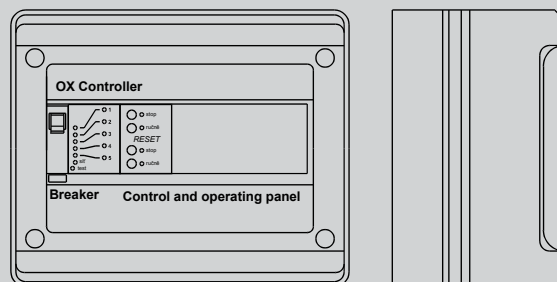




Control Unit OSX / OSX Ex

OSX (OSX-Ex)



Basic Technical Data

Type Identification.....	OSX (OSX-Ex)
Power supply.....	1 x 230V 50 Hz + N + PE
Auxiliary circuit voltage.....	15V 50 Hz, 24 V=
Max. input.....	20 VA
Protection class.....	II IEC 536
Degree of protection – door closed/open.....	IP65/IP40
Max. ambient temperature.....	-5 až +40 °C
Dimensions.....	275 x 220 x 140 (WxHxD)
Weight.....	2 kg

* Valid for inductive load

Use

OSX (OSX-Ex) control units serve to automatically switch output stages of TRN...E/D fan output controllers according to the control analogue signal of 0–10 V which is derived from the monitored physical quantity. The OSX control unit is intended for standard fans while the OSX-Ex control unit is intended for applications which include at least one fan in version EX, Zone 1.

Operating Conditions and Position

OSX (OSX-Ex) control units are designed to be installed in normal environmental conditions in accordance with ČSN 33 2000-3, table 32-NM1. They can be mounted on A and B combustibility grade materials in accordance with the ČSN 73 0823 standards in a vertical operating position.

Attention! The OSX-Ex control unit itself must not be situated in an explosive environment.

Popis a materiály

As standard, the OSX control unit includes the supply circuit breaker, power supply unit, OXe (controller) converter module, control panel (buttons and signalling LEDs) and connecting terminal box. All components are integrated into the twelve-module plastic LUCA box. The OSX-Ex control unit is in addition provided with a tripping device (thermistor relay) of controller protecting circuits and terminals for the connection of fan protecting circuits. The control unit represents a compact control device which provides all necessary links.

Installation

The attached terminal diagram shows the connection of the OSX control unit to the cooperating devices.

The supply cable (1 x 230 V + N + PE) is connected to the input terminal of the main breaker and to the N and PE bus bar.

Other external circuits (TRN...E/D controllers and the source of the 0–10 V control signal) are connected to the X1 terminal block.

Connection of TRN...E/D fan output controllers

One or two circuits of TRN...E/D fan output controllers can be connected to the OSX (OSX-Ex) control unit. Control circuits are connected to the X1 terminal block of the OSX (OSX-Ex) control unit. Control signals for the control of individual output (speed) stages of controllers are led out to E41–E43 double terminals. This arrangement along with the control signals on the PT1 I and PT2 I terminals enable simultaneous switching of both controllers on and off. Unblocking circuits for each controller are connected to the X1 terminal block separately; controller I to terminals 46/1 to 48/1, and controller II to terminals 46/2 to 48/2. Recommended connecting cable is SYKFY 5 x 2 x 0.5.

Connection of the source of the 0–10 V control signal

A converter of any physical quantity which is able to convert it to analogue signals of 0–10 V can be used as a source of the control signal. Voltage of 24 V DC / 50 mA provided by the OSX control unit can be used for the power supply of the sensor. The control signal power source is connected to 24V DC terminals (supply), IN (potential of the control signal) and 0 V (neutral of the control signal). Recommended connecting cable is JYTY 4D x 1.

Attention!

Connection of the OSX control unit to air-handling assembly may be performed only by an authorized technician licensed in accordance with generally valid regulations. After the installation is finished, the initial inspection of the wiring and adjustment of the air-handling assembly must be performed. In accordance with the M&C project.

Functions and Control

Basic Functions

The basic function of the OSX control unit is to change the fan output depending on the change of the control voltage (0-10 V), and thus to change the monitored physical quantity. In addition, it enables manual start of the fans at the (independently) preset output and stopping them. The OSX-Ex control unit is equipped with an extra thermistor relay which evaluates the state of the protective thermistors built into the winding of RP-Ex and RQ-Ex fans, and trips controller protective circuits.⁽¹⁾

Fan Operation Signalling

The fan operation, respective individual output stages in the automatic and manual air-handling unit operating mode are indicated by five red LEDs on the face panel of the OXe converter (to the left of the control panel).

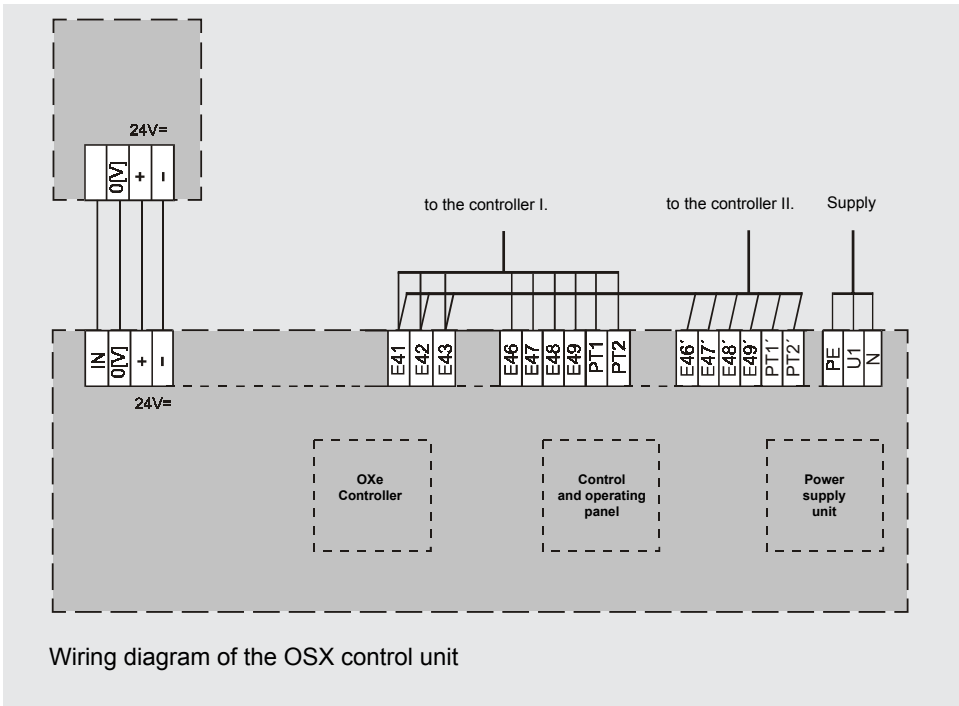
The **OSX control** unit is intended to automatically control two TRN...E/D output controllers according to the control analogue signal of 0 -10 V. The OSX control unit switches the individual stages of controllers depending on the size of the signal. The control and operating panel of the OSX control unit is equipped with LEDs signalling operation or failure of fans, buttons for failure unblocking, a button to stop fans and a button to disable the automatic output control. The OSX control unit serves to control the controllers of Vento fans in normal environmental conditions; the fan thermo-contacts are connected directly to the controllers. If overloaded, the fan is stopped by the controller. After cooling down, the fan can be restarted by confirming the failure-free state, pressing the unblocking M1 or M2 buttons situated on the control and operating panel of the OSX control unit. Upon resuming the power supply after its failure, the M1, M2 are automatically switched on

Unit Control

Unit control and operation is possible after opening the access door. The operator can control and operate it using the buttons situated on the control and operating panel.

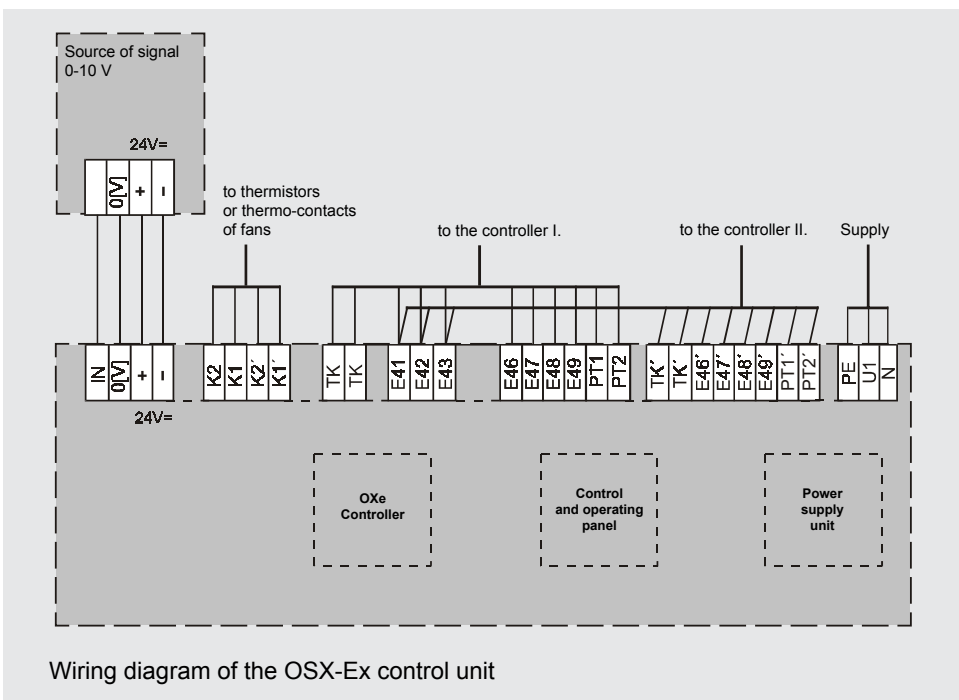
- The "STOP" button stops the air-handling unit operation. The "STOP" mode is indicated by the red LED next to the "STOP" button.

- The bottom "MANUAL" switches the Air-handling unit to the preset fixed operating mode (speed 1-5). Regardless of the momentary value of the control voltage, the voltage preset by the "TEST" trimmer is distributed to the input of the OXe controller, and thus the fan is started at the output (speed) corresponding to the preset voltage.



Wiring diagram of the OSX control unit

The **OSX-E** control unit is intended to automatically control two TRN...E/D output controllers according to the control analogue signal of 0 -10 V. The OSX-Ex control unit switches the individual stages of controllers depending on the size of the signal. The control and operating panel of the OSX-Ex control unit is equipped with LEDs signalling operation or failure of fans, buttons for failure unblocking, a button to stop fans and a button to disable the automatic output control. The OSX-Ex control unit serves to control the controllers of Vento fans in Zone 1 (SNV 2) environmental conditions; the fan thermistors K1, K2 are connected to the corresponding terminals of the OSX-Ex control unit. If any motor is overloaded, both fans will be stopped



Wiring diagram of the OSX-Ex control unit

⁽¹⁾ The normal versions of fans RP, RQ, etc. are equipped with integrated thermo-contacts which are directly connected to the protective circuits of the controller.

- The RESET M1, resp. RESET M2 buttons activate the unblocking circuits of the TRN...E/D I, resp. TRN...E/D II controllers.

The operating mode of the air-handling unit is indicated by the LEDs situated next to each control button. The flashing red LED next to the "RESET M1" or "RESET M2" buttons indicates operating failure of the corresponding fan, which can be caused either by the thermo-contacts' opening or by the failure of the controller's power supply. The fan can be restarted after the failure-free state and activation of circuits have been confirmed by pressing the corresponding unblocking M1 or M2 button (and releasing the "STOP" button, if closed).

The air-handling unit start-up using the OSX control unit can be performed in the following order:

- Switch the main breaker of the OSX control unit on.
- Press the "RESET" M1 and M2 buttons to activate the fan unblocking circuits.
- Using the "MANUAL" button, select the control mode; either from the external sensor – the source of 0-10V (the button is up) or the preset fixed output mode (the button is down).
- Release the "STOP" button, if closed.

Settings, Maintenance and Service

Warning:

The OXe controller setting may be performed only by a technician qualified in electrics in accordance with the applicable regulations (in CZ, authorized for independent work on electrical equipment in accordance with the 50/1978 Sb. directive, § 6), who has been properly instructed and trained in accordance with the air-handling unit service regulations.

Trimmers for output stages 1 to 5 situated on the OXe controller serve to set the voltage levels for switching of individual output stages (the switching is indicated by the LED). The "POWER" LED indicates power supply. The "TEST" trimmer (the OXe controller's panel must be swung away first) serves to set the reference voltage between UT and 0(V) terminals ranging from 0 to 10 V. After pressing the "MANUAL" button, the reference voltage will be led from the UT terminal to the IN terminal, and the switching levels of individual output stages can be set. The set levels can be measured on the 0(V) and IN terminals.

Setting of fixed fan speed

for the air-handling unit manual operating mode

- Press the "RESET" M1 and M2 buttons, the red LED must not flash.
- Press the "MANUAL" button, the green LED will start flashing.
- One of the red LEDs will start flashing according to the currently set fan speed (1 to 5).

- Use a slim screwdriver (2 mm tip), and insert it into the screw in the "TEST" hole on the OXe panel. Turning the screw to the left or to the right decreases or increases the level of the preset fan speed for manual operating mode.

Reference levels have been preset in the factory equally throughout the entire range of the 0-10 V signal.

1. Reference level: $U(KH1) = 0.5 V$
2. Reference level: $U(KH1) = 2.0 V$
3. Reference level: $U(KH1) = 4.0 V$
4. Reference level: $U(KH1) = 6.0 V$
5. Reference level: $U(KH1) = 8.0 V$

If correction of the reference level within 0.5 V from the factory preset level is necessary, use the following procedure:

- Switch the main breaker of the OSX control unit off.
- Release and open the OXe controller's face panel.
- Switch the main breaker of the OSX control unit on, and press the "STOP" and "MANUAL" buttons.
- Using a voltmeter (measuring range up to 10 V DC) measure the voltage on the IN and 0V terminals of the OXe controller.
- Using the "TEST" trimmer (in the hole marked "TEST" on the OXe controller's face panel), set on the voltmeter the required voltage of the corresponding reference level. Turn the trimmer until the LED corresponding to the adjusted reference level starts flashing. Repeating this procedure, the setting of all reference levels can be changed.

Warning:

When setting the reference level by turning the trimmer in the hole of the control stage, it is necessary to be very careful not to disturb the arrangement of voltage values for individual reference levels. The following relation must always be observed:

$$U(KH1) < U(KH2) < U(KH3) < U(KH4) < U(KH5)$$

- After the corrections of levels have been made, switch the main breaker of the OSX control unit off, and reinstall the OXe controller's face panel.
- Set the fixed fan speed for the air-handling unit manual operating mode in accordance with the article "Setting of fixed fan speed".

The OSX control unit does not need special maintenance. Preventive checks are performed within regular inspections of the air-handling unit wiring.

Optional Versions

As standard, the OXe controller module of the OSX control unit is equipped with an internal memory blocking "0", so-called "type 1-10" memory, which means that the air-handling unit will not be stopped at a signal level lower than the first reference level $U(KH1)$. Optionally, if ordered by the customer, other types of memory can also be delivered (e.g. unblocked "0" memory "1-10", inverse memories "10-1" or "10-0", or memory with a level code).

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