



Control System for Air-Handling Units



Fragment of a control interface table showing various parameters and their values:

regulačního procesu			
Nová hodnota			
900			
-2			
60			
-5			

Fragment of a device list table:

Webserver - jiné	194.212.5
Název zařízení	SBT_RC
Umístění zařízení	XP13 -
Číslo zařízení	strojov
Aktuální Poruchy	WBC
Nejsou žádné p	

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The updated version of this document is available at our website www.remak.eu

Introduction

- WebClima control units are manufactured in accordance with valid Czech and European regulations and technical standards.
- WebClima control units must be installed and used only in accordance with this documentation.
- The manufacturer is not responsible for any damage resulting from using procedures other than specified in this documentation, and the customer bears the risk of such use.
- The installation and operating documentation must be available for the operating and servicing staff. It is advisable to store this documentation close to the WebClima control unit.
- When handling, installing, wiring, commissioning, repairing or servicing the WebClima control units, it is necessary to observe valid safety rules, standards and generally recognized technical rules.
- In particular, it is necessary to use personal protective work aids (e.g. gloves) because of sharp edges and corners when performing any handling, installing, dis-mounting, repairing or checking WebClima control units. All device connections must comply with the respective safety standards and regulations
- Any changes or modifications to individual components of the WebClima control unit which could affect its safety and proper functioning are forbidden.
- Before installing and using the WebClima control units, it is necessary to familiarize yourself with and observe the directions and recommendations included in the following chapters.
- The WebClima control units, including their individual parts, are not intended, due to their concept, for direct sale to end customers. Each installation must be performed in accordance with a professional project created by a qualified air-handling designer who is responsible for the proper selection and dimensioning of components concerning their compliance with the requirements of the given application. The installation and commissioning may be performed only by an authorized company licensed in accordance with generally valid regulations.

WebClima control units are equipped with software protected by copyright. Use of the WebClima control unit is conditioned by acceptance of the Licence Agreement.

Licence Agreement
concluded between the user of the WebClima (WBC) control unit software
and REMAK a.s.

1. The WebClima control unit software (hereinafter referred to as the "Software") is the intellectual property of REMAK a.s. (hereinafter referred to as the "Manufacturer").
2. By purchasing the WebClima control unit, the owner or user (physical or legal entity) accepts this Licence Agreement, and undertakes to observe it in extenso. Unit purchase is understood as the purchaser taking the unit over from the forwarder or manufacturer. Unit use is understood as any single or continuous use of its functions, including installation, activation, connection, testing, maintenance and repairs.
3. The Manufacturer provides the unit owner or user with limited rights to use the Software for the purpose for which the unit has been designed by the AeroCAD designing program. The Software can be used solely along with a computer system from the Manufacturer (control unit, hereinafter referred to as the "Hardware"). The Software use must comply with the conditions and limitations included in article 4 of this agreement.
4. Without the written consent of the Manufacturer:
 - a. You are not allowed to copy the Software from the device, reproduce or decompile it, or to use any other methods of reverse engineering.
 - b. You are not allowed to utilize any parts or components of the Software (including the Help file) for any other purposes than for your own use of the Software to ensure functioning of the unit and connected air-handling devices.
 - c. You must not try to acquire unauthorized access to any services, software accounts or associated internet services.
 - d. You are not allowed to install or run the Software on Hardware other than that which was delivered by the Manufacturer along with the Software.
5. REMAK a.s. does not bear any responsibility for direct or indirect damage incurred as a consequence of unauthorized or unqualified use of the Software and/or Hardware, or for damage incurred as a consequence of failure to observe the product's Installation and Operating Instructions.
6. The Licence Agreement and limitations of article 4 shall stay valid even after transferring the owner's rights to the control unit or after termination of Software or Hardware use.
7. If you do not agree with the conditions of this Licence Agreement, you are not authorized to use the Software and/or Hardware, and you must contact the Manufacturer immediately to get information on how to return the unused product to the Manufacturer.

Acceptance of the licence conditions, if access to the unit is carried out using a PC, must be confirmed upon first login

Device Characteristics

Device Characteristics

The WebClima (WBC) control units are complex systems which provide REMAK® air-handling and air conditioning devices with autonomous regulation, protection and control. The central module is equipped with communication technologies to communicate within the scope of the LAN/WAN network, respectively through internet. They are designed especially for more complex air-handling devices including cooling, mixing and other functions. The WebClima control units provide high accuracy and stability of parameters, high safety and unique functions such as remote monitoring, etc.

Figure 1 – Switchboard version with PC



Figure 2 – Installation in the XP unit section



Main Features

The WebClima / WBC control unit is designed to provide:

- Complex autonomous operating control of air-handling devices
- Room air temperature control (cascade regulation).
- Control and power supply of air-handling devices
- Protection of connected devices

The WebClima control unit ensures all control and protection functions. It is equipped with proportional outputs for up to 4 main controllable sequences and with an ancillary digital output. Sophisticated control algorithms ensure system stability, comfort regulation and energy savings.

The WebClima (WBC) control system is delivered in standard plastic or steel-sheet distribution board boxes, degree of protection IP54. Optionally, it can also be integrated directly into the AeroMaster XP air-handling unit – using for this purpose (in a project) designed section of the IP44 protection degree with the possibility to use it also in outdoor units (equipped with heating, resp. cooling of the control unit location space).

The WebClima control unit enables two basic modes of the control:

- Remote control using a PC configuration which can be integrated into an IT infrastructure (LAN/WAN)
- Local control using the HMI controller which is equipped with a display (an external ancillary control device can also be used in some configurations to control operating modes or to correct desired temperatures)

An air-conditioning device equipped with the WebClima control system will become a computer server; connected to the company LAN network or internet it will provide you with above-standard features and services while minimizing operating costs. Furthermore, no specific software is needed (a common internet browser can be used).

An integrated communication card also includes, apart from the WEB server, OPC and BACnet servers, and enables integration into central control systems. The possibility of remote administration, a structured intuitive and transparent graphic user interface along with user language options, integrated documentation and help are the main advantages of this solution.

The WebClima control system minimizes operator's time needed for checking and operating the air-handling device, and among others it enables e-mailing of error messages and archiving of selected operating parameters and conditions. Another advantage is that the WebClima control unit also enables economical and energy saving operation of air-handling devices:

- Three setting options of temperature modes are available:
 - Comfort mode
 - Economy (middle) mode
 - Ventilating mode
- Ample options of time schedules (daily, weekly, yearly) with temperature mode and fan output programming features

Device Characteristics

- Superior anti-freeze protection and tempering of the exchanger during standby mode.
- Accurate analogue control of peripheral devices (depending on the controlled component).

Extended Communication Abilities

The WebClima system enables the "passive communication mode" (from the operator's point of view) through the LAN (resp. WAN) network with the SMTP server – sending error e-mails to a selected e-mail address without the need for "active" supervision of the device.

For more details, refer to "Administration - System Administrator", which also includes the possibility of sending e-mails to a cell phone in the form of SMS messages.

Figure 3 – "passive communication mode"

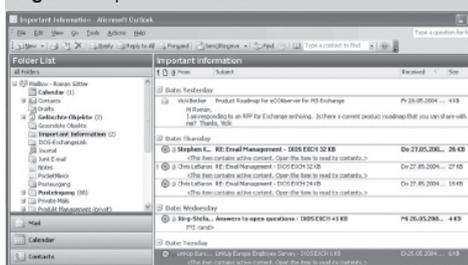
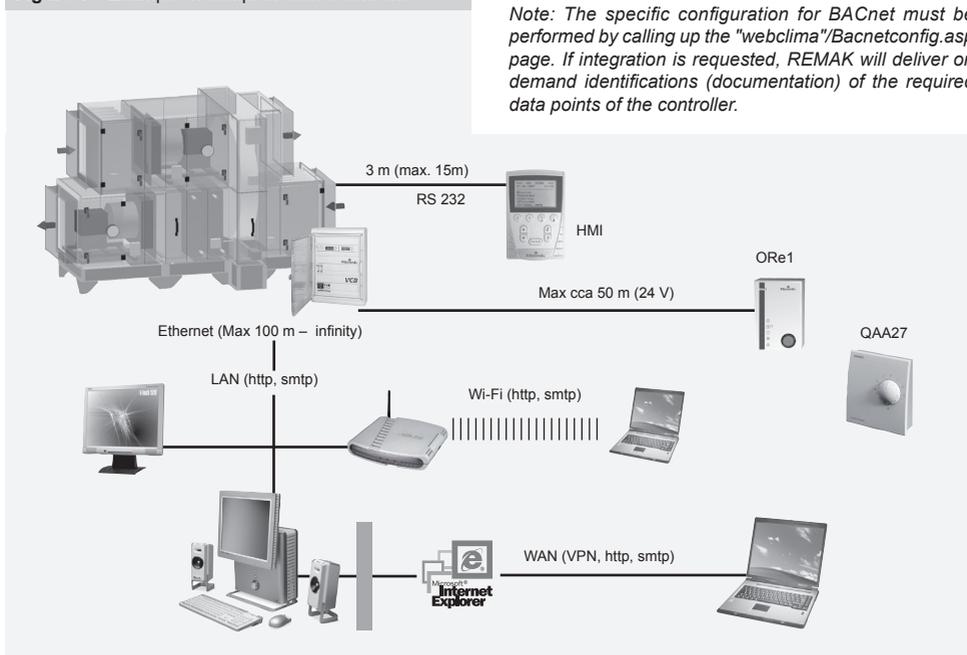


Figure 4 – Example of complex control solution



HW and SW Concept of the Controller

The design of the WebClima (WBC) system is based on the powerful Siemens Saphir (ACX 34, ACX 32) PLC controller, and the system is programmed by special REMAK regulation software to control air-handling devices.

The controller includes an integrated Siemens RCC 52.22 card enabling integration into Ethernet-type LAN networks and software based on Win CE, including e.g. a server, which serves for device default control from the PC through the special WebClima graphic user interface.

The controller and communication card operate independently. The communication card ensures access to the controller data (and their display, resp. changing) through the data interface, which ensures maximum operating reliability and security of the controller regardless of the webserver operation.

The HMI Siemens ACX84.910 manual controller can be used for local control independently of the communication card – refer to "HMI Controller Operating Instructions".

The communication card enables integration into SCADA centralized control systems (integrated OPC server) or BACnet networks (integrated BACnet server). Further option of connection to the SCADA system is enabled by the LONWorks bus. This service is ensured by an ACX51.25 communication card, which is delivered as an optional accessory to the control unit. Connection to the network is ensured by a galvanically separated TP/FTT-10 Transceiver at a baud rate of 78 kB/s. Connecting the twin-lead cable is performed using a connector with two screw terminals.

Note: The specific configuration for BACnet must be performed by calling up the "webclima/Bacnetconfig.asp" page. If integration is requested, REMAK will deliver on demand identifications (documentation) of the required data points of the controller.

Project, Marking, Documentation and Safety Rules

Project

The project of the WebClima system consists in the selection of required functions and the configuration of its internal arrangement. The project is created automatically using the algorithm, an integrated part of the "AeroCad" design program which is simultaneously used for the air-handling unit design. The output project includes an accurate production specification of the control unit and the following individualized lists for a particular device:

- List of connected devices
- Connecting wiring diagram of all components
- Specification of all connecting cables

Marking

Each control system is marked with a unique code (generated by the "AeroCad" design program) which is included only in the accompanying documentation, not in the system, and with a serial number (for communication with the manufacturer).

Documentation

The WebClima (WBC) systems can be installed and used only in accordance with the documentation delivered with the system.

List of Documentation

- Installation and Operating Instructions
- Configuration of the control system (summary of attachable components), terminal diagram and list of recommended cables – printed AeroCAD output of the device project.
- Record of functional and single-part tests

Other – General Documentation

The system, resp. unit documentation also includes a collection of operating and inspection documents, and service regulations. The user is responsible for these documents.

Service Regulations

Before putting the air-handling device into permanent operation the user, in collaboration with the designer, respectively manufacturer, must issue service regulations in accordance with local legal regulations. We recommend including the following in these service regulations:

- Air-handling device assembly description, its intended use and a description of its activities in all operating modes.
- Description of all safety and protective elements and their functioning.
- List of health protection principles and safety rules to be observed when operating the air-handling device.
- List of requirements for operating staff qualification and training, a nomenclature list of personnel authorized to operate the air-handling device.
- Detailed emergency instructions.
- Operating particularities during deferent climatic conditions (e.g. summer or winter operation).

- Inspection, checking and maintenance schedule, including a list of checking steps, and their recording.

Documentation Availability

Documentation delivered with the WebClima control system as well as its operating documentation must be permanently available for the operating and maintenance staff, and stored close to the WebClima control unit. Installation and operating instructions are also available on our website: <http://www.remak.eu>

Notice

The manufacturer reserves the right to change and/or amend this documentation to include the latest technical innovations and/or to comply with the law, without prior notice. Information on changes and/or updating is always available on our website: <http://www.remak.eu>

Safety Rules

- WebClima control units are manufactured in accordance with valid technical standards.
- WebClima control units must be installed and used only in accordance with this documentation.
- The subject that is responsible for use other than specified in this documentation is also responsible for any damage resulting from such use.
 - When handling, installing, wiring, commissioning, repairing or servicing WebClima control units, it is necessary to observe valid safety rules, standards and generally recognized technical rules.
 - In particular, it is necessary to use suitable tools and personal protective work aids (e.g. gloves) because of sharp edges and corners, respectively dangerous voltage when performing any handling, installing, dismounting, repairing or checking WebClima control units.
 - Any changes or modifications to individual components of the WebClima control unit which could affect its safety and proper functioning are forbidden.
 - Neither configuration nor documentation may be changed without prior consent from the manufacturer.
 - WebClima control units, including their individual parts, are not intended, due to their concept, for direct sale to end customers. Each installation must be performed in accordance with a professional project created by a qualified air-handling designer who is responsible for the proper selection and dimensioning of components concerning their compliance with the requirements of the given application.
 - Any connections, including connecting the WebClima unit to the power supply, must be performed in accordance with local safety regulations and standards valid for electrical wiring.
 - The wiring, installation and/or commissioning may be performed only by an authorized company, respectively by qualified worker, licensed in accordance with generally valid regulations.
 - Before installing and using the WebClima control unit, it is necessary to familiarize yourself with and observe the directions and recommendations included in the following chapters.

Commissioning

■ The air-handling device can be put into operation only in accordance with applicable service regulations. The operating staff must comply with requirements given by the service regulations, respectively by the manufacturer (authorization of some servicing operations).

Transport and Preinstallation Storage

WebClima control units are packed in cardboard boxes, or installed in the corresponding section of the air-handling unit. When handling them, it is necessary to observe the rules for fragile goods handling.

WebClima control units can be stored in storerooms which must comply with following conditions:

- Maximum relative air humidity below 85 %, without condensation of moisture.
- Ambient temperature range from -25°C to +60 °C

Stored WebClima control units must be protected against penetration by dust, water, acids or corrosive substances or other substances that can negatively affect their construction and components (degradation of plastic parts and insulating materials, etc.).

Location and Installation

The location of the WebClima control unit must be selected concerning easy access of the operator and cable connecting. The surface for the unit installation must be flat and without bumps.

It is important to leave enough space on the operating side of the WebClima control unit to enable its maintenance and servicing. Prior to installation, check the delivery for completeness and intactness.

WebClima control units are intended for normal environmental conditions (dust, moisture and chemical-free and non-explosive indoor environment).

They can be mounted directly on A and B combustibility grade materials in accordance with the EN 13 501-1 standard.

Permissible ambient temperature: 0 °C to +35 °C

The WebClima control unit delivered in plastic distribution board boxes can be hung directly on a wall, or partly embedded into plaster (allowing the cover to be removed). The WebClima control unit delivered in steel-sheet distribution board boxes can also be installed directly onto the floor. Connecting cables can be led in using cable trenches, cable trays, or led under plaster. The power cables are connected from the bottom side.

For fixing the control unit onto a wall, we recommend using wall-dowels and wood screws dimensioned according to the wall structure.

Note: The above applies also for air-handling units, respectively their Installation, and Operating Instructions must be observed.

Commissioning

Mounting and Wiring Check

Before putting the device into operation for the first time it is necessary to perform a thorough check and verification of all connections of elements of the control system in accordance with the wiring diagram delivered with the particular control unit. The system must not be powered until this check has been performed.

In particular the completeness, locations and connecting of thermal sensors, fan and heater thermo-contacts must be checked in accordance with the M&C project. Further, connections of all alarm inputs must also be checked.

It is also necessary to check fans, electric heaters, heat exchangers, filters and all other components of the connected air-handling unit for correct installation in accordance with the documentation delivered with the air-handling unit.

The above-mentioned checks must include functional testing of individual components.

Special attention must be paid to conductive interconnection of all parts of the air-handling unit and other related devices.

Wiring Conditions

The wiring must be performed following valid standards and local safety regulations. In accordance with these local regulations, the initial inspection of the entire device must also be performed prior to its commissioning.

Adjustment

The WebClima control unit is produced in accordance with the customer's requirements and configuration (the project), and during production it is preset to the basic parameters and thus ready for operation. Providing it is correctly installed, the control unit will start up and regulate the air-handling device to the preset parameters.

The professional operator performing the commissioning must always check, respectively adjust, operating parameters for the air-handling unit according to the actual arrangement and behaviour of the control system, operation or local conditions.

This applies especially for **control constants and parameters, correction values, temperature modes and time-schedules**.

Access to the data points is enabled via PC using WebClima software, respectively via the HIM controller. For adjustment of the PC and cooperating device, refer to the chapter "Connection to PC and LAN/WAN". The operating instructions are described in a web application; respectively it is necessary to follow the chapter "HMI Controller Operating Instructions".

You can also use additional help directly on individual pages of the WebClima user interface.

Control of user access and relationship to IT systems represent an important part of the system setting. Default factory settings must be readjusted to the user's and service needs in the course of commissioning.

Commissioning

The basic preset parameters that must be readjusted during commissioning:

- User accounts (names, passwords and users' "roles" /authorizations)
- Settings for LAN network connection (if required).

Other Settings:

- Contact information – supplier, resp. service or administrator.
- Device identification – name, number, location - actual or according to the project.

To optimize cooperation of the WebClima control unit with peripherals, it is necessary to adjust the appropriate values of analogue control signals for heating, cooling, heat recovery and mixing in the "Settings / Configuration" menu. These values are optional from the range of 0-10 V or 2-10 V (preset).

The 2-10 V values are typically suitable for REMAK, resp. Belimo actuators; on the other hand, for the rotary heat exchanger with a frequency inverter it is necessary to adjust the signal of 0-10 V. Optionally, the pre-recuperation mixing priority can be selected, refer also to "Regulation".

Notice

Parameters are structured so that they are available to users according to their authorization. The "role" must be assigned to individual users in accordance with their qualification and operational responsibility.

Basic Parameterization

– refer to "Administration - System Administrator".

General Overview of Parameters

For a general overview of parameters accessible from the menu and users' authorizations, refer to "WebClima – Review of Factory Preset Parameters Values". For an overview of parameters and default values of the HMI controller, refer to "HMI Controller Operating Instructions".

Important Notice

Proper assembly, installation and commissioning are essential for faultless and safe operation of the WebClima control unit. The components connected to the WebClima control unit must comply with the specification included in the WebClima control unit documentation.

During the service life of the device, it is necessary to observe procedures included in the manufacturer's documentation delivered with the device, as well as service regulations issued by the user of the device.

Location of Control System Sensors

Sensor NS 120 of the inlet air temperature

The sensor must always be situated behind the heater or cooler. It must not be situated in the room. If the air-handling unit ensures dehumidification functions, an inlet air temperature-humidity combined sensor (QFM 2120) situated in a common casing will be used instead of the standard NS 120 sensor.

Thermal sensor (NS 130R)

The thermal sensor, which is a part of the VO water heater antifreeze protection (return water temperature measurement) must be situated in the return water pipe of the water heater so that it will be sufficiently bathed with water. The heating circuit must comply with all required functions needed for control and safe operation in accordance with the specifications included in the project documentation of the air-handling device (among others, water flow discharge and temperature, respectively to be filled with antifreeze medium).

Outdoor Air Temperature Sensor

The outdoor air temperature sensor should be situated actually outdoors – only then are all functions of the control system ensured even during the STOP mode, respectively immediately after starting up (i.e. pre-recuperation of the heater corresponding to the outdoor temperature). If this sensor is situated in the fresh air supply duct inside the building, the measured temperature will be correct only if fans operate (air is flowing). Otherwise, the starting conditions will be incorrect - which can endanger the safety of the air-handling device, and even cause an accident in the exchanger.

Room Temperature Sensors

Optionally, a room (NS100) or duct (NS120) sensor can be used by the designer. If the air-handling unit ensures dehumidification functions, an inlet air temperature-humidity combined sensor situated in a common casing will be used. According to the designer's selection, the room temperature (as standard NS 100) and humidity sensors can be replaced by the QFA 2020 sensor, respectively the duct temperature (as standard NS 120) and humidity sensors can be replaced by the QFA 2120.

- **Room sensor** needs to be situated in a "representative" place for the room temperature. It must not be affected by local effects (heaters, window, vertical distribution of the room temperature, etc.)
- **Duct sensor** must be placed in the room air outlet duct – the advantage is that it can measure mean temperatures of the air exhausted from the room – without influence from local effects (besides that, it is hidden in the duct and cannot be seen).

Antifreeze protection sensor (NS 120)

Sensor must be situated in the outlet air duct behind the heat exchanger.

Sensor for control of the preheating temperature

The sensor must be situated behind the preheating EO heater, but in front of other air temperature adjusting elements. A capillary tube of additional antifreeze protection – if not installed within the air-handling unit by the manufacturer – must be (wavy shaped) led through the entire cross-section along the rear side of the water heater using the prepared clips.

Notice: If necessary (e.g. to compensate the influence of the duct length, etc.) it is possible set the corrections of measured temperature values ($\pm 3^{\circ}\text{C}$).

Connection and Installation

Humidity Sensor

Refer to the information on temperature sensors above.

Device Handling Conditions

Only properly qualified personnel are allowed to commission, operate and service this device.

- Only personnel who have been provably trained by the purchaser (manufacturer or authorized manufacturer's representative) in accordance with service regulations valid for the respective air-handling device and warned of possible risks and hazards can operate the WebClima control unit.

- The removal, bypassing or disconnecting of safety equipment and functions, or protective devices, is forbidden.

- Only faultless air-handling components can be used. Failures which can affect device safety must be removed immediately.

- All precautions concerning electrical accidents must be strictly observed. Any actions restricting safety and/or protective precautions, even temporarily, must be strictly avoided.

- By no means may any guards or other safety equipment be removed. The device and its components may not be operated if safety devices or precautions are ineffective, or if their functioning is restricted.

- Actions which could break the prescribed separation of safe low voltage must be avoided.

- When replacing fuses, the voltage-free state of the control unit must be ensured and only prescribed fuses and protective elements can be used.

- The harmful effects of electromagnetic emissions and overvoltage to signal, control, and power cables, which could cause dangerous unwanted actions or destroy electronic elements, must be avoided.

- Never work on an energized device! Before performing any work on the air-handling unit, disconnect the power supply by means of the main switch, and lock it in its off-position. Use protective work aids in accordance with the service regulations and valid local standards.

- If individual construction assemblies (e.g. el. heater, fan, etc.) are equipped with service switches, they can be switched off by using the appropriate service switch providing that this action is allowed by service regulations, and enabled by features and conditions of the system.

- Never use abrasive cleaners, acid, alkali or solutions aggressive to plastics to clean the control unit.

- Avoid water splashing, hitting and vibrations.

- Air-handling components must always be installed in accordance with the corresponding installation instructions.

Keep all protective elements faultless. After removing failures such as short circuits, etc, always check the function of protective elements; also check the condition of the main and additional interconnections and grounding.

To keep the operation safe, it is necessary to check the condition of pumps of water heaters and coolers – i.e. manually check their rotation, and verify their output curves (power oversizing lowers the quality of the control).

Warning

Remote control (as well as automatic time schedules) must always be taken into account when working (inspecting, maintaining, repairing, etc.) on the air-handling device. Therefore, safe access must be ensured - by turning off and securing the main switch – to avoid the device being started by another user.

Installation and Connection to PC and LAN/WA

Basic Requirements

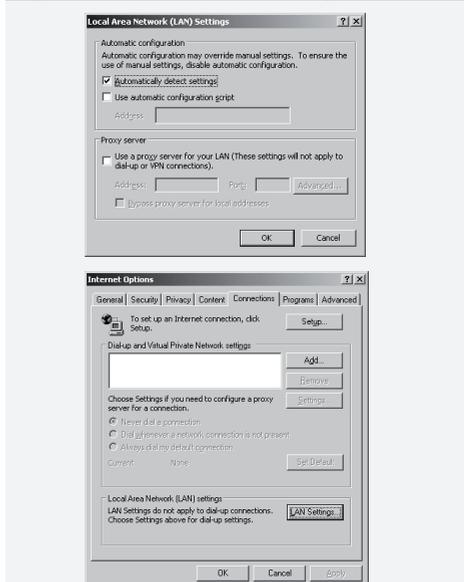
The comfort version of the WebClima system can be operated from your PC using an internet browser.

The PC must be equipped with an Ethernet network card with the RJ-45 connector, or connected to the LAN network - the WebClima system can be connected directly to (one) PC or integrated into the LAN, resp. WAN network, and is accessible from any computer (access authorization is needed) in the network. The TCP/IP protocol must be installed on your PC (to install the TCP/IP protocol, refer to your operating system manual).

Notice

To ensure proper interoperation of the internet browser on your PC directly connected to the WebClima unit, it is necessary to disable proxy server! In Internet Explorer 6: Go to "Tools" / "Internet Options" >> "Connections" >> button / "Local network options" / "Specify" ... lower half of the window = "Proxy server" box – must not be checked (see figure #5).

Figure 5 – Network connection settings



Connection and Installation

Warning

Before putting the WebClima control unit operated by PC, respectively via LAN network, into operation, the installation of the controlled air-handling unit must be checked to see whether it has been performed in accordance with its Installation and Operating Instructions (installation, inspections, safety precautions, heating media, etc.)! Refer to "Location and Installation".

Default WebClima IP Address Setting

During production, the WebClima unit was assigned the fixed IP address: **192.168.1.199**, mask 255.255.255.0, and the default port 0.0.0.0.

Notice

If this address cannot be used in LAN, it is necessary to change the setting from the computer (directly connected PC as described below) before connecting it to the network.

WebClima System Start-up Procedure

1. Step: WebClima System Connection:

Figure 6 – WebClima unit connected directly to PC



WebClima + stand-alone PC = WebClima unit connected directly to PC

Using the Ethernet crossed cable* (UTP cable, RJ-45 connectors) connect the WebClima unit ("LAN" socket on the upper side of the controller) to the network card of your computer.

Figure 7



Attention: Connector RJ-45 marked X13 SERVICE cannot be used! It is intended for HMI controller – refer to "HMI Controller Operating Instructions".

MMax. length of the cable between the WebClima and computer can be 100 m;

however, we recommend 80 m. Switch the WebClima main switch on.

If a greater distance between the PC and WebClima unit is desired, it will be necessary to use a structured network (Ethernet) including active network elements – see below, or contact a specialized PC and IT supplier.

* This cable is not included in the WebClima delivery.

Connecting the WebClima Unit to LAN

Warning

If the default IP address of the WebClima unit cannot be used in the LAN network – i.e. a different address range is used in the LAN network (e.g. 10.0.0..., 192.168.10....), or the existing PC within the LAN network has already been assigned the IP address ...199 (can be verified by the "ping + IP address" command) which must be retained - it is necessary to change the WebClima IP address setting from the computer (as described above) before connecting it to the network.

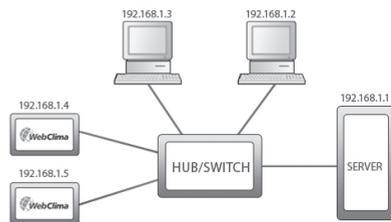
If you are not an administrator of the LAN network, you will have to contact your LAN administrator. The same applies if you are not an administrator of your computer.

Using the Ethernet cable (not included in the WebClima delivery) connect the WebClima unit to the LAN network connecting point in the same way as any other LAN device. The same conditions as in step 1 (connecting points, cable lengths) apply for connection to LAN.

The WebClima unit works in a LAN network as a common computer based on Windows CE with a webserver. Maximum WebClima unit distance from an active network element must comply with the Ethernet network conditions.

Notice: The WebClima unit can also be connected to the LAN network via the wi-fi access point in the client mode, etc. – consult your network administrator.

Figure 8 – WebClima unit connected to local network



To be able to operate the WebClima unit, a unique IP address within the network range (see fig. # 8) must be assigned to the WebClima unit. Go to "Connection" >> "LAN connection" (refer to Step 4: Activation).

Always restart the WebClima unit after assigning a new IP address – the new setting is applied after restart.

Attention! Always consult your network administrator if connecting the WebClima to LAN.

2. Step: Computer Configuration - TCP/IP Settings

Warning

In this step, settings of the PC using Microsoft Windows® 2000 and XP are described; if you use other operating systems (Win98, ME, or Linux ...) you will have to perform corresponding settings of your computer in accordance with your operating system user manual, or ask an expert for help. This setting procedure is needed only for a permanent direct connection to PC, or to change the WebClima settings before its integration into the LAN network.

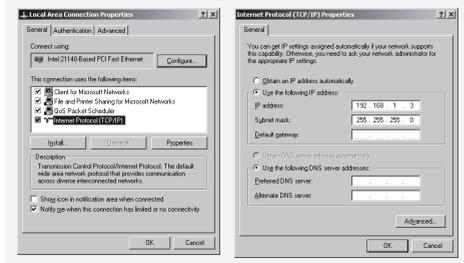
Connection and Installation

After setting the WebClima unit (following the below described procedure), and when the WebClima default address complies with network addressing, it is only necessary to enable new hardware in the infrastructure administration – there is no need to make any other adjustments to individual PCs.

Adjust PC network card settings in Windows:

Go to "Start" >> "Settings" >> "Control Panel" >> "Network and telephone connection" >> (Windows XP "Network connection"). Click (right mouse button) on "Local network connection", then on "Properties", and display "Internet protocol (TCP/IP)" properties*.

Figure 9 – TCP/IP settings



If the protocol is not found in the list of items (it is not installed), add the item to the system. Click the "Install" button, select the "Internet protocol (TCP/IP)", and follow the instructions on the screen.

Select item "Use the following IP address". Type "192.168.1.3"*** into the "IP address" box and "255.255.255.0" into the "Network mask" box.

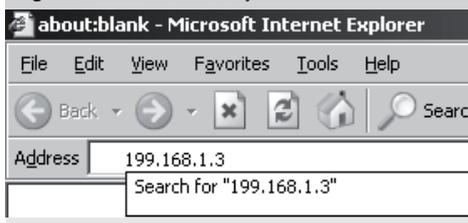
Do not type anything into the item boxes of the second part of the window (leave them blank).

If you are prompted by the system to restart, confirm the restart immediately.

Connection, resp. TCP/IP Protocol Verification

To verify the settings and connection, type the WebClima address into the URL box of the internet browser (the WebClima system must be switched on); it should start functioning in 0.5 – 3 minutes - the time needed to initialize the webserver.

Figure 10 – IP address entry



After sending the request, and if the settings and connecting are correct, the WebClima unit is ready to be configured, and the login window is displayed on the screen requesting the user name and password.

Figure11 – Login window



If you encounter any problems, contact customer support.

3. Step: WebClima Control Unit Connection Setting

The WebClima can be configured via the web interface (which serves also for routine system operation control). Type the following address <http://192.168.1.199> into your browser, and confirm with "Enter".

Notice: The WebClima unit configuration itself is not dependent on the type of browser used.

Enter the following user name and password into the boxes of the login window – see fig #11:

Username: User4
Password: passw4

These access parameters were preset during the WebClima unit production (first start). Attention: The preset user name and password are valid only until they are changed.

Notice: The user can also select the language in the login window to communicate with the WebClima control unit. Default languages are: Czech, English, and Russian. Local distributors can arrange localization into local languages.

These logins represent the highest user authorization (Role: "Service") – this authorization level should be reserved for the installation supplier and service provider.

Note: The highest user level account – "Manufacturer" – has been set in the factory for production checking purposes. This account must be deleted for security reasons, especially if the device is accessible via internet.

*** In the last position of the IP address any number from 1 to 254 can be used, except for 199, which is assigned to the WebClima unit.

Connection and Installation

Figure12 – WebClima Users' Administration



To ensure controlled access, we recommend changing the user name and password after the first login. Go to "Connection" >> "Users" >>, and after clicking on the editing icon (circled) you can change the User name and Password in the bottom part of the form. Click on the "Change" button to confirm the changes – refer to Administration.

Warning

After changing the user name and password, the original user name and password cannot be used. Keep your user name and password in a safe (confidential) place. If you forget or lose them, contact the manufacturer or authorized service representatives.

In addition to service access, it is also necessary to change other preset users according to actually authorized users to enable access by the operating staff.

User name	Password	Group ("Role")
User1	passw1	Guest
User2	passw2	User
User3	passw3	Administrator

Unnecessary users can be deleted, and new ones added (the maximum possible number of users is 16). During the device activation, it is advisable to establish at least a device administrator who can further administer users himself after taking the device over - however, only lower access levels; if more users at the administrator's level are needed (e.g. for different shifts or deputies, etc.) they must be assigned from the "Service" level.

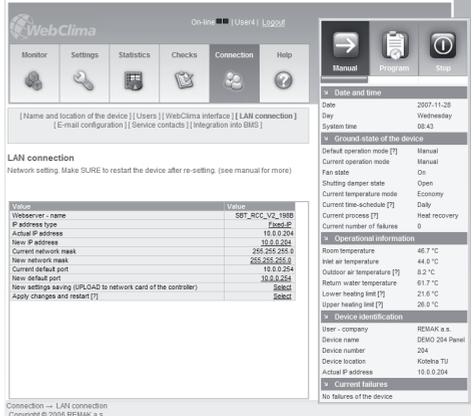
Notice: If the users' settings are not performed in this phase of commissioning, it is necessary to enter users' data during the training or device handover at the latest.

For a further description of users' administration, authorization and interrelations of structured user logins, refer to "Administration" and WebClima interface Help.

4. Step: How to change the WebClima IP address

You can change the WebClima IP address to operate it within your network from the page "Connection" >> "LAN connection"

Figure13 – IP address change



Enter the required data into the fields allowing logging and click on to save.

Field by field, fill in and save all items (New ... address, mask or port).

Then save the new setting by selecting the "Save" option in the "UPLOAD to network card of the controller" item.

Finally, restart the WebClima system using the "Apply" option in the "Apply changes and restart" item.

After restarting, the device will report a new address (it takes approx. 3 minutes to initialize)**.

If the network segment has been changed, it is necessary to change the network connection of your PC according to the compatible WebClima system (resp. LAN) to restore communication, and then the WebClima device can be connected to the LAN network.

The network connection address in your browser must also be changed to the new one to enable login.

Notice – The LAN connection settings

Be considerate and careful when changing the LAN settings; thoroughly check and save each adjustable item (address, mask or port), upload changes – and then apply changes using the "Apply changes and restart" (Attention: Do not restart the device by switching it off or disconnecting it from the power supply – the changes must be applied using the "Apply changes and restart" option, which simultaneously archives the settings;

** This delay is generally applied for each start or restart of the device. Login is not possible during initiation.

Connection and Installation

this is necessary to restart the device after incidental power supply failure; otherwise, there is a risk of uncontrollable changes of settings.)

Notice: The records/settings cannot be changed – even if they were uploaded - until the restart is performed (they are applied after the restart, until then the original last setpoints are applied). However, if they were already uploaded and saved, they cannot be cancelled - only original values can be changed. The reset must be made otherwise the changes will be applied upon the first power supply disconnection (unexpected power failure, etc.)

Notice: Restart of the air-handling control takes a matter of seconds-there is no relation to the webserver initiation; during restarting, the standard starting sequences of the connected air-handling device are applied – i.e. opening of dampers, preheating, fan start up...

We strongly recommend not using the configuration assigning the IP address by the DHCP server, use the Fixed IP address.

Warning

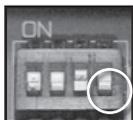
If the IP address of the given device is lost (e.g. after changing and initiating the LAN settings), and the connection is not made (no response on the ping IP address command, etc.), the default (factory) IP address will have to be reset, then follow the procedure as with the new device.

Alternatively, the HMI controller can be used to set the required connecting parameters and restart the device. For the HMI controller use, refer to "HMI Controller Operating Instructions".

Notice: As a last resort, the device can be found within the network via MAC address (mentioned on the type plate) – contact network administrator.

Default (Factory) IP Address Resetting

The default (factory) IP address can be reset by briefly switching up and down the fourth switch (last on the right) in the DIL Switch group (DIL S6) which is situated in the bottom right corner of the controller board above the RJ-45 X13 SERVICE connector.



Warning

The default (factory) IP address can be reset by briefly switching up and down the fourth switch (last on the right) in the DIL Switch group (DIL S6) which is situated in the bottom right corner of the controller board above the RJ-45 X13 SERVICE connector.

E-mail Messaging Settings

The description of the e-mail configuration can be found in "E-Mail Configuration".

Internet Integration

By connecting the WebClima system to the local network via the above-mentioned setting of the IP address and authorization of users, the basic (direct-interactive) monitoring and operating possibilities within the local network or by PC are enabled.

To enable access to the WebClima system via internet, it is necessary to ensure direct access to the device from internet.

Notice: This is necessary especially if supervision (operation, service) outside the company is required.

To connect your WebClima system to the internet, contact your network administrator

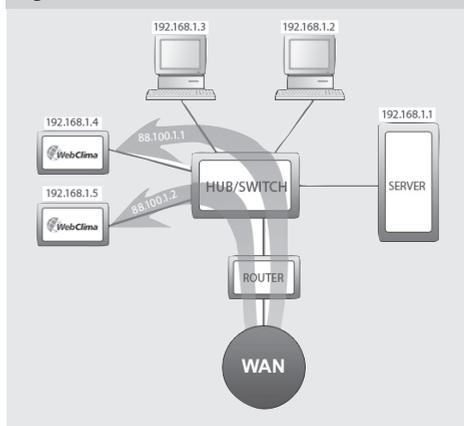
In doing so, we recommend the following:

- Implement the WebClima unit into the secured inner network after the router / network firewall. The direct access to the unit must be ensured by further directing.
- To increase security, we recommend locating the device in the reserved network (DMZ) which is not a part of the company's LAN network, or accessing the device via the company's VPN.

Setting the Network Elements to enable WebClima Access via Internet

Ask your local network administrator to perform these activities!

Figure14 – connection to the WAN network



* The settings are always included in the documentation, the wiring diagram, of the WebClima control unit

Connection and Installation

The network administrator in this case has at their disposal 2 public static IP addresses for the WebClima control unit: 88.100.1.1 and 88.100.1.2

The administrator can set the IP address translation at the router, for example, as follows:

Public IP address	Inner IP address
88.100.1.1	192.168.1.4
88.100.1.2	192.168.1.5

or (to minimize the need for public addresses) leading through only one public IP address and communication port.

Warning to the network administrator

To enable access via internet it is necessary to enable access to the inner IP address via port 80 (http).

Other communication ports must be DISABLED to keep the operation secure!

REMAK does not bear any responsibility for any misuse of the WebClima software (Windows CE) or unauthorized penetration of the inner LAN network due to insufficient inner network security.

Internet Browser Settings to operate the WebClima System

Support of JavaScript and cookies must be enabled to ensure correct functioning of the browser interface on each PC connected to the WebClima system. JavaScript is used to update values in the right (information) panel and for programming time schedules, and cookies are used for login. Further, file opening in new windows must also be enabled.

As the parameters are measured on-line, we also recommend adjusting the temporary files retention (cache settings) in the internet browser (this is essential especially for MS Internet Explorer). The browser must verify the actual page version in every access to the page. Otherwise, saved not current values of parameters can be presented. If you have any doubts whether the read data are correct, refresh the page by clicking on the refresh icon on the browser menu bar, or use shortcut keys CTRL+F5 – forced page loading outside cache.

The WebClima graphic user interface is optimized for Microsoft Internet Explorer 6.0/7.0 and FireFox 2.0.

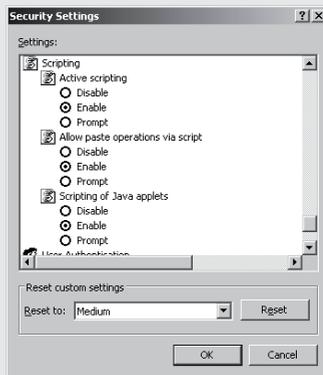
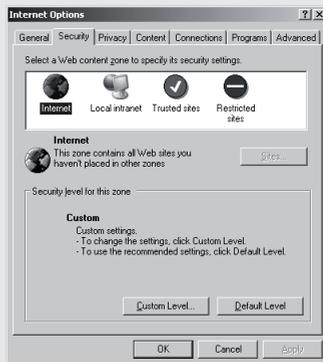
Other web browsers' settings must be checked in accordance with the following instructions.

Internet Explorer 6.0 and above

Internet Explorer JavaScript Support:

Go to the Internet Explorer menu "Tools" / "Internet Options" >> "Security" >> "Custom Level" >> "Scripting" – must be enabled.

Figure15 – JavaScript support settings

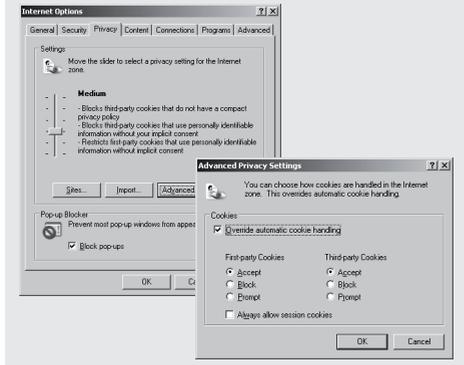


Connection and Installation

Internet Settings (Explorer Cookies):

Go to the Internet Explorer menu "Tools" / "Internet Options" >> "Privacy" >> "Advanced" >> "Accept Cookies" (see fig. # 16)

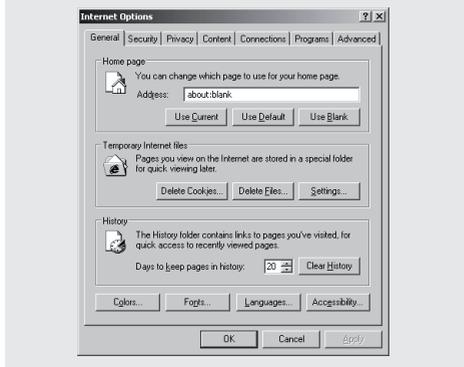
Figure 16 – Cookies settings (IE)



Temporary Files' Settings

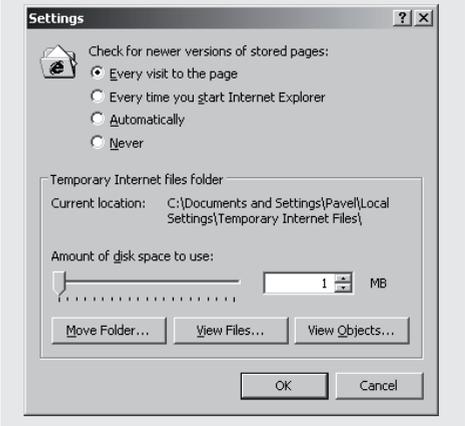
Go to the Internet Explorer menu "Tools" / "Internet Options" >> "General" >> "Temporary Internet files" >> "Settings..."

Figure 17 – Temporary Files' Settings (IE)



In the following window "Setting" >> "Check for newer versions of stored files" >> select "Every visit to the page" >> set "Amount of disk space to use:" to the minimum (1MB). Then save the settings clicking the "OK" button.

Figure 18 – Temporary Files' Settings (IE)



Mozilla Firefox

Mozilla Firefox JavaScript support

Go to menu "Tools" / "Options" >> bookmark "Contents" >> Enable JavaScript should be checked.

Note: The control setting with Mozilla Firefox is the same as with Microsoft Windows and Linux systems.

Figure 19 – JavaScript support settings (Firefox)

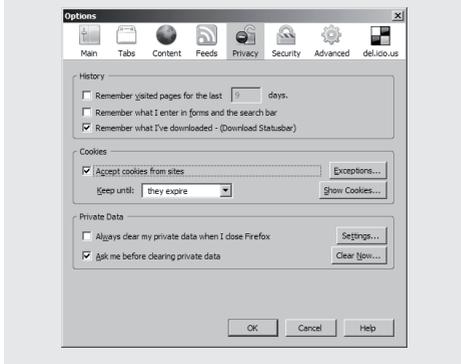


Mozilla Firefox Cookies Settings

Go to menu "Tools" / "Options" >> bookmark "Private" >> menu Cookies >> cookies should not be blocked, if so, enable servers to set cookies.

Control and Protective Functions

Figure 20 – Cookies settings (Firefox)



Other browsers can be set similarly (however, the WebClima manufacturer does not guarantee their proper functionality).

Proxy servers

The proxy servers must be disabled if direct connection PC <-> WebClima is used.

Disabling proxy servers - Internet Explorer: Go to "Tools" / "Internet Options" >> "Connections" >> "Local network options" >> uncheck the box "Proxy server"

Disabling proxy servers - Firefox: Go to menu "Tools" / "Options" >> ... >> "Expanded" >> bookmark "Network" >> Settings >> check the "Direct network connection".

If access is made within LAN, contact your LAN/PC administrator to perform the settings.

Basic WebClima System Operation Settings - Recapitulation

The basic WebClima system commissioning settings to prepare it for operating staff:

- Assigning authorization groups to users and their setting before putting the unit into operation (to ensure unit security against unauthorized access).
- System time setting*
- Service contact entering
- E-mail communication setting

The user administration and setting have already been mentioned above – see Commissioning; for further information, refer to Administration. For HMI controller user authorization setting, refer to HMI Controller Operating Instructions.

Control and Protective Functions

Note: This chapter includes only basic control and protective functions. Detailed planning, resp. compatibility of the entire system is ensured by configuration using the "AeroCad" designing software. For more information contact REMAK, a.s.

Main Control Functions

The WebClima control unit enables automatic control of the following basic control functions to control the temperature of the air:

- Heating
- Cooling
- Mixing
- Recuperation (heat recovery)
- Dehumidification
- Virtual PID controllers with adjustable constants are assigned for each of the above-mentioned functions. Default parameters are set during production. These parameters can be changed via the WebClima user interface in the menu "Settings" >> ["Control parameters"].
- Checking, resp. optimizing these parameters is an essential part of the WebClima commissioning!
- The control ensures economical operation while keeping the hygienic minimum of fresh air delivered. The air cascade temperature regulation is controlled to ensure the desired room temperature.
- The desired room temperature of the air-conditioned room can be assigned by selecting one of three temperature modes. Each mode includes adjustable temperature values to keep the desired room temperature (low limit for heating and high limit for cooling); these values can be changed via the WebClima user interface menu "Settings" >> ["Temperature modes"].

■ First, the control algorithm starts to regulate the processes which do not require energy, i.e. mixing and heat exchange (their interaction can be configured). If control of these processes is not sufficient to keep the required parameters, or these processes are not included in the air-handling unit, then the control processes of heating and cooling are applied. The control algorithm will not allow simultaneous application of heating and cooling; only one control sequence is active. This does not apply for special control applications with controlled dehumidification, where cooling can be activated for dehumidification and after cooling the air down, the heater can be activated for air reheating up to the required temperature.

Temperature Correction and Limitation

It is possible to set limits for maximum and minimum temperature of the supply air, or to set other correction, resp. comfort values (e.g. compensation of setpoint)

Auxiliary Control Functions

The WebClima control unit in most configurations allows you to add an auxiliary function to the basic control function. It is possible to select always only one of the following auxiliary functions:

- ON/OFF, heat recovery regulation*
- Water preheating
- Electric preheating
- Electric reheating
- Heating water supply switching

All auxiliary functions have only two-point control. They cannot be used with the Ore1 driver for external control of operating modes.

* The WebClima system automatically switches between summer and winter system time in accordance with standard European terms

Control and Protective Functions

Description of Main Control and Protective Functions

The WebClima control unit cooperating with the appropriate sensors provides the air-handling device with complex protection, including active antifreeze protection, monitoring of fan operational states and filter fouling. Any deviation from the defined states or parameter ranges is monitored and signalled while the safety measures are simultaneously activated. Depending on the failure's seriousness, the following is applied:

- The failure is signalled and protective measures are automatically applied; after the failure has been handled, the unit returns to the standard mode.
- If a serious failure occurs, the unit will switch to the "STOP" mode, and it can be started only after the failure has been removed and the operator has intervened.

Heating Control

The heating control is carried out depending on the desired temperature, i.e. selected temperature mode and readings of inlet, outdoor and heat exchanger return pipe temperature sensors. The heating control can be corrected by correction values, max. or min. limits, respectively by intervention of the antifreeze protection.

Water Heating

- It is controlled via the LMC 24A-SR actuator of the SUMX mixing set, which is governed by the continuous control signal 0-10 V (working range 2-10 V).

Electric Heating

The electric heating control is following:

- By switching the full output of EO or EOS heater.
- By switching the individual sections of the EOSX electric heater.
- By sectional switching of large EO heaters.
- Regulation of the EOS heaters using the PV current valve (up to 45 KW).

Control of the Mixing Set Pump

Mixing Set pump is controlled in relation to the outdoor air temperature and position of the valve (required heating output).

- During the "STOP" mode of the air-handling unit, the pump is switched on when the outdoor temperature drops below 5 °C, and switched off at outdoor temperature >5 °C; in this case the pump rundown time is not applied.
- During the "RUN" mode of the air-handling unit, the pump is switched by the valve actuator control algorithm. The pump is switched on at valve opening request >5 %.
- At valve opening request < 2% the pump is switched off, and a 2-minute rundown is applied.
- The pump 30 second check spinning is performed every Friday at 12:00.
- Electric failure of the pump is monitored using auxiliary contact even during the "STOP" mode.

Antifreeze Protection of Water Heaters

- The WebClima control unit is equipped with three-stage active antifreeze protection.

Antifreeze protection measures include:

- Switching the unit to the "STOP" mode
 - Switching the fans off
 - Closing the dampers
 - Signalling the freeze danger
 - Controlling the mixing set
 - Switching the pump on
 - During the "RUN" mode of the air-handling unit, the antifreeze protection will be applied if the outdoor temperature drops below 10 °C (factory default setting) and the water temperature in the heater return pipe drops below 15 °C (factory default setting). For 60 seconds from this moment the controller will evaluate the outdoor temperature, and if the outdoor temperature continues to drop, the mixing set's valve will be forced to open according to both the value of the outdoor temperature and the water temperature in the heater return pipe. When the outdoor temperature and the water temperature in the heater return pipe return above the limit values, the antifreeze protection will be stopped.
 - During the "STOP" (standby) mode of the air-handling unit, the antifreeze protection will be applied if the outdoor temperature drops below 10 °C (factory default setting) and the water temperature in the heater return pipe drops below 30 °C (factory default moderate heating setting). For 60 seconds from this moment, the controller will evaluate the outdoor temperature, and if the outdoor temperature continues to drop, the mixing set's valve will be forced to open according to both the value of the outdoor temperature and the water temperature in the heater return pipe. When the outdoor temperature and the water temperature in the heater return pipe return above the limit values, the antifreeze protection will be stopped.
 - The control unit continuously checks the water temperature in the heater return pipe. If the water temperature drops below 8 °C (factory default setting) the following protective measures will be immediately applied independently of the outdoor air temperature:
 - The air-handling unit and fans will be switched off, the dampers will be closed, and the failure alarm will be signalled.
 - The mixing set valve will be forced to open up to 100%, and the circulation pump will be switched on.
 - The above described state will last until the operator checks the unit, removes the failure and confirms the device serviceability by pressing the unblocking button.
 - The control unit continuously checks the water temperature in the heater return pipe. If the water temperature drops below 6 °C (factory default setting) the following protective measures will be immediately applied independently of the outdoor air temperature:
 - The air-handling unit and fans will be switched off, the dampers will be closed, and the failure alarm is on
 - The mixing set valve will be forced to open up to 100%, and the circulation pump will be switched on
- ### Pre-Starting Preheating of the Air-Handling Unit
- The Control unit is equipped with a preheating function to avoid the device being recognized as frozen when starting the air-handling unit during winter or transition seasons.

Control and Protective Functions

- The preheating is related to the outdoor air temperature value. When the outdoor air temperature is above 10 °C, the value for the mixing set valve opening is 0%, so the preheating will not be activated. If the outdoor air temperature drops below 10 °C, the preheating will be activated. The mixing set valve will be forced to open at the % value dependent on the outdoor air temperature (factory default settings: +10°C = 0%, 0°C = 33%, -5°C = 66%, -10°C = 100 %) for a 1-minute period. After this time period is over the valve will start to close, "slide down the ramp", until it reaches the control value preset for the mixing set.
- The preheating will not be activated if the air-handling unit is restarted within 5 minutes of it being stopped.
- Parameters of the antifreeze protection can be accessed via the WebClima user interface, menu "Settings" >> [Antifreeze protection].

Electric Heater Protection

- If overheating (failure) of the electric heater is signalled (the inner heater temperature has exceeded +80°C, and the emergency thermostat contacts have been opened), the control unit will evaluate the signal.
- The electric heater protection in the REMAK unit is doubled – the failure alarm simultaneously enters the controller and auxiliary module.
- The controller will evaluate the failure state and execute the necessary protective measures; first of all it will block the control signal to the electric heater and disconnect the contactor of the heater. The auxiliary protective module will disconnect the EO/S/X breaker (the breaker supporting trigger is released). Simultaneously, the control logic ensures safe cooling of the heater upon the unit shutdown – transition to the "STOP" mode. The controller ensures run-down (adjustable) of fans to cool the heating radiator.

Gas Heater

The gas heater is controlled using a burner output controller and a bypass damper (if the section is equipped with a BP damper). The required heating temperature is controlled depending on the required temperature (selected mode) and readings of inlet temperature, ambient temperature and flue gas temperature sensors.

Gas Burner Output Control

- Single-stage ON/OFF control
- Two-stage control (two output stages)
- Modular (three-point), stepless control of the entire burner output range

The burner lighting is contingent on the fan operation, and the control unit switch must be turned on. At the 5% requirement for heating, the 1st burner output stage is switched on. The minimum preset running time of this stage is 150 s. If the required temperature is not reached, the 2nd stage will be switched on at 70% of the requirement for heating (two-stage output control). The second output stage is not restricted to the minimum running time, and will be switched off at 40% of the requirement for heating. Further re-lighting of the burner is possible after the protection time of 150s has elapsed. Modular control of the burner is

stepless based on the actual requirement (required value) within the Min to Max output range of the gas burner.

Bypass Damper (if equipped)

The bypass damper is controlled by a 0-10V signal (operation range 2-10V) depending on the required flue gas temperature (160°C preset). The regulating damper position controls the air flow coming through the gas chamber and bypass chamber so that a constant flue gas temperature will be kept. Accordingly:

- At $T_{\text{flue gas}} > T_{\text{flue gas required}}$ the bypass damper closes
- At $T_{\text{flue gas}} < T_{\text{flue gas required}}$ the bypass damper opens

Protection and Safety Functions

The control unit ensures fan run-out to cool down the gas chambers (the preset run-out time is 60s).

The gas chamber temperature is monitored by the ESD3J triple thermostat, which ensures the following protection and safety functions:

- If the temperature exceeds 50°C, the fans will be switched on, even if in the STOP mode.
- If the temperature exceeds in the RUN mode the burner will be stopped, the fans switched to the run-out mode and then the unit STOPPED.
- If the temperature exceeds 110°C, the burner will be disconnected from the supply voltage.

If back air draw (chimney effect) occurs during the STOP mode and the air temperature in front of the gas chamber rises above 50°C, the TH 167 thermostat will close and switch on the fans, open the inlet and outlet dampers, and thus the gas chamber will be cooled down.

- TK Malfunction – the unit is immediately switched to the STOP mode without fan run-out (evaluated also during the STOP mode).
- Air Flow Malfunction – the unit is switched to the STOP mode

Cooling Control

The water cooling is controlled identically as the water heating. The cooling is enabled according to the outdoor temperature, which must be higher than the adjusted temperature for cooling. The pump of the mixing set is switched on by the control signal of the cooler's valve.

During the "RUN" mode of the air-handling unit, the pump is switched on at cooler valve opening request > 4 %. At valve opening request < 1% the pump is switched off, and a 5-minute rundown is applied. Direct expansion evaporation is controlled by switching the condensing unit output or by stepless control of the inverter condensing unit. If a single-circuit condensing unit is used, it will be switched on when 30% of the control signal is required and switched off at 20% (10% hysteresis) of the control signal.

If a double-circuit unit or two single-circuit condensing units are used, the two-stage switching will be applied. The first stage is switched on at the 35% level of the control signal request, and switched off at the 15% level of the control signal request (20% hysteresis).

The second stage is switched on at upon reaching the 65% level of the control signal request, and switched at the 55% level of the control signal request (10% hysteresis).

Control and Protective Functions

Minimum running time and minimum shutdown time of condensing unit are adjustable. If a single-circuit or a double-circuit inverter condensing unit is used then it is controlled using the 0-10V control signal and start enable signal. The condensing unit will be switched on when 30% of the control signal is required and switched off at 20% (10% hysteresis) of the control signal. The condensing unit compressor speed is controlled using a 0-10V control signal.

Direct Evaporator Protection

The direct evaporator is protected by the CAP 3M thermostat, which disconnects the control signal if frost on the evaporator is created. If two evaporators are used, then each has its own thermostat.

Heat Recovering Control

The heat recovery is controlled/regulated by the continuous control signal 0-10 V (working range 2-10 V) from the stepless controller – the bypass actuator control, or by changing the speed of the rotary heat exchanger via the frequency converter. 100% heat recovery equals the max. speed of the rotary heat exchanger (50 Hz from FC to motor) or the closed exchanger bypass.

Optionally, the digital output for the auxiliary two-point control (ON/OFF) can (simultaneously) be used and configured (Note: only one auxiliary function can be used). For example, the pump of the glycol circuit or the rotary heat exchanger without a frequency converter can be switched in this way.

Antifreeze Protection of Heat Exchangers

The antifreeze protection of heat exchangers works on the basis of monitoring the exhaust air temperature behind the heat exchanger by the NS 120 sensor. If the temperature at the sensor drops below the setpoint, freezing of the heat exchanger is signalled, and antifreeze measures (bypass or rotary heat exchanger control) are activated.

Control of Mixing Sections

The mixing section actuators are controlled by the continuous control signal 0-10 V (working range 2-10 V). The signal is directly proportional to the air circulation request, i.e. 100% signal level equals 100% requested air circulation (0% fresh air). Maximum level of air circulation (while fans are running) is limited by the preset (hygienic) minimum of fresh air. If the air-handling unit is correctly stopped and put into the "STOP" mode, the dampers in the inlet and outlet duct are closed while the circulation damper is opened.

Control of the Mixing and Heat Exchange

If the room temperature is lower than the outdoor temperature, and simultaneously room cooling is required (running), the heat recovery and air circulation functions will be activated at the maximum level to minimize the cooling energy requirements. The activation of this process starts as soon as a 2°C difference is reached (the indoor temperature is lower than the outdoor). The heat recovery and mixing will be stopped as soon as the temperature difference is 1°C (1 °C hysteresis).

If room heating is required, the heat recovery, mixing and heating sequences are gradually applied (the order of heat recovery and mixing sequences can be changed but the heating sequence must always be the last one).

Dehumidification

Air dehumidification can be ensured by water or direct cooling. Subsequent reheating is ensured by a heater which in the case of dehumidification is situated behind the cooler. The control unit evaluates the signal for the cooler and heater on the basis of inputs from the room and inlet humidity sensors and the user selected room humidity. The desired room humidity can be selected from 20 to 95 %. Dehumidification can be controlled using a 0 - 10V (2 – 10V) stepless control if the air-handling unit is equipped with a water cooler or a condensation unit with an inverter. If the air-handling unit is equipped with a 1 or 2-stage condensation unit, the dehumidification is step controlled. If the cooling is active due to the request for dehumidification, the system (exceptionally) allows reheating by the heater situated behind the cooler. If the request for heating exceeds 90%, the request for dehumidification cooling will be gradually decreased until the desired inlet air temperature is reached; respectively, until the value of the request for cooling is zero (i.e. at 100% request for heating) – The temperature control has priority over the dehumidification control.

Description of Auxiliary Functions

Preheating Auxiliary Function

The preheating is switched ON/OFF in accordance with the preset outdoor temperature.

If the EO electric heater is used for preheating, the contactor of the EO electric heater supply is switched, and additionally, it is controlled according to the preset temperature behind the heater – read by the NS 120 sensor. If the air-handling unit is switched off while the preheating is active, the fan rundown will be applied. The failure will be handled in the same way as with electric heating (EO heater). If the water heater is used for preheating, the pump is switched by the ON/OFF signal (without further regulation). Antifreeze protection of the water preheating is ensured by the temperature sensor (NS130R), which is situated in the return water pipe of the water exchanger. If the water temperature in the return-water pipe drops below the setpoint, the water preheating freezing alarm is activated, including activation of safety protections.

EOS Reheating Auxiliary Function

This auxiliary function ensures two-point ("ON/OFF") control of reheating using the EOS electric heater. It is applied when the output of the main water heater is insufficient (respectively during transition seasons when water heating is disabled, etc.)

Control and Protective Functions

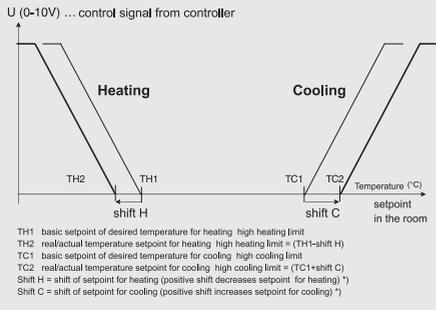
Heating Water Supply Switching

If this function is used, then the output for the heating water supply (boiler) is switched on at the moment the controller signals the request for heating water (the air heating is required) – if starting the air-handling unit before the fans are switched on. This function is applied only if the outdoor temperature is higher than the setpoint (default factory setting is 15°C) otherwise the output is switched permanently. The proper functioning of the system must be ensured by the appropriate setting of related parameters in the starting sequence. When using the auxiliary function of the heating water supply switching, the outdoor temperature sensor must be situated so that it will really read the actual outdoor temperature.

Note: A parametric value for centralized control systems also exists – an equitherm curve, which directly provides the desired temperature of heating water (depending on the curve parameterisation)

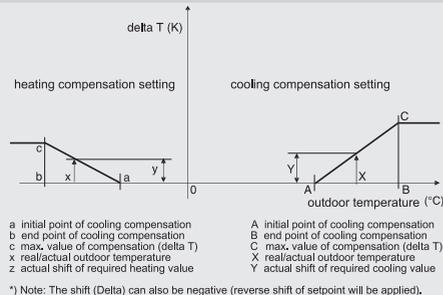
Setpoint Compensation

Figure 21a – Actual temp. setpoint incl. compensation



Definition of the compensation/correction factor (menu [Correction values]). The correction is linear, and can be set (+/- and steepness) independently for desired temperature of heating and cooling.

Figure 21b – Compensation and settings



Note: Picture shows both processes together – but in practice always only one of them can be in progress at any time!

More specifically, the temperature compensation is a correction (shift) of the required value (setpoint) of controlled (room) air temperature related to the temperature read by an outdoor sensor. This compensation (among other correction values) corrects the temperature given by the settings of the temperature mode used. Most often it is used to smooth the difference between outdoor and indoor temperature (to eliminate thermal shocks), and to reduce energy demands of air-handling devices. On the other hand, in the opposite setting it can increase the differences ("aggressiveness") of the control.

Note: On the controller the setpoints are fully described (not just Th1, TC1, etc.); in general, minus influence can also be applied.

Fan Speed Control

The WebClima control unit enables program or manual control of the air output, i.e. speed of fans, via:

- Two-speed motors
- Five-stage TRN voltage controller
- XPFM frequency converter – in five stages

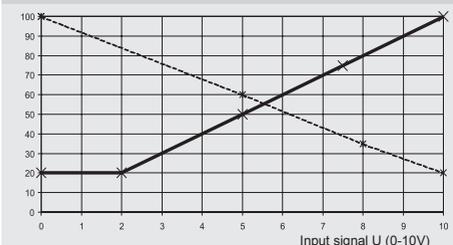
The control is always common for air inlet and outlet.

Speed control is also possible using an external 0-10V control signal. This feature enables the fan speed to be controlled using an external 0-10V control signal, e.g. from the air quality sensor. The control unit functions as a software converter, thus the user can set the input signal-fan output control signal conversion curve (in segments defined by four points) in the control menu. However, the input signal level cannot be set below the minimum level of 20%. The curve's steepness and direction (direct or indirect proportion) can be adjusted for different applications. The input signal level for the 0 - X1 input signal interval equals to the Y1 value.

The curve in the picture corresponds to the factory settings. If needed, it can be readjusted when commissioning the air-handling unit. If a control unit with OXA feature is planned in the project, it is equipped with a separate power supply (AC 24V) to power the 0-10V sensor.

Note: The fan output can no longer be controlled by another control system (the menu and timer program can only be used to start and stop the fans). The signal level cannot be used to start up the air-handling unit.

Figure 22 – OXA conversion curve



- X — Factory settings (direct proportion)
- - - X - - - Example of setting (indirect proportion)

Operating Modes

Basic Information on WebClima Operating Modes

Operating (Work) Modes / Output of Fans

Three basic operating modes are defined for the WebClima units.

- Manual mode – unit operation in permanent (manual) mode according to actual mode settings (menu "Settings" >> ["Manual mode"]).
- Program mode – automatic unit operation according to preset time schedules, refer to "Time Modes" below.
- Stop mode – the air-handling unit is in standby mode (the fans are stopped). Important safety functions are active, especially antifreeze protection of the water heater and its moderate heating.

In operating modes enabling operation of the unit (the fans are working), i.e. Manual and Program modes, two basic groups of parameters are used to control the air-handling unit.

- Temperature mode, refer to "Temperature Modes".
- Output (speed) of fan(s) – if the air-handling unit includes fan output controllers.

The output of fans can be set at levels corresponding to the configuration of the air-handling unit:

- The fans with two-speed motors >> Off (only in program mode) / Stage1 / Stage2
- The fan with five-stage control >> Off (only in program mode) / Stage1 / Stage2 / Stage3 / Stage4 / Stage5

When the fan output controllers are not used, then only "Stop" and "Run" states can be set for manual and program modes (except temperature mode).

Temperature Modes

The WebClima system offers three adjustable user modes of controlled (room) temperature maintenance.

- "Comfort" (usually the common mode for the temperature control process)
- "Economy" (e.g. night mode)
- "Ventilation" (a typical mode for specific needs of ventilation with minimum need for maintenance of room temperature – holidays, etc.)

The modes are defined according to the level of gradation of the required temperatures, resp. temperature difference (heating and cooling systems) – thus according to comfort. Operating energy demand is also related to the mode selected.

Each temperature mode is defined by setting the heating

temperature (lower limit of the room temperature – minimum temperature), and by the cooling temperature (high limit – max. temperature). The controlled temperature zone (threshold) lies between these temperatures. The proper dimensioning of heating and cooling systems is essential to maintain desired temperatures.

The temperature modes are defined so that the less comfort mode has the required temperature:

- for heating (lower limit) always lower than the more comfort mode (resp. the same)
- for cooling (high limit) always higher than the more comfort mode (resp. the same)

This means that the threshold for the room temperature with less comfort modes of systems with heating and cooling is always narrower (or the same) than with more comfort modes.

The threshold – the difference between the heating (lower limit) and cooling temperature (high limit) – can be set to 1 Kelvin (1°C).

The temperature modes are preset in the menu "Settings" >> [Temperature modes] (administrator authorization).

Note: The system automatically monitors the above-mentioned interrelation of temperatures and according to the interference with the setting immediately adjusts information on the possible maximum and minimum of each value.

Warning

The setting, respectively control process influences correction values.

Time Schedules

The WebClima system offers three preset time schedules of operational control:

- Daily time schedule – the schedule of the lowest priority, max. 8 change points per day.
- Weekly time schedule – the schedule of higher priority - max. 7 change points per week.
- Yearly time schedule – the schedule of the highest priority - max. 6 change points per year.

These schedules interact together applying a system of priorities. At any instant of time the schedule of highest priority active at the given time controls the operation. Information on the currently active time schedule is in the menu "Monitor" >> ["Current modes"]. The daily schedule is valid for each day of the week. Requests for specific days (e.g. weekends) must be planned from the weekly schedule (including blocking program blocking – device shutdown).

To achieve maximum operating efficiency we recommend setting the independent yearly schedule for each air-handling unit operating season – summer and winter (shutting down for holidays, etc.)

For each time period within the given time schedule there can be determined:

- Whether the respective time schedule is active.
- Initial and end time, resp. day
- Fan speed
- Temperature mode

Figure 22 – Temperature modes

Value	Value	Min	Max	Unit
Mode > Comfort < [?]				
Desired temperature of HEATING > Comfort < [?]	22	21.6	22	°C
Desired temperature of COOLING > Comfort < [?]	23	23	26	°C
Mode > Economy < [?]				
Desired temperature of HEATING > Economy < [?]	21.6	20.6	22	°C
Desired temperature of COOLING > Economy < [?]	26	23	28	°C
Mode > Ventilation < [?]				
Desired temperature of HEATING > Ventilation < [?]	20.6	10	21.6	°C
Desired temperature of COOLING > Ventilation < [?]	28	26	35	°C

Control and Signalling of Operation

Note: Even though the daily schedule offers relatively many change points with change options of the temperature mode, we do not recommend planning too many changes, like short operational breaks, etc., of the temperature mode via this program because in relation to the features of the controlled air-handling unit and heating system, the stabilized state of the system can be normally reached rather in hours than minutes. During very short time periods between temperature changes you can expect neither accord of reality with the desired state nor greater economy of operation. For short program cycles it is better to optimize the air output, which enables you to optimize the operating energy demand, and does not cause uncomfortable air-handling system vibrations, rep. vibrations of inlet air. We recommend changing the temperature mode in an interval lasting at least several hours (e.g. day/night or work shifts of different work modes) or days (business day/weekend) if the output control is insufficient, or if it is not possible to use interrupted device operation.

The time schedule should set by the system administrator in the menu "Settings" >> ["Time schedules"]:

Figure 23 – Time schedule settings

Value	Value	Set/Reset			
Reset of daily time schedules [?]		Set/Reset			
Reset of weekly time schedules [?]		Set/Reset			
Reset of yearly time schedules [?]		Set/Reset			
- Daily time schedule					
#	Active	Time	Speed	Temperature mode	
1	<input type="checkbox"/>	04:00	Level 2	Economy	
2	<input checked="" type="checkbox"/>	05:30	Level 5	Comfort	
3	<input type="checkbox"/>	11:00	Level 5	Comfort	
4	<input type="checkbox"/>	12:00	Level 5	Comfort	
5	<input checked="" type="checkbox"/>	15:30	Level 3	Comfort	
6	<input checked="" type="checkbox"/>	17:30	Off	Comfort	
7	<input type="checkbox"/>	21:30	Level 4	Economy	
8	<input type="checkbox"/>	23:00	Off	Ventilation	
- Weekly time schedule					
#	Active	Start	End	Speed	Temperature mode
1	<input type="checkbox"/>	Sat → 06:00	Sun → 18:00	Level 5	Ventilation
2	<input type="checkbox"/>	Sat → 06:00	Sun → 18:00	Level 5	Ventilation
3	<input type="checkbox"/>	Sat → 06:00	Sun → 18:00	Level 5	Ventilation
4	<input type="checkbox"/>	Sat → 06:00	Sun → 18:00	Level 5	Ventilation
5	<input type="checkbox"/>	Sat → 06:00	Sun → 18:00	Level 5	Ventilation
6	<input type="checkbox"/>	Sat → 06:00	Sun → 18:00	Level 5	Ventilation
7	<input type="checkbox"/>	Sat → 06:00	Sun → 18:00	Level 5	Ventilation
- Yearly time schedule					
#	Active	Start	End	Speed	Temperature mode
1	<input type="checkbox"/>	31.01. 06:00	31.12. 18:00	Level 2	Ventilation
2	<input type="checkbox"/>	31.01. 06:00	31.12. 18:00	Level 5	Ventilation
3	<input type="checkbox"/>	31.01. 06:00	31.12. 18:00	Level 5	Ventilation
4	<input type="checkbox"/>	31.01. 06:00	31.12. 18:00	Level 5	Ventilation
5	<input type="checkbox"/>	31.01. 06:00	31.12. 18:00	Level 5	Ventilation
6	<input type="checkbox"/>	31.01. 06:00	31.12. 18:00	Level 5	Ventilation

Warning

It is necessary to set accurate system time to ensure correct functioning of time schedules!

The time schedule can be saved only if the time sequence of individual lines is followed. To quickly reset the time schedules back to factory default settings, you can use the parameters (rows) in the upper part of the table.

Control – Control places

Basic Control



In addition to the PC control via internet browser, the WebClima unit can (in some cases) be designed to be alternatively controlled via manual controller Ore1, which enables switching of basic operating modes (Manual, Program and Stop):

If the WebClima unit is configured to be controlled by both internet browser and alternatively via manual remote controller Ore1, it is possible to switch the place of control in the menu "Settings" >> "Control place".

After switching to PC control

- The manual controller is disabled (its control circuits are disconnected), and the control button is inactive.
- The basic control buttons in the internet browser are activated – blue colour. The button of the selected mode is dark blue (see fir. # 24).

Figure 24 – Basic Control Buttons

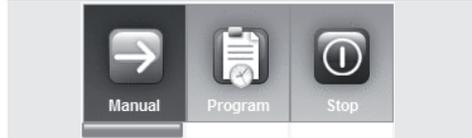


(Even in this state, the Ore1 controller signals the device state – Run/Stop/or Failure, if correctly connected.),

After switching to Ore1 controller

- The basic control buttons in the internet browser are deactivated – grey colour.
- Preset operating mode is not highlighted in colour, but only by the position of the fan state signalling stripe – (see fig. # 25):

Figure 25 – Manual mode of control



Further Possibilities of Control

The air-handling unit can also be controlled by the local HMI controller, or the QAA27 controller in the air conditioned room can be used.

* It is also displayed as a text message: "No failures" in the bottom part of the right window of the WebClima desktop.

Control and Signalling of Operation



Operation via QAA27 controller – enables correction of the desired room temperature (basic setpoint of desired temperature for heating or cooling) ± 3 K ($^{\circ}$ C). The correction made via the QAA27 controller can be displayed on the web interface – in the menu "Monitor" >> ["Temperatures"].



Operation via HMI controller (Human Machine Interface) – enables (protected by a password) complex control and monitoring of device operating parameters similarly to the web interface (but with significantly reduced comfort – only text interface without help statistics, etc.)

Refer to "HMI Controller Operating Instructions".

The HMI controller can also be used as a service control if control via LAN is not available.

Operating Signalling

WebClima web interface

The operating mode is signalled in the window below the basic control buttons (see fir. # 24) and by related colour stripes (virtual LEDs) showing the state of the fan(s) and failures (failure output).

The signal stripes can change to these colours to signal:

- Green ... the fan(s) are running.
- Red ... the fan(s) are stopped.
- Orange ... failure (alternately with red or green colour).

Warning

Sometimes, some failures during operation or after turning the device (fans) off cease themselves, respectively they are not active (resp. not evaluated), but the failure state of the component as well as the failure state as general will be signalled by the yellow stripe flashing until the failure is manually reset. This state is purposely secured by the failure state memory because it is necessary to check and remove possible reasons for the failure, and deliberately confirm the faultlessness of the device by quitting the failure alarm.

The failure logs can be displayed in the menu "Statistics" >> ["History of events-errors"].

Optionally, if error e-mail messaging is enabled (refer to "E-Mail Configuration") you can find them in the reserved e-mail box

Note: Related parameters of all signalled information can be found in WebClima menus, respectively in the information panel. Temperature mode and output below the graphical control buttons of operating modes (refer to the description of the WebClima desktop) are not signalled by specific visual information, but the information can be found in the menu, respectively the infopanel – a structural parameter file below the buttons of operating modes.

ORe1 Controller

The signalling is ensured by the LEDs in pictograms:

- Operating mode (Stop-Manual-Program) – if it is activated via the ORe1 controller.

- Operation of fans

- Failures

Refer to Ore1 "Operating Instructions" (included in the delivery).

HMI Controller

The signalling is ensured by the LED buttons:

- **Operation of fans** (green LED flashes, F3 button).

- **Failure** (the red LED is on, F3 button).

Further information accessed via menus, refer to "HMI Controller Operating Instructions".

QAA27 Controller

It does not provide visual signalling of operating modes; it just shows the temperature correction on its knob scale.

Failures

The WebClima control unit monitors, evaluates and informs on various types of system failures.

The failures are signalled, see the article above; orange in the web interface, red on the HMI controller and text at the bottom of the right panel (if the failure signalling is not switched off in the menu "Connection" >> ["WebClima interface"]). Failures are also listed in the menu: Monitor >> ["Current failures"].

The last 15 failure events are saved in the device memory (failure start and end); they can be displayed in the menu "Statistics" >> ["History of events-errors"] (refer to "History of Events-Errors"; ceased failures, refer to Warning above).

Error messages include object identification, i.e. the components identified as faulty, which must be checked for failure reasons before quitting the failure state.

The failure reset, refer to "Failure Reset".

For further specific information, refer to "Administration/ Checks, Statistics, and E-Mail Configuration".

Failure (Digital) Outputs

VAI important components of the air-handling unit (fan motors, electric heaters, etc.) are equipped with failure outputs (contacts) which after being connected to the correspondent inputs (contacts) are monitored and evaluated by the WebClima control unit, respectively by the controller. If a failure occurs (fault state of the contact) the alarm is automatically activated in accordance with the internal algorithm – while simultaneously indicating the faulty object and if necessary (serious failure) stopping the device. The failure states can also be checked in the menu "Checks" >> ["Error inputs"]. Individual parameters in this submenu display the immediate state of digital failure inputs to the controller in any mode. For more information, refer to "Checks, Failures, Statistics, Failure states".

Note: In the stop mode (at the beginning of start up) the sensors of the air flow and filter fouling signal the actual state of contacts, which in this working mode equals a failure state (contacts are opened). Under such circumstances, the system does not evaluate this state as a failure (the evaluation is carried out after expiration of the delay time which has been set in the menu).

Control and Signalling of Operation

Similarly, in the stop mode – no air flow – the contacts of the filter fouling sensor are switched to the idle state (closed) which does not correspond with the failure state, even though a failure occurred and was signalled during previous operation (the failure will be signalled again after device start up – if the failure has not been removed).

Failures of Temperature Sensors

The information on failures of temperature sensors, respectively their state evaluation outside the working range of measured value, is specific error messages. The controller automatically signals not connected, disconnected or short cut temperature sensors, or the emergency value, and in case of main control (e.g. inlet air) or protective (antifreeze protection) sensors, shuts down the system. Failures of outdoor and indoor temperature sensors disable functions related to the input value from the respective sensor. The WebClima system requires all sensors in accordance with the device specification.

VO Water Heater Antifreeze Protection and Heat Exchanger Frost Back Failures

Antifreeze protection system of the VO water heater signals a failure on the basis of air or water temperature drop below the preset limits. For antifreeze protection details, refer to "Control and Protective Functions" above

Operating Hours

The preset limit of hours of operation for device maintenance is checked by the system, and if exceeded it is signalled as an error (without influencing the device operation). For further information, refer to "Inspection and Maintenance Schedule"

Active Communication

In addition to the digital (contact) output for failure remote signalling, the WebClima system offers active communication with a user, the E-mail error messaging system (optionally SMS error messaging). For details and settings, refer to "E-Mail Configuration".

WebClima PC Control, Desktop

Login

After entering the URL (IP address) in the internet browser, the login window is displayed on the screen. Information on the device (name, number and administrator's settings - see settings in chapter "Administration") is displayed on this screen.

Figure 26 – Login



Information on the device (name, number and administrator's settings - see settings in chapter "Administration") is displayed on this screen. The current number of fully allowed logged in users is also displayed in this screen. This number is represented by a row of green and red dots (see settings in chapter "Administration – Session Control" for details). The green dot represents a vacant session while the red dot an occupied one. If no green dot is displayed, no vacant session is available (until someone logs out), and the system will not allow the login.

- Enter your valid username in the box available (refer to "Commissioning").
- Enter your valid password in the box available (refer to "Commissioning").
- Select your language in the selection box to communicate with the system. Upon repeated login, the system will always offer the last selected language. Czech, Russian and English are standard language versions delivered with the system. Importers in individual countries can arrange localization into the respective languages

Note: The login widow will always be in English.

Note: Upon first user login, after entering the correct login data, a page containing the Software Licence Agreement will be displayed; it is necessary to accept this agreement before the system allows you to go to the control desktop

The language selection can be automated by presetting one of the available languages in the menu "Connection" >> ["WebClima interface"].

Note: If the wrong username or password is entered, an error message is displayed (see fig # 27 below):

Figure 27 – Wrong data entry error message



Operating Control and Signalling

Access Rights and Authorization Levels

The WebClima system offers the possibility of structured access to browse and control parameters according to so-called user roles, see "Users" below.

Note:

- The WebClima desktop, described in the following chapter, can be conveniently displayed full screen by pressing the F11 key.
- While working in the WebClima interface, do not use manual refreshing of the page (either clicking the icon or using shortcut key F5) otherwise due to the application's concept (the entire interface is one page) you will be returned to the login window, and have to login again.

Desktop

The WebClima web desktop arrangement:

Figure 28 – Desktop arrangement



Zone 1 – Application (page) heading displays:

- Session status – same as in the login window (occupied and vacant sessions).
- Username
- Logout option

Zone 2 – Basic operating mode control buttons and quick visual identification of operating modes.

Zone 3 – Structured information panel (adjustable range ... see submenu ["WebClima interface"])

■ The right panel of the WebClima navigation includes a summary of important air-handling state values. The displayed data can be modified according to the user authorization - see submenu ["WebClima interface"].

Zone 4 – Buttons – main menus (sections and bookmarks)

- "Monitor" – Groups of parameters to monitor operation, see page descriptions and context help for parameters.
- "Settings" – Groups of adjustable parameters, see page descriptions and context help for parameters.
- "Statistics" – Summary of selected parameters, respectively device use.

■ "Checks" – Device inspection procedures, including planning and check log.

■ "Connection" – User and device connection definition.

■ "Help" – It will display basic information on the operating states of the device.

Zone 5 – Submenus (bookmarks) –links to parameter groups.

Note: Individual submenus are displayed in relation to the device configuration and user role (authorization), so their appearance on the screen will not always be the same (refer to the item above and "WebClima Interface Settings")

Zone 6 – Page annotation (submenu) – Description, purpose or recommendations for use of parameters.

Zone 7 – Columnar representation/editing of individual parameters.

Note: Possibility to change the parameter (the diskette icon and editing box are displayed) in the menu "Settings" is related to the user role (authorization) – applies for all parameters in the respective submenu. Some parameters cannot be changed at all. This applies especially to the items in the submenu "Device configuration" (these items are given by the software version in accordance with the device project).

■ Symbol [?] – The bracketed question mark by some parameters displays a short context help upon placing the mouse pointer on it (the context help disappears after a while).

Figure 29 – A sample of roll-over context help

Value	Value	Web
Control place [?]		Web
Default device operating mode [?]		Manual
Current device [?]	It determines from where the basic control of the device will be executed (starting up, modes switching).	Manual
Fan state		On

As different browsers may display the context help in different ways, it can also be displayed in a separate window by clicking on the question mark. To return to the control interface, close the context help window:

Figure 30 – A sample of help text when clicked



For detailed information on menus, refer to "Menu List and Description/Factory Settings", for administration, see "Administration".

Administration - System Administrator

To ensure correct operation of the system, it is necessary to enter user access rights (roles) from the "Administrator" level (when commissioning – from the "Service" level), and preset basic parameters, which afterwards cannot be changed by common users.

Operating Control and Signalling

The pages (submenus) allowing these settings are reserved for the "Administrator", respectively "Service" access levels. Users of lower access levels can only display some of them.

This applies especially to the menu "Connection", and partly also to the "Checks", "Statistics" and "Settings" menus.

Note: Some settings are supposed to be made during commissioning by the supplier or service provider. These settings are included in the respective chapters – "Integration into the LAN Network", "Installation".

Menu "Connection"

It serves to administer the LAN connection and related features, and users (refer to "Installation and Connection to PC and LAN/WAN").

LAN Connection

This page enables settings and changes to the WebClima configuration for the LAN/WAN network – the same principles are applied as during commissioning.

E-Mail Configuration

It enables configuration of error e-mail messaging, refer to "Failures" or "Operating Signalling". The WebClima unit after being integrated into the LAN/WAN network (the external SMTP server is required) can be configured to send an error e-mail message to a preset e-mail address to report a failure (occurrence or removal/ceasing). The error message will be sent as soon as the failure is detected.

It is possible to set the system to send a message only if the failure occurs, or to also send a message if the failure ceases. These settings must be consulted with your network administrator.

Figure 31 – Email configuration

E-mail configuration	
This form enables you to set the configuration for sending e-mail about failure events of the device. If your mail provider allows sending only with "POP3 before SMTP" verification, please fill in the name of POP3 server address. If your mail provider allows sending messages without verification, then you only need to know the name of SMTP server	
SMTP Server	192.168.1.100
Unit e-mail address	WBC_DEMO_204@remak.
SMTP verification	<input type="checkbox"/>
"POP before SMTP" verification	<input type="checkbox"/>
POP3 Server	
Login	
Password	
E-mail address	elektrokonstrukce@remak
Message subject	WebClima info
Message text (%s symbols ensure the entry of message from controller)	Info: %s
Enable sending	<input checked="" type="checkbox"/>
Send message when the alarm is activated (To active state)	<input checked="" type="checkbox"/>
Send message when the alarm is activated (To passive state)	<input checked="" type="checkbox"/>

Description of fields:

■ **SMTP Server** – It is recommended to enter the IP address instead of the name – consult the network administrator.

■ **Unit E-mail address** – It identifies the control unit in your e-mail box (enables the use of filters) – it must have the correct format, but it need not to be opened in the mail sever if the SMTP or POP verification is not required. Do not send any emails or reply to this address.

■ **SMTP verification or POP3** – Set in accordance with the needs of services. However, normally it is not needed.

■ **Message subject** – Any text, usually used for e-mail communication. It will be used for all messages from this device (it can be used for filters).

■ **Message text** – The text that will be entered in the e-mail body. Use a short message and the "%s" parameter (see example, fig. # 31). This parameter is needed to enter text from the controller describing failure details. Please always use the English alphabet; the system does not support local (non-English) characters.

■ **Alarm** - [+ or -] (Alarm class [number]) in [function block name] block on unit [device name] number [device number] ... items in brackets [] represent parameters determined by the settings and type of failure. The plus (+) and minus (-) signs in the first parameter represent either failure occurrence or failure ceasing. The parameters "device name" and "device number" must comply with the administrator's settings in the menu "Setting" >> "Device identification".

■ **Sample of Complete Message** (for settings, see fig. # 31, Language ID 0; Failure: filter fouling):

Info message from Saphir: Alarm + (Alarm class 4) in Exh-FiltrDirtyEr block on unit WebClima demo 0 number IP 203

■ **Enable sending** – Check to enable message sending (activated after saving the configuration).

■ **Send message when the alarm is activated** - Check to enable message sending upon failure occurrence.

■ **Send message when the alarm is deactivated** - Check to enable message sending upon the failure ceasing.

■ **Language ID** – Always use "0" (zero) - English.

■ **Save changes** – Use to save the configuration.

■ **Test the e-mail** – sends a test message to the preset e-mail address:

Figure 32 – Test message

Autor:	WBC_DEMO_0@remak.cz	24.05.2007 14:11
Komu:	matyas@remak.cz	
Kopie:		
Na vědomí:		
Předmět:	WebClima info	

This is a generic test Mail from RCC

```

/0
( _O )
( _@ )
( _@ )
( _o )

```

Operating Control and Signalling

Note.:

- The WebClima system will send e-mail messages about both failure occurrence and removal immediately after the respective event has occurred (including device restart – any change in the SMTP server).
- Switching-off and restarting the control unit by disconnecting it from the power supply will result in repeated evaluation of the failure states. If there are still any failures which were not removed, the failure e-mail messages will be sent again
- Otherwise, the e-mail is sent only upon state change, respectively upon turning the device on.
- In addition to failure messages, service messages are sent upon reaching preset maintenance settings, i.e. operating hours or date, refer to "Checks".
- The e-mail messages can be displayed in the menu "Statistics" >> ["E-mail history"] (only messages which have been sent since the last device reset are saved).

Figure 33 – The test message in Statistics



Warning

The WebClima control unit activates system services availability (communication servers, e.g. SMTP server) only upon turning on the power supply. However, their availability is not verified during operation. Therefore, if the SMTP server drops out and restarts again, the WebClima control unit must also be restarted.

If the main power supply fails, the WebClima system will be activated all at once, and the SMTP server may not be connected. Therefore, the e-mail messaging services may not be available. The WebClima system must be restarted (disconnecting its power supply) after the network server services have been activated – or the LAN servers must be equipped with UPS backup power supply units.

After restarting the system, verify the e-mail messaging functionality by sending a test e-mail message – see above.

SMS message to your cell phone via e-mail

Using suitable e-mail filters (rules/agents) in your e-mail box along with services from providers of mobile IT services, e-mail messages can be sent (notified) to a selected cell phone number as an SMS message.

Thus non-stop information on possible air-handling device failure can be available.

Users

User Roles (Authorizations) and General Specification

Warning

PThe device parameters are structured and can be accessed by users in accordance with their role (authorization). The roles (authorizations) must be assigned by the system

administrator according to the user's qualification and responsibility for device operation.

- **Guest** – enables only viewing of common parameter states

- **User** – enables viewing and control of common parameters, and turning the device on / off.

- **Administrator** – allows the system administrator to view and control common and some system parameters, and change operating parameters and modes.

- **Service** – This role (authorization) is reserved only for the device supplier, respectively for an authorized service provider. In addition to administrator's rights, it allows modifications of expert configuration parameters related to the controlled air-handling unit and its equipment, control constants and parameters of the VO water heater protection.

Specification of access authorizations (user roles) for individual menu structures (availability, display of sub-menus and parameters, changing and saving settings) is included in the chapter "HMI Controller Operating Instructions", section "List and Description of Menus and Default Factory Settings".

WebClima System Access – Default (Factory) Settings

Username (login)	Password	Role
User1	passw1	guest
User2	passw2	user
User3	passw3	administrator
User4	passw4	service

Warning

- To keep the device secure, we strongly recommend changing the factory user settings when commissioning the device.

- It is advisable to note down the passwords for the "Service" and "Administrator" roles (authorization) and keep them updated and in a secure (confidential) place to be able to keep administrator's access to the system (user administration, expert settings).

- If you forget or lose your "Service" level password, you will have to contact the manufacturer's representative! The "User" and "Administration" passwords can be renewed from the "Service" level, usually by the manufacturer or authorized service representatives.

- The changed user setting cannot be automatically returned (e.g. by reset) to the factory default settings.

User Access Settings

The WebClima system allows setting up to 16 users with assigned roles (authorizations). See above.

The number of users of an individual role is not limited.

Warning

The user of the "SERVICE" role can create users in all roles; the user of the "ADMINISTRATOR" role can create users of "GUEST" and "USER" roles; the user of the "USER" role cannot create other users; the user of the "GUEST" role cannot create other users.

The setting can be made in the menu "Connection" >> ["User"], refer to "Commissioning".

Always check the item "Active" to enable a new user!

WebClima Interface, Settings

The user can be deleted from the edit form of the user. It is not necessary to change the password if you changing the username – the previous password will be retained.

Note: It is important to always assign a particular user (name, not "groups") to keep the access control transparent.

WebClima Interface

This page enables the display of settings of items in the information panel on the right side of the desktop (limitation of represented values) and the selection of the default language so that it will not be necessary to select it repeatedly at each login. All changes made must be saved; they will be applied upon the following updating of values in the right information panel (i.e. within 1 minute).

Figure 34 – WebClima interface desktop settings



Service Contacts

The page displays contact information about the Administrator, Service provider and WebClima supplier. It is a specific form of diary – it is not related to the access authorization.

It is advisable to enter contacts especially to the administrator as soon as during commissioning.

Session Control

Length and number of simultaneous sessions – number of simultaneously logged in users, and active session expiration time when the system is left without being logged out. Each login creates a new user session. The number of sessions (maximum number of simultaneously logged in users) is given by the setting on this page.

If the user leaves the system without being logged out, the session will be terminated after the preset session expiration time has elapsed; otherwise, the login of other users could be blocked.

Note: All sessions are also automatically cancelled upon

restarting (also by the power being disconnected) the system – new login is possible after initiation of the webserver, in approx. 3 minutes.

Note: All sessions are also automatically cancelled upon restarting (also by the power being disconnected) the system – new login is possible after initiation of the webserver, in approx. 3 minutes.

Menu "Settings"

Date and Time (System Time)

This option sets the actual WebClima system date and time – this is necessary for correct operation.

For quick setting, use the icons provided; upon clicking them, the actual values from your PC will be entered to the correspondent fields. New settings must be saved to be applied. The WebClima system switches automatically between summer and winter system time in accordance with standard European terms.

Note: The parameter "System time validity" does not mean that the time values are correct (the device is not able to communicate with reality); it just indicates that the time was adjusted by the operator.

Nastavení identifikace zařízení

To identify the device, it is necessary to fill in the identification parameters (Device name, location and number) – best as soon as upon commissioning. These data identify the device directly on the web interface desktop as well as in the login window and e-mail error messages. Use only the English alphabet to identify the device; the system does not support specific local characters in these items. These fields are not preset by the manufacturer.

Place of Control

In this submenu, which is only displayed if the device is configured for Ore1 controller use, it is possible to select the active control place – Ore1 controller or web interface. For a description, refer to "Control – Control Places".

Default Application Parameterization

To ensure comfort, economical and easy-to-operate device operation, it is necessary to carry out the main settings which define the parameters and air supply, respectively the process and stability of the temperature control in the ventilated room. It is necessary to set parameters in all corresponding submenus:

- Temperature modes
- Time schedules
- Manual mode
- Control parameters
- Correction values
- Antifreeze protection
- Control constants

Checks, Failures and Statistics

For a description of parameters, refer to the section "List and Description of Menus and Default Factory Settings" and the WebClima interface on-line Help. The submenu "*Device configuration*" should be configured during the device commissioning, refer to "*Parameter Settings*".

Menu "Checks"

It includes the failure check and inspection administration submenus.

Failure (Digital) Inputs – States of External Components

If a failure of any external component connected to the failure inputs occurs (fault state of the contact), the alarm is automatically activated by the WebClima control unit in accordance with its internal algorithm – while simultaneously indicating the faulty object and if necessary (serious failure) stopping the device.

In addition, the states of the failure inputs can be monitored in the menu "Checks" >> ["Failure inputs"]. Individual parameters in this submenu display the actual physical state of the digital failure inputs of the controller.

Note: In the stop mode (or during start up) the sensors of the air flow and filter fouling signal the actual state, which in this working mode equals a failure state. Under such circumstances, the system does not evaluate this state as a failure (the evaluation is performed after the device start-up).

The information on failures of temperature sensors, respectively their state evaluation outside the standard working range of the measured value, is specific error messages. The WebClima automatically signals not connected, disconnected or short cut temperature sensor, or the exceptional measured value.

These components (temperature sensors) are not of the contact type, and they (their states) are not displayed in the "Failure inputs" menu.

Reset of Failures

In this submenu there is only one parameter which can be used to reset the list of active failures and failure inputs. Resetting of the failure may only be performed after it has been checked, its reason found and removed.

See also "*Signalling – Failure*".

Inspection and Maintenance Schedule

The WebClima scheduling system supports the planning of regular service inspections of controlled technology.

The maintenance schedule is based on hours of operation and/or the date.

Maintenance Planning According to Hours of Operation

The limit of hours of operation for main device component (fans, pumps) maintenance can be preset by this parameter. This limit is then checked by the system and if exceeded, an error message including hours of operation of the given component is reported (for further information, refer to "Hours of Operation"

After performing the maintenance, it is necessary to set

a new limit of operating hours for the next inspection. Simultaneously, the system enables planning according to the date. The limit for the first maintenance of the air-handling unit is set in the factory at 4000 hours of operation. This is also the recommended "planning step" for subsequent maintenance intervals. It is assumed that repeated maintenance would be performed every 4000 hours of operation.

Maintenance Planning According to the Date (Season)

Similarly as with the hours of operation limit, this parameter enables you to set the date of the nearest service inspection as a maintenance limit, if reached (exceeded), an error message is reported. After performing the maintenance, it is necessary to set a new valid date for inspection.

The inspection should be scheduled for the beginning of the summer and winter season – to check and prepare the device for specific conditions of the respective season (heating/cooling) – in relation to the associated technologies (heating and cooling circuits).

Operation Check Records, Operations Log

We recommend making an entry of performed (major) inspections and maintenance procedures in the "Operations Log" menu, adding a short and apposite description. The system will record the date and author of the record. These records (on condition that the dates are properly set) are not only evidence of maintenance for the service or manufacturer, but also serve as the administrator's (owner's) database of performed maintenance in relation to service and maintenance costs.

Statistics

History of Events - Errors

This page displays the history of failures and events.

Warning

During device commissioning or if the device has been disconnected from the power supply (for more than two days), the incorrect time/date may be set. Failures may be signalled and recorded with an invalid time/date. If this is the case, it is necessary to perform a reset of failures (they will be kept in statistics until the reset by disconnecting the device from the power supply).

Operation Monitoring Records

This option enables access to continuously accumulated important operating data of the air-handling device. These value records are created each two minutes and persistently saved in a file on the RCC communication card. When the maximum file capacity is exceeded, the oldest records are replaced with new ones.

The figures of 1024 as a minimum and 2048 as a maximum can be displayed for an individual value – depending on the time elapsed since the last deletion of old records, which is always executed in batches of 1024 records.

Checks, Failures and Statistics

Table 1 – Discrimination of monitoring records

Room temperature (exhaust)	0.2 °C
Inlet air temperature	0.2 °C
Temperature behind the electric pre-heater	0.2 °C
Temperature at the heat exchanger (antifreeze protection)	0.2 °C
Outdoor air temperature	0.5 °C
Temperature of return water from the exchanger	1 °C
Return water temperature – water pre-heater	1 °C
Temperature in the gas exhaust flue	1 °C
Air humidity in the room/exhaust	1 %
Inlet air humidity	1 %

Note: Discrimination is the minimum change in the value caused by the parameter change record. Discrimination of 0.2 °C = e.g. the following recorded value for a measured temperature of 12 °C will be 11.8 °C or 12.2 °C.

On-line Data Monitoring

The option "On-line data monitoring" offers a selection of parameters available for this type of monitoring – e.g. checking of the air-handling device behaviour in extreme situations (regulation, troubleshooting, etc.) Ticked parameters are read from the controller at a preset interval (min 3 sec.), and recorded in a table.

Figure 35 – On-line data monitoring



Figure 36 – Records in a table



Note: In regards to the increased system load, it is recommended to use this feature only if the user is active; otherwise, the data may not be downloaded at all. Please follow this procedure: Tick the desired parameters you want to be monitored. Select the time interval of data reading in the box situated in the lower part of the form, and start the data monitoring by clicking on the "Record" button. The results will be displayed in a new window. Click the "End" button to finish the on-line data monitoring.

E-mail History

The page displays a list of e-mails sent by the system in accordance with the system settings. For details and settings, refer to "Administration-System Administration" ("E-mail Configuration").

Note: Slight departures (or interval omission) from the entered period are possible.

Warning

The history will be deleted if the unit is disconnected from the power supply!

Accesses Statistics

The page displays a list of users logged in/out of the WebClima system.

Note: The system saves only the last 1024 records.

Figure 37 – E-mail history

[Historie událostí - poruchy] [Kontrolní záznam provozu] [On-line sledování parametrů]
 [Historie e-mailů] [Statistika přístupů]

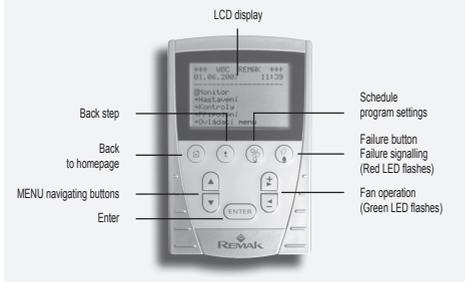
Historie e-mailů

Zobrazení přehledu systémem odeslaných e-mailů dle nastavení



HMI Controller Operating Instructions

Figure 38 – HMI Controller



Warning

The history will be deleted if the unit is disconnected from the power supply!

HMI Controller Use

The HMI Controller ACX84.910 (Human Machine Interface) intermediates communication between the control unit and user. It is designed to operate, control and service the air-handling device. The HMI Controller can be connected to the ACX controller, which is a part of the control unit. The same HMI controller can be connected and disconnected during the controller's operation to be used (successively) to control several control units (controllers).

Conditions of Use

Permissible ambient temperature is from -10 to 50 °C
Degree of protection is IP20.

Warning

When repairing the WebClima unit, it is necessary to turn the main switch off and lock it in its off position to prevent unwanted starting of the unit.

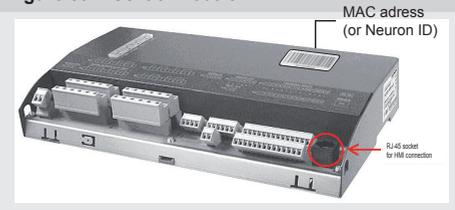
Connection and Location

The HMI controller can be connected via serial interface (8-conductor cable JST) and connector RJ45. The length of the cable is 3 meters. The cable is led to the distributing board through a PG16 grommet. This ensures degree of protection IP20. If a higher degree of protection of the distributing board is required, it is necessary to seal the grommet. The RJ45 connector must be connected to the RJ45 socket in the ACX controller.

Warning

The connecting cable must be connected to the RJ45 serial socket, see fig. # 39. The controller must be positioned so that easy access and connection will be ensured.

Figure 39 – Central module



Description

The HMI Controller ACX84.910 is equipped with a 70x45 mm LCD display, resolution 128 x 80 dots. Eight lines with 20 standard characters or four lines with non-standard characters can be displayed on the screen. The HMI controller is connected to the control unit by the RJ45 cable. The HMI Controller in its upper part is provided with four function keys, F1, F2, F3 and F4, and five control buttons used for the menu navigation, display, change and configuration of measured values and system parameters. On the rear side it is equipped with a magnetic pad to fix it to metal parts (e.g. air-handling components).

Description of Keys and Buttons:



Function key F1. Return to the homepage.



Function key F2. Upon first press it navigates up to the top of actual page, upon the second press it navigates up to the parent page.



Function key F3 is equipped with a green LED. It navigates to the page of the basic control of the unit: operation settings, information on actual device state, control place switching. The flashing green LCD indicates the fan is running.



Function key F4 is equipped with a red LED. It navigates to the page of failures: information on active failures and their types, failure reset, navigation on the failure history page. The flashing red LCD indicates a failure. Upon first press it navigates to the menu of failures, upon the second press it resets the failure.

Description of Control Buttons:



Navigation buttons to move within menus and submenus.



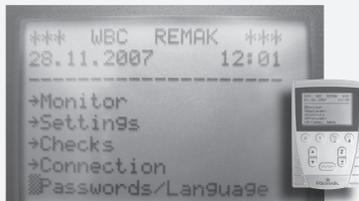
Editing keys to select desired items/values.



Confirms selection.

HMI Controller Operating Instructions

Figure 40 – Menu



Display

After connecting the HMI controller using the RJ45 connector, the initial screen of the control menu is displayed. The first three lines are reserved for the page heading, which includes the device name and number, date and time.

The items of individual menus are on lines 4 to 8. Access to these menus is protected by a password, see below. After entering the password in the "Password" box, it is possible to move among and read or change the parameters in accordance with the user's authorization.

The first three lines are reserved for the page heading, which includes the device name and number, date and time.

The items of individual menus are on lines 4 to 8. Access to these menus is protected by a password, see below. After entering the password in the "Password" box, it is possible to move among and read or change the parameters in accordance with the user's authorization.

Access to the Device Operation Parameters

A transparent tree structure and menu arrangement provides easy navigation when working with the HMI controller. The menu can be accessed after entering the password, which enables access to four access levels according to the user's access authorization. The language can be selected directly on the HMI controller. For details, refer to "List and Description of Menu and Default Factory Settings".

Default (Factory) Setting of Access to the WebClima System via HMI

Pursuant to the concept of structured access from the web interface, the HMI controller is secured by a structured system of access rights, refer also to "List and Description of Menu and Default Factory Settings".

The only difference is the system of assigning access authorization; single-user access is applied. Only four access passwords (four-digit) and one of the different access levels of authorization can be assigned.

Factory default access settings:

Role/Authorization	Password (factory setting)
HOST:	1111
USER:	2222
ADMINISTRATOR:	3333
SERVICE:	4444

Warning:

- To keep the device and its access secure, we strongly recommend changing the factory preset access setting according to the user's needs.

- It is advisable to note down the passwords for "Service" and "Administrator" roles (authorization) and keep them updated and in a secure (confidential) place to be able to keep administrator's access to the system (user administration, expert settings).

- If you forget or lose your "Service" level password, you will have to contact the manufacturer's representative. The "User" and "Administration" passwords can be renewed from the "Service" level (usually by the manufacturer or authorized installer/ M&C service providers).

- The changed user setting cannot be automatically returned (e.g. by reset) to the factory default settings.

Example of HMI Use – Password Entry:

After connecting the HMI controller (connecting the connector RJ45), a flashing cursor appears at the position of the menu PASSWORD ENTRY, confirm by pressing ENTER. Using the navigation buttons, go to the ENTER PASSWORD menu and confirm. Now you are in the password entry menu, the cursor flashes on the first password digit position. Using the editing keys enter the first password digit and confirm. The cursor moves to the next password digit position, and the procedure is repeated until the fourth digit of the password is set and confirmed.

Note: The user must log out of the "Enter password" menu after finishing work with the HMI controller, if not the system will automatically log out the use after 10 minutes of inactivity.

Overview of Factory Setting of Parameters

Similarities to the web (PC) in interface

The "List and Description of Menu and Default Factory Settings" is structured according to the HMI Menu

The HMI controller has almost the same menu structure as the WebClima web interface. Menus "Monitor" and "Settings" are identical to those on the web interface. Menus "Check" and "Connection" are simplified, and the menu "Statistics" was removed. Just as with the web interface, four authorization levels of user access are provided. Slight differences in the parameter location must be taken into account, and the respective parameter on the web interface found according to its character.

Warning:

The device parameters are structured and can be accessed by users in accordance with their role (authorization). The roles (authorizations) must be assigned by the system administrator according to the user's qualification and responsibility for device operation. Following the above-mentioned rule, the HMI menu is also structured – some menus are not accessible and some parameters cannot be changed by users of roles (authorizations) lower than Service.

Menu HMI					
Menu	Description	Factory setting			
		Value	Min	Max	
Monitor					
Current modes					
ControlPlace	Control place				
DefaultOperMod	Default device operating mode				
CurrentOperMod	Current device operating mode				
FanStatus	Fan status				
CurrentTempMod	Current temperature mode				
TimeSchedule	Stand-by time schedule				
State ORe1	External control state (ORe1)				
CurrentContSeq	Current control sequence				
NumbOfFailures	Current number of failures				
Temperatures					
Room	Room temperature (exhaust)				
Inlet	Inlet air temperature				
Outdoor	Outdoor air temperature				
RetWaterHeat	Return-water temperature of the water heater				
RetWatPreheat	Return-water temperature of the preheating water heater				
AirElPreheat	Air temperature behind the electric preheating				
AirHeatExchan	Exhaust air temperature behind the heat exchanger				
FlueGasTemp	Temperature in flue gas ducting				
ReqHeatLoLim	Required heating water temperature (lower limit)				
ReqCoolHiLim	Required cooling water temperature (high limit)				
Outputs					
FanOutput	Fan output				
RequirFanOutput	Required fan output (stage)				
Fan	Fan				
RequirFanOutput	Required fan output				
OXAPosition%	Output position of fan control according to analog sensor (OXA)				
HeatingValve%	Position of the heating mixing set valve %				
HaetingEOValve%	Control output level for electric heating %				
GasHeatOutLev %	Output level for gas heating				
BPDamperPos %	Output level for bypass damper of gas heater				
CoolingValve%	Position of the valve for cooling %				
CoolingState	State of the control output for cooling				
CoolingCapacity	Cooling capacity (2 st)				
MixSectPosition%	Position of the control output for mixing sections%				
HeatExchangPos%	Position of the control output for the heat exchanger%				
RequestDehum%	Request for dehumidification				
Working states					
GroupAlarm	Error output status - Remote report (summary)				
FanState	Fan state				
DigitalRecover	State of the digital output for heat recovery				
WaterPreheat	State of the pump for water preheating				
ElectPreheat	Electric preheating state				
HeatingPump	Heating pump state				
ElectricHeater	Electric heater state				
GasHeater	Gas heater status				
CoolingCompres	Cooling compressor state				
WaterCoolPump	Water cooling pump state				
ElectReheating	Electric reheating state				
Damper	Shutting damper state				
LevelInputOXA	Input analog signal level for fan control				
Humidity					
RoomSnsr	Room sensor humidity (exhaust)				
InletSnsr	Inlet sensor humidity				
Settings					
Date and time					
DayOfWeek	Day of the week				
Date	Date				
SystemTime	System time				
TimeValidity	System time validity				
Temp modes	Temperature modes				
ComfortHeating	Comfort heating				
TemperatureHeating	Temperature heating	22,6	10*	35*	°C
ComfortCooling	Comfort cooling				
TemperatureCooling	Temperature cooling	24,6	10*	35*	°C
EconomyHeating	Economy heating				
TemperatureHeating	Temperature heating	21,6	10*	35*	°C
EconomyCooling	Economy cooling				
TemperatureCooling	Temperature cooling	26	10*	35*	°C
VentilatingHeating	Ventilating heating				
TemperatureHeating	Temperature heating	20,6	10*	35*	°C
VentilatingCooling	Ventilating cooling				
TemperatureCooling	Temperature cooling	28	10*	35*	°C
Manual mode					
FanOutput	Fan output for manual mode				
TempMode	Temperature mode for manual operation				
Time schedules					
Daily schedule	Daily time schedule				

* min./max. values are automatically changed in accordance with selected temperature modes

WeeklyTimeSchedule	Weekly time schedule				
YearlyTimeSchedule	Yearly time schedule				
ResSchedDaily	Reset of time schedules to the default factory settings (Daily)				
ResSchedWeek	Reset of time schedules to the default factory settings (Weekly)				
ResSchedYear	Reset of time schedules to the default factory settings (Yearly)				
Control parameters					
RoomHumStpt	Requested max space humidity	65	20	95	%
MinValueFrshAir	Minimum volume of fresh air	30	0	100	%
TempEnableCooling	Minimum outdoor temperature to enable cooling	14	-5	35	°C
PreheatPumpStpt	Outdoor temperature to start the preheating pump	5	3	10	°C
EIPreheatStpt	Outdoor temperature to switch electric preheating on	-30	-50	10	°C
EIPreheatTemp	Required temperature behind electric preheating	-20	-20	20	°C
FanStartUpDelay	Fan start-up delay (after damper)	30	0	300	s
MinimFanRun	Minimum time of the fan run	15	10	120	s
FanDelaySwitch	Delay for switching two-speed motors from higher to lower speed	12	5	30	s
FanRunDownElhtg	Fan rundown for electric heating	60	0	300	s
DelayFanFlwAlarm	Delay of the air flow alarm	60			s
MinTimeSwitchElhtg	Minimum on/off time of the electric heater	10			s
MinOnOffTimeHeater	Minimal on/off operation time of gas heater	150	0	600	s
FlueGasTempRequest	Request flue gas temperature	160	150	210	°C
MinTimeSwitchClg	Minimum on/off time of the cooling compressor	240			s
MaxTempReturnWater	Maximum temperature of return-water from the water heater	70	20	90	°C
FanRunDownEIPreHtr	Fan rundown for the electric preheater	30	0	300	s
FanRunDownEIReHtr	Fan rundown for the electric reheater	45	0	300	s
HtgPmpRunDown	Heating pump rundown	1			min
EIReHtrSwitchg	Minimum on/off time of the electric reheater	30			s
			X1=2	Y1=20	V/%
			X2=5	Y2=50	V/%
			X3=7,5	Y3=75	V/%
			X4=10	Y4=100	V/%
OXACurveSet	Fan output curve according to analog input				
Correction values					
MinInletAirTemp	Minimum inlet air temperature	15	10	35	°C
MaxInletAirTemp	Maximum inlet air temperature	35	15	40	°C
MaxValCompClg	Maximum value of summer compensation (cooling)	2	-10	10	K
ClgCompStart	Cooling compensation – initial point	25	10	35	°C
ClgCompEnd	Cooling compensation – end point	35	26	35	°C
MaxCompHtg	Maximum value of winter compensation (heating)	1	-10	10	K
CompHtgStrt	Heating compensation – initial point	0	-20	10	°C
CompHtgEnd	Heating compensation – end point	-20	-35	0	°C
CorrectRoomTemp	Correction of required room temperature (from QAA27)				
RoomTemp	Room temperature (exhaust)	0			°C
InletTemp	Inlet air temperature	0			°C
OutdoorTemp	Outdoor air temperature	0			°C
RetWaterTemp	Return-water temperature from the water heater	0			°C
ExhaustTempExchang	Exhaust air temperature behind the heat exchanger	0			°C
EIPrehtTemp	Temperature behind electric preheating	0			°C
PrehtWaterTemp	Return-water temperature of the water preheater	0			°C
CascRegLimit	Maximum influence of cascade control	10	1	20	°C
Anti freeze					
RetWaterAlarmTemp	Return water alarm temperature (anti-freeze protection system)	8	3	20	°C
AirAlarmTemp	Inlet air alarm temperature (anti-freeze protection system)	6	3	15	°C
ActiveAntiFreeze	Active anti-freeze protection water temperature - valve opening	15	10	40	°C
WaterTempStopMode	Moderate heating temperature of the water heater in Stop mode (fans off)	30	15	60	°C
MinOutTempBoilSwit	Minimum outdoor temperature to enable boiler switching in Stand-by mode	10	10	20	°C
WtrPreHrAlarm	Return-water alarm temperature of the water preheater	5	5	50	°C
			X1=-10	Y1=100	°C/%
			X2=-5	Y2=66	°C/%
			X3=0	Y3=33	°C/%
			X4=10	Y4=0	°C/%
HeatingUpCurve	Heating-up curve of the water heater circuit when starting AHU				
HtgUpTimeWatHtr	Heating-up time of the water heater circuit when starting AHU	60	20	300	s
HtgUpTimeBoiler	Heating-up time of the boiler circuit when starting AHU	120	10	600	s
PreHtgRamp	Setting of preheating cease ramp steepness of the water heater circuit when starting AHU	10	0	100	%/min
HeatExFreezAlarm	Heat exchanger freezing alarm temperature	1	-10	30	°C
RequieWaterTemp	Required heating water temperature	45			
LimitatHeatDrop	Limitation of the requested heat drop steepness	10	0	100	
			X1=-15	Y1=90	°C
			X2=-5	Y2=75	°C
			X3=5	Y3=60	°C
			X4=15	Y4=45	°C
EquithermCurve	Equitherm curve for heating request				
Control factors					
FactorsHtg	Factors - Water heating				
IntegFactorHtg	Integration factor of water heating sequence	45			s
DerivFactorHtg	Derivative factor of water heating sequence	10			s
PropFactorHtg	Proportional factor of water heating sequence	5			s
HtgBurCtrl	Factors - Gas heating				
IntegFactorGasHtg	Integration factor of gas heating sequence	60			s
DifferFactorGasHtg	Differential factor of gas heating sequence	0			s
PropFactorGasHtg	Proportional factor of gas heating sequence	5			s
FactorsClg	Factors - Cooling				
IntegFactorClg	Integration factor of cooling sequence	60			s
DerivFactorClg	Derivative factor of cooling sequence	0			s
PropFactorClg	Proportional factor of cooling sequence	-5			s
GasHeatBPDampFactor	Factors - Gas heater bypass				
IntegFactorBPSeq	Integration factor of gas heater bypass sequence	120			s

* min./max. values are automatically changed in accordance with selected temperature modes

EIPreHrHours	Counter of operating hours – electric preheating				
EIReHrHours	Counter of operating hours – electric reheating				
CigHours	Counter of operating hours – cooling				
EIHtrHours	Counter of operating hours – electric heater				
MaintenSchedule					
InspeCountMotor	Next inspection (according to hours of operation)				
InspectionYear	Next inspection (according to date) - year				
InspectionMonth	Next inspection (according to date) - month				
InspectionDay	Next inspection (according to date) - day				
InspectionHour	Next inspection (according to date) - hour				
Connection					
LAN Connection					
IP					
Maska					
Gate					
Change IP settings					
IP-Type					
IP					
Maska					
Gate					
Apply					
Apply+Reset					
Integration intoBMS					
Out temperature	Outdoor air temperature				
Room temperature	Room temperature				
Apply+Reset					
Passwords/Language					
Log in					
Log out					
Change Password					
Stage:					
EnterNewPassw:					
Language selection					
Current Language					
Button F3					
**** State WBC ****					
ControlPlace	Control place				
DefaultOperMod	Default device operating mode				
CurrentOperMod	Current device operating mode				
FanStatus	Fan status				
CurrentContSeq	Current control sequence				
CurrentTemp	Current temperature (Room)				
Button F4					
***** FAILURES *****					
Reset Failures	Reset failures				
Number Failures	Current number of failures				
Failures history					
NumFailureHistory	Number failures history				
ACTUAL FAILURES					
OutSnsr	External temperature sensor				
FstSnsr	Return water temperature sensor				
HRFstSnsr	Heat exchanger freezing sensor				
InletSnsr	Inlet temperature sensor				
RmSnsr	Space temperature sensor				
PreHtrFstSnsr	Frost coil freeze protection sensor				
RmSnsrShftStptEr	QAA27 controller				
EIPreHtrSnsr	Temperature sensor behind electric frost coil				
SupplyHumSnsr	Inlet humidity sensor				
RoomHumSnsr	Space humidity sensor				
ExternAlrmEr	External failure				
FanAlrmEr	Fan				
FanFlwErEr	Flow				
HgPmpErEr	Water heating pump				
HgEOAlrmEr	Electric heater				
EIPreHtrErEr	Electric frost coil				
EIReHtrErEr	Elektricky doh/ev				
SplyFiltrDirtyEr	Supply filter				
ExtFiltrDirtyEr	Extract filter				
CigHumAlrmEr	Cooling				
HgFstDctr	Heater freeze protection				
WtrPreHtrFstAl	Water frost coil freeze protection				
HgFstAlrm	Freeze protection - water				
HgFstAirAlrm	Freeze protection - air				
HRFstMsg	Heat exchanger freezing				
OXASnsr	Fan control signal				
Service	Scheduled maintenance				
CigHours	Operation hours - cooling				
EIPreHtrHours	Operation hours - electric frost coil				
EIReHtrHours	Operation hours - electric re-heater				
FanHours	Operation hours - fan				
HgEOHours	Operation hours - electric heating				
HgHours	Operation hours - heating				
WtrPreHtrHours	Operation hours - frost coil				
BackdraftProtect	Backdraft protection				
TooHighTempSection	High temperature of chamber				
HgFallHighTemp	Chamber temperature exceeded				
HgFlueGasTemp	High temperature of flue gas				
FlueGasExSnsr	Flue gas temperature sensor				

HMI Controller Operating Instructions

List and Description of Menu and Default Factory Settings

The HMI menu is displayed for the highest access right, and all possible combinations of air-handling devices are taken into account.

Note: The information panel in the right part of the WebClima desktop displays some selected menu parameters – they are not described repeatedly.

List of settings which require restart of the device to apply the changes

- Changes in settings of the SMTP server for e-mail sending; or after failure of the SMTP server – restart by disconnecting the power supply or from the "Settings" >> ["Device Configuration"] menu (does not apply for the HMI)
- Changes in e-mail settings; or after power supply failure of the SMTP server – restart by disconnecting the power supply or from the page "Session control" (does not apply for the HMI)
- Changes in integration with BMS (restart enabled directly from the page "Integration with BMS")
- Changes in the IP addresses - restart enabled directly from the page "LAN connection" (the changes must be saved first and then applied by the restart)

Note: A grommet with the RJ 45 connector for the HMI controller can be ordered. It is intended for intermittent connection of the HMI controller to the control unit in a plastic casing. The customer will place the grommet with connector in a suitable location according to the distribution board location on the site.

Figure 41



LON Standard Support

Description of predefined network variables in LONWorks network

This section includes descriptions of SNVT variables (Standard Network Variable Types) according to the assigned REMAK data points.

Input variables:

Network Name:	nviTemp00
Description:	Max. return water temperature – VO heater
Object:	SNVT_temp_p
Network Name:	nviTemp01
Description:	Cooling enabling temperature
Object:	SNVT_temp_p
Network Name:	nviTemp02
Description:	Minimum inlet air temperature
Object:	SNVT_temp_p
Network Name:	nviTemp03
Description:	Maximum inlet air temperature
Object:	SNVT_temp_p
Network Name:	nviTemp04
Description:	Room temperature (exhaust)
Object:	SNVT_temp_p
Network Name:	nviTemp05
Description:	Outdoor temperature
Object:	SNVT_temp_p
Network Name:	nviPress00
Description:	Required maximum humidity
Object:	SNVT_press_p
Network Name:	nviPress01
Description:	N/A
Object:	SNVT_press_p
Network Name:	nviPress02
Description:	N/A
Object:	SNVT_press_p
Network Name:	nviPress03
Description:	N/A
Object:	SNVT_press_p
Network Name:	nviPress04
Description:	N/A
Object:	SNVT_press_p
Network Name:	nviFlow00
Description:	Failure release
Values:	0 OK 1 Reset
Object:	SNVT_flow
Network Name:	nviFlow01
Description:	Temperature mode
Values:	0 Ventilation 1 Economy 2 Comfort
Object:	SNVT_flow
Network Name:	nviFlow02
Description:	N/A
Object:	SNVT_flow
Network Name:	nviFlow03
Description:	N/A
Object:	SNVT_flow
Network Name:	nviFlow04
Description:	N/A
Object:	SNVT_flow
Network Name:	nviPerc00
Description:	Fan output
Values:	0 1St 1 2St 2 3St 3 4St 4 5St
Object:	SNVT_lev_count

Network Name:	nviPerc01
Description:	Minimum fresh air flow rate
Object:	SNVT_lev_count
Network Name:	nviSwitch00
Description:	N/A
Object:	SNVT_switch
Network Name:	nviResetAlarm
Description:	N/A
Object:	SNVT_switch
Network Name:	nviBMS
Description:	N/A
Object:	SNVT_state
Network Name:	nviActTime
Description:	System time of the controller
Object:	SNVT_time_stamp
Network Name:	nviUniState2
Description:	Required device operating state
Values:	0 Stop 1 Program 2 Manual
Object:	SNVT_state

Output variables:

Network Name:	nvoAlarm
Description:	refer to table ↓
Object:	SNVT_state_64 *Reverse view on Tool

bit 0	Outdoor sensor
bit 1	Return water sensor, VO heater
bit 2	Inlet sensor
bit 3	Water preheating sensor
bit 4	Heat exchanger freezing sensor
bit 5	Room sensor, QAA
bit 6	Fan failure
bit 7	Water heating pump
bit 8	Water heater (water, air)
bit 9	Electric preheating
bit 10	Electric reheating
bit 11	Electric heater
bit 12	Water preheating
bit 13	Cooler failure
bit 14	Heat exchanger freezing
bit 15	External failure
bit 16	Inlet filter fouling
bit 17	Outlet filter fouling
bit 18	Inlet humidity sensor
bit 19	Room humidity sensor

LON Standard Support

Output variables (continued):

Network Name:	nvoTemp00
Description:	Current (required) heating temperature
Object:	SNVT_temp_p
Network Name:	nvoTemp01
Description:	Current (required) cooling temperature
Object:	SNVT_temp_p
Network Name:	nvoTemp02
Description:	N/A
Object:	SNVT_temp_p
Network Name:	nvoTemp03
Description:	Water heater preheating return water temperature
Object:	SNVT_temp_p
Network Name:	nvoTemp04
Description:	Temperature behind the electric pre-heater
Object:	SNVT_temp_p
Network Name:	nvoTemp05
Description:	Outdoor temperature
Object:	SNVT_temp_p
Network Name:	nvoTemp06
Description:	Inlet temperature
Object:	SNVT_temp_p
Network Name:	nvoTemp07
Description:	Return water temperature
Object:	SNVT_temp_p
Network Name:	nvoTemp08
Description:	Room temperature (exhaust)
Object:	SNVT_temp_p
Network Name:	nvoTemp09
Description:	DHW required temperature
Object:	SNVT_temp_p
Network Name:	nvoTemp10
Description:	Heat Exchanger temperature
Object:	SNVT_temp_p
Network Name:	nvoPress00
Description:	Inlet humidity
Object:	SNVT_press_p
Network Name:	nvoPress01
Description:	Outlet humidity
Object:	SNVT_press_p
Network Name:	nvoPress10
Description:	N/A
Object:	SNVT_press_p
Network Name:	nvoPress11
Description:	Fan state
Values:	0 Off 1 On
Object:	SNVT_press_p
Network Name:	nvoFlow00
Description:	Fan output (manual)
Values:	according to application 2St, 5St, Var (10 to 100)% 0 1St 1 2St 2 3St 3 4St 4 5St
Object:	SNVT_flow
Network Name:	nvoFlow01
Description:	Temperature mode (manual)
Values:	0 Ventilation 1 Economy 2 Komfortní
Object:	SNVT_flow
Network Name:	nvoPerc00
Description:	Heater output
Object:	SNVT_lev_count

Network Name:	nvoPerc01
Description:	Cooling output
Object:	SNVT_lev_count
Network Name:	nvoPerc02
Description:	Mixing output
Object:	SNVT_lev_count
Network Name:	nvoPerc03
Description:	Heat exchanger output
Object:	SNVT_lev_count
Network Name:	nvoPerc04
Description:	Damper state
Values:	0 Off 1 On
Object:	SNVT_lev_count
Network Name:	nvoPerc05
Description:	Fan operation
Values:	according to application 2St, 5St, Var (10 to 100)% 0 Off 1 1St 2 2St 3 3St 4 4St 5 5St
Object:	SNVT_lev_count
Network Name:	nvoPerc06
Description:	Compressor operation
Values:	according to application 1st, Wtr: 0 Off 1 Off according to application 2St: 1 On 2 1st 3 2st
Object:	SNVT_lev_count
Network Name:	nvoPerc07
Description:	Batch failure signalling
Values:	0 OK 1 Alarm
Object:	SNVT_lev_count
Network Name:	nvoOpMode
Description:	N/A
Object:	SNVT_switch
Network Name:	nvoSwitch00
Description:	N/A
Object:	SNVT_switch
Network Name:	nvoSwitch01
Description:	N/A
Object:	SNVT_switch
Network Name:	nvoCount00
Description:	Nevyužito
Object:	SNVT_count_f
Network Name:	nvoCount01
Description:	N/A
Object:	SNVT_count_f
Network Name:	nvoUniState1
Description:	Active control sequence
Values:	0 Cooling 1 Mix 2 Heat recovery 3 Heating 4 Off
Object:	SNVT_state *Reverse view on Tool
Network Name:	nvoUniState2
Description:	Actual device operating state
Values:	0 Stop 1 Program 2 Manual
Object:	SNVT_state *Reverse view on Tool

Regular Inspections and Troubleshooting

Regular Inspections

Service inspections of the entire air-handling device should be performed at least twice a year (transition of the unit operation from one season to another – summer/winter and vice-versa).

Extra inspections must be performed after the device repair or emergency.

The maintenance of the WebClima control unit itself includes just regular cleaning, inspection of screw connections, conductors, and component fixing, etc. The components inside the box must be regularly cleaned of dust and other dirt.

If necessary, clean the face side of the box with a soft wet cloth. Common cleaners can be used. The system performs regular preventive spinning of the pump. Therefore, if preparing the air-handling unit for summer operation, respectively if the heating system is drained, it is necessary to disconnect the pump of the mixing set from the power supply by turning the switch to the "OFF" position to protect the pump from damage.

When changing back for the winter season, the pump must be activated in reverse order, i.e. turned "ON", and its function verified.

The same applies for the cooling system (though the pump of the cooling system is not preventively spun).

Possible Reasons for Failure Alarms

Antifreeze Protection Alarm

- Low water temperature in the water heat exchanger circuit.
- Check the water temperature in the water heat exchanger circuit.
- Check the heating water supply source.
- Check and if necessary clean the filter of the SUMX mixing set.
- Check the heat exchanger for fouling.
- Check the switching and operation of the pump.
- Check the operation of the three-way valve actuator.
- Check the NS 130 sensor in the duct

Failure of the Electric Heater

- Check the thermo-contacts of the electric heater.
- Check the switching of the electric heater.
- Check the circuit breaker and condition of the EOS(X) electric heater.
- Check and clean the filter insert.
- Check dampers for opening.
- Check the air flow regularity

Particularities of Electric Heaters

EOS electric heaters are designed for long, safe and reliable service. As semiconductor relays (SSR) are used in their construction it is necessary to pay special attention to operating conditions, especially to overvoltage, installation and allowable the SSR relays to warm up. SSR relays are modern semiconductor power components designed to switch output stages of electric heaters while producing a low level of electronic hash when switching.

The max. pole voltage for SSR technology must not exceed 1,200 V. As standard, SSR relays are equipped with overvoltage protection. If the voltage exceeds the values allowed by the ČSN 330420 standard for installation category III, the service life of SSR relays can be reduced and/or they can even be destroyed. If this is the case, the supply line must be provided with multi-stage overvoltage protection. A greater danger of overvoltage can be caused by closely situated 22kV / 400V transformers, highly loaded parallel lines, frequency converters, etc.

Overheating of the inner semiconductor structure of SSR relays can cause its destruction. The design of the SSR relay ensures sufficient cooling providing its cooler is situated in an air flow. Overheating can also be caused by increased contact resistance of the supply terminals and supply cable. Therefore, when installing or inspecting the device, it is essential to pay special attention to the tightening of screws on the SSR terminals.

Fan Failure

- Check the connection of thermo-contacts.
- Check the motor circuit breaker condition.
- Check the V-belt condition.
- Check the fan for free rotation.
- Check the connection and functioning of the P33N pressure difference sensor.
- Check the motor input current.
- Check the frequency converter condition

Air Flow Failure

- Check the V-belt condition.
- Check the fan for free rotation.
- Check the connection and functioning of the pressure difference sensor.
- Check the fan run and direction of the propeller rotation.
- Check the frequency converter condition

Emergency Alarms –Fire, Smoke

- Check the state of the fire dampers.
- Check the condition of connected external devices.

Filter Fouling

- Check the filter for fouling, and if necessary, replace the filter.
- Check the P33N pressure sensor setting

Cooling Failure

- Check the condition of the connected cooler (if the collected failure reporting from the WebClima is installed)

Cooling Malfunction – without failure report

- Check the switching and operation of the water cooler's pump (at active cooling signal over 20% = 2V)

PMO Sensor Failure

- Check the temperature of the heating water.
- Check the connection of the NS 130R sensor.
- Replace the sensor

Spare Parts and Service

The network control light does not flash

- Check the supply voltage.
- Check the breaker of auxiliary circuits.
- Check the power supply fuses

Troubleshooting

When performing any work or troubleshooting on the air-handling device, it is necessary to disconnect the power supply from the entire distribution board using the main switch. Pay special attention to proper operation of the assemblies ensuring device protection (SUMX mixing sets, motor and electric heater thermo-contacts). Verify proper functioning of the evaluating, protective and switching elements. Check the control signal. Check the tightening of terminal screws; both controller's and peripherals' terminals.

Spare Parts and Service

Spare parts are not a part of the WebClima control unit delivery. If needed, they can be ordered from the manufacturer or local distributor.

Guarantee and after-sales servicing can be ordered from the manufacturer or authorized service providers (see the list at www.remak.eu).

Disposal and Recycling

The WebClima control unit contains electronic, metal and plastic parts. After exceeding its service life limit the WebClima unit belongs to waste group Q14 according to the Waste Act (č.185/2001 Sb.) Regarding the possibility of part recycling, WebClima belongs to waste group R5 by course of the above-mentioned Waste Act.

The WebClima control unit contains the following types of waste, in accordance with Directive No. 381/2001 Sb:

- 15 01 01 Paper and cardboard packing (packaging, documentation) - must be delivered to a collecting centre.
- 15 01 02 Plastics (plastic box) - must be delivered to a collecting centre.
- 16 06 30 Disabled material containing dangerous substances (printed circuit boards incl. parts and batteries) - must be delivered to a specialized collecting centre.
- 16 06 04 Disabled alkalic batteries (batteries on the printed circuit board or replaced batteries) - must be delivered to a specialized collecting centre.



Further, applicable national regulations and directives must be observed.

Glossary

ASP (Active Server Pages) – a technology independent of a programming language (developed by Microsoft) which enables the server to execute a code and send the result to the user.

BACnet - Building Automation and Control Networks – a standard communication protocol developed by ASHRAE (American Society of Heating, Refrigerating and Air-conditioning Engineers, www.bacnet.org) with the goal to create a protocol which would enable integration of various devices intended for buildings and produced by various manufacturers.

DHCP (Dynamic Host Configuration Protocol) – an application protocol from the family of TCP/IP protocols which is used for automatic IP address assigning to end users.

ETHERNET – a type of local network

HMI (Human Machine Interface) – a graphic display unit, graphic terminal or LCD control panel; delivered as an optional accessory.

IP address (Internet Protocol) – the IP address is a unique identification of a specific device (usually PC) within the internet network. All data sent from/to the respective device include the IP addresses of the sender and recipient.

LAN (Local Area Network) – a local network. A LAN needs at least two PCs to be created.

LONWorks – communication bus has been developed by Echelon (Local Operating Network). It represents a sophisticated communication standard for comprehensive and flexible solution for building automation. LonTalk is used as a network protocol enabling data transfer using any medium and network topology.

MAC address (Media Access Control) – a unique identifier of a net device. It is assigned to the network card during production. The factory-assigned MAC address is unique worldwide.

SMTP (Simple Mail Transfer Protocol) – a protocol which enables the transfer of e-mail messages between PCs.

ROUTER – a network device which supports cooperation between at least two networks using the same communicating protocol, e.g. LAN and Internet.

TCP/IP (Transmission Control Protocol) – one of the basic Internet protocols. It enables the connection of stations to transfer data.

VPN (Virtual Private Network) – a type of interconnection of several PCs, situated in different places on the internet, into one virtual network; the PCs can be in different networks and places but they behave as if they were on one network segment.

WAN (Wide Area Network) – a large PC network; the most famous example is the internet. It can also indicate a network connected to public communication lines.

WEBSERVER – or HTTP server, is software which enables the content to be sent to browsers within the internet network via http protocol.

OPC (OLE for Process Control) – a standardized specification of the interface for applications focused on the control of fast processes; an OPC server is required.

Warning

The manufacturer reserves the right to change and/or amend this documentation to include the latest technical innovations and/or to comply with the law, without prior notice.

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