the Heating/Cooling status of a chronostat or an external input or, in the absence of the latter, by the thermostat settings), the antifreeze function will be activated with a fixed setpoint of 6.0°C to prevent the temperature within the rooms from falling below this value.

'Economy' input

When closed, the external 'Economy' input will cause all thermostat -controlled outputs to regulate temperature at the reduced economy setpoint. See paragraph on 'Associating thermostats with a chronostat'.
By connecting an external clock switch to the 'Economy' input you can reduce the temperature setting during the desired periods of the day.

Overload and short circuit protection

The actuators outputs are protected against short circuit, The module detects which channel output is in short circuit and evidences the overload status by quickly flashing the relevant led in red and green.
The channel in overload or short circuit is kept disabled in order to allow the other channels to operate.
In case to the module are connected more actuators than the quantity that the module is able to power, the last channel energised will generate an overload condition and will be therefore turned off, with its led flashing in red/green. In this way the overload condition will appear in sequence on different channels.

Maintenance

This product requires no particular maintenance.
Once the system is installed and operational, it is good practice to check periodically that the quality of the signal received is good.
If the signal is weak or absent on one or more channels, the corresponding LEDs will blink: this could occur if the batteries are low.
If the fuse has blown (see 'Troubleshooting'), disconnect the power supply and check the electrical system and valves used. Replace with a fuse of the same type and rating.

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	REMEDY
The module appears completely 'dead'. None of the LEDs is lit.	There is no power.	Check the device power supply.
	Fuse **F1** is blown.	Disconnect power supply, check electrical wirings and the relevant connected devices, then replace fuse **F1** (L in Fig. 1).
One channel led C Fig. 1 on the front panel of the module is flashing quickly in red and green.	The channel output is overloaded or in short circuit.	Replace the actuator wired to the channel.
One or more channel LEDs (C Fig. 1) on the front panel of the module blink green continuously.	The device is signalling a fault because it has detected an error in the temperature probe of the thermostat or chronostat transmitter.	Check the probe of the transmitter and, if present, the jumper for selecting between the internal and external probe. Carefully read the instructions of the transmitters for further information.
One or more channel LEDs (C Fig. 1) on the front panel of the module blink yellow continuously.	The device is signalling a fault because it has detected the thermostat or chronostat transmitter batteries to be running low.	Replace the batteries of the transmitters concerned. Carefully read the instructions of the transmitters for further information.
One or more channel LEDs (C Fig. 1) on the front panel of the module blink red continuously.	The channels in question are in an 'alarm status' due to the absence of radio communication.	Check the radio communication using the 'test' function on the transmitter. Assess whether the devices need to be moved away from metal shields or a 'repeater' needs to be installed.
A transmitter is in the 'test' mode but the module fails to switch on any output, even though the LED of the active antenna indicates that the radio commands are being received.	The commands emitted by the transmitter are being correctly received but do not correspond to any of the addresses memorised in the 8-channels module.	Carry out the 'self-learning' procedure as directed in the section ' Configuring the System' for the channel you wish to associate with the transmitter.
The 'power' LED (F Fig.1) is blinking	There is a problem in communication with the active antenna or other modules connected in the chain.	Check that the data cables are plugged in correctly. The cable connected to the 'SIGNAL IN' socket must lead in from the active antenna, whereas the cable connected to the 'SIGNAL OUT' socket must lead out to another 8-channel 8-channels module.
A transmitter is in the 'test' mode but the module fails to switch on any output, the LED of the active antenna remains steadily lit green, not indicating any reception of commands via radio.	The signals received are too weak to enable correct decoding of the commands.	Assess whether the devices need to be moved away from metal shields or a 'repeater' needs to be installed.

WARRANTY

In the view of a constant development of their products, the manufacturer reserves the right for changing technical data and features without prior notice. The consumer is guaranteed against any lack of conformity according to the European Directive 1999/44/EC as well as to the manufacturer's document about the warranty policy. The full text of warranty is available on request from the seller.

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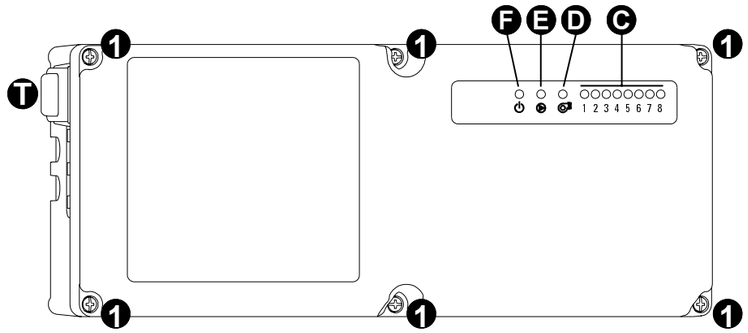
8 CHANNEL MODULE FOR HEATING / COOLING SYSTEMS ' NEW WAVE '

- High efficiency driving of the actuators
- Maximum capability: 14 actuators NC or NA
- Ouputs protected against overload and short circuit
- Indication of the quality of radio communication for each channel
- Global standby and Heating/Cooling changeover inputs
- Regulation with temperature reduction
- Two auxiliary relays for separated driving of pump and boiler



KEY:

A Association button (**A**)
B Self-learning buttons (1,2,..)
C Actuator outputs status leds
D Boiler output active led
E Pump output active led
F On led
G Temperature reduction trimmers (SB1-2 / SB3-4 …)
H Pump output delay adjustment trimmer (▶)
I 'Options' DIP-switch
J Data cable IN connector
K Data cable OUT connector
L Fuse **F1**
M Power supply input
N 230V~ output
O Pump output
P Boiler output
Q 8 actuator outputs
R External inputs
S Protective earth terminals
T On-Off switch

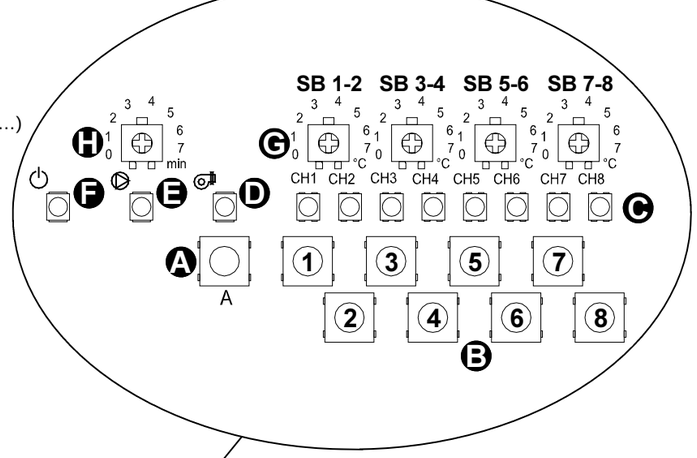


Fig. 1: Internal view of components.

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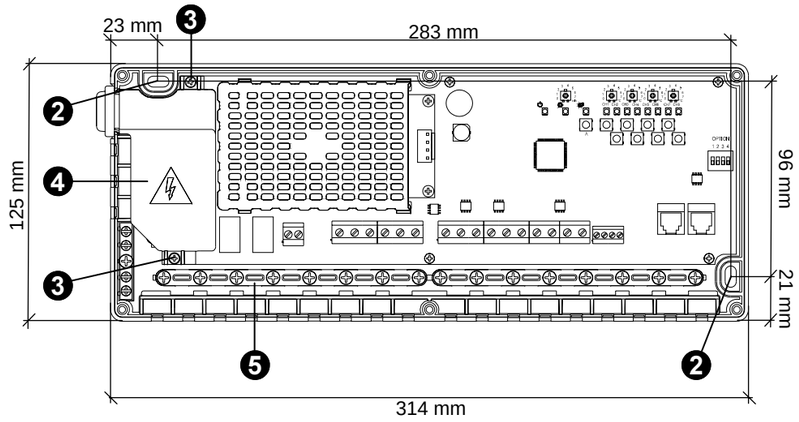

Fig. 2: Internal view and parts.

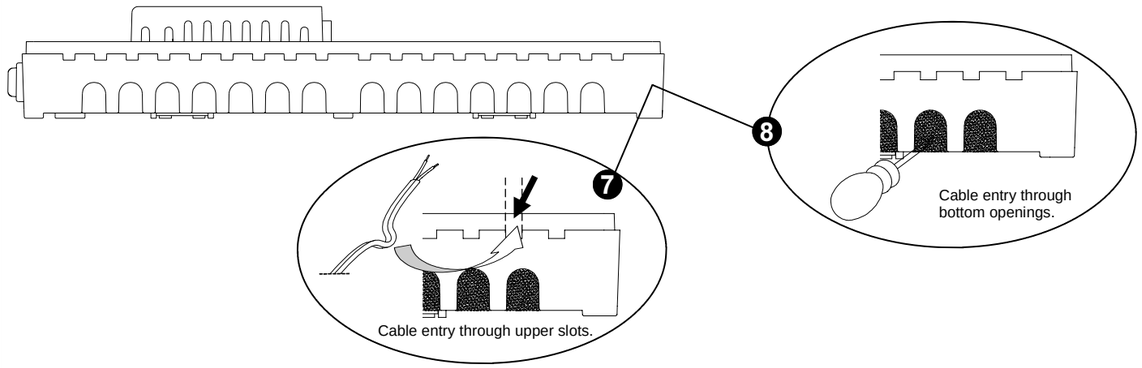

Fig. 3: Cable entry instructions.

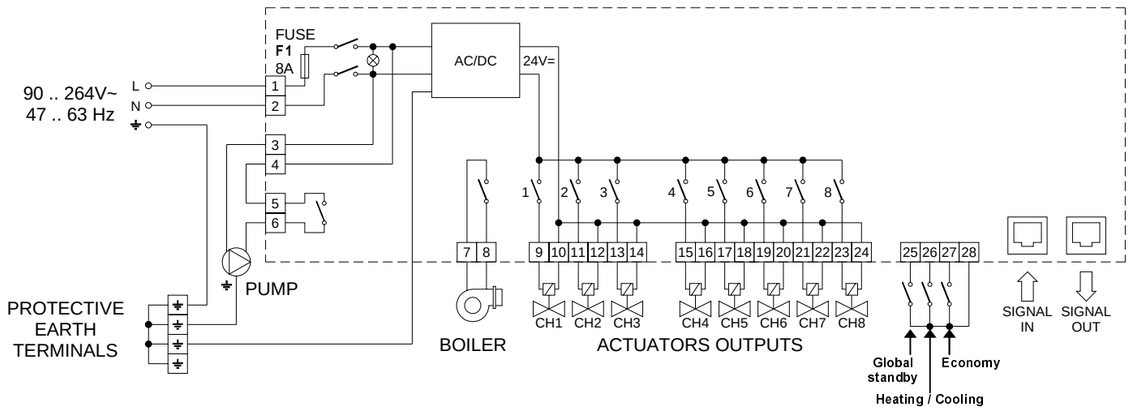

Fig. 4: Wiring diagram.

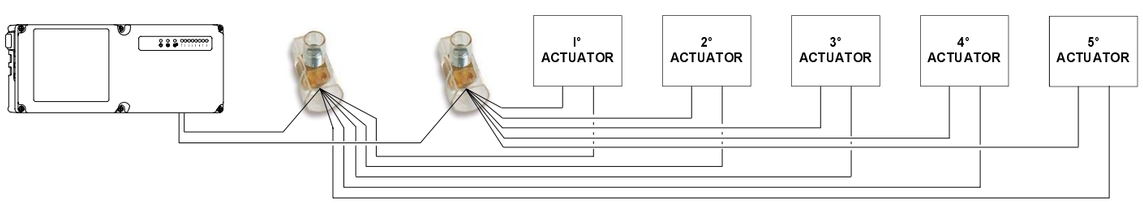

Fig. 5: Wiring example for up to 5 actuators per channel with cap terminals.

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follows:
blinking green = NC actuator
blinking red = NO actuator
- Pressing the button corresponding to a channel will change the NO-NC setting and the LED will indicate the new status.
- Press the association button '**A**' to terminate the configuration procedure. In any event, after 20 sec of inactivity the module will automatically exit the configuration mode, saving any changes made.

Configuring the periodic activation of actuators

The 8-channels module is set in the factory to carry out a function of periodically switching on the actuators: if the actuator outputs remain off for long periods, they will automatically be switched on for at least 5 minutes every 2 days to prevent damage from being caused by inactivity.
If this function is not required, it can be individually disabled for each channel.

- To enter the configuration mode, press the association button '**A**' and channel 2 button '**CH2**' together for three seconds.
- The LED of each channel will start blinking. The meaning is as follows:
  blinking green: periodic activation of actuators enabled.
  blinking red: periodic activation of actuators disabled.
- Pressing the button corresponding to a channel will change the setting and the LED will indicate the new status.
- Press the association button '**A**' to terminate the configuration procedure. In any event, after 20 sec of inactivity the module will automatically exit the configuration mode, saving any changes made.

PWM output regulation

The 8 channels module is factory set to operate on every channel with ON/OFF regulation with hysteresis. Through the configuration menu of some thermostats this regulation mode can be modified. As an example it could be possible to change the hysteresis value or activate a PWM type (Pulse Width Modulation) proportional regulation, as well as customize proportional band, integral time etc., according to any specific need. For additional information refer to the user manual of the thermostats featuring this capability:
Wireless digital thermostat.
Wireless digital weekly chronostat (from firmware 021613A1 onward).
In case the user wants to go back to the ON/OFF regulation with hysteresis a 'Factory Reset' can be performed.

OPTION DIP-SWITCH (❶ in figure 1)

DIP-SWITCH 1: Safety antifreeze option

- ▲ In the absence of radio communication, it switches on the actuator every hour for 18 minutes in the antifreeze mode.
- ▼ In the absence of radio communication, it switches off the actuator completely.

The 'safety antifreeze' option is useful in cases where not providing any thermal energy to the system could cause the pipes to break.
In the event that a problem occurs in the radio communication with one or more outputs, if the safety antifreeze option has been enabled the outputs in question will be switched on automatically every hour for 18 minutes, supplying 30% power to the system.

DIP-SWITCH 2: Periodic activation of pump output

- ▲ If the pump output always remains off, it is switched on for 1 minute every 2 days to prevent the pump from being damaged due to inactivity.
- ▼ Function deactivated.

The 'periodic activation of pump output' option is useful if the system includes a circulation pump that could undergo damage if left inactive for long periods of time.
When this option is enabled, the auxiliary output will be switched on for 1 minute every 2 days.
The output will be switched on at the same time as the actuators if the periodic activation function is also enabled for the actuator outputs.

DIP-SWITCH 3: Share pump output

- ▲ The pump output will be switched on/off according to the status of the channels of all modules connected in a chain.
- ▼ The pump output will be switched on/off according to the status of the channels present on the same module.

If the 'share pump output' option is enabled, the relay will be controlled according to the status of the channels of all modules connected in cascade to one another.
If the option is disabled, the pump output relay will be switched on or off depending solely on the status of the outputs present on the module to which the relay itself belongs.

DIP-SWITCH 4: Heating/Cooling selection via external input

- ▲ The Heating/Cooling status is determined by the external Heating/Cooling input.
- ▼ The Heating/Cooling status is determined by the thermostat transmitter.

When the 'Heating/Cooling selection via external input' option is enabled, the external Heating/Cooling contact will determine the operating mode for all thermostat-controlled channels of the module. See the paragraph on 'External Heating/Cooling input' for further information.
If the system you are installing does not require any particular options to be enabled, it is sufficient to leave all DIP-switches in the '0' (▼)position.

Heating/Cooling selection

The 8-channels module is factory configured (DIP-switch 4 down) so that that the Heating/Cooling status of each channel will be determined by the setting of the associated thermostat transmitter.
However, if a chronostat is present in the system, it will override the thermostat settings and impose its own Heating/Cooling status on all thermostat-controlled channels, including those of other modules connected in cascade to the same active antenna.
This makes it possible to change over the mode selection easily by means of a single device (chronostat) without having to adjust every thermostat individually.
If there is more than one chronostat in the system, the one controlling the lowest channel (in the module closest to the antenna, in the event of a number of cascade-connected modules) will override the others in determining the Heating/Cooling status.
The Heating/Cooling status of a chronostat can never be changed via the 8-channels module: it must always be adjusted manually. The options permitting a global Heating/Cooling changeover apply only for the channels controlled by thermostats.
If the 8-channels module is configured so that the Heating/Cooling status is determined by an external input (DIP-switch 4 up), the thermostat-controlled channels will take on the status defined by the external contact. However, the module cannot change the Heating/Cooling status of any channels controlled by chronostats.
In cases where a chronostat is present in the system, it is not convenient to use the 'Heating/Cooling selection via external input' option since you can change the Heating/Cooling setting of all thermostat-controlled channels simply by changing that of the chronostat.
The status of the external Heating/Cooling input is communicated to all the modules connected in cascade. Therefore, it is not necessary to connect the inputs of several modules in parallel: it is sufficient to connect the switch to one module in the chain in order to change the Heating/Cooling status of all channels in the system.
If a thermostat-controlled channel has been associated with a chronostat, the channel will always take on the Heating/Cooling status of the associated chronostat, irrespective of the setting of DIP-switch 4.

External 'Heating/Cooling' input

If the 'Heating/Cooling selection via external input' option is enabled (See paragraph on 'DIP-switch options'), the external Heating/Cooling contact will determine the operating mode for all thermostat-controlled channels of the module:
contact open: heating mode
contact closed: cooling mode
See the paragraph on 'Heating/Cooling Selection' for further information and also in the event that a chronostat is present within the system.

'Global standby' input

To the 'Global standby' input it is possible to connect a contact which, when closed, will cause all channels of the module to switch off.
When the contact is open, normal operation will resume.
Even the channels controlled by a chronostat will be switched off by the global standby input.
If the system is operating in the heating mode (as determined by

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the heating mode (in the cooling mode Tcomfort + fixed reduction value). The 8-channels module has 4 trimmers, indicated by Ⓒ in Figure 1, by means of which it is possible to adjust the fixed reduction value between 0 and 7 °C.
Each trimmer allows you to set the amount of the temperature reduction for two adjacent channels: for example, trimmer SB1-2 sets the reduction on channels 1 and 2, trimmer SB3-4 sets the reduction on channels 3 and 4, and so on.
The economy mode can be activated by the external 'Economy' input via an override command or controlled by an associated chronostat. The device permits one or more thermostat-controlled outputs to be associated with the output of a chronostat, so that the associated channels will receive from the chronostat an indication as to the time of day and information about which setpoint - comfort or economy - should be used to regulate the room temperature. The OFF or antifreeze status is likewise received by the associated thermostats.
If the chronostat is currently set in the comfort mode, the associated thermostats will abide by the setpoint set on their respective knobs; if, on the other hand, the chronostat is currently set in the economy mode the associated thermostats will apply the temperature reduction as described above. Similarly, if the chronostat is off with the antifreeze function set on 5 °C, the associated thermostats will likewise be set on an antifreeze temperature of 5 °C. The thermostats can have a selector that allows them to be set in the comfort or economy mode according to the time schedule of the associated chronostat, or to override the latter so as to remain always set in the comfort mode or always off. See thermostat instructions. See the chronostat instructions to find out how to program time schedules and comfort and economy temperatures.
In this way a chronostat and the thermostats associated with it will form a 'zone'.
For example, in a home it would be possible to create separate 'zones' for the living area and bedroom area, with room temperatures in each area regulated according to different time schedules programmed on two different chronostats.

Procedure for associating thermostats with a chronostat
Before starting the association procedure, make sure that the address self-learning procedure has been carried out for all thermostats and chronostats of the system.

1. To start the procedure press the association button '**A**' for one second.
2. The 8-channels module and all the modules connected to the same antenna will go into the association mode: the LED of each channel will start blinking: it will blink green if the channel is controlled by a chronostat or red if the channel is controlled by a simple thermostat. If the channel is inactive, no address has been memorised and the corresponding LED will remain off.
3. Select the chronostat you want to associate thermostats with by pressing the button of the corresponding channel, whose LED will be blinking green. Once the button has been pressed the green LED will remain steadily lit to confirm the selection. The blinking green LEDs of any other chronostat channels will go off.
4. Now you can choose which thermostats to associate with the selected chronostat by pressing the button of the corresponding channel, whose LED will be blinking red. Once the button has been pressed the red LED will remain steadily lit to confirm the selection. It is possible to associate or disassociate the thermostats by repeatedly pressing the button corresponding to the channel. The red LED of a channel will blink if the thermostat is disassociated and remain steadily lit if the thermostat is associated.
5. By again pressing the button corresponding to the selected chronostat, whose green LED will be steadily lit, the chronostat itself will be unselected and go back to the condition described in step 2, with the LED blinking green. Steps 2 to 5 can be repeated to associate thermostats with all the chronostats in the system.
6. To exit the association mode, press the association button '**A**'.

NOTE
The association procedure can be repeated at any time in order to make changes or simply carry out a check.
For example, to check which channels a transmitter has or has not been associated with by means of the self-learning procedure, follow steps 1 and 2 and exit with 6.
To check the associations with chronostats, carry out the whole procedure without pressing any buttons corresponding to thermostats in step 4.
The self-learning procedure cancels the association of a channel.
Therefore, if the self-learning procedure needs to be repeated for one or more channels, the association procedure will likewise have to be repeated as necessary.
It is possible to associate thermostats with chronostats whose channels reside in different 8-channels modules, provided they are connected in a chain to the same active antenna.

Learning the association
A chronostat can be associated even if there is no channel assigned to it on the module itself or on any other of the modules connected in chain. Actually on any thermostat channel can be applied a self-learning procedure of the association with the chronostat. The procedure is much similar to that of the address self-learning, with the chronostat in 'test mode': just press one second the button of the channels that must be associated; in this way the self-learning procedure is initiated and the channel led flashes quickly in yellow. Press the association button '**A**' to confirm the association: the led will flash quickly in green.
As soon as a test command is received the led will remain steady green and after that a sequance red-green-red-green will evidence the storing in memory of the association with the chronostat.

Checking the signal strength
The device constantly indicates the strength of the radio signal received for each of the eight channels.
This makes the whole system simpler to install and adjust and moreover allows the user to carry out an instant check on the quality of the radio communication over each channel.
The signal strength is indicated by each of the 8 output status LEDs. They may light up green, yellow or red depending on the quality of the radio signal received:

Green: The signal received is good or excellent, radio communication is reliable.
Yellow: The signal received is sufficient.
Red: The signal received is weak, communication is not reliable.

The status of the output of an actuator that is currently switched off is signalled with the corresponding LED faintly lit rather than off, so that the quality of the radio signal can always be seen.
The 8-channels module indicates two types of signal quality via the LED of each channel based on:
- An immediate analysis of the last command received.
- A long-term analysis of the commands received.

The LED will normally indicate the 'long-term' signal quality, based on the quantity of correct commands received over the previous 90 minutes of operation. This data is stored in a non-volatile memory, so that it will be possible to check the status of each channel even after a mains power cut or blackout.
At the moment a channel receives a radio command, the corresponding output LED goes off for a brief instant and then immediately back on again. For a brief instant the LED will provide an immediate indication of the last command received, proportional to the strength of the radio signal received.
If a transmitter is in the 'test' mode, the corresponding LED on the 8 -channels module will always provide only an 'immediate' indication of signal strength so that you can instantly assess whether to go ahead with mechanical installation.
If the signal strength is not acceptable, try changing the position of the active antenna or, if necessary, of the transmitter.
Remember that both the transmitter and receiver must be installed away from metal objects or metal-reinforced walls that could weaken the radio signals.

NOTE
The output LED may blink to signal a system fault. In this case the colour of the LED has a different meaning, see the paragraph on 'Actuator output status LEDs'.

Configuring NO/NC actuators
The 8-channels module is set in the factory to control normally closed (NC) actuators but each channel can be individually configured to control a normally open actuator (NO).

- To enter the configuration mode, press the association button '**A**' and channel 1 button '**CH1**' together for three seconds.
- The LED of each channel will start blinking. The meaning is as

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WARNING:
THE 8 CHANNELS 24V~ RELAY MODULE IS COMPATIBLE WITH BOTH THE 8 CHANNELS 230V~ RELAY MODULE AND THE 2 CHANNELS 230V~ RELAY MODULE.

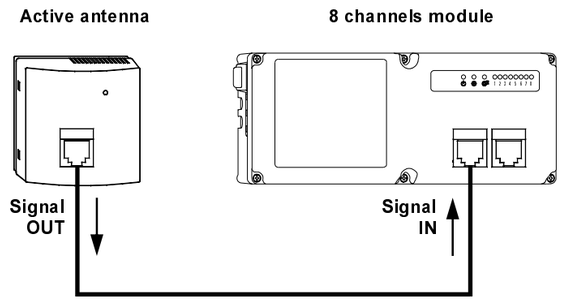

Fig. 6: Connection of cables for a system based on an active antenna and one 8-channel module.

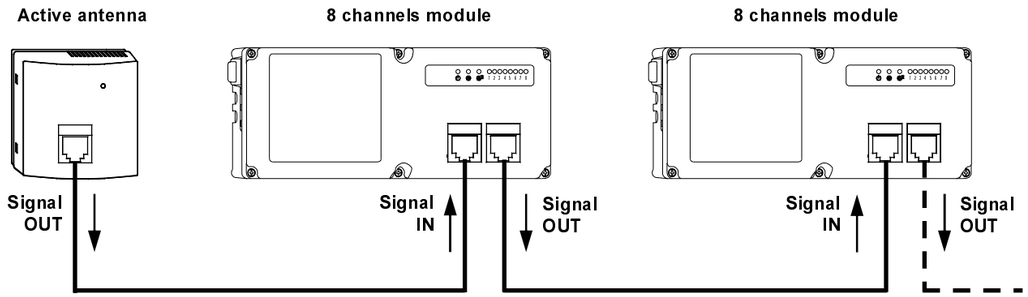

Fig. 7: Connection of cables for a system based on an active antenna and two 8-channel modules.

OVERVIEW
This device is an 8 channels relay module designed to drive electro-24V thermal actuators in heating and cooling wireless systems and installed in domestic premises or offices. It features 8 independent channels any of which can be associated to a single wireless transmitter (either wireless thermostat or chronostat).
WARNING: THIS MODULE IS TO BE USED WITH 24V ACTUATORS ONLY.
The device controls up to 8 outputs for 24V powered actuators; each output can drive several actuators connected in parallel, provided that the overall maximum power absorption allowed is not exceeded (see paragraph 'Technical Features'). Two additional relay outputs are available for a separate control of the pump and the boiler.
The device is equipped with a time delayed 8A fuse (**F1**) whose purpose is to protect the pump and the internal power supply from short circuit.

OPERATION
Each thermostat or chronostat transmitter emits 'radio commands' toward the active antenna according to the heating and cooling requirements of the room where the thermostat is located in and according to the programmed setpoint.
These commands are then received by the active antenna, installed in a suitable position in the room where the boiler or air conditioning equipment is installed.
The active antenna then transmits digital data to the 8-channel module via a data cable so that only the output associated with the transmitter concerned will switch on or off according to need. Each output can be connected to a valve that will control the flow of hot/ cold water in the heating/cooling unit present in the room.
In addition to the channel outputs the device provides two auxiliary outputs which become active any time at least one among the actuator outputs is made active (channels 1..8: see also 'Pump Operation').
While it is operating, the 8-channels module continuously monitors the status of each channel in order to detect any transmitter malfunctions.

MECHANICAL DESCRIPTION
On the front panel of the device, shown in Fig. 1, there are eleven leds and one light switch:

Power Led '⏻' (Ⓕ in figure 1).
The green 'power' LED, marked with the ' ⏻ ' symbol, can be steadily lit or blinking:
Green LED steadily lit: the device is powered.
Green LED blinking: there is a problem in communication with the active antenna or with other modules connected in the chain (for example, there may be a problem with the data cable connection).

Actuator output ' 1 .. 8 ' status LEDs (Ⓒ in figure 1).
There are 8 status LEDs, each of which corresponds to a channel, and they may light up green, yellow or red.
Each LED provides information about the output and the radio thermostat controlling it.
In general, the following rule should be borne in mind:

- When a LED is lit, irrespective of colour, it means that the corresponding actuator output is ON.
- When a LED is either off or only faintly lit, it means that the corresponding actuator output is OFF.
- The colour of the LED provides information about the quality of radio communication. See paragraph on '**Checking the signal strength**'.
- A continuously blinking LED indicates the presence of a fault in the system which requires the user's intervention.
  In this case the colour of the LED has the following meanings:
  Green: Error in the temperature probe of the thermostat transmitter.
  Yellow: Thermostat transmitter battery low.
  Red: Absence of radio communication.

When a channel is in a fault status and the corresponding LED is blinking, it may blink in two different ways depending on the output relay status. If the output is deactivated the LED will normally remain off but then emits a brief flash, whereas if the output is active, the LED will normally remain lit and then go off briefly.

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Pump output active led ' ▶ ' (E in Figure 1)
The yellow led, labeled with symbol ' ▶ ' show the pump relay status.
- Led on: pump output active (the pump connected to the 8 channels relay module is active).
- Led off: pump output not active.

Boiler output active led '◎' (D in Figure 1)
The yellow led, labeled with symbol '◎' show boiler relay status.
- Led on: boiler output active (the boiler connected to the 8 channels module is active).
- Led off: boiler output not active.

ON / OFF light switch (T in Figure 1)
The light switch located on the left side of the module turns on and off the module. When the light switch is turned on the module is powered.

Fig. 2 shows the internal layout of components.

Before opening the enclosure, it is absolutely necessary to make sure that the device is disconnected from the mains power supply.

Fuses
The device is equipped with a time delayed 8A fuse (**F1**), labeled with L in Figure 1, whose purpose is to protect the pump and the internal power supply from short circuit.

Self-learning and configuration buttons
The device includes 8 self-learning and configuration buttons indicated by B in Figure 1, one for each of the 8 channels (1 .. 8), plus an association button '**A**' indicated by A in Figure 1.

Trimmers and Dip-switch
Shown in Figure 1 are 4 trimmers (SB1-2 .. SB7-8) used to set the temperature reduction, indicated by G in Figure 1, plus a trimmer for setting the pump output delay time, indicated by H in Figure 1.
Also present is a DIP-switch, indicated by I in Figure 1, for configuring the ' options '.

INSTALLATION
To install the wiring centre:
- Remove the 6 screws labelled as 1 in Fig. 1 then remove the front plastic cover.
- Fix the device base to the wall by using the two screw holes labelled 2 in Fig. 1.

When working with electric tools in close proximity to the electronic parts, double check that the device is completely disconnected from 230V~ mains and take care to avoid damaging the circuits or components.

- Remove the 2 screws labelled as 3 in Fig. 1 then remove the plastic cover labelled as 4 in Fig. 1.
- Make the electrical connections as shown in ' Electrical Wiring ' below.
- Cable entry can be made in two different ways:

Cable entry through the top slots in the bottom face 7:
Using pliers, carefully remove the plastic ' teeth ' shown arrowed 7, Fig. 3, then after connecting the cable to the appropriate terminal, bend it as shown in Fig. 3 and clamp using the clamps provided.

Cable entry through the lower slots in the bottom face 8:
Pierce the sponge as shown in item 8, Fig. 3, then pass the cable through the sponge into the centre. Make the electrical connections to the appropriate terminals and clamp using the clamps provided.

- Close the device cover, by locating it on the base then screw the 6 closing screws.

ELECTRICAL WIRING
Please read carefully the following directions and compare with the electrical diagram in Fig. 4, which shows the terminals arrangement , the internal diagram and the wiring with the external components.
Terminals **L (1)** and **N (2)** are power inputs: ensure that terminal **N (2)** is connected with Neutral. The electronic circuit is internally protected with a time delayed 8A fuse, **F1** labeled as L in Fig. 1.
On the module plastic base is also located a brass terminal set, S in Fig. 1, to which can be wired the protective earth cables of the different devices connected to the product.
Terminals **N1** (3) and **L1** (4) deliver 230V~ protected by fuse **F1** for powering the circulation pump.
The contacts of the pump relay are available at terminals 5 and 6.
Terminals 4 and 5 are bridged in factory so that it is possible to wire a pump directly, with neutral at terminal 3, live at terminal 6 and protective earth at the brass block, S in Fig. 1.
Should the user need a voltage free contact for the pump operation , just remove the wire bridge between terminals 4 and 5 and use the voltage free contact available at terminals 5 and 6.
The boiler relay contacts (voltage free) are available at terminals 7 and 8.
Terminals 9 to 24 are the 8 outputs for 24V actuators.
More than one actuator can be wired to the same output, but in this case the installer must know the power consumption of the actuators and be sure not to exceed the maximum power that the module can supply overall.
As an example if 4W (each) actuators are used, multiply 4W by the total number of actuators which are meant to be used. The resulting value must be smaller than the 'Maximum total power for actuators outputs' allowed by the module and reported under paragraph 'TECHNICAL FEATURES'.
The actuator power value that must be used in calculations is the power drawn at first turn on or 'cold start' because this value is significantly larger than the steady operation power.
Terminals 25, 26 and 27 (Fig. 4) are respectively the external 'Global standby', 'Heating/Cooling' and 'Economy' inputs that can be closed at terminal 28 to activate the associated function.
The status of the external inputs are communicated to all modules connected in the chain, so it is not necessary to connect the inputs of several modules in parallel. For example, it is sufficient to connect the switch to a single module in the chain in order to change the Heating/Cooling status of all channels in the system.
The 'SIGNAL IN' socket is used to plug in the cable leading from the active antenna, or else the output cable of another 8-channels module if the system requires more than 8 actuator outputs.
Each 8-channels module delivers the signal originating from the antenna to the 'SIGNAL OUT' socket, thus enabling the system to be expanded. See the examples in Fig. 6 and Fig. 7.
Up to ten 8-channels modules can be connected in cascade to the same antenna. This 24V~ 8 channels module can also be connected in chain with 230V~ 8 channels modules and 230V~ 2 channels modules.

TECHNICAL FEATURES

Power supply:		90 .. 264 V~
Supply frequancy:		47 .. 63 Hz
Maximum absorption:		110 VA
Absorption with no-load:		2W (DAPF84 connected, all outputs off)
Outputs rating:		
Actuators outputs:		8 x 3A@24V=, Max 2,63A total
Pump output:		5A@250V~
Boiler output:		5A@250V~, voltage free
Maximum total power on actuators outputs:		63 W
Maximum number of actuators:		14 (4 W at start-up)
Fuse (**F1**):		8A time delayed
Economy reduction range:		0,0 .. 7,0 °C
Pump output delay:		0 .. 7 min
Antifreeze temperature:		6,0 °C
Regulation hysteresis:		0,3 °C (adjustable)
Protection rating:		IP 44
Operating temp.:		0°C .. 40°C
Storage temp.:		-10°C .. +50°C
Humidity limits:		20% .. 80% RH (non-condensing)
Enclosure:	Material:	ABS UL-V0 auto-estinguente
	Colour:	Signal White (RAL 9003)
	Dimensions:	320 x 125 x 67 mm (W x H x D)

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Weight:	~ 1092 gr.
EMC reference standards:	EN-55014-2 (1997) EN-55014-1 (1993)
LVD reference standard:	EN-60730-1 (2011)

⚠ WARNING
- **Connect the device to the mains power supply via an omnipolar switch complying with current regulations and having a contact gap of at least 3 mm in each pole.**
- **Device installation and electrical connections must be entrusted to qualified personnel and must comply with the laws in force.**
- **Before making any connections make sure the mains power is disconnected.**

CONFIGURING THE SYSTEM
The receiving system is made up of at least one 'active antenna' and one '8-channels module'. Several modules can be connected in cascade to increase the number of available outputs. Carefully make the power connections and output connections on the device and then, with the power supply still disconnected, plug the cable for connecting the active antenna to the 8-channels module into the corresponding sockets.
The cable leading from the active antenna must be plugged into the socket marked '**SIGNAL IN**'. If you intend to use additional modules in a cascade connection, you must connect the '**SIGNAL OUT**' socket of each module to the '**SIGNAL IN**' socket of the module following it in the chain, using the cable provided. The last device in the chain will have the '**SIGNAL OUT**' socket free. Using the '**SIGNAL IN**' and '**SIGNAL OUT**' sockets up to 10 modules can be connected together. Carefully inspect each connection and then continue with the self-learning procedure

Self-learning procedure
- Switch on the 8-channels module: the LEDs will blink for a few seconds during the initialisation phase.
- Switch on a single thermostat or chronostat and set it in the 'test' mode (this means that the transmitter will continuously emit an ON command followed by an OFF command after two seconds).
  It is advisable to keep the transmitter in the same room as the receiver, positioned at a distance of no less than 1 metre from the active antenna.
- In order to link each individual transmitter to the desired receiving channel it is necessary for the module to learn the transmitter 'address' code, which will be stored in a non-volatile memory. To carry out this procedure simply press the button corresponding to the channel you want to 'associate' with the transmitter for one second during the 'test' phase.
  This will launch the 'self-learning' procedure and the LED of the channel in question will rapidly blink yellow. If you wish to memorise the address of the same transmitter on several channels you can press the button of the other channels and the corresponding LEDs will blink yellow.
- As soon as a test command is received, the LED associated with the channel will remain steadily lit yellow for 7 seconds. During this time the module will continue to receive test commands and memorise only the signal received at the highest strength. This means that it will memorise the signal coming from the nearest transmitter and will thus avoid learning addresses from any transmitters in the test mode which are not meant to be connected to the system.
- After 7 seconds have elapsed the procedure will be terminated and the corresponding LED will blink red-green-red-green in sequence to indicate that the transmitter address has been saved.
- The 8 channels module returns to normal operation and the output of the 'learnt' channel will start turning on and off, every two seconds. thus following the comands issued by the transmitter in test mode.
  While the test function is active it is highly advisable to check the signal strenght placing the transmitter in its final position.
  Do not test more than one transmitter at the same time, in order to avoid misleading indications due to signals overlapping.
- After verifying that the signal strength is satisfactory, you may proceed with the final mechanical and electrical installation.

NOTE
The device can indicate which channels an address code has or has not been associated with. See paragraph on 'Procedure for associating thermostats with a chronostat'.
If the system uses fewer than eight thermostats and therefore does not use all of the outputs, it is important to keep the unused channels 'inactive' by not assigning them an address code. The device will ignore the inactive channels, since they are not connected to any valve: this configuration is very important to ensure the correct control of the pump and boiler outputs.

Configuring a channel as ' inactive '
The 8-channels module has all channels in an 'inactive' status when it leaves the factory; however, if an active channel needs to be configured as 'inactive', the address assigned to it can be 'erased' by means of the following procedure:
- Press the button corresponding to the desired channel (Figure 1) and keep it pressed down.
- The corresponding LED will rapidly blink yellow and after a few seconds it will blink red-green-red-green in sequence.
- Release the button: the channel is now inactive

When a channel is 'inactive' it will be ignored for all functions and its respective output will always remain off, irrespective of the signals received. Making a channel inactive will also have the effect of cancelling any association with a chronostat.

Resetting to factory status
If you want to erase all of the memorised addresses, associations with chronostats, NO/NC configurations and periodic activation of outputs and the regulation mode for the outputs, thus restoring the module to its original factory status, you can carry out a reset procedure as follows:
- Disconnect the power supply.
- Press the association button '**A**' (Figure 1) and keep it pressed down.
- Switch the power back on.
- Continue pressing the association button '**A**' (about 3 sec) until the output LEDs start blinking like they normally do when the device is switched on.
- Release button '**A**'; the module will restart and the memory of each channel is erased.

Pump output
The relay of the pump output is activated each time at least one actuator output is switched on. If the 'share pump output' option is enabled (see paragraph on 'DIPswitch options') the relay will be controlled according to the status of the channels of all modules connected in cascade to one another. If the option is disabled, the relay will be activated based solely on the status of the outputs of the module the relay itself belongs to. It is possible to set a delay in the on/off switching of the auxiliary output. The delay may be set in the range of 0 to 7 minutes by adjusting the trimmer indicated by H in Figure 1. This will permit the output to control a pump, which will wait for the electro-thermal actuators to open before starting to circulate water and continue after all actuators have been switched off, until they are completely closed. If a pump is controlled by the module, it is useful to enable the 'periodic activation' option (see paragraph on 'DIP-switch options').

Boiler output
The boiler relay is energised every time at least one actuator output is active.
When the module is connected in chain with other modules the boiler relay will be energised according to the state of all modules in the chain.
The boiler relay is turned on and off with a 10 seconds delay.

Associating thermostats with a chronostat
Through radio signals the thermostats transmit to the 8-channels module the current room temperature reading and setpoint programmed on the knob. Accordingly, the 8-channels module can decide whether to adjust the setpoint downward for the 'economy' function, which allows the temperature to be regulated so as to save energy in certain periods of the day.
This function allows the temperature in the room where the thermostat is installed to be regulated according to two setpoints: comfort and economy. The comfort setpoint corresponds to the temperature set on the knob, whereas the economy setpoint is equal to the comfort temperature minus a fixed reduction value in

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