# AR234

# RECORDER OF TEMPERATURE AND STANDARD SIGNALS

**Recorder with universal and analogue thermometric input, with internal temperature measurement with LCD**

- 1 universal measurement input (thermoresistance, thermocouple, and analog) and 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
- LCD display showing measured values as well as messages and errors
- 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
- lower and upper alarm, in band and out of band, LED signaling
- 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 identificationnumber (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** (measurement range: -20 ÷ 70 °C) | 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, 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** | dispaly LCD, 3 LED diodes: „READ/WRITE", "STATUS", 1 alarm |
| **Display** | LCD 7-segments, 4 digits, digit height 10mm |
| **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 condesing) |
| **Working environment** | air and neutral, dust-free gases |
| **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 measurement period, whether SD/MMC card is used, working mode of LCD display and working temperature:
  - 5 years (measurement period > 10 min., data recorded in internal storage, copying data only via USB, LCD in economic mode, 20÷30 °C)
  - 20 months (measurement period> 10 min, recording in internal memory, data copied only via USB, LCD in continuous mode, 20 ÷ 30 ° C)
  - 7 months (measurement period 10 s, internal memory, copying data only via USB, 20÷30°C)
  - 1.5 years (measurement period > 10 min., data recorded on SD/MMC card, LCD display in economic mode, 20÷30 °C)
  - 4 months (measurement period 10 s, data recorded on SD/MMC card, 20÷30 °C)
- ■ 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)
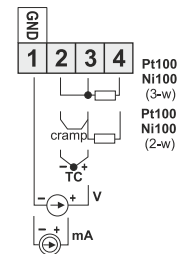
## Installation data

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|---|---|
| **Dimensions** | 80x80x25 mm |
| **Mounting** | 4 screw M3 |
| **Material** | ABS UL94-V0 |
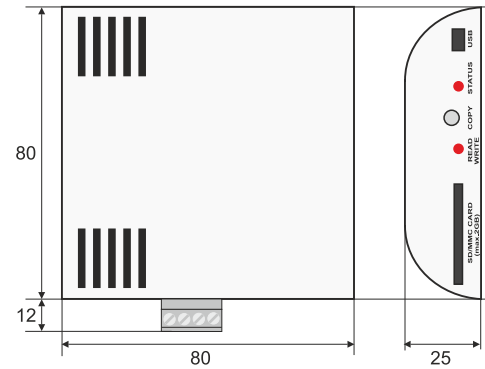


## Electrical connection



### Ordering procedure
**AR234**