TermoGea

INSTALLATION MANUAL

SMART-CENTRAL IO (SCIOCENT)

Temperature and humidity control unit with embedded gateway

APP for remote control

www.termogea.com

General warnings

- Read carefully the warnings contained in this document as they provide important information regarding safe installation, use and maintenance.
- All operations must be carried out with care and in a workmanlike manner, in compliance with current workplace safety regulations.
- After removing the packaging, ensure the integrity and completeness of the contents. In case of non-compliance, contact the agency that sold the appliance.
- It is forbidden to modify the safety or regulation devices without the authorization and indications of the appliance manufacturer.
- It is forbidden to disperse and leave the packaging material within the reach of children as it can be a potential source of danger.
- Repair or maintenance interventions must be carried out by the Technical Assistance Service or by qualified personnel in accordance with the provisions of this booklet. Do not modify or tamper with the appliance as this may create dangerous situations and the manufacturer of the appliance will not be responsible for any damage caused.
- The manufacturer cannot be held responsible for any damage resulting from improper, erroneous or unreasonable use.

SUMMARY

INTRODUCTION

The “Smart-Central IO” (product code *SCIOCENT*) is a thermoregulation control unit with integrated Gateway for remote connection of the systems. Radiant floors & ceilings of different brands are managed.

The SCIOCENT configures itself when the system is turned on for the first time. Thanks to an extremely innovative program, the control unit queries the terminals and probes installed in the various areas, configuring itself automatically and in just a few seconds.

The control unit manages the dehumidifier, the mixing valve, the circulation pump and the radiant heads directly with its own outputs.

The zone terminals (T/H/R probes, Minitouch thermostats, Room thermostats) provide temperature of the various zones as well as humidity data depending on the chosen terminal.

To control the systems, you can use, in addition to the "touch" interface of the terminal in every zone, also the Termogea APP (IoS or Android) from any mobile or fixed device.

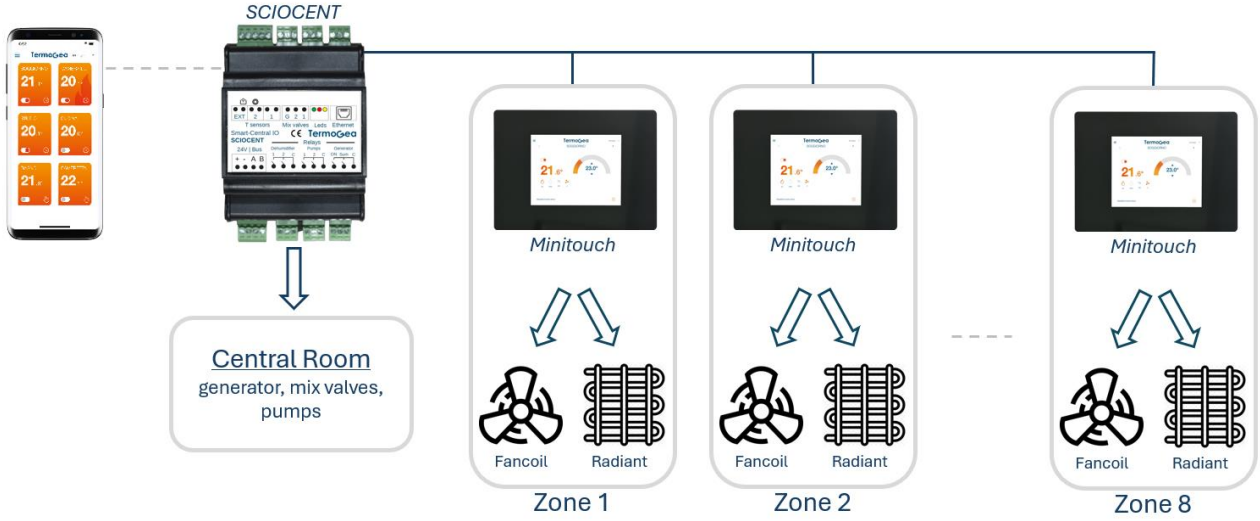
The SCIOCENT can be used in one of the following types of installations or a combination of them.

PRODUCT CODE AND NAME

Product name	Product code	Description
SMART-CENTRAL IO	SCIOCENT	Compact control unit for climate control up to 8 zones and 2 hydraulic circuits. Integrated web server for remote control. Management of condominium heating plants.

RADIANT AND FANCOIL CONTROL WITH MINITOUCH

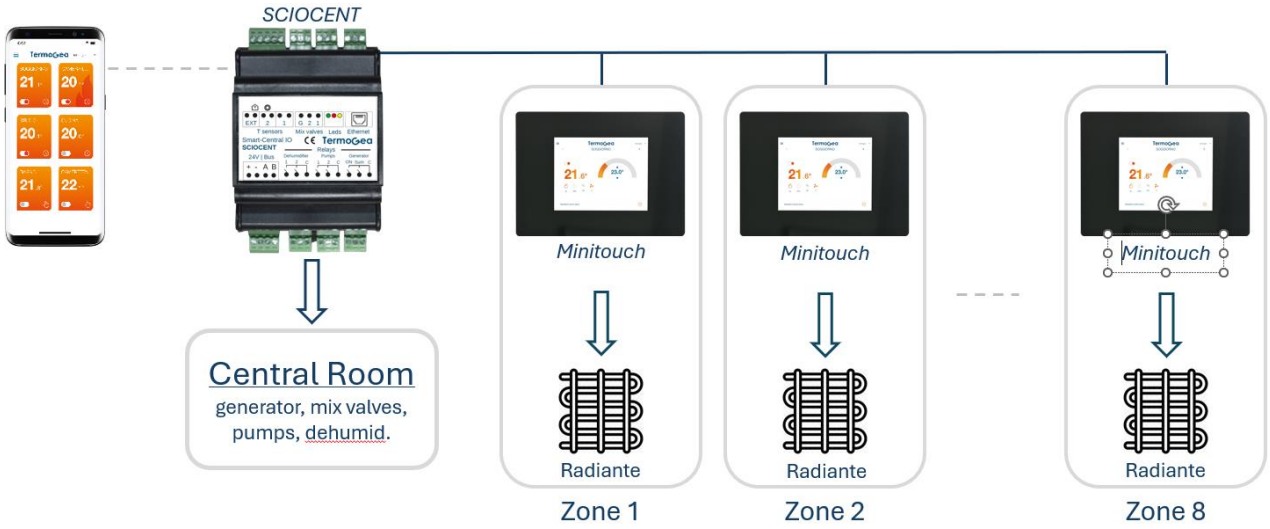
With this type of installation, the radiant in heat and the fancoil (0-10V) in cold are controlled in each zone, via the outputs on board the MINITOUCH thermostat which also provides the measurement of the room temperature/humidity. In particular, the relay output of the Minitouch is used for the radiant head, while the other 0-10V output is used for the fancoil.



The circulation pump and the mix valve are activated by the thermostat function allowing the passage of the fluid in the radiant system. In Summer the de-humidistat function activates the dehumidifier and a second circulation pump dedicated to it. It is possible to control up to 8 zones independently.

RADIANT CONTROL WITH MINITOUCH

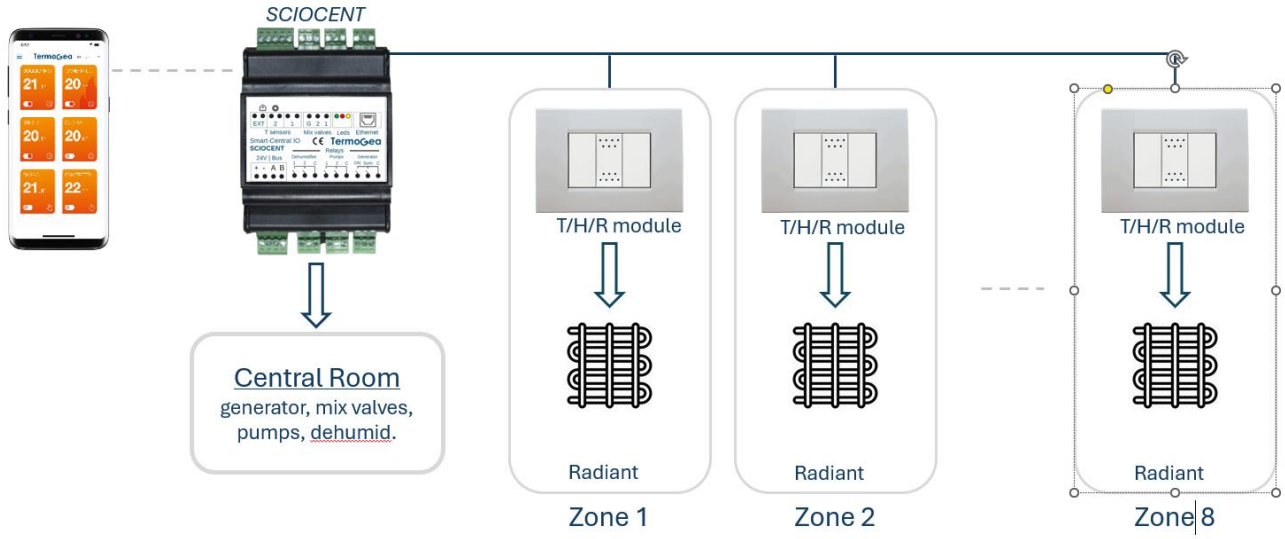
With this type of installation, the radiant heating and cooling in each zone is controlled via the relay output on board the MINITOUCH terminal which also provides the room temperature/humidity measurement.



Even with this type of installation, both temperature and humidity are controlled in each area, thanks to the humidity sensor on the *MINITOUCH* and the outputs for the dehumidifier of the *SCIOCENT* control unit.

RADIANT CONTROL WITH T/H/R MODULE (TH SENSOR WITH RELAY)

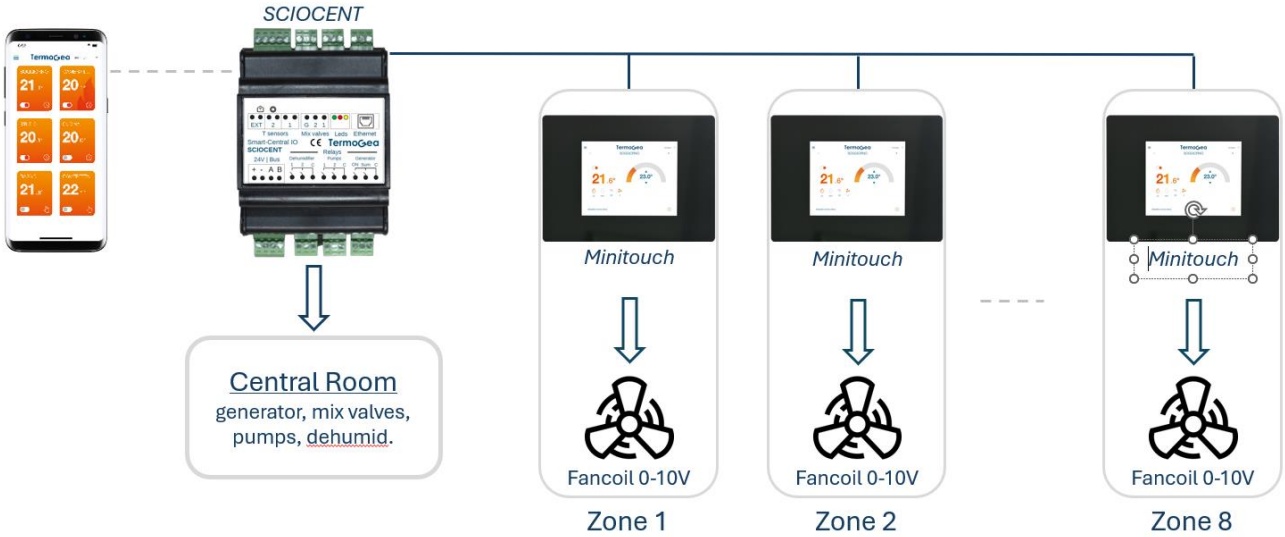
With this type of installation, the radiant heating and cooling in each zone is controlled via the relay output on board the T/H/R module which also provides the measurement of the room temperature.



Even with this type of installation, both temperature and humidity are controlled in each area, thanks to the humidity sensor on the T/H/R module and the outputs for the dehumidifier of the SCIOCENT control unit.

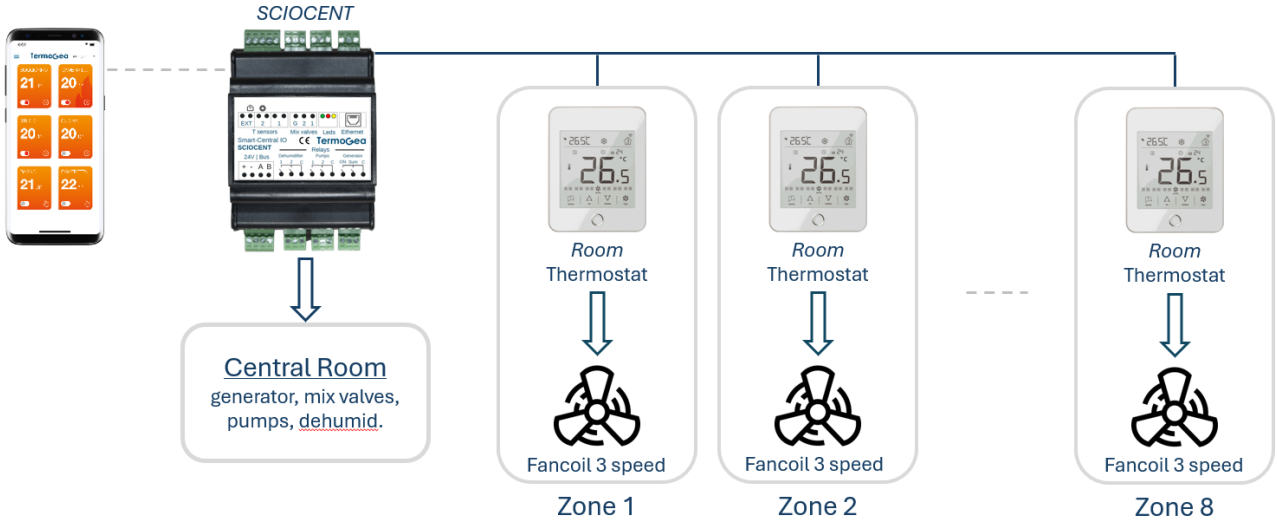
0-10V FANCOIL CONTROL WITH MINITOUCH

With this type of installation, the fan coils (0-10V) of each zone are controlled, in hot and cold, via the outputs on board the MINITOUCH thermostat which also provides the measurement of room temperature and humidity.



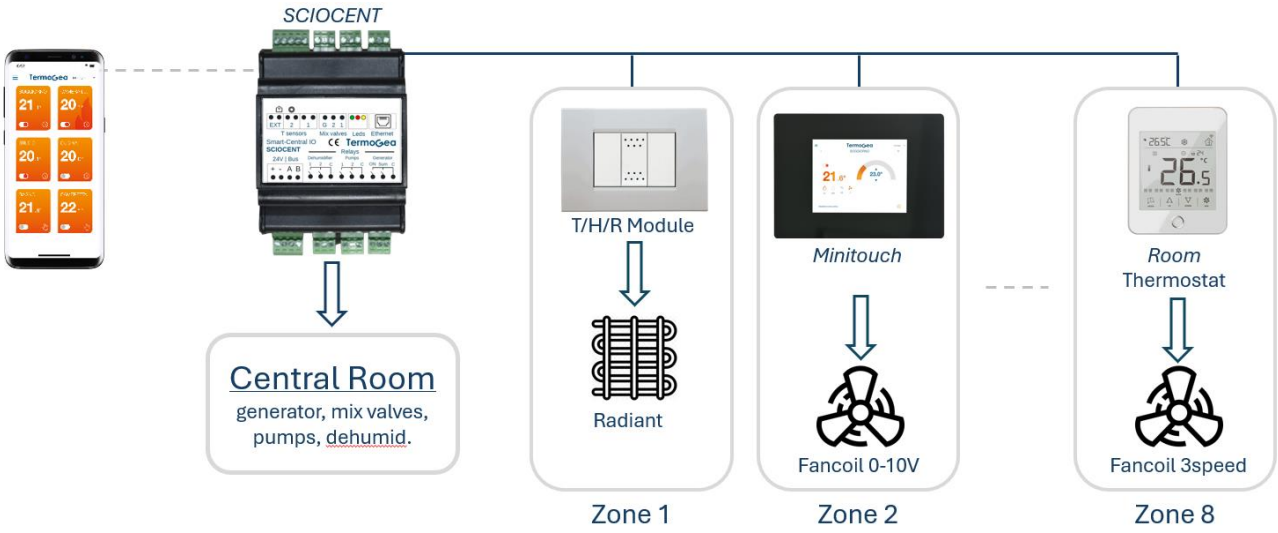
3-SPEED FANCOIL CONTROL WITH ROOM THERMOSTAT

With this type of installation, the fan coils (3 speeds) of each zone are controlled, in hot and cold, via the outputs on board the ROOM thermostat which also provides the room temperature measurement.



ZONE CONTROL ALL COMBINATIONS

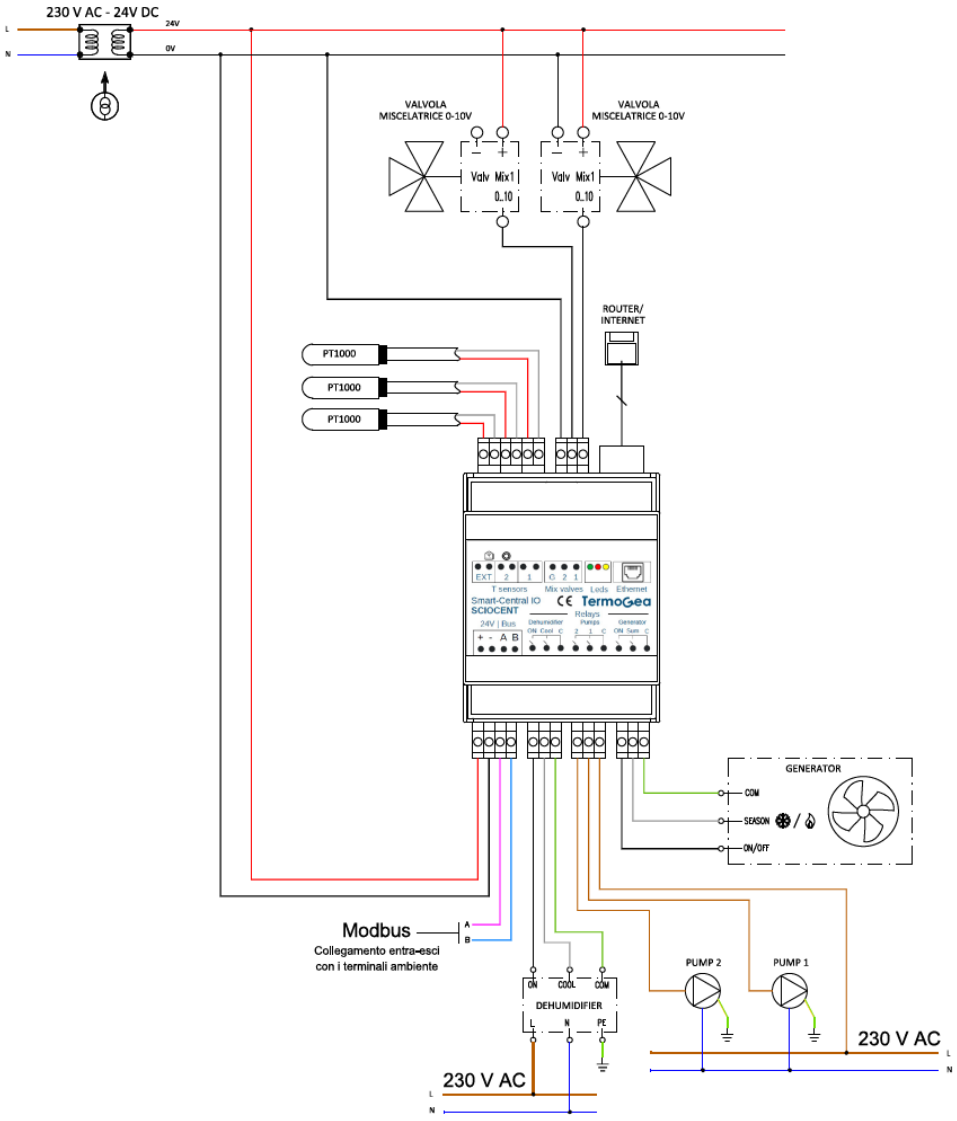
Finally, you can use any combination of the system types described above. For example: T/H/R modules in some areas, Minitouch in other areas and Room thermostats in other areas.



WIRING DIAGRAM

SCIOCENT controls the heating plant equipment via the on-board relays and 0/10V outputs.

- “Generator ON”: generator on/off control
- “Generator Sum”: generator season change
- “Dehumidifier 1”: dehumidifier 1 on/off control
- “Dehumidifier 2”: dehumidifier 2 on/off control in the case of two hydraulic circuits
- “Pumps 1”: hydraulic circuit 1 circulator (on/off control activated by the thermostat function)
- “Pumps 2”: hydraulic circuit 2 circulator, (on/off control activated by the thermostat function)
- “Mix valves 1”: hydraulic circuit 1 mixing valve (0/10V opening control)
- “Mix valves 2”: hydraulic circuit 2 mixing valve, (0/10V opening control)

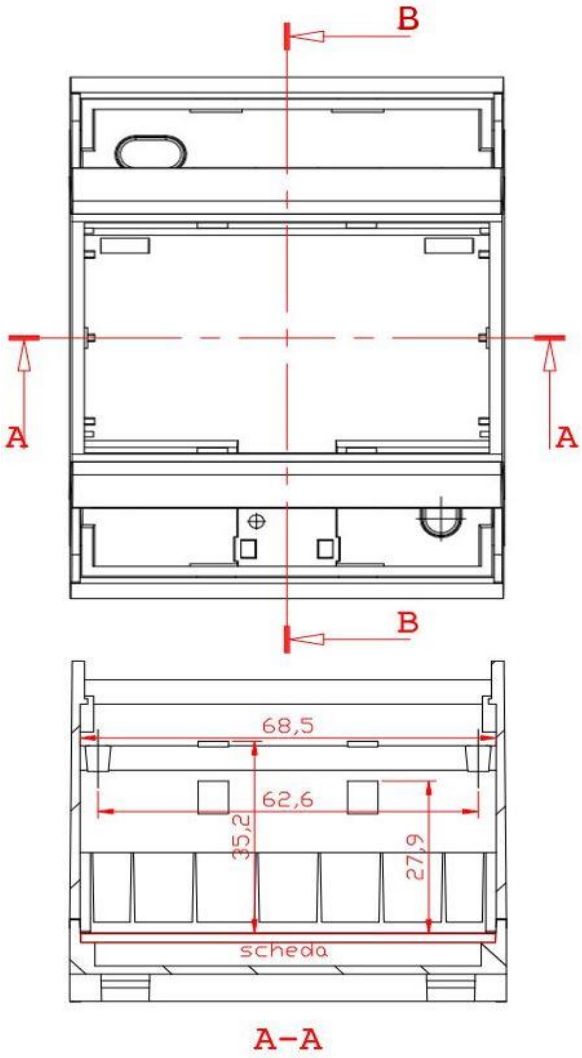


The “ROOM” or “MINITOUCH” thermostats or the “SND-THRT” probe-relay modules are connected to the MODBUS cable in the diagram.

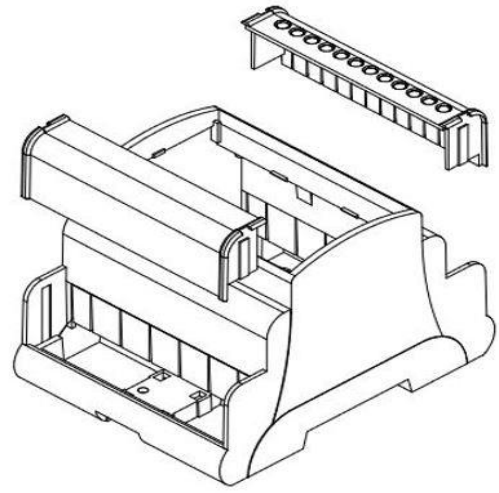
The bus line (Modbus RS485) must be of the linear “in-out” type. The cable to be used for the Modbus must be shielded with twisted connectors of the Belden 9841 type or equivalent.

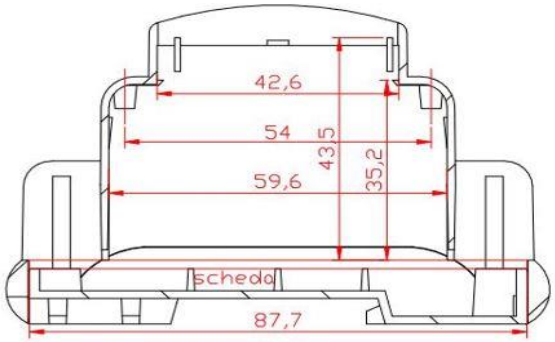
DIMENSIONS AND MOUNTING

The Smart Central IO has to be mounted on a DIN bar in a standard electrical frame and occupies 4 DIN modules.



A–A





B–B

All dimensions are in millimiters.

TECHNICAL SHEET

TECHNICAL SPECIFICATIONS	
PRODUCT CODE (up to 8 zones)	SCIOCENT
Power	24V c.c. o 24V a.c.
Consumption	110 mA
N° Relay	6
Analog output	2 (0V-10V)
N° Temperature probe input (PT1000)	3
Ethernet	10BaseT/100BaseT
WiFi	2.4GHz IEEE 802.11b/g/n
Relays operating limits	NO, 250V c.a./5A o 24V c.c./5A
Environment operating limits	Temperature -20…50°C
Storage limits	Temperature -20…50°C
Mounting	DIN bar
Communication protocol	Modbus RTU
Protection	IP20
Mounting type	4 DIN modules
Dimensions	72 x 95 x 58mm

CENTRALIZED CONDOMINIUM PLANT

Thanks to the SCIOCENT innovative functions, it is possible to connect the systems of the individual apartments to the condominium heating plant, allowing it to be used "only when needed", thus obtaining significant energy savings compared to traditional systems.

The SCIOCENT control units installed in the apartments for their thermoregulation are connected, via the condominium Ethernet network, to the control unit (TSHT) that manages the condominium heating plant.

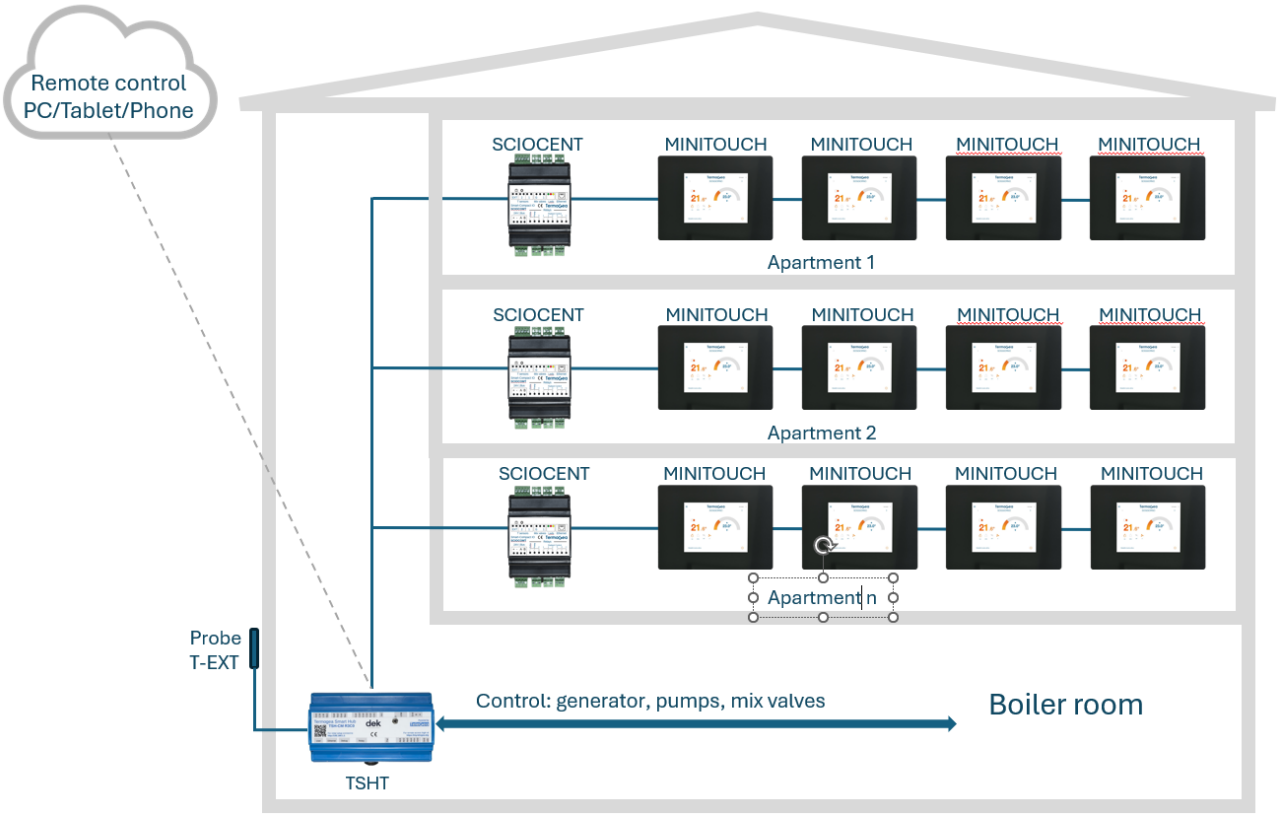
The main functions of this type of connection are:

- Synchronized season change of the heating plant with all the apartments
- Heating plant activation only when there is demand from the apartments
- Compact thermoregulation in apartments controllable by APP
- Three Options with a single MINITOUCH thermostat in each room:

  a) Radiant summer-winter

  b) Fan coil summer-winter

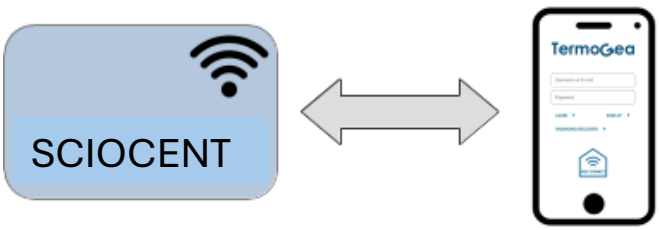
  c) Radiant-winter and fan coil-summer
- Only one external temperature probe for the entire condominium
- Management of multiple generators in cascade
- Remote assistance and maintenance of the entire system



SCIOCENT CONTROL

The *SCIOCENT* is controlled via the “Termogea” app on a smartphone or tablet. The connection between *SCIOCENT* and the smartphone occurs via a Wi-Fi network generated in "hot spot" mode by *SCIOCENT* itself. The SSID of this network is “TermogeaLight” and the password is “123456789”.

Note: The Wifi network is activated only in the absence of the Ethernet connection and after pressing the “EasyConnect” button. The yellow LED flashes quickly to confirm that the Wi-Fi network is active. If the “EasyConnect” button is not pressed, the Wifi network is automatically activated after 5 minutes.



The operations that can be managed are the following:

- System configuration
- System diagnostics
- System control
- Parameter setting (offset, hysteresis, climate curve, etc.)
- Maintenance (reset, restart)

To connect to *SCIOCENT*, launch the “Termogea” app on your smartphone and wait until the “EasyConnect” button appears on the login page. Then press the “EasyConnect” button on the SCIOCOMT and on the app at the same time to access the app home page.

SCIOCENT AUTO-CONFIGURATION

The *SCIOCENT* configuration is automatically done by the *SCIOCENT* itself through an automatic procedure that scans the bus after the installation has been completed and it creates the configuration according to the devices found. The only parameters to be configured manually during installation are the Modbus addresses of the terminals positioned in the various zones. The setting of these addresses must be carried out directly on the terminal touch panel (refer to the device manual).

DEVICES MODBUS ADDRESSES

Modbus addresses are set manually on the zone terminals. Via the Modbus, the association with a zone (from 1 to 8) and a hydraulic circuit (1 o 2) is chosen. The association between the device's Modbus address and the zone number is as follows.

Zone	Modbus Address (circuit 1)	Modbus Address (circuit 2)
1	1	9
2	2	10
3	3	11
4	4	12
5	5	13
6	6	14
7	7	15
8	8	16

Note: The zone with the highest number where a device is found during the bus scan is considered the last zone in the system. A zone with a lower number where a device is not found is configured as an inactive zone. These inactive zones can be activated later when the associated terminal is installed.

The CompactIO relay expansion card is used with its default Modbus address 200, so it does not need to be set.

If the heat pump is also controlled via Modbus, its address must be set to 20.

CONNECTIONS

The following connections must be made between the *SCIOCENT* terminal blocks and the devices.

TEMPERATURE SENSORS

The PT1000 temperature sensors are connected to the “T sensors” terminal block with the following diagram.

Input	Label	Sensor
1	1	T delivery circuit 1
2		
3	2	T delivery circuit 2
4		
5	EXT	T external / season input
6		

Note: The PT1000 sensor do not have polarity.

"SEASON" INPUT

As an alternative to the external T sensor (EXT), a clean contact can be connected to the "T sensors" terminal block as a season input with the following operation:

• Open contact: Winter

• Closed contact: Summer

To make the system recognize that you want to use this functionality, the contact must be closed during the auto-configuration procedure.

MIXING VALVE

The 0/10V control signals are connected to the "Mixing valves" terminal block with the following diagram.

Output	Label	Signal
1	1	Mix valve circuit 1 (0/10V)
2	2	Mix valve circuit 2 (0/10V)
3	G	Common

RELAY OUTPUT

The *SCIOCENT* relay and 0-10V outputs are connected to the heating plant devices and the radiant control valves according to the following diagram.

Output	Label	Signal
1	Dehumidifier 1	Dehumidifier 1 on/off
2	Dehumidifier 2	Dehumidifier 2 on/off
3		Common output 1/2
4	Pump 1	Circulator pump circuit 1 on/off
5	Pump 2	Circulator pump circuit 2 on/off
6		Common output 4/5
7	Generator ON	Heat Pump generator on/off
8	Generator Sum	HP season (on:summer/off:winter)
9		Common output 7/8

POWER AND SIGNALS ON THE BUS

To the “24V | Bus” connectors the power supply and the RS485/Modbus bus are connected with the following diagram.

Input	Label	Signal
1	+	Power 24V +
2	-	Power 24V -
3	A	Modbus A (+)
4	B	Modbus B (-)

LED SPECIFICATIONS

On the *SCIOCENT* there are 3 colored LEDs (near the Ethernet connector) which are accessible by removing the upper terminal block cover of the box.

- **Green LED**: indication of the power presence
- **Red LED**: alarm indication
- **Yellow LED**: indication of the network connection mode

GREEN LED

LED Status	Description
Steady ON	Power is present
OFF	No power

RED LED

LED Status	Description
Steady ON	*SCIOCENT* is in error mode
Fast flashing (2Hz)	Modbus device disconnected
Slow flashing (1Hz)	Temperature probe disconnected
Heartbeat flashing	Modbus device and temperature probe disconnected
OFF	No alarm

YELLOW LED

LED Status	**Description**
Heartbeat flashing	LAN connected, Cloud connection not active
Slow flashing (1Hz)	Cloud connection active (via cable)
Fast flashing (2Hz)	Access point Wifi active
OFF	LAN disconnected

INSTALLATION AND START-UP PROCEDURE

ELECTRICAL INSTALLATION

- Install the *SCIOCENT* in the electrical panel
- Carry out the installation of the zone terminals
- Carry out the bus wiring
- Connect the boiler room control devices
- Connect the power supply to the *SCIOCENT*

TERMINALS CONFIGURATION

- Manually assign the Modbus addresses to the zone terminals

SCIOCOMT CONFIGURATION

- Connect to the “TermogeaLight” Wifi network with your smartphone (see paragraph “*SCIOCENT* CONTROL”)
- Start the “Termogea” app and connect to the *SCIOCENT* using the “EasyConnect” button (see paragraph “*SCIOCENT* CONTROL”)
- Choose the “System Setup->Configuration” option from the side menu (provide the installation password “Setup#2023” when requested)
- Start the configuration using the “Auto configuration” button
- At the end of the procedure the epilogue of the generated configuration is shown

DIAGNOSTICS

- Choose the “System setup->Diagnostics” option from the side menu
- Start the diagnostic procedure using the “Test” button
- At the end of the procedure the results of all the tests performed are shown
- Correct any errors detected by the diagnostics

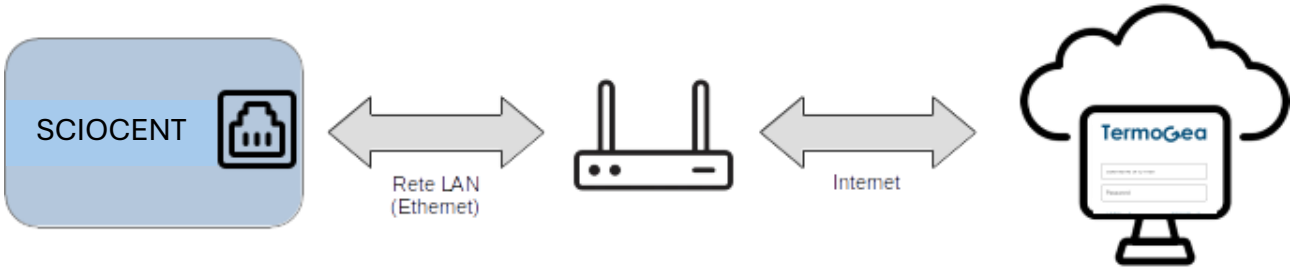
PLANT START-UP

- Choose the “System setup->Maintenance” option from the side menu
- Restart the *SCIOCENT* using the “RESET” button

The *SCIOCENT* restarts and activates the thermoregulation logics according to the configuration made.

CLOUD CONNECTION

The connection of the *SCIOCENT* to the Termogea Cloud service allows remote control of the system via smartphone and Termogea app. It is necessary to have an Internet connection available via a network router. The *SCIOCENT* must be connected to the router via an Ethernet cable.



To register a *SCIOCENT* on the Termogea Cloud service you must log in to the service via the Termogea app or web portal with your credentials and create a new system using the "New system" button. In addition to the name of the system which can be freely chosen, you must provide the unique identifier of your *SCIOCENT* (UUID). This identifier is accessible via the Termogea app under “System info” in the side menu.

Once you have registered your *SCIOCENT* on the Cloud service, simply restart the *SCIOCENT* to activate the Cloud connection and be able to access the system remotely.

DEK ITALIA s.r.l.
Operative and legal address
Via Orvieto 12/A
00071 Pomezia (RM)
WEB: *www.termogea.com*
EMAIL: *info@termogea.com*