Product Advantages

One of the Smallest 6-Axis Sensors in the World: The Nano43 fits into restricted spaces of research applications and allows linkages and cables to pass through its center hole.

Extremely High Strength:

- EDM wire-cut from high-yield strength stainless steel.
- Maximum allowable single-axis overload values are 6.4 to 28 times rated capacities.

High Signal-to-Noise Ratio: Silicon strain gages provide a signal 75 times stronger than conventional foil gages. This signal is amplified, resulting in near-zero noise distortion.

The Nano43 F/T transducer
The transducer is made of hardened stainless steel with integral interface plates made from high-strength aircraft aluminum.

Typical Applications

- Telerobotics
- Robotic hand research
- Robotic surgery
- Finger-force research

English Calibrations

SENSING RANGES	Calibrations		
Axes	US-2-1	US-4-2	US-8-4
Fx, Fy (±lbf)	2	4	8
Fz (±lbf)	2	4	8
Tx, Ty (±lbf-in)	1	2	4
Tz (±lbf-in)	1	2	4

RESOLUTION	System Type*					
Axes	CTL	Net/DAQ	CTL	Net/DAQ	CTL	Net/DAQ
Fx, Fy (lbf)	1/1160	1/2320	1/580	1/1160	1/290	1/580
Fz (lbf)	1/1160	1/2320	1/580	1/1160	1/290	1/580
Tx, Ty (lbf-in)	1/2320	1/4640	1/1160	1/2320	1/580	1/1160
Tz (lbf-in)	1/2320	1/4640	1/1160	1/2320	1/580	1/1160

Metric Calibrations

SENSING RANGES	Calibrations		
Axes	SI-9-0.125	SI-18-0.25	SI-36-0.5
Fx, Fy (±N)	9	18	36
Fz (±N)	9	18	36
Tx, Ty (±Nmm)	125	250	500
Tz (±Nmm)	125	250	500

RESOLUTION	System Type*					
Axes	CTL	Net/DAQ	CTL	Net/DAQ	CTL	Net/DAQ
Fx, Fy (N)	1/256	1/512	1/128	1/256	1/64	1/128
Fz (N)	1/256	1/512	1/128	1/256	1/64	1/128
Tx, Ty (Nmm)	1/20	1/40	1/10	1/20	1/5	1/10
Tz (Nmm)	1/20	1/40	1/10	1/20	1/5	1/10

*CTL: Controller F/T System; Net: Net F/T System; DAQ: 16-bit DAQ F/T System. The resolution is typical for most applications and can be improved with filtering. Resolutions quoted are the effective resolution after dropping four counts of noise (Net/DAQ) or eight counts of noise (CTL). All sensors calibrated by ATI.
Applied loads must be within range in each of the six axes for the F/T sensor to measure correctly (refer to the transducer manual for complex loading information).

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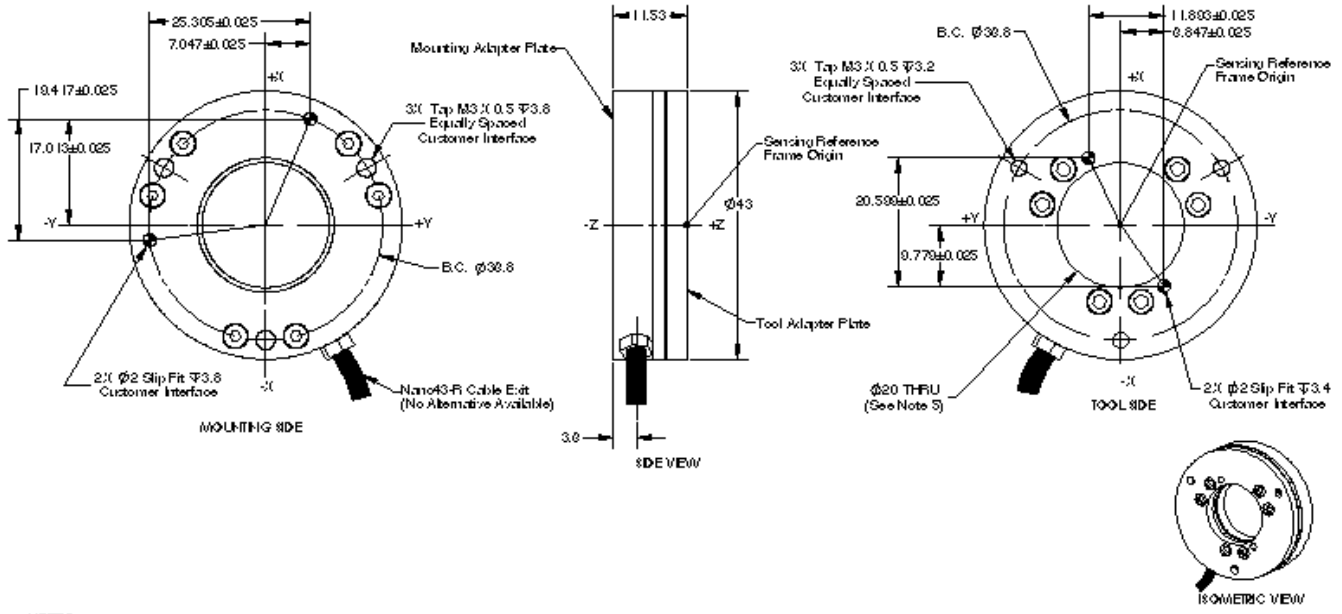
Single-Axis Overload	English	Metric
Fxy	±68 lbf	±300 N
Fz	±86 lbf	±380 N
Txy	±29 lbf-in	±3.2 Nm
Tz	±41 lbf-in	±4.6 Nm
Stiffness (Calculated)	**English**	**Metric**
X-axis & Y-axis force (Kx, Ky)	2.9×10^4 lb/in	5.2×10^6 N/m
Z-axis force (Kz)	2.9×10^4 lb/in	5.2×10^6 N/m
X-axis & Y-axis torque (Ktx, Kty)	6.8×10^3 lbf-in/rad	7.7×10^2 Nm/rad
Z-axis torque (Ktz)	1.0×10^4 lbf-in/rad	1.1×10^3 Nm/rad
Resonant Frequency (Measured)		
Fx, Fy, Tz	2800 Hz	
Fz, Tx, Ty	2300 Hz	
Physical Specifications	**English**	**Metric**
Weight*	0.0854 lb	0.0387 kg
Diameter (OD,ID)*	1.69 in, 0.78 in	43 mm, 19.9 mm
Height*	0.454 in	11.5 mm

*Specifications are for non-IP rated models. Diameter excludes any connector or cable features.

"For high-resolution miniature 6 DOF force sensors, we've found ATI's products to be the best commercially available."

Peter Berkelman, PhD
Center for Computer-Integrated Surgical Systems and Technology
Johns Hopkins University

ATI INDUSTRIAL AUTOMATION | NANO43



NOTES:
1. Mounting and Tool Adapter made of aluminum, Transducer made of hardened stainless steel.
2. WARNING: DO NOT LOOSEN OR REMOVE INTERFACE PLATES OR CABLE FITTING DUE TO POTENTIAL DAMAGE.
3. DO NOT EXCEED INTERFACE DEPTH. MAY CAUSE DAMAGE
4. Standard connector (not shown) has 17mm diameter & is 67.5mm long.
5. Do not allow items passing through center hole to touch both the Mounting and Tool Adapter Plates or accuracy will be compromised.

Customer Drawing # 9230-05-1110-06