FP

User Manual

Flush Panel

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1 Introduction

FP is a flush panel with LCD display with four (model FP-4B-x) or two buttons (model FP-2B-x) in black and white version. The Flush Panel is powered with 24 V AC/DC and has a built-in RS485 port (Modbus RTU). The use of open communication protocol allows to connect the panel with any controller, which supports Modbus RTU/ASCII. Connected to the iSMA controllers, the panel allows to change the basic parameters such as: temperature setpoint, fan speed, FCU mode, and other.

This user manual outlines Modbus registers available in the FP room panel and describes their configuration.

1.1 Revision History

Rev.	Date	Description
1.0	5 October 2022	1st Release

Table 1. Revision history

2 Safety Rules

- Improper wiring of the product can damage it and lead to other hazards. Make sure that the product has been correctly wired before turning the power on.
- Before wiring or removing/mounting the product, make sure to turn the power off. Failure to do so might cause an electric shock.
- Do not touch electrically charged parts such as power terminals. Doing so might cause an electric shock.
- Do not disassemble the product. Doing so might cause an electric shock or faulty operation.
- Use the product only within the operating ranges recommended in the specification (temperature, humidity, voltage, shock, mounting direction, atmosphere, etc.). Failure to do so might cause a fire or faulty operation.
- Firmly tighten the wires to the terminal. Failure to do so might cause a fire.
- Avoid installing the product in close proximity to high-power electrical devices and cables, inductive loads, and switching devices. Proximity of such objects may cause an uncontrolled interference, resulting in an instable operation of the product.
- Proper arrangement of the power and signal cabling affects the operation of the entire control system. Avoid laying the power and signal wiring in parallel cable trays. It can cause interferences in monitored and control signals.
- It is recommended to power controllers/modules with AC/DC power suppliers. They provide better and more stable insulation for devices compared to AC/AC transformer systems, which transmit disturbances and transient phenomena like surges and bursts to devices. They also isolate products from inductive phenomena from other transformers and loads.
- Power supply systems for the product should be protected by external devices limiting overvoltage and effects of lightning discharges.
- Avoid powering the product and its controlled/monitored devices, especially high power and inductive loads, from a single power source. Powering devices from a single power source causes a risk of introducing disturbances from the loads to the control devices.
- If an AC/AC transformer is used to supply control devices, it is strongly recommended to use a maximum 100 VA Class 2 transformer to avoid unwanted inductive effects, which are dangerous for devices.
- Long monitoring and control lines may cause loops in connection with the shared power supply, causing disturbances in the operation of devices, including external communication. It is recommended to use galvanic separators.
- To protect signal and communication lines against external electromagnetic interferences, use properly grounded shielded cables and ferrite beads.
- Switching the digital output relays of large (exceeding specification) inductive loads can cause interference pulses to the electronics installed inside the product. Therefore, it is recommended to use external relays/contactors, etc. to switch such loads. The use of controllers with triac outputs also limits similar overvoltage phenomena.
- Many cases of disturbances and overvoltage in control systems are generated by switched, inductive loads supplied by alternating mains voltage (AC 120/230 V). If they do not have appropriate built-in noise reduction circuits, it is recommended to use external circuits such as snubbers, varistors, or protection diodes to limit these effects.

3 Technical Specification

Power Supply	Voltage	24 V AC/DC ± 20%
	Power consumption	0.2 W
Temperature sensor	Type	10K NTC @ 25°C (77°F)
	Range	0°C to 50°C (32°F to 122°F)
	Accuracy	± 0.5°C (± 32.9°F)
	Resolution	± 0.1°C (± 32.18°F)
Communication	4-terminal connector	2 for power supply and 2 for the communication bus
	Protocol	Modbus RTU Slave
	Baud rate	4800, 9600, 19200, 115200
Platform	Atmel@AVR@ 8-Bit Microcontroller - RSC	
Ingress protection	IP rating	IP20 for indoor installation
Temperature	Storage	-40°C to +85°C (-40°F to +185°F)
	Operating	0°C to +50°C (32°F to +122°F)
Humidity	Relative	5% to 95% RH (without condensation)
Housing	Material	Plastic, self extinguishing
	Mounting	Flush mounting for 503 boxes
Dimensions	Width	120 mm / 4.72 in
	Length	84 mm / 3.30 in
	Height	8 mm / 0.31 in

4 Hardware Specification

FP is a flush panel (for 503 box) with LCD display with four (model FP-4B-x) or two buttons (model FP-2B-x) in black and white version. FP is powered with 24 V AC/DC and has a built-in RS485 port (Modbus RTU).

4.1 Room Panel Version

The FP room panels are available in the following versions:

Product Code	Temperature Sensor	Display	Buttons	Color	
				Black	White
FP-2B-B	☑	☑	2	☑	
FP-2B-W	☑	☑	2		☑
FP-4B-B	☑	☑	4	☑	
FP-4B-W	☑	☑	4		☑

4.2 Dimensions [mm]

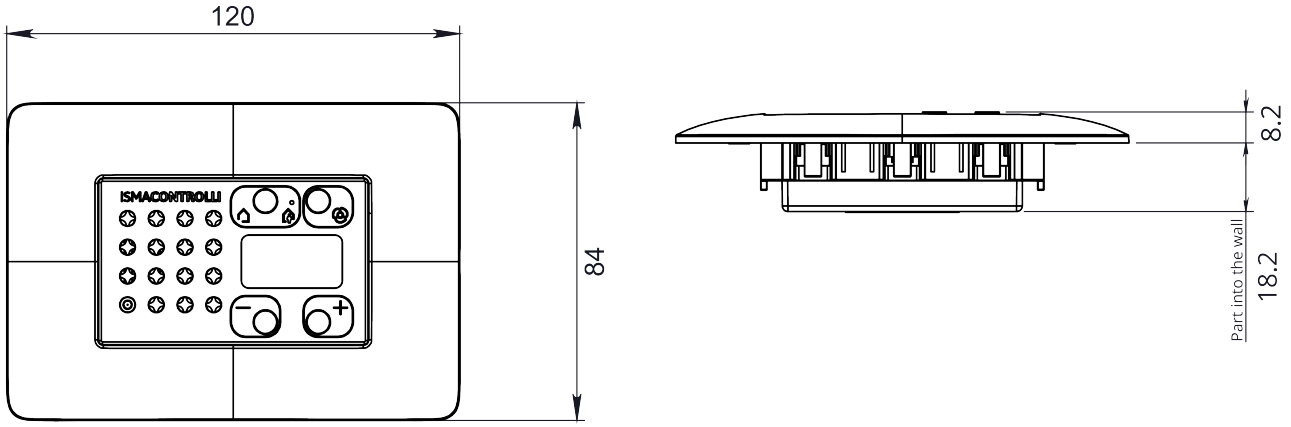

Figure 1. Dimensions

4.3 Power Supply

FP sensor has a 4-terminal connector for power supply and for the communication bus.

It can be powered at 24 V AC or 24 V DC.

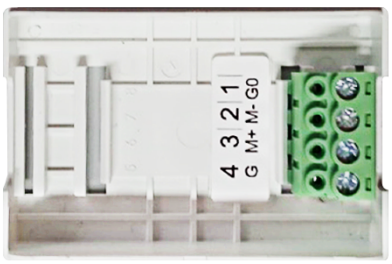

Figure 2. Terminal connector

G0 Fase 1 / V-

G Fase 2 / V+

4.3.1 DC Power Connection

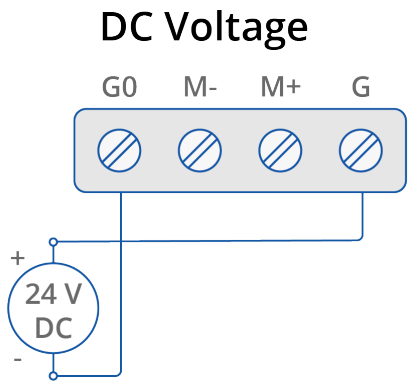

Figure 3. DC power connection diagram

4.3.2 AC Power Connection

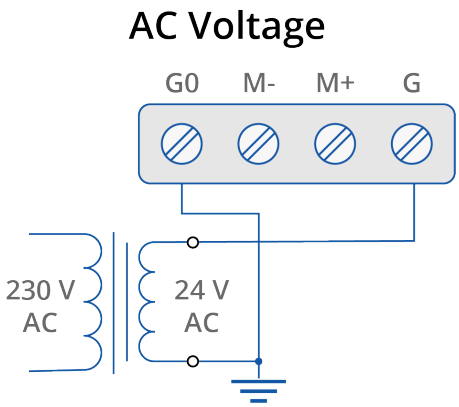

Figure 4. AC power connection diagram

4.4 Communication

The communication bus provides for connection to a Modbus Master device (controller).

M+ RS485 +

M- RS485 -

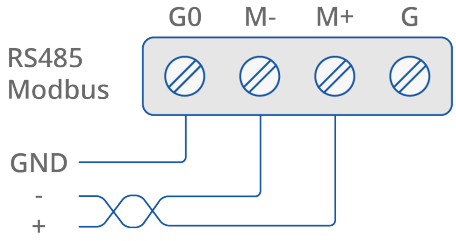

Figure 5. RS485 Modbus connection diagram

4.5 RS485 Network Termination

Transmission line effects often present a problem for data communication networks. These problems include reflections and signal attenuation. To eliminate the presence of reflections of signal from the end of the cable, the cable must be terminated at both ends

with a resistor across the line adequate to its characteristic impedance. Both ends must be terminated since the propagation is bidirectional. In case of an RS485 twisted pair cable this termination is typically 120 Ω. Each panel has a built-in termination resistor, which can be added to the network by setting the DIP-switch no. 2 to the ON position. The last and first room panels in the network need to have the termination activated.

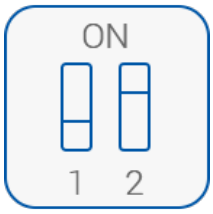

Figure 6. termination resistor activated

4.6 Restoring Default Setting

This procedure allows to restore the sensor with the factory setting. This operation is necessary when several settings have been changed and you want to reset them starting from a certain position.

Figure 7. DIP 1 ON to start with factory setting

Disconnect the FP sensor.

1. Set DIP 1 to ON.
2. Power up the FP sensor.
3. The characters “888” flash on the LCD.
4. Set DIP 1 to OFF.
5. The FP sensor loads the default data and restarts with normal operation.

Note: in step 4 if you no longer want to load the default data, disconnect the FP sensor, reposition DIP 1 on OFF and power up again.

5 Main Parameters

5.1 Communication Parameters Configuration

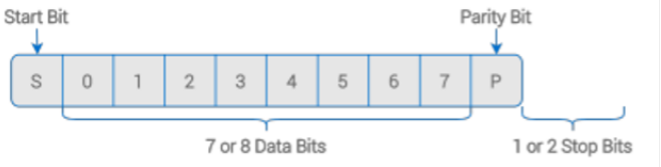

Figure 8. Parameters configuration

5.1.1 COUNTER OF RECEIVE MESSAGE (03)

The 32-bit register with the number of valid Modbus messages received by the room panel from the time of the last power-up. The value is reset after power cycle or after changing of transmission parameters (speed, stop bits, parity, etc.).

5.1.2 COUNTER OF ERROR MESSAGE (05)

The 32-bit register with the number of error Modbus messages received by the room panel from the time of the last power-up. The value is reset after power cycle or after changing of transmission parameters (speed, stop bits, parity, etc.).

5.1.3 COUNTER OF SENT MESSAGE (07)

The 32-bit register with the number of Modbus messages sent by the room panel from the time of the last power-up. The value is reset after power cycle or after changing transmission of parameters (speed, stop bits, parity, etc.).

5.1.4 BAUD RATE (16)

The actual baud rate in bps divided by 10. By default: 11520 (115200 bps).

Value	Baud Rate
480	4800
960	9600
1920	19200
11520	115200 (default)

5.1.5 STOP BIT (17)

The number of stop bits is determined on the basis of this register in accordance with the following table:

Value	No. of Stop bit
1	1 (default)

Value	No. of Stop bit
2	2

5.1.6 PARITY BIT (19)

Each byte of data being transferred may have additional protection of a parity bit added before stop bit (bits). The method of calculating parity bit determines the below table:

Value	Type of Parity bit
0	None (default)
1	Odd
2	Even

5.1.7 RESPONSE DELAY TIME (20)

The value of this 16-bit register determines the number of milliseconds to wait before the unit answers the question. This time is used to extend the interval between the question and the answer. The default value of 0 means no delay (the answer is sent once during the 3.5 character required by the protocol Modbus RTU).

5.1.8 PANEL ADDRESS (22)

This register contains information about the Modbus address of the room panel. The default address is 1.

5.2 Device Configuration

5.2.1 VERSION TYPE (0)

In this register the type and module firmware version are encoded.

The High byte contains information about the Release Firmware and Low byte contain the Type of HW. For example: the modbus register address = 0 contain the value 0x0F71.

This means that it is a FP Panel room (0x71) and the Release Firmware version is (multiplied by 10) 0x0F =15.

5.2.2 LIVE TIME (11)

This 32-bits register contains information about the uptime, expressed in seconds. After power supply failure or the panel restart LIVE_TIME register value resets and the uptime is counted again.

5.2.3 SENSOR TYPE (28)

This register contains information about the sensors built-in the room panel.

In FP Panel only Temperature Sensor is present and is value is always 0x04.

5.2.4 DEVICE ACTION (0)

Setting register 0 according to the table below enables 1 of 4 available actions: reset device, reload settings, reset settings, or enter bootloader.

Register Value Decimal.	Register Value Hexadecimal	Action
511	0x01FF	Reset
767	0x02FF	Reload Setting
1023	0x03FF	Reset Setting
1279	0x04FF	Enter Bootloader

5.2.5 DEVICE CONFIGURATION REGISTER (204)

PANEL_OFF (204, Bit 11)

The bit 11 of the register 204 switches the panel off. If the bit 11 is true, the room panel is inactive. It means that it is impossible to control the room panel locally. The LCD display show "---". The main menu is not displayed. The room panel works as temperature sensor. If the bit 11 is false, the room panel works in normal mode (functions of local control are active). By default, the bit 11 is false (panel is on).

KEY_PAD_OFF (204, Bit 12)

The bit 12 of the register 204 switches the panel keypad off. If the bit 12 is active, the keypad function is deactivated. The main menu is displayed. By default, the bit 12 is false (keypad is on).

5.2.6 Room Panel Modes

The actual room panel mode depends on the keypad activity (pushing buttons) and values set by appropriate registers in Device Configuration.

5.2.7 LCD Display

The FP room panel is equipped with a 3-digit LCD display. By default, the LCD display is turned on (when the device is powered) and basic parameters from in-built sensors are shown in the main menu. The register DEVICE_CONFIGURATION bit 11 and 12 are responsible for the LCD display and keypad activation. If the bit is false, the LCD display and keypad work in normal mode (parameters and actual sensor values are displayed). If the bits are true, the LCD display and keypad are deactivated. The room panel works as a simple sensor.

Main Menù Display

The display can show Temperature values or the setpoint value.

Fan and Mode are show when relative Button is pushed. The user can determine, whether a Temperature value or the actual setpoint value is to be shown or not.

5.2.8 LED Signal

On the front of the sensor there is a luminous signal that represents the operating mode of the controller.

Occupancy Status	Led Mode
Unoccupied	Led Green Blink at 5% ON
Standby	Led OFF
Occupied	Led Green ON
Forced Occupied	Led Green Blink at 80% ON

5.2.9 Keypad

There are a model with two button and other model with four button.

The model with 2 button can only change a Set

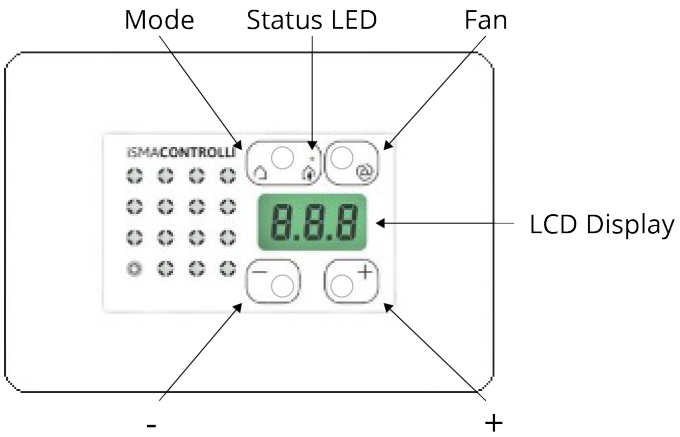

Figure 9. Panel interface

FAN Button

From the dedicated FAN button it is possible to show and set the following speed modes:

Fan Mode	Value	Label LCD	Fan Speed
Manual 0	0	F0	0
Manual 1	1	F1	1
Manual 2	2	F2	2
Manual 3	3	F3	3
Automatic	4	AUT	0 - 3

When the FAN button is pushed for the first time, the active speed value is displayed which, if the controller has been defined in Automatically mode:

Fan Mode	Value	Label LCD	Fan Speed
Manual 0	0	F0	0
Manual 1	1	F1	1
Manual 2	2	F2	2
Manual 3	3	F3	3
Auto 1	4	A1	1
Auto 2	5	A2	2
Auto 3	6	A3	3

MODE Button

From the MODE button it is possible to set the following occupation modes:

Occupancy Mode	Label LCD	Value
Unoccupied	noc	0
Occupied	occ	1

When the MODE button is pushed for the first time, the active status defined by the controller is displayed:

Occupancy Mode	Label LCD	Value
Unoccupied	noc	0
Standby	stb	2
Occupied	occ	1
Forced Occupied	Foc	3

UP and DOWN Buttons

From UP (+) and DOWN (-) button is possible change the value of Setpoint or Correction of Setpoint

Button	Description
+	to increase the Setpoint / Correction Set.
-	to decrease the Setpoint / Correction Set.

6 Sensor

In the FP room panel there is only a temperature sensor

6.1 Temperature Sensor

The temperature unit is only °C

6.1.1 TEMPERATURE SENSOR (300)

The register stores actual values from the temperature sensor (including Temperature Sensor Offset) multiplied by 10.

In the main menu the temperature sensor value is displayed directly (without multiplying). Actual register value is calculated according to the equation:

Actual temperature (register value) = (Actual sensor temperature + Temperature sensor offset)*10

6.1.2 TEMPERATURE_SENSOR_OFFSET (303)

The register contains a value which allows for setting a correction of the temperature sensor's actual value indication. The offset value can be positive or negative. The register value is also multiplied by 10 as in case of the temperature sensor actual value register. The actual temperature offset value is added to temperature sensor indication. The default value is 0.

6.1.3 TEMPERATURE_CONFIGURATION (315, Bit 0 and Bit 4)

Bit	Name	0	1
0	Active	Not active	Active (def)
4	Third Point Active	Not decimal	Decimal (def)

The bit 0 of the register 315 is responsible for activation or deactivation of the visibility of temperature sensor. If the bit 0 is active, the temperature sensor actual value is visible in the main menu. The bit 4 of the register 315 is responsible for the temperature display precision. True value of the bit 4 activates temperature displaying precision to the first decimal place. If the bit 4 is false, the temperature is displayed as an integer value (without decimal place).

7 Setpoint

This section outlines the registers for setpoints configuration.

7.1 SETPOINT VALUE (1500)

The register stores an actual setpoint value multiplied by 10. After device restart, the value is read from the DEFAULT_SETPOINT_VALUE register and set as the actual setpoint value. The default value is 210.

7.2 EFFECTIVE SETPOINT (1501)

The register represents a sum of the actual setpoint value and offset setpoint value. This value is a final setpoint value.

7.3 DEFAULT SETPOINT (1502)

The register contains a default setpoint value. The default setpoint is set as a setpoint value after the room panel restart or power supply reconnection (the value of the DEFAULT_VALUE register is written down to the SETPOINT_VALUE register). The register contains value multiplied by 10. The default value is 210.

7.4 OFFSET SETPOINT (1503)

The register contains a value which allows for setting a correction for the setpoint value. The offset value can be positive or negative. The offset setpoint value is added to the setpoint value and the result value is entered to the EFFECTIVE_SETPOINT register. The register contains value multiplied by 10. The default value is 0.

7.5 SETPOINT LOW LIMIT (1504)

The register contains a minimum setpoint value, which can be set by the user, multiplied by 10. The default value is 180 (18°C).

7.6 SETPOINT HIGH LIMIT (1505)

The register contains a maximum setpoint value, which can be set by the user, multiplied by 10. The default value is 240 (24°C)

7.7 OFFSET RANGE (1506)

The register contains a value, which limits the offset setpoint value change, multiplied by 10. The value creates a range from – OffsetRange to + OffsetRange of possible offset values, which can be set by the user. The default value is 30 (3°C). For example: Offset range value is 20. It means that the user can change the offset setpoint value from -2°C to +2°C.

7.8 CONFIGURATION

7.8.1 SETPOINT CONFIGURATION (1512)

SETPOINT_VISIBILITY (1512, Bit 0)

The bit 0 is responsible for activation or deactivation of the setpoint visibility. If the bit 0 is active, the setpoint actual value is displayed in the main menu. By default, the bit 0 is true (setpoint is visible).

SETPOINT_EDITION (1512, Bit 1)

The bit 1 determines a possibility to change the setpoint locally from the room panel. If the bit is true, the setpoint is editable, and the user can change the setpoint value by pressing + / - buttons. If the bit is false , the setpoint is not editable. By default, the bit 1 is true (setpoint is editable).

OPERATING_MODE (1512, Bit 2)

The bit 2 value determines a setpoint mode edition. If the bit 2 is true, the + / - buttons change the setpoint value. If the bit 2 is false, pressing + / - buttons changes the setpoint offset (the change is limited to the OFFSET_RANGE register value). By default, the bit 2 is true (changing setpoint).

THIRD_POINT_ACTIVE (1512, Bit 4)

If the register SETPOINT_CONFIGURATION bit 4 is true, the setpoint value is displayed with one decimal place. In this case the setpoint step is also adjusted to one decimal place with fixed step of 0,5.

If the register SETPOINT_CONFIGURATION bit 4 is false, the setpoint value is displayed as an integer. In this case the setpoint step is also adjusted to one integer with fixed step of 1.

7.9 SETTING

7.9.1 OPERATING MODE (1512)

OPERATING_MODE (1512, Bit 2): True

Pressing the + button increases the setpoint value with the step value = 0.5°C. If the entered value is higher than the value stored in the SETPOINT_HIGH_LIMIT register, the actual setpoint value is overwritten by the value in that register. Pressing the - button decreases the setpoint value with the step value = 0.5°C. If the entered value is lower than the value stored in the SETPOINT_LOW_LIMIT register, the actual setpoint value is overwritten by the value in that register.

OPERATING_MODE (1512, Bit 2): False

In case if the OPERATING_MODE (1512, Bit 2) register value is false, the user changes the setpoint value indirectly, by changing the SETPOINT_OFFSET register value. Pressing the +

button increases the OFFSET_SETPOINT register value with the step value =1°C. If the entered value is higher than the value stored in the OFFSET_RANGE register, the actual OFFSET_SETPOINT value is overwritten by the value in that register. Pressing the - button decreases OFFSET_SETPOINT register with the step value = 1°C. If the entered value is lower than the negative value of the OFFSET_RANGE register, the actual OFFSET_SETPOINT value is overwritten by the value in that register.

8 Fan

The FP room panel allows fan control from the dedicated FAN button and LCD display.

The fan configuration registers allow to select different fan control modes, corresponding to different fan types.

The user can switch different FAN Mode pushing dedicate button and see the actual State on LCD.

When the FAN button is pushed for the first time, the Current Speed value is displayed

8.1 FAN CURRENT SPEED (1600)

The register stores numeric values corresponding to the current fan speed. Each register value displays a specified Label (see the table below). The register value can be used as an actual fan status indication.

Fan Speed	Label LCD	Register Value
Manual 0	F0	0
Manual 1	F1	1
Manual 2	F2	2
Manual 3	F3	3
Auto 1	A1	4
Auto 2	A2	5
Auto 3	A3	6

8.2 FAN MODE (1601)

The register contains numeric values corresponding to the fan mode. There are up to 5 different fan modes, which can be selected locally from the FAN Button. Particular fan modes availability depends on the FAN_TYPE register value.

Fan Mode	Label LCD	Register Value
Manual 0	F0	0
Manual 1	F1	1
Manual 2	F2	2
Manual 3	F3	3
Automatic	AUT	4

8.3 FAN TYPE (1602)

The register contains numeric values corresponding to the fan type. The fan type selection determines which fan modes are available in the FAN_MODE register. This register has a software limitation, where the max. value is 6. Available fan modes in particular fan type selection are shown in the table below:

Fan Type	Available Fan Mode Text on LCD	Comment	Register Value
0 – 10 V (def)	0 – 1 – 2 – 3 - Aut	Fan is controlled by the analog value 0-10 V DC	0
1 - Speed	0 – 1 - Aut	1-Speed Fan	1
2 - Speed	0 – 1 – 2 - Aut	2-Speed Fan	2
3 - Speed	0 – 1 – 2 – 3 - Aut	3-Speed Fan	3
1 - Speed	0 – 1	1-Speed Fan without AUTO mode	4
2 - Speed	0 – 1 – 2	2-Speed Fan without AUTO mode	5
3 - Speed	0 – 1 – 2 – 3	3-Speed Fan without AUTO mode	6

⚠ WARNING! The register values from 4 to 6 (1-3 speed fan without AUTO mode) have to be set when fan works in Local Mode.

8.4 Configuration

8.4.1 FAN CONFIGURATION (1613)

FAN_CURRENT_SPEED_VISIBILITY (1613, Bit 0)

The bit 0 is responsible for activation or deactivation of fan current speed visibility. If the bit 0 is active, the fan current speed is visible onLCD. The Label indicate fan activity (run status), actual speed, and auto/manual mode.

The default value is 1 (fan current speed is visible).

FAN_EDITION (1613, Bit 1)

The bit 1 determines if the FAN_MODE is editable locally from the FAN Button. If the bit 1 is true, the FAN Button is active and the user can set the FAN_MODE. If the bit 1 is false, the FAN Button is inactive and the user cannot set the FAN_MODE. The default value is 1 (FAN_MODE is editable).

FAN_CONFIG_LOCAL_MODE (1613, Bit 6)

The bit 6 switches between the local mode and the BMS modes, which define how the FAN_CURRENT_SPEED register value is determined. By default, the bit 6 is false (BMS mode).

Local Mode: If the bit 6 is true, the room panel fan setting works in a local mode. It means that the value of the FAN_CURRENT_SPEED register is determined by the value of the FAN_MODE register and so the value of the FAN_CURRENT_SPEED register cannot be overwritten by the higher level system.

BMS Mode: If the bit 6 is false, the room panel fan setting works in the BMS mode. The FAN_MODE register works separately from the FAN_CURRENT_STATUS register

9 Occupancy

Setting of the Occupancy Mode is available from Mode Button

The FP room panel allows Occupancy Mode control from the dedicated MODE button.

The Mode configuration registers allow to select different Occupancy Mode control modes.

The user can switch different Occupancy Mode pushing dedicate button and see the actual State on LCD display and Status Led.

When the MODE button is pushed for the first time, the Current Occupancy Mode value is displayed

9.1 OCCUPANCY CURRENT STATUS (1700)

The register contains a numeric value corresponding to the actual occupancy status. The particular register value determines displaying a specific Label on LCD and Led signal. This register has a software limitation, where the maximum value is 3. The register value can be used as the actual occupancy status indication.

Occupancy Current Status	Label LCD	Value	Led Mode
Unoccupied	noc	0	Led Green Blink 5% ON
Standby	stb	2	Led OFF
Occupied	occ	1	Led Green ON
Forced Occupied	Foc	3	Led Green Blink 80% ON

9.2 OCCUPANCY MODE (1701)

The register contains a numeric value corresponding to the occupancy mode. There are two different occupancy modes, which can be selected locally from the MODE button (see the table below). This register has a software limitation, where the maximum value is 1.

Occupancy Mode	Label LCD	Value	Led Mode
Unoccupied	noc	0	Led Green Blink 5% ON
Occupied	occ	1	Led Green ON

9.3 Configuration

9.3.1 OCCUPANCY CONFIGURATION (1706)

OCCUPANCY_VISIBILITY (1706, Bit 0)

The bit 0 of the register 1706 is responsible for activation or deactivation of the occupancy current status visibility. If the bit 0 is active, the occupancy current status is visible on LCD display.

The default value is 1 (occupancy mode is visible).

OCCUPANCY_MODE_EDITION (1706, Bit 1)

The bit 1 of the register 1706 determines, whether the OCCUPANCY_MODE register is editable locally from the FP room panel. If the bit 1 is true, the occupancy MODE Button is active and the user can set the occupancy mode. If the bit 1 is false, the occupancy MODE Button is inactive. The default value is 1 (occupancy mode is editable).

OCCUPIED_CONFIG_LOCAL_MODE (1706, Bit 6)

The bit 6 of register 41706 switches between the local and BMS modes. By default, the bit 6 is false (BMS mode).

Local Mode: If the bit 6 is true, the room panel occupancy setting works in a local mode. It means that the value of the OCCUPANCY_CURRENT_STATUS register is determined by the value of the OCCUPANCY_MODE register, and the value of the OCCUPANCY_CURRENT_STATUS register cannot be overwritten by the higher level system.

BMS Mode: If bit 6 is false, the room panel occupancy setting works in a BMS mode. The OCCUPANCY_MODE register works independently from the OCCUPANCY_CURRENT_STATUS register.

10 Register Adjustable Locally from Room Panel

This registers are available only for 4-button version.

10.1 Room Panel Setting

The additional parameters that can be managed are:

- FP sensor Modbus Address (LCD label “Add”).
- NTC temperature reading calibration (LCD label “tAr”).
- FP sensor FW release (LCD label “rEl). It is read-only.

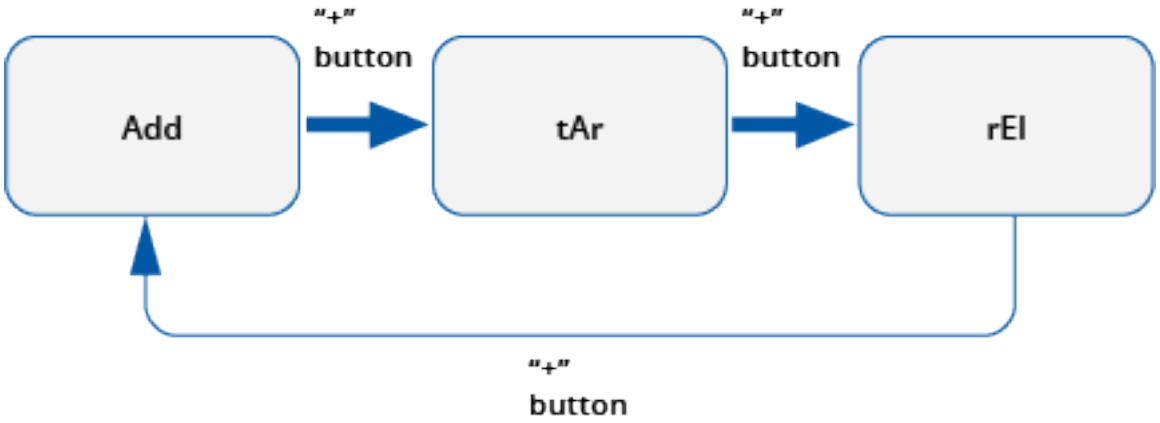

Figure 10. Register Adjustable Locally display sequence

To view and / or manage these parameters, you need to enter a submenu:

1. Press the FAN and + buttons simultaneously for about 8 sec.
2. The "Add" label will be displayed
3. Press the + button repeatedly to choose the parameter to view / modify
4. Press the FAN button within 8 sec.
5. The value of the chosen parameter will be displayed
6. Press the + or - key within 3 sec. to change the value
7. To confirm the data, do nothing for 3 sec.
8. You return to the main menu

10.2 Release FW (rEl)

It show the actual Firmware release.

10.3 Modbus address Device (Add)

It show and set a Modbus Address value of FP probe.

10.4 Correction Sensor (tAr)

It show and set the correction of Temperature Sensor (°C)

11 List of Modbus Register

Modbus Address	Decimal Address	Hex Address	Register name	Access	Description
41501	1500	0X05DC	SetPoint	R/W	Actual Stpoint
31502	1501	0X05DD	Effective SetPoint	R	Effective SetPoint: if use CorrSet
30301	300	0X012C	Temperature	R	Actual Temperature Sensor + correction (TarProbe)
41503	1502	0X05DE	Def_Setpoint	R/W	Default Setpoint
41505	1504	0X05E0	ValMinSet	R/W	Set Low Limit
41506	1505	0X05E1	ValMaxSet	R/W	Set High Limit
40017	16	0X010	BaudeRate	R/W	Trasmission Speed are stored divided by 10 (480, 960, 1920, 11520)
40021	20	0X014	ResponceDelay	R/W	Delay (ms) before sending a responce
30004	3	0X03	ReceiveMsg Low	R	Counter Message received (reset at start up and when change trasmission parameters)
30005	4	0X04	ReceiveMsg High	R	Counter Message received (reset at start up and when change trasmission parameters)
30006	5	0X05	ErrorMsg Low	R	Counter Message received (reset at start up and when change trasmission parameters)
30007	6	0X06	ErrorMsg High	R	Counter Error Message (reset at start up and when change trasmission parameters)
30008	7	0X07	SentMsg Low	R	Counter Message trasmitted (reset at start up and when change trasmission parameters)
30009	8	0X08	SentMsg High	R	Counter Message trasmitted (reset at start up and when change trasmission parameters)
40001	0	0X00	Release	R/W	Release FW (0x0A) and FP Probe identification (0x71)
31301	1300	0X0514	HW Type	R	HW_TYPE + HW_SUBTYPE

PROBE	HW Type	HW Subtype
FP-4B	0x71	0x0B
FP-2B	0x71	0x0A

<table>
<tr><th>Modbus Address</th><th>Decimal Address</th><th>Hex Address</th><th>Register name</th><th>Access</th><th>Description</th></tr>
<tr><td>31302</td><td>1301</td><td>0X0515</td><td>HW Version</td><td>R</td><td>Defined in BootLoader</td></tr>
<tr><td>31303</td><td>1302</td><td>0X0516</td><td>Boot Version</td><td>R</td><td>Defined in BootLoader</td></tr>
<tr><td>31304</td><td>1303</td><td>0X0517</td><td>FW Version</td><td>R</td><td>Defined to FW</td></tr>
<tr><td>31305</td><td>1304</td><td>0X0518</td><td>Serial number</td><td>R</td><td>Part 1/4</td></tr>
<tr><td>31306</td><td>1305</td><td>0X0519</td><td>Serial number</td><td>R</td><td>Part 2/4</td></tr>
<tr><td>31307</td><td>1306</td><td>0X051A</td><td>Serial Number</td><td>R</td><td>Part 3/4</td></tr>
<tr><td>31308</td><td>1307</td><td>0X051B</td><td>Serial Number</td><td>R</td><td>Part 4/4</td></tr>
<tr><td>30130</td><td>129</td><td>0X081</td><td>HW Version</td><td>R</td><td>Defined in BootLoader</td></tr>
<tr><td>30012</td><td>11</td><td>0X0B</td><td>LiveTime Low</td><td>R</td><td>Living Time Probe, Reset at power on</td></tr>
<tr><td>30013</td><td>12</td><td>0X0C</td><td>LiveTime High</td><td>R</td><td>Living Time Probe, Reset at power on</td></tr>
<tr><td>40205</td><td>204</td><td>0X0CC</td><td>ConfigProbe</td><td>R/W</td><td>Key Pad, Panel Mode, Illumination LCD activation.
Description | Value 0 | Value 1
Bit 11 - Panel Mode | Enable (def) | Disable
Bit 12 - Key Pad OFF (Button Enable) | Enable (def) | Disable</td></tr>
<tr><td>41507</td><td>1506</td><td>0X05E2</td><td>MaxCorrSet</td><td>R/W</td><td>Max Offset SetPoint Range</td></tr>
<tr><td>41707</td><td>1706</td><td>0X06AA</td><td>OccupancyConfig</td><td>R/W</td><td>Occupancy Mode Configuration
Description | Value 0 | Value 1
Bit 0 -Visible | Not Active | Active (def)
Bit 1 -Enable | Not Active | Active (def)
Bit 6 - Mode | BMS (def) | LOCAL</td></tr>
<tr><td>41701</td><td>1700</td><td>0X06A4</td><td>ModeStatus</td><td>R/W</td><td>Mode Status setting remotely (0 Unoccupied, 1 Occupied, 2 Standby, 3 Forced occupied)</td></tr>
<tr><td>41702</td><td>1701</td><td>0X06A5</td><td>OccupancyMode</td><td>R/W</td><td>Occupancy Mode (0 Unoccupied, 1 Occupied)</td></tr>
<tr><td>41601</td><td>1600</td><td>0X0640</td><td>FanStatus</td><td>R/W</td><td>Current StatusFan Speed send from FCU</td></tr>
</table>

Modbus Address	Decimal Address	Hex Address	Register name	Access	Description
41602	1601	0X0641	FanMode	R/W	Fan Mode 1, 2, 3, Auto
41603	1602	0X0642	FanType	R/W	Fan Type 0-10V , 1 Speed, 2 Speed, 3 Speed , 1 Speed+ Auto, 2 Speed+ Auto, 3 Speed+ Auto
41614	1613	0X064D	FanConfig	R/W	Fan Configuration Description / Value 0 / Value 1 Bit 0 -Visible / Not Active / Active (def) Bit 1 -Enable / Not Active / Active (def) Bit 6 - Mode / BMS (def) / LOCAL
41504	1503	0X05DDF	CorrSet	R/W	Offset Setpoint
40316	315	0X016B	TemperatureConfig	R/W	Temperature Configuration Description / Value 0 / Value 1 Bit 0 -Active / Not Active / Active (def) Bit 4 - Third point / Not Active / Active (def)
40304	303	0X012F	TarProbe	R/W	Tunning Probe
40210	209	0X0D1	LcdTimeOff	R/W	Time [s] to turn Off LCD ligth (not managed in this version)
40207	206	0X0CE	LcdIntensity	R/W	LCD Ligth Intensity Value Percent (not managed in this version)
41513	1512	0X05E8	SetConfig	R/W	Setpoint Configuration Description / Value 0 / Value 1 Bit 0 - Visible / Not Active / Active (def) Bit 1 - Enable / Not Active / Active (def) Bit 2 - Operating Mode / Offset / Setpoint (def) Bit 3 - -- / Not Used / Not Used Bit 4 - Third Point Decimal / Not Active / Active (def)

Modbus Address	Decimal Address	Hex Address	Register name	Access	Description		
					Bit 5 - --	Not Used	Not Used
40029	28	0X01C	TypeSensor	R/W	In FP pannel is present only temperature sensor		
40023	22	0X016	MBAddress	R/W	Modbus Address RT Probe		
40018	17	0X011	StopBit	R/W	Stop Bit		
40019	18	0X012	DataBit	R/W	Fixed value to default = 8		
40020	19	0X013	Party	R/W	Parity (0 = none, 1 = Odd, 2 = Even)		
41801	1800	0X0708	Test LED	R/W	For Test - Force State of Led		
					Description	Value	
					Led are not forced	0	
					Led Red = ON, Led Green = ON	1	
					Led Red = ON, Led Green = OFF	2	
					Led Red = OFF, Led Green = ON	3	
					Led Red = OFF, Led Green = OFF	4	
41802	1801	0X0709	Test Buttons	R/W	State of pusched buttons		
41803	1802	0X070A	Test Leds	R/W	State of blinking leds		
41804	1803	0X070B	Test Modbus	R/W	State of Modbus comunications		
41805	1804	0X070C	Test Start	R/W	Test Enable		
41806	1805	0X070D	Test Result	R/W	Return the errors		
41807	1806	0X070E	Test EEProm	R/W	State of EEPRom (1 = OK)		