CONTROLLI

CONTROL SOLUTIONS FOR HVAC-R AND BUILDING AUTOMATION

SENSORS & CONTROLLERS 2021

Sensors & Controllers

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Valves & Actuators

CONTROLLI

SINCE 1936 A LEADING COMPANY IN HVAC AND BUILDING AUTOMATION

MADE IN ITALY

COMPANY PROFILE

CONTROLLI was established in Genoa in 1936 and was the first Italian company to manufacture a complete range of controllers, actuators and control valves for heating and air-conditioning systems.
Since 1950 the product range was improved by widening the range of control equipments and systems for industrial application.
In the 80s CONTROLLI consolidates its position as the most important Italian manufacturer, with special regard to climate controls, thanks to the development of analogue and digital electronic devices.
In the 90s CONTROLLI gains a position also in the Building Automation market.
From 1996 to July 2005 CONTROLLI has been part of the Invensys multinational group.
From 2005 to August 2011 CONTROLLI has been part of Schneider Electric S.A.

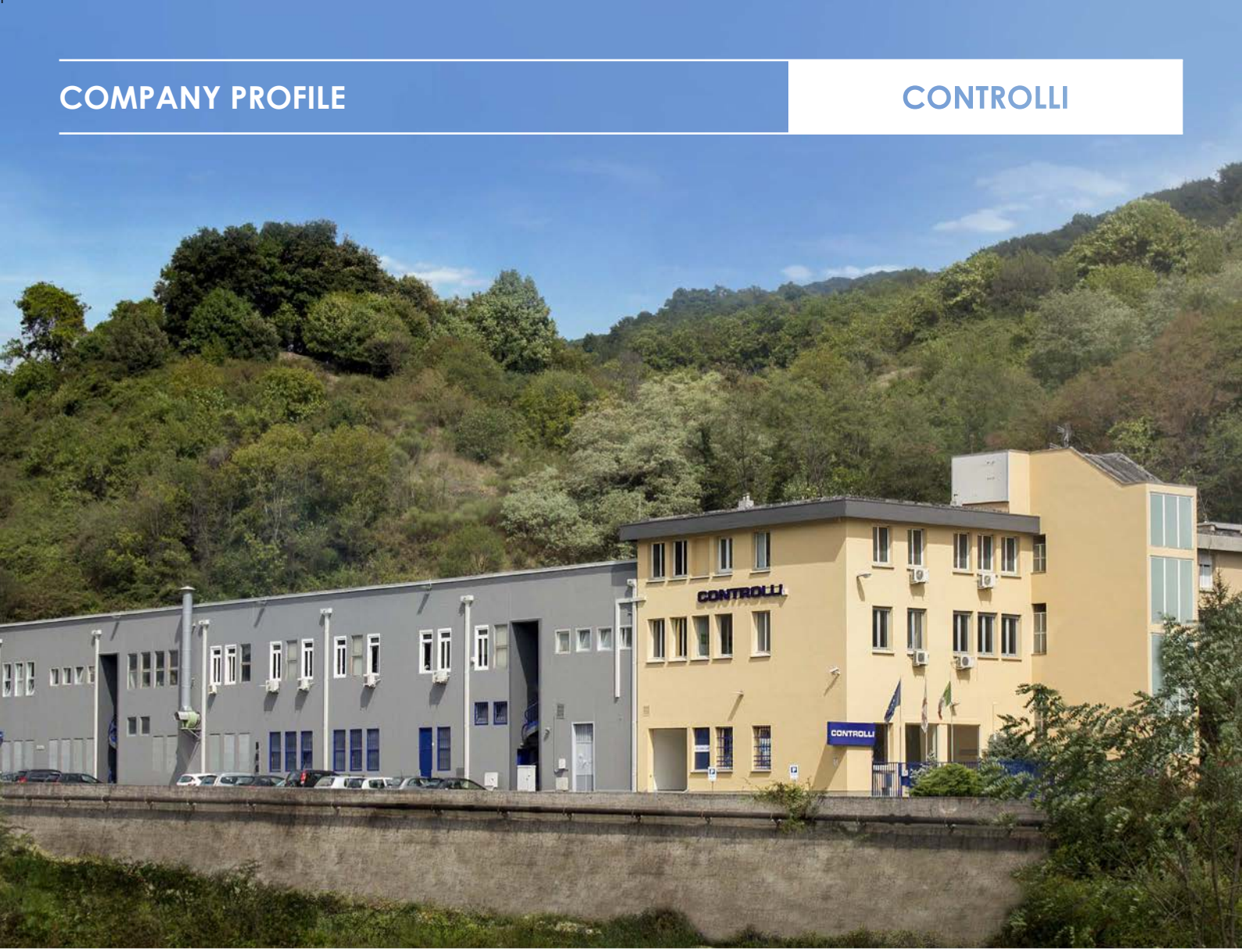
CORE BUSINESS

CONTROLLI core business consists of products and systems for the control and supervision of HVAC plants and industrial processes.
CONTROLLI products are the result of mechanical - electric - electronic technology integration, supported by a 80-years experience in HVAC applications.

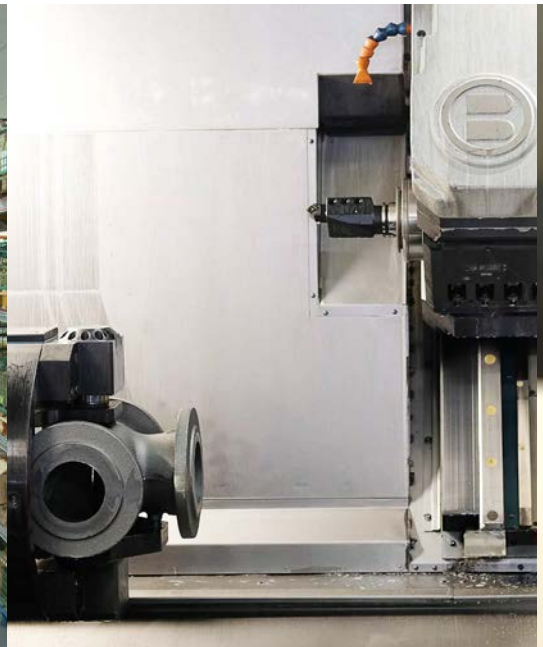
PRODUCT QUALITY IS CONTROLLI N°1 COMMITMENT

Controlli is recognised today as an Italian leader in the Building Automation market and a benchmark in the segment of valves and actuators for the HVAC market.
Business with OEMs (Original Equipment Manufacturers) is more than 30% of our turnover. System integration for BMS is part of our business too. Our Building Automation team develops control software for free programmable controllers according to customers' specifications. Since several years we are mainly focusing on cutting-edge solutions aiming at guaranteeing the highest level of comfort but keeping a close eye on energy saving technologies. Some of these technologies refer to: heat metering systems, control devices with wireless communication, circuit balancing and more.

* The port of Genoa



An industrial area of 6000 m^2 in Sant'Olcese (Genoa) is CONTROLLI head office. Production is highly automated with robotic devices for the assembly and calibration of mechanical and electronic spare parts and finished products.
It is worth mentioning the robotic plant for processing, mounting and testing of valve bodies and the robotized workcell for assembly, testing and certification of fan coil valve actuators.
CONTROLLI has adopted the SIX SIGMA procedures, further elevating the quality standard of its products.
CONTROLLI operates under ISO9001-2008 Quality Certificate System. All CONTROLLI valves are PED (Pressure Equipment Directive) compliant. Products are tested 100%.



SALES ORGANIZATION

Sales & Marketing Dept. is in Sant'Olcese (Genoa).

Italian sales network consist of Sales-Offices in Milan, Genoa, Rome and Padova, 45 representatives and 75 authorised dealers throughout the Italian territory.

Abroad CONTROLLI operates through a widespread network of distributors and agents in Europe, Africa, Middle East, Far East, North and South America. By getting in touch with the nearest CONTROLLI sales point, the customers will find solution to any technical and commercial issue.

TECHNICAL SUPPORT

Our offices will provide a continuous technical assistance and support for systems and devices, application information, quotations and wiring diagrams.

Moreover, CONTROLLI holds periodically training courses for different levels of technical expertise and class of customers.

FIELDS OF APPLICATION

Offices

Hotels

Industrial plants

Data centers

Hospitals

Research centers

Universities

Swimming pools

Transports

Residential

Pubblic offices

Shopping centers

VALVES & ACTUATORS

We are proud to offer one of the largest range of valves and actuators in the HVAC market. Valves range from 15mm to 200mm for fluids with temperature from -30°C to +350°C, max. pressure 12bar (steam) or 30bar (water). Linear actuators start at 90N and go up to 3000N. Rotary actuators for butterfly valves and shoes valves and for direct mounting on air dampers up to 2sqm.

CONTROLLERS

To start with, we will mention our thermostats for heating and cooling, our fan coil units controllers, room controllers, ddc controllers with parameter-setting as well as programmable controllers. Not to forget our KX climatic controllers with outside temperature compensation. Controllers are offered either as stand-alone or with Modbus connectivity. Our range includes sensors, transmitters and switches for temperature, humidity, pressure, differential pressure, air quality, etc.

SUPERVISORY SYSTEMS

To make matters easy, we propose a brand new touch screen device with attractive graphics, multiple connectivity options and web gate capability.
Remote monitoring also takes advantage of GTX703 our IoT gateway with HTML5 Web Browser. This device is compatible with the Industry 4.0 (Smart Factory).

ENERGY SAVING

CONTROLLI is offering an innovative Energy Saving solution based on IoT and Machine Learning Algorithm. "ENERBRAIN" is based on a unique technology reducing the energy consumption for the heating / cooling / ventilation systems by an average 30% in medium or large BMS installations. No need to replace the existing controllers! This system is extremely attractive to owners / contractors / real estate companies willing to achieve a significant reduction of the energy bill without replacing the existing BMS.

FOR VALVES EQUIPMENT PLEASE REFER TO OUR CATALOGUE DEDICATED TO "**VALVES & ACTUATORS**"

CONTROLS FOR HVAC SYSTEMS AND BUILDING AUTOMATION

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ENERGON
NR9000

"Innovative digital controller for fan-coil units. Compact dimensions but powerful and flexible hardware with 20 Inputs/ Outputs."

POWERFUL

The controller can manage up to 20 control points and 2 different communication protocols with a compact hardware.

USER-FRIENDLY

It is field configurable by means of micro switches and it can be supervised through the web without the need of any installed software or App.

FLEXIBLE

It fits all the control strategy of the last generation Fan-Coils with EC motor.

ATTRACTIVE

The room sensor is available in two different colors and is compatible with finishing plates BiTicino and Vimar.

Room controller for FCUs able to manage 2 different control loops. Ideal solution for hotels, hospitals, offices and shopping malls".
Modbus RS-485 communication. Proprietary Bus to connect more controllers to a single room sensor.
Removable terminal plugs for: power supply, high power signal, low power signal.
Analog/Digital Inputs for sensors and remote functions selection. (Winter/Summer change over, Economy mode, Remote power-off [Occupancy Sensor], Windows contact) 2 Analog Outputs (0..10Vdc) for modulating valves and modulating fan speed control.
High Voltage Digital output for valves control and 3 fan-speed control. Digital Outputs for External Relays: Electrical heater, Electrical Power enable. Universal power supply from 85 to 265 Vac.

Control possibilities selectable by DIP switches:

- On/Off Valves and 3 speed fan (fast ventilation mode)
- On/Off valves and 3 speed fan
- 3 point / modulating valves and 3 speed fan
- On/Off valves and 1 speed fan
- 3 point/ modulating valves and 1 speed fan
- On/Off valves and modulating fan
- 0..5Vdc & 6..10Vdc valves in sequence (4-pipe FCU) and 0..10Vdc fan
- 0..10Vdc valve (2-pipe FCU) and 0..10 Vdc fan

For each above configuration are available an electric Heating control output and one auxiliary output for electric load.

Digital room sensor with adjustment for: set point, fan speed (manual or automatic), Economy/Comfort mode.
Room Sensor available in 2 colors (black or white) external frame available in many different colors.
Flush mounting or wall mounting. Functions: On/Off/Economy Mode set, fan speed selection (Auto/3/2/1/0), temperature set point adjustment, multicolor leds (red-green-orange) showing operating mode (Off-Comfort-Economy). User may have full control or limited control or no control.
Free of charge Configuration Tool for setting of all parameters, overview on the plant installation showing the key variables for each individual controller, setting of daily & weekly time schedules.
A controller set as master can manage up to 5 slave modules.

ROOM SENSOR

The internally stored parameters used by the controller during operation can be changed using NR9000-RT Remote Sensor. The remote sensor has a temperature sensor inside and it has 4 buttons and a 3 digit LCD display. NR9000-RT is suitable for flush mounting in standard box 503E or for wall mounting. The plastic casing is compatible with BTicino cover plates Living light (square cover) or Living International (round cover) otherwise with Vimar Plana cover plates modifying the supplied plastic casing.

Modbus

STA60M

STA70M

STA60M and STA70M are **Modbus** room temperature sensors for flush or wall mounting. They allow to set regulation setpoint, operating speed, fan speed and time tables. The STA70M series also allows you to set seasonal switching.

To use the Modbus sensors, order the **NR9001** controller version.

PUSH BUTTONS

OPERATIVE MODE

COMFORT: the controller will control the temperature to satisfy the Comfort Temperature Set.

ECONOMY: the controller will control the temperature to satisfy the Economy Temperature Set.

OFF with FROST PROTECTION: the controller is normally OFF; just during winter operation it works with a set fixed at 8°C and heating function only.

FAN SPEED SELECTION

It sets the ventilation operative speed

MANUAL SPEED (min, med, max speed selected manually)

AUTOMATIC SPEED (driven by controller)

TEMPERATURE SET POINT

The room set point temperature is modified by +/- (plus & minus) buttons. The required set point can be increased or decreased from 10 to 30°C or +/- 3°C in case only small adjustments are left to the user.

REMOTE CONTROL PANEL

MT-NET-PONR is a panel solution suitable as monitoring system for NR9000 controllers.
It offers high performances in terms of memory, connectivity and user interface.
Settings, maintenance and service are very easy.

The panel allows to supervise up to 50 NR9000 using RS485 (Modbus) Bus connection. Through the ethernet port and the web application server, the operator can access from remote on MT-NET-PONR using pcs, smartphones and tablets and he can easily set main parameters of each NR9000.

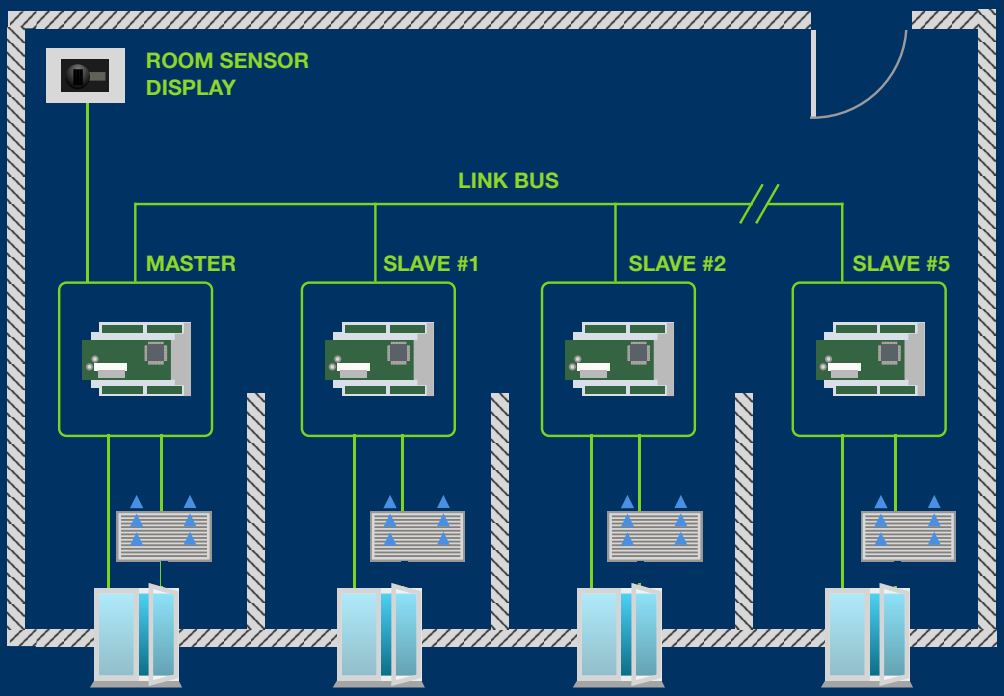
REMOTE CONTROL

The remote control is an easy way to control your NR9000 unit. NR9000 can be managed by an infrared remote control (NR9000-TC). The remote control is equipped with a wide display and supplied together with batteries and frame for wall mounting. It allows to set the temperature, the programming for a daily switching on and off and the set of the operation mode (ventilation only, heating only, cooling only and automatic).

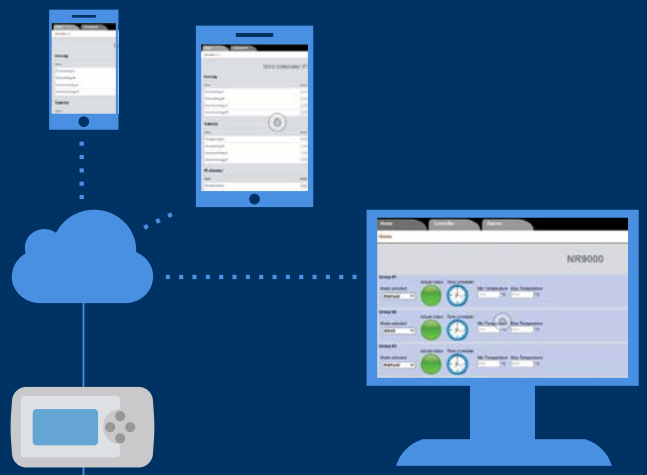
Manually ON/Off
Operating Mode
Fan Speeds
Temperature set point
Timer program

STAND ALONE

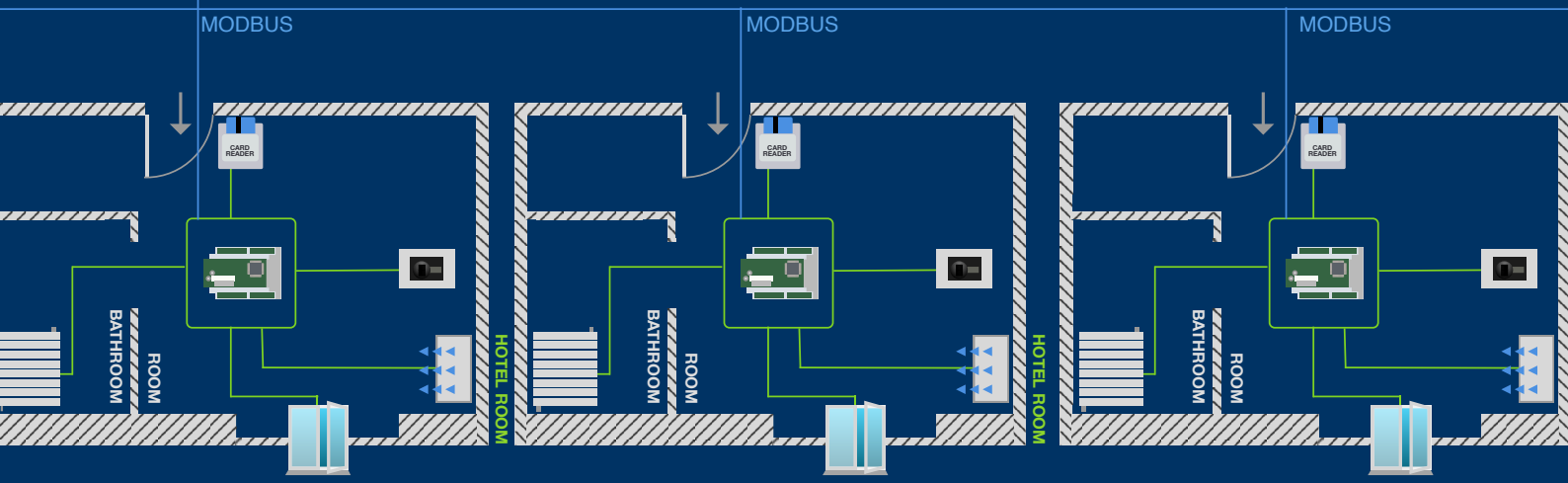
Layout configuration:
1 sensor connected to 1 controller used as Master connected to max 5 controllers (slave).



NETWORK MODE



MT-NET-PONR allows connection and monitoring up to 50 NR controllers through a remote web server interface on your PC tablet or Smartphone



TECHNICAL SPECIFICATIONS	
POWER SUPPLY NR9000 / NR9001	85-265 Vac (isolated)
POWER SUPPLY NR9000-RT	12 Vdc (from controller)
DIMENSIONS [MM]	90x106x160 mm

CODE	DESCRIPTION
NR9000	Room digital controller
NR9000-RT1A	Flush-mounting remote sensor charcoal colour
NR9000-RT1B	Flush-mounting remote sensor white colour
NR9000-RT2A	Wall mounting remote sensor charcoal colour
NR9000-RT2B	Wall mounting remote sensor WHITE colour
MT-NET-PONR	Operator Panel: MT-NET-PONR: it is possible to connect up to 50 controllers
54609-03	White BTicino cover plate (Already included with nr9000 rt2x sensor)
4200-2098	Orange BTicino cover plate
4200-2097	Light blue BTicino cover plate
4200-2096	BLACK BTicino cover plate
4200-2095	Flush mounting box E503
S431X [S432X]	Room temp. sensor without set point adjustment flush mounting [wall mounting]
NR9000-TC	Remote control for NR9000
NR9000-RX	Infrared receiver for NR9000
SNTC-SL	Duct temperature sensor
37T	Summer/Winter change-over (for 2-pipe FCUs when NR9000 controllers are used in stand-alone applications)
4200-2094	Grey color frame
S411X [S412X]	Room temp. sensor with set point adjustment 10°÷30°C flush mounting [wall mounting]
S421X [S422X]	Room temp. sensor with set point adjustment increase-decrease flush mounting [wall mounting]

NR9001	Fancoil digital controller for Modbus sensors
STA60M	Room temperature sensor Modbus 24 Vac/dc [Wall mounting]
STA60MP	Room temperature sensor Modbus 24 Vac/dc [Flush mounting]
STA60M-2	Room temperature sensor Modbus 230 Vac [Wall mounting]
STA60MP-2	Room temperature sensor Modbus 230 Vac [Flush mounting]
STA70M	Modbus touchscreen temperature sensor, 24Vac/dc

NEW

INPUTS

INPUTS	FUNCTION	TECHNICAL SPECIFICATIONS
DI1	WINDOW CONTACT	Digital 1 /24vac
DI2	ON/OFF CONTACT	Digital 2 /24vac
DI3	SUMMER / WINTER CONTACT	Digital 3 /24vac
DI4	COMFORT / ECONOMY CONTACT	Digital 4 /24vac
S1	RETURN TEMPERATURE SENSOR	Analogue input NTC10k
S2	REMOTE TEMPERATURE SET	Analogue input NTC10k
S3	AUXILIARY LOOP RETURN TEMPERATURE SENSOR	Analogue input NTC10k
S4	AUXILIARY LOOP REMOTE TEMPERATURE SET	Analogue input NTC10k

OUTPUTS

OUTPUTS	FUNCTION	TECHNICAL SPECIFICATIONS
HOT_CL/ HOT_OP	Hot valve	24-230Vac TRIAC 4A
COLD_CL/ COLD_OP	Cool valve	24-230Vac TRIAC 4A
R1..R3	V1, V2, V3 Fan Speed	24-230Vac RELAY 8A
AO1	Modulating heating valve 1 – sequence	Analogue output 0-10 Vdc
AO2	Modulating cooling valve 2 – fan	Analogue output 0-10 Vdc
OC1	Open Collector for external RELAY 1	Open Collector 1
OC2	Open Collector for external RELAY 2	Open Collector 2

Control strategy	Heating or Cooling Valve (2 pipes)		Cooling Valve (4 pipes)			Fan			Summer Winter change over
	Proportional (1)	On/Off (2)	Sequence	Proportional (1)	On/Off (2)	Proportional	3 speeds	On/Off	
1	-	●	-	-	●	-	●(3)	-	●(4)
2	-	●	-	-	●	-	●	-	●(4)
3	●	-	-	●	-	-	●	-	●(4)
4	-	●	-	-	●	-	-	●	●(4)
5	●	-	-	●	-	-	-	●	●(4)
6	-	●	-	-	●	●	-	-	●(4)
7a (two pipes)	●	-	-	-	-	●	-	-	●(4)
7b (four pipes)	-	-	●	-	-	●	-	-	-

1) Output valve can be driven using 0..10Vdc or Floating Control
2) Floating and On/Off controls are supplied by means of TRIAC
3) Fan fast insertion
4) Mandatory in case of 2 pipes fan coil units

Inputs/Outputs		NR9000 control strategies									Field devices	
		1, 2, 3, 4, 5, 6			7a			7b				
123.4	Multifunction sensor with LCD	-	●	●	-	●	●	-	●	●	NR9000-RT1A/B NR9000-RT2A/B	DISPLAY PANELS
	Remote IR control	-	●	●	-	●	●	-	●	●	NR9000-TC NR9000-RX	DISPLAY PANELS
	Room setpoint adj. (knob)	O(2)	-	-	O(2)	-	-	O(2)	-	-	S411A/B, S412A/B, S421A/B, S422A/B, S441A/B, S442A/B	INPUTS
	Return air temp	●	●	●	●	●	●	●	●	●	S431A/B, S432A/B	INPUTS
	Windows contact	●	●	●	●	●	●	●	●	●	-	INPUTS
	On/Off contact (badge switch)	O(2)	-	-	O(2)	-	-	O(2)	-	-	-	INPUTS
	Eco/Comfort (Unocc/Occ)	●	●	●	●	●	●	●	●	●	-	INPUTS
	Summer winter change over	O(2,3)	O(2,3)	O(2,3)	O(2,3)	O(2,3)	O(2,3)	-	-	-	37T (thermostat) SNTC-SL (Sensor)	INPUTS
	Aux loop Sensor Water temp. for fan enabling	◒	◒	◒	◒	◒	◒	◒	◒	◒	S431A/B, S432A/B SNTC-SL	INPUTS
	Aux loop set point Water temp. for S/W change over	◒	◒	◒	◒	◒	◒	◒	◒	◒	S411A/B, S412A/B, S421A/B, S422A/B, S441A/B, S442A/B SNTC-SL	INPUTS
	3 speed fan control	●(1)	●(1)	●(1)	●(1)	●(1)	●(1)	●(1)	●1)	●(1)	-	OUTPUTS
	On/off fan control	●(1)	●(1)	●(1)	●(1)	●(1)	●(1)	●(1)	●(1)	●(1)	-	OUTPUTS
	EC fan	●(1)	●(1)	●(1)	●(1)	●(1)	●(1)	●(1)	●(1)	●(1)	-	OUTPUTS
	Heating Valve	●	●	●	●	●	●	●	●	●	MVX./MVT.	OUTPUTS
	Cooling valve	O(4)	O(4)	O(4)	-	-	-	●	●	●	MVX./MVT.	OUTPUTS
	Aux output OC1 (loop)	●	●	●	●	●	●	●	●	●	MVX./MVT. (ON/OFF ONLY)	OUTPUTS
	Aux output OC2 (lights)	●	●	●	●	●	●	●	●	●	-	OUTPUTS

● - Always Mandatory
● - Optional
● - Mandatory when aux loop is used
O - Mandatory / Optional (see the note)
◒ - Both configurations are not available at the same time

(1) According to **CONTROL STRATEGY** selection table
(2) Mandatory when FCU is 2 pipes
(3) Set up by hardware input or by BMS
(4) Mandatory when FCU is 4 pipes

Control possibilities

Valves: On/Off or 3 pos. (floating) or Modulating 0..10Vdc (additionally, also valve sequence control 0..5Vdc + 5..10Vdc is achievable using our MVT503 actuators).

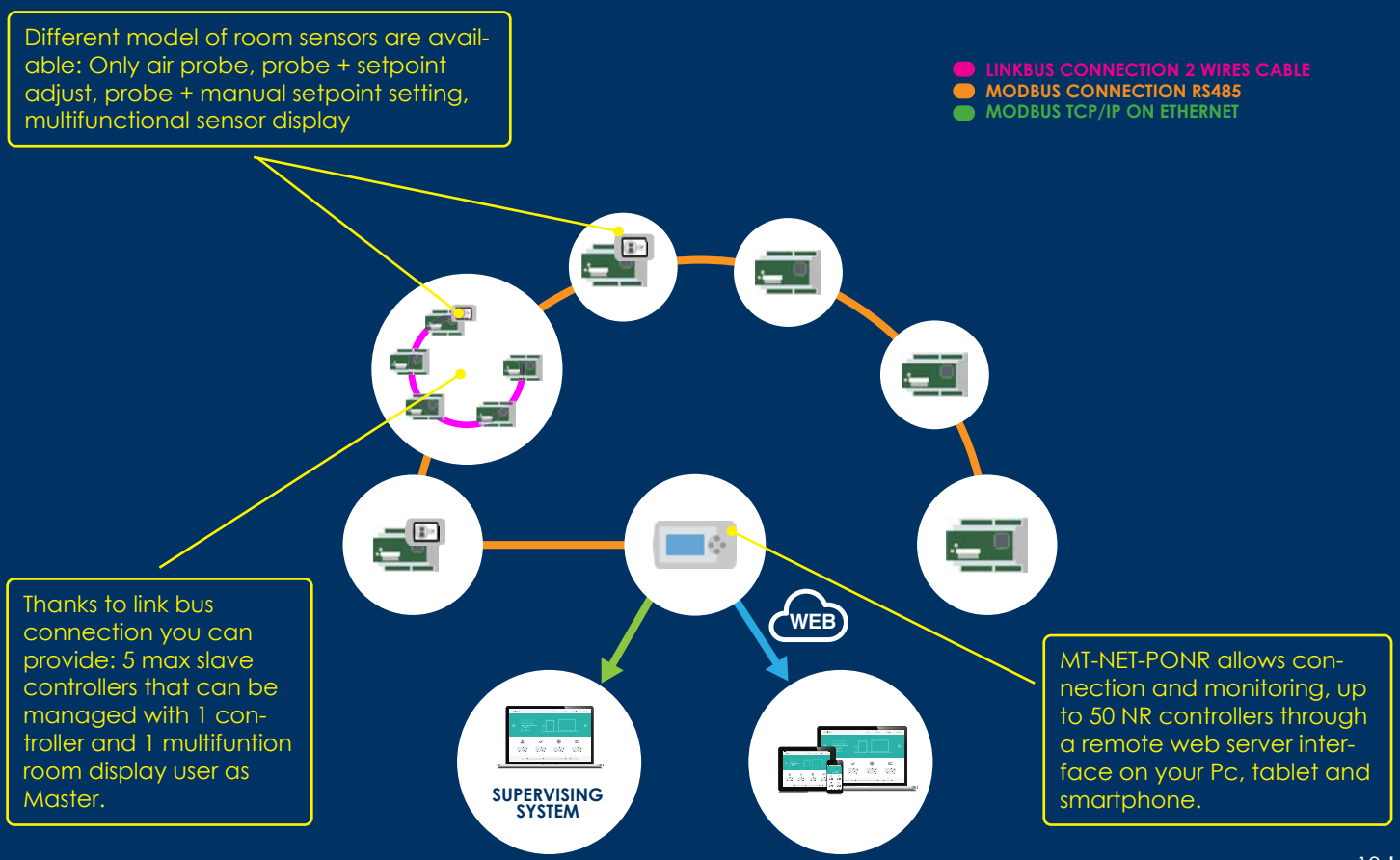
Ventilation: manual fan speed control or automatic fan speed control (3 speed fans or Proportional 0..10Vdc control for EC motor fans).

Auxiliary temperature loop: it's an additional control loop to be used for the bathroom or a separate room or for the electric heating of the room: it consists of an input for a temperature sensor (strap-on water sensor or Soavis room sensor with set-point adjustment) and one On/Off output (for the radiator thermostatic head or for the electric heater).

Electric load: NR9000 is provided with an auxiliary Open Collector output, by means of an additional relay it can switch off the power supply (lighting, etc) to the room when unoccupied.

Parameters/Functions avaiable		Multifunction sensor with LCDNR9000-RT1A/B NR9000-RT2A/B	Remote IR control NR9000-TC NR9000-RX	Web monitoring & control interface MT-NET-PONR
	Temperature	●	●	●
	Setpoint adjustment	●	●	●
	Valves status	-	-	●
	Fan status selection (Auto/ Man speed)	●	●	●
	Mode selection (On/Off)	●	●	●
	Economy/Comfort (Unocc/ Occ)	●	●	●
	Summer /winter global change over	-	-	●
	Stand Alone Time schedule	-	●	-
	Mode selection (On/Off) by group	-	-	●
	Time schedule by group	-	-	●
	Setpoint adjustment by group	-	-	●
	Diagnostic	-	-	●
	Real Time clock	-	-	●
	Web supervising	-	-	●

Different model of room sensors are available: Only air probe, probe + setpoint adjust, probe + manual setpoint setting, multifunctional sensor display



Thanks to link bus connection you can provide: 5 max slave controllers that can be managed with 1 controller and 1 multifuntion room display user as Master.

MT-NET-PONR allows connection and monitoring, up to 50 NR controllers through a remote web server interface on your Pc, tablet and smartphone.

NR9002 is our solution dedicated to Heating/Cooling Recovery Ventilation Units

Modbus **NR9002**

According to EPBD Directive all new buildings need to be "Nearly Zero Energy" and heat recovery in ventilation units is a must to achieve this results.

HCRV units are equipped with an high efficiency cross flow heat exchanger reducing the gap between the external fresh air and the internal exhaust air.

Compact controller for DIN rail mounting (6 modules) field configurable with dip-switches setting. Modbus RTU, Power Supply 85-265 Vac. Suitable to several types of heat recovery ventilation units with different management of intake air/supply, air/extract, air/exhaust and air dampers. Ventilation unit bypass management for free-cooling or free-heating functions.

Preset configurations:

1. without dampers
2. with intake damper with/without bypass
3. with exhaust damper
4. with/without bypass
5. with return / intake / exhaust
6. dampers.

Analog input for air quality or humidity sensor. Digital input for flow switch, differential pressure switch and frost protection switch. Fan and valves outputs depend on configuration selected.

Fresh air ventilation control:

Manual or Automatic the fan speed is automatic driven by air quality or humidity. Loop can be manually forced.

Control speed types are:

- 3 speed powerful outputs relays (max load 8A) can be operated directly connected to the fan,
- Variable speed supply and return modulating EC fans can be operated by 2 analogue outputs 0..10 Vdc.

Temperature control:

- Hot and/or chilled valves are available for 2 or 4 pipe systems (On/Off, 3 position or proportional),
- Electric heater output for pre heating or post heating coils.

Parameters setting achieved by means of NR9002-RT remote panel (selected number of parameters only).

Controlli dedicated configuration tool Supervisory systems with Modbus protocol. NR9002-RT remote panels available in white or black color.

Functions: Power On/Off, Ventilation enable and fan speed selection, Temperature set-point adjustment, Air quality setting for humidity, Summer/Winter change-over.

Visualization of: supply and return temperature, external temperature, humidity or air quality, alarms and pressure/flow switch anomalies.

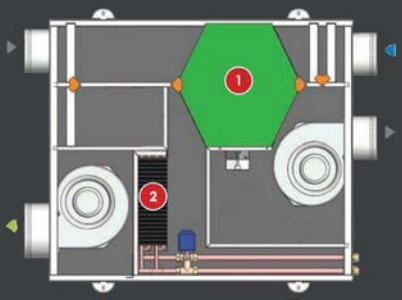
Controller can work without NR9002-RT remote panel.

DISPLAY PANEL

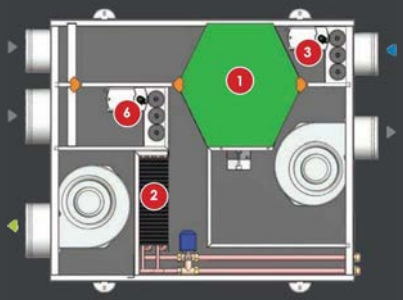
The internally stored parameters used by the controller during operation can be changed using NR9002-RT Remote Sensor. The remote sensor has 4 buttons and a 3 digit LCD display. NR9002-RT allows to set and visualize the following parameters:

- Power On/Off
- Ventilation enabling and fan speed selection
- Temperature set-point adjustment
- Air quality setting
- Summer/Winter change-over
- Visualization of: supply and return temperature, external temperature, humidity or air quality, alarms and pressure/flow switch anomalies.

NR9002-RT is suitable for flush mounting in standard 503E boxes or for wall mounting. The plastic casing is compatible with BTicino cover plates Livinglight (square cover) or Living International (round cover) otherwise with Vimar Plana cover plates modifying the plastic casing.

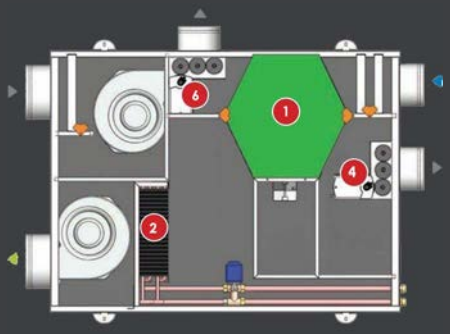


Without dampers

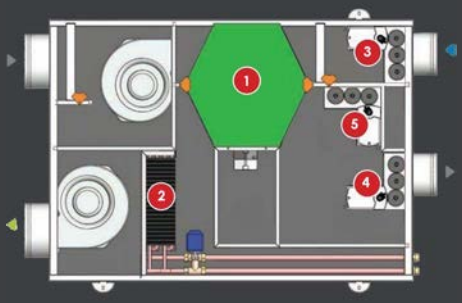


With damper and intake air bypass damper (heat recovery device is bypassed on air intake side)

1. Heat Recovery Device
2. Heating/Cooling water battery
3. Intake damper
4. Discharge damper
5. Return damper
6. Bypass damper



With discharge damper and discharge bypass damper (Heat recovery device is bypassed on discharge side)



With intake, recirculation and discharge dampers

MODEL	DESCRIPTION
NR9002	Controller
NR9002-RT1A	Charcoal flush-mounting remote sensor
NR9002-RT2A	Charcoal wall mounting remote sensor
NR9002-RT1B	White flush-mounting remote sensor
NR9002-RT2B	White wall mounting remote sensor

TECHNICAL SPECIFICATIONS	
POWER SUPPLY NR9000	85-265 Vac (isolated)
POWER SUPPLY NR9000-RT	12 Vdc (from controller)
PROTECTION DEGREE	IP20
OPERATION TEMPERATURE	2T45 °C
STORAGE TEMPERATURE	-25T65 °C
DIMENSIONS	90x106x160 mm

INPUTS / OUTPUTS

INPUTS	DESCRIPTION	TYPE OF SIGNAL
DI1	Flowmeter status	Digital input 1 (24 Vac/dc)
DI2	Pressure switch status	Digital input 2 (24 Vac/dc)
DI3	Frost protection status	Digital input 3 (24 Vac/dc)
DI4	ON / OFF status	Digital input 4 (24 Vac/dc)
S1	Supply temperature sensor	Analog input NTC10 kOhm
S2	External temperature sensor	Analog input NTC10 kOhm
S3	Return temperature sensor	Analog input NTC10 kOhm
S4	Air H/Q sensor (0-10V)	Analog input NTC 10 kOhm

OUTPUTS	DESCRIPTION	TYPE OF SIGNAL
TRIAC1	Intake bypass	24-230 Vac TRIAC 4A
TRIAC2	Bypass damper	24-230 Vac TRIAC 4A
TRIAC3	Recirculation damper	24-230 Vac TRIAC 4A
TRIAC4	Expulsion bypass	24-230 Vac TRIAC 4A
RI, R2, R3	Supply fan	24-230 Vac RELAY 8A
R4, R5, R6	Return fan	24-230 Vac RELAY 8A
A01	H/C proportional valve (0-10 V)	Analog output 0-10 Vdc
A02	C proportional valve (0-10 V)	Analog output 0-10 Vdc
OC1	Pre/reheating electrical coil	Open collector 1
OC2	Alarm lamps	Open collector 2

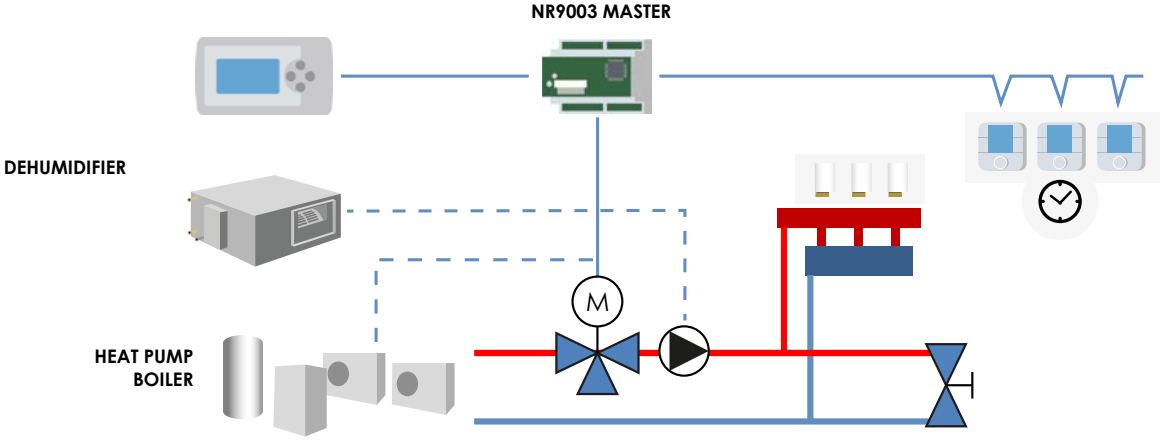
NR9003

"Temperature and humidity control of up to 9 independent zones "

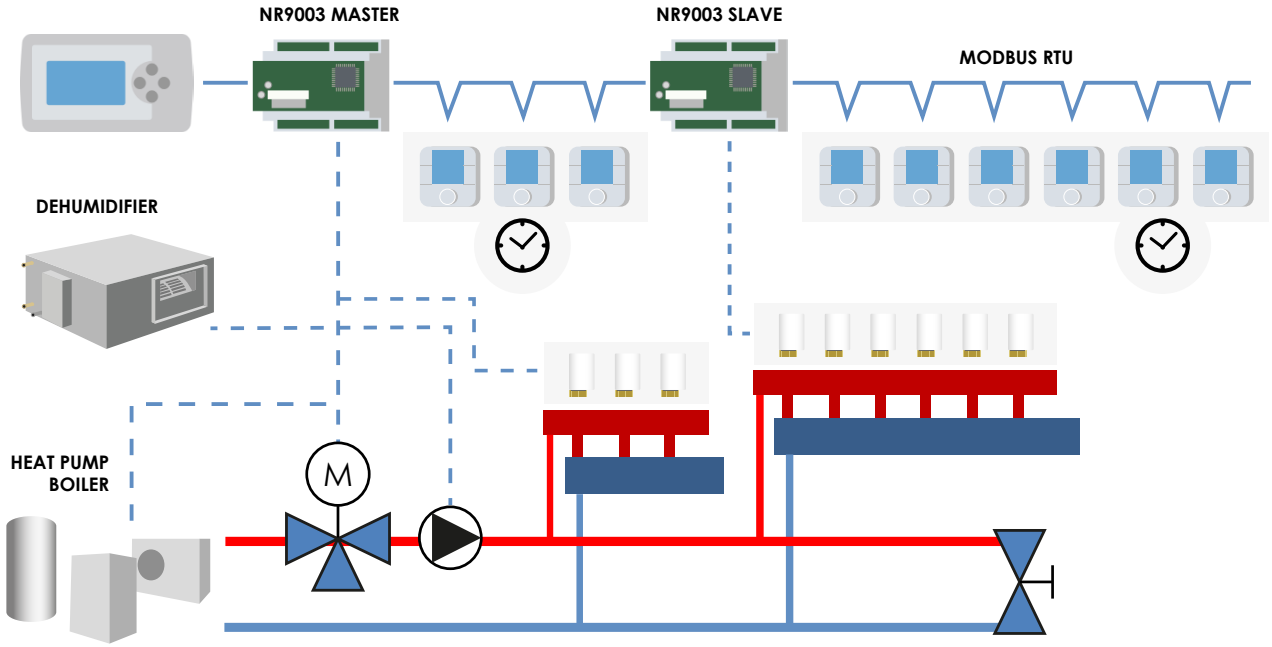
NR9003 is a digital controller that allows to manage the control both in heating and cooling of the mixing group of a radiant panel system with a maximum of 9 independent zones through temperature and relative humidity sensors positioned in each single zone acting on electrothermals actuators positioned on the distribution manifold (if more than 3 zones have to be managed, a second controller must be added as expansion connected to the master controller via Modbus communication bus). In addition, the controller is able to enable a possible dehumidifier on the basis of the relative humidity measured in the rooms for humidity control and as a safety against possible condensation during the summer. STA61M temperature and relative humidity sensors are connected to the controller via a Modbus communication bus and allow the setting of an hourly temperature setpoint (daily and weekly) and a relative humidity setpoint for each individual zone.

NR9003 is equipped with a second RS485 communication port (Slave) to communicate with a supervision or other Master devices, through the Modbus protocol.

PRIMARY CIRCUIT MANAGEMENT AND 3 ZONES



PRIMARY CIRCUIT MANAGEMENT AND 9 ZONES



MODEL	DESCRIPTION	POWER SUPPLY
NR9003	Digital controller for radiant panel system	85-265 Vac (isolated)
STA61M	24 Vac/dc Modbus temperature and humidity sensor	24 Vac

INPUTS / OUTPUTS

INPUTS	FUNCTION	TECHNICAL CHARACTERISTICS
DI1	FUNCTIONING START/STOP	Digital 24 Vac or voltage free contact
DI2	SUMMER/WINTER CHANGEOVER	Digital 24 Vac or voltage free contact
DI3	THERMOSTAT FOR THE DETECTION OF THE MAXIMUM FLOW TEMPERATURE	Digital 24 Vac or voltage free contact
DI4	END-STROKE STATUS OF ELECTRO-THERMAL HEADS / DEW POINT SWITCH DETECTOR	Digital 24 Vac or voltage free contact
S1	SUPPLY WATER TEMPERATURE SENSOR	NTC 10 kOhm
S2	EXTERNAL TEMPERATURE SENSOR	NTC 10 kOhm
S3	"HEATED TOWEL RAIL" TEMPERATURE SENSOR	NTC 10 kOhm
S4	EXTERNAL TEMPERATURE SENSOR	0-10 Vdc

OUTPUTS	FUNCTION	TECHNICAL CHARACTERISTICS
TRIAC1	HEATING/COOLING VALVE OPENING	24-250 Vac TRIAC 4A
TRIAC2	HEATING/COOLING VALVE CLOSING	24-250 Vac TRIAC 4A
TRIAC3	ZONE 3 THERMOSTATIC HEAD CONTROL	24-250 Vac TRIAC 4A
TRIAC4	"HEATED TOWEL RAIL" THERMOSTATIC HEAD	24-250 Vac TRIAC 4A
R1, R2, R3	DELIVERY FAN	24-250 Vac RELAY 8A
R4, R5, R6	RECOVERY FAN	24-250 Vac RELAY 8A
A01	HEATING/COOLING PROPORTIONAL VALVE	0-10 Vdc
OC1	HEAT PUMP	Open collector 18 mA

OMNIA®

PID CONTROL

DDC Temperature Controllers

PTC sensing element - Power supply 230 Vac or 24 Vac - Data exchange through LinkBus - Modbus connectivity - IP30 protection - Dimensions 70X85X61 mm. For data reading through Touchscreen.

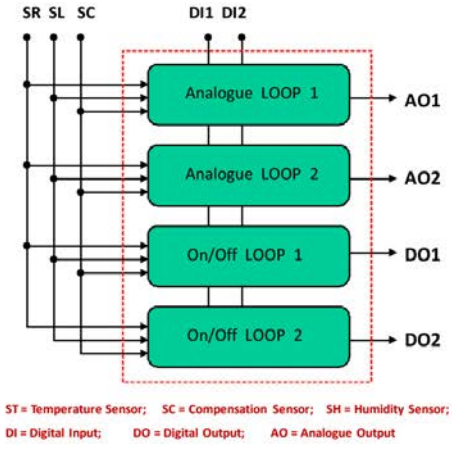
MODEL	DESCRIPTION
W500TMB	Digital temperature controller. P, P+I control, limit and compensation functions. 3 analogue inputs+ 2 digital inputs, 2 analogue 0÷10 Vdc outputs + 2 relay outputs. 3 ½-digit display. DIN rail mounting, with RTC clock and Modbus connectivity, 230 Vac power supply
W500TMB4	As W500TMB with 24 Vac power supply
W501TMB	As W500TMB with application-specific default values and 3-position output
W500T2MB	As W500TMB but with PID control and two independent control loops

DDC Controllers for Temperature, Humidity, Pressure

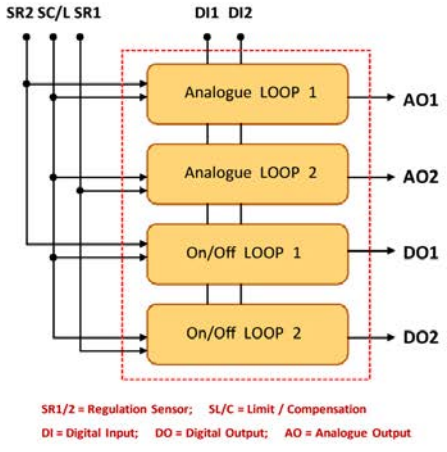
PTC sensing element - Power supply 230 Vac or 24 Vac - Data exchange through LinkBus - Modbus connectivity - IP30 protection - Dimensions 70X85X61 mm.
For data reading through Touchscreen.

MODEL	DESCRIPTION
W500HMB	Digital temperature and humidity controller. P, P+I control, limit and compensation functions 3 analogue inputs+ 2 digital inputs, 2 analogue 0÷10 Vdc outputs and 2 relay outputs. 3 ½-digit display. DIN rail mounting, with RTC clock and Modbus connectivity, 230 Vac power supply
W500HMB4	As W500HMB with 24 Vac power supply

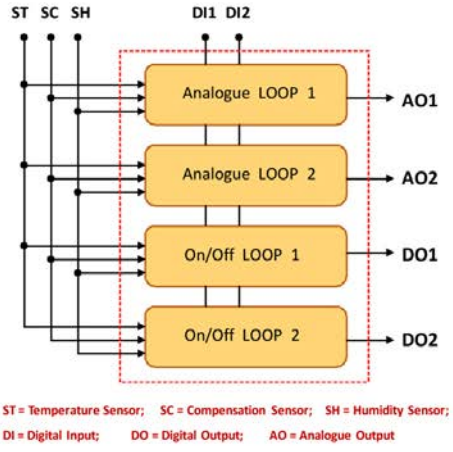
W50.TMB.

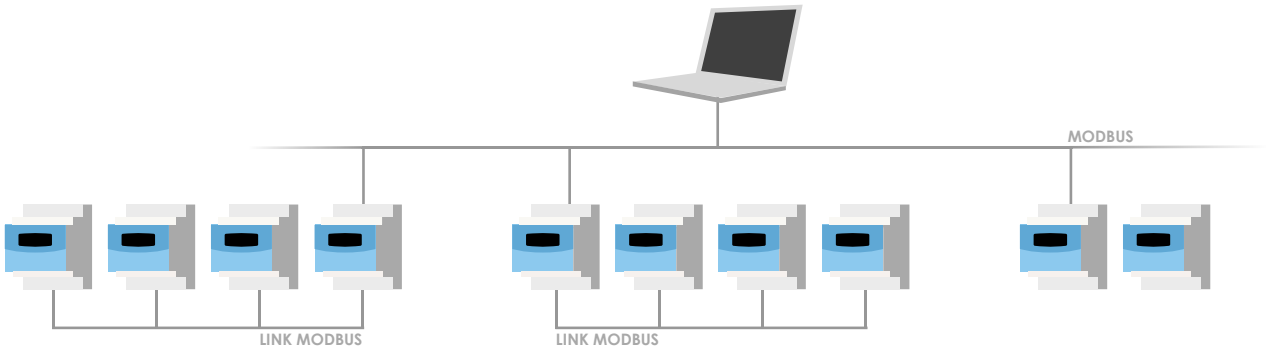


W500T2MB.



W500HMB.





Programming Tool

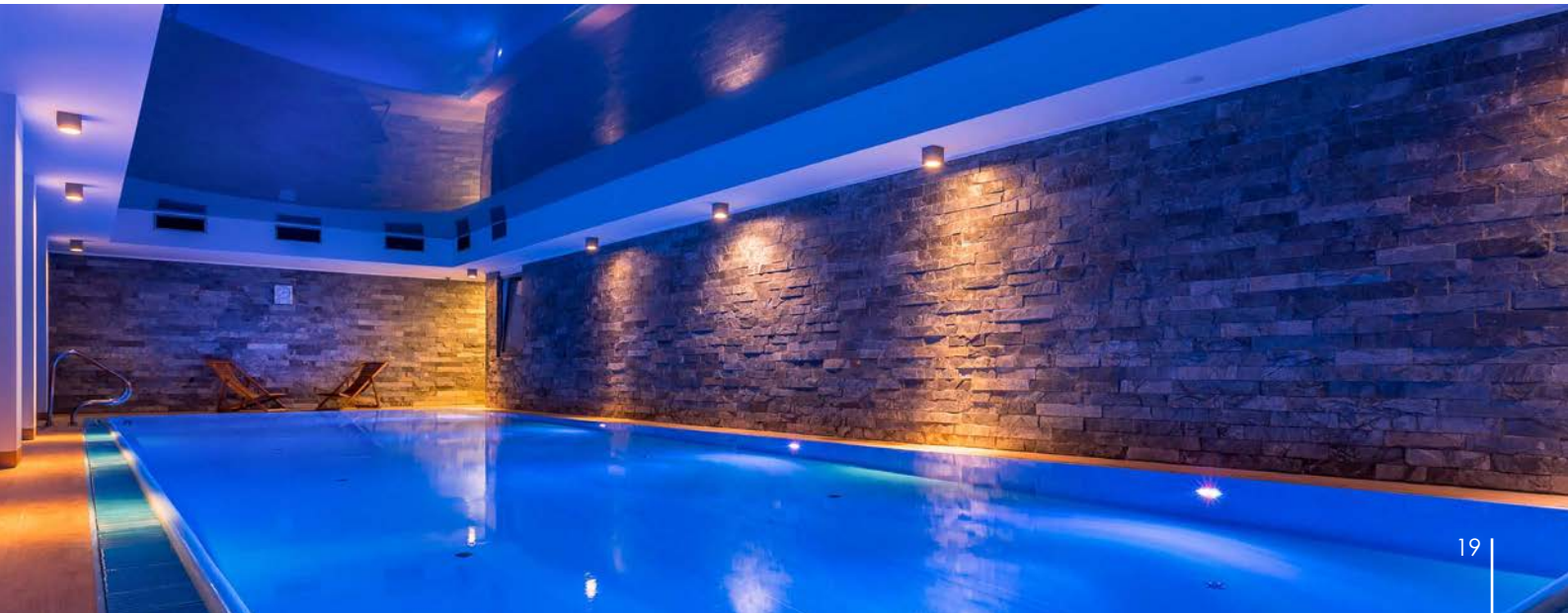
Programming tool for W500T, W500TMB, W500H, W500HMB controllers. You can set all parameters from your PC or Laptop by simply connecting one or more controllers via either a RS232/485 converter or a USB/ RS485 opto-isolated converter. All configurations can be saved on your PC and downloaded onto other controllers.

Sensors

- SPTC Temperature Sensors (See also pag 32)
- S2XX Temperature Sensors (See also pag 31)
- TU Series Humidity / Temperature Sensors (pag 34)
- TQ Air Quality Transmitters (pag 34)
- TP Pressure Transmitters (Pag 35)

Accessories

MODEL	DESCRIPTION
LIBO-USB	USB-RS485 optically isolated converter
RM500	Remote positioner for Omnia controllers, working range 5÷35 °C



MODEL	DESCRIPTION	POWER SUPPLY
WPRO-561DS	Programmable controller with display, with serial port rs-485	12÷24 V
WPRO-562DS	Programmable controller with display, with double triac, with serial port rs-485	
WPRO-521DS	Programmable controller with display, with serial port rs-485	230 V
W560-RT	Remote terminal (white)	
W521-EXP	I/O expansion for WPRO 521 (max 1 for each controller)	
W560-EXP	I/O expansion for WPRO 560 (max 1 for each controller)	12÷24 V

OmniaPRO programmable controllers are used for small size HVACR installations especially when parametric controllers (W500,NR9000) are not flexible enough to meet certain project specifications.
OmniaPRO are innovative controllers and, despite the compact dimensions, are powerfull enough to achieve a variety of HVACR applications.
Inputs: 6 digital + 5 analogue (3 passive NTC + 2 NTC or Vdc or mA)
Outputs: 5 digital + 3 analogue (0-10Vdc / 4(0)-20mA) + 3 open collector outputs for external relay.
12-24 Vca or 100-240Vac power supply.

Additional devices complete the OMNIA PRO's series:

- programmable combined temperature / humidity room sensor with display, for residential applications (STA6xL).
- I/O expansion module available with 22 I/Os.
- remote display (W560-RT).

OmniaPRO controllers are all equipped with Link Bus connectivity allowing direct connection of one I/O expansion module, one remote display and programmable room sensor with display and up to 5 soavis room sensor with display. (page 27)

Models with "S are provided with RS485.
Any function can easily be managed by a BMS system or by our GTO Touch Screens series, through RS485 and Modbus protocol.
Up to 40 controllers can be monitored by a single GTO touch screen.
Examples of application: AHUs with heating/cooling/humidity control, frost protection, compensation, optimization, free cooling, electric heater, heat pump, central heating, hot water service, boilers and chillers sequencing and more.

By 4 buttons and display, the room sensor is able to manage the following parameters:
Manual on/off
4 set-points
weekly program schedule
clock setting

STA60L/61L room sensors are respectively temperature and temperature/humidity sensors which can be used combined with OmniaPRO controllers.
The device is provided with a user's interface composed by:
• 4 buttons on the frontal panel
• a 4-digit number display to visualize hours and labels of menu, parameters and alarms
• a 2-digit and a half number display + a temperature/humidity visualization symbol.
• Several icon with programmable visibility in reason of the application downloaded into the controller

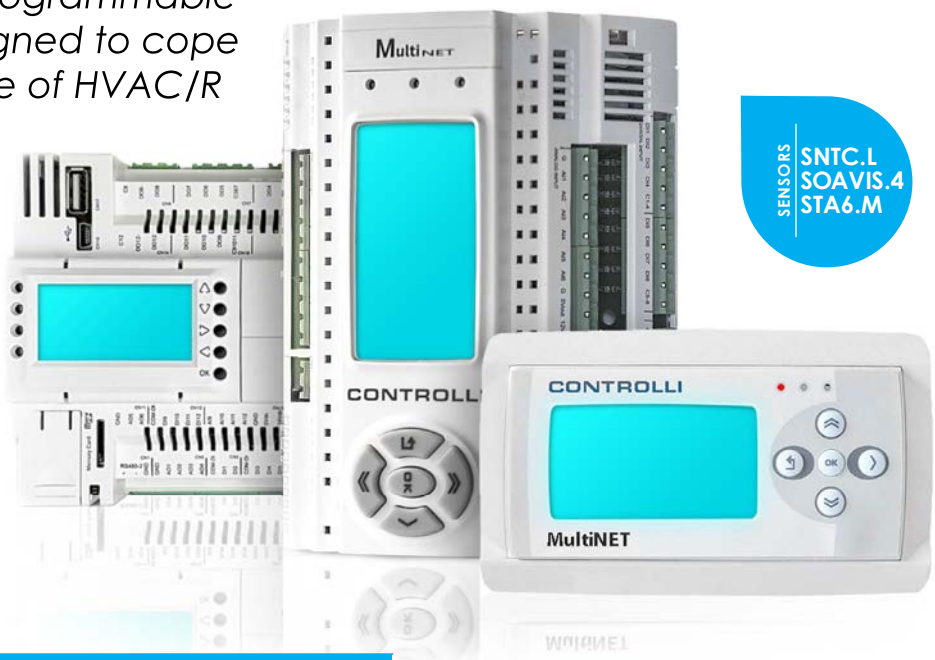
The following sensors can be connected to the device:

Analogue
- passive sensors SNTC-xL series
- active sensors 0..10V/4..20mA
- sensor STA72L/STA76L

Digital room sensor with display
- 1 temperature sensor or
- 1 temperature and humidity sensor

DESCRIPTION	WPRO-561DS	WPRO-562DS	EXPANSION W560-EXP	WPRO-521DS	ROOM SENSORS STA60L STA61L	TERMINAL UNIT W560-RT
Dimensions	4 DIN (70,2x87x61,6 mm)			4 DIN	137x95,5x31,3 mm	74x32x30 mm
Display	LED 4 digit 7 segments (D models)		-	LED 4 digit 7 segments (D models)	LCD	LED 4 digit 7 segments
Power supply	12-24 Vac/24 Vdc ± 10% 50/60 Hz	12-24 Vac ± 10% 50/60 Hz	12-24 Vac/24 Vdc ± 10% 50/60 Hz	100-240±10% 50/60Hz	From base	From base
Max consumption	6 VA / 4 W	6 VA / 4 W	5 VA / 3.5 W	4.3 W		30 mA
Relay digital outputs	5 x 2A 230 V~	3 x 2A 230 V~	5 x 2A 230 V~	4x2A-230 Va	-	-
Analogic outputs	-	2 x TRIAC 3A 230V~	-	3 (SELV(§)) 0..10V	-	-
					-	
	3 A.O.		2 x 0÷10 V		-	-
			1 x 4÷20mA/0÷20mA		-	-
Digital outputs O.C.	2 x Open Collector PWM	1 x Open Collector PWM	2 x Open Collector PWM	2 Open Collector for external relay. (Config. PWM)	-	-
Digital inputs	6 free contact inputs			2	-	-
Programmable digital input	3 x NTC / D.I.				1 x NTC on board	-
	2 x NTC / D.I. / 4÷20 mA / 0÷10 V / 0÷5 V / 0÷1 V				1 x NTC / D.I. / 4÷20mA / remote	-
Connectivity	TTL			RS485	-	-
	RS485		-		-	-
	LAN - connection to remote terminal W560-RT, sensors STA60L - STA61L o espansion W560-EXP				LAN - connection to controller	LAN - connection to controller
Mounting	DIN rail			DIN rail	Wall	Panel

Multinet is the Top Level solution of the Controlli Programmable equipments designed to cope with a wide range of HVAC/R applications.



27 I/Os

SENSORS SNTC.L SOAVIS.4 STA6.M

MODEL	DESCRIPTION
MT-NET-BD1	Programmable Controller 27 I/O, with display, 1 Modbus
MT-NET-BD2	Controller with display 28 I/O, Ethernet, 2 Modbus
MT-NET-BX2	Controller without display 28 I/O, Ethernet, 2 Modbus
MT-NET-BD3	Controller with display 42 I/O, Ethernet, 2 Modbus
MT-NET-BD4	Controller with display 7 I/O, Ethernet, 2 Modbus
MT-NET-BD5	Controller with display 18 I/O, Ethernet, 2 Modbus
MT-NET-ES1	CAN-bus expansion module 27 I/O
MT-NET-ES2	CAN-bus expansion module 14 I/O
MT-NET-TS1	Local keyboard
MT-NET-P01	Remote control panel
MT-NET-232	Plug-in RS232
MT-NET-ETH	Plug-in Ethernet
MT-NET-CAN	Plug-in CANopen
MT-NET-485	Plug-in RS485

Multinet grants high level performances in terms of memory, connectivity as well as user-friendly programmable user interface. All models are available for DIN bar installation and removable plug terminals offering a relevant time saving for wiring and installation.

Multinet can be programmed in 5 different programming languages (IEC61131-3) and is equipped with a large integrated I/O that can be expanded up to 350 physical control points with 1 Controller and 12 expansion modules; furthermore Multinet offers a multiple selection of communication protocols thanks to Plug-In modules for Modbus, (RS458 and RS-232) CanOpen, Ethernet and RS-232 in addition to the on-board Modbus and CanOpen communication port. Multinet platform can be supervised by SCADA software MicronetView, by GT Smart touchscreen and when coupled with Ethernet Plug In Multinet is WebServer and therefore can be supervised by mean of common browser from a lap-top, a tablet and a smartphone.

Multinet is suitable for application such as:

- AHU especially if a lot of analogue output are required
- Heating and Cooling plants
- Big plants where the direct data exchange is required
- Remote Control

MT-NET-BD1

Plug in modules expand the Multinet MT-NET-BD1 communication capability and they offer more opportunities in terms of connections. Each MT-NET-BD1 can interlock one plug in module.

Using the additional plug-in MT-NET-485, MT-NET-BD1 can read and write parameters from and to a Modbus slave devices such as the programmable STA 6XM room terminals.
Parameters are acquired using Multinet Modbus communication protocol and can be shared into the BMS system.
MT-NET-BD1 support up to 12 room terminals.

MT-NET-BD1 models are equipped with a Modbus RTU (RS-485) communication port for connecting with other Modbus devices. MT-NET-BD1 is equipped with a CANOpen and Modbus (RS485) integrated connection without the use of any Plug-In module; the expansions (12 max) and the remote keyboard MT-NET-TS1 (2max) are connected on the CANOpen bus; controllers with display can be connected to each other on the 485 bus with a supervisory system.

Using a Plug-In module the MT-NET-BD1 can offer an additional communication port for the connection with a supervisory control system or with a gateway (e.g. GSM Modem or 3G Router) for remote control.
Multinet comprises an additional Remote Control Panel MT-NET-PO1 offering the same smart capability and functionality of a Controller MT-NET-BD1 but in a different format and without Inputs and Outputs. MT- NET-PO1is also equipped with 3 integrated communication ports Modbus RTU (RS-485) for other Modbus devices, CanOpen for expansions modules providing the I/O and Modbus IP (Ethernet) offering WebServer capability for a remote control.

MT-NET-BD2 / MT-NET-BD3

MT-NET-BD4 / MT-NET-BD5

The STA6.M is also able to:
- read room temperature and humidity,
- manages owns time table schedule,
- allows the user to modify temperature and humidity set point.

MT-NET-BD2/BX2/BD3/BD4/BD5

The MT-NET-BD2 and MT-NET-BX2 models are identical, they differ only by the presence or absence of the display and the buttons.
All models are equipped with a CANopen connection, two isolated RS485 connections, two USB ports (one type and one mini-B) and one Ethernet port on board without the need for any plug-in modules.
The expansions (max 12) and the remote keyboards (max 2) are connected to the CANopen bus, while the bases with the supervision display can be connected to the 485 bus.
A port for a micro SD memory card as an expansion is also available.

CAN (Field) expansion bus network connection
A CAN (Field) expansion bus network connection can consist of:
- Maximum 1 MultiNET BDx/BX2 operating as MASTER;
- Maximum 12 MT-NET-ES1/ES2 operating as SLAVE;
- Maximum 2 MT-NET-TS1 keyboards.

CAN (Network) expansion bus network connection
A CAN (Network) expansion bus connection can consist of:
- 1 MultiNET BDx;
- Maximum 10 between BDx and PO1 connected in binding (1) on CAN expansion bus;
- Maximum TS1 keyboards.

Ethernet Connection
The Ethernet connection also allows communication via HTTP protocol, or access to a Web Server contained in MultiNET BDx.
Maximum 4 BDx can be connected in bindings on an Ethernet network.

BRIDGE connection
It allows monitoring of up to 32 other tools, generally Modbus/RTU slaves.
It is used as a protocol conversion element from Modbus/TCP to Modbus/RTU for Modbus commands 0x03 and 0x10.

CONTROLLERS I/O LAYOUT

MODEL	DI (low voltage input 24 Vac/dc)	FAST DI (free voltage input)	AI 0÷10 Vdc, 4÷20 mA NTC DI	DO Relay	AO (0÷10 Vdc, 4÷20 mA, On/Off with DGSRMV)
MT-NET-BD1	8	2	4 2 (only NTC/DI)	2 (8A 250 Vac) 2 (5A 250 Vac)	5
MT-NET-ES1	8	2	4 2 (only NTC/DI)	2 (8A 250 Vac) 2 (5A 250 Vac)	5
MT-NET-ES2	4	none	4	1 (8A 250 Vac) 3 (5A 250 Vac)	2 (only 0÷10 Vdc)
MT-NET-BD2	6	2	8	7 (3A 250 Vac) 1 (1A 250 Vac)	3 2 (only 0÷10 Vdc)
MT-NET-BX2	6	2	8	7 (3A 250 Vac) 1 (1A 250 Vac)	3 2 (only 0÷10 Vdc)
MT-NET-BD3	10	2	12	10 (3A 250 Vac) 2 (1A 250 Vac)	6 2 (only 0÷10 Vdc)
MT-NET-BD4	none	2	2	3 (3A 250 Vac)	none
MT-NET-BD5	none	2	8	6 (3A 250 Vac)	2 (only 0÷10 Vdc)

GT SMART

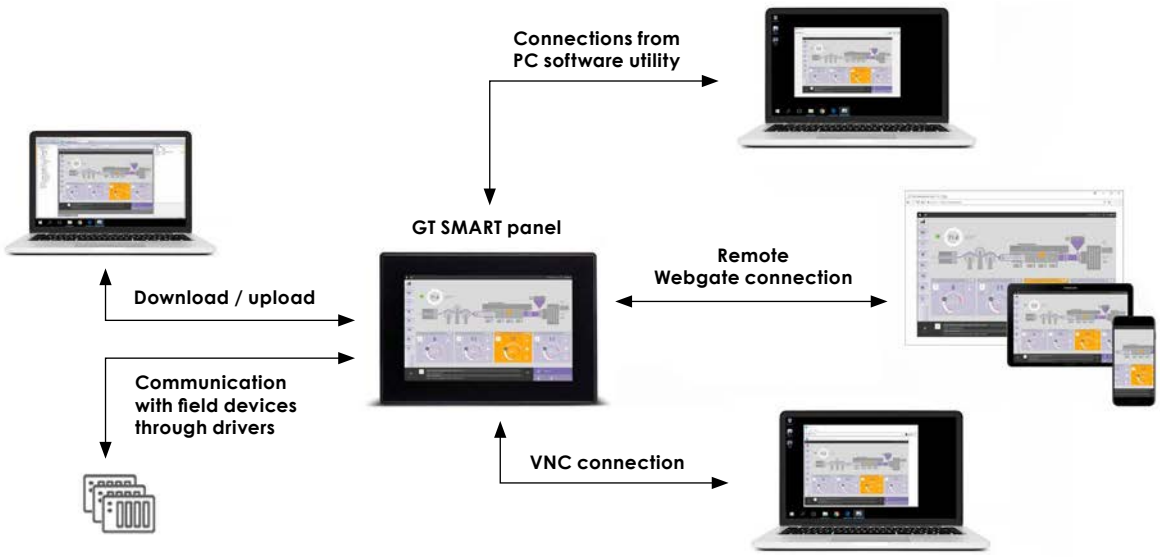
GT Smart is a series of programmable touch screen devices which can be used for monitoring and managing some PLCs via bus or via Ethernet.
They are available with 7" or 10" display, 1 Ethernet port, 1 USB port and 1 configurable serial port (RS-232, RS-485 and RS-422).
It's also possible to remotely connect a PC to GT Smart thanks to native Web-Gate capability.

MODEL	SIZE	DISPLAY	ETHERNET
GTSMART-07	7"	Color TFT 800 x 480 WVGA	Yes
GTSMART-010	10"	Color TFT 1024 x 600 WVGA	Yes

GTX703

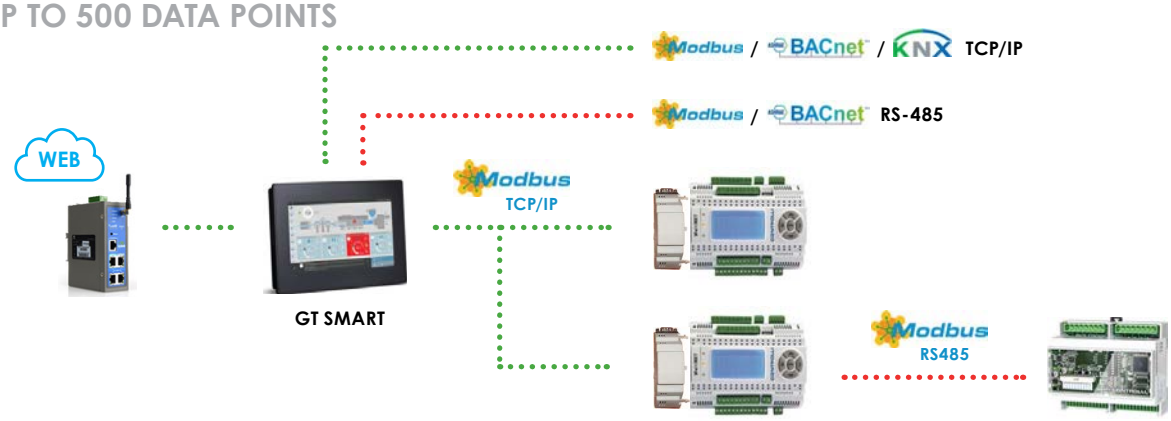
GTX703 is the essential device for building the IoT systems up.
It works as gateway and it helps customer to perform any kind of IoT instructions and data management.
It is equipped with 2 different Ethernet ports for both OT and IT networks.
In case connectivity is missing, it's possible to installing the auxiliary 3G Modem GTX703-3G.
GTX703 can be remotely connected to the network thanks to native Web-Gate capability.

MODEL	DESCRIPTION
GTX703	IoT gateway for remote supervisory systems
GTX703-3G	Wireless modem for GTX703

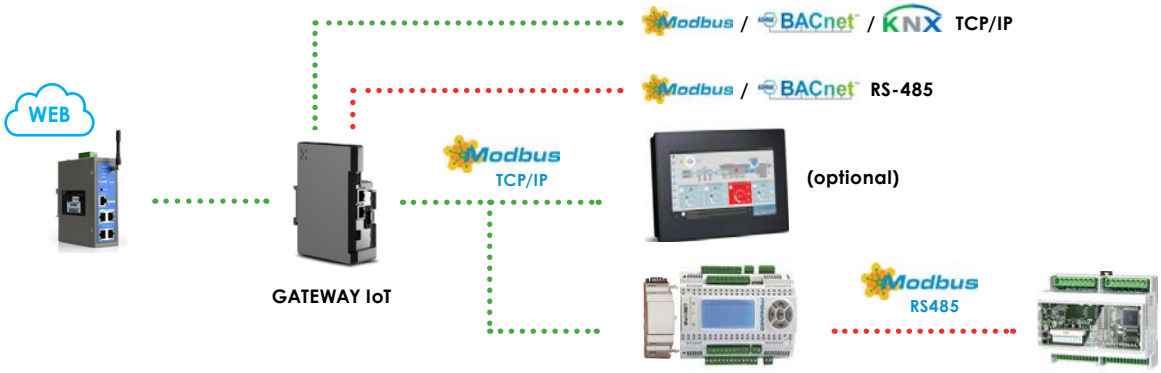


- REMOTE ACCESS VIA CLOUD
- MANAGEMENT FROM FIXED AND MOBILE DEVICES
- STATISTICS AND DATA LOG
- ALARM MANAGEMENT
- GRAPHIC PAGES
- MULTI PLANT

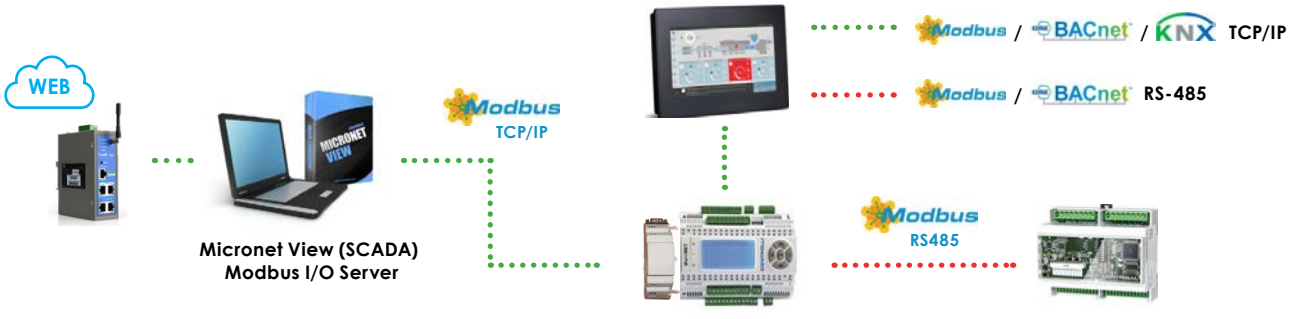
UP TO 500 DATA POINTS



UP TO 2000 DATA POINTS



UP TO 10000 DATA POINTS



STA7.M

New Room Display Panel for temperature, humidity and motion detector. For residential solutions, with Modbus connectivity.

STA7.M is a room terminal with a large color touchscreen display that allows the measurement of temperature, relative humidity and occupancy depending on the model. Through the display it is possible to control temperature setpoint, humidity, a daily and weekly schedule and set the speed of a possible fan as well as virtualize the measured quantities (temperature and humidity) and others such as the outside temperature and the air quality coming from the reference controller.
STA7.M can be appropriately configured via the display to enable and disable certain functions (e.g. Schedule) or to hide or display some information (e.g. Setpoint, Regime, Season). It communicates with Modbus-RTU protocol and can be connected to appropriately configured programmable controllers that operate on this network as master devices. The probe is mounted on the wall.

MODEL	DESCRIPTION
STA70M	Modbus temperature sensor, 24Vac/dc
STA71M	Modbus temperature and relative humidity sensor, 24 Vac/dc
STA72M	Modbus temperature, humidity and occupancy sensor, 24 Vac/dc

STA6.M

STA6.M is a room display panel that allows the user to control temperature and humidity in residential applications.
It communicates through the Modbus protocol and can be connected to Multinet programmable controllers, properly setted, as master devices.
Depending on the model, STA6.M display panel is fitted with a temperature probe or temperature and humidity probe, and power supply may be 230 Vac or 24 Vac/dc.
All models are wall mounting and compatible with the main flush mounting electrical boxes available in the market.
4 functional buttons allow to move through the internal menu.
Using the encoder knob, parameters change becomes very easy: turn it to change the value and press it to confirm.
Different passwords can be set to grant safe access. The information are showed using graphic icons and digits.
If room terminals work coupled with multinet controllers you can connect up to 12 of them using a Modbus connection.
Modbus communication is achieved using a 3 wires cable AWG 20/22 (RS485) maximum length 500 m.
Flexible speed communication: you can choose communication baude rate between 4800 bps, 9600 bps and 19200 bps.

MODEL	DESCRIPTION
STA60M	24 Vac/dc Modbus temperature sensor
STA61M	24 Vac/dc Modbus temperature and humidity sensor
STA60M-2	230 Vac Modbus temperature sensor
STA61M-2	230 Vac Modbus temperature and humidity sensor
STA60MP	24 Vac/dc Modbus temperature sensor, flush mounting
STA61MP	24 Vac/dc Modbus temperature and humidity sensor, flush mounting
STA60MP-2	230 Vac Modbus temperature sensor, flush mounting
STA61MP-2	230 Vac Modbus temperature and humidity sensor, flush mounting

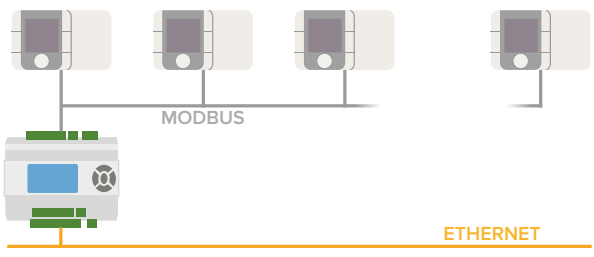
Functions:
Displaying of room temperature and humidity
Setting of mainly parameters of the regulation.
Handling of time program schedule Alarm displaying
Changing of the On/Off regulation status
Managing of fan status (if present)

Power supply: STA6.M: 24 Vac (+10/-15%), 22-35 Vdc
STA6.M-2: 230 Vac (+10/-15%) 50/60 Hz

Maximum current: 2 VA

Temperature: -10T60 °C, 10-90% U.R. non condensing (operation)
-20T70 °C, 10-90% U.R. non condensing (storage)

Connections: AWG 20-22, shielded cable Lmax=500 m (485 serial)
wires cross-section: 0,5 mm^2 -1,5 mm^2 (power supply)



Electronic Controllers for FCUs

AXC series - Periodic ventilation, valve protection, set point limit, led indication (Heating/Cooling/On), hot start (timer), periodic valve opening, Economy switch (on request), 3 fan speed selector, water sensor input, window contact input, automatic changeover, electric heater. IP30 protection, power supply 230 Vac, 50/60 Hz.
Suitable to remote monitoring from GT SMART touch screen.

MODEL	DESCRIPTION
AXCU22/W	Controller for 2/4-pipe fan coils
AXCU22/WMB	Controller for 2/4-pipe fan coils with Modbus connectivity
AXCU/BA	Bus Adapter for AXCU22/WMB
MT-NET-POAXC	Web server device to manage up to 50 AXCU22/WMB controllers

Room Thermostats

With Bimetal element.

MODEL	RANGE °C	DIFFERENTIAL K	OTHER FEATURES
AS206	5÷30	0.5	SPDT. Power supply 230 Vac
AS207	5÷30	0.5	SPST for S/W changeover. Power supply 230 Vac

With Thermistor sensing element - Supply 230 V ac.

MODEL	RANGE °C	OTHER FEATURES
AX236	5÷30	On/Off, 3 fan speed control, s/w change-over.
4200-588	5÷30	Fan coil controller, 2-pipe/4-pipe, SPDT contact, 3 speed fan control, S/W changeover, On/Off switch
4200-662	5÷30	Fan coil controller, 4-pipe, SPDT contact, 3 speed fan control, S/W changeover, On/Off switch
4200-953	5÷30	Fan coil controller with LCD display, 2-pipe, SPDT contact, 3 speed fan control, On/Off switch heat/cool/off/fan selection
4200-577	5÷30	Fan coil controller with LCD display, 4-pipe, SPDT contact, 3 speed fan control, On/Off switch

Room Chronothermostat

MODEL	RANGE [°C]	DIFFERENTIAL [K]	OTHER FEATURES
DGTOUCH2	4÷40	0,5	3.8" touch screen chronothermostat for heating and cooling programmable with 3 temperature levels with daily and weekly programme. Battery powered. Dimension 125x85x26 cm

Room Controllers

Series **AX500** - Built-in NTC sensing element - Power supply 24 Vac - IP30 protection - Optional external temperature sensor STR73.

MODEL	RANGE °C	PROPORTIONAL BAND [K]	OTHER FEATURES
AX526	5 to 30	1.5	2 outputs 0 to 10 Vdc
AX527	5 to 30	3	As AX526 with on/off switch and 3 fan speed control
AX536	5 to 30	1.5	2 outputs 0 to 10 Vdc with on/off electric heater output and LCD display
AX537	5 to 30	1.5	As AX536 with on/off switch and 3 fan speed control

Temperature Controllers

Series **CTY** - DDC controllers with analogue or digital output and PD or PID action. Dimensions 72x72x102 mm, panel mounting (cut-out 67x67 mm).
SPTC sensors. (see page 28)
More features: off-set, copy card, password, alarms, duty-cycle.
When pressure or humidity transmitters are connected (4÷20 mA) CTY will become pressure or humidity controllers (0-100% range). Available units: °C, °F, bar, % RH, Pa, psi.

MODEL	OUTPUT	INPUT	POWER SUPPLY [Vac]
CTY231	2 relay + 1 alarm	PTC	230
CTY232	2 relay + 1 alarm	Pt100 and 4÷20 mA	230
CTY241	2 relay + 1 alarm	PTC	24
CTY242	2 relay + 1 alarm	Pt100 and 4÷20 mA	24
CTY541	0÷10 V + 1 relay + 1 alarm	PTC	24/230
CTY542	0÷10 V + 1 relay + 1 alarm	Pt100 and 4÷20 mA	24/230

Temperature Controllers for Industrial Applications, Heat Exchangers, etc.

Series **TX500** - P, PD and Proportional - Integral - Derivative action (PID) - Power supply 230 or 24 Vac - Configurable as heating or cooling loop - Supervision by Modbus protocol - Sensing element: see SP-TP below or SPTX-U - Flush mounting with 67x67 mm panel cut-out - IP54 protection.

MODEL	OUTPUT	INPUT	POWER SUPPLY [Vac]
TX542	1 alarm relay output 1 configurable analogue output[1)]	Pt100	24/230

1. Max load controlled by analogue output: 0-1 V = 20 mA with 50 Ohm min. load resistance;
0-5 V = 20 mA with 250 Ohm min. load resistance;
0-10 V = 20 mA with 500 Ohm min. load resistance;
0-20 mA or 4-20 mA = 350 Ohm.

Accessories for CTY-TX

MODEL	DESCRIPTION
ARAD9672	Hole adapter (96x96 to 72x 72 mm) for front panel mounting to replace analogue TX and RX series having 96x96 mm drilling templalte
4200-1322	COPY CARD for data storage and upload/download of parameter settings on CTY and TX

Sensors

Temperature sensors for TX and CTY.2 with Platinum (100 Ohm at 0 °C) sensing element.

MODEL	DESCRIPTION
SPTX-U	Universal sensor, Pt100 sensing element, cable length 3 m, sensor material AISI316 steel, max fluid temperature: 350 °C
SPC	Immersion, AISI 304 well, 1/2" gas connection, conduit opening Ø 10 mm, 113 mm long, max fluid temperature: 150 °C, IP44 protection
TPC	Immersion, 1/2"gas connection, AISI 304 well, conduit opening Ø 10 mm 200 mm long, max fluid temperature: 500 °C - IP55 protection
421	Option for SPC: AISI 304 stainless steel sheath and connection

Temperature sensors Soavis are used in heating and air conditioning systems for both commercial and residential purposes. Connected to the relevant controllers, they allow detecting and controlling the room temperature. They can be equipped with a potentiometer in order to change the set point.
Room sensors Soavis can have two different type of installation: flush-mounting using 503 box 503 or wall mounting with relevant back-plate. They are composed by a removable front part where you have the electronics, a supporting frame and the back plate if required. The removable front part is compatible with BTicino supporting frame (included) for Living or Light cover plates and with Vimar supporting frames for Plana or Idea cover plates. SOAVIS sensors can be equipped with different thermistor: NTC 5kOhm, NTC 10 kOhm, Balco or PTC 1kOhm for controllers line NR OmniaPRO, Multinet, Omnia and old CX serie.
New sensors S45X are equipped with a LCD display (3 digit and decimal point). They allow to show room temperature and to do set point adjustament.
S45XA/B can be used for Multinet and OmniaPRO controllers only.

CONTROLLERS
OMNIA
OMNIAPRO
MULTINET
ENERGON

MODEL	DESCRIPTION	CONTROLLER
S1XXA/B	Room sensor with or without set correction; available white or char- coal, wall or flush-mounting; sen- sing element NTC 5K	SERIES CX AND RX
S2XXA/B	Room sensor with or without set correction; available white or char- coal, wall or flush-mounting; sen- sing element Balco	SERIES W500
S3XXA/B	Room sensor with or without set correction or with graduated scale; available white or char-coal, wall or flush-mounting; sensing element PTC 1K	SERIES NR7XXX
S4XXA/B	Room sensor with or without set correction or with graduated scale; available white or char-coal, wall or flush-mounting; sensing element NTC 10K	SERIES OMNIAPRO, MULTINET AND NR9XXX
S45XA/B	Room sensor with digital display and set correction, available white or charcoal. wall or flush mounting.	SERIES OMNIAPRO, MULTINET

S X X X X

1. Balco
2. PTC 1 kΩ
3. NTC 5 kΩ
4. NTC 10 kΩ

1. Flush mounting
2. Wall mounting

A. Charcoal
B. White

1. with graduated scale
2. with set correction, 3 terminals
3. No potentiometer
4. with set correction, 4 terminals*
5. with display

** 2 dedicated to potentiometer*

Temperature Sensors

NTC 10k Ohm sensing element for OmniaPRO, W562 and MultiNET controllers.

MODEL	RANGE [°C]	SENSING ELEMENT	DESCRIPTION
SNTC-CL	-35÷110	NTC10k β=3435 at 25 °C	Immersion sensor with plastic case
SNTC-EL	-20÷60		Outside sensor
SNTC-FL	-10÷110		Strap-on sensor
SNTC-L	-30÷80		Duct sensor (cable and sensing element)
SNTC-SL	-30÷105		Immersion sensor (cable and sensing element)
SNTC-VL	-20÷65		Duct sensor, fast detection
S4xxA/B	-10÷60		Room sensor with/without set point adjustment, white or charcoal color, wall mounting or flush mounting
SNTC-CR	-35÷150	NTC 10k β=3977 at 25 °C	Immersion sensor (with plastic case)

PTC 1K (SPTC) and **PT100** (SPTX-U only) sensing element for Omnia, W500T / W500H and CTY, TX controllers.

MODEL	RANGE [°C]	SENSING ELEMENT	DESCRIPTION
SPTC-C	-50÷150	PTC 1K	Immersion sensor for CTYxx1 and Omnia cable type, 1.5 m silicone cable
SPTC-CR	-50÷150		Immersion sensor for CTYxx1 and Omnia with case and stick enclosed - supplied with brass pocket
SPTC-D	-50÷150		Duct sensor for CTYxx1 and Omnia, cable type, 1.5 m silicone cable
SPTC-E	-20÷60		Outside sensor for Omnia with PG9 cable sleeve - IP44
SPTC-F	-10÷120		Strap-on pipe sensor for Omnia - IP44
SPTC-V	-20÷65		Same as SPTC-D but with case and stick enclosed for Omnia and CTYxx1 - length 315 mm - max temperature 65 °C - IP44 Not suitable for applications with possible condensation
SPTX-U	up to 350	PTC100	Universal sensor for CTYxx2, PT100 sensing element, cable type, 3 m cable

NTC sensing element: STA/STR, 5k Ohm at 25 °C, STR72 10k Ohm at 25 °C, STR73 33k Ohm at 25 °C - Application 0÷50 °C.

MODEL	DESCRIPTION
STR72	Return air or pipe-contact sensor without mounting kit for RA735 - IP30
STR73	Return air or pipe-contact sensor without mounting kit for AX526/527/536/537 - IP30

Temperature Transmitters

Output signal 0÷10 Vdc or 4÷20 mA.

MODEL	RANGE [°C]	OUTPUT SIGNAL	DESCRIPTION
TT-A21	0÷50	4÷20 mA	room - dimensions 115 x 85 x 32 mm. IP30
TT-A31	0÷50	0÷10 Vdc	
TT-C21	0÷100	4÷20 mA	immersion - 113 mm stainless steel well - AISI 304 stainless steel 1/2" connection - IP55
TT-C22	-50÷50	4÷20 mA	
TT-C23	0÷300	4÷20 mA	immersion - length 175 mm - 1/2" stainless steel connection without well, Pt100 Ohm at 0 °C sensing element
TT-C24	0÷500	4÷20 mA	
TT-C31	0÷100	0÷10 Vdc	as TT-C21
TT-D21	-50÷50	4÷20 mA	duct, 300 max stem length, with wall mounting kit. IP55
TT-E21	-50÷50	4÷20 mA	outside - IP55

Pipe mounting thermostat for Automatic Summer/Winter Change-over

MODEL	DESCRIPTION
37T	For water temperature in the pipe of 30 °C or more, this thermostat will enable Heating mode, for water temperature 18 °C or less, it will enable Cooling mode.

Immersion Thermostats

Series **YTC3** - Liquid-filled sensing element - SPDT 16 (4) A-250 Vac - IP43 protection.

MODEL	RANGE °C	DIFFERENTIAL [K]	OTHER FEATURES
YTC3	0÷90	6±2	copper well 3/4" - 100 mm long
YTC3RM	100 (fixed)	15÷25	copper well 3/4" - 100 mm long (manual reset)

Fan-coil Thermostat

Series **YZB** - Liquid-filled sensing element - Copper bulb and capillary 1 m long.
SPDT 16 (4) A-250 V a.c. - IP00 protection.

MODEL	RANGE °C	DIFFERENTIAL [K]	OTHER FEATURES
YZB	0÷40	2±1	setting knob and lock nut

Frost-protection Switches

Series **Y111** - Steam- filled sensing element - 6 m long capillary. SPDT contact 16 (16) A 250 V a.c. - IP43 protection.
Note: For correct operation, the bulb must have a lower temperature with respect to the controller.

MODEL	RANGE °C	DIFFERENTIAL [K]	OTHER FEATURES
Y111	-18÷13	3	max safety temperature 200 °C with external set
Y111RM	-18÷13	-	as above with manual reset

Humidity and Humidity + Temperature Transmitters

TU Series - H and H + T combined sensors for duct and room installation

MODEL	HUMIDITY	TEMPERATURE	APPLICATION
TU-D22	4÷20 mA (2 wire)	x	Duct, lenght 200 mm, IP55
TU-D32	0-10 Vdc (3 wire)	x	
TUTD32	0-10 Vdc (3 wire)	Ohm (Balco)	
TUTD32N10	0-10 Vdc (3 wire)	Ohm (NTC 10K)	
TUTD32P1	0-10 Vdc (3 wire)	Ohm (PTC 1K)	
TU-D33	4÷20 mA or 0-10 Vdc (config.)	x	Duct, lenght 230 mm, IP65
TU-A22-1A	4÷20 mA (2 wire)	x	Flush mounting, black
TU-A22-1B	4÷20 mA (2 wire)	x	Flush mounting, white
TU-A22-2A	4÷20 mA (2 wire)	x	Wall mounting, black
TU-A22-2B	4÷20 mA (2 wire)	x	Wall mounting, white
TUTA35	4÷20 mA or 0-10 Vdc	Ohm (NTC 10K)	Wall mounting, white

Room sensors: dimensions 80x115x28,5 mm, protection degree IP30

Humidity Switches

Series **UF200** - Synthetic fibre sensing element
UF215 room type - UF217 duct type with 228 mm immersion pipe.

MODEL	RANGE % R.H.	DIFFERENTIAL % R.H.	OTHER FEATURES
UF215	35÷100	4	SPDT 2 (2) A - 240 Vac - IP30
UF217	30÷100	3 to 6	SPDT 15 (2) A - 250 Vac - IP64

Room Air Quality Transmitters

Series **TQ** - Output signal 0 to 10 Vdc - Power supply 24 Vac.

MODEL	RANGE	DESCRIPTION
TQ-A31	1÷100% RH	Room type - dimensions 115 x 85 x 32 mm - IP20
TQ-D32	1÷100% RH	Duct type - dimensions 115 x 85 x 32 mm - IP20
TQ-D32-CO2	0÷2000 ppm	Duct type for CO_2 - 0÷10Vdc or 4÷20 mA - IP65

Differential Pressure Switches

Series **BD200** - Differential pressure switch for signalling dirty air filter - Silver contacts - Membrane sensing element - IP54 protection.

MODEL	RANGE [Pa]	MAX SAFETY PRESSURE [bar]	OTHER FEATURES
BD297	40÷400	0.1	Connections Ø 5 mm for PVC pipe with 2 m tube and bracket for wall mounting

Pressure Switches

Series **B300** - Metal bellows sensing element - 165 Ohm potentiometer - Die-cast aluminium case - IP55 protection.

MOD.	RANGE [kPa]	DIFFERENTIAL [kPa]	MAX SAFETY PRESSURE [kPa]	OTHER FEATURES
B302	100÷600	15÷120	900	copper alloy bellows
B303	200÷1400	60÷400	2200	
B304	500÷3000	80÷400	3800	
B353	200÷1400	150÷900	2200	
B354	500÷3000	120÷900	3800	
B301X	10÷200	7÷30	600	AISI 316 stinless steel bellows inox
B302X	100÷600	15÷120	900	
B303X	200÷1400	60÷400	2200	
B304X	500÷3000	80÷400	3800	
B353X	200÷1400	150÷900	2200	
B354X	500÷3000	12÷900	3800	

Pressure and Differential Pressure Transmitters

Series **TP** - Output signal 0 to 10 Vdc, except TP-D333-MA and TP-D334-MA (4÷20 mA) 24 Vac power supply - For CTYxx2 (4÷20 mA-version) controllers.

MODEL	RANGE	MAX PRESSURE	APPLICATION
TP-C34	0-500/1000/2000 kPa	+300%	pressure of not aggressive gas and liquids - G 1/8" - IP65
TP-C351	0 to 600 kPa	12 bar	differential pressure of not aggressive gas and liquids G 1/8" connections - IP65 - 0÷10 Vdc output
TP-C361	0 to 1000 kPa	12 bar	
TP-D333	0-312.5/625/1250 Pa adjustable with central "0"	0.68 bar	differential pressure of air and not aggressive gas PVC internal Ø 6 mm connections - IP65 - 0÷10 Vdc output
TP-D333-MA			differential pressure of air and not aggressive gas PVC internal Ø 6 mm connections - IP65 - 4÷20 mA output
TP-D334	0-62.5/125/250 Pa adjustable with central "0"	0.68 bar	differential pressure of air and not aggressive gas PVC internal Ø 6 mm connections - IP65 - 0÷10 Vdc output
TP-D334-MA			differential pressure of air and not aggressive gas PVC internal Ø 6 mm connections - IP65 - 4÷20 mA output

Flow Switches

Series **Y100** - Paddle type - Protection degree: Y106 IP55, Y107 IP65. SPDT contact 15 (8) A - 230 Vac

MODEL	RANGE	OTHER FEATURES
Y106	1÷85 m^3/h	for liquids - 1" screwed connections for pipes Ø 1" to 8"
Y107	1÷10 m/s	for air - with paddle 175 x 80 mm

enerbrain

Innovative Energy Saving solution based on IoT and Machine Learning

1 Monitoring

The environmental sensors monitor temperature, CO_2, relative humidity, VOC, pressure and costantly send your data to the cloud.

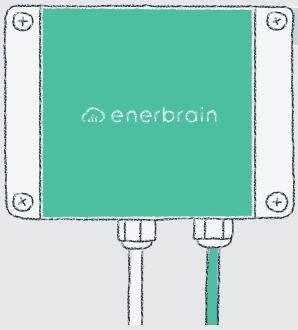
2 Artificial intelligence

The cloud receives the data and uses machine learning algorithms that process the best parameters of comfort and efficiency to be sent to the control units. The same algorithms process and analyze the production KPIs.

Intuitive dashboard

It is possible to manage the entire real estate portfolio in real time remotely thanks to the dashboard, designed for an optimal user experience.

Closed loop



3 Dynamic automation

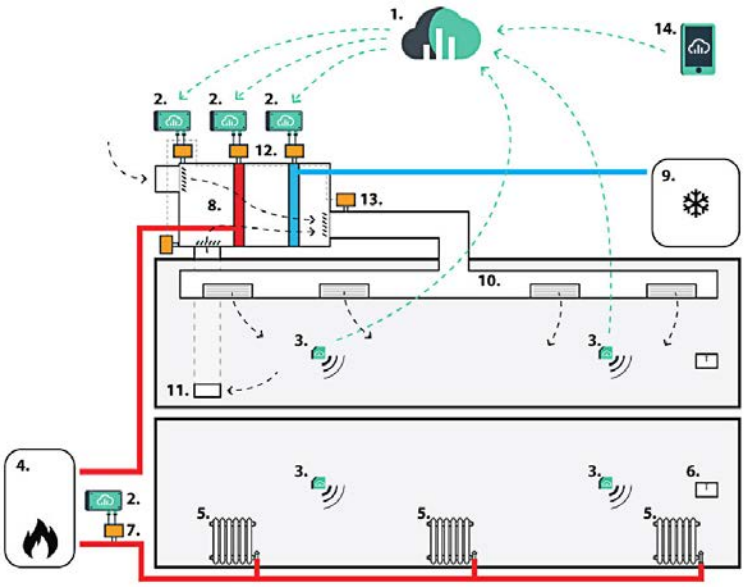
The unique eNodes receive the information from the cloud and use machine learning to regulate your HVAC systems, delivering 30% energy savings and maximised comfort levels.

Target saving by applications

	Retail	Aeroporti	Scuole	Musei & Teatri	Uffici	Hotel
Annual costs of energy for HVAC	100k €	1.000k €	50k €	150k €	60k €	80k €
SAVING	-25%	-30%	-15%	-20%	-15%	-15%

ENERBRAIN IS PLUG & PLAY FOR EVERY HVAC SYSTEM

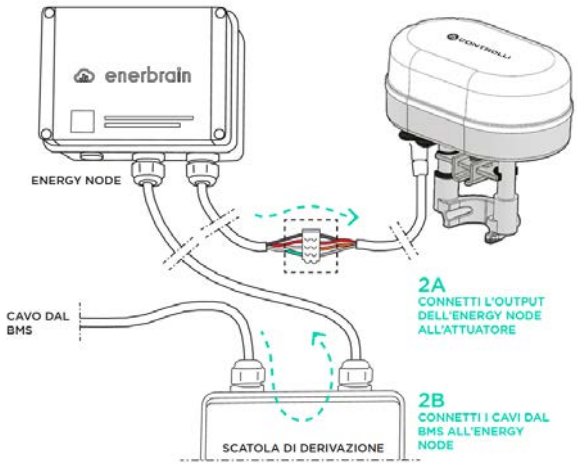
1. Enerbrain cloud algorithms
2. eNode or IoT actuator
3. eSense
4. Existing heat generator
5. Existing terminal units
6. Existing thermostats
7. Existing three-way valve
8. AHU
9. Existing chiller
10. Supply air ducts
11. Return air ducts
12. Hot/Cold battery valve
13. Air damper
14. App for set-point control



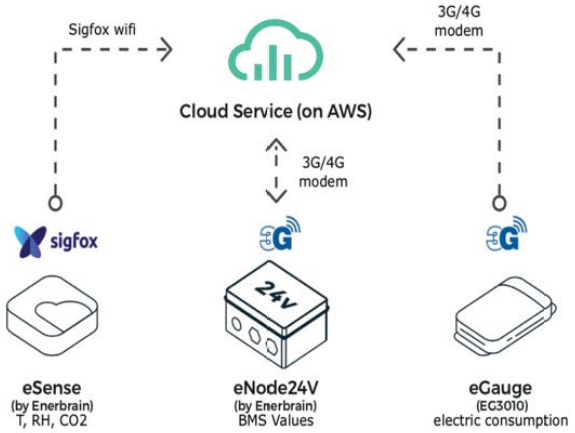
COMPETITIVE ADVANTAGES

Control System based on **Artificial Intelligence – Machine Learning**

Universal non-invasive solution



Fast to install because it is based on wireless technologies



MONITORING	
egauge15	Electric Monitoring Datalogger (15 channels)
egauge30	Electric Monitoring Datalogger (30 channels)
Kit_TA	Caliper kit
eGateway	eGateway (to be added if ethernet connectivity is not available)
eEye	eEye - Camera for remote reading of the gas meter
SENSORS	
eSense	Temperature and humidity sensor
eSensePRO	Temperature, Humidity and VOC sensor
eSensePRO-CO2	Temperature, Humidity, VOC and CO_2 sensor
eSenseRIP	Repeater
eSenseHub	Gateway hub (to be added if Sigfox connectivity is not available)
eSense3G	Modem Router 3G/ETH (to be added if Sigfox connectivity is not available)
CONTROLS	
eNode24	Control of 1 modulating valve 0..10 Vdc
eNode220	Control of 1 3 points valve
eNodeDO	Control of 2 relays
ePLC	Control for Rooftop systems
eNode3.0	Control of 3 valves 0..10V and 2 relays
SOFTWARE AND SERVICES	
Energy-Cloud-B	Annual Energy-Cloud License - Bronze
Energy-Cloud-S	Annual Energy-Cloud License - Silver
Energy-Cloud-G	Annual Energy-Cloud License - Gold

ControlBOX systems from Controlli are turn-the-key panels, ready to be installed in the wall. Fluid can either be hot or chilled water. Each ControlBOX panel includes an heat meter , PT500 temperature sensors, 2way or 3way zone valve, 2 flow meters (for hot and for chilled water), electrical pull box, pipes, gaskets, strainers and all the necessary fittings and accessories.
Room temperature can be controlled by a thermostat or a chronothermostat. Our heat meters consist of a microprocessor-controlled calculator, two fixed attached temperature sensors for the supply and return flows, and a flow sensor. A large display constantly shows the energy consumption. Additional data can be easily displayed by scanning three display loops. The integrated E²PROM automatically stores all data several times a day. Consumptions can be read locally on the meters or transmitted to a remote data station (via M-Bus connectivity). ControlBOX modules include AQUACON (compact sizes), MULTICON (multijet), WOLTCON (Woltmann) or ULTRACON (ultrasonic) heat meters, all compliant to MID (Measuring Instruments Directive) European Directive 2004/22/CE. CONCxxx data stations allow reading of up to 250 heat meters, data stations can be connected to PC via USB port and reading is achieved thanks to STCU Reader software.

MODEL	FLOW RATE [m³/h]	DIMENSIONS [mm]	CONNECTION	DESCRIPTION
CB001	1,5	400x500x110	3/4"	COMPACT DIMENSIONS suitable to residential buildings. Includes static balancing valve on by-pass line.
CB002	1,5	400x500x110	3/4"	Same as CB001 with static balancing valve also on supply line
CB003	1,5	550x550x130	3/4"	Larger box dimensions suitable to customizations.
CB004	2,5	550x550x130	3/4"	Larger box dimensions suitable to customizations.
CB005	1,5	550x550x130	3/4"	Includes a supply line for decorative towels radiators
CB006	2,5	550x550x130	3/4"	Includes a supply line for decorative towels radiators
CB007	1,5	500x400x110	3/4"	COMPACT DIMENSIONS and dynamic balancing.
CB008	6	670x820x150	1"	Suitable for larger installations / large flow rate
CB009	1,5	670x820x150	3/4"	Suitable for larger installations / large flow rate. Manifold included

ControlBOX *is our innovative solution of metering systems for heating and cooling.*

Heat meters are all compliant ENI434:2007 according to MID (Measuring Instruments Directive) European Directive 2004/22/EC 2006/95/EC EN1434:2007

AQUACON

- Compact heat-meter with high accuracy multi-jet flow meter
- Max water temperature: 105 °C
- Flow rates: 1,5 to 10 m³/h
- Electronic with 8 digits diplay + special symbols
- 18 months data storage
- IP54
- Electronic can be separate from the flow meter (cable length 120 cm)
- 5 years battery (10 years when connected to bus)
- PT1000 sensor (x2)
- Battery life: 6 years
- MID3 class

MULTICON & WOLTCON

- Multicon (multi-jet flow meter) and Woltcon (Woltmann) are suitable to water / superheated water up to 120 °C (130 °C Woltcon)
- Flow meters with 1,5 to 10 m³/h with threaded connections, up to 1000 m³/h with flanged connections
- PN16
- IP65
- Suitable from 100 W to 100 MW
- Reed switch pulse emitter
- M-Bus connectivity
- MID3 class

ULTRACON

- Ultrasonic flow meter
- Max water temperature 130 °C
- Flow rate from 15 to 60 m³/h
- 8 digits display
- Connectivity: IrDA (default)
- On request: M-Bus or pulses (energy/flow)
- 5 years battery
- IP65
- MID2 class

FLOW METERS

MODELS	TYPE	FLUID TEMPERATURE	SIZE	FLOW RATE	OTHER FEATURES
CFU	Single-jet flow meter	water up to 30 °C	DN15 and DN20	1,5 and 2,5 m³/h	Reed switch
CFW					Walk-by module
CFR					AMR module
CCU		water up to 90 °C			Reed switch
CCW					Walk-by module
CCR					AMR module
CFM	Multi-jet flow meter	water up to 30 °C	DN15 to DN50	2,5 to 25 m³/h	Reed switch
CCM		water up to 90 °C	DN15 to DN40	1,5 to 10 m³/h	
CM		water up to 120 °C			

WHERE TO FIND US

CONTROLLI

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Via Carlo Levi, 52
16010 Sant'Olcese
Genova - Italy

Controlli is located 10 Km north of Genova.

take the A7 highway (genova-milano) and exit at Genova Bolzaneto.
44.4862, 8.9223
Closest Railway Station: Genova Piazza Principe

GENOA AIRPORT ▶ **CONTROLLI**

A7 Highway — 16min / 13,7Km

LINATE AIRPORT ▶ **CONTROLLI**

A7 Highway — 1h e 13min / 149Km

PISA AIRPORT ▶ **CONTROLLI**

A12 Highway + E80 — 1h e 35min / 172Km

MALPENSA AIRPORT ▶ **CONTROLLI**

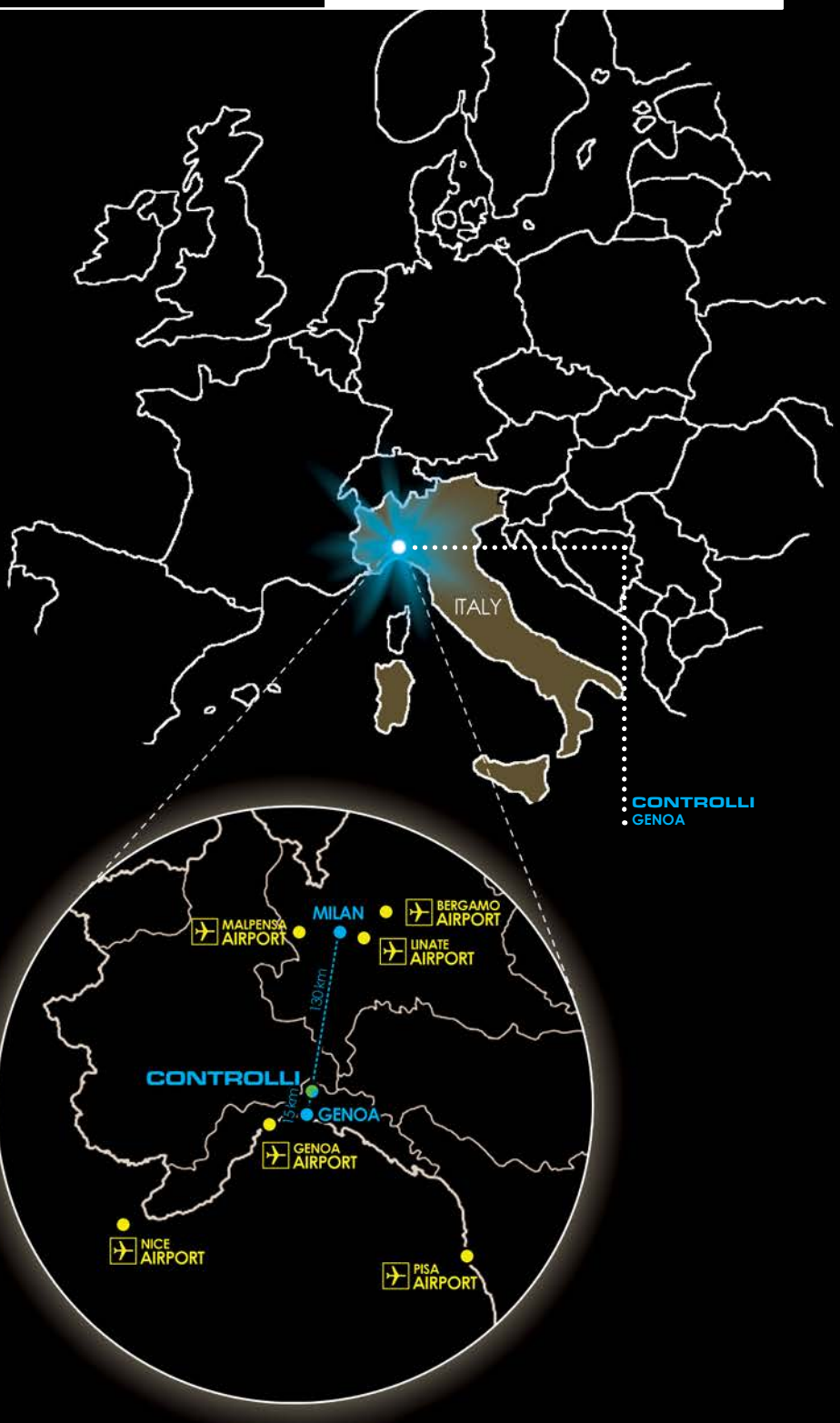
A7 Highway + E62 — 1h e 53min / 181Km

BERGAMO AIRPORT ▶ **CONTROLLI**

A7+A4 Highway — 2h e 2min / 195Km

NICE AIRPORT ▶ **CONTROLLI**

A10 Highway + E80 — 2h e 5min / 206Km



NOTE

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