

# R2300

## Compact Controller: 48 x 24 mm

3-349-200-03  
1/5.02

- Single-channel digital controller with microprocessor
- Extremely compact design: 48 x 24 mm (1/32 DIN)
- Universal input for thermocouples, Pt100 and linear signals (mV, mA)
- Two / three-step controller
- Extraordinary functionality
- IP 65 protection



### Applications

The R2300 ultra-compact digital controller offers top functionality and flexibility. It is used primarily for controlling, displaying and monitoring temperatures in very small machines, devices and laboratory instruments, which are also used in harsh environments (IP 65).

### Features

- PID algorithm
- SMART self-optimization
- Soft start function
- Two manually selectable setpoints
- Setpoint ramps for increases and decreases
- Universal alarm monitoring with actuation suppression
- Heat circuit monitoring (loop-break alarm)

### Description

The universal input can be configured for all common thermocouples, Pt100 sensors or linear signals. The controller is furnished with either 2 relay outputs, 1 relay output and 1 logic output, or 2 logic outputs for direct control of semiconductor relays or contactors. They can be programmed as heating, cooling or alarm outputs. Control parameters are readily determined by means of self-optimization, and are used as a basis for the selected PID or PI algorithm.

Extensive additional functions include an absolute alarm, a band alarm, a deviation alarm, automatic or manual resetting and adjustable alarm suppression. Rising and falling ramps can be programmed for the realization of setpoint changes, and a second setpoint can be activated manually as well. Control loop monitoring recognizes errors automatically, can trigger an alarm and can read out a predefined manipulating factor. A security code protects the temperature controller against changes entered by unauthorized persons after initial start-up.

The variable power pack (100 to 240 V AC) allows for use with all common mains voltages and is highly advantageous for export business. The controller is alternatively available with a 24 V AC/DC power pack.

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### Characteristic Values

#### Inputs

Input range	0 ... 60 mV
Calibration accuracy	0.2% measuring range at 25 °C
Measuring rate	4 Hz for linear input, 2 Hz for thermocouples and Pt100
Resolution	30,000 counts (~ 13 bit)
Input filter	0 ... 20 s
Input offset	- 500 ... + 500 digits
Thermocouples	L, J, K, N, R, S, T
Reference junction	10 : 1 internal, 0 ... 50 °C working range
Resistance thermometers	3-wire, Pt100, DIN 43760
Linear, mV	0 ... 60 mV, scalable from - 1999 to 9999
Linear, mA	0 ... 20 mA with external 2.5 Ω shunt

#### Outputs

Logic output	14 V DC at 20 mA, 24 V at 1 mA, non-floating
Applications	Heating, cooling or alarm
Relay output	3 A, 250 V AC ohmic
Applications	Heating, cooling or alarm

#### Input and Output Functions

Controller classes	PID, PI, PD, P or On/Off
Setpoint ramp	1 ... 200 units per minute, separate for up and down
Self-optimization	PID + SMART algorithm for all control parameters
Working point adjustment	Manual from 0 to 100% PB, for PD and P control
Alarm	Full range maximum, full range minimum, system deviation band, system deviation maximum and system deviation minimum, loop-break
Alarm mode	Alarm mask for actuation and setpoint change, automatic or manual acknowledgement

### General

Display	4-place 7-segment LED display, 8 mm character height
Dimensions (W x H x D)	48 x 24 x 102 mm
Weight	max. 90 g
Mains power	100 ... 240 V AC (- 15%, + 10%), 24 V AC/DC (± 10%), 50/60 Hz, max. 2.5 VA
Protection	IP 65 (NEMA 4) at front-panel with installed sealing ring
Insulation	2300 V RMS, fulfills EN 61010-1
Ambient conditions	Conductive contamination must be prevented from entering the control cabinet in which the device is mounted. The device is not suitable for use in corrosive environments or explosive atmospheres.

### Mechanical Design

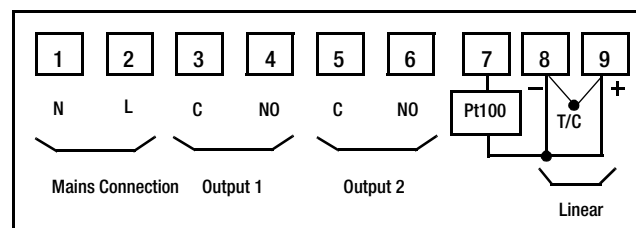


Figure 1: Terminal Block at Rear

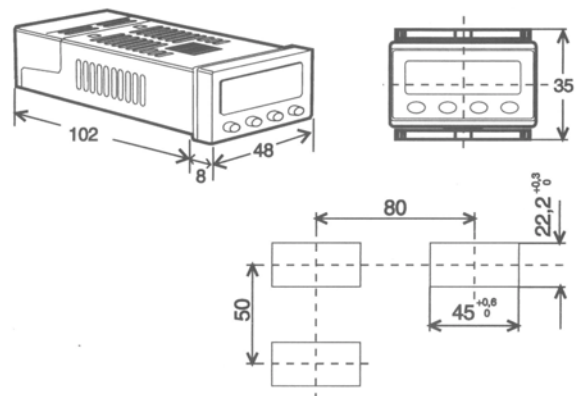


Figure 2: Housing Dimensions

### Order Information

Feature	Designation
<b>Compact Controller</b>	R2300
With universal input and self-optimization, front panel dimensions: 48 x 24 mm (W x H)	
<b>Controller Type</b>	
Two / three-step controller	2 relay outputs 1 relay output and 1 logic output 2 logic outputs
<b>Auxiliary Voltage</b>	
100 ... 240 V AC	C1
24 V AC/DC	C2

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