HMI Glossy

1. Technical data:

- Supply voltage: 24 VDC +/- 10%
- Power consumption: 4 VA
- Communication: Modbud RTU, ELP-Bus, cooperation with EL-Piast PLCs
- Storage temperature: 0..70 °C
- Operating temperature: 0..40 °C
- Mounting: installation box 60 mm
- Dimensions: 100 x 100 x 32 mm

2. DESCRIPTION:

Touchscreen controller for the control of ventilation systems. Interaction with the user takes place using capacitive touch-sensitive fields that perform functions:

- system on/off
- gear shift 0 - 1 - 2 - 3
- increasing the temperature setting
- reducing the temperature setting

The current temperature setting and the current temperature are presented on a three-digit 7-segment display.

Presentation of system operating states:

- alarm condition of the device
- current gear setting
- SET signalling of temperature setting mode; when inactive the current temperature reading is shown

3. Modbus RTU

The device communicates in Modbus RTU protocol over the RS485 bus. The address register map and functions are described in the following tables.

Table 1. Status and control registers.

Address (hex)	R/W	Name	Description	Default value
0000	R	**Status**	**General condition of the equipment** bit 0 [h0001]: On/Off bit 1 [h0002]: ---- bit 2 [h0004]: Relay connection (Sonoff) bit 3 [h0008]: Controller output status bit 4 [h0010]: Relay register status bit 5 [h0020]: Controller operating status (On/Off) Bit 6 [h0040]: Stable measurements	-
0001	R/W	**Device On**	**Device status (on/off)** 0 - switched off 1 - attached	-
0002	R/W	**Fun Course**	**Fan mode bit** bit 0 [h0001]: gear 1 bit 1 [h0002]: gear 2 bit 2 [h0004]: gear 3 bit 3 [h0008]: Auto bit 4 [h0010]: Calendar	1
0003	R/W	**Relay State**	**Relay/controller status** 0 - relay off 1 - relay on If the controller is on, the register determines the state of the controller output and is read-only. If the regulator is off, the register controls the state of the relay.	0
0004	R/W	**Alarm**	**Alarm status** 0 - alarm inactive 1 - alarm active	0
0005	R/W	**Force LED Controls**	**LED control** Forced control of the function LED lights. To control the lights, the bits in the "Mask LED Controls" register must be set analogously. bit 0 [h0001]: Alarm bit 1 [h0002]: Options bit 2 [h0004]: Calendar bit 3 [h0008]: Auto bit 4 [h0010]: WiFi bit 5 [h0020]: Unit bit 6 [h0040]: SET bit 7 [h0080]: Run 1 bit 8 [h0100]: Run 2 bit 9 [h0200]: Run 3	0
0006	R/W	**Mask LED Controls**	**LED control mask** Mask for taking control of individual function lights. The controls (on/off) of the lights are controlled via the "Force LED Controls" register.	0

			bit 0 [h0001]: Alarm bit 1 [h0002]: Options bit 2 [h0004]: Calendar bit 3 [h0008]: Auto bit 4 [h0010]: WiFi bit 5 [h0020]: Unit bit 6 [0x0040]: SET bit 7 [0x0080]: Run 1 bit 8 [0x0100]: Run 2 bit 9 [0x0200]: Run 3 Notes: 1. The fan gear lights are group-masked, meaning that setting any of the bits (7, 8, 9) will take control of all the lights in that group.	

Table 2 Parameter registers.

Address (hex)	**R/W**	**Name**	**Description**
0010	R	**Temperature**	**Temperature** unit: [℃]. coefficient: x10 range: 0...1000 example: 237 => 23.7℃ value: FFFF - no measurement
0011	R	**Humidity**	**Moisture** unit: [%HR]. coefficient: x10 range: 0...1000 example: 582 => 58.2% value: FFFF - no measurement
0012	R	**CO2**	**CO2** unit: [ppm]. scope: 400...2000 (SCD40 sensor) 400... - (equivalent, BME680 sensor) value: FFFF - no measurement
0013	R	**IAQ Index**	**IAQ** Range: 0...500 (BME680 sensor) value: FFFF - no measurement
0014	R	**Pressure**	**Atmospheric pressure** unit: [hPa]. range: 300...1100 value: FFFF - no measurement
001F	R	**Detected Sensor**	**Sensor detected on I2C bus** 0 - no sensor detected 1 - NTC 2 - SHT21 4 - SHT4x

			8 - SCD40 16 - BME680

Table 3 Modbus protocol configuration registers.

Address (hex)	R/W	Name	Description	Default value
0020	R/W	**DeviceAddress**	**Device address**	90 (hex)
0021	R/W	**Parity**	**Parity bit**	0
0022	R/W	**StopBits**	**Number of stop bits**	0
0023	R/W	**BaudRate**	**Modbus communication speed**	2

Parity

B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
PARITY															

PARITY - specifies the parity bit of the modbus communication (RS485):

0 - none
1 - Even
2 - Odd

⚠ Writing to this register will not immediately change the modbus (RS485) communication parameters, the *BaudRate* register must be written to in order to apply the changes.

StopBits

B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
STOP_BITS															

STOP_BITS-Specifies the number of modbus (RS485) communication stop bits:

0 - 1 stop bit

1 - 2 stop bits

⚠ Writing to this register will not immediately change the modbus (RS485) communication parameters, the *BaudRate* register must be written to in order to apply the changes.

BaudRate

B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
BAUDRATE_INDEX															

BAUDRATE_INDEX - specifies the modbus (RS485) communication speed index:

0 - 2400
1 - 4800
2 - 9600
3- 14400
4 - 19200
5 - 28800
6 - 38400
7 - 57600
8 - 76800
9 - 115200
10 - 230400
11 - 250000
12 - 460800
13 - 921600

⚠ **Writing to this register will immediately change the modbus (RS485) communication parameters.**

CONFIGURATION REGISTERS

Table 4.1 Regulator

Address (hex)	R/W	Name	Description	Default value
9A00	R/W	**Controller Enabled**	**Switching on the controller** 0 - switched off 1 - attached	0
9A01	R/W	**Parameter controller**	**Controller parameter** 0 - temperature 1 - humidity	0
9A02	R/W	**Min controller**	**Minimum controller setting** Value appropriate to the selected parameter. Temperature: - unit: [˚C]. - coefficient: x10 - range: 0...1000 - example: 237 => 23.7˚C Humidity: - unit: [%HR]. - coefficient: x10 - range: 1...999 - example: 582 => 58.2%	15
9A03	R/W	**Regulator Max**	**Maximum controller setting** Description as for the *Regulator.Min* parameter	35
9A04	R/W	**Regulator Set**	**Controller setpoint** Description as for the *Regulator.Min* parameter	25
9A05	R/W	**His regulator**	**Controller hysteresis** Description as for the *Regulator.Min* parameter	2

Table 4.3. Display

Address (hex)	R/W	Name	Description	Default value
9A08	R/W	**Display BrightnessLo**	**Display brightness when the device is switched off** unit: [%]. range: 1...100	10%
9A09	R/W	**Display BrightnessHi**	**Display brightness with device on** unit: [%]. range: 1...100	50%
9A0A	R/W	**Display EnabledDigits**	**Display of digits, dots and units** 0 - excluded 1 - attached	1
9A0B	R/W	**Display EnabledControls**	**Display of controls** 0 - excluded	1

			1 - attached	
9A14	R/W	**Display Control Alarm**	**LED number for the ALARM light** 0 - no light 21 - LED D21 25 - LED D25 29 - LED D29 34 - LED D34 36 - LED D36	25
9A15	R/W	**Display Control Wifi**	**LED number for the WIFI light** Description as for the *Display.ControlAlarm* parameter	29
9A16	R/W	**Display Control Calendar**	**LED number for the CALENDAR light** Description as for the *Display.ControlAlarm* parameter	36
9A17	R/W	**Display Control Auto**	**LED number for the AUTO indicator light** Description as for the *Display.ControlAlarm* parameter	34
9A18	R/W	**Display Control Options**	**LED number for the OPTIONS light** Description as for the *Display.ControlAlarm* parameter	0
9A19	R/W	**Display Control SET**	**LED number for the SET light** Description as for the *Display.ControlAlarm* parameter	21

Table 4.4. Buttons

Address (hex)	R/W	Name	Description	Default value
9A0C	R/W	**Keys Enabled**	**Touch fields (buttons)** 0 - excluded 1 - attached	1

Table 4.5 Fan

Address (hex)	R/W	Name	Description	Default value
9A0D	R/W	**Fun Enabled**	**Fan function** 0 - switched off 1 - attached	1
9A1A	R/W	**Fun Max**	**Maximum fan mode bit** bit 0 [h0001]: gear 1 bit 1 [h0002]: gear 2 bit 2 [h0004]: gear 3 bit 3 [h0008]: Auto bit 4 [h0010]: Calendar ...	0010 (hex)

Table 4.6. Communication

Address (hex)	R/W	Name	Description	Default value

9A13	R/W	**ModbusRTU Mode**	**Modbus RTU protocol mode** 10 - Master (EL-Piast HMI) 20 - Slave	20

Table 4.8. Recording of settings

Address (hex)	R/W	Name	Description	Default value
9AFE	R/W	**Restore Default Settings**	**Restoring default settings** Saving the value **69D5**(hex) restores the factory settings. The result of the operation can be read from this register: 7777(hex) - OK 1111(hex) - Error	0
9AFF	R/W	**Save Settings**	**Storage of settings** Writing the value **C37D**(hex) saves the settings to non-volatile memory. The result of the operation can be read from this register: 7777(hex) - OK 1111(hex) - Error	0

MASTER mode (HMI)

Table 5: Modbus register mapping in MASTER mode (HMI).
(Registers are sent in 32bit format.)

Address (hex)	R/W	Name	Description	Default value
9A30	R/W	**ModbusMasterRegMap. RegulatorCur**	**Current controller value**	0000 (hex)
9A31	R/W	**ModbusMasterRegMap. RegulatorCur**	**Controller setpoint**	0002 (hex)
9A32	R/W	**ModbusMasterRegMap. DeviceOn**	**Switch-on status of the device**	0004 (hex)
9A33	R/W	**ModbusMasterRegMap. FunCourse**	**Fan gear bit**	0006 (hex)
9A34	R/W	**ModbusMasterRegMap. FunCourseAC**	**Fan speed bit in AUTO and CALENDAR mode**	0008 (hex)
9A35	R/W	**ModbusMasterRegMap. Alarm**	**Alarm**	000A (hex)

9A36	R/W	**ModbusMasterRegMap. Temperature**	**Temperature**	000C (hex)
9A37	R/W	**ModbusMasterRegMap. Humidity**	**Moisture**	000E (hex)

4. Connection

Connector designation:

B - RS485 line B-
A - RS485 line A+
G- supply, ground, potential 0
24 - power supply, potential +24 VDC or 24 VAC

The HMI connects to EL-Piast PLCs via RS485 master or HMI CON.

5. Wall mounting in an installation box

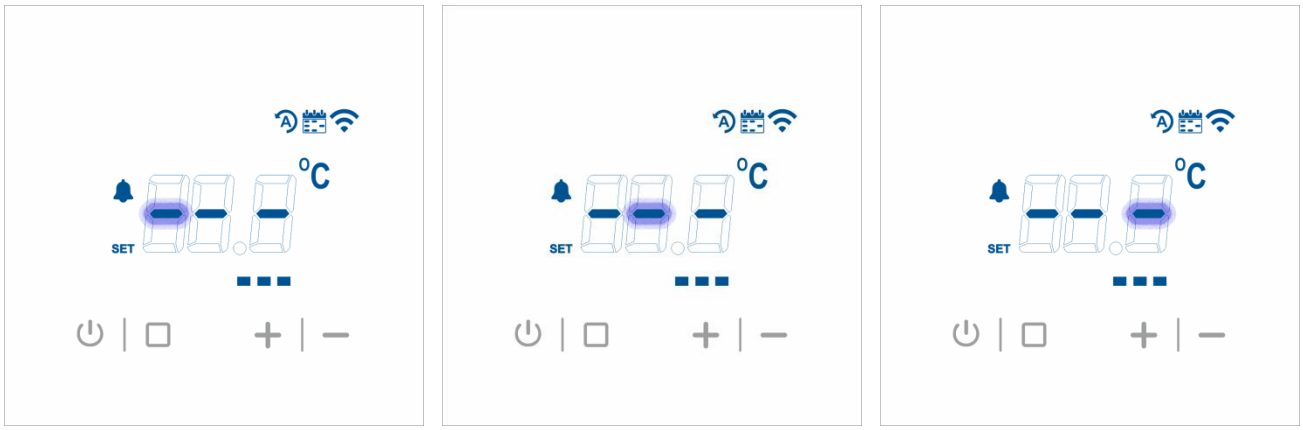
The unit is designed to be mounted in a 60 mm junction box. The maximum diameter of the screws is 3 mm.

The mounting hole spacing is adapted to the hole spacing of the installation box.

6. Calibration

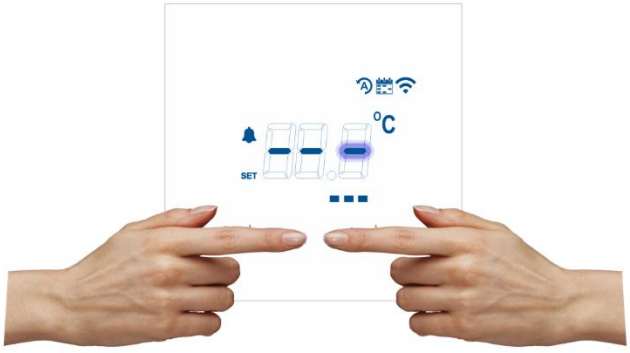
Once the front panel has been removed and reassembled, the calibration process of the

unit occurs. Signalled by flashing LEDs (Cyclically as in the diagram below).

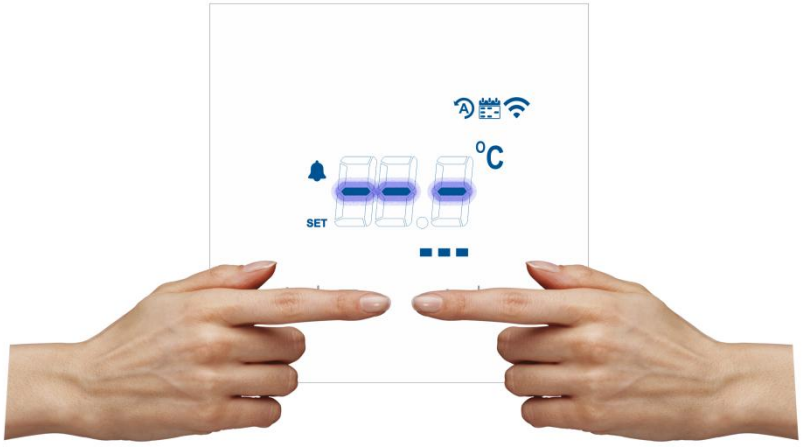


To complete the calibration process, perform the following procedure:

1. Press all 4 buttons simultaneously for 5 seconds



2. When the LEDs stop flashing (they all light up at the same time) quickly release the buttons.



3. Once the procedure has been carried out correctly, the temperature reading appears.