Competitive Combat Robots
Multi-Axis, Torque Transducer, WTS
Industry: Education

Summary

Customer Challenge

University robotics teams and clubs require precise and reliable measurement systems to evaluate the performance, durability, and safety of their combat robots used in robotic competitions. Testing robotic arms and wheel torque is needed for real-time data.

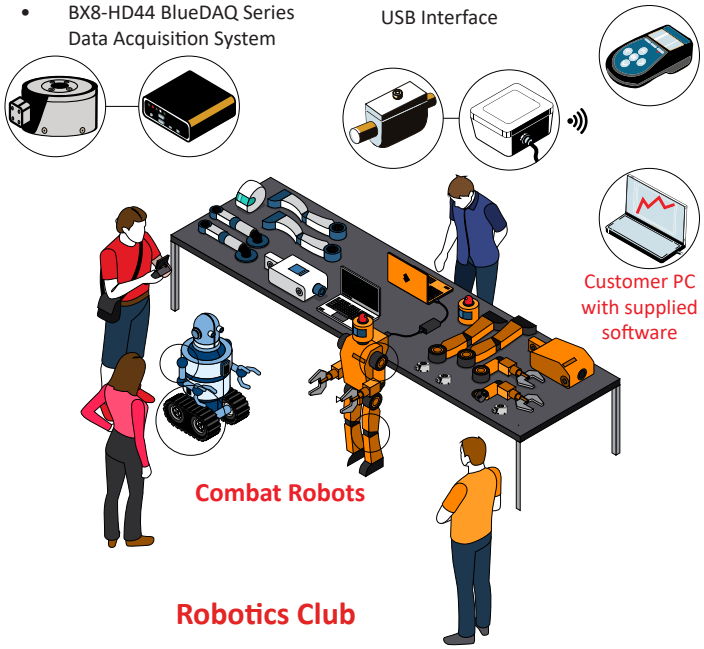
Interface Solution

Interface recommends multi-axis sensors like the 6ADF Series 6-Axis DIN Flange-Type Load Cells for robotics testing, as they are easy to install for monitoring joints and movement. Results are given when connected to the BX8-HD44 BlueDAQ Series Data Acquisition System. For wheel torque measurement, the T14 Slip-Ring Shaft Style Rotary Torque Transducer is mounted inside the wheel alongside the motor. The sensor connects to the WTS-AM-1E Wireless Strain Bridge Transmitter Module, which wirelessly transmits data to the WTS-HK-S Next-Generation Wireless Handheld or a PC via the WTS-BS-4 Wireless Base Station.

Results

By implementing Interface force sensor products, robotics teams gain accurate, repeatable data that improves design validation and performance optimization. Teams can better understand force distribution, identify mechanical weaknesses, and refine weapon efficiency or drivetrain output. The result is safer, more competitive robots with enhanced reliability, giving teams a measurable advantage in competitions and engineering development.

- 6ADF Series 6-Axis DIN Flange-Type Load Cells
- BX8-HD44 BlueDAQ Series Data Acquisition System
- T14 Slip-Ring Shaft Style Rotary Torque Transducer
- WTS-AM-1E Wireless Strain Bridge Transmitter Module
- WTS-HK-S Next-Generation Wireless Handheld
- WTS-BS-4 Wireless Base Station with USB Interface



Materials

- 6ADF Series 6-Axis DIN Flange-Type Load Cells
- BX8-HD44 BlueDAQ Series Data Acquisition System
- T14 Slip-Ring Shaft Style Rotary Torque Transducer
- WTS-AM-1E Wireless Strain Bridge Transmitter Module
- WTS-HK-S Next-Generation Wireless Handheld
- WTS-BS-4 Wireless Base Station with USB Interface
- Customer PC or Laptop with supplied softwares
- Combat robots undergoing tests

How It Works

The 6ADF Series 6-Axis DIN Flange-Type Load Cells are mounted to the limb motors to measure robot movement, with data displayed, graphed, and recorded using BlueDAQ software when connected to the BX8-HD44 BlueDAQ Series Data Acquisition System. A T14 Slip-Ring Shaft Style Rotary Torque Transducer is installed in the robot's wheels to measure torque. The WTS-AM-1E Wireless Strain Bridge Transmitter Module collects this data and transmits it wirelessly to either the WTS-HK-S Next-Generation Wireless Handheld or the WTS-BS-4 Wireless Base Station with USB Interface connected to a PC or laptop. All software is supplied with instrumentation.

interface
FORCE MEASUREMENT SOLUTIONS

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