



Hand-Held Thermometer

Type UM RTD.2



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0 About this operating manual

- The operating manual is aimed at specialists and semi-skilled personnel.
- Before each step, read through the relevant advice carefully and keep to the specified order.
- Thoroughly read and understand the information in the section “Safety”.

If you have any problems or questions, please contact your supplier or contact us directly at:



Dr. Siebert & Kühn GmbH & Co. KG
Struthweg 7-9 • D - 34260 Kaufungen
☎ +49 5605 803-0 • 📠 +49 5605 803-555
info@sika.net • www.sika.net

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Consequently, we can continue to pursue this constant innovation policy, which has benefited our users for over 100 years. SIKA encourages all comments and welcomes any suggestions you might have in order to allow us to fine-tune our know-how and improve our future products.

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Checking the contents of the package

The UM RTD.2 was checked mechanically and electrically prior to despatch. The necessary precautions have been taken to ensure it reaches the user without being damaged.

Nonetheless, it is wise to perform a rapid check to detect any deterioration which may have occurred during transport. If this is the case, inform the carrier immediately thereof.

The standard accessories are the following:

- This user's manual
- Four 1.5V AA batteries.
- A wrist-strap
- A protective sheath

If the product needs to be returned, use the original packaging where possible and indicate as clearly as possible the reasons for the return in a note accompanying the device.

1 General

1.1 Introduction

The UM RTD.2 is a portable resistive sensor temperature thermometer (compliant with EC standards). It is especially designed for measurement and maintenance. It makes it possible to measure temperatures on site as well as in a laboratory.

The UM RTD.2 features a large number of related functions which extend its range of application, including:

- Storage of acquisitions and display in the form of tables or trend curves.
- Use of calibrated sensors with their coefficients of correction

A range of improvements facilitates its operation:

- Rapid access to all functions.
- Intuitive user interface.
- 160x160 graphic display
- Connection via 4 mm safety plugs or a circular connector (4 pin).
- Power supply via 4 AA batteries or rechargeable batteries with rapid internal charger (Option).

The device is fitted in an elastomer-sheathed ABS case.

1.2 Parts

General characteristics:

- Portable device powered by 4 AA batteries
- Hand strap for carrying and use on-site
- Graphic liquid crystal display: 160 x 160 pixels
- Choice of language used for messages and programming of functions, gauges and parameters via 6-key keyboard + 1 navigator
- Backlit display accessible via a keyboard key, with the possibility of automatic black-out after a specific programmable period of inactivity
- Appearance: ABS case (elastomer-sheathed)
- Dimensions: 157 mm x 85 mm x 45 mm (without sheath)
- Weight: 306 g (without sheath)
- IP54 tightness in compliance with standard EN 60529

1.3 Safety

1.3.1 Compliance with safety standards

The device complies with the applicable standards in force on the subject of electrical safety (EN 61010) as well as on the electromagnetic compatibility of the electrical measuring instruments (EMC: EN61326).

These user manual contain information and warnings which must be observed by the user to protect the latter against the dangers of electricity, to ensure the safe operation of the device and to protect it against any mishandling which could damage or compromise the safety of use of the device.

1.3.2 Environmental conditions

In accordance with publication CEI 359: operating category I.

Range of application of standards from 0 to 2200 m.

Reference temperature range: 23°C ± 5°C

Reference relative humidity: 45 % to 75 %.

Nominal operating temperature range: -10°C to +50°C

Nominal operating relative humidity: 20 % to 80 % non-condensing.

Operating temperature range limit: -15°C to +55°C

Operating relative humidity limit: 10 % to 80 % (70 % at 55°C).

Storage and transport temperature range limit: - 30°C to + 60°C (without the batteries).

1.3.3 Worn devices

Worn electrical devices can pollute the environment. We recommend you refrain from disposing of this device in an ordinary waste bin, but rather that you use the recycling circuits available locally. If not, you can return the device to us, and we will take care of its disposal free of charge.

1.3.3.1 Waste generated by the device

List of waste classified according to the decree published in the Official French Gazette dated 20th April 2002. Decree no. 2002-540.

- **16.02.14: Waste originating from electronic equipment:**
→ Printed circuit boards making up the device.
- **16.06.02: Batteries and storage battery (dangerous)**
→ Alkaline Batteries (or NI-MH batteries).
- **15.01.02: Packaging**
→ ABS plastic device casing.
→ Elastomer conduit.

1.3.4 Disposal

Opening the device: unscrew the screw on the battery compartment, followed by the 5 screws securing the 2 shells. Separate the 2 shells. Separate the PCB from the upper shell.

With regard to the batteries, you will find them in the battery compartment (see commissioning chapter).

In the case of the pack of batteries, there are 2 contaminants: NI-MH (Nickel-Metal Hybride) batteries and a PCB. Separate these 2 items.

1.3.5 Instructions

The device was designed to operate safely if the instructions provided in the accompanying documents are followed. Any other use may jeopardise the safety of the operator. Any use other than those specified in the instructions is therefore dangerous and forbidden.

1.3.6 Making measurements

The measuring leads and wires must be in good condition and must be replaced if their insulation appears faulty (insulating material cut, burned, etc...).

When the instrument is connected to the measuring circuits the terminals can be dangerous, therefore do not place your hands near a terminal, whether used or not.

Never exceed the protection value limits indicated in the specifications.

When the order of size of the measured value is not known, ensure that the starting measurement range is as high as possible, or select automatic range change mode.

Before changing function, disconnect the measuring wires from the external circuit. When voltage measurements are being made, even weak ones, keep in mind that the circuits may feature a dangerous voltage for the operator compared to the ground.

Do not make any measurements when the device is linked up to another device using the USB link or when the batteries are being charged (option).

1.3.7 Defects and abnormal stresses

Every time you believe the protection may have been compromised, switch off the device and prevent it from being switched back on unexpectedly.

The protection may be impaired in the following cases, for example:

- The device is visibly worn.
- The device is no longer able to make precise measurements.
- The device was stored in unfavourable conditions.
- The device has undergone severe stresses during transport.

1.3.8 Definitions

1.3.8.1 Definition of the category and degree of pollution

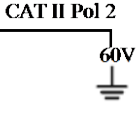
CAT II 60V:

The notion of categories determines the maximum transient voltage that can be applied to the measurement inputs (it is also called overvoltage category). For the SIKA UM RTD.2, the maximum permissible overvoltage is 60V (DC or AC)

POL 2:

The notion of pollution determines the clearance between circuits. Degree 2 authorises temporary conductivity caused by condensation.

1.3.8.2 Table of symbols used

Symbol	Name
	Attention: see the accompanying documents
	Earth
	Compliant with the European Union directives
	Category II, Pollution 2. Maximum common mode voltage compared with the ground=60V
	Worn device: see chapter 1.3.3

1.4 Maintenance

The device must always be repositioned in accordance with the instructions provided herein. Any incomplete or incorrect assembly could compromise the safety of the operator.

The authority responsible must regularly ensure that all safety-related items are not worn and ensure all the preventive maintenance operations required are performed.

Before opening the device for any maintenance operations, you must make sure that all the wires are disconnected from the appliance.

All adjustments, maintenance and repair work on the open device must be avoided as much as possible and, when these are indispensable, they must be performed by qualified staff, who are well aware of the risks involved.

2 Using the instrument

In order to use the device in all the safety required, all operators must read the paragraph on safety carefully, along with the paragraph below.

2.1 Power-up

The device is delivered with 4 AA batteries of 1.5V each. It is wise to place these batteries in the compartment provided for this purpose. To open up the compartment, unscrew the screw on the back of the box. Once the batteries are in place, screw the cover back on.

Observe the polarity: an incorrect battery positioning could damage the device. The correct polarity is indicated inside the compartment.

The figure below illustrates how to open the battery compartment as well as the correct positioning of each battery.



After inserting the dry cells (or NiMH batteries) correctly, press the ON/OFF key to turn ON the product.

To turn the unit off completely, press the ON/OFF key until the "Instrument in power off mode" screen comes up.

2.1.1 Keyboard

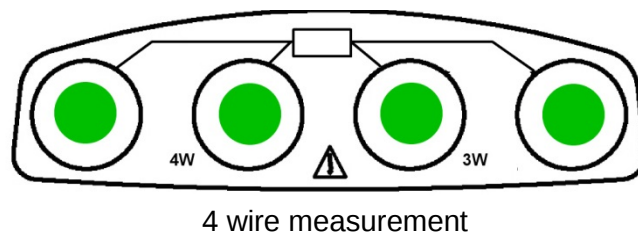
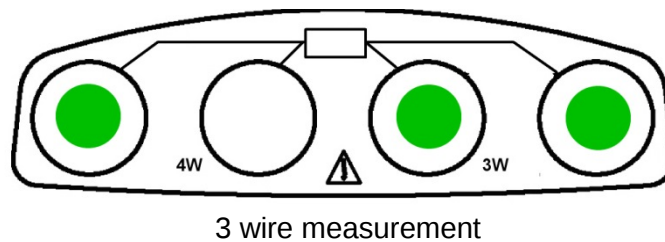
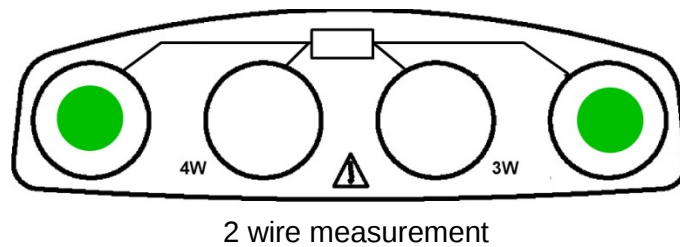
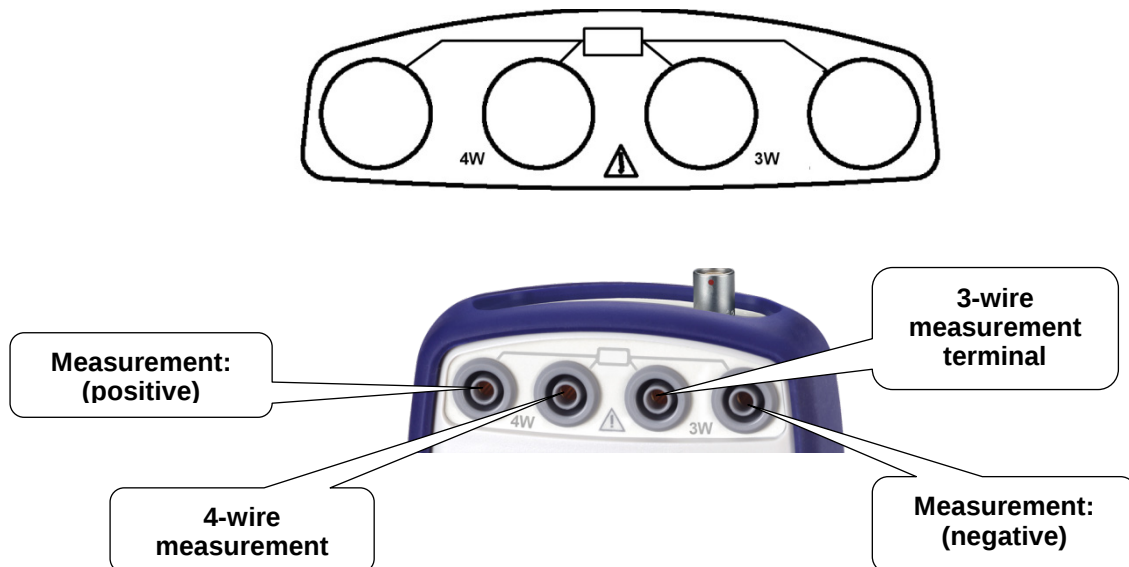
The keyboard features:

- 2 function keys (**F1** and **F2**) for the selection of the various menus displayed on the screen.
- The navigator, consisting of 4 arrows (up (↑), down (↓), right (→), left (←))
- A clear key (**CLEAR**).
- A device on/off and backlighting on/off key (**ON/OFF**).
Press briefly to start the device. During operation, press briefly to turn the lighting on or off.
Press it longer for 2 seconds to stop the device.
- A validation key (**VAL**).
- A **HOLD** key allows you to suspend a process temporarily (when pressed briefly).



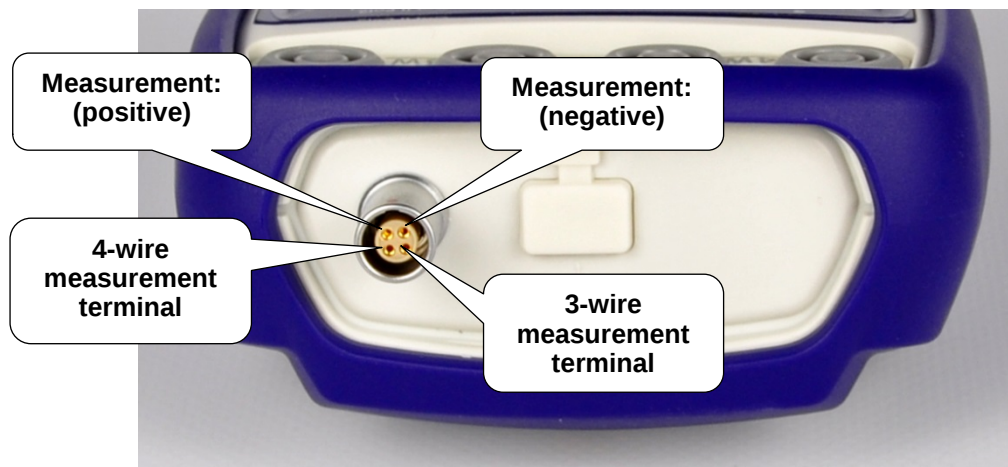
2.1.2 Measuring terminals

The UM RTD.2 is fitted with 4 safety bushes (4 mm in diameter) and a circular 4-point connector. This wiring is used in measurement mode.



NOTE:

An adjustment of 2, 3 or 4 wire measurement is not necessary. The numbers of wires will be detected automatically.

**NOTE:**

When using the device with resistance measurement, you must respect the polarities.

2.1.3 USB connector

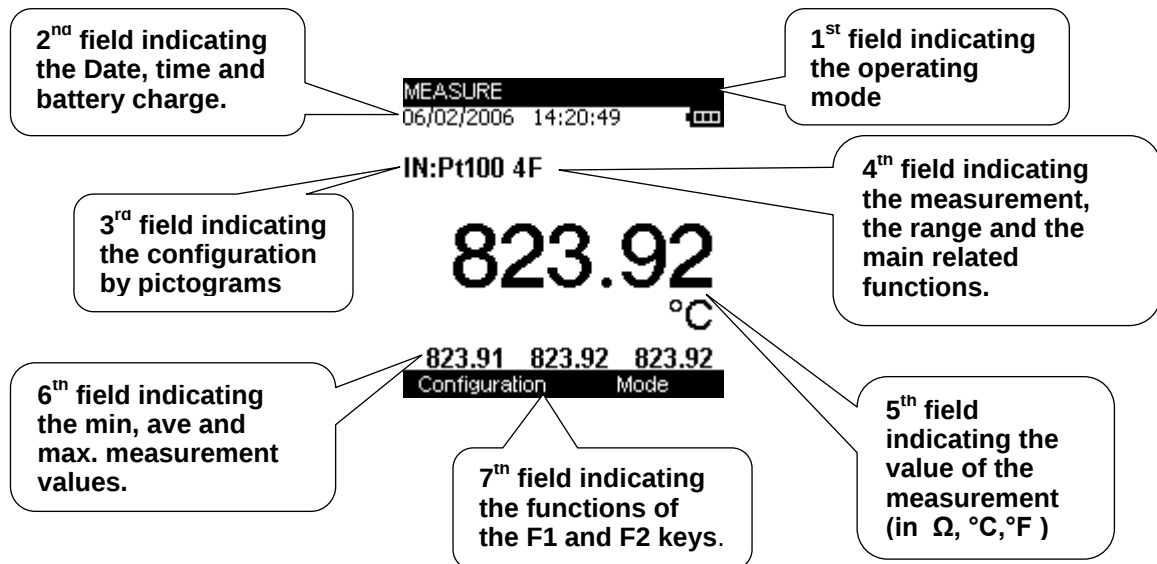
The UM RTD.2 is fitted with a USB connector (mini B) intended for uploading new software versions, device adjustment and general connection to PC.



2.1.4 Screen

The UM RTD.2 is fitted with a graphic LCD display with back-lighting. The display resolution is 160 x 160 pixels. In normal operating conditions, the display is divided up into seven horizontal fields:

- The 1st field indicates the operating mode (Measurement).
- The 2nd field indicates the date, time and battery charge.
- The 3rd field is reserved for icons indicating the operating mode (Scaling, filtering...etc).
- The 4th field indicates the operating mode, the range and certain related functions.
- The 5th field indicates the value of the measurement, expressed in Ω , $^{\circ}\text{C}$, $^{\circ}\text{F}$
- The 6th field indicates the min., average and max. values of the measurement.
- The 7th field indicates the function of keys **F1** and **F2**.



The table below provides a definition of each pictogram displayed on the screen:

Symbol	Description
	Scaling
	On hold
	Filtering
	Error (over-calibration in measurement or error on the value emitted...)
	Incremental mode using the arrows
	Battery life indication
	Acquisition in progress (the value on the right of the pictogram indicates the number of values recorded)

The table below provides a definition of each pictogram of the function keys

Symbol	Description
	Tab key
	Open a drop-down list
	Close a drop-down list
	Delete the selected item
	Clear the selection
	Add the item being edited

2.1.5 Getting started (after power-up)

On power-up (inserting the batteries or accu pack), the device is automatically turned on (loading the software in the memory). At this stage, we advise against connecting the device to an external circuit. To avoid any signal conflicts, the device switches to measurement mode.

2.1.6 Operating mode

There is one operating mode:

- Measurement of resistive sensors (displayed in Ω or $^{\circ}\text{C}$ or $^{\circ}\text{F}$),

The functional and electrical characteristics not to be exceeded are described below:

2.1.6.1 Resistance/temperature measurement

The following ranges are available:

Range	400 Ω (for PT100)	3600 Ω (for PT1000)
Resolution (display)	10 m Ω or 0.01 $^{\circ}\text{C}$ or 0.01 $^{\circ}\text{F}$	100 m Ω or 0.01 $^{\circ}\text{C}$ or 0.01 $^{\circ}\text{F}$
Scope of range:	0 Ω up to 400 Ω -220 $^{\circ}\text{C}$ up to 850 $^{\circ}\text{C}$ -364 $^{\circ}\text{F}$ up to 1562 $^{\circ}\text{F}$	0 Ω to 3600 Ω -220 $^{\circ}\text{C}$ to 760 $^{\circ}\text{C}$ -364 $^{\circ}\text{F}$ up to 1400 $^{\circ}\text{F}$
Scaling	yes	yes

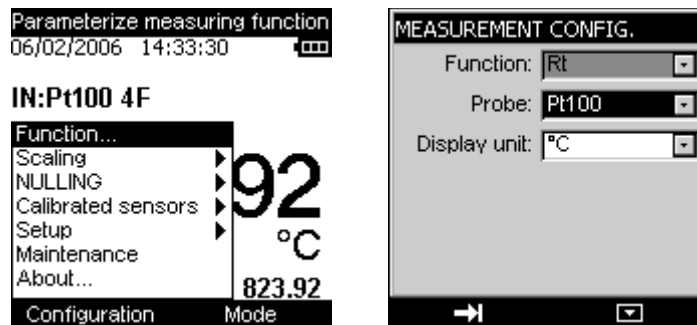
2.1.6.2 Electrical characteristics not to be exceeded.

Function	Range	max V_{in}
Ω measurement	400 Ω / 3600 Ω	60 V

3 Mode Programming

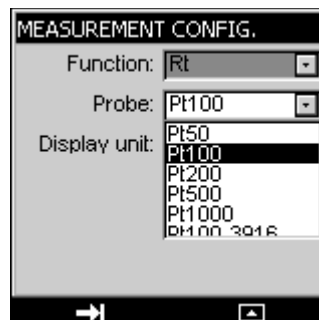
3.1.1 Resistance or temperature measurement using resistive sensors

- The function type selection (Resistive sensor type) is made using the **F1** key (**configuration menu**).
- Using the navigation keys (↑ and ↓), position the cursor in the **Function** field.
- Confirm the latter using the **VAL** key.

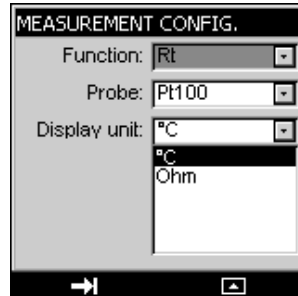


In the **MEASUREMENT CONFIG.** menu, position the cursor in the **Probe** field using the **F1** key.

- Enter the **Probe** menu using the **F2** key.
- Choose the type of sensor (PT50, PT100, PT200...), using the navigation keys (↑ and ↓).

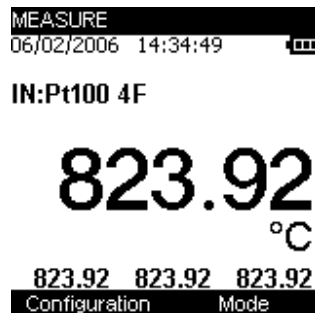


- Press **VAL** to confirm.
- Using the F1 key, define the **Unit** by positioning the cursor on it.
- Enter the menu by pressing **F2**.
- Using the navigation keys (↑ and ↓), choose the unit.
- Press **VAL** to confirm.

**NOTE:**

Attention, the choice of °C or °F is made in the **Configuration/Setup/Preferences/Display unit** menu

- Press **VAL** (again) to confirm the desired function and go back to the measurement screen.



4 Related Functions

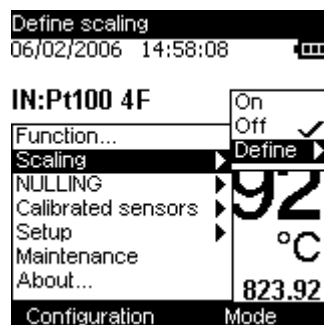
4.1 Scaling (linearisation)

The scale correction function performs conversion operations between the electrical values measured and the physical values converted.

This **linearisation operation** makes it possible to correct partially the errors induced by non-linear sensor/converter systems.

The Scaling function makes it possible to define up to 10 right-segments, i.e. 11 points, in order to approach as much as possible the non-linear response curve, and to make the scale corrections according to each segment.

The pictogram  is displayed on the screen in the active window when the scaling function is enabled.



The **Configuration/Scaling/Define/List of Points** menu makes it possible to program up to

10 lines of 2 values
X and Y= f(X)

In measurement mode:

X = Value measured
Y = Value Displayed.

In emission mode:

X = Value displayed
Y = Value emitted.

The lines entered are sorted according to the X in increasing order, to scale an X-value, the device seeks the 2 lines n and m=n+1 which frame it, and extrapolates linearly:

$$Y = Y_n + (X - X_n) \times (Y_m - Y_n) / (X_m - X_n)$$

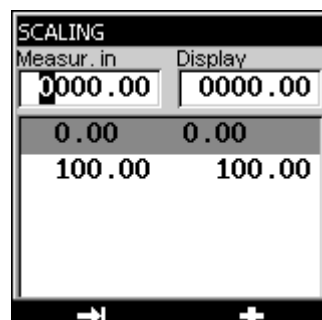
Use the function keys to edit the points:

To add a line: enter X and Y, then enable the  function key.

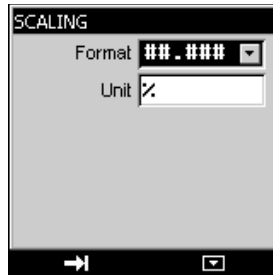
To select a line in a list, use the Up and Down navigation keys.

To delete a selected line, use the  key.

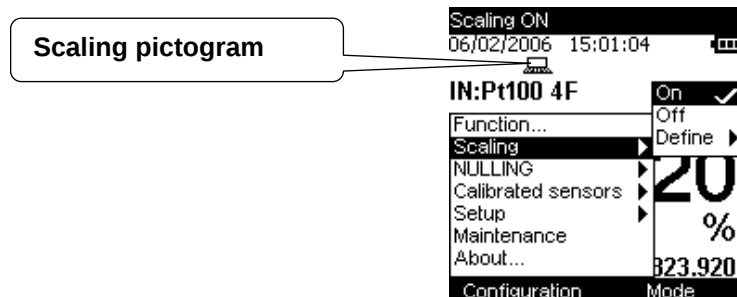
To move from one field to the next, use the  key.



The **Configuration/Scaling/Define/Parameters** menu makes it possible to define the format (Number of digits displayed) and unit.



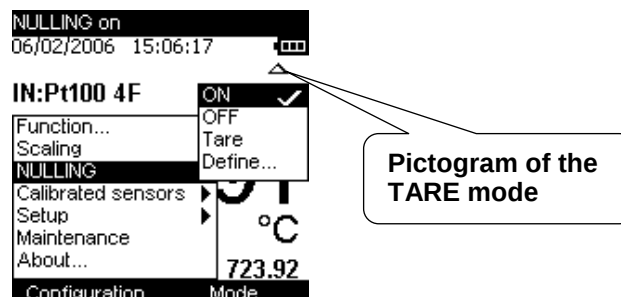
Once the parameters have been set, the scaling is automatically enabled. To disable it, enter the **Configuration/Scaling ON** menu, select **OFF** and confirm by pressing the **VAL** key.



4.2 Nulling (tare/offset)

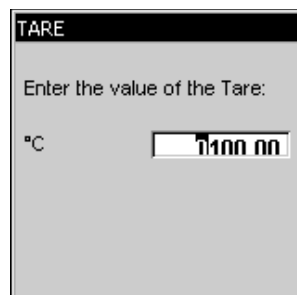
The relative measurement function available on the device makes it possible to cancel a constant or spurious value via programming.

When the relative measurement function is enabled, the symbol $\triangle$ is displayed on the measurement screen.



The **NULLING/Define** menu makes it possible to program the value of the Tare (positive or negative). This value is obtained from the measurements:

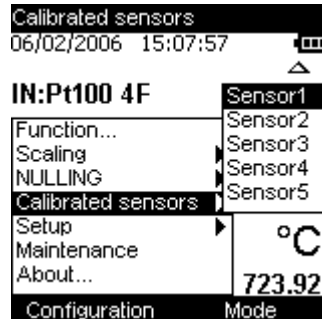
$$\text{Value Displayed} = \text{Value measured} - \text{Value of the Tare}$$



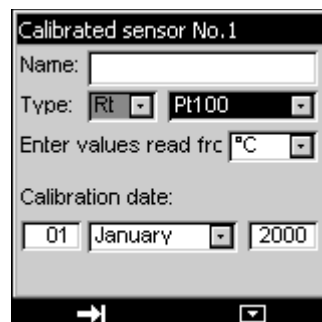
4.3 Calibrated sensors (point correction)

The calibrated sensors function of the device makes it possible to use sensors, the calibration (correction) coefficients of which are taken into consideration by the device during measurement.

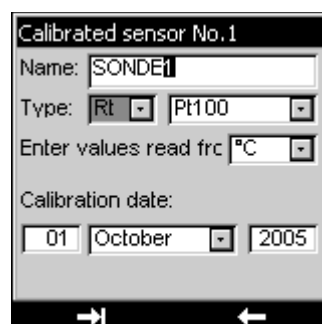
- Using the F1 key, enter the Configuration menu.
- Select the **Calibrated sensors** function, followed by one of the 5 available sensors.



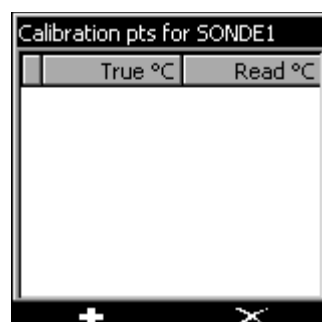
- Confirm by pressing ENTER.



- Enter the sensor information fields. Use the F1 function key (F1) to move from one field to the next.



- Confirm your choice using the **VAL** key.



- To add a value in the table of calibration points, use the **+** keys, enter the calibration points (real value and value read) then confirm using the **VAL** key.

Repeat this operation for all the calibration points (maximum of 4).

Calibration pts for SONDE1		
	True °C	Read °C
1	-40.00	-39.90
2	0.00	0.02
3	240.00	240.10
4	400.00	399.90

To delete a line, select it then use the  key.

To edit a line, select it then use the navigation key (→) to make editing possible.

- Confirm using the **VAL** key to return to the measurement screen.

To ensure the measurements are made using the calibration coefficients defined earlier, go to the **Configuration/Function** menu.

- In the **Sensor** field, select sensor1 (SONDE1-SENSOR1 below).

MEASUREMENT CONFIG.	
Function:	Rt
Probe:	*SONDE1
Display unit:	°C

NOTE:

The calibrated sensors are at the top of the list and their name is preceded by a *.

- Confirm the latter using the **VAL** key.

The chosen calibrated sensor is displayed in the measurement screen.

MEASURE

06/02/2006 15:21:57

IN:*SONDE1 4F

831.24

°C

831.24 831.24 831.24

Configuration Mode

Name of calibrated sensor used

4.4 Storage of acquisitions in progress

The UM RTD.2 is designed to store 10000 measuring values in one or more acquisition bursts.

- Using the F2 key, enter the Mode menu.
- Select the **Memory** function.
- Confirm using the **VAL** key.



The drop-down list displays the following functions:

4.4.1 Save measurement

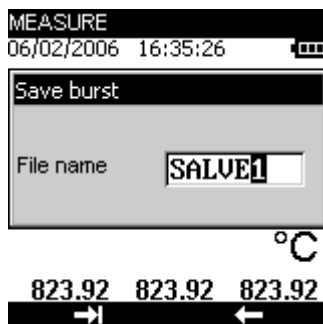
Enable the triggering of an acquisition on a case-by-case basis.

If an acquisition has already been opened, then the following screen is displayed:



Press the F2 key (YES) to confirm.

- You are then requested to enter the name of a file. Using the navigation keys (↑ and ↓), scroll down the letters.
- Using the navigation keys (← and →), move the cursor by one position.
- Using the F2 key (↵), you can delete the characters entered



- Once you have entered the file name, confirm by pressing the **VAL** key.

4.4.2 Run

Launches the storage of data following the parameters set in the “parameters” function. The pictogram is displayed on the measurement screen

4.4.3 Stop

Stops the storage in progress.

4.4.4 Parameters

Allows you to define:

- the size of the acquisition (max 10000 values),
- the sampling period from 0.5 S to 30 Min,
- and the type of trigger (None, low level, high level).

If you have selected a low level or high level trigger, you must define the trigger level and the number of data to record after this trigger (Post-trigger).

Burst configuration

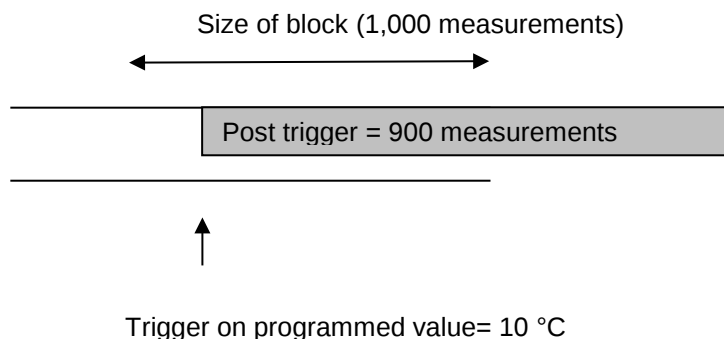
Total block : 01000 Meas

Recording : 0.5 s

Trigger type : High level

Trigger level : 0000010 °C

Post-Trigge : 00900 Meas



4.4.5 Display burst

You can display the burst in the form of a table of values or a trend curve.

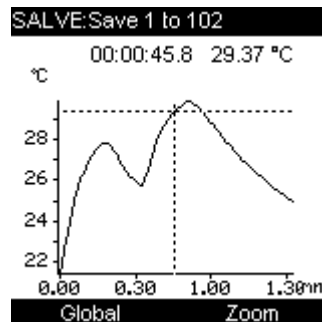
Burst 'SALVE':

Start date: --/--/---- 16:12:36

N°	Time	°C
1»	00:00:00.0	21.45
2	00:00:00.9	21.84
3	00:00:01.7	22.75
4	00:00:02.9	23.39
5	00:00:03.8	23.97
6	00:00:04.7	24.49
7	00:00:05.5	24.94
1»	...	

At this level, it is possible to

- display the trend curve entirely: press the F2 key (GRAPH).



- place markers so as to display in the form of a graph all the values included between these 2 markers. To do so, press the F2 key (...).

Burst 'SALVE':

Start date: --/--/---- 16:12:36

N°	Time	°C
1»	00:00:09.3	26.38
12	00:00:10.2	26.62
13	00:00:11.1	26.83
14	00:00:12.0	27.02
15	00:00:12.8	27.19
16	00:00:13.7	27.35
17	00:00:14.6	27.53

1» ...

- Using the navigation keys (↑ and ↓), move the cursor to the value to be marked "value 1" and press the F1 key (1>>).
- For the second marker, press the F2 key (...) and using the navigation keys (↑ and ↓), move the cursor to the value to be marked "value 2" and press the F1 key (2>>).

Burst 'SALVE':

Start date: --/--/---- 16:12:36

N°	Time	°C
1»	00:00:07.3	25.70
10	00:00:08.2	26.12
11	00:00:09.3	26.38
12	00:00:10.2	26.62
13	00:00:11.1	26.83
14	00:00:12.0	27.02
15	00:00:12.8	27.19

1» ...

Burst 'SALVE':

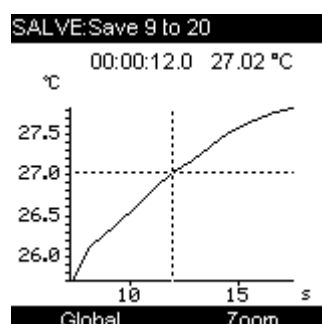
Start date: --/--/---- 16:12:36

N°	Time	°C
14	00:00:12.0	27.02
15	00:00:12.8	27.19
16	00:00:13.7	27.35
17	00:00:14.6	27.53
18	00:00:15.8	27.66
19	00:00:16.6	27.77
2»	00:00:17.5	27.82

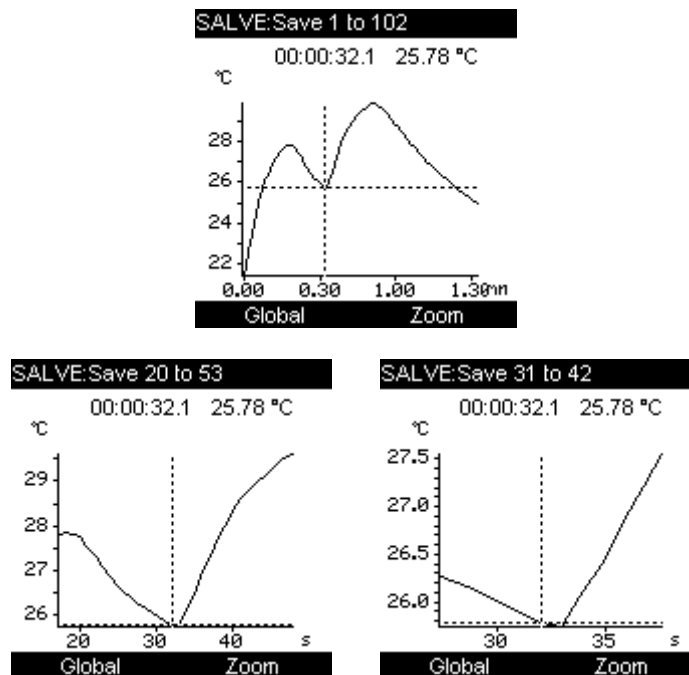
2» ...

In this particular example, the graph will display values included between positions 9 and 20.

- Press the F2 key twice (...), to reach the **GRAPH** function, then press F2 to confirm.



At this level, you can display the whole curve or a zoom around the cursor. The cursor is moved using the navigation keys(← and →)



- Press **CLEAR** to return to the table of values.

At this level, you can find out some statistics on the measurements made (Min, Max, Avg (Average) and Ect (Shift)).

- Press the F2 key three times (...) followed by the F1 key (STAT).

Burst 'SALVE':

Statistics for measurements 1 to

N°	Min:	°C
1	Min:	21.45
57	Max:	29.86
	Avg.:	27.0829
	Ect	1.72111

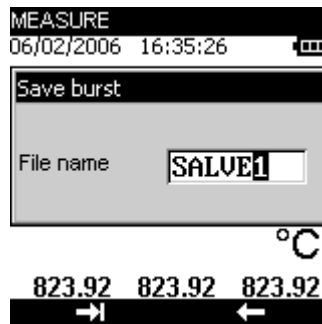
Measurements

- Press F2 (measurements) to return to the table of values.
- Press **CLEAR** to quit the storage function.

4.4.6 Save burst

This function makes it possible to record the burst in the memory.

- You are then requested to enter the name of a file. Using the navigation keys (↑ and ↓), scroll down the letters.
- Using the navigation keys (← and →), move the cursor by one position.
- Using the F2 key(←), you can delete the characters already entered



- Using the F2 key (←), you can delete the characters entered
- Once you have entered the file name, confirm by pressing the **VAL** key.

4.4.7 Open a burst

Allows you to choose a burst among many and to open it to display the values. At this level, you can obtain information on the acquisition burst, such as the number of measurements, the date of acquisition, the sensor used, etc.

4.4.8 New free burst

Allows you to start a new acquisition burst. If a burst is under way, you will be requested to save it.

4.4.9 Burst management

Allows you to display all the bursts recorded. At this level, you can delete one or all bursts.

4.4.10 Statistics

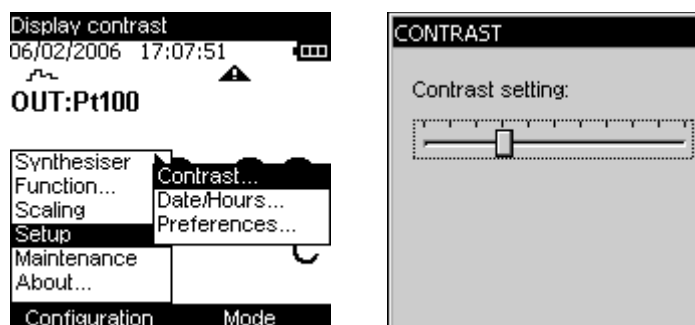
Allows you to find out the number of bursts recorded, the number of bytes free as well as the number of measurements which can be recorded.

5 Parameter settings

5.1 Contrast adjustment

In the CONFIGURATION/SETUP menu, you can adjust the display contrast.

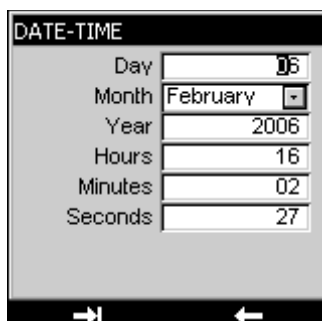
- Access this menu using the F1 key.
- Select the **Setup** field using the navigation keys (↑ and ↓), then confirm.
- Select the **Contrast** field using the navigation keys (↑ and ↓), then confirm.
- Using the navigation keys (← and →), increase or decrease the contrast as required.



5.2 Date and time setting

In the CONFIGURATION/SETUP menu, you can set the time and date.

- Access this menu using the F1 key.
- Select the **Setup** field using the navigation keys (↑ and ↓), then confirm.
- Select the **Date/hours** field using the navigation keys (↑ and ↓), then confirm.



- Use the navigation keys (↑ and ↓) to increase the various parameters.
- Use the navigation keys (← and →) to go to the next field.
- Press **VAL** to confirm.

5.3 “Preferences” setting

5.3.1 Filtering setting

In the event of noisy measurements, you can filter the latter to make the value displayed on the screen more stable.

- Access this menu using the **F1** key (configuration menu).
- Select the **Setup** field using the navigation keys (↑ and ↓), then confirm.
- Select the **Preferences** field using the navigation keys (↑ and ↓), then confirm.
- Select the **Filtering** field by pressing the F1 key.
Four filtering values are available
 - o OFF
 - o 0.5s
 - o 1s
 - o 2s
- Select these values using the navigation keys (↑ and ↓).
- Confirm by pressing the VAL key.

5.3.2 Display resolution setting

In the **CONFIGURATION/SETUP/PREFERENCES** menu, you can select the desired display resolution:

- Access this menu using the **F1** key.
- Select the **Setup** field using the navigation keys (↑ and ↓), then confirm.
- Select the **Preferences** field using the navigation keys (↑ and ↓), then confirm.
- Select the **Display resol.** field by pressing the F1 key.
Three type of resolution are then available:
 - o high (res=1mV or 1μA),
 - o medium (res=10mV or 10μA)
 - o low (res=100mV or 100μA).
- Select this resolution using the navigation keys (↑ and ↓).
- Confirm by pressing the VAL key.

5.3.3 Lighting duration setting

In the same menu (**CONFIGURATION/SETUP/PREFERENCE**), you can control the duration of the lighting (manual, 10s or 1min). Press the **ON/OFF** key briefly to turn on the lighting for the selected duration (10s or 1min). Press it again briefly to start the timing or to turn off the lighting in the case of the **manual editing** mode.

- Access this menu using the **F1** key.
- Select the **Setup** field using the navigation keys (↑ and ↓), then confirm.
- Select the **Preferences** field using the navigation keys (↑ and ↓), then confirm.
- Select the **Lighting** field by pressing the F1 key.
- Choose the manual or timed mode using the navigation keys (↑ and ↓).
- Confirm by pressing the VAL key.

5.3.4 Key beeping setting

In the **CONFIGURATION/SETUP/PREFERENCE** menu, you can emit a beeping sound every time a key is pressed:

- Access this menu using the F1 key.
- Select the **Setup** field using the navigation keys (↑ and ↓), then confirm.
- Select the **Preferences** field using the navigation keys (↑ and ↓), then confirm.
- Select the **Key beep** field using the F1 key.
- Using the navigation keys (↑ and ↓), select the **ON** or **OFF** mode
- Confirm by pressing the VAL key (if the parameter settings are completed or go to the next field using the F1 key).

5.3.5 Language setting

In the **CONFIGURATION/SETUP/PREFERENCES** menu, you can choose whether to have the interface in French, English, Dutch, Italian or Spanish.

- Access this menu using the F1 key.
- Select the **Setup** field using the navigation keys (↑ and ↓), then confirm.
- Select the **Preferences** field using the navigation keys (↑ and ↓), then confirm.
- Select the **Language** field using the F1 key.
- Using the navigation keys (↑ and ↓), select your desired language
- Confirm by pressing the VAL key (if the parameter settings are completed or go to the next field using the F1 key).

5.3.6 Temperature unit setting

In the **CONFIGURATION/SETUP/PREFERENCES** menu, you can choose the temperature unit that will be displayed.

- Access this menu using the F1 key.
- Select the **Setup** field using the navigation keys (↑ and ↓), then confirm.
- Select the **Preferences** field using the navigation keys (↑ and ↓), then confirm.
- Select the **Unit of temp.** field using the F1 key.
- Using the navigation keys (↑ and ↓), select the desired unit
- Confirm by pressing the VAL key.

5.4 Maintenance menu

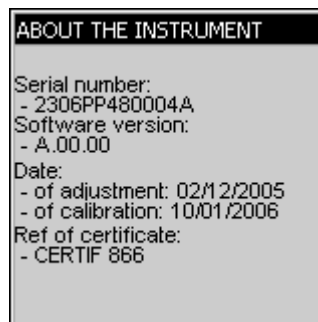
Not accessible to the user:

Consult SIKA who will indicate the procedure to follow for maintenance services.

5.5 About the instrument menu

In the **Configuration/About** menu, you can find out:

- The Serial number
- The software version
- The date of adjustment
This is the date of the very first adjustment/calibration of the instrument.
It is the production date of the instrument. This date is fixed and will never change. It is not possible to ot modify this date.
- The date of calibration
This is the date of the re-calibration. If there was no re-calibration since the first adjustment, then the date is blank. You can enter the new re-calibration date every time you calibrate the instrument.



6 Technical specifications

In the context of metrological quality monitoring, the user may have to carry out a periodic performance verification.

The verification must take the standard metrological precautions into consideration. The following instructions are to be applied.

The operations are carried out under reference conditions, namely:

- Room temperature: $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$.
- Relative humidity: 45% to 75%.

The standards that constitute the measuring chain must be such that the errors at the check points are known and are less than or equal to $\pm 0.008\%$.

If this verification reveals one or more characteristics of the instrument to be outside the tolerances specified in the technical specifications chapter, you can:

- Or return the instrument to the address indicated below for verification and calibration. specifications

The precision expressions mentioned herein apply from $+18^{\circ}\text{C}$ to $+28^{\circ}\text{C}$, unless otherwise specified, and are expressed in $\pm (n \% L + C)$ where L = Reading and C = Constant expressed in practical units, for a confidence interval of 95%.

They apply to a device positioned in the reference conditions defined after fifteen minutes of pre-heating.

The precision includes the precision of the reference calibrations, the non-linearity, hysteresis, repetitiveness and long-term stability over the time period mentioned.

6.1 Measurement Function

Rated maximum voltage in common mode: 60 VDC or VAC.

6.1.1 Resistance measurement

The resistance measurement function is obtained by configuring the device as follows:

Sensor: PT100 and Unit: Ohm for the 400 Ω gauge.

Sensor: PT1000 and Unit: Ohm for the 3600 Ω gauge.

Range	Scope of measurement	Resolution	Precision
400 Ω	0 Ω up to 400 Ω	10 m Ω	0.012 % of rdg. + 10 m Ω
3600 Ω	0 Ω up to 3600 Ω	100 m Ω	0.012 % of rdg. + 100 m Ω

- Temperature coefficient $< 10 \text{ ppm}/^{\circ}\text{C}$ from 0°C to 18°C and from 28°C to 50°C .
- Automatic wiring diagram detection: 2 wires, 3 wires or 4 wires.
- In the 2-wire assembly, the measurement includes the line resistances.
- In the 3-wire assembly, add the line resistances imbalance.
- Measurement current 0.65 mA
- The relative accuracies shown are stated for 360 days and operative conditions from $+18^{\circ}\text{C}$ to $+28^{\circ}\text{C}$ ($+64^{\circ}\text{F}$ to $+84^{\circ}\text{F}$).
- Typical 90 days relative accuracy can be estimated by dividing the “% of rdg” specifications by 1.8.
- Typical 2 year relative accuracy can be estimated by multiplying the “% of rdg” specifications by 1.5.

6.1.2 Temperature by resistive sensors (measurement)

Sensor	Scope of measurement	Resolution	Accuracy
Pt 50 ($\alpha = 3851$)	-220°C up to 850 °C	0.01 °C	0.012 % of rdg. + 0.06 °C
Pt 100 ($\alpha = 3851$)	-220°C up to 850 °C	0.01 °C	0.012 % of rdg. + 0.05 °C
Pt 100 ($\alpha = 3916$)	-200°C up to 510 °C	0.01 °C	0.012 % of rdg. + 0.05 °C
Pt 100 ($\alpha = 3926$)	-210°C up to 850 °C	0.01 °C	0.012 % of rdg. + 0.05 °C
Pt 200 ($\alpha = 3851$)	-220°C up to 1200 °C	0.01 °C	0.012 % of rdg. + 0.12 °C
Pt 500 ($\alpha = 3851$)	-220°C up to 1200 °C	0.01 °C	0.012 % of rdg.+ 0.07 °C
Pt 1000 ($\alpha = 3851$)	-220°C up to 760 °C	0.01 °C	0.012 % of rdg.+ 0.05 °C
Ni 100 ($\alpha = 618$)	-60°C up to 180 °C	0.01 °C	0.012 % of rdg.+ 0.03 °C
Ni 120 ($\alpha = 672$)	-40°C up to 205 °C	0.01 °C	0.012 % of rdg.+ 0.03 °C
Ni 1000 ($\alpha = 618$)	-60°C up to 180 °C	0.01 °C	0.012 % of rdg.+ 0.03 °C
Cu 10 ($\alpha = 427$)	-70°C up to 150 °C	0.10 °C	0.012 % of rdg.+ 0.18 °C
Cu 50 ($\alpha = 428$)	-50°C up to 150 °C	0.01 °C	0.012 % of rdg. + 0.06 °C

- For negative temperatures, use the value displayed (of rdg.) and not its absolute value.
- Temperature coefficient: < 10 % of accuracy/°C.
- The above accuracy is given for a 4-wire connection to the temperature sensor.
- You should also take into consideration the actual error of the temperature sensor used, as well as the conditions of its setup.
- Measurement current: 0.65 mA
- The relative accuracies shown are stated for 360 days and operative conditions from +18°C to +28°C (+64 °F to +84°F).
- Typical 90 days relative accuracy can be estimated by dividing the “% of rdg” specifications by 1.8.
- Typical 2 year relative accuracy can be estimated by multiplying the “% of rdg” specifications by 1.5.

6.2 Power supply – Autonomy

The SIKA UM RTD.2 is designed to function either with four 1.5V AA batteries or with a 4.8V battery pack.

The following autonomies are given for information.

Mode	Resistance measurement	Standby mode
Autonomy	40 h	> 95 days

For your notes



Sensors and Measuring Instruments



Flow Measuring Instruments



Test and Calibration Instruments



SIKA Dr. Siebert & Kühn GmbH & Co. KG
Struthweg 7–9
34260 Kaufungen • Germany

+49 5605 803-0

+49 5605 803-555

info@sika.net

www.sika.net