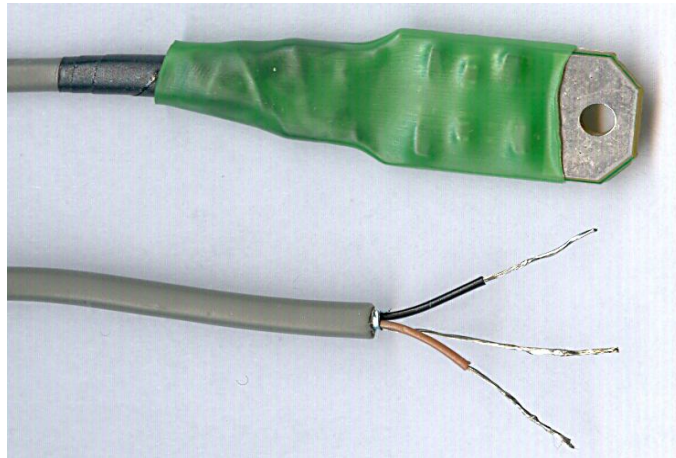


- Temperature measurement in the range from -50C to 116C.



**USER'S MANUAL**

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## **CCU6225 inputs adjustment recommendations**

CCU6225-H version 04.05 and UP

CCU6225-LT version 02.01 and UP

CCU6225-LC version 05.02 and UP

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## 1. Introduction

This document presents a review of thermal sensor RTD-02 applications in remote temperature monitoring and in building up a circuit for temperature maintenance within the set limits on the basis of controller CCU6225 using 1 input and 1 relay, as well as in additional monitoring of temperature falling outside the set limits using an additional input. Meanwhile, all the detection functions of the system are preserved via remaining 6 or 7 inputs, 1 relay and 5 outputs.

For version CCU6225-H (HA.04.05 and UP), the sensor may be connected to six inputs 3-8 any of which may control in-built relays.

For version CCU6225-LT (LT.02.01 and UP), the sensor is supported only via inputs 7 and 8 and such configuration does not allow those inputs to control relays or outputs.

For version CCU6225-LC (LC.05.02 and UP), the sensor is supported only via inputs 7 and 8 and such configuration does not allow those inputs to control relays or outputs.

### 1.1. Thermal sensor RTD-02

The sensor is supplied as a measurement unit sized 33x14 mm and is assembled with a 2 m cable. The sensor is equipped with a mounting opening 3,2 mm in diameter.

For indoor temperature measurement, the sensor may be mounted at any suitable location. For surface temperature measurement (tanks, pipeline liquid), make sure that the area around the mounting opening tightly fits to the measured surface.

For connection to controller CCU6225, a three-wire cable is used where the shield wire is GND (terminal 18), the black wire is the output (analogue signal, to be connected to the controller input, e.g. terminal 17 or 19), the brown wire is supply voltage +15V (may be connected to terminal 20).

CCU6225 must be connected off the line, should this happen to be impossible, the following connection procedure must be observed: first the shield wire, then the brown wire and finally the black wire are to be connected.

The sensor output (black) is energized with voltage from 0,5 to 5 V, the voltage is related to the temperature in the linear mode.

The measurement accuracy is  $\pm 0,5^{\circ}\text{C}$ .

Thermal sensor is not watertight. Possible condensation of liquid vapours may adversely affect the measurement accuracy and subsequently make the sensor unserviceable. In such situations any insulation measures are recommended to be taken, the most simplistic one being a PE bag.

## 1.2. CCU6225-H input and output settings adjustment

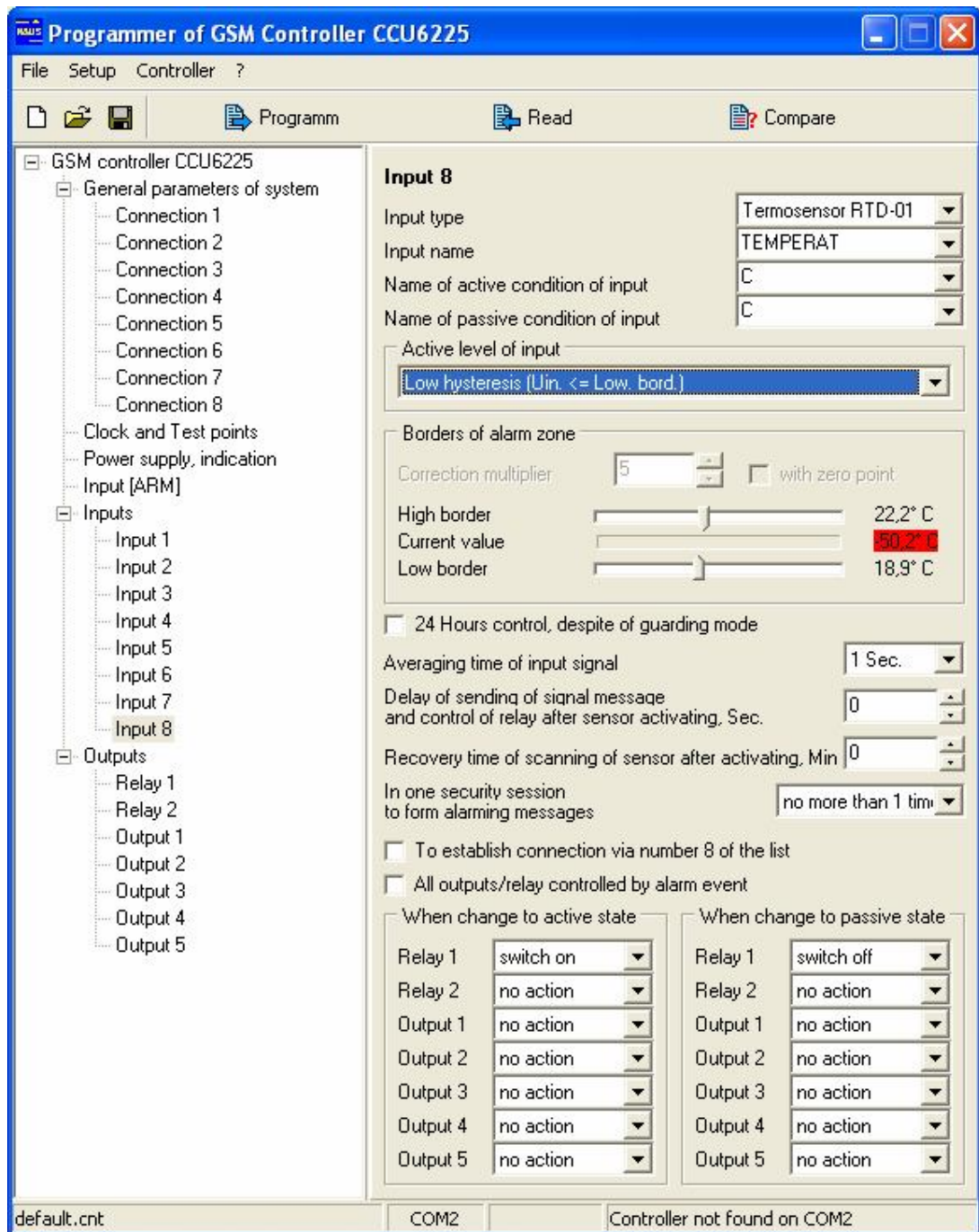


Figure 2. RTD-02 input adjustment

Sensor RTD-02 is supposed to be connected to input 8 and the user is supposed to maintain the temperature within the set limits.

The active input level is **low hysteretic**, the input signal activates when the temperature drops to 18,9°C or below. This triggers relay 1. The relay is ON until the temperature rises over 22,2°C.

Note that this input does not generate a warning message (voice message or SMS), as it was not set to transmission of such messages in any of the

connections. Thus, this circuit (input 8 and relay 1) operates automatically without user intervention, the user may only request the sensor temperature by SMS: /pass TEMPERAT ?

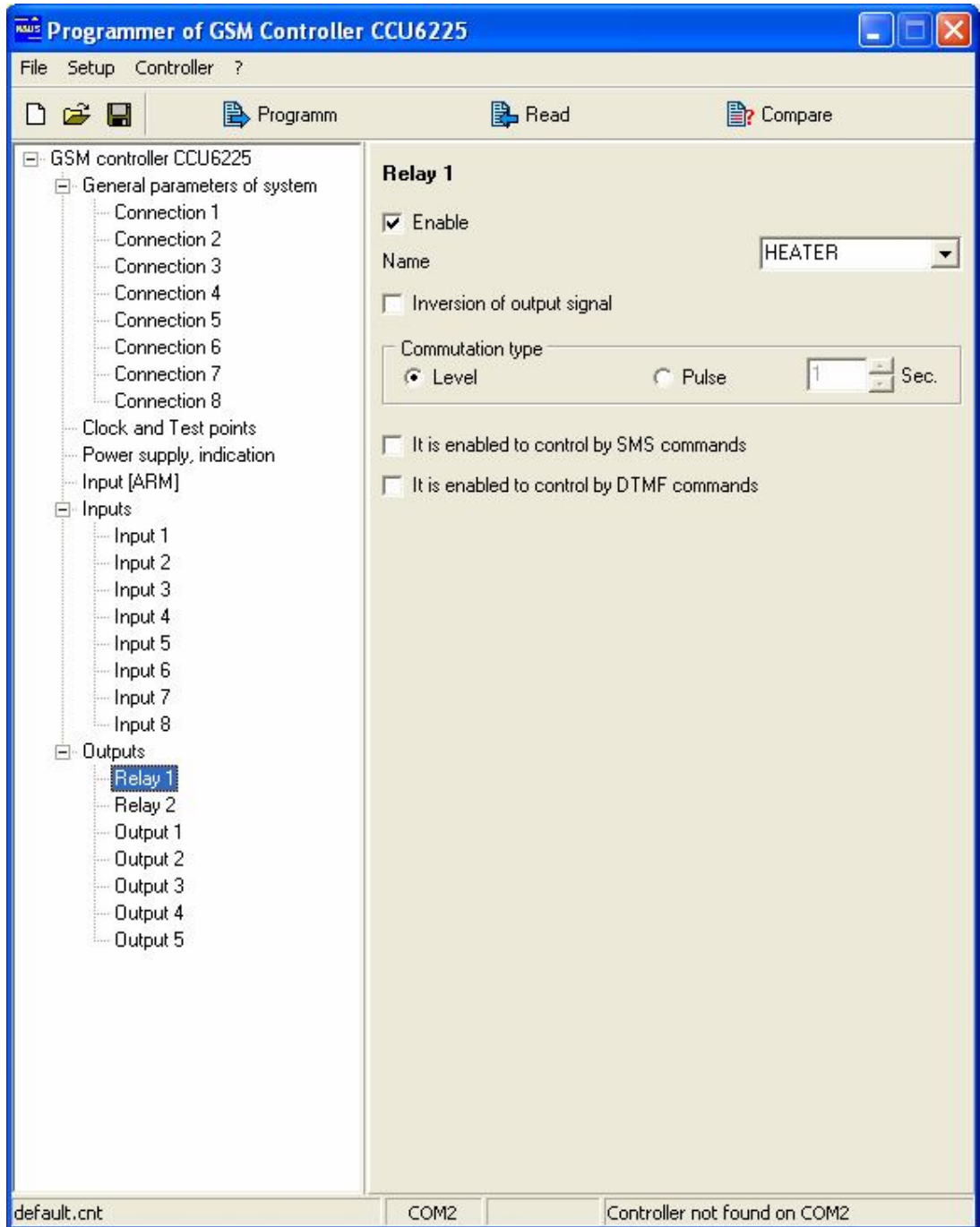


Figure 3. Input adjustment for heater operation

### 1.3. CCU6225-H additional input settings adjustment for troubleshooting.

In some applications when it is required not only to adjust but also to monitor the temperature falling outside the prescribed limits, an additional input,

e.g. input 7, may be used by connecting it to the output of the sensor and adjusting it as described below.

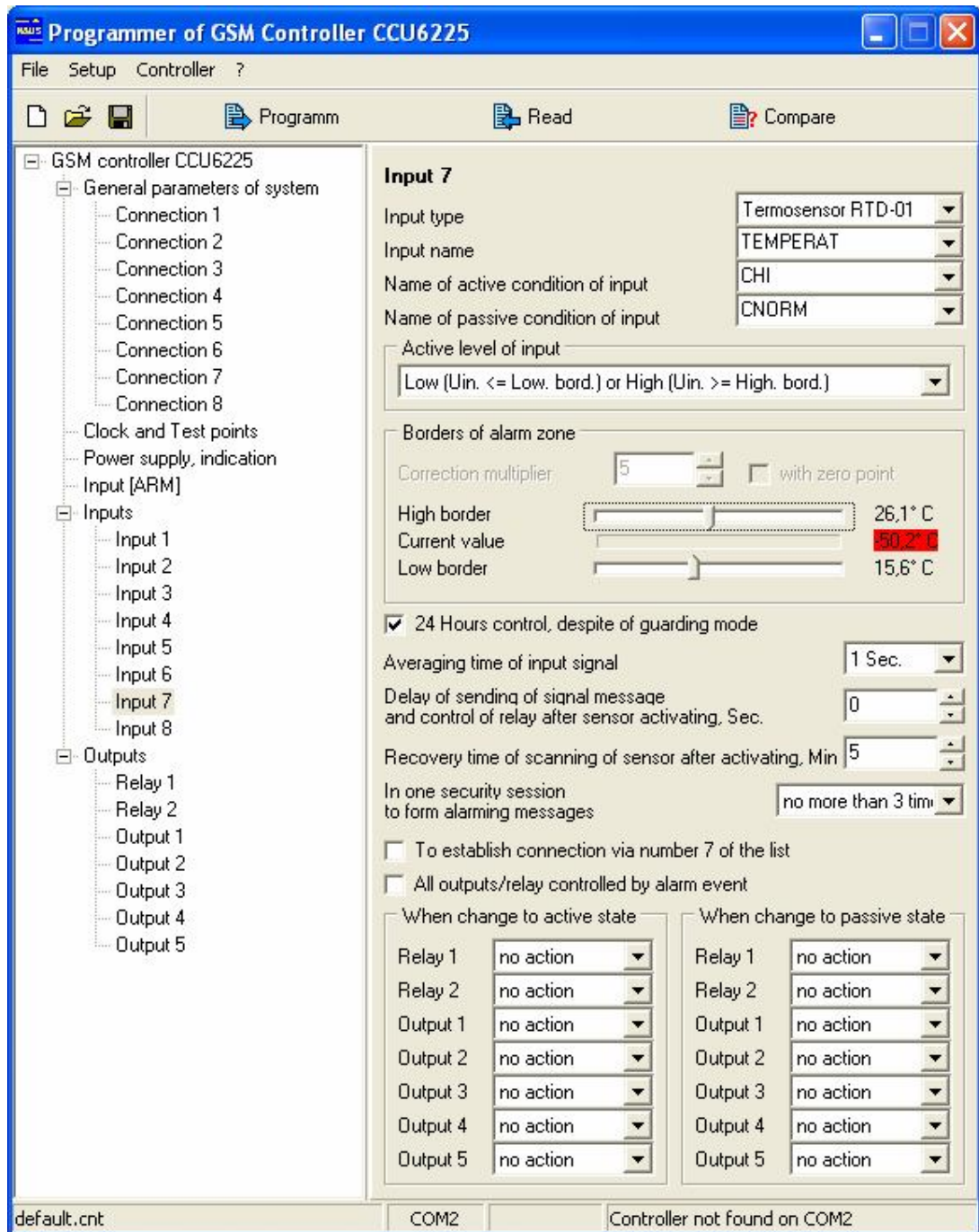


Figure 4. RTD-02 input adjustment

It will allow the user to receive a voice message or an SMS in the case of the temperature dropping below 15,6°C or exceeding 26,1°C. An individual message will be sent within a minimal interval of 5 minutes with a total amount of messages not exceeding 3 per one detection period. No messages are sent during normal operation of the equipment, however, should there be a heater or

a relay unit failure, no heater start-up or shutdown will occur and an appropriate message will be sent.

#### 1.4. CCU6225-LT or CCU6225-LC input settings adjustment for warning

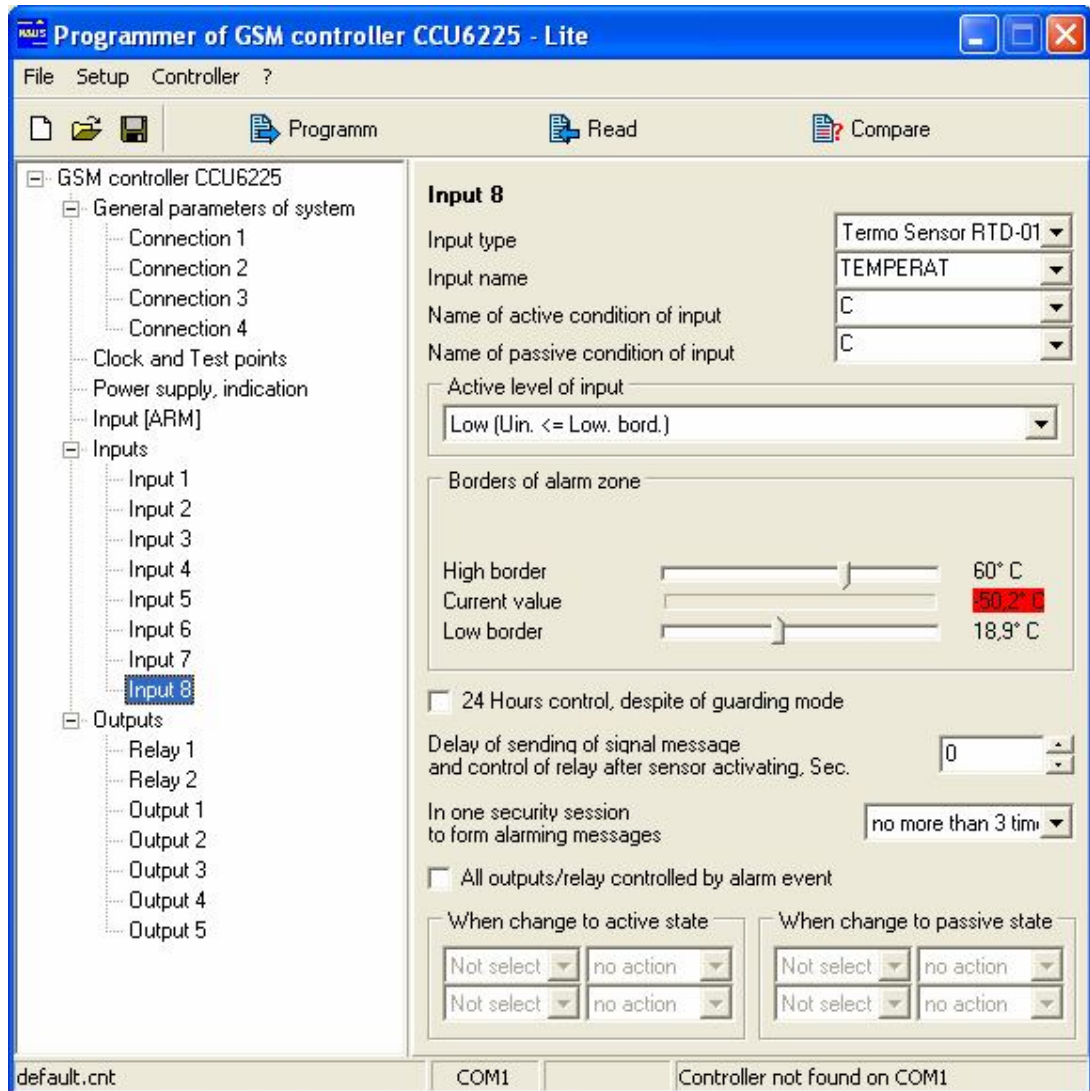


Figure 5. RTD-02 input adjustment

Sensor RTD-02 is supposed to be connected to input 8 and the user is supposed to receive a warning message when the temperature drops below 18,9°C. For the CCU6225-LT or CCU6225-LC version, the setting **"active input level"** does not have the **"low hysteric"** value as in the H version, therefore it should be set to **"low"**.

The active input level **is low**, the input signals are considered to be active when the temperature drops to 18,9°C or below. This input is able to generate a warning message (voice message, SMS), if the setting **"from any input"** of an appropriate connection is ON. A total amount of such messages will not exceed 3 per one detection period. A smaller amount of messages is possible if the



temperature falls outside the prescribed limit on more than one occasion before the moment of sending of a single SMS or a voice message.

The user may request the sensor temperature by SMS: /pass TEMPERAT ? at any moment.

For the CCU6225-LT or CCU6225-LC version, control of relay or inputs is not supported in the case of the "temperature sensor" input type.

## 1.5. CCU6225- LT or CCU6225-LC input settings adjustment for monitoring low or excess temperature

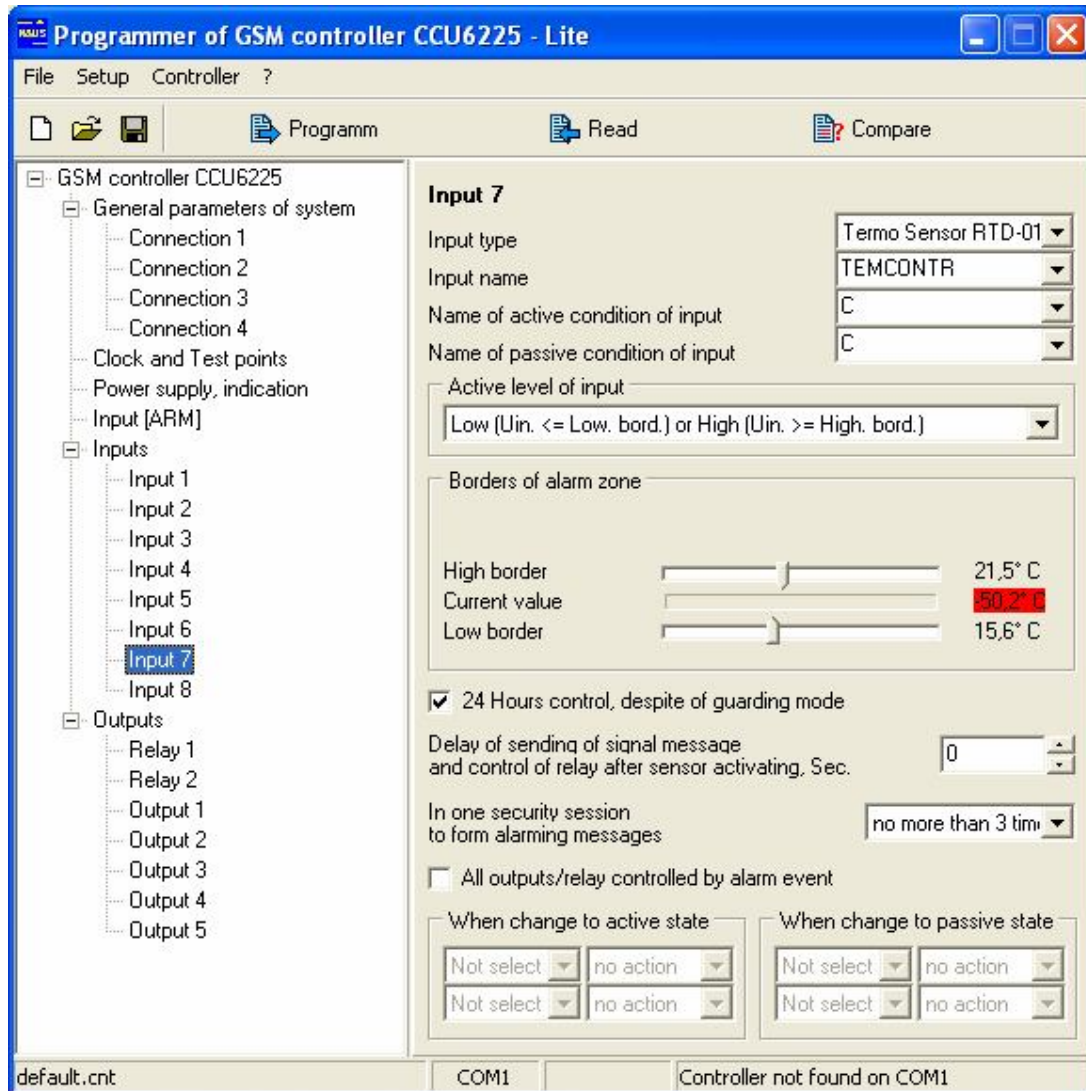


Figure 6. RTD-02 input adjustment

It will allow the user to receive a voice message or an SMS in the case of the temperature dropping below 15,6°C or exceeding 21,5°C. A total amount of such messages will not exceed 3 per one detection period. A smaller amount of messages is possible if the temperature falls outside the prescribed limit on more than one occasion before the moment of sending of a single SMS or a voice message. No messages are sent during normal operation of the equipment,

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however, should there be a heater or a relay unit failure, no heater start-up or shutdown will occur and an appropriate message will be sent.

*Note that the configuration tool may exhibit variations in temperature readings (current value), e.g. 32,6°C – 33,1°C is not a failure but a natural drift.*