4.2 Switching / reblocking behavior

The device is configured according to VDA 24571-1.

4.3 Communication Switching Output 1 and 2

Connection diagrams:

3-wire system (IO-Link / SIO with switch output)

![Fig. 4 Switching and reblocking behavior for hydrostatic function in pressure-time graph](image)

5. EMV

Before using the device for the first time, check that it has been properly installed, and make sure that it does not feature any defects.

After installation, the device is tested by applying the following: 69.5 V/50 Hz voltage to the input. The device may be commissioned only by appropriately qualified specialist personnel who have read and understood the user manual.

5.6 Observations

The observations are made in accordance with the manufacturer’s instructions.

6. Operation

6.1 Control and display elements

- 1.4 Limitation of liability and warranty

Failure to follow the instructions or observe the technical regulations, improper use or use of the device in a manner other than that intended, or damage to the device will void the warranty and invalidates claims for liability.

1.5 Intended use

The DS 3XX Pressure Switches have been developed for pressure monitoring applications depending on the particular model. They are equipped with a 4-digit LED display which indicates the actual system pressure. Depending on the particular device and manufacturer, additional parameters might be displayed.

The pressure sensor is intended for integration in a machine or system. It is the responsibility of the user to ensure whether the device is suitable for the chosen application. If in doubt, please contact our sales office. BD SENSORS cannot, however, assume any liability for an incorrect choice or any consequences arising from that.

Media that can be measured are gases or liquids that are compatible with the materials that contact the medium. These are described in the data sheet. Furthermore, it must be ensured in each individual case that the medium is compatible with the gaskets the device is contact with.

The technical data set out in the current data sheet are authoritative. If you do not have the data sheet, please request it from us before the device is downloaded from our website.

6.1.1 Information concerning the control, display, and input elements


The type plate must not be removed from the device!

6.1.2 Information concerning the function elements

The device is configured according to VDA 24571-1.

6.3 Calibration and storage instructions

The type plate must not be removed from the device!

6.4 Environmental and safety instructions

- Please note that the entire system must comply with the requirements of the BAM (German Federal Institute for Materials Research and Testing, DIN 19247).

- Protective caps are designed for use without seals for gas applications with up to 25 bar. Protective caps with FMA/Visi-Max are designed for use without seals for gas applications with up to 100 bar. Protective caps with Visi-Max are designed for use without seals for gas applications with more than 100 bar.

- Make sure that the sealing surface of the receiving part is perfectly clean and smooth (R = 0.3). Screw the device into the mounting thread by hand. If the device is included in a mounting ring, the device need only be screwed in by hand.

- Devices with whose must be lightened with an open-end wrench (with steel wrench flats: G1/4": approx. 8–10 mm, G3/8": approx. 10–12 mm, G1/2": approx. 20–32 mm, with plastic wrench flats: max. 25 mm).

- The specified tightening torques must not be exceeded.

6.5 Installation instructions for DIN 3852 connectors

- For DIN 3852 mech. connectors: O-ring (pre-fitted)
- Center the clamp or Varivent connector above the pressure connector.

If the device is installed with the pressure connector facing upwards, make sure that no liquid runs down the housing. This could result in moisture and dirt blocking between the power supply unit or control cabinet and the device.

5.2 Servicing/Repair

5.6 Observations

The observations are made in accordance with the manufacturer’s instructions.

6. Orientation of the display module

In order to ensure easy readability even when the device is installed in an awkward location, the display module is tilted into the desired position. Its rational capacity is illuminated (less intense) in this case.

6.6 Electrical installation

- Danger of death from electric shock
- Do not touch the device!
- Install the device only when the main supply has been switched off!

6.7 Electrical installation

3. Installation

3.1 General installation and safety instructions

- Please treat this highly sensitive electronic measuring instrument with care, both when it is unpacked and when it is packed.

- Modifications or alterations may be made to the device.

- Please send back the device to us.

- The device is configured according to VDA 24571-1.

- The type plate must not be removed from the device!

3. Installation

3.1 General installation and safety instructions

- Danger of death from electric shock - Install the device only when the mains power supply has been switched off!

- Danger of death from improper installation - Installation must be performed by an appropriately qualified specialist personnel who have read and understood the user manual.

- Follow the instructions in the following described installation instructions.

3.4 Installation instructions for non-oval flanges

- Media that can be measured are gases or liquids that are compatible with the process media and the pressure to be measured (e.g. a copper pipe).

- Make sure that the sealing surface of the receiving part is perfectly clean and smooth (R = 0.3). Screw the device into the mounting thread by hand. If the device is included in a mounting ring, the device need only be screwed in by hand.

- Devices with whose must be lightened with an open-end wrench (with steel wrench flats: G1/4": approx. 8–10 mm, G3/8": approx. 10–12 mm, G1/2": approx. 20–32 mm, with plastic wrench flats: max. 25 mm).

- The specified tightening torques must not be exceeded.

3.5 Installation instructions for EN 837 connectors

- Use a suitable seal that is compatible with the process media and the pressure to be measured (e.g. a copper pipe).

- Make sure that the sealing surface of the receiving part is perfectly clean and smooth (R = 0.3). Screw the device into the mounting thread by hand. If the device is included in a mounting ring, the device need only be screwed in by hand.

- Devices with whose must be lightened with an open-end wrench (with steel wrench flats: G1/4": approx. 8–10 mm, G3/8": approx. 10–12 mm, G1/2": approx. 20–32 mm, with plastic wrench flats: max. 25 mm).

- The specified tightening torques must not be exceeded.

3.6 Installation instructions for NPT connectors

- Attention: Media that can be measured are gases or liquids that are compatible with the process media and the pressure to be measured (e.g. a copper pipe).

- Make sure that the sealing surface of the receiving part is perfectly clean and smooth (R = 0.3). Screw the device into the mounting thread by hand. If the device is included in a mounting ring, the device need only be screwed in by hand.

- Devices with whose must be lightened with an open-end wrench (with steel wrench flats: G1/4": approx. 8–10 mm, G3/8": approx. 10–12 mm, G1/2": approx. 20–32 mm, with plastic wrench flats: max. 25 mm).

- The specified tightening torques must not be exceeded.

3.7 Installation instructions for dairy pipe connectors

- Check that the O-ring is undamaged and is seated in the O-ring seat of the device.

- Center the dairy pipe connector in the corresponding opening of the tank.

- Screw the union nut on to the reblocking fitting.

- Pull the joint connector firmly upwards (for venting).

- Provide a cooling section when using the device in a process where temperatures of over 50°C are expected.

- In the case of hydraulic systems, orient the device such that the protective cover faces upwards (for venting).

- Take care that the pressure connector is not subjected to any excessive pressure, which could fracture the protective cover, since this could cause the chaff to shift or result in damage, especially to very slim pressure ranges, as well as to devices with a pressure cone of plastic.

- Information concerning the user manual

- This user manual is part of the device and should be kept accessible at all times in the immediate vicinity of the installation location of the device.

- Subject to technical alteration –
6.3 Structure of the menu system

7. IO-Link Interface

7.1 General Link Interface

7.2 ISO mode (standard IO mode)

In this mode the sensor operates like a normal pressure sensor with standard output signals. The digital output is shown on Pin 4 (Output 1) of the M12 connector plug. Depending on the design, Pin 2 (Output 2) can be an analog or an additional digital output.

7.3 Process data

The process data length of the sensor is 16 bits. The switch states (BDC1 and BDC2) as well as the current measured values are transmitted. The 14 bits of the measured value are scaled according to the measuring range.

7.4 Error codes

<table>
<thead>
<tr>
<th>Error code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x01</td>
<td>OK</td>
</tr>
<tr>
<td>0x02</td>
<td>Out-of-Speciation</td>
</tr>
<tr>
<td>0x03</td>
<td>Hysteresis NC</td>
</tr>
<tr>
<td>0x04</td>
<td>Download End</td>
</tr>
<tr>
<td>0x05</td>
<td>Data Storage Break</td>
</tr>
<tr>
<td>0x06</td>
<td>Data Storage Lock + User Interface Lock</td>
</tr>
<tr>
<td>0x07</td>
<td>Data Storage Lock + IO-Link Lock + User Interface Lock</td>
</tr>
<tr>
<td>0x08</td>
<td>User Interface Lock  + Parameterization Lock</td>
</tr>
<tr>
<td>0x09</td>
<td>IO-Link Lock + Data Storage Lock + User Interface Lock</td>
</tr>
<tr>
<td>0x0A</td>
<td>IO-Link Lock + Data Storage Lock + Parameterization Lock</td>
</tr>
</tbody>
</table>

7.5 Parameter data for the pressure sensor

<table>
<thead>
<tr>
<th>Index Sub-index Object name</th>
<th>Single value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00</td>
<td>System constants</td>
</tr>
<tr>
<td>0x01</td>
<td>Date/Time</td>
</tr>
<tr>
<td>0x02</td>
<td>Error code</td>
</tr>
<tr>
<td>0x03</td>
<td>BDC1 / Output 1</td>
</tr>
<tr>
<td>0x04</td>
<td>BDC2 / Output 2</td>
</tr>
<tr>
<td>0x05</td>
<td>BDC1 / Output 3</td>
</tr>
<tr>
<td>0x06</td>
<td>BDC2 / Output 3</td>
</tr>
</tbody>
</table>

8. Decommissioning

Danger of injury from media escaping under pressure

- Disposal of the device in a cleaning chamber is not allowed.

9. Maintenance

The device is in principle, maintenance-free. If necessary, the housing of the device may be cleaned with a damp cloth and a non-aggressive cleaning solution, for instance a mild detergent. Take care not to damage the sensor. Care should be taken while doing so. If the decommissioning process is not properly finished, the device may be damaged.

10. Servicing/Repair

If the device has come into contact with pollutants, wear suitable protective clothing, e.g. gloves, goggles, when cleaning it.

11. Disposal

The device must be disposed of in accordance with European Directive 2002/96/EC and 2003/108/EC (Waste Electrical and Electronic Equipment). Waste electrical products may not be disposed of with household waste!

12. Guarantee Conditions

The guarantee conditions are subject to the statutory warranty period of 24 months, starting from the date of delivery. No warranty claims will be accepted if the device has been used improperly, modified or damaged. The warranty does not cover damaged components. Warranty cover also excludes any claims for defects that have arisen as a result of normal wear.

13. Declaration of Conformity / CE

The supplied device fulfills the statutory requirements. The relevant directives, harmonized standards and documents are listed in the EU Declaration of Conformity applicable to the product. This can be found at http://www.bdsensors.de. In addition, the operational safety of the device is confirmed by the CE mark on the type plate.