SDT200 Operating instructions

You can download the latest version of this manual by visiting the SDT International website: www.sdt.eu



HEAR MORE

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Safety precautions for the SDT200 ATEX version

Please read carefully the safety precautions before using the SDT200 - ATEX version in a potentially explosive environment.



- Make sure your SDT200A protection class is suited regarding the environment it will be used.
- Under no circumstances, do not attempt to service or replace SDT200 ATEX version components. In case of malfunction, contact SDT International or SDT local representative.
- Maintenance must always be performed outside potentially explosive environments.
- Battery charge must exclusively be performed outside potentially explosive environments.
- FUBATTR270-02 is the only authorized power source for SDT200 ATEX version.
- The max. permissible room temperature is:
  - -15°C to 50°C for T3.
  - -15°C to 60°C for T2.
- Potential danger of static electricity for the display. Avoid electrostatic charge:
  - Avoid friction.
  - No dry cleaning.
- Do not use USB connectivity in dangerous area.
- Do not use SDT carrying case in dangerous area

Related links

Technical specifications of SDT200 ATEX version

Overview

The main side



The back side

Marking

Serial Number

CE marking

The rear side of the SDT200 ATEX version has a specific ATEX marking

The sensor side

Built-in pyrometer

Activation of this functionality is optional



The bottom side

Reset button

Insert a needle to make a reset. (Reset causes a restart of the device but the data stored are not deleted)



Charging the battery

The SDT200 uses an internal NiMH battery. The battery charger outlet will connect to a socket on the bottom side of the SDT200.

Charging the battery of the SDT200 ATEX version must exclusively be performed outside potentially explosive environments.

Due to the typical self-discharge rate of NiMH batteries it is recommended to charge the SDT200 battery at least every 3 months, even if it is not used.

It is recommended not to store the SDT200 with an uncharged battery for more than a few weeks. This would significantly reduce the battery life span.

Only use the charger provided by SDT.

The charging time will typically be 6 hours. When the LED of the charger is continuously green, the SDT200 battery is completely charged.

Like most batteries these days, leaving the SDT200 charging after the charger says it is charged does not hurt the battery – in fact it very slowly tops the charge up a little more.

You can charge the SDT200 switched off. You can also trickle charge the SDT200 switched on, so you can be using it to load and unload data, for example, and charge it at the same time.



SDT200 bottom side



SDT Universal charger for SDT200

A fully charged battery will give you about 8 hours of continuous use. This will vary of course depending upon your need to use the backlight and the power drain of certain external sensors that you might be using.

You can increase the autonomy by adjusting the Auto Power Down and the time before switching off the backlight.

Related link

Battery charger

Turning on & turning off the SDT200

To turn on:

Press the ***Power button*** on the bottom right of the keypad. The status LED will shine dark blue. Then, a few seconds later you will see on the screen the SDT logo and the message “loading”. If you do not see this display your battery might be flat.



To turn off:

Push the ***Power button*** on the bottom right of the keypad. You will see the following display:



Confirm the device shut down by pressing the ***Enter button***.

Plug & unplug an external sensor

The SDT200 is equipped with a LEMO connector, used to plug external sensors.

It is a commonly used industrial connector, considered for its reliability and robustness. It have a sprung-loaded knurled barrel and mechanical polarisation to go only in one way round.



To plug a LEMO connector:

- Line up the red dot on the plug with the red mark on the connector.
- Insert the plug into the connector without any rotating movement.

When an external sensor is connected to the SDT200, it is automatically selected. Howerver, you can switch between available sensors using the ***F1 button***.

To unplug the LEMO connector

- Move up, towards the cable, the ring located on the bottom of the plug.
- Only pull the connector without any rotation.

Please, never pull on the cable itself.

Taking and storing an ultrasonic measurement

Select the desired ultrasonic sensor using the ***F1 button*** if necessary.

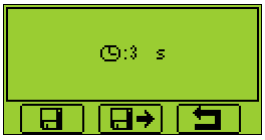
Set up amplification using ***Up and Down arrow buttons***, till the up and down ***amplification adjustment indicators*** disappear .

Activate or deactivate the laser pointer using the ***F2 button***.



Measurement settings

Press the ***F3 button*** to enter the measurement settings menu.



Adjust the acquisition time using ***Up and Down arrowbuttons***.

If the acquisition time is set to 0 second, the RMS, Max RMS, Peak and Crest Factor are refreshed every 250 milliseconds. This mode enables the operator to take data on the fly.

If the acquisition time is set at 1 second or more, the RMS, Peak and Crest Factor will be calculated over the complete acquisition time. The Max RMS will be the highest sub RMS reached over the complete acquisition time. Each sub RMS is calculated during 250 milliseconds. The maximum acquisition time is 10 seconds.

Use the ***F1 button*** to save the settings as preferred configuration

Use the ***F2 button*** to load the settings associated to the preferred configuration

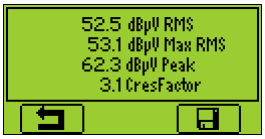
Use the ***F3 button*** to go back to the ultrasound measurement screen using the modified settings. Note that the preferred configuration is reloaded at startup of the SDT200.

Getting data

Press the M button:

- To freeze RMS and Max RMS values when the acquisition time is set to 0 second.
- To start the acquisition when the acquisition time is set to 1 second or more.

  At the end of the acquisition time, a screen detailing RMS, Max RMS, Peak and Crest factor values, is displayed.:



Press the ***F3 button*** or the ***Store button*** to save the data (or the ***F1 button*** to come back to the measurement screen without saving the data)



Then choose the desired memory location using the ***Up and Down arrow buttons*** and confirm by pressing the ***Enter button***.

Taking and storing a temperature measurement

This feature is optional.

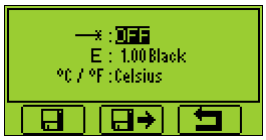


Select the built-in pyrometer by highlighting the ***T*** in the upper left corner of the display with the ***F1 button***.

Activate or deactivate the laser pointer using the ***F2 button***

Measurement settings

Press the ***F3 button*** to enter the Measurement Settings menu.



You can :

- Adjust the emissivity coefficient from 1 to 0.01
- Switch between Celsius, Fahrenheit and Kelvin physical units

To modify the parameters of the selected setting :

- Use the ***Up and Down arrow buttons*** to switch form one field to another.
- Use the ***Left and Right arrow buttons*** to modify the value of the selected field.
- Use the ***Enter button*** to save the changes and return to the previous menu.

Use the ***F1 button*** to save the settings as preferred configuration

Use the ***F2 button*** to load the settings associated to the preferred configuration

Use the ***F3 button*** to go back to the ultrasound measurement screen using the modified settings. Note that the preferred configuration is reloaded at startup of the SDT200.

Freeze measurement

Press the ***M button*** to freeze the measurement.

Store measurement

Press the ***Store button*** to save the measurement.



Then highlight the chosen memory location using the ***Up and Down arrow buttons*** and confirm by pressing the ***Enter button***, or the ***F1 button*** to cancel measurement storage.

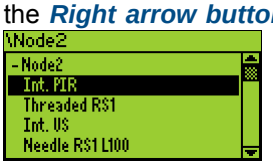
Review measurements stored in the SDT200

- From the Measurement screen press the ***Enter key*** to access the Main Menu.
- Use the ***arrow buttons*** to highlight the Node Tree icon: 
- Press the ***Enter button*** to display the list of memory locations:



Note: the "+" sign placed before a memory location means it contains recorded measurements.

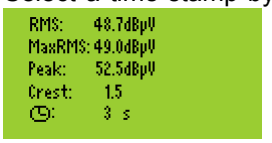
- Select the desired memory location using ***Up and Down arrow buttons***. Expand the memory location using the ***Right arrow button***. The saved measurements are filtered regarding the sensor used:



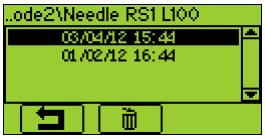
- Select the desired sensor using ***Up and down arrow buttons***. Display the list of saved measurements by using the ***Right arrow button***. The data are filtered according to the recording time stamp:



- Select a time stamp by using the ***Arrow Buttons***, then and press the ***Enter button*** to visualize the data:



- Press the ***F1 button*** to come back to the list of recording timestamps:

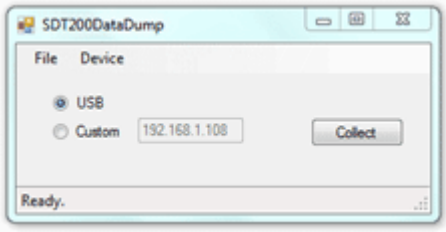


- To delete a recording, select its timestamp using the ***Up and down arrow buttons*** and press the ***F2 button***.
- To come back to the measurement screen, press a few times the ***F1 button***.

Download data to PC using SDT DataDump

Do not connect your SDT200 device to the computer before the SDT200 USB driver is installed.

Note : be sure that the SDT200 USB driver and SDT DataDump software are correctly installed on your computer before continuing this section.



Start the SDT DataDump application on your computer.

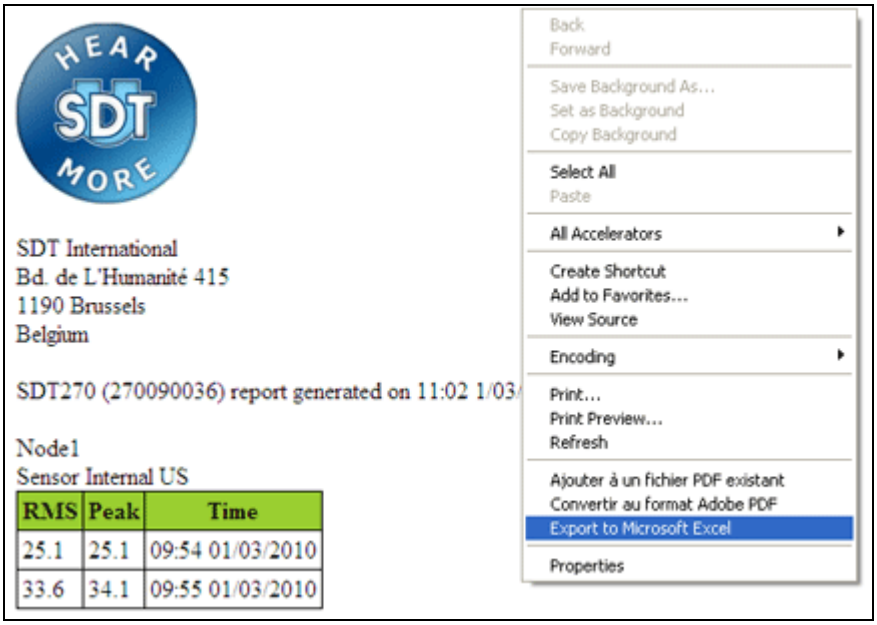
The SDT DataDump window appears.

Verify the ***USB radio button*** is ticked then click on ***Collect***.

The report is generated and opened via your web browser:

Each measurement includes the sensor used, the time stamp, RMS, Peak and Crest Factor values.

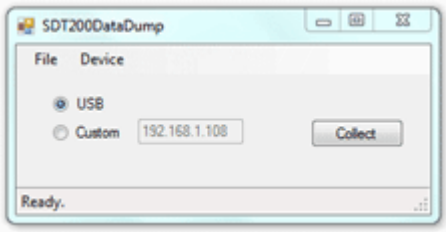
You are able to export data to MS Excel by a right click on the Internet Explorer web browser interface:



Note : You must first enable one time the add-on by opening the menu File/Preferences and clicking the button “Add export IE to Excel registry rule”.

The report is automatically stored on your computer using the format: "report dd-mm-yy.xml". By default, the path is: C:\Users\Public\Documents\SDT\SDT270DataDump\Reports\504 or 505xxxxxx or 505xxxxxx which is the serial number of your SDT200 device.

Other SDT DataDump functions



Erasing the SDT200 memory:

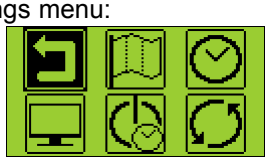
Verify the ***USB radio button*** is ticked, then click on ***Device*** (menu) and ***Delete all device data***. You can also use the keyboard shortcut CTRL+U.

Updating the SDT200 firmware:

Select the menu "***Device / Update Firmware***". On the Device update window, tick the radio button "***USB***" and then click "***Check for updates***". Note that this requires an internet connection. Updating the SDT200 firmware is possible during the warranty period.

Changing device settings

- To access the Main menu, press the ***Enter button***.
- Use the ***arrow buttons*** to highlight the Settings icon: 
- Press the ***Enter button*** to access the Settings menu:



- Use the ***arrow buttons*** to select the desired icon and the ***Enter button*** to select the desired setting.
  -  Language icon: change device interface language (English, Nederlands, Français, Deutsch, Italiano or Español).
  -  Date and time icon: set date, time and their format
  -  LCD icon: adjust the screen contrast and the operating time of the backlight
  -  Auto power down icon: adjust the time before device auto power down when it is unused.
  -  Reset icon: force a factory reset of the SDT200 device. Note that this does not erase saved measurements.
  -  Escape icon: to get back to the main menu. In the main menu, to get back to the measurements screen, press the ***F1 button***

- To modify the parameters of the selected setting :
  - Use the ***Up and Down arrow buttons*** to switch form one field to another.
  - Use the ***Left and Right arrow buttons*** to modify the value of the selected field.
  - Use the ***Enter button*** to save the changes and return to the previous menu.
  - Use the ***F1 button*** to go back to the previous menu without saving the changes.

Device Info

- From the Measurements screen press the ***Enter Button*** to access the ***Main Menu***

- Use the ***arrow buttons*** to highlight the Device Info icon: 
- Press the ***Enter Button*** to display device information:
  - The version of your instrument (screen 1)
  - Its calibration date (screen 2)
  - The serial number of the battery and its remaining capacity (screen 4)
  - The device and PCB serial numbers, the firmware version (screen 5)
- Use the ***Up and down arrow buttons*** to switch between the different screens. Push the ***F1 button*** to go back to the main menu and push once again the ***F1 button*** to go back to the measurements screen.

SDT200 technical specifications

Technical specifications for all SDT200 versions

For SDT200 ATEX version specific technical specifications, please see next page

Function	Multifunction detector
Display	Graphic LCD with backlighting (128 x 64)
Keyboard	12 function keys
Built-in sensors	Ultrasonic sensor Pyrometer (according to the version)
External sensors	Through specific connector (Lemo 7 pin connector)
Data Logger	- 20 Measurement Nodes (measurement points) - Total 4000 Measurements (measurements data)
Communication	USB interface
Software for transferring data to PC	DataDump Application
Battery pack (*)	Rechargeable battery type: 8 cell, 4.8 V, NiMH (Nickel Metal Hydride) Nominal capacity: 4.4 Ah Life span: 500 to 1,000 charge/discharge cycles Autonomy: 6 to 7 hours Protections: short-circuit, reverse polarity and temperature protected
Auto power down	Auto power down after preset time
Operating temperature	-15 °C to +60 °C / 14 °F to 140 °F non condensing
Housing	Extruded aluminium
Weight	±770 g / 27 oz.
Dimensions	226 x 90 x 40 mm / 8.90 x 3.54 x 1.57 inches (L x W x H)
Headphones	noise isolating, NRR 25 dB (tested in an accredited NVLAP laboratory)

(*) for optimum performance, this battery pack is equipped with an electronic management system (includes digital serial number, capacity and temperature management).

Specific technical specifications for the SDT200 ATEX version

The SDT200 ATEX version is certified ATEX II 1 G Ex ia IIC T3/T2 Ga, according to IEC 60079-0, 60079-11 and 60079-26.

Check room temperature for use of the SDT200 ATEX version in potentially explosive environments. The max. permissible room temperature is:

- -15°C to 50°C (T3).
- -15°C to 60°C (T2).

The SDT200 ATEX version has the following marking on the rear side:



Electrical specification for non SDT sensors used with the SDT200 ATEX version

Check electrical compatibility of non SDT sensors, for use in potentially explosive environments, before connecting them to the SDT200 ATEX version.

Max. outer voltage V_0	20.4V
Max. outer current intensity I_0	68.7mA
Max. outer effective capacitance C_0	96nF
Max. outer effective inductance L_0	1mH

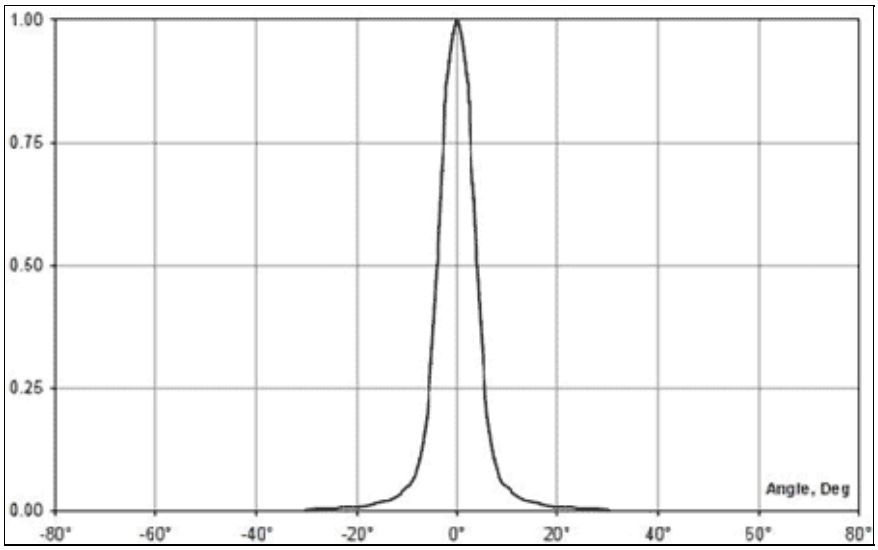
Built-in ultrasound sensor



Function & type	Open type ultrasonic sensor
Bandwidth	± 2 kHz at -6 dB
Central Frequency	40 kHz ± 1 kHz
Sensitivity	-65 dB/V/µbar at 40 kHz
Total beam angle	55° typical at -6 dB

Built-in pyrometer





Field of view

Sensor type	Infrared temperature sensor
Temperature calibration range	sensor temperature:-40…+125 °C object temperature: -10... +380 °C
Measurement resolution	0.1°C
Temperature precision (for ambiant temperature between 0 and 50°C – for emissivity = 1)	○ For measured temperature between -70°C and -40 °C : ±2°C ○ For measured temperature between -40°C and 0°C : ±1°C ○ For measured temperature between 0°C and 60°C : ±0.5°C ○ For measured temperature between 60°C and 120°C : ±1°C ○ For measured temperature between 120°C and 180°C : ±2°C ○ For measured temperature between 180°C and 240°C : ±3°C ○ For measured temperature between 240°C and 380 : ±4°C
Field of view at 50% of attenuation	10°

Battery charger



Charger type:	specific for SDT200NiMH battery pack
Power supply:	110 VAC to 230 VAC +15 % / -10 % 50/60 Hz
Output voltage:	+4.0 or 8.5 V DC (depends on operating mode)
Power:	7,5 W
Protection:	temperature protected, limit set at 60°C / 140 °F
Status indicator:	Green LED is continuously lit: battery is fully charged Green LED flashes evenly: normal charge One red flash every 5 seconds : Battery Voltage error Two red flashes every 5 seconds: Over temperature error Three red flashes every 5 seconds: Timeout full charge Four red flashes every 5 seconds: Timeout Rapid charging Five red flashes every 5 seconds: Timeout Activate charging Six red flashes every 5 seconds: 1 Wire communication error
Isolation:	double isolation
Weight:	300 grams / 10.6 ounces
Housing:	PPE
Conformity:	IEC 60950 (CB certificate) conform with CA and US national conditions

Declaration of conformity

SDT International n.v. s.a.
Boulevard de l'Humanité 415
B - 1190 BRUSSELS
BELGIUM

declares that

SDT200 Multifunction Detector

making the object of this declaration, is built in conformity with the applicable European Directives:

- Electrical equipment for measurement IEC EN 61010-1
- EMC Directive 2004/108/CE
- Low voltage Directive 2006/95/CE.

The equipment hence displays the EC logo of being compliant to the current EC regulations.

To be able to operate by state of the art rules, as stipulated in the directive, it has been designed by the following rules:

- The SDT200 does not radiate electromagnetic waves (EMC)
- The SDT200 is immunized against external electromagnetic radiation (EMI)
- The SDT200 is protected against electrostatic discharges (ESD).

Note: the owner is obliged to preserve the present users manual with the obligation to pass it on to future users, or been resold to another user.

Brussels, January 2012.

The Manager.

Warranty and responsibility limits

Warranty

SDT International guarantees the SDT200 unit against manufacturing faults for a period of 2 (two) years, with the exception of the battery and accessories (charger, headphones, sensors, etc.) these are guaranteed for a period of 6 (six) months. The warranty covers all material supplied and implies the free replacement of all parts that contain a manufacturing fault.

Warranty does not include shipping, handling and importation.

The warranty is void if misused, or accident damages the product, if the product is altered in any way, if an unauthorized party attempts repair, or the unit is opened without written authorization of SDT International.

In the event of a defect, contact your local SDT representative or SDT International.

Responsibility limits

Neither the company SDT International, nor any related company, will in any circumstances be liable for any damages, including, without limitation, damages for loss of business, business interruption, loss of information, defect of the SDT200 unit or its accessories, bodily harm, loss of time, financial or material loss or any other indirect or consequential loss arising out of the use, or inability to use this product, even when it has been warned of possible damages.

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The information herein is believed to be accurate to the best of our knowledge.

Due to continued research and development, specifications of this product can change without prior notice.