Honeywell

Media Compatibility for Heavy Duty Pressure Transducers, PX2 Series and PX3 Series

A Technical Note

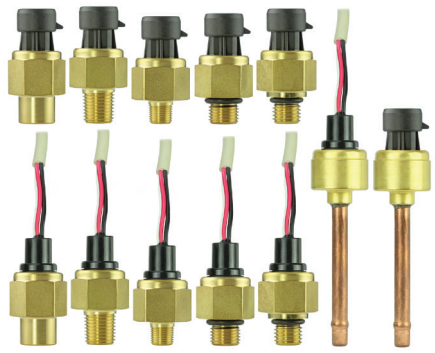
1.0 Background

When using heavy duty pressure transducers across a variety of media, it is necessary to ensure that the device is able to operate with the desired media without adverse effects. To ensure compatibility, it is important to consider all the materials in the sensor with which the media will come into contact. The information in this Technical Note is intended to assist end users in understanding the media compatibility of the PX2 Series and PX3 Series Heavy Duty Pressure Transducers. (See Figure 1.)

Figure 1. Pressure Transducers - Heavy Duty

PX2 SERIES

PX3 SERIES



Ultimately, it is up to the customer to determine if the transducer is compatible with the media and is right for the application. Honeywell can assist in this effort, utilizing our existing application knowledge and testing experience.

2.0 Description

Honeywell's PX2 Series and PX3 Series Heavy Duty Pressure Transducers are a line of configurable pressure transducers that use piezoresistive sensing technology with ASIC (Application Specific Integrated Circuit) signal conditioning in a stainless steel (PX2) or brass (PX3) housing that is compatible with a variety of liquid and gaseous media.

3.0 Wetted Materials of Construction

The materials shown in Table 1 are in contact with the application media.

The media being used needs to be compatible with all wetted materials used in the transducer construction (i.e., ports, substrate, adhesives, and sensing element). Even though a medium may be compatible initially, it is not uncommon for some media to undergo chemical changes over time. If this is possible in the end user's 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_2), combines with high humidity to form nitric acid (HNO_3), which, at certain concentrations, will etch the silicon sensor die and affect the sensor output.

Table 1: Wetted Materials

COMPONENT	PX2 SERIES	PX3 SERIES
PORT	304 stainless steel	threaded ports: brass C36000; lead (Pb) content: 3.7% max. tube port: copper UNS C12200; lead (Pb) free
BRAZE FILLER	-	silver and copper alloy
INTERNAL O-RING SEAL	-	HNBR (option H), silicone (option S)
SUBSTRATE	alumina ceramic	alumina ceramic
ADHESIVES	epoxy	epoxy or silicone
SENSING ELEMENT	glass, silicon	glass, silicon

4.0 COMPATIBLE MEDIA

The following media have been tested to be compatible with the wetted materials used in the construction of the PX2 Series and PX3 Series. This list is for reference only and contains a portion of all the media that are compatible with the PX2 Series and PX3 Series. Based on the media tested with these transducers, the PX2 Series and PX3 are believed to be compatible with other similar hydrofluorocarbon blends that are not listed above (i.e., R404A, R407A, etc.). It is up to the customer to determine if the transducer is compatible with the media and is right for an application. For Honeywell heavy duty pressure transducers designed for use with ammonia refrigerants, please see the SPT Series, 19 mm Series, or 13 mm Series Heavy Duty Pressure Transducers.

- Refrigerants
- R410A
- R134A
- R1234ZE
- R32
- R448A (Solstice® N40)
- Mixture of R245fa and trans-dichloroethylene
- Engine oil 10W30
- Brake fluid DOT3
- Hydraulic fluid
- Dry air

5.0 ADDITIONAL USAGE

The **CAUTION** information below provides additional usage information that should be followed in order to avoid potential product damage.

CAUTION

PRODUCT DAMAGE DUE TO MECHANICAL ISSUES

- Ensure torque specifications are determined for the specific application. Values provided are for reference only. (Mating materials and thread sealants can result in significantly different torque values from one application to the next.)
- When using mating parts made of stainless steel, use a thread sealant with anti-seize properties to prevent thread galling. Ensure the sealant is rated for the application.
- Use appropriate tools (such as an open ended wrench or deep well socket) to install transducers.
- Always hand-start transducers into the hole to prevent cross threading and damage.
- Ensure that torque is not applied to the electrical connector.
- Ensure that the proper mating electrical connector with a seal is used to connect the transducer. Improper or damaged seals can compromise ingress protection, leading to short circuits.

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

CAUTION

PRODUCT DAMAGE DUE TO PARTICULATES

- Ensure that a filter is used upstream of the transducer to keep media flow free of larger particulates and increased humidity. All PX3 Series transducers are dead-ended devices; particulate accumulation and condensing moisture may affect sensor output.
- It is recommended that the transducer be positioned with the port facing downwards; any particulates in the system are less likely to enter and settle within the pressure transducer if it is in this position.
- Ensure that the media does not create a residue when dried. Build-up inside the transducer may affect transducer output; rinsing of a dead-ended transducer is potentially difficult and has limited effectiveness in removing residue.

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

Warranty/Remedy

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. 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 that Honeywell, in its sole discretion, 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 Honeywell may provide application assistance personally, through our literature and the Honeywell web site, it is buyer's sole responsibility 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 writing. However, Honeywell assumes no responsibility for its use.

For more information

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