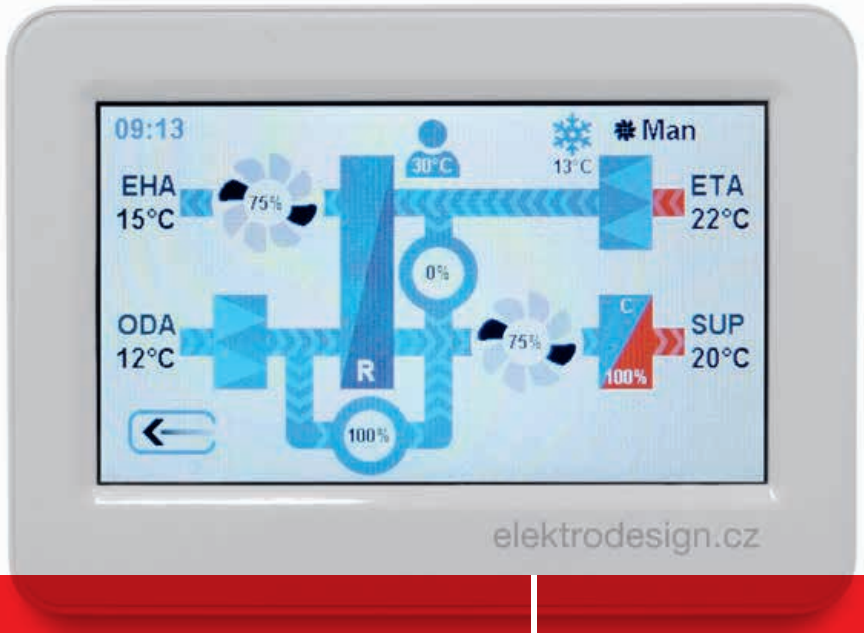


CONTROL MODULE Digireg® evo.018

user manual

de.elektrodesign.cz

User manual
Elektrodesign Digireg® evo.018
version 2022 EN 1.0

Digireg® evo.018 switchboard

Digireg® evo.018 IP65 switchboard

ELEKTRODESIGN® VENTILÁTORY

Company of Soler & Palau Ventilation Group

Contents

General

INTRODUCTION

This manual refers to Digireg® evo.018 control module. The intention of this manual is to provide information in regards to Digireg installation, commissioning and use. Due to the fact that our products are constantly evolving, we reserve the right to change this manual without any prior notice.

WARRANTY

We do not guarantee compatibility of this device with any other special usage therefore, the determination of compatibility falls upon full competence of customers and project engineers. The warranty for this module goes in accordance with the valid legal regulations. The warranty is considered valid if all installation and maintenance instructions were fully followed. Digireg warranty covers manufacturing defects, material defects or malfunctions of the device.

The warranty does not cover defects caused by:

- improper use and design
- improper handling (does not apply to mechanical damage)
- transport (compensation for damage-caused during transport must be claimed from the carrier)
- incorrect installation, incorrect electrical-connection or inadequate protection
- incorrect operation
- unauthorized device tampering
- disassembling of the device
- use in unfit conditions or in an unsuitable manner
- normal wear and tear
- third party intervention
- due to a natural disaster

With warranty claim, it is necessary to submit a report containing:

- information regarding the person or
- company generating the claim
- date or purchase and invoice number
- description of the defect
- wire connection diagram
- measured values during the startup
  - voltage
  - current
  - air temperature

ELEKTRODESIGN ventilátory s.r.o. reserves the right to decide whether warranty repair work will be done on site or at the company service center. The method of correcting the defect is solely at the discretion of the service company ELEKTRODESIGN ventilátory spol. s r.o. The complaining party will receive a written statement stating the result of the complaint. In any event of an unjustified complaint, the complaining party pays all costs associated with repairs.

Warranty conditions

Digireg must be installed by qualified personnel or by a professional HVAC company. The electrical connection must be made by qualified electrical company. Installation and location of equipment must be performed in accordance with ČSN 33 2000- 4-42 (IEC 364-4-42). The device must be subjected to initial electrical inspection according to ČSN 33 1500. **The device must be set to meet the project specifications.** During the first startup, it is necessary to measure all specified values and record those measurements. Those will be confirmed by a company providing the unit commissioning. In the case of any future warranty claim it will be necessary to submit a full record of the above-mentioned parameters together with the complaint, including the initial revision, generated during the initial startup.
During normal operation, it is necessary to perform regular inspections of electrical equipment according to ČSN 33 1500 and to perform inspections and maintenance on the unit.
After receiving and unpacking the module from transport packaging, the customer is obliged to perform following inspections. It is necessary to check for any damages as well as whether the device delivered reflects the device ordered. It is necessary to check whether the shipping label and identification data on shipping packaging, equipment label or motor model number correspond to project specifics and that it meets what was ordered. Due to the constant technical improvements of the equipment and changes in technical parameters, and due to a certain time lag between ordering and order processing, the manufacturer reserves the right to implement changes to equipment without notifying the customer.
The customer is responsible for inquiring about any equipment changes before making the final order. Subsequent complaints cannot be taken into account.

CIVIL LIABILITY

The Digireg® evo.018 control unit is designed primarily for control of air handling units. Neither the manufacturer nor the seller is liable for defects caused by:

- inappropriate use
- normal wear and tear of components
- failure to observe the instructions for safety, use and commissioning specified in this manual
- not using the manufacturer‘s original components

SAFETY REGULATIONS

Adherence to these instructions should not pose any safety, health or environmental risks in accordance with EC directives (CE marked). The same applies to other products used in the device or during installation. Consider the following warnings:

- Follow the safety instructions to prevent damage to the device or personal injury.
- The technical information in this manual must not be changed.
- It is forbidden to interfere with the motor of the device.
- The motors of the device must be connected to a single-phase 230 V / 50 Hz AC mains supply.
- In order for the device to comply with EC directives, the device must be connected to the mains in accordance with the applicable regulations.
- The equipment must be installed in such a way that, under normal operating conditions, it cannot come into contact with any moving and/or live part.
- The device complies with the applicable regulations for the operation of electrical equipment.
- Always disconnect the device from thepower supply before carrying out any work on it.
- Appropriate tools must be used when-handling or maintaining the device.
- The device must only be used for the purposes for which it is intended.
- This appliance is not intended for use by children under the age of 8 and persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they are under the supervision of a responsible person or they have been sufficiently instructed in the safe use of the equipment, and for whom the risks associated with it cannot be understood. The user must ensure that children do not play with the device. Cleaning and maintenance of the appliance must not be carried out by children without supervision.

Introduction of the Digireg® evo.018 controller

Digireg® evo.018 control module was designed to control air handling units manufactured by ELEKTRODESIGN Ventilator s.r.o. and the Soler & Palau Ventilation Group. Each Digireg module can control one piece of air handling equipment (unit) fitted with heat recovery module and some type of heater and cooler. Source of heating can come in form of electric heat strip, hot water coil, gas fired unit or heat pump. Cooling can be provided by chill water coil, DX coil or heat pump. Under a certain technical condition, Digireg® can be used to control forced air heating. In such a case, Digireg controls two units. Indoor unit - circulating air with either heating or cooling provisions and additional heat recovery unit – providing ventilation with its own control.

The basic function of Digireg control module allows for the controller to be installed with a majority of air handling units coming from different manufacturers. The only limiting factor for Digireg use is the need to use TGCU (TGCK) type of temperature sensors. Other inputs and outputs use unified signal values and common components which are typical of any hybrid HVAC control product range.

The controller can be also used on devices with significantly higher output of heating and higher fan output than is permitted by preinstalled protection elements; such an installation will be conditioned by external main switch design, power breaker and safety contactor.

Digireg® evo.018 controller is a microprocessor controlled, single-purpose system which functions and uses are defined in the product catalogue sheet. The catalog sheet can be found at ELEKTRODESIGN ventilátory s.r.o. website or in ELEKTRODESIGN catalog. The wiring configuration and device settings shall be performed by authorized technician and with considerations to customer‘s request however, only in compliance to the range of functions and values listed in the catalogue sheet and installation manual. Setting of parameters is done by special configuration software.

When required for any other application, or function or combination of device functions that are not listed in the catalogue sheet or in the manual, it will not be possible to use this type of controller. In such cases, another brand of programmable control device must be used.

This operation manual is designed for basic user operation procedures and for installation of air handling equipment. During unit commissioning, and when the unit is equipped with Digireg® evo.018 controller and the Digireg® CP TFT controller, commissioning technician must provide the owner/operator with all information regarding to the safe operation of the equipment and must demonstrate all unit functions in regards to the equipment.

The controller commissioning and thus commissioning of the entire air handling unit must be performed by a qualified company in close cooperation with authorized service technician who is familiar with the controller. Depending on the equipment accessories, cooperation of several trades (electrical engineering, refrigeration tech, HVAC tech) during unit commissioning might be necessary.

Any service technician working with the controller must possess a registered certificate of competence. The commissioning technician must then provide his registration certificate number and write it in the Technical and Registration Sheet which is included with each unit. In the event of non-completion of the said protocol and missing certificate number, the equipment shall be treated as non-commissioned and will not become a subject to the warranty claim conditions. Detailed list of all equipment requiring authorized start-up procedure is listed on the website. Also listed is a link to ELEKTRODESIGN’s service center.

The principle of heat recovery system

The main function of any heat recovery unit is to preheat (or pre-cool) incoming outside air by carrying air through a heat recovery module. This process of heat recovery varies based on outside air temperature and unit configuration. The heat recovery module is used for economical preheating or pre-cooling of outside air and only after the initial outside air preconditioning, electric or water heating/ cooling is applied to meet the actual temperature that is desired. This process of heat recovery saves a large amount of energy while still ensuring excellent indoor air quality. AHU’s control system evaluates the heat recovery option by collecting data coming every minute from temperatures sensors and also by considering AHU settings.

Demand for heating and cooling is processed by Digireg control system and it is distributed between heat recovery module and additional added source of heating or cooling. The amount of heat recovery usage is regulated by air by-pass. The higher usage of by-pass equals to smaller usage of a heat recovery module.

Heating
Electric heat strip, hot water, gas fired burner or heat pump:
0–25 %
of efficiency is transferred to heat recovery module and recuperator
25–100 %
of efficiency is converted to heating
0–100 %

Cooling adjustable
cold water or heat pump
0–25 %
of power is transferred to the use of a recuperator
25–100 %
of power is converted to cooling 0–100 %

Cooling on/off
compressor or heat pump on/off
0–50 %
of power is transferred to the use of a recuperator
50–100 %
of power is converted to cooling 0–100 %

Selection of the type of HVAC unit

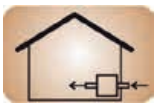
Heat recovery unit

Air handling device coupled with heat recovery module and fans which provides removal of stale air (exhaled air, containing faulty odors from kitchen, toilet etc.) to outside the building and its replacement with fresh, heated (cooled in summer) air. Provides controlled ventilation with heat recovery thus ensures optimal use of already produced (and already paid for) heat with high efficiency (in the case of using EDV units up to 97 %). In summer, on the other hand, this ventilation can be used to cool the living space. The heat recovery module could be built either as fixed plates, or counterflow, rotating wheel type or a liquid type.

Each unit comes fitted with supply and exhaust fan, supply air and return air filter and with a heat recovery module. Optional humidity and CO_2 or VOC sensors provide for „intelligent“ ventilation control (ventilation based on current air quality inside ventilated space). The unit includes air bypass which navigates air around the recuperator in the warm season in order to reduce fan resistance, therefore providing energy savings. Different types of supplemental heating and cooling provisions comes as an option (electric heating, gas fired heating, heat pump, ground collector, water heating/cooling with mixing node).

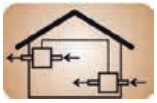
Heat recovery + circulation (heating), hot air heating unit

Heat recovery unit interconnected with another, circulation only unit which is dedicated for air circulation and heating/cooling in designated areas. Control of the circulation (heating) unit and the heat recovery unit is realized by one controller. All features and options of heating unit remain standard, as well as the possibility of adding different types of heating and cooling provisions, or their combinations. Only heat recovery unit's fan output and time mode are being controlled. Designed primarily for compact heat recovery units with internal control, suited for family houses and apartments, controlled by a cable.



Supply air unit

Used for delivering fresh outdoor air to designated areas. Each unit is fitted with one supply fan, replaceable filter, necessary temperature and humidity sensors as well as CO_2/VOC/SQA sensor. Different types of supplemental heating and cooling provisions come as an option.



Supply air and exhaust air unit

Designed for supplying fresh air and exhausting stale air without the use of heat recovery option. Supply air unit is interconnected with exhaust air unit while both units are controlled by controller mounted on the supply air unit. All product features designated for supply air units remain standard, as will all the options for adding different types of heating and cooling provisions.

Explanation of function and use

Availability and access to each function listed below depends on the initial control system settings. Initial function configuration should be given by project documentation, by actual design of the air conditioning equipment and by all required functions. These requirements must correspond with catalogue list for the controller. The description should be given in the project documentation - technical report. The operation of the device is determined by the „Local Operating Rules“.

Freecooling

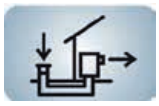
Only used in Summer as to provide for economic means of cooling under a certain and defined, operating conditions. If the outdoor temperature is lower than the indoor temperature, the incoming outdoor air can be cooled by bypassing heat recovery module in order to cool the indoor space without use of mechanical cooling. If the conditions are not met, Free cooling is switched off.

Conditions:
- The unit switched to summer mode.
- External temperature sensor must be connected.
- Temperature required must be at least 1°C lower than the actual temperature - weather is regulated to room temperature (reading the room sensor / sensor located inside the controller), or to return air temperature).
- The external temperature must at least 1 °C lower than the real temperature for it to make sense to supply outside air.
- Cannot be used when set to supply air temperature control.
- If the conditions are not met, the unit is switched off.

Ground collector

Used during summer period for cooling and during winter period for preheating for ventilation/recuperation. The settings must be adapted to the yield of the collector.

Conditions:
- It must be enabled in HW parameters.
- External temperature sensor must be installed.



Preheating

It is used in winter to protect the recuperator from freezing by starting an electric, water or other pre-heater at suction of the unit. Preheating is triggered by a potential-free contact depending on setting of the exhaust air temperature limit - operation only when preheating is required. Depending on the version, the pre-heater must be equipped with the prescribed security/protection system.

Conditions:
- It must be enabled in the HW parameters.
- Exhaust air temperature must be lower than the set value for unlocking the function and return air temperature must be lower than the operating temperature for preheating.
- The switching hysteresis is fixed at 2 °C and the switching repetition period is at least 2 minutes.

Cooling

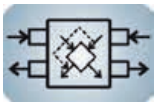
Each unit can be equipped with several types of cooling provisions:

- Compressor / compressor with inverter
- Chilled water coil
- Heat pump with reversible evaporator coil

Heating

The unit can be equipped with several types of heating options:

- Electric heat strip single-stage, two-stage
- Hot-water coil
- Heat pump with reversible evaporator coil
- Combined electric heating and hot water heating
- Gas fired heater



Bypass and rotating wheel heat recovery

Heat recovery bypass allows air to go around the recuperator. Bypass can be mounted on both, supply air side and return air side. With rotating wheel all streams of air will pass through the wheel. Heat recovery is done by moving air through rotating heat recovery wheel. When set as a rotary recuperator with analog control, the digital bypass output can be used as a command to close the FM or RRT speed controller. It switches at 5 % analog signal for RRT.

Mixing air damper

Designed to mix return air with incoming fresh air. Helps with energy savings when some of the heated air being exhausted from the interior is returning directly to incoming fresh air by means of supply air. Can also be used to reduce indoor humidity by increasing fresh air supply or by reducing the amount of air being recirculated.

Selected HW and SW parameters

Circulation

Certain types of heat recovery units can be switched to indoor air circulation only mode by means of adjusting internal dampers. With this application the circulating air can be re-heated or cooled down without going through heat loss that would accumulate through mixing air together with outdoor air. This mode can be used for quick heating or cooling of interior space, but only when people are absented.

The circulation mode feature sends analogue output to mixing damper, modulating damper opening. When circulation mode is being used it is necessary to put in consideration unit's initial configuration and we must also follow any hygiene requirements for the building.

Boost

BOOST mode is used to change air flow volume while increasing the temperature of unit's preset value. BOOST mode is activated by an external switch contact. BOOST mode will stay active until the required time setting is reached, after contact is opened.

Boost mode cannot be used at the same time with pool ventilation settings, when unit operation in controlled according to water temperature in the pool.

RH

Relative Humidity mode is used to increase air flow to a preset value. It becomes active after closing either a humidity sensor contacts or another switching contact which features adjustable run-down time period after contact opens. The Boost and RH modes take precedence over other modes except unit's OFF mode and FIRE mode.

When AHU is turned off manually, or remotely via contact, or remotely via ModBus, or from active time programs then Boost and RH modes do not work and the unit operation is prohibited. RH function cannot be used at the same time as the HW lock function.

Summer/winter mode

Summer or winter mode can be set manually via service access or, when an external temperature sensor is installed, the unit will select between summer and winter mode automatically.

The current mode is indicated by either sun icon or snowflake icon displayed on touch screen of the controller. Actual outdoor temperature will also be displayed.

The outdoor temperature sensor must be installed in order for added heating and cooling provisions to work properly.

The service technician can set the temperature shift for automatic selection of the Summer/Winter mode by ±5 °C.

Hot water coil freeze protection

Freeze protection control is based on two adjustable stages of temperature limits coming from a temperature sensor which is mounted on hot water return line. Correct temperature sensor placement close to the unit and good insulation around the sensor is essential to proper function of the freeze protection control.

- The first stage temperature limit opens mixing valve while bringing hot water to heater exchanger.
- The second stage limit opens mixing valve providing hot water to heat exchanger while unit's fan motors and air intake dampers are shot close at the same time.
- For better reliability of freeze protection, or when higher level of safety is required, it is possible to connect NC switch of capillary frost protection that will be installed in series with the sensor.

Any freeze protection system is functional only when hot water is continuously supplied to the unit and the power supply is switched on. If these conditions are not met, the protection cannot be functional and will not prevent damage to the heat exchanger.

ESU mixing valve must be installed as close as possible to heat exchanger. Maximum acceptable total pipe length with regard to the functionality of the system is up to 5 meters.

The optimal temperature control is achieved when mixing valve is installed directly at the water heater inlet and when proper hydraulic balancing and uninterrupted supply of heating water to the mixing valve is provided.

Heat exchanger freeze protection

Based on air pressure differential noted across exhaust side of heat exchanger or on temperature of exhausted air. This function can be set using the unit configuration software.

Unit's freeze protection response is configured based on heat recovery unit's design and also on required function of the unit. Anti-freeze protection options can be activated by switching unit to OFF position, by opening bypass (on the supply side) or by restricting the operation of inlet fan, or by combination of opening the bypass and switching off the unit.

Bivalent heating for heat pump

When heat pump's output is not sufficient to maintain selected air temperature the unit's controller will switch to bivalent heat. Nevertheless, the bivalent heating will not be activated until meeting the time delay setup for insufficient heat pump output. This time delay constant is set to three hours and its intention is to eliminate rapid transitions between heat requirement during defrost cycle and transition of the heating function to bivalence only. After releasing supplemental heating, the concurrence of heat sources is regulated so that the controller reduces demand for additional source.

- Outputs used for bivalent heating:

When heat pump is being used together with another bivalent heat source:

Electric bi-valence

1. Degree of bi-valence
   Output to SSR I + JTR1
2. Degree of bi-valence
   Output to SSR II + JTR2

Water bi-valence

1. Degree of bi-valence
   Analogue output 0–10 V JTR1
2. Degree of bi-valence
   Analogue output 0–10 V JTR2

Coms with the same antifreeze protection as it is provided with water heat exchanger. First response is to attempt to warm up water and if water temperature continues to drop, the device is switched off completely.

Notes on heat pump or condensing unit operation

Heat pump must be compatible for operation when coupled with air handling units. This means that heat pump must have its own temperature controller reacting on evaporating temperature and have the ability of controlling temperature in both heating and cooling mode. Air temperature after evaporator, while the heat pump is running, must be in the range of +15 to +40 °C. It is not possible to use devices regulating the evaporating pressure (temperature) to low or negative values (less than +10 °C) or use devices which cannot be switched off with on/off signal. Another condition is to control the defrost by non-reversible cycle. If bivalent heating is installed, the evaporator temperature sensor must be installed on evaporator outlet side, before any bivalent heater.

Digireg® comes with only one set of compressor control allowing activation of one condensing unit. For this reason, multiple condensing unit cannot be controlled separately. If a multi-circuit evaporator control is required, it is necessary to use either a multi-circuit compressor unit (with one control regulator) or an AHU box for controlling several units. Also, it is not possible to use a condensing unit dedicated for split systems controlled by combined analogue input for regulating and input for cooling/heating switching.

Digireg's control board heat pump outputs correspond to industry unified set of signals:

- Signal for switching compressor ON/OFF/ or activating water cooling
- Signal for switching heat pump's operating mode between heating and cooling/ also output for ESU mixing valve
- 0–10V signal for 0–100 % compressor power output

0 V **minimum power**
for cooling and heating mode
10 V **maximum power**
for cooling and heating mode

Digireg® does not contain any autonomous controller that would be dedicated for a heat pump function. Supplied condensing unit must come equipped with appropriate control module such as AHU box.

Selected HW and SW parameters

Cascade temperature control (terminals 53/54)

Mainly used for swimming pool ventilation.

After switching on Boost mode, supply or exhaust air temperatures are regulated according to pool water temperature, by stepping one level above. Temperature sensor located inside remote control module is used in replacement of water temperature sensor.

It cannot be used for room temperature control based on temperature sensor located inside remote control module. Cannot be used together with the BOOST function.

Equal-pressure ventilation

Stands for providing equal amount of air coming in through the supply side and which equals to amount of air leaving through the exhaust side.

- If AHU's pressure sensor detects higher than normal pressure difference across heat exchanger (indicating risk of frozen heat exchanger) it will automatically limit power coming to supply fan. This function must be pre-programmed in Digireg.
- Authorized service technician can preset AHU performance for permanent positive or negative pressure. This is done by adjusting the power output coming to exhaust fan by ±50% depending on the project requirement and according to any pressure losses accumulated in ductwork distribution systems.
- **Warning: when operating HVAC units in rooms equipped with a chimney ventilated heater, and without a separate combustion air intake, there is a risk of reversing the flow of combustion air leading to CO poisoning.**

„Fire Alarm" input response (terminals 69/70)

When Fire Alarm input is disconnected, the output power of fan motors during normal operation is set to 0-100 %. If Fire Alarm input is not being used, it must be interconnected with a jumper wire.

In order to unlock the device that was switched to state "Fire Alarm" it is necessary to eliminate the cause of this fault. This can be done by means of resetting the unit by switching the main power to OFF and ON position.

Under no circumstances shall be the AHU used for fire or fire safety ventilation. When the fire alarm contact becomes open the AHU will switch to OFF position in order to prevent any smoke recirculation.

HW blocking input response (terminals 67/68)

When HW input becomes opened, and after AHU runs through standard cooling down period, the AHU goes into the blocking state. All unit's outputs are switched to off position and the unit cannot be switched to on position by control module or by accessing service SW. Anti-freeze protection for heat exchanger and fire alarm mode remain available and active. When HW blocking input closes once again the unit switches back to normal operating state, corresponding to the last unit operating mode programmed in control module or based on the last programmable time schedule.

HW blocking input cannot be used together with RH mode reading info from a humidistat.

Selected HW and SW parameters

Response to temperature and fan speed settings while running time programs

When controlling AHU with pre-programmed time period any manual program changes activated by a user will be valid only up to next preprogrammed time period.

In order to run manually adjusted program continuously it is necessary to switch preprogrammed time setting to off position. This can be done by deactivating a time program icon which is located on remote display control module

Time programs

Seven days programable setting is available. Time programs provide option to program up to eight time periods daily for every day of a week separately. Each time period can be assigned with requested temperature setting and fan power performance. The shortest time interval can be programmed to period of 5 minutes. The time periods must be set in ascending order, the time period sequence is automatically cross-checked and any allocated time slot overlap cannot be set.

It is possible to copy and paste programmed daily time periods.

Rundown, cooling time period for electric and gas heating

The rundown time period is fixed at:

- Wire heater - 2 minutes.
- Electric strip heater - 4 minutes.
- Gas fired heater - 3 minutes.

Control of air dampers

Digireg® controller provides separate output terminals to control supply air damper and return air damper. Start sequence to modulate dampers to open or close position is delayed by adjustable interval of 30 to 240 seconds.

Both dampers must have common source of power supply, combination of 24 VAC and 230 VAC is not possible.

Important notes on assembly and installation

Cable connection

Digireg® CP TFT control module must be connected with Digireg® control board with a SYKFY or UTP 2x2x0.5 type of data cable. When only a short cable is needed 2x2x0.25 or an equivalent type of twisted pair cable is acceptable. When a thicker type of wire is used, protentional damage to control board connectors becomes likely. Improper wire connection could lead to faulty display on control module or faulty signal transmission.

Main disconnect enclosure with control board, including all wire cabling, must be properly secured to AHU or to building structure. In a case where connecting cable distribution runs inside pre-installed cable supporting structure, the wiring must be made with stranded conductors and secured tightly against being pulled out of the control module or the control board, in accordance with ČSN-EN.

The authorized service technician will not commission AHU unless the cable harness running between control module and control board is properly fastened.

Outdoor rated electrical enclosure, when installed outdoors, must be installed away from direct sun exposure and must be shielded from rain and snow (installed under a roof with a sufficient overlap). Failure to observe these basic principles will cause a significant reduction to life of all electric parts located inside the enclosure and possible permanent damage. Outdoor type enclosures with increased IP65 protection are only produced up to the maximum size listed as M3-Vx, M1-E8-2 or M3-E15. Where outdoor installation is required SSR relays will be mounted inside the AHU, on the return air side of the unit.

The outdoor enclosure must be installed in a freely ventilated place. When electric heating is part of the installation, associated heat sink is mounted on the right side of the enclosure and it requires good circulation of cooled air. When installed inside of another enclosure or unventilated space, it is necessary to ensure sufficient air ventilation.

Manostats (differential pressure sensors) which are located inside each AHU must be adjusted according to the AHU's actual performance and considering installed HVAC ductwork and accessories. Manostat adjustment involves manostats dedicated for filter clogging, manostats confirming fan operation and manostats sensing freezing up of heat recovery module. Initial manostat setting based on project values comes preset from the manufacturer

Smoke detectors must not be connected to power supply that is dedicated for Digireg® control board. The initial unit start-up process switches from on and off causing the smoke detectors to signal Fire alarm. It is necessary to provide a separate and protected power supply dedicated to smoke detector which will be located before the main Digireg power switch.

Analogue sensors with uninsulated output voltage must not be powered from Digireg® switchboard transformer. Separate power supplies must be used, optimally for each sensor separately or sensors with direct 230 VAC supply.

Connection of Digireg® CP TFT control module

Digireg® CP TFT touch screen control module may only be used with Digireg® evo.018 control board. It is not compatible with Digireg® CP monochrome controller or with Digireg® HW1 regulator.

The control module is intended for placement in areas intended for people occupation. The control module protection corresponds to the IP20 classification. When installed in exteriors, bathroom areas, swimming pool areas, industrial kitchens it is necessary to provide additional control module protection.

The control module must be connected to its control board with a SYKFY 2x2x0.5 or equivalent (UTP) data cable.

During the first installation, it is necessary activate CR 2032 battery which stores set time, date and programmed parameters - the installed battery has an insulating strip and it must be removed by carefully pulling it out. The battery life expectancy during normal usage is up to 10 years.

Connection of communication cable to terminal board

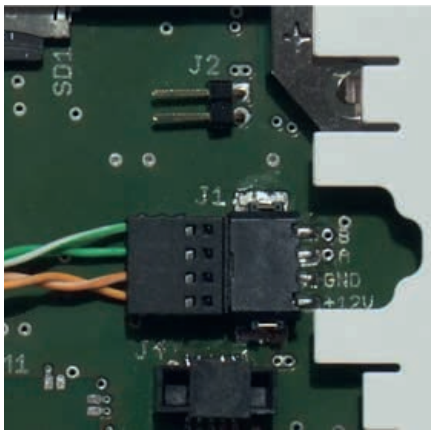
J1 connection terminal block is equipped with a special connector with self-locking contacts for connecting a fixed conductor (wire) with diameter 0.25 to 1 mm.

Any other different diameter cable is used it must be transitioned in by an adapter, which can be ordered.

Figure 1 shows the position of CR 2032 backup battery. The battery life expectancy during normal usage is up to 10 years.

Figure 1 shows J2 connector dedicated for optional connection for an external room temperature sensor.
Below it is a four-pin connector J1 for connecting the base to the controller.

Fig. 1



Description of data terminals connection:

1) White green	– RS485 / signal B	—> Digireg® terminal 60
2) Green	– RS485 / signal A	—> Digireg® terminal 59
3) White orange	– power supply / GND	—> Digireg® terminal 58
4) Orange	– power supply / +12 VDC	—> Digireg® terminal 57

Fig. 2

The controller base must be installed on a level surface (optimally installation box 68 to the plaster-board) using suitable fastening screws. The heads must not protrude above the level of the base.

After the wires of the communication connector have been fitted correctly (Fig. 1), the connector can be inserted and the controller itself can be fastened with the correct screws. Mounting screws (Fig. 2) of the controller on the base in the picture below. Damage of the threads can lead to incorrect fastening and damage to the device, responsibility of the installer.

After mounting, the top cover frame must be installed. It is necessary to proceed by pulling it from the bottom up, on the underside there is a hole for the internal temperature sensor.

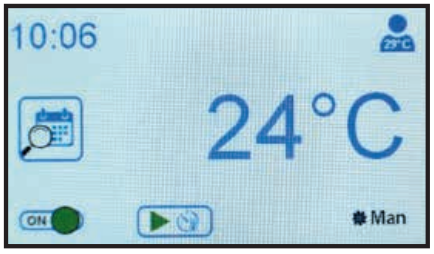
- Photos of graphic display are used for clarity.
- The individual screens can differ in actual design and operation.

Display of data reading when AHUs power supply is switched on

When the main switch or main power breaker is turned on, „Searching for air handling unit“ screen appears. After communication with AHU is secured, the basic screen is displayed.

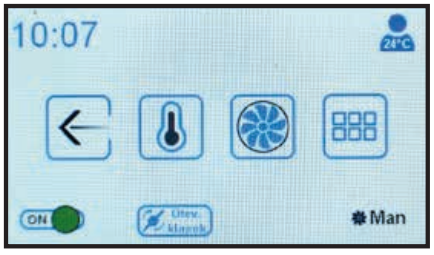
If the controller keeps searching for AHU, there is a communication wire issue. The wires may be broken or wire order may be reversed.

Basic screen display when AHU is turned off



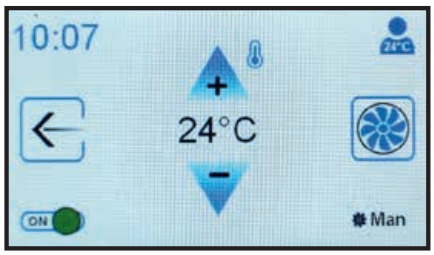
Basic screen display when AHU is turned on

The lower middle “Play” icon, as displayed on attached picture, signals operation of the unit based on preset “time program”. When the unit is running with “time program” in stop notion, this function is indicated by “Pause” icon. By pressing the “Pause” icon the unit returns back to run “time program”.



Default screen for adjusting different values

Default screen for adjusting temperature value, fan speed value and access to miscellaneous items.



Setting desired temperature value

Setting desired temperature value after clicking on the thermometer icon.

Setting fan speed value after clicking on the fan icon

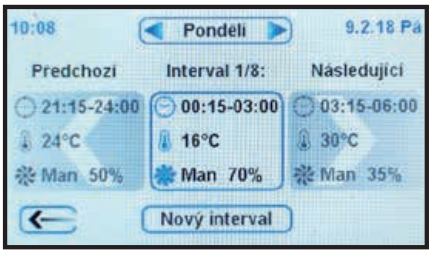
By clicking on „arrow left“ icon, we will return one step back to the home screen. By clicking on icon with symbols located to the right, we go either to temperature or fan power settings.

AHUs set to equal-pressure ventilation have only one fan icon available, which equals to one fan setting. AHUs set to independent pressure setting will have one icon for supply air pressure and one icon for exhaust. Shown in the photo.

Access to miscellaneous items

Access to miscellaneous items, after clicking on the miscellaneous items icon located on previous screen. Description of icons, from left to right and from top to bottom:

1) Icon for access to program settings.
2) Empty space reserved for mixing controller or bivalent reheating item.
3) Icon for access to language options.
4) Icon for displaying graphical visualization of current system operation.
5) “Arrow” icon to return to the previous screen.
6) Actual date and time settings.
7) Icon for access to service menu (access code is required).
8) Icon for a fault display and access to fault history.

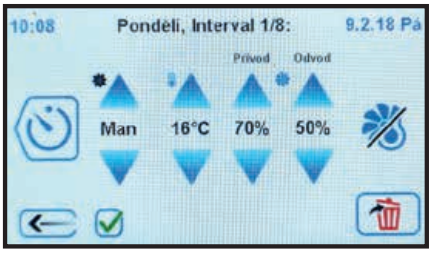


Setting of programs running in time intervals

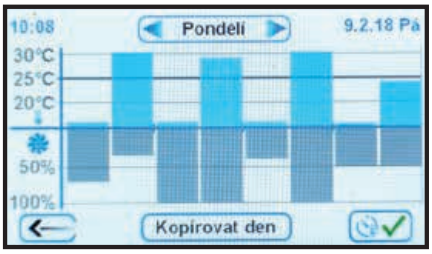
By clicking on the “program settings” icon we can create or modify unit’s operation during different time intervals. This option offers up to 8 programmable time sections per day, seven days per week. Minimum run time for each programmable section is 5 minutes, time overlap is not allowed. Inside each time section we can set duration of current time interval, adjust temperature settings and adjust fan speed.

Access to each time section and adjustable options is intuitive by clicking on the corresponding symbol.

Time interval setting, green color digit display indicate that current period is OK, red color digit indicate a time overlap. The green color check mark saves the interval, the red color trash symbol deletes the interval. The “Arrow” icon pointing left will display air temperature and fan speed adjustment screen.

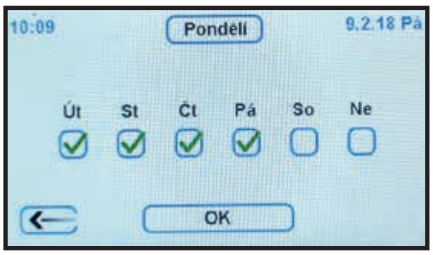


Setting for desired air temperature and fan speed.

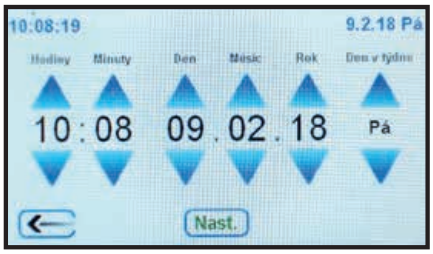


Graphic interpretation of current time intervals together with air temperature settings and fan speed settings.

Description of controller operation



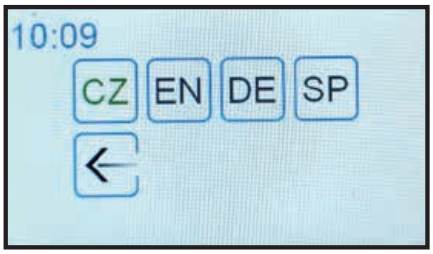
Daily time programs can be copied to across the weekly calendar.



Actual day and time settings

Proper operation of RTC calendar and clock requires activation of CR 2032 battery by removing inserted insulation tape and by programing current day and time.

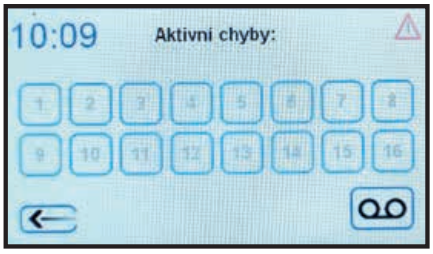
If a battery fault is displayed on control module the battery must be replaced.



Language settings

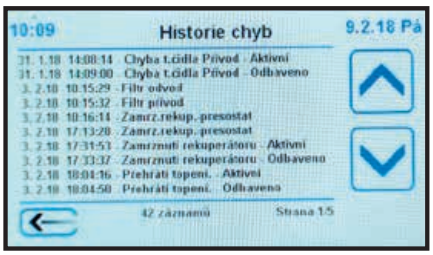
Language options available are Czech, English, German, Spanish, Russian, Slovak and French.

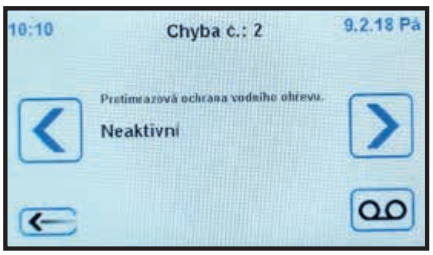
In service access menu English and Czech language is used.

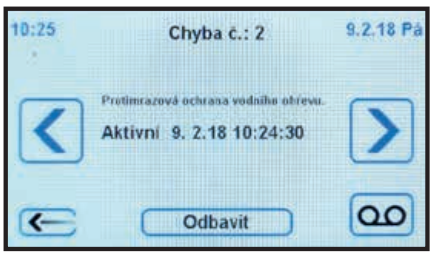


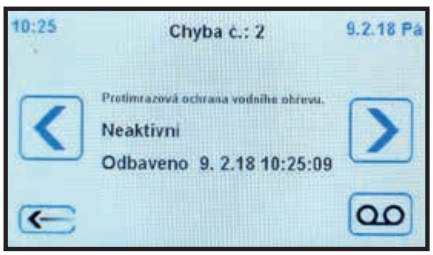
System running errors, error reporting and system fault history

Error messages will be displayed on fault display screen by error number. When the error is active, corresponding error number will be framed in red. The “ribbon” symbol located at the bottom right allows access to the error history, up to 250 recordings.





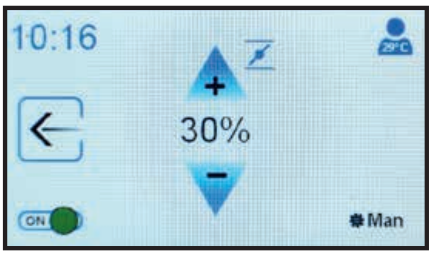




By clicking on individual error number, we can access the error’s history by acknowledging the error.

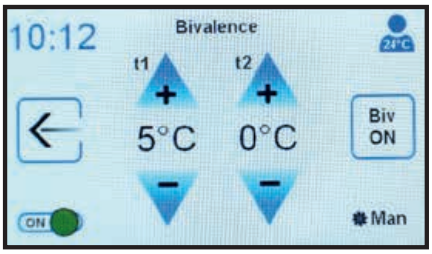
The actual restart of AHU is performed by switching the control module OFF and ON. Restart is also possible by switching the AHU main power supply OFF and ON.

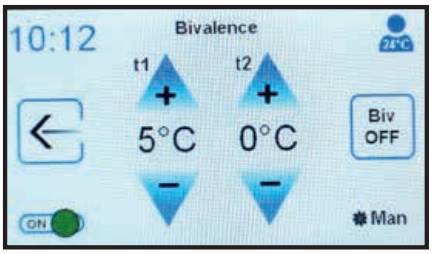
Description of controller operation



Adjusting settings for mixing damper and for bi-valent heat

Accessible only when programmed and enabled during initial unit commissioning. Mixing damper icon will be displayed in the same location as may be displayed icon for bivalent heat source for heat pump.

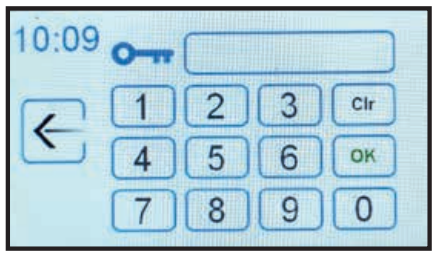




The bivalent heat source option may be activated or deactivated by the Biv OFF icon located to the right side of the display. Actual switching on for bivalent heat depends on preset setpoint and switching time of the continuous heating demand. During normal operation the main source of heat is provided by a heat pump and an auxiliary source of heat comes on as second. If necessary, the auxiliary source can be set as an emergency heater by adjusting temperature values for blocking heat pump's operation based on the outside temperature.

Icons for mixing valve or bi-valent heat on the home screen

If both functions are programmed, we can access the second setting that is located in a submenu after clicking on the first displayed function.



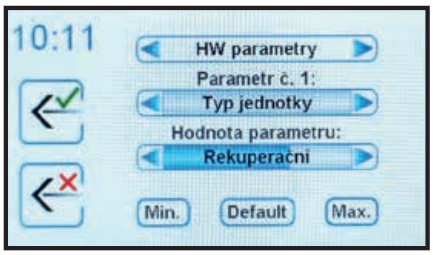
Access to service settings

Can be accessed only by entering appropriate codes.

Accessing the service setting gains access to selecting the initial screen display, blocking parameters access to unauthorized personnel etc.

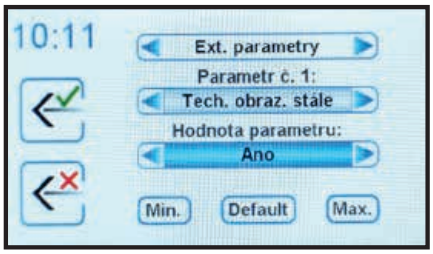
Password for service access:	.....
Password to lock the display:	8080
Display customization password:	1110

Description of controller operation



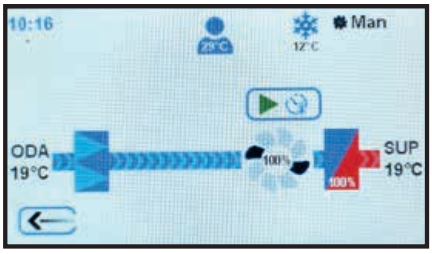
Service settings - setting hardware parameters

Service setting - setting software parameters



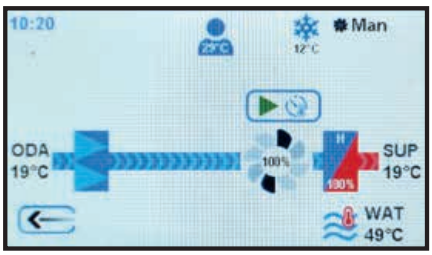
Service setting - setting controller parameters

Access to the service menu is possible after entering appropriate password by an authorized technicians.

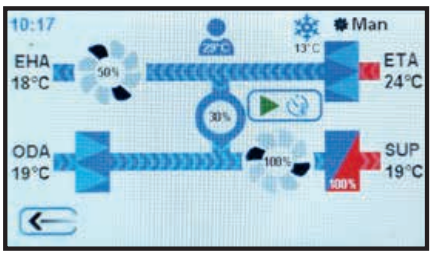


Examples of graphical visualizations

Supply air unit with electric heating and mechanical cooling. Active time interval program settings.

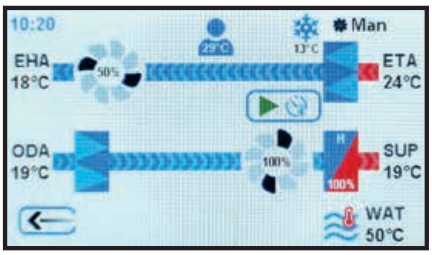


Supply air unit with hot water heating and mechanical cooling. Active time interval program settings.

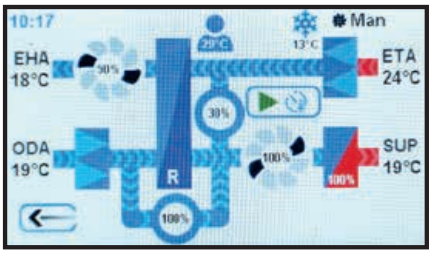


Supply air and exhaust air unit coupled with electric heating and mechanical cooling. Mixing valve and active time interval program settings.

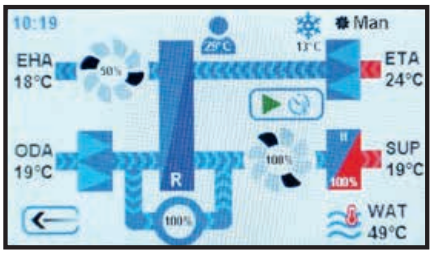
Description of controller operation



Supply and exhaust air units coupled with hot water heating and mechanical cooling. Active time interval program settings.



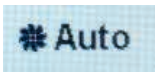
Heat recovery unit with electric heating and mechanical cooling. By-pass damper and mixing air damper with active time program.



Heat recovery unit with hot water heating and mechanical cooling. Active time interval program.

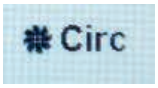
Popis zobrazení ikon na ovladači

Fully automated mode with pre-set ventilation power output.



Fully automated mode with variable ventilation power output.

Free cooling mode activated.



Indoor air circulation mode activated.

Ventilation mode activated, mechanical cooling and heating is switched off.

Icons indicating different modes of unit operation

Unit stop, coming from an external contact signal.

Unit operation based on preprogrammed time schedule.

Ventilation mode activated by BOOST contact.

Ventilation mode activated by RH input contact.

BOOST and RH modes are only available while the unit is running and their function depends on unit's actual settings.

If the unit is non active, or switched off, BOOST and RH contacts won't provide any response.

Icon signaling opening of air dampers.

Icon indicating hot water heater getting warmed up. (the unit will not start until the warm-up request is satisfied or preset time limit has elapsed).

Error indication icon. This signal requires intervention from a service tech.
(the unit may stop running, depending on the type of error).

Icon indicating clogged up filter (does not prevent operation of the unit).

Icon explanation notes

Warning signal when heat exchanger is freezing up, antifreeze protection system is activated.

Icon indicates running cooldown period, before the unit is switched off.

Preset temperature.

Icon indicating Summer or winter system operation mode with outdoor temperature display.

Heat pump defrost mode activation icon.

Control buttons

Return button with recorded inputted parameters.

Return button without recording inputted parameters.

Icon for activating program based on time interval settings.

Icon for de-activating program based on time interval settings.

Button to access program to set time intervals and function settings.

Button for manual control of mixing damper (access to Bi-valence submenu).

Button for language selection.

Description of icons on the controller

Button to access visual display of system's current performance.

Go one step back button.

Button to enter time and date settings.

Service access button.

Error messages access button.

Desired temperature setting.

Desired fan output selection button.

Additional options for screen optimization

1) Adjustment of active screen brightness.
2) Adjustment of inactive screen brightness.
3) Choosing between basic screen and graphical visualization screen.
4) Activate or deactivate touch tone on touch panel.
5) Blocking access to parameter settings in order to prevent any unauthorized person or unintentional changes to saved settings.
6) Adjusting transition time going from active to inactive screen.

Technical support

Wide network of S&P's technical support teams guarantees sufficient response time with any technical issues. If any faulty issue with the device is detected, contact any technical support office for further assistance. Any unauthorized tampering with the device will void the warranty. If you have any questions about the products, please contact any branch of ELEKTRODESIGN ventilátory s.r.o. to find your nearest dealer, visit the websitewww.elektrodesign.cz.

Decommissioning

When not using the device for a longer period of time, it is recommended to return the control module back to its original packaging and store it in a dry and dust-free location. The manufacturer accepts no liability for damage to a property or health caused by non-compliance with these instructions. S&P reserves the right to modify products without any prior notice.

Disposal and recycling

EU law and our responsibility to future generations bind us to recycle used materials; don't forget to dispose all unwanted packaging materials at the appropriate recycling points and dispose of obsolete equipment at the nearest waste disposal site. In case of any questions, please contact any branch of ELEKTRODESIGN ventilátory s.r.o. to find your nearest dealer, visit the website de.elektrodesign.cz.

Soler & Palau Ventilation Group

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