

dThermoprobe



6.01117.300 / 6.01118.300

Sensor leaflet

8.0109.8018EN / v3 / 2024-07-19



Metrohm AG
Ionenstrasse
CH-9100 Herisau
Switzerland
+41 71 353 85 85
info@metrohm.com
www.metrohm.com

dThermoprobe

Sensor leaflet

Technical Communication
Metrohm AG
CH-9100 Herisau

This documentation is protected by copyright. All rights reserved.

This documentation is an original document.

This documentation has been prepared with great care. However, errors can never be entirely ruled out. Please send comments regarding possible errors to the address above.

Disclaimer

Deficiencies arising from circumstances that are not the responsibility of Metrohm, such as improper storage or improper use, etc., are expressly excluded from the warranty. Unauthorized modifications to the product (e.g., conversions or attachments) exclude any liability on the part of the manufacturer for resulting damage and its consequences. Instructions and notes in the Metrohm product documentation must be strictly followed. Otherwise, Metrohm's liability is excluded.


[illegible][illegible]

1 Overview

1.1 dThermoprobe – Product description

The dThermoprobe and the dThermoprobe HF are thermometric sensors and record even the smallest of temperature changes that occur during a titration.

Both sensors are dTodes (digital sensors) für OMNIS.

 The dThermoprobe and the dThermoprobe HF are precision sensors and must be handled accordingly with appropriate care.

Selecting the sensor

Select the right sensor based on the application and chemicals in use.


*dThermoprobe –
6.01117.300*

This sensor can be used in either aqueous or nonaqueous solutions.

 This sensor may **not under any circumstances be used in acidic solutions containing fluoride!**

*dThermoprobe HF –
6.01118.300*

This sensor can also be used in acidic solutions containing fluoride (e.g. hydrofluoric acid). The components that come into contact with the solution are provided with a correspondingly resistant coating.

 This sensor may **not under any circumstances be used in organic solvents!**

1.2 dThermoprobe – Overview

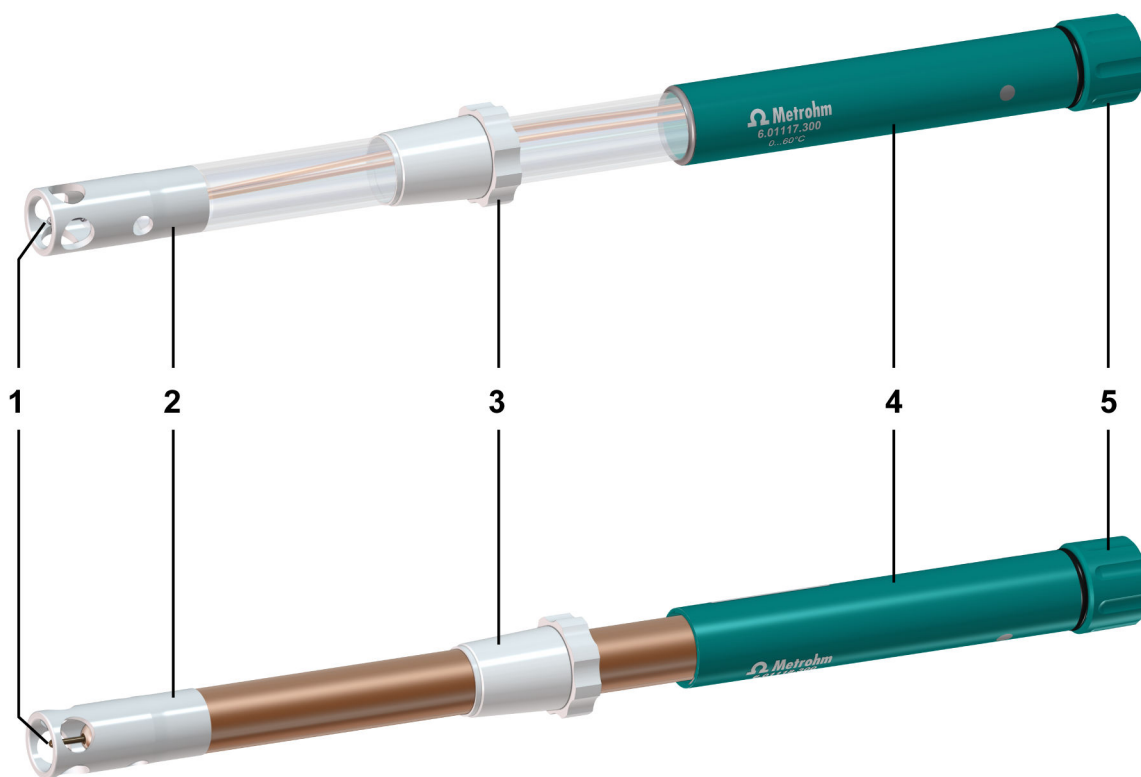


Figure 1 dThermoprobe / dThermoprobe HF – Overview

1	Thermistor	2	PTFE protective sleeve
3	Ground-joint sleeve	4	Sensor head
5	Protective cap		

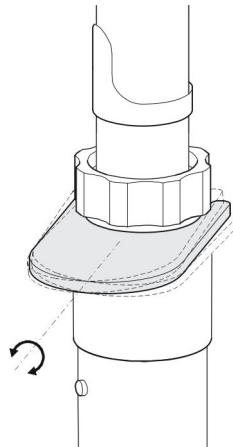



Figure 2 Loosening the sensor from the storage vessel

- Hold the sensor and storage vessel firmly in your hand so that the sensor cannot slip away.
- Position the tool between the storage vessel and the ground-joint sleeve.
- **Carefully** push the tool to the side to release the sensor.
Do not tip the tool **forwards**!

 If the sensor exhibits clear optical defects or damage, then the sensor will already be considered defective and should be sent in.

3.4 Storing the dThermoprobe

The sensor must be stored as follows to protect the dThermoprobe or the dThermoprobe HF from water, solvents, dust, and mechanical influences:

- 1 Screw the protective cap (1-5) onto the sensor head (1-4).
- 2 Store the sensor dry (in the storage vessel if possible).

4 Installation

4.1 Preparing the dThermoprobe

Cleaning the sensor

NOTICE

Damage to the dThermoprobe through incorrect handling

The sensor is rendered unusable and needs to be replaced.

Measures to be avoided:

- The thermistor (1-1) is very sensitive. Avoid impairment or damage.
 - Do not touch the thermistor with your fingers or with other objects (e.g. brushes or cloths).
 - **Never** remove the PTFE protective sleeve (1-2).
- **Never** clean the sensor in an ultrasonic bath.

! Clean the dThermoprobe **after every sample series** and **do not leave it in the solution once the titration has finished**.

Required accessories:

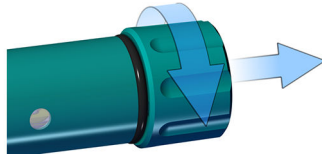
- Lint-free cloth
- Distilled water or another suitable solvent (e.g. H_2SO_4 for BaSO_4 precipitates)

Observe the resistance of the sensor: (see "Selecting the sensor", page 1)

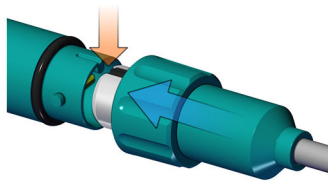
- 1 Rinse the dThermoprobe with a suitable solvent or immerse it. Make sure that the entire PTFE protective sleeve (1-2) is immersed in the process.
- 2 Carefully clean the outside of the shaft including the PTFE protective sleeve with a lint-free cloth. **Never** clean the inside of the PTFE protective sleeve.

Connecting the sensor

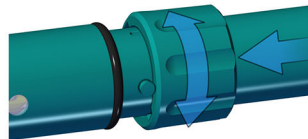
- 1 Unscrew the protective cap.



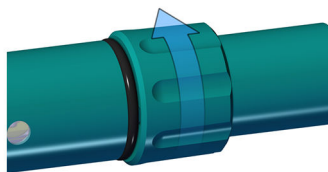
- 2 Position the cable connection on the sensor head in such a way that the slot in the cable connection is on the guide lug of the sensor head (orange arrow). Push the cable connection into the sensor head.



- 3 Guide the grooves of the cable connection over the guide lugs in the sensor head and push the outer ring of the cable connection all the way over the sensor head.



- 4 Push the cable connection onto the sensor head until it clicks into place, and then carefully tighten the outer ring by turning it one rotation in the direction of the arrow.



The sensor is now connected and ready for use.

- i** To replace the sensor, it must be removed from the electrode holder, after which its cable must also be removed. To remove the cable, hold the cable connection firmly, do **not** pull on the cable.

4.2 Mounting the dThermoprobe



Example of a mounted dThermoprobe

Mounting the sensor

- 1 To set the desired height, move the ground-joint sleeve (1-3) on the sensor.
- 2 Mount the sensor with the ground-joint sleeve in the electrode holder and press the ground-joint sleeve tightly.

Arrangement in the electrode holder

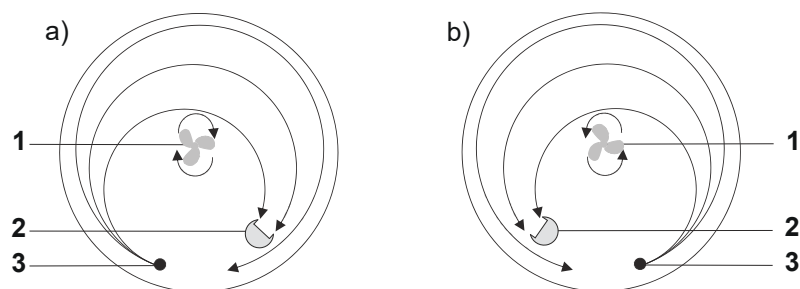


Figure 3 Diagrams showing rod stirrer, sensor and titration tip during a titration. a) clockwise stirring direction, b) counterclockwise stirring direction.

1 Rod stirrer

2 Sensor

3 Titration tip

Arranging the sensor

During the titration, it is important that the solution is mixed well. Set the stirring rate to form a vortex.

i If the stirring rate is too high, then air bubbles will be aspirated. Incorrect measured values may result. If the stirring rate is too low, then the solution is mixed only slowly and the response time or titration time increases accordingly.

To be able to measure in a well-mixed solution after the addition of the titrant, arrange the sensor according to the following criteria (titration tip may need to be repositioned):

- 1** Mount the titration tip (3-3) in a place where turbulence is high.
- 2** Mount the sensor in such a way that the path from the addition of the titrant (titration tip) to the sensor (3-2) is as long as possible.

Always observe the stirring direction (3-1).

6.1 dThermoprobe – Ambient conditions

6.2 dThermoprobe – Dimensions

Shaft diameter	12 mm
Maximum installation length	125 mm

6.01117.300 shaft material	Glass
6.01118.300 shaft material	PVDF-coated glass

6.5 dTodes – Display specifications

Status display	LED	green-red
-----------------------	-----	-----------

6.6 dThermoprobe – Measurement specifications

Temperature range 0–60 °C

Minimum immersion depth	15 mm
--------------------------------	-------

6.7 dThermoprobe – Analog measurement connection

Temperature


NTC 4.7 kOhm

Measuring range	-40 °C to +125 °C	
Resolution	0.0001 °C	
Measuring accuracy	±0.6 °C	in the measuring range 0.0 °C to +60.0 °C

Reference conditions

Relative humidity	≤ 60%	
Ambient temperature	+25 °C (±3 °C)	
Instrument status		min. 30 minutes in operation

Measuring accuracy	applies for all measuring ranges without sensor error, under reference conditions, measuring interval 100 ms
---------------------------	--

 Valid for the measurement contacts of the analog measurement connection installed in the sensor. These connections are not accessible after installation.