DI-730 Aids Moon Roof Design and Qualification

DATAQ Instruments

It was a good, long run, but the strip chart recorder our customer had used for years was finally being replaced with a state-of-the-art PC-based data acquisition system. The recorder had become unreliable, and the paper records were tedious to analyze, and difficult to archive. The only problem was selecting a new instrument that combined the simplicity of the chart recorder with the flexibility of contemporary instrumentation.

The application for monitoring the performance of the DC motors used to open and close the glass roof appeared straightforward on the surface: Monitor motor DC voltage and current over time. However, current was to be measured using a current shunt (1mV/amp) and therefore defined a product with isolation and high gain. Measurements were to me made both in the lab and in-vehicle, so the selected instrument would need to be DC-powered. Scalability was also important, since our customer wanted to expand into temperature measurements in the near future. Finally, the customer could envision the need to network the new data acquisition system so acquired data could be made available on their intranet both during and after a test. For example, the test engineer wanted to be able to view the performance of a test from the convenience of his office, in real time, whenever he desired.

All these prerequisites were satisfied by DATAQ Instruments DI-730 data acquisition hardware running WinDaq software. Here's how the DI-730 matched up by requirement:

Customer Requirements	DI-730/WinDaq Feature
Current shunt measurements	Each DI-730 channel is electrically isolated from input-to-output and channel-to-channel to 1000V. Each channel can be programmed for a 10mV to 800V FS range across six ranges. Connecting the DI-730 to the mV shunt output was no problem.
In-vehicle and in-lab applications	The DI-730 is powered from either a provided AC adapter, or from any 9-36VDC source. A simple cigarette lighter adapter powers the DI-730 while it's in the vehicle.
Ease-of-use	WinDaq software provided with the DI-730 is a no-programming solution and comes up acquiring and displaying waveform information. Simple manipulations with the mouse configure the software for any test.
Expansion	The addition of a DI-75B backpack allows the DI-730 to measure virtually any industrial signal, including thermocouples.
Networked operation	WinDaq software's unique multi-tasking operation provides seamless data file access in real time using utilities that are built into every Windows operating system.

The DI-730 was put into service and yielded better that expected results. Since the replaced strip chart recorder had a limited frequency response, results provided by the DI-730/WinDaq software combination (see Figure 1) revealed the spiky nature of the current waveform caused by large in-rush currents when the motor is initially activated. These high frequency spikes were virtually hidden in the paper recorder's record.

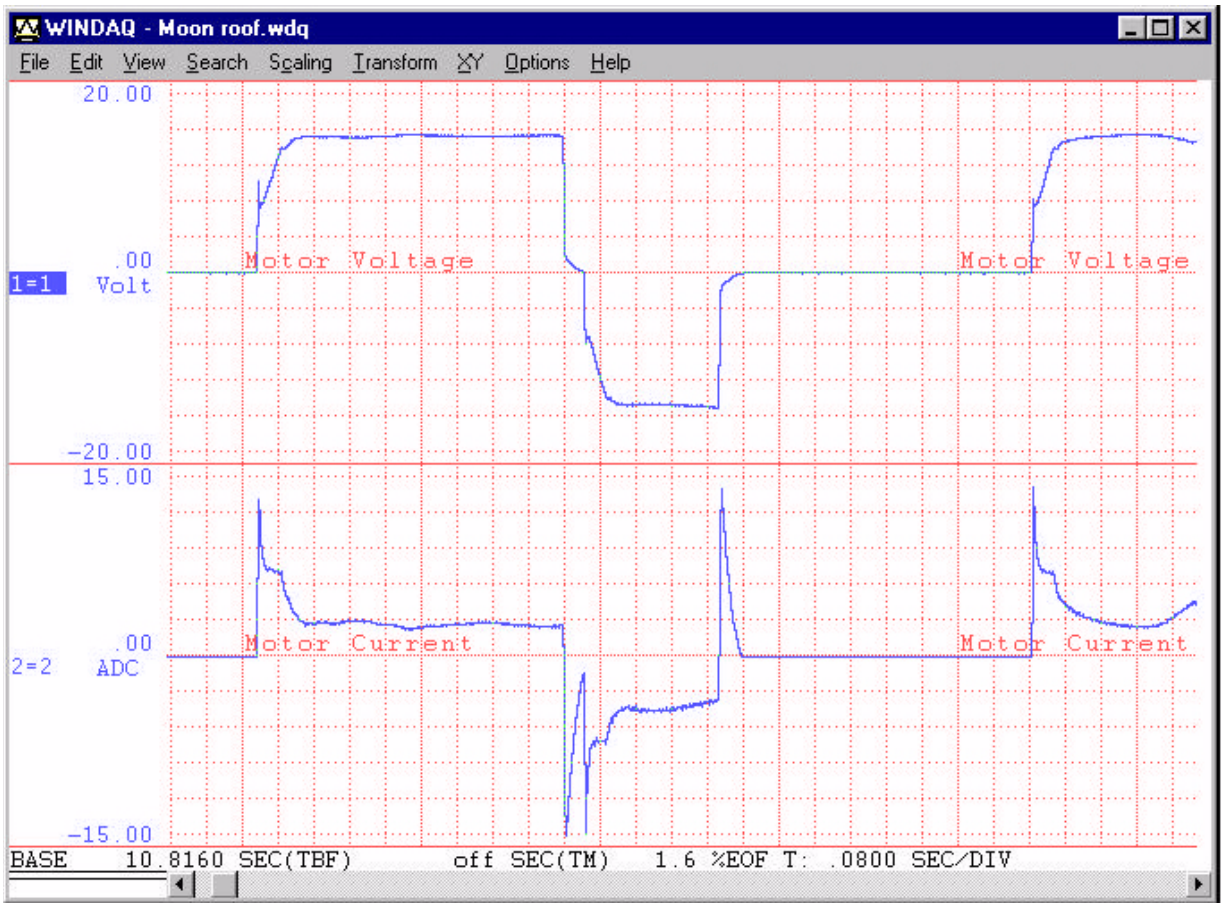

Figure 1 – A typical output from WinDaq software (shown here at a compression factor of 2) when connected to the moon roof motor through DI-730 data acquisition hardware. Notice the spikes on the current waveform that were virtually hidden on the strip chart recorder output.