

# AR233

## RECORDER OF TEMPERATURE AND STANDARD SIGNALS



### Recorder with universal and analogue thermometric input, with internal temperature measurement

- 1 universal measurement input (thermoreistance, thermocouple, and analog) and integrated digital temperature sensor
- data recording in a standard text file located in the internal memory of the recorder or on an SD/MMC card in the FAT system, with the possibility to read through the USB interface
- portable housing suitable for wall installation
- battery power supply with the possibility that the user changes the battery
- long operation time with a new battery (up to 5 years, depending on the recording interval, the presence of an SD card, and the operating temperature of the device)
- possibility to transfer archived and configuration data on an SD card
- available protection against unauthorized data copying and modification
- internal real time clock with a battery backup power supply
- free software included that enables configuration of the parameters of the device and presentation of the recorded results in a graphic form or as text; possibility to update from a website
- long-term high stability of the measurements
- parameter configuration methods:
  - via USB interface and software (Windows 7/8/10)
  - using a configuration file stored on an SD/MMC card
- checksum to detect unauthorized changes in the archive
- uniquely identifying multiple recorders of the same type by assigning unique identifier (ID) to each of them
- programmable type of input, range of indications, recording interval, start and end of recording, and other configuration parameters, such as zero and sensitivity calibration, SD/MMC card options, and identification number (ID)
- possibility to prevent unauthorized change of the recorder's parameters from the SD/MMC card and transfer of archived data from the internal memory onto an SD/MMC card (authorization of the card or free access is required)
- protection against incorrect battery polarity
- possibility to update the recorder's software
- high temperature stability of measurements, accuracy, and immunity to interferences

#### Contents of the set :

- recorder with a lithium battery 3,6V type AA, (SAFT LS14500))
- 2-meter long USB cable (A4 – miniA4) to connect to a computer
- user manual

#### Available accessories:

- lithium battery 3,6V type AA (R6), 2450mAh
- SD memory card (2 GB)
- SD/MMC card reader
- stabilized AC adapter 5V/150mA

## Technical data

### Universal input (programmable): measurement range

|                                 |               |
|---------------------------------|---------------|
| - Pt100 (RTD, 3- or 2-wire)     | -200 ÷ 850 °C |
| - Ni100 (RTD, 3- or 2-wire)     | -50 ÷ 170 °C  |
| - thermocouple J                | -40 ÷ 800 °C  |
| - thermocouple K                | -40 ÷ 1200 °C |
| - thermocouple S                | -40 ÷ 1600 °C |
| - thermocouple B                | 300 ÷ 1800 °C |
| - thermocouple R                | -40 ÷ 1600 °C |
| - thermocouple T                | -25 ÷ 350 °C  |
| - thermocouple E                | -25 ÷ 680 °C  |
| - thermocouple N                | -35 ÷ 1300 °C |
| - current signal (Rwe = 110Ω)   | 0/4 ÷ 20 mA   |
| - voltage signal (Rwe = 110 kΩ) | 0 ÷ 10 V      |
| - voltage signal (Rwe > 2 MΩ)   | 0 ÷ 60 mV     |
| - resistance (3- or 2-wire)     | 0 ÷ 700 Ω     |

**Lead resistance (RTD, Ω)** Rd < 25 Ω (for each line)

### Processing errors (at ambient temperature 25°C):

|   |                       |  |
|---|-----------------------|--|
| - basic                                 | - for RTD, mA, V, mVΩ | 0,1 % measuring range ± 1 digit                              |
|   | - for thermocouple    | 0,2 % measuring range ± 1 digit                              |
| - additional for thermocouples          |                       | < 2 °C (thermocouple cold junction temperature compensation) |
| - additional from ambient temp. changes |                       | < 0,005 % input range /°C                                    |

**Built-in temperature sensor** Accuracy: ±0,5°C (in range -10 ÷ 70°C)  
±0,5 ÷ 1,7°C (in remaining range)

**Measurement resolution** 0,1 °C

**Measurement and writing period** programmable from 10s to 24h.

**Communication interface** USB (to communicate with computer), drivers compatible with Windows 2000/ XP/Vista/7

### Storage (non-volatile)

|                                     |   |
|-------------------------------------|---|
| - interior                          | 4MB FLASH memory, file system FAT12, record up to 80,000 meas.                  |
| - external (connector with ejector) | SD/MMC card, FAT16, FAT32. recommended capacity ≤ 1GB, FAT16, max. capacity 2GB |

**Real-time clock (RTC)** quartz, remembers about leap year

**Optical indication** 2 LED diodes: „READ/WRITE“, „STATUS“

**Power** lithium battery 3.6 V type AA (R6), 2450 mAh, (SAFT LS14500)

**Working time on new battery (1)** up to 5 years (in ambient temperature 20 ÷ 30 °C)

**Nominal operation environment** -20 ÷ 70°C, <100 %RH (non condensing)

**Working environment** air and neutral, dust-free gases

**Enclosure** on-wall, material ABS UL94-V0, white, IP20

**Enclosure dimensions** 80 x 80 x 25 mm

**Working position** any

**Weight** ~80g (with battery)

**Electromagnetic compatibility (EMC)** immunity: acc. to PN-EN 61000-6-2:2002(U)  
emission: acc. to PN-EN 61000-6-3:2002(U)

(1)

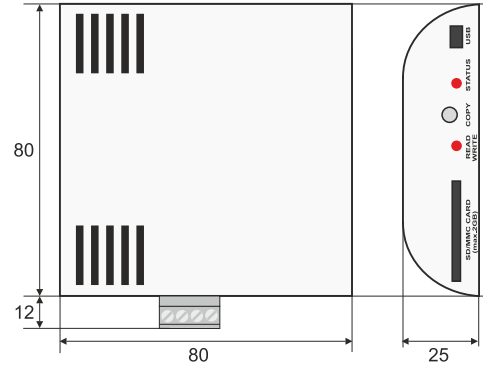
- working time depends on measuring period, whether SD/MMC card is used and the ambient temperature:
  - 5 years (measurement period > 10 min, write to internal memory, data copied only via USB, 20 ÷ 30°C)
  - 8 months (measurement period 10s, internal memory, data copied only via USB, 20 ÷ 30°C)
  - 1.5 years (measurement period > 10 min, recording on an SD/MMC card, 20 ÷ 30°C)
  - 5 months (measuring period 10 s, recording on an SD/MMC card, 20 ÷ 30°C)
- unused card left in card slot also wears out the batteries
- moving the contents of full internal storage (4 MB) to an SD/MMC card takes about 2 min. and uses about 2 mAh of the battery power (tests run on SanDisk and Kingston cards)
- when optional adapter is used, new battery working time may be extended up to about 8 years (20 ÷ 30°C)

## Installation data

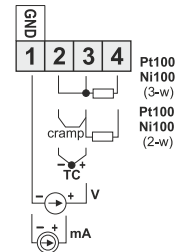
**Dimensions** 80x80x25 mm

**Mounting** 4 screw M3

**Material** ABS UL94-V0



## Electrical connection



## Ordering procedure

### AR233