

# Evolution Split THS2-0MM, THS2

Master / slave units for multiple fan coils control.



*Preprogrammed controller with remote power units for temperature control applications and optional display for monitoring and adjusting parameters.*

- One THS2-0MM master unit controls up to 14 THS2-0MM slave units. Display unit THS2 is optional
- Two communication ports RS485 (Modbus), for connection with other power units and for optional display or Scada system
- Easy configuration with Evolution tool 3
- 3-speed or EC fan control and direct control of electric heater, valves 3-point, on / off, 0..10V
- Keycard input, window contact, season change, occupancy override
- CO<sub>2</sub> control with remote transmitter
- Humidity control possible with built-in THS2 sensor or remote transmitter

## Application

The Evolution controller series are available with a wide range of functions for controlling heating, cooling and air conditioning installations. They are used for air climate control in buildings, in order to optimize energy consumption and comfort. The THS2 controls air conditioning in buildings through the use of power units.

## Function

THS2-0MM is able to control 3-speed fan coils with EC engine, valves that can be on/off, modulating or 3-point and electrical resistance. It is possible to connect up to 15 remote power units via the RS485 communication line, of which one is master and the others are slave. Selection master/slave is done by jumper. The optional backlit THS2 display unit is large and easy-to-read and allows you to view the measured temperature and humidity values, the operating time slots and the status of connected remote units. Through the keypads you can quickly access the most common functions

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(on/off, setpoint change, fan speed control, season change, input/output status display, alarms, etc.) and set all operating parameters.

## Sensors

Each power unit has 2 input sensors. Regulation can either be done using one of them, the remote sensor of the master unit or the built-in temperature sensor of the optional display unit. The communication between the master and slave units allows you to optimize the use of the sensors. In particular, by connecting the water sensor to the master unit, it is possible to carry out the season change for all units.

Furthermore, it is possible to connect a CO<sub>2</sub> transmitter to the Modbus communication network to control the level of CO<sub>2</sub> in the room.

## Digital inputs

Each power unit (that can be set as master) and the optional display unit are equipped with 2 digital inputs. This means that if you want to make a remote season change it is possible to choose any of the digital inputs, either on the master unit or on the optional display unit (connected to the master unit) and it will be considered by all units. The same applies to a window contact, economy, or holiday mode. In this way it greatly simplifies the wiring.

## Actuators and fans

The power units are equipped with 3 0...10V analog outputs and 6 digital outputs, one for direct control (electrical power up to 2.5 kW). Outputs can be configured in order to drive proportional, on/off (2-point) or 3-point valves, 3-speed or electronically controlled fans (EC fan).

## Flexible communication

The network, composed of power units, can be connected to a BMS system via RS485 (Modbus RTU) through the master. It is possible to monitor, change parameters and make any setting of one or more outputs for BMS.

## Evolution tool 3

Evolution tool 3 is a software that allows you to quickly and easily configure the master unit and the whole network via the second communication port. The software can be downloaded free of charge from our website [www.industrietechnik.it](http://www.industrietechnik.it).

## Installation THS2-0MM

Easy wiring thanks to clamps with push-in connection method and twin connectors for Modbus terminals

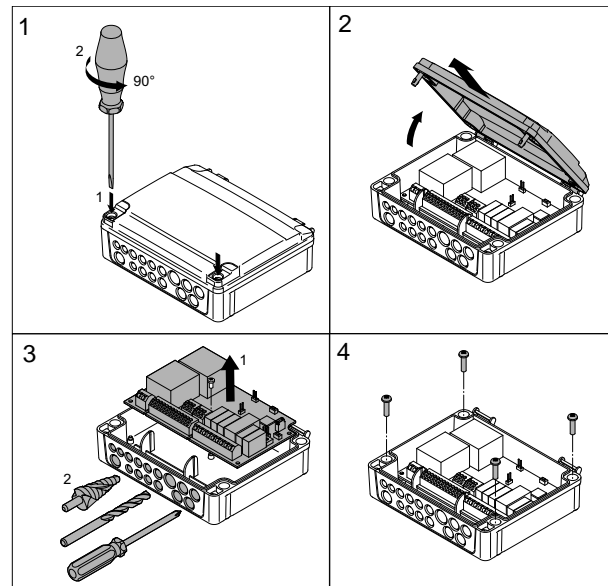


Fig. 1 Mounting THS2-0MM unit.

## Installation optional THS2

The modular design enables an easy installation. The base is installed separately from the electronics and mounted to the wall.

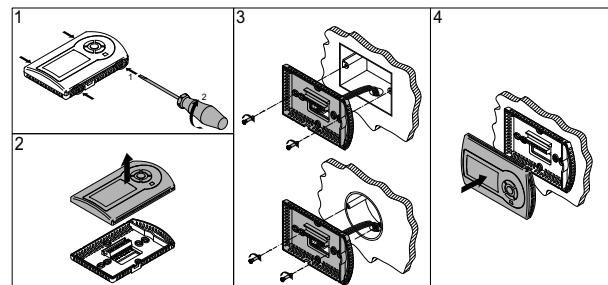


Fig. 2 Wall mounting, optional THS2 unit.

## Keys and display THS2

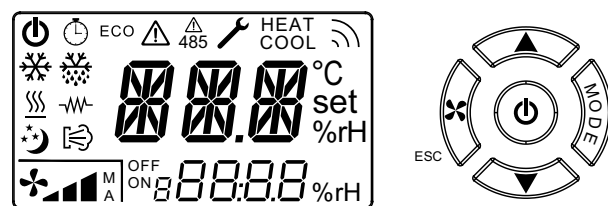


Fig. 3 .Keys and display THS2.

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## Clock and time schedule

The optional THS2 is equipped with a clock and can manage up to 4 daily time slots for on/off switching or normal/economy mode.

## Communication port (RS485)

In addition to being used for the exchange of information, the communication port can be used for configuration with the Evolution tool 3.

## USB port

Through the controller's USB port (type mini B) and Evolution tool, you can update the firmware .

## Application example

Fan coil management with return probe, mixed valve and additional electrical resistance. The window and presence contacts are managed by the optional THS2 display unit. Season change is managed on the THS2-0MM master unit.

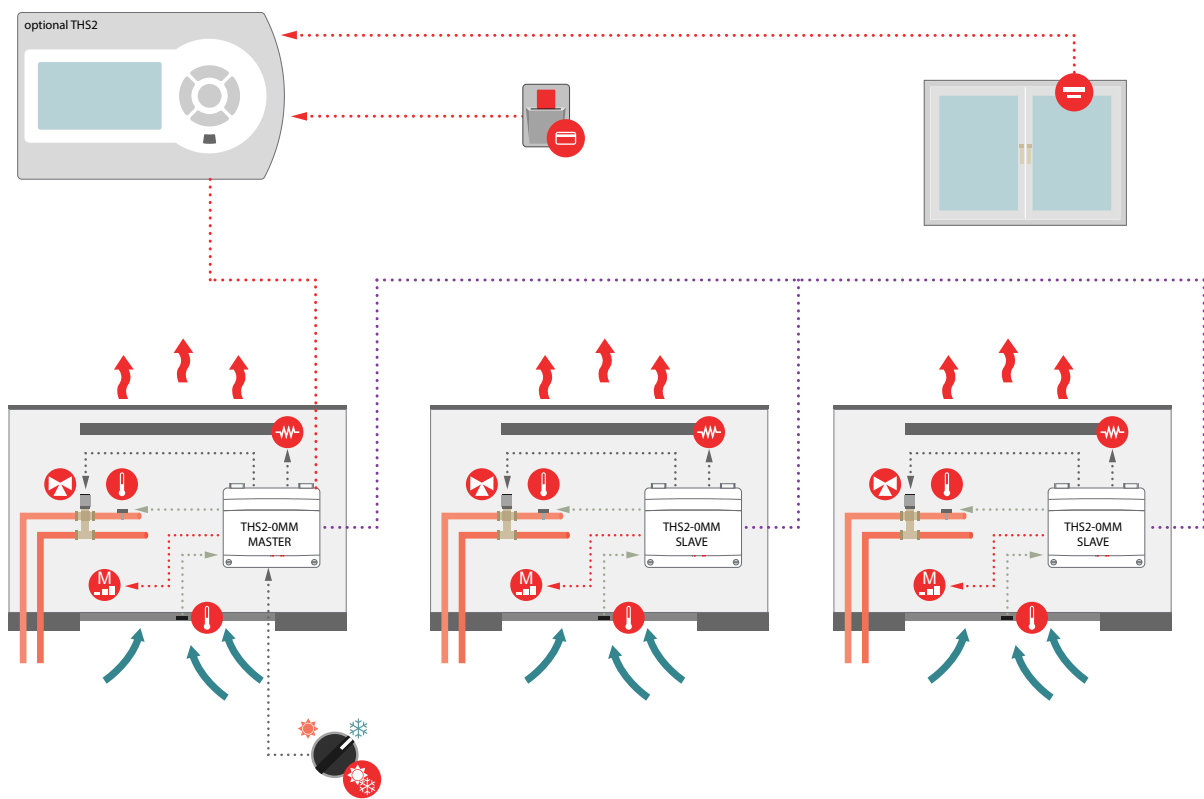


Fig. 4 . Application example with 3 power units.

## Internal network

The internal network consists of: a master unit which allows the operating parameters of each slave and the master itself to be set and 1 to 14 THS2-0MM slave units, a possible CO<sub>2</sub> transmitter and humidity transmitter, model TCO2AU-(D)-M.

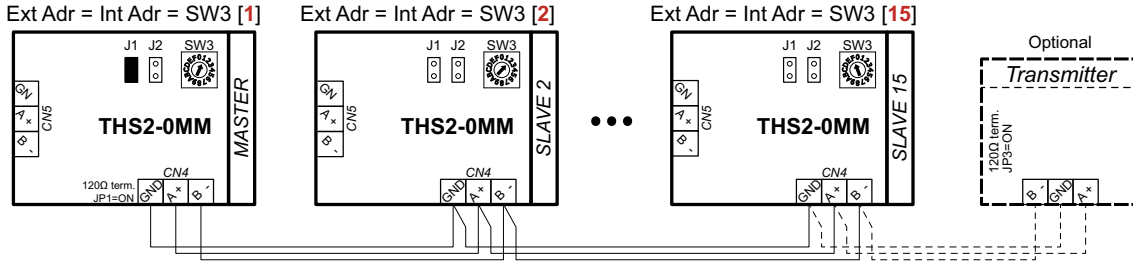


Fig. 5 Internal network connection diagram.

## External Modbus

Through the THS2-0MM master power units, through a BMS (Supervisor), you can control the units of one or more internal networks.

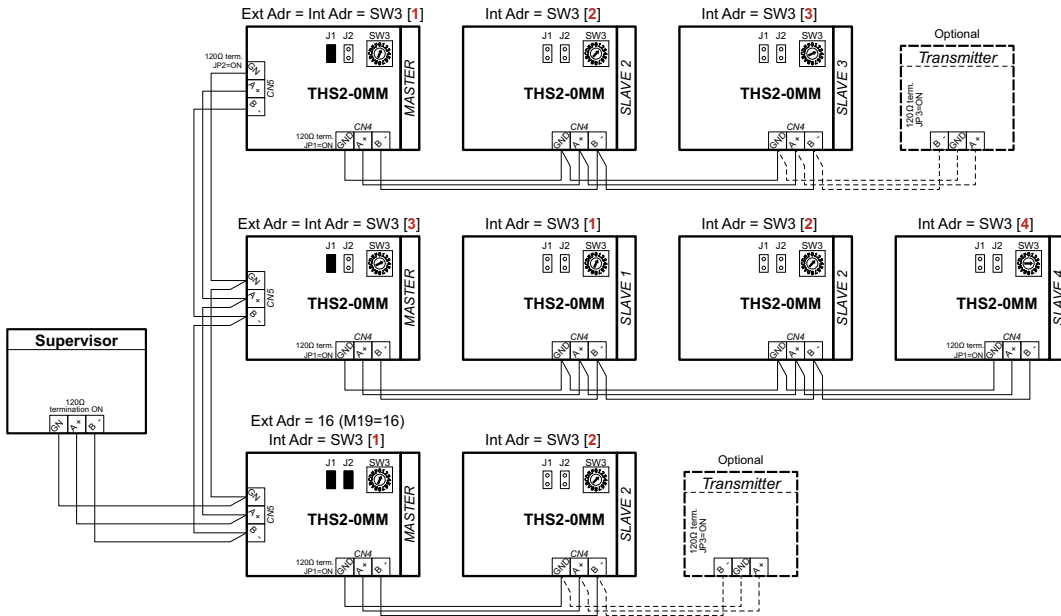


Fig. 6 Connection diagram for external Modbus network.

## Optional display unit

The THS2 display unit can be connected with each THS2-0MM master or slave.

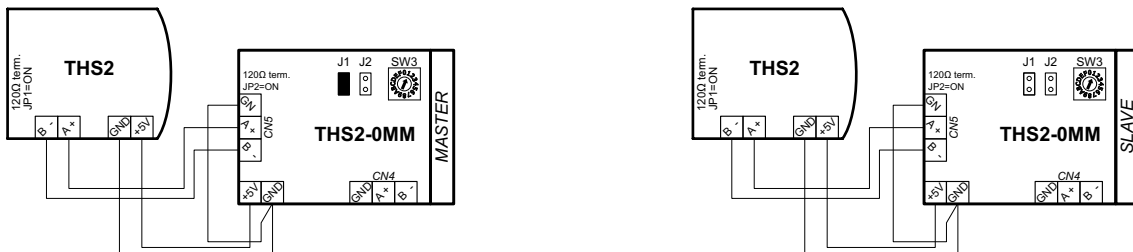


Fig. 7. Connection diagram for THS2.

## Technical data display unit THS2

Supply voltage	5 Vdc provided by THS2-0MM unit
Ambient temperature	0...50°C
Display	backlit LCD display
Inputs	2 SELV potential free contacts (limit of voltage: 5 Vdc) USB port for configuration and software updates
Communication	external network, Modbus RTU (master)
Dimensions	128 x 80 x 28.5 mm
Mounting	wall mounting, 3 module flush-mounting box
Protection class	IP30
Isolation class	II
CE standard conformity	EN 60730-1

## Technical data THS2-0MM power unit

Supply voltage	110...240 V AC, 50/60 Hz
Power consumption	Max 1.1 W (3.5 VA) THS2-0MM (with power supply from THS2 unit)
Ambient temperature	0...40°C
Inputs	2 potential-free contacts SELV (limit of voltage: 4 Vdc) 2 NTC10K sensors USB for software update
Outputs	3 analogue outputs 0...10 V (R <sub>L</sub> >10K) 5 SPST 240 Vac relays. K1 K2 K3 combined total 3 A (AC1), K5 K6 each 1 A (AC1) 1 SPST 240 Vac, 10 A (AC1) relay K4
Communication	An external Modbus RTU network (slave) for BMS, configuration or display. An internal network for connecting up to 15 units
Dimensions	140 x 121.5 x 47 mm
Protection class	IP30
Isolation class	II
CE standard conformity	EN 60730-1



This product carries the CE-mark. More information is available at [www.industrietechnik.it](http://www.industrietechnik.it).

## Models

Article	Communication	Internal sensor	AI	DI	AO	DO	Clock
THS2	External network, Modbus RTU (slave)	Temperature +humidity	-	2	-	-	X
THS2-0MM	Internal network Modbus RTU (master or slave)	-	2	2	3	6	-

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## Dimensions THS2

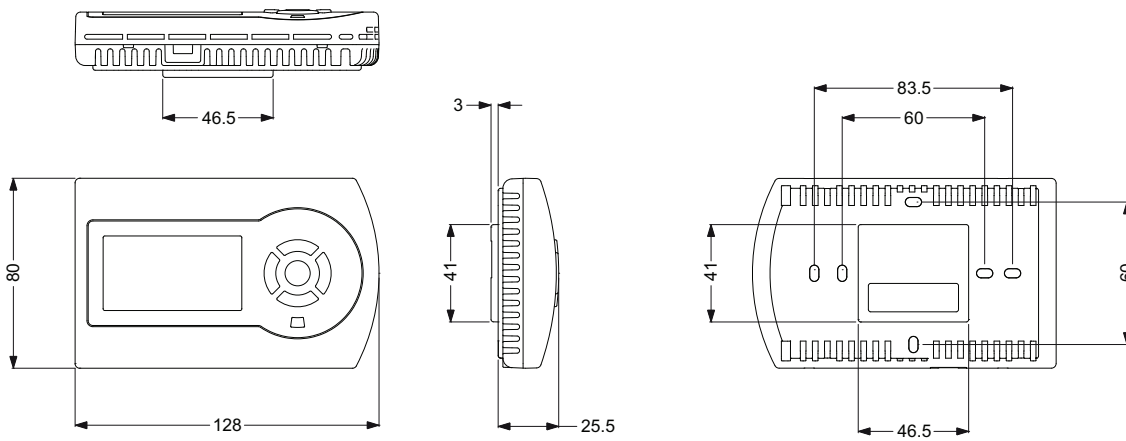


Fig. 8 . Dimensions THS2 (mm).

## Dimensions THS2-0MM power unit

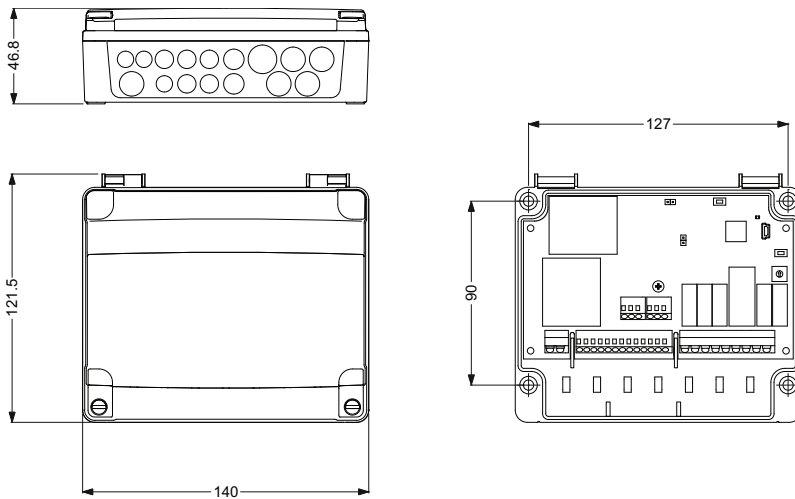


Fig. 9 . Dimensions THS2-0MM (mm).

# Wiring

## Display unit THS2

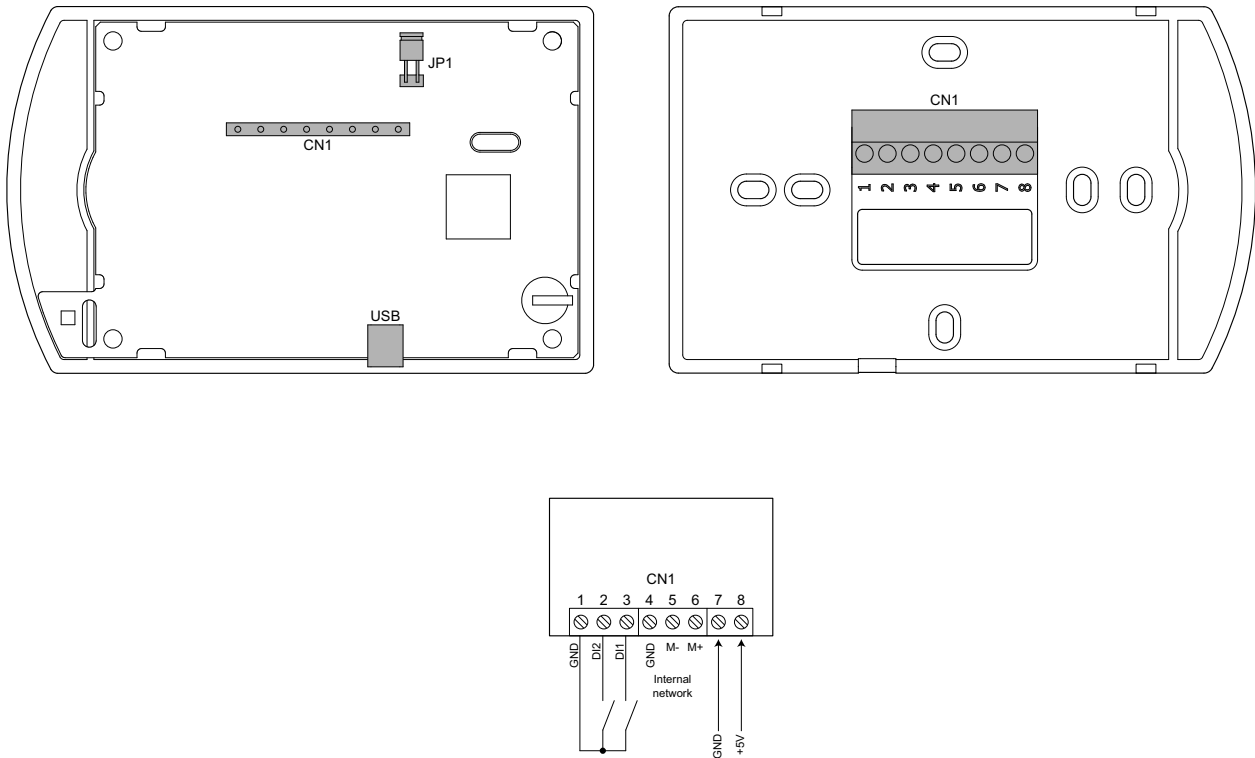


Fig. 10 . Electrical connections THS2 power unit. JP1 = insertion internal bus termination resistor. USB = USB mini B connection port.

## Power unit THS-0MM

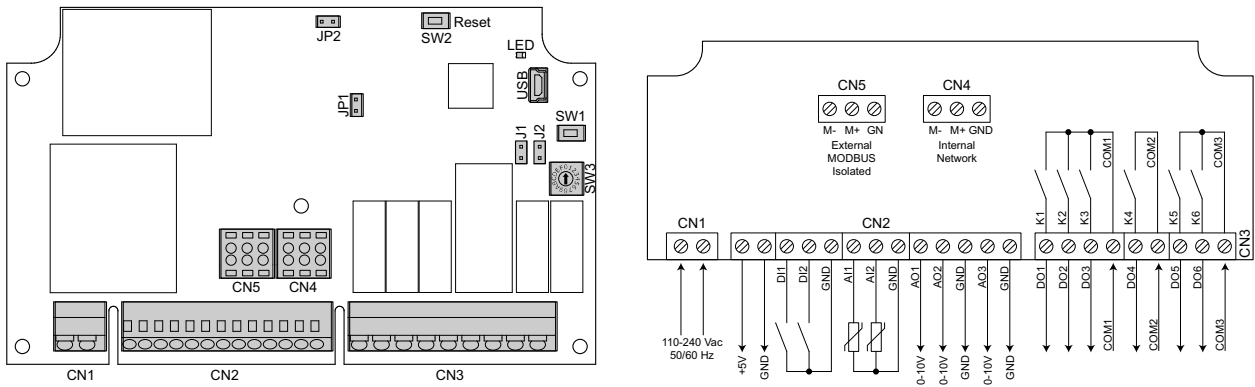


Fig. 11 . Electrical connections THS2-0MM remote unit. JP1 = insertion internal bus termination resistor, JP2 = insertion external bus termination resistor, SW1 = default parameters button, SW2 = reset button, SW3 = rotary dipswitch for internal external address selection LED = visual indication, USB = USB connection port.

# Documentation

All documentation can be downloaded from [www.industrietechnik.it](http://www.industrietechnik.it).

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