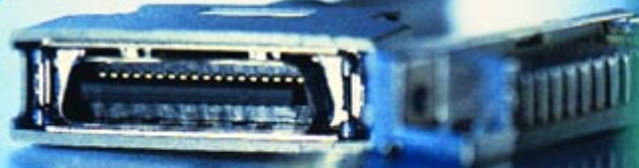
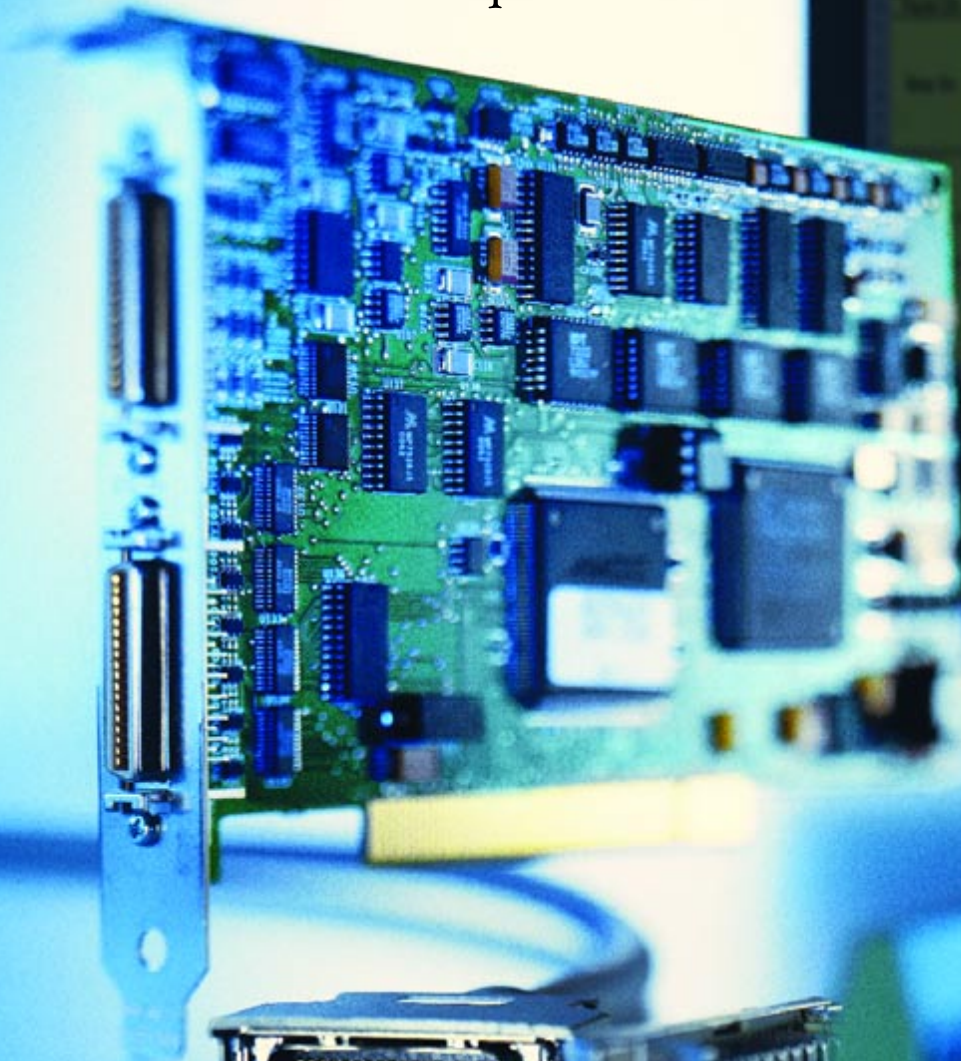


KEITHLEY



Solutions for Today's Data Acquisition and Control Challenges



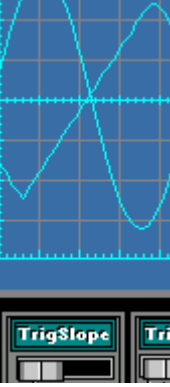
Optimize your test and automation system with

MULTIPOINT MEASUREMENT & CONTROL CAPABILITIES



Ask us how our data acquisition solutions can slash your time to market.

Keithley's cost-effective plug-in boards and external systems



Keithley offers data acquisition solutions for applications that include production testing, process automation and control, and research and development. Whether the application is in the lab or on the production floor, Keithley offers solutions in a variety of form factors, from plug-in boards to external systems with multipoint measurement and control capabilities. The high quality, high performance, and economical price of these solutions help you improve your productivity and ensure a great return on investment.

Easy to use

Easy to install with plug-and-play hardware and software

Easy to prototype and troubleshoot with start-up software

Easy to program with state-of-the-art software drivers for developing application software quickly

Easy to upgrade hardware with a consistent programming interface that makes code modifications unnecessary

Reliable

Specifications spell out how Keithley products will work in a system—from board to cable to accessory

Robust

Dependable operation that keeps systems running

Outstanding technical support that's unmatched in the industry

Our experts can help with system building and optimization

HIGH QUALITY, HIGH PERFORMANCE, AND ECONOMICAL PRICE

Complete line of data acquisition boards for building powerful systems

BOARDS TO MATCH A VARIETY OF INDUSTRIAL APPLICATIONS

Outstanding mix of functionality, performance, and value

Keithley offers PCI, ISA, and PCMCIA boards to match a variety of computer hardware. These boards offer a wide range of functionality, including analog I/O, digital I/O, and counter/timers. Visit www.keithley.com for detailed specifications on any Keithley product.

Multifunction Analog I/O

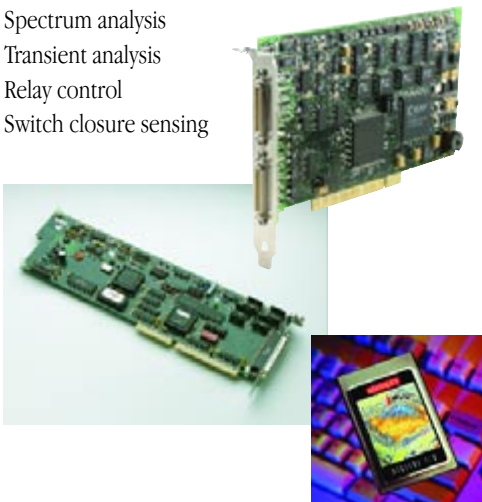
These multifunction boards make it simple to gather analog data, read and output digital signals, provide analog stimulus, count events, and much more. System integrators, OEMs, production engineers, and control engineers also use these all-in-one solutions to control closed-loop processes by switching relays and controlling setpoints.

Key Features:

- 12- and 16-bit A/D resolution
- 16 to 64 analog inputs channels with gains up to 800 (+12mV range)
- Up to 1.25MHz sampling rate
- Automatic CJC for thermocouples
- Up to two waveform-quality analog output channels
- Up to 32 digital I/O lines
- Up to 3MHz digital I/O streaming

Typical Applications:

- Voltage, temperature, strain, vibration, and other analog signal measurements
- Analog stimulus/response testing
- Waveform generation and analysis
- Spectrum analysis
- Transient analysis
- Relay control
- Switch closure sensing



Digital I/O

System integrators and OEMs use our digital I/O products to control processes, monitor the status of switches, contacts, and other control points, turn power on and off, and meet high channel count requirements.

Key Features:

- Up to 96 digital I/O lines
- Configurable for input or output
- 64mA current sink capability
- Interrupt and latching capabilities
- Compatible with industry standard solid-state relays and PB-24/SSIO-24

Typical Applications:

- Interface to TTL, NMOS, and CMOS components
- Factory automation
- Contact closure sensing
- Status monitoring and control of switches, LEDs, pushbuttons, valves, limit switches, etc.
- Energy management
- Security systems monitoring and control

Analog Output

Control and process engineers use Keithley analog output boards to control valves, gauges, ovens, gates, and other analog devices that require voltage or 4-20mA current. They also use them to simulate outputs from other devices and generate arbitrary waveforms.

Key Features:

- Up to 16 analog outputs
- 20mA output current
- Up to 20-bit resolution
- 4-wire remote sensing
- Automatic fault-circuit detection
- Up to 32 digital I/O lines

Typical Applications:

- Burn-in
- Machine control and automation
- Servo and setpoint control
- Programmable voltage source
- Control 4-20mA loads without external power supply
- Excitation voltage

Description
Key Features
Analog Inputs
A/D Resolution
Sampling Rate
Max. Input Gains
Analog Outputs
D/A Resolution
Digital I/O lines
TTL Sink
TTL Source



Counter/Timers

Production engineers and OEMs use Keithley counter/timers in applications as complex as determining the position of a crankshaft or as simple as counting the number of products on an assembly line.

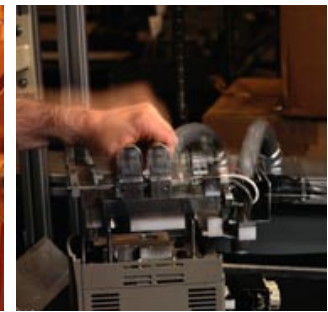
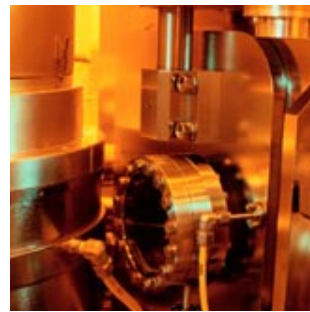
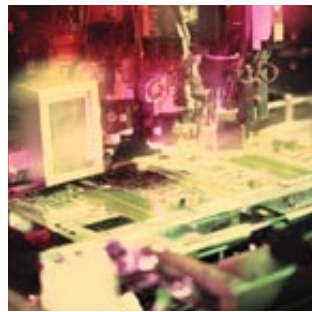
Keithley's specifications tell you exactly what to expect when building our products into a system. Visit www.keithley.com for complete specifications and further information on our PCI, ISA, and PCMCIA boards and accessories.

Key Features:

- Up to 10 counter/timers
- Interrupt capabilities
- Digital pattern recognition
- 32 digital I/O

Typical Applications:

- Position measurement
- Event counting and gating
- Time, frequency, and period measurement
- Pulse train generation
- Frequency generation



Multifunction Analog I/O						Digital I/O	Analog Output	Counter/Timers
KPCI-3107/3108	KPCI-1801HC/1802HC	KPCI-3101/3102	KPCI-3103/3104	KPCI-3110	KPCI-3116	KPCI-PIO24/3160	KPCI-3130/3132	KPCI-3140
Multi function, all-in-one board	High channel count	Low cost, entry level	Medium cost, higher speed	High speed	High resolution, higher speed	Universal digital I/O	Universal analog output board	Counter/timer and digital I/O
<ul style="list-style-type: none"> • High resolution • Waveform-quality analog output • Wide gain up to 800 • Thermocouple/CJC solution 	<ul style="list-style-type: none"> • Up to 64 channels • Burst mode support up to 312kHz • High gains up to 250 • Thermocouple/CJC solution 	<ul style="list-style-type: none"> • 225kHz, 12-bit • High-speed, digital I/O, up to 3MHz • 4 counters 	<ul style="list-style-type: none"> • 400kHz, 12-bit • High-speed digital I/O, up to 3MHz • 4 counters 	<ul style="list-style-type: none"> • 1.25MHz, 12-bit • Waveform-quality analog output • Up to 32 analog input channels • 4 counters 	<ul style="list-style-type: none"> • 250kHz, 16-bit • Waveform-quality analog output • Up to 32 analog input channels • 4 counters 	<ul style="list-style-type: none"> • 64mA sink current • External interrupt and latching capabilities (KPCI-PIO24) • Compatible with industry standard solid-state relays 	<ul style="list-style-type: none"> • 4-wire sensing • 20mA current sourcing without an external power supply • Automatic fault-circuit detection • High resolution 	<ul style="list-style-type: none"> • 8 counters, 4 interval timers • CPU interrupt capabilities • Digital pattern interrupt (8-bit) • 40MHz clock frequency
16	64	16	16	32	32	-	-	-
16 bit	12 bit	12 bit	12 bit	12 bit	16 bit	-	-	-
100kHz	333kHz	225kHz	400kHz	1.25MHz	250kHz	-	-	-
800	250/8	8	8	8	8	-	-	-
0/2	2	0/2	0/2	2	2	-	8/2	-
16 bit	12 bit	16 bit	16 bit	12 bit	16 bit	-	20 bits	-
32	12	23	23	16	16	24/96	32/0	32
64mA	4mA	12mA	12mA	24mA	24mA	64mA	64mA/-	12mA
-15mA	-400µA	-15mA	-15mA	-15mA	-15mA	-15mA	-15mA/-	-15mA

Integra Systems: High channel count at a very low cost per channel

STATE-OF-THE-ART INTEGRATING A/D, AND SIGNAL CONDITIONING

Up to 200 channels



The Model 2700 and 2750 are high performance data acquisition and control systems that provide maximum flexibility at a minimum cost. Both of these highly integrated systems include a true 6½-digit multimeter, a state-of-the-art integrating A/D, and signal conditioning. Their intuitive front panel design makes troubleshooting easier. Production, quality, and research engineers often use Integra systems to characterize and profile their systems and to perform final functional tests on their products.

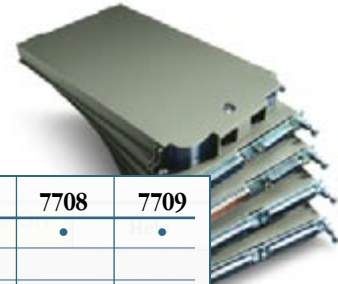
Key Features:

- Up to 200 channels of differential analog inputs
- Built-in signal conditioning directly measures temperature (thermocouple, RTD, thermistor), voltage AC/DC, current AC/DC, resistance (2- and 4-wire), frequency, and period
- Up to 160 digital I/O lines
- 22-bit high resolution integrating A/D
- Per channel configurability, scaling, and alarm limits
- Built-in 1000V/300V electrical isolation
- Flexible modular configuration
- 200 channels per second scanning rate
- RS-232 and GPIB communication standard

Typical Applications:

- Process monitoring and control
- Production testing of electronic products and devices
- Burn-in, accelerated stress testing (AST)
- Low ohms, multichannel measurements

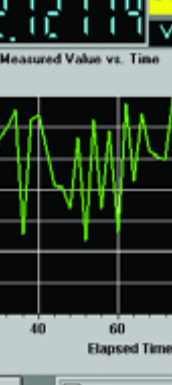
Highly flexible—when the application's needs change, simply change modules. Integra systems reconfigure themselves automatically.



Module	7700	7701	7702	7703	7705	7706	7707	7708	7709
AC and DC Volts	•	•	•	•		•	•	•	•
AC and DC Current	•		•						
Temperature:									
T/C w/Automatic CJC	•					•		•	
T/C w/External CJC	•	•	•	•		•	•	•	•
RTD	•	•	•	•		•	•	•	•
Thermistor	•	•	•	•		•	•	•	•
Resistance (2- or 4-wire)	•	•	•	•		•	•	•	•
Frequency	•	•	•	•		•	•	•	•
Event/Counter/Totalizer						•			
Signal Routing/Control	•	•	•	•	•	•	•	•	•
Digital Input							•		
Digital Output						•	•		
Analog Output						•			
Analog Input Channels	20	32	40	32	40	20	10	40	6x8

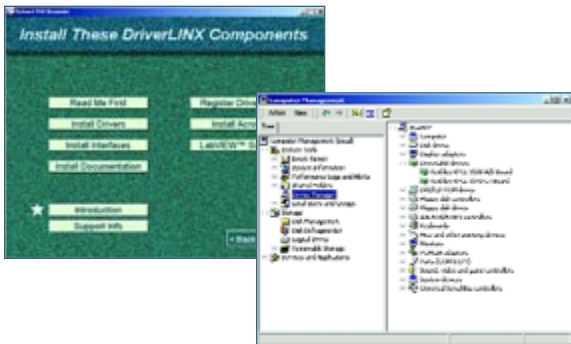
All modules are compatible with the two-slot Model 2700 Multimeter/Data Acquisition System and the five-slot Model 2750 Multimeter/Switch System.

Intuitive software tools speed and simplify system building



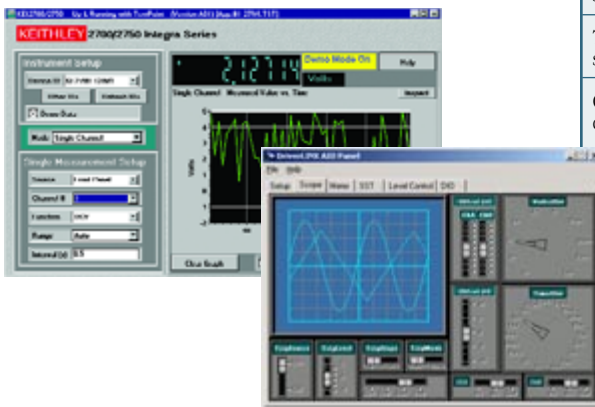
Step 1: Install hardware and driver software

Easy installation—just point and click.



Step 2: Prototype and debug the system with Keithley's free "Up & Running" software

No programming required. Exercise and verify all analog and digital I/O functions with the start-up software and TestPoint runtimes.



Step 3: Use Keithley's turnkey application software or develop a custom application in your favorite programming language

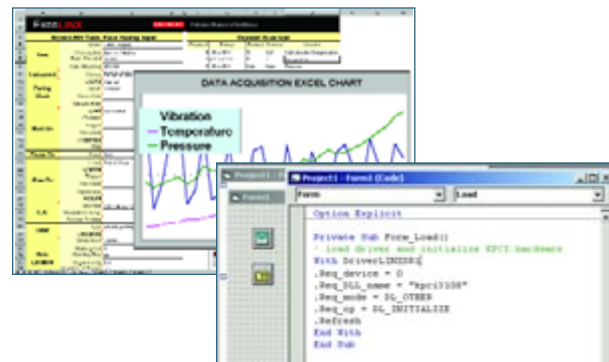
Turnkey applications

No programming needed to

- Acquire data directly into Excel with ExceLINX™
- Capture, plot, and analyze waveforms with VisualSCOPE™

Custom application development

- Software drivers based on ActiveX® controls and DLL controls simplify writing hardware-independent software in Visual Basic, C/C++, Delphi, TestPoint, LabVIEW, and LabWindows/CVI



Select the optimum software for your hardware		
Software Categories	PC Plug-In Boards	Model 2700 and 2750
Exercise/debug/prototype software	DriverLINX test panel	TestPoint runtimes
Turnkey application software	ExceLINX-DAS, VisualSCOPE	ExceLINX-IA
Custom program development tools	DriverLINX, ActiveX controls and DLL for Visual Basic, Visual C++, and Delphi. Also, TestPoint and LabVIEW drivers	IVI drivers for TestPoint, LabVIEW, LabWindows/CVI, Visual C++, Visual Basic, and others

Data Acquisition and Control Handbook

This valuable 200-page reference brings together Keithley's experience in helping customers with data acquisition and control applications. It provides objective recommendations on designing test circuits, software programs, and common test and automation systems. To request a FREE copy, visit www.keithley.com or call **1-888-KEITHLEY (534-8453)**.



Application notes and articles

Visit www.keithley.com to download an extensive library of applications notes and articles that offer practical, real-world answers to data acquisition questions.

Dependable service and applications support

Service and support, both before and after the sale, from Application Engineers who are experts in their fields are all part of the package when you work with Keithley. Ask them for advice on the best way to configure a system or for answers to tough test, measurement, and data acquisition questions. Contact them through www.keithley.com or call them at 1-888-KEITHLEY (534-8453). Keithley's international offices provide native language support in countries around the world.

Get the whole story in Keithley's catalog

See Keithley's catalog for complete descriptions of our test, measurement, and data acquisition solutions. Call 1-888-KEITHLEY (534-8453) or visit www.keithley.com to request a FREE copy.

A greater measure of confidence

Keithley is a pioneer in the data acquisition industry. For more than 50 years, we've been developing state-of-the-art test, measurement, and data acquisition products. Our partnerships with the leading manufacturers in optoelectronics, telecommunications, semiconductors, and other industries allow us to create innovative solutions for evolving test and measurement needs.

Specifications are subject to change without notice.

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