

# Infrared-Temperature Module Model 2328-Z001 (IRM 100)

## Temperature Measurement in Distance



### Applications

Measurements on rubber, plastics, paper, textiles, liquids, ceramics, varnish, food products etc.

### Advantages

- quickness
- wearless measurement on moved parts
- no energy removal at the test object
- no pollution of the test object

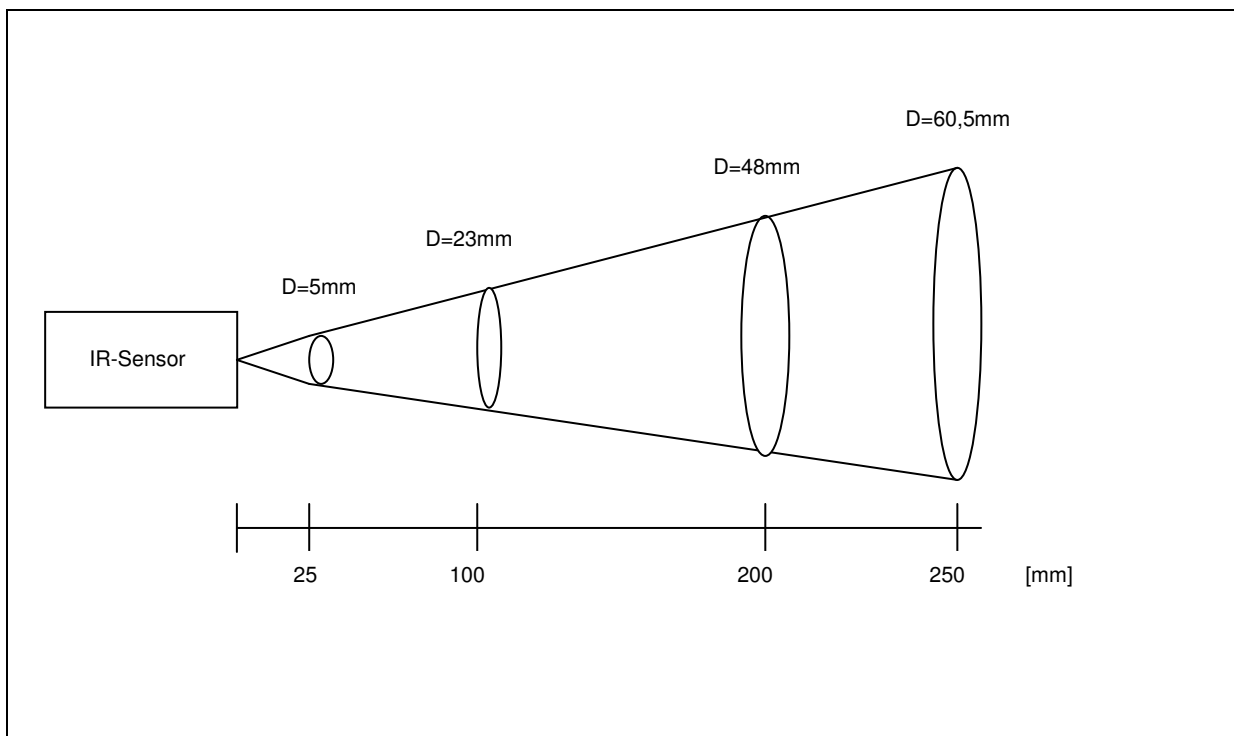
## Technical Data

### Electronic module

Temperature Range	0...100°C
Output	0...10V at min. 2 k $\Omega$
Resolution (A/D-converter)	14 Bit
Non-Linearity	$\pm 1\%$ full range
Measurement Time	60 ms
Emission Factor	0...1, in steps of 0,01
Power Supply	24V $\pm 20\%$ DC
Current Consumption	max. 25 mA
Operation Temperature	0...80°C
Storage Temperature	-20...80°C
Dimension	(B x T x H) 22,5 x 70 x 60 [mm]
Assembly	Mount Rails 35mm according EN50022 and G-Rails according EN50035
Weight	70 g
Protection Class	IP30

### Optics

Angel of Beam Spread	14°
Min. meas. Point at 25mm Distance	5 mm $\emptyset$
Range of the Wavelength	6...14 $\mu$ m
Dimension	12 mm $\emptyset$ , L= 30mm, stainless steel
Connection Cable	1,5 m, not prolongable (it's calibrated) special length is possible as an option
Operation Temperatur	0...80°C
Storage Temperatur	-20...80°C
Weight	50 g
Type of Protection	IP64



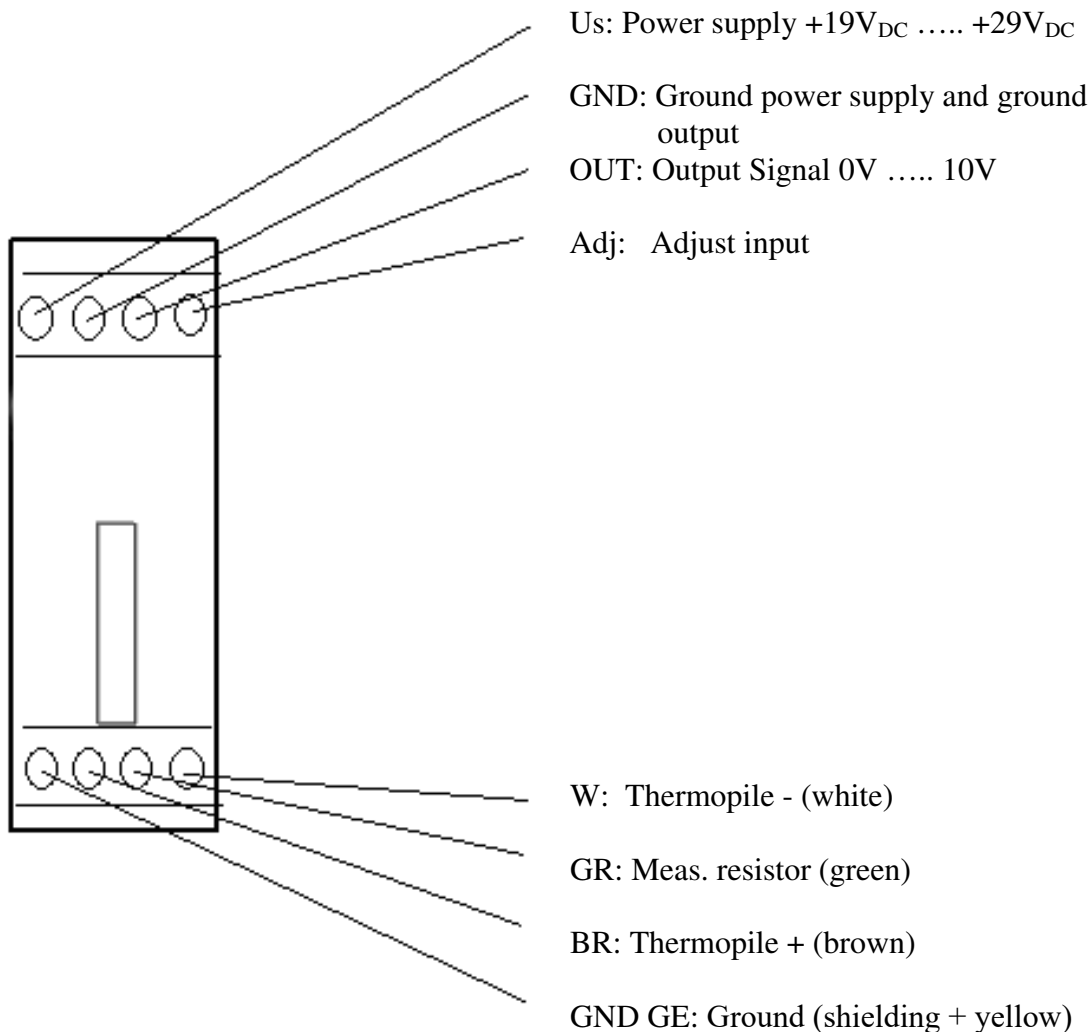
## Description

The pyrometer consists of the sensor head and the electronic module. The pyrometer converts thermal radiation from material surfaces with temperatures between 0°C and 100°C into a linear output voltage between 0 and 10 V. The 24V power supply comes from customer side.

### Attention !

At security relevant equipments the pyrometer can not be used for the thermic overload protection! Please be carefully with the polarity of the power supply .A reverse polarity can destroy the electronic module.

### Connection:



### Power-up

After switching on the operating voltage, the green LED flashes at a frequency of 1 Hz. The emissivity is a significant source of error in non-contact temperature measurement. Materials with an E close to one, such as plastics, paper, wood, and non-glossy painted surfaces, are generally easy to measure. Highly reflective materials such as shiny metals are difficult or inaccurate to measure.

In these cases, reflective ambient radiation is an additional source of error. Expensive IR measuring devices offer the option of a preselectable E, which is often not sufficiently known. With the 2328-Z001 pyrometer, this source of error must be eliminated by means of a calibration measurement (e.g., contact) and adjustment on the DIN rail module. The pyrometer is factory calibrated and set to an emission factor of 0.95. If a new offset adjustment is necessary (e.g., if the room temperature is displayed incorrectly) or if other emission factors are required, the customer can make changes by following the instructions below:

**Offset (in the case of not matching room temperature):**

- IRM 100 head should be covered with shining Aluminium foil at room temperature
- after 1 minute (which is needed for temperature compensation) enable the Adjust input by connecting Adjust and Power supply-ground until red and green are blinking.
- Interrupt and connecting again. If the green LED is blinking fast (4 Hz), the offset adjust is done.
- Interrupt the connection, red is blinking also.

**Emission factor:**

- The real temperature of the target should be determined (for instance by measuring with a touching thermometer)
- IRM 100 head should be focused on the target
- enable the Adjust input by connecting Adjust and Power supply-ground until red and green are blinking
- Interrupt and wait until the red is blinking
- connect and interrupt (the emissions factor adjust is now enabled)
- connect (short) again, the output will increase slowly  
(long, max. 2,5 s), the output will increase fast
- if the real temperature is achieved: connect and interrupt, the process stopped
- connect until the red LED is blinking fast (4 Hz), the emissions factor adjust is done
- interrupt the connection

**CAUTION!** With this adjustment, the temperature difference between target and measuring head should be a minimum of 20 degrees.

The distance between sensor head and target should be chosen in such way that the sensor only see the target and no other parts of the environment.

In case of a sensor defect (connector break), the output is a steady 10 V.