

Performance Validation of Test Cars

Grant Squirrel SQ2040 Portable Universal Input Data Logger

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CAS DataLoggers recently provided a major automobile manufacturer with the data logging solution for its rigorous performance validation testing. As part of the testing of any new vehicle, sample units were typically subject to a variety of endurance and durability tests to identify any potential weak points or failure modes and chart their performance. To gather the most detailed record of a car's data throughout these speed validation tests and ensure the safety and robustness of the entire product line, engineers needed highly accurate, reliable data logging equipment. These devices would have to be capable of measuring the many parameters used to gauge the cars' performance as well as be portable and compact for quick placement and retrieval from hundreds of test cars.



Plant management installed 20 **Grant Squirrel SQ2040 Portable Universal Input Data Loggers** in an equal number of their test cars. Subsequently, test engineers put their development cars through testing on the track at high speeds as part of their endurance testing program, equipped with temperature and pressure sensors feeding data into the SQ2040 dataloggers. The loggers were set to record the data at preset regular intervals throughout the tests, including road conditions, engine temperature and pressure data, all recorded into each Squirrel's memory. This data gave engineers vital information on performance concerning a whole host of vehicle components.

The Grant SQ2040 dataloggers each featured up to 32 universal analog inputs for voltage, current or resistance and up to 8 inputs for digital pulse and event, supporting a wide range of analog inputs including thermistors, thermocouples, RTD temperature sensors, voltage, current, and resistance. Twin processors and multiple 24-bit ADC converters enabled precision measurements with a high basic accuracy of 0.05%, while 4 alarm outputs provided early warning capabilities whenever key parameters went out of specification.

Compact and lightweight, the high-performance Squirrel dataloggers were easy to transport to and from the test cars and intuitively convenient to use. Functioning as portable, standalone data loggers or as PC-linked data acquisition systems, the Squirrels could be battery-operated or mains powered, and were quickly configured via integral interface or by PC. Each logger offered 16 MB of internal memory for approximately 14 million readings, as well as removable Multi Media (MMC) or SD card memory. Fully equipped with the same advanced features as the Squirrel 2020 series but adding additional high speed data logging on up to four channels and twice as many universal input channels, the SQ2040 loggers had the versatility to handle the demanding multi-channel testing of the plant's vehicles at top speeds.

The data loggers' communications features included built-in Ethernet networking along with USB and RS232 connectivity. When a validation test was over, engineers easily and quickly downloaded the Windows-based data from each Squirrel in graphic form onto a PC for analysis. This data was then applied to existing production methodologies and resulted in safer automobiles.

The automobile manufacturer benefited in several key ways following installation of the Grant Squirrel SQ2040 dataloggers in their quality assurance program. Most importantly, the loggers could measure the wide variety of parameters needed in the tests. These data loggers featured many universal channels recording at high accuracy and offered several communications options, all at a low price. The portable Squirrels were also ideal for quick installation in the test cars and were quickly configurable which gave the project a head start.

A quality performance engineer commented: "We chose the Squirrels because they're about the size of a small notebook but extremely sophisticated and very easy to use. Downloading the information from the loggers to our PCs enables us to analyze the data quickly and clearly. We've already tested hundreds of cars and the Squirrels have proven to be invaluable tools for improving the reliability of our vehicles. With these devices, you don't need to be a computer scientist to collect, download and analyze your data."

Check out the SQ2040 product page at

http://www.dataloggerinc.com/products/SQ20402F16_Portable_Universal_Input_Data_Logger/19/.

For further information on the Grant Squirrel 2040 data logger, the entire Squirrel family of data loggers, or to find the ideal solution for your application-specific needs, contact a CAS Data Logger Applications Specialist at (800) 956-4437 or visit the website at www.DataLoggerInc.com.

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