

# Thermo Scientific Multiskan GO

## Brief User Manual

Rev. 1.1, Cat. No. N13133



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This Brief User Manual is a shorter version of the *Thermo Scientific™ Multiskan™ GO User Manual*, Cat. No. N10588. The safe use of the instrument requires that all instructions are followed accordingly.

(This translation corresponds to the master document *Thermo Scientific™ Multiskan™ GO Brief User Manual*, Cat. No. N13133, Rev. 1.1.)

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# Introduction to the Multiskan GO

## Intended use

The Thermo Scientific™ Multiskan™ GO (Figure 1) is a spectrophotometer used to measure photometric assays with defined 96- and 384-well microplates. The Multiskan GO with the cuvette version can also measure photometric assays with cuvettes.

The Multiskan GO is intended for use in research laboratories by professional personnel. The Multiskan GO is designed to be part of an analyzing system for an end user responsible for validating the system to assure reliable and safe results. We recommend Good Laboratory Practice (GLP) during the analyzing process.

**Caution!** Operate the instrument only with software and hardware that is specifically designed or selected for it. Thermo Fisher Scientific assumes no liability when third-party software applications are used.



**Figure 1.** Multiskan GO with cuvette port (A) and without cuvette port (B)

**Note!** This manual covers the operation of the Multiskan GO with the cuvette instrument version. If you have the Multiskan GO without the cuvette, you can skip the parts of the manual referring to cuvette use.

For more details on instrument-related issues, refer to the *Multiskan GO User Manual* (Cat. No. N10588).

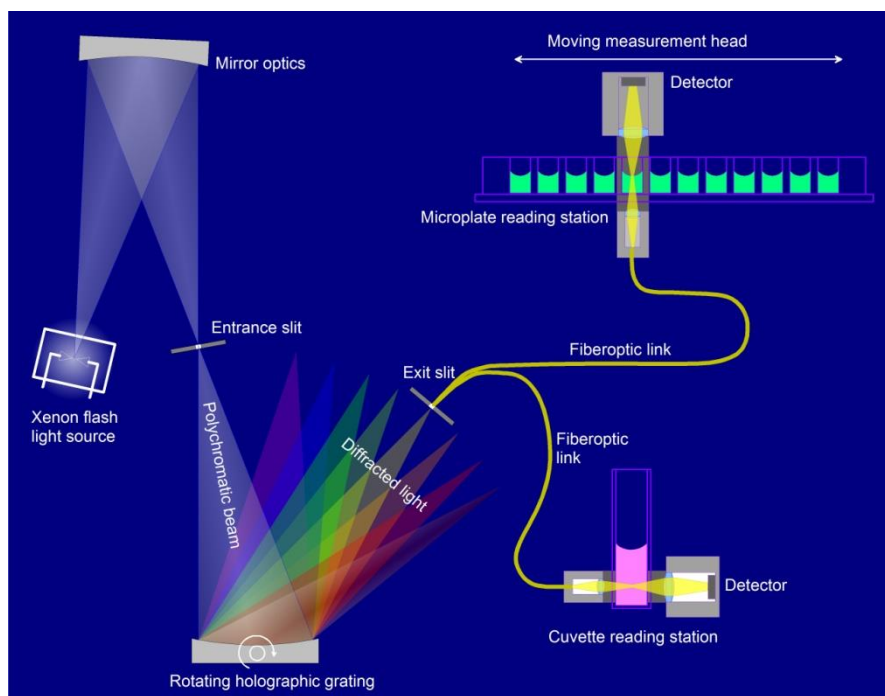
For PC software related issues, refer to the *Thermo Scientific™ SkanIt™ Software for Microplate Readers User Manual* (Cat. No. N16243) and its respective language versions or *Thermo Scientific SkanIt Software for Microplate Readers Technical Manual* (Cat. No. N16046).

## Principle of operation

The Multiskan GO is a monochromator based microplate and cuvette photometer. The sample on the microplate is measured vertically (from bottom to top) while the sample on the cuvette is measured horizontally. The operating principle of the Multiskan GO is shown in Figure 2.

The exact wavelength of the spectrum of the Xenon flash lamp is selected by using a monochromator. The light is guided to the microplate optics or the cuvette optics by the optical fiber. In both optics, part of the light is being guided through the sample and part to the reference detector. The light is sensed simultaneously by the reference detector and the measurement detector positioned after the sample to compensate any intensity fluctuations of the Xenon flash lamp.

In microplate measurement the measurement head moves to select the well column while the track moves to select the row.



**Figure 2.** Operating principle

Blank (air) measurement is needed to calculate the absorbance values. In microplate measurement the Multiskan GO moves the microplate aside to measure the blank automatically. In cuvette measurement the user has to perform a separate zero measurement manually before measuring the sample.

## Installation

### Installation steps

This section describes necessary installation steps before operating the instrument.

**Warning!** Only authorized technical service personnel are allowed to open the instrument.

**Warning!** Do not touch switches or electrical outlets with wet hands. Switch the instrument off before disconnecting it from the mains supply.

**Caution!** Leave the instrument to sit for at least three hours before installing and switching it on to prevent condensation, which may cause a short circuit.

**Caution!** Do not touch or loosen any screws or parts other than those specifically designated in the instructions. Doing so may cause misalignment and will void the instrument warranty.

### Removing the transport lock

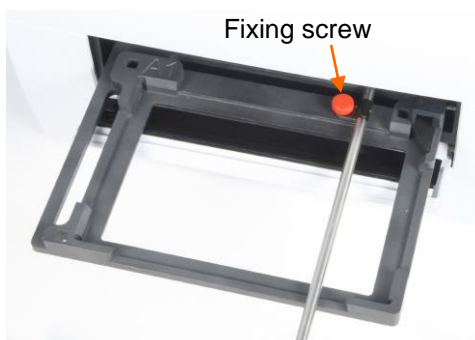
**Caution!** Do not attempt to operate the instrument with the transport lock in place.

1. Open the measurement chamber door (Figure 3) and unscrew the transport lock bar.



**Figure 3.** Transport lock bar with warning tag

2. Pull the plate carrier fully out of the instrument (Figure 4) and unfasten the fixing screw.



**Figure 4.** Plate carrier pulled fully out

3. Remove the lock rod from the carrier and push the plate carrier back into the instrument making sure that the measurement chamber door closes properly.
4. Store the transport lock bar, fixing screw and warning tag on the back of the instrument (Figure 5) for use in future instrument relocation or transportation.

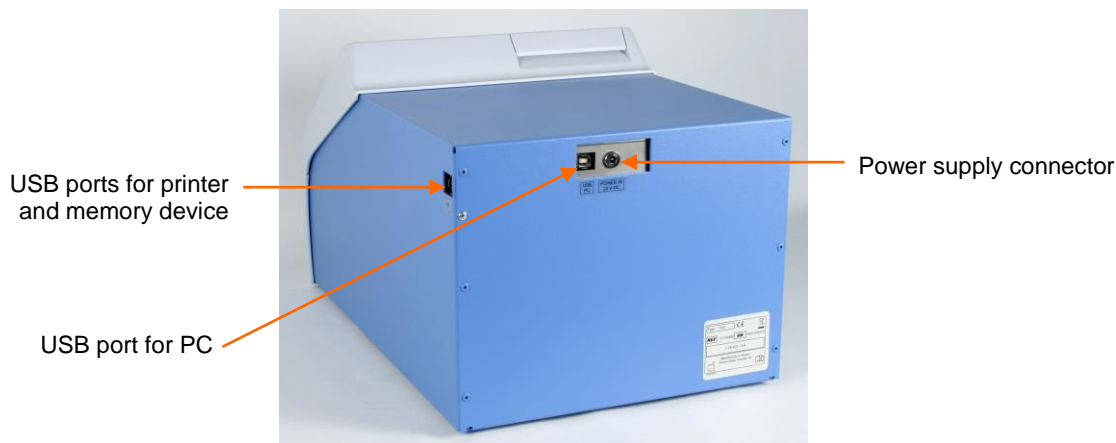


**Figure 5.** Transport lock bar storage position

## Connecting the power supply cable

**Warning!** Never operate your instrument from a power outlet that has no ground connection. Never use a power supply cable other than the Thermo Scientific power supply cable designed for your region.

1. Connect the power supply to a correctly installed line power outlet that is grounded.
2. Connect the power supply cable to the power supply connector (Figure 6) at the back of the instrument.



**Figure 6.** Connecting the power supply cable

## Connecting to a computer

If you are using a computer with the Multiskan GO, connect the communication cable to the USB port marked USB/PC (Figure 6).

**Note!** Connecting the instrument to Thermo Scientific™ SkanIt™ Software automatically updates the instrument date and time according to the PC clock.

## Connecting to a printer

If you are using a printer, connect it to the USB port marked USB/PRINTER (Figure 6).

## Changing the language

Change the user interface language by selecting Settings > Configuration > **Language**.



## Power Save feature

The Multiskan GO has a Power Save feature which lowers power consumption when the instrument is idle.

Change the Power Save parameter by selecting Settings > Configuration > **Power save**.

**Note!** The Power Save mode also turns the incubators off.

## Routine Operation

### Switching on

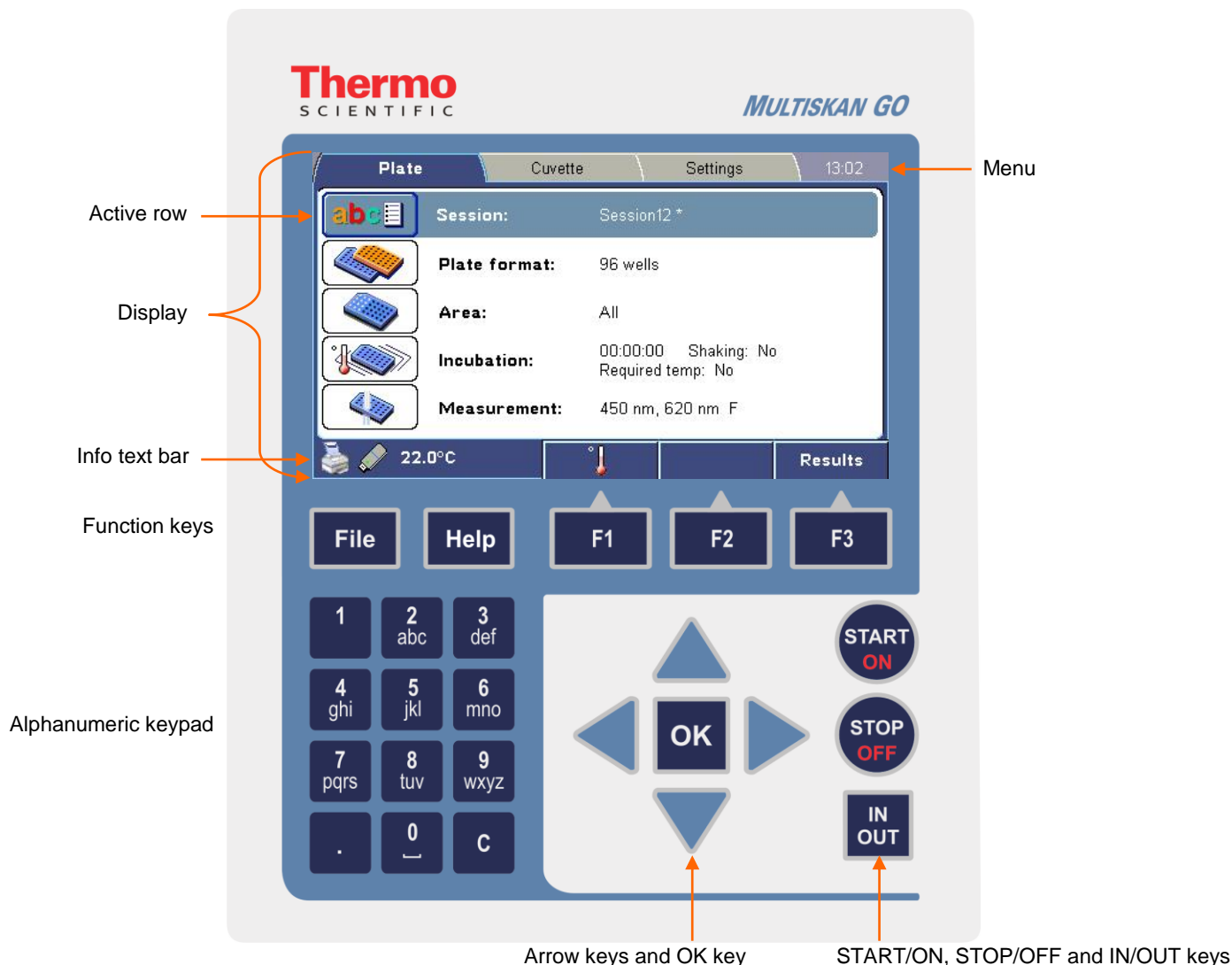


Switch the instrument on by pressing the **START/ON** key. The instrument proceeds to perform the self-diagnostics and displays “Self diagnostics passed” after it has been passed. The instrument is now ready for use.

**Note!** The cuvette port cover must be closed during the startup self-diagnostics tests.

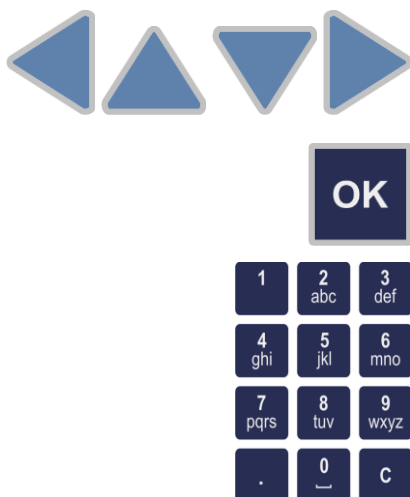
**Note!** Do not switch the power off during startup, self-diagnostics or when data is being transferred to the memory device.

## Display and keys



**Figure 7.** Keypad and display of the Multiskan GO

The user interface keys are detailed below (Figure 7).



The **LEFT**, **RIGHT**, **UP** and **DOWN** arrow keys navigate the menu structure, move inside windows, and change numeric values.

Repeat a selection by holding down the arrow key.

The **OK** key selects and edits the highlighted item.

The alphanumeric keys enter numerical data and text.

- Press a key several times to cycle through the characters.
- Pressing the **0** key enters a character space in text fields.
- Period (**.**): decimal point





The **CLEAR (C)** key deletes text and numbers.



The **F1–F3** keys select the action shown on the info text bar above the corresponding key.

The info text bar is updated according to the active menu.



The **FILE** key opens the **File** menu, which contains data management functions.

In the **Plate** menu, you can open, save and delete sessions from instrument memory as well as export and print measurement results.

In the **Cuvette** menu, you can export and print results but not save session parameters or results in the internal memory.



The **HELP** key offers information on the current view.



The **IN/OUT** key moves the plate carrier into or out of the instrument.



The **START/ON** key:

- Switches the instrument on.
- Starts a microplate or cuvette measurement.
- Accepts settings in submenus.

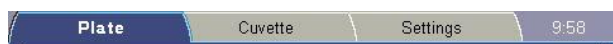


The **STOP/OFF** key:

- Terminates the measurement process.
- Terminates the computer remote control.
- Cancels the current setting in submenus.
- Switches the instrument off (press and hold).

## Menu structure

The user interface is divided into the **Plate**, **Cuvette** and **Settings** menus, which are displayed as tabs at the top of the display.



You can switch between the **Plate**, **Cuvette** and **Settings** menus with the **LEFT** and **RIGHT** arrow keys when you are on the main menu level.

The **Plate** and **Cuvette** menus are used to define the measurement parameters for microplate and cuvette measurements. The **Settings** menu contains universal instrument configuration settings.



The info text bar also displays the current instrument temperature as well as the target temperature when the incubator is activated.

If a printer or USB memory device is connected to the instrument, a corresponding icon is displayed on the info text bar.

**Note!** The Multiskan GO maintains the used settings and parameters until these are changed.

## Measuring a plate

1. Load the microplate. Always insert the microplate so that the A1 corner is positioned in the top left-hand corner of the plate carrier (Figure 8).



**Figure 8.** Multiskan GO with plate carrier out

**Caution!** *Ensure that you select the correct plate type. An unsuitable plate may become jammed in the instrument. When you work in the UV range, use quartz or other UV-compatible microplates.*

2. Define the measurement parameters in the **Plate** menu.
3. Press the **START/ON** key to start the measurement.
4. View the results of the measurement.

The asterisk (\*) by the session name indicates unsaved results.

5. Save, export or print the results if desired.

To store results for later use, you should save them in the instrument's memory, export them to a connected USB memory device or print them on a connected USB printer.

Selecting Export in the **Results** view automatically exports the current session. By using Export in the **File** menu, you can export multiple sessions simultaneously.

## Measuring a cuvette

1. Open the cuvette port cover.
2. Ensure that the cuvette port is empty or insert a cuvette with buffer to perform instrument zeroing.
3. Close the cuvette port cover.
4. Select the measurement session, **Single**, **Spectrum**, **DNA/RNA**, **User formula** or **Kinetic**, and define its parameters in the **Cuvette** menu.
5. Zero the instrument by pressing the **F2 (Zero)** key. For more information, see "Zeroing for cuvettes" on page 11.
6. Insert the sample cuvette into the cuvette port. Ensure that the measurement window is aligned with the measurement direction arrow on the cuvette station (Figure 9). Ensure that the cuvette is fully inserted.



**Figure 9.** Multiskan GO cuvette port

7. Press the **START/ON** key to start the measurement.
8. View the results of the measurement.
9. Export or print the measurement data if desired.

Cuvette sessions or measurement results cannot be stored in the instrument's memory. The last result of all predefined cuvette sessions is automatically saved, until parameters are changed or a new cuvette measurement is run.

You can print measurement results directly to a connected USB printer by selecting File > **Print**.

Either export the current cuvette session to a connected USB memory device by pressing the **F1** (Export) key or File > **Export (new file)** in the result view; or append to the end of the selected session on the USB memory device by pressing File > **Export (append)**.

**Note!** Always keep the same cuvette orientation.

**Caution!** Ensure that you use a correct cuvette type with a measurement position height of 8.5 mm. When you work in the UV range, use quartz or other UV-compatible cuvettes.

## Zeroing for cuvettes

The instrument must be zeroed to determine the instrument zero absorbance level.

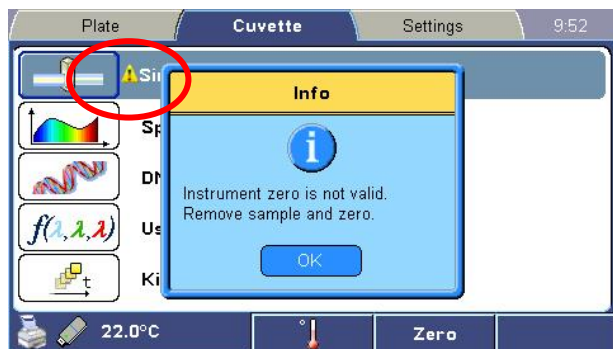
In microplate measurements, the Multiskan GO performs zeroing automatically. In cuvette measurements, however, the user must perform zeroing manually. All measured sample absorbances will be measured in comparison to this baseline level.

The instrument's zeroing for cuvettes can be performed in several ways:

- The recommended zeroing process is to run the zero measurement twice, first with an empty cuvette port and then with an assay blank cuvette.
- Alternatively, perform the zeroing only with an empty instrument.
- The third possible way is to directly zero the instrument with the blank sample cuvette.

**Caution!** Do not perform zeroing with an empty cuvette. This leads to incorrect zero levels.

To zero the cuvette station, press the **F2** (Zero) key. The yellow triangle alerts the user when the zero is not valid.



When Zero is pressed, the instrument measures the current absorbance level and sets it to 0.000 Abs.

The following applies for zeroing:

- It is not possible to start a cuvette measurement without a valid zero value.
- There are separate zero values for each measurement type. The zeroing is valid only if it has been performed with the same parameters as during the session.
- The zeroing values are valid for eight hours or until the measurement mode or parameters are changed.
- The zeroing values are reset at shutdown.

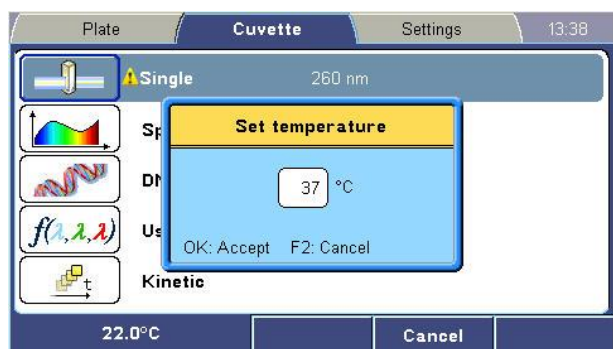
For more details on zeroing, refer to the *Multiskan GO User Manual* (Cat. No. N10588).

## Instrument incubator



The incubator temperature can be controlled from the **Plate** and **Cuvette** menus using the **F1** key.

You can toggle the instrument incubator on and off with the **F1** key. When you turn off the heating, the heating icon blinks for a few seconds.



**Note!** The **Plate** incubation setting “Required temp” does not affect the real instrument temperature but is only used as a session-specific temperature reminder for the user.

## Settings menu

The **Settings** menu allows you to configure instrument operation. The settings are universal for the instrument and do not differ between plate and cuvette use.

## Export file formats

When exporting data to an external USB memory device, Multiskan GO stores the files in a folder named “GO”. The folder is created automatically if it does not already exist.

Multiskan GO can export three types of files:

- Plate measurement results: PLA#####.TXT
- Cuvette measurement results: CUV#####.TXT

- Instrument status reports: REP#####.TXT

All files of the same type are numbered sequentially: PLA00001.TXT, PLA00002.TXT, and so on.

The exported files are in ASCII format and can be opened with any text editor, such as Microsoft<sup>™</sup> Notepad. Result files can be imported into Microsoft<sup>™</sup> Excel<sup>™</sup>.

The measurement results are exported using four decimal places.

**Note!** Set the export decimal delimiter to the desired value in Settings > **Configuration**.

## Shutting down



1. Remove any plates or cuvettes from the instrument.
2. Switch off the instrument after use by pressing and holding the **STOP/OFF** key for a few seconds.

## Maintenance

### Maintenance checklist

**Table 1.** Maintenance checklist

Item	d.	wk.	mo.	yr.	If req.
Keep the instrument free of dust.	✓				
Wipe away spilled saline solutions, solvents, acids or alkaline solutions from outer surfaces immediately to prevent damage, and wipe with deionized distilled water.	✓				
If any surfaces have been contaminated with biohazardous material, disinfect with a mild sterilizing solution.	✓				
Clean the case of the instrument periodically.		✓			
Clean the plate carrier and cuvette port when necessary.		✓			
Ensure proper shutdown.	✓	✓			
Decontaminate the instrument when relocating the instrument or sending it for service.				✓	✓
Perform verification with the Spectrophotometric Verification Plate every six months. Cat. No. N03394.				✓	
Service the instrument regularly.				✓	

**d.** = daily, **wk.** = weekly, **mo.** = monthly, **yr.** = yearly, **req.** = required

✓ = depending on the laboratory conditions and the use and configuration of the instrument

# Technical Specifications

Thermo Fisher Scientific reserves the right to change any specifications without prior notice as part of our continuous product development program.

## General specifications

**Table 2.** General specifications

General specifications	
Operating conditions (indoor use)	+5°C to +40°C; maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C Indoor use only!
Mains power supply	100–240 Vac, 50/60 Hz
Power consumption	Max. 110 W, typical operation < 22 W, Power Save < 2.5 W

## Safety specifications

### In conformity with the requirements

**Table 3.** Safety specifications

The safety specifications are also met under the following environmental conditions in addition to or in excess of those stated in the operating conditions:	
Altitude	Up to 2000 m
Temperature	+5°C to +40°C
Humidity	Maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C
Mains supply fluctuations	±10% from nominal
Installation category (overvoltage category)	II according to IEC 60664-1 (see Note 1)
Pollution degree	2 according to IEC 60664-1 (see Note 2)

**Note! 1)** The installation category (overvoltage category) defines the level of transient overvoltage which the instrument is designed to withstand safely. It depends on the nature of the electricity supply and its overvoltage protection means. For example, in CAT II which is the category used for instruments in installations supplied from a supply comparable to public mains, such as hospital and research laboratories and most industrial laboratories, the expected transient overvoltage is 2500 V for a 230 V supply and 1500 V for a 120 V supply.

**Note! 2)** The pollution degree describes the amount of conductive pollution present in the operating environment. Pollution degree 2 assumes that normally only nonconductive pollution, such as dust, occurs with the exception of occasional conductivity caused by condensation.