

Installation Instructions for the TruStability® Board Mount Pressure Sensors: NSC Series-Uncompensated/Unamplified, DIP and SMT Packages

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GENERAL INFORMATION

The TruStability® NSC Series-Uncompensated/Unamplified, is a piezoresistive silicon pressure sensor offering a ratiometric analog output for reading pressure over the specified full scale pressure span and temperature range.

The NSC Series is both unamplified and uncompensated. It offers infinite resolution on the pressure signal. Frequency response is limited only by the end user's system.

These sensors are available in standard pressure ranges from 1 psi to 150 psi (60 mbar to 10 bar) and are intended for use with non-corrosive, non-ionic gases, such as air and other dry gases. The liquid media option extends the performance of these sensors to con-corrosive, non-ionic liquids.

LIQUID MEDIA OPTION

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® 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.

SOLDERING

See soldering times and temperatures in Table 2.

CLEANING

CAUTION

IMPROPER CLEANING

- Ensure cleaning fluids, such as appropriate alcohols or fluorinated solvents, are used based on the type of contaminants to be removed.
- Do not immerse the sensor.

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

Table 1. Environmental Specifications

Parameter	Characteristic
Humidity: Dry gases only Liquid media option	0% to 95% RH, non-condensing 100% condensing or direct liquid media on Port 1
Vibration	MIL-STD-202F, Curve AK (20.7 g random)
Shock	MIL-STD-202F, Method 213B, Condition F
Life ¹	1 million cycles minimum
Solder reflow	J-STD-020-C

Note:

1. Life may vary depending on specific application in which sensor is utilized.

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Table 2. Absolute Maximum Ratings¹

Parameter	Min.	Max.	Unit
Supply voltage (V _{supply})	-12.0	12.0	Vdc
ESD susceptibility (human body model)	3	–	kV
Storage temperature	-40 [-40]	85 [185]	°C [°F]
Soldering time and temperature: Lead solder temperature (SIP, DIP) Peak reflow temperature (SMT)	4 s max. at 250 °C [482 °F] 15 s max. at 250 °C [482 °F]		

Table 3. Operating Specifications

Parameter	Min.	Typ.	Max.	Unit
Supply voltage (V _{supply}) ²	1.8	5.0 ³	12.0	Vdc
Supply current (at 5.0 Vdc supply)	–	1.5	2	mA
Specified temperature range ⁴	-40 [-40]	–	85 [185]	°C [°F]
Startup time	–	–	5	ms
Accuracy ⁵	–	–	±0.25	%FSS BFSL ⁶

Table 4. Wetted Materials⁷

Parameter	Port 1 (Pressure Port)	Port 2 (Reference Port)
Covers	high temperature polyamide	high temperature polyamide
Substrate	alumina ceramic	alumina ceramic
Adhesives	epoxy, RTV	epoxy, RTV
Electronic components	ceramic, silicon	silicon, glass, gold, solder

Notes:

1. Absolute maximum ratings are the extreme limits the device will withstand without damage.
2. Ratiometricity of the sensor (the ability of the device output to scale to the supply voltage) is achieved within the specified operating voltage.
3. Incorrect application of supply voltage or ground to the wrong pin may cause electrical failure.
4. The specified temperature range is the temperature range over which the sensor will produce an output proportional to pressure within the specified performance limits.
5. Accuracy: The maximum deviation in output from a Best Fit Straight Line (BFSL) fitted to the output measured over the pressure range at 25 °C [77 °F]. Includes all errors due to pressure non-linearity, pressure hysteresis, and non-repeatability.
6. Full Scale Span (FSS) is the algebraic difference between the output signal measured at the maximum (P_{max}) and minimum (P_{min}) limits of the pressure range. (See Figure 1 for ranges.)
7. Contact Honeywell Customer Service for detailed material information.

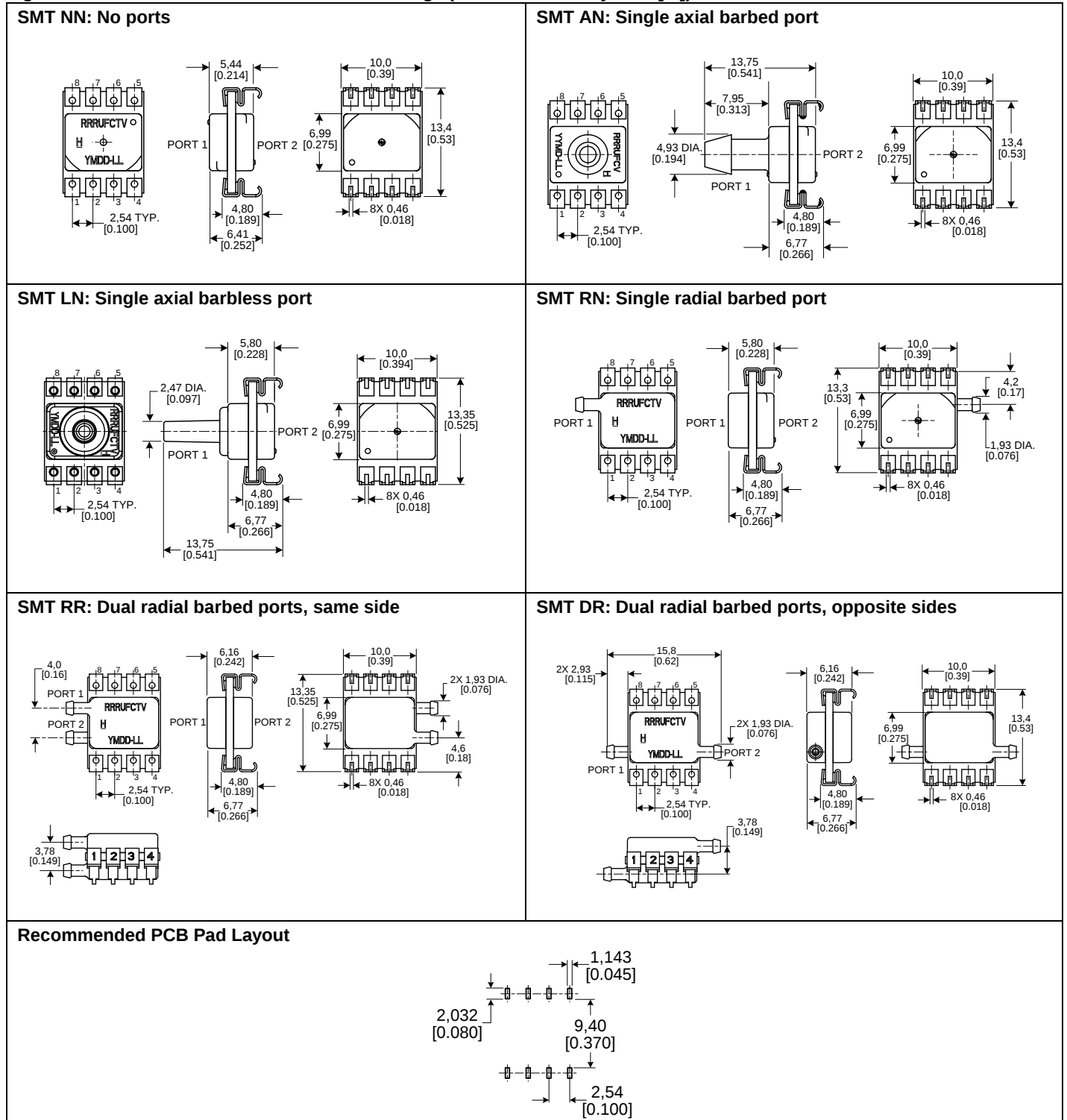
Table 5. Pinout for SMT and DIP Packages

Output Type	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
analog	GND	OUTPUT+	V _{supply}	OUTPUT-	NC	NC	NC	NC

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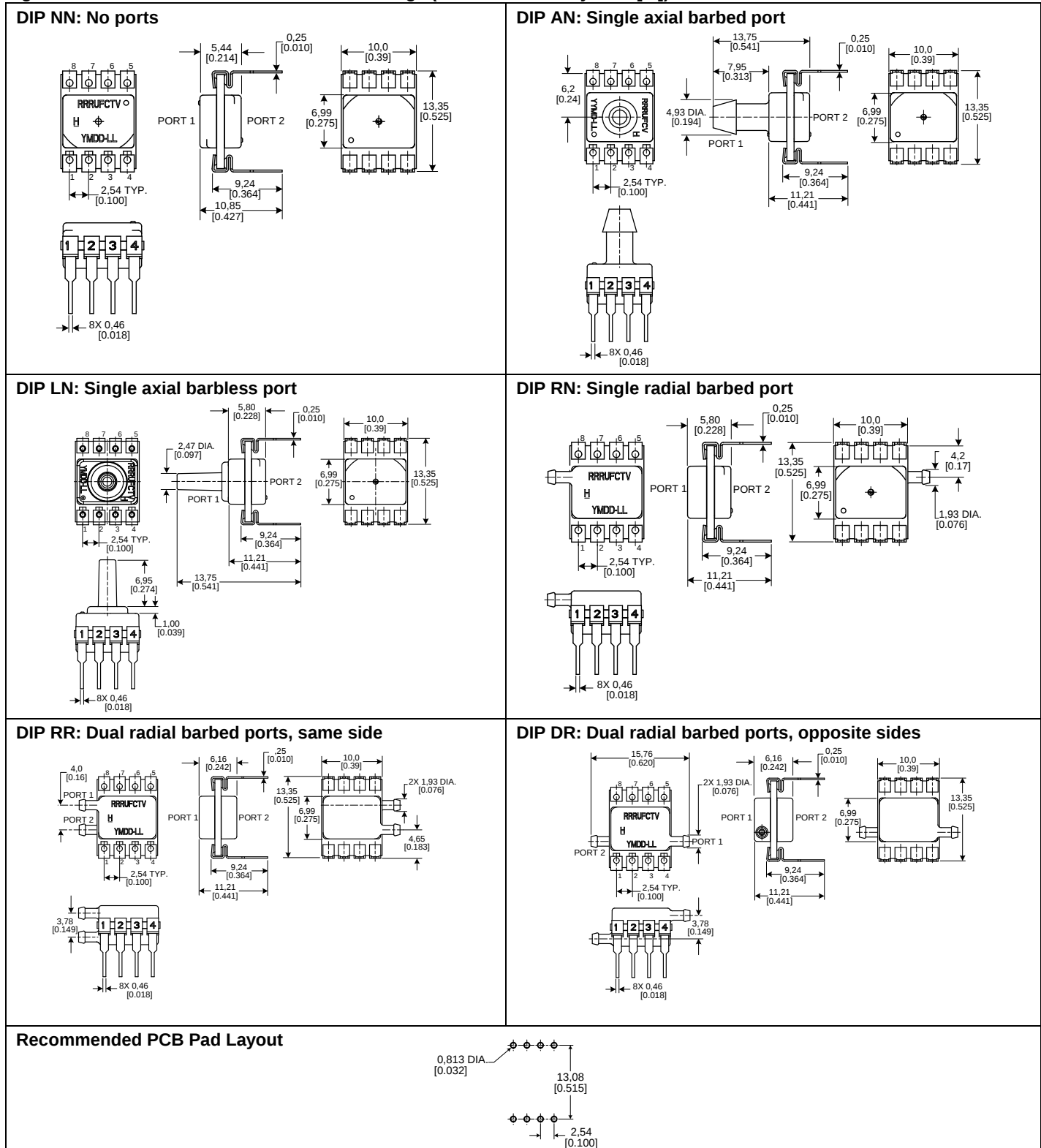
Figure 1. SMT Pressure Port Dimensional Drawings (For reference only: mm [in])



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Figure 2. DIP Pressure Port Dimensional Drawings (For reference only: mm [in])



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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.

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.

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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

Internet: <http://sensing.honeywell.com>

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
<http://sensing.honeywell.com>

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