



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
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Technical Specification of Force Platform System

Item Description:

1. 1 unit of force platform system having the following components with specifications listed against each component:
 - a. 1 unit of force platform:
 - i. It should provide forces in three orthogonal directions/axes (Fz, Fx, and Fy) and the moments about each axis (Mz, Mx, and My)
 - ii. It should give analog and digital outputs
 - iii. It should come with the following capacity for different channels:
 - Fz: at least 1000 lb
 - Fx: at least 500 lb
 - Fy: at least 500 lb
 - Mz: at least 5000 in·lb
 - Mx: at least 8000 in·lb
 - My: at least 8000 in·lb
 - iv. It should come with the following natural frequencies for different channels:
 - Fz: at least 200 Hz
 - Fx: at least 300 Hz
 - Fy: at least 300 Hz
 - v. It should come with the following sensitivities for different channels:
 - Fz: at least $0.70 \mu\text{V}/[\text{V}\cdot\text{lb}]$
 - Fx: at least $2.5 \mu\text{V}/[\text{V}\cdot\text{lb}]$
 - Fy: at least $2.5 \mu\text{V}/[\text{V}\cdot\text{lb}]$
 - Mz: at least $0.30 \mu\text{V}/[\text{V}\cdot\text{in}\cdot\text{lb}]$
 - Mx: at least $0.15 \mu\text{V}/[\text{V}\cdot\text{in}\cdot\text{lb}]$
 - My: at least $0.15 \mu\text{V}/[\text{V}\cdot\text{in}\cdot\text{lb}]$
 - vi. It is preferred to have centre of pressure (COP) accuracy within $\pm 0.3 \text{ mm}$

- vii. It is preferred to have load measurement accuracy within $\pm 0.2\%$ of applied load
 - viii. It is preferred to have crosstalk values within $\pm 0.1\%$ of applied load on all channels
 - ix. It is preferred to have hysteresis within $\pm 0.3\%$ of full scale output
 - x. The excitation voltage to the bridge circuit should be selectable up to 10 V. The excitation voltage should be configurable on each channel independently via software
 - xi. The operating temperature should range from -15 to 50 degree Celsius
 - xii. It is desirable that the ASTM F3109-16 standard for accuracy is met across the entire working surface of the platform
 - xiii. It should have following dimensions (w x l x h): 18 x 20 x 3 inches or something similar
- b. 1 unit of signal conditioner:
- i. It should come with selectable gains ranging from at least 500 to 2000. The gains should be configurable on each channel independently via software
 - ii. The output voltage range should be adjustable between at least $\pm 5V$
 - iii. It should have the facility for zero calibration via software or manually
 - iv. The inbuilt D/A converter should come with 16-bit resolution
 - v. It should provide adjustable sampling frequencies ranging from at least, 20 Hz per channel to 1000 Hz per channel
 - vi. It should have the facility to synchronize with third party devices via external trigger, internal clock etc
- c. 1 unit of power supply cable and 1 unit of adaptor:
- i. **The system should come with suitable power supply and cords compatible with Indian line voltage**
- d. Cables and connectors

- i. 1 unit of interconnecting cable at least 8 meters long with appropriate connectors for connecting the force platform with signal conditioner
 - ii. 1 unit of cable for providing signal conditioner digital outputs via USB
 - iii. 1 unit of cable, at least 1 meter long, which connects signal conditioner analog outputs to a system with BNC connector inputs
 - iv. 1 unit of cable, at least 1 meter long, which connects signal conditioner analog outputs to stripped connectors for a system with screw terminal connector inputs
2. 1 unit of mounting kit that should include appropriate mounting rails and adhesive/bonding kit
3. The system should come with appropriate software for data acquisition and third-party device integration
4. The system needs to be supplied with an operating manual
5. The system should meet requisite electro-medical safety and regulatory standards such as CE mark, ISO 9001, IEC- 60601-1-2
6. On-site installation and training should be provided
7. Life-long web and telephone support should be available to users
8. The system should come with a 5-year on-site comprehensive warranty for force platform and 1 year on-site comprehensive warranty for all other components/accessories including signal conditioner, power supply cable and adapter, interconnecting cable, and digital and analog output cables. On-site comprehensive warranty will start on the day of successful installation and commissioning of the equipment.
9. It is mandatory to provide a detailed compliance sheet (as per enclosed format) in accordance with the technical specifications of the inquiry, failing which quotation will be rejected. Any deviations must be reported clearly.