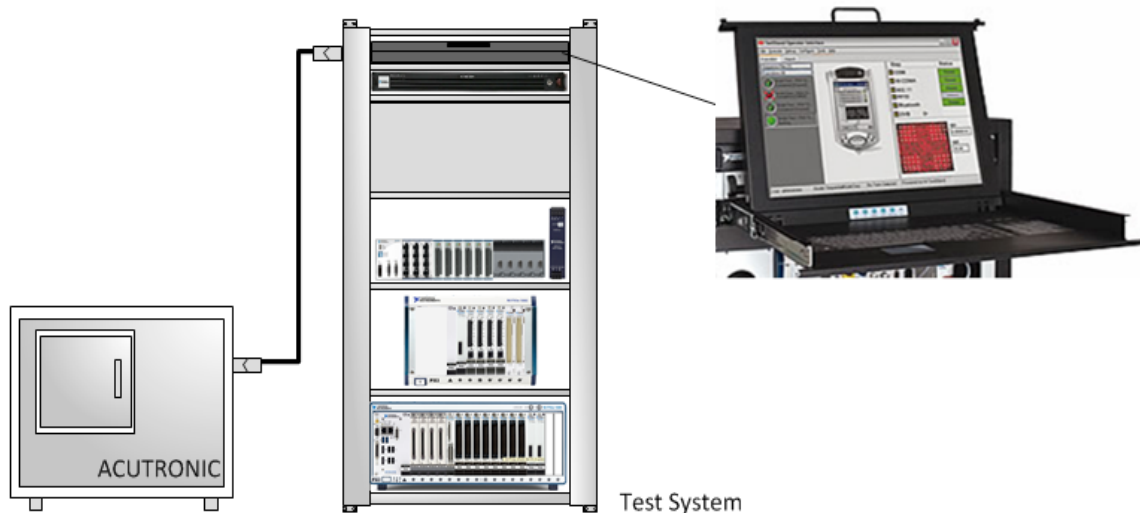


Automated Test System for Gyroscopes



Overview

Test system for dynamically tuned gyroscopes is designed to measure gyroscopes parameters, including measurements in the temperature range in order to control the quality of devices. The stand consists of turntable where can be installed four gyroscopes and rackmount with real-time controller, data acquisition and data processing modules and modules for gyromotors control.

Features

- Manual and automatic testing modes
- Database recording
- Simultaneous test of 4 gyroscopes
- User-friendly interface
- Emergency stop

Test System Hardware

- NI PXIe-163, 18-Slot 3U PXI Express Chassis
- NI PXIe-8135 Core i7-3610QE 2.3 GHz Controller
- NI PXIe-6363, X Series Multifunction DAQ
- NI PXIe-2529 High-Density Multiconfiguration Matrix
- NI PXI-2527 64 Channel 300V CAT Multiplexer
- NI PXIe-4112 2 Channel Power Supply, 60V 1A
- NI PXI-8513, CAN Interface

Software

- NI LabVIEW Real-Time Module
- NI LabVIEW FPGA Module
- LabVIEW Control Design and Simulation Module
- NI Sound and Vibration Measurement Suite
- TestStand Full Development System

Measurable Parameters

- Power supply
- Consumption current
- Rotor acceleration time up to synchronous speed
- Rotor run-down time
- Resonance frequency of rotor speed
- Temperature coefficient of resonance frequency
- Instability of resonance frequency
- Steepness of torque sensors
- Temperature coefficient of torque sensor's steepness
- Instability of torque sensor's steepness
- Error binding of torque sensor's electric axes
- Instability of torque sensor's electric axes
- Time constant of gyroscope
- Steepness of angle sensors
- Harmonic modulation of angle sensor's signal
- Acceleration of body devices vibration
- Deviation angle of rotor up to the stop
- Drift of angle speed
- Receptiveness to axial vibration
- Temperature coefficient of drift components
- Temperature coefficient drift of nonlinearity
- Readiness time
- Angular speed
- Continuous operating time