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better measurement



SCHMIDT[®] Verification Probe
SS 20.450
Instructions for Use

SCHMIDT® Verification Probe

SS 20.450

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Subject to modifications

1 Important information

These instructions for use contain all required information for a fast commissioning and a safe operation of **SCHMIDT® Verification Probe**:

- These instructions for use must be read completely and observed carefully, before putting the unit into operation.
- Electrical installation, commissioning and operation of the sensor may only be carried out by trained specialists. Safety and accident prevention regulations must be observed
- Any claims under the manufacturer's liability for damage resulting from non-observance or non-compliance with these instructions will become void.
- Tampering with the device in any way whatsoever - with the exception of the designated use and the operations described in these instructions for use - will forfeit any warranty and exclude any liability.
- The unit is designed exclusively for the use described below (see chapter 2). In particular, it is not designed for direct or indirect protection of personal and machinery.
- **SCHMIDT Technology** cannot give any warranty as to its suitability for certain purpose and cannot be held liable for errors contained in these instructions for use or for accidental or sequential damage in connection with the delivery, performance or use of this unit.

Symbols used in this manual

In the following section, all the symbols used in this manual are explained.



Important notes – Read carefully!

Non-observance of these instructions may lead to malfunction or destruction of the device.

Trademarks

The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by **SCHMIDT Technology GmbH** is under license.

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2 Application area & components

The **SCHMIDT® Verification Probe SS 20.450** (part no. 563540) is designed to verify fix installed operational flow sensors of type **SS 20.415**, **SS 23.400 ATEX** and **SS 20.515** in cleanroom applications.

The device consist of two pluggable components:

- The actual sensor probe **SS 20.450** (562950):
The probe measures flow velocity and features a unique mounting bracket, which allows an easy and reproducible mounting to the device under test.
- The battery powered Bluetooth®-module **BT 10.450** (563070):
It also powers the sensor probe and transmits its measurement data via Bluetooth® to a portable android device (operating system: Android 7.0 or higher).
To display and process the transmitted data the **SCHMIDT® Sensor App V1** is required (for detailed information see chapter 4).

3 General information

The **SCHMIDT® Verification Probe SS 20.450** is a precise measuring instrument with high sensitivity. Mechanical stress to the probe, in particular to the sensor chip inside of the probe head, must be avoided.



The sensor probe must not subjected to mechanil stress. Especially the sensor chip inside the probe head is very sensitive and can be easily destroyed.

Contamination of the probe head can lead to deviations in measurement results or even damage the sensor element and should therefore be avoided as far as possible (cleaning see chapter 5).

The sensor is equipped with a protective cap to protect the sensitive sensor element from contamination. That cap should only be removed when using the probe for measurements. After completion of the measurements, the protective cap should be put back on immediately.



Whenever the sensor probe is not in use the protective cap should be placed on the sensor head.

4 Operation

Commissioning

First of all the batteries (3 x LR44¹) have to be inserted into the Bluetooth[®] module observing the right polarisation (see Figure 1).

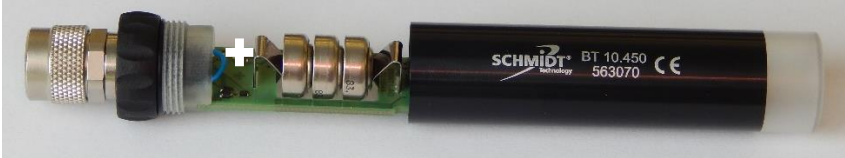


Figure 1 Module with batteries inserted – observe polarity (+)

After that, the probe has to be plugged into the module and the spigot nut of the connector (M9) must be screwed up completely.



By plugging the two components together, the **Verification Probe** is switched on.

Problems (functional, batteries are almost discharged) are indicated optically by red or blue LEDs (see chapter 5 for details).

Radio communication and measurement

As soon as the **Verification Probe** is functional, it searches for a compatible Bluetooth[®] device. This is displayed by three blue LEDs, which are flashing in rotational order (cycle period ca. 1 s).

The **SCHMIDT[®] Sensor App V1** has to be installed on said device (mobile phone or tablet PC). By activating the app's scanning feature, each compatible device will be listed that is found within the next 10 seconds.

Selecting the **Verification Probe** within this list will initiate the BT-connection. As soon as the connection is established, the optical pattern of the BT-module changes to rotating double flashes of the blue LEDs (cycle period ca. 1 s).

The system is now operational and the app displays, in addition to some sensor parameters, valid, constantly updated measured values.

Detailed information for using the **SCHMIDT[®] Sensor App V1** are described in its manual. Both, app and manual are available as download:

<https://schmidttechnology.de/service-support/service-support-fuer-sensorik/>

¹ Highdrain, alternatively silver oxide (SR44); zinc air cells (PR44) are not suitable.

Installation

Use the integrated mounting bracket to mount the **Verification Probe** to the device under test (e.g. with a SS 20.415 see Figure 2).

At first, unscrew the knurl screw of the bracket manually to such an extent that the U-shaped receiving fork is not blocked. Place the fork on the sensor tube, adjust position and alignment of the **Verification Probe** carefully and finally hand-tight the knurl screw.

Errors in positioning of the probe can lead to measurement distortions and should therefore be avoided.



To reduce measurement errors align the probe properly relative to the monitored device and the flow direction.

- The centre of the probe's measuring chamber should be parallel to the centre of the measuring element of the sensor:
 - SS 20.415:
The front edges of both sensors should be aligned.
 - SS 20.515:
The probe's centre of its measuring chamber should be aligned with the centre of the heater element from the dumbbell head.
- The probe's measurement direction (observe arrow on probe housing) should be parallel to the direction of the airflow.



The probe's measurement direction may deviate by a maximum of $\pm 3^\circ$ from the flow direction of the air.

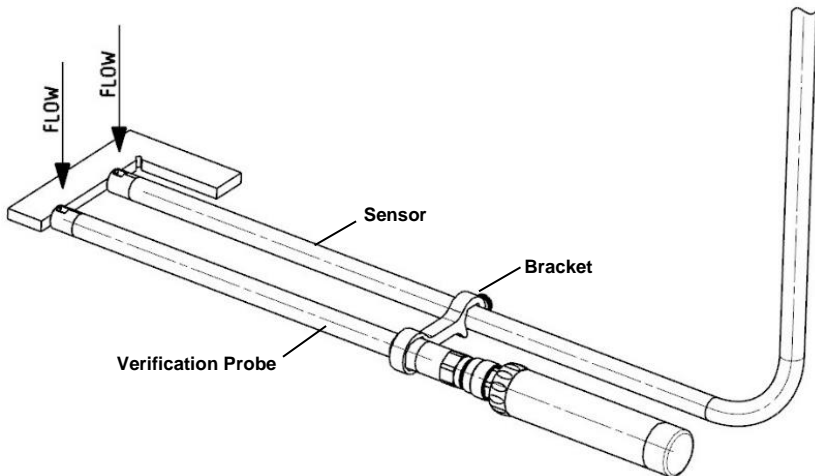


Figure 2 Alignment of sensor probe relative to monitored sensor (SS 20.415)

5 Service information

Troubleshooting

The following table lists possible errors and their signalling.

Furthermore, possible causes with remedial measures are described.



Causes of any error, which is signalled, have to be eliminated immediately; otherwise, no reliable operation can be guaranteed.

Error image BT-module	Possible cause	Remedy
No LED light flashing	<ul style="list-style-type: none">➤ Wrong polarisation of batteries or batteries empty➤ BT-Module defective	<ul style="list-style-type: none">➤ Check polarisation and energy state of batteries➤ Send in Verification probe for checking / repair
Blue LEDs are flashing in rotational order (cycle period ca. 3 s)	<ul style="list-style-type: none">➤ No data connection between BT-module and probe	<ul style="list-style-type: none">➤ Send in Verification Probe for checking / repair
Blue LEDs are flashing & All red LEDs flashing simultaneously (repetition 1 s)	<ul style="list-style-type: none">➤ Batteries almost empty	<ul style="list-style-type: none">➤ Replace Batteries
Error image APP	Possible cause	Remedy
No BT device found	<ul style="list-style-type: none">➤ BT-Module dysfunctional➤ BT-Module out of range	<ul style="list-style-type: none">➤ See above, first row➤ Place BT-module less than 3 m away from mobile device and try again
Display: „Batteries nearly empty“	<ul style="list-style-type: none">➤ Residual life time of batteries less than 1 h	<ul style="list-style-type: none">➤ Replace batteries soon
Display: „Batteries empty“	<ul style="list-style-type: none">➤ Batteries almost empty	<ul style="list-style-type: none">➤ Replace batteries immediately
No or wrong readings	<ul style="list-style-type: none">➤ Probe soiled or defective	<ul style="list-style-type: none">➤ Clean sensor head➤ Send probe in for repair

Transport / dispatch of the sensor

For transportation or dispatching of the **SCHMIDT® Verification Probe SS 20.450**, it must be well protected against vibrations and shocks. Ideally, the device is shipped with fitted protective cap and in its original packaging.



Soiling, mechanical stress and / or touching of the sensor element should be avoided.

Cleaning

A strongly soiled or wetted sensor element will be detected by the electronics and signalled in the app. In this case, clean the probe head as described below. If the error signal does not disappear after cleaning and drying, the probe must be sent in to the manufacturer for repair.

If the probe tip is soiled or dusty, it can be carefully cleaned by means of compressed air (avoid strong pressure impulses!). If this procedure is not successful, clean the tip by immersing and washing it in alcohol, which dries without leaving residues (e.g. isopropyl alcohol). As soon as the alcohol has been evaporated, the sensor is again ready for operation.



- Never touch the sensor element inside the probe head!
- Do not shake or tap the wet probe!
- Do not try to clean the sensor tip by any type of mechanical methods.
- Do not use strong cleaners, brushes or other objects like fluffy cloths etc. to clean the sensor tip!

Calibration

If the customer has made no other provisions, we recommend repeating calibration at a 12-month interval.

Therefore, the sensor probe **SS 20.450** has to be sent in to the manufacturer.

Repair

Repair of any of both components is only possible at the manufacturers. In case of defects, the complete **Verification Probe** must be sent in to the supplier for repair.

In addition, a completed declaration of decontamination, in conjunction with all shipping documents, must be attached at the outside of the shipment package.

The appropriate form “Declaration of decontamination” is enclosed to the sensor. Alternatively, it can be downloaded from:

www.schmidt-sensors.com or www.schmidttechnology.de

Test and material certificates

Every new **Verification Probe** is accompanied by a certificate of compliance according to EN10204-2.1. Material certificates are not available

A factory calibration certificate is also included, the calibration equipment is traceable to national standards.

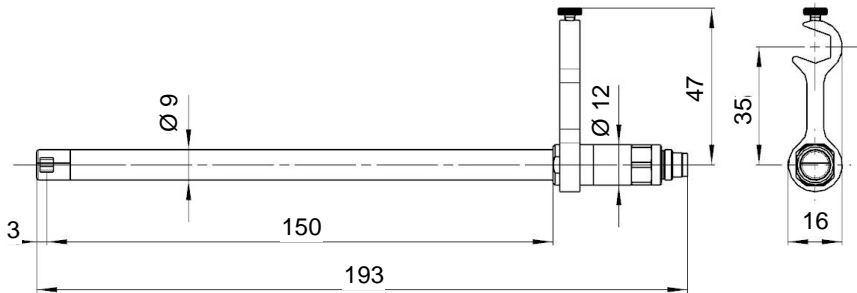
6 Technical data

Sensor type	Thermal flow sensor
Measurand	Standard velocity w_N of air, based on standard conditions of 20 °C and 1013.25 hPa
Medium to be measured	Clean air
Measuring range (MR) w_N	0 ... 1 / 5 / 10 m/s
Measuring direction	Unidirectional
Lower detection limit w_N	± 0.05 m/s
Measuring accuracy w_N	MR = 1 m/s: $\pm(1\%$ of reading + 0.025 m/s) Other MR: $\pm(2\%$ of reading + 0.8 % of range)
Response time (t_{90}) w_N	Approx. 5 s
Mounting position	Relative to flow direction: $\pm 3^\circ$ Relativ to gravity: Arbitrary
Operating pressure	Atmospheric (700 ... 1,300 hPa)
Humidity range	Non-condensing ($\leq 95\%$ rH)
Bluetooth®	BLE 4.2
Range	Max. 50 m (free field; less in buildings)
Optical signalling	Blue LEDs: Bluetooth® connectivity Red LEDs: Problems with probe / batteries
Batteries	3 coin cells of type LR44 ² / SR44
Battery lifetime	Typ. 7 h
Electrical connection	M9, 5-pin, spigot nut at BT-module
Operating temperature	0 ... +60 °C
Protection type	IP64 (housing when plugged & closed properly)
Protection class	III (SELV) / PELV (EN 50178)
Material	Probe: Stainless steel 1.4404 Module: PA, PVC
Weight	Probe: 52 g (incl. bracket) Module: 32 g (incl. batteries)

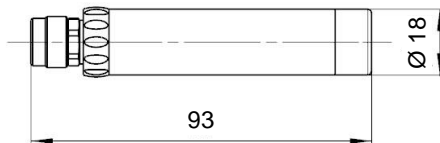
² High drain; air zinc coins are unsuitable

7 Dimensions

SS 20.450



BT 10.450



All dimensions are indicated in mm.

8 Declarations of conformity

SCHMIDT Technology GmbH herewith declares in its sole responsibility, that the product

SCHMIDT® Verification Probe SS 20.450

Part-No. **518 210**

is in compliance with the appropriate



European guidelines and standards

and



UK statutory requirements and designated standards.

The corresponding declarations of conformity can be download from **SCHMIDT®** homepage:

www.schmidt-sensors.com

www.schmidttechnology.de



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