

**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. Disconnect the power supply before performing any type of maintenance operation. Do not expose the device to liquid leakage, high temperatures over +55°C, high humidity over 80%. 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 2** has the following technical characteristics:

- One input**, either for **NTC** temperature sensor of scale -37 ÷ +110 °C or **PTC** scale -50. ÷ +110 °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

Through the **AS2** parameter we set the analog output to work with the set point of cooling **SCo (AS2 = 1)** or heating **SH1 (AS2 = 2)** or both set points (**AS2 = 3**). In the 3rd case the analog signal is controlled in both the cooling area and the heating area, while the relay works only in the cooling area. **AS2 = 4** Adjusts the analog voltage driven by the inverter / FAN so that the signal read by the differential pressure switch is equal to SET POINT **SCo**. Only in option **AS2 = 4** the input to terminal 7-11 works. When the contact is open, the display shows OFF

**PROGRAMMING THE PARAMETERS**

**ATTENTION:** to access the entire configuration menu the 3rd Cod parameter must be set to 22

- By pressing we enter the parameters menu.
- Select the parameter you want with or and press to display its value.
- With or change its value and press to enter the new value.
- By pressing we exit the parameter's menu.

**RESETTING TO FACTORY SETTINGS**

We can reset the factory settings to the following table by entering **Cod = 31** in the parameter and pressing twice to enter the value and exit the parameter menu.

PARAMETER TABLE						
#		description	min	max	default	UOM
1	<b>SCo</b>	SET POINT in cooling mode	-50.0	150	10.0	°C/°F
2	<b>SHt</b>	SET POINT in heating mode	-50.0	150	20.0	°C/°F
3	<b>Cod</b>	code to enter parameter's menu <b>Cod = 22</b>	0	255	0	-
4	<b>ArC</b>	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	<b>ArH</b>	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	<b>LLo</b>	Lower analog output voltage The analog output has a scale between the <b>LLo</b> and <b>HLo</b> limits and in a temperature range defined by the respective set point and the corresponding parameter <b>ArH</b> or <b>ArC</b> . For example, if <b>LLo = 3VDC</b> , <b>HLo = 10VDC</b> , set point in heating <b>SHt = 45 °C</b> and <b>ArH = 3 °C</b> , 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	<b>HLo</b>	Higher voltage at the analog output	6.0	10.0	10.0	Volt DC
8	<b>IAO</b>	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	<b>AS2</b>	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.	1	4	1 = cooling	Units
10	<b>Aln</b>	Input setting to sensor mode(NTC/PTC) or signal 4-20 mA : 1 = sensor / 2 = 4-20 mA	1	2	1 = PTC	Units
11	<b>r nA</b>	Adjust maximum limit of the mA scale, for example instead of 0 - 100 to show 0 - 30	10	100	100	Units
12	<b>diC</b>	Differential of relay in cooling mode	0.5	25.0	3.0	°C/°F
13	<b>diH</b>	Differential of relay in heating mode	0.5	25.0	3.0	°C/°F
14	<b>SEn</b>	<b>NTC/PTC sensor selection</b> for Sen = 0 PTC and Sen = 1 NTC	0	1	0	Units
15	<b>SE1</b>	Sensor offset	-10.0	15.5	0.0	°C/°F
16	<b>rtd</b>	Relay time delay from OFF to ON	0	240	0	seconds
17	<b>tS</b>	Delay in displaying the actual temperature on the screen	0	20	0	seconds
18	<b>C_F</b>	Switching °C/°F (0=°C, 1=°F) <b>ATTENTION:</b> switching between °C/°F do not change the SPo	0	1	0 = °C	°C/°F
19	<b>trE</b>	Time response of the device on network	20	100	30	Units
20	<b>Add</b>	Address of the device on network	0	255	1	Units
21	<b>dEr</b>	Increasing the value, reduces the change speed of the signal 0-10 Volt.	2	12	2	Units
22	<b>dr2</b>	Increasing the value, reduces the change speed of the signal 0-10 Volt.	1	100	2	Units

**ALARM TABLE**

1	<b>LF1</b>	Room sensor malfunction / malfunction in input for signal 4-20mA
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## 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÷+110°C (-58÷+230°F) or (NTC 10K 1% 25°C IP68 with temperature range -37÷+110°C (-34÷+230°F) not included) / Accuracy: ±0.5°C

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

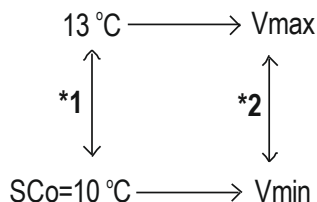
Connections cable cross section 2.5 mm<sup>2</sup> for the relay / cable cross section from 0.25 to 1.0 mm<sup>2</sup> for the sensor

Connections with terminal blocks 18A using cable with cable cross section up to 2.5 mm<sup>2</sup>. / 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÷+55°C / Storage temperature: -20÷+80°C

## 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.

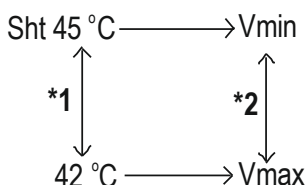
\* **Note 1:** The range is defined by the parameter ArC = 3 °C

\* **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.

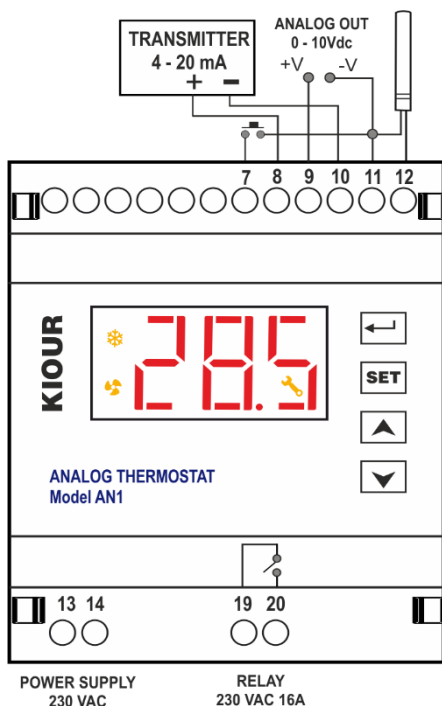
\* **Note 1:** The range is defined by the parameter ArH = 3 °C

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

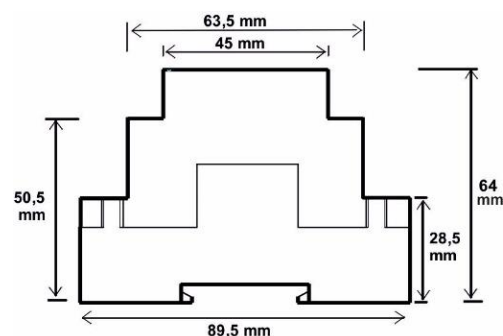
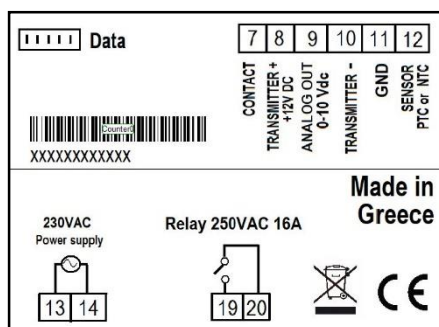
**Vmin:** The minimum level of the analog voltage at 45 °C at the output and is defined by the LLo parameter on a scale from 0 to 5 VDC

**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

## CONNECTIONS - DIMENSIONS



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



Made in Greece.



**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 been 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.

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 preserves the right to adjust its products without further notice.