



# ReguLAR

CONTROLLER WITH VENTWORK APPLICATION FOR AHU

VERSION 1.1

## 1. ABOUT REGULAR

ReguLar is a controller with Ventwork application for AHU. ReguLar is intended to control ventilation units equipped with a rotor heat exchanger or a plate heat exchanger with a bypass valve, fans with EC motors, electrical heater or water heater, electrical preheater, freon chiller. The controller is operated via a control panel, PC Software (VentWork Controller) or Modbus RTU protocol. Regular settings can be configured via Software (VentWork Controller).

### 1.1. REMOTE CONTROLLER OPTIONS



<b>Product name</b>	3S	RCW	TPC
<b>Touch screen</b>	Yes	No	Yes
<b>Screen size</b>	4.9"	3.2"	3.7"
<b>Schedule</b>	24 events/day	24 events/day	-
<b>Events type</b>	Temporary, pre-set	Temporary, pre-set	Manual
<b>Alarm display</b>	Yes	Yes	Yes
<b>Extended settings menu</b>	Yes	Yes	No

## 2. TECHNICAL CHARACTERISTICS

Dimensions, (L x W x H) mm	159x65x28
Controller power supply	230VAC (-15...+10)%, 50Hz
Ambient temperature	0...50 °C
Relative humidity	Max. 90 % RH (non-condensing)
Storage temperature	-20...70 °C
Analog inputs for temperature sensors	x4 (NTC10K (10@25°C; $\beta = 3250...3300K$ ))
Analog input for humidity sensor	x1 (0...3V; 0..100% RH)
Analog outputs 0-10VDC	x7 (0...10V; 10mA)
Digital outputs	x3 (0..24VDC; 500mA)
Relay outputs	X2 (230VAC; max. 16A (AC-1)) X5 (230VAC; max. 5A (AC-1))
24VDC	x1 (24VDC; 500mA)

### 3. CONTROLLER FUNCTIONS

Temperature control	<ul style="list-style-type: none"> <li>• Maintaining the supply air temperature</li> <li>• Maintaining the extract (room) air temperature</li> <li>• Switching between supply air temperature control and extract (room) air temperature control depends on outside temperature</li> </ul>
Fans control	<ul style="list-style-type: none"> <li>• Fans speed by index: <i>low, middle, high, stop</i></li> <li>• Available working modes of SAF fan: by percentage, by pressure, by flow</li> <li>• Available working modes of SAF fan: by percentage, by pressure, by flow, by percentage of SAF</li> <li>• BOOST and fireplace functions</li> <li>• Fan fail detection</li> <li>• Air valves control</li> </ul>
Heater control	<ul style="list-style-type: none"> <li>• Electric heater control types: On/Off, 0-10V, PWM</li> <li>• Electric heater overheat protection</li> <li>• Water heater control types: 3 way valve, 0-10V</li> <li>• Water heater-cooler control (0-10V)</li> <li>• Water heater protection against freezing</li> <li>• Circulation pump control</li> <li>• Forbid heating function</li> </ul>
Chiller control	<ul style="list-style-type: none"> <li>• Chiller control types: DX on/off, 0-10V, 3 way valve</li> <li>• Forbid cooling function</li> </ul>
Exchanger control	<ul style="list-style-type: none"> <li>• Plate exchanger control types: 0-10V, 3 way valve</li> <li>• Rotor exchanger control types: On/Off, 0-10V</li> <li>• Plate exchanger protection</li> </ul>
CO <sup>2</sup> control	<ul style="list-style-type: none"> <li>• CO<sup>2</sup> remove function (fans speed control)</li> <li>• Configurable CO<sup>2</sup> limit</li> </ul>
Humidity control	<ul style="list-style-type: none"> <li>• Low humidity function (fans speed control)</li> <li>• High humidity function (fans speed control)</li> <li>• Configurable humidity limits</li> <li>• Function timers available</li> </ul>
Night cooling	<ul style="list-style-type: none"> <li>• Night cooling function</li> </ul>
Filters control	<ul style="list-style-type: none"> <li>• Possible ways for detection of filter contamination: external contact or timer</li> <li>• Configurable filter timer limit</li> </ul>
Fire alarm	<ul style="list-style-type: none"> <li>• Fire alarm input</li> <li>• 5 seconds after triggering contact ventilation and fans are stopped</li> <li>• Configurable input normal state: N.C. or N.O.</li> </ul>
Schedule	<ul style="list-style-type: none"> <li>• Controller can operate according to schedule with 24 events per day</li> <li>• The controller has 6 event pre-sets</li> <li>• Temporary events</li> </ul>
System log	<ul style="list-style-type: none"> <li>• Systems stores up to 20 events, indicating time and type of the event</li> </ul>
Inputs/outputs control	<ul style="list-style-type: none"> <li>• Input/output configuration</li> <li>• Digital input normal state configuration</li> <li>• Analog output 0-10V inversion</li> <li>• Sensors input configuration</li> <li>• Sensors fault type configuration</li> <li>• Sensor can be eliminated if none of the system function requires it</li> </ul>



<b>Analog output 0-10V</b>	
AO1 AO2 AO3 AO4	<ul style="list-style-type: none"> <li>• Heater 010 AO Pin</li> <li>• Preheater 010 AO Pin</li> <li>• Chiller 010 AO Pin</li> <li>• Exchanger 010 AO Pin</li> <li>• SAF 010 AO Pin</li> <li>• EAF 010 AO Pin</li> </ul>

<b>Analog input 0-10V / Digital input</b>	
ADI1 ADI2 ADI3	<p>Digital input:</p> <ul style="list-style-type: none"> <li>• Heater DI Pin</li> <li>• Exchanger DI Pin</li> <li>• Fans Boost DI Pin</li> <li>• Stop Ext DI Pin</li> <li>• Fire Alarm DI Pin</li> <li>• Antifrost DI Pin</li> <li>• Filters DI Pin</li> <li>• Fan Fail DI Pin</li> <li>• SAF RPM DI Pin</li> <li>• EAF RPM DI Pin</li> <li>• Fans Fireplace DI Pin</li> </ul> <p>Analog input 0-10V:</p> <ul style="list-style-type: none"> <li>• SAF 010 AI Pin</li> <li>• EAF 010 AI Pin</li> <li>• CO2 010 AI Pin</li> </ul>

<b>Terminal block (Analog output 0-10V / Digital output 24VDC / Digital input)</b>	
TB1 TB2 TB3	<p>Analog output 0-10V:</p> <ul style="list-style-type: none"> <li>• Heater 010 AO Pin</li> <li>• Preheater 010 AO Pin</li> <li>• Chiller 010 AO Pin</li> <li>• Exchanger 010 AO Pin</li> <li>• SAF 010 AO Pin</li> <li>• EAF 010 AO Pin</li> </ul> <p>Digital output 24VDC:</p> <ul style="list-style-type: none"> <li>• Heater DO Pin</li> <li>• Preheater DO Pin</li> <li>• Exchanger DO Pin</li> <li>• Chiller DO Pin</li> <li>• Heat Valve Open DO Pin</li> <li>• Heat Valve Close DO Pin</li> <li>• Bypass DMP Open DO Pin</li> <li>• Bypass DMP Close DO Pin</li> <li>• Work Indication DO Pin</li> <li>• Stop Indication DO Pin</li> </ul>

	<ul style="list-style-type: none"> <li>• Air Damper DO Pin</li> <li>• Fans DO 1 (SAF) Pin</li> <li>• Fans DO 2 (EAF) Pin</li> <li>• Fans DO 3 Pin</li> <li>• Fans DO 4 Pin</li> <li>• Chill Valve Open DO Pin</li> <li>• Chill Valve Close DO Pin</li> </ul> <p>Digital input:</p> <ul style="list-style-type: none"> <li>• Heater DI Pin</li> <li>• Exchanger DI Pin</li> <li>• Fans Boost DI Pin</li> <li>• Stop Ext DI Pin</li> <li>• Fire Alarm DI Pin</li> <li>• Antifrost DI Pin</li> <li>• Filters DI Pin</li> <li>• Fan Fail DI Pin</li> <li>• SAF RPM DI Pin</li> <li>• EAF RPM DI Pin</li> <li>• Fans Fireplace DI Pin</li> </ul>
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<b>Sensor input (temperature)</b>	
SI1 SI2 SI3 SI4	<ul style="list-style-type: none"> <li>• Supply Air Temp Sens Pin</li> <li>• Outside Air Temp Sens Pin</li> <li>• Extract Air Temp Sens Pin</li> <li>• Exhaust Air Temp Sens Pin</li> <li>• Water Air Temp Sens Pin</li> </ul>
<b>Sensor input (humidity)</b>	
SI5	<ul style="list-style-type: none"> <li>• Extract RH Sens Pin</li> </ul>

<b>RS-485 interface</b>	
MBS	<ul style="list-style-type: none"> <li>• RS-485 port with static interface parameters:               <ul style="list-style-type: none"> <li>- Baudrate: <i>19200</i></li> <li>- Parity: <i>none</i></li> <li>- Stop bit: <i>1 bit</i></li> </ul> </li> <li>• Supports Modbus RTU protocol</li> <li>• Supports remote controller (TPC)</li> </ul>
MB1	<ul style="list-style-type: none"> <li>• RS-485 port with configurable interface parameters</li> <li>• Supports Modbus RTU protocol</li> </ul>

## 5. ELECTRICAL WIRING DIAGRAM

