

MultiFanACThermostat

`MultiFanACThermostat` is a virtual object used for creating cooling or heating control configurations based on temperature sensor values and entered cooling or heating schedules on a weekly basis. It features additional functions such as managing a three-stage fan and the control output protection.

In one CLU, up to 64 objects can be created.

Note!

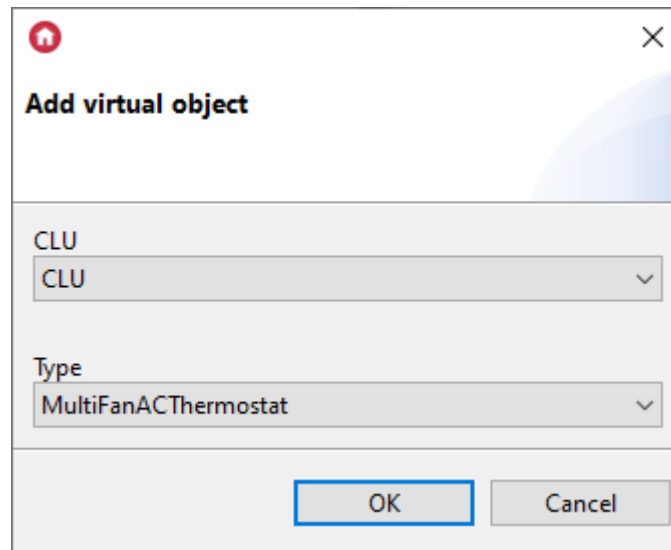
After creating the `MultiFanACThermostat` object (after sending a new configuration to the CLU), it becomes active automatically. To stop its operation, you need to invoke the `Stop` method.

A. Creating object MultiFanACThermostat

In order to create a thermostat, select the CLU, under which it is to be placed, and then from the top menu run `Add object CLU`.



In the opening selection window, find and select `MultiFanACThermostat` :



After confirming the window, the window for assigning a name and thermostat inputs and outputs will open:

Add virtual object

Object name

Source Show all objects

Control Show all objects

Low Fan Speed Control Show all objects

Medium Fan Speed Control (optional) Show all objects

High Fan Speed Control (optional) Show all objects

OK Cancel

Assign a name to the virtual object and specify the temperature source (e.g., OneWire sensor), control output (e.g., DOUT object), and fan stages - single, two, or three-stage depending on the device. Assigning medium and high-speed settings is optional.

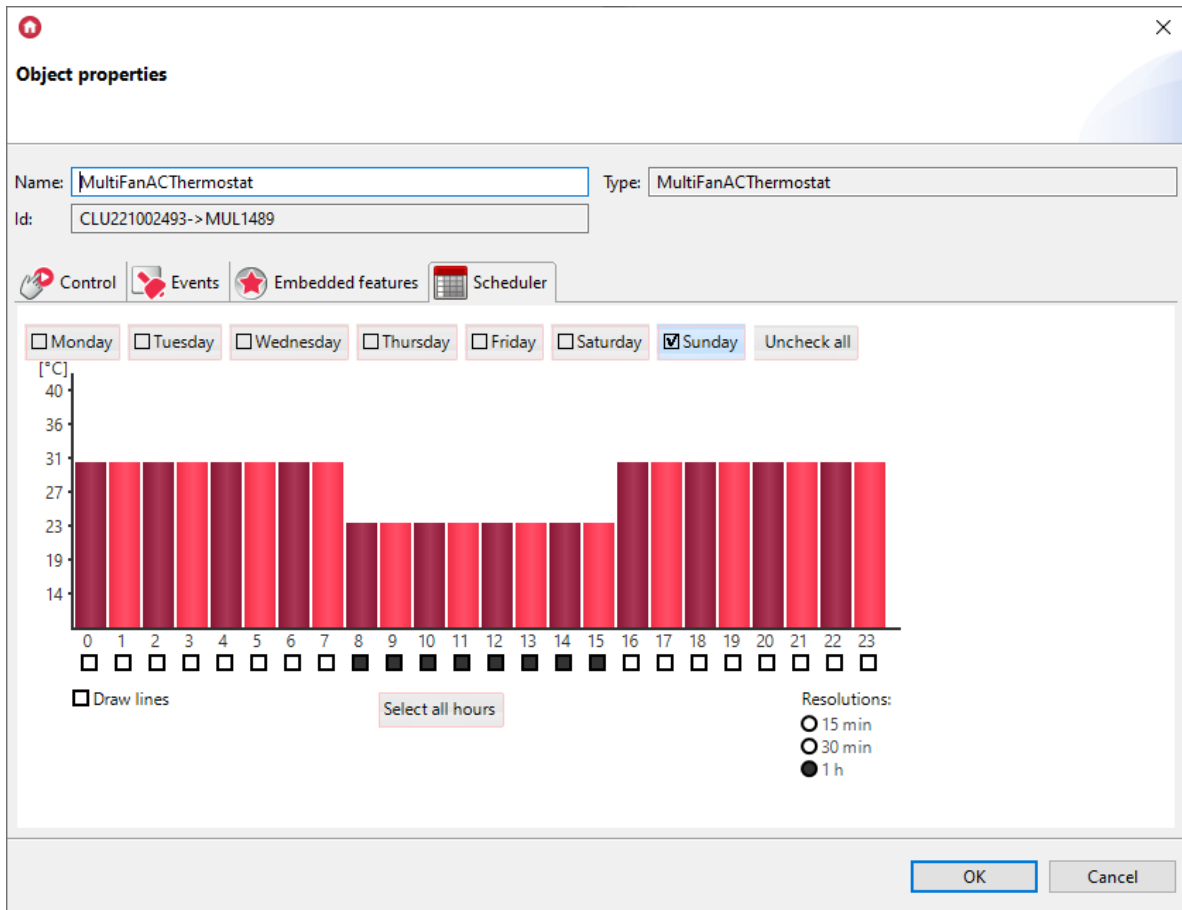
After clicking the button, the thermostat properties window will open.

In this window there are four tabs:

- **Control** - includes thermostat methods;
- **Events** - contains thermostat events;
- **Embedded features** - contains a list of thermostat features;
- **Scheduler** - includes a graphical interface that allows you to easily formulate values for the entire scope of the thermostat.

B. Formulating values for a thermostat

In the tab *Scheduler* (in the properties window) there is a graphical interface, thanks to which it is possible to set values.



The schedule allows you to enter values for 7 days (within one week) with a 15-minute resolution. You can set values for each day separately or for several days at the same time. The day for which the values are currently entered is marked with a black marker on the left side of the name.

Switching to another day follows after clicking on its name.

To enter values for several days at the same time, click on the tags next to the names for which the values will be set. The values can be set directly on the graph using the mouse or manually enter values in the window, which opens after clicking on the selected hour.

Set values

12:00 - 12:14	23.4
12:15 - 12:29	23.4
12:30 - 12:44	23.4
12:45 - 12:59	23.4

OK Cancel

The thermostat responds to the schedule when it is in the `Auto` mode. The schedule can be edited directly in the myGrenton application.

C. Functionality of the virtual object MultiFanACThermostat

The virtual object `MultiFanACThermostat` has the following functions:

- `ControlSwitchDelay` - the possibility of defining a minimum time difference after which the control output is switched on, after the fan has been switched on. The fan switches on before the control output is switched on and switches off after a delay with respect to the control output;
- `ProtectionDelayOn` - the possibility of defining the time for which the control output output cannot be switched on after any change in the state of the control output output (`ControlOutValue`). After each reboot of the system, switching on can occur at the earliest after the `ProtectionDelayOn` time (compressor protection function);
- `ProtectionDelayOff` - the possibility of defining the time for which the control output output cannot be switched off after any change in the state of the control output output (`ControlOutValue`) (control output protection function).
- `MediumFanSpeedDelta` - specifies the temperature difference between the source temperature (`CurrentTemp`) and the target temperature (`TargetTemp`) to activate the second stage of the fan (`FanMediumControl`).
- `HighFanSpeedDelta` - specifies the temperature difference between the source temperature (`CurrentTemp`) and the target temperature (`TargetTemp`) to activate the third stage of the fan (`FanHighControl`).

Note!

The value of the `MediumFanSpeedDelta` feature must be less than the value of `HighFanSpeedDelta`.

The fan can be controlled by one of the four available `FanMode` modes:

- `FanMode` = 0 (Auto) - the fan switches on before the control output is switched on and switches off with a delay in relation to the control output according to the `ControlSwitchDelay` time;
- `FanMode` = 1 (Low) - if the thermostat is turned on (`State` = 1), the output `FanLowControl` of the fan is continuously activated regardless of the control output output.
- `FanMode` = 2 (Medium) - if the thermostat is on (`State` = 1), the output `FanMediumControl` of the fan is continuously activated regardless of the control output output.
- `FanMode` = 3 (High) - if the thermostat is turned on (`State` = 1), the output `FanHighControl` of the fan is continuously activated regardless of the control output output.

Note!

In the case of changing the state of the thermostat in mode `FanMode` = 1, 2, or 3, the `ControlSwitchDelay` time is not ignored.

D. Configuration parameters of the MultiFanACThermostat object

FEATURES

Name	Description
Source	Thermostat input, connection to a temperature sensor
Control	Thermostat output, thermostat linking to control element (Y)
FanLowControl	Thermostat fan output, connection with the fan (Gl)
FanMediumControl	Thermostat fan output, connection with the fan (Gm)
FanHighControl	Thermostat fan output, connection with the fan (Gh)
OutputType	Determination of the output type: -1 - autodetection, 0 - digital output, 1 - analog output
PointValue	The value of the temperature set manually
HolidayModeValue	The temperature value for the holiday mode
Hysteresis	Hysteresis value - defining the limits of thermostat activation and deactivation
State	Operation status: 1 - active thermostat, 0 - inactive
ControlDirection	Working direction: 1 - cooling mode
Mode	Operating mode: 0 - manual mode (using <code>PointValue</code>), 1 - holiday mode (<code>HolidayModeValue</code>), 2 - automatic mode (<code>AutoMode</code> value from the Schedule), 3 - heating mode (<code>HeatUp</code> value)
Data	A string that defines the schedule for changing values
Min	The lower value of the scope of the built-in schedule
Max	The upper value of the scope of the built-in schedule
TargetTemp	The current target temperature value depending on the set <code>Mode</code>
CurrentTemp	Returns the temperature values at the sensor
ControlOutValue	The value assigned to the control output
FanControlOutValue	The value assigned to the fan control output 1 - Off 2 - On (Low) 3 - On (Medium) 4 - On (High)

Name	Description
FanMode	Fan mode: 0 - automatic mode (automatic activation and speed adjustment), 1 - always-on mode (low), 2 - always-on mode (medium), 3 - always-on mode (high)
ControlSwitchDelay	Delay for turning the control output on or off in relation to the fan output
ProtectionDelayOn	The time for which the control output cannot be turned on after it has been turned off (compressor protection function)
ProtectionDelayOff	The time for which the control output cannot be turned off after it is turned on (compressor protection function)
MediumFanSpeedDelta	The difference between the source and target temperatures to activate the second stage of the fan
HighFanSpeedDelta	The difference between the source and target temperatures to activate the third stage of the fan

METHODS

Name	Description
Start	Switching thermostat to active state (State = 1)
Stop	Switching the thermostat to an inactive state (State = 0)
IncreaseDegree	Increase PointValue by 1 °C
DecreaseDegree	Decrease PointValue by 1 °C
HeatUp	Increasing PointValue by a given value at a specified time
HolidayModeStart	Starting holiday mode
HolidayModeStop	Stopping the holiday mode
AutoModeStart	Starting the AutoMode mode (downloading temperature from the schedule)
AutoModeStop	Stop the AutoMode mode
SetData	Setting the weekly schedule
SetOutputType	Output type setting: Auto - auto detection, Digital - digital output, Analog - analog output
SetPointValue	Setting the manually set temperature
SetHolidayModeValue	Setting the temperature value for the holiday mode
SetHysteresis	Setting the hysteresis value
SetFanMode	Sets the fan mode
SetControlSwitchDelay	Sets the delay for turning the control output on or off in relation to the fan output
SetProtectionDelayOn	Sets the time for which the control output cannot be turned on after it has been turned off (compressor protection function)
SetProtecionDelayOff	Sets the time for which the control output cannot be turned off after it is turned on (compressor protection function)
SetMediumFanSpeedDelta	Specifies the difference between the source and target temperatures to activate the second stage of the fan
SetHighFanSpeedDelta	Specifies the difference between the source and target temperatures to activate the third stage of the fan

EVENTS

Name	Description
OnPointValueChange	An event generated when the value of the <code>PointValue</code> property is changed
OnStart	An event generated when the thermostat is restarted
OnStop	An event generated when the thermostat stops working
OnControlOutValueOn	An event generated when output <code>ControlOutValue</code> is switched on
OnControlOutValueOff	An event generated when output <code>ControlOutValue</code> is switched off
OnHolidayModeOn	An event generated when starting holiday mode
OnHolidayModeOff	An event generated when the holiday mode is turned off