

Product Advantages

One of the Smallest 6-Axis Sensors in the World: The Mini45 has a compact, low-profile design with a through-hole to allow passage of linkages or cables.

Extremely High Strength:

- EDM wire-cut from high-yield strength stainless steel.
- Maximum allowable single-axis overload values are 5.7 to 25 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.

IP65 and IP68 (4m) Versions Available: The IP65 version of the transducer is available for use in wet environments. The IP68 version is for underwater environments to a maximum depth of 4 meters in fresh water. Contact ATI Industrial Automation for drawings and more information.



The Mini45 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 surgery
- Robotic hand research
- Finger-force research

ENGLISH CALIBRATIONS	SENSING RANGES	Calibrations					
	Axes	US-30-40		US-60-80		US-120-160	
	Fx, Fy (±lbf)	30		60		120	
	Fz (±lbf)	60		120		240	
	Tx, Ty (±lbf-in)	40		80		160	
	Tz (±lbf-in)	40		80		160	
	RESOLUTION	System Type*					
	Axes	CTL	Net/DAQ	CTL	Net/DAQ	CTL	Net/DAQ
	Fx, Fy (lbf)	1/40	1/80	1/20	1/40	1/10	1/20
	Fz (lbf)	1/40	1/80	1/20	1/40	1/10	1/20
Tx, Ty (lbf-in)	1/44	1/88	1/22	1/44	1/11	1/22	
Tz (lbf-in)	1/88	1/176	1/44	1/88	1/22	1/44	

METRIC CALIBRATIONS	SENSING RANGES	Calibrations					
	Axes	SI-145-5		SI-290-10		SI-580-20	
	Fx, Fy (±N)	145		290		580	
	Fz (±N)	290		580		1160	
	Tx, Ty (±Nm)	5		10		20	
	Tz (±Nm)	5		10		20	
	RESOLUTION	System Type*					
	Axes	CTL	Net/DAQ	CTL	Net/DAQ	CTL	Net/DAQ
	Fx, Fy (N)	1/8	1/16	1/4	1/8	1/2	1/4
	Fz (N)	1/8	1/16	1/4	1/8	1/2	1/4
Tx, Ty (Nm)	1/376	1/752	1/188	1/376	1/94	1/188	
Tz (Nm)	1/752	1/1504	1/376	1/752	1/188	1/376	

*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).

Single-Axis Overload		English	Metric
Fxy		±1100 lbf	±5100 N
Fz		±2300 lbf	±10000 N
Txy		±1000 lbf-in	±110 Nm
Tz		±1200 lbf-in	±140 Nm
Stiffness (Calculated)		English	Metric
X-axis & Y-axis force (Kx, Ky)		4.2x10 ⁵ lb/in	7.4x10 ⁷ N/m
Z-axis force (Kz)		5.6x10 ⁵ lb/in	9.8x10 ⁷ N/m
X-axis & Y-axis torque (Ktx, Kty)		1.5x10 ⁵ lbf-in/rad	1.7x10 ⁴ Nm/rad
Z-axis torque (Ktz)		3.1x10 ⁵ lbf-in/rad	3.5x10 ⁴ Nm/rad
Resonant Frequency (Measured)			
Fx, Fy, Tz		5600 Hz	
Fz, Tx, Ty		5400 Hz	
Physical Specifications		English	Metric
Weight*		0.202 lb	0.0917 kg
Diameter (OD,ID)*		1.77 in, 0.373 in	45 mm, 9.5 mm
Height*		0.618 in	15.7 mm

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

“ATI’s sales support has been invaluable in helping us select the appropriate sensor and explaining detailed technical issues. I am extremely pleased with the ATI sensor we have chosen. It has enabled us to measure forces exerted by a physician, during a medical procedure, which have never been measured before.”

Nathan Delson, PhD
Director, Mechanical Engineering
Design Center
University of California, San Diego
Department of Mechanical
and Aerospace Engineering

