

## Technical Note

# TruStability® Pressure Sensor Liquid Media Compatibility and Guidelines

### BACKGROUND

TruStability® Pressure Sensors (HSC Series—High Accuracy and SSC Series—Standard Accuracy) have an available option that extends performance from non-corrosive, non-ionic gases to non-corrosive, non-ionic liquids and condensing humidity on the primary pressure port (Port 1). The information in this Technical Note is intended to assist end users in understanding the performance of this “liquid media” option.

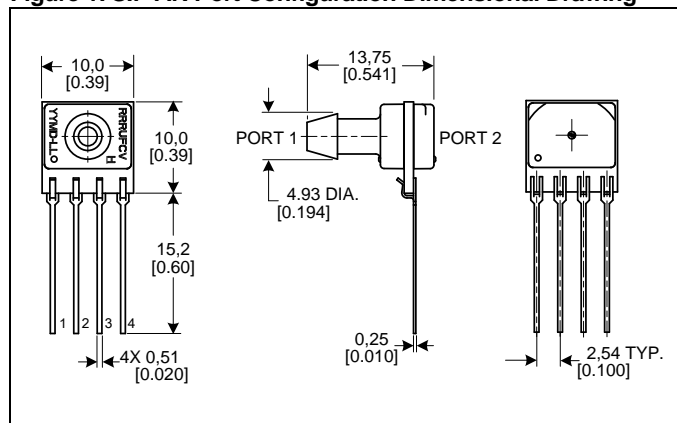
When using pressure sensors across a variety of liquid media, it is necessary to ensure that the sensor is able to operate with the desired liquid without adverse effects. To ensure compatibility, it is important to consider all the materials in the sensor with which the liquid will come into contact.

Customers using the liquid media option should review the product data sheets to understand the materials in the liquid media’s path. Ultimately, it is up to the customer to determine if the sensor is compatible with the liquid media and is right for the application. Honeywell can assist in this effort, utilizing our existing application knowledge and testing experience.

### PRESSURE PORT DESCRIPTION

TruStability® Pressure Sensors have two pressure ports, labeled Port 1 and Port 2, on the dimensional drawings in the product data sheets. Port 1 is the primary pressure port and Port 2 is the reference pressure port (see Figure 1).

**Figure 1. SIP AN Port Configuration Dimensional Drawing**



### PRESSURE PORT COMPATIBILITY

TruStability® products with the liquid media option have additional protection applied to Port 1 to allow it to survive exposure to condensing humidity and some liquids (see Table 1).

**Table 1. TruStability® Pressure Port Compatibility**

Option	Port 1	Port 2
without liquid media option	<ul style="list-style-type: none"> <li>• non-corrosive, non-ionic media only (such as air and dry gases)</li> <li>• must not be exposed to condensing humidity</li> </ul>	<ul style="list-style-type: none"> <li>• non-corrosive, non-ionic media only (such as air and dry gases)</li> <li>• must not be exposed to condensing humidity</li> </ul>
with liquid media option	<ul style="list-style-type: none"> <li>• non-corrosive, non-ionic liquids or gases</li> </ul>	<ul style="list-style-type: none"> <li>• non-corrosive, non-ionic media only (such as air and dry gases)</li> <li>• must not be exposed to condensing humidity</li> </ul>

### PORT 1 WETTED MATERIALS OF CONSTRUCTION

The following wetted materials of construction are exposed materials in the media path:

- High temperature polyamide
- Alumina ceramic
- Epoxy
- Glass
- Silicone
- Silicon
- Ceramic
- Solder

The liquid media being used needs to be compatible with all wetted materials used in the sensor construction (i.e., covers, substrate, adhesives and electronic components). Even though a liquid may be compatible initially, it is not uncommon for some media to undergo chemical changes in the application over time. If this is possible in the end user application, the changed media also needs to be validated as compatible with the wetted materials.

An example of this change is when a compatible gas, like nitrogen dioxide (NO<sub>2</sub>), combines with high humidity to form nitric acid (HNO<sub>3</sub>), which, at certain concentrations, will etch the silicon sensor die and affect the sensor output. The same thing may occur when water is present in combination with NO<sub>2</sub> or other gases that create an incompatible working liquid.

### SENSOR PORT POSITIONING

- Recommend that the sensor be positioned with Port 1 facing downwards; any particulates in the system are less likely to enter and settle within the pressure sensor if it is in this position.
- Ensure liquid media contains no particulates. All TruStability® sensors are dead-ended devices. Particulates can accumulate inside the sensor, causing damage or affecting sensor output.
- Ensure liquid media does not create a residue when dried; build-up inside the sensor may affect sensor output. Rinsing of a dead-ended sensor is difficult and has limited effectiveness for removing residue.

# TruStability<sup>®</sup> Pressure Sensor Liquid Media Compatibility and Guidelines

## LIQUID MEDIA GUIDELINES

### CAUTION

#### PRODUCT DAMAGE

- Ensure liquid media is applied to Port 1 only; Port 2 is not compatible with liquids.
- Ensure liquid media contains no particulates. All TruStability<sup>®</sup> sensors are dead-ended devices. Particulates can accumulate inside the sensor, causing damage or affecting sensor output.
- Recommend that the sensor be positioned with Port 1 facing downwards; any particulates in the system are less likely to enter and settle within the pressure sensor if it is in this position.
- Ensure liquid media does not create a residue when dried; build-up inside the sensor may affect sensor output. Rinsing of a dead-ended sensor is difficult and has limited effectiveness for removing residue.
- Ensure liquid media are compatible with wetted materials. Non-compatible liquid media will degrade sensor performance and may lead to sensor failure.

**Failure to comply with these instructions may result in product damage.**

### WARNING

#### PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**

### WARNING

#### MISUSE OF DOCUMENTATION

- The information presented in this technical note is for reference only. DO NOT USE this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

#### WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

#### SALES AND SERVICE

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

**E-mail:** [info.sc@honeywell.com](mailto:info.sc@honeywell.com)

**Internet:** [www.honeywell.com/sensing](http://www.honeywell.com/sensing)

#### Phone and Fax:

Asia Pacific	+65 6355-2828
	+65 6445-3033 Fax
Europe	+44 (0) 1698 481481
	+44 (0) 1698 481676 Fax
Latin America	+1-305-805-8188
	+1-305-883-8257 Fax
USA/Canada	+1-800-537-6945
	+1-815-235-6847
	+1-815-235-6545 Fax

Sensing and Control  
Honeywell  
1985 Douglas Drive North  
Golden Valley, MN 55422  
[www.honeywell.com/sensing](http://www.honeywell.com/sensing)

008212-1-EN IL50 GLO Printed in USA  
March 2011  
Copyright © 2011 Honeywell International Inc. All rights reserved.

# Honeywell