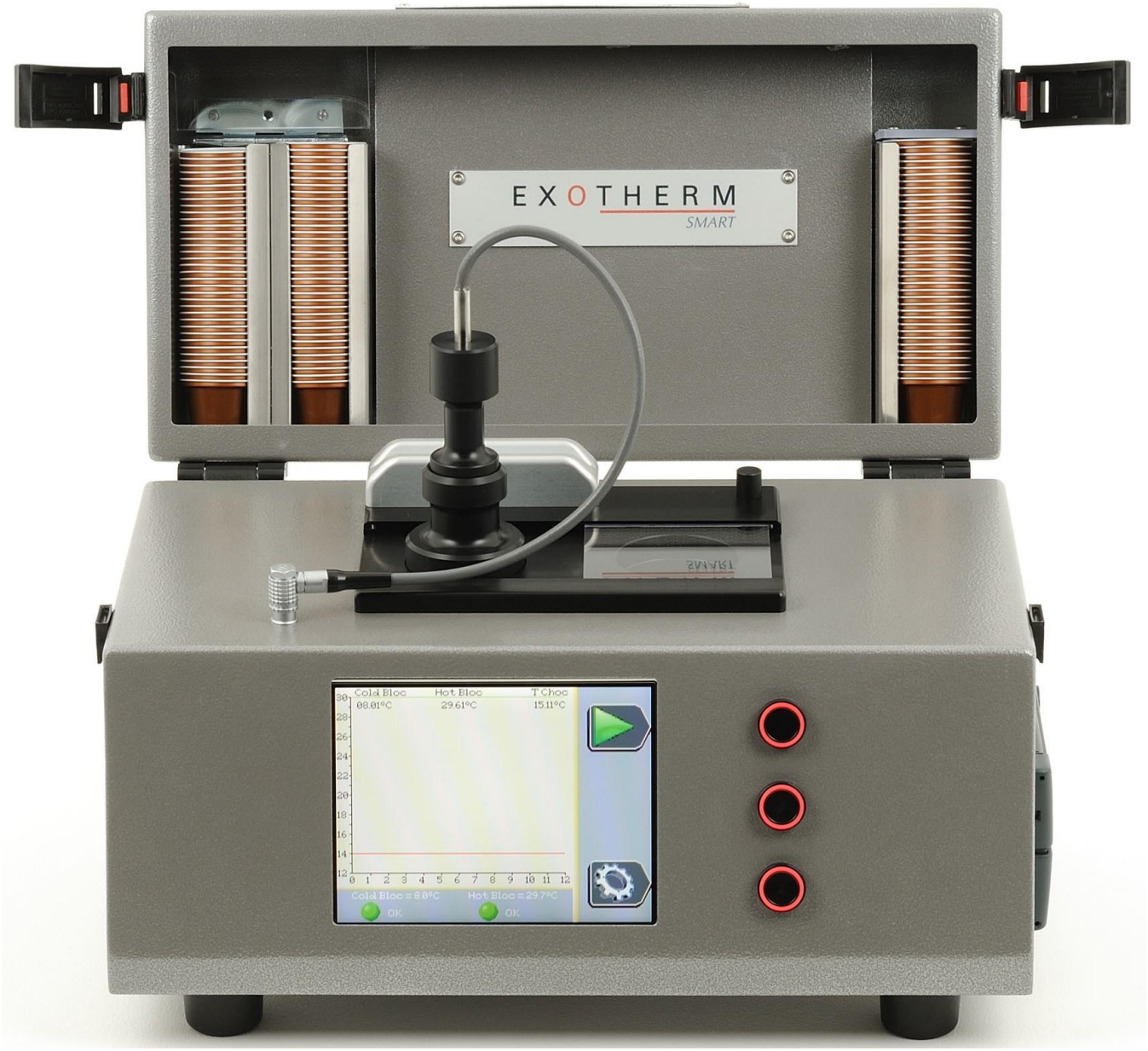
USER MANUAL – EXOTHERM SMART



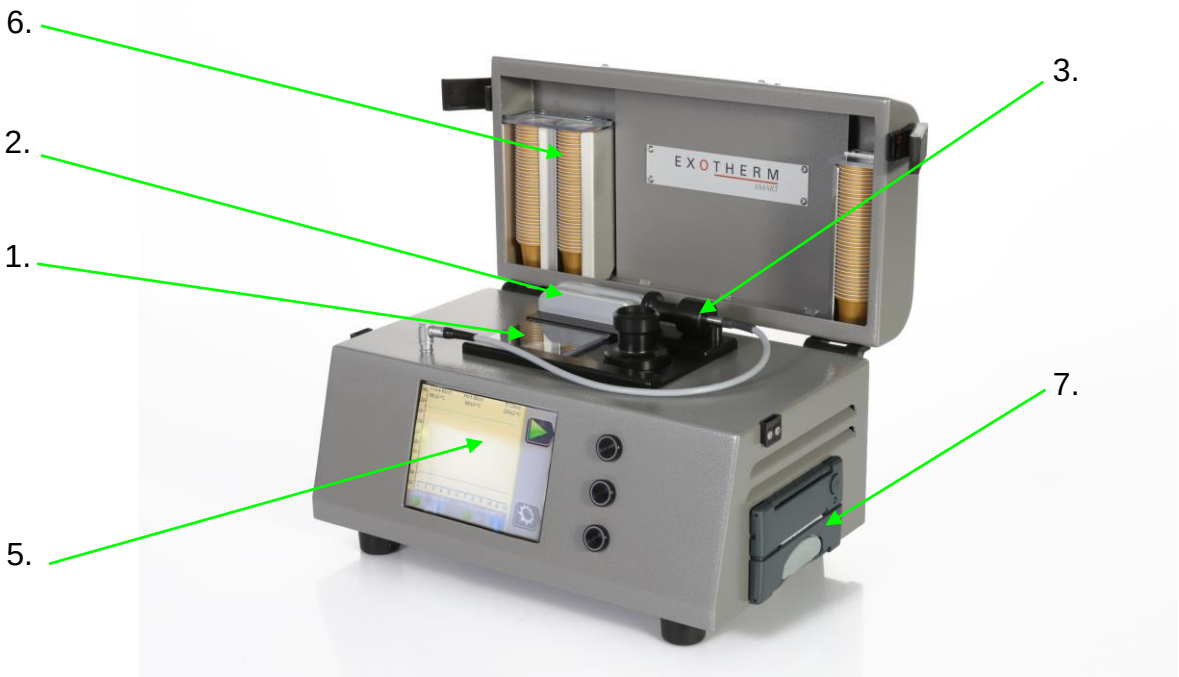
Summary

1- Presentation of Exotherm SMART

This portable device can measure the crystallization curve of chocolate, the tempering curve (exothermic reaction) and calculate the slope, the temperature, the time and the RSI (Relative Solid Index) at the inflection point.

It includes:

1. A thermostatically controlled refrigeration unit for allowing the sample to be measured.
2. A hot block for setting the probe temperature in order to not disturb the reaction when it is introduced in the sample.
3. A temperature sensor with its support for the exothermic reaction during the cooling of the sample.
4. A structure and measurement of integrated management (not visible).
5. A user interface with colour graphic display and 3 buttons
6. Cup stores inside the device cover
7. A receipt printer to print the curve and results



2 – Instructions for installation and service

2-1 General instructions

- This manual is intended for normal use of the device.
- Only authorized persons should access the inside of the device.
- Before working, cleaning or doing maintenance, disconnect the power cord.

2-2 Power requirements

- 100 to 240 V - 50/60 Hz Plug on cord with earth electrode 10/16A.
- Protection is provided by 2 Fuses 6.3 AT 230 inside the block.
- Only when plugging off the power cord completely, power is removed.

2-3 Handling and installation

- The portable device is equipped with a carrying handle.
- Weight: 5.5 kg,
- It must be installed on a flat and stable surface.
- CAREFULNESS: The device must not be installed near dust (cacao or flour) because the dust can go inside the device and destroy it.

3 – Connecting the device

3-1 Connecting cords

- Connect the power cord into an AC 110 or 230V 50/60Hz single-phase with earth.

3-2 Applying power

- View the home page for 10 seconds.
- Get the cold block temperature
- When the cold block temperature is reached, the device can be used for measurements.

3-3 Printing results

- Printing is automatic at the end of measurement
- Printing is also obtained when pressing the STOP button.

It is possible to print results again at any time.

4 – Switching off the machine

- There is no particular software sequence to stop the SMART : switch OFF the machine (at the back of the unit)

5 – Using the SMART

5-1 The user interface (GUI) in English only.

5-1-1 Home page

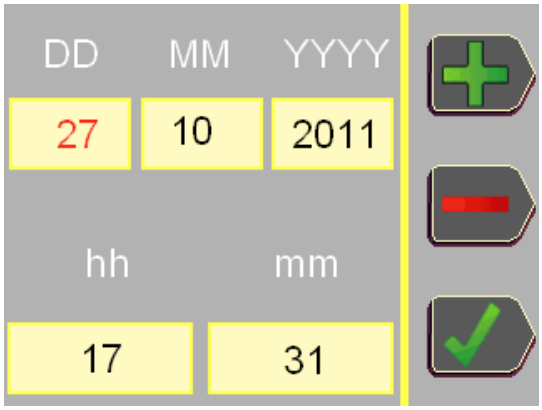
Inactive

Inactive

Go to the date and time configuration window

This page is displayed for 10 seconds at the start of the unit. During that time, by pressing the lower button, it opens the date and time configuration window.

5-1-1b Date and time configuration window



Increase the value

Decrease the value

Valid and go to next step

The date has to be entered in the following order: Day, Month, Year, Hour and Minute.
To pass from one field to another, press the button on the bottom.
The buttons on the top and in the middle can be used to change the current values (Values in red).

5-1-2 Page starting measure

Starting button

Go to the configuration window

Temperature set point and state of cold bloc

Temperature set point and state of hot bloc

5-1-3 Configuration window

The following parameters are available:

- Starting temperature for tracing the curve:
  T Start: between 13°C and 30°C
- Stopping temperature for tracing the curve:
  T Stop: between 12°C and 29°C

  With T Start > T Stop
- Cold bloc temperature: between 1°C and 15°C
- Hot bloc temperature : between 20°C and 40°C

5-2 Preparing the sample – (must be rapid, no more than 10 to 15 seconds)

Fill the cup up to its first edge Tap the cup on the table to eliminate the air bubbles.

Place the Aluminium cup into the will of the cooling bloc

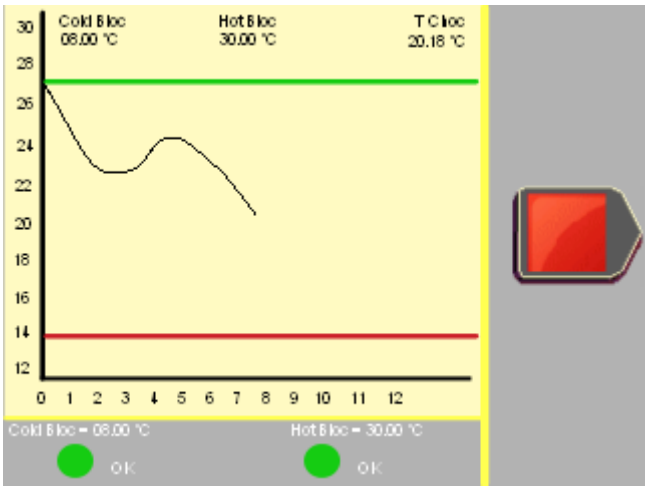
Place the reel upon the cup

Place the temperature probe

Take the temperature probe out of its rewarming unit and introduce the probe into the orifice of the reel. Make a small right and left turn of the probe to get rid of possible small air bubbles formed along the probe during the introducing.

5-3 Measuring the sample

Press the START button
The measurement starts automatically when the temperature of the sample reaches the T Start temperature (configurable in SETUP).

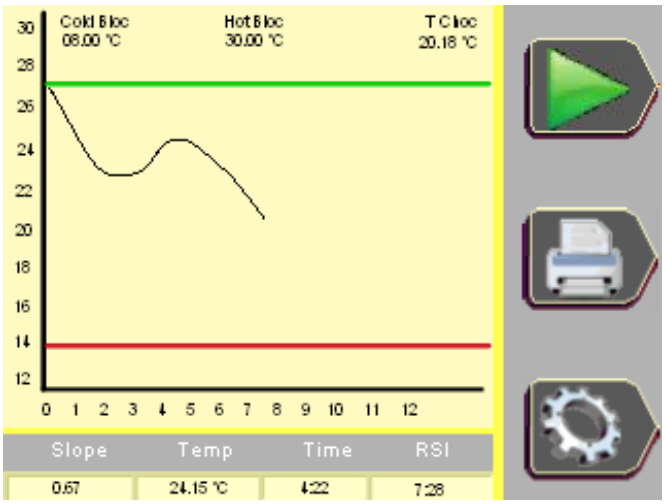


STOP button

The measuring ends:

- When the T Stop temperature is reached.
- Or after 12 minutes if the T Stop temperature "has not been reached".
- Or when the STOP button is pressed.

5-4 Measurement result



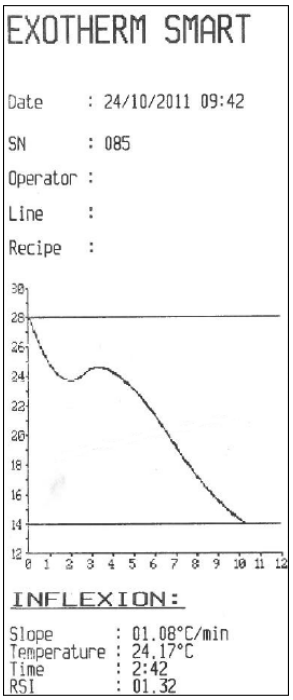
Re-Start button

Print the result

Go to configuration window

The curve and the results are printed on the receipt.

The useful values are the slope at the Inflexion point, the time at the Inflexion point, and the temperature at the Inflexion point. The RSI value is a relative indication of the amount of cocoa butter crystals formed during the tempering process.



Small value means small quantity of crystals

This happens when the temperature machine was set too high during the low stage, Set the temperature settings of your tempering machine a bit lower (start by 0.2 °C lower).

Large value means a large quantity of cocoa butter crystals.

This happens when the temperature machine was set too low during the low stage. Set the temperature settings of your tempering machine a bit higher (start by 0.2 °C higher)

5-5 Removing the Sample

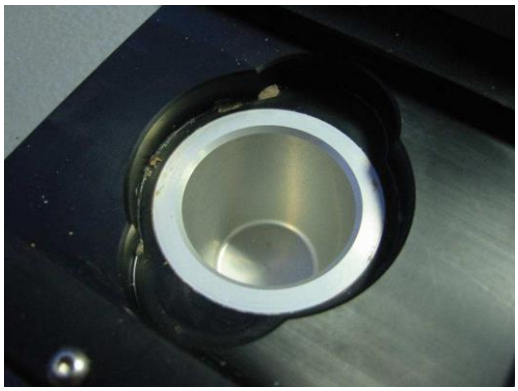
Once the measurement is complete, replace the temperature probe in the hot block.

If you don't do measurements and if the tempermeter is running, you must close the measuring cell by sliding the Plexiglas upon the well to prevent water condensation inside the cold well.

6 – Service

6-1 Cleaning:

The well must always be totally cleaned to ensure a perfect contact with the Aluminium cup inside the well.



Clean up the screen with a slightly wet rag or tissue. NEVER USE abrasive material or metallic tools.

Change the filter when dirty. The frequency may vary from 1 to 3 times a year depending on the working conditions.
Turn the tempermeter on its side and remove the plastic support. Change the filter (a few filters are delivered with the package) and cover with the plastic protection.

6-2 Calibration:

The calibration of the device is made by the manufacturer.

6-3 Change the paper roll:

Open printer

Remove the empty roll and place the new one in the good direction!

7 – Composition of Exotherm SMART

1 cardboard contains:

- 1 Exotherm Smart unit with its temperature sensor and printer
- 1 paper roll
- 1 set of aluminium cups
- 1 manual
- 1 power cord
- 1 medium plastic cup support

8 – Specifications

Dimensions:	350 x 210 x 210 mm
Weight:	5.500 Kg
Power:	100V to 240V single phase 50/60Hz - 150W
Fuses:	2 x 6,3 AT
Setting range of cold block:	1 °C to 15 ° C
Setting range block hot:	20 °C to 40 ° C
Normal noise level:	< 45 dB

CE Declaration of conformity

The manufacturer / responsible for the placing on the market

STATICE TEMPERING®

9 rue Thomas Edison, Z.I Les Tilleroyes
25000 BESANCON, France

declares that the following product :

Product Name: **EXOTHERM Smart®**
Reference:

Was designed and produced according to ISO9001.

CE

It is conforms:

- To the regulations defined by Annex 1 of the “machinery” European directive 2006/42/EC and national implementing legislation.
- To the regulations of the following European directives and regulations :
  - N° 2006/95/EC: Low Voltage Directive
  - N° 2004/108/EC: EMC
  - N° 2011/65/EU: RoHS Directive
  - N° 2002/96/EC: DEE Directive
  - N°1935/2004/EC On materials and articles intended to come into contact with food

Harmonized European standards used to give presumption of conformity with the essential requirements of the directives mentioned above:

- EN 55016-2-1: Measurement of conducted emissions. Conducted disturbances from 150 kHz to 30 MHz on alternating current power
- EN 55016-2-3: Measurement of radiated emissions. Radiated disturbances in cage at 3 m at 0-360° (deflection to the method). Measurement of 30 MHz – 1 GHz (Highest internal freq of EST < 0.108 GHz)
- EN 61000-3-2 : Limits for harmonic current emissions (current drawn by the devices ≤ 16A per phase)
- EN 61000-3-3: Limitation of voltage fluctuations and flicker in low-voltage networks for equipment with rated current ≤ 16A
- EN 61000-4-2 : Electrostatic discharge immunity (Criterion B)
- EN 61000-4-3 : Immunity to radiated electromagnetic fields to the radio frequencies (Criterion A)
- EN 61000-4-4: Immunity to fast transient bursts. On power input-output in alternating current (level ± 1 kV)
- EN 61000-4-5: Immunity to shock waves. On power input-output in alternating current. Between Lines (level ± 0.5 and 1 kV)
- EN 61000-4-6: Immunity to conducted disturbances induced by radio frequencies fields. From 0.15 to 80 MHz with amplitude modulation at 80% at 1 kHz on power input-output in alternating current (level 3 Veff)
- EN 61000-4-11: Immunity to voltage dips, short outages and voltage variations (50/60 Hz)

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