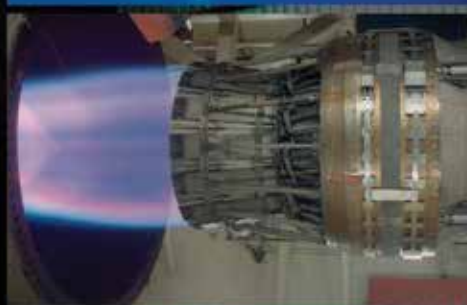


Signal Conditioning, Data Acquisition and Control

Product Guide

Pacific Instruments

Measuring
Human
Innovation



pacificinstruments.com



Application-Oriented Acquisition Systems



Wind Tunnels

Energetic Testing

Structural Testing

Rocket Test Stands

Series 6000



10K+
Channels

Signal Conditioning,
Acquisition and
Control System

Completely modular:
2 to 10,000+ channels

High performance
conditioning and
integrated A/D

Digital I/O and DSP
for control

Single or distributed
systems

Turnkey and API software

Series 6600



32Ms/s
per Enclosure

Signal Conditioning
and High Speed
Acquisition System

Series 6000 expanded
to 32Ms/s per enclosure

Higher Aggregate rate with
multi-enclosure system

Up to 128 Channels at
Max 200ks/s per channel
in one enclosure with
up to 2Ms/s per channel

New Enclosure with Serialized
Backplane, Low-Noise
Switching Power Supplies

New I/O Modules & Digital I/O

Series 6700



32Ms/s
24-Bit

Signal Conditioning and
24-Bit High Speed Data
Acquisition System

Series 6000 redesigned
with higher Aggregate
(32Ms/s) AND 24-bit

Uses 6600 Enclosure
(Model 6700U)

6600 I/O Modules with
24-bit SAR A/D

Serialized Backplane,
Low-Noise Switching
Power Supplies



Since 1978

Custom Design

Quality Solutions

Application Support

Series 7000



.05%
Accuracy

Ruggedized
Ethernet Data
Acquisition System

High accuracy, high gain
signal conditioning

High resolution 24-bit A/D

Real-time temperature
compensation from
-20°C to +50°C

Ruggedized for harsh
environments

Turnkey and API software

Series 5800



10Ms/s
per Enclosure

Transient
Recording
System

High bandwidth bridge /
IEPE signal conditioning

High Speed A/D up to
10 MS/s

Harsh environment or
laboratory enclosures

Turnkey software

PI660 Software



15
Display Types

Professional Test
and Measurement
Software

Pre-test operations for
setup, test definition
& calibration

Real-time features for
data acquisition, display
& distribution

Post-test functions for data
replay, plotting & export

Series 6000

Signal Conditioning, Acquisition and Control System

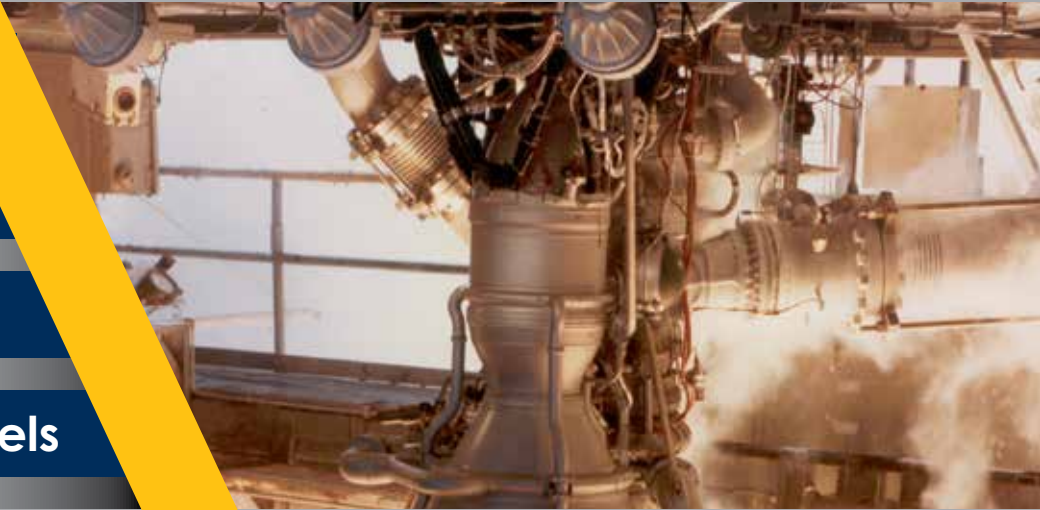


Series 6000

Modular Design

Digital I/O & DSP

2 to 10,000+ Channels



Enclosures



Step 1: Select Enclosures

Large and small, AC and DC powered enclosures are available for nearly any test environment.

Expandable Systems
Use Any Combination
Local or Remote Setup

1

I/O Modules



Step 1: Select I/O Modules

Analog and digital I/O modules condition, amplify, filter and digitize signals from transducers.

Mix & Match Types
Simultaneous Sampling
2 to 10,000+ Channels

2

Software



Step 1: Select Software

Turnkey and/or API software is available, helping facilities get up and running quickly.

Turnkey Acquisition
Real-Time Displays
3rd Party Support

3

Series 6000 Custom Configuration in 3 Steps

An innovative and fully integrated modular transducer conditioning, acquisition and control system, the Series 6000 has unparalleled performance and accuracy. From two to many thousands of channels, high and low speed, analog and digital, Series 6000 acquires measurement data from virtually all types of sensors and is fully customizable to the needs of any test facility. Large and small, AC and DC powered enclosures are available for nearly any test environment. Analog and digital I/O modules condition, amplify, filter and digitize signals from transducers. Turnkey and/or API software is available, helping facilities get up and running quickly.

Configuring the Series 6000 System begins with selecting enclosures, I/O modules and software.

pacificinstruments.com/6000



Enclosures

Over 40MS/s

USB & Ethernet

Multi-System Support

6000U



Model 6000U & 6000E

16 I/O Module Slots
19", 8U Rack Mount
USB & Ethernet Versions

16
I/O Slots

6005U



Model 6005U & 6005E

10 I/O Module Slots
10.5", 6U DC Powered
USB & Ethernet Versions

10
I/O Slots

6010U



Model 6010U & 6010E

4 I/O Module Slots
19", 8U Rack Mount
USB & Ethernet Versions

4
I/O Slots

6008U



Model 6008U & 6008E

4 I/O Module Slots
10.5", 4U DC Powered
USB & Ethernet Versions

4
I/O Slots

Common Features

- Any number or combination of racks
- Over 40 MS/s, simultaneous sampling per system (Multiple Enclosures)
- Multiple, distributed system support
- On-board storage for data redundancy
- Distributed sample clock, alarm and calibration Bus
- IRIG A, B or G
- Supports any I/O module in any slot

The native interface for the enclosure is USB 2.0 and can be configured for Ethernet. There are many ways to configure a system. Multiple racks can be combined to provide a single larger system or used individually to create smaller, lower channel count installations. The systems can be run locally (near a test cell) or remotely from a control room. This allows the test operators to setup, configure and calibrate the system locally near the test article and remotely while a test is in progress.

Data redundancy is optionally available and mounts on the controller board in each Series 6000 enclosure, creating a redundant recording point for the system. In the unlikely event the Operator's Workstation or application software fails, data will continue to record in each enclosure and can be recovered from the system post-test.

Series 6000

Signal Conditioning, Acquisition and Control System



I/O Modules

16-Bit SAR A/D

Analog & Digital

All Transducer Types

Model 6017

Voltage/Thermocouple
Amplifier, Digitizer

Voltage & Thermocouple Inputs
Thermocouple Reference Junction Box
Gains 1 to 5,000 with 0.05% Accuracy
2kS/s per Channel, 16-Bit Resolution
Automatic Zero & Gain Calibration



Model 6084-32-RTD/RM UTR



UTR
Option

32
Channels



Voltage

6013-HV

100V Input
8 Channels
10kS/s

6017

High Density
32 Channels
2kS/s

6029

Instrumentation Amp
Analog Output
8 Channels
200kS/s

6029-HV

100V Input
Analog Output
8 Channels
200kS/s



Thermocouple

6013

High Flexibility
Thermocouple
8 Channels
10kS/s

6017

High Density
Thermocouple
32 Channels
2kS/s



4-20mA

6013-I

24 VDC
Loop Power
8 Channels
10kS/s

6029-I

24 VDC
Loop Power
8 Channels
200kS/s



Position

6013

DC Excitation
12V, 15V & 24V
8 Channels
10kS/s

6018

Current Excitation
Potentiometer
8 Channels
10kS/s

6039B

Dual Input
with Bridge
8 Channels
10kS/s



RTD

6018

Current Excitation
8 Channels
10kS/s

6060

Plug-on Configuration
Analog Output
2 Channels
200kS/s, 300VCM

6068

Plug-on Configuration
Analog Output
2 Channels
200kS/s, 300VCM



Bridge < 1kHz, 10k S/s

6039B

Strain / Bridge & Position
Programmable Filter
8-Wire
8 Channels, 10kS/s



I/O Modules

Mix & Match

High Performance

Simultaneous Sample

Mix and Match Capability

All modules can be mixed and matched to meet test requirements and are easily changed as testing requirements change. Many of the Series 6000 I/O Modules can be used with more than one measurement type and are able to be reconfigured or custom designed to fit any application.

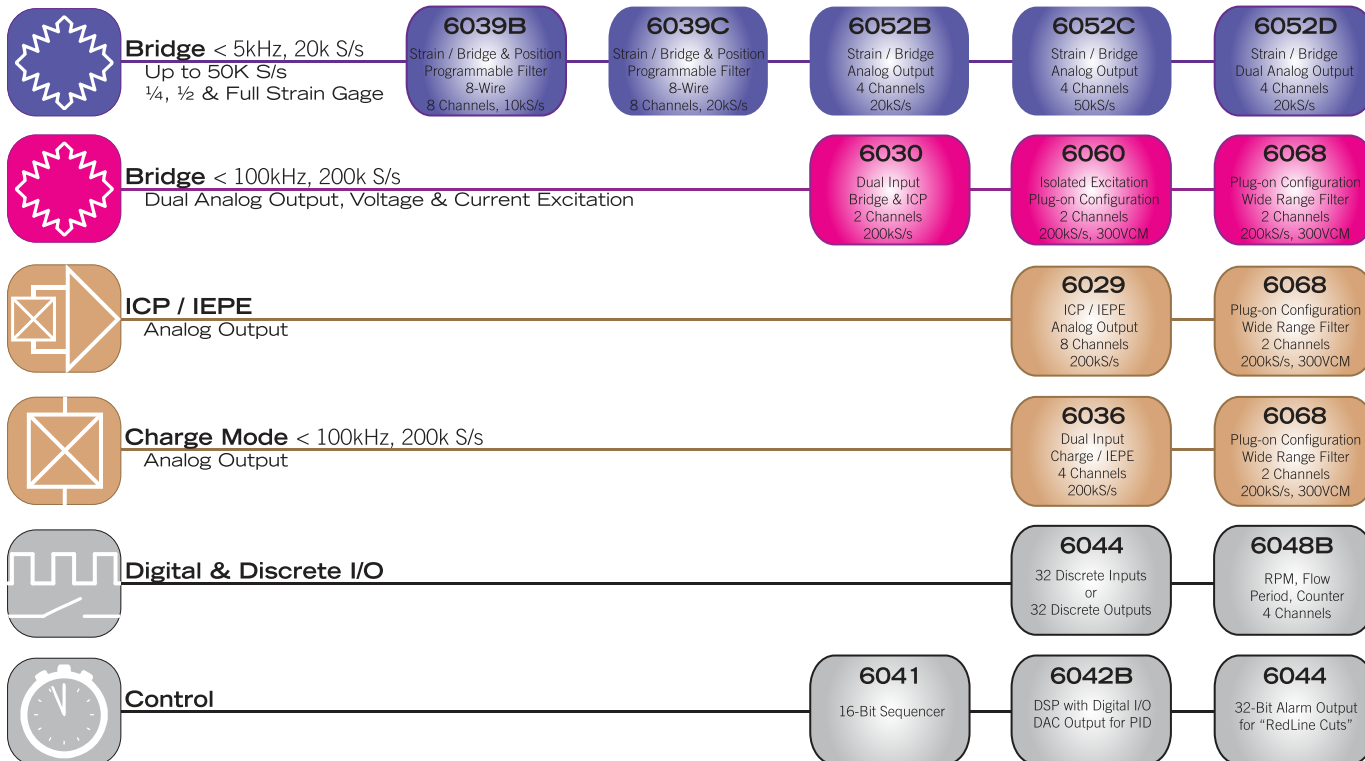
New Model 6039C

Strain/Bridge Transducer Amplifier, Filter, Digitizer

20ks/s per Channel
Selectable 120 & 350 Bridge
8-Wire Connection
±15V Excitation for DC-LVDT
Custom Filter Options



8
Channels



Series 6000

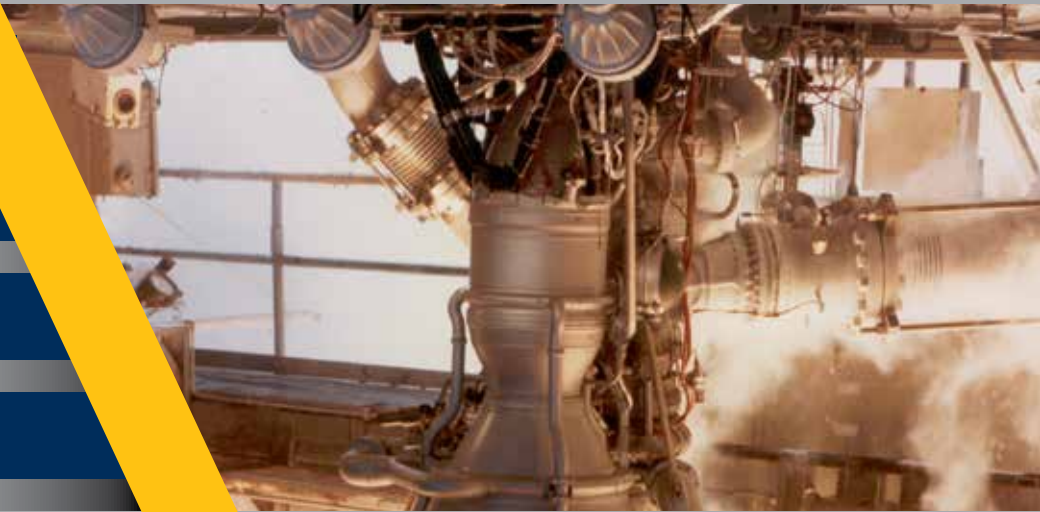
Signal Conditioning, Acquisition and Control System

Software

Turnkey & API

Real-Time Display

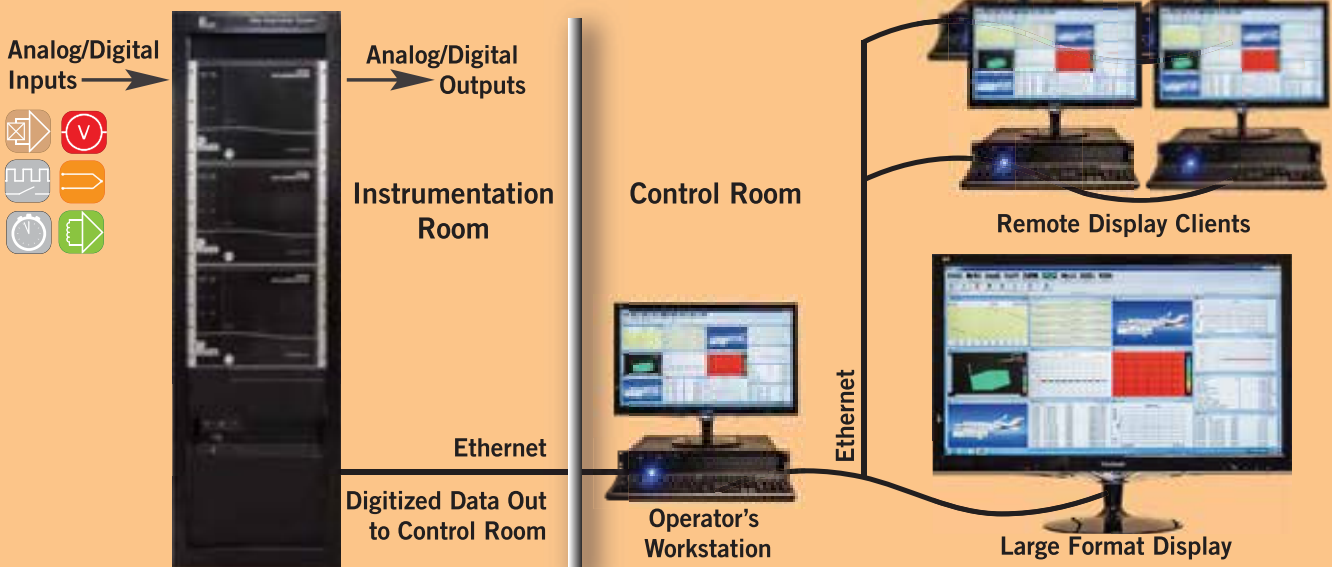
System Calibration



PI660: Professional Test and Measurement Software

Full System Management Features Reduce Setup Time

- Pre-test operations for setup, test definition & calibration
- Real-time features for data acquisition, display & distribution
- Post-test functions for data replay, plotting & export



PI660 is a turnkey application that runs on Microsoft® Windows® Operating Systems. Pre-test operations include: system setup, test definition and tracking, system and transducer calibration. Real-time features include: display, acquisition and data distribution to display clients. Post-test functions include: data replay, plotting and export to third party formats for analysis. When facilities choose PI660, setup time is greatly reduced, allowing users to focus on what matters most: testing, not writing software.

15
Display
Types



Ready Check

Data Preview

Custom Reporting

Facility Management

Accounts

Streamline Facility Needs

Create and manage user accounts with three levels of permissions: View & Modify, View Only, or Invisible

Up to 50 User Accounts
Secure Password Protection
Manage Software Functions By User
Set Operating Language



Test Denition

Set Channel Characteristics

Dene channel conditioning, gain, filter, calibration procedures, sample rates & recording options.

Test Ready Check
Save/Load Channel Configurations for Quick Test Setup
Generate Reports with Calibration Results & Channel Settings



Display Denition

15+ Data Display Types

Any number or combination of displays may be placed on a screen and configurations are saved with the test file.

Add/Remove Channels to Displays
Large Format Multi-Display Setup
Save/Load Display Configurations
Display Definitions are Saved with the Test File
Set Operating Language



Calibration

System Health Check

System & engineering unit calibrations, bridge balancing, tare & zeroing for one or all channels.

Automatic or Manual Calibration
Extensive Gain Cal & System Check
Calibrate One, Many or All Channels



Acquisition

Preview & Record Data

Acquire & display real time data in Preview, Record or Single Scan Modes.

Channel & Display Verication
Save Recorded Data to Disk
Single Scan Data Logging
High & Low Speed Capture Options



Export

View & Plot Recorded Data

After acquisition, plot or export the data to a wide variety of native formats: ASCII, Binary, CSV, DPlot, WinPlot, UFF.

Built-In Viewer for Plotting Data
Manage Data Files with Unique Test Names & Run Numbers
Process Data Immediately or Move to the Next Test



3rd Party Data Stream Integration

DIC Data

Fiber Optic

Pressure Scanners

Wireless Transducers

Digital Image Correlation

Non-Contact Measurement Systems
3D Displacement
Surface Strain



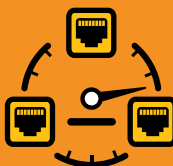
Wireless Data

Wireless Strain, Load, Pressure,
Accelerometer, Pulse Sensors
Continuous Sampling Rate



PSI Ethernet

Display Data from Network Scanners
Alongside Analog Signals
Any Pressure Range



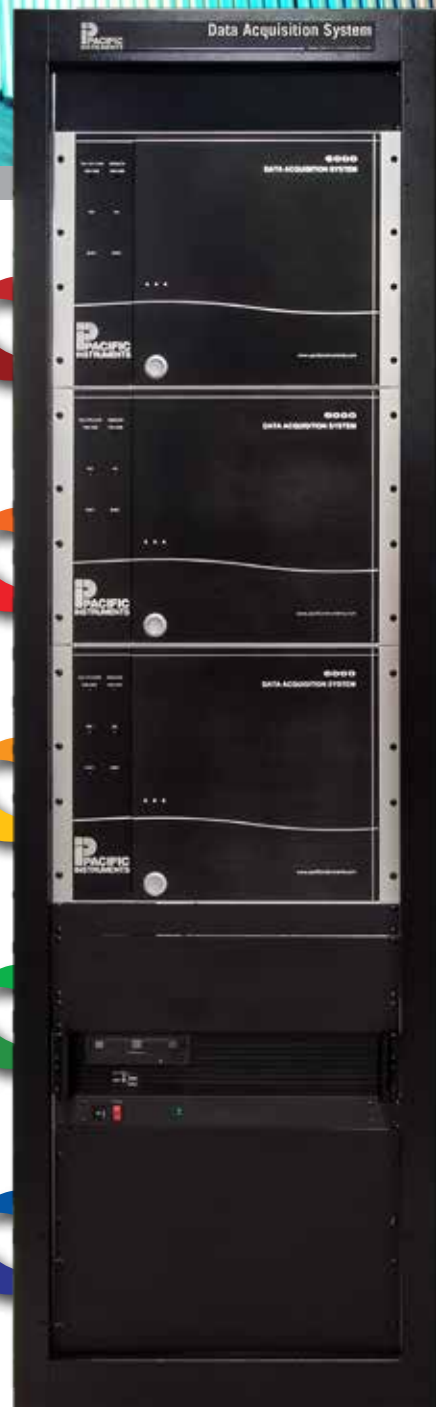
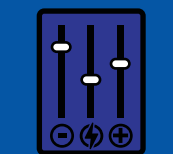
Fiber Optic

Real Time Fiber Optic Sensing
Thousands of Data Points
3D Visualization of Shape & Strain



Load Control

Receive and Display Data from LCS
Accept and Respond to
LCS Commands



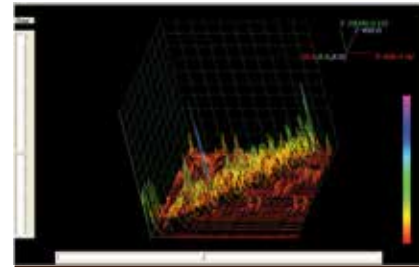
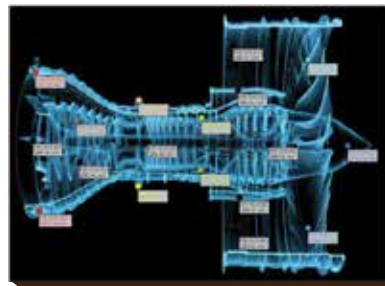
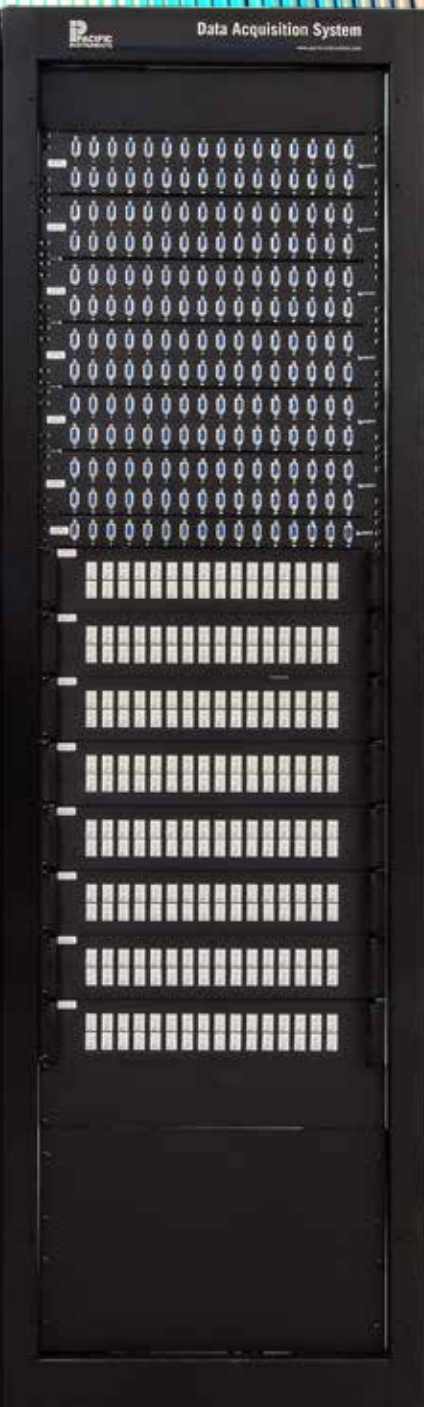
3rd Party Data Stream Integration

Digital Data

Analog Data

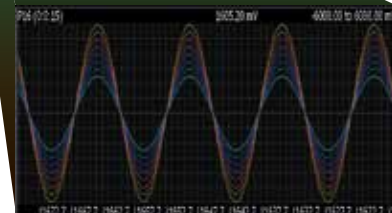
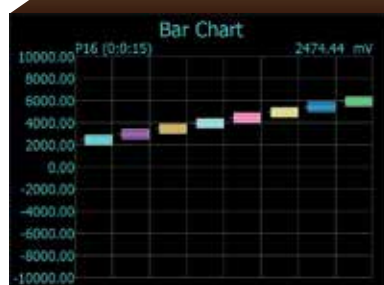
Record & Display

Combined Streams



PI660: Visualize Results

Record & Display 3rd Party Data Streams Alongside Analog Channel Data in PI660.



Series 6600

High Speed Signal Conditioning, Acquisition & Control System



Series 6600

High Speed DAQ

200ks/s per Channel

32Ms/s per Enclosure



Features

- Series 6000 redesigned with Higher Aggregate (32Ms/s)
- Ability to compliment 128 Channels at Max 200ks/s per channel
- New USB 3.0 Enclosure

- Switching Power Supplies with enhanced noise performance
- PSU Filters mitigate common mode and high frequency noise
- 40lbs vs. 70lbs
- Redesigned Serialized backplane

- New I/O Modules
- New 6694 USB Controller board at the rear of enclosure

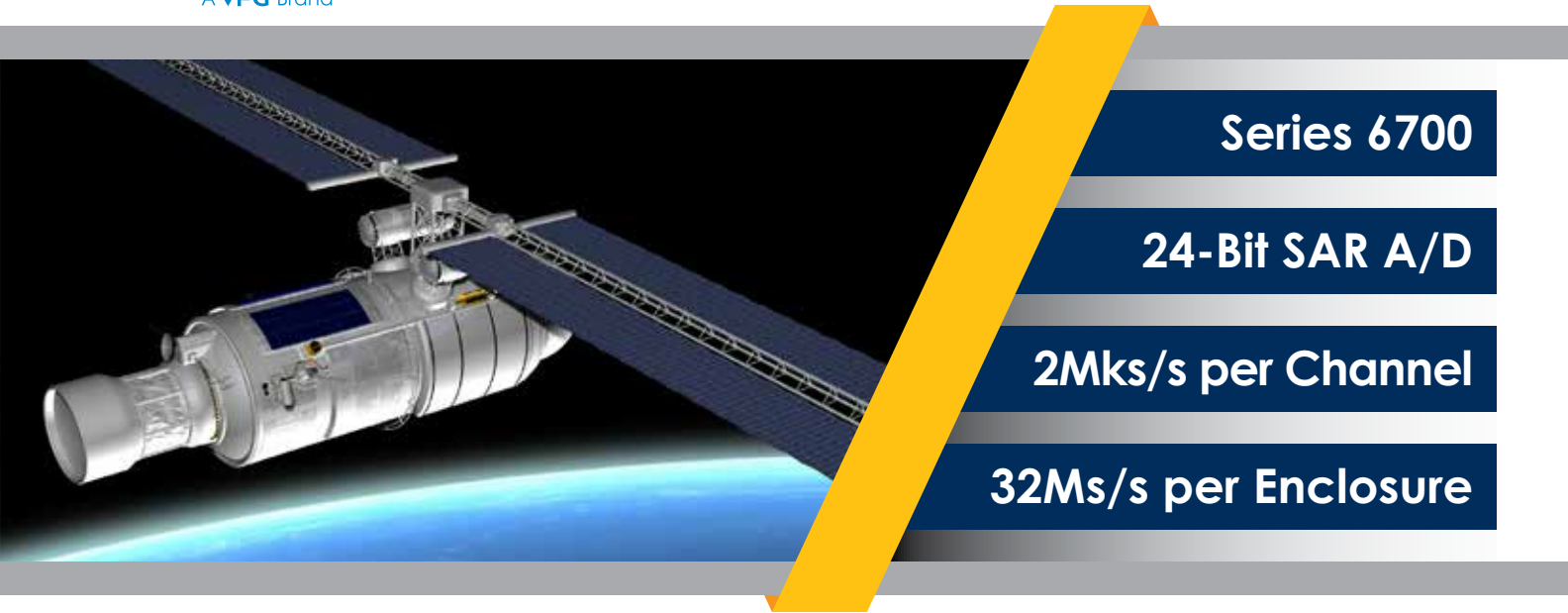
- Enables ease of removal for Controller/Modules
- Increased spacing between I/O Modules for better cooling

- Same Turnkey PI660 Software Package
- Same Digital I/O Capabilities

Applications

- Rocket Testing
- Jet Engine/Turbine
- Wind Tunnel
- Satellite Testing
- Aerospace
- Defense/Military
- Explosive Testing
- PCB





Series 6700

24-Bit SAR A/D

2Mks/s per Channel

32Ms/s per Enclosure



Features

- Series 6000 redesigned with Higher Aggregate (32Ms/s)
New USB 3.0 Enclosure
- Switching Power Supplies with enhanced noise performance
PSU Filters mitigate common mode and high frequency noise
40lbs vs. 70lbs
Redesigned Serialized backplane
Up to 2Mks/s Channel Data per I/O Module (32 MS/s per Enclosure)
- New I/O Modules
New 6794 USB Controller board
- Mounted on rear of enclosure, ease of removal
Increased spacing between I/O Modules
- Same Turnkey PI660 Software Package
Same Digital I/O Capabilities

Applications

- | | |
|--------------------|--------------------|
| Rocket Testing | Defense/Military |
| Jet Engine/Turbine | Structural Testing |
| Wind Tunnel | Explosive Testing |
| Satellite Testing | Universities |
| Aerospace | PCB |

Series 6000, 6600 & 6700

Integrated Conditioning, Acquisition and Control Systems



XXXXXXXXXX

XXXXXXXXXX

XXXXXXXXXX

XXXXXXXXXX

Why Pacific Instruments & Series 6000?

Top Quality Supplier with Experience

- Dedication to customer support and satisfaction
- Knowledgeable and experienced design team with superior analog/digital design capability
- Continuously expanding product line
- Fulfill custom and semi-custom requirements

High Performance Hardware

- Conditioning, acquisition and I/O in a single cost-effective system
- High performance, high accuracy signal conditioning with integrated A/D
- Flexible – input, gain, filter, excitation, sample rate, alarms and more – all selectable per channel
- Many modules offer analog outputs in addition to the A/D
- Mix and match modules to meet specific requirements
- Local and/or distributed architecture

Application Software

- Turnkey or API for easy facility integration
- Quick and easy test setup using menus or spreadsheets – ideal for large channel count installations
- Pre-test – system setup, test definition and tracking, system and transducer calibration
- Runtime – real time display, recording and data distribution
- Post Process – data replay and export to third party formats

Applications

Quality Solutions

High Performance

Custom Conguration



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- Runtime – real time display, recording and data distribution
- Post Process – data replay and export to third party formats

Series 7000

Ruggedized Ethernet Data Acquisition Systems



Series 7000

Ruggedized

High Resolution

200ks/s per Channel



Models 7200



Models 7214 / 7216 / 7224

24 kS/s per channel
10 kHz analog bandwidth
0.05% or better accuracy
Strain, bridge, voltage

200kS/s
per Channels

Models 7300



Models 7314 / 7316 / 7324

100 kS/s per channel
50 kHz analog bandwidth
0.05% or better accuracy
Strain, bridge, voltage, IEPE

100kS/s
per Channels

Models 7400



Models 7414 / 7416 / 7424

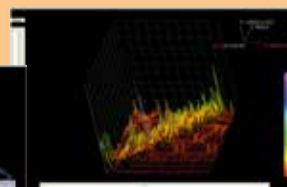
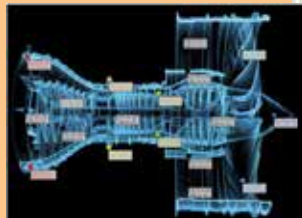
200 kS/s per channel
100 kHz analog bandwidth
0.05% or better accuracy
Voltage, strain
Dynamic strain, charge, IEPE

200kS/s
per Channels

PI770: Professional Test & Measurement Software

Transducer Data Acquisition & Display

Turnkey or API
Real-Time Data Displays
Test Quality Validation
Transducer Calibration
Data Replay & Export
Test Denition & Tracking



15
Display Types



Series 7000

Network Design

T° Compensation

High Gain 24-Bit A/D

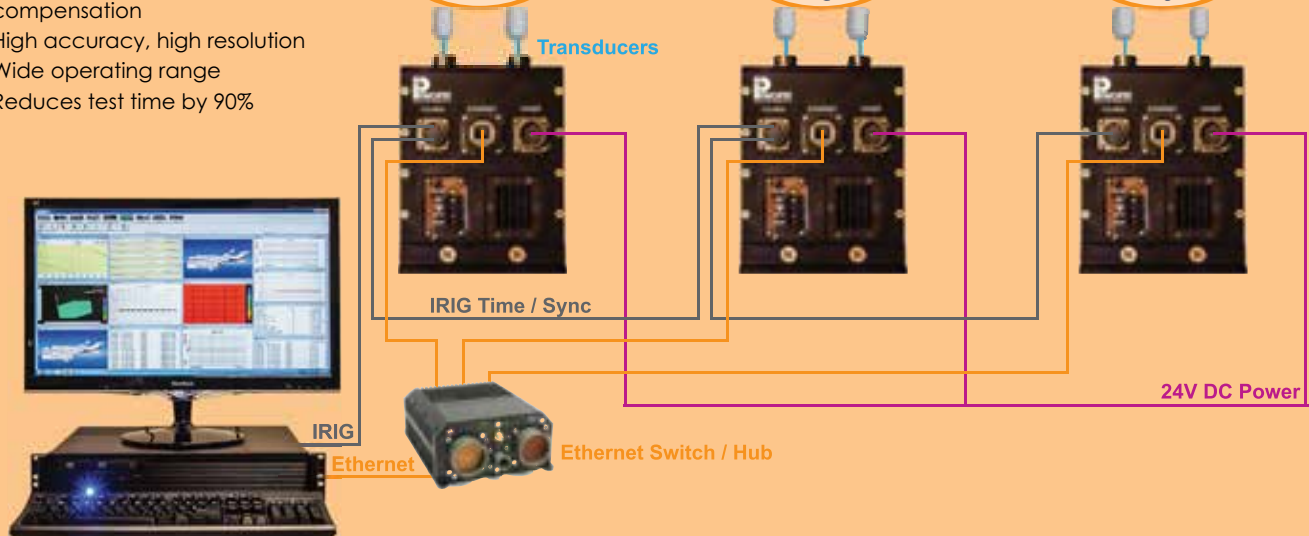
Reduce Installation Costs & Test Time

Unique Rugged Design

Installation near transducers
Reduces cable costs
Improves signal quality

Performance Oriented

Real-time temperature compensation
High accuracy, high resolution
Wide operating range
Reduces test time by 90%



Each 7000 has an Ethernet interface for control and data output, which simplifies system wiring and provides remote and distributed operation. Multiple 7000s (up to 4,096 channels) may be connected on a single Ethernet LAN.

0.5%
Accuracy

IRIG
A, B & G

1μS
Sample
Sync

16
Channels

Series 5800

Transient Recording Systems

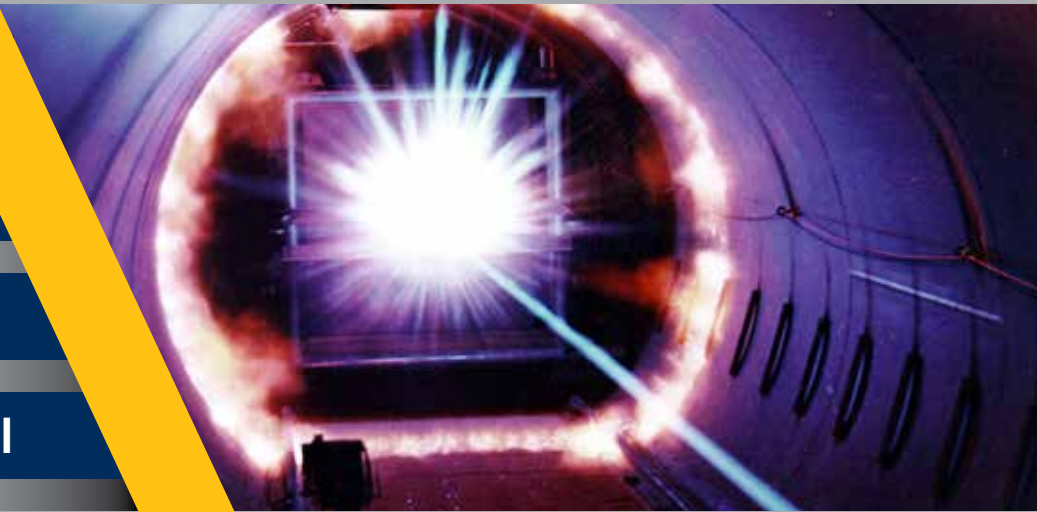


Series 5800

High Speed

Shock & Vibration

10Ms/s per Channel



Enclosures



Models 587X

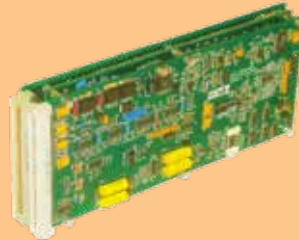
Rugged for Harsh Environments
DC Powered & Portable
Shock & Vibration Testing

Model 5810

Laboratory Installations
AC Powered Rack-Mount
High Speed Testing

AC & DC
Versions

I/O Modules



Series 5800 Modules

Dual Mode Signal Conditioning
14, 16 or 24-Bit Resolution
On-Board Data Recording
Simultaneous Sampling
High Bandwidth & Gain
Programmable Filter
Analog Output
10Ms/s per Channel

10M
S/s/Ch

PI580 Software



PI580 Turnkey Software

Turnkey Acquisition
System Setup
Real-Time Displays
Calibration
Data Debrief & Export

15
Display Types

Transient Recording Systems for High Speed Applications

Series 5800 is a transient recording system for explosive and other high speed recording applications like shock and vibration testing. Each measurement channel includes high bandwidth signal conditioning, digitizing rates up to 10 MS/s and recording to on-board memory. Series 5800 can be used in laboratory or harsh physical environments and includes turnkey application software. A system consists of an Enclosure, I/O Module and Software.

Supporting our Legacy Systems

Discontinued Signal Conditioning and Amplifier Systems

Calibration

Configuration

Repair Services

Application Support

Series 9300 - Transducer Signal Conditioning

Features

Plug-in completion cards configure channel for multiple transducer types

Voltage and current excitation with remote sensing and excitation interrupt

Per channel isolation with 300 V common mode rejection

Voltage substitution calibration

4-step, bipolar resistive or DAC shunt calibration

100 kHz bandwidth and gains 1 to 10,000

Selectable 4 or 8-pole low-pass filters



pacificinstruments.com/9300

25^{YRS}
of Service

Model 70A - Instrumentation Amplifier

Features

Gains from 0.01 to 5,000

0.1% or 0.02% gain accuracy

100 kHz bandwidth

300 Volt common mode

2 or 6-pole selectable low-pass filter

Voltage substitution calibration

Dual, 100 mA, floating outputs

Optional AC input coupling



pacificinstruments.com/70A

30^{YRS}
of Service



Sales Contact

PH: +1.925.827.9010

Email: SalesRequest@pacificinstruments.com



pacificinstruments.com

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