Data Acquisition
Portable, Wireless, Networked

The complete picture in data acquisition
Fluke’s Family of Data Acquisition Products

**Portable, wireless, and networked data acquisition**

Fluke offers three types of data acquisition tools representing three ways to transfer data.

Getting accurate data where you want it, when you want it, and in a form that you can work with is a universal goal. That’s true whether you’re designing airplanes or automobiles; manufacturing steel or processing chemicals. For accurate, reliable, quick data acquisition, Fluke is the common denominator.

Fluke data acquisition products feature unique built-in universal signal conditioning and a plug-in Universal Input Module to provide enormous flexibility. This allows you to accurately measure a wide range of parameters simultaneously without the expense or inconvenience of additional equipment.

Powerful, easy-to-use Windows®-based software supports easy configuration, advanced trend analysis, and professional-quality reporting, without any programming.

**Hydra Series**

The portable Hydra Series transfers data either to internal memory (Hydra Data Logger), to a removable memory card (Hydra Data Bucket), or directly to your PC (Hydra Data Acquisition Unit).

**Wireless Logger™**

The go-anywhere Wireless Logger™ transfers data in real time via a secure RF link to a wireless modem connected to your PC. Its wireless design enables it to transmit through buildings, walls, and floors and makes it convenient for remote locations. It also saves the expense of cabling in any location.

**NetDAQ®**

Distributed NetDAQ units plug right into your existing networks to send data directly to a PC. This saves the cost of setting up a new network and allows multiple users to simultaneously view data in real time. NetDAQ units can also be used as a portable dedicated system connected to a notebook computer for maintenance, product validation, research, and troubleshooting applications.

**Shared features**

While their applications vary, all three product lines share a number of unique features.

**Unique built-in signal conditioning saves time and money**

Fluke’s data acquisition products are the first to integrate signal conditioning directly into the instrument. You can assign any measurement function—thermocouple, RTD, volts, frequency, or ohms—to any or all channels.

**Removable Universal Input Module connects any signal**

The key to the flexibility of all Fluke data acquisition products is our unique, patented Universal Input Module that allows you to connect and measure virtually any electrical or physical parameter. Thermocouple reference junction compensation occurs automatically by sensing the temperature of the input module’s isothermal block.

Virtually any combination of sensor or signal lines may be connected to the input module which is plugged into the back of the data acquisition unit. You can pre-wire extra input modules at each test site and move your data acquisition units from one location to another.
Rugged design for reliable performance
Fluke data acquisition products are designed to stand up to rugged industrial environments with some models operating from -20° to 60°C. A sturdy metal chassis effectively shields against electromagnetic interference so you can maintain high measurement accuracy on low-level signals regardless of surrounding noise. They are tested to stringent shock and vibration standards and to withstand surges of up to 1500V input on most models. All units conform to IEC, CSA, and CE standards.

Isolated circuitry for top accuracy
Fluke analog measurement circuitry is fully isolated channel-to-channel, input-to-output, and input-to-ground. This isolation supports direct measurement of voltages up to 300V AC rms.

Scan triggers, including interval, push button, external, and alarm triggers, scan all defined channels.

Monitor any channel from the front panel.

Mx+B scaling is available on each channel.

Selectable measurement rates from 4 Rdgs/s up to 1000 Rdgs/s, depending on model.

Front panel lockout prevents unauthorized tampering or accidental setup changes.

Alarms, two for each channel, can be independently set for high or low sense.

Real time clock provides precise time stamping of data.

Closed-case calibration for reliability and traceability.

Operates on AC or DC power.

<table>
<thead>
<tr>
<th>Model Series</th>
<th>Universal Signal Conditioning</th>
<th>Basic DC Accuracy</th>
<th>PC Interface</th>
<th>Channels Per System</th>
<th>Max Reading Rate (Rdgs/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydra Series</td>
<td>Yes</td>
<td>0.018%</td>
<td>RS-232</td>
<td>21 to 42</td>
<td>17</td>
</tr>
<tr>
<td>Wireless Logger</td>
<td>Yes</td>
<td>0.018%</td>
<td>RF Modem</td>
<td>21 to 420</td>
<td>17</td>
</tr>
<tr>
<td>NetDAQ</td>
<td>Yes</td>
<td>0.01%</td>
<td>Ethernet (TCP/IP)</td>
<td>20 to 400</td>
<td>1000</td>
</tr>
</tbody>
</table>

Application software
No programming required
Windows®-based logger software makes instrument configuration and data analysis as easy as a few mouse clicks. You can create multiple setup files and save them either to your hard disk or to a memory card for quick reconfiguration. You can also save data in a variety of file formats and establish Dynamic Data Exchange (DDE) links with spreadsheet programs to analyze the data in real time.

Advanced trending capabilities
Optional Trend Link for Fluke software enables you to easily access, view, analyze and compare tremendous amounts of real time or historical data from any Fluke data acquisition product, making paper chart recorders obsolete. Trend Link is designed to make it easy to zoom in on data, review and compare historical data to real-time data, compare batch processing operations, and automatically view statistics on any channel.

Data acquisition for any application
Any data acquisition application that requires high accuracy, easy setup, portability, and convenience calls for Fluke data acquisition. Fluke data acquisition products are widely used for:

• R & D applications.
• Environmental testing.
• Product testing and process validation.
• Troubleshooting.
• Manufacturing test systems.
• And much more.

Whether you’re gathering data at a high-voltage substation, in a clean room, on a production line, or on an automotive test track, Fluke data acquisition products can make your job easier.

Universal Input Module
Connect any sensor type or input signal to any channel—internal signal conditioning automatically switches to correct function.
Hydra Series

**Portable, flexible solutions for stand-alone or PC-based data acquisition**

The Hydra Series offers easy portability along with Fluke’s built-in signal conditioning and Universal Input Module at a price to fit your budget. You can easily retrieve data from the Hydra units via the RS-232 interface, or through a modem in upload or real-time mode.

Channel information and measurement parameters can be set up directly from the front panel or your PC.

Three models featuring removable memory card data storage, internal memory storage, and direct real-time data transfer options.

Should power fail, these instruments automatically resume data collection when power is restored.

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**2635A Hydra Data Bucket**

The ideal choice for gathering and transporting large volumes of data and for working extended periods from remote locations.

**Flexibility**

The Hydra Data Bucket comes equipped with a 256 KB PCMCIA card and is also available with either a 1 MB, 2 MB, or 4 MB memory card to suit your data storage needs. Data may be uploaded from these cards via the Hydra RS-232 port, the optional 263XA-803 memory card drive, or from your computer’s standard PCMCIA slot. Real-time data can be simultaneously transferred to a PC at the same time it is recorded to the memory card.

**Quick setups**

Simply push a few front panel buttons or load instrument setups from the memory card.

**Fail-safe features**

The Hydra Data Bucket gives advance indication of a low battery or low memory condition on the memory card. Its internal memory buffer continues to store up to 70 scans while the card is removed.

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**2625A Hydra Data Logger**

A low-cost alternative for stand-alone monitoring operations.

**Internal memory**

A built-in nonvolatile memory that can store more than 2000 scans.

**Flexible data retrieval**

The ability to upload stored data or transfer real-time data via modem, or directly to your PC via the RS-232 port.

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**2620A Hydra Data Acquisition Unit**

Hydra is ideal for applications that require direct connection to a PC for real-time data collection.

**Easy-to-use front-end**

An RS-232 serial interface makes it easy to connect the Hydra Data Acquisition Unit to a PC or modem for real-time data acquisition. The 2620A can also be used as a 20-channel panel meter.

**IEEE interface**

An optional IEEE-488 interface easily allows you to integrate the 2620A with other IEEE-488 instruments and your PC. The 2620A delivers workhorse performance for a wide variety of applications such as test and monitoring systems.
Menu-driven software simplifies setup

Optional Hydra Logger software provides an intuitive graphical interface that makes it even easier to configure and access your Hydra unit’s powerful features without any programming.

Hydra Series features

- Review the min/max and last readings from the front panel
- Channel 0 accepts standard test leads from the front panel for quick measurements
- Monitor a selected channel from the front panel
- Use the Channel Function to configure measurement type and range for each individual channel
- Use the Memory Card Drive (in 2635A only) to store data and instrument configuration on a portable, non-volatile memory card and transfer collected data to your PC for later analysis

Easy portability and quick configuration for convenient field use.

<table>
<thead>
<tr>
<th>Model</th>
<th>Universal Signal Conditioning</th>
<th>Nonvolatile Data Storage</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>2635A Data Bucket</td>
<td>Yes</td>
<td>PCMCIA Card</td>
<td>RS-232</td>
</tr>
<tr>
<td>2625A Data Logger</td>
<td>Yes</td>
<td>Internal Card</td>
<td>RS-232</td>
</tr>
<tr>
<td>2620A Data Acquisition Unit</td>
<td>Yes</td>
<td>None</td>
<td>RS-232</td>
</tr>
<tr>
<td>2620A/05 Data Acquisition Unit</td>
<td>Yes</td>
<td>None</td>
<td>IEEE-488</td>
</tr>
</tbody>
</table>

Ordering information

2620A  Hydra Data Acquisition Unit
2620A/05 Hydra Data Acquisition Unit with IEEE-488 interface
2625A  Hydra Data Logger
2635A  Hydra Data Bucket (256 KB memory card)
2635A-1MB Hydra Data Bucket (1 MB memory card)
2635A-2MB Hydra Data Bucket (2 MB memory card)
2635A-4MB Hydra Data Bucket (4 MB memory card)

Includes: Instrument, Universal Input Module, line cord, user manual, Starter Software (DOS)

Options and accessories

2620A-100 Extra Universal Input Module
263XA-803 External PC Memory Card Drive
263XA-804 Memory Card-256 KB
263XA-805 Memory Card-1 MB
263XA-806 Memory Card-2 MB
263XA-807 Memory Card-4 MB
RS43   RS-232 cable; (DB9 to DB9), Hydra to PC; 1.8m
26XXA-600 Hydra Portable Battery Pack
2620A-101 Current Shunt, 10Ω, for 0 to 100 mA; Qty (22)
M00-200-634 19" Rack Mount Kit
Y8021   Shielded IEEE-488 Cable, 1 Meter
P/N 889589 Service Manual
C40     Hydra Carrying Case
C44     Transit Case

Application software

2635A-901 Hydra Logger
2635A-902 Hydra Logger with Trending
2600A-904 Trend Link for Fluke
RF-linked data acquisition eliminates the obstacles to gathering data

With the Fluke Wireless Logger, you can collect and transmit data via a secure RF link from virtually any location—no matter how inaccessible—without the expense or hassle of running cable long distances.

Spread spectrum RF technology clears the way

Unlike traditional narrow band RF transmission that is susceptible to electromagnetic interference, the spread spectrum technology used in the Wireless Logger is ideal in areas where narrow band equipment fails. It was developed for military communications systems requiring exceptional immunity to electromagnetic interference and high data transmission integrity. This means you won’t have to worry about motors, solenoids, walkie-talkies, and other sources of severe electrical interference interrupting your transmissions. It transmits up to 120 meters through walls and floors, or up to 300 meters in line-of-sight applications using the modem.

This technology also allows the Wireless Logger to coexist with other electronic equipment. Its power output is lower than cellular phones. The spreading techniques and frequency dwell times used by the Wireless Logger modems produce an effective peak power at any frequency that is lower than equivalent narrow band transmission—too low to disrupt or interfere with other electronic instrumentation. And, it complies with FCC part 15C and does not require an FCC site license. The optional 2.4 GHz modem is ETSI certified for operation in most European and many other countries.

Saves on hazardous duty

The Wireless Logger thrives on tough jobs that would put people at risk. Whether it’s placed at the top of a smokestack, or surrounded by toxic materials, high voltage, or exhaust fumes, the Fluke Wireless Logger is quick to set up and can take the heat.

Fault tolerance prevents data loss

Each Wireless Logger satellite can store more than 2000 scans in its nonvolatile buffer. If your PC goes down during data acquisition, the Wireless Logger satellite continues to collect measurements. When your PC comes back on line, the data collected in the interim can be transferred to your data file automatically.

The Wireless Logger satellite consists of a Hydra Data Logger (2625A) and a 2.4 GHz wireless modem, both housed in a protective soft-sided carrying case. Built-in signal conditioning eliminates the need to add additional components for signal or sensor interfacing.

Back at the office, attach the wireless base station modem to the RS-232 port on your PC, install Wireless Logger for Windows software, transmit your setup information and you’re ready to start collecting data.
Windows-based software extends versatile performance

Wireless Logger for Windows software makes it easy to configure and communicate with up to 20 Wireless Logger satellites at the same time through a single spread spectrum modem connected to your PC. And you can share that data with spreadsheet programs in real time.

Easy to set up and verify

A wireless base station that includes Wireless Logger software, base station modem, and a Wireless Logger satellite are all you need to start collecting data. Its unique Site-Survey feature makes it easy for one person to set up satellites and verify communication between the satellite and the base station.

Wireless Logger™ features

- No cables to run or maintain
- Up to 300m range
- Spread spectrum technology provides exceptional immunity to electromagnetic interference, high-data transmission integrity, and security
- Site-Survey capability enables one person to set up satellites and verify communication to the base station
- High fault tolerance to continue recording data if PC goes down
- Supports up to 20 units for a total of 420 channels

Base Station

Real-time data collection from up to 20 Wireless Logger satellites using the Wireless Logger Base Station.

<table>
<thead>
<tr>
<th>Basic System</th>
<th>Channel Capacity</th>
<th>Interface</th>
<th>Range (line-of-sight/indoors, typical)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2625A/W2 (Satellite) and 26X5A/W2-700 (Base Station)</td>
<td>21 to 420</td>
<td>RF Modem (Spread Spectrum) (2.4 GHz)</td>
<td>300m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Options and accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>26X5A/W2-701 (2.4 GHz)</td>
</tr>
<tr>
<td>26XXA-705</td>
</tr>
<tr>
<td>2620A-100</td>
</tr>
<tr>
<td>2620A-101</td>
</tr>
</tbody>
</table>
**NetDAQ®**

**Delivers versatile solutions for distributed data acquisition**

Fluke NetDAQ networked data acquisition units are a powerful combination of hardware and software seamlessly integrated to deliver your data directly over your network. These systems, with Trend Link software, enable multiple users to view only the information they need in real time, from anywhere on the system. View current, temperature, voltage, and more on the same screen at the same time. You can also monitor several units simultaneously making it ideal for applications such as equipment monitoring, product testing, and process validation. NetDAQ replaces aging chart recorders and adds future expandability to your measurement system.

You can combine from one to twenty NetDAQs into an integrated NetDAQ system of up to 400 channels. Use an existing network or simply connect directly to your PC. Two models offer a choice of scan speeds (up to 1000 Rdgs/s), and accuracy (up to 0.01%) to meet your needs.

### NetDAQ® 2640A

NetDAQ delivers extremely high accuracy and resolution to provide calibration-level performance. It measures up to 300V at up to 100 Rdgs/s with 0.01% volts DC accuracy and 18-bit resolution, scanning 6 to 100 Readings per second.

### NetDAQ® 2645A

NetDAQ delivers higher speed data acquisition making it ideal for applications that require more dynamic signal capture. It directly measures multiple inputs of up to 50V at 1000 Rdgs/s with 0.01% volts DC accuracy and 16-bit resolution, scanning 48 to 1000 Readings per second.

### Add NetDAQ® units to your network

Adding NetDAQ units directly to your network saves the time and expense of setting up a large network. This capability also enables you to provide data access to any or all users on your network. NetDAQ Logger software works with any Ethernet network that uses TCP/IP communications protocol and supports major network operating systems including Novell®, Windows for Workgroups, Windows NT®, and Windows 95. Built-in 10Base-2 (coax) and 10Base-T (twisted pair) connectors give you options for hookup configuration.

### Add a dedicated NetDAQ® system to your company network

Isolate your data acquisition application from the rest of the network while still allowing multiple-user viewing. This prevents your data acquisition application from being hampered by network operations and protects it from network failure.

### Quick results you can rely on

The NetDAQ system supports 3000 readings per second from multiple instruments ensuring high throughput for all units. Plus NetDAQ’s on-board memory provides a data buffer in case network traffic prevents timely delivery of time-stamped data to the host PC.

### Computed channels save time

In addition to its 20 analog input channels, each NetDAQ unit supports 10 computed channels.
It performs custom calculations using addition, subtraction, multiplication, division, log, natural log, exponent, square root, absolute value, and integer functions. Math channels have the same alarm capability as analog channels. This saves the time of performing separate post calculations on channel data and is especially helpful for monitoring and alarming on real time calculated values such as power, flow, volumes, pressure, and more.

**NetDAQ® Logger and optional trending software keep you on top of the situation**

The highly intuitive NetDAQ Logger software makes it easy to set up and configure up to 20 NetDAQs. Combining NetDAQ Logger software with Fluke’s optional trending software enables multiple users to easily monitor processes and import data into spreadsheet programs for further analysis. This provides more efficient operation and improved productivity.

NetDAQ Logger software supports up to 400 channels and offers a choice of English, French, Spanish, or German during installation.

**Developer’s Toolbox for system integration**

Fluke offers an optional NetDAQ Developer’s Toolbox to allow programmers and developers to automate and customize NetDAQ operation using Visual Basic, C or C++ programming languages.

It includes a set of routines which manipulate NetDAQ measurement hardware through NetDAQ Logger for Windows software allowing you to:

- Create custom user interfaces for NetDAQ applications.
- Access real time data and store it in any format, such as a custom database.
- Automatically load different setup files.
- Change Mx+B values for each channel on an instrument.
- Control digital I/O channels.
- Access and control NetDAQ’s serial port.

**NetDAQ® features**

- Expandable systems from 20 to 400 channels
- High accuracy readings, up to 0.01%
- Higher throughput, to support up to 3000 readings per second
- Distributed design enables multiple users, equipped with Trend Link software, to view trend data at the same time
- Network flexibility enables you to add to your existing network or set up as a dedicated system

*300V max for channels 1, 11; all others 150V

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### Ordering information

- **2640A** NetDAQ Data Acquisition Unit (100 Rdgs/s)
- **2645A** NetDAQ Data Acquisition Unit (1000 Rdgs/s)

Includes: Instrument, Universal Input Module, 4m Coax cable, 50Ω terminator, Y BNC adapter, power cable. (User manual included with NetDAQ Logger software.)

**Application software**

- 2640A-911 NetDAQ Logger
- 2640A-912 NetDAQ Logger with Trend Link
- 2600A-904 Trend Link for Fluke
- 264XA-903 Developer’s Toolbox

**Options and accessories**

- 264XA-801 Ethernet Card (10Base-2, 10Base-T) PC plug-in
- 264XA-802 Parallel-to-LAN Adapter (10Base-2)
- 264XA-803 PCMCIA-to-LAN Adapter (10Base-2, 10Base-T)
- 2620A-100 Extra Universal Input Module
- 2620A-101 Current Shunts, 10Ω, for 0 to 100 mA, Qty (12)
- Y2641 19" Rack Mount Kit, single/dual
- Y2642 Wall/Cabinet Mounting Plate
- Y2644 NEMA 4X (IP65) Enclosure
- C44 Transit Case

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<table>
<thead>
<tr>
<th>Model</th>
<th>Reading/sec (Max)</th>
<th>Resolution (Volts DC)</th>
<th>Max. Input (Volts DC)</th>
<th>Basic TC Accuracy (Type T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2640A</td>
<td>100</td>
<td>0.3 mV</td>
<td>150/300*</td>
<td>0.3°C</td>
</tr>
<tr>
<td>2645A</td>
<td>1000</td>
<td>3.0 mV</td>
<td>50</td>
<td>0.7°C</td>
</tr>
</tbody>
</table>
Data Logging Software

Puts your data to work
Fluke offers logger software for all our data acquisition units. These Windows®-based programs turn your PC into a powerful tool for data acquisition, without any programming. They support:

- Configuration of signal conditioning for sensors and signals connected to the Universal Input Module.
- Data logging functions like intervals, triggering, alarms, signal scaling and engineering units.
- Easy data exchange by recording data in a file format that’s easily imported into other applications such as spreadsheets.
- Dynamic Data Exchange (DDE) allows you to establish links for sharing data in real time with Windows®-based spreadsheet programs such as Microsoft Excel, Lotus 1-2-3, and InTouch by WonderWare. Data is updated every second.

Hydra Logger software
Hydra Logger software provides easy access to all the powerful features in the Hydra Series.
- Access one or two Hydra instruments at one time via RS-232
- Establish modem communications for remote data acquisition
- Convert files to .CSV or Trend Link formats
- Copy files from a Data Bucket memory card to the PC
- Store Data Bucket configurations on a memory card for easy one-step field setup

Wireless Logger™ for Windows software
This easy-to-use software enables you to communicate to Wireless Logger satellites through a single spread spectrum modem connected to your PC.
- Configure remote communications with up to 420 channels (20 Wireless Loggers)
- Site Survey feature helps determine working distance
- Set software to alert you to alarm events at your PC

NetDAQ® Logger software
NetDAQ Logger software allows you to easily configure and reconfigure your system and view your data.
- Set up multiple NetDAQ units (up to 20), distributed throughout your facility in a grouped mode to create a “virtual instrument” that synchronizes and directs all data to a single data file
- Save valuable disk space by recording only readings outside the range of your normal process limits
- Easy network configuration
- Advanced triggering modes
- File rollover feature automatically creates a new data file at a specific time or size

All logger software features point-and-click configuration dialogs.
**Trend Link for Fluke software**

Combine easy analysis and reporting with Trend Link for Fluke software. Trend Link for Fluke software is a comprehensive trend plotting, batching, and analysis package. It combines the look and feel of a chart recorder with the analytical power of your PC. Trend Link software is available for the full line of Fluke data acquisition instruments—Hydra Series, Wireless Logger, and NetDAQ.

- Review real-time data in the context of historical data for performance or batch comparisons
- Compare multiple channels from different time periods
- Zoom in on a particular time span for closer analysis
- View multiple windows—each featuring different process parameters—in real time
- Calculate basic statistics such as mean and standard deviation for any trend
- Create X-bar R charts and X-Y scatter diagrams for statistical analysis
- Import data directly into spreadsheet programs from trend plots
- Attach text notes to any point on a trace that become part of a permanent record

**Quickly find specific data**

Trend Link enables you to quickly scroll through volumes of historical and real-time data looking for key events or changes in the process. When you find what you’re looking for, you can compare multiple traces against each other on the same screen or zoom in on a particular point in time.

**Document your results**

The data and trend plots you generate with Trend Link software can be easily cut and pasted into spreadsheet and word processing programs to generate presentation-quality reports. Or you can print plots directly for hard copy documentation.

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**Data logging software availability chart**

<table>
<thead>
<tr>
<th>Application Software</th>
<th>Instrument Model</th>
<th>2620A</th>
<th>2620A/05</th>
<th>2625A</th>
<th>2635A</th>
<th>2625A/05</th>
<th>2640A</th>
<th>2645A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydra Logger²</td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td>•</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydra Logger with Trend Link²</td>
<td>2635A-901</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wireless Logger 2645A/05</td>
<td></td>
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<td></td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NetDAQ Logger¹,²</td>
<td>2640A-911</td>
<td>•</td>
<td>•</td>
<td></td>
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<tr>
<td>NetDAQ Logger with Trend Link¹,²</td>
<td>2640A-912</td>
<td>•</td>
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<td></td>
<td>•</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Trend Link for Fluke¹,²</td>
<td>2600A-904</td>
<td>•</td>
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<tr>
<td>Developer’s Tool Box 2645X-903</td>
<td></td>
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</tr>
</tbody>
</table>

¹ Programs will automatically install the appropriate 16- or 32-bit software based on the resident operating system (Windows 3.1, Windows 95, or Windows NT) at time of installation.

² Language support for English, French, Spanish and German.
Hydra/Wireless Logger™ Specifications

- Universal Input Module:
  Connect 20 analog inputs of virtually any sensor type without external signal conditioning
- Hydra Interfacing:
  Use RS-232 interface to connect to printer, PC or modem
- External Trigger:
  Activate scanning with real-world events
- Totalizer:
  Count on/off events, updated at every scan
- Alarm Outputs:
  Flag out-of-limit conditions to external devices
- Power:
  Accepts 90-264V AC, or 9-16V DC. Can operate from both simultaneously

**Hydra Series and Wireless Logger™**

**Channel capacity**
- Analog inputs: 21
- Digital I/O and alarm outputs: 12 total
- Totalizer: 1

**Measurement rate**
- Slow: 4 Rdgs/s nominal
- Fast: 17 Rdgs/s nominal
  (LS Rdgs/s for V AC, Hz and Ω inputs nominal)

**Analog to digital converter**
- Dual slope type, linear to 17 bits

**Common mode rejection**
- AC: ≥120 dB (50/60 Hz, ±0.1% max 1 kΩ source imbalance); dc: ≥120 dB
- Normal mode rejection
  - 53 dB (60 Hz, ±0.1%)
  - 47 dB (50 Hz, ±0.1%)

**Common mode and normal mode voltage maximum**
- 300V DC or V AC rms (channels 0,1,11)
- 150V DC or V AC rms (all other inputs)

**Isolation**
- Analog input to analog input, and analog input to any digital input: meets IEC 1010 for 300/150 volts reinforced and ANSI/ISA-S82.01-1994 and CSA-C22.2 for 250 volts single insulation

**Current measurements**
- AC or DC current measurements up to 100 mA may be accomplished using the 2620A-101 10Ω Current Shunt Strip

**Totalizing input**
- DC coupled, non-isolated, max +30V, min -4V
- Max count: 65,535
- Minimum signal: 2V peak
- Threshold: 1.4V
- Rate: 0-5 kHz (debounce off)
- Hysteresis: 500 mV
- Input debouncing: None or 1.66 ms

**Digital inputs**
- Threshold: 1.4V
- Hysteresis: 500 mV
- Maximum Input: +30V, min -4V; non-isolated

**Digital/alarm outputs**
- The open collector output lines are non-isolated, TTL compatible

**Alarms associations**
- Alarm outputs 0-3 are fixed assignments associated to channels 0-3. Alarms for channels 4-19 are mapped to digital I/O lines. Digital I/O may be used as a digital input or alarm status output (associated with any input channel or channels).

**Trigger input**
- Minimum pulse: 5 µs
- Maximum latency: 100 ms
- Repeatability: 1 ms
- Input “High”: 2.0V min, 7.0V max
- Input “Low”: -0.6V min, 0.8V max
- non-isolated, contact closure and TTL compatible

**Clock**
- Accurate to within 1 minute/month for 0 to 50°C range

**Power**
- 90 to 264V AC 50 or 60 Hz (<10 watts), or 9 to 16V DC (<4 watts). (If both sources are applied simultaneously, the greater of AC or DC is used.) At 120V AC the equivalent dc voltage ~14.5V.

**Temperature, humidity**
- (non-condensing)
  - Operating: 0 to 28°C, ≤90% RH
  - 28 to 40°C, ≤75% RH
  - 40 to 60°C, ≤50% RH
- Storage: -40 to 75°C, 5 to 95% RH

**Electromagnetic Interference (EMI)**
- Passes FCC EMI Class B Equipment, VDE 0871B, and CE-EN61010, CE approved

**Safety**
- Complies with applicable sections of the IEC1010, ANSI/ISA-S82.01-1994, CSA-C22.2, and CE standards as noted above

**Weight**
- 3.0 kg

**Dimensions (HxWxD)**
- 9.3 cm x 21.6 cm x 31.2 cm

**Interfaces**
- RS-232
- IEEE-488 (Optional, 2620A only) - Disables RS-232 interface while in use
Hydra 2625A Data Memory

- Stores 2,047 scans
- Scan contents:
  - Memory life: 5 years minimum; at 25°C
  - Date and time stamp
  - All defined analog input channel values
  - Status of four alarm outputs and eight digital I/O
  - Totalizer count

Hydra Series and Wireless Logger™

Dimensions (HxWxD)
13.5 cm x 7.5 cm x 1.7 cm

Humidity
20% to 90% (non-condensing)

Certifications
- FCC: Part 15C - No license required
- ETSI: ETS 300 328 Type Test (Europe)
- CE: EMC (EN 55022 and EN 50082-1); LV (EN 60950)

Wireless Logger satellites supported
Up to 20 Hydra Wireless Logger satellites can be supported by a Wireless Base Station

Hydra 2635A Memory Card capacity—number of scans

<table>
<thead>
<tr>
<th>Memory Card Size</th>
<th>Channels in Scan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td>256 KB</td>
<td>8900</td>
</tr>
<tr>
<td>1 MB</td>
<td>36960</td>
</tr>
<tr>
<td>2 MB</td>
<td>74110</td>
</tr>
<tr>
<td>4 MB</td>
<td>149039</td>
</tr>
</tbody>
</table>

Detailed specifications are available on request.

1. Total instrument accuracy for 90 days following calibration and ambient temperature range of 18 to 28°C. Includes A/D errors, linearization conformity, initial calibration error, isothermality errors, reference junction conformity and power line voltage effects within the range from 90V AC to 264V AC.

2. Accuracies for crest factor to 2.0.
NetDAQ® Specifications

- Universal Input Module: Connect 20 analog inputs of virtually any sensor type without external signal conditioning
- NetDAQ Interfacing: Ports for both 10Base-2 (coaxial) and 10Base-T (twisted pair) are provided for convenient network cabling. RS-232 input for calibration
- External Trigger: Activate scanning with real-world events
- Totalizer: Count on/off events, value reported with every scan
- Alarm Outputs: Flag out-of-limit conditions to external devices
- Power: Accepts 107-264V AC, or 9-16V DC. Can operate from both simultaneously for fail-safe power operation

### NetDAQ® 2640A/2645A

**Channel capacity**
- Analog inputs: 20
- Computed channels: 10

**Computed channels**
Ten computed channels can be created by processing analog input channels and other computed channels with addition, subtraction, multiplication, division, log, natural log, exponent, square root, absolute value, and integer functions. In addition, the following predefined selections are available: the average of a group of channels, the difference between any two channels, the difference between a channel and a group of averaged channels.

**Measurement rate (2640A)**
- Slow: 6 Rdgs/s nominal
- Medium: 41 (50 Hz), 48 (60 Hz) Rdgs/s nominal
- Fast: 100 Rdgs/s nominal
  - (5 Rdgs/s for V AC nominal, 140 Rdgs/s on 300Ω range, 37 Rdgs/s on 3 MΩ range)

**Measurement rate (2645A)**
- Slow: 45 (50 Hz), 54 (60 Hz) Rdgs/s nominal
- Medium: 200 Rdgs/s nominal
- Fast: 1000 Rdgs/s nominal
  - (5 Rdgs/s for V AC nominal, 370 Rdgs/s on 300Ω range, 44 Rdgs/s on 3 MΩ range)

**Analog to digital converter**
- 2640A: Multi-slope type, linear to 18 bits
- 2645A: Multi-slope type, linear to 16 bits

**Common mode rejection**
- 2640A: AC: ≥120 dB (50/60 Hz, ±10.1% max 1 kΩ source imbalance); DC: ≥120 dB
- 2645A: AC: ≥100 dB (50/60 Hz, ±10.1% max 1 kΩ source imbalance); DC: ≥100 dB

**Normal mode rejection**
- 50 dB at 50/60 Hz, ±10.1%

**Common mode and normal mode voltage maximum**
- 2640A: 300V DC or V AC rms (channels 1,11); 150V DC or V AC rms (all other channels)
- 2645A: 50V DC or 30V AC rms (all channels)

**Isolation**
- 2640A: AC: ≥120 dB (50/60 Hz, ±10.1% max 1 kΩ source imbalance); DC: ≥120 dB
- 2645A: AC: ≥100 dB (50/60 Hz, ±10.1% max 1 kΩ source imbalance); DC: ≥100 dB

**Current measurements**
- AC or DC current measurements up to 100 mA may be accomplished using the 2620A-101 10Ω Current Shunt Strip

**Totalizing input**
- DC coupled, non-isolated, max +30V, min -4V
- Max count: 4,294,967,295
- Minimum signal: 2V peak
- Threshold: 1.4V
- Rate: 0-5 kHz (debounce off)
- Hysteresis: 500 mV
- Input debouncing: None or 1.66 ms

**Digital inputs**
- Threshold: 1.4V
- Hysteresis: 500 mV
- Maximum input: +30V, min -4V; non-isolated

**Digital/master alarm outputs**
- The open collector output lines are non-isolated, TTL compatible

**Digital I/O and alarm outputs**
- 8 total; totalizer: 1

**Alarm associations**
- Digital I/O may be used as a digital input or alarm status output (associated with any input channel or channels)

**Trigger input**
- Minimum pulse: 5 µs
- Minimum latency: 2 ms
- Repeatability: 1 ms
- Input: “High” = 2.0V min, 7.0V max
- Input: “Low” = -0.6V min, 0.8V max
- non-isolated, contact closure and TTL compatible
Clock
Accurate to within 1 minute/month for 0 to 50°C range

Power
107 to 264V AC, 50 or 60 Hz (<15 watts), or 9 to 16V DC (<6 watts). (If both sources are applied simultaneously, the greater of AC or DC is used.) At 120V AC the equivalent DC voltage ~14.5V.

Temperature, humidity (non-condensing)
Operating: -20 to 28°C, ≤90% RH
28 to 40°C, ≤75% RH
40 to 60°C, ≤50% RH
Storage: -40 to 70°C, 5 to 95% RH

Altitude
Operating: 2000m
Storage: 12,200m

Electromagnetic Interference (EMI)
Passes FCC EMI Class B Equipment, Vfg. 243, European Norms EN50081-1 and EN50082-1, CE approved

Safety
Complies with applicable sections of CE, IEC 1010-1, ANSI/ISA-S82.01-1994, CSA-C22.2 No. 1010.1-92 and CSA standards as noted under “Isolation”

Weight
3.7 kg

Dimensions (HxWxD)
9.3 cm x 21.6 cm x 39.4 cm

Battery life
10 years minimum for real-time clock

Interfaces
Ethernet: Conforms to IEEE 802.3 Ethernet standard. Compatable with 10Base-2 and 10Base-T standards. Uses TCP/IP protocol.

Data buffer memory
Each scan consists of computed channels, time stamp, all defined analog input channels, the status of the eight digital I/O, and the totalizer count.
The number of stored scans varies with the number of channels configured ranging from 6400 scans for 1 configured channel to 1,896 scans for 20 configured channels.

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Model 2640A NetDAQ®

<table>
<thead>
<tr>
<th>Input</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy (3-Sigma)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Volts</td>
<td>90 mV to 150/300V</td>
<td>0.3 µV to 1 mV</td>
<td>0.01%</td>
</tr>
<tr>
<td>AC Volts</td>
<td>300 mV to 150/300V</td>
<td>10 µV to 10 mV</td>
<td>0.3%</td>
</tr>
<tr>
<td>Resistance</td>
<td>300Ω to 3 MΩ</td>
<td>1 mΩ to 10 mΩ</td>
<td>0.015%</td>
</tr>
<tr>
<td>Frequency</td>
<td>15 Hz to 1 MHz</td>
<td>0.01 Hz to 100 Hz</td>
<td>0.05%</td>
</tr>
<tr>
<td>RTD (Pt100)</td>
<td>-200 to 600°C</td>
<td>0.003°C</td>
<td>0.06°C</td>
</tr>
</tbody>
</table>

Thermocouples
- J: -100 to 760°C, 0.02°C, 0.35°C
- K: -100 to 1372°C, 0.02°C, 0.4°C
- T: -100 to 400°C, 0.02°C, 0.3°C

Other Thermocouple types R, S, B, C, E, N

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Model 2645A NetDAQ®

<table>
<thead>
<tr>
<th>Input</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy (3-Sigma)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Volts</td>
<td>90 mV to 50V</td>
<td>3 µV to 10 mV</td>
<td>0.02%</td>
</tr>
<tr>
<td>AC Volts</td>
<td>300 mV to 30V</td>
<td>10 µV to 1 mV</td>
<td>0.3%</td>
</tr>
<tr>
<td>Resistance</td>
<td>300Ω to 3 MΩ</td>
<td>10 mΩ to 100 mΩ</td>
<td>0.02%</td>
</tr>
<tr>
<td>Frequency</td>
<td>15 Hz to 1 MHz</td>
<td>0.01 Hz to 100 Hz</td>
<td>0.05%</td>
</tr>
<tr>
<td>RTD (Pt100)</td>
<td>-200 to 600°C</td>
<td>0.03°C</td>
<td>0.16°C</td>
</tr>
</tbody>
</table>

Thermocouples
- J: -100 to 760°C, 0.2°C, 0.7°C
- K: -100 to 1372°C, 0.2°C, 0.8°C
- T: -100 to 400°C, 0.2°C, 0.7°C

Other Thermocouple types R, S, B, C, E, N

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Detailed specifications are available on request.

1 Total instrument accuracy for 90 days following calibration and ambient temperature range of 18 to 28°C.
Includes A/D errors, linearization conformity, initial calibration error, isothermality errors, reference junction conformity and power line voltage effects within the range from 107V AC to 264V AC.

2 Accuracies for crest factor to 2.0.
Customer support
Choosing a data acquisition system that meets your specifications is just the first step in making a smart equipment investment. You also need to choose a company that can help you get up and running quickly and easily and that will support you throughout the life of the system.

Fluke has addressed these issues by assembling a wide variety of services that are solidly backed by our sales and application support teams, world-wide service centers, and state-of-the-art parts supply system. Our offerings range from comprehensive service programs and technical training to custom programming and system consulting.

Extended warranty service agreements
Warranty extensions are available, in some locations to cover necessary repairs and performance testing, including parts, labor, and return-surface freight costs. Warranty extensions may not be available in all countries. Contact your local Fluke sales office for specific details.

Service parts and spare parts kits
A complete inventory of Fluke replacement parts, subassemblies, and modules are available. Contact your local sales office to find out more about the service programs available in your area or to develop a customer program that suits your needs and budget.

Fluke. Keeping your world up and running.