

# 8-22X / 8-24X Conductivity/Resistivity Sensor Operation Manual

## Safety instructions of sensor installation

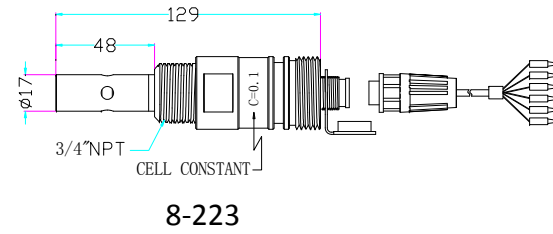
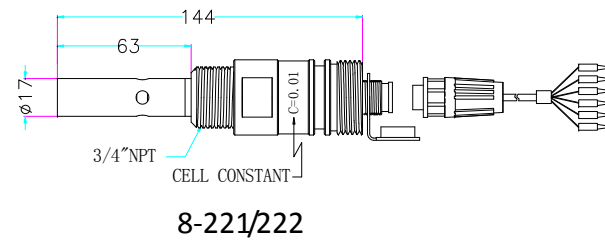


1. Do not disassemble the sensor under pipeline pressure
  2. Do not exceed the sensor's specifications of maximum temperature/pressure
  3. Do not alter the structure of the sensor
  4. Wear goggles or face shield when installation or maintenance
  5. When connecting the sensor to the instrument, be sure to turn off the power in advance
- ✘ Not following the safety instructions may result in serious personal injury.

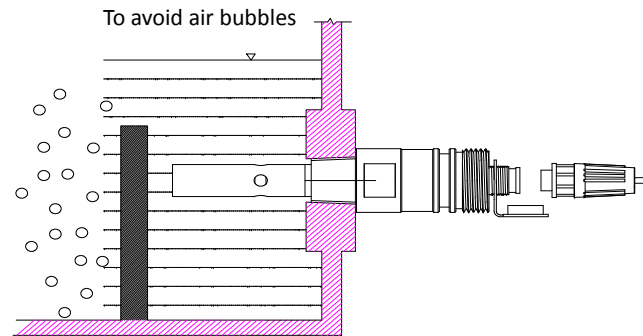
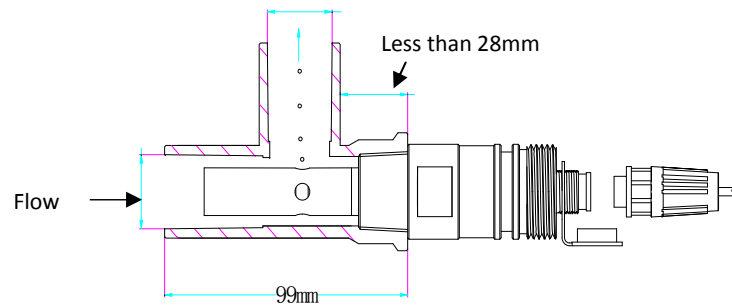


## Installation of 8-221/222/223 Resistivity Sensor

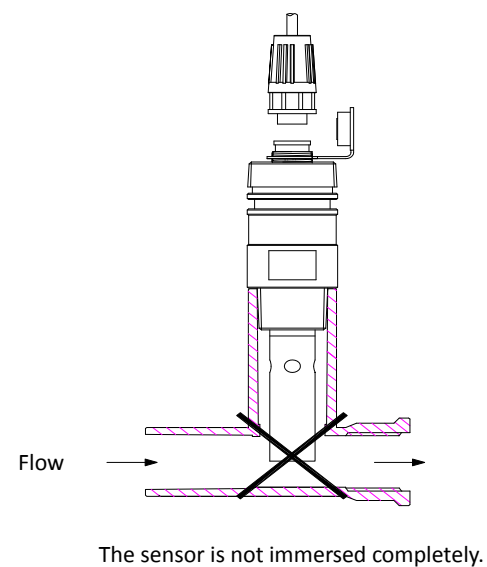
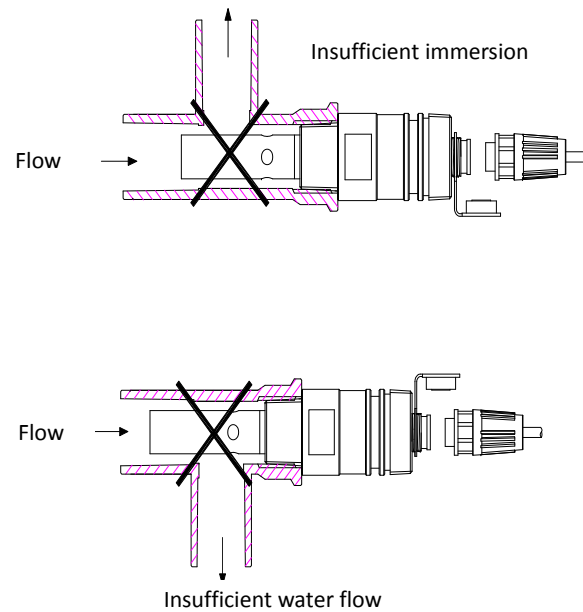
### 1. Sensor Overview



### 2. Correct Installation

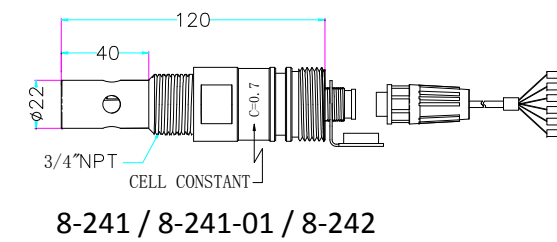


### 3. Incorrect Installation

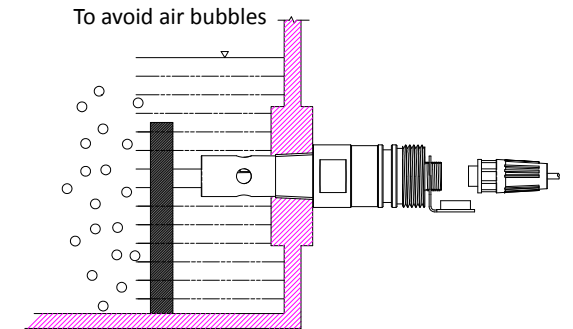
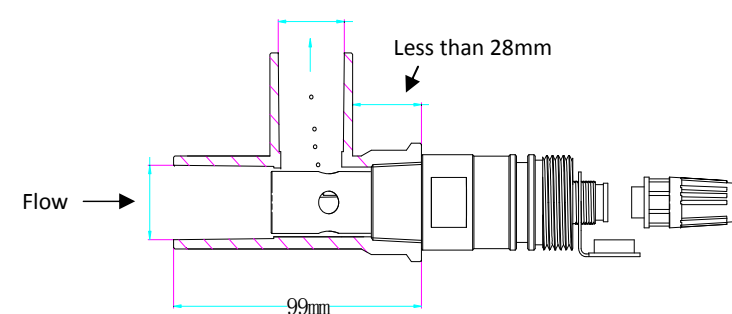


## Installation of 8-241/8-241-01/8-242 Conductivity Sensor

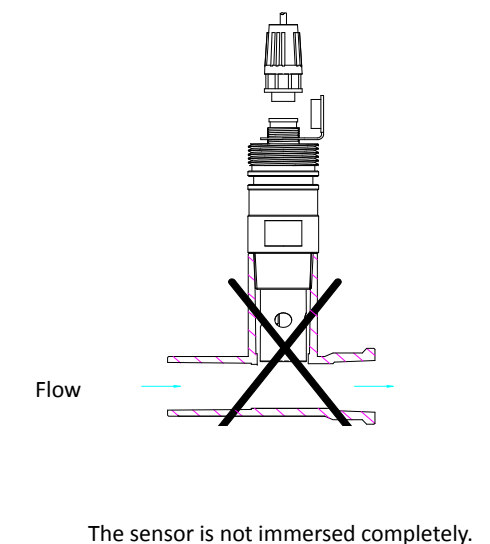
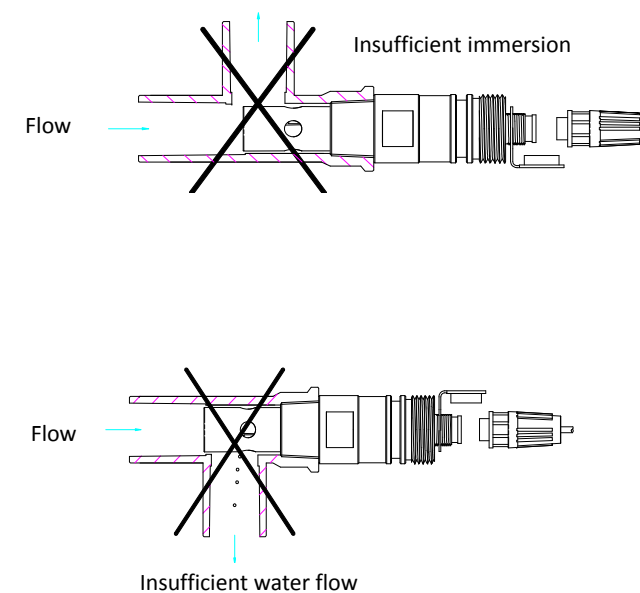
### 1. Sensor Overview



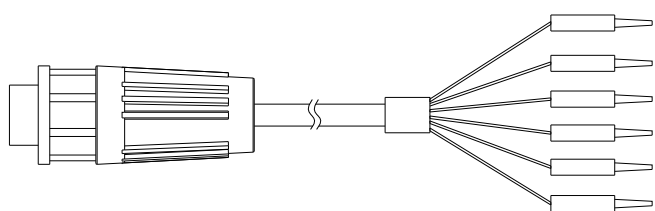
### 2. Correct Installation



### 3. Incorrect Installation



## Wiring illustration of 8-1XX Signal cable



Wire color	Wire description
Transparent	SHIELD
Brown	CELL 1
Red	CELL 2
Orange	CELL 3
Black	CELL 4
Yellow	T / P

## Specifications

### (1) Ultra pure water/pure water resistivity sensor

Model	8-221	8-222	8-223
Cell constant	0.01 cm <sup>-1</sup>	0.05 cm <sup>-1</sup>	0.1 cm <sup>-1</sup>
Measuring range	20.00μS/cm~20.00MΩ·cm	100.00μS/cm~18.00MΩ·cm	200.00μS/cm~10.00MΩ·cm
Material	Titanium, CPVC	Titanium, CPVC	Titanium, CPVC
Temperature sensor	NTC-30K	NTC-30K	NTC-30K
Temperature range	0~70°C	0~70°C	0~70°C
Pressure range at 25°C	7 bar	7 bar	7 bar
Process connection	3/4" NPT	3/4" NPT	3/4" NPT
Socket connector	6 pins, waterproof	6 pins, waterproof	6 pins, waterproof

### (2) 4-electrode conductivity sensor

Model	8-241	8-241-01	8-242
Cell constant	0.5 cm <sup>-1</sup>	0.5 cm <sup>-1</sup>	0.5 cm <sup>-1</sup>
Measuring range	20.00μS/cm~500.0mS/cm	20.00μS/cm~500.0mS/cm	20.00μS/cm~500.0mS/cm
Material	Titanium, CPVC	Monel, CPVC	Titanium, PVDF
Temperature sensor	NTC-30K	NTC-30K	NTC-30K
Temperature range	0~70°C	0~70°C	0~120°C
Pressure range at 25°C	7 bar	7 bar	7 bar
Process connection	3/4" NPT	3/4" NPT	3/4" NPT
Socket connector	6 pins, waterproof	6 pins, waterproof	6 pins, waterproof

## Maintenance

Any attachment on the electrode will cause the drift of measured value or slow response. Use a mild detergent solution with a soft brush or a cotton swab to clean the metal surface of the electrode.

## Troubleshooting

For insisting on the real, accurate measurement, the design of the Suntex sensors is to react the actual situation of the water quality in order to ensure that users can precisely control the water quality and to render the most realistic water quality data which of course includes over range or distortion of the measured values phenomenon by improper installation, air bubble interference, stagnant water measurement, insufficient immersion, etc. Please refer to the instructions in detail and properly install the sensor to ensure the correctness of the measurement.

### (1) Ultra pure water/ pure water resistivity sensor

Failure phenomenon	Possible reasons	Dispositions
Display shows: ---- MΩ·cm ( Over range )	1. Poor wiring 2. Insufficient immersion of sensor 3. Interference by air bubbles	1. Recheck the wiring 2. Confirm the installation ( See sensor installation instruction ) 3. Avoid air bubbles and recheck if the installation is correct
Drifted measurement	Electrode contaminated	Clean the sensor and re-calibrate the sensor with cell constant if necessary
Low measured value	Insufficient immersion of sensor results to stagnant sample measurement	Re-install the sensor according to the installation instructions

#### ● How to ascertain the assembly of the measurement system?

1. Check if the cable wiring is correct. (Please refer to the operation instructions of the wiring diagram.)
2. Clean the sensor according to the maintenance procedure. (Please refer to the operation instructions of maintenance.)
3. The cell constant needs to be correctly set at instrument, and the temperature error cannot be too much. (Normal: ±0.5°C)
4. When moving out and dry up the sensor, the instrument's display should show "----MΩ·cm (Over range)." .
5. Use metal wire to connect sensor's inner electrode and outer electrode to make it shortcut, the instrument's display should show "0.0 MΩ·cm"
6. Put the sensor tip into a flow-through chamber or a beaker, continuously lead the sample solution through the chamber or the beaker and maintain the flow, measure the sample solution and record the value. Make a measurement comparison by applying a calibration confirmed portable conductivity meter or a calibration confirmed sensor.

After checking by following the above procedures, we can ascertain that the measurement system is working properly. The measurement error should result from improper installation, ex. Insufficient immersion or air bubble interference, to show over range or result in measurement error, please refer to the installation instructions and install the sensor certainly.

### (2) 4-electrode conductivity sensor

Failure phenomenon	Possible reasons	Dispositions
Display shows: ---- μS/cm ( Over range )	1. Over range 2. Poor wiring	Please switch to a higher range Recheck the wiring
Drifted measurement	Electrode contaminated	Clean the sensor and re-calibrate the sensor with cell constant if necessary
Low measured value	Interference by air bubbles	Avoid air bubbles and recheck if the installation is correct
Display shows: 0.0μS/cm	Poor wiring	Recheck the wiring

#### ● How to ascertain the assembly of the measurement system?

1. Check if the cable wiring is correct. (Please refer to the operation instructions of the wiring diagram.)
2. Clean the sensor according to the maintenance procedure. (Please refer to the operation instructions of maintenance.)
3. The cell constant needs to be correctly set at instrument, and the temperature error cannot be too much. (Normal: ±0.5°C)
4. When moving out and dry up the sensor, the instrument's display should show "0.0 μS/cm."
5. A: Place the sensor tip into a flow-through chamber or a beaker, continuously lead the sample solution through the chamber or the beaker and maintain the flow, measure the sample solution and record the value. Make a measurement comparison by applying a calibration confirmed portable conductivity meter or a calibration confirmed sensor. Note: When measurement, it needs to take turns to measure with these two sensors to avoid the mutual interference of the sensors. Or B: Place the sensor tip into a conductivity standard solution(1413 μS/cm at 25°C, or other value standard solutions, and rescaled the cell constant.

After checking by following the above procedures, we can ascertain the measurement system is working properly. The measurement error should result from contaminated sensor or air bubble interference.