SEN SofIT INS Handbook

Insertion assembly
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 INS assembly is attached to tanks or pipes. The insertion assembly serves for mounting a sensor in such a way that it immerses into the process fluid in order to measure chemical or physical characteristics. The material characteristics of the flow-through assembly, the gaskets, the sensors and the housing must be chosen depending on the process characteristics (e.g. pressure, temperature, abrasivity). The flow-through assembly must 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.

 RESULTS
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.

---

Figure 2-1: Scope of delivery

1. Ordered assembly
2. Documentation

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

Figure 2-2: Insertion assemblies

a SENSOFIT INS 1310 / b SENSOFIT INS 7311 / c SENSOFIT INS 7312

1. Sensor cable
2. Protection cap
3. Sensor assembly
4. Process connection Union nut
5. Process connection Tri-clamp
6. Process connection Varivent
7. Sensor
8. Protection cage

Assemblies are attached to tanks or pipes by an applicable process connection. You can choose between different process connections, sealing materials and protection cage.
2.3 Nameplate

Figure 2-3: Example for a nameplate on the assembly body

1. Max. static pressure / max. temperature
2. Serial number
3. Order code
4. Device name
5. Manufacturer
6. Observe the operation and installation instruction
3.1 General notes on installation

**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. Check for the correct supply voltage printed on the nameplate.

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...+70°C / -4...+158°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 depends on the process conditions; the manufacturer can thus only give the general recommendation that the gasket must comply with the individual requirements of the measuring point (e.g. pressure, temperature, chemically aggressive media).

Preparing the system and make sure that
- the process is switched off.
- there is sufficient working space available for operation of the assembly.
- tanks or pipelines are depressurised, empty and clean.
- the assembly connection and the process connection fit together.
- the protection cap is removed and the sensor cable is guided through it.
- all wetted sealings are in place and not damaged.
- there is no potentially explosive atmosphere.

Preparing the assembly and make sure that
- the dimensions of the sensor fits into the assembly. For further information refer to Dimensions on page 17
- all seals connected to the sensor are available.
3.4 Installing the assembly

Make sure that
1. the system is prepared.
2. the assembly is prepared.
   For more information refer to *Pre-installation requirements* on page 10.

Steps to install the assembly
1. Insert the assembly into the prepared installation position by using an appropriate gasket.
2. Connect the process connection and tighten.

**DANGER!**
*Do not operate the assembly without sensor. Otherwise process fluid will be blown out through the assembly.*

Steps to install the sensor in the assembly
1. Insert the sensor into the assembly and tighten it.
2. Connect the sensor cable to the sensor.
3. Install the protection cap.

Check the correct installation
1. Check if all connections are tight.
2. Check if no fluid escapes the process if the process starts again.
4.1 Maintenance

4.1.1 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.*

4.1.2 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.

4.1.3 Removing the sensor

*DANGER!*  
*Broken glass from the sensor may damage the wetted sealing.*

*CAUTION!*  
*Ensure that system is pressure-free before replacing the sensor.*

*CAUTION!*  
*Process liquid will leak when sensor is disconnected from process in an inappropriate way.*

*CAUTION!*  
*Check wetted seals and replace if necessary.  
If necessary, install the seals chosen according to the assembly and the process.*

*CAUTION!*  
*Drain and clean the pipe or tank before removing the sensor*

**Remove the sensor**

1. Process pipes and tanks must be pressure-free, empty and clean before removing the sensor from the assembly.
2. Remove protection cap.
3. Remove sensor cable.
4. Untighten sensor.
5. Replace the sensor or close the process via blind plugs before restarting the processes.
4.1.4 Replace the wetted sealing

**DANGER!**
Broken glass from the sensor may damage the wetted sealing.

**CAUTION!**
Check wetted seals and replace if necessary.
If necessary, install the seals chosen according to the assembly and the process.

---

**Figure 4-1: Position of the sealings**

a SENSOFIT INS 1310 / b SENSOFIT INS 7311 / c SENSOFIT INS 7312

1. 0-Ring Ø10.77 mm x 2.62 mm
2. 0-Ring Ø21.95 mm x 1.78 mm

**Replace the wetted sealings**
1. Remove sensor from the assembly.
2. Remove assembly from the process connection.
3. Remove and replace O-ring seals on the assembly.
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:

<table>
<thead>
<tr>
<th>This medium is:</th>
<th>radioactive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>water-hazardous</td>
</tr>
<tr>
<td></td>
<td>toxic</td>
</tr>
<tr>
<td></td>
<td>caustic</td>
</tr>
<tr>
<td></td>
<td>flammable</td>
</tr>
<tr>
<td>We checked that all cavities in the device are free from such substances.</td>
<td></td>
</tr>
<tr>
<td>We have flushed out and neutralized all cavities in the device.</td>
<td></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Date:</th>
<th>Signature:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stamp:</td>
<td></td>
</tr>
</tbody>
</table>

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>Process connections</th>
<th>Tri-clamp</th>
<th>1&quot;...1.5&quot; (OD 50.5 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2&quot; (OD 64 mm)</td>
</tr>
<tr>
<td>Varivent® N</td>
<td>DN40...125</td>
<td></td>
</tr>
<tr>
<td>Union nut</td>
<td>G1 1/4&quot; DN25</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(O-ring position: 25 mm)</td>
<td></td>
</tr>
<tr>
<td>Sensor type</td>
<td>120/12 mm PG 13.5</td>
<td></td>
</tr>
</tbody>
</table>

### Installation conditions

<table>
<thead>
<tr>
<th>Operating conditions</th>
<th>Temperature range</th>
<th>-10...+140°C / +14...+284°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process pressure</td>
<td>Max. 10 bar / 145 psi</td>
<td></td>
</tr>
<tr>
<td>Ambient conditions</td>
<td>Ambient temperature</td>
<td>-10...+70°C / +14...+158°F</td>
</tr>
<tr>
<td></td>
<td>Transport and storage temperature</td>
<td>-20...+80°C / -4...+176°F</td>
</tr>
</tbody>
</table>

### Materials

<table>
<thead>
<tr>
<th>Wetted</th>
<th>Assembly</th>
<th>Stainless Steel (1.4404, 316L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sealing</td>
<td>EPDM [FDA USP Class VI] or FPM (not for SENSOFIT INS 7312)</td>
</tr>
<tr>
<td>Non wetted</td>
<td>Protection cap</td>
<td>PA 6.6.GF30</td>
</tr>
</tbody>
</table>
5.2 Dimensions

![Figure 5-1: Dimensions Overview](image)

<table>
<thead>
<tr>
<th></th>
<th>[mm]</th>
<th>[inch]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>29</td>
<td>1.14</td>
</tr>
<tr>
<td>b</td>
<td>200</td>
<td>7.87</td>
</tr>
<tr>
<td>c</td>
<td>252</td>
<td>9.92</td>
</tr>
</tbody>
</table>
Figure 5-2: Dimensions SENSOFIT INS 1310

<table>
<thead>
<tr>
<th></th>
<th>[mm]</th>
<th>[inch]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>G1 1/4</td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>25</td>
<td>0.98</td>
</tr>
<tr>
<td>c</td>
<td>25</td>
<td>0.98</td>
</tr>
<tr>
<td>d</td>
<td>70</td>
<td>2.76</td>
</tr>
</tbody>
</table>
Figure 5-3: Dimensions SENSOFIT INS 7311

<table>
<thead>
<tr>
<th></th>
<th>[mm]</th>
<th>[inch]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>50.5 / 64</td>
<td>1.99 / 2.52</td>
</tr>
<tr>
<td>b</td>
<td>25</td>
<td>0.98</td>
</tr>
<tr>
<td>c</td>
<td>45</td>
<td>1.77</td>
</tr>
</tbody>
</table>
Figure 5-4: Dimensions SENSOFIT INS 7312

<table>
<thead>
<tr>
<th></th>
<th>[mm]</th>
<th>[inch]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>84</td>
<td>3.31</td>
</tr>
<tr>
<td>b</td>
<td>25</td>
<td>0.98</td>
</tr>
<tr>
<td>c</td>
<td>40</td>
<td>1.57</td>
</tr>
<tr>
<td>d</td>
<td>52</td>
<td>2.05</td>
</tr>
</tbody>
</table>
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