

## Suspended float switch, model SLS

EN



**SLS-MS1**



**SLS-C**

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Prior to starting any work, read the operating instructions!  
Keep for later use!

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## 1. General information

- The suspended float switches described in the operating instructions are designed and manufactured in accordance with the current state-of-the-art. During production, all components are subject to strict quality and environmental criteria. Our management systems are certified in accordance with ISO 9001.
- These operating instructions provide information on how to use the unit. Compliance with all specified safety instructions and work instructions are a prerequisite for working safely.
- Compliance with the local applicable accident prevention regulations and general safety regulations for the area of use of the unit is required.
- The operating instructions are a component of the product and must be kept in the immediate vicinity of the unit where they are accessible to the technicians at all times. Pass on the operating instructions to subsequent users or owners of the unit.
- The technicians must read and understand the operating instructions prior to starting any work.
- The general terms and conditions from the sales documents apply.
- Technical changes reserved.
- Additional information:
  - Internet address: [www.ksr-kuebler.com](http://www.ksr-kuebler.com) or [www.wika.com](http://www.wika.com)

## **2. Design and function**

### **2.1 Functional description**

A suspended float switch (SLS) is a switch with one switch contact. The SLS is mounted from the top with a highly flexible cable and contains a micro switch that is encapsulated unbreakably and shockproofed in a double-chamber system. If the float dips into the fluid, the float bulb tilts and re-releases the micro switch.

The contact in the SLS is a change-over switch, so high and low alarms can be detected.

Due to the patented centric microswitch installation, the SLS switches in any position regardless of the direction in which it tilts.

The SLS was specially developed for the using in sewage treatment plants and pumping stations with solids-based liquids. The suspended float switch is resistant to numerous liquids, because of the chemical properties of the material.

As an option a cable weight can be attached to stabilize and fix the switching point (only for the SLS-C). Thus, the float is suitable for larger solids contents.

### **2.2 Scope of delivery**

Compare the contents of the delivery with the delivery certificate.

## 3. Safety

### 3.1 Symbols



#### **DANGER!**

... indicates an immediately hazardous situation which might result in death or severe injuries if it is not avoided.



#### **WARNING!**

... indicates an potentially hazardous situation which might result in death or severe injuries if it is not avoided.



#### **CAUTION!**

... indicates an potentially hazardous situation which might result in light or minor injuries or property or environmental damages if it is not avoided.



#### **INFORMATION!**

... highlights useful tips and recommendations and information for efficient and fault-free operation.

### 3.2 Proper intended use

The Suspended float switches are solely intended for monitoring the liquid level of fluids. The area of use is based on the technical performance limits and materials. The material is resistant to the following liquids:

- Raw sewage, faecal sewage, manure, domestic sewage, dirty water from washing machines, baths and showers, washing lyes, emulsions containing petrol, diesel oils, fats, oil and acids as well as rainwater, groundwater, chlorine water and salt water.
- Compliance with the usage conditions specified in the operating instructions is required.

- The suspended float switch may not be subjected to strong mechanical stresses (impact, bending, vibrations). The unit is exclusively designed and constructed for the intended use described here and may only be used accordingly.
- These instructions are intended for technicians who execute the installation and calibration.
- Compliance with the relevant safety regulations for the use is required.
- Compliance with the technical specifications in these operating instructions is required. Improper use or operation of the unit outside the technical specifications requires immediate shut-down and inspection by an authorized WIKA service technician.
- Claims of any kind due to improper use are excluded.



### **DANGER!**

When working on containers, there is a risk of poisoning or suffocation. Work may only be performed using suitable personal safety equipment (e.g. respiratory protection, protective clothing, etc.).

## **3.3 Improper use**

Any use that exceeds the technical performance thresholds or that is incompatible with the materials is considered improper use.



### **WARNING!**

#### **Injury due to improper use**

Improper use of the unit can result in hazardous situations and injuries.

- Do not modify the unit without authorization
- Do not use the unit in potentially explosive areas.

Any use beyond the proper intended use or any other use is considered improper use.

Do not use this unit in safety or emergency off equipment.

### 3.4 Responsibility of the operator

The unit is used in the industrial sector. The operator is therefore subject to statutory obligations with respect to occupational safety.

Compliance with the safety instructions in these operating instructions and the applicable safety, accident prevention and environmental protection regulations for the area of use of the unit is required.

In order to safely work on the unit, the operator must ensure

- the operating personnel is regularly trained in all matters pertaining to occupational safety, first aid and environmental conservation and is familiar with the operating instructions and, in particular, the safety instructions contained therein the unit is suitable for the application in accordance with the proper intended use (check for improper use).

After check, improper use is excluded.

### 3.5 Personnel qualification



#### **WARNING!**

#### **Risk of injury due to insufficient qualifications**

Improper use can result in significant personal injury and property damages.

- The activities described in these operating instructions may only be performed by specialist technicians with the following qualifications.

#### **Specialist personnel**

The specialist personnel authorized by the operator is capable of executing the described work and autonomously detect potential hazards due their technical training, knowledge of measuring and control technology and their experience and knowledge of country-specific regulations, applicable standards and guidelines.



### 3.6 Personal safety equipment

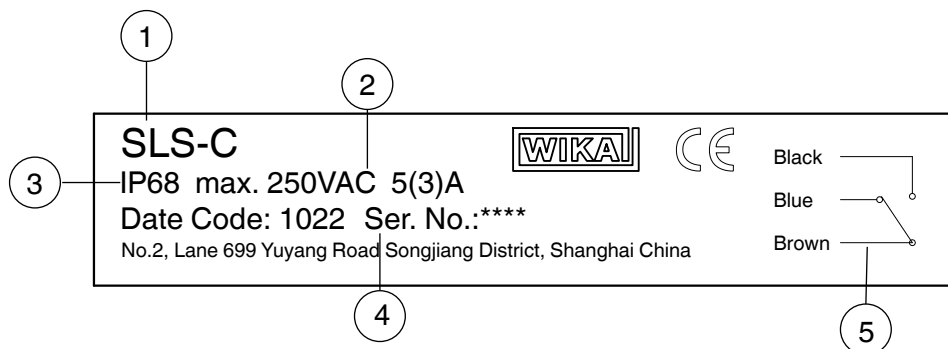
The personal safety equipment serves to protect the technicians against hazards that might impact the safety or health while working. When executing the various tasks on and with the unit, the technicians must wear personal safety equipment.

#### Comply with warning signs posted in the work area regarding personal safety equipment

The required personal safety equipment must be provided by the operator.

### 3.7 Signs, safety markings

#### Name plate (examples)



- 1) Type description
- 2) Power supply
- 3) Protection class
- 4) Serial number
- 5) Wiring

#### Symbols



Prior to assembly and commissioning of the unit, you must read the operating instructions

## 4. Transport, packaging and storage

### 4.1 Transport

Check the suspended float switch for potential transport damage. Immediately report obvious damage.



#### **CAUTION!**

##### **Damage due to improper transport**

Improper transport can result in significant property damages.

- When unloading packages upon delivery and for internal facility transport, proceed carefully and comply with the symbols on the packaging.
- For internal facility transport, follow the instructions in Chapter 4.2 “Packaging and storage”.

### 4.2 Transport and storage

Remove packaging immediately prior to assembly. Keep the packaging as it provides optimum protection during transport (e.g. changing installation location, repair shipment).

## 5. Commissioning, operation

- Comply with all of the instructions on the packaging pertaining to removing the transport locks.
- Remove the suspended float switch from the packaging carefully!
- When unpacking, check all parts for external damage.
- Functional test before assembly.



The functional test is carried out to determine the proper functioning of the switching contacts. The switching function can be determined e.g. by using a continuity tester. The function test can happen by activating the contact, e.g. by a rotation of the suspended float switch.



During the functional test, unintentional processes can be triggered off in the downstream control. Risk of physical injuries and property damage. Competent technical staff only should connect and disconnect power lines. Do not expose suspended float switches to strong mechanical loads.

## 5.1 Mounting preparations

Ensure the sealing surface of the container or the SLS is clean and has no mechanical damage.

## 5.2 Mounting of the suspended float switch

Before installation it must be ensured, that the float switches can be mounted through the opening of the vessel.

At the point of installation it is absolutely necessary to ensure that the switches can hang freely, do not rest on the base, are without impairment by shaft walls, pipes, fittings, etc. and can therefore float freely and are not affected by currents or strong movements of the liquid (see figure 1 left).

If the movement of the float switches is restricted by other objects (see Figure 1 right), the optimum functionality cannot be guaranteed.

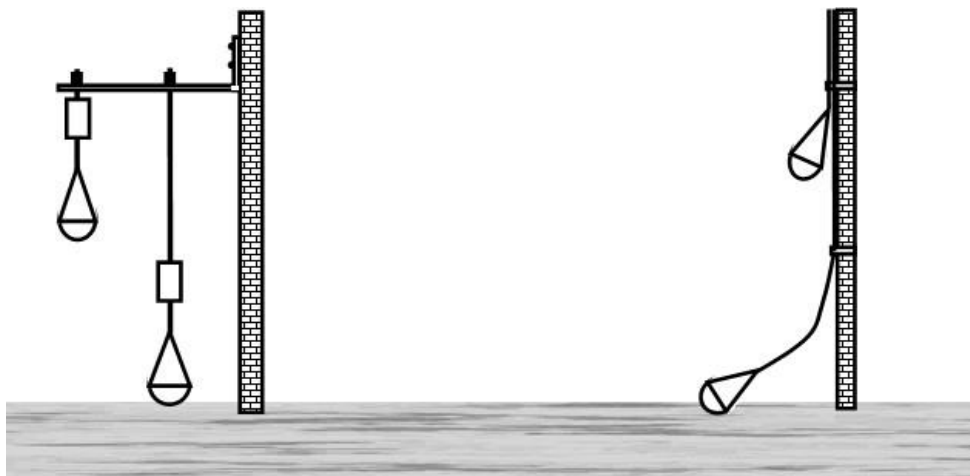


Figure 1: Installation Suspended float switch

To aid mechanical mounting a stainless steel angle bracket can be used (available as supplementary product – ask for angle bracket – see figure 1 left). This holder is fixed directly to the wall. Two suspended float switches can be mounted per bracket via a cable gland connection. The suspended float switch can be installed at the desired height using the strain relief. The angle bracket is not included in the scope of supply.

### 5.3 Electrical connection



The electrical connection must be established in accordance with the application construction regulations in the country of installation and may only be performed by specialist personnel.

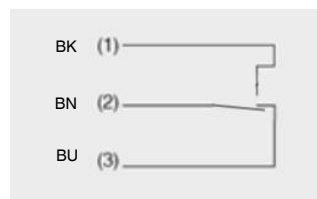
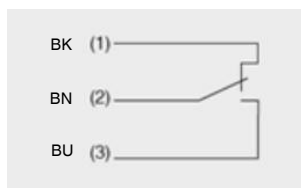
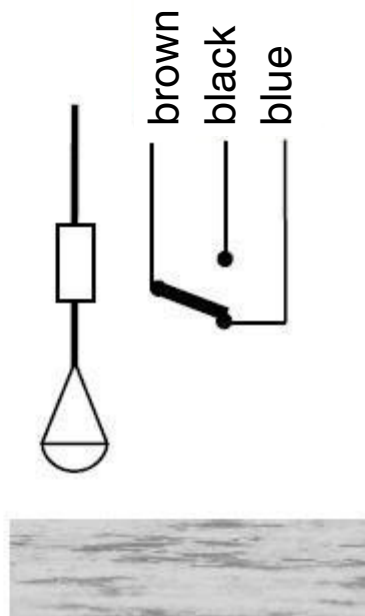
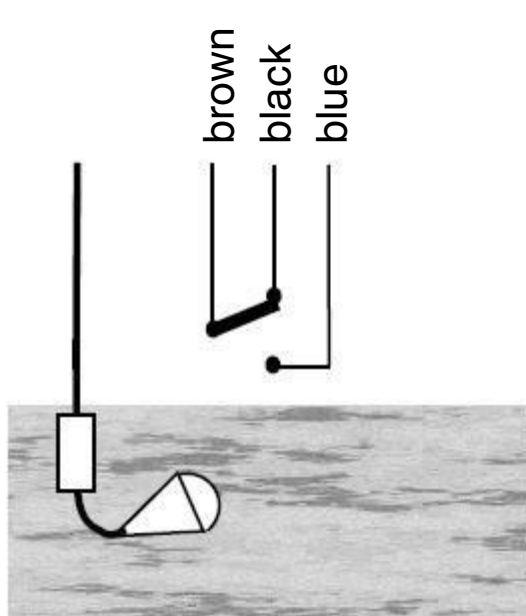
The electrical data on the type plate must be observed. The work may only be carried out by qualified personnel.

Before installation, fault rectification or maintenance, the electrical system must be disconnected from the power supply.



#### **WARNING**

It must be ensured that no humidity may enter the system via the cable ends.



The wires are connected depending on the function by using the following connection diagram:

Function of the suspended float switch	Wire		
	Blue	Black	Brown
For emptying a tank	insulate	x	x
For filling a tank	x	insulate	x
Alarm high level	insulate	x	x
Alarm low level	x	insulate	x

The brown and black wires must be connected for measurement when emptying. The connection, which is not used, has to be insulated.

## 5.4 Commissioning

Switch on the voltage supply of the connected control device. Fill the vessel and check the switch points of the magnetic float switch for function.



### **WARNING!**

Ensure that the functional check does not start any unintended processes.

## 6. Faults



The most frequent root causes and required countermeasures are listed in the following table.

Fault	Cause	Measure
No or undefined switching function	Electrical connection incorrect	See chapter 5.3
	Incorrect switching function	Change terminal assignment
	Incorrect switching point	Reposition SLS
	Ragged cable	Return shipment to factory
	No switching function	Return shipment to factory
SLS cannot mounted on the right position	Collision with other attachments	Modification of the attachments



### CAUTION!

#### **Bodily injuries, property and environmental damages**

If faults cannot be rectified with the help of the listed measures, immediately shut the unit off.

- Ensure the pressure is switched off and secure the unit against unintentionally being switched on.
- Contact the manufacturer.
- If return shipment is necessary, follow the instructions in Chapter 8.2 “Return Shipment”.



## 7. Maintenance and cleaning

### 7.1 Maintenance

Suspended float switches do not require maintenance if operated properly.

Depending on the degree of contamination of the medium, the system must be checked at certain intervals and the suspended float switch cleaned accordingly.



#### **DANGER!**

When working on containers, there is a risk of poisoning or suffocation. Work may only be performed using suitable personal safety equipment (e.g. respiratory protection, protective clothing, etc.).



#### **NOTICE!**

Fault-free functionality of suspended float switches can only be guaranteed if original KSR Kuebler accessories and spare parts are used.

## 7.2 Cleaning



### **CAUTION!**

#### **Bodily injuries, property and environmental damages**

Improper cleaning may result in bodily injuries, property and environmental damages. Measurement material residues in the disassembled unit can result in risks to persons, the environment and equipment.

- Flush and clean the disassembled unit.
  - Implement sufficient precautionary measures.
1. Prior to cleaning the unit, properly disconnect it from the process and the power supply.
  2. Carefully clean the unit with a damp cloth.
  3. Do not let electrical connections come into contact with moisture!



### **CAUTION!**

#### **Property damage**

Improper cleaning will damage the unit!

- Do not use any aggressive cleaning agents.
- Do not use any hard or sharp objects for cleaning.

## 8. Dismounting, return and disposal



### **WARNING!**

#### **Bodily injuries, property and environmental damages due to measuring material residues**

Measuring material residues in a disassembled unit can result in risks to persons, the environment and equipment.

- Wear the necessary protective equipment.
- Flush and clean the disassembled unit in order to protect persons and the environment from risks posed by adhering measuring material residues.

### **8.1 Disassembly**

Only disassemble the measuring unit when it has been disconnected from the pressure and voltage!

If necessary, the container must be relaxed.

### **8.2 Return shipment**

Use the original packaging or suitable transport packing for the return shipment of the unit.

Instructions for return shipment can be found in the “Service” section on our local website.

### **8.3 Disposal**

Incorrect disposal can result in risks to the environment.

Dispose of unit components and packaging materials in an environmentally compatible manner in accordance with the country-specific waste management and disposal regulations.

## 9. Specifications

### 9.1 Technical specifications

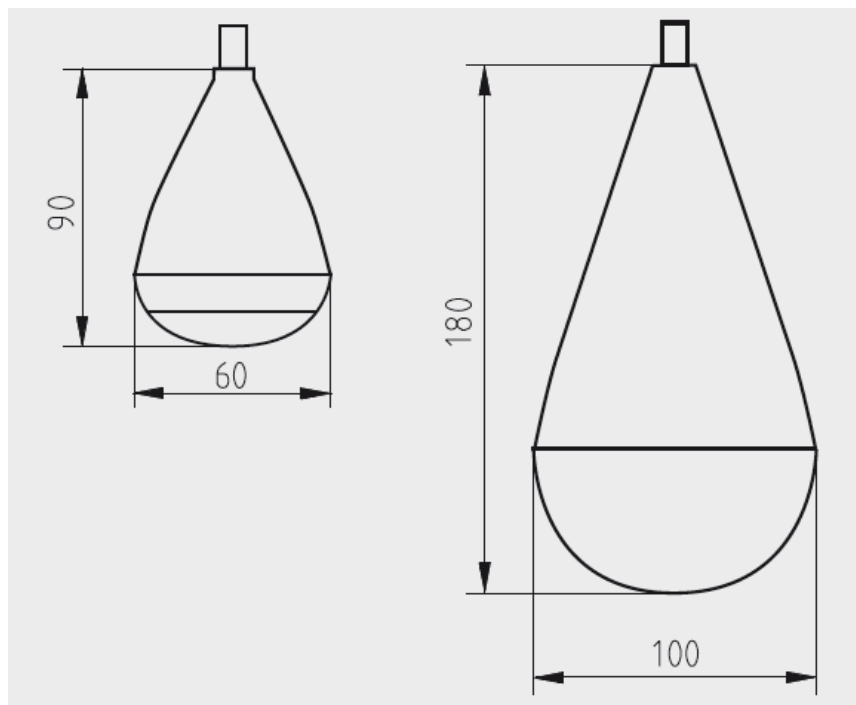


Figure 2: Dimensions of the SLS (f.l.t.r. SLS-C, SLS-MS1)

	SLS-MS1	SLS-C
<b>Specific weight</b>	950 ... 1050 kg/m <sup>3</sup>	
<b>Switch point</b>	10°	25°
<b>Protective system</b>	IP68	
<b>Protective class</b>	II	
<b>Height/Diameter</b>	180mm/100mm	90mm/60mm
<b>Cable</b>	TPK/PVC 3 x 0,75mm <sup>2</sup>	PVC 3 x 0,5mm <sup>2</sup>
<b>Housing quality</b>	Polypropylen	
<b>Breaking capacity</b>	1mA/5VDC-5A/250VAC*	4A/30VDC-5(3)A/250V*

\*Micro-switch with gold-plated or silver-plated contacts especially for low currents in electronic circuits

9.2 Operating limits

	SLS-MS1	SLS-C
Max. operating pressure	7bar	2bar
Max. ambient temperature	80°C	

- Suspended float switch; Type SLS; see data sheet SLS

9.3 Type code

Field-No.	Code	Type
Basetype		
1	SLS-MS1	Suspended float switch
	SLS-C	Suspended float switch small
	MS1 EX	Suspended float switch Ex i
Cable length		
2	5	5m
	10	10m
	20	20m

Typcode:

(1)

(2)

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