SENSOFIT IMM 1000 Handbook

Immersion assembly for analytical sensors
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1.1 Intended use

**CAUTION!**
Responsibility for the use of the measuring devices with regard to suitability, intended use and corrosion resistance of the used materials against the measured fluid lies solely with the operator.

**INFORMATION!**
The manufacturer is not liable for any damage resulting from improper use or use for other than the intended purpose.

The SENSOFIT IMM 1000 assembly can be mounted to open basins or channels. The assembly serves for mounting up to 3 sensors in such a way that they are immersed into the process fluid in order to measure chemical or physical properties. Specific holders for different sensor types are available. The material characteristics of the assembly, the gaskets, the sensors and the housing must be chosen depending on the process parameters (e.g. temperature, corrosion resistance, abrasivity). The assembly has to be maintained on a regular basis. Establish a maintenance plan which is adjusted to your process.

1.2 Safety instructions from the manufacturer

1.2.1 Copyright and data protection

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The manufacturer reserves the right to alter the content of its documents, including this disclaimer in any way, at any time, for any reason, without prior notification, and will not be liable in any way for possible consequences of such changes.

1.2.3 Product liability and warranty

The operator shall bear responsibility for the suitability of the device for the specific purpose. The manufacturer accepts no liability for the consequences of misuse by the operator. Improper installation or operation of the devices (systems) will cause the warranty to be void. The respective "Standard Terms and Conditions" which form the basis for the sales contract shall also apply.

1.2.4 Information concerning the documentation

To prevent any injury to the user or damage to the device it is essential that you read the information in this document and observe applicable national standards, safety requirements and accident prevention regulations.

If this document is not in your native language and if you have any problems understanding the text, we advise you to contact your local office for assistance. The manufacturer can not accept responsibility for any damage or injury caused by misunderstanding of the information in this document.

This document is provided to help you establish operating conditions, which will permit safe and efficient use of this device. Special considerations and precautions are also described in the document, which appear in the form of icons as shown below.
1.2.5 Warnings and symbols used

Safety warnings are indicated by the following symbols.

**DANGER!**
This warning refers to the immediate danger when working with electricity.

**DANGER!**
This warning refers to the immediate danger of burns caused by heat or hot surfaces.

**DANGER!**
This warning refers to the immediate danger when using this device in a hazardous atmosphere.

**DANGER!**
These warnings must be observed without fail. Even partial disregard of this warning can lead to serious health problems and even death. There is also the risk of seriously damaging the device or parts of the operator’s plant.

**WARNING!**
Disregarding this safety warning, even if only in part, poses the risk of serious health problems. There is also the risk of damaging the device or parts of the operator’s plant.

**CAUTION!**
Disregarding these instructions can result in damage to the device or to parts of the operator’s plant.

**INFORMATION!**
These instructions contain important information for the handling of the device.

**LEGAL NOTICE!**
This note contains information on statutory directives and standards.

• **HANDLING**
This symbol designates all instructions for actions to be carried out by the operator in the specified sequence.

⇒ **RESULT**
This symbol refers to all important consequences of the previous actions.

1.3 Safety instructions for the operator

**WARNING!**
In general, devices from the manufacturer may only be installed, commissioned, operated and maintained by properly trained and authorized personnel. This document is provided to help you establish operating conditions, which will permit safe and efficient use of this device.
2.1 Scope of delivery

INFORMATION!
Inspect the packaging carefully for damages or signs of rough handling. Report damage to the carrier and to the local office of the manufacturer.

INFORMATION!
Do a check of the packing list to make sure that you have all the elements given in the order.

INFORMATION!
Look at the device nameplate to ensure that the device is delivered according to your order.

Assembly for 1 sensor

Figure 2-1: Example of scope of delivery
① Ordered assembly
② Documentation
SENSOFIT IMM 1000 versions are available for the following sensors:

- SMARTPAT pH / ORP 8xxx (PG 13.5 / 120 mm sensor length)
- OPTISENS pH / ORP 8x00 (PG 13.5 / 120 mm sensor length)
- OPTISENS COND 1200 W (G 1/2" process connection)

**INFORMATION!**
For further information contact your local sales office.
2.2 Device description

Assembly for 1 sensor

Figure 2-3: Description of the assembly

1. Cable gland
2. Closing plug
3. Support pipe
4. Mounting bracket
5. Union nut
6. Protection cage
7. Sensor holder (PG 13.5)
8. Sensor holder (G 1/2")

**INFORMATION!**
The support pipe can be shortened to your individual needs.
Remove the closing plug before shortening the support pipe at the upper end.
Assembly for up to 3 sensors

Figure 2-4: Description of the assembly

1. Cap
2. Screwed cover
3. Cable gland
4. Support pipe
5. Sensor holder
6. Protection cage
3.1 General notes on installation

**DANGER!**
No use in areas with potential flammable surroundings.

**CAUTION!**
Do not expose the assembly to intense vibration.

**CAUTION!**
If using abrasive media or processes which lead to accelerated wearing, check the assembly in shorter intervals.

**INFORMATION!**
Inspect the packaging carefully for damages or signs of rough handling. Report damage to the carrier and to the local office of the manufacturer.

**INFORMATION!**
Do a check of the packing list to make sure that you have all the elements given in the order.

**INFORMATION!**
Look at the device nameplate to ensure that the device is delivered according to your order.

![Figure 3-1: Installation requirements](image)

1. Measuring medium
2. Maximum deviation of 75° from vertical position

The mounting position of the assembly should ensure, that when installed, the sensor is typically at an angle of 0 ... 75 degrees from the vertical.
3.2 Storage and transport

- Store the assembly in its original packaging.
- Store and transport the device in a dry, dust-free environment.
- Store and transport the device in an environment with a temperature between -20...+60°C / -4...+140°F.
- The original packing is designed to protect the equipment. It has to be used if the device is transported or sent back to the manufacturer.

3.3 Pre-installation requirements

**CAUTION!**

Choosing the right gasket for the process connection as well as for the sensor connection depends on the process conditions; (e.g. temperature, corrosion resistance, abrasivity).

Ensure for the measuring point that
- there is sufficient working space available for mounting of the assembly.
- the device must not be heated by radiated heat (e.g. exposure to the sun) to a surface temperature above the maximum permissible ambient temperature. If it is necessary to prevent damage from heat sources, a heat protection (e.g. sun shade) has to be installed.

Ensure for the assembly that
- the sensor connection fits to the assembly.
3.4 Installation

Make sure that
1. the system is prepared.
2. the assembly is prepared.

3.4.1 Completing the assembly for 1 sensor

Figure 3-2: Installing the sensor

Steps to install the sensor with PG 13.5 process connection
1. Unscrew the cable gland and remove the closing plug from the support pipe ①.
2. Insert the sensor cable through the support pipe, the closing plug and the cable gland ②.
3. Insert the sensor into the sensor holder ③ and connect the sensor cable to the sensor ④.
4. Tighten the protection cage on the sensor holder ⑤ and fasten the sensor holder with the union nut ⑥.
5. Re-Install the closing plug in the support pipe ⑦ and fasten the cable gland ⑧.
Steps to install the sensor with G 1/2” process connection

1. Unscrew the cable gland and remove the closing plug from the support pipe (1).
2. Insert the sensor cable through sensor holder, support pipe, closing plug and cable gland (2).
3. Screw the sensor into the sensor holder (3).
4. Fasten the sensor holder with the union nut (4).
5. Re-install the closing plug in the support pipe (5) and fasten the cable gland (6).

Check the correct installation

1. Check if all connections are tight.
3.4.2 Installing the assembly for 1 sensor

Steps to install the assembly
1. Fix the mounting bracket to the wall ①.
2. Clip the assembly into the mounting bracket ②.

Check the correct installation
1. Check if all connections are tight.
2. Check if the assembly is properly seated in the mounting bracket.
3. Check if the assembly is immersed deep enough in the water basin.

Figure 3-4: Installing the assembly
3.4.3 Completing the assembly for up to 3 sensors

Steps to install the sensor
1. Remove cap and screwed cover and unscrew the cable gland ①.
2. Unscrew the protection cage and remove the sensor holder ②.
3. Screw the sensor into the sensor holder and connect the sensor cable to the sensor ③.
   Close unused positions in the sensor holder with sealing plugs.
4. Lead the sensor cable through the support pipe ④.
5. Insert the sensor holder into the support pipe ⑤. Screw the protection cage to the support pipe ⑤.
6. Insert the sensor cable into the next chamber and through the sealing plug ⑥.
7. Apply sealing plug to the port ⑦ and insert the sensor cable through the cable gland ⑧.
8. Tighten the cable gland ⑨. Mount cap and screwed cover ⑨.

Check the correct installation
1. Check if all connections are tight.
3.4.4 Installing the assembly for up to 3 sensors

Install the assembly either with mounting brackets (customer-supplied) as shown in fig. 3-4 refer to Installing the assembly for 1 sensor on page 15.

As an alternative the assembly can be installed with screws or bolts using the 2 holes (diameter 10 mm / 3.94”) between cap and screwed cover.
4.1 Maintenance

4.1.1 Service instructions

**WARNING!**
Installation, assembly, start-up and maintenance may only be performed by appropriately trained personnel. The regional occupational health and safety directives must always be observed.

For standard applications we recommend the following schedule.

**Maintenance schedule**

<table>
<thead>
<tr>
<th>Maintenance action</th>
<th>Every month</th>
<th>Once a year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual check of the assembly</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Establish a maintenance plan which is adjusted to your process.

4.1.2 Availability of services

The manufacturer offers a range of services to support the customer after expiration of the warranty. These include repair, maintenance, technical support and training.

**INFORMATION!**
For more precise information, please contact your local sales office.

4.1.3 Spare parts availability

The manufacturer adheres to the basic principle that functionally adequate spare parts for each device or each important accessory part will be kept available for a period of 3 years after delivery of the last production run for the device.

This regulation only applies to spare parts which are subject to wear and tear under normal operating conditions.
4.2 Returning the device to the manufacturer

4.2.1 General information

This device has been carefully manufactured and tested. If installed and operated in accordance with these operating instructions, it will rarely present any problems.

**WARNING!**

*Should you nevertheless need to return a device for inspection or repair, please pay strict attention to the following points:*

- *Due to statutory regulations on environmental protection and safeguarding the health and safety of the personnel, the manufacturer may only handle, test and repair returned devices that have been in contact with products without risk to personnel and environment.*
- *This means that the manufacturer can only service this device if it is accompanied by the following certificate [see next section] confirming that the device is safe to handle.*

**WARNING!**

*If the device has been operated with toxic, caustic, radioactive, flammable or water-endangering products, you are kindly requested:*

- *to check and ensure, if necessary by rinsing or neutralising, that all cavities are free from such dangerous substances,*
- *to enclose a certificate with the device confirming that it is safe to handle and stating the product used.*
4.2.2 Form (for copying) to accompany a returned device

CAUTION!
To avoid any risk for our service personnel, this form has to be accessible from outside of the packaging with the returned device.

<table>
<thead>
<tr>
<th>Company:</th>
<th>Address:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department:</td>
<td>Name:</td>
</tr>
<tr>
<td>Tel. no.:</td>
<td>Fax no. and/or Email address:</td>
</tr>
<tr>
<td>Manufacturer’s order no. or serial no.:</td>
<td></td>
</tr>
</tbody>
</table>

The device has been operated with the following medium:

This medium is:  | radioactive
                 | water-hazardous
                 | toxic
                 | caustic
                 | flammable

We checked that all cavities in the device are free from such substances.
We have flushed out and neutralized all cavities in the device.

We hereby confirm that there is no risk to persons or the environment through any residual media contained in the device when it is returned.

Date: | Signature: |
Stamp: |

4.3 Disposal

CAUTION!
Disposal must be carried out in accordance with legislation applicable in your country.
## 5.1 Technical Data

### Design

<table>
<thead>
<tr>
<th>Type of assembly</th>
<th>Immersion assembly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process connections</td>
<td>Basins / open channels</td>
</tr>
<tr>
<td>Sensor connection</td>
<td>Sensor Specific</td>
</tr>
<tr>
<td></td>
<td>PG 13.5, Ø 12 mm / 0.47 inch, 120 mm / 4.7 inch</td>
</tr>
<tr>
<td></td>
<td>G 1/2&quot;</td>
</tr>
<tr>
<td>Total length</td>
<td>approx. 1 m / 3.3 ft</td>
</tr>
</tbody>
</table>

### Installation conditions

<table>
<thead>
<tr>
<th>Operating conditions</th>
<th>Temperature range (assembly)</th>
<th>max. 90°C / 194°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process pressure</td>
<td>pressureless</td>
<td></td>
</tr>
</tbody>
</table>

### Materials

<table>
<thead>
<tr>
<th>Holder</th>
<th>PP</th>
</tr>
</thead>
<tbody>
<tr>
<td>O-rings</td>
<td>EPDM</td>
</tr>
</tbody>
</table>
### 5.2 Dimensions

**Assembly for 1 sensor**

![Dimensions Diagram]

**Table: Dimensions**

<table>
<thead>
<tr>
<th></th>
<th>[mm]</th>
<th>[inch]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>100</td>
<td>3.94</td>
</tr>
<tr>
<td>b</td>
<td>160</td>
<td>6.3</td>
</tr>
<tr>
<td>c</td>
<td>68</td>
<td>2.68</td>
</tr>
<tr>
<td>d₁ₘₐₓ</td>
<td>1030</td>
<td>40.55</td>
</tr>
<tr>
<td>d₂ₘₐₓ</td>
<td>930</td>
<td>36.61</td>
</tr>
<tr>
<td>e</td>
<td>Ø 59</td>
<td>Ø 2.32</td>
</tr>
<tr>
<td>f</td>
<td>Ø 37</td>
<td>Ø 1.46</td>
</tr>
<tr>
<td>g</td>
<td>Ø 25</td>
<td>Ø 0.98</td>
</tr>
<tr>
<td>h</td>
<td>Ø 37</td>
<td>Ø 1.46</td>
</tr>
</tbody>
</table>
Assemble for up to 3 sensors

Figure 5-2: Dimensions

<table>
<thead>
<tr>
<th>Assembly for up to 3 sensors</th>
<th>[mm]</th>
<th>[inch]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>170</td>
<td>6.69</td>
</tr>
<tr>
<td>b</td>
<td>200</td>
<td>7.87</td>
</tr>
<tr>
<td>c</td>
<td>1000</td>
<td>39.37</td>
</tr>
<tr>
<td>d</td>
<td>45</td>
<td>1.77</td>
</tr>
<tr>
<td>e</td>
<td>75</td>
<td>2.95</td>
</tr>
<tr>
<td>f</td>
<td>Ø 75</td>
<td>Ø 2.95</td>
</tr>
<tr>
<td>g</td>
<td>Ø 63</td>
<td>Ø 2.48</td>
</tr>
</tbody>
</table>
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- Level
- Temperature
- Pressure
- Process Analysis
- Services

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