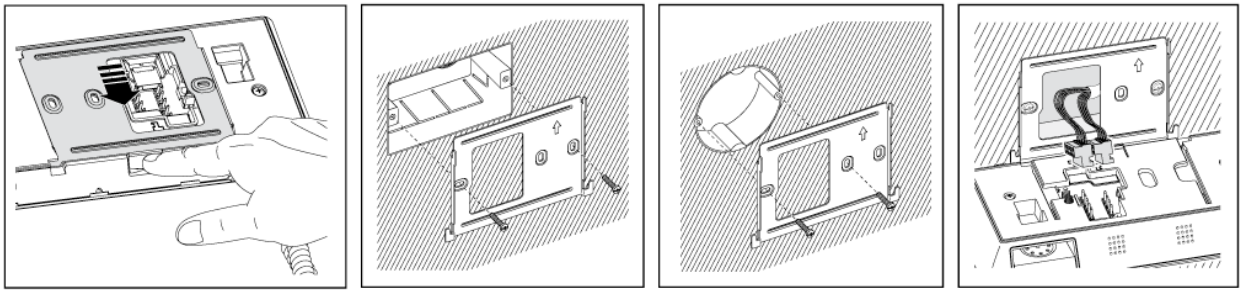
In the rest of this paragraph and the following one, the installation and connection methods for Bpt Home automation system devices will be set out in brief. See the instruction manuals for each individual apparatus for further details.

4.6.2 Installation of the Mitho Terminal

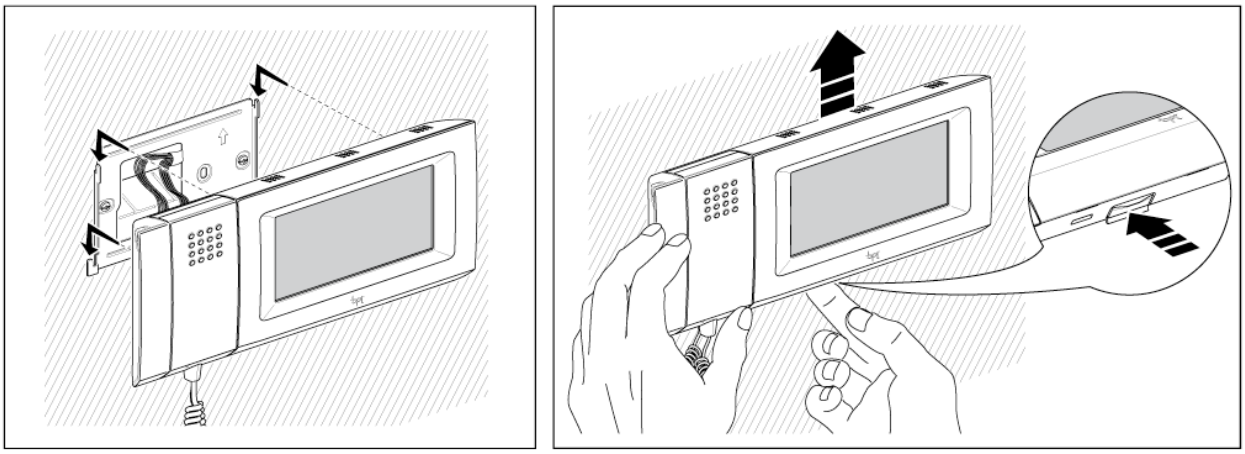
Unhook the apparatus from the metal support, allowing it to slide along after pressing the plastic push button. Fix the metal support to the round Ø 60 mm flush mounted box or 503 rectangular box, using the screws provided and following the instructions ABOVE. The box must be installed at a suitable height for the user. Avoid attaching too many screws on walls that are not perfectly even.





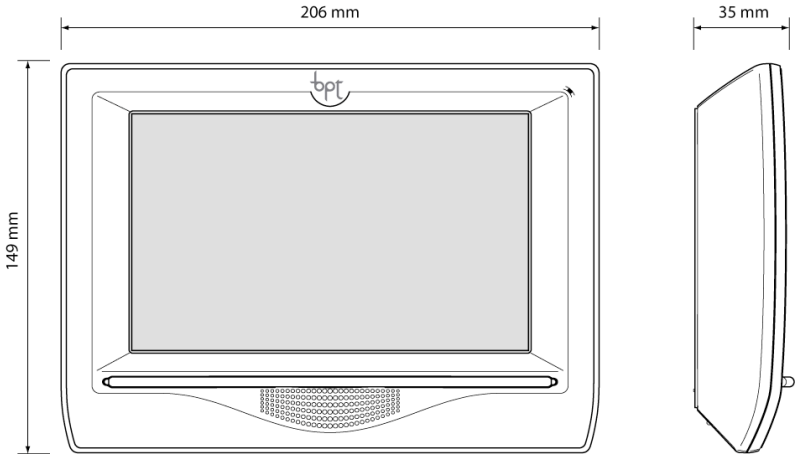


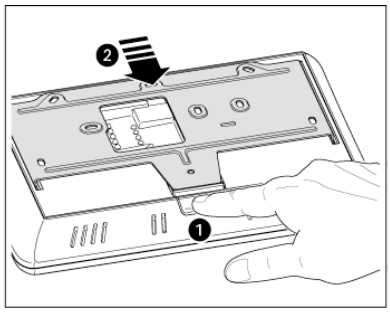
Once the connections are complete, hook the video terminal onto the metal support. In order to unhook the apparatus from the metal support, press the plastic hook and lift up the terminal.

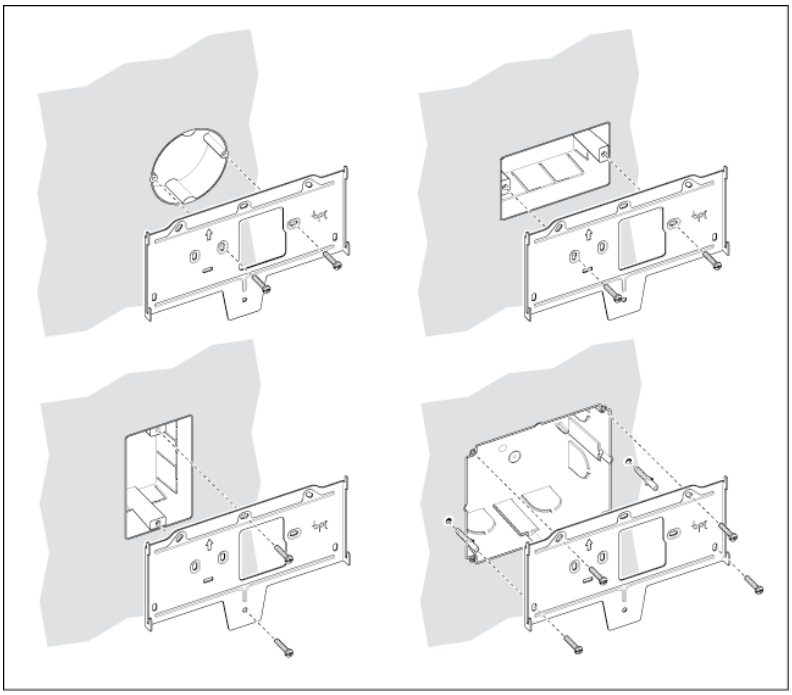


4.6.3 Installation of the Mitho XL Terminal

Unhook the apparatus from the metal support, allowing it to slide along after pressing the plastic push button.

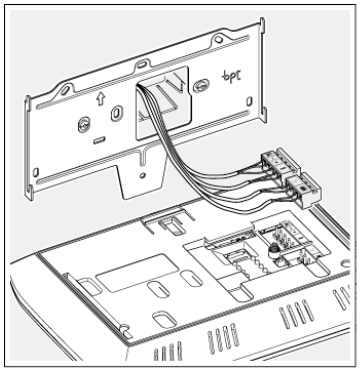


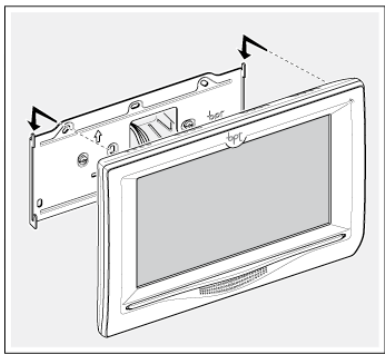


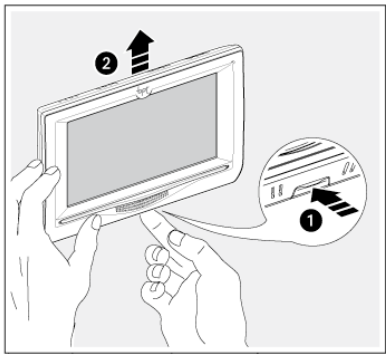


Fix the metal support to the round Ø 60 mm flush mounted box or 503 rectangular box, using the screws provided and following the instructions ABOVE. The box must be installed at a suitable height for the user. Avoid attaching too many screws on walls that are not perfectly even.

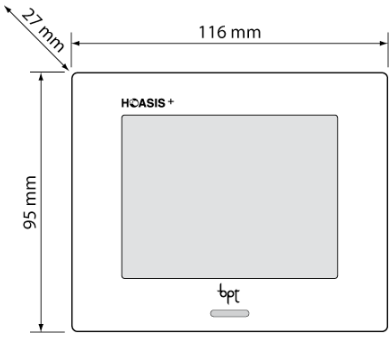
Once the connections are complete, hook the video terminal onto the metal support. In order to unhook the apparatus from the metal support, press the plastic hook and lift up the terminal.

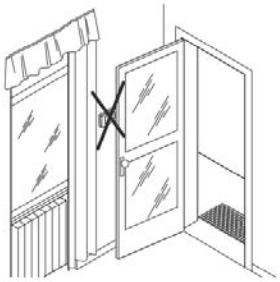




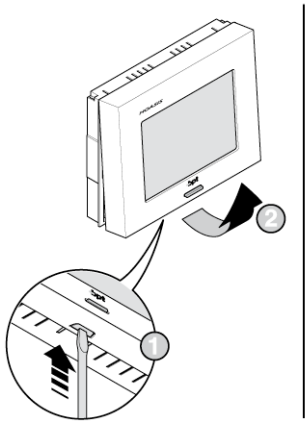


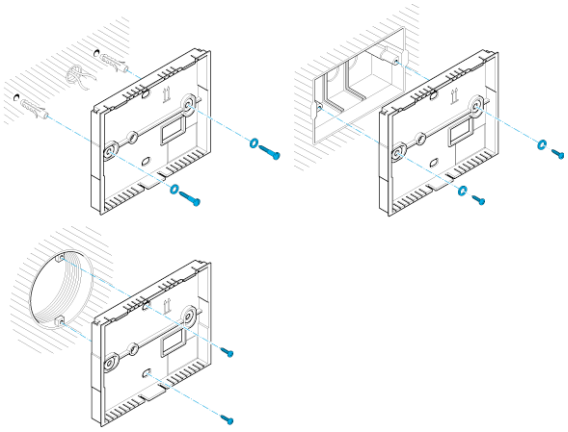
4.6.4 Installation of the Hoasis Terminal + OH/T.01





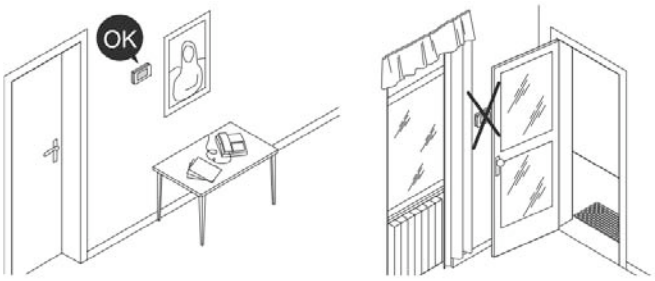
It is essential that the installation position of the device does not obstruct the integrated probe from taking the correct room temperature measurement: so installations in niches, behind doors, curtains or near heat sources should be avoided.



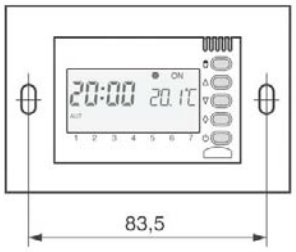


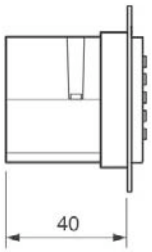
Open the apparatus by inserting a screwdriver into the slit. Fix the bottom to the wall by using the screws and plugs provided or on a flush mounted box. We recommend installation on flat surfaces, avoiding attaching too many screws. Shut the apparatus again.

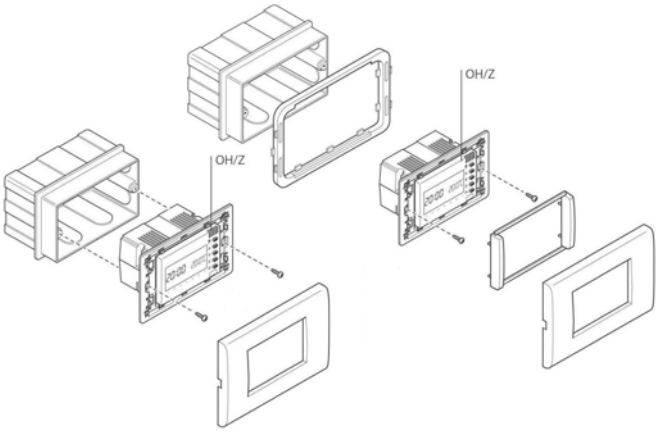
4.6.5 Module OH/Z.02 Installation



It is essential that the installation position of the device does not obstruct the integrated probe from taking the correct room temperature measurement: so installations in niches, behind doors, curtains or near heat sources should be avoided.





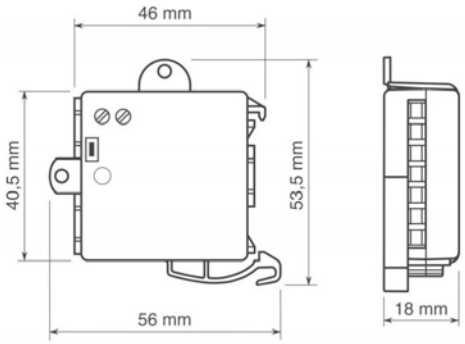


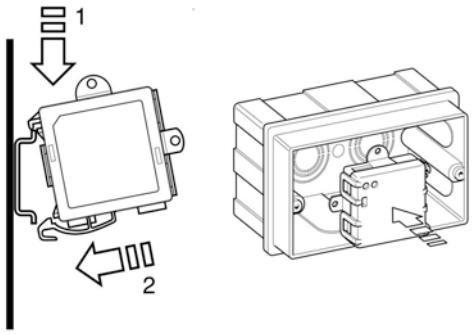
The module can be installed in 3 module boxes (50 mm deep) and is compatible (with or without adaptors) with the following Residential series:

BTicino	Axolute, Luna, Light, Living International
Vimar	Plana, Eikon, Idea, Idea Rondò
Gewiss	Playbus, Playbus Young, System

Ave	Sistema 45, Banquise
ABB	Elos
Legrand	Vela, Cross

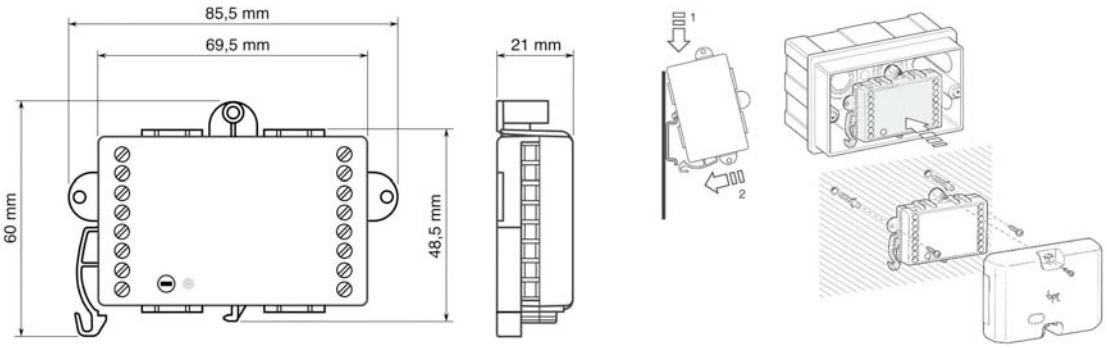
4.6.6 Installation of OH/6I, OH/RP, OH/2RP, OH/RI and OH/4I modules





The devices can be installed, without case sheath, in boxes fitted with DIN guide (EN 50022) or positioned at the bottom of the flush mounted box with 3 or more modules; in this case, between the bottom of the box and wall there should be at least 18 mm of space. If there is network voltage (230 V ac) in the flush mounted box, then the case sheath supplied has to be used, on the final part of the BUS.

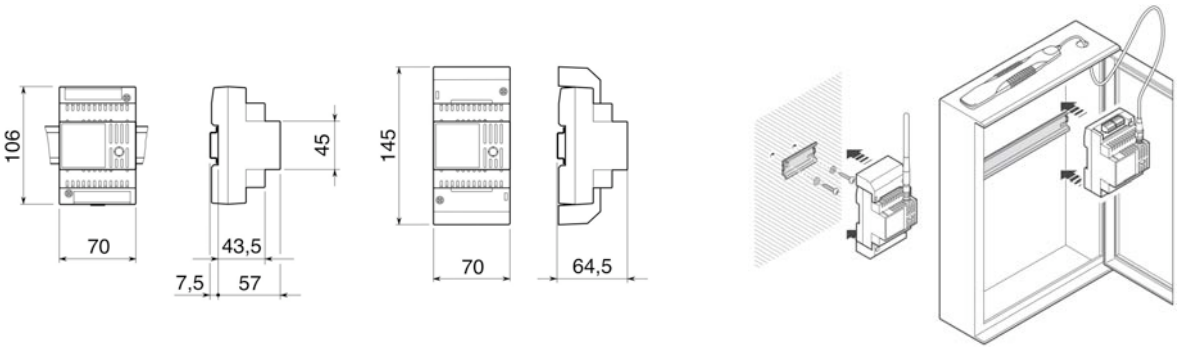
4.6.7 Installation of OH/3RPI, OH/MA, NH/DIM, OH/FAN, OH/AI4 and OH/MT2 Modules



The devices can be installed, without case sheath, in boxes fitted with DIN guide (EN 50022) or positioned at the bottom of the flush mounted box with 3 or more modules; in this case, between the bottom of the box and wall there should be at least 18 mm of space. If there is network voltage (230 V ac) in the flush mounted box, then the case sheath supplied has to be used, on the final part of the BUS.

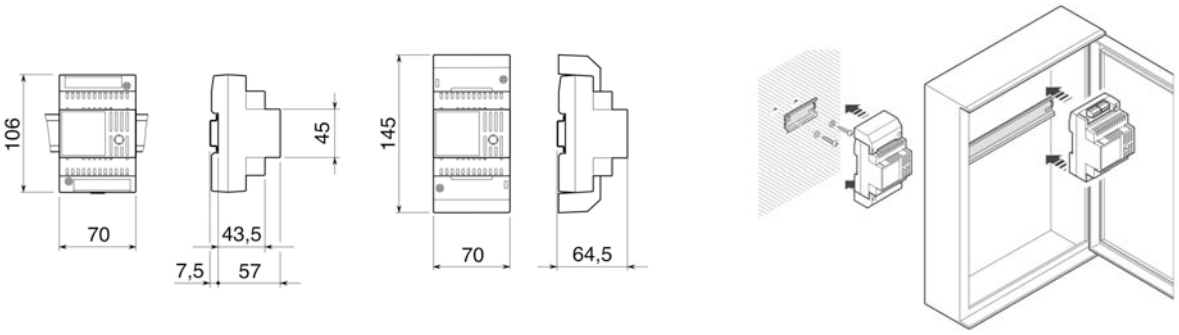
Furthermore, the OH/3RPI, OH/MA, NH/DIM, OH/FAN devices can be installed into the wall with the protection cover supplied.

4.6.8 Installation of the OH/GSM and OH/ANT Modules



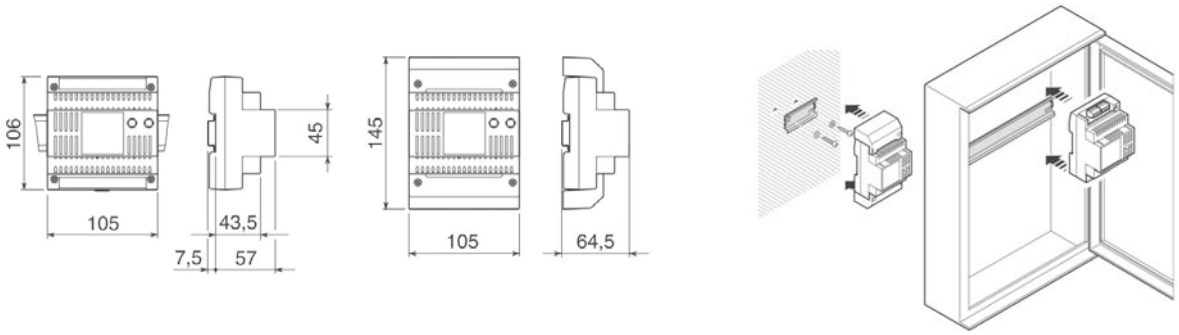
The devices can be installed, with or without clamp cases, into the wall using the DIN guide supplied or in containers fitted with guides. DIN (EN 50022). In the case of metal containers, use the optional OH/ANT aerial positioning it outside the container itself.

4.6.9 Installation of the OH/GW, OH/MPE6KW Modules.



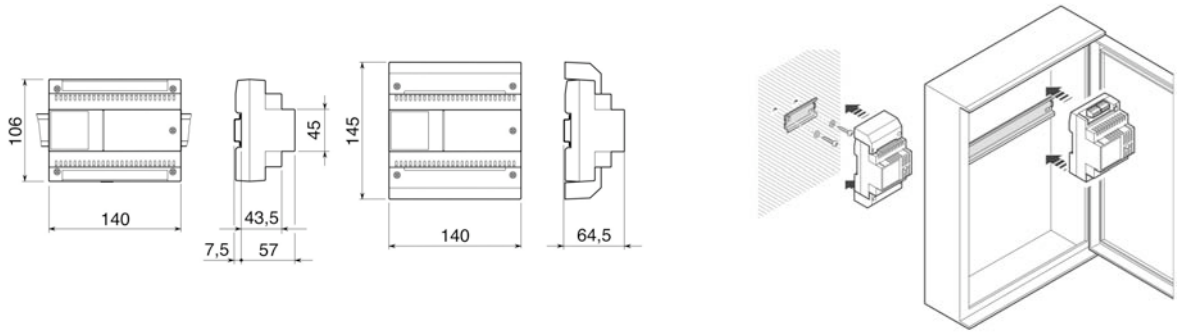
The devices can be installed, with or without clamp cases, into the wall using the DIN guide supplied or in containers fitted with guides. DIN (EN 50022).

4.6.10 Installation of OH/A.01, OH/R.01, OH/RI4416, OH/DI2230, OH/FANEVO, OH/AO4010 Modules



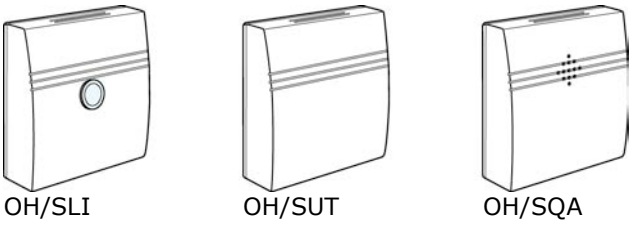
The devices can be installed, with or without clamp cases, into the wall using the DIN guide supplied or in containers fitted with guides. DIN (EN 50022).

4.6.11 Installation of the OH/AS, NH-RBB Module

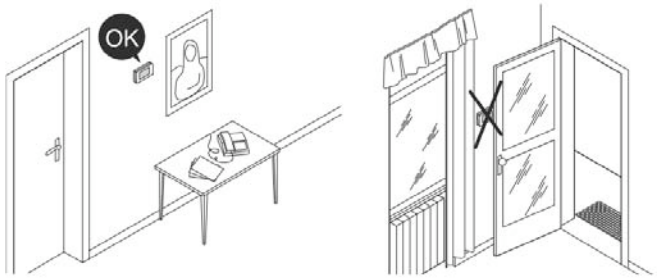


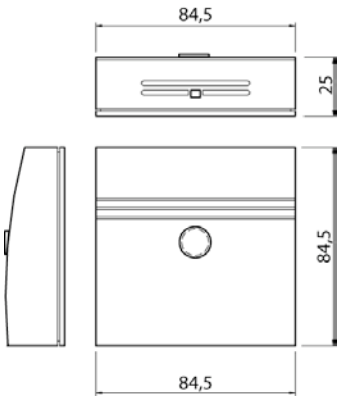
The device can be installed, with or without clamp cases, into the wall using the DIN guide supplied or in metal containers fitted with guides. DIN (EN 50022).

4.6.12 Installation of OH/SLI, OH/SUT, OH/SQA probes



OH/SLI OH/SUT OH/SQA





OH/SLI: The accuracy of the brightness measurement depends on where the probe is fitted. The brightness sensor should not be covered by furniture, etc. Lastly, it is unadvisable to fit it next to doors or windows.

OH/SUT: The accuracy with which the temperature is measured depends on where the probe is fitted and the temperature dynamics of the wall where it is installed. It is important that the back zone where the connections are located are completely closed so that the air

can circulate through the slits in the mechanics. Otherwise, temperature measurement variations could occur due to uncontrolled air circulation. Furthermore, the temperature sensor should not be covered by furniture, etc. Lastly, it is unadvisable to fit it next to doors or windows.

OH/SQA: Installation must be carried out in places that are of significance to the air quality to prevent incorrect measuring. Direct solar radiation must be avoided. The sensor cannot distinguish pleasant smells from unpleasant ones. The setpoint for the quality desired is regulated by default but the optimisation must be done during installation. The adaptation of the output signal is done via a potentiometer on the edge of the sensor. The offset of the output signal increases or decreases with the potentiometer. Installation procedures:

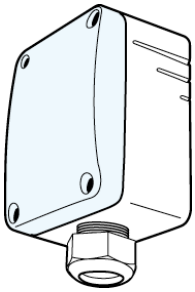
1. Connect the sensor and supply voltage.

2. Ensure there are good air conditions close to the sensor.

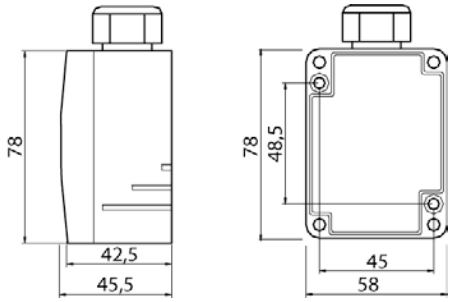
3. The output signal must be checked after a running time of approx. 30 minutes. The level of voltage must remain between 1-3V. A voltage level that is too high or low should be corrected via the potentiometer. The potentiometer must be rotated leftwards until the red LED has gone off. Now, the output signal is equivalent to approx. 0.7 V.

4. The sensor is ready for use - the output signal functioning voltage increases if the air quality worsens.

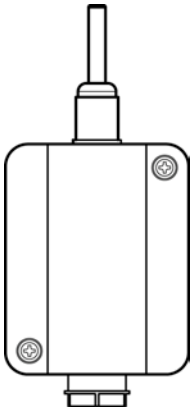
4.6.13 Installation of the OH/SLE, OH/STE probes



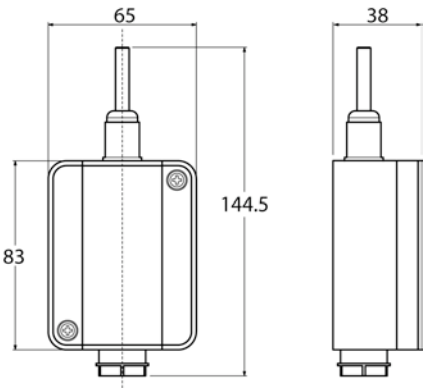
OH/SLE



OH/SLE: The accuracy of the brightness measurement depends on where the probe is fitted. The brightness sensor should not be installed in shaded zones of any kind.



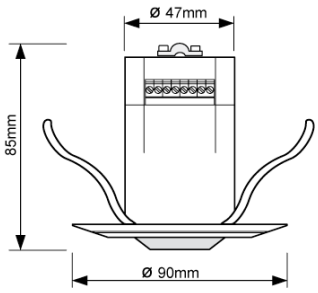
OH/STE

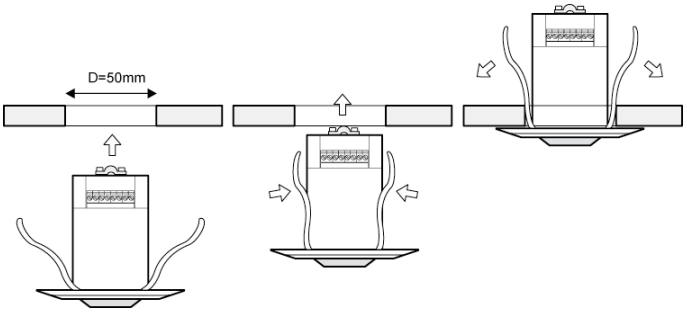


OH/STE: The measurement accuracy of the external temperature depends on where the probe is fitted. The temperature sensor should not be installed in zones that overheat like sheet metal gutters, etc..

4.6.14 Installation of OH/SLP probe

OH/SLP





Fitting height: The height at which it is fitted directly influences the sensor covering. The ideal fitting height is 2.70m. Any variations will change the sensor covering. The sensor must be fitted on a solid ceiling, otherwise any kind of movement would give an incorrect reading.

Distance from lamps that are on: The sensor must not be installed above a lamp. The heat radiation from the lamp can influence the functioning of the sensor and could result in a faulty reading.

Installation on the side of a corridor: For an ideal movement reading, the sensor must be fitted to the side of the detection field, so that the zones are cut as rectangular as possible. Installation areas where the objects detected move towards the sensor, causing a considerable reduction in cover.

Distance from the sources of interference: In order to prevent any kind of incorrect reading the interference sources, such as radiators, lights, air conditioning systems etc.. should be installed out-with the detection range.

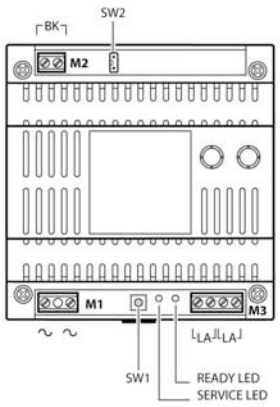
Furthermore, direct solar radiation must be avoided.

4.7 Device connections

Below is a detailed list of the technical specifications of the modules belonging to the system; specified are the clamps for electrical connection and a table with the module absorptions and the connectable input and output specifications.

4.7.1 System modules

OH/A.01 Power supplier



Terminal block M1

~ ~ Power supply input from 230Vac network

Terminal block M2
(emergency power supply)

BK 24 V cc, ca

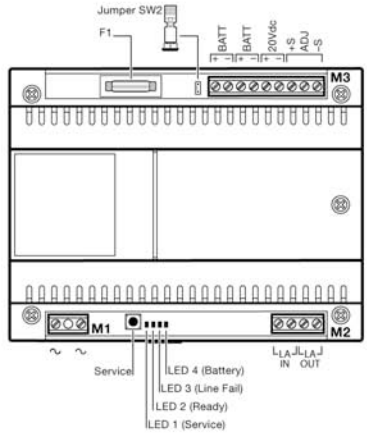
Terminal block M3

LA BUS line

LA BUS line

Power supply	230 V 50/60 Hz protected electronically
Emergency Power Supply	24 Vdc, 700 mA
Power consumption	35VA
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxd)	105x106x64,5 module of 6 units low for DIN guide
Connections to the System	non polarised twisted pair

OH/AS Supplementary power supplier



Terminal block M1

~ ~ Power supply input from 230Vac network

Terminal block M2

LA IN BUS line input from system power supplier

LA OUT BUS line output towards the other plant devices

Terminal block M3

\+ BATT – Battery input

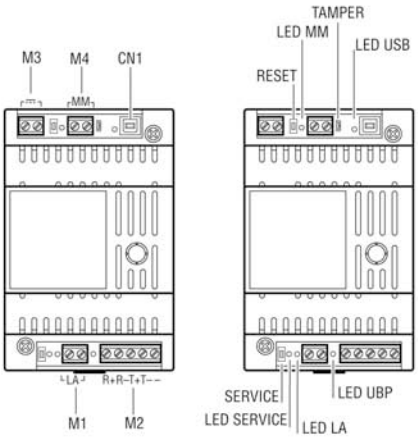
\+ BATT – Battery input

\+ 20VDC – Supplementary Power supply output

+S ADJ –S Sensor input battery temperature

Power supply	230 V 50/60 Hzprotected electronically
Emergency Power Supply	24 Vdc, 500 mA
Power consumption	35VA
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements(lxhxp)	140x106x64,5 module of 8units low for DIN guide
Connections to the System	non polarised twisted pair

OH/GW Gateway Module



Terminal block M1

LA Home Automation Bus line

Terminal block M2

R+ Connected to
R– bus RS422 for
T+ B2 anti-intrusion plants T–
– Common earth

Terminal block M3

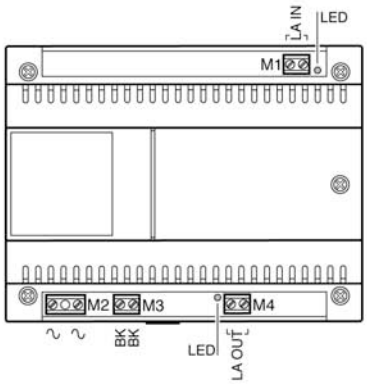
⎓ 12÷24 V DC Power supply

Terminal block M4

MM MultiMaster Bus

Power supply	12/24 Vdc protected electronically
Power consumption	70mA a 12Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	70x106x64,5 module of 4units low for DIN guide
Connections to the System	non polarised twisted pair

NH/RBB BUS signal module repeater



Terminal block M1

LA IN BUS line input

Terminal block M2

Power supply input from 230Vac network

Terminal block M3

BK
BK
12 V cc-ca Emergency Power Supply

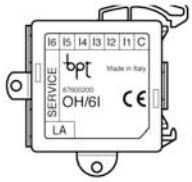
Terminal block M4

LA OUT Uscita linea Bus

Power supply	230 V 50/60 Hz protected electronically
Emergency Power Supply	12 Vdc, 1A
Power consumption	24VA
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	140x106x64,5 module of 8 units low for DIN guide
Connections to the System	non polarised twisted pair

4.7.2 Digital input and output modules

OH/6I 6 Digital inputs module



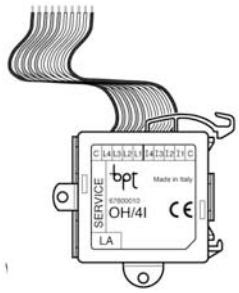
Terminal blocks

LA BUS line

C common contacts
I1 contact input 1
I2 contact input 2
I3 contact input 3
I4 contact input 4
I5 contact input 5
I6 contact input 6

Power supply	by the bus line
Power consumption	4mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	56x53,5x18
Connections to the System	non polarised twisted pair
Digital Input Number	6
Input type contact	NO, NC without voltage passage or head current

OH/4I 4 digital inputs and 4 LED outputs in low voltage module



Terminal blocks

LA BUS line

C common contacts
I1 contact input 1
I2 contact input 2
I3 contact input 3
I4 contact input 4

C comune LED
L1 LED output 1
L2 LED output 2
L3 LED output 3
L4 LED output 4

Power supply	by the bus line
Power consumption	4mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	56x53,5x18
Connections to the System	non polarised twisted pair
Digital Input Number	4
Type of Input Contacts	NO, NC without voltage passage or head current
LED Output Type: **- Output Voltage** **- Maximum Current**	 1,5 ÷ 3,5 Vdc 2 mA

OH/RP 1 relay output module

Terminal blocks

LA BUS line

1 Output switch

Power supply	by the bus line
Power consumption	4mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	56x53,5x18
Relay Number	1
Connections to the System	non polarised twisted pair
Relay Type	250 V max, 16 A max with resistive load (5A max with inductive load) NO contact

OH/2RP 2 output slave relays module of OH/RP module

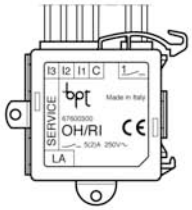
Terminal blocks

2 Relay output

3 Relay output

Power supply	by the bus line
Power consumption	4mA a 20Vdc
Communication	OH/RP twin lead connection
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	56x53,5x18
Relay Number	2
Relay Type	250 V max, 16 A max con carico resistivo (5A max con carico induttivo) contatto NO

OH/RI 1 output relay and 3 digital inputs module



Terminal blocks

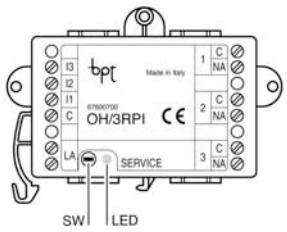
LA BUS line

C common contacts
I1 contact input 1
I2 contact input 2
I3 contact input 3

1 Relay output

Power supply	by the bus line
Power consumption	4mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	56x53,5x18
Connections to the System	non polarised twisted pair
Digital Input Number	3
Type of Input Contacts	NO, NC without passage of voltage or current to heads
Relay Number	1
Relay Type	250 V max, 5 A max con carico resistivo (2A max con carico induttivo) - contatto NO

OH/3RPI 3 output relays and 3 digital inputs module



Terminal blocks

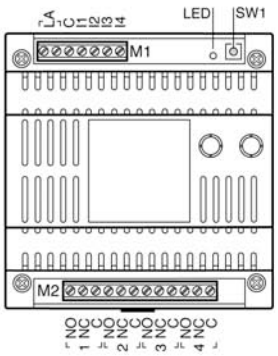
LA BUS line

C common contacts
I1 contact input 1
I2 contact input 2
I3 contact input 3

1 Switch output

Power supply	by the bus line
Absorbed Power	4mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	85,5x60x21
Connections to the System	non polarised twisted pair
Digital Input Number	3
Type of Input Contacts	NO, NC without passage of voltage or current to heads
Relay Number	3
Relay Type	250 V max, 16 A max con carico resistivo (5A max con carico induttivo) - contatto NO

OH/R.01 4 output relays and 4 digital inputs module



Terminal block M1

LA BUS line

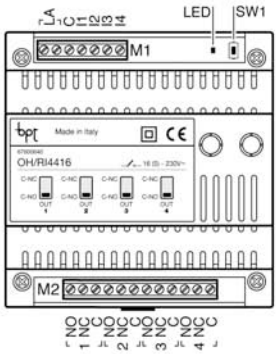
C common contacts
I1 contact input 1
I2 contact input 2
I3 contact input 3
I4 contact input 4

Terminal block M2 (contatti relé)

NO / NC 1 / C — Relay output 1
NO / NC 2 / C — Relay output 2
NO / NC 3 / C — Relay output 3
NO / NC 4 / C — Relay output 4

Power supply	by the bus line
Power consumption	5mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	105x106x64,5 module of 6 units low for DIN guide
Connections to the System	non polarised twisted pair
Digital Input Number	4
Type of Input Contacts	NO, NC without voltage passage or head current
Relay Number	4
Relay Type	250 V max, 5 A max con carico resistivo (2A max con carico induttivo) - contatto NO e NC

OH/RI4416 4 digital inputs and 4 relay outputs module with option of manual refitting



Terminal block M1

LA BUS line

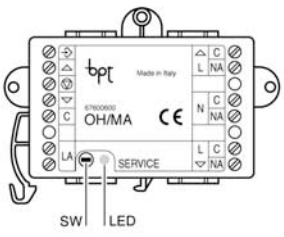
C common contacts
I1 contact input 1
I2 contact input 2
I3 contact input 3
I4 contact input 4

Terminal block M2 (contatti relé)

NO / NC 1 / C — Relay output 1
NO / NC 2 / C — Relay output 2
NO / NC 3 / C — Relay output 3
NO / NC 4 / C — Relay output 4

Power supply	by the bus line
Power consumption	8mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	105x106x64,5 module of 6 units low for DIN guide
Connections to the System	non polarised twisted pair
Digital Input Number	4
Type of Input Contacts	NO, NC without voltage passage or head current
Relay Number	4
Relay Type	250 V max, 16 A max con carico resistivo (5A max con carico induttivo) - contatto NO e NC

OH/MA Relay module for motorization control



Terminal blocks

configuration contact input
contact input for opening
contact input for stopping
contact input for closing
C common input

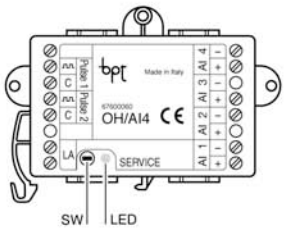
LA BUS line

C / NA / L — Opening output relay
C / NA / N — Neutral output relay
C / NA / L — Closing output relay

Power supply	by the bus line
Power consumption	4mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	85,5x60x21
Connections to the System	non polarised twisted pair
Digital Input Number	3
Type of Input Contacts	NO, NC without voltage passage or head current
Relay Number	3
Relay Type	250 V max, 16 A max con carico resistivo (5A max con carico induttivo) - contatto NO

4.7.3 Analogical input and output modules

OH/AI4 4 analogical inputs module

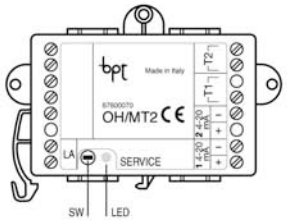


Terminal blocks

- Pulse 1 / C — Pulse counter input 1
- Pulse 2 / C — Pulse counter input 2
- LA — BUS line input from system power supplier
- \+ / − AI 1 — Analogical Input1
- \+ / − AI 2 — Analogical Input2
- \+ / − AI 3 — Analogical Input3
- \+ / − AI 4 — Analogical Input4

Power supply	by the bus line
Power consumption	7mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	85,5x60x21
Connections to the System	non polarised twisted pair
Analogical Inputs Number	4 + 2 pulse counter
Analogical Input Type	0-10V, 0-1V, 4-20mA, 0-20mA, pulse counter (0-25Khz)

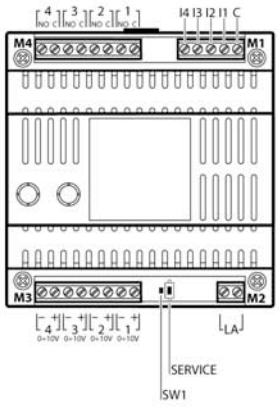
OH/MT2 2 temperature probe inputs and 2 analogical inputs module



- LA — BUS line
- T1 — Connection to heat probes
- T2 — Connection to heat probes
- − / + 4-20 mA — Connection to humidity probes
- − / + 4-20 mA — Connection to humidity probes

Power supply	by the bus line
Power consumption	7mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	85,5x60x21
Connections to the System	non polarised twisted pair
Analogical Inputs Number	2 + 2
Analogical Input Type	2x 0-10V, 2x probe temp.

OH/AO4010 4 analogical outputs module



Terminal block M1

- C common contacts
- I1 contact input 1
- I2 contact input 2
- I3 contact input 3
- I4 contact input 4

Terminal block M2

- LA BUS line

Terminal block M3

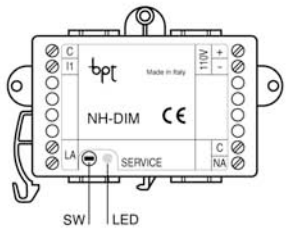
- \+ / − 1 0÷10V — Relay output 0÷10V
- \+ / − 2 0÷10V — Relay output 0÷10V
- \+ / − 3 0÷10V — Relay output 0÷10V
- \+ / − 4 0÷10V — Relay output 0÷10V

Terminal block M4

- NO / C 1 — Relay output 1
- NO / C 2 — Relay output 2
- NO / C 3 — Relay output 3
- NO / C 4 — Relay output 4

Power supply	by the bus line
Power consumption	8mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	105x106x64,5 module of 6 units low for DIN guide
Connections to the System	non polarised twisted pair
Digital Input Number	4
Type of Input Contacts	NO, NC without voltage passage or head current
Relay Number	4
Relay Type	250 V max, 16 A max with resistive load (5A max with inductive load) NO contact
Analogical Inputs Number	4
Analogical Input Type	0-10Vdc switch

NH-DIM 1 Analogical output module



Terminal blocks

LA BUS Line

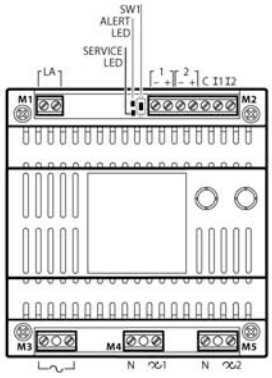
I1 Input contact for dimmer local control
C common contacts

C
NA
Relay output

+
-
Uscita 1÷10 V

Power supply	by the bus line
Power consumption	7mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	85,5x60x21
Connections to the System	non polarized twisted pair
Digital Input Number	1
Type of Input Contacts	NO, NC without voltage passage or head current
Relay Number	1
Relay Type	250 V max, 16 A max with resistive charge (5A max with inductive charge) - NO contact
Analogical output number	1
Analogical output type	attuatore 1-10Vdc

OH/DI2230 Dimmer module 2x300W



Terminal block M1

LA BUS line

Terminal block M2

- 2 +
Input 2
light sensor (0÷10V)

- 1 +
Input1
light sensor (0÷10V)

C Common input contacts
I1 Contact input for output 1
I2 Contact input for output 2

Terminal block M3

~ 230 Vac Network

Terminal block M4

1~
N
Dimmer 1 output

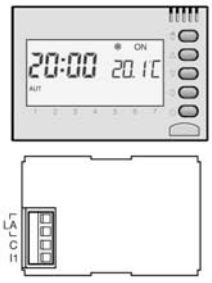
Terminal block M5

2~
N
Dimmer 2 output

Power supply	230 V 50/60 Hz protected electronically and by the bus line
Power consumption	1mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	105x106x64,5 module of 6 units low for DIN guide
Connections to the System	non polarised twisted pair
Digital Input Number	2
Type of Input Contacts	NO, NC without voltage passage or head current
Analogical Inputs Number	2
Analogical Input Type	0-10V
Power output number	2
Power output type	2x300W, or 1x500W

4.7.4 Special function modules

OH/Z.02 Flush heat zone control module



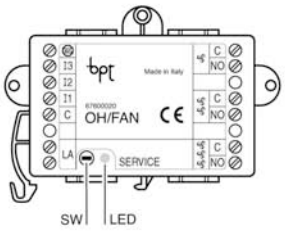
Terminal blocks

LA BUS line

C common contact
I1 Contact input

Power supply	by the bus line
Power consumption	5mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	in wall box 503
Connections to the System	non polarised twisted pair
Digital Input Number	1
Type of Input Contacts	NO, NC without voltage passage or head current

OH/FAN Fan-coil base control module



Terminal blocks

LA BUS line

C common contacts
I1 contact input 1
I2 contact input 2
I3 contact input 3
STOP contact input STOP

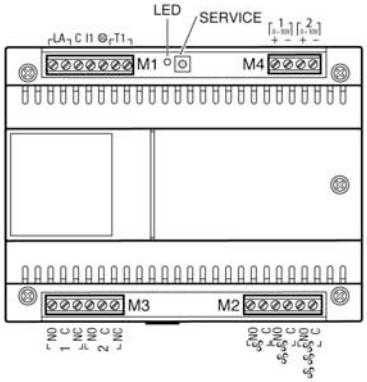
C / NA Speed relay output 1

C / NA Speed relay output 2

C / NA Speed relay output 3

Power supply	by the bus line
Power consumption	4mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	85,5x60x21
Connections to the System	non polarised twisted pair
Digital Input Number	3
Type of Input Contacts	NO, NC without voltage passage or head current
Relay Number	3
Relay Type	250 V max, 16 A max with resistive load (5A max with inductive load) NO contact

OH/FAN-E Complete fan-coil control module



Terminal block M1

LA BUS line

C common contacts
I1 contact input 1
STOP contact input STOP

T1 Connection to heat probe

Terminal block M2

NO / C Speed 1 output relay

NO / C Speed 2 output relay

NO / C Speed 3 output relay

Terminal block M3

NO / C 1 / NC Valve relay output 1

NO / C 2 / NC Valve relay output 2

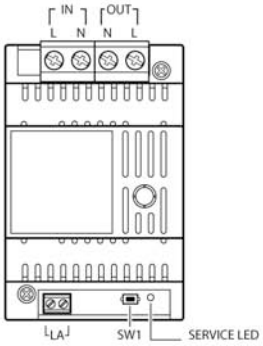
Terminal block M4

\+ / 1 0÷10V / − 0÷10V output for valve 1

\+ / 2 0÷10V / − 0÷10V output for valve 2

Power supply	by the bus line
Power consumption	8mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	105x106x64,5 module of 6 units low for DIN guide
Connections to the System	non polarised twisted pair
Digital Input Number	3
Type of Input Contacts	NO, NC without voltage passage or head current
Analogical Inputs Number	1
Analogical Input Type	PTC type temperature probe
Relay Number	3
Relay Type	250 V max, 16 A max with resistive load (5A max with inductive load) NO contact
Analogical output Number	2
Analogical output Type	0-10Vdc

OH/MPE6KW Single phase electric power meter module



Terminal blocks

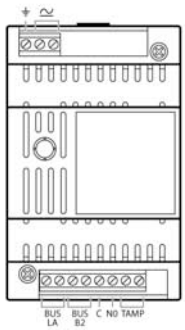
L / N IN Domestic 230V a.c. 50 Hz electric network line input

L / N OUT 230V a.c. 50 Hz output towards devices to be powered

LA Connection to BUS Bpt line

Power supply	230 V 50/60 Hz protected electronically and by the bus line
Power consumption	8mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 35°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	70x106x64,5 module of 4 units low for DIN guide
Connections to the System	non polarised twisted pair

OH/GSM GSM controller module



Terminal block M1

BUS LA	Bpt Home Automation Bus line
BUS B2	BUS line B2
C	Common contact
NO	Contact input
TAMP	Contact input Tamper

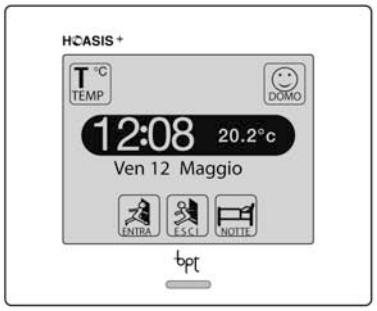
Terminal block M2

≂	Power supply input from power supplier
⏚	Earth line connection

Power supply	by the bus line
Power consumption	180mA a 12Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 40°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	70x106x64,5 module of 4 units low for DIN guide
Connections to the System	non polarised twisted pair
Relay Number	1
Relay Type	12V, 1A - NO contact

4.7.5 System terminals

OH/T.01 Touch screen control terminal for basic system



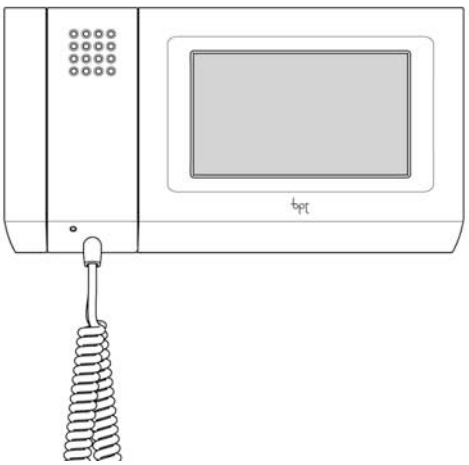
Terminal blocks

LA	Linea BUS

Power supply	by the bus line
Power consumption	50mA a 20Vdc
Communication	BPT bus
Operating Temperature	0°C ÷ 40°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	116x95x627
Connections to the System	non polarised twisted pair

Terminal capable of handling systems with up to 80 devices distributed across a single bus branch. It can handle digital inputs and outputs, modules for managing roller shutters (OH/MA) or for measuring the temperature (OH/Z.02 or OH/MT2) and devices capable of controlling dimmers (NH-DIM). The terminals can control up to 100 lights, 40 roller shutters, 20 heat zones, 16 scenarios and 40 timers.

Mitho plus 4.3"Touch screen control terminal for full system



Terminal block M1

B	BUS video entry control 2 wire X1
+ 🔔 −	entrance called from the landing
AL	entrance alarm (active towards earth)

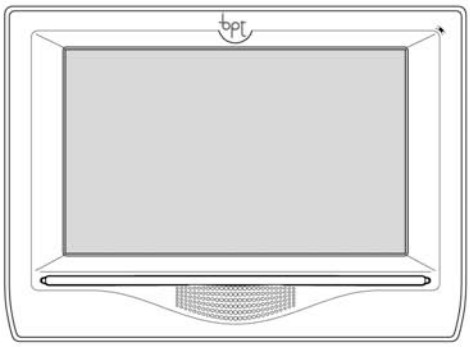
Terminal block M2

MM	MultiMaster Bus
≂	local power supply 14÷24 V DC 12÷16 V AC

Power supply	14÷24 V DC 12÷16 V AC
Power consumption	0.75 A (1.5 A at peak) 12 V AC, 0.5 A (1.1 A at peak) 16 V AC, 0.31 A (0,81 A at peak) 18 V DC 0.23 A (0,58 A at peak) 24 V DC.
Communication	Multi Master bus
Operating Temperature	0°C ÷ 40°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	203x108x31
Connections to the System	non polarised twisted pair

Terminali in grado di gestire impianti complessi con funzionalità di domotica, antintrusione e videocitofonia.

Mitho XL 7" Touch screen control terminal for full system



Terminal block M1

B	BUS video entry control 2 wire X1
+ / 🔔 / −	entrance called from the landing
AL	entrance alarm (active towards earth)

Terminal block M2

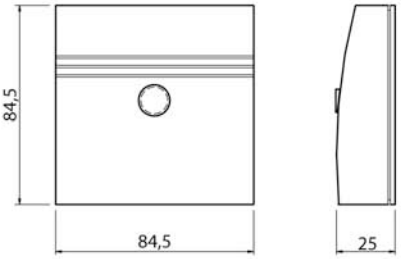
MM	MultiMaster Bus
≂	local power supply 14÷24 V DC 12÷16 V AC

Power supply	14÷24 V DC 12÷16 V AC
Power consumption	1 A (1,75 at peak) 12 V AC 0,75 A (1,7 A at peak) 16 V AC, 0,45 A (1 A at peak) 18 V DC 0,33 A (0,8 A at peak) 24 V DC
Communication	Multi Master bus
Operating Temperature	0°C ÷ 40°C
Relative Operating Humidity	< 93% - without condensation
Measurements (lxhxp)	206x149x35
Connections to the System	non polarised twisted pair

Terminali in grado di gestire impianti complessi con funzionalità di domotica, antintrusione e videocitofonia.

4.7.6 Probes for surrounding parameters

OH/SLI 0-10V wall mounted room brightness sensor



Terminal blocks

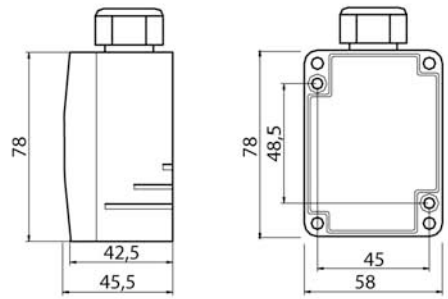
1	15 - 24 Vdc, 24 Vac
2	GND
3	0–10 V

Selection of measurement range(DIP-SWITCHES)

	SW1	SW2	SW3	SW4
2 kLux	ON	OFF	OFF	OFF
20 kLux	OFF	ON	OFF	OFF
100 kLux	OFF	OFF	ON	OFF

Measurement range	2kLux, 20kLux, 100kLux (Adjustable using dip-switch)
Precision	±5% of the measurement range
Operating Temperature	-20°C ÷ +70°C
Relative Operating Humidity	< 85% - without condensation
Power supply	15-24Vdc (±10%)
Absorption	max. 15mA/24Vdc
Protection	IP 20

OH/SLE 0-10V external brightness sensor



Terminal blocks

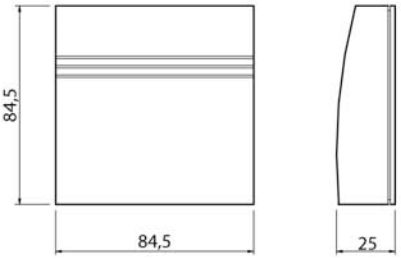
1	15 - 24 Vdc, 24 Vac
2	GND
3	0–10 V

Selection of measurement range(DIP-SWITCHES)

	SW1	SW2	SW3	SW4
2 kLux	ON	OFF	OFF	OFF
20 kLux	OFF	ON	OFF	OFF
100 kLux	OFF	OFF	ON	OFF

Measurement range	2kLux, 20kLux, 100kLux ((Adjustable using dip-switch)
Precision	±5% of the measurement range
Operating Temperature	-20°C ÷ +70°C
Relative Operating Humidity	< 85% - without condensation
Power supply	15-24Vdc (±10%)
Absorption	max. 15mA/24Vdc
Protection	IP 65

OH/SUT 4-20 mA wall mounted humidity sensor + NTC temperature sensor compatible with OH/MT2

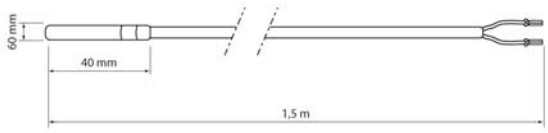


Terminal blocks

1	4-20 mA active at 24 Vdc
2	
3	NTC 10k temperature input
4	

Measurement range	Umidità: 0 ÷ 100 %rH; Temperatura: 0°C ÷ +50°C
Precision	±2% tra il 35 ÷ 75%rH; ±1% del dato misurato
Operating Temperature	-20°C ÷ +70°C
Power supply	15 ÷ 24Vdc (±10%)
Absorption	max. 20mA/24Vdc
Protection	IP 20

OH/STI Wall mounted NTC internal temperature probe compatible with OH/MT2 inputs

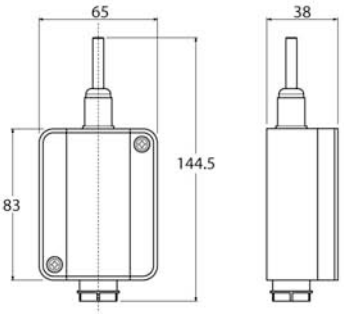


Terminal blocks

OUT — 0-10 V
← — 15-24 Vdc, 24 Vac
GND — GND

Measurement range	-10°C ÷ +50°C
Precision	±1% of the measurement range
Operating Temperature	-40°C ÷ +125°C
Relative Operating Humidity	< 85% - without condensation
Power supply	from the module

OH/STE Wall mounted NTC external temperature probe compatible with OH/MT2 inputs



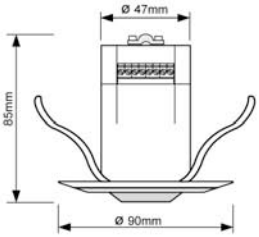
Terminal blocks

1, 2 — 4-20 mA active at 24 Vdc

3, 4 — NTC 10k temperature input

Measurement range	-40°C ÷ +125°C
Precision	±1% of the measurement range
Operating Temperature	-40°C ÷ +125°C
Power supply	from the module
Protection	IP 65

OH/SLP 0-10 V brightness sensor and PIR type presence sensor for ceiling installation



Terminal blocks

1 — 15 - 24 Vdc, 24 Vac

4 — 0-10 Vdc – brightness

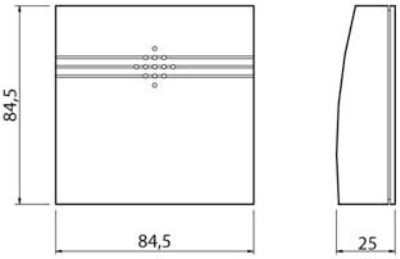
6 — GND

7 — C
8 — NO
movement

30min + ⊕ 1sec − Potentiometer for movement reading delay

Measurement range	Brightness: 0 ÷ 1k lux; Movement: 4 element sensor (passive infrared)
Precision	±50 lux; ±1% of the measured data
Operating Temperature	-20°C ÷ +70°C
Relative Operating Humidity	< 85% - without condensation
Power supply	15-24Vdc (±10%)
Absorption	1,2W / 4VA
Protection	IP 65

OH/SQA Air quality sensor capable of revealing gas mixes



Terminal blocks

OUT — 0-10 V
← — 15-24 Vdc, 24 Vac
GND — GND

Measurement type	Organic gas mixes
Precision	±5% of the measurement range
Operating Temperature	0°C ÷ +50°C
Relative Operating Humidity	< 85% - without condensation
Power supply	15-24Vdc (±10%)
Absorption	max. 50mA/24Vdc
Protection	IP 20

4.8 Tables Filling

At the system installation and cabling stage we recommend you use the tables provided in the OH/A.01 module box to list all the system inputs and outputs and indicate the rules with which the latter are controlled and piloted from the command points.

The data shown on the tables is essential at the system programming stage using software because they are used to create the system structure with which the system is activated.

4.8.1 Connection table

All the system modules must be listed in the Connection Table in order specifying for each one the ID number, where it is located on the system and all the combined outputs and inputs with a physical connection.

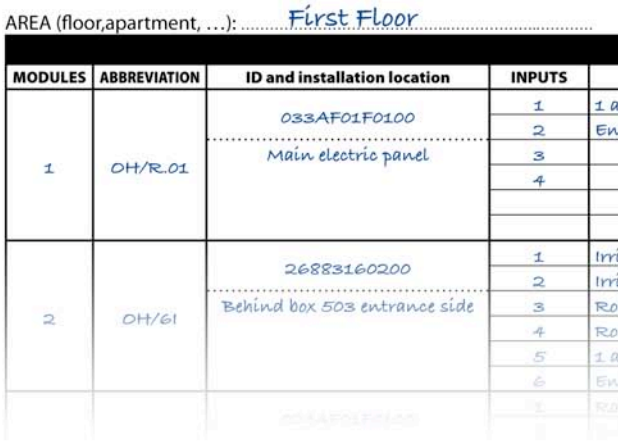
All this is needed to create an idea of the system that could be used for future implementative intervention work.

AREA (floor,apartment, ...): First Floor SPACE (kitchen,lounge, ...): Entrance Page 1

MODULE LIST

MODULES	ABBREVIATION	ID and installation location	INPUTS	Description	Cabling	OUTPUTS	Description	Cabling
1	OH/R.01	033AF01F0100 Main electric panel	1	1 and 2 garden light push button	I1	1	Electrovalve in living room	U1
			2	Entrance light push button	I2	2		
			3			3		
			4			4		
2	OH/61	26883160200 Behind box 503 entrance side	1	Irrigation push button 2	I3			
			2	Irrigation push button 1	I4			
			3	Roller shutter UP push button	I5			
			4	Roller shutter down push button	I6			
			5	1 and 2 garden light push button	I7			
			6	Entrance light push button	I8			

The first three columns are purely descriptive and are for listing the modules found in the system.



The first "MODULE" column simply indicates a progression of references for putting the modules in order.

The second column, "ABBREVIATION" indicates the model of the module as it is written on the packaging label.

The third column, "ID and installation place", must be compiled with an unambiguous module ID code, found on the mechanics under the form of a label, and a short description of the place where it is installed (for example: main electric panel or behind box 503 on the kitchen side)

The second group of columns focus mainly on the individual connections made.

SPACE (kitchen,lounge, ...): Entrance Page 1

MODULE LIST

ication	INPUTS	Description	Cabling	OUTPUTS	Description	Cabling
	1	1 and 2 garden light push button	I1	1	Electrovalve in living room	U1
	2	Entrance light push button	I2	2		
nel	3			3		
	4			4		
	1	Irrigation push button 2	I3			
	2	Irrigation push button 1	I4			
ince side	3	Roller shutter UP push button	I5			
	4	Roller shutter down push button	I6			
	5	1 and 2 garden light push button	I7			
	6	Entrance light push button	I8			
	1	Rain sensor	I9	1	Garden light 1	U2

On the columns entitled "INPUTS", "OUTPUTS" the number of module inputs and outputs are counted in progressive order (for example for a OH/3RPI, there are 3 inputs and 3 outputs).

On the "Description" columns it is essential to indicated a brief description of the connected object (for example light in the sitting room, controlled socket in the kitchen, bathroom light switch, etc); these columns are helpful for reading the whole table and for interpreting the cabling codes in terms of readability by everyone.

The last "Cabling" columns should be filled in by indicating a global progressive number of the system differentiating between inputs and outputs. We recommend for simplicity purposes to insert I1, I2, I3 .....for the inputs and U1, U2, U3 .....for the outputs.

Once this first table has been compiled a detailed summary of all the Home automation system's electric connections will be given with precise indications of which modules pilot the various loads in the house and which modules manage the various command points also with the position within the electrical system design arrangements.

4.8.2 Functioning Table

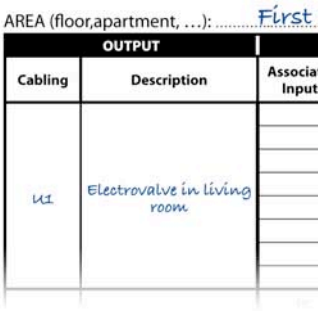
The "Functioning" Table is used to describe the relationships between inputs and outputs from a functioning logic point of view.

For each output, listed and described in the "Connection Table", all the inputs associated with them must be shown and the logic with which each input, whether analogical or digital, pilots it.

AREA (floor,apartment, ...): First Floor SPACE (kitchen,lounge, ...): Entrance Page 1

OUTPUT		Digital						Analogical									
Cabling	Description	Associated Inputs	ACTIVE WITH		Functioning logic			Associated Inputs		Analogical Steps		Digital Steps	Feedback		Linear	Dimmer	
			CC	OC	Logic	Delay	Duration	Digital	Analogical	% Input	% Output	% Output	ctrl	%/Sp	Scale F.	Push buttons	% Auto OFF
U1	Electrovalve in living room																

The initial part of the table is dedicated to the description of the output that you are looking at.

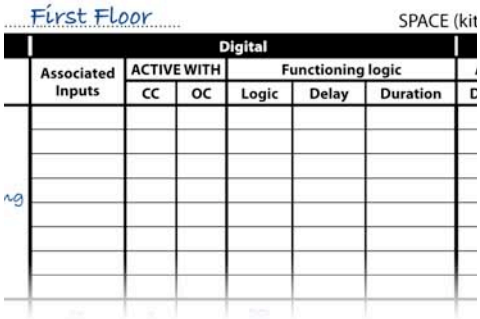


On the first column "Cabling" the progressive number of the output that is inserted in the "Connection Table" must be shown. (For example U1, U2, U3....)

On the second column "Description" a description of the output you are looking at has to be inserted, as shown in the "Connection Table".

The second part of the table is dedicated to the description of the inputs associated with the output in question with the detail of the logic that it is piloted by.

If the output is digital then only the part indicated below should be filled out.



The progressive code of the input as previously assigned on the "Connection Table" must be inserted on the first column (for example Ing1, Ing2, Ing3,....).

Once the first column has been filled in, then it must be indicated whether the output should be activated with the contact opening (CA) or contact closure (CC) associated with the digital input in question.

On the "Functioning Logic" column you should indicate how the input should pilot the output in question choosing between the Step by Step, On, Off, Direct, Activation, Impulse logics explained in detail in chapter 5.3 with the possible indication of intervention Delay time and the duration of the intervention if the impulse function is being used.

STEP by STEP logic

Digital					
Associated Inputs	Active with		Functioning logic		
	CC	OC	Logic	Delay	Duration
I4	**x**		**PP**		

Logic ON

Digital					
Associated Inputs	Active with		Functioning logic		
	CC	OC	Logic	Delay	Duration
I5	**x**		**ON**		

Logic OFF

Digital					
Associated Inputs	Active with		Functioning logic		
	CC	OC	Logic	Delay	Duration
I6	**x**		**OFF**		

Logic DIRECT

Digital					
Associated Inputs	Active with		Functioning logic		
	CC	OC	Logic	Delay	Duration
I7	**x**		**DIR**		

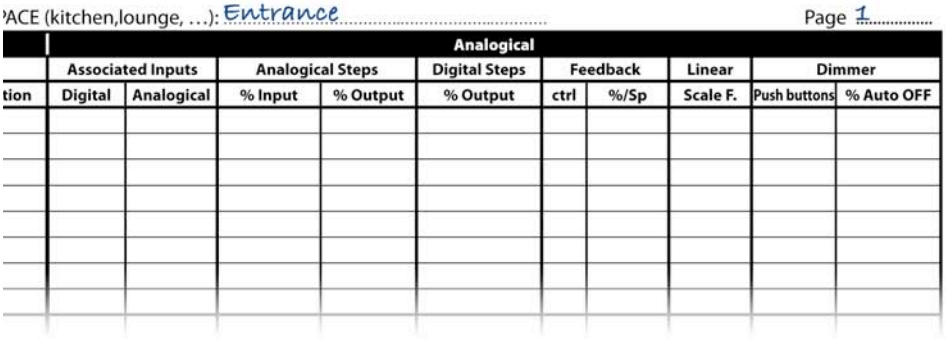
Logic ACTIVATION

Digital					
Associated Inputs	Active with		Functioning logic		
	CC	OC	Logic	Delay	Duration
I8	**x**		**AB**		

Logic IMPULSE

Digital					
Associated Inputs	Active with		Functioning logic		
	CC	OC	Logic	Delay	Duration
I9	**x**		**IMP**	**5s**	**30s**

If the output is analogical then only the part indicated below should be filled out.



The progressive code of all the combined inputs as previously assigned on the "Connection Table" must be inserted on the first column (for example I1, I2, I3,....).

Further to this, the output analogical logic has to be shown and what role the input that has just been shown inside the selected logic plays. It is possible to choose between the analogical and digital step logics, Feedback, Linear or Dimmer explained in detail in chapter 5.10.

If you select the "Analogical Steps" you have to indicate for each step (from 1 to 8) the percentage of the analogical input that generates the step and the percentage where the output should position itself at the grouping of the input threshold. In this case you will have a single combined analogical input.

Analogical									
Associated Inputs		Analogical Steps		Digital Steps	Feedback		Linear	Dimmer	
Digital	Analogical	% Input	% Output	% Output	ctrl	%/Sp	Scale F.	Push buttons	% Auto OFF
	I1	**5**	**10**						
		10	**20**						
		15	**30**						
		25	**40**						
		35	**50**						
		50	**60**						
		65	**80**						
		90	**100**						

If you choose the "Digital Step" logic it is possible to combine each output to a maximum of 8 digital inputs, highlighted in the column "Associated Inputs", each one of which correspond to a single step. Further to this you have to indicate on the column "Digital Step -% Output" the percentage value to which the output has to reach on the closure of the dedicated output.

Analogical									
Associated Inputs		Analogical Steps		Digital Steps	Feedback		Linear	Dimmer	
Digital	Analogical	% Input	% Output	% Output	ctrl	%/Sp	Scale F.	Push buttons	% Auto OFF
I1				**10**					
I2				**20**					
I3				**30**					
I4				**40**					
I5				**50**					
I6				**60**					
I7				**80**					
I8				**100**					

If you choose the Feedback logic you have to indicate the combined control input and if you wish to use a fixed percentage value (e.g. 50%) as setpoint input.

Analogical									
Associated Inputs		Analogical Steps		Digital Steps	Feedback		Linear	Dimmer	
Digital	Analogical	% Input	% Output	% Output	ctrl	%/Sp	Scale F.	Push buttons	% Auto OFF
	I1				**x**	**50**			

or an input from among those highlighted (e.g input I2 that is used as setpoint input).

Analogical									
Associated Inputs		Analogical Steps		Digital Steps	Feedback		Linear	Dimmer	
Digital	Analogical	% Input	% Output	% Output	ctrl	%/Sp	Scale F.	Push buttons	% Auto OFF
	I1				**x**				
	I2					**x**			

If you choose the Linear logic it is enough to indicate on column "Scale F." the linear increasing scale factor by pointing out if this is positive or negative.

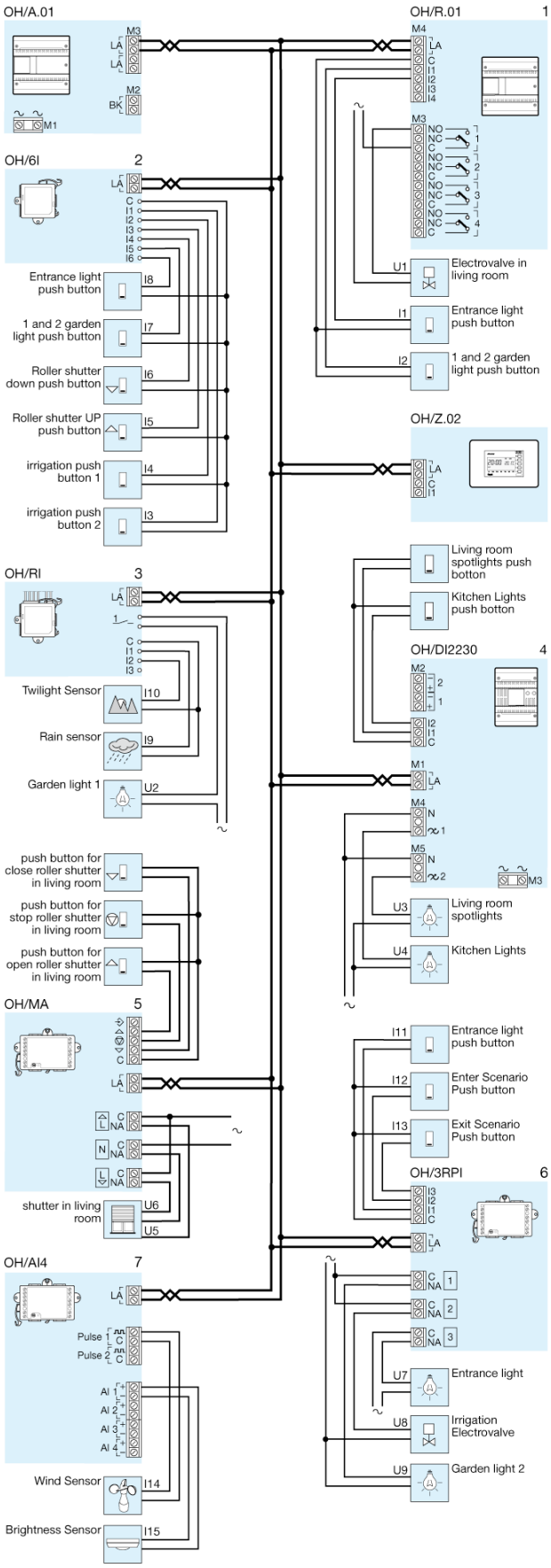
Analogical									
Associated Inputs		Analogical Steps		Digital Steps	Feedback		Linear	Dimmer	
Digital	Analogical	% Input	% Output	% Output	ctrl	%/Sp	Scale F.	Push buttons	% Auto OFF
	I1						**-10**		

If you choose the dimmer logic it is possible to indicate the push button inputs that manually pilot the output and which is the automatic switch off input of the output with relative percentage that generates it.

Analogical									
Associated Inputs		Analogical Steps		Digital Steps	Feedback		Linear	Dimmer	
Digital	Analogical	% Input	% Output	% Output	ctrl	%/Sp	Scale F.	Push buttons	% Auto OFF
	I1								**60**
I2								**x**	
I3								**x**	
I4								**x**	

Once the "Connection" and "Functioning" tables have been compiled for all the system modules, you are ready for the programming and configuration stage via software.

4.8.3 Example of Table compilation



Example of system that includes:

- Living area heating
- 1 Garden light
- 2 Garden light
- Living room spotlights
- Kitchen Lights
- Entrance light
- Living Room Shutter
- Irrigation
- External Brightness Sensor
- Wind Sensor
- Twilight Sensor
- Rain sensor

The following apparatus is required for this system:

- 1 OH/Z.02 zone thermostat
- 1 OH/A.01 power supplier
- 1 OH/6I input module
- 1 OH/RI relay module
- 1 OH/DI2230 dimmer module
- 1 OH/MA automation module
- 1 OH/3RPI relay module.
- 1 OH/R.01 relay module.
- 1 OH/AI4 analogical input module

AREA (floor, apartment, ...): First Floor SPACE (kitchen,lounge, ...): Entrance Page 1

MODULE LIST

MODULES	ABBREVIATION	ID and installation location	INPUTS	Description	Cabling	OUTPUTS	Description	Cabling
1	OH/R.01	033AF01F0100 Main electric panel	1	1 and 2 garden light push button	I1	1	Electrovalve in living room	U1
			2	Entrance light push button	I2	2		
			3			3		
			4			4		
2	OH/61	26883160200 Behind box 503 entrance side	1	Irrigation push button 2	I3			
			2	Irrigation push button 1	I4			
			3	Roller shutter UP push button	I5			
			4	Roller shutter down push button	I6			
			5	1 and 2 garden light push button	I7			
			6	Entrance light push button	I8			
3	OH/RI	029AF01F0100 Behind box 503 kitchen side	1	Rain sensor	I9	1	Garden light 1	U2
			2	Twilight Sensor	I10			
			3					
4	OH/ DI2230	02F4F01F0100 Main electric panel				1	Living room spotlights	U3
						2	Kitchen Lights	U4
5	OH/MA	029AF01F0100 Connector block in lounge				1	Open roller shutter in living room	U5
						2	Close roller shutter in living room	U6
6	OH/3RPI	0234F01F0100 Connector block in lounge	1	Entrance light push button	I11	1	Entrance light	U7
			2	Enter Scenario Push button	I12	2	Irrigation Electrovalve	U8
			3	Exit Scenario Push button	I13	3	Garden light 2	U9
7	OH/AI4	027AF01F0100 Connector block in lounge	1	Wind Sensor	I14			
			2	Brightness Sensor	I15			

AREA (floor,apartment, ...): First Floor SPACE (kitchen,lounge, ...): Entrance Page 1

OUTPUT		Digital							Analogical									
			ACTIVE WITH		Functioning logic			Associated Inputs		Analogical Steps		Digital Steps	Feedback		Linear	Dimmer	
Cabling	Description	Associated Inputs	CC	OC	Logic	Delay	Duration	Digital	Analogical	% Input	% Output	% Output	ctrl	%/Sp	Scale F.	Push buttons	% Auto OFF
U1	Electrovalve in living room																
U2	Garden light 1	I1	X		PP												
		I7	X		PP												
		I10	X		AB												
		I13	X		IMP		30s										
U3	Living room spotlights								I15				X	60			
U4	Kitchen Lights								I15	70	10						
										60	20						
										50	40						
										35	70						
										10	100						
U5	Open roller shutter in living room	I5	X		IMP		30s										
		I12	X		IMP		30s										

AREA (floor,apartment, …): First Floor SPACE (kitchen,lounge, …): Entrance Page 2

OUTPUT		Digital						Analogical									
Cabling	Description	Associated Inputs	ACTIVE WITH		Functioning logic			Associated Inputs		Analogical Steps		Digital Steps	Feedback		Linear	Dimmer	
			CC	OC	Logic	Delay	Duration	Digital	Analogical	% Input	% Output	% Output	ctrl	%/Sp	Scale F.	Push buttons	% Auto OFF
U6	Close roller shutter in living room	I6	X		IMP		30 s										
		I9	X		IMP		30 s										
		I13	X		IMP		30 s										
		I14	X		IMP		30 s										
U7	Entrance light	I2	X		PP												
		I8	X		PP												
		I11	X		PP												
		I12	X		ON												
		I13	X		OFF												
U8	Irrigation Electrovalve												X	60			
U9	Garden light 2	I1	X		PP												
		I7	X		PP												
		I10	X		AB												

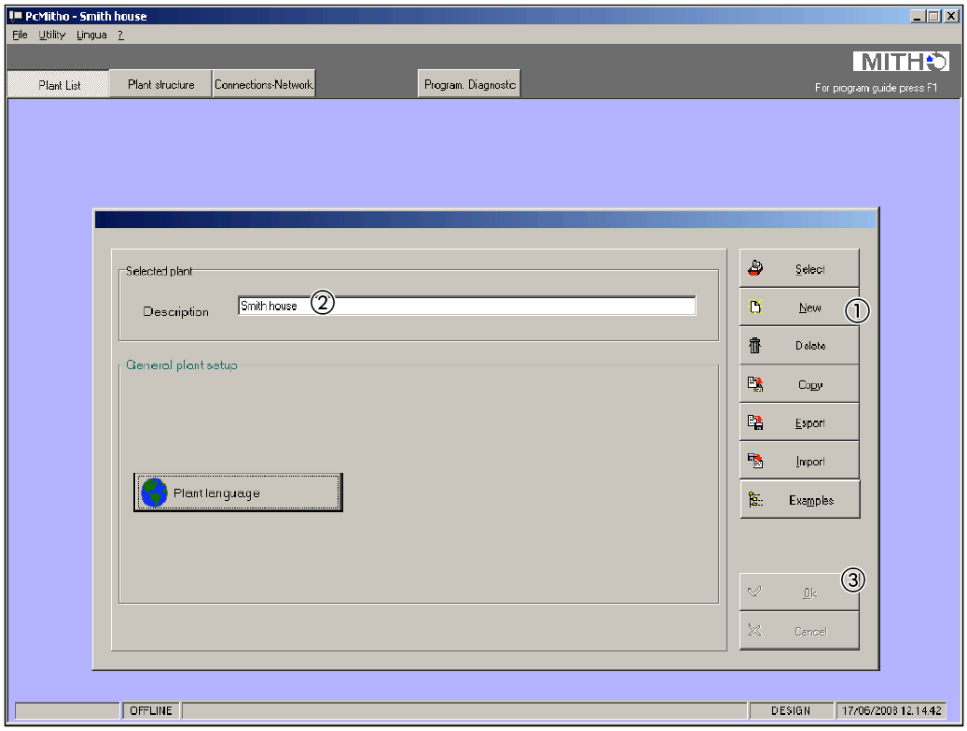
4.9 Programming and configuration with PCMitho Software

One unusual aspect of the Bpt Home automation system is undoubtedly the simplicity of the configuration software, an essential tool for transferring the system's functioning logics designed by the installer to the devices on site.

The system's configuration can be done completely "off line", that is, without the need for the PC where the software is located being physically connected to the system: it is, therefore, possible to "plan" the configuration virtually, even before the system is physically available according to a hierarchy structure that is as similar as possible to the one that the system itself will acquire.

The relevant characteristics of the configuration software will be briefly set out in this paragraph; consult the relative manual for further information on the specifications and operational methods of use.

4.9.1 System database



The first operation to be carried out is to create a system "database" via which it will subsequently be possible again to access all the information relating to it both for completion work and for changes and functional extensions.

The following commands will be available in this context:

Select : access the list of the last systems created

New : creation of a new system.

Delete : delete the system selected

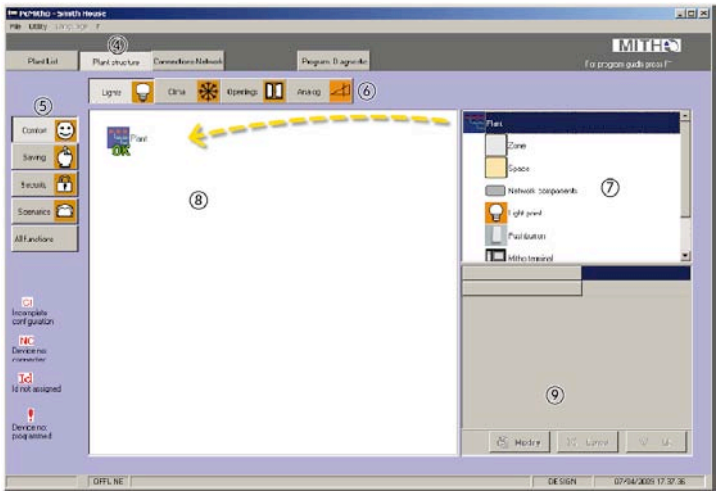
Copy : creation of a copy of the selected system

Export : save the system selected

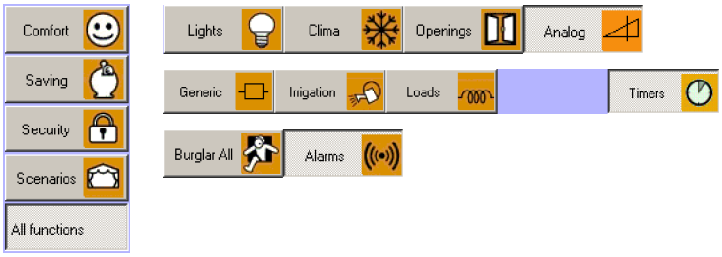
Import : importation of a previously saved system

Examples: loading a system example

4.9.2 Structure



As previously mentioned, the programming system is extremely intuitive so in order to create the structure all that is needed is to drag all the elements that will make up the system, into the operating area.



At the system structure creation stage, you can choose in which system environment you wish to work (by selecting the "Comfort", "Save", "Safety", "Scenarios" or "All functions" icons) and which parts relating to the pre-selected environment to use.

Comfort

Lights	: contains all the devices for lighting (lights, switches, push buttons etc.)
Room temperature	: contains all the devices for heating or cooling the rooms (pumps, valves, thermostats etc..)
Openings	: contains the devices for motorised openings and closures etc.
Analog	: contains the analogical input / output devices that can be stationed in the system

Saving

General	: contains all other devices that can be relay commanded and stationed in the system that are not included in other types
Irrigation	: contains the irrigators for programming irrigation scenarios
Loads	: contains all the devices for controlling consumption
Timers	: contains all the devices that can be commanded via "timer"

Safety

Burglar alarm	: allows you to include compatible burglar alarm systems in the Home automation system.
Alarms	: contains all the "technical" alarm devices like gas sensors, flood and smoke detectors etc.
Scenarios	: contains all the elements required to create automation groups for managing scenarios.
All functions	: allows you to have all the functions described previously in one single window.

The configuration software estimates that the system is subdivided into "Zones" and "Spaces".

One "Zone" represents a grouping of several spaces in the house with common specifications like, for example, the floor of a house, or a group of rooms in the living area of a house.

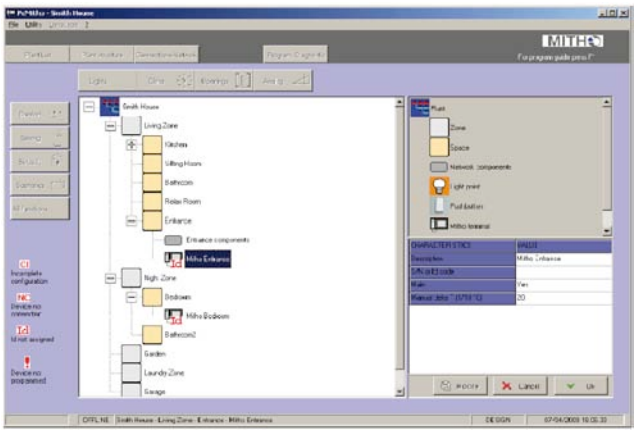
A "Space" represents a specific place in the house like, for example, a corridor, a room or a group of rooms

A "Network component" represents, on the other hand, the container (connector blocks, equipment rooms, electric cupboards, etc.) inside which the Home automation system devices will be physically located; if positioned inside the "Zones" and "Spaces" this makes it easier to view the physical layout.

Another significant characteristic of the Bpt Home automation system is that via the system configuration done using software, the interface available to the user on the supervision terminal can also be simultaneously programmed without any additional effort.

We recommend you pay particular attention to the names given to "Zones" and "Spaces" because they will be transferred to the terminal memory and will be used in the user interface to "navigate" within the system.

4.9.3 Programming the system devices



As previously mentioned, the programming system is extremely simple to use: in order to create the structure just drag all the elements that will make up the system into the operating area.

The whole structure (including "Zones", "Spaces", "Network Components", physical devices and Home automation system modules) can be fully programmed by just using the "drag & drop" introduction method.

Once the entire structure has been created, you have to create "logical ties" between devices and Home automation modules: for example you will have to indicate to which input or output of which module, lights and its command push button are connected to.

Lastly, by selecting the device involved, it is possible to give the value to each programming parameter in order to create exactly the functions desired.

The meaning of the programmable parameters for each device will be explained in detail in Chapter 4.

4.10 System Test

In order to make checking the systems easier at assembly stage, here is a list of useful operations for checking the correctness of the connections and configuration.

4.10.1 Checks on a non-powered system

1. Check that the 230 Vac power supply is not connected to the following devices: OH/A.01, OH/AS, NH-RBB, General system power suppliers.
2. Check the continuity on the line and absence of a short-circuit on the bus:
    a. connect a R=100 ohm or similar to the end of the line and check the measurement at the other end
3. Check that the maximum number of connected modules and the distances between these are within the limits of the system described in this manual

4.10.2 Checks on a powered system

1. Make sure that the following devices are powered with 230Vac: OH/A.01, OH/AS, NH-RBB, General system power suppliers.
2. Check that the voltage on the LA bus is of a value between 18 Vdc and 20 Vdc at the end of the line; repeat the measurement on the lines powered by possible NH-RBB
3. Check in the OH/GW Gateways:
    a. that the power supply clamps (Clamp M3) have a power of between 12 Vdc and 24 Vdc
    b. That there is between 18 Vdc and 20 Vdc on the LA clamps (Clamp M1)
    c. That the MM clamps (Clamp M4) are connected to the corresponding clamps on the Home automation terminal of the Mitho family if present

4.10.3 Check that bus is functioning

1. Connect the PC to one of the system OH/GWs via a USB cable
2. Check that the green Led (USB LED) near the CN1 connector on the OH/GW is on (USB driver installed)
3. Check via the programming SW, the collection of data of all the devices connected to the LA bus.
4. After downloading the programming on the modules, check that all the devices are working properly via the "Diagnostics" mode found on the programming Software.

4.11 Problem Solving

4.11.1 Connections and Assembly Stage

Incorrect voltage on the LA automation bus

Values that do not come within the range (18-20Vdc)

1. Check that the system power suppliers, OH-A.01, OH/AS and NH-RBB (if present), are powered by the electric network.
2. Check that the number of modules connected to the LA bus line is consistent with the system's limits.
3. Check that the cable section used conforms with the specifications in this manual
4. Check that the distances between the power supplier and modules are consistent with the system's limits
5. Disconnect the line bus from a power supplier device found on the system, OH-A.01, OH/AS and NH-RBB (if present), and measure the voltage level directly between the LA (18-20Vdc) clamps and if the voltage does not correspond, replace the device. Reconnect the bus line and repeat the operation for each power supplier.

6. Start sectioning the LA bus line by identifying the branch/module causing the fault (faulty module could have a yellow led on)

Some devices on the LA Home automation bus are not detected

Make a new data collection.

1. If the undetected modules are the same ones:
   - Check the connection
   - Check the power supply (see section "*Incorrect voltage on the LA automation bus*")
   - Check that the yellow led on the module is off otherwise replace the module
2. If the undetected modules are different:
   - Check the number of modules connected
   - Check that the cable used is in conformity
   - Check that the distances are within the limits
   - Check the power supply (see section "*Incorrect voltage on the LA automation bus*")

In the case of the system with several OH/GW gateways, take a second reading of the devices so that all the Home automation modules can be brought together; in fact, the first is used by the system to assign an address to the gateways themselves.

No device on the LA Home automation bus has been detected

1. - Check the LA Home automation bus power supply (see section "*Incorrect voltage on the LA automation bus*")
2. Check that the yellow Led found on the system's power suppliers, OH-A.01, OH/AS and NH-RBB, are off; if the led is always on, replace the device
3. Press the Service push button on the system power suppliers, OH-A.01, OH/AS and NH-RBB, and check the yellow led comes on in correspondence
4. Make a new data collection.

In the case of the system with several OH/GW gateways, take a second reading of the devices so that all the Home automation modules can be brought together; in fact, the first is used by the system to assign an address to the gateways themselves.

Some devices on the MM bus (gateway and terminals) are not detected

1. Voltage detected on the bus: there is only one digital signal that cannot be measured by the multimeter
2. Check the continuity and absence of a short-circuit on the MM bus
3. Check the power supply to the device that is not detected
4. Check if the cable is in conformity
5. Check that the distances are within the limits
6. Check that the number of devices connected to the bus is within the system's limits
7. Check that the terminal clamps are properly inserted

4.11.2 System programming

The PC does not connect, the structure discharge blocks at the start

If the gateway, OH/GW is connected to the PC via the USB cable, and the green LED (USB LED) located close to the CN1 connector is on:

1. Check that the COM communication port has been selected on the programming SW (see programming SW manual)
2. Unplug the USB cable from the PC then plug it in again
3. Reset the gateway by pressing impulsively on the reset push button, wait 20 seconds, unplug the USB cable and plug it in again

If the led is turned off:

1. check the gateway power supply
2. check that the USB port communication drive is installed (see programming SW manual)
3. unplug the USB cable from the PC then plug it in again

No Home automation module is programmed

1. Unplug the USB cable from the PC then plug it in again
2. Reset the gateway by pressing impulsively on the reset push button, wait 20 seconds, unplug the USB cable and plug it in again
3. Check that all the identification codes for the modules are inserted in the structure and that they are correct
4. Check the LA Home automation bus power supply
5. Check that the yellow Led found on the system's power suppliers, OH-A.01, OH/AS and NH-RBB, are off; if the led is always on, replace the device
6. Press the Service push button on the system power suppliers, OH-A.01, OH/AS and NH-RBB, and check the yellow led comes on in correspondence

In the case of the system with several OH/GW gateways, take a second reading of the devices so that all the Home automation modules can be brought together; in fact, the first is used by the system to assign an address to the gateways themselves.

Some Home automation modules are not programmed

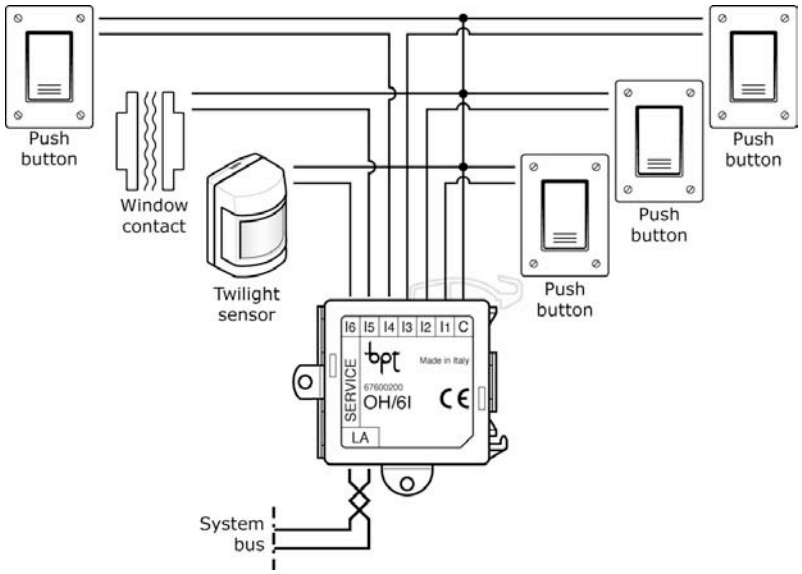
Unload the structure again.

1. If the unprogrammed modules are the same ones:
   - check that their identification codes are correct
   - check the system modules' connection
   - check the power supply (see section "*Incorrect voltage on the LA automation bus*")
   - check that the yellow led on the module is off otherwise replace the module
2. If the unprogrammed modules are different:
   - check the number of modules connected
   - check that the cable used is in conformity with the system's specifications
   - check that the distances are within the system's limits
   - check the power supply (see section "*Incorrect voltage on the LA automation bus*")

In the case of the system with several OH/GW gateways, take a second reading of the devices so that all the Home automation modules can be brought together; in fact, the first is used by the system to assign an address to the gateways themselves.

5 Programmable Parameters

5.1 OH/6I 6 digital inputs module



The OH/6I is a device to be fitted onto the DIN bar or flush mounted on a 3 module box fitted with 6 digital inputs referred to as I1, I2, I3, I4, I5, I6 to connect the command devices fitted with output contacts with no voltage.

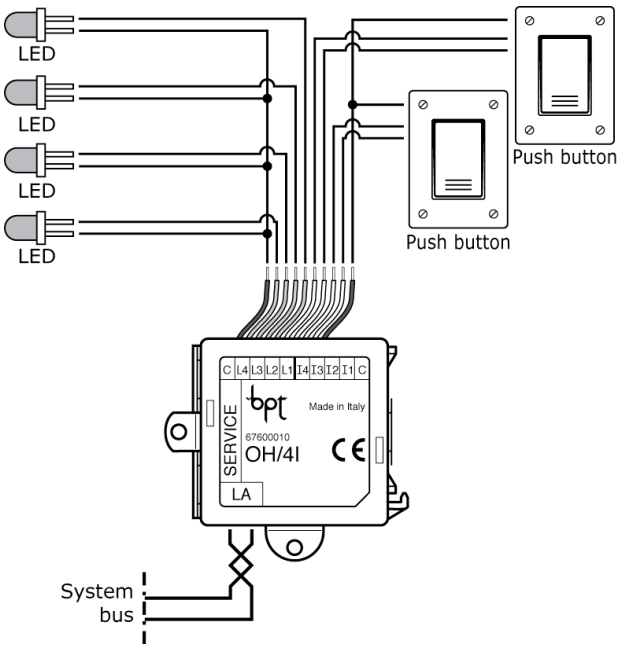
5.1.1 General Parameters

Description: is the symbolic name of the module that by default corresponds with the product code but which can be customised.

S/N or Id code: is the module's unambiguous serial number (SN number). It corresponds with the number found on the sticky label on the module.

I1, I2, I3, I4, I5, I6 Input: indicates the module's digital inputs. Combine the command devices in these fields.

5.2 OH/4I 4 digital inputs and 4 low voltage LED outputs module



The OH/4I is a device to be fitted onto the DIN bar or flush mounted on a 3 module block fitted with 4 digital inputs referred to as I1, I2, I3, I4 to connect the command devices fitted with output contacts with no voltage.
It is also fitted with 4 low voltage outputs (1.5 ÷ 3.5 Vdc and 2 mA max) that can be used for piloting the Led for local signaling of the status of the outputs controlled by the command devices.

5.2.1 General Parameters

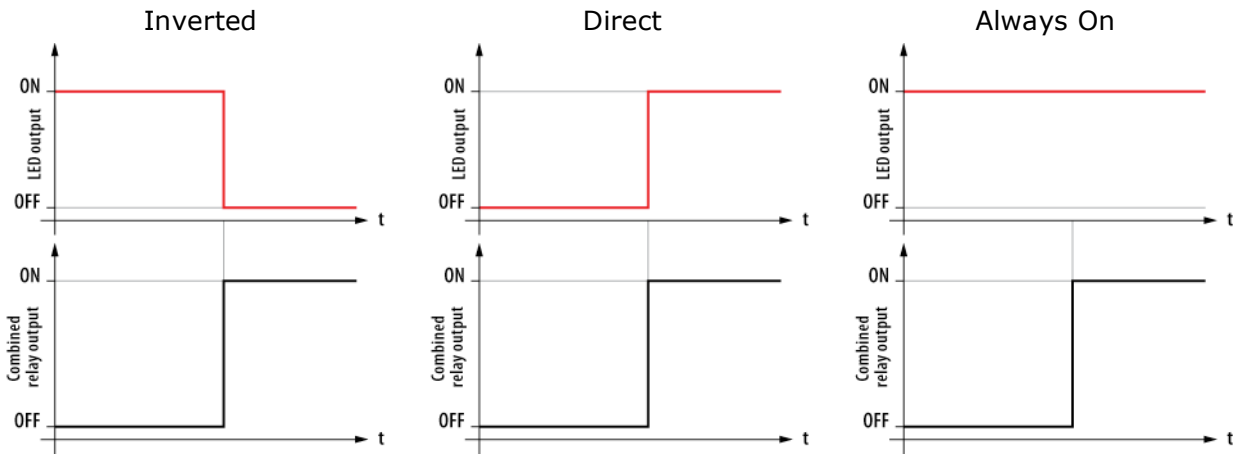
Description: is the symbolic name of the module that by default corresponds with the product code but which can be customised.

S/N or Id code: is the module's unambiguous serial number (SN number). It corresponds with the number found on the sticky label on the module.

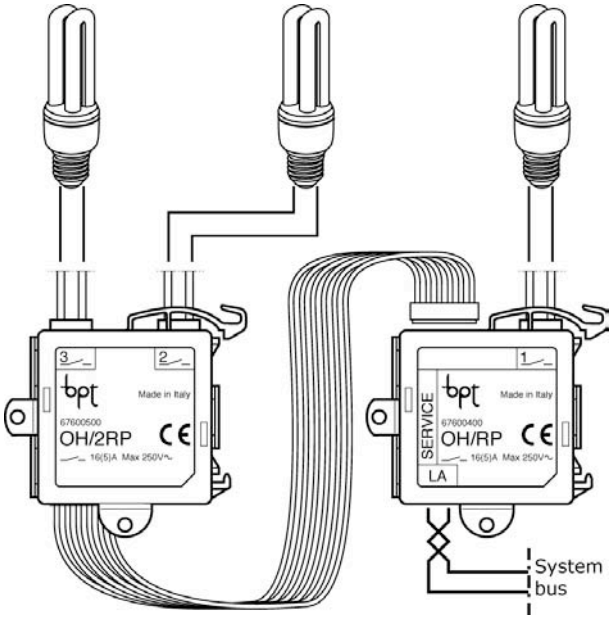
I1, I2, I3, I4 Input: indicates the module's digital inputs. Combine the command devices in these fields.

LED 1, 2, 3, 4: indicates the outputs that you want status feedback from via the corresponding LED connected to the module.

LED mode 1, 2, 3, 4: indicates the method with which to pilot the LED according to the behaviours of the combined output in the previous parameter. (Inverted, Direct, Always On; Default value: Direct).



5.3 OH/RP 1 relay output module and OH/2RP 2 relay output expansion module



The OH/RP is a device to be fitted onto the DIN bar or flush mounted on the 3 module block fitted with one relay output (16A capacity for resistive loads and 5A for inductive loads) with which it is possible to control devices such as the ON/OFF electrovalve, lights etc.
The OH/2RP is an expansion device on the OH/RP module to be fitted onto the DIN bar or flush mounted on the 3 module block fitted with 2 relay outputs (16A capacity for resistive loads and 5A for inductive loads). The expansion can be connected via a specific connector to 6 pre-cabled wires.

5.3.1 General Parameters

Description: is the symbolic name of the module that by default corresponds with the product code but which can be customised.

S/N or Id code: is the module's unambiguous serial number (SN number). It corresponds with the number found on the sticky label on the module.

Relay 1, 2, 3: indicates the relay outputs. Combine the outputs connected to the module in these fields.

5.3.2 Parameters of the relay outputs

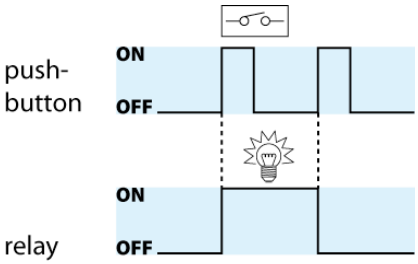
Description: is the symbolic name of the output. It corresponds with the label that will appear on the user's interface.

Cabling: is the symbolic name of the "space" that the output belongs to. It corresponds with the label that will appear on the user's interface.

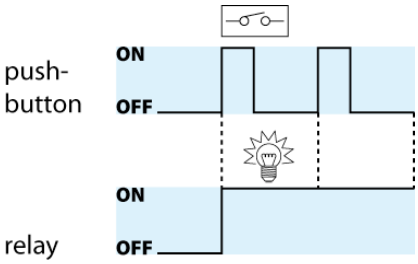
Activated by (1-7): indicates the input devices capable of commanding the output.

5.3.3 Functioning Logics of output relays

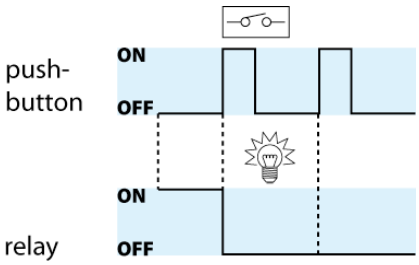
This parameter indicates the behaviour of the relay output after the activation of the assigned command input. It is possible to choose between the following logics: Step by Step, On, Off, Direct, Activation and Impulse.



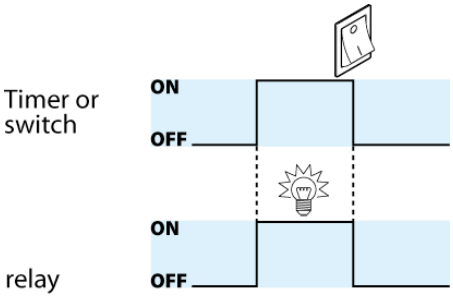
STEP BY STEP: each time the command input is activated, the relay changes status. A simple application is the on, off command of a light, even from several push buttons.



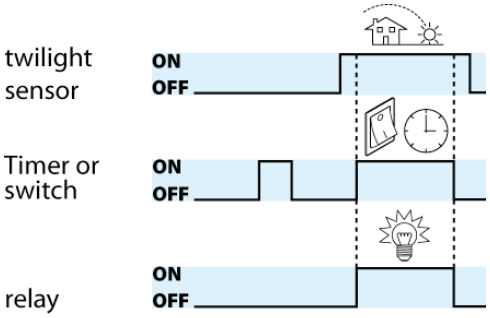
"ON": with each activation of the command input, the relay changes to the ON status if in the OFF position, otherwise the command is ignored. This function is useful if you wish to implement an unconditional "turning on" command.



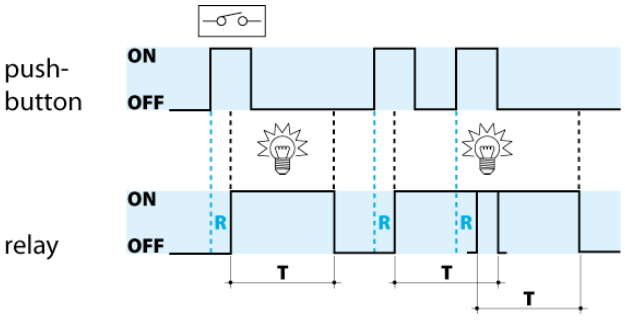
"OFF": with each activation of the command input, the relay changes to the OFF status if in the ON position, otherwise the command is ignored. This function is useful if you wish to implement an unconditional "turning off" command.



"Direct": with each activation of the input command, the relay changes to the ON status for the entire time that the input is active.

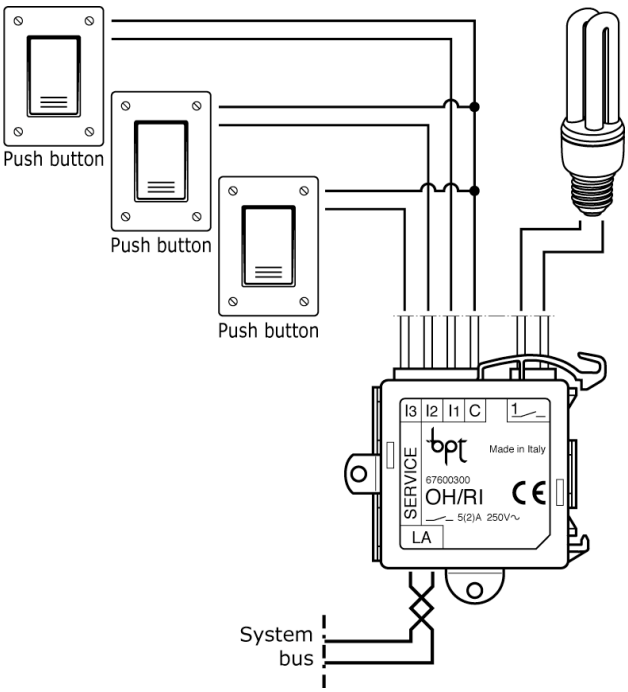


"Enable": the logic is the same as the "Direct" logic, but the change of the output is also conditioned by the presence of the activation signal. One typical example is the use of a crepuscular to "activate" turning on the lights outside activated by timers or switches.



"Pulse": with each activation of the command input, the relay changes the ON status, after a delay (R), for the duration (T). (T and R can be programmed from 1" to 59' 59").
One typical example can be turning on lights in the stairwell of an apartment block with a timer.

5.4 OH/RI 1 output relay and 3 digital inputs module



The OH/RI is a device to be fitted onto the DIN bar or flush mounted on the 3 module block fitted with one relay output (5A capacity for resistive loads and 2A for inductive loads) with which it is possible to control devices such as the ON/OFF electrovalve, lights etc.

It is also fitted with 3 digital inputs referred to as I1, I2, I3 to connect command devices fitted with output contacts with no voltage.

5.4.1 General Parameters

Description: is the symbolic name of the module that by default corresponds with the product code but which can be customised.

S/N or Id code: is the module's unambiguous serial number (SN number). It corresponds with the number found on the sticky label on the module.

I1, I2, I3 Input: indicates the module's digital inputs. Combine the command devices in these fields.

Relay 1: indicates the relay output. Combine the output connected to the module in this field.

5.4.2 Relay Output Parameter

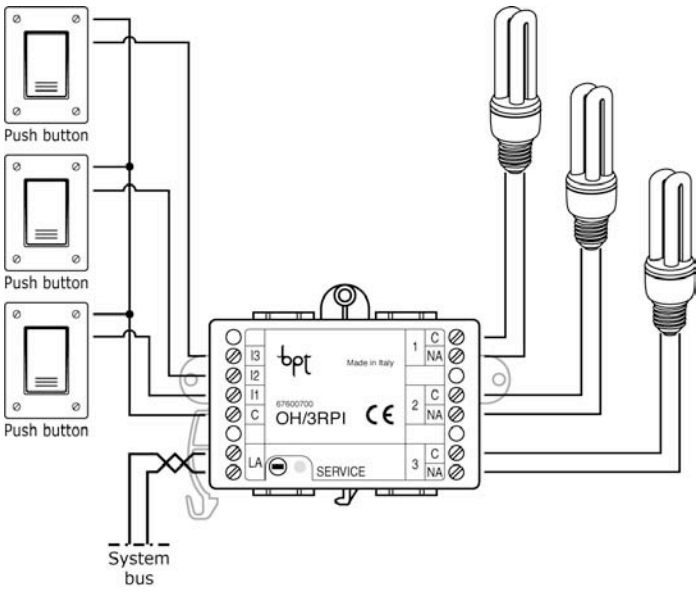
Description: is the symbolic name of the output. It corresponds with the label that will appear on the user's interface.

Cabling: is the symbolic name of the "space" that the output belongs to. It corresponds with the label that will appear on the user's interface.

Activated by (1-7): indicates the input devices capable of commanding the output.

For the output piloting parameters via the system's digital inputs see the detailed description given on the OH/RP module (paragraph 4.3.3)

5.5 OH/3RPI 3 output relays and 3 digital inputs module



The OH/3RPI is a device to be fitted onto the DIN bar or flush mounted on the 3 module block fitted with 3 relay outputs (16A capacity for resistive loads and 5A for inductive loads) with which it is possible to control devices such as the ON/OFF electrovalve, lights etc.
It is also fitted with 3 digital inputs referred to as I1, I2, I3 to connect command devices fitted with output contacts with no voltage.

5.5.1 General Parameters

Description: is the symbolic name of the module that by default corresponds with the product code but which can be customised.

S/N or Id code: is the module's unambiguous serial number (SN number). It corresponds with the number found on the sticky label on the module.

I1, I2, I3 Input: indicates the module's digital inputs. Combine the command devices in these fields.

Relay 1, 2, 3: indicates the relay outputs. Combine the outputs connected to the module in these fields.

5.5.2 Relay Output Parameters

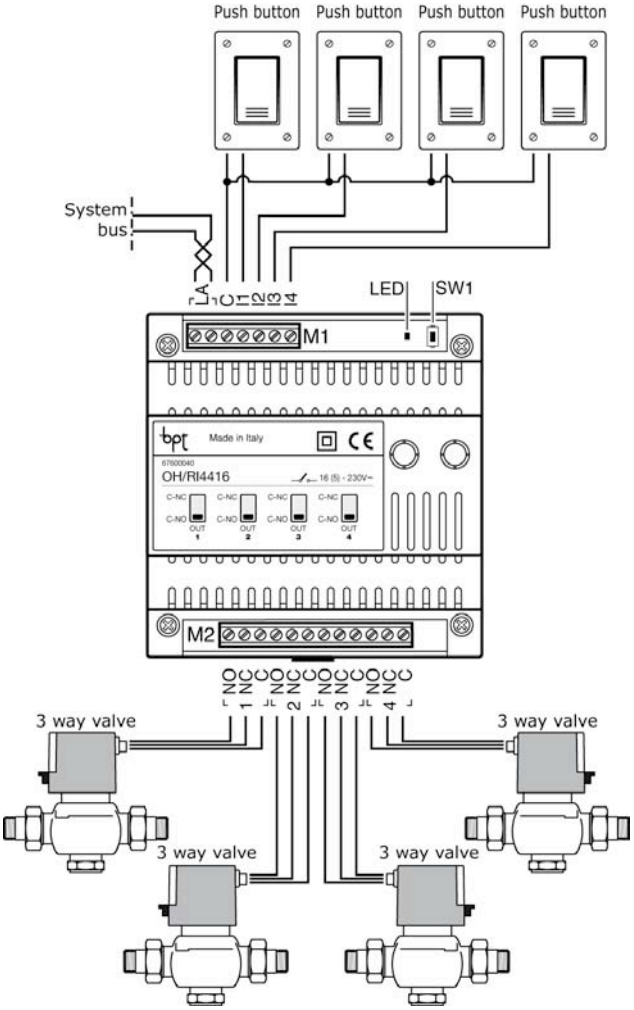
Description: is the symbolic name of the output. It corresponds with the label that will appear on the user's interface.

Cabling: is the symbolic name of the "space" that the output belongs to. It corresponds with the label that will appear on the user's interface.

Activated by (1-7): indicates the input devices capable of commanding the output.

For the output piloting parameters via the system's digital inputs see the detailed description given on the OH/RP module (paragraph 4.3.3)

5.6 OH/RI4416 4 output relays and 4 digital inputs module



The OH/R11416 is a device to be fitted onto the DIN bar fitted with 4 relay exchange outputs (16A capacity for resistive loads and 5A for inductive loads) with which it is possible to control devices such as the ON/OFF electrovalve, lights etc.
The relay outputs can intervene manually by forcing both the NC and NO status using the levers positioned at the front of the module.
It is also fitted with 4 digital inputs referred to as I1, I2, I3, I4 to connect command devices fitted with output contacts with no voltage.

5.6.1 General Parameters

Description: is the symbolic name of the module that by default corresponds with the product code but which can be customised.

S/N or Id code: is the module's unambiguous serial number (SN number). It corresponds with the number found on the sticky label on the module.

I1, I2, I3, I4 Input: indicates the module's digital inputs. Combine the command devices in these fields.

Relay 1, 2, 3, 4: indicates the relay outputs. Combine the outputs connected to the module in these fields.

5.6.2 Relay Output Parameters

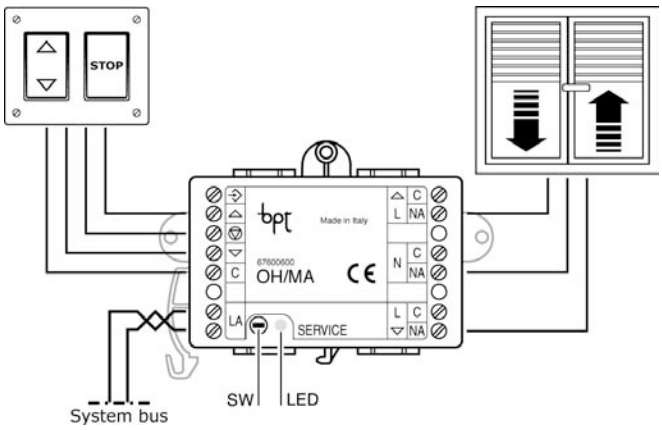
Description: is the symbolic name of the output. It corresponds with the label that will appear on the user's interface.

Cabling: is the symbolic name of the "space" that the output belongs to. It corresponds with the label that will appear on the user's interface.

Activated by (1-7): indicates the input devices capable of commanding the output.

For the output piloting parameters via the system's digital inputs see the detailed description given on the OH/RP module (paragraph 4.3.3)

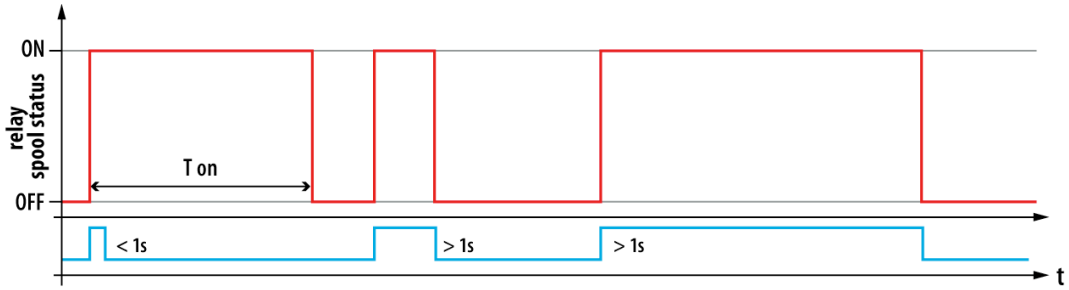
5.7 OH/MA Relay module for motorization control



The OH/MA is a device to be fitted onto the DIN bar or flush mounted on the 3 module block fitted with 3 relay outputs (16A capacity for resistive loads and 5A for inductive loads) for directly piloting the motors for blinds (shutters, sun-shades, etc.). It is also fitted with 4 digital inputs indicated with △, ▽, ▽ and →.
The closure (or opening if configured this way) of the contacts connected to the inputs △, ▽, ▽ allows for the activation of the corresponding outputs (L△, L▽ and N) that command the opening and closing of the connected motor.

These inputs are "local" and cannot, therefore, be used for other purposes within the system so do not appear at the programming stage. The input → on the other hand has a local Ton time configuration function, that is, of the activation duration of the L △, L▽ relays.

The closure of the contacts on the command push buttons creates two different functioning logics: Timed and Human presence. If the command impulse lasts less than 1 second, the combined relay will stay closed for a time equivalent to the Ton (Opening duration or Closure duration depending on the kind of relay); if the command impulse lasts longer than this, the combined relay will remain active for the entire duration of the impulse.



5.7.1 General Parameters

Description: is the symbolic name of the module. It corresponds with the label that will appear on the user's interface.

S/N or Id code: is the module's unambiguous serial number (SN number). It corresponds with the number found on the sticky label on the module.

Relay 1: indicates one of the two relay outputs for the opening and closure command of the shielding. Select the function to combine with the relay in this field.

Relay 2: indicates one of the two relay outputs that pilot either the opening or closure of the shielding. Select the function not combined with relay 1 in this field.

Open time (s): duration of the opening cycle (1-120; Default value: 90)

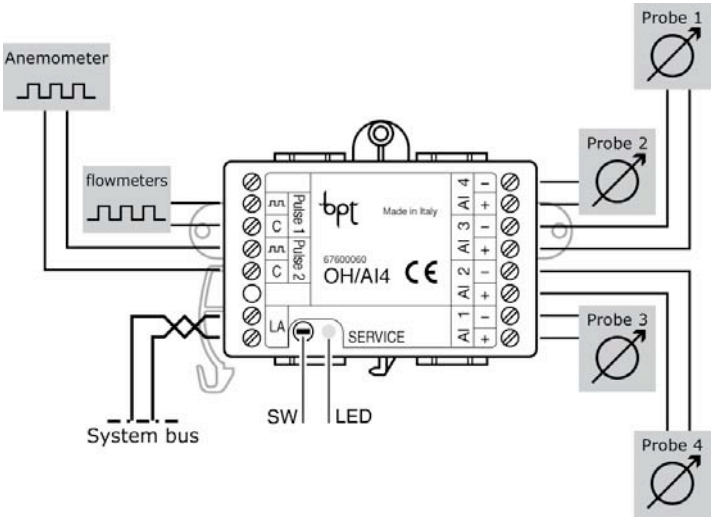
(open) Activated by (1-7): it is possible to combine up to 7 secondary system inputs that activate the opening of the shielding

Close time (s): duration of the closure cycle (1-120; Default value: 90)

(close) Activated by (1-7): it is possible to combine up to 7 secondary system inputs that activate the closure of the shielding

(Stop) Activated by (1-7): it is possible to combine up to 7 secondary system inputs that stop the shielding

5.8 OH/AI4 4 analogical inputs module

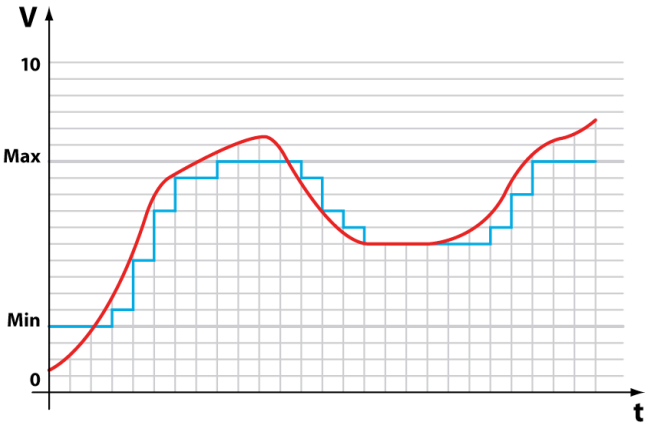


The OH/AI4 is a device fitted with 4 analogical inputs and 2 impulsive inputs via which it is possible to pick up signals from rain gauges, wind sensors, brightness sensors etc. that can be used to activate outputs and create "events": in fact, for each input, up to 8 different thresholds can be set with intervention hysteresis for the generation of system alarms or events.

The way of picking up signals from each sensor connected to the OH/AI4 module can be fully programmed with the configuration software as described in the following paragraphs.

5.8.1 General Parameters

Description: is the symbolic name of the output. It corresponds with the label that will appear on the user's interface.



--- Real pattern
--- Acquired value

Cabling: is the symbolic name of the "space" that the output belongs to. It corresponds with the label that will appear on the user's interface.

Min value (V): is the minimum analogical input value that should be taken into consideration.

Max value (V): is the maximum analogical input value that should be taken into consideration.

Measure Unit: is the unit of measurement with which the analogical input value can be viewed.

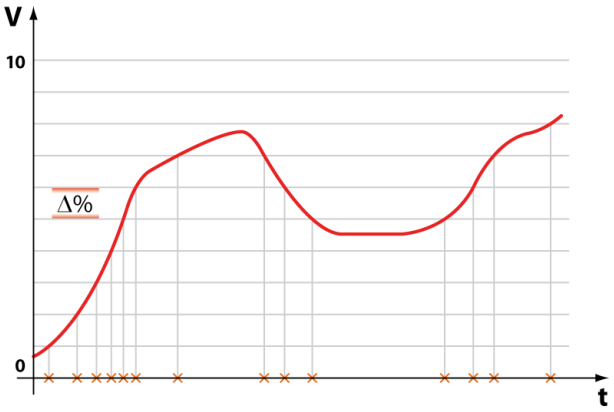
Scale factor: is the multiplication coefficient between the value measured by the module and its value used in display.

5.8.2 Send Message On the Bus

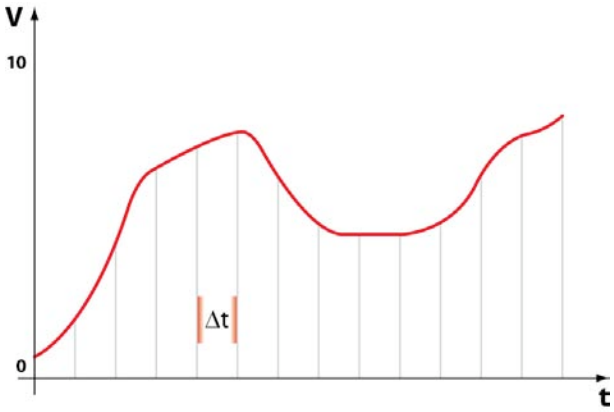
Status Sending mode: is the method with which the value measured for the input signal is made available on the communication bus. (On range or time, On range and time, On time, On range, On demand; Default value: On range or time).

Delta %: Difference between the instant input value and the previous measured value.

Cycle sending time (min): Cyclical send period on the data bus read at the input.



On Range: the value is sent when the difference between the real value and last value sent surpasses the programmed Δ %.



On time: the value is sent at regular intervals in minutes corresponding to the value assigned to the "Cycle Sending Time" parameter.

It is also possible to decide if the two conditions (on the percentage variation and on the time interval) have to be combined in AND (both conditions have to be checked) or in OR (at least one of the two has to be checked).

Note. The measured value is sent on the bus both in percentage form (OV=0%, 10V=100%) and as an absolute value bearing in mind the scale factor set.

5.8.3 Threshold Setting

Number of steps: is the number of "events" (max 8) that you want sent on the bus: analogical output values can, for example, be combined with these as described in the relative paragraphs.

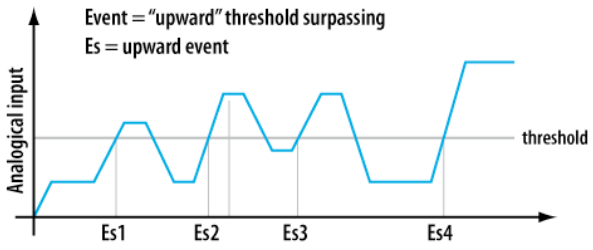
For each step it is possible to define:

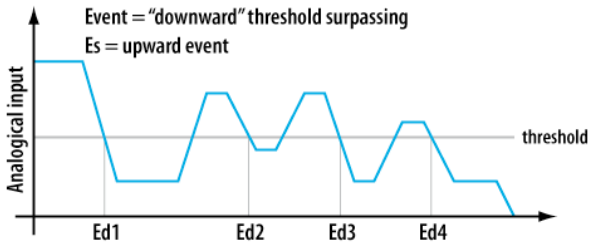
Threshold n (%): reference value for the threshold (0-100; Default value: 0);

Hysteresis n (%): variation tolerance around the threshold value (0-100; Default value: 0);

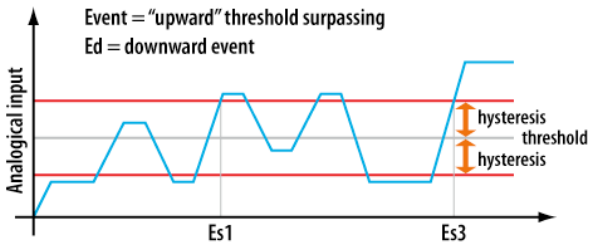
The correct hysteresis value setting is extremely useful for avoiding event transmissions due only to variations in the input value around the threshold value.

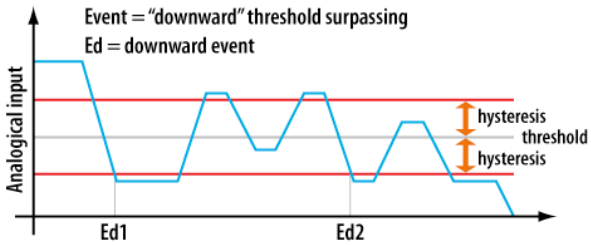
Without Hysteresis





With Hysteresis

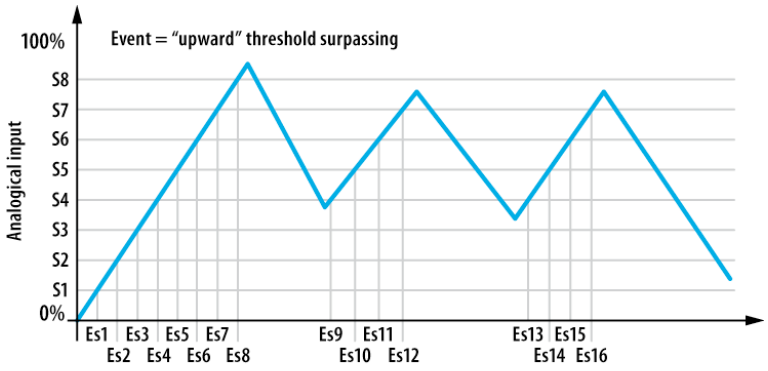


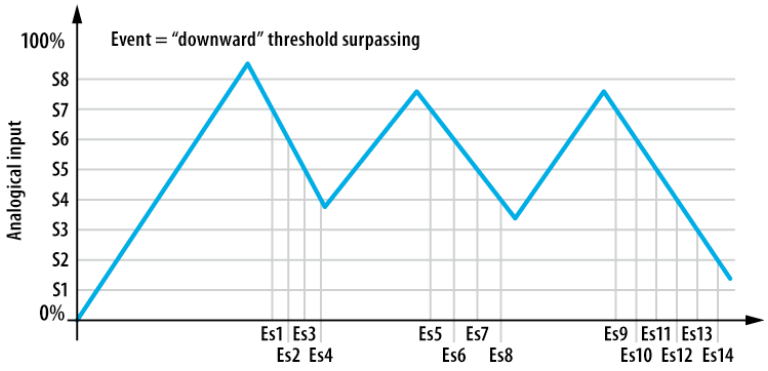


Furthermore, for each threshold it is possible to define:

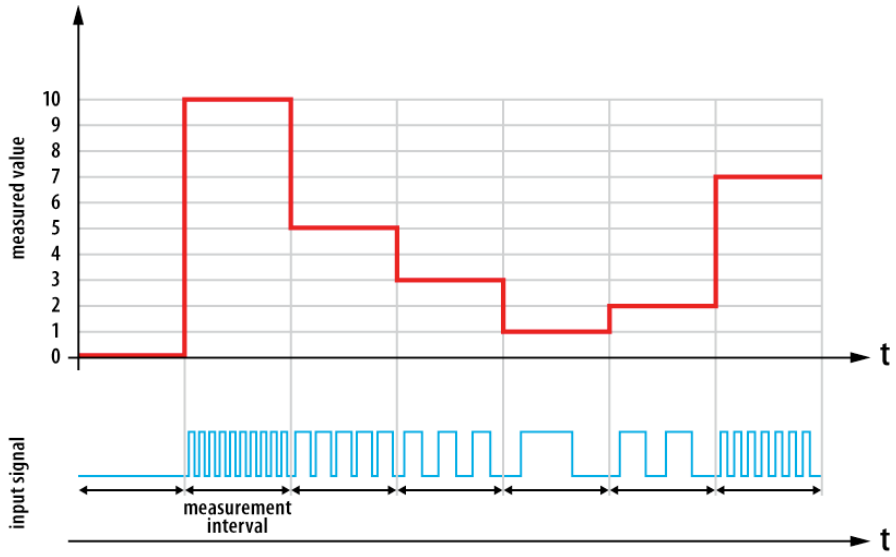
Contact n (%): relay output that can be combined with the programmed event.

Warning Event: is the pattern of the input value around the threshold value that generates the event you wish to point out. It is possible to distinguish between "upward" and "downward" threshold surpassing. (threshold reached from bottom to top, threshold reached from top to bottom; Default value: threshold reached from bottom to top)





For the signals picked up by the "pulse counter" inputs the same considerations made for the analogical inputs are valid, bearing in mind that the impulsive signal is elaborated as shown in the figure.



Description: is the symbolic name of the output. It corresponds with the label that will appear on the user's interface.

Cabling: is the symbolic name of the "space" that the output belongs to. It corresponds with the label that will appear on the user's interface.

Min value (Hz): is the minimum frequency value of the input signal that should be taken into consideration.

Max value (Hz): is the maximum frequency value of the input signal that should be taken into consideration.

Measure Unit: is the unit of measurement with which the input signal value can be viewed.

Scale factor: is the multiplication coefficient between the value measured by the module and its value used in display.

Status sending mode: is the method with which the value measured for the input signal is made available on the communication bus. (On range or time, On range and time, On time, On range, On request; Default value: On range or time).

Delta %: Difference between the instant input value and the previous measured value.

Cycle sending time (min): Cyclical send period on the data bus read at the input.

Number of steps: is the number of "events" (max 8) that you want sent on the bus: analogical output values can, for example, be combined with these as described in the relative paragraphs.

For each step it is possible to define:

Threshold n (%): reference value for the threshold

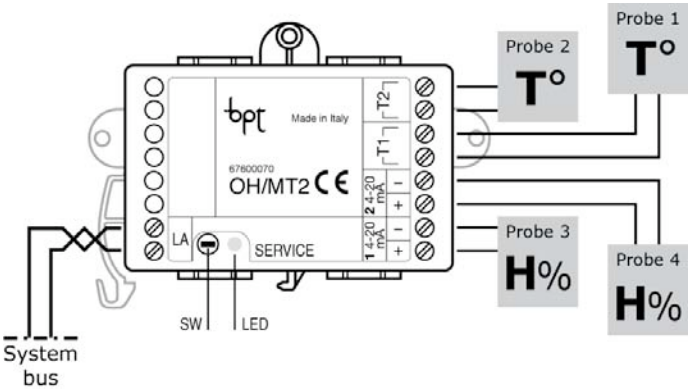
Hysteresis n (%): variation tolerance around the threshold value

Furthermore, for each threshold it is possible to define:

Contact n (%): relay output that can be combined with the programmed event.

Warning Event: is the pattern of the input value around the threshold value that generates the event you wish to point out. It is possible to distinguish between "upward" and "downward" or both, threshold surpassing.

5.9 OH/MT2 2 temperature probe inputs and 2 analogical inputs module



The OH/MT2 is a device fitted with 2 inputs dedicated to PT1000 or NTC (10K beta 3977) temperature probes and 2 4-20mA analogical inputs via which it is possible to pick up signals from hygrometers.
We recommend you connect the OH/STI probes, if necessary an internal temperature reading and the OH/STE probes if necessary an external temperature reading.

The way of picking up signals from each sensor connected to the OH/MT2 module can be fully programmed with the configuration software as described in the following paragraphs.

5.9.1 General Parameters

Description: is the symbolic name of the input and corresponds with the label that will appear on the user's interface.

S/N or Id code: is the module's unambiguous serial number (SN number). It corresponds with the number found on the sticky label on the module.

5.9.2 Hygrometer Parameters

Cabling: is the symbolic name of the "space" that the output belongs to. It corresponds with the label that will appear on the user's interface.

Measure Unit: is the unit of measurement with which the analogical input value can be viewed.

Status sending mode: is the method with which the value measured for the input signal is made available on the communication bus. (Never, On range or time, On range and time, On time, On range, On request; Default value: On range or time). See 4.8.2 for an explanation on the meaning of this parameter

Delta %: Difference between the instant input value and the previous measured value.

Cycle sending time (min): Cyclical send period on the data bus read at the input.

Value for 0%: is the minimum analogical input value that should be taken into consideration. (0-100; Default value: 0). See 4.8.1 for an explanation on the meaning of this parameter

Value for 100%: is the maximum analogical input value that should be taken into consideration. (0-100; Default value: 100). See 4.8.1 for an explanation on the meaning of this parameter

5.9.3 External Temperature Parameters

Manufacturer: represents the kind of probe that is used as external probe. Selecting Bpt requires you to connect the OH/STE. (Bpt, PT1000; Default value: Bpt)

Calibration offset °C: is a measurement correction value that can be used in cases where the installation of the external probe is essential (from -10,0°C to +10,0°C; Default value: 0°C)

Status sending mode: is the method with which the value measured for the input signal is made available on the communication bus. (Never, On range or time, On range and time, On time, On range, On request; Default value: On range or time). See 4.8.2 for an explanation on the meaning of this parameter

Delta °C: Difference between the instant temperature value and the previous measured value.

Cycle sending time (min): Cyclical send period on the data bus read at the input.

5.9.5 Internal Temperature Parameters

*Description:*is the symbolic name of the output. It corresponds with the label that will appear on the user's interface.

Heating valve command on: In the case of heating system control, select the hydraulic electrovalve combined with the thermal zone.
(N.B.: it is essential to have already configured the value inside the system in order to combine it with the thermal zone.)

Heating pump command on: In the case of heating system control, select the pump combined with the thermal zone.
(N.B.: it is essential to have already configured the pump inside the system in order to combine it with the thermal zone.)

Heating type: Select the kind of thermal zone to be controlled. Depending on the kind of system selected, change the default thermal differential. (Fan, Electric, Radiator, Floor, Default value: Radiator)

*Cooling valve command on:*In the case of cooling system control, select the hydraulic electrovalve combined with the thermal zone.
(N.B.: it is essential to have already configured the value inside the system in order to combine it with the thermal zone.)

Cooling pump command on: In the case of cooling system control, select the pump combined with the thermal zone.
(N.B.: it is essential to have already configured the pump inside the system in order to combine it with the thermal zone.)

Status change contact: an optional contact that allows for the forced change between the thermal zone control methods. It is possible to combine any system digital input.

Status set by the contact: The previous selected contact forces the status of the thermal zone in one of the possible control methods. (Auto, Jolly, Holiday, OFF, Manual; Default value: Auto)

Auto: The module will automatically control the valve and zone pump to follow a daily/weekly temperature profile set on the terminal or resident default profile on the controller module of the thermal zone.

Jolly: The module will automatically control the valve and zone pump to follow a Jolly temperature profile set on the terminal. (where present)

Holiday: The module will automatically control the valve and zone pump to follow a Holiday temperature profile set on the terminal. (where present)

OFF: The zone will be initialised in stand-by mode and will stay in the rest position until the first request arrives from the system.

Manual: The module will control the valve and pump to reach the temperature that will be enforced in the following parameter.

Manual temperature °C: indicates the temperature desired in the combined thermal zone if the "Manual mode" has been selected in the previous parameter. (5.0-32.0; Default value: 18).

Manufacturer: represents the kind of probe that is used as external probe. Selecting Bpt requires you to connect the OH/STE. (Bpt, PT1000; Default value: Bpt)

Calibration offset: is a measurement correction value that can be used in cases where the installation of the external probe is essential (from -10,0°C to +10,0°C; Default value: 0°C)

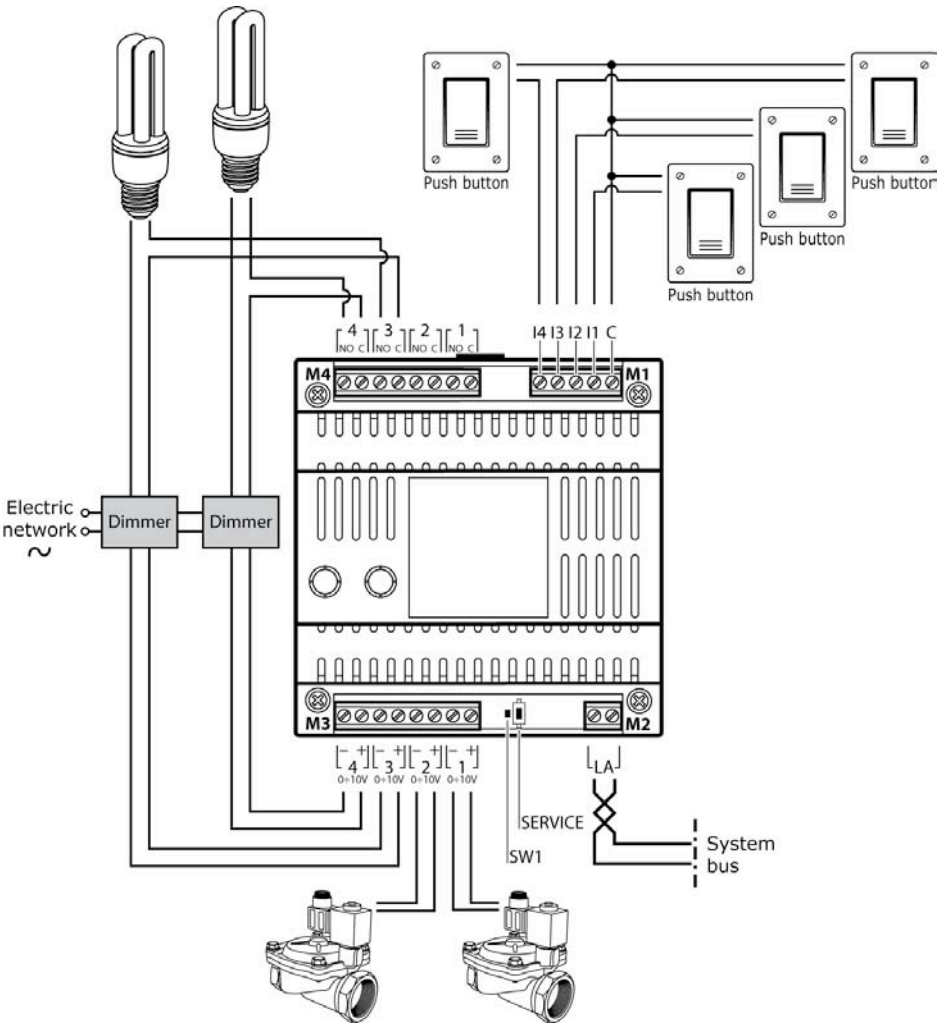
Status Sending mode: is the method with which the value measured for the input signal is made available on the communication bus. (Never, On range or time, On range and time, On time, On range, On request; Default value: On range or time). See 4.8.2 for an explanation on the meaning of this parameter

Delta °C: Difference between the instant temperature value and the previous measured value.

Cycle sending time (min): Cyclical send period on the data bus read at the input.

Season Change Contact: is an optional contact that allows for the forced change between summer and winter. It is possible to combine any system digital input. (Default value: none).

5.10 OH/AO4010 4 analogical outputs module



The OH/AO4010 is a device to be fitted onto the DIN bar with 4 0÷10V outputs with which it is possible to command devices such as the proportional electrovalves, devices for controlling the lights etc..

Furthermore, it is also fitted with 4 relay outputs (16A capacity for resistive loads or incandescent lamps and 5A for inductive loads, fluorescent lamps or ferromagnetic transformers) and 4 digital inputs to connect to command devices fitted with output contacts with no voltage.

The OH/AO4010 module function can be fully programmed via the configuration software and it is possible to choose between manual method ("dimmer") and three different automatic functioning methods. For each output you can programme the parameters described in the following paragraphs.

Both the relay inputs and outputs are "local" and are, therefore, not available for other system functions. The relays can be used to disconnect the power supply to the loads piloted by the homologous analogical outputs (the relay 1 for analogical output 1, relay 2 for analogical output 2 etc.). The inputs can be used for manual command if automatic logics are used.

5.10.1 General Parameters

Description: is the symbolic name of the output. It corresponds with the label that will appear on the user's interface.

Cabling: is the symbolic name of the "space" that the output belongs to. It corresponds with the label that will appear on the user's interface.

Power on value: is the desired behaviour or the output when the power supply comes back on. You can choose a well determined value ("Enable") or insist that the value for the output goes back to the one it had prior to the power supply being cut off. (Last value; Enable; Default value: Last value).

Power on value (%): is the value that the output will acquire when the power supply comes back if, for behaviour, the "Ability" option has been selected. (0-100; Default value: 10).

5.10.2 Send Messages On the Bus

Status sending mode: is the method with which the output value is made available on the communication bus. (On range or time, On range and time, On time, On range; Default value: On range or time). See 4.8.2 for an explanation on the meaning of this parameter

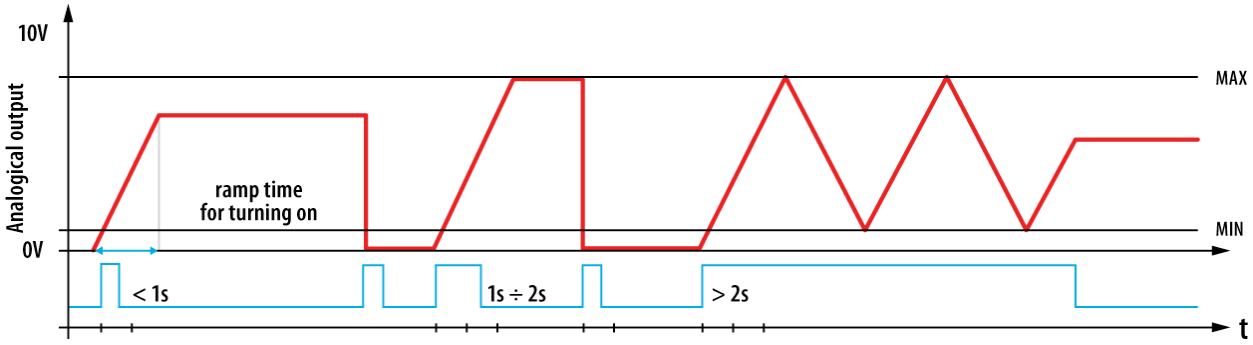
Delta %: Difference between the instant input value and the previous measured value.

Cycle sending time (min): Cyclical send period on the data bus read at the input.

5.10.3 "Dimmer" function logic

The manual function logic (or "Dimmer") allows you to regulate the output voltage on a normal push button.

- by pressing the push button for a period of time less than 1 second, the output is commanded "step by step" or changed, with each pressure on the push button, between the minimum value and the last stored value.
- by pressing the push button for a period of time greater than 1 seconds but less than 2 seconds, the output rises to the maximum value set
- by pressing the push button for a period of time greater than 2 seconds, the partialisation is varied (upwards and downwards) to allow you to select the desired value; on release, the selected value is maintained.



The following parameters can be programmed for this logic.

ON rise time (s): is the interval time needed to reach the operating value starting from the "Off" position (output = 0V)

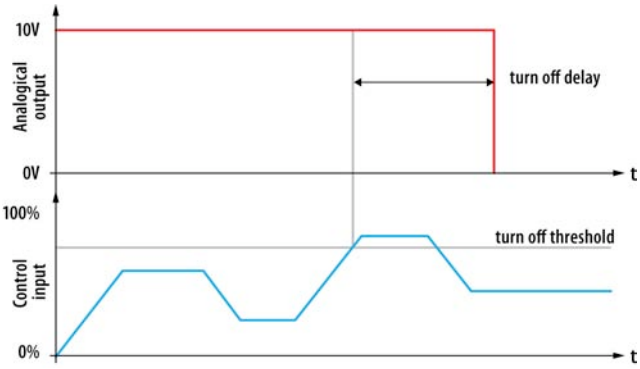
MIN (%): minimum output value during manual regulation with push button. (0-100; Default value: 1).

MAX (%): maximum output value during manual regulation with push button. (0-100; Default value: 100).

Activated by (1), (2), (3): are the symbolic names of the push buttons with which it is possible to manually control the output.

Auto off enabling: activates the automatic turn off function to reach the pre-set threshold of an analogical input.

Control input: is the analogical input used for automatic turn off.

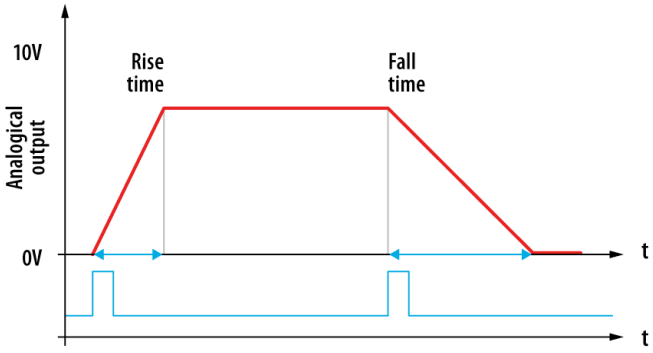


Off threshold (%): is the control input value that, if surpassed, causes automatic turn off. (0-100; Default value: 5).

Off delay (s): is the delay in seconds between the surpassing of the threshold and the actual turning off. If at any stage during the delay time the control input value falls back below the threshold, the turn off command will, in any case, by activated. (0-100; Default value: 0).

Soft ON Enable: activates the "soft on" function

Soft OFF Enable: activates the "soft off" function



Rise time (s): if the "soft on" function is activated, this is the interval time needed to reach the operating value starting from the "Off" position (partialisation = 0%) (0-30; Default value: 0).

Fall time (s): if the "soft off" function is activated, this is the interval time needed to to move to the "Off" position (partialisation = 0%). (0-30; Default value: 0).

In the case of Soft ON activation, this function prevails on the previously described "ON rise Time".

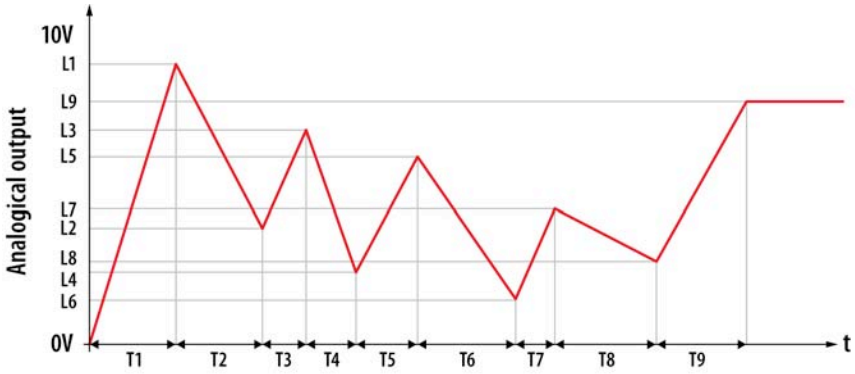
"Wave mode": if activated, this function allows you to reach the value of operating partialisation, moving through various values and allowing for the creation of original "scenic" effects.

Step Number: defines in how many "stages" the operating value will be reached.

For each "stage" you can decide:

Brightness level x (%): partialisation value for the pre-selected level:

Rise time x (s): is the time interval needed to reach the pre-set partialisation value for the level starting from the partialisation condition programmed for the previous level.



5.10.4 Automatic "Linear" function logic

This kind of automatic function estimates that the value of the output voltage is linear function of the trend of an analogical input (local or system). The scale factor (k) can be programmed.

The following parameters can be programmed for this logic.

Control input: is the analogical input used to control the output voltage.

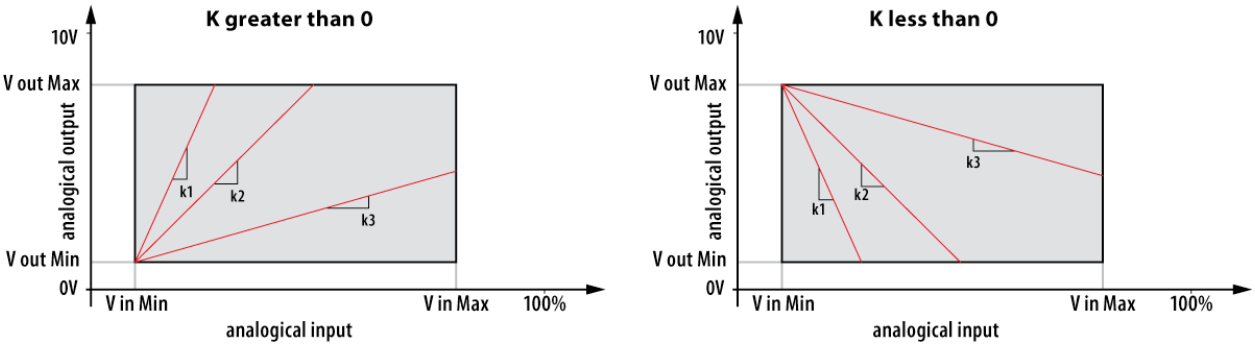
MIN Input Value (%): is the minimum value of the input to be taken into consideration. (0-100; Default value: 0).

MAX Input Value (%): is the maximum value of the input to be taken into consideration. (0-100; Default value: 100).

Output for MIN Input (%): is the value of the output voltage that corresponds with the minimum input value. (0-100; Default value: 0).

Output for MAX Input (%): is the value of the output voltage that corresponds with the maximum input value. (0-100; Default value: 100).

Scale factor: is the numerical coefficient that links the output voltage value to the control input value. (from -100 to 100; Default value: 1).



5.10.5 Automatic "Step" function logic

This kind of automatic function estimates that the output assumes values combined with "events" (max 8) given by the surpassing ("upwards and/or "downwards) of programmable thresholds of an analogical input (local or system) or by the activation of one or more digital inputs.

With analogical signal control the following parameters can be programmed.

Min output value (%): minimum value that can be assumed by the output. (0-100; Default value: 0).

Max output value (%): maximum value that can be assumed by the output. (0-100; Default value: 100).

Number of steps: number of "events" to be programmed. (0-8; Default value: 0).

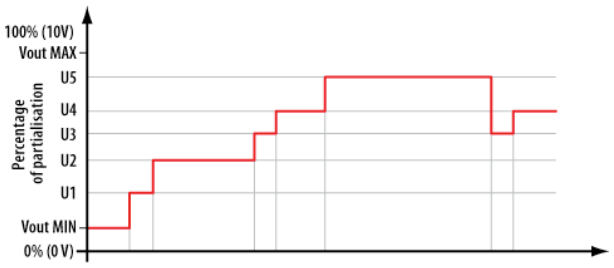
Control input: is the analogical input used for control.

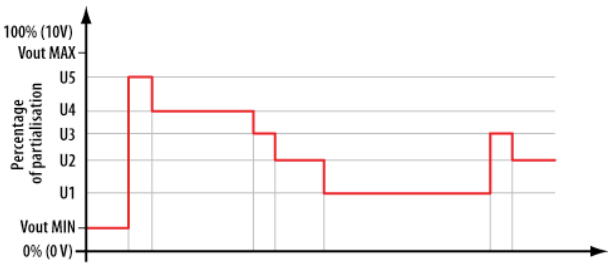
Event Output 1 (%): output value relative to the first "event" programmed for the control entrance. (0-100; Default value: 0).

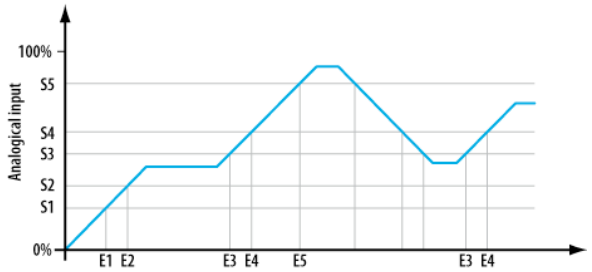
Event Output 2 (%): output value relative to the second "event" programmed for the control entrance. (0-100; Default value: 0).

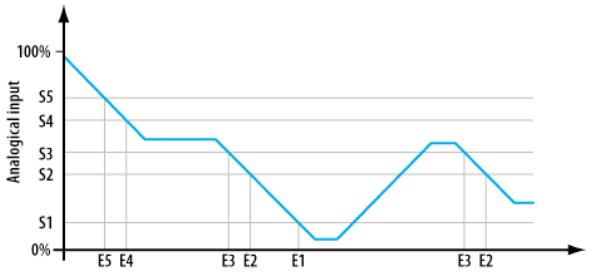
….

Event Output n (%): output value relative to the last "event" programmed for the control entrance. (0-100; Default value: 0).







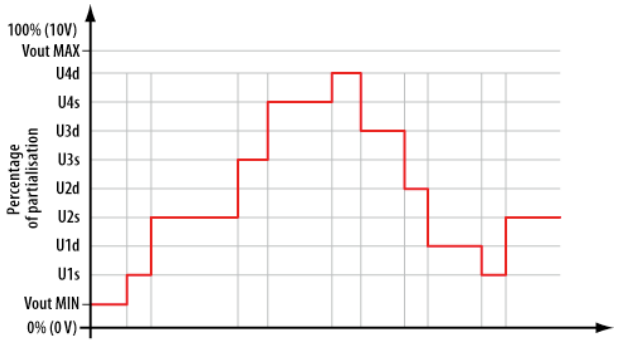


"Upward" threshold crossing

"Downward" threshold crossing

With digital input control the following parameters can be programmed.

Control input (*step mode)* 1: digital input whose activation brings the output to the value established by the parameter "Output 1 (%)".

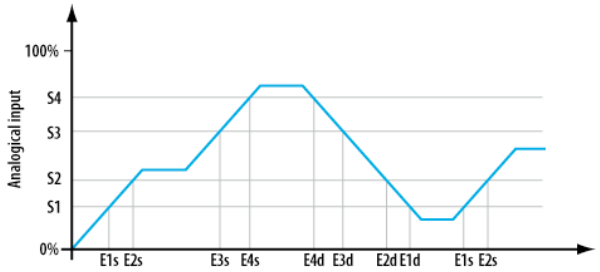


Output 1 (%): value to which the output is brought due to the activation of the first digital input. (0-100; Default value: 0).

Control input (*step mode) 2*: digital input whose activation brings the output to the value established by the "Output 2 (%)" parameter.

Output 2 (%): value to which the output is brought due to the activation of the second digital input. (0-100; Default value: 0).

…..

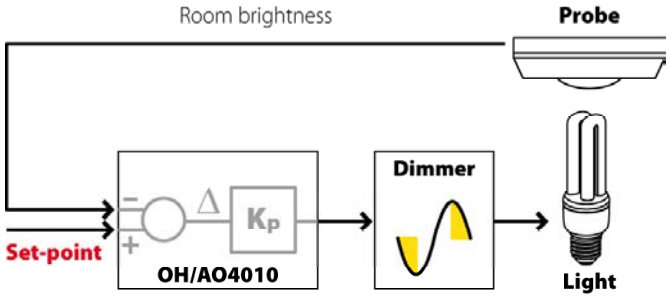


Control input (*step mode) n*: digital input whose activation brings the output to the value established by the "Output n (%)" parameter.

Output n (%): value to which the output is brought due to the activation of the last digital input considered. (0-100; Default value: 0).

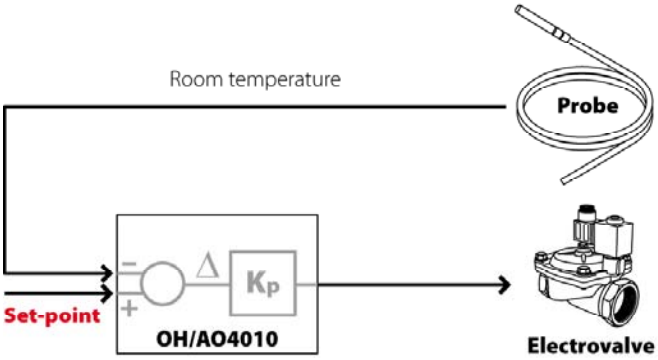
5.10.6 Automatic "Feedback" function logic

This kind of automatic function estimates that the output "follow" the set-point established (by configuration software, terminal or analogical input) to vary the measured value (directly or indirectly) of the variable that you wish to control.



E.g.: control of the brightness in the room.

The value of the dimmer command voltage depends on the difference between the desired internal brightness value and the value measured via the brightness sensor.



E.g.: temperature control in electricity systems.

The value of the temperature depends on the water load regulated by the proportional electrovalve: the greater the difference between the desired temperature and the one measured by the probe, the greater the water load will be.

Basically it is a suitable choice of the constant Kp of proportional regulation to have answers ready for the system of variations of the measured variable (that also obviously depends on factors that cannot be controlled by the system) while at the same time avoiding undesired control variations. We recommend you use negative values for Kp.

The following parameters can be programmed for this logic:

Min output value (%): minimum value that can be assumed by the output. (0-100; Default value: 0).

Max output value (%): minimum value that can be assumed by the output. (0-100; Default value: 100).

Control input: is the analogical input to measure the variables to be controlled.

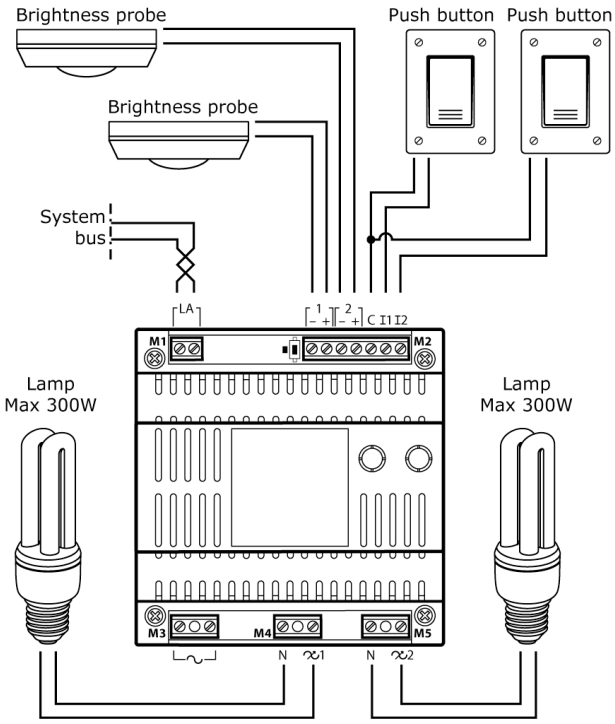
Input set-point: is the analogical input that provides the value that the output must "follow".

Set-point value: is the value that the output must "follow" (set by the software). (0-100; Default value: 50).

Proportional coefficient: is the control proportional constant that regulates the output trend according to the difference between the set-point value and the value measured by the control input. (0.01-100; Default value: 1).

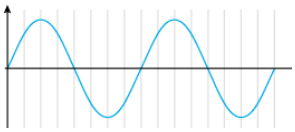
Follow hysteresis (%): is the "feedback error" that you tolerate in order to avoid variations in the output variable. (0-30; Default value: 5).

5.11 OH/DI2230 Dimmer module 2x300W

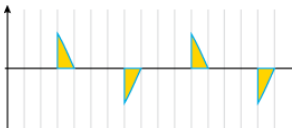


The OH/DI2230 is a device to be fitted on the DIN bar that allows you to command, with power supply voltage participation, 2 loads with a max power of 300W or a single load of 500W. Furthermore, it is fitted with 2 analogical inputs for sensors with 0-10V output and 2 digital inputs to connect push buttons for turning on, turning off and manually adjusting the partialisation.

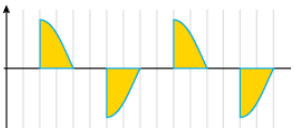
Each output of the OH/DI2230 can partialise the effective value of the voltage with which it supplies the load connected to it, in a more or less continuous fashion between 0 and 100%.



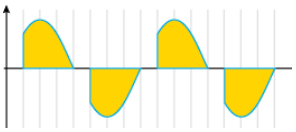
power supply voltage



voltage supplied to the load with partialisation at 25%.



voltage supplied to the load with partialisation at 50%.



voltage supplied to the load with partialisation at 75%.

The OH/DI2230 module is compatible with different kinds of lamps and can automatically recognise the kind of load connected to it. The connectable lamps can be of the following kinds: incandescent, 230V halogen, low voltage halogen, low voltage halogen with winding transformer, low voltage halogen that can be dimmed, low voltage halogen with low voltage electronic transformers.

The OH/DI2230 module function can be fully programmed via the configuration software and it is possible to choose between manual method ("dimmer") and three different automatic functioning methods. For each output you can programme the parameters described in the following paragraphs.

5.11.1 General Parameters

Description: is the symbolic name of the output. It corresponds with the label that will appear on the user's interface.

Cabling: is the symbolic name of the "space" that the output belongs to. It corresponds with the label that will appear on the user's interface.

Power on value: is the desired behaviour or the output when the power supply comes back on. You can choose a well determined partialisation value ("Enable") or insist that the partialisation value for the output goes back to the one it had prior to the power supply being cut off. (Last value; Enable; Default value: Last value).

Power on value (%): is the value that the partialisation will acquire when the power supply comes back if, for behaviour, the "Enable" option has been selected. (0-100; Default value: 10).

Load Type: indicates the kind of load connected to the output. (Default value: automatic recognition).

5.11.2 Send Messages On the Bus

Status Sending mode: is the method with which the output value is made available on the communication bus. (On range or time, On range and time, On time, On range,; Default value: On range or time). See 4.8.2 for an explanation on the meaning of this parameter

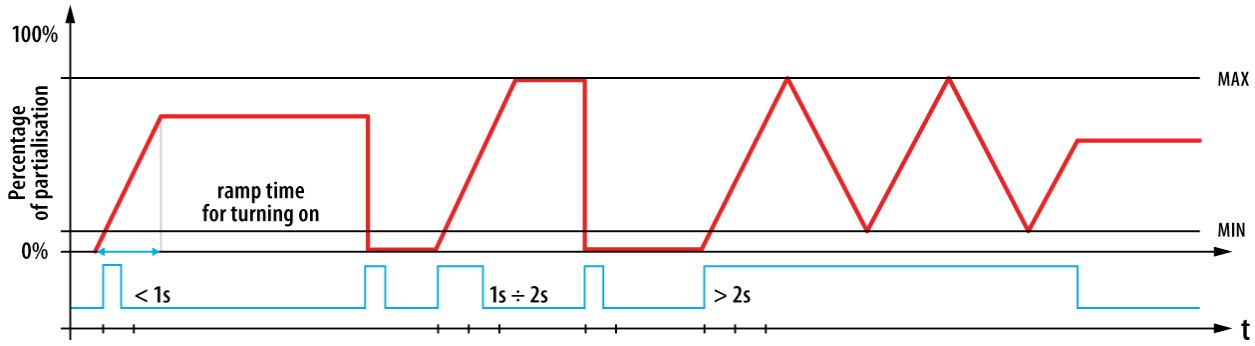
Delta %: Difference between the instant input value and the previous measured value.

Cycle sending time (min): Cyclical sending period on the data bus read at the input.

5.11.3 "Dimmer" function logic

The manual function logic (or "Dimmer") allows you to regulate the load voltage by pressing a normal push button.

- by pressing the push button for less than 1 second, the load is commanded "step by step" (each time you press the push button you move from on to off or vice versa) and each time you turn it on, the partialisation assumes the last stored value.
- by pressing the push button for more than 1 second but less than 2 seconds, the load is piloted with the maximum partialisation value to the maximum set value.
- by pressing the push button for a period of time greater than 2 seconds, the partialisation is varied (upwards and downwards) to allow you to select the desired value; on release, the selected value is maintained.



The following parameters can be programmed for this logic.

ON rise time (s): is the interval time needed to reach the operating value starting from the "Off" position (partialisation = 0%)

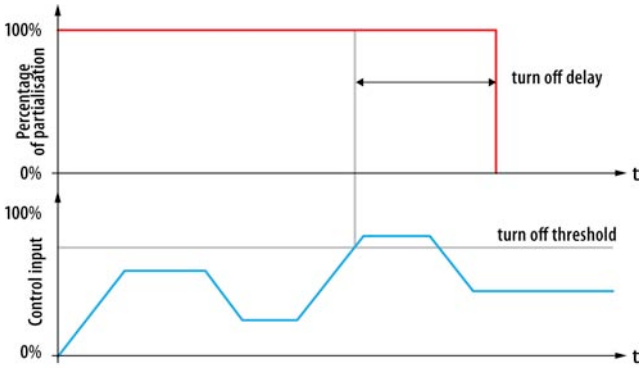
MIN (%): minimum partialisation during the manual adjustment with push button. (0-100; Default value: 1).

MAX (%): maximum partialisation during the manual adjustment with push button. (0-100; Default value: 100).

Activated by (1), (2), (3): are the symbolic names of the push buttons with which it is possible to manually control the output.

Auto off Enabling: activates the automatic turn off function to reach the pre-set threshold of an analogical input.

Control input: is the analogical input used for automatic turn off.

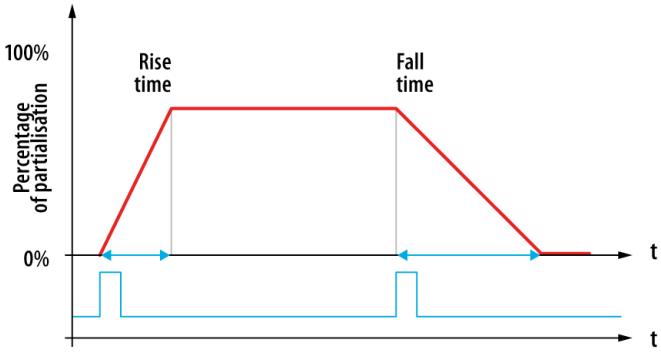


Off threshold (%): is the control input value that, if surpassed, causes automatic turn off. (0-100; Default value: 5).

Off delay (s): is the delay in seconds between the surpassing of the threshold and the actual turning off. If at any stage during the delay time the control input value falls back below the threshold, the turn off command will, in any case, by activated. (0-100; Default value: 0).

Soft ON Enable: activates the "soft on" function

Soft OFF Enable: activates the "soft off" function



Rise time (s): if the "soft on" function is activated, this is the interval time needed to reach the operating value starting from the "Off" position (partialisation = 0%) (0-30; Default value: 0).

Fall time (s): if the "soft off" function is activated, this is the interval time needed to move to the "Off" position (partialisation = 0%). (0-30; Default value: 0).

In the case of Soft ON activation, this function prevails on the previously described *ON rise time*.

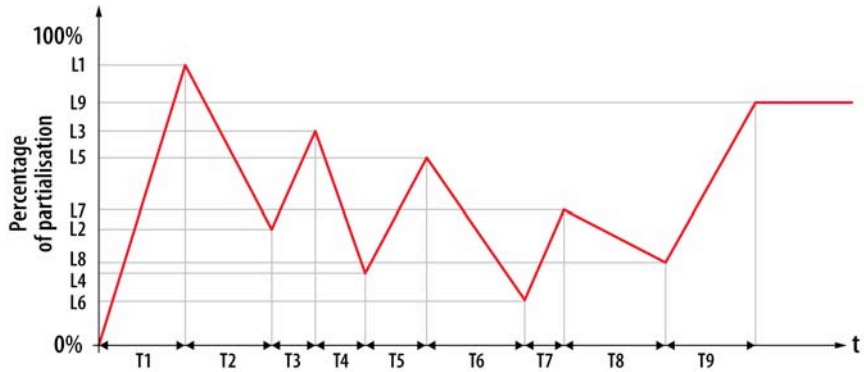
Wave mode Enable: if activated, this function allows you to reach the value of operating partialisation, moving through various values and allowing for the creation of original "scenic" effects.

Step Number: defines in how many "stages" the operating value will be reached.

For each "stage" you can decide:

Brightness level x (%): partialisation value for the pre-selected level:

Rise time x (s): is the time interval needed to reach the pre-set partialisation value for the level starting from the partialisation condition programmed for the previous level.



5.11.4 Automatic "Linear" function logic

This kind of automatic function estimates that the partialisation percentage is linear function of the trend of an analogical input (local or system). The scale factor (k) can be programmed.

The following parameters can be programmed for this logic.

Control input: is the analogical input used to control the partialisation of the output voltage.

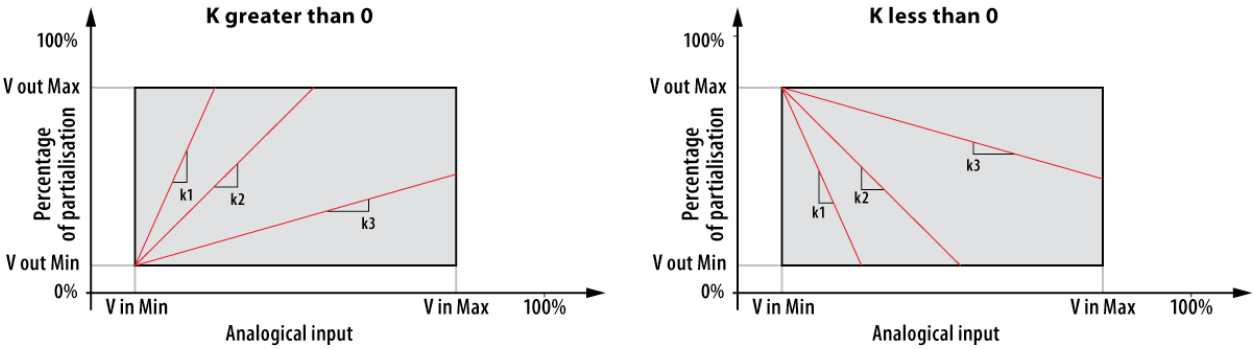
MIN Input Value (%): is the minimum value of the input to be taken into consideration. (0-100; Default value: 0).

MAX Input Value (%): is the maximum value of the input to be taken into consideration. (0-100; Default value: 100).

Output for MIN Input (%): is the value of the output voltage partialisation that corresponds with the minimum input value. (0-100; Default value: 0).

Output for MAX Input (%): is the value of the output voltage partialisation that corresponds with the maximum input value. (0-100; Default value: 100).

Scale factor: is the numerical coefficient that links the output voltage partialisation to the control input value. (from -100 to 100; Default value: 1).



5.11.5 Automatic "Step" function logic

This kind of automatic function estimates that the output assumes values combined with "events" (max 8) given by the surpassing ("upwards and/or "downwards) of programmable thresholds of an analogical input (local or system) or by the activation of one or more digital inputs.

With analogical signal control the following parameters can be programmed.

Min output value (%): minimum value that can be assumed by the output. (0-100; Default value: 0).

Max output value (%): maximum value that can be assumed by the output. (0-100; Default value: 100).

Number of steps: number of "events" to be programmed. (0-8; Default value: 0).

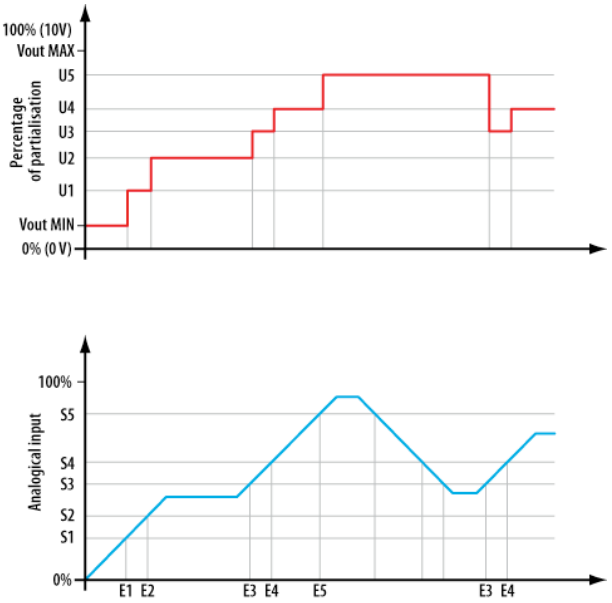
Control input: is the analogical input used for control.

Event Output 1 (%): output value relative to the first programmed "event". (0-100; Default value: 0).

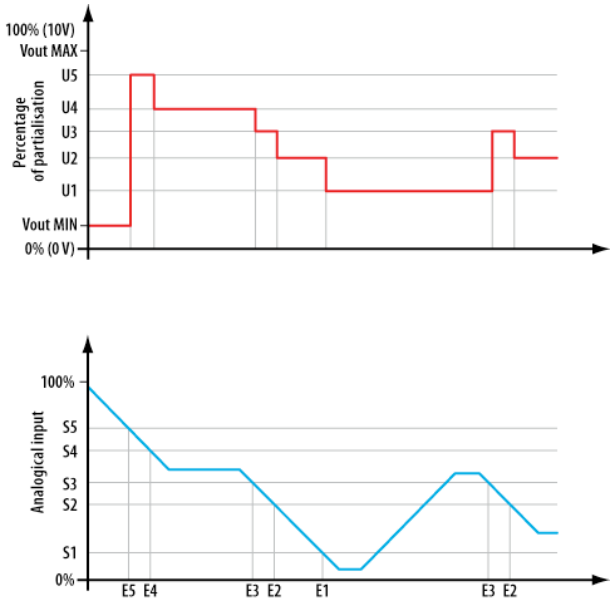
Event Output 2 (%): output value relative to the second programmed "event". (0-100; Default value: 0).

….

Event Output n (%): output value relative to the last programmed "event". (0-100; Default value: 0).



"Upward" threshold crossing



"Downward" threshold crossing

With digital input control the following parameters can be programmed.

Control input (*step mode)* 1: digital input whose activation brings the output to the value established by the "Output 1 (%)" parameter.

Output 1 (%): value to which the output is brought due to the activation of the first digital input. (0-100; Default value: 0).

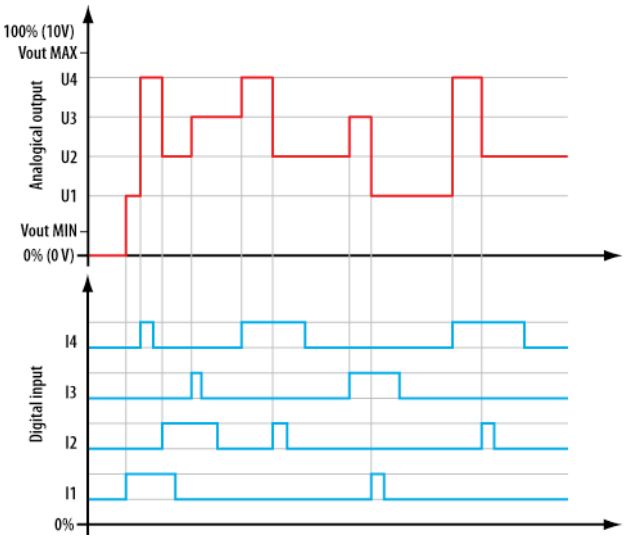
Control input (*step mode) 2*: digital input whose activation brings the output to the value established by the "Output 2 (%)" parameter.

Output 2 (%): value to which the output is brought due to the activation of the second digital input. (0-100; Default value: 0).

…..

Control input (*step mode) n*: digital input whose activation brings the output to the value established by the "Output n (%)" parameter.

Output n (%): value to which the output is brought due to the activation of the last digital input considered. (0-100; Default value: 0).

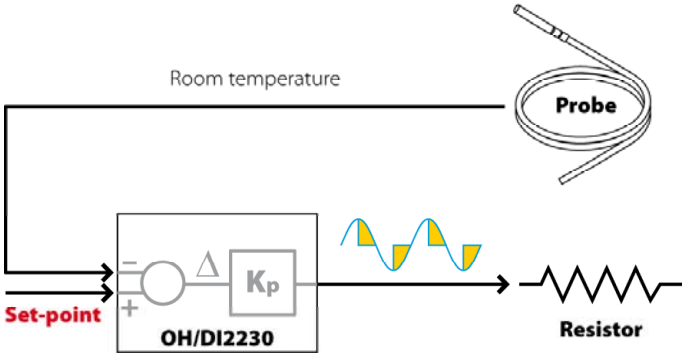


5.11.6 Automatic "Feedback" function logic

This kind of automatic function estimates that the output "follow" the set-point established (by configuration software, terminal or analogical input) to vary the measured value (directly or indirectly) of the variable that you wish to control.

E.g.: control of the brightness in the room.

The value of the voltage partialisation supplied to the lamp depends on the difference between the desired internal brightness value and the value measured via the brightness sensor.



E.g.: temperature control in electricity systems.

The value of the temperature depends on the electric power dispelled by the resistor: the greater the difference between the desired temperature and the one measured by the probe, the greater the partialisation value of the voltage supplied to the heating resistor will be.

Basically, it is a suitable choice of the constant Kp of proportional regulation to have answers ready for the system of variations of the measured variable (that also obviously depends on factors that cannot be controlled by the system) while at the same time avoiding undesired control variations. We recommend you use negative values for Kp.

The following parameters can be programmed for this logic

Min output value (%): minimum value that can be assumed by the output. (0-100; Default value: 0).

Max output value (%): minimum value that can be assumed by the output. (0-100; Default value: 100).

Control input: is the analogical input to measure the variables to be controlled.

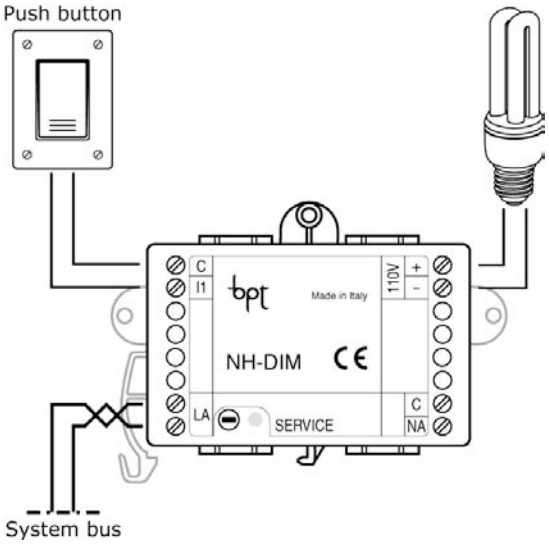
Input setpoint: is the analogical input that provides the value that the output must "follow".

Setpoint value: is the value that the output must "follow" (set by the software). (0-100; Default value: 50).

Proportional coefficient: is the control proportional constant that regulates the output trend according to the difference between the set-point value and the value measured by the control input. (0.01-100; Default value: 1).

Follow hysteresis (%): is the "feedback error" that you tolerate in order to avoid variations in the output variable. (0-30; Default value: 5).

5.12 NH-DIM 1 Analogical output module



The NH-DIM is a device to be fitted on the DIN bar supplied with one 1÷10V output with which it is possible to command devices to control lights etc..
Furthermore, it is also fitted with 1 relay output (16A capacity for resistive loads or incandescent lamps and 5A for inductive loads, fluorescent lamps or ferromagnetic transformers) and 1 digital input to connect to command devices fitted with output contacts with no voltage.

The functioning of the NH-DIM module can be fully configured using the software configuration. For the output you can programme the parameters described in the following paragraphs.

5.12.1 General Parameters

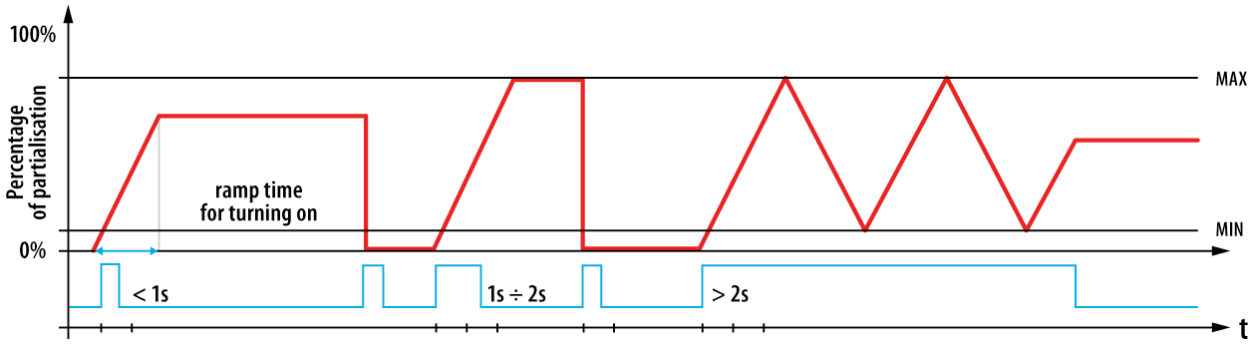
Description: is the symbolic name of the output. It corresponds with the label that will appear on the user's interface.

Cabling: is the symbolic name of the "space" that the output belongs to. It corresponds with the label that will appear on the user's interface.

5.12.3 "Dimmer" function logic

The manual function logic (or "Dimmer") allows you to regulate the output voltage with a normal push button:

- by pressing the push button for a period of time less than 1 second, the output is commanded "step by step" or changed, with each pressure on the push button, between the minimum value and the last stored value.
- by pressing the push button for a period of time greater than 1 seconds but less than 2 seconds, the output rises to the maximum value set
- by pressing the push button for a period of time greater than 2 seconds, the partialisation is varied (upwards and downwards) to allow you to select the desired value; on release, the selected value is maintained.



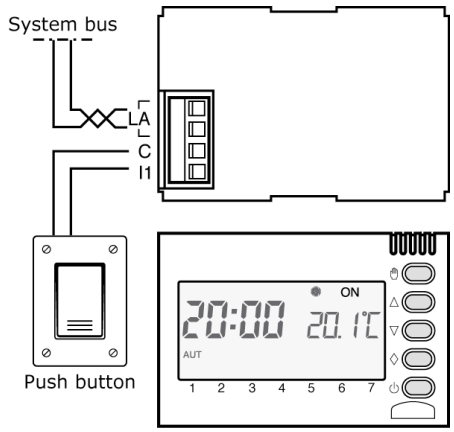
The following parameters can be programmed for this logic.

Activated by (1-7): are the symbolic names of the secondary system push buttons with which it is possible to manually control the output.

Time to brightness (s): is the interval time needed to reach the operating value starting from the "Off" position (output = 0V) (0-10; Default value: 5).

Brightness: represents the brightness percentage on turning on the lights (10-100%; Default value: 50).

5.13 OH/Z.02 Flush heat zone control module



The OHZ.02 is a control module for the thermal zones with integrated temperature probe capable of taking temperatures between 0-35°C. It is available in 3 colours (grey, white, silver) and is suitable for flush installation.

It is also fitted with 1 digital input known as I1 freely combinable within the system. Lastly, the module is fitted with LCD display with display of time, measured room temperature and thermal zone status. Via this module it is possible to locally change the temperature set-point manually, change between the AUTO, MANUAL, OFF function modes and change the status of the zone between summer and winter

5.13.1 General Parameters

Description: Is the symbolic name of the thermal zone. It corresponds with the label that will appear on the user's interface.

S/N or Id code: is the module's unambiguous serial number (SN number). It corresponds with the number found on the sticky label on the module.

Input I1: Input freely combinable with a digital part on the system (push buttons, sensors, crepusculars, window contact sensors,...)

5.13.2 Thermal Regulation Parameters

Heating valve command on: in the case of heating system control, select the hydraulic electrovalve combined with the thermal zone. (N.B.: it is essential to have already configured the value inside the system in order to combine it with the thermal zone.)

Heating pump command on: in the case of heating system control, select the pump combined with the thermal zone. (N.B.: it is essential to have already configured the pump inside the system in order to combine it with the thermal zone.)

Heating Type: Select the kind of thermal zone to be controlled. Depending on the kind of system selected, change the default thermal differential. (Fan, Electric, Radiator, Floor, Default value: Radiator)

Cooling valve command on: in the case of cooling system control, select the hydraulic electrovalve combined with the thermal zone. (N.B.: it is essential to have already configured the value inside the system in order to combine it with the thermal zone.)

Cooling pump command on: in the case of cooling system control, select the pump combined with the thermal zone. (N.B.: it is essential to have already configured the pump inside the system in order to combine it with the thermal zone.)

Status change contact: an optional contact that allows for the forced change between the thermal zone control methods. It is possible to combine any system digital input.

Status set by the contact: the previous selected contact forces the status of the thermal zone in one of the possible control methods. (Auto, Jolly, Holiday, OFF, Manual; Default value: Auto)

Auto: The module will automatically control the valve and zone pump to follow a daily/weekly temperature profile set on the terminal or resident default profile on the controller module of the thermal zone.

Jolly: The module will automatically control the valve and zone pump to follow a Jolly temperature profile set on the terminal. (where present).

Holiday: The module will automatically control the valve and zone pump to follow a Holiday temperature profile set on the terminal. (where present).

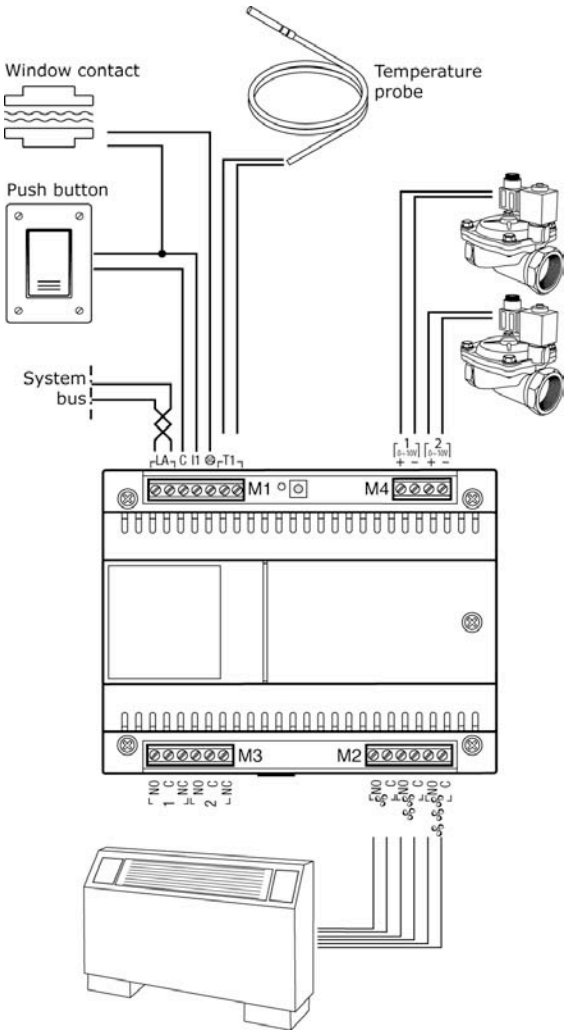
OFF: The zone will be initialised in stand-by mode and will stay in the rest position until the first request arrives from the system.

Manual: the module will control the valve and pump to reach the temperature that will be enforced in the following parameter.

Manual temperature °C: indicates the temperature desired in the combined thermal zone if the "Manual mode" has been selected in the previous parameter. (5.0-32.0; Default value: 18).

Season Change Contact: is an optional contact that allows for the forced change between summer and winter. It is possible to combine any system digital input. (Default value: none).

5.14 OH/FANEVO Complete fan-coil control module



The OH/FANEVO is a device to be fitted on the DIN bar to control a thermal zone managed by a 3-speed fan-coil unit where there is a need to control not only the fan speed, but also that of the electrovalves that regulate the flow of hot and cold water to the individual units.
It is fitted with 3 relay outputs (16A capacity for resistive loads and 5A for inductive loads) for the direct control of the fan speeds on the fan-coil unit and 2 alternative outputs for the command of the eletrovalves. If the electrovalves are proportionally controlled, they should be connected to the two 0÷10V outputs, if these foresee the On/Off control they should be connected to the two correlated relay outputs (5A capacity for resistive loads and 2A for inductive loads). It is, therefore, possible to connect a single kind of electrovalve for each output: for example, if you connect a proportional valve to the 0-10V n°1 output, the n°1 relay output cannot be used.

Furthermore, it is also fitted with two digital inputs known as I1 and STOP. The I1 input allows for a change in the fan speed (or to reset in automatic mode), that is, it moves in a cyclical way to speed 1, 2 and 3 and lastly the automatic mode.
At the STOP input it is, on the other hand, possible to connect a magnetic contact for windows that if activated stops the fan-coil from functioning.

Lastly, the OH/FANEVO is fitted with an input for PT1000 or NTC 10K beta 3977 feed temperature probe via which it is possible to stop the electrovalves from opening: if, for example, the probe shows that the water in the feed pipe is cold it will not allow the electrovalve to open if there is a heating request; likewise, if the feed pipe is hot, it will not allow the electrovalve to open if there is a heating request.
The OH/FANEVO module function can be fully programmed via the configuration software and for this you can programme the parameters described in the following paragraphs.

5.14.1 General Parameters

Description: is the symbolic name of the module that by default corresponds with the product code but which can be customised.

S/N or Id code: is the module's unambiguous serial number (SN number). It corresponds with the number found on the sticky label on the module.

Master Module: In thermal zones with several fan-coil units, it is possible to programme a module for each area as "Master": in this case, all the other "Slave" fan-coil units will follow the same functioning of the "Master" fan-coil unit.

Temperature source: is the temperature sensor associated with the thermal zone that the module is part of. In this field, it is necessary to indicate which OH/Z.02 module or which temperature probe connected to an OH/MT2 module should be used in the thermal zone that the fan-coil unit belongs to.

Speed number: This parameter allows you to select the fan speed number of the fan-coil unit connected to the module (1-3; Default speed: 3).

Power ON mode: represents the control method for the thermal zone each time the system is started up again after a power cut. (Auto, OFF, Manual; Default mode: OFF).

- √ Auto: the module moves into automatic control of the fan-coil unit following the daily/weekly temperature profile set on the terminal or the default profile found in the thermal zone controller modules
- √ OFF: the module moves into stand-by and will keep the unit in the rest position until the system makes its first request:
- √ Manual: the module moves into manual control of the fan-coil unit to reach the temperature that will be set in the following parameter.

Temperature set: indicates the temperature desired in the combined thermal zone if the "Manual" mode has been selected in the previous parameter. (1.0-60.0; Default value: 24).

Function mode: this parameter indicates the control method of the fan-coil unit, distinguishing use just for heating, just for cooling or for both functions depending on the temperature taken. (Summer, Winter, Auto, Off; Default mode: Winter).

- √ Summer: unit just for cooling
- √ Winter: unit just for heating
- √ Auto: unit both for cooling and heating
- √ Off: unit in stand-by.

5.14.2 Activations

Local door contact type: indicates, if present, the kind of door contact connected to the input dedicated to the module. (No Contact, Contact NO, Contact NC; Default value: Contact NO).

Door contact function: indicates the kind of action resulting from the activation of the door contact (Forced On, Forced OFF, No Action; Default action: Forced ON).

Speed (manual): indicates the fan-coil unit's fan speed if the local window contact is set with "Forced ON" action (1-3; Default speed: 1).

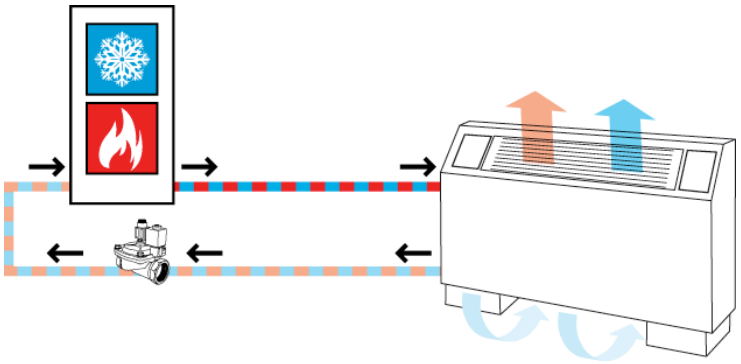
Delay (s): indicates the delay between the activation of the window contact and the sending of the relative alarm message. (1-255; Default value: 2)

Remote door contact: indicates, if present, a door contact connected to a system input module.

Remote door contact type: indicates, if previously selected, the kind of remote window contact. (Normally Open (NO), Normally Closed (NC); Default value: Normally Open (NO)).

Heating type: indicates the kind of system controlled by the device. It is possible to choose between 2 and 4 pipe systems, with ON/OFF regulation or analogical, with or without a probe on the primary water feed pipe. List of selectionable types (Default value: Not Configured):

- Not Configured
- 2 tubes system with T probe - 1 ON/OFF Valve
- 2 tubes system without T probe - 1 ON/OFF Valve
- 2 tubes system with T probe - 1 analogical Valve
- 2 tubes system without T probe - 1 analogical Valve
- 4 tubes system with 2 ON/OFF valves
- 4 tubes system with 2 remote ON/OFF valves
- 4 tubes system with 2 Analogical valves



2 Pipe systems:

2 pipe fan-coil unit; single cold and hot circuit; option of controlling just hot, just cold, or hot-cold on the system, according to the season

ON/OFF valve with probe:

Systems with single valve for hot and/or cold with ON/OFF control and temperature probe on the primary feed with activation function.

ON/OFF valve without probe:

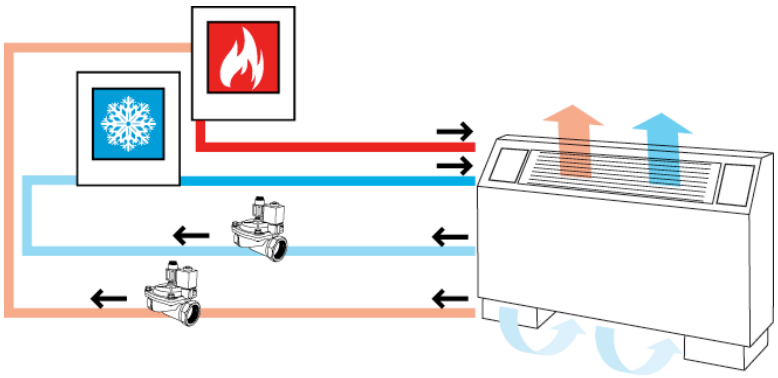
Systems with single valve for hot and/or cold with ON/OFF control and no temperature probe on the primary feed with activation function.

Analogical valve with probe:

Systems with single valve for hot and/or cold with 0-10V control and temperature probe on the primary feed with activation function.

Analogical Valve without probe:

Systems with single valve for hot and/or cold with 0-10V control and no temperature probe on the primary feed with activation function.



4 Pipe systems

4 pipe fan-coil unit; separate cold and hot circuits; option of controlling just hot, just cold, or hot-cold on the system

2 local ON/OFF valves:

Systems with separate hot and cold valves with ON/OFF control connected directly to the module's relay outputs.

2 remote ON/OFF valves:

Systems with separate hot and cold valves with ON/OFF control connected to another system device with relay outputs.

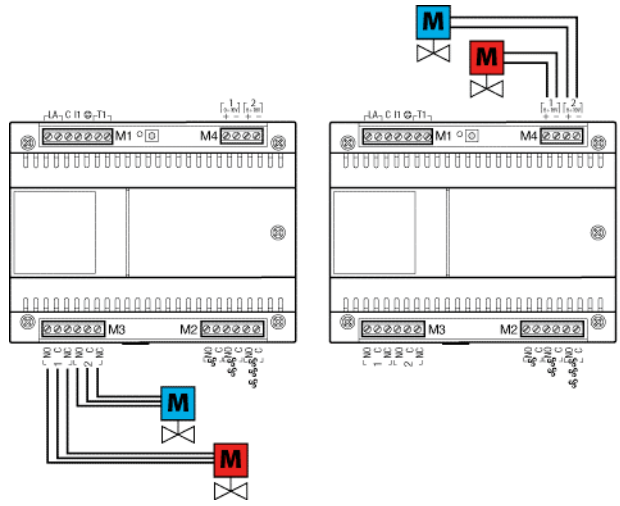
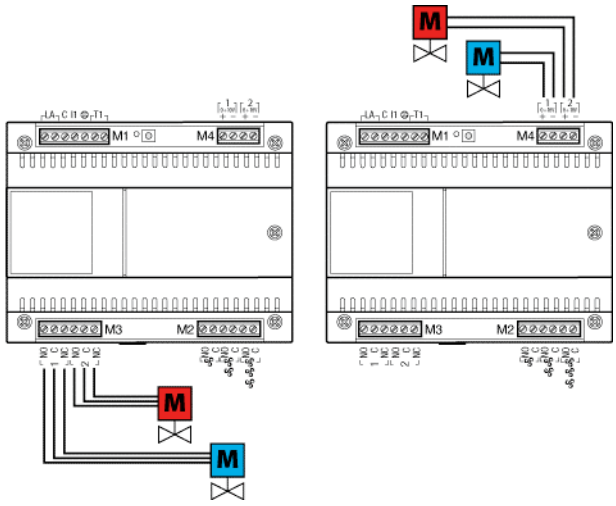
Local analogical valves:

Systems with separate hot and cold valves with 0-10 V analogical control connected directly to the module's 0-10V outputs.

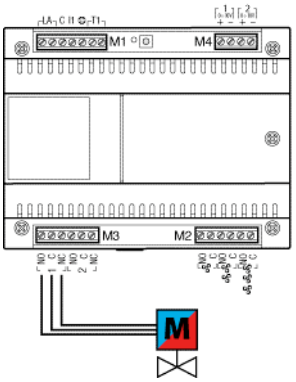
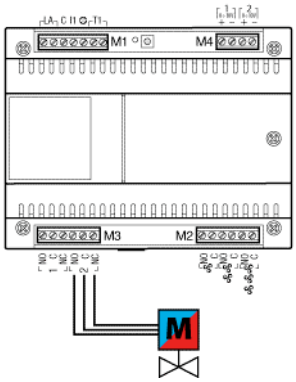
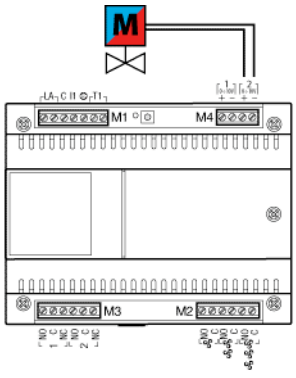
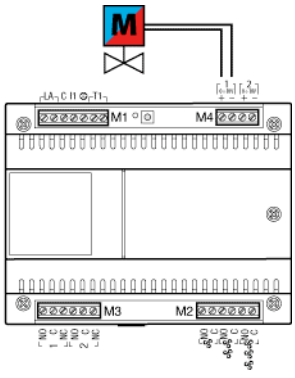
Control valves: indicates the kind and position of hydraulic valve cabling connected to the module. List of selectionable choices (Default value: Not Configured):

Not Configured
4 tubes system (Hot Valve 1 and Cold Valve 2)
4 tubes system (Cold Valve 1 and Hot Valve 2)
2 tubes system on ON-OFF valve 1 (hot-cold on valve 1)
2 tubes system on ON-OFF valve 2 (hot-cold on valve 2)
2 tubes system on Analogic valve 1 (hot-cold on valve 1)
2 tubes system on Analogic valve 2 (hot-cold on valve 2)

4 pipes - Valve 1 and Valve 2 connected to the module

the valve that regulates the hot water flow to the unit is positioned at output 1 the valve that regulates the cold water flow to the unit is positioned at output 2	the valve that regulates the cold water flow to the unit is positioned at output 1 the valve that regulates the hot water flow to the unit is positioned at output 2
	

2 pipes - Hot valve - connected to the module

Single valve with ON/OFF control		Single valve with proportional control	
valve connected to the relay output with exchange contact 1	valve connected to the relay output with exchange contact 2	proportional valve connected to 0-10 1st output	proportional valve connected to 0-10 2nd output
			

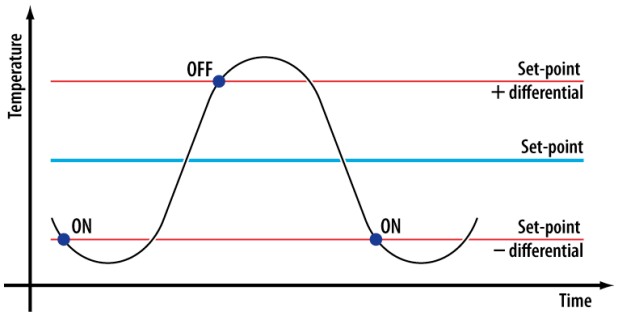
Program setting: indicates the level of preferred programming settings to be adopted. In the minimum mode, it is not possible to set the thermal regulation parameters that maintain the default values; in advanced mode, all the regulation parameters shown below can be set out in detail. (Minimum, Advanced; Default value: Minimum).

Minimum ON time (s): indicates the minimum turning on time of the fan before giving the "OFF" command. (2-255; Default value: 10).

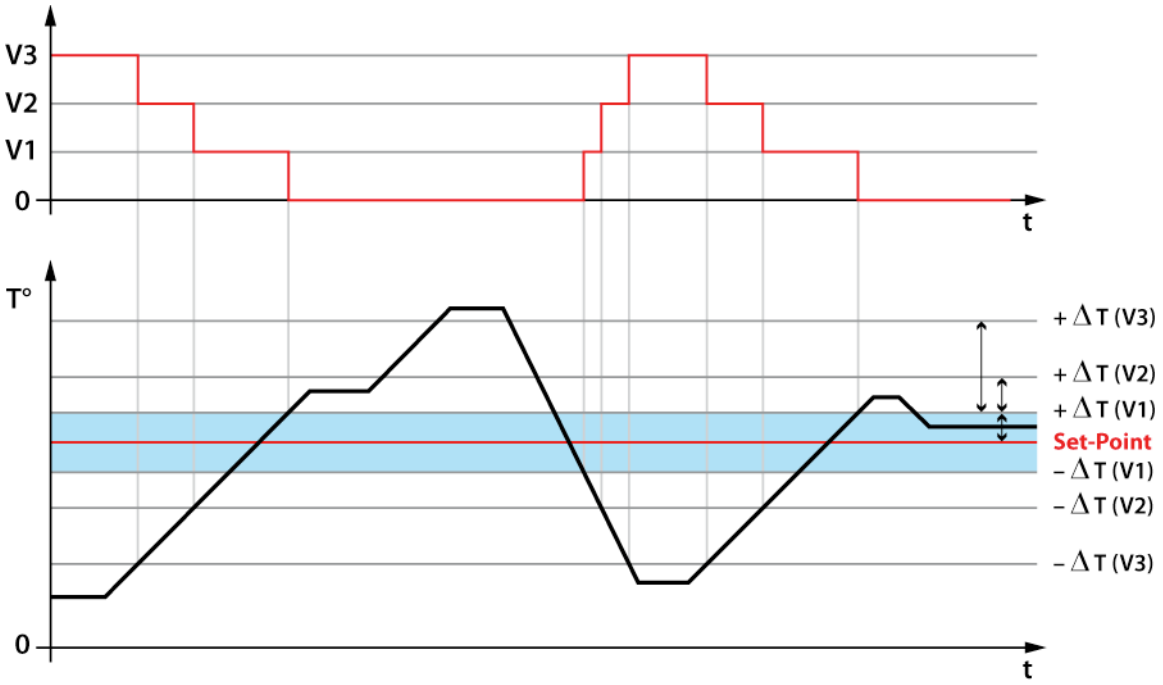
5.14.3 Control logic with Temperature Differential

The temperature differential allows for a simple, effective on/off regulation of the boiler depending on the set value.

The boiler is turned on when the room temperature (taken by the probe) falls below the set-point value reduced by the set differential.
The boiler is turned off when the room temperature (taken by the probe) rises above the set-point value increased by the set differential.



The logic with differential foresees that the turning on/off and changing between the fan-coil unit speeds occur according to the difference between the room temperature (taken by the probe) and the temperature set-point to be reached.



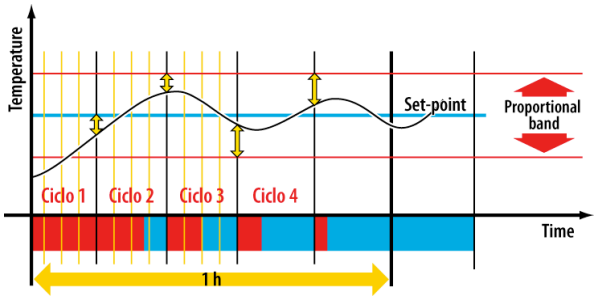
Thermic Differential (°C or °F): difference in temperature around the set-point that turns the fan-coil unit on or off at speed 1 (0.0-1.0; Default value: 0,2).

Thermic Differential Delta for speed 2: difference in temperature beyond the thermal differential that causes the speed of the fan-coil unit to change from 1 to 2 (1.0-3.0; Default value: 1,5).

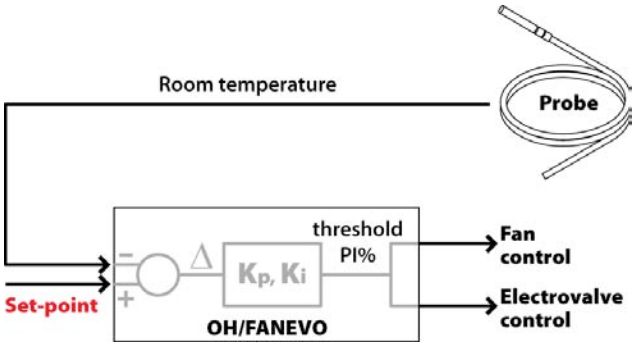
Thermic Differential Delta for speed 3: difference in temperature beyond the thermal differential that causes the speed of the fan-coil unit to change from 2-3. (2.0-4.0; Default value: 2,0).

5.14.4 Control logic with Proportional/Integral algorithm

The Proportional/Integral control regulates the turning on and off cycles of the boiler according to the difference between the room temperature (taken by the probe) and the temperature set-point to be reached: the more this difference decreases, the more the turning on cycles reduce.



The PI Threshold (expressed in percentage) is the function of the Kp and Ki coefficients of the proportional/integral algorithm and the difference between set-point and room temperature. This is used to control the valves and fan speed on the fan-coil unit



PI threshold speed 1 (%): percentage value exiting the control algorithm for which the fan moves from speed 1 (0-100; Default value: 10).

PI threshold speed 2 (%): percentage value exiting the control algorithm for which the fan moves from speed 2 (0-100; Default value: 30).

PI threshold speed 3 (%): percentage value exiting the control algorithm for which the fan moves from speed 3 (0-100; Default value: 60).

PI Parameters: are the two regulation constants of the PI control algorithm.
It is possible to select three predefined control profiles or manually type in the values of the two Kp coefficients (proportional part) and 1/Ki (integral part). (Small Room, Average Room, Large Room, Custom; Default value: Average Room)

Small	Medium	Large	Custom
Kp = 3	Kp = 3	Kp = 3	Kp = 1-10 (default: 3)
1/Ki = 16	1/Ki = 25	1/Ki = 33	1/Ki = 10-40 (default: 16)

5.14.5 Common advanced parameters

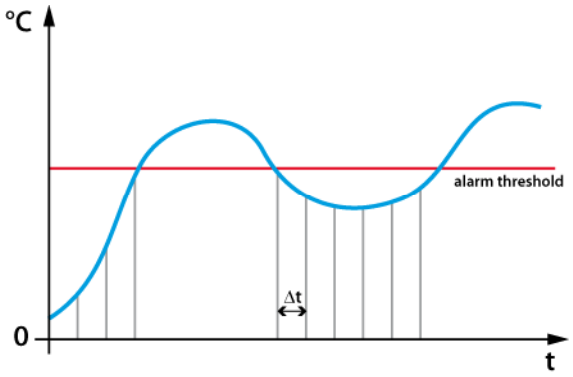
Frost threshold (°C or °F): temperature that indicates the risk of the thermal system freezing; a threshold surpassing signal is created that can be used by the system to come to its aid. (2.0-10.0; Default value: 7).

Overheating threshold (°C or °F): temperature that indicates the risk of the thermal system overheating; a threshold surpassing signal is created that can be used by the system to come to its aid. (5.0-40.0; Default value: 35).

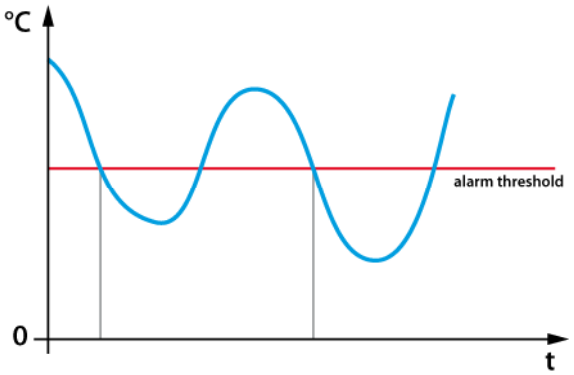
Antifreeze alarm (°C or °F): temperature that shows the real danger of thermal system freezing; an alarm displayed on the terminals or that can be sent via controller is given that allows for fast aid intervention. (2.0-10.0; Default value: 5).

Sending data period (s): indicates the cycle sending time of the functioning parameter status of the module if there are no changes in them. (1-65536; Default value: 60).

Antifreeze alarm sending mode: is the method with which the alarm message is made available on the communication bus. (Cyclic, One Time; Default value: Cyclic).



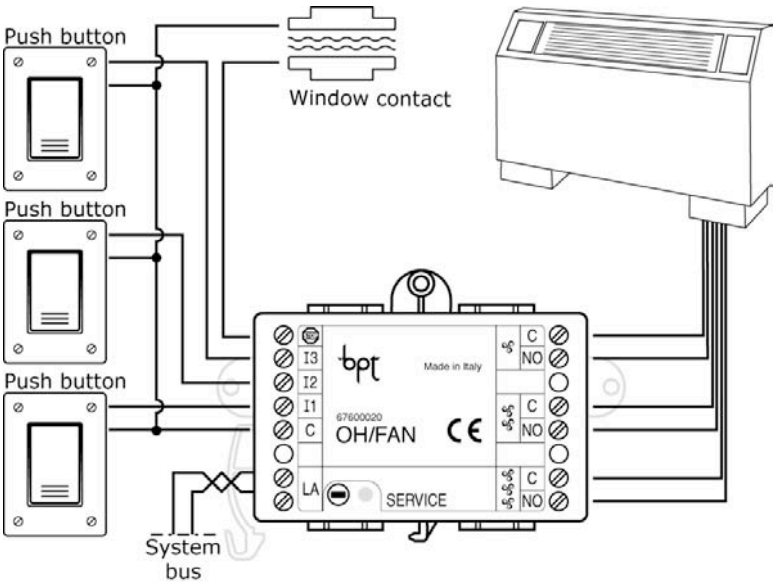
Cyclic: Throughout the entire period for which the alarm is on, a message is sent cyclically on the bus with a repetition time that can be set.



One Time: each time the alarm threshold is surpassed, a message is sent on the bus.

Activation time (min): is the time span between sending one alarm message and another. (3-255; Default value: 5).

5.15 OH/FAN Fan-coil base control module



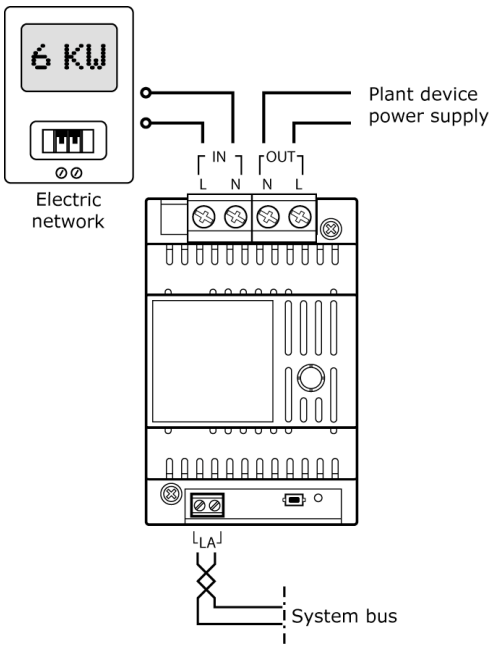
The OH/FAN is a device to be fitted onto the DIN bar or flush mounted on the 3 module block fitted with 3 relay outputs (16A capacity for resistive loads and 5A for inductive loads) to control the fan speed on a fan-coil unit.
It is also fitted with 4 digital inputs known as I1, I2, I3 and STOP.

The closure (or opening if configured like this) of the I1÷I3 inputs allows for the activation of the corresponding outputs that regulate the fan speed. They are local inputs that are not freely combined within the system and are, therefore, not visible at the programming stage irrespective of the module itself.
At the STOP input it is, on the other hand, possible to connect a magnetic contact for windows that if activated stops the fan-coil from functioning.

The functioning of the OH/FAN module can be fully programmed using the software configuration.

The same parameters described in the previous paragraph relating to the OH/FANEVO module can be programmed for this with the exception of *Heating type* and *Control Valves* unavailable for the OH/FAN.

5.16 OH/MPE6KW single phase electric power meter module

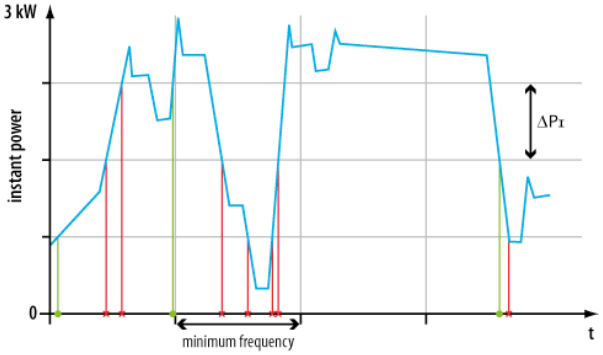


The OH/MPE6KW is a device for measuring the instantaneous electric power consumed by the system. The maximum power that can be measured is 6kW with a precision of 5%.

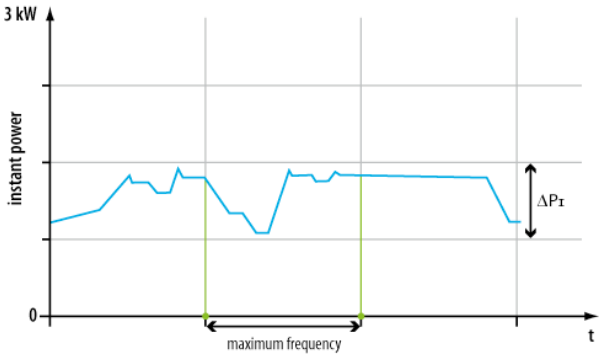
The instantaneous power data measured allows for the implementation of the previously described algorithms for controlling the loads and consumption management. It is, therefore, good practice to arrange the installation in such a way that uncontrolled load power is less than the overall power provided by the electricity company, otherwise it would be impossible to prevent overloadings by the Bpt Home automation system. If this occurs, the system will deactivate all the loads without being able to resolve the overloading and, if this situation continues, the meter's limiter switch.

5.16.1 General Parameters

Minimum difference indicated (W): is the minimum electric power variation that has to be shown and transmitted on the bus. It limits the number of readings and transmissions of the data on the bus by the device. (10-100).



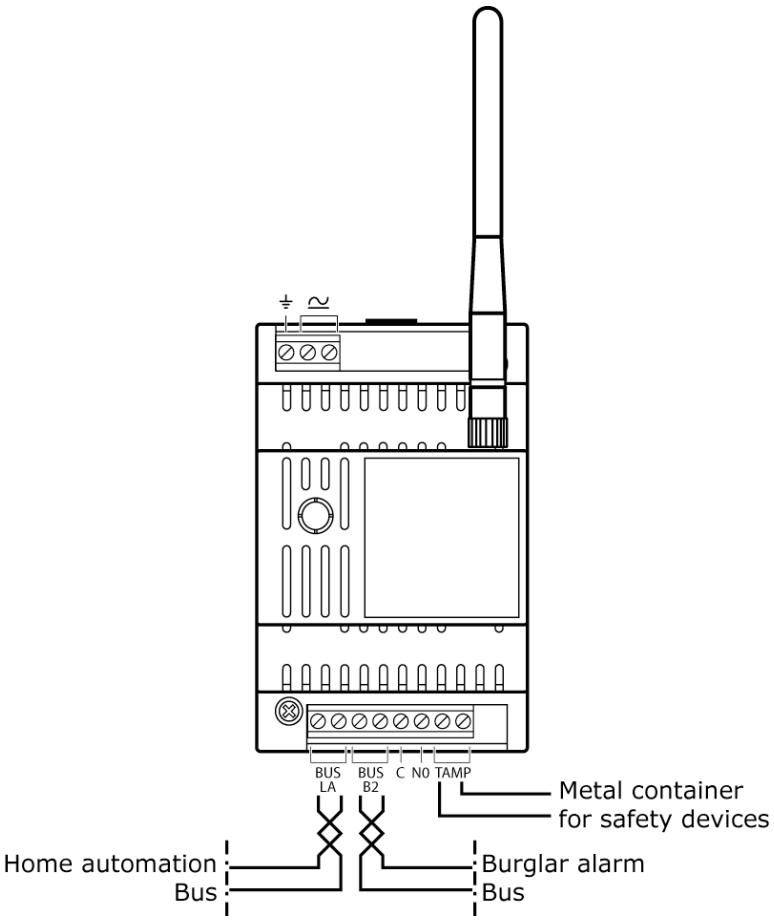
Minimum update frequency (s): Minimum time interval that has to elapse between one measurement and the next. (1-255). Useful in the case of consumptions with strong, fast variations to prevent the forwarding of irrelevant data.



Maximum update frequency (s): Maximum time interval that has to elapse between one measurement and the next if there are no power differences generating readings. (1-255). During periods of limited load use, it is convenient to force a measurement of the power data.

Controlled Load n°: is the number of loads (max 100), belonging to the system and previously configured, that will be controlled by the system via previously described load control algorithms and consumption management.

5.17 OH/GSM GSM controller module



The OH/GSM is a device to be fitted on the DIN bar that sends text messages giving alarm warnings or system status information and receives commands, again via text message, for the activation of a maximum of 16 pre-set scenarios and the control of a maximum of 20 thermal zones. The messages can be sent to a phone book with 10 numbers.

The OH/GSM module functioning can be fully programmed via the configuration software and the following parameters are available.

5.17.1 General Parameters

Description: is the symbolic name of the module.

S/N or Id Code: is the module's unambiguous serial number (SN number). It corresponds with the number found on the sticky label on the module.

Check 12/24: is the time period in hours for the automatic sending of information by the controller relating to the system's status. Activating this function, the system will send a text message to the first number stored in the phone book indicating the status of the first thermal zone, inserted between the parameters of the controller and the network status and alarms on the whole system. (Off, 12, 24; Default value: Off).

Day Check: is the day of the week when the system status message will be sent. (All Days, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday; Default value: All Days).

Hour Check (hh:mm): is the specific time when the text message is sent to the minute. This parameter will be combined with the "Check Day" to define the exact times when the system will send out the status. (00:00, 23:59; Default value: 12:00).

Phone number: You can set up a phone book with telephone numbers that can make use of remote control services.

The telephone numbers can consist of a maximum of 19 digits. If the numbers exceed 19 digits, up to a maximum of 24 digits, it will be possible to programme the telephone numbers in the phone book via text message.

It is possible to arrange for messages arriving from a pre-set telephone number to be sent to the first number in the phone book. In order to organise this, write the number where the messages are coming from in box number 11 of the phone book.

This function could be used in such a way that the information messages sent by your telephone operator (for example information regarding credit depletion) is sent to the first number in the phone book; to arrange this, you must know the number of the "Service Centre" of your phone operator; contact Customer Services for this number.

Thermal Zone n°: are the thermal zones that can be commanded by the controller via text message; these zones must firstly be programmed via programming software.

Alarm n°: are the Alarms that can be reported by the controller; these alarms must firstly be programmed via programming software.

Scenario n°: are the scenarios that can be activated via text message through the controller. These scenarios must firstly be programmed via programming software.

5.17.2 Accessories

OH/B008: The OH/GSM module foresees the connection of a 12V OH/B008 battery that allows for the sending and receiving of text messages in the event of a power cut. This OH/B008 battery can receive for a few hours and send about ten messages.

OH/ANT: If fitting the module inside metal containers, use the optional OH/ANT aerial positioning it outside the container itself.

FAQs

1. **What is the main advantage of a Home automation system?**

   The possibility of controlling and customising the functions within the system at any time. This involves:
   - developing client's trust (only the installer who installed the system can control and customise the system quickly)
   - increasing the professionalism perceived by the end user (the satisfaction of the end user's needs, quick intervention, proposition of innovative functioning are the main reasons why the end user defines the installer as a "technician specialised in electric systems")
   - the possibility of integrating other systems to the Home automation system (safety, video entry control, video surveillance, sound diffusion, etc..).

2. **Can a traditional system be converted into a Home automation system ?**

   Yes, with different solutions depending on the level of automation requested subordinately by the existing system structure.

3. **Does it cost more to set up a Home automation system than a traditional one?**

   The setting up of the system does not significantly alter the costs of a house but allows for future use of the Home automation systems. Precisely with this in mind, thanks to the inexpensiveness of the option, we recommend you install the system with Bpt Home automation modules even if initially the Home automation functions are not required.

4. **Should the creation of a Home automation system be set out in advance?**

   Yes, we recommend you set out the system in such a way as to allow for an ideal layout of the boxes and conduits. Thanks to the contained size of the Home automation devices and the freedom to connect up, it is possible to set out the system without completely changing the installation habits.

5. **Is it always essential to have a control terminal in a Home automation system?**

   No, a Bpt Home automation system can function even without a control terminal; naturally, the terminal (or Home automation panel) enriches the system with functions, allowing for real time supervision of the system situation.

6. **Can I command a ventilator (or Fancoil) with Home automation?**

   Yes, there are two modules that have been designed to command the Fancoil: the OH/FAN and the OH/FANEVO. Both allow you to directly command the 3 Fancoil speeds; the second is also fitted with a command for the proportional electrovalves (hot and cold) on board.

7. **In order to dim the lights, can I use any dimmer on the market or must I exclusively use BPT dimmers?**

   Both configurations are possible: it is possible to interface the system with any dimmer on the market (with analogical 1-10V or 0-10V control signal or directly command the light using a special dimmer module (OH/DI2230).

8. **How many Home automation modules can be connected on the same bus line?**

   Up to 40 modules can be connected on the same bus line; this number can be extended to 80 by using the NH-RBB repeater.

9. **Do the lights connected to a relay of a module have to be commanded by push buttons connected to the module itself?**

   No, the combination between command push buttons and lights occurs via tool programming and the connection is then free.

10. **What is the maximum distance possible between command push buttons and inputs on the Home automation modules?**

    The modules can be installed up to 20m away from the command push buttons.

11. **How do you connect the Home automation modules between themselves?**

    The connection follows a free distribution without following any particular rule in terms of topology; the system's performances should be taken into consideration in terms of distance (see DISTANCES PARAGRAPH).

12. **Does the bus line require to be terminated with any specific impedance?**

    The bus line does not require any termination.

13. **Which kind of cable needs to be used for the Home automation bus connection?**

    Bpt recommends (but it is not obligatory) you use their NH-C1D twisted cable that allows for the maximum expansion of the system in terms of the number of modules and distances thanks also to the twisted wire (0.28mm²) section that it is made up of. The NH-C1D cable also has a 750V insulation sheath (see question 6). You can also use a UTP5 twisted cable (section of wires equivalent to 0.22mm²) limiting the number of modules and distances in play.

14. **Can the Home automation bus be laid within the same piping used for the 230VAC power supply?**

    Yes, because the current regulations require that the Home automation BUS cable (with very low voltage) is electrically insulated from the power supply cables; precisely for this reason, BPT recommends the NH-C1D cable with 750V insulation sheath.

15. **Do the Home automation modules require a separate power supply?**

    No, they are powered directly by the Home automation bus.

16. **How can you physically identify the position of a Home automation module in the system?**

    - The position of the module is shown in the specific box within the table of physical connections.
    - The position of the modules can also be traced within the structure of the programming file; this is why we recommend you intuitively and simply nominate the various modules at the programming stage.

17. **Can the conductor connected jointly with the inputs of a Home automation module be connected to the same conductor of another module?**

    No, we recommend you dedicate one "joint one" for each Home automation module (for the OH/6I for example, one joint + 6 push button returns).

18. **What are the programming tables for?**

    There are 2 kinds of tables available, one for recording the physical connections carried out on the system and the second one for inserting the functions programmed for each command.

    The first one gives a clear and immediate idea of the connections carried out and the positioning of the individual Home automation modules within the house; the

second one, on the other hand, is useful for having a permanently available summary regarding the programming of each individual input/output.

19. Are the tables still useful once the system is operational?

The tables always have to be available where they were installed in order to allow for any changes/updates/system maintenance.

20. Is the programming file still useful once the system is operational?

Yes, for any future assistance, expansion, customisation....
We recommend with Mitho Home automation systems to save it within the control terminal's microSD so that it is always available where it was installed.

21. Does the system have to be tested by the technical help centre?

No, there is no need to contact the help Centre (CAT) to start operating the system; the Bpt Home automation system and all the tools that come with it have been designed in such a way as to make the installer autonomous when creating and managing the system. Naturally, the zone CAT (see bottom of the BPT catalogue) is available for support intervention should the installer ask for it.

22. What does the installer have to leave with the user?

- Compiled tables
- The programming file
- Any passwords used in the system

23. Can the switches used in the traditional systems be re-used?

Yes, it is possible to reuse the traditional switches, because Bpt has created a specific function (direct command) for the functioning of the input as "switch". For financial and aesthetic reasons, however, we recommend the use of simple push buttons for input commands, in order to make the most of all the innovative functions proposed by the Home automation system.

24. What happens in the event of a black-out?

The modules maintain their current status until the power comes back on when they will be moved into the default condition; naturally, a battery powered back-up system is foreseen that allow you to maintain all the system modules powered even when there is no voltage. It is also possible to foresee a UPS back-up.

25. Does the apparatus lose its programming during black-out?

The programming remains stored inside each module no matter what the condition. The memory where the programming is saved is, in fact, "non volatile" (as are the USB pen drives, for example)

26. How can a module be replaced?

A module can be quickly replaced using the programming tool (with the system's programming file) thanks to an automatic replacement procedure.

27. Are the Home automation scenarios managed by a special control panel?

No, management of the Home automation scenarios is "standard" on the system: it is possible to create Home automation scenarios even without a control terminal (in this case, the command of the scenario is assigned to a push button on the system).

28. Can the scenarios be customised?

Certainly, depending on the system used, there can be scenarios programmed by tools, where it is possible to select/de-select the pre-set actions, or can even be created/changed/eliminated directly by the user on the terminal.

29. Can the end user customise the system autonomously?

Bpt does not recommend that unsuitably trained staff make changes to the system structure because these changes could jeopardize the system's functioning. Subsequently, we recommend that the end user contact the installer who created the system for everything they need customised.

30. Is a Home automation system more vulnerable than a traditional one in terms of surges and atmospheric discharges?

No, because it should be seen as part of the electronic apparatus connected to the 230Vac network. Subsequently, we recommend you install typical protection devices.

31. Can the functions available on the control terminals be partialised?

Yes, some kinds of terminal can be customised in order to present only some of the selected functions.

32. Can the devices be updated?

Yes, all the devices can easily be updated; the updating allows you to introduce, for example, new functions integrated into the system on the same physical devices.

33. Why does a light activated by "Timer" + "Impulse" turn itself off after the timing established by the latter function?

The "impulse" function has priority over all other kinds of function.

34. How are the lights commanded by Home automation terminals?

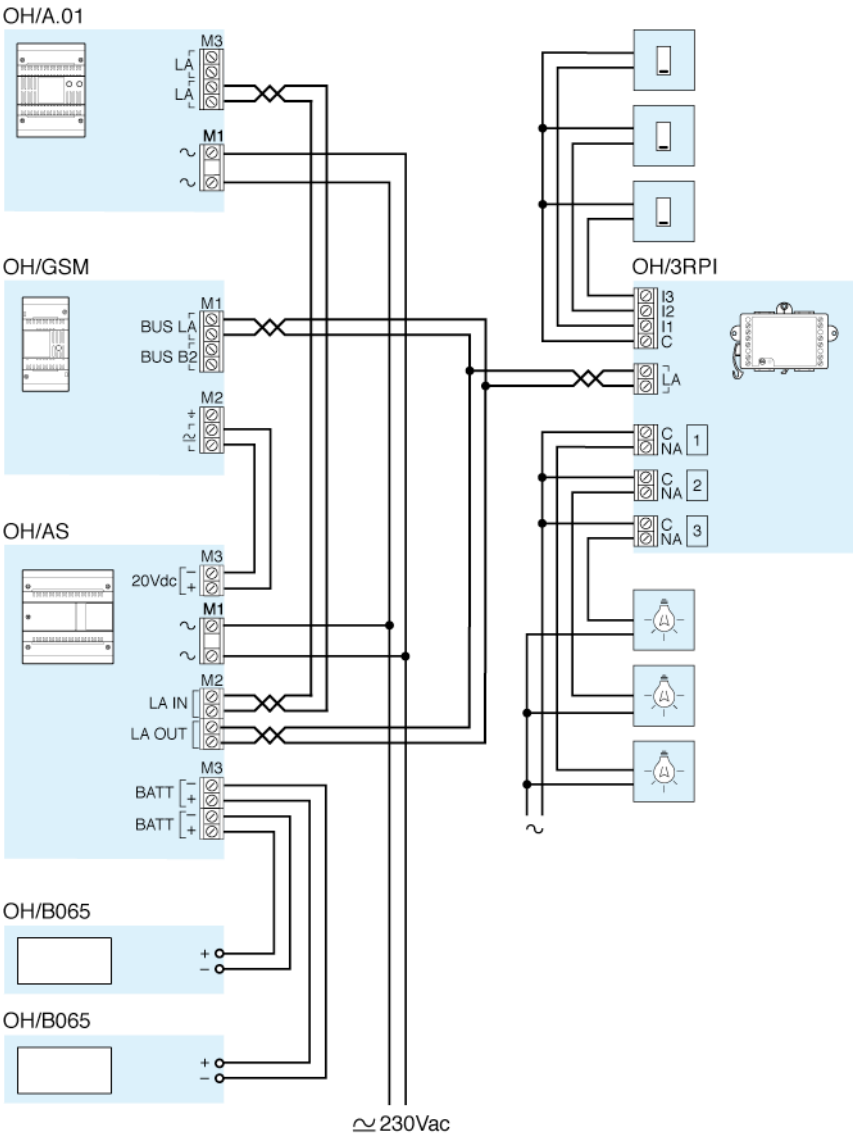
From the Home automation terminal the lights in the menu are always commanded with the step by step function unless an "impulse" function is combined with this light. In this case, the light will be commanded by the "impulse" function.

35. How is a Home automation system programmed with Mitho?

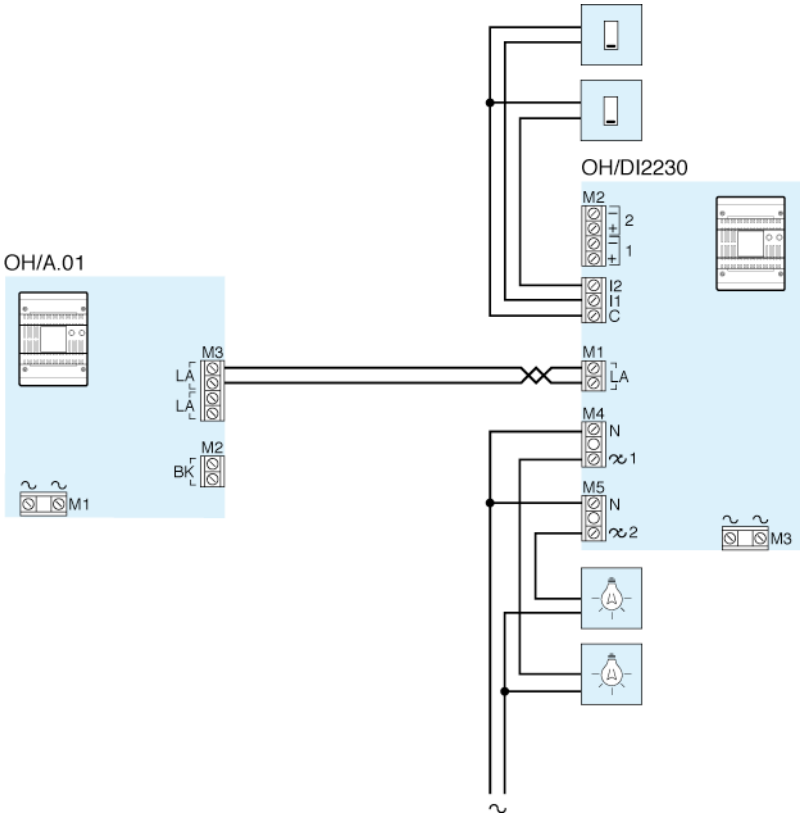
The programming is done using a specific programming tool; this tool has been designed to make the programming part highly intuitive, in fact, there is not even a code line to be stored as it is based on icon dragging (like Windows).

Electric diagrams

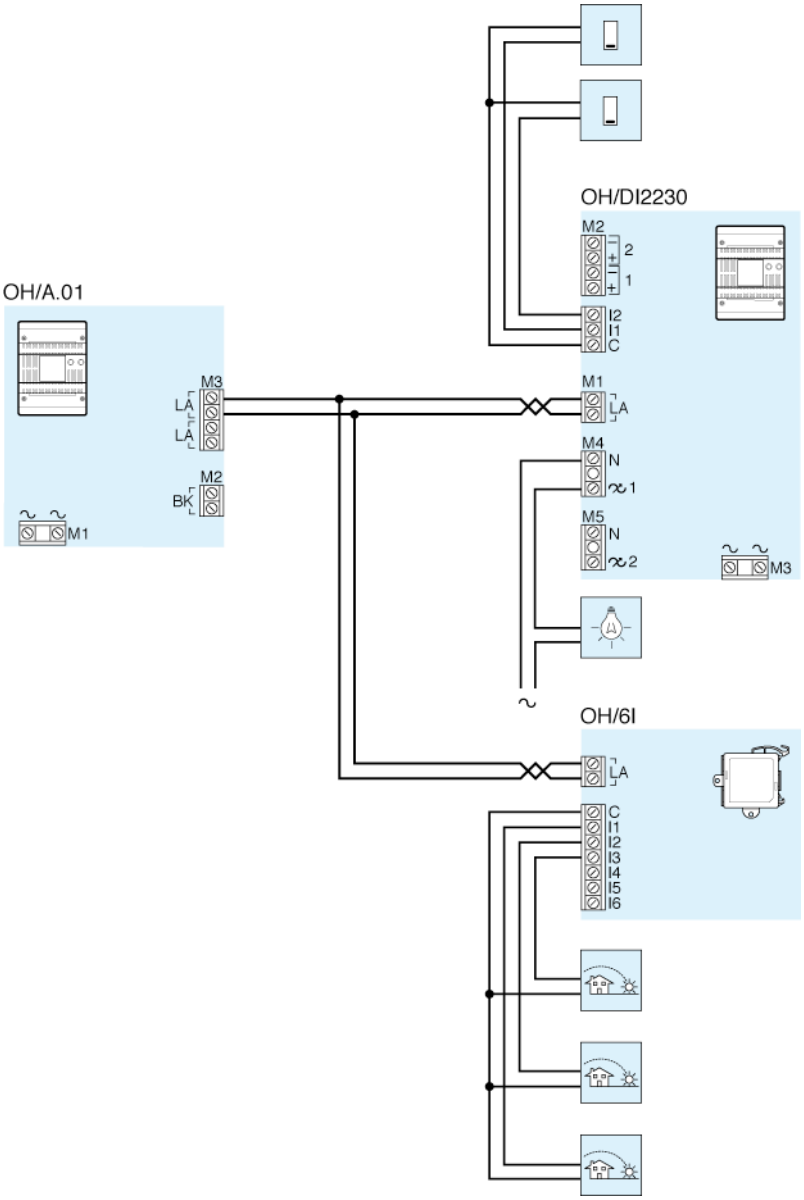
The diagrams below refer to some examples set out in chapter 2.



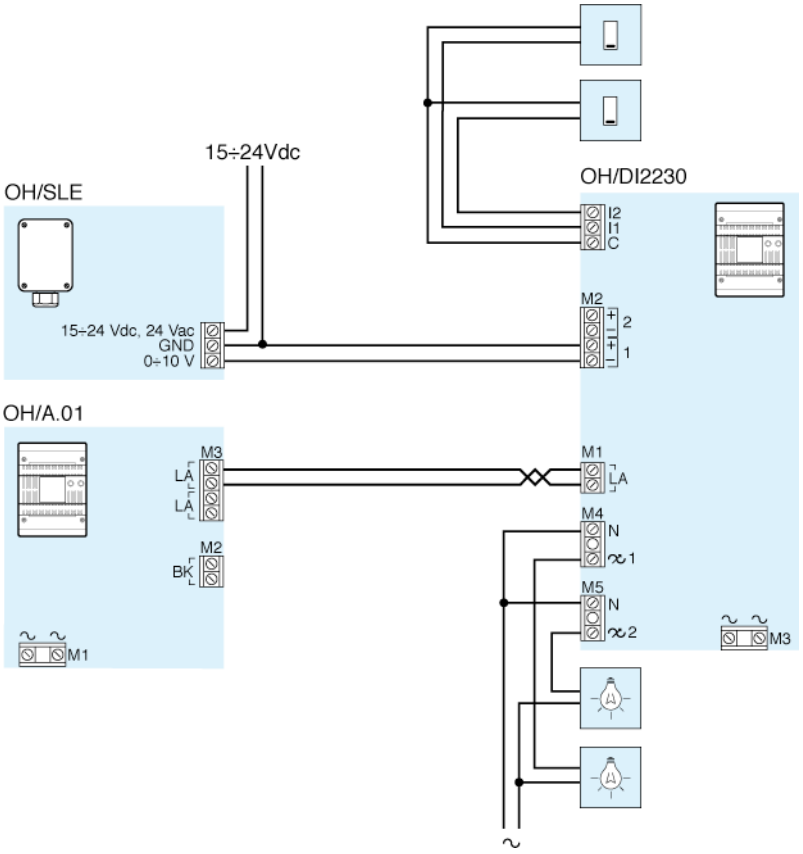
Manual command of 3 lights by 3 separate push buttons with remote control and supplementary power supplier.



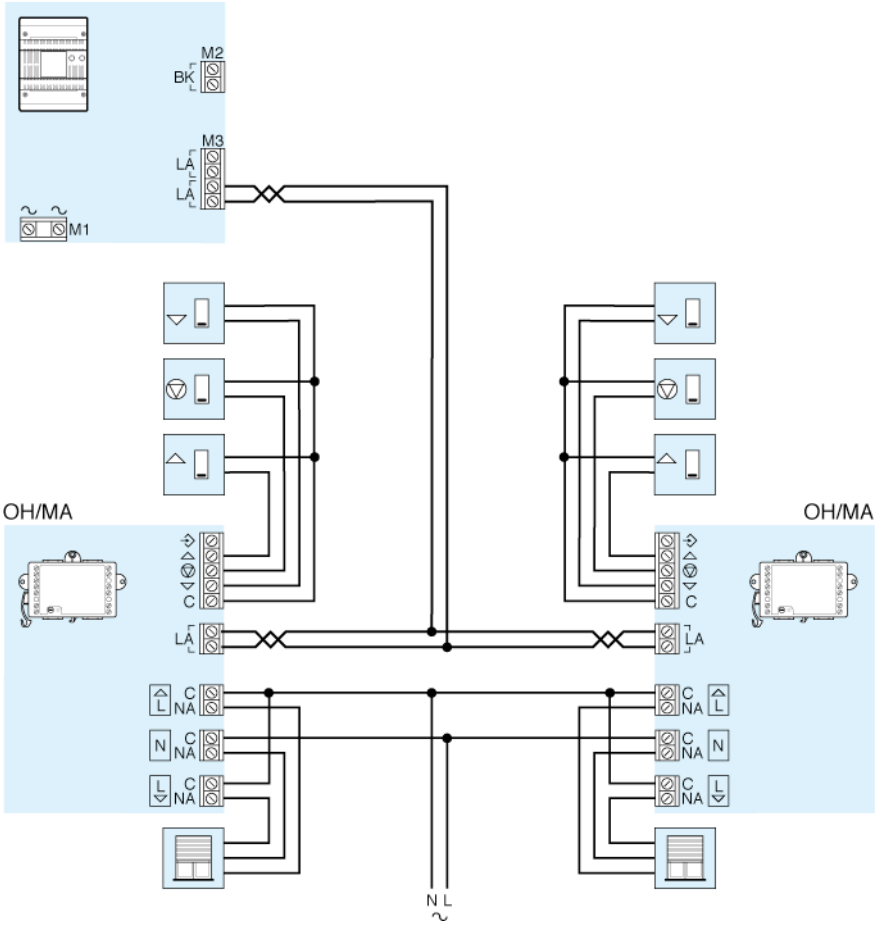
Manual dimming control of 2 lights from 2 separate push buttons



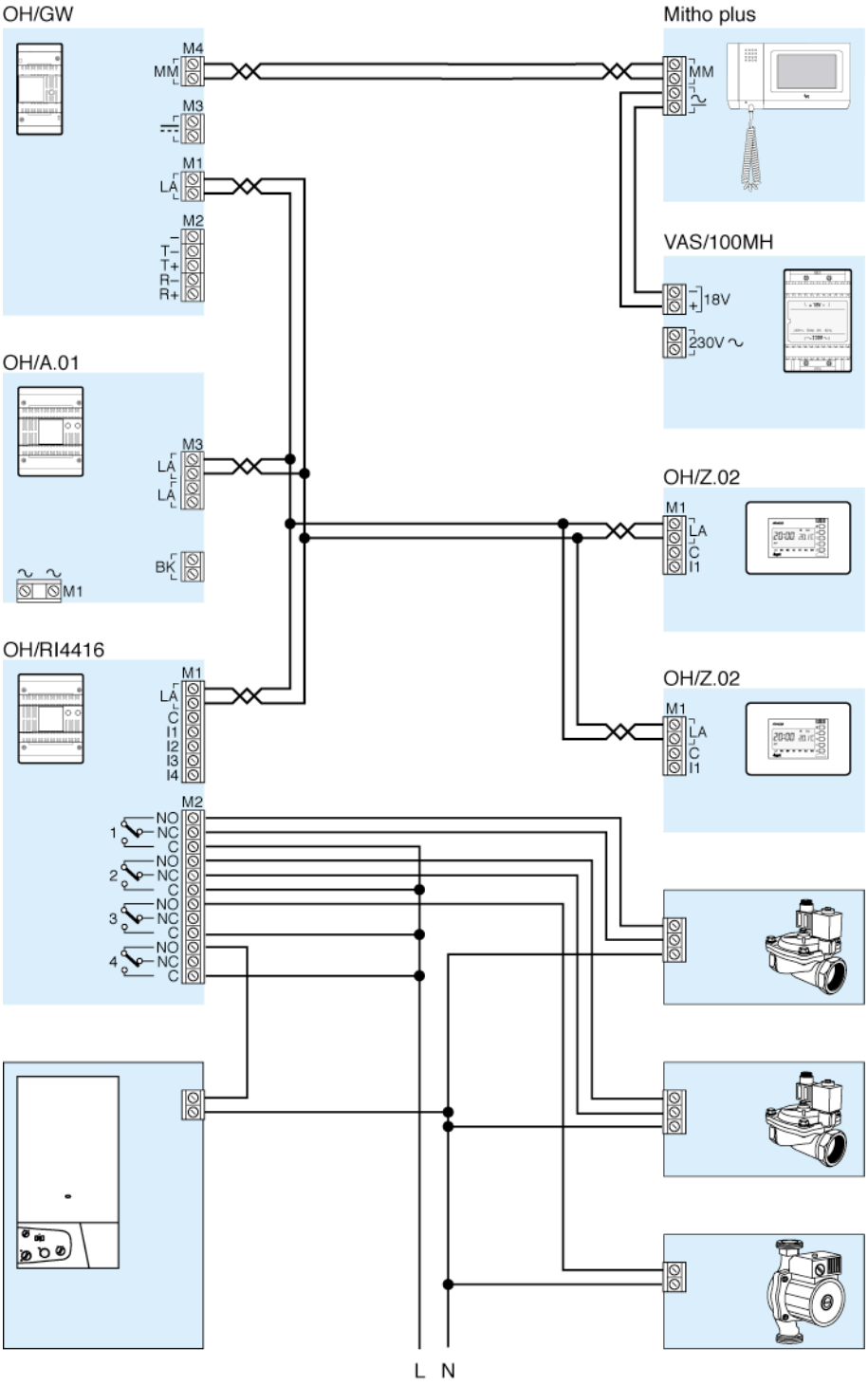
Manual dimming control of a light via a push button, with 3 automatic threshold controls with 3 twilight sensors.



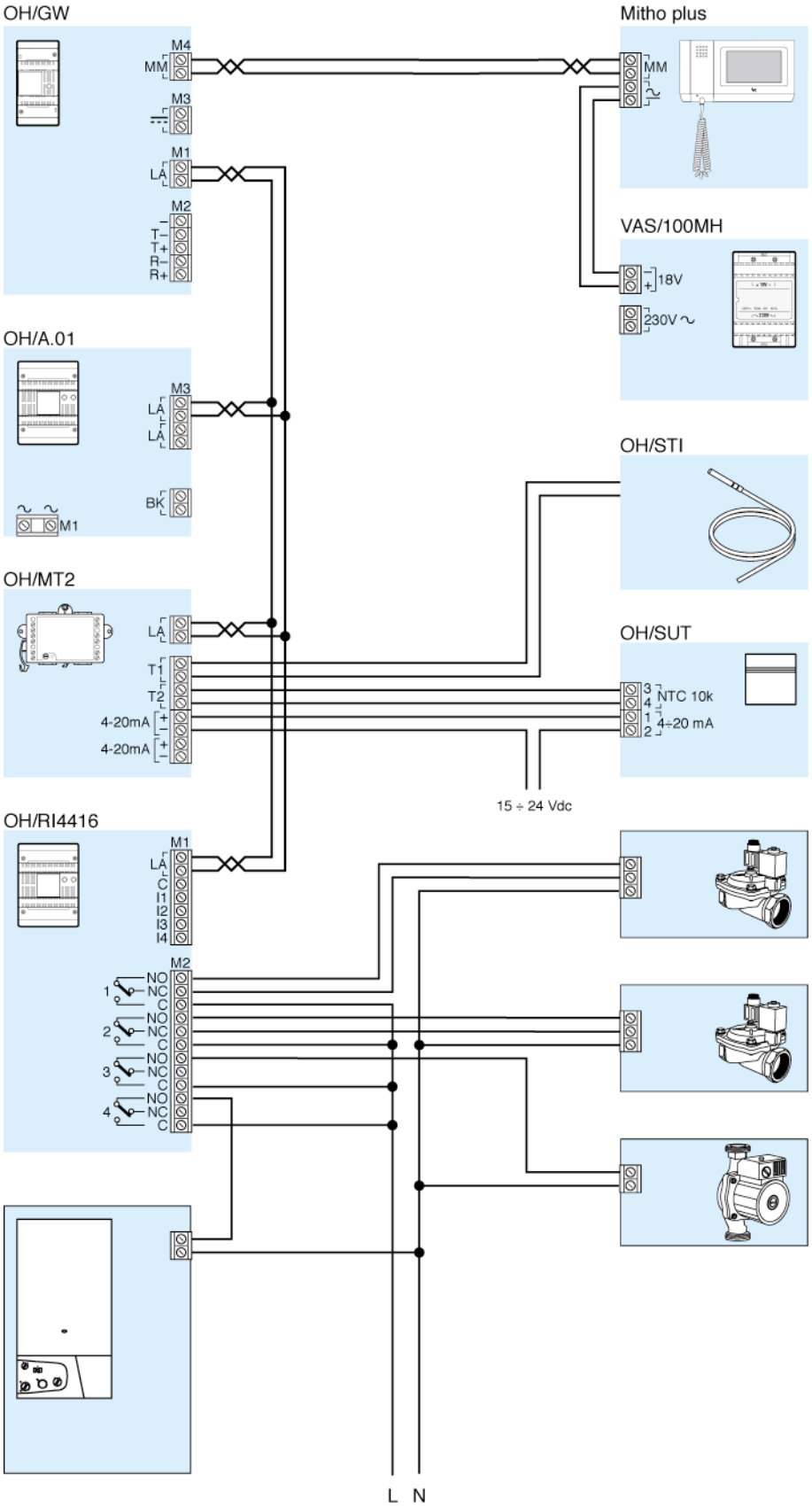
Manual dimming control of two lights by two separate push buttons with automatic threshold control via analogical brightness sensor.



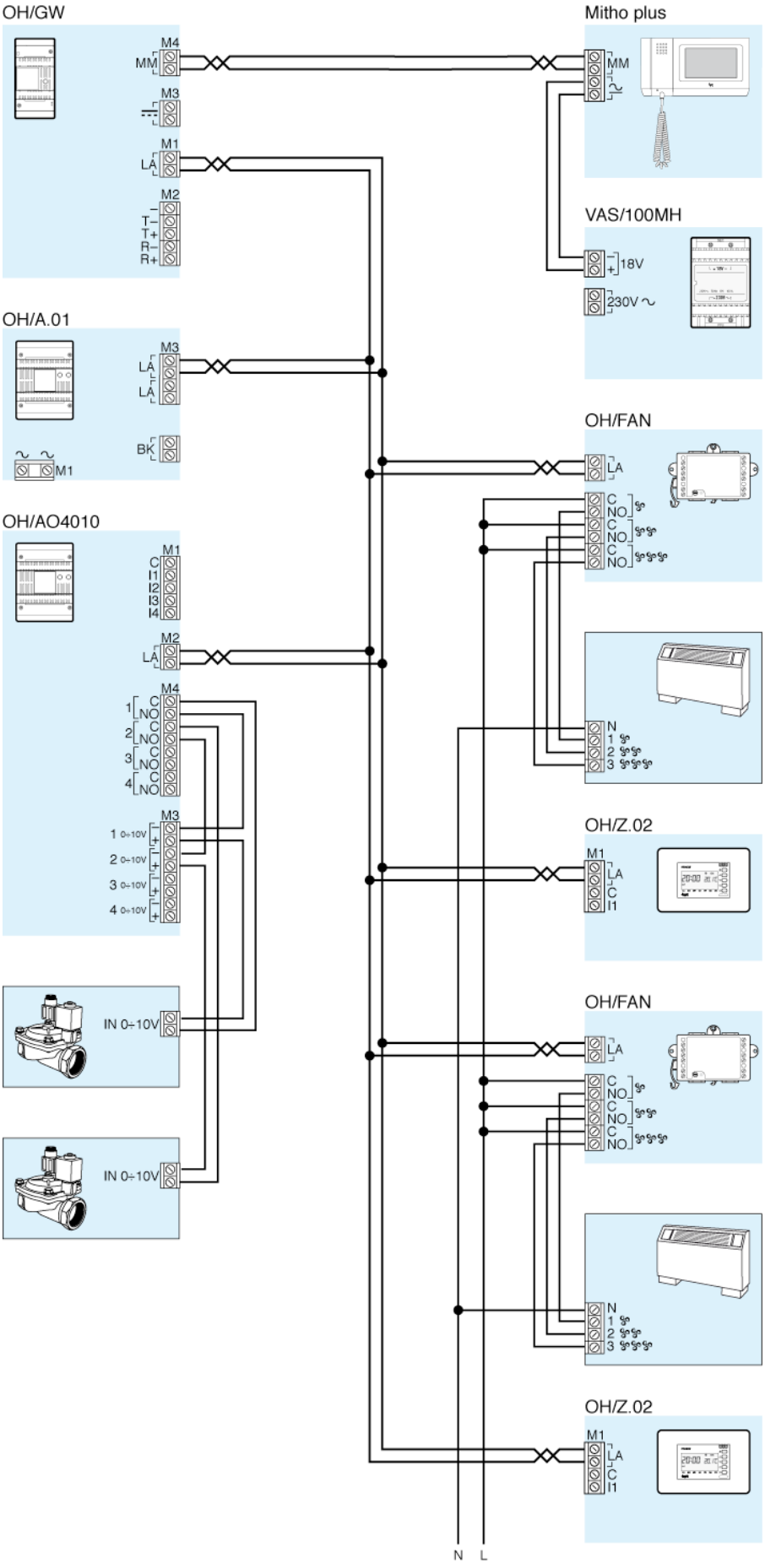
Manual opening and closing of 2 motorised roller shutters via 2 switches with two positions plus the STOP push button.



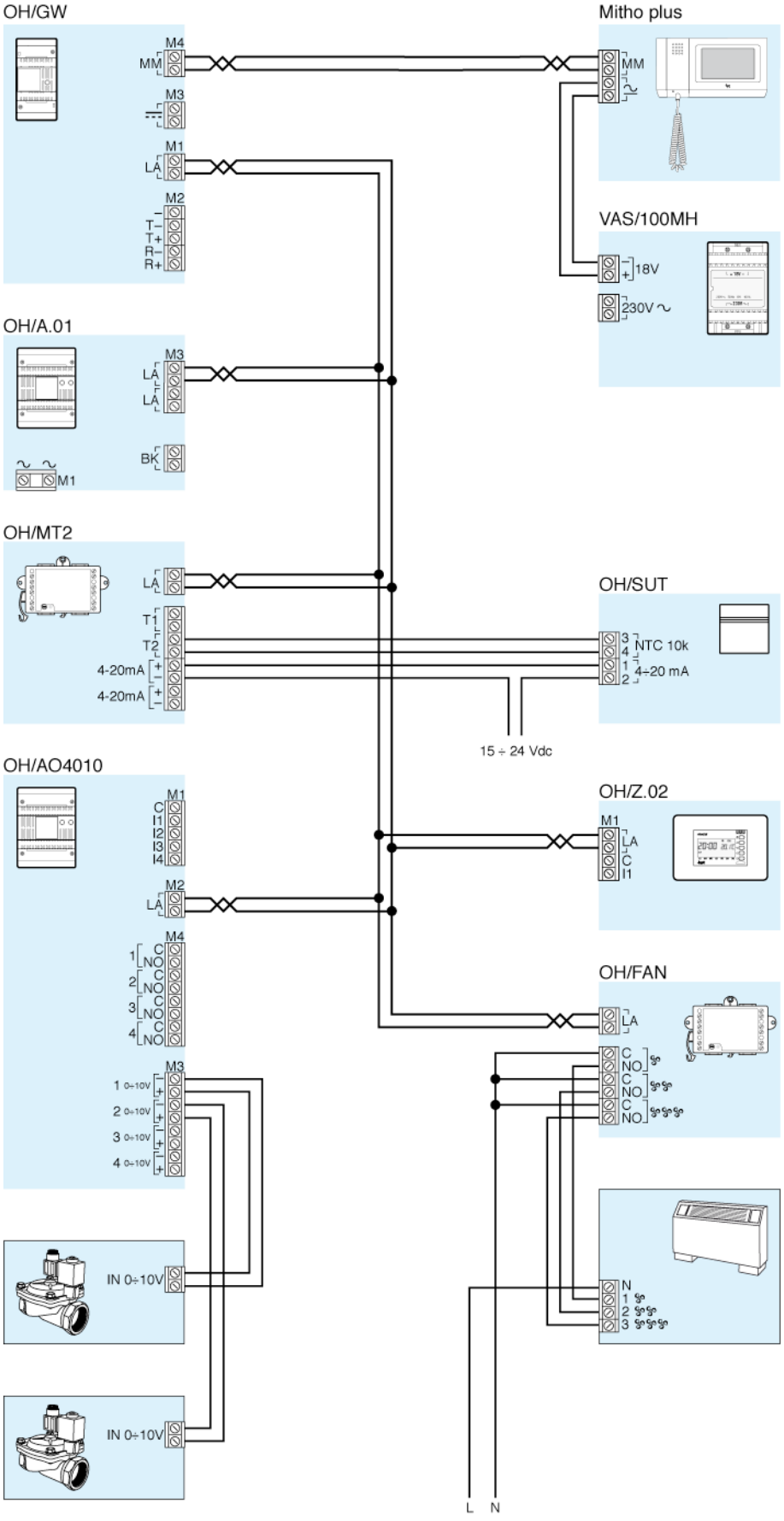
System with 2 radiator heat zones, pump, boiler and hydraulic valves for ON/OFF zone with local manual management of the temperature and weekly profile of the automatic mode



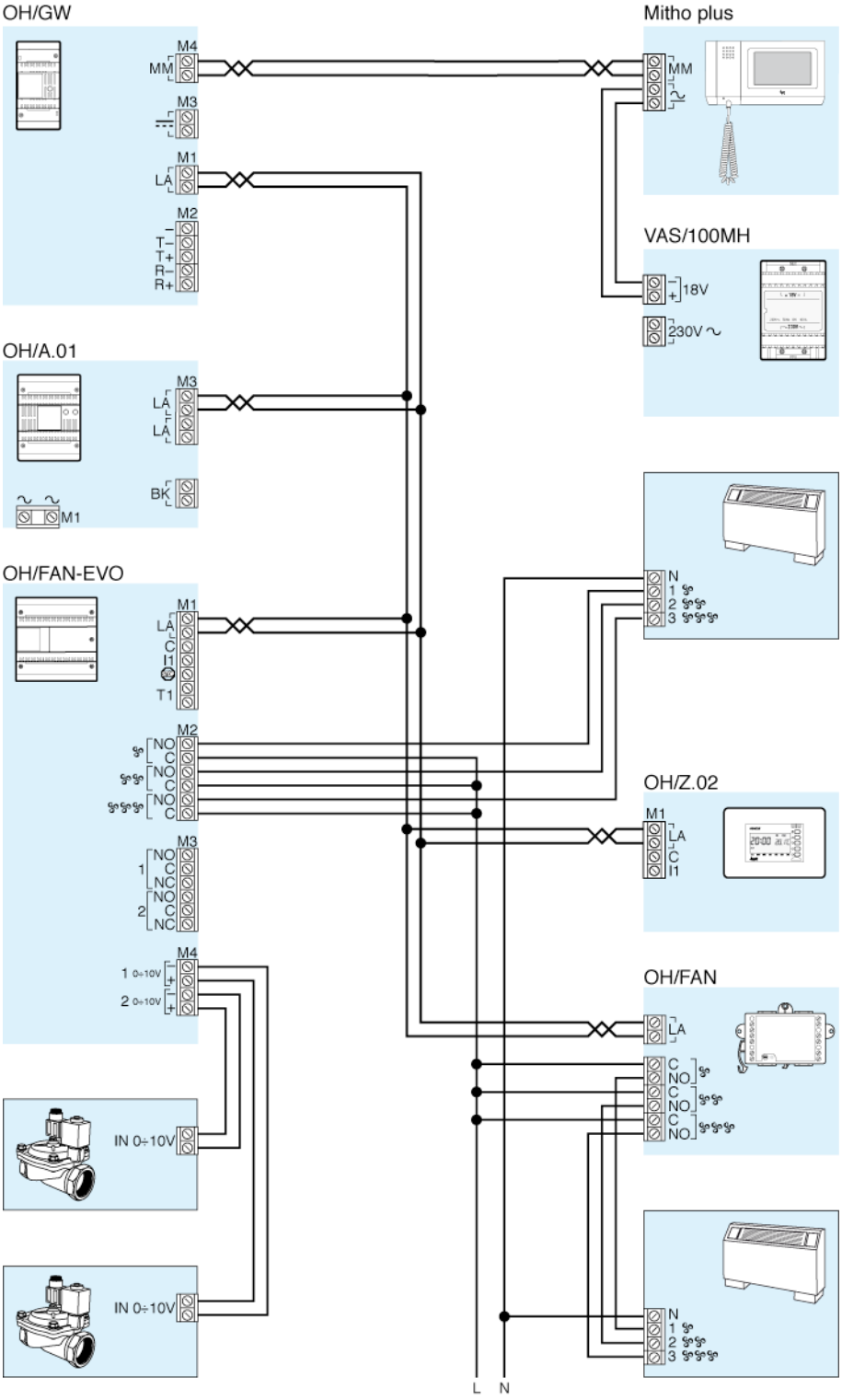
System with 2 heat zones with under-floor heating, condensation boiler, pump and hydraulic valves for ON/OFF zone with weekly profile management of the automatic modes and proportional control programme.



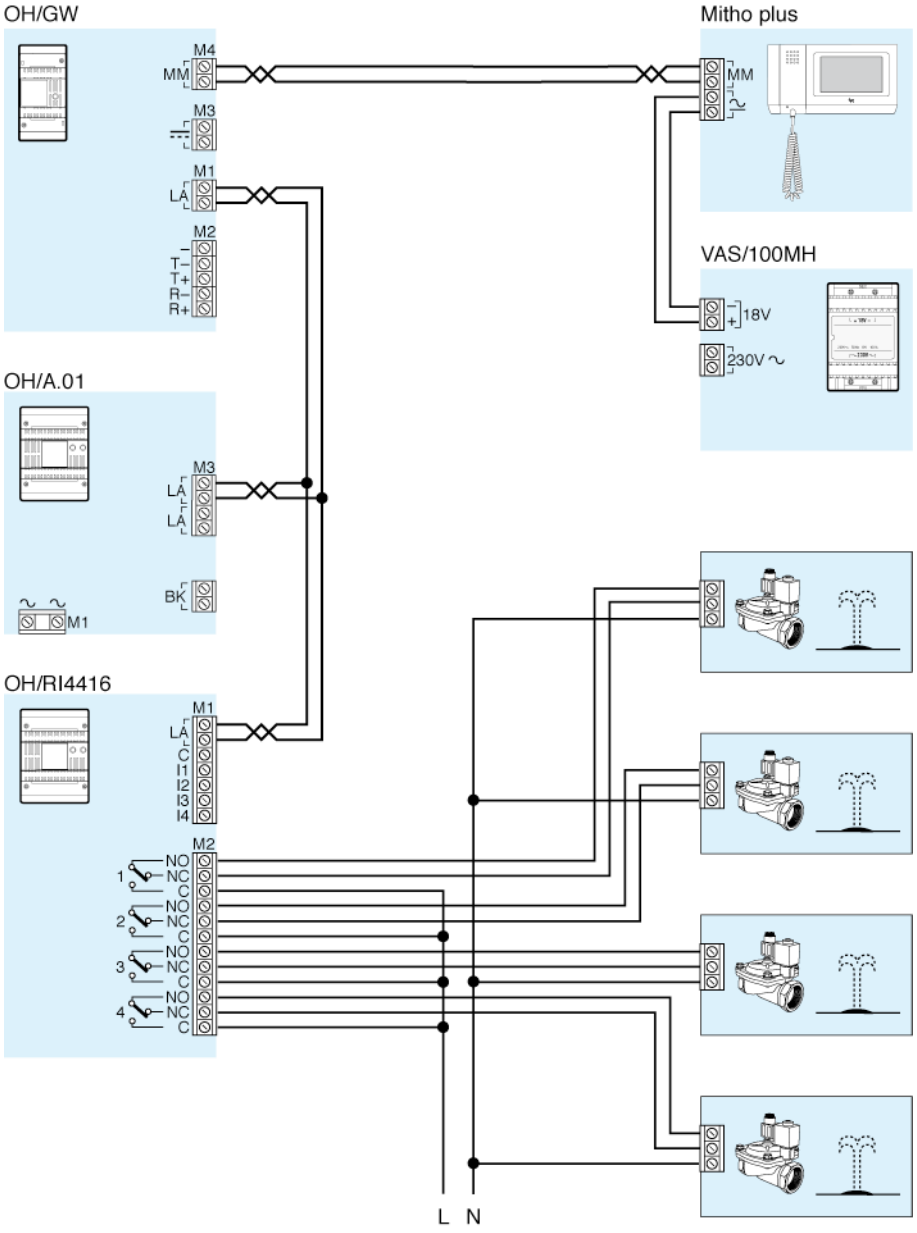
Heating system with two 2 tube fan-coil heat zones and proportional hydraulic zone electro-valves with local manual management of the temperature and speed of the fans and weekly profile of the automatic mode.



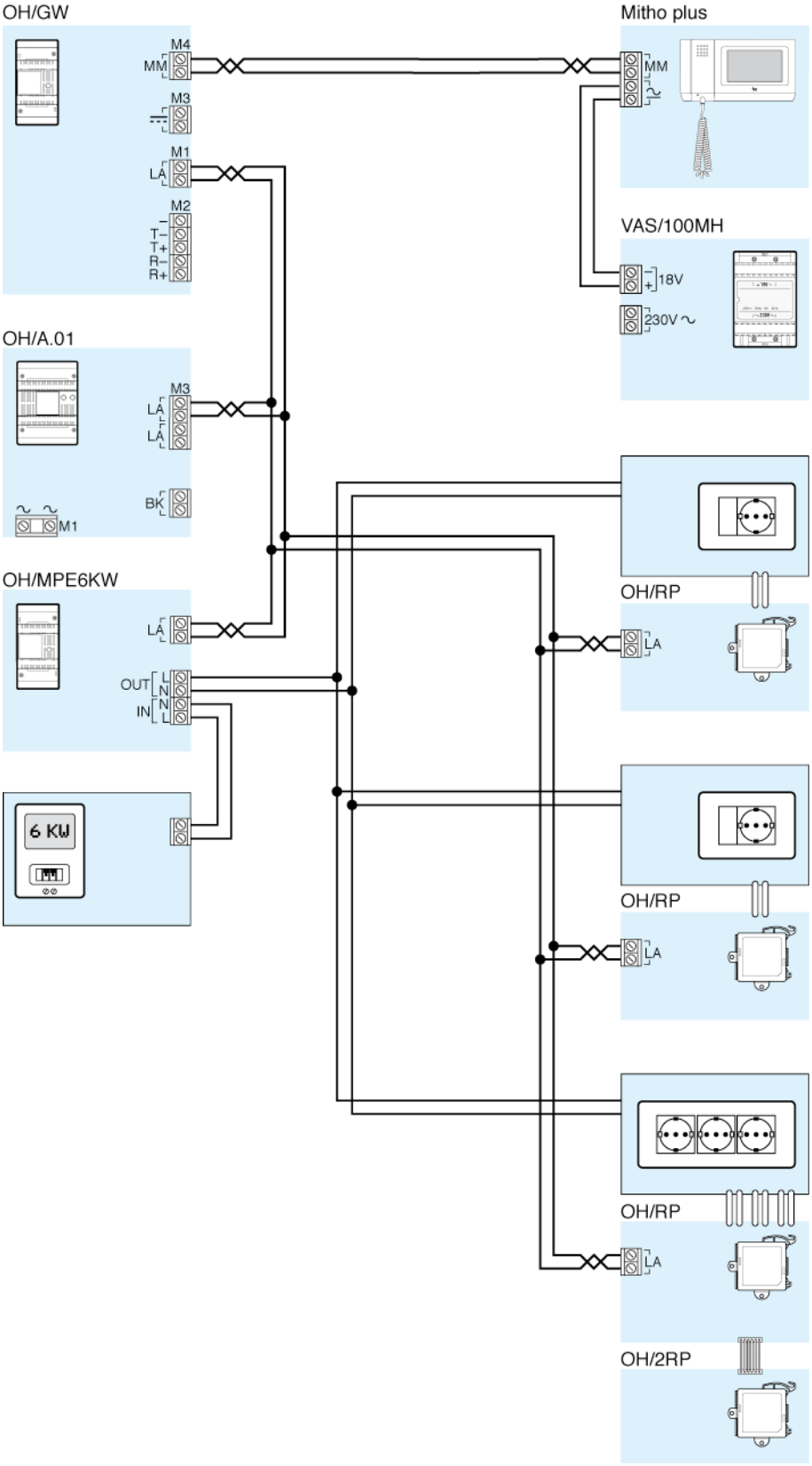
System with a mixed thermal zone with under-floor heating and cooling with 2 tube fan-coil, proportional hydraulic zone electrovalve and temperature and humidity reading. Local manual management of temperature and speed of the fans and weekly profile of the automatic mode.



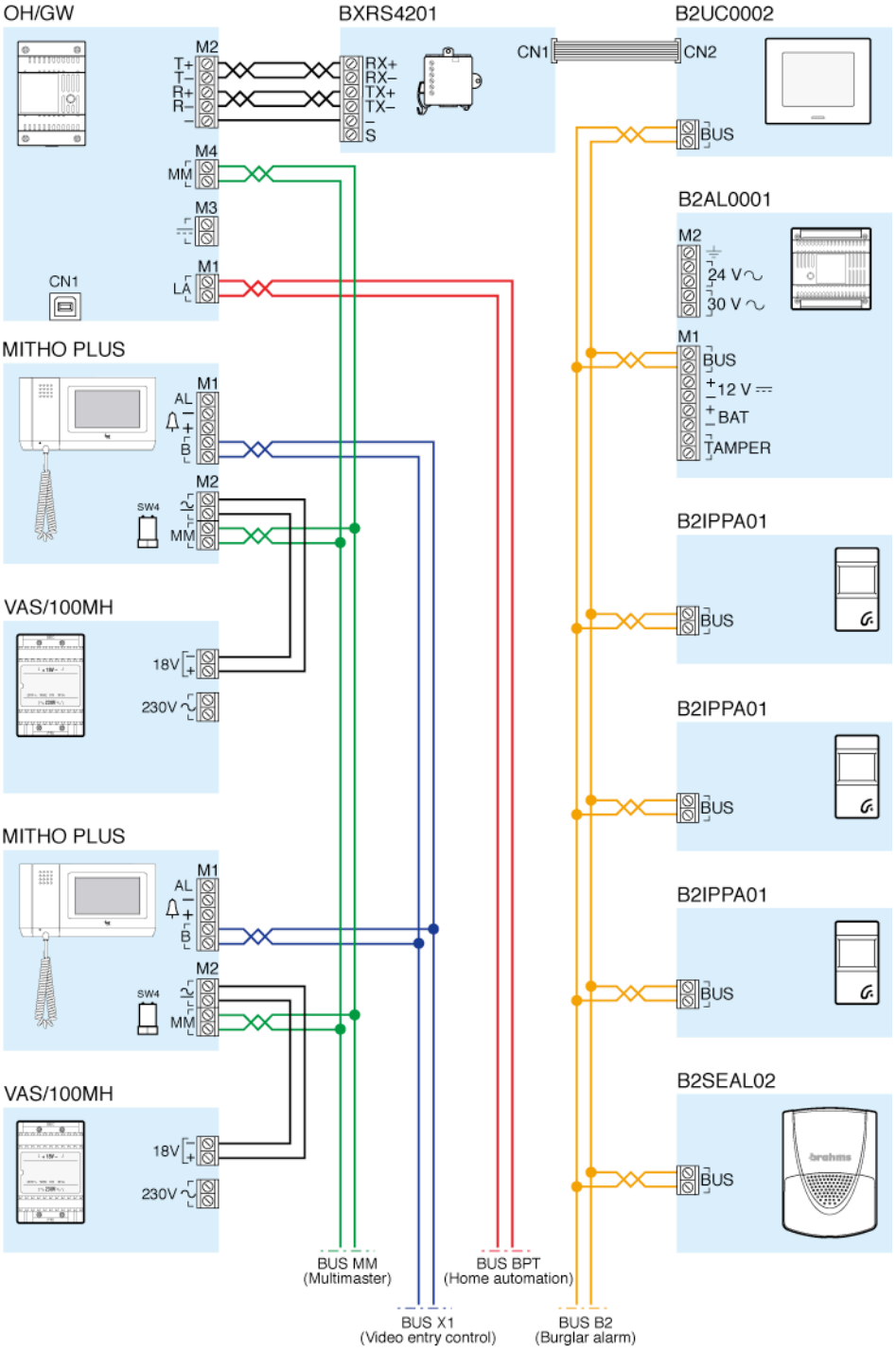
System with heating and cooling with a mixed thermal zone with two 4 tube fan-coils, proportional hydraulic zone electrovalves. Local manual management of temperature and speed of the fans and weekly profile of the automatic mode.



4 zone system with seasonal variations of the watering times and manual forcing of the start of irrigation



5 load control with possibility of choosing the release property according to the time period or favouring some loads over others.



Integration between Bus X1 Bpt video entry control, Bpt Automation Bus, Brahms Safety Bus.

AREA (floor, apartment, …): ..... SPACE (kitchen,lounge, …): ..... Page .....

MODULE LIST

MODULES	ABBREVIATION	ID and installation location	INPUTS	Description	Cabling	OUTPUTS	Description	Cabling
		.....						
		.....						
		.....						
		.....						
		.....						
		.....						

AREA (floor,apartment, …): ………………………………   SPACE (kitchen,lounge, …): ………………………………………………   Page ……………

OUTPUT		Digital						Analogical									
Cabling	Description	Associated Inputs	ACTIVE WITH		Functioning logic			Associated Inputs		Analogical Steps		Digital Steps	Feedback		Linear	Dimmer	
			CC	OC	Logic	Delay	Duration	Digital	Analogical	% Input	% Output	% Output	ctrl	%/Sp	Scale F.	Push buttons	% Auto OFF

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