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Installation and operating instructions

Flex Controller

CONTROL PANEL WITH THE LIQUID CRYSTAL DISPLAY

„FLEX" Technical manual

Description

   The **"FLEX"** control panel is used for control of ventilation units with V1, V2, V2.3, V2.4 control boards.

• Program the unit operation modes for one week.
• Set the temperature for supply or extracted air flow.
• Set fan motor rotation speed.
• Indication for the plate heat exchanger's antifreeze protection.
• Fault signal indication
• Indication of the temperatures, humidity and pressure for ambient, outdoors room, exhaust and supply air.
• Automatic recognition of the controlled unit.

Technical data

Mounting		Surface.
Voltage	[VDC]	15-30
Data transmission		RS485
Cable length	[m]	13
Dimensions (WxHxD)	[mm]	86x86x16
Safety class		IP-20
Ambient temperature	[°C]	10-30(50*)
Ambient humidity	[%]	<90

Functionality of buttons

1 **"Fast Button"** – used for control of the selected function (see II.6.5.3)
2 „ ↑ "– used for increasing the setting values or for moving a line up
3 **"OK"** – used for confirmation of the selected line or of the set value
4 „ ↑ "– used for decreasing the setting values or for moving a line down
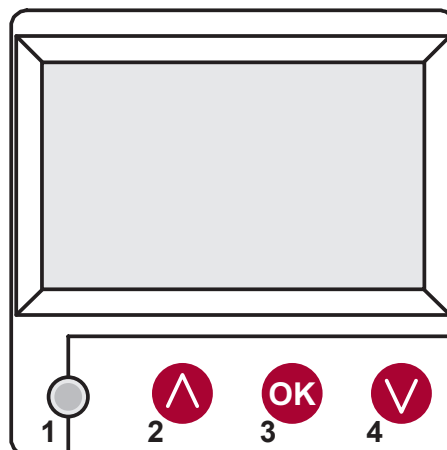
I. Initial window

1. **Unit operation mode is selected**

    "OFF" – complete switch off of the unit
    "Manual" – the unit operates based on the set speed and temperature
    „Schedules" - the unit operates based on the programmed events., and/or **„Building protection"** – minimal ventilation without temperature maintenance, (see.: Service manual 17.1.).
    If no programmed events exist, **"(!)"** is shown (see II.2).

Manual	
Fan speed	Schedules (!)
Set temperature	**Manual**
Supply air temp.	OFF
Deicing	
7:28 **2013-06-04** Sk	

2. "Fan speeed" – allows selecting the speed

   "Building protection" operation with minimal speed and economic temperature. (see. II.7.1), "minimal", "nominal" or "Stop", "low", "middle", "high" (see.: Service manual 17.1.)
   The speed of the supply and extraction motors of the units with EC motors can be adjusted individually setting their speed and pressure (see II.6.7 and II.6.8)

Manual	▶
Fan speed	middle
Set temperature	**low**
Supply air temp.	Stop
Deicing	
7:28 **2013-06-04** SUN	

3. "Set temperature"

   The desired supply or extracted air temperature can be set from 15 to 30 °C.

Fan speed	low
Set temperature	20 °C
Menu	**19** °C
Supply air temp.	18 °C
Deicing	
7:28 **2013-06-04** SUN	

4. "Menu" – other settings (see II.)

   "Schedules"
   "Date-Time"
   "View Alarms"
   "Languages"
   "Sensors values"
   "Extra"
   "Menu configuration"

Fan speed	low
Set temperature	**19** °C
Menu	▶
Supply air temp.	
Deicing	
7:28 **2013-06-04** SUN	

5. Indication based on the setting of the maintained supply or extracted air temperature: (see II.6.3.1) "Supply air temp." or "Extract air temp."

6. Extra:

   "NC" or "Communication error" - no connection with the unit's control board.
   "Deicing" - activated unfreezing function for the plate heat exchanger.
   "Change filters" – contaminated filters (see. II.6.11).
   "Economic" – from external Stop signal the unit works at the lowest speed and under the economic temperature.
   "Stop input" - the unit is stopped from the external input signal.
   "Standby (Sleep)" - when the fast button "Run/Standby" function is selected (see II.6.5.3.)
   "Boost/fireplace" - when the fast button „Boost/fireplace" function is selected (see II.6.5.3.) or external signal.
      – if the selected function is on (see II.6.5.1.)
   "Night cooling" – if the selected function is on (see II.6.5.1)
   "High CO2 level" – allowed CO_2 level is exceeded (see II.6.5.2)
   "Battery low" – Battery should be replaced with the new one.
   "Critical supply temp." – when supply air temperature drops below 16,5 °C
   „False Psi" – it is impossible to support set parameters in pressure mode.

Fan speed	low
Set temperature	**19** °C
Menu	
Supply air temp.	**18.7** °C
communication eror	
7:28 **2013-06-04** SUN	

System NC	**6/7**
Date – Time	▶
View Alarms	▶
Languages	▶
Sensors values	▶
Extra	▶

7. Current time and date is displayed (see II.2)

II. Menu

The first line is for information:
Version of the unit is shown or **"NC"** if there is no connection with the unit;

Numbers at the right side:
Right – total number of the items for selection

Left – your current position
"**(!)**" – no parameters set – attention.

1. "Schedules"

Is used for entering the device operation mode based on the time. When setting the events, check if the set time and date is accurate (see II.2). 8 events for every day of the week or group of days can be set with using fan speeds, temperatures and start times. Groups of days: 1–7 for week, 1–5 for working days, 6–7 for weekend. If one day is selected, settings can be copied for any other day if desired. When desired settings are made, select "**OK**" to enter the event settings.

1.1 "Week days"

"Holidays" settings have a priority to **"Schedules"** settings
Groups of days: 1–7 for week, 1–5 for working days, 6–7 for weekend. If one day is selected, settings can be copied for any other day if desired. When desired settings are made, select "OK" to enter the event settings.

At first, select the event start time and then select the fan rotation speed and the desired temperature. If event hours **"hh"** are set, the event is deleted. Press **"OK"** after every setting is made. When desired events are entered, select **"Save"**, **"Copy"**, **"Exit"**. The setting is confirmed by selecting and pressing **"OK"**.

Select **"Copy"** to enter the list of options for the week of days, select day to copy the settings for and press **"OK"**.
In order to finish the copying, select and press **"OK"** at the list of days. When saved, settings of group of days change the previous settings of the selected days.

1.2 "Holidays"

"Holidays" settings have a priority to **"Schedules"** settings
At first, select the event start time and then select the fan rotation speed and the desired temperature. If event hours "hh" are set, the event is deleted. Press **"OK"** after every setting is made. When desired events are entered, select **"Save"**, **"Copy"**, **"Exit"**. The setting is confirmed by selecting and pressing **"OK"**.
The beginning and the end time of the holidays are set and saved. In order to switch the holiday mode you have to choose **"OFF"** **"Save"** and **"OK"** in **"Holidays"** window.

2. "Date-Time"

Is used for setting the current time and date. If no time is set, **"(!)"** is displayed at the menu screen.

Note: Summer/winter time does not change automatically.

System V2.2		2/7
Exit		
Schedules	**(!)**	▶
Date – Time	**(!)**	▶
View Alarms		▶
Languages		▶

No events		
Week days		
1-7 1-5 6-7		
	↓	
1 2 3 4 5 6 7	Exit	

Events		
Exit		
Save?		
Copy?		
1 7:30	middle	18 °C
2 hh:mm	Stop	18 °C

Events	**Copy?**	
Week days		
1-7 1-5 6-7		
	↓	
1 2 3 4 5 6 7	OK	18 °C

Date – Time		
Exit		
↓		
7:34	**2013-04-14**	SUN

3. "View Alarms"

In case of any fault the unit is stopped and alarm is displayed on the screen:

"System reset?" –is used for deleting of system faults

3.1. Sensor faults are shown when out of a min and max range

"TJ sensor" – supply air temperature sensor (-40 °C to +120 °C)
"TL sensor" – ambient air temperature sensor (-40 °C to +120 °C)
"TA sensor" – extracted air temperature sensor (-40 °C to +120 °C)
"TE sensor" – exhaust air temperature sensor (-40 °C to +120 °C)
"TV sensor" – return water temperature sensor (-40 °C to +120 °C)
"GP sensor" – pressure converter fault (only when the converter is using current control signal)
"CO2 sensor" – CO_2 converter fault (only when the converter is us-ing current control signal)

$\longrightarrow$

View Alarms
Exit
System Reset ?
Sensor fault TJ
Motor overheat

3.2. Other faults

"Fire input" – external fire signal input is active
"Antifrost"- critical minimum water heater temperature
"Overheat" – overheat of the electric heater (see.: electrical connec-tion diagram)
"Rotor fail" – overheat of the supply or extraction fan motor (see.: electrical connection diagram)
"Change filters" – contaminated filters (see: II.6.11.) or external signal
"Low pressure" – working at pressure support mode before reach-ing the set pressure
 – working at pressure support mode before reaching the set pressure
„False Psi" – it is impossible to support set parameters in pressure mode.

$\longrightarrow$

View Alarms
Exit
System Reset ?
Sensor fault TJ
Motor overheat

4. "Languages"

The following languages can be selected:

Lietuvių,
Русский,
English,
Français,

System V2.2	**5/7**
Date - Time	▶
View Alarms	▶
Languages	▶
Sensors values	▶
Extra	▶

System V2.2	**3/5**
Exit	
English	
Lietuvių	√
Русский	
Deutcsh	

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5. "View sensors"

Values of all connected sensors are displayed.

Note: Number of the displayed sensors depends on the configuration of the controlled board
"Efficiency" % - efficiency of the heat exchanger based on exhaust air temperature
"Supply air temp." °C (TJ)
"Room air temp." °C
"Extracted air temp." °C (TA)
"Outdoor air temp." °C (TL)
"Exhaust air temp." °C (TE)
"Ret. water temp." °C (TV)
"Preheat air temp." °C
"Supply humidity" %
"Extract humidity" % (DR)
"Outdoor humidity" %
"Supply pressure" %, Pa
"Extract pressure" % Pa
"Extract CO2" %, ppm
"Heating" %
"Cooling" %
"By-pass valve" %

System V2.2	6/7
Date - Time	▶
View Alarms	▶
Languages	▶
Sensors values	▶
Extra	▶

View sensors	
Exit	
Supply air temp.	**20.2** °C
Extract air temp.	**19.2** °C
Outdoor air temp.	**-2.3** °C

6. "Extra"

Additional settings from the controlled recuperator.

6.1. **"Exit"** – return to the menu window

6.2. **"ModBus"** – settings of the ModBus protocol

   6.2.1. **"MBAddress"** 0-247 (*1)

   6.2.2. **"Parity"**, *None, Odd, Even

   6.2.3. **"Baudrate"**
   Possible data transmission speeds
   2'400, *4'800, 9'600, 19'200, 38'400 kbps

   6.2.4. **„Stop"** *1 or 2 stop bits

6.3. **"Vent.Ctrl."**

   6.3.1. **"Mode"** – select the type of ventilation:
   "Supply" – based on the supply air temperature
   "Room" – based on the extracted air temperature
   "ByOutDoor" – - ventilation operates using the supply or extracted air temperature based on the set „OutDoor T.C" value of the ambient air temperature (see. 6.3.4). When the outdorr air temperature exceeds the set value, ventilation operates using the extracted air temperature and, when the ambient air temperature is lower than the set temperature, supply air temperature is used.

   6.3.2. **"Min Supply"** – lowest allowed supply temperature, 12-24°C (*15°C)

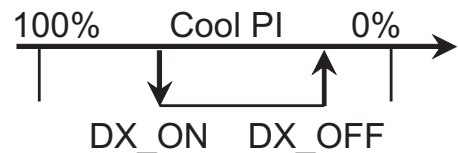   **6.3.3.** **"Max Supply"** – highest allowed supply temperature, 25-40°C (*40°C)

   6.3.4. **"OutDoot T.C"** – summer/winter temperature setting, 10-30°C (*16°C)

6.4. **"Cool.Ctrl."** – cooling control

   6.4.1. **"Min Supply"** – minimum supply air temperature when cooled, 0-15°C (*6°C)

   6.4.2. **"DX_coolOn"** – chlorofluorocarbon cooling is switched on at "Cool PI", % (*23%)

| Extra	1/10
Exit	
ModBus	**76** %
Vent. Ctrl.	**20.2** °C
Cool. Ctrl.	**19.2** °C
Add. Func.	**-2.3** °C

6.4.3. **"DX_coolOff"** – chlorofluorocarbon cooling is switched off at **"Cool PI"**, % (*20%)

6.4.4. **"OutDoor T.C"** – when outdoor air temperature exceeds this setting, cooling is allowed, 10-30°C (*12°C)

6.5. **"Add.Func."**

6.5.1. **"Night Cool"** – night cooling „On/*Off"

6.5.2. **"CO2"** – highest allowed level of CO2. If exceeded, the supply air flow is increased, %, *550ppm

6.5.3. **"Fast Butt."** – select the function of the fast button:
"Standby(Sleep)" – the unit switches to standby mode. It will enter into operation after permitted turn off time or when the night cooling function will turn on.
"Boost/fireplace"- settings of „Boost/fireplace" function (see. 6.6.)
"Off" – fast button function off.

6.5.4. **"FanStopTime"** – time for cooling of the electrical heater after switching the unit off, 0-255 s. (*60s.)

6.6. **"Boost Ctrl."**

6.6.1. **"Boost timer"** – **"Boost/fireplace"** operation period of the function, *0-255 min.

6.6.2. **"Boost SAF"** – supply air fan speed during operation of the "Boost" function, %, Pa

6.6.3. **"Boost EAF"** – extracted air fan speed during operation of the "Boost" function, %, Pa

6.7. **"SAF Ctrl."** – supply fan speed or pressure setting (depends on configuration).

6.7.1. **"SAF Low"** – set supply fan speed **"Low"**, %, Pa

6.7.2. **"SAF Midd"** – set supply fan speed **"Middle"** ", %, Pa

6.7.3. **"SAF High"** – set supply fan speed **"High"**, %, Pa

6.8. **"EAF Ctrl."** – extraction fan speed or pressure setting (depends on configuration)

6.8.1. **"EAF Low"** – set extraction fan speed **"Low"**, %, Pa

6.8.2. **"EAF Midd"** – set extraction fan speed **"Middle"** ", %, Pa

6.8.3. **"EAF High"** – set extraction fan speed **"High"**, %, Pa

6.9. **"Versions"** – version of the unit software, board, settings are shown; when **"OK"** is pressed, panel version and software date is shown. Return to menu by pressing **"⌃"**.

6.10. **"Service"** – additional options of the unit's settings (see **"Service instructions"**).

6.11. **"Filters"**- filter contamination-hours timer is activated in service menu **"Misc"** –**"> F Timer"**.

6.11.1. **"Set Timer"** – the operation time for the unit is set until contamination of the filters will be reported.

6.11.2. **"ReSet Timer"** – zero adjustment of the timer

6.11.3. **"Curr.Timer"**– current number of working hours

7. **"Menu configuration"**
Extra settings: (see.: Service instruction 17.1.)

7.1. **"Economic temper."** – to set economic temperature which automatically changes set temperature when the fans operate at the lowest speed.
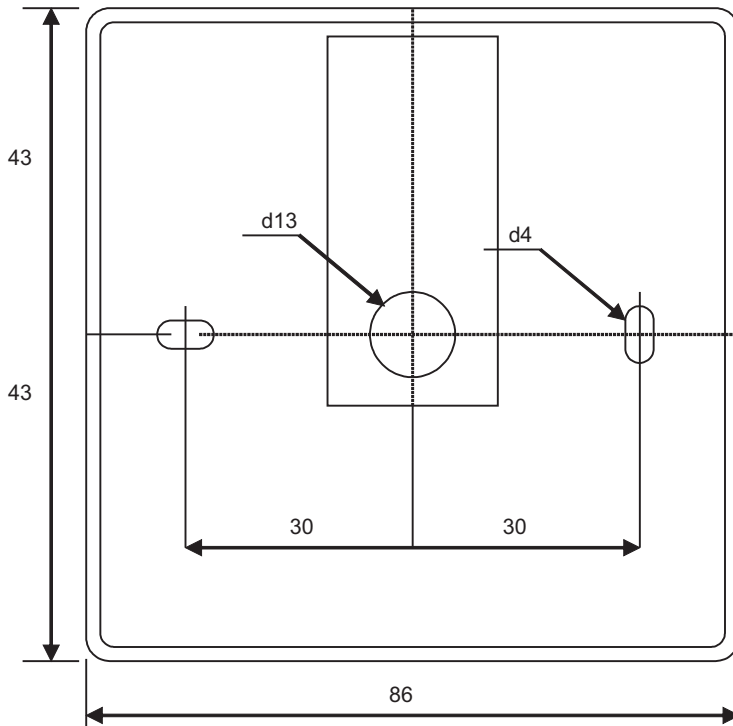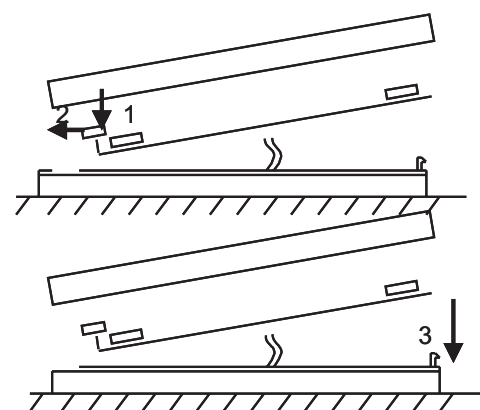* - default settings

III. Dimensions
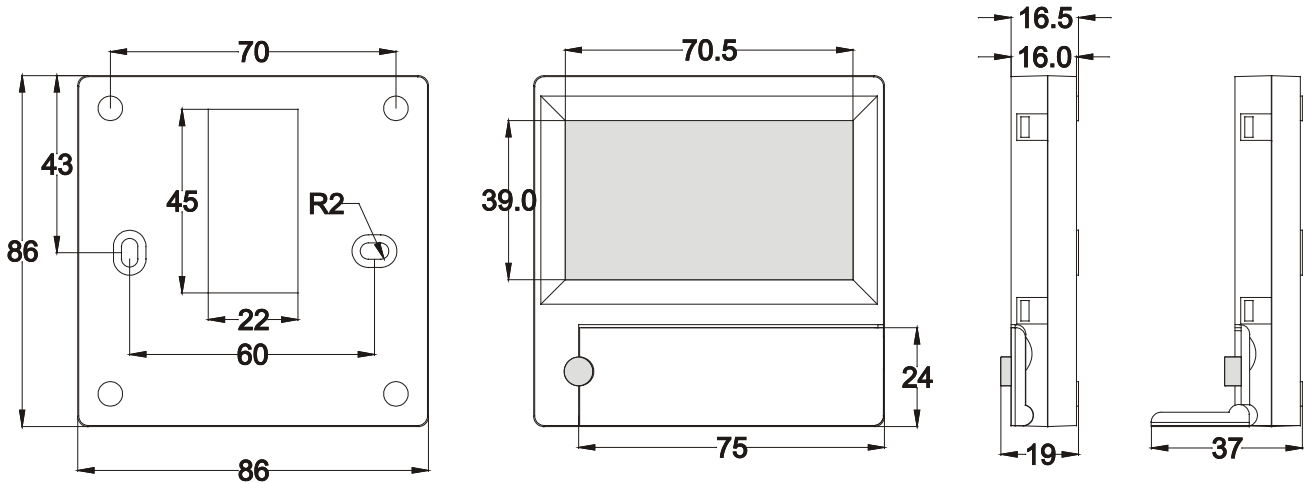
IV. Mounting

Surface mounting, opening is prepared in the wall for the connection cable d13 and two holes for installation of the box bottom.


Mounting drawing   Assembly drawing

Attach the box bottom cover to the wall leaving approx. 3 cm of cable from the surface. Put the battery to the socket at the board, polarity "+" outwards, connect the plug to the board and close the box cover (see the drawing) by attaching the left side (1–2) and then gently press the right side (3). Connect the other cable plug to the socket of the recuperator (RS485_1).

⚠️ **IT IS FORBIDDEN to leave the remaining remote controller's cable in the AHU's control box!**
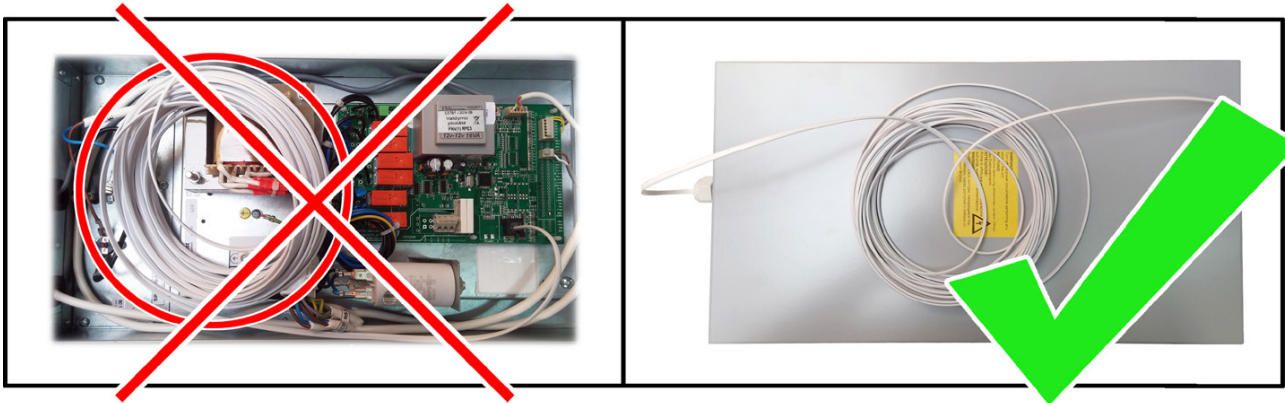
V. Contents

Control panel FLEX	1 piece
Battery 2032 type	1 piece
Communication cable RJ11 to He1402(4 strands) 13 meters	1 piece

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