PRODUCT MANUAL

QUAD

Analog & Digital Sensor

ZN1IO-4IAD

Edition 1

Version 2.1

1. INTRODUCTION

1.1. PRODUCT

The QUAD has **4 analog/digital inputs** available to be configured as a **binary input** or a **temperature probe**.

Every binary input in the device can be connected to a push button or a switch/sensor.

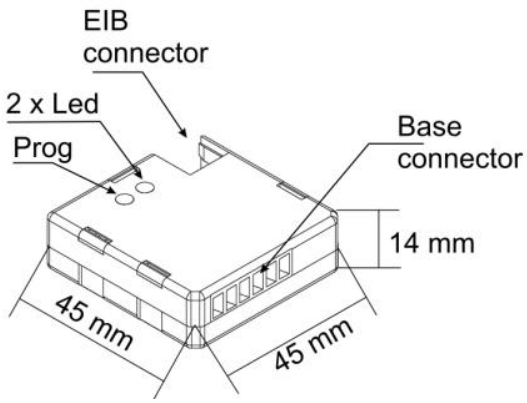
Temperature probe inputs include a room **thermostat** function (selectable by parameter) to control basic and additional heating/cooling systems.

Main characteristics:

- Reduced size: 45 x 45 x 14 mm
- Can be mounted inside distribution boxes or electrical mounting boxes (60x60mm) with blank cover plate.
- Shutter and Light control
- Scenes sending
- EIB/KNX BUS coupling unit integrated.
- Complete data saving after Power Failure.
- CE directives OK

Elements description:

- **Prog:** Button to set the device programming mode. When initially pushed, after powering the BUS, "secure mode" is set.
- **LED:** Led On indicates "Programming Mode". Led blinking every 0.5s, the device is set in "secure mode".



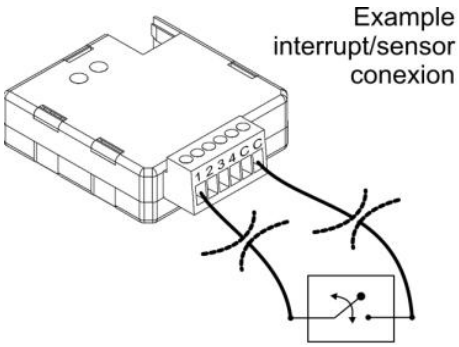
1.2. WIRING

The QUAD has 4 Analog/Digital inputs available to be configured as a **binary input** or a **temperature probe**.

1.2.1. PUSH BUTTON / SENSOR / SWITCH

Every binary input in the device can be connected to a push button or a switch/sensor.

Type	Max. Length (m)
push button	30
switch/sensor	30

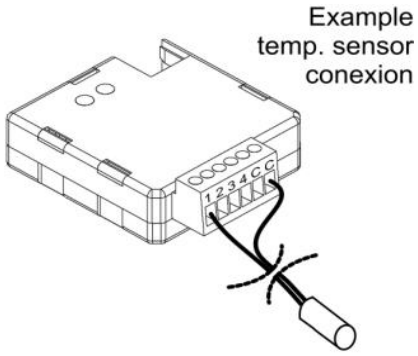


1.2.2. TEMPERATURE PROBES

Temperature probe inputs include a room thermostat function (selectable by parameter) to control basic and additional Heating/Cooling Systems.

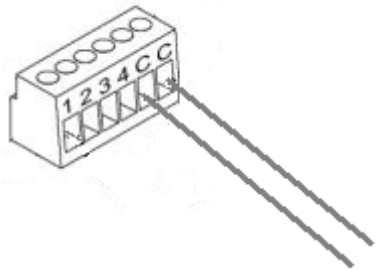
Temperature probe must be NTC type (Negative Temperature Coefficient). There are two options:

- ✓ ZN1AC – NTC68E Probe (Epoxi)
- ✓ ZN1AC – NTC68S Probe (Steel)



Model	Min. Temperature (ºC)	Max. Temperature (ºC)	Max. Length (m)
NTC68E	-30	90	30
NTC68S	-30	125	30

Below, a detail of the binary inputs and/or temperature probes connection clamp is shown:



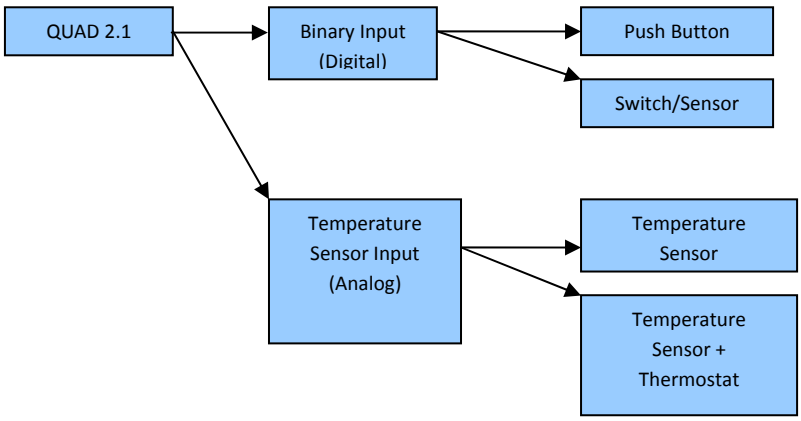
Input Terminal detail

Note: *Both points identified as "C" on the the terminal are internally linked so that both can be used indistinctly when connecting the inputs.*

2. PARAMETERIZATION

The QUAD has 4 Analog/Digital inputs available to be configured as a binary input or a temperature probe.

- Binary Input
- Temperature probe



2.1.BINARY INPUTS

Following functions may be selected through a Push Button input type:

- **0/1 Sending:** To send a 1 bit value to the BUS
- **Shutter Control:** This function results on sending a 1 bit object to the BUS in order to control shutters.
- **Dimmer Control:** This function results on sending a 4 bits Dimming Control Object to the BUS.
- **Scene sending:** This function results on sending a 1 byte Scene Control Object to the BUS; a scene on the BUS, may be then managed from the input through this Object.

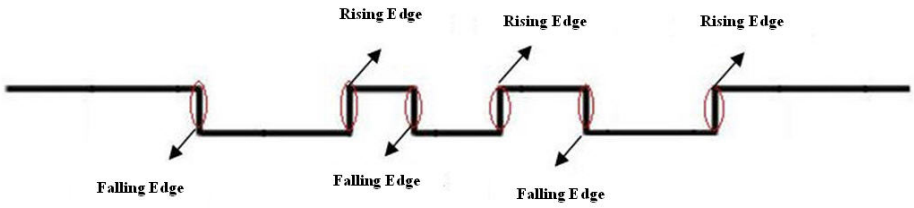
It is possible for the QUAD to carry out a function with a short press and another different function with a long press. The QUAD then can control up to 8 different functions through its inputs.

Example: *Input 3 can control a light with a short press and run a scene with a long press.*

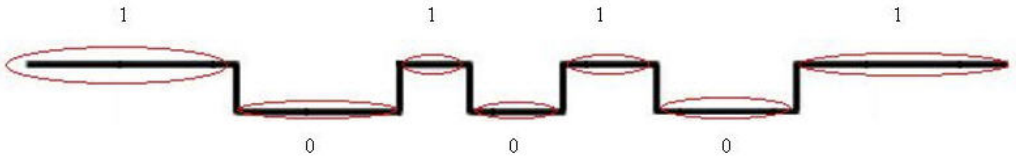
For a sensor input type the following function is available:

- **0/1 Sending:** For every rising/falling edge detected on an input, user can select whether to send a "0", a "1", or an alternative switching of “0” and “1”

Difference between Push Button & Switch/Sensor



Sensor/Switch → *Detects the transition of the digital signal from low to high (rising edge) or from high to low (falling edge)*



Push Button → *Detects the status of the pulse*

2.1.1. PUSH BUTTON

A Push Button connected to an input consists of an electrical mechanism which keeps its contacts open under normal conditions. While keeping it pressed, contacts remain closed to later recover its normal position when released.

Two different actions over a push button can be distinguished:

- **Short Press**
- **Long Press**

Note: *QUAD cannot be used with push buttons with closed contacts in normal conditions.*

2.1.1.1. SHORT PRESS

❖ **ONE BIT SENDING "0/1"**

This function results on sending 1 bit to the BUS

- **Response:** This parameter fixes whether the value sent is "0", "1" or an alternative switching between "0" y "1".
- **Cyclical Response Sending:** You can ask the QUAD to periodically send "0" or "1", or even both (when "always is selected).
  - ✓ **Cycle Time:** Set the time between two consecutive telegrams when using the Cyclical Sending.

❖ **SHUTTER CONTROL**

This function results on sending 1 bit to the BUS in order to control shutters

- **Response**: The corresponding control object may be used to:
  - ✓ **Raise:** Raise the shutter. "0" is sent to the BUS.
  - ✓ **Lower:** Lower the shutter. "1" is sent to the BUS.
  - ✓ **Raise/Lower (toggle switch):** Alternative switching between the Raise/Lower orders (to manage the shutter with an only input).
  - ✓ **Stop/Step Up:** Stops the shutter ("0" is sent to the BUS). When talking about shutters with lamellas, this mode also allows the user to control them by moving lamellas a step up.
  - ✓ **Stop/Step Down:** Stops the shutter ("1" is sent to the BUS). When talking about shutters with lamellas, this mode also allows the user to control them by moving lamellas a step down.
  - ✓ **Stop/Step (toggle switch) :** Stops the shutter. When talking about shutters with lamellas, this mode also allows the user to control them; this parameter alternatively switches the lamellas up/down steps.

Note: *When no directional lamellas are present, any of the 3 last options will "stop" the shutter.*

Note: *When up/down (toggle) option is selected for a short press, the user will not be able to stop the shutter with another short press on the same input.*

❖ **DIMMER CONTROL**

This function results on sending a (4 bits) Dimming Control Object to the BUS.

- **Response :** Depending on the chosen option, the Control Object may be:

  - ✓ **Light ON:** Turn the light ON. “1” is sent to the BUS.
  - ✓ **Light OFF:** Turn the light OFF. “0” is sent to the BUS
  - ✓ **Light ON/OFF (toggle):** Alternative switching between the ON/OFF orders (to manage the lighting level with an only input).
  - ✓ **Brighter:** Depending on the “Dimming Step” set, every press on the input will make the brightness level go up. The first short press on the input will increase the brightness level ; a second press stops the “Increase”
  - ✓ **Darker:** Depending on the “Dimming Step” set, every press on the input will make the brightness level go down The first short press on the input will decrease the brightness level ; a second press stops the “Decrease”
  - ✓ **Brighter/Darker (toggle):** Alternative switching between the Brighter/Darker orders.
  - ✓ **Dimming Step:** Depending on the value selected, different brightness levels are offered. Once the “DIMMER CONTROL” option is selected, it is necessary to set this parameter to fix the increasing/decreasing percentage level with every in every dimming step.

Dimming Step	Necessary button presses for a complete regulation (0 – 100%)
6. 100%	1
5. 50%	2
4. 25%	4
3. 12.5%	8
2. 6.25%	16
1. 3.1%	32
0. 1.5%	64

❖ **SCENE SENDING**

This function results on sending a (1 byte) Scene Control Object to the BUS; a scene on the BUS can be managed with an input through this object.

- **Response:** Choose whether the scene will be "Run" or "Saved".
- **Scene:** This parameter identifies the scene to Run/Save with the corresponding input.

2.1.1.2. LONG PRESS

Configuration options are exactly the same as in the previous case "Short Press".

2.1.1.3. THRESHOLD TIME

This parameter defines the time limit where a short press turns into a long press. If a press on the screen ends before the long press time, then it is a short press. This value must be set with precision to tenths of a second (e.g. to get "0.5" seconds, set "5")

2.1.1.4. RESPONSE DELAY

This parameter sets the time to wait for the object to be sent to the BUS since the action on the input took place. This value must be set with precision to tenths of a second (e.g. to get "1" second, set "10").

To get an immediate sending (no delay), set value "0" in this field.

2.1.1.5. DELAY (LONG PRESS)

This parameter sets the time to wait for the object to be sent to the BUS since the action on the input took place. This value must be set with precision to tenths of a second (e.g. to get "1" second, set "10").

To get an immediate sending (no delay), set value "0" in this field.

2.1.1.6. BLOCK:

By selecting "Yes" on this field, a new Communications object "Block appears on the ETS. This object can be used to disable an input:

- On receiving a "1" through this object, the QUAD will be ignoring any press on the input.

- On receiving a “0” through this object, the input recovers its enabled status, so that it is ready again to receive orders.

  Actions taken on the input while being disabled will not be taken into account.

2.1.2. SWITCH/SENSOR

A Switch/Sensor connected to an input, consists of an electrical mechanism which may have its contacts open or closed under normal conditions. These mechanisms don´t recover their normal position automatically as with the push button.

A transition of a digital signal from low/high/low is called "Edge":

- **Falling Edge:** From closed contact to Open Contact.
- **Rising Edge:** Paso de Contacto Abierto a Contacto Cerrado.

By selecting a Switch/Sensor input, “[Switch/Sensor] Edge” Communication object will be sent to the BUS every time a rising/falling Edge is detected

2.1.2.1. RISING EDGE

Set the value to be sent to the BUS in the transition of the digital signal from low to high

2.1.2.2. FALLING EDGE

Set the value to be sent to the BUS in the transition of the digital signal from high to low

2.1.2.3. DELAY “0”

Time for the QUAD to wait before sending value “0” through the “[Switch/Sensor] Edge” communication object when this value has been detected on an incoming edge.

2.1.2.4. DELAY “1”

Time for the QUAD to wait before sending value “1” through the “[Switch/Sensor] Edge” communication object when this value has been detected on an incoming edge.

2.1.2.5. PERIODICAL SENDING “0”

Set a period of time to cyclically send value “0” to the BUS when object “[Switch/Sensor] Edge” detects this value on an incoming edge. If not cyclically sending is needed, please select value “0” in this field.

2.1.2.6. PERIODICAL SENDING “1”

Set a period of time to cyclically send value “1” to the BUS when object “[Switch/Sensor] Edge” detects this value on an incoming edge. If not cyclically sending is needed, please select value “0” in this field.

2.1.2.7. SWITCH/SENSOR: BLOCK

By selecting “Yes” on this field, a new Communications object “Block appears on the ETS. This object can be used to disable an input:

- On receiving a “1” through this object, the QUAD will be ignoring any Edge on the input.
- On receiving a “0” through this object, the input recobres its enabled status, so that it is ready again to receive orders.

  Actions taken on the input while being disabled will not be taken into account.

2.2. TEMPERATURE PROBE INPUT

A temperature probe allow users to make measurements of real temperatures in a room or place.

In addition to the temperature probe, the QUAD application program includes a thermostat option for every enabled input as temperature sensor.

Thus, depending on the installation needs, the thermostat might be enabled or not (by parameter)

- Temperature Sensor
- Temperature Sensor & Thermostat

2.2.1. TEMPERATURE SENSOR

2.2.1.1. TEMPERATURE SENSOR CALIBRATION

Allow a user to recalibrate the Temperature Sensor referred to the own temperature measured by the sensor itself when the calibration parameter remains unchanged (value “0”).

Example: If we have a really accurate thermometer at home, we can take its measure as a reference for the Quad.

Measurement shown by the temperature probe	x ºC
Measurement shown by the accurate thermometer	y ºC
Positive difference between measures	x – y = z ºC
Positive Calibration parameter	z ºC
Negative difference between measures	x – y = - z ºC
Negative calibration parameter	- z ºC

2.2.1.2. TEMPERATURE SENDING PERIOD

This field is meant to set a period of time for the QUAD to send the registered temperature to the BUS through the **“Current Temperature”** Communication object.

2.2.2. TEMPERATURE SENSOR & THERMOSTAT

2.2.2.1. TEMPERATURE SENSOR CALIBRATION

Allow a user to recalibrate the Temperature Sensor referred to the own temperature measured by the sensor itself when the calibration parameter remains unchanged (value “0”).

Example: If we have a really accurate thermometer at home, we can take its measure as a reference for the Quad.

Measurement shown by the temperature probe	x ºC
Measurement shown by the accurate thermometer	y ºC
Positive difference between measures	x – y = z ºC
Positive Calibration parameter	z ºC
Negative difference between measures	x – y = - z ºC

Negative calibration parameter	- z ºC

2.2.2.2. TEMPERATURE SENDING PERIOD

This field is meant to set a period of time for the QUAD to send the registered temperature to the BUS through the **"Current Temperature"** Communication object.

2.2.3. THERMOSTAT

2.2.3.1. THERMOSTAT FUNCTION

Select the regulation type to carry out.

- **Heating**
- **Cooling**
- **Both Heating & Cooling**

On enabling any of the above mentioned options, new parameterization fields appear:

- ✓ **Enable special modes:** Setting this field to "Yes" 3 new Communications objects (Comfort, Night and Stand-by) will appear to enable them when necessary; furthermore, 3 additional communication objects per mode (Cool/Heat) will also appear to set the "Set Temperature" in the Special modes.

Communication Object	Function
Comfort	"1" enables the mode
Night	"1" enables the mode
Stand-by	"1" enables the mode
Temperature Confort (cool)	Set Temperature for the Special Comfort Mode (Cool)
Temperature Confort (heat)	Set Temperature for the Special Comfort Mode (Heat)
Temperature Noche (cool)	Set Temperature for the Special Night Mode (Cool)
Temperature Noche (heat)	Set Temperature for the Special Night Mode (Heat)
Temperature Salir (cool)	Set Temperature for the Special Stand-by Mode (Cool)
Temperature Salir (heat)	Set Temperature for the Special Stand-by Mode (Heatl)

The only way to exit a special mode is by sending a new set temperature through the "Set Temperature" Communication object.

Communication Object	Function
Set Temperature	Set the "Set Temperature". El termostato sale de cualquier modo especial al recibir una consigna a través de este objeto de comunicación

⇨ **Special Mode activation meaning:** Set by parameter the Thermostat performance when this is off and a special mode is selected (Night, Comfort or Stand By).

- Remains OFF & nothing changes
- Remains OFF & Setpoint Tª is updated
- Setpoint Tª changes and Thermostat turns ON

✓ **Start up settings (on BUS Voltage recovery):** This field is meant to preset the Thermostat performance (On / off) on BUS voltage return (after a Power Failure).

✓ **Reference Temperature:** For every thermostat in the QUAD, the user will be asked by parameter whether to use any of the probes in the QUAD (internal sensor measure) as a reference, or if on the other hand an external sensor will be used. The same parameterization field offers also the possibility to choose a proportion between both measures (QUAD probe + external sensor).

Proportion	QUAD Sensor	External Sensor
1	75%	25%
2	50%	50%
3	25%	75%

The resulting measure is exclusively used by the thermostat in the QUAD, and cannot be shown through any available Communication object.

❖ **HEATING:**

o **Freezing Protection:** Regardless of the status the thermostat may be (On/Off), when "Freezing Protection" is activated, the system will be warned to automatically keep the temperature always over a value (Protection Temperature) selected by parameter.

- ✓ **Protection Temperature:** This parameter fixes the minimum temperature the user will accept.
  - ⇨ Protection Temperature is measured in ºCelsius.
  - ⇨ There is no connection between the "Set Temperature" and the "Protection Temperature".
  - ⇨ This is the real temperature to be applied as freezing protection.
  - ⇨ Thermostat will turn Off when temperature in the room reaches "Protection Temperature + 1ºC"

o **Control Method:** To choose between Hysteresis or PI Control method:

- ✓ **Upper Hysteresis (décimas de grado):** This parameter sets the upper hysteresis point referred to the "Set Temperature"
- ✓ **Lower Hysteresis(décimas de grado):** This parameter sets the lower hysteresis point referred to the "Set Temperature"

o **Additional Heating:** Under normal conditions, Climatization Systems are responsible by themselves for the global regulation of the room temperature. However, "auxiliary systems" are more and more installed everyday, so these systems may be used to complement the heating system.

It is when a user relays on one of this auxiliary systems, (A/C split, Heat Pump…) when this parameter has a major importance.
Enabling this field, the auxiliary system is asked to contribute to reach the "Set temperature" as soon as possible.

- ✓ **Addditional Heating Band:** As mentioned before, the extra heating contribution must be complementary to the Heating System, this implies, that it would be inconsistent that the "Auxiliary" system provides heat until the "Set temperature" is reached. It is because of this that this parameter sets the number of degrees below the "Set Temperature" we want our "auxiliary system" to be referred.

  The real operation will be as follows

Auxiliary System Reference (Tª) = "Set Temperature"- "Additional Band"

And the Auxiliary System in this case will be providing heat to the room until its Reference Temperature is reached, to leave the Main System acting alone from that moment.

❖ COOLING:

- **Overheating Protection:** Regardless of the status the thermostat may be (On/Off), when "Overheating Protection" is activated, the system will be warned to automatically keep the temperature always below a value (Protection Temperature) selected by parameter.

  - ✓ **Protection Temperature:** This parameter fixes the maximum temperature the user will accept.
    - ⇨ Protection Temperature is measured in ºCelsius.
    - ⇨ There is no connection between the "Set Temperature" and the "Protection Temperature".
    - ⇨ This is the real temperature to be applied as overheating protection.
    - ⇨ Thermostat will turn Off when temperature in the room reaches "Protection Temperature – 1ºC"

- **Control Method:** To choose between Hysteresis or PI Control method:

  - ✓ **Control Type:** To choose between "PWM (1 bit)" and "Continuous (1 byte)" Control.
  - ✓ **Cycle Time:** This parameter sets the period of time to be analyzed by both control types.
  - ✓ **Control Parameters:** Depending on if the system is working with COOL or HEAT, this parameter sets the cooling or heating system type used in the installation.

- **Additional Cooling:** Under normal conditions, Climatization Systems are responsible by themselves for the global regulation of the room temperature. However, "auxiliary systems" are more and more installed everyday, so these systems may be used to complement the Main Cooling System.

  It is when a user relays on one of these auxiliary systems, when this parameter has a major importance. Enabling this field, the auxiliary system is asked to contribute to reach the "Set Temperature" as soon as possible.

  - ✓ **Additional Cooling Band:** As mentioned before, the extra cooling contribution must be complementary to the Main Cooling System, this implies, that it would be inconsistent that the "Auxiliary System" provides cool until the "Set temperature" is reached. It is because of this that this parameter sets the number of degrees over the "Set Temperature" we want our "auxiliary system" to be referred.

The real operation will be as follows:

Auxiliary System Reference (Tª) = "Set Temperature"+ "Additional Band"

And the Auxiliary System in this case will be providing cool to the room until its reference temperature is reached, to leave the Main System acting alone from that moment.

ANNEX I. CONTROL METHODS

HYSTERESIS

This is one of the control methods the thermostat may use to control a room temperature. Hysteresis can be used to filter signals so that the output reacts slowly by taking recent history into account. The only factor to consider when applying this method is the sensivity range; in this case, by setting this parameter we'll be setting both the upper and lower level of the sensivity range (hysteresis).

Example: a thermostat controlling a heater will turn the heater on when the temperature drops below A degrees, but not turn it off until the temperature rises above B degrees. Thus the On /Off output of the thermostat to the heater when the temperature is between A and B depends on the history of the temperature. This prevents rapid switching On and Off as the temperature drifts around a set point.

Consider that, if the GAP (interval between the upper and lower hysteresis points) is too narrow, devices in charge of transmitting/receiving the On/Off to the system might be damaged because of a rapid switching.

The default configuration sets a 2ºC GAP referred to the "Set Temperature" (1ºC above, 1ºC below).

> ***Note:*** *The control method the Thermostat uses when this reacts autonomously to the "Freezing or Overheating Protection" is* ***"2 Points with Hysteresis"****.*
>
> *In this case the lower hysteresis point is 0º (referred to the parameterized Temperature) while the upper point is 1ºC. This means that the system will start working exactly when the "Protection Temperature" is detected and won't stop until the room temperature raises one degree exactly.*

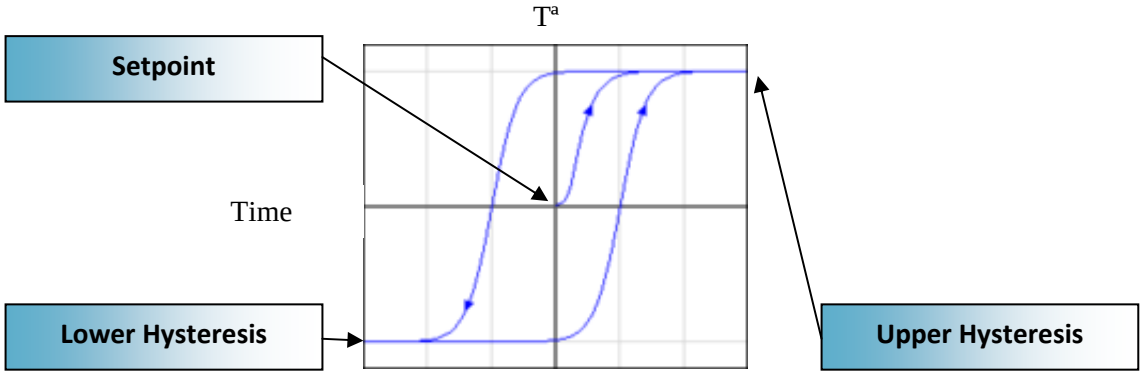


Figure 2.2.3

PI CONTROL (Proportional-Integral)

This control is carried out by following the KNX Standard rules.

There are different Systems to control ambient temperatures:

HEATING	COOLING
- Warm Water	- Cooling Ceiling
- Floor Heating	- Blowing Convector
- Electric Heating	- A/C Split
- Blowing Convector	
- A/C Split	

Depending on the climate control system used on the installation, users must choose the appropriate option.

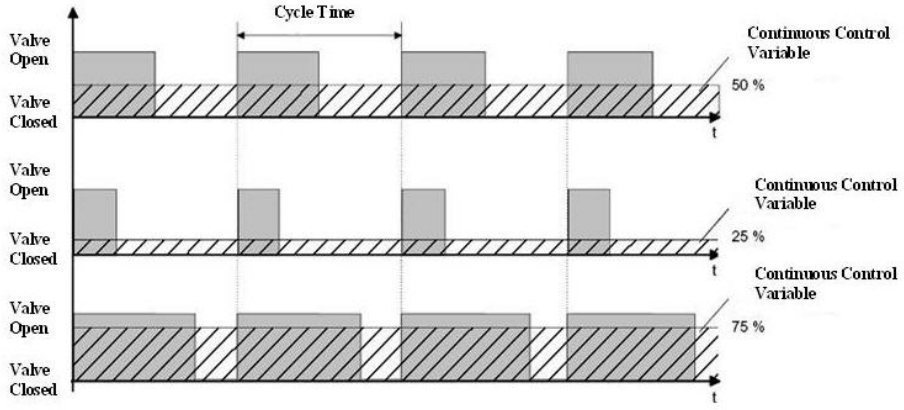
Any available option is internally parameterized for best performance in each case. The pre-Set options correspond to practical tests, ensuring a perfect performance control when controlling a room temperature.

> ***Note:*** *Advanced users may customize their own parameterizable constants:* ***Proportional Band & Integral Time***

The PI Control Method may be applied following two different Control Types:

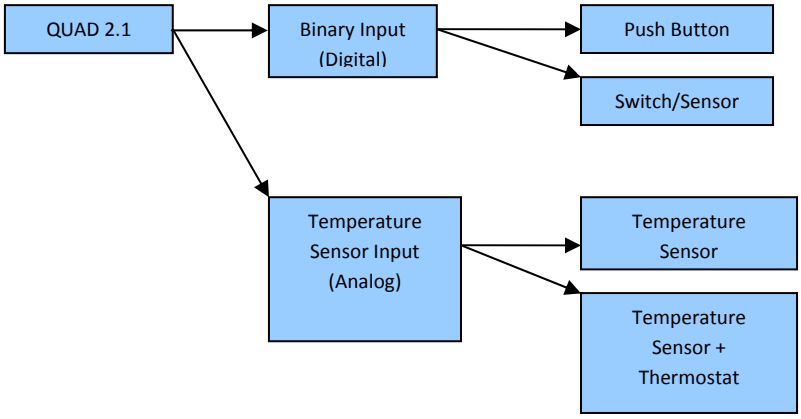
- **PWM (1 bit):** Acts over the device On/Off. This type of control makes an internal estimation on the **"Cycle Time"** prefixed by parameter, for the climatization system to be ON, to comply with the user requirements.

- **Continuous (1 byte):** Under normal conditions, the 1 byte manipulated variable is turned by the actuator into its equivalent "Switching PWM". The resulting output signal is internally calculated by the thermostat, setting the percentage of the **"Cycle Time"** (prefixed by parameter) for the corresponding valve to be ON to comply with the user requirements.

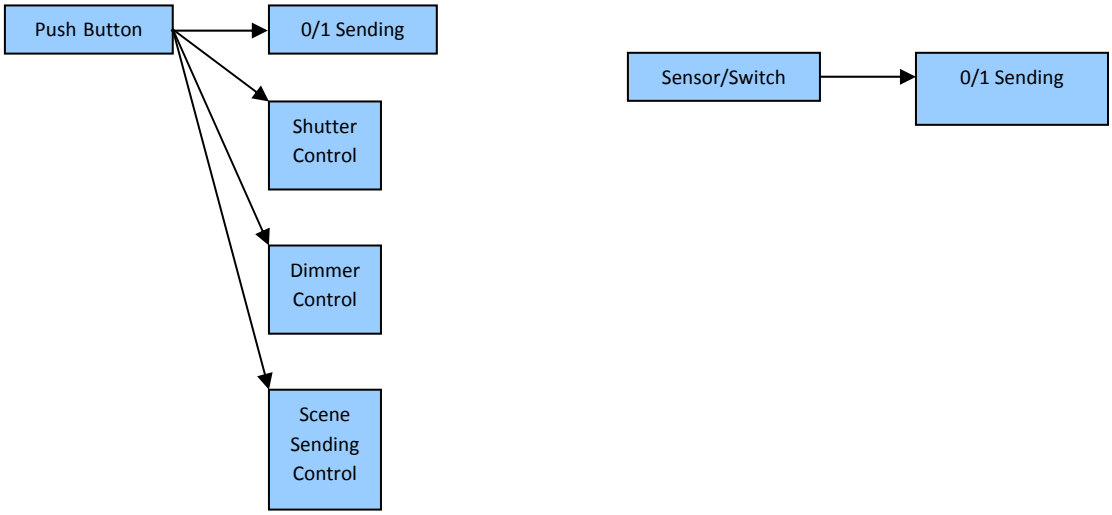


ANNEX II CONFIGURATION SCHEMES

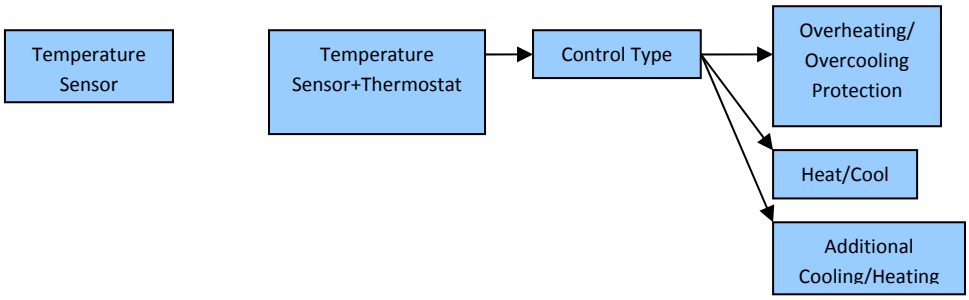
General Scheme



Digital input configuration scheme



Analog Input configuration scheme



ANNEX III COMMUNICATION OBJECTS

SECTION	NUMBER	SIZE	IN/OUT	FLAGS	VALUE			NAME	DESCRIPTION
					RANGE	1ª TIME	RESET		
BINARY INPUTS	0-3	1bit	I	W	0/1	0	Previous	[Ix] Block	1=Input Disabled; 0=Input Free
	4-7	1 bit	I	R-W-T	0/1	0	Previous	[Ix] [Short Press] "0"	Short Pr. -> Sending of "0"
								[Ix] [Short Press] "1"	Short Pr. -> Sending of "1"
								[Ix] [Short Press] Switching	Short Pr. -> Switching "0/1"
								[Ix] [Short Press] Move Up Shutter	Short Pr. -> Sending of 0 (Up)
								[Ix] [Short Press] Move Down Shutter	Short Pr. -> Send. of 1 (Down)
								[Ix] [Short Press] Move Up/Down Shutter	Short Pr. -> Switching "0/1"
								[Ix] [Short Press] Stop / Step Up Shutter	Short Pr. -> Sending of "0"
								[Ix] [Short Press] Stop / Step Down Shutter	Short Pr. -> Sending of "1"
								[Ix] [Short Press] Stop / Step Shutter (switched)	Short Pr. -> Switching "0/1"
								[Ix] [Short Press] Dimmer ON	Short Pr. -> Sending of 1 (ON)
								[Ix] [Short Press] Dimmer OFF	Short Pr. -> Send. of 1 (OFF)
								[Ix] [Short Press] Dimmer ON/OFF	Short Pr. -> Switching "0/1"
								[Ix] [Sensor] Edge	Edge -> Sending of "0" or "1"
	8-11	4 bits	O	R-T	0-15	0	Previous	[Ix] [Short Press] Brighter	Sh.Pr.->Bright; Sh.Pr.->Stop
								[Ix] [Short Press] Darker	Sh.Pr.->Dark; Sh.Pr.->Stop
								[Ix] [Short Press] Brighter/Darker	Sh.Pr->Bright/Dark;Sh.Pr->Stop
	12-15	1 byte	O	R-T	0-63 128-192	No difference	No difference	[Ix] [Short Press] Run Scene	Short Pr. -> Sending of 0-63
								[Ix] [Short Press] Save Scene	Short Pr. -> Send. of 128-191
	16-19	1 bit	O	R-W-T	0/1	0	Previous	[Ix] [Long Press] "0"	Long Pr. -> Sending of "0"
								...	...
								[Ix] [Long Press] Dimmer ON/OFF	Long Pr. -> Switch. (OFF/ON)
	20-23	4 bits	O	R-T	0-15	0	Previous	[Ix] [Long Press] Brighter	Lg.Pr.->Bright; Lg.Pr.->Stop
								[Ix] [Long Press] Darker	Lg.Pr.->Dark; Lg.Pr.->Stop
								[Ix] [Long Press] Brighter/Darker	Lg.Pr->Bright/Dark;Lg.Pr->Stop
	24-27	1 byte	O	R-T	0-63 128-192	No difference	No difference	[Ix] [Long Press] Run Scene	Long Pr. -> Sending of 0-63
								[Ix] [Long Press] Save Scene	Long Pr. -> Send. of 128-191
TEMPERATURE INPUTS (PROBES)	28-31	1 bit	I/O	W-T		0	Previous	[Ix] Thermostat ON/OFF	0=Off; 1=On
	32-35	2 bytes	I/O	W-T	0ºC-30ºC	95ºC	Previous	[Ix] Setpoint Temperature	from 0ºC to 95ºC
	36-39	1 bit	I/O	W-T		0	Previous	[Ix] Heat/Cool	0=Heat; 1=Cool
	40-47	1 bit	O	T		No difference	No difference	[Ix] Control Variable (Heat)	2 Point Control
								[Ix] Control Variable (Heat)	Proportional Integral (PWM)
								[Ix] Control Variable (Cool)	2 Point Control
								[Ix] Control Variable (Cool)	Proportional Integral (PWM)
	48-55	1 byte	O	T		No difference	No difference	[Ix] Control Variable (Heat)	Proport. Integral (Continuous)
								[Ix] Control Variable (Cool)	Proport. Integral (Continuous)
	56-63	1 bit	O	T		No difference	No difference	[Ix] Aditional Heat	Temp < (Setpoint-Band) => "1"
								[Ix] Aditional Cool	Temp > (Setpoint+Band) => "1"
	64-67	1 bit	I/O	W-T		No difference	No difference	[Ix] Confort	1=Set Confort mode;0=No action
	68-71	1 bit	I/O	W-T		No difference	No difference	[Ix] Night	1=Set Night mode;0=No action

	72-75	1 bit	I/O	W-T		No difference	No difference	[Ix] Standby	1=Set Standby mode;0=No action
	76-83	2 bytes	I	W		23º/26º (heat/cool)	Previous	[Ix] Comfort Temperature	Temperature for Confort Mode
	84-91	2 bytes	I	W		21º/28º (heat/cool)	Previous	[Ix] Night Temperature	Temperature for Night Mode
	92-99	2 bytes	I	W		19º/30º (heat/cool)	Previous	[Ix] Standby Temperature	Temperature for Standby Mode
	100-103	2 bytes	I	R-T		No difference	No difference	[Ix] Current Temperature	Temperature sensor value
	104-107	2 bytes	I	W		25ºC	Previous	[Ex] External Temperature Sensor	External sensor value temp.

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