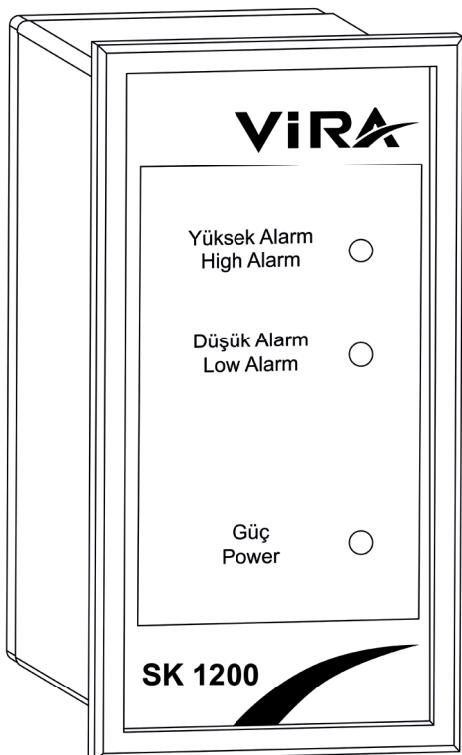


SK 1200

Level Alarm Controller

Installation, Operating and Maintenance Instructions



Safety Notes

General Information

Mechanical Installation

Electrical Installation

Connection Types

Commissioning

Troubleshooting

Technical Information

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 Information

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

CE Type Approval

The 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

2.1 Intended Use

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

2.2 Function

The SK 1200 level alarm controller switches two different alarm using the conductivity principle and makes use of the electrical conductivity of the water to do this.

The level alarm 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 μS / cm at 25 °C.

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

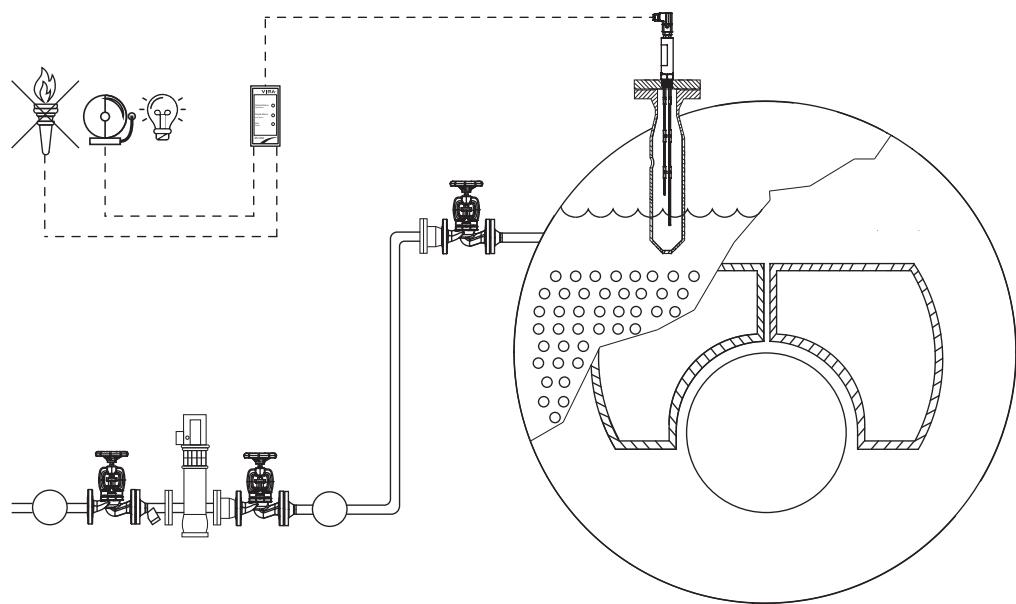


Figure 1 : SK 1000 System Application

The switch points for water alarm levels (minimum or maximum levels) are determined by the length of the respective probe tips.

For water level limiting, the level switch 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, which then turns the alarm 1 or alarm 2. Power and alarm indications are displayed by LEDs.

Typical Applications

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

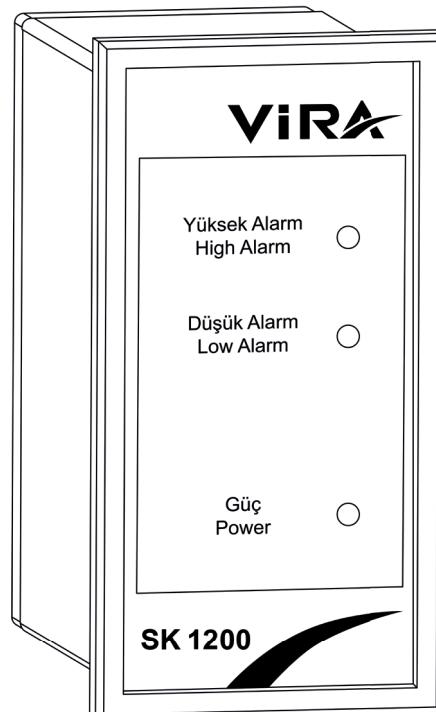


Figure 2 : Perspective View Of SK 1200

3. Mechanical Installation

3.1 Dimensions

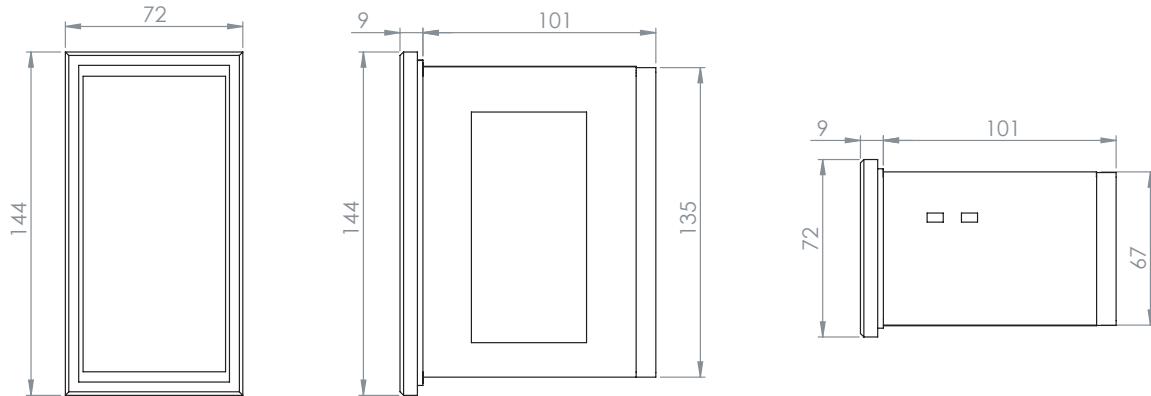


Figure 3 : SK 1200 Level Controller Dimensions

3.2 Panel Mounting of Enclosure

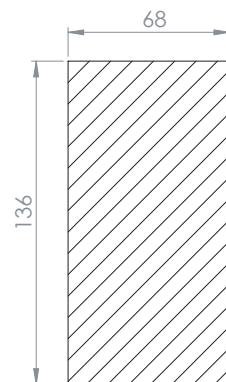


Figure 4 : SK 1200 Panel Cutting Sizes

3.3 Name Plate

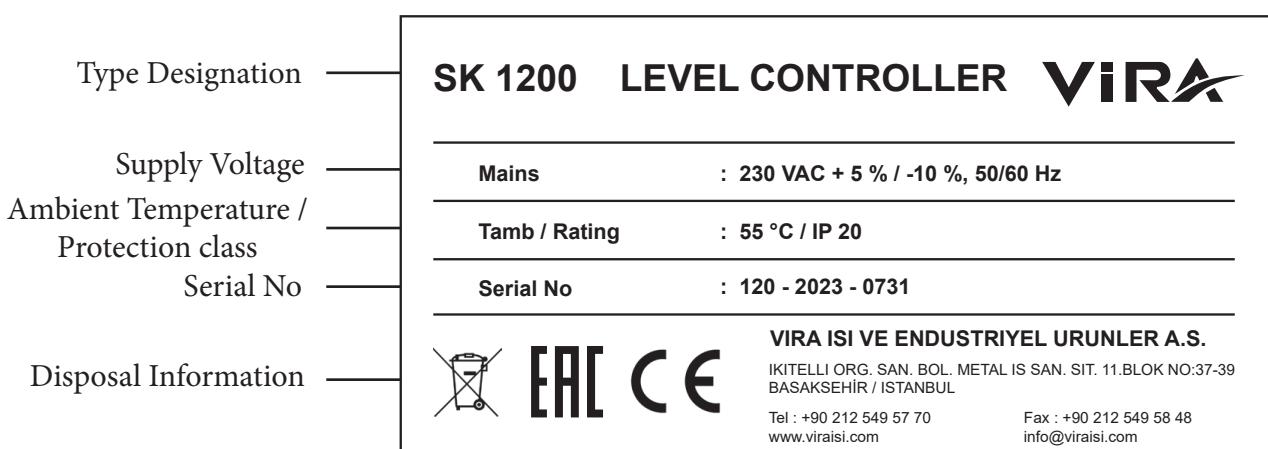


Figure 5 : SK 1200 Name Plate

4. Electrical Installation

4.1 Wiring Diagram

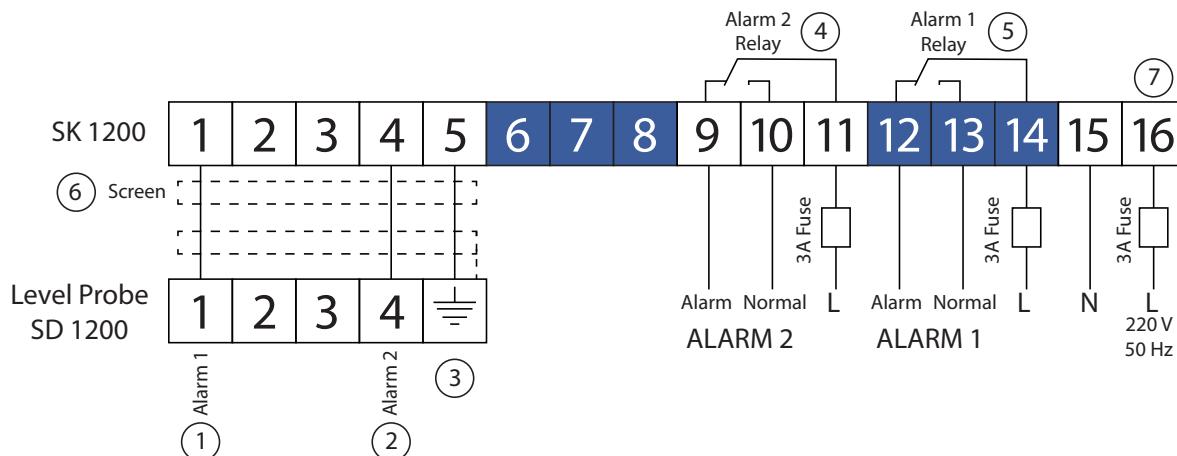


Figure 6 : SK 1200 Wiring Diagram

Item	
1	Alarm 1 (High/Low) probe tip (High Level as default), de energizing delay 3 seconds
2	Alarm 2 (High/Low) probe tip (Low Level as default), de energizing delay 3 seconds
3	Functional earth in the SD 1200 Probe body (tank), with cable shield connection
4	Alarm 2 (High/Low) output contact (Low Level as default), de energizing delay 3 seconds
5	Alarm 1 (High/Low) output contact (High Level as default), de energizing delay 3 seconds
6	Cable shield, wired only in probe side.
7	Supply voltage connection 220VAC with semi-delay fuse M 3A provided on site

Table 1 : Wiring Diagram Index

4.2 Supply Voltage Connection

The equipment must be supplied with 220Vac from a power supply. An external 3A semi-delay fuse must also be fitted.

4.3 Connection of Output Contacts

Wire the terminals between 9-14, (Fig. 6) according to the desired switching functions. Provide an external slow-blow 3A fuse for the output contacts.

4.4 Connecting the Level Probe

The SK 1200 level alarm controller can be combined with the SD 1200 level probe. For connecting the equipment, please use a screened, multi-core control cable with a minimum conductor size of 0.5 mm^2 , maximum length 100 m.

Route the connecting cable between items of equipment separately from power lines. Connect the screen 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. Connection Types

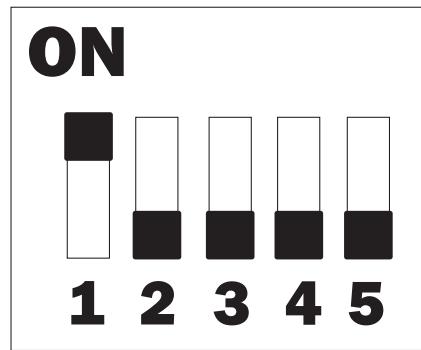


Figure 7 : 5 Pole Dipswitch

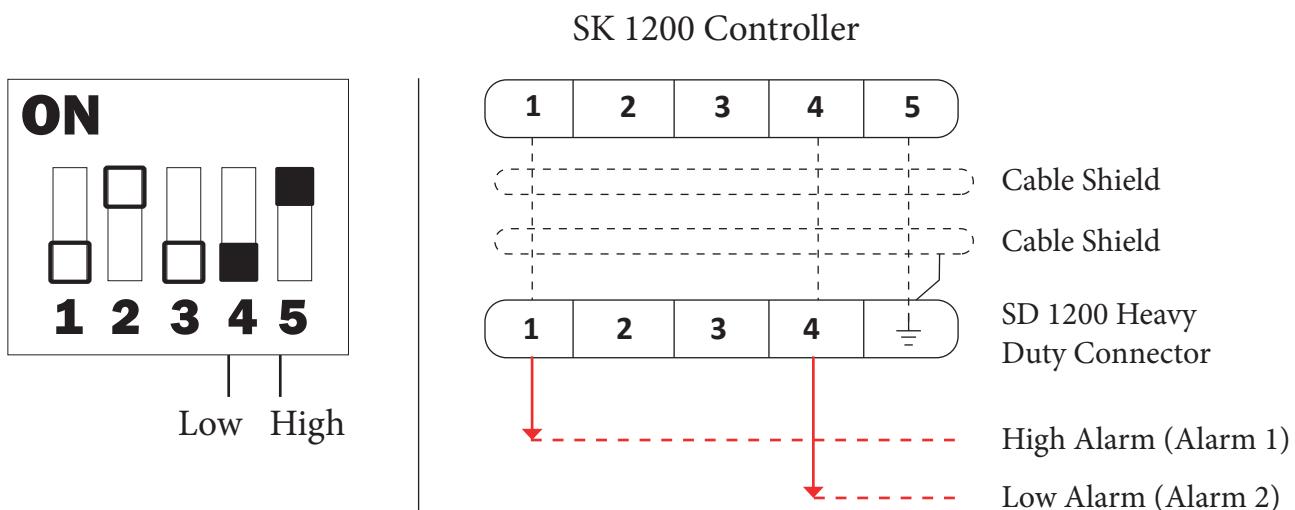
Note : Switch pole number 3 has no function.

5.1 Alarm 1 and Alarm 2 (Dip Switch Pole 4 and 5)

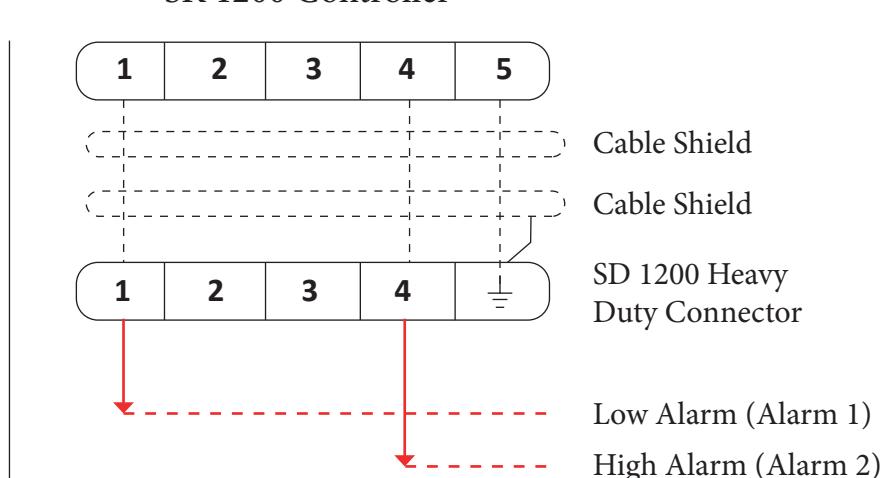
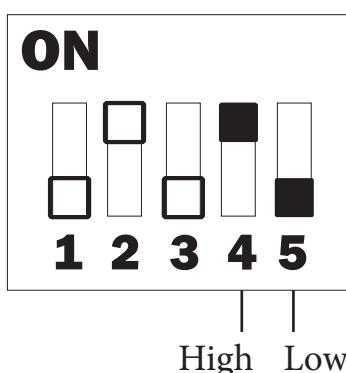
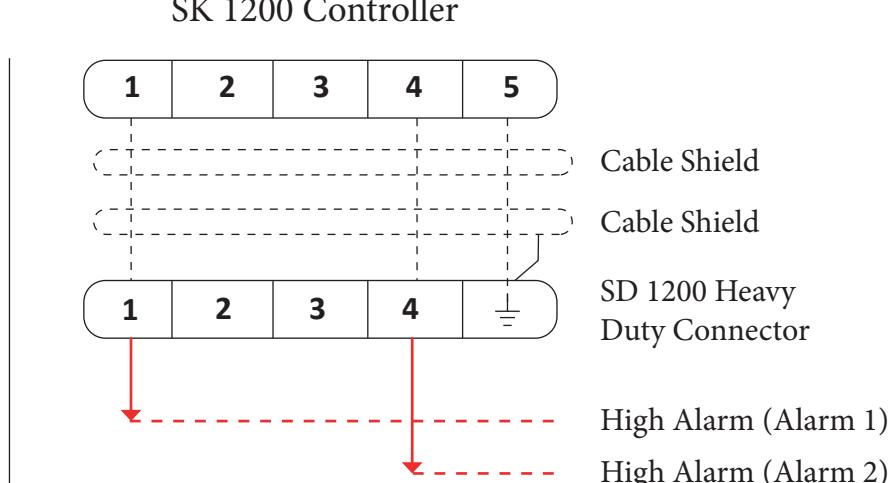
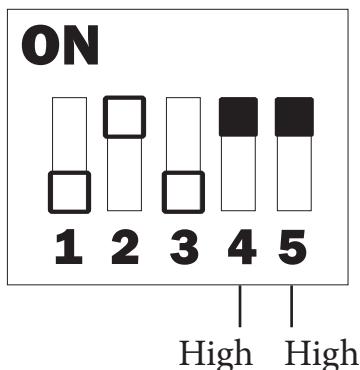
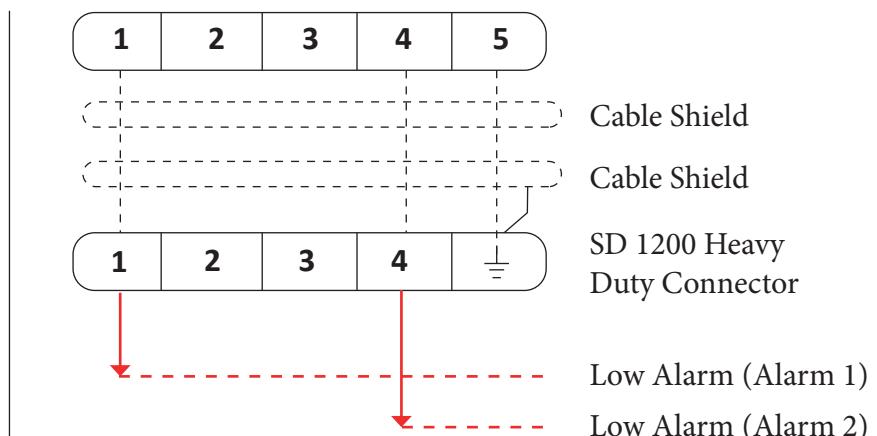
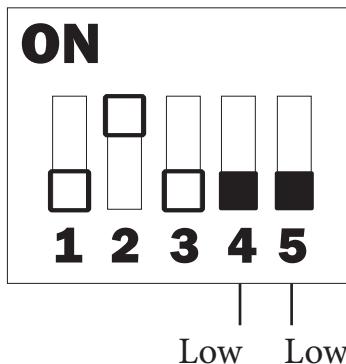
Alarm 1 and alarm 2 can be configured in 4 different ways as following;

Dip switch pole number 5 : Alarm 1

Dip switch pole number 4 : Alarm 2



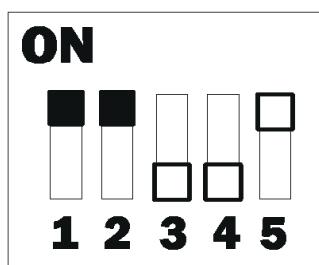
SK 1200 Controller



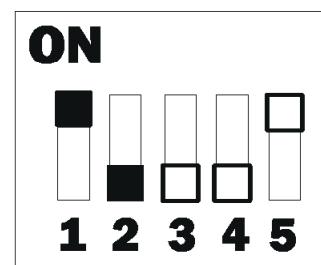
5.2 Alarm Delay (Dip Switch Pole 1 and 2)

Alarm delays can be configurated by dip switches pole 1 and 2.

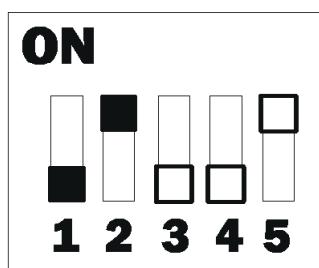
1 Second



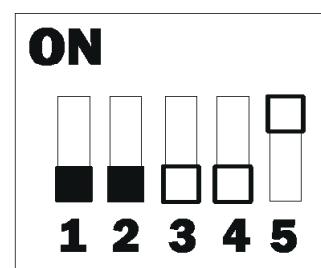
3 Seconds (Default)



5 Seconds



7 Seconds



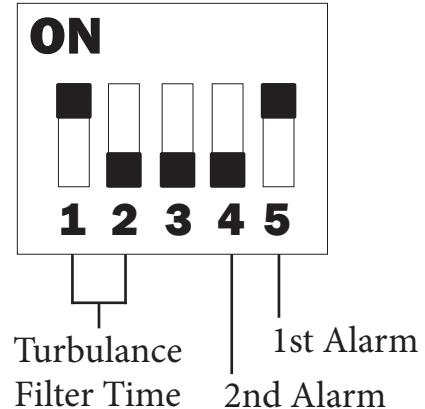
Note : According to EN standards; the maximum response delay shall not exceed 3 seconds.

6. Commissioning

6.1 Factory Settings

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

Note : Dip switch pole number 3 has no function.



6.2 Changing Factory Settings

Danger !



The terminal blocks of the equipment is live during operation. There is a risk of serious injury due to electric shock! Always cut off the power supply to the equipment before installing, removing or connecting the terminal blocks!

6.3 Changing the function and input of the level controller

The input and function are determined by the setting of dip switch. Please see figure 8 to reach dip switch on controller.

- Switch off the supply voltage before any change.

When the changes are complete:

- Switch the supply voltage back on. The equipment restarts.

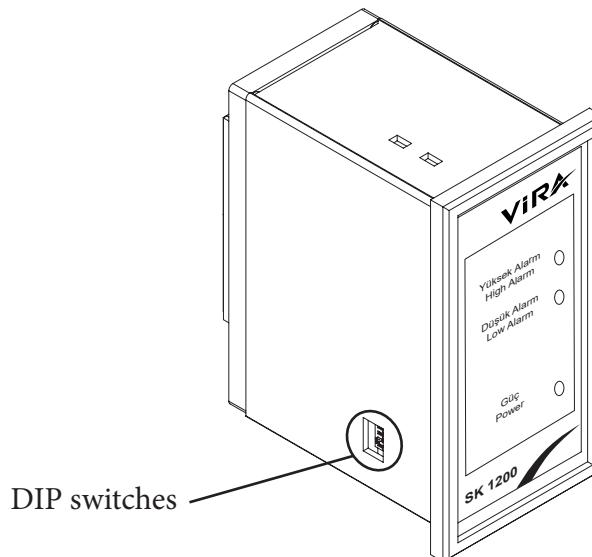


Figure 8 : Dipswitch Position

6.4 Checking the switchpoints and function

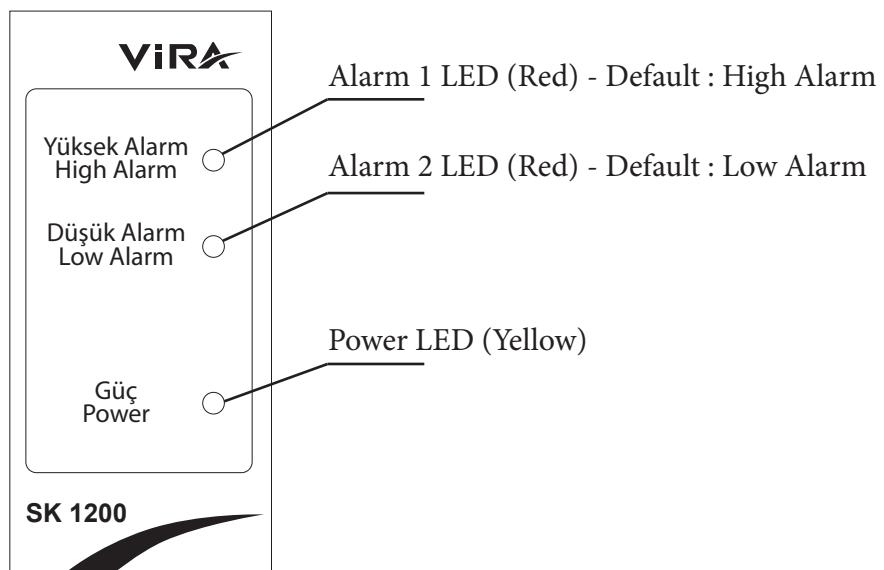


Figure 9 : Front Label Of The Controller

Start

Action	Operation	Status
Switch on supply voltage	The power led lights yellow	The system is started and tested

Normal Operation

Action	Operation	Status
The system is working within the desired parameters	Power LED lights up yellow Depending on the water level, the Alarm LEDs light up	Status display during normal operation

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.	Led Alarm 2 (or Alarm 1) lights up red 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 10/11 closed, 9/11 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.	Led Alarm 1 (or Alarm 2) lights up red 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 13/14 closed, 12/14 are open. Factory Setting; Delay time : 3 seconds

6.5 Normal Operation

High Alarm Case

The water is above the “MAX level” switchpoint. LED High Alarm (Alarm 1) lights up red. The off delay is in progress. Delay time elapsed and the MAX alarm relay is de-energised. MAX output contacts 13/14 closed, 12/14 are open.

Low Alarm Case

The water has dropped below the “MIN level” switchpoint. LED Low Alarm (Alarm 2) lights up red. The off delay is in progress. Delay time elapsed and the MIN alarm relay is de-energised. MIN output contacts 10/11 closed, 9/11 are open.

7. Troubleshooting

7.1 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 alarm controller?

For further diagnosis, please refer to the SD 1200 installation and operating manual.

7.2 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.

7.3 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.

7.4 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.

7.5 Fault Finding List For Troubleshooting

Leds 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 High level tip of the probe is not connected to controller's related terminal Sticky or damaged relay Electronic circuit board defective. The electrode body 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 compact system 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 Dip switch position is not true	Remedy Identify electrode supply wires and reconnect the circuit board accordingly Change dipswitch positions accordingly.
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 Dip switch position is not true	Remedy Identify electrode supply wires and reconnect the circuit board accordingly Change dipswitch positions accordingly.
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 body does not have earth connection to the boiler	Remedy Clean seating surfaces and insert copper joint ring Do not insulate probe body with hemp or PTFE tape!

Table 2 : 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.

8. Technical Information

Supply Voltage	220 VAC (+5% /- 10%), 50/60 Hz
Fuse	external 0.5 A (semi-delay)
Power Consumption	2 W
Connection of Level Probe	2 x inputs for SD 1200 level 2-pin,
Probe Tip Voltages	5 Vss
Sensitivity	> 10 µS/cm (water conductivity at 25 °C),
Outputs	2 floating change over 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	1 x yellow "Power" LED - for indicating the supply voltage state 1 x red "Alarm 1 (High)" LED for indicating a High alarm 1 x red "Alarm 2 (Low)" LED for indicating a Low alarm 1 x 5-pole dip switch for configuration.
Housing	Housing material, base: black 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 20 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	CE type approval, EMC and LVD, Machine Directive

Table 3 : Technical Informations

Scope of Supply

- 1* Level Controller SK 1200
- 1* Installation and Maintenance Instructions
- 2 * Panel Mounted Enclosure Fixing Clamp

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@viraishi.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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