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HMI EC (1-4-2801-0155)

MANUAL (2-1-0101-0047 ver. 06.2020)

HMI EC is a control panel, dedicated for all types of AIRSTREAM curtains. It has an interface with RTU Modbus protocol for easy integration with building management systems (BMS). It is characterised by very easy and intuitive operation due to the comfortable, practical keypad and backlit screen.

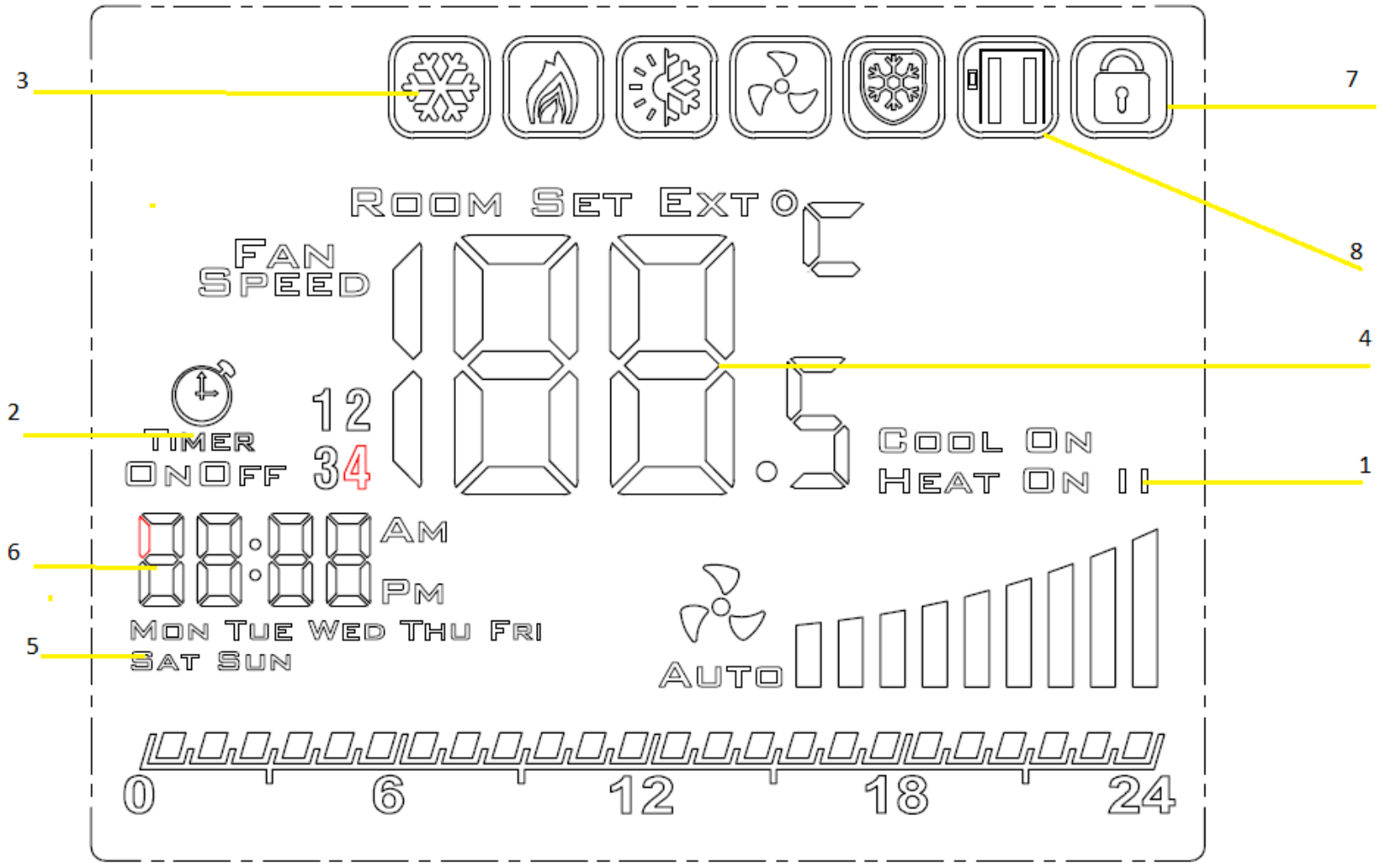
HMI EC controller has been made from electronic materials of the highest class. The panel is adapted for continuous operation with 230 V AC single-phase power supply. Due to the well-thought design, the controller is installed in a very easy manner on a special mounting bracket in the Ø60 mm flush mounting box. The mounting bracket enables easy installation and removal of the panel. Electric wires are connected directly to the terminal block, located at the back of the controller. The panel enables three-position regulation of rotational speed of the fans with EC motors, as well as three-position regulation of the heating power.

Due to the integrated thermostat and as well as programmer function, the controller enables to define operating parameters in the weekly schedule (on working days/at weekend, with 4 heating periods per 24 hours).









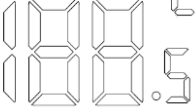
The installation of an external door sensor enables the selection of one of three modes of automatic operation:

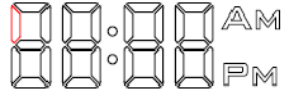


- Door (default one): heating with the air supply or only the air supply, maintenance of set temperature. Active only with open door.
- Room: heating with the air supply or only the air supply (air supply activated manually), maintenance of the set temperature. Active regardless of the status of the door sensor.
- Door + room: heating with the air supply or only the air supply, maintenance of the set temperature. Active, depending on the status of the door sensor.

HMI EC controller optimises the operation of the curtains, ensuring their continuous and reliable operation, and well-thought functions of the device enable significant power efficiency.



Display and operation

No.	Description	Operation button
1	Heating mode: Operation of single heater coils sections  Operation of two heater coils sections 	Function A1 [^] or [v]
2	Calendar-based work: Yes  ; TIMER ON No  ; TIMER OFF	Function AE [^] or [v]
3	Operating mode: heating:  ; ventilation  ; heating + ventilation  +  ;	Function A3 [^] or [v]
4	Temperature display: ROOM (current temp.), SET (set temp.) EXT (based on external temperature sensor) ROOM SET EXT °C 	Function A1 [^] or [v]

5	Day of the week MON TUE WED THU FRI SAT SUN	Hold [Set]+[v]
6	Hour, minute 	Hold [Set]+[v]
7	Screen lock 	Hold [v]
8	Door close/open 	n/a


Explanation of the operating modes:

- Speed I: Programmable value in the range of 15-80%.
- Speed II: Programmable value in the range of 15-90%.
- Speed III: Programmable value in the range of 15-100%.

Press to change the fan speed.


The values of the individual gears can be set from the advanced settings A: function A5, A6 and A7.




AntiFrost (): Frost protection of the heater medium. If the temperature falls below the set point, two-way valve opens. The function works even with deactivated controller or out of the working time set according to the calendar provided that controller is connected to a 230VAC power supply.

Programming mode

You may enter the **advance settings A** by holding the

buttons [] for 5 seconds with the deactivated controller. You may go to the next set point by pressing the **[Set]** key. The values can be changed using **[^]** and **[v]** buttons. You may leave the programming mode by pressing any other button.

No.	Function	Set point
IP	Communication Modbus RTU - address	1 ... 254
A0	Modes of automatic operation: door [1], room [0], door+room [2]	selection [0, 1, 2]
A1	Regulation of the heating power level: without heating [0], first level [1], second level [2], third level [3]	Selection [0, 1, 2, 3]
A2	Temp. sensor calibration	max. $\pm 8^{\circ}\text{C}$ with the step of 0.5°C
A3	Heating mode: Heating [0], ventilation [1], heating+ventilation [2]	Selection [0, 1, 2]
A4	Hysteresis of differential adjuster	0.5/1/2
A5	First speed value	15-80%
A6	Second speed value	15-90%
A7	Third speed value	15-100%
A8	Fan speed delay	30...200s
A9	Backlight time	5...600s
AA	Door optimum	0, +1, +2, +3
AB	Door sensor logic	NO [0], NC [1]
AC	Mim. Fan speed during cooling down	45-100%
AD	Min. fan speed	Only display
AE	Calendar-based work	No [0], Yes [1]
AF	Time mode	12h [1]; 24h [0]
B0	Buttons blockade	selection
B1	Extra heating time	0...90s
Bo	Default settings	Hold 
BU	Version number	XX

You may enter the **advance settings C** by holding the buttons **[Set]** for 5 seconds with the deactivated controller. You may go to the next set point by pressing the **[Set]** key. The values can be changed using **[^]** and **[v]** buttons. You may leave the programming mode by pressing any other button.

No.	Function	Set point
C0	Temperature units	°C/°F
C1	Min. Temperature	5....15°C
C2	Max. Temperature	16.....40°C
C3	Communication Modbus RTU – speed	2400/4800/9600 kbps.
C4	Communicatin Modbus RTU – parity	None/ odd/ even

Outputs*

BMS connection (wires) **

B	RS 485 B
A	RS 485 A

Ao	Analog output
GND	Analog gnd. output
DS	Door sensor
DS	Door sensor

L	230 V AC L
N	230 V AC N
H1	Heating
H2	Heating

*For proper installation please refer to the wiring diagrams of the individual Volcano EC heaters.

**Tables of Modbus variables available please email us at sales@flexiheatuk.com fro these

Calendar programming



When the controller is switched on, pressing the [Set] button for a longer time (approx. 5 seconds) will activate the function of weekly programming. You may go to the next set point by pressing the [^] key. The value of specific set points is made using [Set], [^] and [v] buttons. The calendar is programmed for each day of the week individually. In both cases, there is a possibility of programming a maximum of four heating periods during 24 hours. The programming takes place in the time scope referring to the time when a given function is to be activated. Leaving the calendar programming mode is possible by pressing power button.


Function "Door Optimum"

The AA function in **the advanced settings A** allows to program the "Door optimum" function.

- "+0" – no increase of fan speed after door opening detection
- "+1" – increase by +1 of fan speed after door opening detection
- "+2" – increase by +2 of fan speed after door opening detection

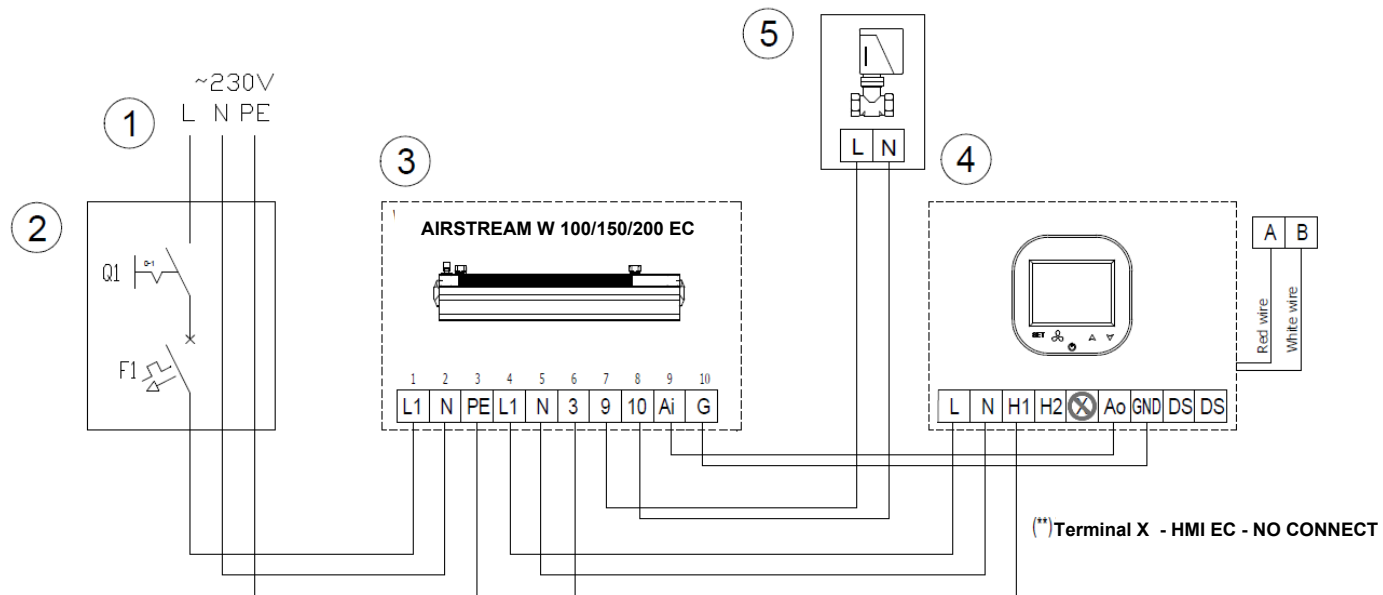
Function "Door Optimum" dependent on others founctions that were set up:

- When device is working in room mode function "Door Optimum" doesn't have influence on parameters of air curtains because only temperature parameter is relavent.
- When device is working in door mode or door + room mode function "Door Optimum" influence on parameters of air curtains. Door opening detection is followed by increasing fan speed by the value that was set up in "Door Optimum". Door closing detection is followed by reducing fan speed by the value that was set up in "Door Optimum".

Extra heating time	
The B1 function in the advanced settings A enables the user to program the function of heating the room after the door is closed. The time can be set between 0 and 90 seconds.	
Suggested electric wires	
<ul style="list-style-type: none"> • L, N : 2x1 mm² • H, C : 2x1 mm² • AO, GND : 2x0.5 mm² LIYCY • External temperature sensor: 2x0.5 mm² LIYCY 	
Error messages	
<ul style="list-style-type: none"> • E1 – internal temperature sensor error 	
Switching off the device	
In order to switch off the panel, press the power supply button and the device will switch off after a short animation. Switching off shall take place after the power supply button has been pressed.	
Technical specifications	
Type	control panel, adjuster
Temperature measurement	-10°C ... +99°C ; NTC10K
Operation of the device	Physical buttons of the keypad Advance settings A: Holding the [] buttons for 5 seconds with deactivated device advance settings B: Holding the [Set] buttons for 5 seconds with deactivated device
Calendar function	Programming weekly calendar (each day's separate programming)
Communication	Modbus RTU protocol
Speed of transmission	2400/4800/9600 bps
Outputs	1 analogue output 0-10V (8 bit, I _{max} = 20 mA) 2 relay outputs (250 VAC, AC1 500 VA for 230 VAC)
Power supply	230 V AC
Power consumption	1.5 VA

Display	backlit, graphic LCD (white captions, blue background)
Structure	ABS + Plexiglas
Dimensions (W x H x D)	86 mm x 86 mm x 17 mm
Installation	in a standard Ø60 mounting box on a mounting bracket
Weight	150 g

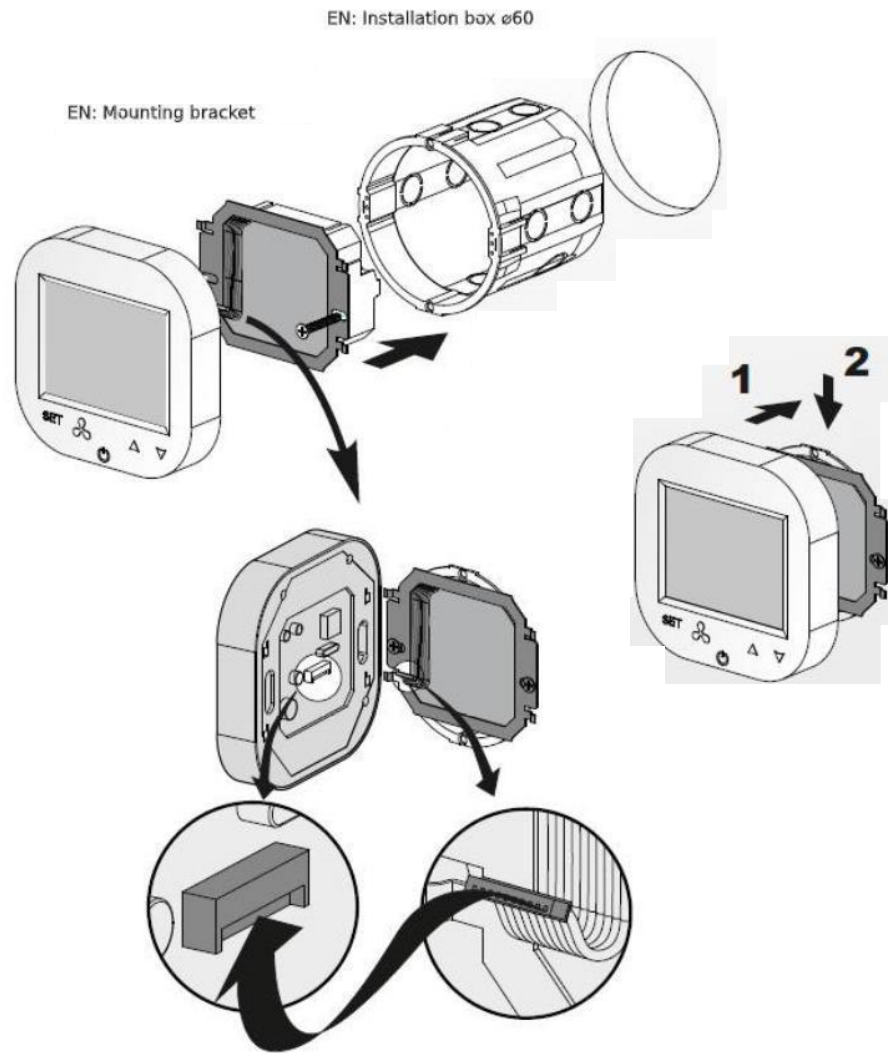
ELECTRIC DIAGRAM



Example connection diagram of AIRSTREAM W100-200 EC, full electrical diagrams available on request from sales@flexiheatuk.com

- 1- supply: 230V - 50Hz
- 2- main switch, fuses
- 3- AIRSTREAM W100-200 EC
- 4 - controller HMI EC 5 - valve actuator

INSTALLATION DIAGRAM



For proper electrical installation please refer to the electric wiring diagrams of air curtain WING EC

Norms and standards



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