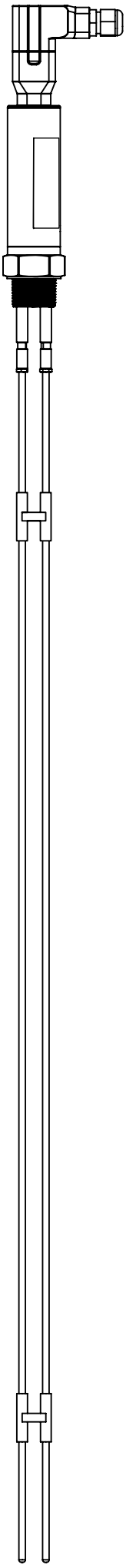


SD 1200
Level Probe

Installation, Operating and Maintenance Instructions

- Safety Notes
- General Information
- Installation
- Wiring
- Maintenance
- Spare Parts
- Tecnical Assistance

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.

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.

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 probe SD 1200 is designed for use in conjunction with the Vira level controller SK 1200. The level probe SD 1200 is designed to detect and signal 2 different liquid levels and works in condensate and feedwater tanks, steam boilers, and (pressurized) hot-water installations.

Use this installation and operating instructions and the technical data sheet to check whether the device is suitable for the intended use/application. The device complies with the European Pressure Equipment Directive 2014/68/EU requirements.

The maximum values of the pressure and temperature range of the device must be checked before installation. If the maximum allowable operating values of the device are lower than those of the system on which it is to be installed, protective instruments for the device, such as pressure reducers or similar, must be provided to avoid limit situations.

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.

The operator of the facility is obliged to familiarise himself with the compatibility of the medium and the device. In case of doubt, contact the relevant installation manager or site manager. The correct installation position, alignment and flow direction of the device must be observed! Before installing the VIRA product on boilers or containers, it is essential to remove all protective covers.

Safe operation of this product can only be guaranteed if these conditions are satisfied. General installation and safety instructions for pipeline and plant construction, as well as the proper use of tools and safety equipment, must also be complied with.

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 Manufacturer's Specifications

Note: SD 1200 level probe does not have self monitoring function. Therefore, it should not be considered as an independent level limiter. An additional self monitoring level limiter must be used.

2. General Information

2.1 Description

The Vira SD 1200 level probe is designed for use with a Vira level controller SK 1200 to provide two different alarm (high or low) functions in steam boilers, tanks, or other vessels. The level probe SD 1200 is also suitable for use with a wide range of conductive liquids.

The probe may also be used in non-conductive tanks by providing a separate earth rod or plate. The SD 1200 probe has two detachable level sensing tips which are cut to length on installation to give the required switching levels.

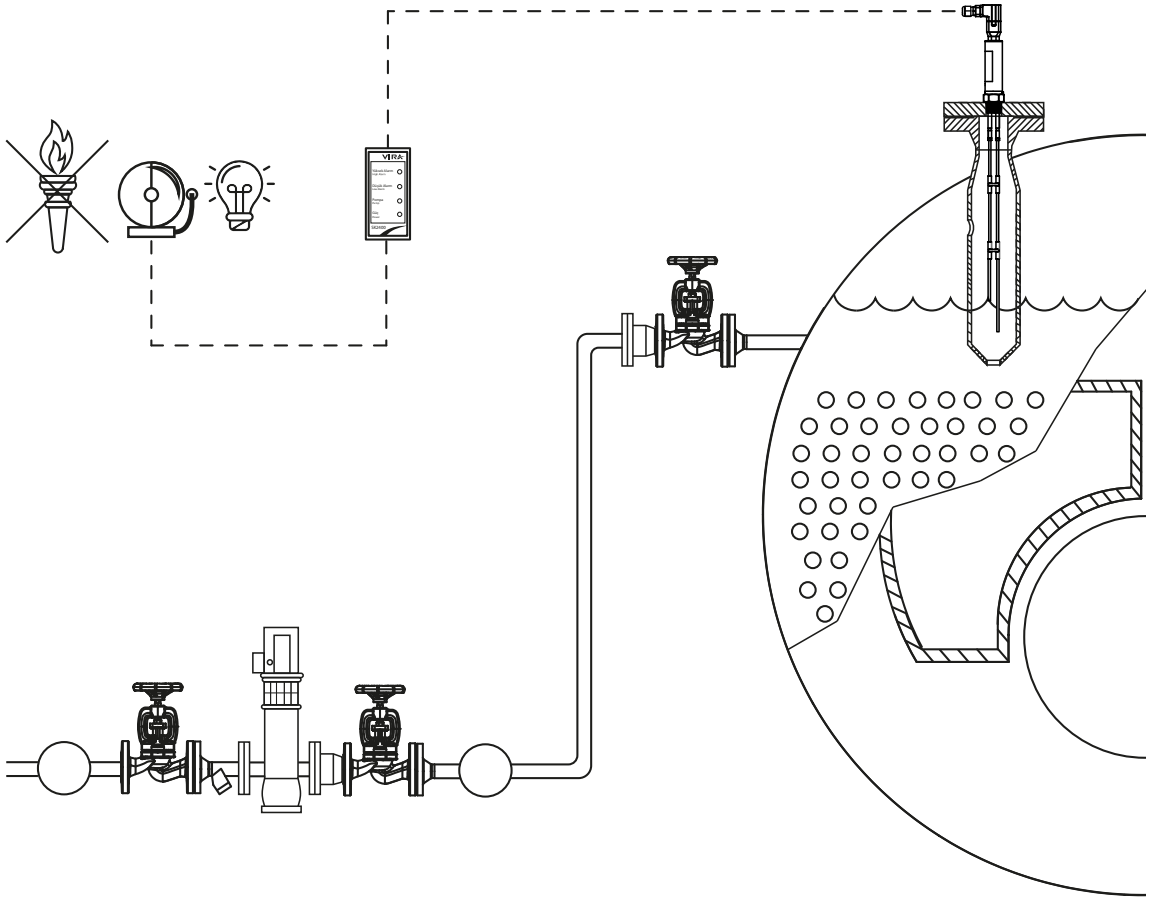


Figure 1 : SK 1000 System Application

2.2 Technical Data

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

Mechanical Connection
Screwed BSPT 1”

Materials

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

Electrode Rods

Lenght Supplied	**:**	1000mm (standard Lenght)
Diameter	**:**	5mm

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

2.3 How it Works?

The SD 1200 has two extension tips which can be cut to the desired length on installation to give the required switching levels. The probe body is earthed through its 1” screwed connection, and the boiler or tank naturally forms the earth return path. If the probe is to be used in a non-conductive tank, use one of the tips as an earth return or provide a separate earthing rod or plate.

When a tip is touched by a conductive liquid, it completes an electrical circuit to earth. When the level drops below the tip, the resistance to earth increases, signalling the controller that the tip is not in contact with the liquid.

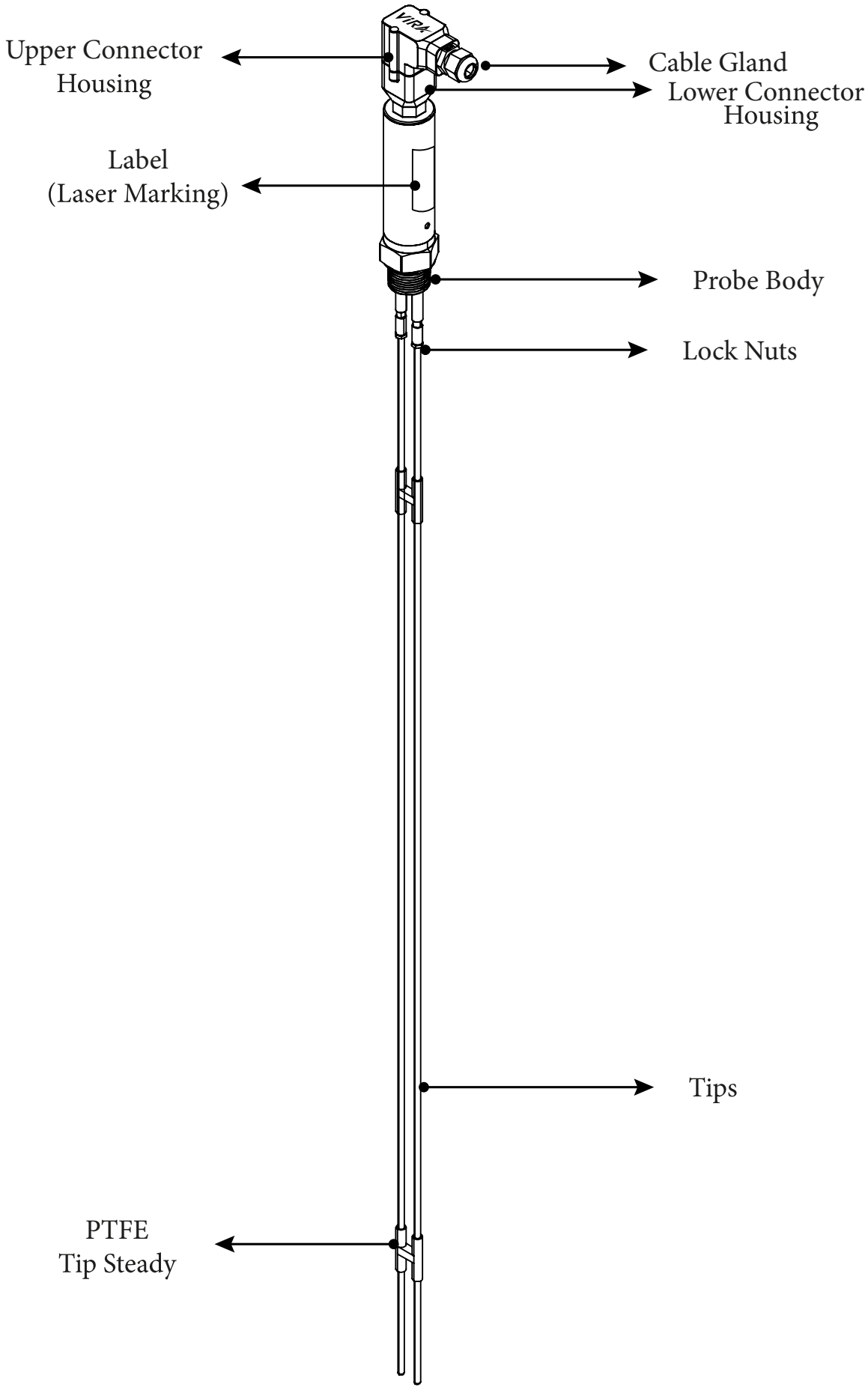


Figure 2 : Material description of SD 1200

3. Installation

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

Warning !

The tip steady is an essential part of the probe and must be fitted. Failure to fit the tip steady may lead to short-circuits between the tips, or by the tips touching the protection tube - a potentially hazardous situation.

3.1 General

- For steam boiler applications, the probe may be installed in an external chamber or inside the boiler.
- For the approval of the boiler standpipe the relevant regulations must be considered.
- Refer to page 9 and 10 for typical installation examples.

3.2 Installation Procedure

- Determine the measuring lengths of the electorde tips and enter the lengths in the table “Functions”
- Cut the electrode tips to desired lengths with a bolt cutier or spiral grinding machine.
- Deburr the end faces of the electrode tips.
- Position the PTFE tip steady.
- Place the tip steady over the end of the tips.
- Use provided M5 snap ring not to cause any sliding of tip steady.
- Fit the second tip steady.(if needed)
- Tighten the connector lock-nuts.
- 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 41 mm open-end spanner.
- Due to the nature of a taper/parallel joint it is not possible to recommend tightening torque figures.

Warning !

Failure to tighten the connector lock-nuts may cause the tips loosing or falling off.

3.3 Table “Functions”

The function table should be used to avoid errors when wiring between the SK 1200 Level Alarm Controller and the SD 1200 Level Probe.

Electrode No	Function	Controller Terminals	Color	Length (mm)
1		1		
2		4		

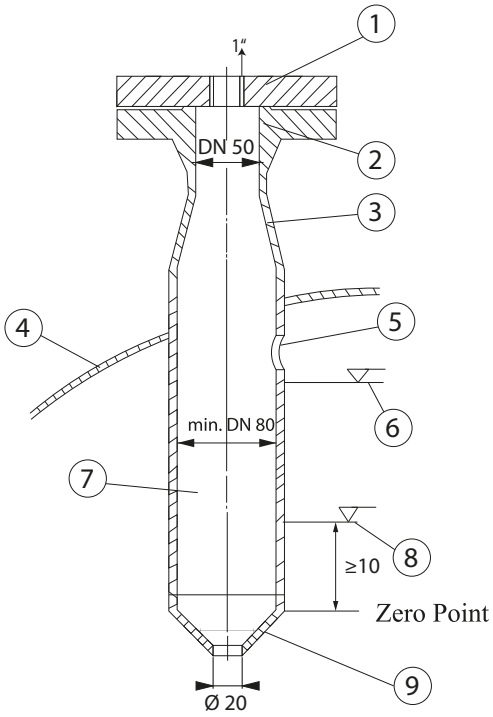
Table 1 : Functions

3.4 Examples of Installation

Warning !

In the places where two low level probes required to be installed in one protection tube, these must be installed in separate protection tubes or chambers with two different controllers.

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



1. Mounting flange for probe SD 1200
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

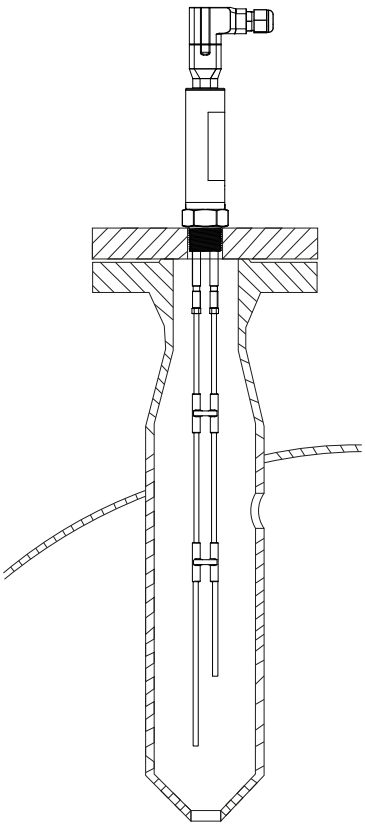
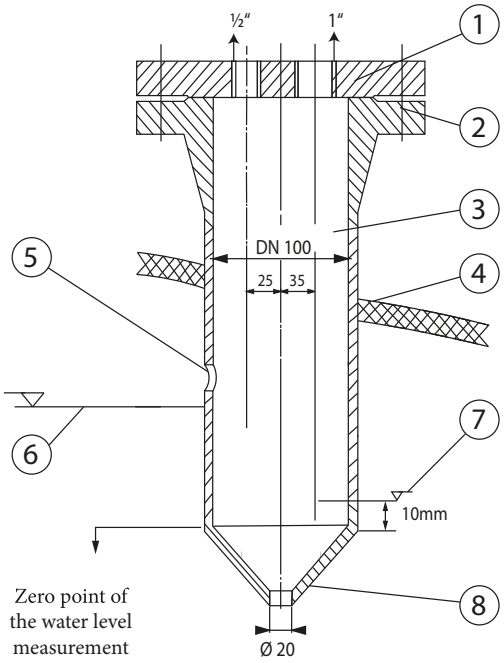


Figure 3 : Installation example 1, usage with protection tube inside the boiler.



1. Mounting flange DN 100 for the combination probe SD 1200 + 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

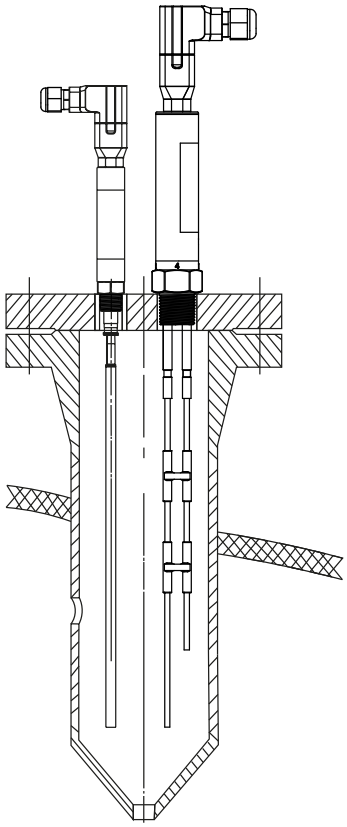
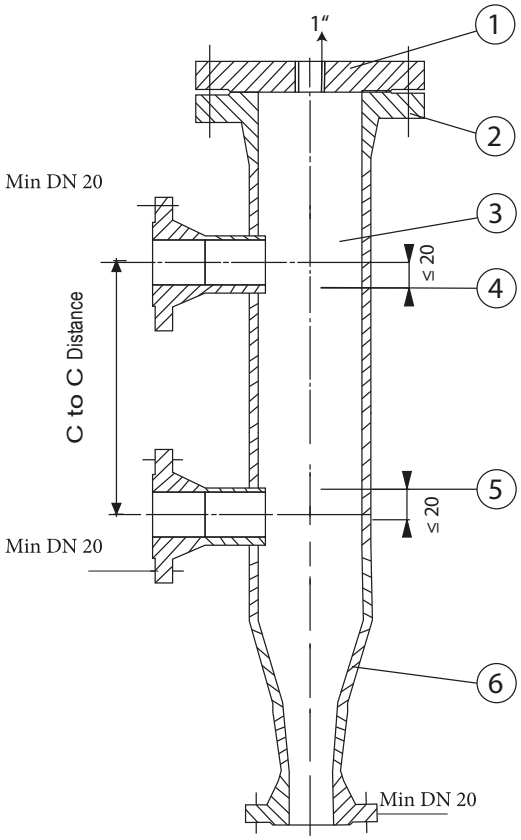


Figure 4 : Installation example 2, combination with self monitoring low level alarm probe SMLD 1000

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



1. Mounting flange DN 100 for the probe SD 1200
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

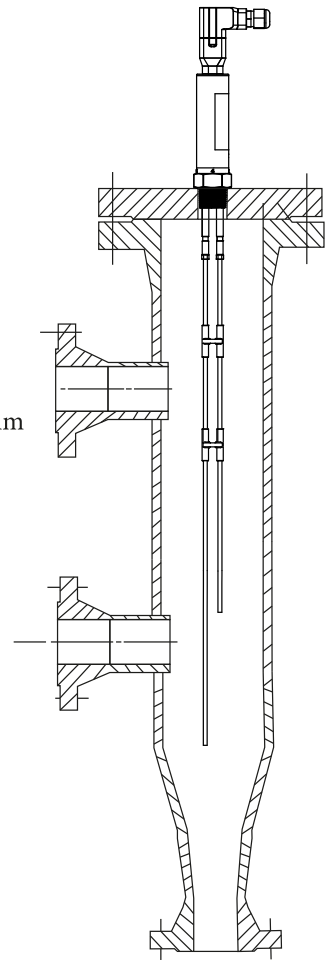


Figure 5 : Installation example 3, usage with protection tube outside the boiler.

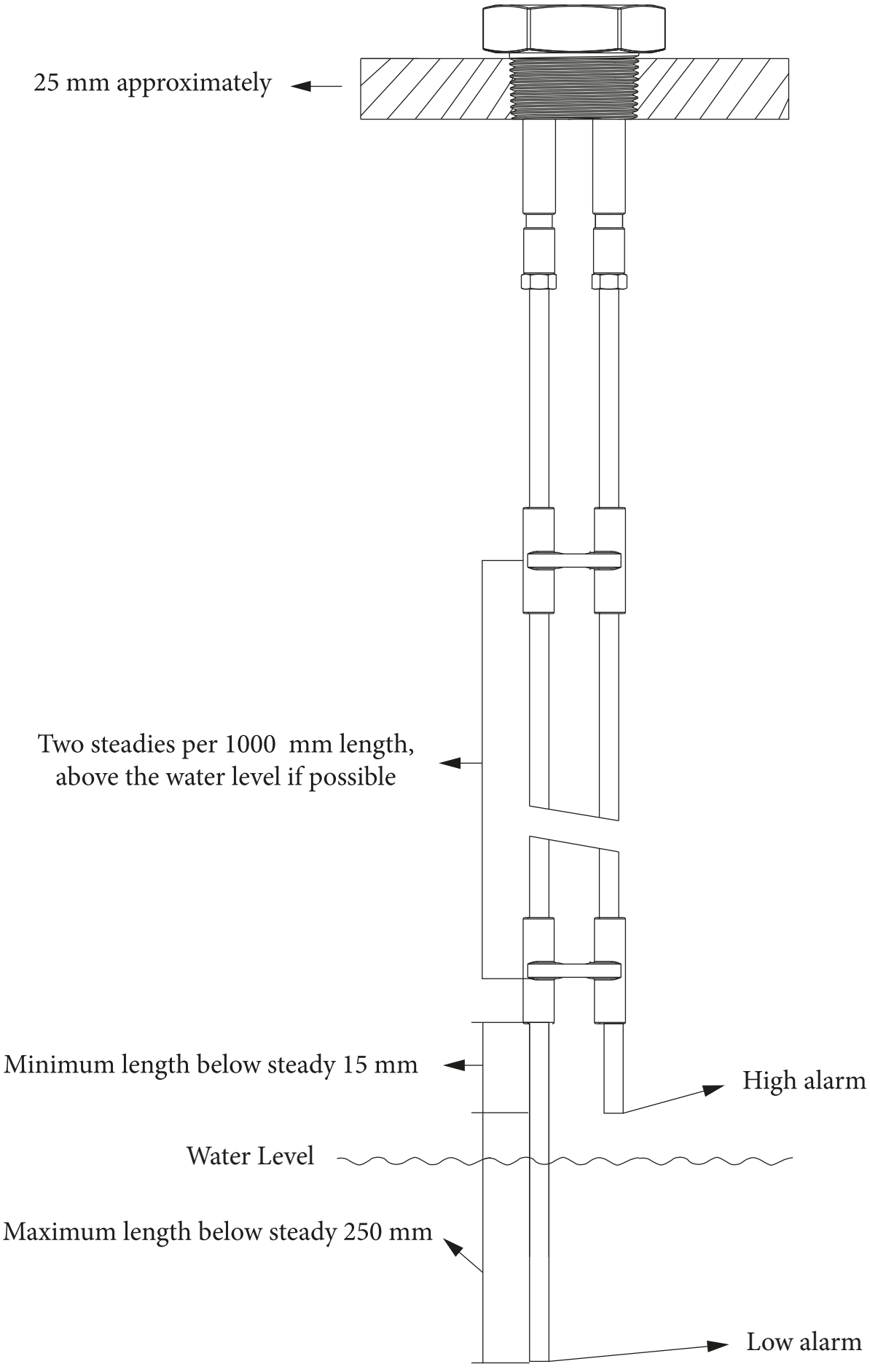


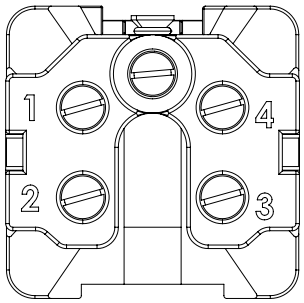
Figure 6 : Electrode length indication

4. Wiring

4.1 Connection

Use 3-core (2-core and earth) 0,5 mm²
high-temperature cable. The **Cable must be screened!**
For detailed cable specifications check SK 1200
controller Installation, Operating and Maintenance
Instructions. The SD 1200 probe is supplied with
heavy duty connector with 5 terminal. 2 of them is for
connection to the probe tips and 1 for the probe body
earth connection.

Note: Please do not use unconnected terminals.



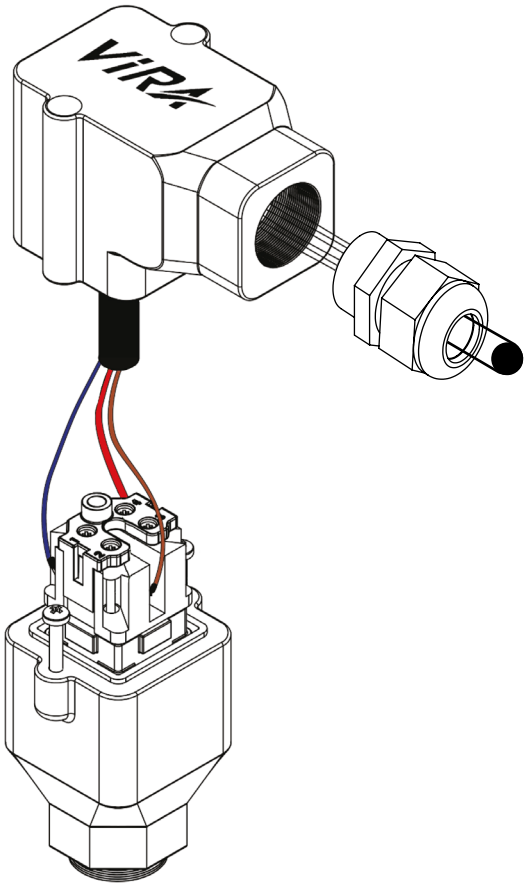


Figure 7 : Wiring layout

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

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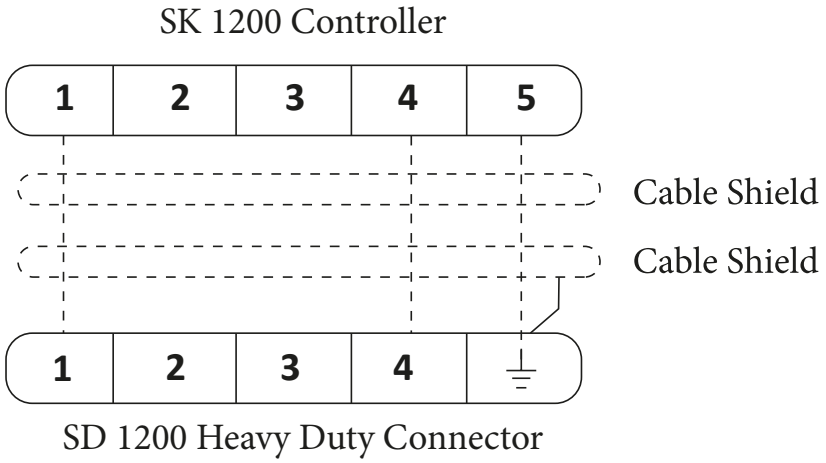

Figure 8 : Wiring diagrams

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).

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 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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