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RecuperationX REX EC

Controller for air handling units, recuboxes and heat recovery systems with fans with EC motors

The product was manufactured in accordance with
ISO 9001 for RekupeX by INSBUD Michaÿ Grzebinoga

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GENERAL INFORMATION

The RekupeX REX EC controller is an electronic controller with a large LCD display designed to control air handling units, recuboxes and recuperation sets with fans with **EC motors.** The controller allows control of air handling units with a 0-10 V signal (e.g. with commutated motors) and with additional equipment. (switched contact)

REX EC allows you to set the ventilation intensity based on a programmed work plan or operates in manual mode.

Thanks to the switching contact (relay R), the controller has additional functions:

ÿ The controller, thanks to relay R, allows **the device to be switched on (thermostat function - heating or cooling)** based on the temperature measured by the built-in or external temperature sensor.

ÿ The controller **can protect the heat exchanger of the heat recovery system against freezing.** Based on the temperature measured by an external sensor located at the outlet of the polluted air from the exchanger, relay R enables the switching off of the fresh air supply fan in order to defrost the exchanger with polluted air or to switch on the preheating.

The controller also has a contact that, when short-circuited, starts the **BOOST function - one-time ventilation.** This allows you to control the heat recovery system from a remote location (WC, bathroom, kitchen, etc.) for the purpose of quick ventilation. There are 3 modes to choose from. And it can be started either by simply pressing a button or with a suitable additional sensor, e.g. humidity, etc.

FEATURES

ÿ Large, backlit LCD display that displays the current fan speed, temperature of the integrated and additional temperature sensor, set mode, date and time, and more information.

ÿ 6 selectable fan speeds, each level individually adjustable within the entire control voltage range of 0-10 V

ÿ Input for connecting a warning signal. If a short circuit, an acoustic signal sounds and a message appears on the screen.

ÿ Monitoring the time for filter replacement (word FILTER, sound signal).

ÿ Easy, intuitive operation and programming

ÿ DC 6-29V power supply with backup battery (control settings retained)

ÿ Programming of ventilation intensity in a weekly cycle, 4 time periods each day (setting with an accuracy of 1 minute)

ÿ Manual or automatic mode

ÿ Support for additional digital input

TECHNICAL DATA

ÿ Consumption: < 2W
ÿ Number of power levels: 6 ÿ Storage temp.: -5 ÷ 50 ° C ÿ Temperature display: -20 ÷ 140 °C setting by 0.1 °C ÿ Temperature measurement accuracy: 1 °C ÿ Power supply: DC 6 - 29V
ÿ Current: 0.1A
ÿ Output signal: 0-10V DC
ÿ Digital inputs: 2x ÿ Relay output: 1x 1A 250V AC ÿ Housing: ABS ÿ Display: LCD (3.2")
ÿ Control: Electronic
ÿ Protection class: IP30

TECHNICAL DATA

ÿ Protection class: IP30
ÿ Setting memory retention: 36 months
ÿ Dimensions (height x width x depth): 86 x 86 x 15 mm
control panel, 62 x 45 x 27 mm relay module

GENERAL PRINCIPLES

The controller must be disconnected from the power supply during installation.
We recommend that you leave the installation to a qualified professional.

The controller is designed to control ventilation systems controlled by DC voltage 0 - 10V (2V = 20%, 3V = 30%, etc.)

DELIVERY CONTENTS

ÿ 1x main control panel - LCD
ÿ 1x relay connection module
External temperature sensor not included (can be ordered separately)

REGULATOR COVER

The REX EC controller consists of two parts: the main control panel with an LCD display and control buttons and a relay connection module (with screw terminals).
for connecting controlled devices, an additional button, a temperature sensor, a signal about a clogged filter.

The control panel and relay module are one unit after connection and installation is possible by attaching them using the holes of spacing of approximately 60 mm on a box with a depth of approximately 50 mm.
The modules are connected by a 7-core cable.

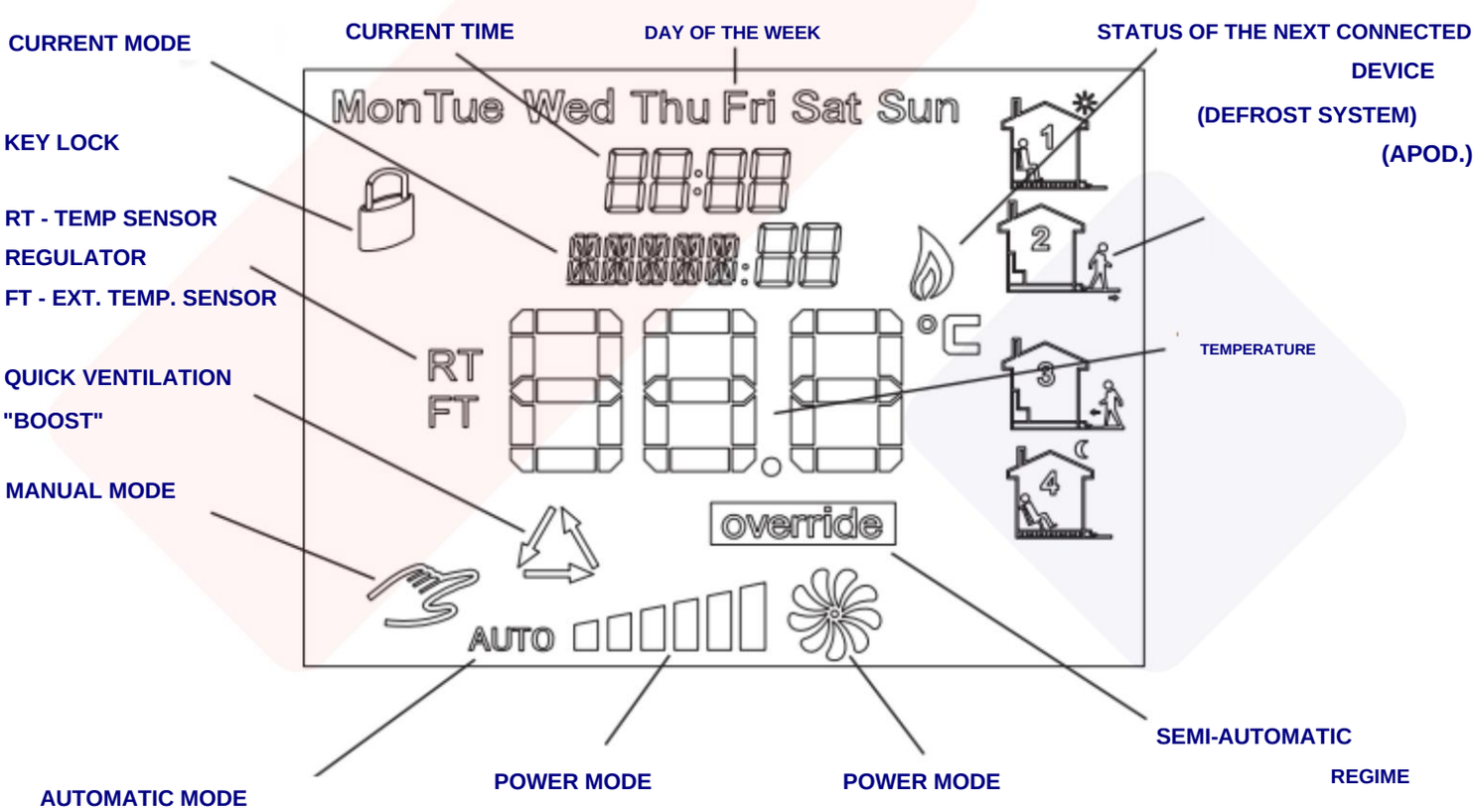
EXTERNAL TEMPERATURE SENSOR

ÿ It is possible to connect an NTC 10kÿ temperature sensor to the REX EC controller with the following characteristics:

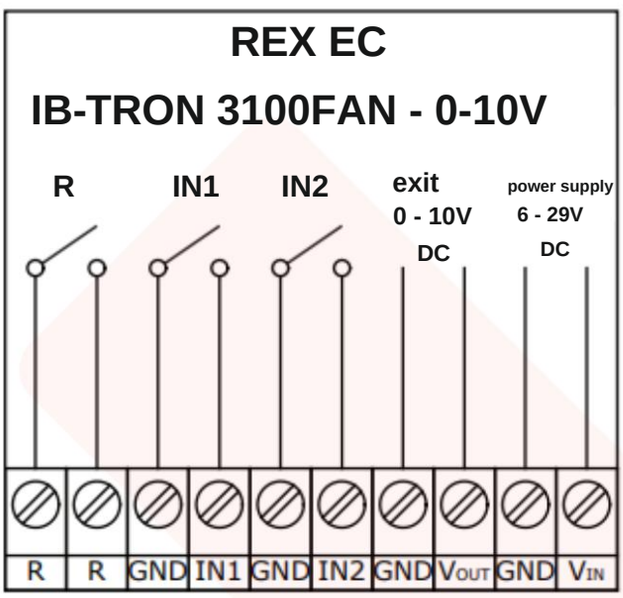
TEMPERATURE [°C]	RESISTANCE [Ω]
-40	346 405
-30	181 628
-20	99 084
-10	56 140
0	32 960
10	20 000
20	12 510
25	10 000
30	8 047
40	5 310
50	3 588
60	2 476
70	1 743
80	1 249
90	911
100	647

CONTROL PANEL OF THE REGULATOR

CONTROLLER CONTROL PANEL - ICON LEGEND



RELAY CONNECTION MODULE

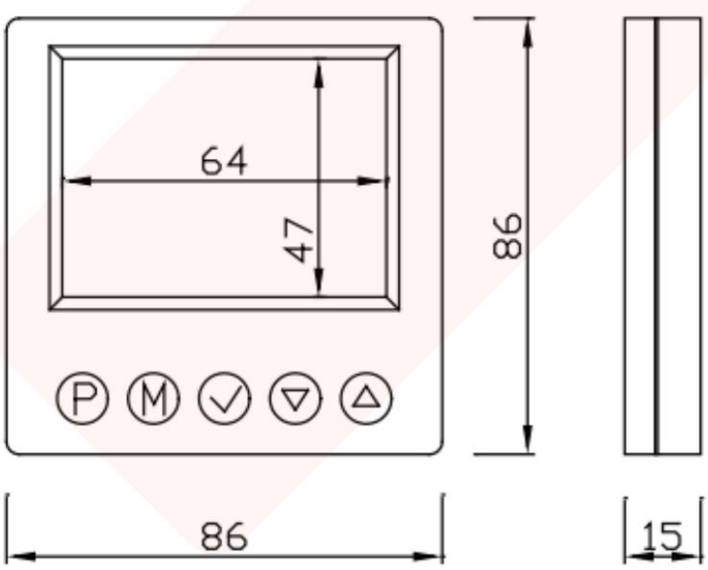


SCREW TERMINAL MARKING

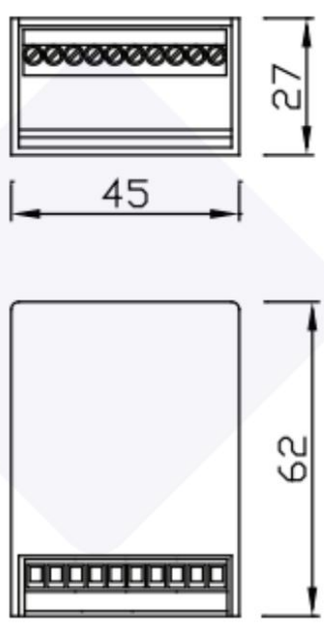
- **R** - connection of another device, which can be started depending on the selected function. Potential-free connector open circuit (closed / open). Detailed description in the next part of the manual
- **IN1** - input activating alarm or BOOST function - one-time ventilation depending on configuration
- **IN2** - input activating the alarm or for connecting an external temperature sensor sensors
- **OUTPUT 0-10V DC (GND, Vout)** - 0 - 10 V DC signal output
- **POWER SUPPLY 6-29V DC (GND, Vin)** - controller power supply

DIMENSIONS

main control panel - LCD



relay connection module



INSTALLATION NOTES

ÿ The main panel with the relay module is usually installed in an optional easily accessible location, such as the living room

ÿ A button for changing the fan speed from a remote location can be connected to the switched contact.
Multiple buttons can be connected by parallel connection.

ÿ Such buttons will be placed in rooms that require a temporary increase in ventilation intensity from time to time, e.g. in the toilet or kitchen.

ÿ The buttons are connected using a 2-core cable

ÿ **Connection examples are given in the next section of the manual**

SWITCHING ON THE REGULATOR

To turn the control on or off, press **the "P" button.**

When the controller is off, the display only shows the current RT or FT temperature and the OFF icon. The fan control output is 0V and the other connected device is off.
When the controller is turned off, the alarm and clogged filter detection function is still active.

CONTROLLER CONFIGURATION

The controller operating parameters are set in the configuration menu.

To enter the configuration menu:

If the controller is on, turn it off by pressing **the "P" button.**

With the remote control turned off, press and hold **the "M" button for about 3 seconds.**

Once the controller is in configuration mode, the **"MENU"** symbol , the setting level number, the setting code abbreviation (e.g. "CFG") as well as the setting value and unit are displayed.

CONTROLLER CONFIG.

To change the displayed setting value, press the **"DOWN"** or **"UP" button.**

To move to the next setting level, press the **"M" button.** After reaching the last setting level, pressing the **"M"** button again will return to the first level of settings.

The controller exits the configuration menu either after the set idle time has elapsed or by pressing the button: **"P"** or **"OK".** By pressing the **"OK"** button or after the idle time has elapsed, the newly set value is saved and the configuration menu is exited. By pressing the **"P"** button , you cancel the changes and exit the configuration menu.

RELAY MODULE CONNECTION CONFIGURATION - set no. 01 - MCPid

Correct communication with the relay module is symbolized **by the sun symbol.**
The relay module address should not be changed in case of standard controller operation and should be **"0"**

To set a different module address:

Enter the configuration menu.
Press the **"M"** button until the display shows the number of setting level 01, marked as **"MCPid".**

Select a value between 0 and 7.
Save the settings by pressing the **"OK"** button.

“BOOST” FUNCTION (QUICK VENTILATION) - setting no. 02 - INMOD

The user can select one of three operating modes for the additional digital input **(IN1).** Mode 1 and 2 allow using a monostable button and mode 3 - a bistable button.

1. VENTILATION AT A SET LEVEL FOR A SPECIFIC TIME

After briefly pressing the button connected to the **IN1** input , a one-time ventilation is started and the fans change their speed to the user-set level for the user-set time.

After the one-time ventilation time has elapsed, the control will re-engage the gear that was in use before the button was pressed.

To exit the single ventilation mode, press the button for about 3 seconds during the mode.

When the mode is active, there is a ventilation icon on the control panel.

2. GRADUAL INCREASE IN FAN SPEED

Pressing the button connected to input **IN1** will increase the fan power by 1 speed. If the power is at the highest level, pressing the button will cause the fans to turn off.

The sequence repeats itself continuously. If the controller is operating in **MANUAL** mode, pressing the button will cause a permanent change in power.

If the control is operating in automatic mode **(AUTO),** pressing the button will cause a transition to semi-automatic mode **(OVERRIDE).**

To return to automatic mode, press the button for about 3 seconds.

3. MODE CHANGE WITH BISTABLE BUTTON (SWITCH)

This mode allows connecting a bistable switch to input **IN1.**

After switching the control button, the fan speed will change to the set level. Then switching the button back will return the control mode to the original level.

The start of this mode is signaled by an icon on the controller display.

SELECTING A SPECIFIC TYPE OF “BOOST” FUNCTION

Enter the configuration menu:

Press the **“M”** button until setting number 02 marked **“INMOD” appears on the display.**

Choose:

Value 1 to set the ventilation function.
VENTILATION AT A SET LEVEL FOR A SPECIFIC TIME
(monostable button)

Value 2 to set the ventilation function.
GRADUAL INCREASE IN FAN SPEED
(monostable button)

Value 3 to set the ventilation function.
MODE CHANGE WITH BISTABLE BUTTON (SWITCH)

POWER LEVEL SETTING FANS IN “BOOST” FUNCTION - no. set. 03 - b_SPd

When the function **VENTILATION AT A SET LEVEL FOR A DEFINED TIME** (Parameter INMOD = 1) or the function **CHANGE MODE WITH BISTABLE BUTTON (switch)** (parameter INMOD = 3) is assigned to the digital input **IN1 ,**
the user should define what fan speed will start when the button or switch is pressed.

Enter the configuration menu.

Press the **"M"** button until setting number 03, labeled **"b_SPd", appears on the display.**

Select the gear that will be activated when the external button is pressed.

Exit the configuration menu or go to another setting.

SETTING THE VENTILATION TIME "BOOST" - Set No. 04 - bTIME

When the function **VENTILATION AT A SET LEVEL FOR A DEFINED TIME** is assigned to the digital input **IN1** (Parameter INMOD = 1), the user should define the time for which the ventilation function will be active.

The time is set as follows:

Enter the configuration menu.
Press the **"M"** button until setting number 04, labeled **"bTIME", appears on the display.**

Select the ventilation time in minutes (range from 1 to 30).

Exit the configuration menu or go to another setting

CALIBRATION OF TEMPERATURE SENSORS - set no. 05 - CALIB

RT TEMPERATURE VALUE CALIBRATION

If the internal temperature **RT** indicated by the controller differs from the actual temperature, calibrate the internal temperature sensor.

Calibration settings are made as follows:

Enter the configuration menu.
Press the **“M”** button until the display shows setting number 05, labeled **“CALIB”**

Set the value by which the displayed **RT** temperature value should change .

For example, if the displayed value is 20°C and the actual temperature is 18°C, set the value to -2°C and exit the configuration menu.

If the outdoor temperature **FT** indicated by the controller differs from the actual temperature, calibrate the outdoor temperature sensor.

Enter the configuration menu.
Press the **“M”** button until the display shows setting number 06, labeled **“CALIB”**

CALIBRATION OF TEMPERATURE SENSORS

Set the value by which the displayed temperature value **FT** should change .

For example, if the displayed value is 20°C and the actual temperature is 18°C, set the value to -2°C and exit the configuration menu.

INACTIVE TIME - set no. 07 - PTD

The idle time is the time it takes for the controller to exit parameter setting mode to the default operating mode after the last time any button was pressed. This gives the user more time to make the necessary settings.

Setting the idle time:

Enter the configuration menu. Press the **“M”** button until the display shows setting number 07, marked **“PTD”**

Set the required value in the range of 5 ÷ 30 s, in 5 s increments. Exit the configuration menu or switch to another setting.

LCD BACKLIGHT TIME - set no. 08 - LIGHT

Backlight time is the time after which the LCD backlight turns off after the last button was pressed.

To set the backlight timeout:

Enter the configuration menu. Press the **“M”** button until the display shows setting number 08, marked **“LIGHT”**

Set the desired value in the range of 10 ÷ 60s, with a step of 10 s.

It is also possible to set the value **"OFF"** - backlight is always off or **"ON" -** the backlight is always on.

BACKLIGHT INTENSITY - No. set 09 - LT_oN

The controller is programmed to automatically turn off the screen backlight after a period of inactivity.
By default, the LCD backlight is completely turned off in inactive mode. However, the controller can be set so that the LCD display only reduces its backlight intensity in inactive mode. The LCD backlight intensity can also be set for the controller's active mode.

Adjusting the backlight intensity in active mode is done as follows:

Enter the configuration menu. Press the **“M”** button until the display shows setting number 09, marked as **“LT_oN”**

Set the desired backlight intensity in % when the controller is active.

Setting the backlight intensity when the controller is not active:

Enter the configuration menu. Press the **“M”** button until setting number 10, labeled **“LToFF”, appears on the display.**

Set the desired backlight intensity in %, for inactive controller mode (state after (timeout for inactivity).

:

DISPLAYED TEMPERATURE UNITS - No. set 11 - UNIT

The temperature can be displayed in either °C or °F.

The settings are made as follows:

Enter the configuration menu. Press the **“M”** button until the display shows setting number 11, labeled **“UNIT”.**

Select the unit for displaying the temperature.

TIME FORMAT - setting no. 12 - CLOCK

The time can be displayed in either 12 or 24 hour format.

The settings are made as follows:

Enter the configuration menu. Press the **“M”** button until setting number 12, labeled **“CLOCK”,** appears on the display.

Select 12 or 24 hour time format.

FILTER REPLACEMENT REMINDER - no. set 13 - FILTER

The controller can remind you to change the filters and you can set the interval (unit is the number of days) after which the controller will enter reminder mode as follows:

Enter the configuration menu. Press the **“M”** button until setting number 13, labeled **“FILTER”,** appears on the display.

Select the number of days for which the reminder will run filter replacement or select **“OFF”** to deactivate the reminder function.

NOTICE!

After the specified time has elapsed, the number of days must be set again, otherwise the control will still be in reminder mode.

ALARMS - set no. 14 - ALoFF

The controller can inform you of alarms (e.g. filter replacement) even when the controller is turned off.
To activate this feature, follow these steps.

Enter the configuration menu. Press the **“M”** button until the setting number appears on the display.
14, marked as **"ALoFF"**

Select
“YES” - Alarms are always reported.
“no” - Alarms are not reported if the controller is turned off

DISPLAYED TEMPERATURE - Set No. 15 - dISPT

The display can show either the temperature measured by the integrated sensor or the temperature from an external sensor. Alternatively, it is possible to display both temperatures alternately.

To set:

Enter the configuration menu. Press the **“M”** button until the display shows setting number 15, labeled **“dISPT”**

DISPLAYED TEMPERATURE

Select a value:

"rt" - displays only the temperature of the integrated **RT** sensors

“Ft” - displays only the external temperature **FT** sensors

“rFt” - displays **the FT and RT** values alternately

INPUTS IN1 and IN2 - setting no. 16 - ISIGN

The processing method and function of inputs IN1 and IN2 is performed in this way.

Enter the configuration menu. Press the **“M”** button until the setting number appears on the display. 16, marked **"ISIGN"**

Select a function:

"bt" - **IN1** will be processed as activation of the **BOOST function; IN2** will function as an outdoor temperature sensor

“a1t” - **IN1** activates alarm 1 (short circuit causes ALARM1 to be displayed and an audible signal to be triggered); **IN2** will function as a sensor outdoor temperatures

"ba2" - **IN1** activates the BOOST function; **IN2** will trigger alarm 2 (the display will show ALARM2 and a sound signal)

NOTICE!

If the operation of output R depending on the external temperature is selected (sensor connected to IN2), then it will not be possible to save the IN2 output setting as an alarm

NOTICE!

If the R output operation is selected.
- input IN2, it will not be possible to remember the setting of output IN2 as the outdoor temperature.

REFERENCE TEMPERATURE - set no. 17 - R_CTM

The controller can operate based on the temperature measured by the integrated sensor or an external sensor.

To change the reference sensor, do the following:

Enter the configuration menu. Press the **“M”** button until the display shows setting number 17, labeled **“R_CTM”**

Select:
“rt” - the integrated sensor will be the reference sensor RT temperatures
"Ft" - the reference sensor will be an external temperature sensor FT

ACTIVE STATE OF RELAY - set no. 18 - R_oUT

You can choose whether the relay on output R should be in the closed or open state when active or inactive. The active state is indicated by a flame symbol on the display.

To set:
Enter the configuration menu. Press the **“M”** button until the display shows setting number 18, marked **“R_oUT”**

Select:
“oPn” - in the active state the relay is disconnected (the flame symbol lights up on the display)
"cLo" - in the active state the relay is connected (flame symbol is not on the display)

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OTHER DEVICES - output R - No. set. 19 - R_Mod

As a user, you can choose the support mode for another device connected to the R output:

oFF - The connected device is permanently switched off

htG - The connected device is in operation and performs the function of a thermostat - heating. If the reference temperature (RT or FT set by the **R_CTM parameter)** drops below the set temperature **R_TS0** taking into account the hysteresis (parameter **R_HYS),** relay **R** will be set to the active state (parameter **R_oUT).**

clG - The connected device is in operation and performs the function of a thermostat - cooling. If the reference temperature (RT or FT set by parameter **R_CTM)** increases above the set temperature **R_TS0** taking into account the hysteresis (parameter **R_HYS),** relay **R** will be set to the active state (parameter **R_oUT).**

byP - The connected device is controlled by the **BY-PASS function.** If the temperature (RT or FT set with parameter **R_CTM)** drops below the set temperature **R_TS0** taking into account the hysteresis (parameter **R_HYS)** or the reference temperature itself rises above the set temperature **R_TS1,** then relay **R** will set to active state (parameter **R_oUT).**

ri2 - If input IN2 is set as alarm input 2, this mode causes relay **R** to be set to the active state (parameter **R_oUT)** if alarm 2 is active (shorting IN2 sets relay R to active).

rFn - if a voltage other than 0V is given on the control output 0..10V, then relay **R** is set to the active state (parameter **R_oUT).** If the voltage on the output 0..10V is 0V, then relay **R** is set to inactive state.

Procedure for setting up a connected device on output R:

Enter the configuration menu.
Press the **"M"** button until setting number 19, labeled **"R_Mod", appears on the display.**

Select the appropriate mode according to the mode description above:

"oFF" "htG" "clG" "byP" "ri2" "rFn"

HYSTERESIS - set no. 20 - R_HYS

Hysteresis is the difference (expressedn °C or ºF) between the threshold for switching on and off the device in relation to the set temperature. For example, if the set temperature is 20 °C and the hysteresis is set to 1.0 °C, the controlled device will switch on in heating mode when the temperature drops below 19.5 °C, and then switches off only after the temperature rises above 20.5 ° C.

To change the hysteresis value for a device in htG, clG or byP mode:

Enter the configuration menu.
Press the **"M"** button until setting number 20, labeled **"R_HYS", appears on the display.**

Set the value. The hysteresis can be set within the range 0.2 ÷ 20.0 °C by 0.1 °C.

TEMPERATURE R_TS0 - set no. 21

Control of the connected device on output R in **htG, clG** or **byP** mode is based on the set temperature **T_TS0.**

To set the temperature **T_TS0:**

Enter the configuration menu.
Press the **"M"** button until setting number 21, marked **"T_TS0", appears on the display.**

The temperature can be set in the range of -9.5 ÷ 99.0 ° C in 0.5 ° C increments.

TEMPERATURE R_TS1 - set no. 22

Control of the connected device on output R in **byP** mode is based on the set temperature **T_TS1.**

To set the temperature **T_TS1:**

Enter the configuration menu.
Press the **"M"** button until setting number 22, labeled **"T_TS1",** appears on the display .

The temperature can be set in the range of -9.5 ÷ 99.0 ° C in 0.5 ° C increments.

OUTPUT VOLTAGE VALUES - No. settings 23 to 29

The controller supports 6 ventilation speeds.
Each stage has a different output voltage. The user can change the voltage value of each stage.
Defining voltage values for individual stages (increasing bar symbol):

Enter the configuration menu.
Press the **"M"** button until the display shows a setting number from 23 to 29.

Set the desired voltage value in the range 0-10V by 0.1 V.

Defining voltage values for individual stages:

SPEED DEGREE	NUMBER IN MENU SETTINGS	NAME SETTINGS	DEFAULT VALUE
0 (Wył)	23	FoF_V	0,0 V
1	24	FL1_V	2,0 V
2	25	FL2_V	3,0 V
3	26	FL3_V	4,5 V
4	27	FL4_V	6,0 V
5	28	FL5_V	8,0 V
6	29	FL6_V	10,0 V

NOTICE!

The value of the set speed gear is independent of the value of the set voltage.

Which means that it is possible to set the voltage somewhat pointlessly:

» Speed level number 4 has an output voltage of 6.0 V
» Speed level number 5 has an output voltage of 3.0 V
etc.

SOFTWARE VERSION

Checking installed software:

Enter the configuration menu.
Press the **"M"** button until setting number 30 marked **"VER" appears on the display.**

TIME AND DAY OF THE WEEK

Setting the current time and day of the week:

Turn on the controller.

Press and hold the **“OK”** button for approximately 3 seconds. The displayed time will start flashing.

Set the current time.

Press the **"OK"** button again .
The day of the week will start flashing.

Set the day of the week:
Mon-Mon, Tue-Tue, Wed-Wed,
Thu-Thu, Fri-Fri, Sat-Sa and Sun-Sun

Press **"OK".**

FACTORY SETTINGS

To reset the controller to factory settings:

Turn off the controller.
Press the **"M"** and **"OK"** buttons simultaneously and hold them for 3 seconds.
The display will show **“RESET”** for 5 seconds.

KEYBOARD LOCK

To protect the controller from unwanted changes to settings, you can lock the keyboard.
When the keypad lock is active, the display shows a padlock symbol and the keypad does not respond to pressing.

To lock and unlock the keyboard:

Press and hold the “DOWN” and “UP” buttons at the same time for about 3 seconds.

WORKING PROGRAMMING SCHEDULE - AUTO mode

In automatic mode, you can set the controller's work schedule.
This means that you program the fan speeds for a certain time, thus, for example, preventing unnecessary ventilation when it is not needed.
Thanks to the schedule, four time periods can be programmed for each day of the week, indicated by a symbol on the display.
The result is, for example, the following:

Time period #1
from 7:00 - at home

Time period no. 3
from 3:00 PM - return

Time period #2
from 9:00 - outside the house

Time period no. 4
from 9:00 PM - sleep

Setting your own schedule:

Turn on the controller. Make sure that the controller is set to automatic operation (the time segment symbol and the word **AUTO are displayed).**
Optional switching with the **"M" button.**

Press and hold the **“P”** button for 3 seconds.
The display will show **“PROG”** and the current day of the week will start flashing.

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WORKING PROGRAMMING SCHEDULE - AUTO mode

Use the “DOWN” and “UP” buttons to select the day of the week, to select the entire weekend, hold the "UP" button and to select all days from MON to FRI, hold the button again "UP".

Confirm your selection by holding down the **“P” button.**

NOTE!

The following steps describe programming one work interval (day, weekend or work week).
Repeat the procedure for all intervals you set.

The time to start will start flashing on the display.
given working mode. Set the time.

Confirm with the **“P” button.**

The power symbol will start flashing on the display.
for a given time interval. Choose for you suitable power, with OFF turning off ventilation.

Confirm with the **“P” button.**

Repeat the above steps for all time periods.
After programming all four time periods of the day, the controller returns to standard display mode.

The fourth time segment lasts until the beginning of the first time segment the following day (e.g. from 9:00 p.m. Monday to Tuesday 7:00 a.m.).

MANUAL MODE

In manual mode (manual), the controller constantly maintains the set ventilation speed (no work schedule).

In manual mode, the display shows a hand symbol.

The controller remains in manual mode until the user does not change to automatic mode.

To switch to automatic mode, press **"M"** button .

Fan speed adjustment in manual mode is done by pressing the **“DOWN”** or **“UP” button.** Confirm your choice by pressing the **“OK”** button.

If an external button is connected to input **IN1** and the **INMOD** parameter is set to value 2, the controller will increase the fan speed by 1 degree each time the external button is pressed.

If the controller is at the highest speed, then pressing the external button will turn off the ventilation. The sequence repeats all the time.

To lock and unlock the keyboard:

Press and hold the "DOWN" buttons at the same time and “UP” for about 3 seconds.

SEMI-AUTOMATIC MODE

If you wish to change the ventilation speed in automatic mode only for the current time period, use the semi-automatic mode (displayed as **OVERRIDE).**

In semi-automatic mode, the speed is corrected manually in the current time period.

This means that you set a different speed for the current time period than the plan suggests.

After the current segment ends, the controller returns to automatic mode and continues working according to the schedule.

SEMI-AUTOMATIC MODE

Switching to semi-automatic mode is only possible from automatic mode.

Activating semi-automatic mode, de-facto changes the ventilation speed only for the current time period:

The controller must be in automatic mode. Press the **“DOWN”** or **“UP” button.** The display will show the current speed setting.

Enter new settings.
Confirm your selection with the **“OK” button. OVERRIDE will appear on the display.**

To cancel semi-automatic mode and return to automatic mode, press the **“OK”** button before the end of the current time period .

If an external button (or buttons) is connected to input **IN1** and the **INMOD** parameter is set to **2** and the controller operates in automatic mode, the controller switches to semi-automatic mode and each time the external button is pressed, the fan speed and power consumption increase.

You can then exit semi-automatic mode by pressing the **“OK”** button on the controller or by pressing and holding the external button for approximately 3 seconds.

MALFUNCTIONING REGULATOR

If you suspect that the controller is not working properly, try resetting it to factory settings.

Turn off the controller.
Press the **"M"** and **"OK"** buttons simultaneously and hold them for 3 seconds.
The display will show **“RESET”** for 5 seconds.

Turn off the controller.

Press the **"M"** and **"OK"** buttons simultaneously and hold them for 3 seconds.
The display will show **“RESET”** for 5 seconds.
module.

We also recommend checking all connected wires.

If resetting the controller to factory settings does not help, check the cable connections.

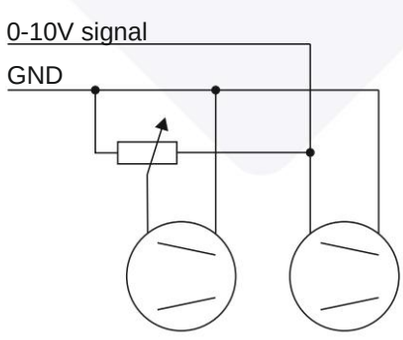
“BOOST” FUNCTION (QUICK RESOLUTION) FRICTION) - SENSOR CONNECTION

A carbon monoxide sensor, carbon dioxide sensor or humidity sensor can be connected to input **IN1 .** The active signal for this input is its short circuit.

The sensor can therefore be used instead of an external button.

“REGULATING” INEQUALITY- WHOSE SYSTEM

If your system is not pressure balanced, it is possible to adjust the pressure balance by installing a 10kOhm potentiometer between the control signal and the fan that supplies the larger amount.
air.
Correct settings will reduce the flow rate to the same values for the volume flow of clean and exhaust air.



(less pressure loss)

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CONNECTION EXAMPLE 1
FREEZE PROTECTION OF THE HEAT EXHAUST SYSTEM
DISCONNECTING THE SUPPLY FAN

relay module.

The controller in this connection is used to regulate a heat recovery system equipped with a supply and exhaust fan controlled by a **0-10V signal.**

An external temperature sensor connected to **IN2,** physically located at the exhaust air outlet from the heat exchanger, indicates a temperature of e.g. 1°C and then **the controller stops the supply fan.**
In this state, the warm air from the exhaust fan defrosts the heat exchanger with warm exhaust air.

The internal temperature in this case is for information only.

The temperature of the external sensor **FT** is the temperature at the waste heat output from the recuperator, which is not important information for the user and can be hidden on the screen by appropriately configuring the **"dISPT" parameter.**

Input **IN1** is configured as **BOOST function.**

Any BY-PASS is controlled manually.

ATTENTION!

This connection method will create a slight short-term indoor **vacuum.** Therefore, this connection must under no circumstances be used in a space where devices or sources are used heat that requires air supply from the interior, do not have a secured air supply from the exterior or in which the negative pressure can cause damage to themselves or damage to things due to these devices (connected to negative pressure).

SETTINGS

No. MENU	No. MENU Settings	
16	ISIGN	bt
17	T_CTM	Ft
18	R_oUT	oPn
19	R_Mod	htG
20	R_HYS	1.0°C (*)
21	T_TS0	1.0°C (*)

The values marked (*) are suggested values for starting the exchanger defrost process.
The values should be chosen depending on the type of exchanger and the location of the temperature sensor.

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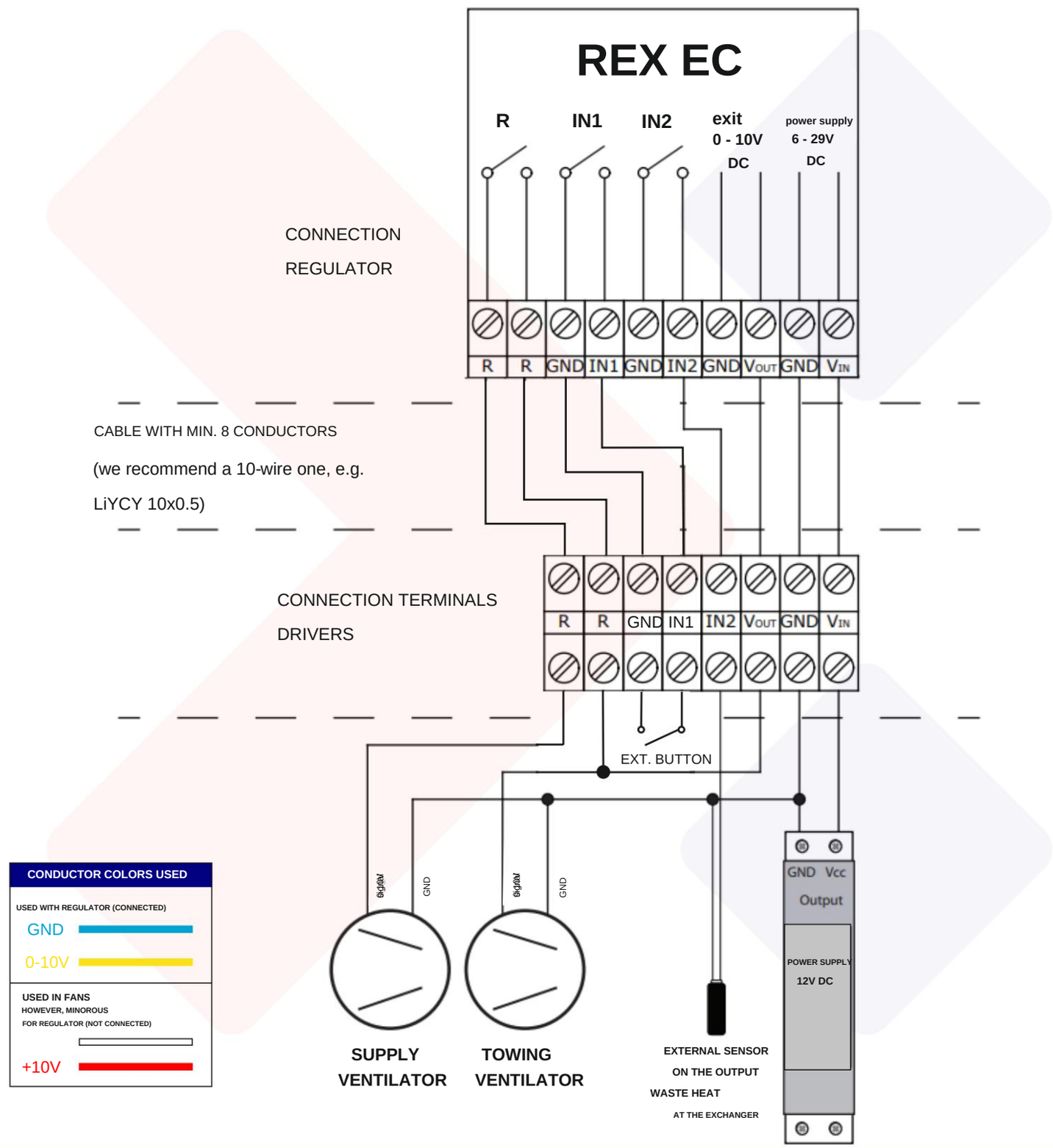
CONNECTION EXAMPLE 1
FREEZE PROTECTION OF THE HEAT EXHAUST SYSTEM
DISCONNECTING THE SUPPLY FAN



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CONNECTION EXAMPLE 2
FREEZE PROTECTION OF THE HEAT EXHAUST SYSTEM
SWITCHING ON PREHEATING

The controller in this connection is used to regulate a heat recovery system equipped with a supply and exhaust fan controlled by a **0-10V signal.**

An external temperature sensor connected to **IN2,** physically located at the exhaust air outlet from the heat exchanger, indicates a temperature of e.g. 1°C and then **the controller starts the electric preheater** located in the fresh air supply pipe in front of the heat exchanger.

Subsequently, the heated air defrosts the heat exchanger and the electric preheating is switched off (when the set temperature is reached - in this case at 3°C).

The internal temperature in this case is only informative.

The temperature of the external sensor **FT** is the temperature at the waste heat output from the recuperator, which is not important information for the user and can be hidden on the screen by appropriately configuring the **"dISPT" parameter.**

Input **IN1** is configured as **BOOST function.**

Any BY-PASS is controlled manually.

SETTINGS		
No. MENU	**No. MENU Settings**	
16	**ISIGN**	**bt**
17	**T_CTM**	**Ft**
18	**R_oUT**	**duty**
19	**R_Mod**	**htG**
20	**R_HYS**	**3.0°C (*)**
21	**T_TS0**	**1.0°C (*)**

The values marked (*) are suggested values for starting the exchanger defrost process.
The values should be chosen depending on the type of exchanger and the location of the temperature sensor.

The contactor used must be controlled by 12V DC. and must be sized according to the power of the electric heater.
Relay Re can directly control the heater as long as the maximum relay load of R = 1 A is not exceeded.

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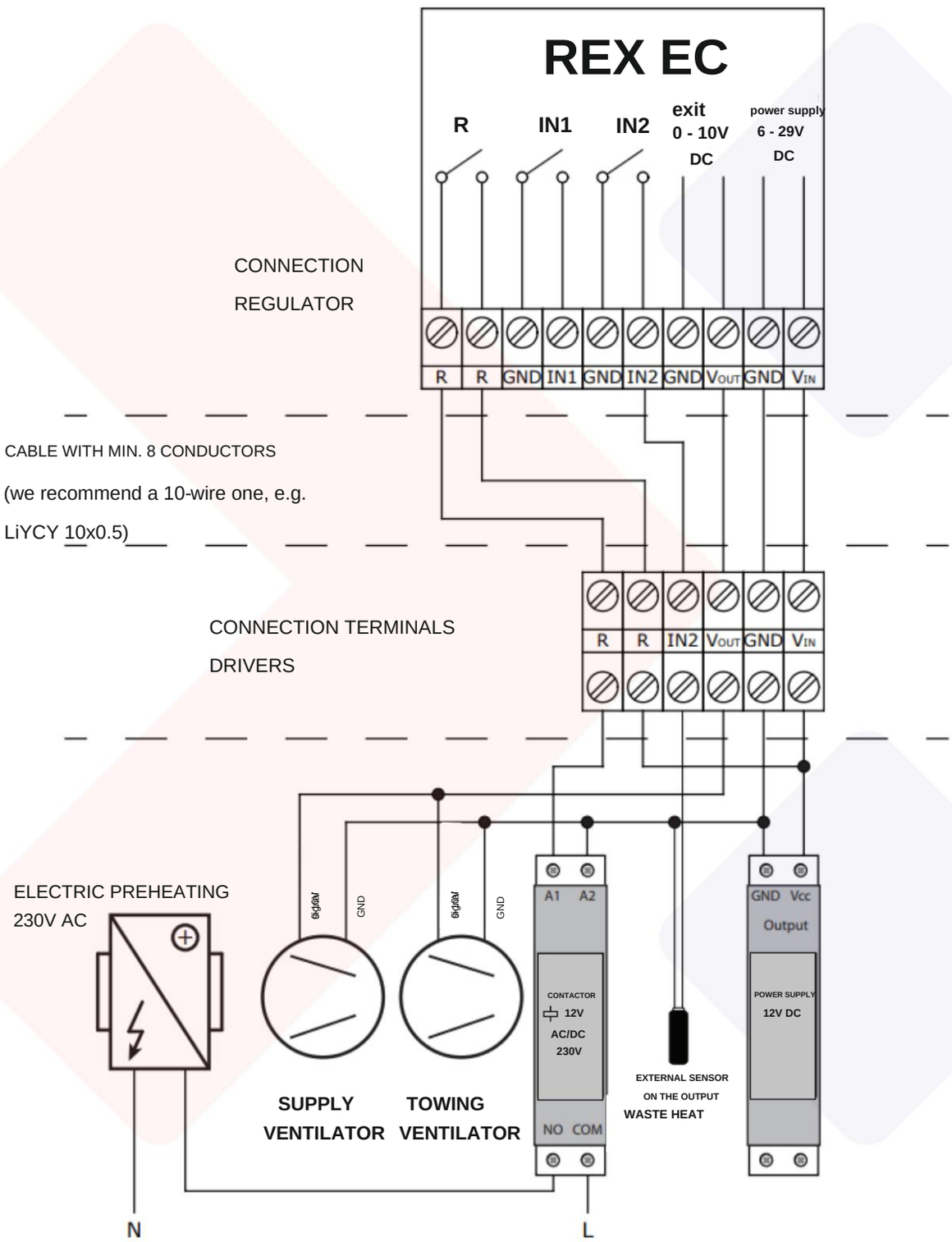
CONNECTION EXAMPLE 2
FREEZE PROTECTION OF THE HEAT EXHAUST SYSTEM
SWITCHING ON PREHEATING



CONNECTION EXAMPLE 3
AUTOMATIC BY-PASS CONTROL

The controller in this connection is used to regulate a heat recovery system equipped with a supply and exhaust fan controlled by a **0-10V signal.**
An external temperature sensor connected to **IN2,** physically located at the fresh air inlet to the heat exchanger (exchanger), indicates the outdoor temperature value and based on it, the controller opens or closes **the heat exchanger (recuperator) bypass with fresh air - BY-PASS damper controlled by a servo drive.**

In our case, the BY-PASS is still closed, but as soon as the outside temperature is the ideal temperature for us, the servo drive opens the BY-PASS damper. For example, if the temperature is outside air between 16 and 26°C.

The internal temperature in this case is only informative.

The temperature of the external sensor **FT** is the temperature at the fresh air inlet to the heat exchanger and can be displayed on the screen by appropriately configuring the **"dISPT" parameter.**

Input **IN1** is configured as **BOOST function.**

SETTINGS		
No. MENU	**No. MENU Settings**	
16	**ISIGN**	**bt**
17	**T_CTM**	**Ft**
18	**R_oUT**	**duty**
19	**R_Mod**	**htG**
20	**R_HYS**	**3.0°C (*)**
21	**T_TS0**	**1.0°C (*)**

The values marked (*) are suggested values for starting the exchanger defrost process.
The values should be chosen depending on the type of exchanger and the location of the temperature sensor.

The scheme includes a 230V AC bypass drive with three-point control. Therefore, an additional external 12V DC relay P1 was used.

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CONNECTION EXAMPLE 3

AUTOMATIC BY-PASS CONTROL