

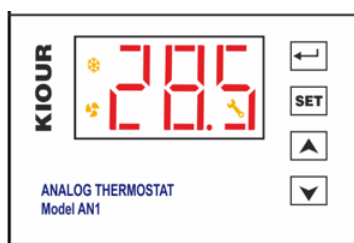
ATTENTION

Read carefully these instructions before installing and using this device and keep them for future reference. Attention to installation and electrical wiring. Use this device only as described in this document and never use itself as a security device. The device must be disposed of in accordance with local standards for the collection of electrical and electronic equipment.

**DESCRIPTION**

The analog thermostat **AN1 Version 4** has the following technical characteristics:

- One input**, either for **NTC** temperature sensor of scale $-50 \div +110$ °C or **PTC** scale $-50. \div +150$ °C, and an input for signal 4-20mA, where the adjustment is made through parameters. It analyzes 4-20 mA from 0 - 1000 units. This scale is defined by the parameter **r nA**, where if for example: **r nA = 30**, the scale of **4-20 mA** will be **0 - 30.0 units** (so 0 units = 4mA and 30.0 units = 20mA).
- Output** for 0-10 Volt signal. The signal settings are made through the parameters of the table below.
- One relay** controlled based on SET POINT and the corresponding differentials for cooling and heating, parameters **diC** and **diH**.
- Power supply +12 Volt** for transmitter
- AS2** parameter. By parameter value:
 - AS2=1** the analog output works with the cooling set point SCo.
 - AS2=2** works with the heating set point SH1.
 - AS2=3** works with both set points, while the relay works only in the cooling area.
 - AS2=4** adjusts the analog voltage that drives the inverter / FAN so that the signal read by the differential pressostat is equal to SET POINT SCo. The input to terminal blocks 7-11 works and when the contact is open the display shows OFF and the signal is reset.
 - AS2=5** adjusts the 0-10 Volts of the analog output based on the temperature from the temperature sensor and SET POINT SCo. And he tries to bears the measured temperature equal to the value of SCo. By parameter **IAO=0** the analog signal increases above the value of SCo and by parameter **IAO=1** the analog signal is reduced above the value of SCo. The input to terminal blocks 7-11 works as in option 4.

INDICATIONS AND BUTTONS FUNCTION

Indications	
	Relay 1 ON
	alarm ON
	malfunction ON

Keyboard	
	enter/exit the parameter's menu
SET	display the parameter's value enter parameter's value
	up arrow
	down arrow

For more indications regarding the alarms please see the alarm's table at page 2.

INDUSTRIAL FACTORY SETTINGS

- Press to display **SCo**. By pressing the parameter **Cod** is displayed.
- Press to display its value and press to enter the value **31**. Press to store the value to parameter **Cod**.
- Press again to exit the parameter menu. 'YES' is displayed on the screen. All appropriate factory settings are now stored in the device.
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PROGRAMMING A PARAMETER

ATTENTION: to gain full access to the parameter's menu, the 3rd parameter **Cod** must be adjusted to **22** (see parameter table next page)

- Press to enter the parameter menu.
- Choose the parameter you want to adjust by pressing or and press to display its value.
- Press or to change its value and then press to store the new value.
- Press to exit the parameter menu.

TECHNICAL SPECIFICATIONS

Power supply: 230VAC 50/60Hz / Maximum power consumption: 3W

It is recommended to use a power supply safety switch: fuse 0,5A (not included)

Temperature sensor PTC 1K 25°C with metal tube, temperature range $-50 \div +150$ °C ($-58 \div +302$ °F) or (NTC 10K 1% 25°C IP68 with temperature range $-50 \div +110$ °C ($-58 \div +230$ °F) not included) / Accuracy: ± 0.5 °C

One input 4-20 mA / Relay 16A res. normally open contact / Serial input

Connections cable cross section 2.5 mm² for the relay / cable cross section from 0.25 to 1.0 mm² for the sensor

Connections with terminal blocks 18A using cable with cable cross section up to 2.5 mm². / It is recommended using a torque wrench with maximum torque 0.4Nm

The device is mounted on an Ω rail / IP20 protection

Operating temperature: $-15 \div +55$ °C / Storage temperature: $-20 \div +80$ °C

Firmware V4.0.0

SERIAL INPUT

AN1 can connect to the **key programmer** or to the data logger **Mini Logger** or to the **KIOUR CAMIN** network or to any **modbus network**.

- Key programmer:** controller's parameter values can be saved or retrieved from the programming key. Plug in the programming key to the controller and press at the same time **[SET]+[▲]**. The device connects to the key and the message "Eo" is displayed. By pressing **[▲]** the device downloads the parameters from the key and the message "ro" = read O.K. or "rF" = read Fail is displayed. By pressing **[▼]** the device uploads the parameters to the key and the message "Yo" = Write O.K. or "YF" = Write Fail is

displayed. In case of failure (rF or YF) reenter the key to the serial input and repeat the procedure from the beginning. The key can connect to all **KIOUR** devices. If you try to read the parameters of a different device, message "rF" is displayed. At any time, we can perform the aforesaid operation. After 10sec the key is disconnected.

- **Data logger Mini Logger:** the controller is connected to the data logger via cable and by programming the parameter **Add = 1**. Automatically, based on selected minutes, the data logger writes to a microSD memory card the controller's temperatures, status and alarms.

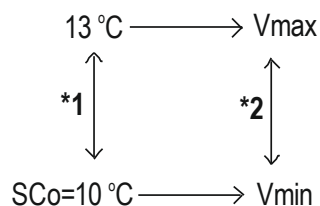
PARAMETER TABLE

#		description	min	max	default	UOM
1	SCo	SET POINT in cooling mode	-50.0	150	10.0	°C/°F
2	SHT	SET POINT in heating mode	-50.0	150	20.0	°C/°F
3	Cod	code to enter parameter's menu Cod = 22	0	255	0	-
4	ArC	Cooling function: temperature range to which the proportional voltage at the output corresponds (see sketch below)	1.0	25.0	3.0	°C/°F
5	ArH	Heating function: temperature range to which the proportional voltage at the output corresponds (see sketch below)	1.0	25.0	3.0	°C/°F
6	LLo	Lower analog output voltage The analog output has a scale between the LLo and HLo limits and in a temperature range defined by the respective set point and the corresponding parameter ArH or ArC . For example, if LLo = 3VDC, HLo = 10VDC, set point in heating SHT = 45 °C and ArH = 3 °C, then the voltage will vary from 3 to 10 VDC and from 42 to 45 °C	0.0	5.0	3.0	Volt DC
7	HLo	Higher voltage at the analog output	6.0	10.0	10.0	Volt DC
8	IAO	Adjusting the analog signal at the output according to the function: 0 = compressor mode / 1 = fan operation with signal reversal (see sketch below)	0	1	0 = compressor	Units
9	AS2	Analog input setting: 1 = cooling mode 2 = heating mode 3 = cooling and heating function at the same time. 4 = adjustment of the analog voltage value to control the speed (supply) of the fan. The input to terminal blocks 7-11 works and when the contact is open the display shows OFF and the signal is reset 5 = adjusts the 0-10 Volts of the analog output based on the temperature from the temperature sensor and SET POINT SCo. And he tries to bears the measured temperature equal to the value of SCo. By parameter IAO=0 the analog signal increases above the value of SCo and by parameter IAO=1 the analog signal is reduced above the value of SCo. The input to terminal blocks 7-11 works as in option 4	1	4	1 = cooling	Units
10	Aln	Input setting to sensor mode(NTC/PTC) or signal 4-20 mA : 1 = sensor / 2 = 4-20 mA	1	2	1 = PTC	Units
11	r nA	Adjust maximum limit of the mA scale, for example instead of 0 - 100 to show 0 - 30	10	100	100	Units
12	diC	Differential of relay in cooling mode	0.5	25.0	3.0	°C/°F
13	diH	Differential of relay in heating mode	0.5	25.0	3.0	°C/°F
14	SEn	NTC/PTC sensor selection for Sen = 0 PTC and Sen = 1 NTC	0	1	0	Units
15	SE1	Sensor offset	-10.0	15.5	0.0	°C/°F
16	rtd	Relay time delay from OFF to ON	0	240	0	seconds
17	tS	Delay in displaying the actual temperature on the screen	0	20	0	seconds
18	C_F	Switching °C/°F (0=°C, 1=°F) ATTENTION: switching between °C/°F do not change the SPo	0	1	0 = °C	°C/°F
19	trE	Time response of the device on network	20	100	30	Units
20	Add	Address of the device on network	0	255	1	Units
21	dEr	Increasing the value, reduces the change speed of the signal 0-10 Volt.	2	12	2	Units
22	dr2	Increasing the value, reduces the change speed of the signal 0-10 Volt.	1	100	2	Units

ALARM TABLE

1	LF1	Room sensor malfunction
2	EEr	Error in memory RAM: re-enter the SPo (see ADJUSTING TEMPERATURE – SET POINT page 1)
The alarms are automatically deactivated once the cause of the alarm disappears.		

OPERATION OF ANALOG COLD OUTPUT ADJUSTMENTS



For **compressor** operation (parameter IAO = 0), 10 °C corresponds to Vmin and 13 °C to Vmax.

For **fan** operation (parameter IAO = 1), the above condition is reversed and 10 °C corresponds to Vmax and 13 °C to Vmin.

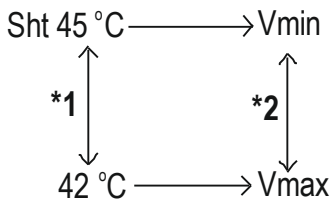
* **Note 1:** The range is defined by the parameter ArC = 3 °C

* **Note 2:** Analog output voltage (Terminal block 9-11, Analog Out) corresponding to 10 to 13 °C

Vmin: The minimum level of the analog voltage at 10 °C at the output and is defined by the **LLo** parameter on a scale from 0 to 5 VDC

Vmax: The maximum level of the analog voltage at 13 °C at the output and is defined by the parameter **HLo** scale from 6 to 10 VDC

OPERATION AND ADJUSTMENTS OF THE ANALOG HEATING OUTPUT



For **compressor** operation (parameter IAC = 0), 45 °C corresponds to Vmin and 42 °C to Vmax.

For **fan** operation (parameter IAO = 1), the above condition is reversed and 45 °C corresponds to Vmax and 42 °C to Vmin.

* **Note 1:** The range is defined by the parameter ArH = 3 °C

* **Note 2:** Analog output voltage (Terminal block 9-11, Analog Out) corresponding to 45 ÷ 42 °C

Vmin: The minimum level of the analog voltage at 45 °C at the output and is defined by the **LLo** parameter on a scale from 0 to 5 VDC

Vmax: The maximum level of the analog voltage at 42 °C at the output and is defined by the parameter **HLo** scale from 6 to 10 VDC

ELECTRICAL DIAGRAM - DIMENSIONS

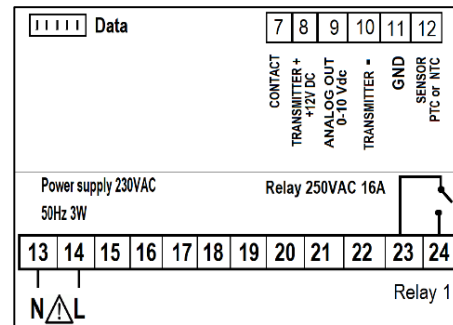
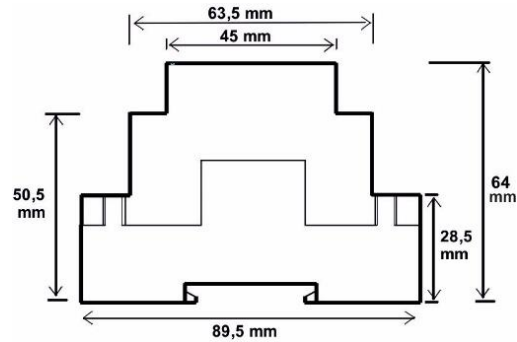
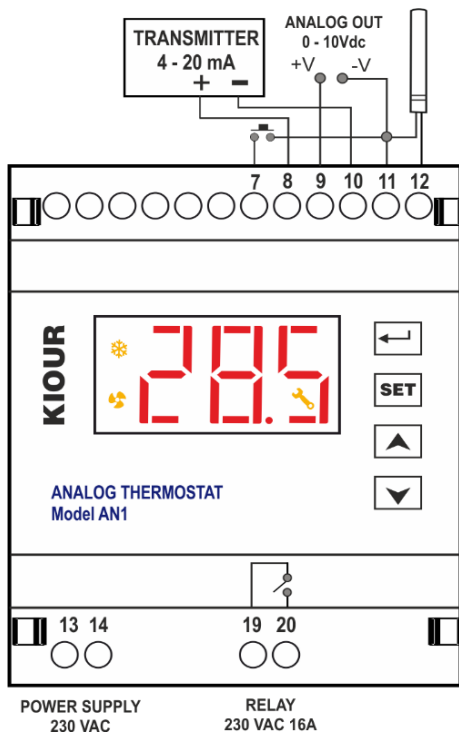
ATTENTION: according to safety standards, the device must be properly positioned and protected from any contact with electrical parts. The device must be fastened in such a way that it cannot be removed without the use of tools. Disconnect the main safety switch of the installation before proceeding to any maintenance. Disconnect the power supply of the device before proceeding to any maintenance. Do not place the device near heat sources, equipment containing strong magnets, in areas affected by direct sunlight or rain. Prevent electrostatic discharges and sharp objects from being inserted to the device. Separate signal cables from power supply cables to prevent electromagnetic disorders. Signal cables must never be in the same pipe with the power supply cables.

ATTENTION: Read carefully the technical specifications and make sure that the working conditions are appropriate. According to safety standards, the device must be properly positioned and protected from any contact with electrical parts. The device must be fastened in such a way that it cannot be removed without the use of tools.



ATTENTION: No other device than the transmitter must be connected to the terminal no. 8.

The device is mounted on Ω rail / Dimensions 70x90x65mm



REVISION HISTORY

PDF Version	Date	Comments
4.0.0	18/09/2023	Added option with value =5 to AS2 parameter. Adjusts Volts based on temperature from temperature sensor and SET POINT SCo. And it tries to bring the measured temperature equal to SCo. With parameter IAO=0 the analog signal increases above the value of SCo and with IAO=1 the analog signal decreases above the value of SCo. The input to terminal 7-11 works and when open the display shows OFF and the signal is reset

Made in Greece.



The device is under two year's guarantee. The guarantee is valid only if the manual instructions have been applied. The control and service of the device must be done by an authorized technician. The guarantee covers only the replacement or the service of the device. KIOUR PC implements a Quality Management System according to EN ISO 9001:2015 Standard with registration number 01013192. KIOUR preserves the right to adjust its products without further notice