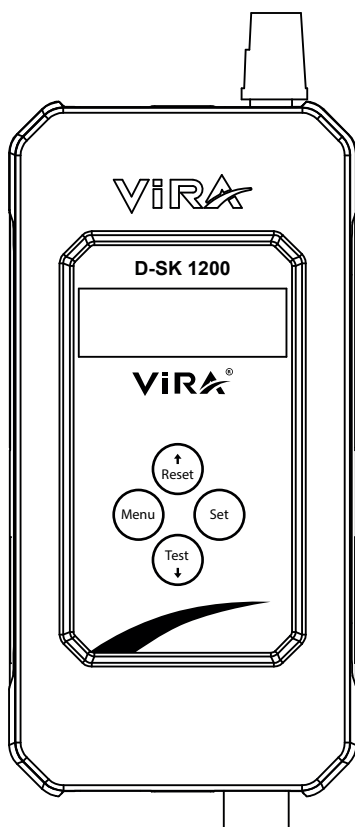




D- SK 1200 Level Alarm Controller

Installation, Operating and Maintenance Instructions



Safety Notes

General Information

Mechanical Installation

Electrical Installation

Functions and Configurations

Technical Information

Commissioning

Troubleshooting

Technical 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.

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EN
ENGLISH

1. Safety Notes

The equipment may only be installed, electrically connected and commissioned by suitable persons with the relevant instruction/training.

Maintenance and modification may only be performed by authorised staff who have undergone specific instruction/training.



The terminal blocks of the equipment are live during operation!

There is a risk of serious injury due to electrical shock!

Always cut off the power supply to the equipment before installing, removing or connecting terminal blocks!

The name plate specifies the features of the equipment. Do not commission or operate any item of equipment that does not have its own specific name plate.

1.1 Directives and Standards

The D-SK 1200 level controller, in combination with SD 1200 level probe, is type approved to the TUV. The TUV “EN 12952 and EN 12953 “ describes the requirement for water level control and limiting equipment.

LV (Low Voltage) Directive and EMC (Electromagnetic Compatibility)

The equipment conforms to the requirements of the Low Voltage Directive 2014/35/EU, the EMC Directive 2014/30 EU.

ATEX (Atmosphere Explosible)

The equipment must not be used in potentially explosive atmospheres, in accordance with European Directive 2014/34/EU.

2. General Information

The Vira D-SK 1200 level alarm controller can be used in conjunction with a SD 1200 level probe as level alarm system in pressurised steam and hot-water plants and in condensate and feedwater tanks. The D-SK 1200 level alarm controller indicates two alarm states, which can be configured as minimum or maximum.

2.2 Function

The D-SK 1200 level alarm controller measures using the conductivity principle and makes use of the electrical conductivity of the water to do this.

The level controller is designed for use with various conductive liquids from salt solutions or boiler water to condensate having an electrical conductivity as low as 10 $\mu\text{S/cm}$ at 25 °C.

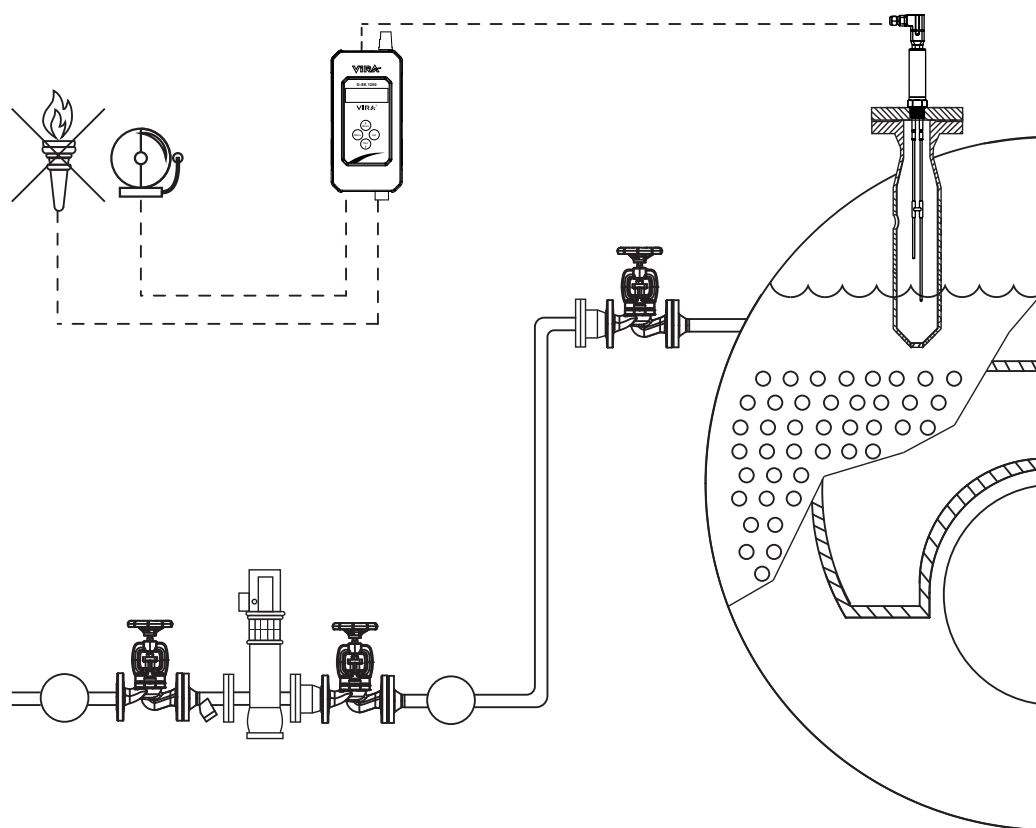


Figure 1 : D-SK 1000 System Application

The level alarm controller indicates when the water reaches two independent alarm states, which can be configured as minimum or maximum.

The switchpoints for the minimum or maximum levels are determined by the length of the respective probe tips.

For water level alarm, the level alarm controller recognises whether the probe tips are immersed or out of the water and, depending on which function is set, it switches the controller output contact.

Typical Applications

- Pressurized steam systems
- Hot-Water plants
- Condensate and feedwater tanks

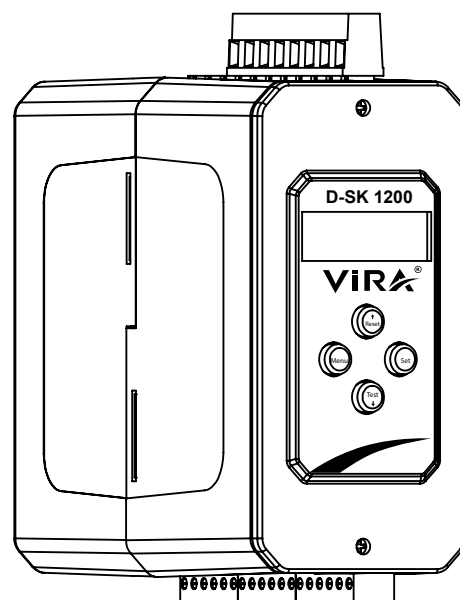


Figure 2 : Perspective View of D-SK 1200

3. Mechanical Installation

3.1 Dimensions

3.1.1 Dimensions with Front Panel

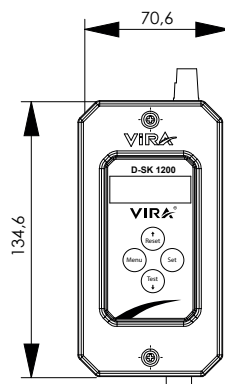


Figure 3 : D-SK 1200 Level Alarm Controller Dimensions With Panel Mounting Bracket

3.1.2 Dimensions with Din Rail Connector

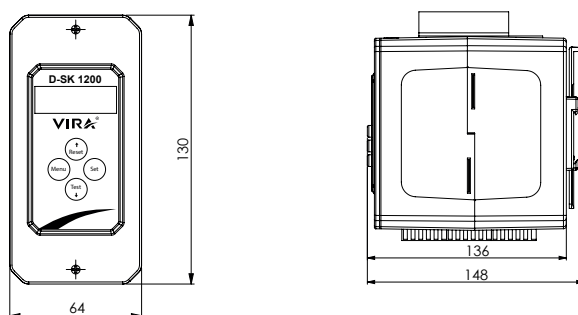


Figure 4 : With Din Rail Mounting Bracket

3.2 Panel and Din Rail Mounting of Enclosure

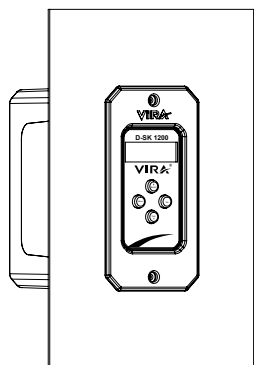


Figure 5 : D-SK 1200 Panel Application

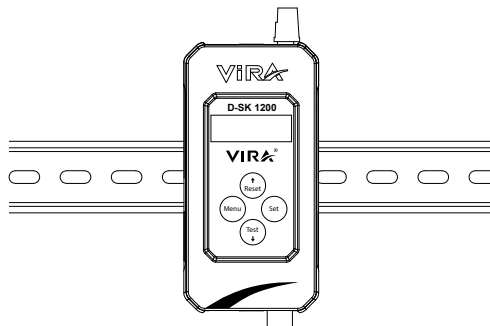


Figure 6 : D-SK 1200 Din Rail Application

3.3 Panel Cutting Sizes

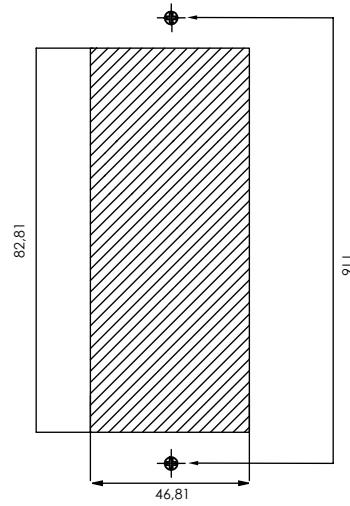


Figure 7 : D-SK 1200 Panel Cutting Sizes

3.4 Name Plate

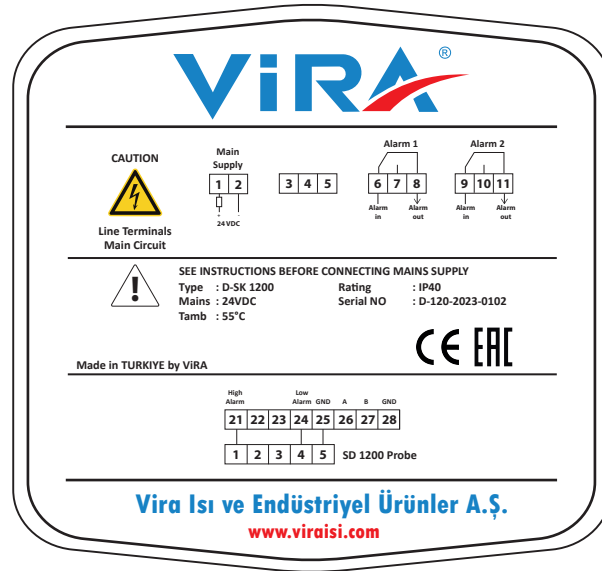


Figure 8 : D-SK 1200 Name Plate

4. Electrical Installation

4.1 Wiring Diagram

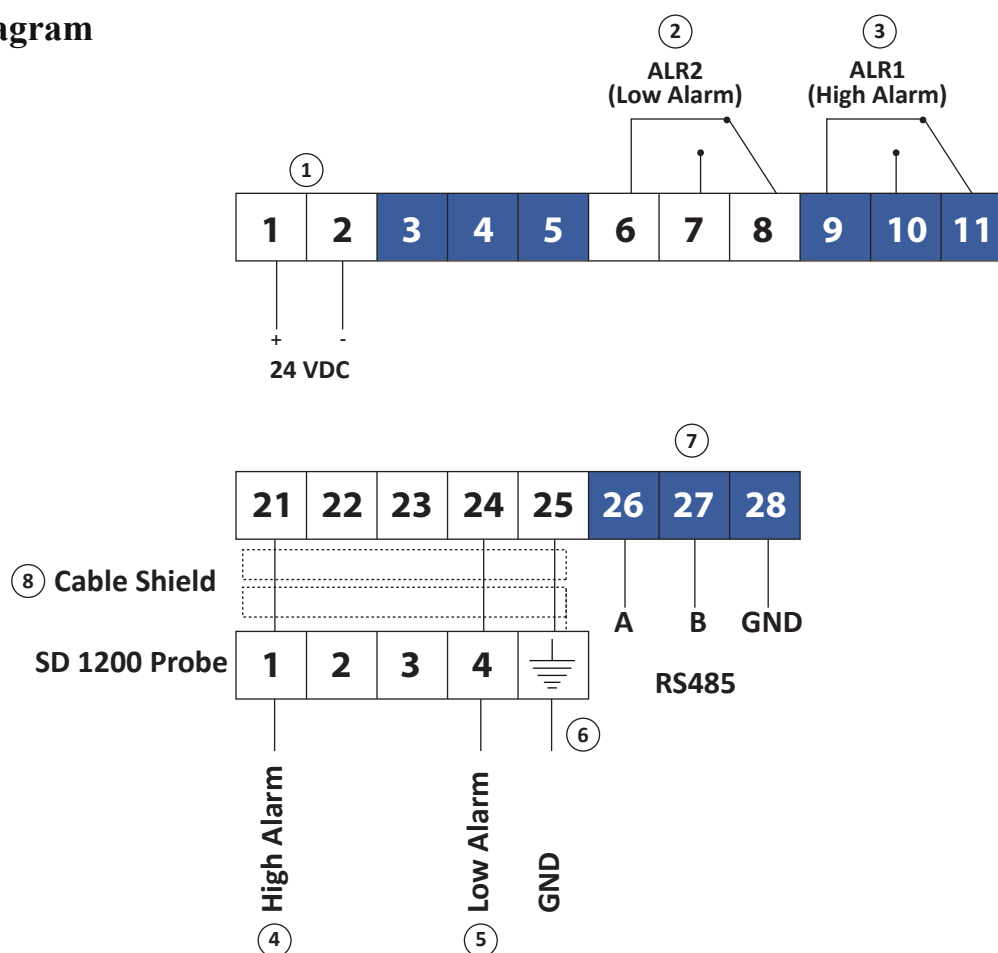


Figure 9 : D-SK 1200 Wiring Diagram

Item	Description
1	Power Supply - 24VDC
2	Alarm 2 (High/Low) output contact (Low Level as default), de energizing delay 3 seconds
3	Alarm 1 (High/Low) output contact (High Level as default), de energizing delay 3 seconds
4	Alarm 1 (High/Low) probe tip (High Level as default)
5	Alarm 2 (High/Low) probe tip (Low Level as default)
6	Functional earth in the SD 1200 Probe body (tank), with cable shield connection
7	Modbus Connection
8	Cable shield, wired only in probe side. (with ground cable)

Table 1 : Wiring Diagram Index

4.2 Supply Voltage Connection

The equipment must be supplied with 24VDC from a power supply. An external 1A semi-delay fuse must also be fitted.

4.3 Connection of Output Contacts

Wire the terminals between 6-11, (Fig. 9) according to the desired switching functions. Provide an external slow-blow 3A fuse for the output contacts.

4.4 Connecting the Level Probe

The D-SK 1200 level alarm controller can be combined with the SD 1200 level alarm probe. For connecting the equipment, please use a screened, multi-core control cable with a minimum conductor size of 0.5 mm², maximum length 100 m.

Route the connecting cable between items of equipment separately from power lines. Connect the cable shield as shown in the wiring diagram.

Please commission the equipment as described in the SD 1200 installation and operating manuals. Do not use unused terminals as support point terminals.

4.5 Tools

Screwdriver size 3 x 100 mm.

5. Functions and Configurations

5.1 Menu Descriptions

Menu	Descriptions	Selection Criteria	Default
P-01	Lock out Feature	0 : Not Locked 1 : Locked	0
P-02	Alarm 2 Selection	0 : Low 1: High	0
P-03	Alarm 1 Selection	0 : Low 1 : High	1
P-04	No Function	-	-
P-05	Alarm 2 Delay	0 - 9 seconds	3
P-06	Alarm 1 Delay	0 - 9 seconds	3
P-07	No Function	-	-
P-08	No Function	-	-
P-09	Baudrate	0 : 1200	3
		1 : 2400	
		2 : 4800	
		3 : 9600	
		4 : 19200	
P-10	Device Address (hundreds digit)	0-1-2	0
P-11	Device Address (tens digit)	0-99	0
P-12	Device Address (units digit)	0-9	1
P-13	Language	0 : TR 1: ENG	1
P-14	Factory Settings	1 : Return to factory settings	Press “set” to return to factory settings.

Table 2 :Menu Descriptions

5.2 Description of 7 Segment Characters

Character	Description
AL.1.1.	Alarm 1
AL.2.2.	Alarm 2
EESE.	Test
L.AL.	Low Alarm
H.AL.	High Alarm
----	No Alarm

Table 3 : Display Description

5.3 Lock Out Feature

Lock-out features in steam boiler level limiters are critical for ensuring safety and compliance with standards such as EN 12952, EN 12953, and IEC 61508. These features prevent unsafe conditions by locking out burner operation or feedwater supply when dangerous water levels are detected.

When P-01 : 0 (Default)

A lock-out alarm is deactivated. Once the water level returns to a safe range, the controller removes the alarm and automatically resumes regulating the feedwater valve, pump, or burner based on its normal operation logic.

When P-01 : 1

A lock-out alarm is activated.

For Low-Level Conditions:

The burner is shut down to prevent dry firing and overheating.

For High-Level Conditions (if applicable):

The feedwater pump may be disabled to prevent overfilling.

A lock-out alarm is activated and manual reset is required after a lock-out event.

Note: This product is a level controller, not a level limiter. The lock-out function is an additional feature.

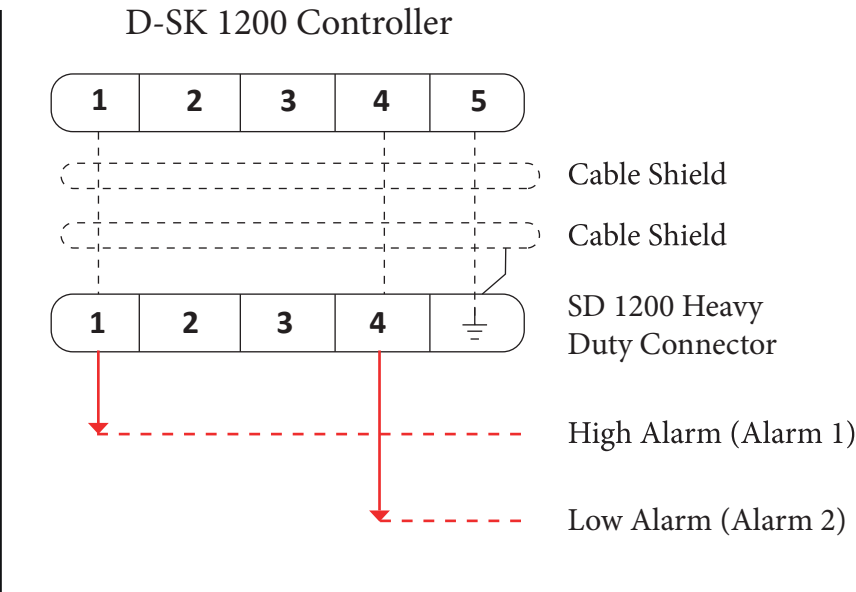
5.4 Alarm 1 and Alarm 2

Alarm 1 and alarm 2 can be configured in 4 different ways as follows;

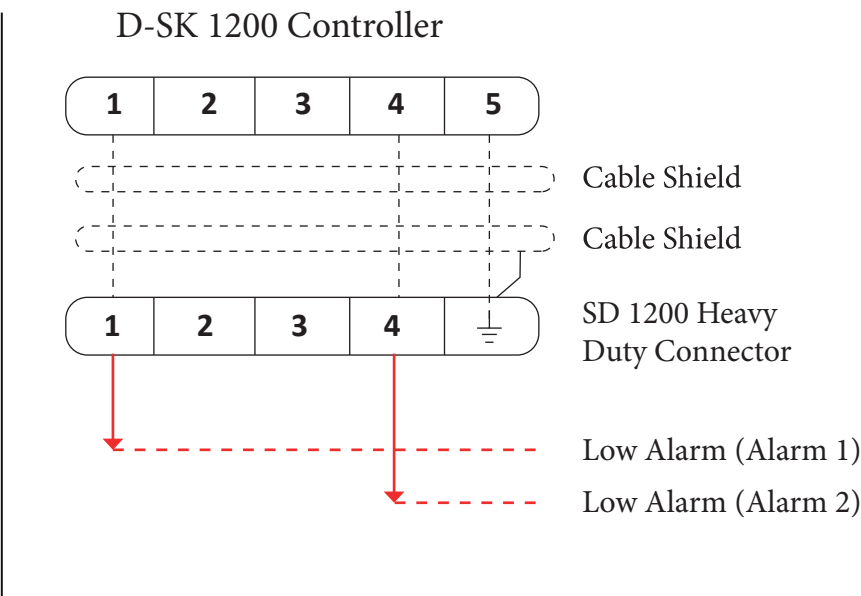
P-02 : Alarm 2

P-03 : Alarm 1

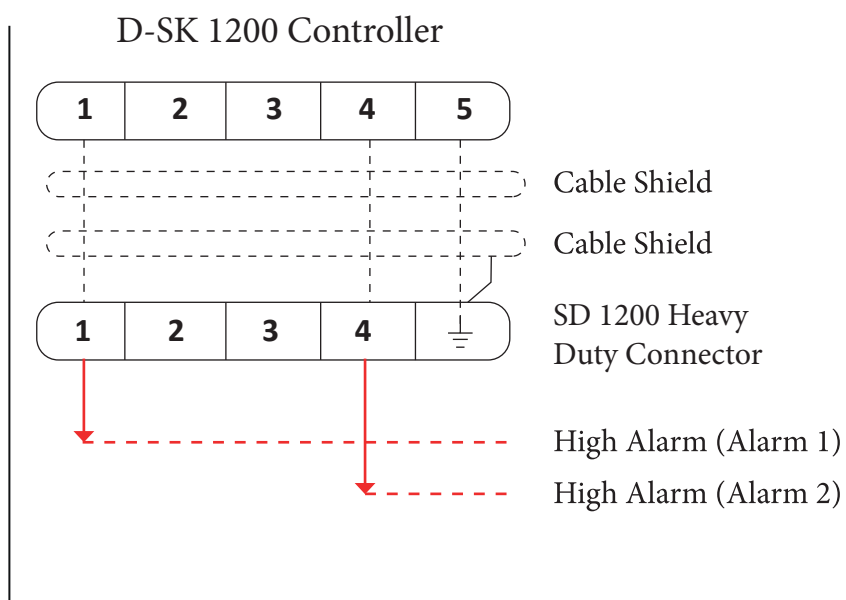
When ;
P-02 (Alarm 2) : 0 (Low)
P-03 (Alarm 1) : 1 (High)



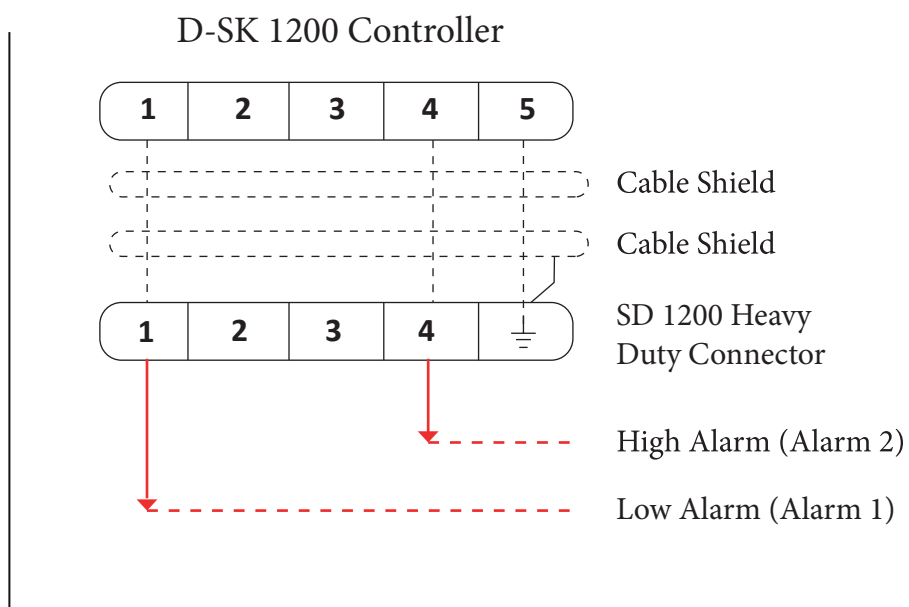
When ;
P-02 (Alarm 2) : 0 (Low)
P-03 (Alarm 1) : 0 (Low)



When ;
P-02 (Alarm 2) : 1 (High)
P-03 (Alarm 1) : 1 (High)



When ;
P-02 (Alarm 2) : 1 (High)
P-03 (Alarm 1) : 0 (Low)



5.5 Alarm Delay

Alarm delays can be configured in the menu in sections P-05, P-06;

P-05 (Alarm 2 Delay) : 3 seconds
P-06 (Alarm 1 Delay) : 3 seconds

Note : According to EN standards; the maximum response delay shall not exceed 3 seconds.

6. Technical Information

Supply Voltage	24VDC
Fuse	external 1 A (semi-delay)
Power Consumption	2 W
Connection of Level Probe	2 x inputs for SD 1200 level probe
Probe Tip Voltages	5 V _{ss}
Sensitivity	> 10 µS/cm (water conductivity at 25 °C),
Outputs	2 floating changeover contacts, 12A, 250VAC, cosφ=1, 85°C Low/High). De-energizing delay 3 seconds (Low/High alarm) Contacts requires an external 3A fuse for protection.
Displays and Controls	7 Segment Display 4 Buttons
Housing	Housing material, base: white polycarbonate Terminal strips can be removed separately
Electrical Safety	Degree of contamination 2 for installation in control cabinet with degree of protection IP 54, fully insulated. Overvoltage category III.
Degree of Protection	Housing: IP 40 to EN 60529
Weight	approx. 0.5 kg
Ambient Temperature	0 °... 55 °C
Transport Temperature	-20 ... +80 °C
Storage Temperature	-20 ... +70 °C
Relative Humidity	max. 95%, no moisture condensation
Approvals	Tüv type approval, EMC and LVD, Machine Directive Conformity

Table 4 : Technical Informations

6.1 Scope of Supply

- Level Controller D-SK 1200
- Installation and Maintenance Instructions
- Din Rail Mounting Bracket (Optional)
- Panel Mounting Bracket

7. Commissioning

7.1 Factory Settings

- **De-energizing delay** : 3 seconds (factory set)
- **Alarm 1** : High Alarm
- **Alarm 2** : Low Alarm

Note: According to EN standards; the maximum response delay should not exceed 3 seconds.

7.2 Changing the function and input of the level alarm controller

Changing the functions is possible by changing the program values in the menu. Follow the steps below to make changes to the menu.

- Press and hold the menu button for at least 5 seconds to access the menu.
- Use the up and down arrow buttons to navigate through the menus.
- Press the set button to enter the selected menu.
- Adjust values in the selected menu using the up and down arrow buttons.
- After making a selection, press the set button to automatically move to the next menu.
- Press the menu button to return to the main screen.

7.3 Checking the switchpoints and function

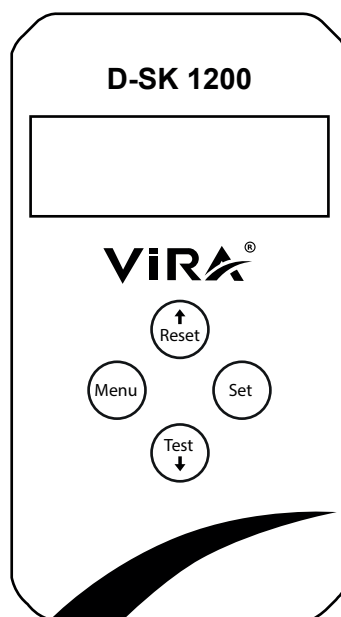


Figure 10 : Front Label Of The Controller

Start

Action	Operation	Status
Switch on supply voltage	The display lights up	The system is started and tested

Normal Operation

Action	Operation	Status
The system is working within the desired parameters	Depending on the water level, the display shows L.A.L.F. , ----- or H.A.L.F.	If the water level is between high level H.A.L.F. and low level L.A.L.F. display will show -----

Checking the switchpoint and function (Min Alarm)

Action	Operation	Status
Reduce the water level until it is below the Min Level. The min probe tip is no longer immersed.	Display shows Low Level Alarm L.A.L.F. depending on the configuration. Factory Setting; Alarm 1 : High Level (MAX) Alarm 2 : Low Level (MIN)	The off delay is in progress. When delay time elapsed, the MIN alarm relay is de-energised. MIN output contacts 7/8 closed, 6/8 are open. Factory Setting; Delay time : 3 seconds

Checking the switchpoint and function (Max Alarm)

Action	Operation	Status
Increase the water level above the Max. Level. The max. probe tip is immersed.	Display shows High Level Alarm H.A.L.F. depending on the configuration. Factory Setting; Alarm 1 : High Level (MAX) Alarm 2 : Low Level (MIN)	The off delay is in progress. When delay time elapsed, the MAX alarm relay is de-energised. MAX output contacts 10/11 closed, 9/11 are open. Factory Setting; Delay time : 3 seconds

7.4 Normal Operation

Stable Condition

The water level is in between **H.888** and **L.888**. There is no alarm. The display shows **----**

High Alarm Case

The water is above the “MAX level” switchpoint. The display shows **H.888**. The off delay is in progress. Delay time elapsed and the MAX alarm relay is de-energised. MAX output contacts 9/11 closed, 9/10 are open.

Low Alarm Case

The water has dropped below the “MIN level” switchpoint. The display shows **L.888**. The off delay is in progress. Delay time elapsed and the MIN alarm relay is de-energised. MIN output contacts 6/8 closed, 6/7 are open.

8. Troubleshooting

8.1 Diagnosis and troubleshooting

Please check the following before fault diagnosis:

Supply voltage: Is the level switch supplied with the voltage specified on the name plate?

Wiring: Does the wiring conform to the wiring diagram?

Probe: Do the probe tips have the correct length, and are they correctly assigned on the level controller? For further diagnosis, please refer to the SD 1200 installation and operating manual.

8.2 High-frequency interference

High-frequency interference can be caused by out-of-phase switching operations. If such interference occurs and results in sporadic failure, we recommend taking the following action to suppress interference:

- Route the connecting cable to the level probe separately from power lines.
- Increase the distance from sources of interference.
- Check the connection of the screen to the central earthing point (CEP) in the control cabinet and in the probe connector.
- Suppress HF interference using hinged-shell ferrite rings.

8.3 Replacement of a “ Out of Service” Unit

- Switch off the power supply and cut off power to the equipment.
- Remove terminal blocks from the back of the product.

8.4 Disposal

The equipment must be disposed of in accordance with statutory waste disposal provisions.

- **In the event of faults that cannot be remedied with the aid of this manual, please contact our Technical Customer Service.**

8.5 Fault Finding List For Troubleshooting

Display does not light up - No function Fault Mains voltage is not applied The cartridge Fuse has been triggered. Electronic circuit board defective.	Remedy Switch on power supply and wire equipment in accordance with the wiring diagram. Discard and replace defective fuse. Replace circuit board.
Level below switchpoint “Low Level” - No function Fault The electrode tips have earth contact. The isolating valves of the external measuring pot are closed.	Remedy Check and change position of installation, if necessary Open isolation valves.
Switchpoint “High-Level” exceeded - No function Fault Pump on and off tips of the probe is not connected to controller's related terminal. Sticky or damaged relay. Electronic circuit board defective. The electrode thread does not have earth connection to the boiler.	Remedy Check wiring and reconnect wires, if needed. Replace circuit board. Clean seating surfaces and insert metal joint ring. Do not insulate electrode thread with hemp or PTFE tape!
High alarm switchpoint has been reached - Incorrect function Fault The switching function has not been assigned correctly. The electrode tips have been cut to the wrong length. Check P-03 on the menu.	Remedy Identify electrode supply wires and reconnect the circuit board accordingly. Change the value, If the value in P-03 is not correct.

Low alarm switchpoint has been reached - Incorrect function Fault The switching function has not been assigned correctly. The electrode tips have been cut to the wrong length. Check P-02 on the menu.	Remedy Identify electrode supply wires and reconnect the circuit board accordingly. Change the value, If the value in P-02 is not correct.
Low or High Alarm Relay - Incorrect function Fault The electrode insulation damaged. The electrode tips have earth contact. (short-circuit)	Remedy Change electrode. Check and change position of installation, if necessary.
Fault The electrode thread does not have earth connection to the boiler.	Remedy Clean seating surfaces and insert copper joint ring. Do not insulate probe thread with hemp or PTFE tape!

Table 5 : Troubleshooting Table

If faults occur that are not listed above or cannot be corrected, please contact our service centre or authorized agency in your country.

9. 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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