



# Manual for connection and operation of

# GIR 2000 Pt

as of version 1.3



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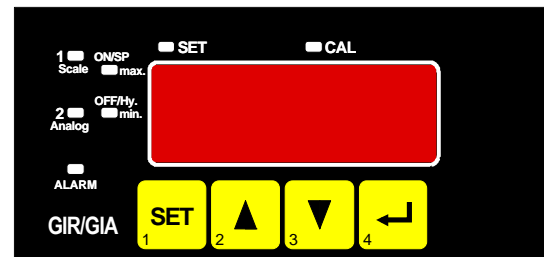
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## 1. Introduction

The GIR 2000 Pt is a microprocessor controlled displaying device.

The devices supports one input for the connection of:

- RTD (Pt100, 3-wire)



The device features additional one switching output, which is configured as 2-point-controller. The state of the switching output (relay) is displayed with the LED "1".

When leaving our factory the GIR 2000 Pt has been subjected to various inspection tests and is completely calibrated.

**Before the GIR 2000 Pt can be used, it has to be configured for the customer's application.**

**Hint: By calling a configuration menu for offset- and slope-adjustment the measurement and regulation of the device will be deactivated.  
By leaving the menu the device will be reinitialised and the measuring/regulation will be started again.**

## 2. Safety regulations

This device was designed and tested considering the safety regulations for electronic measuring devices.

Faultless operation and reliability in operation of the measuring device can only be assured if the General Safety Measures and the devices specific safety regulations mentioned in this users manual are considered.

1. Faultless operation and reliability in operation of the measuring device can only be assured if the device is used within the climatic conditions specified in the chapter "Specifications"
2. Always disconnect the device from its supply before opening it. Take care that nobody can touch any of the unit's contacts after installing the device.
3. Standard regulations for operation and safety for electrical, light and heavy current equipment have to be observed, with particular attention paid to the national safety regulations (e.g. VDE 0100).
4. When connecting the device to other devices (e.g. the PC) the interconnection has to be designed most thoroughly, as internal connections in third-party devices (e.g. connection of ground with protective earth) may lead to undesired voltage potentials.
5. The device must be switched off and must be marked against using again, in case of obvious malfunctions of the device which are e.g.:
  - visible damage.
  - no prescribed working of the device.
  - storing the device under inappropriate conditions for longer time.

When not sure, the device should be sent to the manufacturer for repairing or servicing.



**ATTENTION:** When running electric devices, parts of them will always be electrically live. Unless the warnings are observed serious personal injuries or damage to property may result. Skilled personnel only should be allowed to work with this device. For trouble-free and safe operation of the device please ensure professional transport, storage, installation and connection as well as proper operation and maintenance.

### SKILLED PERSONNEL

Are persons familiar with installation, connection, commissioning and operation of the product and have professional qualification relating to their job.

For example:

- Training and instruction or qualifications to switch on or off, isolate, ground and mark electric circuits and devices or systems.
- Training or instruction according to the state.
- First-aid training.



### **ATTENTION:**

**Do NOT use this product as safety or emergency stopping device, or in any other application where failure of the product could result in personal injury or material damage.**

**Failure to comply with these instructions could result in death or serious injury and material damage.**

### 3. Electric Connection

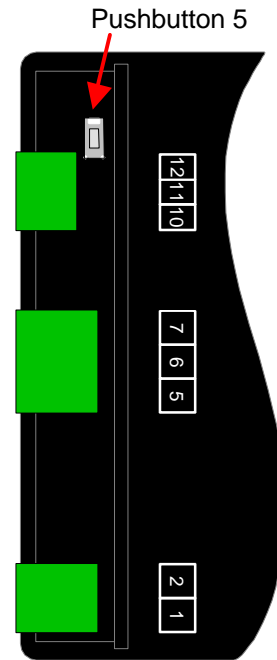
Wiring and commissioning of the device must be carried out by skilled personnel only.

**In case of wrong wiring the device may be destroyed. We can not assume any warranty in case of wrong wiring of the device.**

#### 3.1. Terminal assignment

12	Input: Pt100
11	Input: Pt100
10	Input: Pt100
7	Relay, break contact, * <sup>1</sup>
6	Relay, make contact, * <sup>1</sup>
5	Relay, input, * <sup>1</sup>
2	Supply voltage 230V <sub>AC</sub> , * <sup>1</sup>
1	Supply voltage 230V <sub>AC</sub> , * <sup>1</sup>

\*<sup>1</sup> = or the corresponding designation on the label on the housing



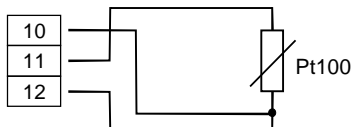
#### 3.2. Connection data

	between terminals	typical		limitations		notes
		min.	max.	min.	max.	
Supply voltage	1 and 2	207 V <sub>AC</sub>	244 V <sub>AC</sub>	0 V <sub>AC</sub>	253 V <sub>AC</sub>	or corresponding designation on the type plate
Relay (change-over contact)	5, 6 and 7				253 V <sub>AC</sub> 10A ohmic load	plate or corresponding designation on the type plate
Input Pt100 (3-wire)	10 - 12			0 Ω	8 Ω	plate active signal not allowed

**These limits must not be exceeded (not even for a short time) !**

#### 3.3. Connecting a Pt100-temperature probe

Please take care not to exceed the limitations of the inputs when connecting the device as this may lead to destruction of the device.



#### 3.4. Connecting switching output

The device features one switching output (relays) by default.

**Please take care that you must not exceed the limits of the voltage and of the maximum current of the switching outputs (not even for a short period of time). Please take extreme care when switching inductive loads (like coils or relays, etc.). Because of their high voltage peaks, protective measures (e.g. RC-element) to limit these peaks have to be taken.**

## 4. Switching points and alarm-boundaries

### General description and notes to the operating of the menu

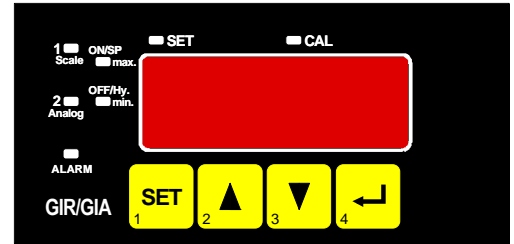
By means of **button 1** you can go to the next parameter. Additionally a given changing in the parameter setting can be confirmed by this button and the new value will be saved. Afterwards it will be changed to the parameter view again.

By means of **button 2** and **3** you can go from the parameter view to the parameter setting and adjust its value there.

*Hint:* The buttons 2 and 3 are featured with a 'roll-function'. When pressing the button once the value will be raised (button 2) by one or lowered (button 3) by one. When holding the button pressed for longer than 1 sec. the value starts counting up or down, the counting speed will be raised after a short period of time. The device also features a 'overflow-function', when reaching the upper limit of the range, the device switches to the lower limit, vice versa.

By means of **button 4** a given changing will be cancelled in the parameter setting. The changing will be discarded and the former parameter value will be preserved. In the parameter view button 4 closes the menu.

**Please note:** If you don't press any button for more than 10 sec. in the parameter setting, the adjustment will be cancelled, the changing discarded and it will be changed to the parameter view. If you don't press any button for more than 60 sec. in the menu, the menu will be automatically closed.



### 4.1. 2-point-controller

- When pressing button 1 for >2 seconds the menu to select the switching points will be called.
- The device will be displaying "1.on" (turn-on-point of switching function 1).
- Use button 2 or button 3 to set the desired value, the device's switching function 1 should be turning on.
- Press button 1 to validate your selection. The display shows "1.on" again.
- Press button 1 again, the device will be displaying "1.off". (turn-off-point of switching function 1)
- Use button 2 or button 3 to set the desired value, the device's switching function 1 should be turning off.
- Press button 1 to validate your selection. The display shows "1.off" again.

**Example:** You want to control the temperature of a heating coil, with a hysteresis of +2°C, to 120°C. Therefore you will have to select the turn-on-point "1.on" to 120°C and the turn-off-point to "122°C". When your heating coil temperature falls below 120°C it will be turned on. When the temperature rises above 122°C the heating coil will be turned off.

*Note:* Depending on the inertia of your heating coil an overshooting of the temperature may be possible.

- When pressing button 1 again, the display shows "1.on" again.

Now you have finished the adjustment of the switching points of the device.

- Press now button 4 to exit the switching point adjustment menu.

## 5. Offset- and slope-adjustment

The offset and slope-adjustment function can be used for compensating the tolerance of the used sensor.

### General description and notes to the operating of the menu

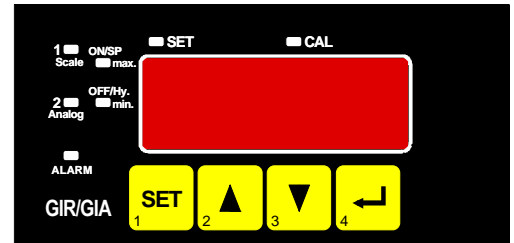
By means of **button 1** you can go to the next parameter.  
Additionally a given changing in the parameter setting can be confirmed by this button and the new value will be saved.  
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By means of **button 2 and 3** you can go from the parameter view to the parameter setting and adjust its value there.

*Hint:* The buttons 2 and 3 are featured with a 'roll-function'. When pressing the button once the value will be raised (button 2) by one or lowered (button 3) by one. When holding the button pressed for longer than 1 sec. the value starts counting up or down, the counting speed will be raised after a short period of time.  
The device also features a 'overflow-function', when reaching the upper limit of the range, the device switches to the lower limit, vice versa.

By means of **button 4** a given changing will be cancelled in the parameter setting. The changing will be discarded and the former parameter value will be preserved.  
In the parameter view button 4 closes the menu.

**Please note:** If you don't press any button for more than 10 sec. in the parameter setting, the adjustment will be cancelled, the changing discarded and it will be changed to the parameter view. If you don't press any button for more than 60 sec. in the menu, the menu will be automatically closed.



### 5.1. Menu calling and adjustment

- Turn on the device and wait after it finished its built-in segment test.
- At the same time press the pushbutton on the rear side (button 5) and button 3 for >2 seconds. The device displays "OFFS" (offset).
- Use button 2 or button 3 for setting the desired zero point offset-value.  
*The value that had been set will be subtracted from the measured value. (see below for further information)*
- Press button 1 to validate your selection. The display shows "OFFS" again.
- When pressing button 1 again, the device will be displaying "SCAL". (scale = slope)
- Use button 2 or button 3 to select the desired slope-adjustment.  
*The slope adjustment will be entered in %. The displayed value is calculated according to the following formula:*  
$$\text{Displayed value} = (\text{measured value} - \text{zero point offset}) * (1 + \text{slope adjustment} [\% / 100])$$
  
*Example:* The setting is 2.00 => the slope has risen 2.00% => slope = 102%.  
When measuring a value of 1000 (without slope-adjustment) the device would display 1020 (with slope adjustment of 102%)
- Press button 1 to validate the selection of the slope-adjustment. The display shows "SCAL" again.
- When pressing button 1 again, the display shows "OFFS" again.

Now you have finished the offset- and slope-adjustment.

- Press now button 4 to exit the offset- and slope-adjustment menu.

#### Examples for offset- and slope-adjustment:

The device displays the following values (without offset- or slope-adjustment: 2.0°C at 0°C and, 151.7°C at 150°C

Therefore you calculated: zero point: 2.0

slope: 151.7 - 2.0 = 149.7

deviation: 0.3 (= target-slope - actual-slope = 150.0 - 149.7)

You have to set: offset = 2.0 (= zero point-deviation)

scale = 0.20 (= deviation / actual-slope = 0.3 / 149.7 = 0.0020 = 0.20%)

## 6. Min-/max-value memory:

The device features a minimum/maximum-value memory. In this memory the highest and lowest performance data is saved.

Calling of the minimum-value	press button 3 shortly	the device will display "Lo" briefly, after that the min-value is displayed for about 2 sec.
Calling of the maximum-value	press button 2 shortly	the device will display "Hi" briefly, after that the max-value is displayed for about 2 sec.
Erasing of the min/max values	press button 2 and 3 for 2 sec.	The device will display "CLr" briefly, after that the min/max-values are set to the current displayed value.

## 7. Error codes

When detecting an operating state which is not permissible, the device will display an error code

The following error codes are defined:

### Err.1: Exceeding of the measuring range

Indicates that the valid measuring range of the device has been exceeded.

Possible causes:

- Input signal to high
- Sensor broken

Remedies:

- The error-message will be reset if the input signal is within the limits.
- Check sensor

### Err.2: Values below the measuring range

Indicates that the values are below the valid measuring range of the device.

Possible causes:

- Input signal is to low or negative.
- Sensor shorted

Remedies:

- The error-message will be reset if the input signal is within the limits.
- Check sensor

### Err.7: System-error

The device features an integrated self-diagnostic-function which checks essential parts of the device permanently. When detecting a failure, error-message Err.7 will be displayed.

Possible causes:

- Valid operating temperature has exceeded or has fallen below the valid temperature range.
- Device defective.

Remedies:

- Stay within valid temperature range.
- Exchange the defective device.

### Err.9: Sensor defective

The device features an integrated diagnostic-function for the connected sensor or transmitter. When detecting a failure, error-message Err.9 will be displayed.

Possible causes:

- Sensor broken or shorted

Remedies:

- Check sensor or exchange defective sensor.

## 8. Specification

**Absolute maximum ratings:** see chapter 3.2. (Connection data)

**Measuring input:** Pt100, 3-wire

**Measuring range:** -50.0 ... + 200.0°C (or -58.0 ... +392.0 °F)

**Resolution:** 0.1°C or 0.1°F

**Accuracy:** < 0.3% FS ±1 digit (at nominal temperature)

**Temperature drift:** < 0.015% FS / K

**Max. perm. line resistance:** 20 Ohm

**Measuring freq.:** approx. 4 measures / sec.

**Display:** approx. 13 mm height, 4-digit red LED-display

**Operating:** 4 push-buttons or via interface

**Output:** 1 volt-free Relay-output (standard) *or the corresponding designation on the label on the housing*

**Output type:** change-over contact, breaking capacity: 10A (ohmic load), 250 V<sub>AC</sub>

**Response Time:** ≤ 0.5 sec.

**Output-functions:** 2-point-controller

**Switching points:** arbitrary

**Power supply:** 230 V<sub>AC</sub> , 50/60 Hz (standard) *or the corresponding designation on the label on the housing*

**Nominal temp.:** 25°C

**Operating ambient:** -20 to +50°C

**Relative humidity:** 0 to 80% RH (non condensing)

**Storage temp.:** -30 to +70°C

**Housing:**

**Dimensions:** 48 x 96 mm (front-panel dimensions).

**Installation depth:** approx. 115 mm (incl. screw-in/plug-in clamps)

**Panel Mounting:** with brackets

**Panel cut-out:** 43.0<sup>+0.5</sup> x 90.5<sup>+0.5</sup> mm (H x W)

**Connection:** via screw-in/plug-in clamps

Conductor cross-selection from 0.14 to 1.5 mm<sup>2</sup>

**Protection class:** front IP54, with optional mounting seals IP65

**EMC:** EN61326 +A1 +A2 (appendix A, class B), additional errors: < 1% FS

When connecting long leads adequate measures against voltage surges have to be taken.

## 9. Disposal notes

This device must not be disposed as 'residual waste'.

To dispose this device, please send it directly to us (adequately stamped). We will dispose it appropriately and environmentally friendly.