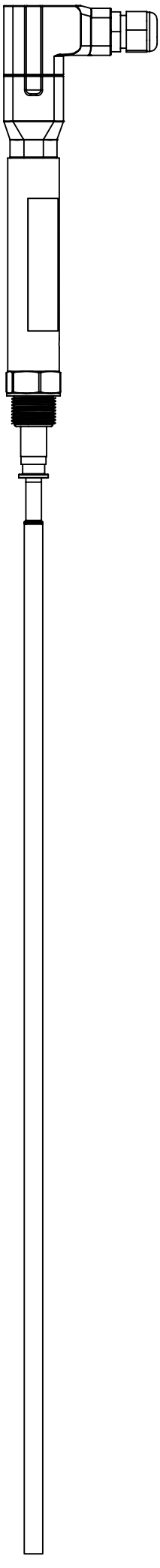

SMLD 1000
Self Monitoring Low Water Level Limiter Probe

Installation, Operating and Maintenance Instructions

Local regulations may restrict the use of this product to below the conditions quoted.
In the interests of development and improvement of the product, we reserve the right to change the specification without notice.

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EN
ENGLISH

1. Safety Notes

The product is designed and constructed to withstand the forces encountered during normal use. Use of the product for any other purpose, or failure to install the product in accordance with these Installation and Maintenance Instructions, could cause damage to the product and may cause injury or fatality to personnel.

The SMLD 1000 level limiter probe and SMK 1000 level limiter comply with the requirements of the Pressure Equipment Directive (PED) and carry CE mark. The are classed as Safety Accessories and fall within Category 4 of the Directive.

If this product is not used in the manner specified by this user manual, then the protection provided may be impaired.

1.1 Intended Use

The level limiter probe SMLD 1000 is designed for use in conjunction with Vira low water level limiter SMK 1000.

Check that the product is suitable for use with the intended fluid.

Check material suitability, pressure and temperature limits. Do not use product out of limits. It may cause malfunction which can result in a dangerous overpressure or overtemperature.

Vira products are not designed to withstand the external stresses they may be exposed to in any system in which they are installed. It is the installer's responsibility to consider these stresses and take adequate measures to minimize them.

Remove protection covers from all connections before installation on steam or other high temperature applications.

Determine the correct installation position and direction of fluid flow.

Danger!

When loosing the level electrode steam or hot water might to escape. This presents the danger of severe scalds to the whole body.
Do NOT remove the level probe unless the boiler pressure is verified to be 0 bar.
The level switch becomes hot during operation.
Risk of severe burns to face, hands and arms.
Before carrying out installation and maintenance work make sure that the equipment is cold.

Tools

Before starting work, make sure that you have suitable tools and consumables available.
Use only genuine Vira replacement parts.

Temperature

After isolation, let the temperature to cool down to avoid danger of burns.

Freezing

Required precautions must be taken to protect products in environments where they may be exposed to temperatures below freezing point.

Pressure

Ensure that any pressure is isolated and safely vented to atmospheric pressure. Do not assume that the system has depressurized even when the pressure gauge indicates zero. exposed to temperatures below freezing point.

Access

Ensure safe access and if necessary a safe working platform (suitably guarded) before attempting to work on the product. Arrange suitable lifting gear if required.

Residual Hazards

The external surface of the product may be very hot. Take essential care when removing the product from an installation.

Hazardous Environment

Plant rooms are explosion-risk areas. There may be a lack of oxygen, dangerous gases, extremes of temperature, hot surfaces, fire hazards excessive noise, and moving machinery.

Protective Clothing

In order to be protected against the hazards of chemicals, high temperature, radiation, noise, falling objects, and dangers to eyes and face, anyone around requires protective clothing suitable in the plant room.

Supervision

All work must be carried out or supervised by a suitably competent person. Installation and operating personnel should be trained in the correct use of the product according to the Installation and Operation Instructions.

Disposal

Unless otherwise stated in the Installation and Operation Instructions, this product is recyclable and no ecological hazard is anticipated with its disposal providing due care is taken.

Returning Products

When returning products to “Vira Isı ve Endüstriyel Ürünler A.Ş” the customers must provide information on any hazards and the precautions to be taken due to contamination residues or mechanical damage which may present a health, safety or environmental risk.

Safety Note – Specific for level control and alarm (limiting) Products in steam boilers

•Two independent low water limiting / alarm systems must be installed on steam boilers. Level probes must be installed in separate protection tubes/chambers, with sufficient clearance between the tips, and earth.

•Each probe must be connected to an independent controller. The alarm relays must isolate the boiler heat supply at low alarm status.

•A high water alarm may be part of the water level control, or a separate system. An independent high water alarm system must be fitted if it is considered a safety requirement. In this case, the relays must simultaneously isolate the feedwater supply and the boiler heat supply at high alarm status. All boiler water limiters/alarms require regular functional testing.

•A suitable water treatment system must be used to ensure continuous safe and correct operation of the control and alarm (limiter).

Products / systems must be selected, installed, operated and tested in accordance with:

- Local or National standards and regulations (EN 12952, EN 12953, TS 2025 and etc.)
- The requirements of Approval Authorities (Local or International)
- Boiler Insurance Bodies
- Boiler Manufacturer's Specifications
- Guidance Notes systems. Consult a competent water treatment company.

2. General Information

2.1 Description

The Vira SMLD 1000 level limiter probe is deigned for use with a vira level limiter SMK 1000 to provide self monitoring low level alarm in steam boilers and other vessels. The level probe in supplied in 3 nominal length 500, 1000 and 1500 mm and is cut to the exact length required prior to installation.

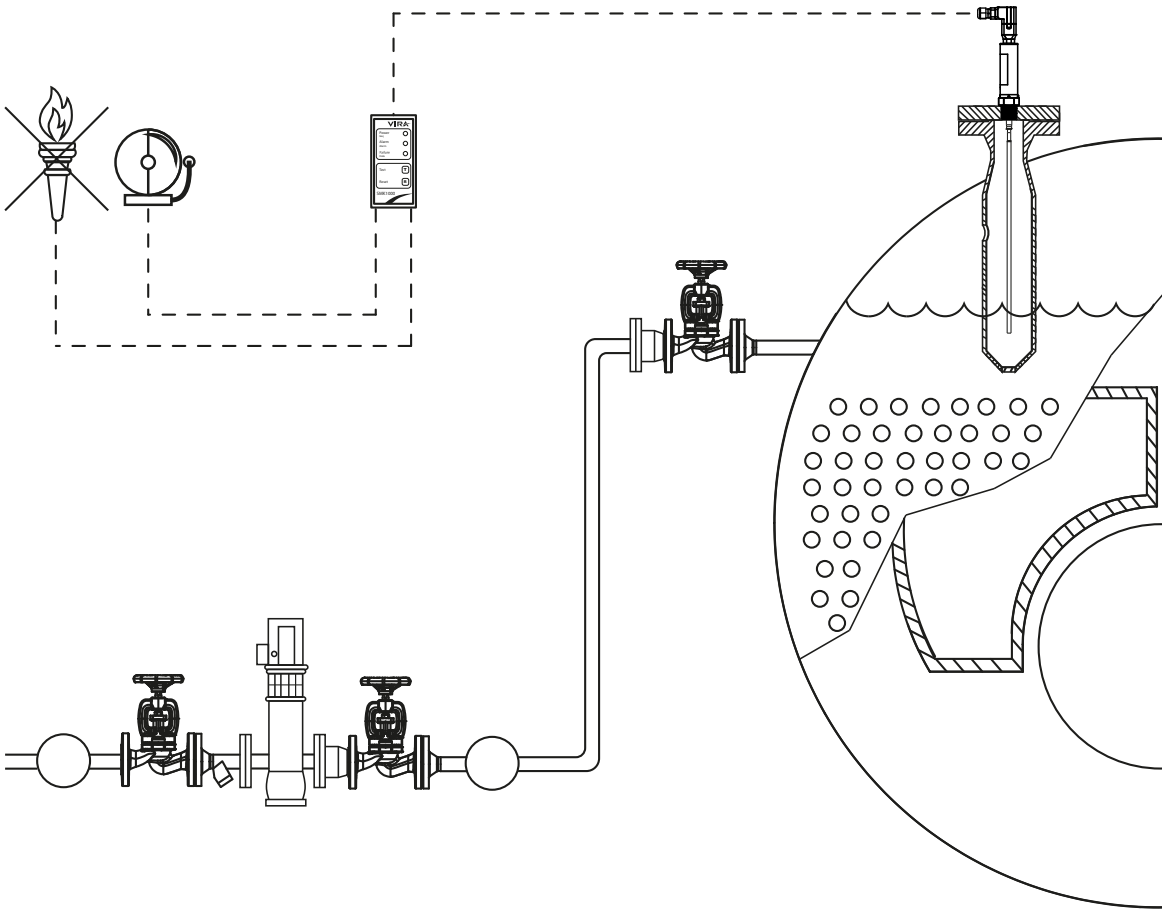


Figure 1 : SML 1000 System Aplication

2.2 Technical Data

Service Pressure and Temperature
PN 40, 32 Bar g at 239°C

Mechanical Connection
Screwed BSPT 1/2”

Materials

Screw-in Body	**:**	Stainless Steel
Electrode Rods	**:**	Stainless Steel
Insulation of Electrode Rod	**:**	PTFE
Connector Housing	**:**	PA

Electrode Rods

Lenght Supplied	**:**	1000mm (standard lenght)
Diameter	**:**	10mm

Note : 500, 1000 and 1500 mm lengths are available.

Maximum Cable Length **:** See controller installation, operating and maintenance instructsions.
Degree of Protection **:** IP 54

2.3 How it Works?

The probe has a probe tip and a comparator tip. The earth return path is provided by the body connection.

In normal operation of steam boiler, the probe tip is immersed, and the resistance to earth is low. When the water level drops below the probe tip and the resistance to earth becomes high. High resistance causes the level limiter to give a low level alarm signal.

The comparator tip compensates for any leakage to earth caused by scale, dirt or internal moisture, ensuring a low water alarm signal even under adverse conditions.

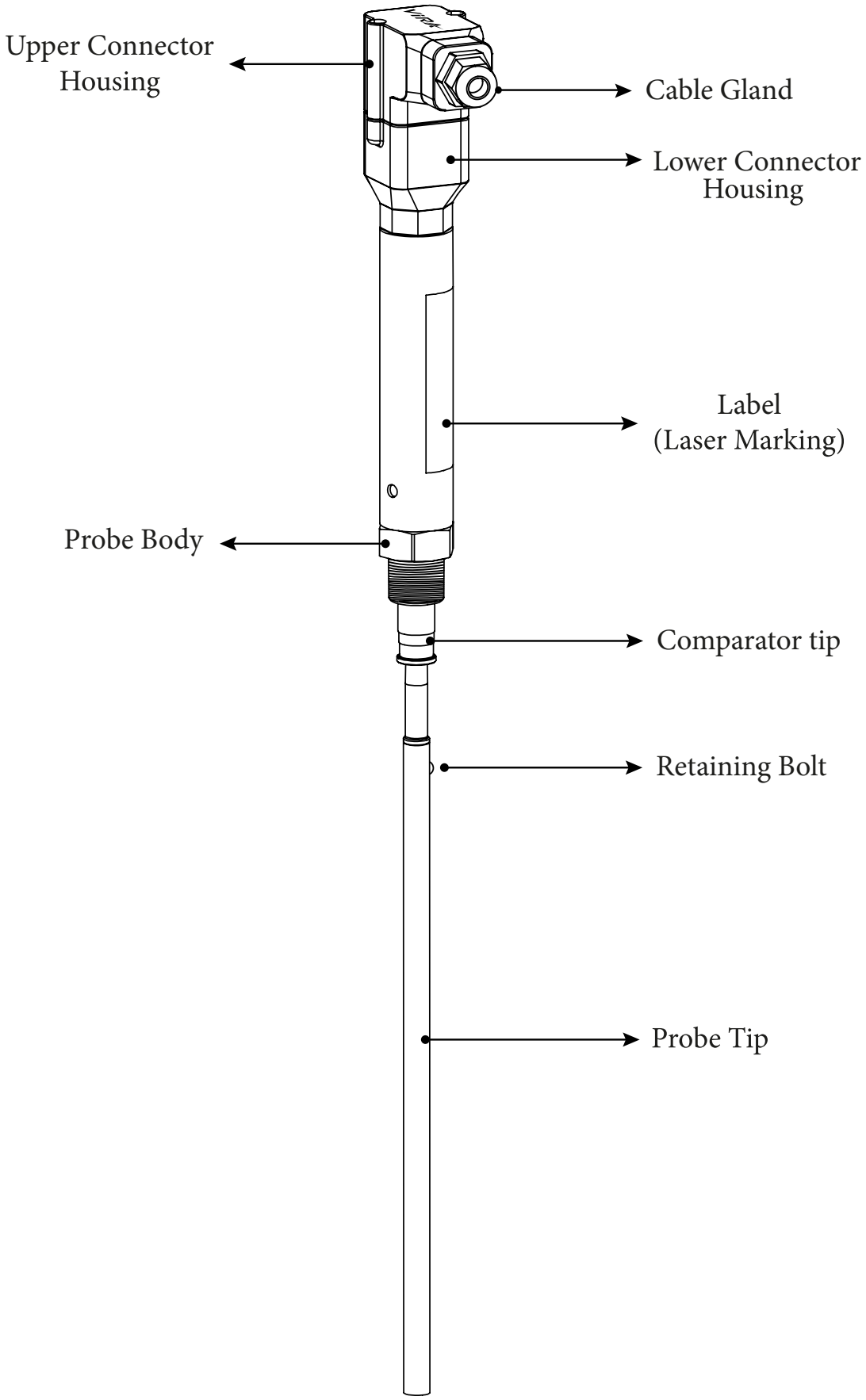


Figure 2 : Material description of SMLD 1000

3. Installation

3.1 General

Note : Before proceeding with any installation or maintenance, please read safety notes.

The probe is installed in the boiler shell or in a protection tube. It can also be mounted in an external chamber if regulations permit. For installation examples, see figures 3,4 and 5.

In most shell and tube boilers the water will "swell" when it's firing. During firing, actual water level will be higher than the level shown in the gauge glass. In practise this can be up to 50 mm in very large boilers, 10 mm in smaller boilers. This difference must be taken into consideration when cutting the probe tip to length.

Therefore, second low level alarm should be well above the bottom of the gauge glass when the boiler is cold. This level will reduce when the boiler is firing. The first low level alarm may be 20 mm above second low level alarm.

Wherever possible the boiler manufacturer should be consulted for advice on the working and alarm levels.

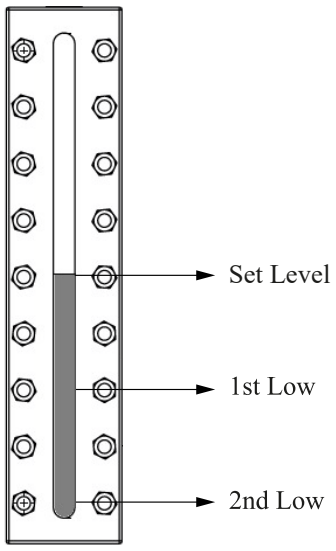


Figure : Low Alarm Levels.

- Install the level probe only in vertical position.
- Do not bend probe tips when mounting!
- Do not insulate probe thread with hemp or PTFE tape!
- Observe the minimum distances for the installation of the probe!
- Do not expose electrode tips to physical shocks.
- Do not apply conductive paste or grease to the probe thread! Do not use excessive tape!
- Make sure that the air distance between the electrode tips and earth is not less than 14mm!

Warning !

Ensure that the probe is positioned at least 1 meter away from any safety valve or steam take-off since it can cause increased localised water level.

3.2 Installation Procedure

• Mark the electrode tip with a water soluble felt pen and dip the boiler to find the depth from the top of the probe mounting flange to the water level. This level can also be obtained by the level seen in gauge glass.

• Cut electrode to the desired length.

• Deburr the end faces of the electrode tips.

• Before mounting level probe, ensure that retaining bolt is tightened and boiler water is at the required low alarm level.

• Check sealing surfaces

• Place supplied joint ring onto seating surface of the threaded standpipe of flange.

• Use up to three turns (no more) of PTFE thread sealing tape on the probe thread.

• Fit and tighten the probe by hand initially. Screw the level probe into the threads or flange and tighten with a suitable open-end spanner.

• Due to the nature of a taper/parallel joint it is not possible to recommend tightening torque figures.

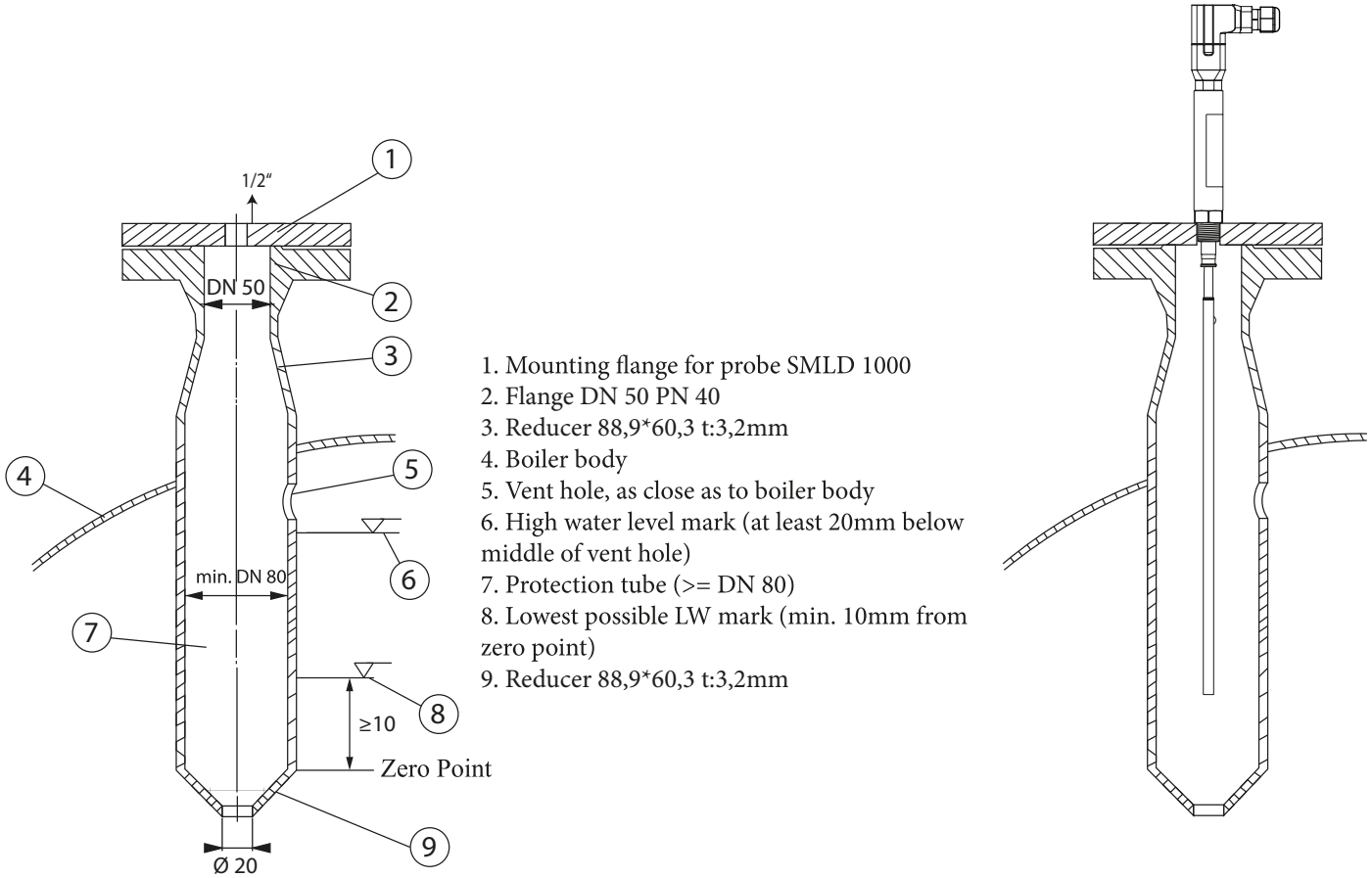
• Make sure there is enough space between the level probe electrode and the protection tube.

Warning !

Failure to tighten the retaining bolt may cause the tips loosing or falling off.

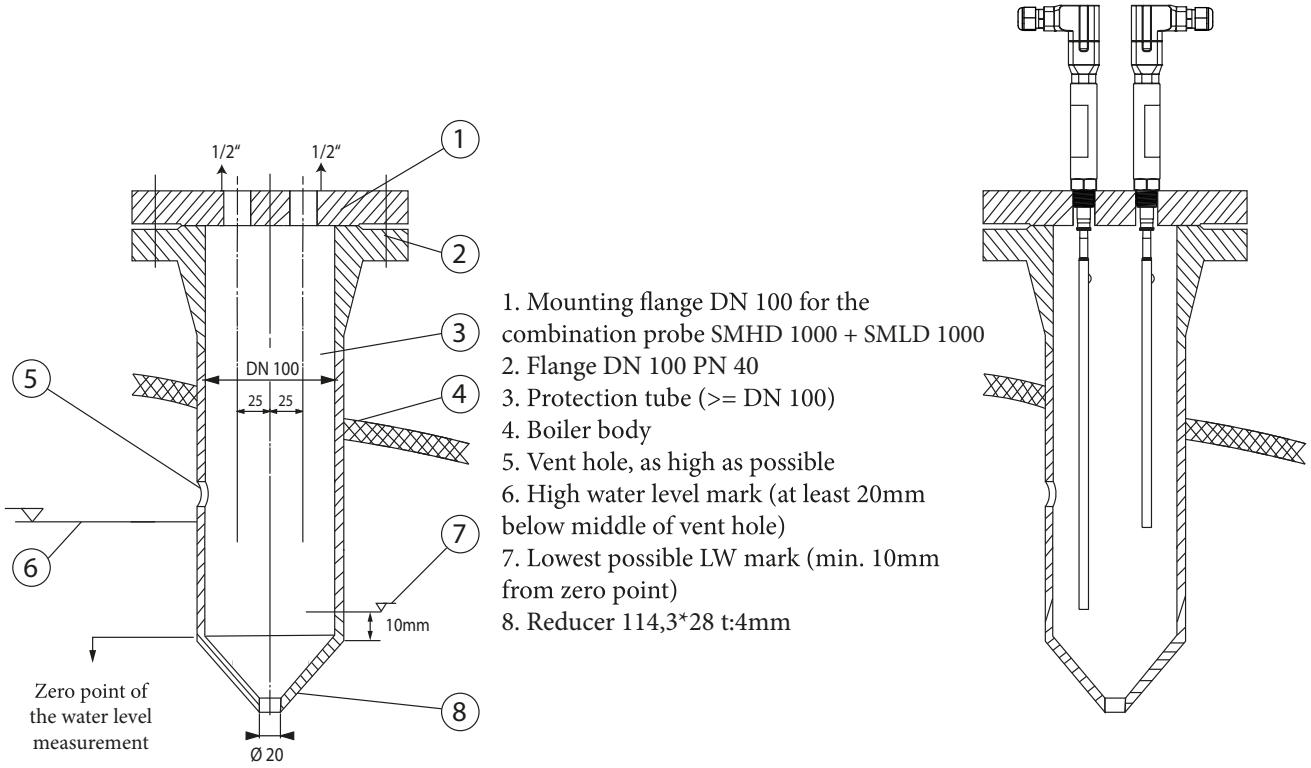
3.4 Examples of Installation

• The boiler manufacturer should be consulted for advice on the working and alarm levels.



1. Mounting flange for probe SMLD 1000
2. Flange DN 50 PN 40
3. Reducer 88,9*60,3 t:3,2mm
4. Boiler body
5. Vent hole, as close as to boiler body
6. High water level mark (at least 20mm below middle of vent hole)
7. Protection tube (>= DN 80)
8. Lowest possible LW mark (min. 10mm from zero point)
9. Reducer 88,9*60,3 t:3,2mm

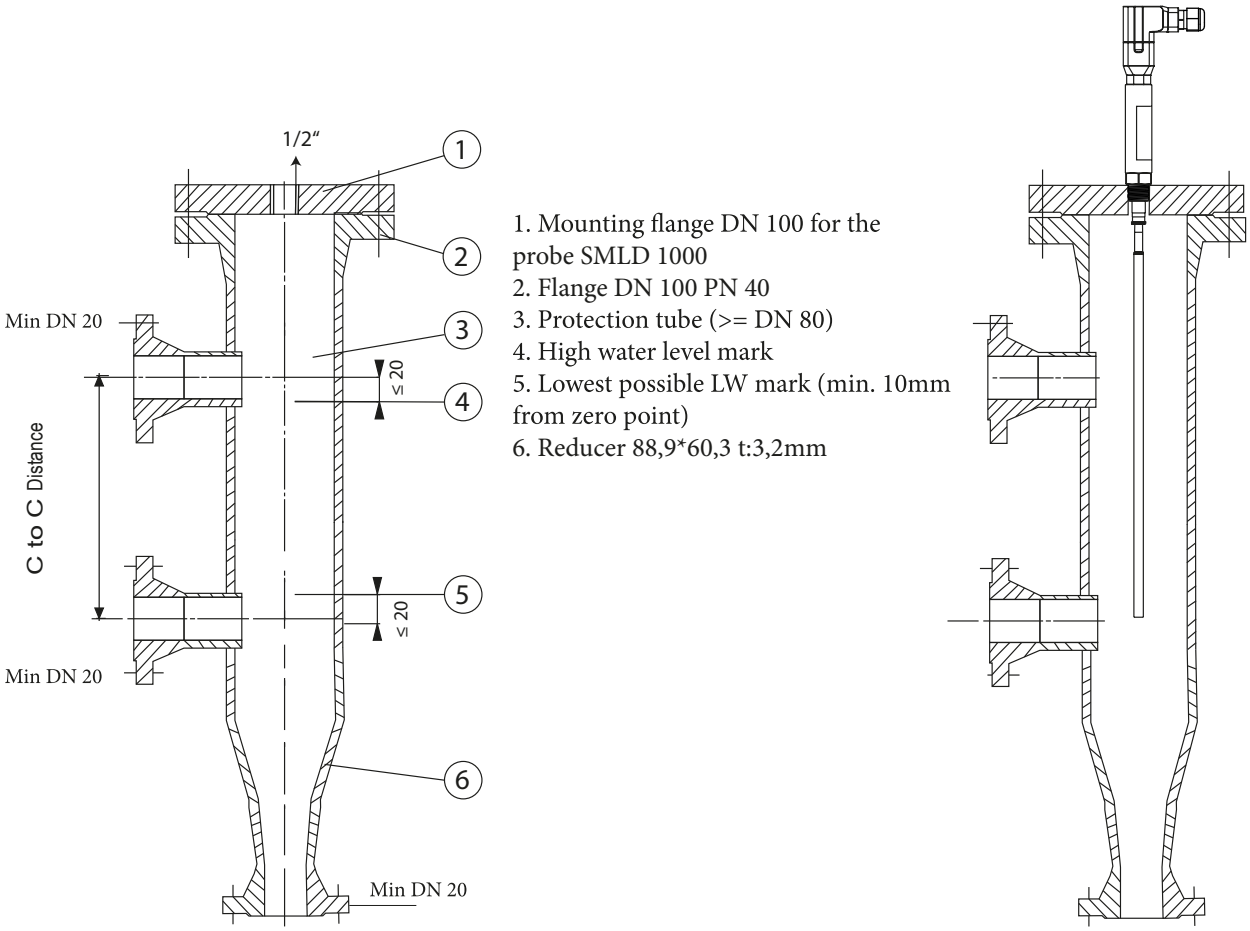
Figure 3 : Installation example 1, usage with protection tube inside the boiler.



1. Mounting flange DN 100 for the combination probe SMHD 1000 + SMLD 1000
2. Flange DN 100 PN 40
3. Protection tube (>= DN 100)
4. Boiler body
5. Vent hole, as high as possible
6. High water level mark (at least 20mm below middle of vent hole)
7. Lowest possible LW mark (min. 10mm from zero point)
8. Reducer 114,3*28 t:4mm

Figure 4 : Installation example 2, combination with self monitoring low level alarm probe SMLD 1000

Note : The lowest water level should be higher than the zero point.



1. Mounting flange DN 100 for the probe SMLD 1000
2. Flange DN 100 PN 40
3. Protection tube (>= DN 80)
4. High water level mark
5. Lowest possible LW mark (min. 10mm from zero point)
6. Reducer 88,9*60,3 t:3,2mm

Figure 5 : Installation example 3, usage with protection tube outside the boiler.

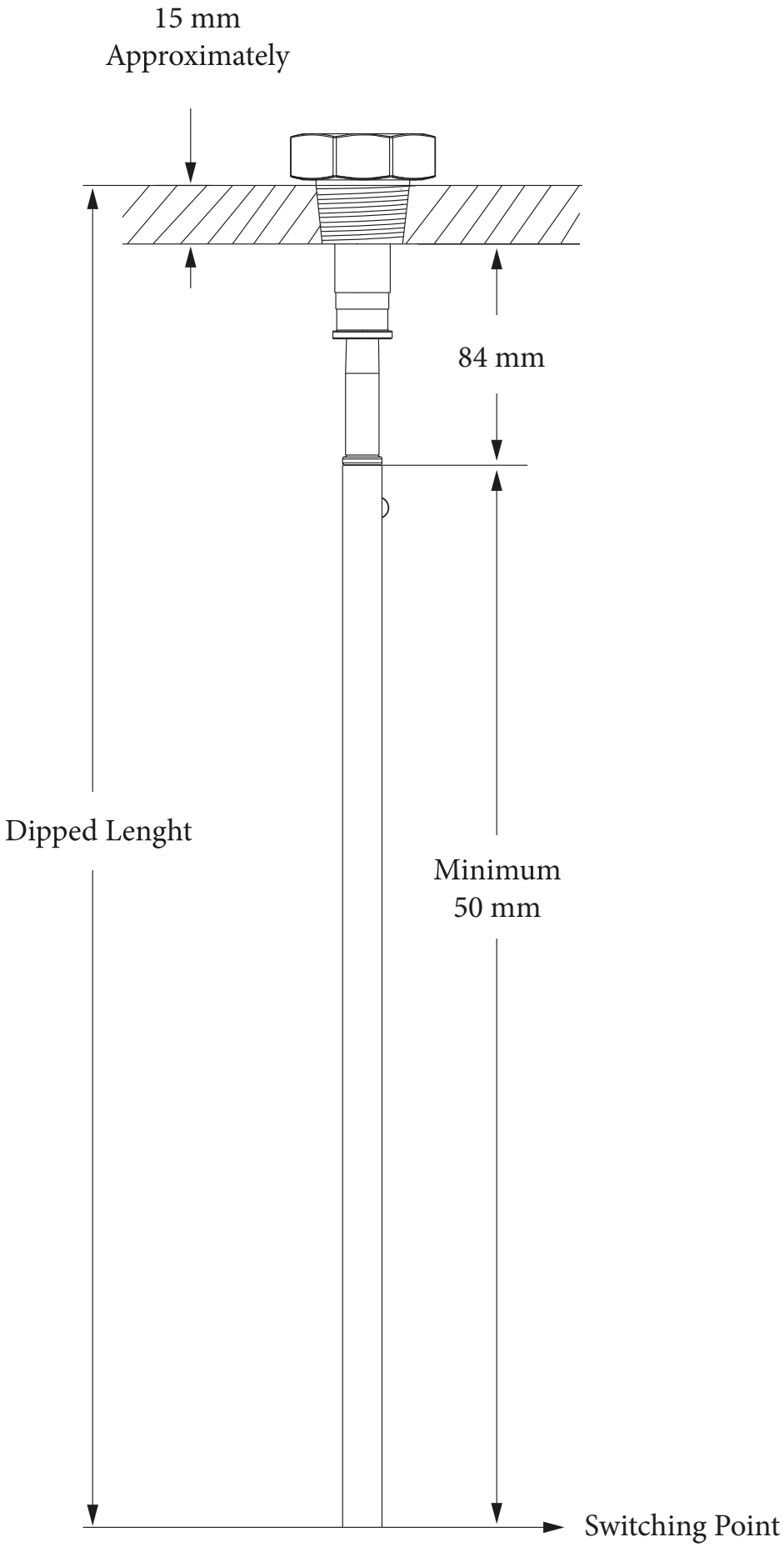


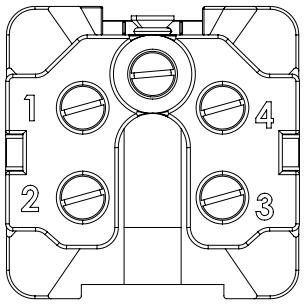
Figure 6 : SMLD 1000 Probe length indication.

4. Wiring

4.1 Connection

Use 4-core (3-core and earth) minimum 0,5 mm^2 high-temperature cable. **The Cable must be screened!** For detailed cable specifications check SMK 1000 controller Installation, Operating and Maintenance Instructions. The SMLD 1000 probe is supplied with heavy duty connector with 5 terminal. 3 of them is for connection to the probe tips and 1 for the probe body earth connection. **Connector number 4 is empty.**

Note: Please do not use unconnected terminals.



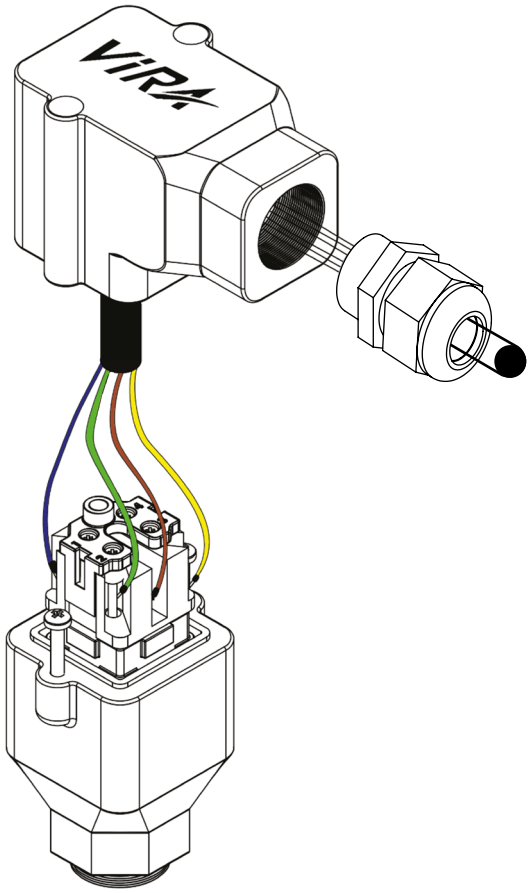


Figure 7 : Wiring layout

Note: The wire colors are for illustration purposes only. Different colors can be used in the actual application.

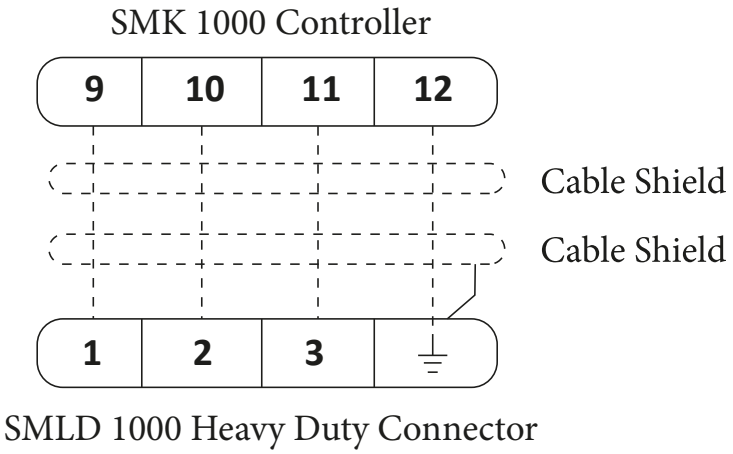


Figure 8 : Wiring diagrams

Note: As shown in figure 8 the cable shield is left unconnected in controller side. Please only wire cable shield on the probe side.

Attention

Do not install low-voltage cables near high-voltage cables or switchgear, as this may reduce the performance of, or cause damage to the product. Probe cables must not use the same conduit / wiring trays as power cables or other wiring. Ensure internal wires have not been stressed or damaged during installation.

An earth current loop is created if a wire or screen is connected between two earth points that are at different potential (voltage). If the instructions are followed correctly, then the probe Cable screen will only be connected to earth at one end.

Attention

• Ensure that the screen is only connected to earth terminal of the probe.

• Do not connect the common terminal to earth local to the controller. To do so may induce an earth current loop, which may reduce performance or damage the product.

5. Maintenance

The probe does not normally need regular maintenance. Remove, clean, and check the probe annually.

Where regular tests are carried out properly in a well run boiler house with good water treatment, it may be that only twice or an annual inspection of the probe is required. This inspection programme must be determined by the boiler inspector.

Please follow this procedure during the inspection;

• Depressurise and vent boiler or vessel.

• Before carrying out installation and maintenance work make sure that the equipment is cold.

• Disconnect the electrical supply to controller.

• Remove probe upper connector.

• Remove probe. When loosening the level electrode steam or hot water might escape. This presents the danger of severe scalds to the whole body.

• Check condition of probe.

• Clean probe tips and insulation if necessary. Use a soft brush or cloth dampened with tap water. Use of other cleaning materials could damage the product and invalidate the warranty. Do not use abrasive or conductive products such as steel wool.

• Inspect the wiring between probe and controller, and the controller supply wiring.

• Check the controller for damage.

• Reassemble and carry out a full functional check of the equipment.

6. Spare Parts

Stock Code		Description
8801 0000 0007	:	Upper Connector
3210 3000 0004	:	Upper Connector Housing

7. Technical Assistance

For technical assistance or service requests, please directly contact Vira service center by making a phone call or sending an e-mail to **servis@viraisi.com.**

Return faulty or service items to Vira itself or authorized agency in your area. Ensure all items are suitably packed for transit (preferably in the original cartons).

Please provide the following information with any equipment being returned:

- Your name, company name, address and telephone number, order number and invoice and return delivery address.
- Description and the serial number of equipment.
- Full description of the fault or repair required.
- If the equipment is being returned under warranty, please indicate the date of purchase.

The manufacturer reserves the right to make change without prior notification.

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