

Power Window Regulator



SPECIFICATIONS / FEATURES

- Real-time monitoring of current, displacement and sound.
- Auto detection of false reversals and cyclic behavior.
- Motor noise analysis in an acoustic chamber.
- Variant-based testing with tolerance limits.
- Pass/fail reports with live graphs and data logs.

CHALLENGE

The client required a comprehensive system to test power window regulator motors. The challenges included measuring motor current, detecting false reversals, monitoring cyclic behavior and capturing sound of the motor/mechanism in a soundproof chamber. The system needed to ensure accuracy, reliability and compliance with automotive standards.

SOLUTION

TMCS developed a PC-based DAQ System integrated with PLC and NI Hardware. The software was implemented using LabVIEW, providing a secure, user-friendly interface. The system allowed real-time monitoring, logging, and analysis of parameters, including current, displacement and sound. Variant-specific settings and tolerance bands were incorporated for precise testing.

TEST TYPE	DESCRIPTION / PARAMETERS MONITORED
Cyclic Behavior Detection	Monitors motor current using NI PCIe to detect performance issues.
False Reversal Detection	Monitors window displacement and current to detect abnormal reversals.
Sound Detection	Analyzes motor noise in an isolated chamber using microphones.
Diagnostic Checks	Validates analog inputs, PLC signals, and power supply integrity.
Reporting & Analysis	Generates detailed pass/fail reports, live graphs, and test data trends.

TECHNOLOGY USED

- NI PCIe DAQ: Precise data measurement.
- LabVIEW: Control, visualization, and logging.
- PLC Integration: Automation and signal validation.
- Sound Capture: Microphone in acoustic chamber

