

Industrial Microprocessor Controller



INDU-52

*Intended for;
heat boilers, smoke houses, industrial ovens,*

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1. Application

The INDU52 Controller can be used for any process control that requires two temperature setpoints and two-channel measurements (analog inputs: PT-100 within -50°C to 400°C). The control can be carried out continuously or depending on the process running. The control mode can be selected in the SETUP menu.



Fig: 1 INDU-52 Controller Front Panel

2. Technical Specifications

Display	LED ½ " x 4 digits LED ½ " x 3 digits
Power Supply	230 (option 110, 24) VAC ± 10%
Keyboard	5 keys (microswitch)
Enclosure dimensions	134x134x65 mm
Rack mount opening	90x90 mm
Inputs	2 analog inputs, PT-100
Outputs	2 relay outputs, closing contact (250 VAC/8A)
Protection	IP67 (front side)
Power input	3 W

3. Controller Operating Modes

The controller can run in the following modes:

- **START:** in this mode the process control is carried out according to the measured temperature and the preset START mode time is counted down. Output 1 (Re1) is controlled according to measurements made in Channel 1 (Ch1). Similarly, Output 2 (Re2) is controlled with measurements made in Channel 2 (Ch2). When the START mode is running the SET TIME LED is flashing and the time to the end of the START mode counted down from the set value to zero is shown in the upper display. After the set time is elapsed the controller is switched into the STOP mode.
- **STOP:** the end of the START mode is indicated by "STOP" appearing on the upper display and by an audible signal. Press the STOP key to switch into the STANDBY mode.
- **STANDBY:** in this mode the controller is waiting for the next operation in the START mode. The set START mode duration is displayed on the upper display. The current temperature measurement is shown on the bottom display.

4. Process Parameter Changing

- **START MODE DURATION**

The START mode duration setting (hours and minutes) is shown on the upper display. Press the SET TIME key to change the time setpoint.. Both the parameter being edited and the SET TIME LED flash. Press the SET TIME key once again to confirm the setting and continue. Use the PLUS / MINUS keys to change the setting.

- **CHANNEL 1 TEMPERATURE SETPOINT**

The temperature measurement made in Channel 1 is shown on the bottom display. Press the SET TEMP key to display and change Channel 1 temperature setpoint. Press the SET TEMP key once again to confirm the changes. Use the PLUS / MINUS keys to change the setting.

MOTE:

Channel 2 temperature setpoint is available in F06 in the SETUP menu.

5. Process Start

Press the START key to run the process. When the START mode is activated the START key flashes. The time to the process end is shown on the upper display. The end of the process is indicated by "STOP" appearing on the display and by an audible signal. Press the STOP key to confirm that the process is completed.

The temperature setpoint can be changed during the process (see section 4).

6. Process Stop

The process can be stopped at any moment by switching into the STOP mode. To do it press the STOP key. The display shows "STOP" and an audible signal is activated. Confirm by pressing the STOP key.

7. Continuous Control Mode

If in the SETUP menu F 1 or F 2 are set at 1, the control in selected channel is carried out independently on the control operating mode. The START mode can be then used for counting down and indicating a set time. Continuous Control Mode can be selected for each channel.

8. Info

To display the temperature measurement made in another channel, press the INFO key. The upper display shows "INFO". To quit this mode press the INFO key or wait for 20 seconds to quit automatically.

When the controller is running in the START mode you can view the START mode duration setting after pressing the SET TIME key. When this information is displayed the SET TIME key is lit. To quit press the SET TIME key once again or wait for 3 seconds to quit automatically.

9. Setup

To get into the Setup menu press and hold down the MINUS key and then press the START key. Enter the access code with the PLUS / MINUS keys and confirm it by pressing any SET key, if the access code function is enabled. The display shows "Fx" indicating the Setup item. You can change the Setup item number with the PLUS / MINUS keys. To edit the selected item press any SET key. To quit press the STOP key.

Setup items:

Item Number	Default value	Range	Description
F0	1	1...127	MODBAS network address
F1	-	-	-
F2	0	0..1	temperature unit 0 - °C, 1 - °F
F3	0	0..1	Channel 1 control 0 – START mode only, 1 – regulation in all modes
F4	0	0..1	Channel 2 control 0 – START mode only, 1 – regulation in all modes
F5	0	0..9999	SETUP access code 0 – disabled
F6	30	0..399	Channel 2 temperature setpoint
F7	150	0..399	maximum Channel 1 temperature setpoint
F8	0.2	0.0 .. 10.0	Channel 1 Low hysteresis value
F9	0.2	0.0 .. 10.0	Channel 1 High hysteresis value
F10	0.2	0.0 .. 10.0	Channel 2 Low hysteresis value
F11	0.2	0.0 .. 10.0	Channel 2 High hysteresis value

10. Alarms

After power supply is switched on the measuring elements are tested by the controller. Should a faulty measuring element is found the upper display shows "Err" and corresponding channel number. Such information shall be confirmed by pressing the INFO key. Further control will be carried out by using the properly operating channel only.

Alarm messages available:

- Err 1 – faulty measuring element in Channel 1
- Err 2 – faulty measuring element in Channel 2

When the measuring range is exceeded or measuring element is damaged , the display shows "---" instead of the measured temperature.