

NanoSensors

NX/NZ NanoSensor®

Mounting and Handling Instructions

NanoSensors® are sensitive components designed to measure with extreme accuracy and should be handled with care. It is recommended that gloves be worn when handling the sensors to protect them from contamination, especially the sensing faces.

Care must be taken to prevent damage to cables and the user should observe the recommended minimum bend radii for the cables. On standard sensors this should be 5mm static and 10mm dynamic. On UVAC variants with Kapton cables this should be increased to 7.5mm static and 12mm dynamic.

On standard sensors the Probe sensor has a green wire and is identified "P" next to the connector. The Target sensor has a blue wire and is identified "T" next to the connector. On UVAC sensors, both cables are Kapton insulated and are both the same colour, so care must be taken to maintain identity as there is no "P" or "T" identifier.

The connector bodies must be electrically isolated from chassis ground and also electrically isolated from each other. If vacuum compatible variants are specified then the bulkhead feedthrough flange must also maintain electrical isolation between both connector bodies and also chassis ground. The outer sensor housing should be electrically grounded to chassis for best performance.

Typically one NanoSensor® is mounted on a fixed part and one on a moving part. It is recommended that the Probe NanoSensor® is mounted on the fixed part as this is generally easier to provide chassis grounding.



NX series NanoSensors® come in 3 profiles:

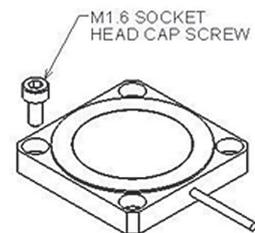
- Type 1 Round
- Type 2 Square
- Type 3 Rectangular.

● Type 1 (Round) sensors have threaded mounting holes on the mounting face of the sensor and are designed to be fixed from the rear of the sensor.



NXC1

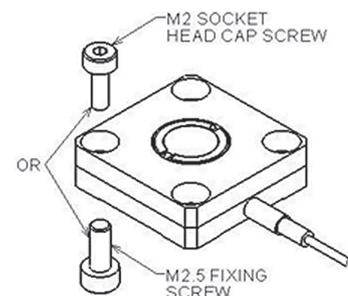
● Type 2 (Square) sensors have clearance holes for SHCS fixing screws and are designed to be fixed from the front sensing face of the sensor.



NXC2

● NXB3 (Rectangular) sensors are mounted as per Type 1 sensors. NXC3 (Rectangular) sensors are mounted as per Type 2 sensors.

● NZ series NanoSensors® are Type 2 (Square), but have combination threaded mounting holes which will accept fixing screws from the rear face or SHCS fixing screws to fix from the front face.

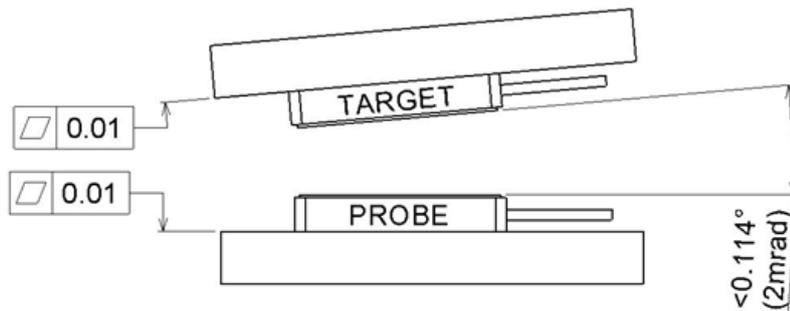


NZB2

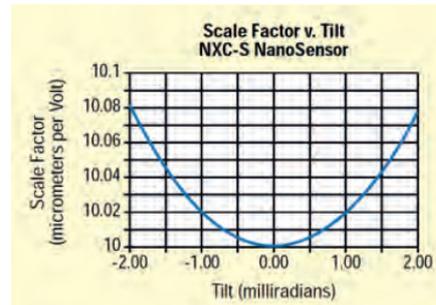
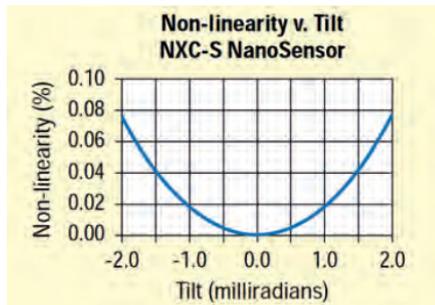
● Care must be taken to ensure fixing screws **do not** protrude beyond the sensing face on Types 2 & 3 sensors.

NanoSensors NX/NZ NanoSensor®

- Mechanical mounting of the NanoSensors® is critical to obtaining the best performance. NanoSensors® require a precision flat surface to minimise physical distortion of the sensor. Sensors must also be parallel to each other to reduce linearity and scale factor errors. The diagram below shows recommended mounting tolerances.



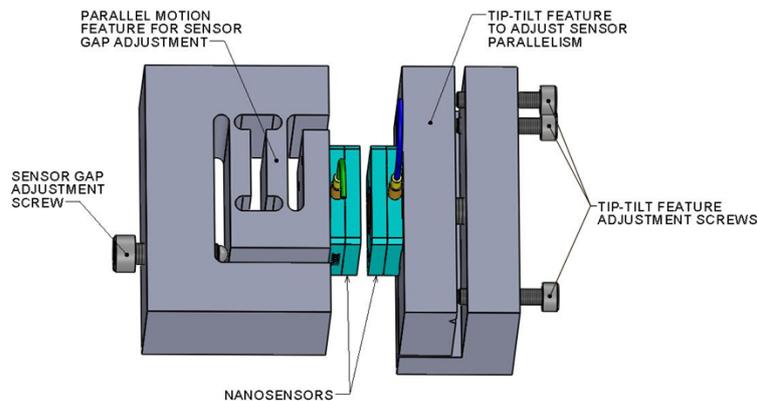
- The graphs below show the effects of tilt on linearity and scale factor.



Sensor Gap and Parallelism Adjustment.

- As previously stated, for optimum performance, the “sensor gap” and parallelism between sensing faces is important. If these cannot be achieved through the mechanical tolerances of the components the sensors are mounted on, it may be necessary to design in some adjustment features.

- The scheme below shows some adjustment suggestions, but there are many other different possibilities.



NanoSensors NX/NZ NanoSensor®

NanoSensor Variants

Model No.	Shape	Material	Range	Active Area	VAC/UVAC Option	Magnetic Mtg.
NXB1-AL	Round	Al. Alloy	20µm (-S) 100µm (-L)	22.5mm ²	Yes	No
NXB1-SI	Round	Super Invar	20µm (-S) 100µm (-L)	22.5mm ²	Yes	Yes
NXB2-AL	Square	Al. Alloy	20µm (-S) 100µm (-L)	22.5mm ²	Yes	No
NXB2-SI	Square	Super Invar	20µm (-S) 100µm (-L)	22.5mm ²	Yes	No
NXB3-AL	Rectangular	Al. Alloy	20µm (-S) 100µm (-L)	22.5mm ²	Yes	No
NXB3-SI	Rectangular	Super Invar	20µm (-S) 100µm (-L)	22.5mm ²	Yes	No
NXC1-AL	Round	Al. Alloy	100µm (-S) 500µm (-L)	113mm ²	Yes	No
NXC1-SI	Round	Super Invar	100µm (-S) 500µm (-L)	113mm ²	Yes	Yes
NXC2-AL	Square	Al. Alloy	100µm (-S) 500µm (-L)	113mm ²	Yes	No
NXC2-SI	Square	Super Invar	100µm (-S) 500µm (-L)	113mm ²	Yes	No
NXC3-AL	Rectangular	Al. Alloy	100µm (-S) 500µm (-L)	113mm ²	Yes	No
NXC3-SI	Rectangular	Super Invar	100µm (-S) 500µm (-L)	113mm ²	Yes	No
NXD1-AL	Round	Al. Alloy	250µm (-S) 1250µm (-L)	282mm ²	Yes	No
NXD1-SI	Round	Super Invar	250µm (-S) 1250µm (-L)	282mm ²	Yes	Yes
NXD2-AL	Square	Al. Alloy	250µm (-S) 1250µm (-L)	282mm ²	Yes	No
NXD2-SI	Square	Super Invar	250µm (-S) 1250µm (-L)	282mm ²	Yes	No
NZB2	Square	Super Invar/Zerodur	20µm (-S) 100µm (-L)	22.5mm ²	Yes	No
NZC2	Square	Super Invar/Zerodur	100µm (-S) 500µm (-L)	113mm ²	Yes	No
NZD2	Square	Super Invar/Zerodur	250µm (-S) 1250µm (-L)	282mm ²	Yes	No

Notes

1. All of the above NX Series sensors are bonded construction. Use at cryogenic temperature is possible but not recommended.
2. NZ Sensors are appositely designed for use at cryogenic temperatures. They also exhibit higher thermal stability than Super Invar NX Sensors.
3. NX Series NanoSensors® can be manufactured from alternative materials, for example Stainless Steel or Titanium. Please consult Queensgate to discuss your requirements.
4. All the models can be prepared per vacuum operation. Please consult Queensgate to discuss your requirements.