

In-Vehicle Datalogger Start-Up Kit

In-Vehicle Datalogger Start-Up Kit

Benefits

Open source code based on LabVIEW™ graphical programming software
Real-time monitoring and logging of automotive run time parameters
Upgradeable using standard PC-based technology
In-Vehicle Datalogger Example Program included (downloadable from the Web)

Features

Real-time display and storage of automotive parameters
Easily-modified software architecture
Low-cost, flexible platform for in-vehicle data logging

Portable components for use on bench top or on a laptop computer
Accurate measurement capability
Intuitive graphical interface



Download the FREE In-Vehicle Datalogger Example Program

ni.com/automotive/autovi_exchange.htm

Overview

The National Instruments In-Vehicle Datalogger Start-Up Kit is designed for automotive testing applications. With the kit, you can monitor and log sensor output such as temperature, strain, engine RPM, automotive chassis vibration, and more. You can connect the kit to read signals from thermocouples, RTDs, strain gauge bridge output, and accelerometer output.

The In-Vehicle Datalogger Start-Up Kit uses existing computer technology to take measurements. With its open-source code architecture, you can modify and build on the kit to fit your individual needs. The kit includes a SCC signal conditioning system with configurable connectors that allow I/O panelettes to accept connectors of most sensor types. The In-Vehicle Datalogger Start-Up Kit also allows you to choose I/O devices other than what we've recommended. You can connect a microphone to a channel for voice annotation of your data using event messages such as "brake applied here" or "mile marker."

We built the kit around the In-Vehicle Datalogger Example Program. The example program for this start-up kit is developed in the LabVIEW graphical development environment to log data and generate reports in word-processing, spreadsheet, and database programs. You can download the example application **FREE** from the National Instruments Web site at ni.com/automotive/autovi_exchange.htm

Applications

With the kit you can perform automotive and component testing of many parameters including:

- Engine vibration
- Chassis vibration
- RPM measurement
- Strain on structure under load
- Temperature measurement

In-Vehicle Datalogger Components

The kit consists of the following hardware and software components, which must be ordered separately:

Hardware

- Data acquisition (DAQ)
- SCC Series shielded carrier
- Signal conditioning modules

Software

- In-Vehicle Datalogger Example Program
- LabVIEW 5.1 (or higher)
- NI-DAQ™ 6.7 (or higher)

In-Vehicle Datalogger Start-Up Kit

Data Acquisition

The kit includes a multifunction data acquisition board with analog, digital I/O, and digital triggering features. National Instruments offers a variety of hardware options for the flexibility to configure your system based on your requirements.

For portable use with a laptop computer:

The DAQCard[®]-AI-16XE-50 is a Type II PCMCIA card that features:

- Analog inputs – software-configurable as 16 single-ended or eight differential channels
- Programmable sampling rates to 200 kS/s with 16-bit resolution
- Digital I/O – eight TTL lines
- Counter/timers – two up/down, 24-bit resolution
- PR68-68F cable
- Shielded connector block SCB-68

For bench top use with a desktop PC:

The PCI-6034E is a PCI-bus card that features:

- Analog inputs – software-configurable as 16 single-ended or eight differential channels
- Programmable sampling rates to 200 kS/s with 16-bit resolution
- Digital I/O – eight TTL lines
- Counter/timers – two up/down, 24-bit resolution
- SH68-68EP cable

For bench top and rack use with a PXI[™]-based computer:

The PXI-6052E is a PXI card that features:

- Analog inputs – software configurable as 16 single-ended or eight differential channels
- Programmable sampling rates to 333 kS/s with 16-bit resolution
- Digital I/O – eight TTL lines
- Counter/timers – dual 24-bit up/down
- Analog outputs – dual 16-bit outputs
- SH68-68EP cable

Please contact National Instruments for other configuration options.

SCC (Signal Conditioning System)

The SCC Series is a portable, modular signal conditioning system that you can reconfigure on a per-channel basis to suit your signal conditioning, connector, and sensor requirements. The SCC system consists of a SC-2345 series shielded carrier, connectors, and one or more SCC modules. Up to 20 SCC modules can connect to the SC-2345 Series device. Panelettes for the SCC Series provide selectable connectivity of different sensor connector types. Modules appropriate for in-vehicle datalogging applications are listed in the table below.

Module	Description	Application	Features
SCC-TC02	Single-channel thermocouple input module	Temperature monitoring	<ul style="list-style-type: none"> • Input range ± 100 mV • Lowpass filter at 2 Hz with gain amplifier
SCC-SG04	Single-channel strain gauge input modules	Strain monitoring	<ul style="list-style-type: none"> • Full bridge strain gauges • 1.6 kHz lowpass filter • Single 2.5 V excitation source
SCC-AI05	Dual-channel isolated analog input modules	Reading input voltages	<ul style="list-style-type: none"> • Input range ± 1.0 V • Bandwidth 10 kHz

In-Vehicle Datalogger Start-Up Kit

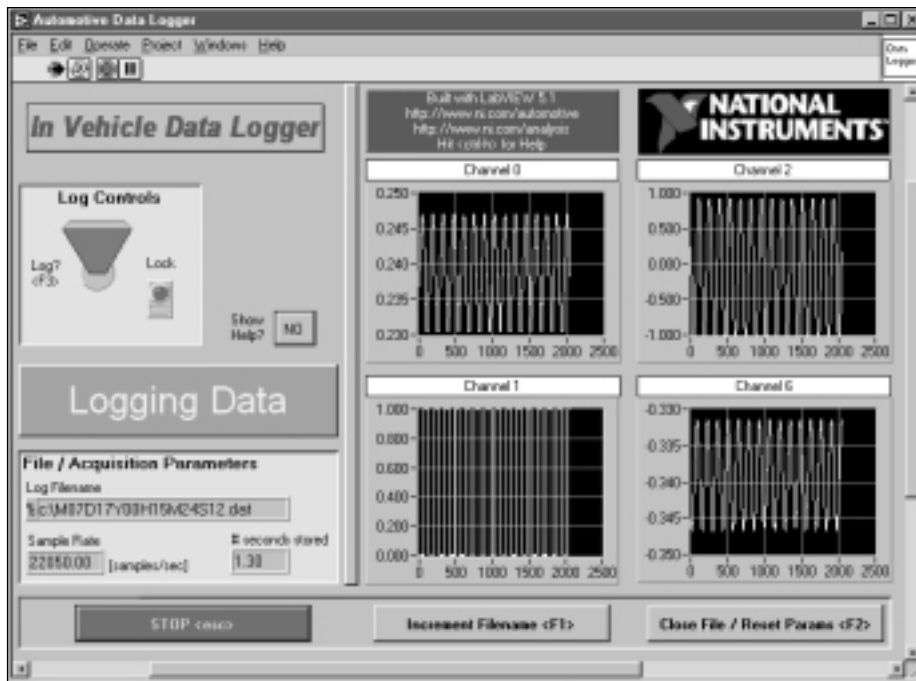


Figure 1. In-Vehicle Datalogger Example Program Front Panel

In-Vehicle Datalogger Example Program

The In-Vehicle Datalogger Example Program displays and logs automobile parameters, such as vibration data or temperature data, to your hard drive. The example program requires LabVIEW 5.1 or higher. You can download the example code **FREE** from the National Instruments Web site at ni.com/automotive/autovi_exchange.htm

The program is part of a set of unsupported examples intended as starting points for a wide variety of applications. With its open source code architecture, you can customize the example for individual applications and connect to other I/O devices.

Program features include:

- Web-based, downloadable
- Easily extendible LabVIEW code (requires LabVIEW base, full, or professional version to modify)
- Acquisition and logging of up to 16 channels at a time
- Displays up to four channels at a time during acquisition
- Front-panel switch starts and stops acquisition

LabVIEW

The LabVIEW environment for high-performance systems combines easy-to-use graphical development with the flexibility of a powerful programming language. The In-Vehicle Datalogger Start-Up Kit uses LabVIEW to maintain flexibility for modification. LabVIEW has several specialized toolboxes for related data analysis such as the Signal Processing Toolset and the Sound and Vibration Toolset.

NI-DAQ

NI-DAQ driver software integrates all National Instruments DAO products, so you can use different DAO hardware with the same application without modifying the software. You can develop an SCC system quickly and easily with NI-DAQ driver software. You can download the NI-DAQ driver software **FREE** from the National Instruments Web site at ni.com/automotive/autovi_exchange.htm

In-Vehicle Datalogger Start-Up Kit

Technical Support

National Instruments strives to provide you with quality technical assistance worldwide. To provide you with immediate answers and solutions 24 hours a day, 365 days a year, we maintain an extensive online technical support system. Web support is available at no cost to all of our registered users, and is found in the technical support section of our Web site at ni.com/support

To handle questions that cannot be answered by an automated system, National Instruments provides no-cost standard technical support via e-mail and phone for all registered users on all products. In the Americas, phone support is available on non-holiday weekdays from 7:00 a.m. to 7:00 p.m. central time. For technical support outside of the Americas, please contact your local National Instruments office.

National Instruments sponsors a wide variety of group activities, such as user group meetings at trade shows and at large industrial sites. Our users also receive our quarterly *Instrumentation Newsletter*™ and *AutomationView*™ newsletters to get the latest information on new products, product updates, application tips, and current events. In addition, sign up for *NI News*, our electronic news service at ni.com/news

Warranty

All National Instruments data acquisition, computer-based instrument, VXIbus, and MXI™ bus products are covered by a one-year warranty. GPIB hardware products are covered by a two-year warranty from the date of shipment. The warranty covers board failures, components, cables, connectors, and switches, but does not cover faults caused by misuse. You may return a failed assembly to National Instruments for repair during the warranty period. Extended warranties are available for an additional charge.

Information furnished by National Instruments is believed to be accurate and reliable. National Instruments reserves the right to change product specifications without notice.

Seminars/Training

Free and fee-paid seminars are presented several times a year in cities around the world. Comprehensive, fee-paid training courses are available at National Instruments offices or at customer sites. For training schedules, and to register online, please visit our Web site at ni.com/custed

Ordering Information*

LabVIEW Base Development System

Windows 2000/NT/9x.....776671-03

LabVIEW Full Development System

Windows 2000/NT/9x.....776670-03

LabVIEW Professional Development System

Windows 2000/NT/9x.....776678-03

Data Acquisition

For portable use:

DAQCard-AI-16XE-50..... 777231-01

PR68-68F ribbon cable..... 183646-0R1

SCB-68 shielded I/O connector block.....776844-01

For desktop use with a PCI-based computer:

PCI-6034E.....778075-01

SH68-68EP..... 184749-01

For bench-top and rack use with a PXI-based computer:

PXI-6052E.....777962-01

SH68-68EP..... 184749-01

SCC Signal Conditioning

SCC-AI05..... 777459-24

SCC-TC02 (2x).....777459-04

SCC-SGO4.....777459-16

SCC-2345.....777722-01

Panelettes

Thermocouple, Type J..... 184736-01

Dual toggle switch..... 185378-01

Male dual 9-pin Dsub (3 slot)..... 184738-01

Dual BNC..... 184737-01

Blank panelette (x3)..... 184483-01

*For other details and configuration suggestions, contact National Instruments or visit our National Instruments Web site at ni.com



342089A-01

ni.com/automotive (512) 794-0100

U.S. Corporate Headquarters • Fax: (512) 683-9300 • info@ni.com

Branch Offices: Australia 03 9879 5166 • Austria 0662 45 79 90 0 • Belgium 02 757 00 20 • Brazil 55 011 284 5011 • Canada 905 785 0085
China 0755 3904939 • Denmark 45 76 26 00 • Finland 09 725 725 11 • France 01 48 14 24 24 • Germany 089 741 31 30 • Greece 30 1 42 96 427
Hong Kong 2645 3186 • India 91805275406 • Israel 03 6120092 • Italy 02 413091 • Japan 03 5472 2970 • Korea 02 596 7456 • Mexico 001 800 010 0793
Netherlands 0348 433466 • New Zealand 09 914 0488 • Norway 32 27 73 00 • Poland 0 22 528 94 06 • Portugal 351 1 726 9011 • Singapore 2265886
Spain 91 640 0085 • Sweden 08 587 895 00 • Switzerland 056 200 51 51 • Taiwan 02 2528 7227 • U.K. 01635 523545 • Venezuela 800 1 4466