

# Control system C5 for VERSO, RHP and KLASIK units

Panel C5.1



## Detailed information for the user

- Air flow indication (m<sup>3</sup>/h, m<sup>3</sup>/s, l/s).
- Thermal efficiency of the heat exchanger (%).
- Heat exchanger energy recovery (kW).
- Thermal energy savings indicator (%).
- Air heater energy consumption (kWh).
- Heat exchanger recovered energy counter (kWh).
- Fan's energy consumption (kWh).
- SFP factor of the fans\*.
- Clogging level of filters (%).

## Various operating modes

- 5 different operation modes: *Comfort1*, *Comfort2*, *Economy1*, *Economy2*, and *Special*. User may set supply and extract air volumes as well as air temperature for each of mode separately.
- Temperature control modes: Supply air / Extract air / Room / Balance. Possibility to select which temperature to maintain.
- Flow control modes: Constant Air Volume (CAV), Variable Air Volume (VAV), Directly Controlled Volume (DCV).
- Universal operating schedule with up to 20 events, for which of them the user can assign weekday(s) and one of five operating modes.
- Holliday scheduling allows the user to change operating mode or switch off the air handling unit on some dates of the year. Up to 10 events are possible.

\* only with PM fans

## Extended control possibilities

- Controlling up to 30 units connected into a network from one panel.
- Ability to connect the controller to the Internet network and manage it via a standard internet browser without any accessories.
- Possibility to control air handling unit by Smartphone via Android OS or iOS application software.
- Ability to control the unit not only by a control panel or a computer, but also by different external devices (switch, timer, etc.) and systems (e.g. the smart house system).

## Connectivity & Protocols

- Modbus RTU over RS-485
- Modbus TCP over Ethernet
- BACnet/IP over Ethernet



## CONTROL FUNCTIONS

### Air quality control

Two different air quality values may be set for two different unit operating modes (e.g. *Comfort* and *Economy*). These values will be maintained by automatically increasing or reducing the intensity of ventilation

### Outdoor compensated ventilation

This function adjusts the air volume depending on the outdoor temperature. It is possible to enter four temperature points where two of them define winter conditions and the other two define summer conditions. Upon entering the compensation curve according to the outdoor temperature, the current intensity of ventilation is decreased or increased accordingly

### Summer night cooling

This function is intended for energy saving in summer: utilising the outside chill of night hours to cool down the heated rooms. The user may enable or disable function at any time as well as set the room temperature at which the function is automatically activated

### Override function

Override control of the unit can be performed by an external device (timer, switch, thermostat, etc.). The signal received from the outside activates the function which switches the unit to the pre-programmed mode ignoring the current operating mode

### Minimum temperature control

This function forces the reduction of the supply and extract air volumes set by the user when the heater capacity available in the unit is insufficient and/or heat recovery does not ensure the supply of the minimum temperature to the room

### Operation on demand

The air handling unit start-up function is designed to start the unit operating in off mode when one of the selected parameters (CO<sub>2</sub>, air quality, humidity, or temperature) has exceeded the critical limit

### Humidity control

An air handling unit can be ordered with an air humidity control function. If this function is available the user is able to choose the humidity control location: supply air, extract air or room. The user is also able to choose the method of control: humidification, dehumidification or both at a time

### Circulation pumps control on demand

Both heating and cooling pumps are controlled according to the current need for heating or cooling instead of a season control

### Air flow density compensation

Air density depends on the temperature. The controller has a function which adjusts the air flows automatically to avoid any misbalance in rooms while being ventilated

### Change-over function

Control of combined water heater cooler and DX cooler reversing to the heating mode

### Additional zone control

Option for independently control of additional heaters and coolers in separately ventilated area. Up to two additional temperature zones can be controlled

### Recirculation control

The controller has a modulated extract air recirculation function. There are four control options: 1) recirculation according to the air quality which may be defined by one of the selected parameters: CO<sub>2</sub>, air pollution by organic components and chemical substances, humidity or temperature; 2) recirculation according to the external temperature curve; 3) recirculation according to a weekly schedule; 4) recirculation controlled by an external device

### Recirculation limitation by temperature

Recirculation may be limited according to the need for heating or cooling. In cases where recirculation is controlled automatically according to one of the air quality sensors or the recirculation level set by the user, the required value of extract air recirculation may be ignored if recirculation heats or cools down the supplied air too much. In such a case recirculation is forcibly reduced until the temperature of supply air set by the user has been reached

## SAFETY FUNCTIONS

### Rotary or plate heat exchanger failure protection

This function observes the thermal efficiency of the heat exchanger. If it does not reach the required level a fault is recorded and indicated

### Rotary or plate heat exchanger anti-frost

Under the low outdoor temperature conditions, this function is constantly observing decreasing tendency of the heat exchanger thermal efficiency, determines the moment when the heat exchanger starts freezing, and activates the defrosting function automatically

### Service time

A warning message appears when the continuous operation of the AHU has reached 12 months

### Rotor warm-up function

This function forcibly activates the rotary heat exchanger if the air handling unit is turned off for some time and the temperature inside the unit or ventilation system is low enough for the rotor to freeze

### Circulation pumps start-up in off mode

This function starts water circulation pumps for a short period of time when they are off longer than the set period

### Warning for too low air flow

If the air handling unit does not reach the air volume set within the time set, the user is warned by an informative message

### External stop

Shut-down function from external device. May be used with or without an automatic unit restart

### Emergency shut-down in case of fire

The external fire alarm is provided when the unit is connected to the building fire alarm system. There is also an internal fire alarm to detect an increased temperature inside the air handling unit or the ventilation system

### Intelligent self-diagnostic

Self-check function of controller and elements of the air handling unit. If a fault is detected, controller terminates the operation of the unit and warns about such a fault using the respective informative messages