Product Advantages

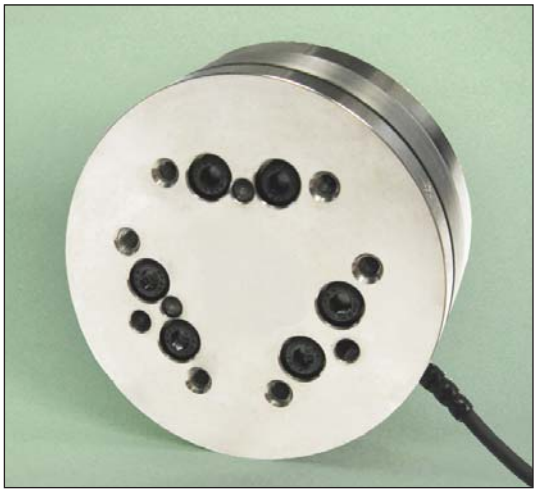
Extremely High Strength:

- EDM wire-cut from high yield-strength stainless steel.
- Maximum allowable overload values are 5.9 to 24.9 times rated capacities.
- Through-hole available as a special order option.

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.

Typical Applications

- Telerobotics
- Humanoid robots
- Rehabilitation research
- Prosthetics research



The Mini85 F/T transducer
The transducer is made of hardened stainless steel.

English Calibrations

SENSING RANGES	Calibrations					
Axes	US-105-185		US-210-370		US-420-740	
Fx, Fy (±lbf)	105		210		420	
Fz (±lbf)	210		420		840	
Tx, Ty (±lbf-in)	185		370		740	
Tz (±lbf-in)	185		370		740	
RESOLUTION	System Type*					
Axes	CTL	Net/DAQ	CTL	Net/DAQ	CTL	Net/DAQ
Fx, Fy (lbf)	1/26	1/52	5/64	5/128	5/32	5/64
Fz (lbf)	7/130	7/260	3/32	3/64	3/16	3/32
Tx, Ty (lbf-in)	5/84	5/168	5/42	5/84	5/21	5/42
Tz (lbf-in)	1/24	1/48	1/12	1/24	1/6	1/12

Metric Calibrations

SENSING RANGES	Calibrations					
Axes	SI-475-20		SI-950-40		SI-1900-80	
Fx, Fy (±N)	475		950		1900	
Fz (±N)	950		1900		3800	
Tx, Ty (±Nm)	20		40		80	
Tz (±Nm)	20		40		80	
RESOLUTION	System Type*					
Axes	CTL	Net/DAQ	CTL	Net/DAQ	CTL	Net/DAQ
Fx, Fy (N)	9/56	9/112	9/28	9/56	9/14	9/28
Fz (N)	3/14	3/28	3/7	3/14	6/7	3/7
Tx, Ty (Nm)	5/748	5/1496	5/374	5/748	5/187	5/374
Tz (Nm)	7/1496	7/2992	7/748	7/1496	7/374	7/748

*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).

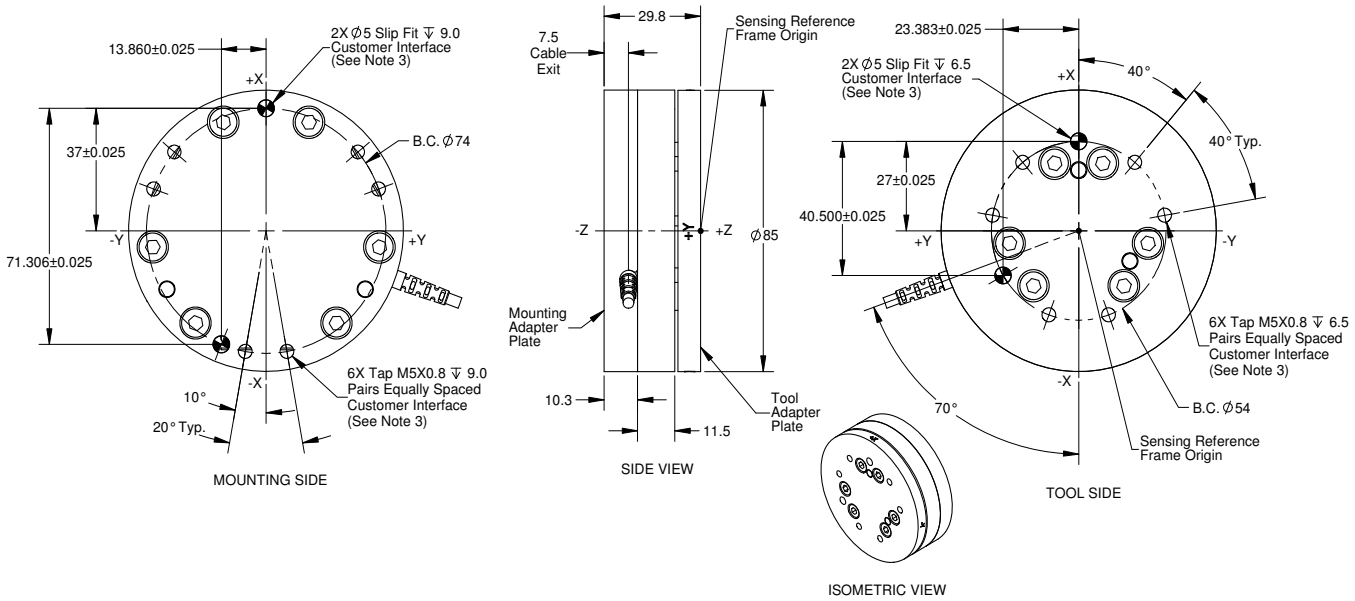
Single-Axis Overload	English	Metric
Fxy	±2800 lbf	±13000 N
Fz	±6100 lbf	±27000 N
Txy	±4400 lbf-in	±500 Nm
Tz	±5400 lbf-in	±610 Nm
Stiffness (Calculated)	**English**	**Metric**
X-axis & Y-axis force (Kx, Ky)	4.4×10^5 lb/in	7.7×10^7 N/m
Z-axis force (Kz)	6.8×10^5 lb/in	1.2×10^8 N/m
X-axis & Y-axis torque (Ktx, Kty)	7.2×10^5 lbf-in/rad	8.1×10^4 Nm/rad
Z-axis torque (Ktz)	1.2×10^6 lbf-in/rad	1.3×10^5 Nm/rad
Resonant Frequency (Measured)		
Fx, Fy, Tz	2400 Hz	
Fz, Tx, Ty	3100 Hz	
Physical Specifications	**English**	**Metric**
Weight*	1.4 lb	0.635 kg
Diameter*	3.4 in	85 mm
Height*	1.2 in	30 mm

*Specifications include standard interface plates. Diameter excludes any connector block.

"ATI's products and knowledgeable staff were instrumental in allowing us to rapidly prototype our latest surgical robotic platform. Because of their off-the-shelf solutions for miniature force and torque sensing, we were able to go from concept to working prototype in months instead of years."

Patrick Jensen, Ph.D.
Assistant Professor of Ophthalmology
Johns Hopkins University

MINI85



Notes:
1. Material: Mounting and Tool Adapter made of aluminum, Transducer made of hardened stainless steel.
2. **WARNING: DO NOT LOOSEN OR REMOVE INTERFACE PLATES OR CABLE DUE TO POTENTIAL DAMAGE**
3. **DO NOT EXCEED INTERFACE DEPTH, MAY CAUSE DAMAGE.**
4. Connector (not shown) has 17mm diameter and is 67.5mm long.
5. For best accuracy, transducer must be mounted to surface rigid enough to support loads without deflection.

Customer Drawing # 9230-05-1394-02