Distributed data acquisition where and when you need it

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, along with optional Trend Link software, enable multiple users to view just 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 small-to-medium sized equipment monitoring, product testing, and process validation applications. A NetDAQ unit can also be used as a portable dedicated system connected to a notebook computer for maintenance, product validation, research, and troubleshooting applications.

Combine from one to twenty NetDAQs into an integrated 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 1,000 rps), and accuracy (up to 0.01 %) to meet your needs. And both NetDAQ models use Fluke's patented Universal Input Module which accepts any combination of analog input types for each of its 20 channels—without requiring external signal conditioning.

Fluke NetDAQ®

With all these capabilities NetDAQ addresses the escalating need for measurement, recording, and analysis tools that enable you to improve quality, maximize process efficiency and meet regulatory requirements.

Key NetDAQ® features

- Expandable systems from 20 to 400 analog channels
- High accuracy readings, up to 0.01 %
- High throughput, to support up to 3,000 rps
- 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 Ethernet network or set up as a dedicated system
- Replaces chart recorders

NetDAQ® is designed to fit into your system

The versatile NetDAQ system offers flexible options for data distribution.

- **Configure a dedicated system.** Simply daisy-chain one or more NetDAQ units to your desktop or notebook PC for quick, easy data collection.
- **Add NetDAQ® units to your high-speed network.** Adding NetDAQ units directly to your existing network saves the time and expense of setting up large dedicated networks and enables you to implement distributed applications with NetDAQ units in multiple locations enabling multiple PC users to monitor data in real time as it is collected. NetDAQ Logger software works with any Ethernet network that uses TCP/IP communications protocol and supports major network operating systems including Microsoft, Novell, Banyan Vines, and others. Built-in 10Base-T (twisted pair) connector gives 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 3,000 rps from multiple instruments ensuring high throughput

NetDAQ Series

Choose the NetDAQ Model that matches your requirements

Model	Reading/sec (Max)	Resolution (Volts DC)	Max. Input (Volts DC)	Basic TC Accuracy (Type T)
2640A	100	0.3 mV	150/300*	0.3 °C
2645A	1,000	3.0 mV	50	0.7 °C

for all units. Plus 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. The computed channels perform custom calculations using addition, subtraction, multiplication, division, log, natural log, exponent, square root, absolute value, and integer functions. Math channels feature the same alarm capability as analog channels which saves having to perform separate post calculations on channel data. It is also especially useful for monitoring and alarming on real-time calculated values such as power, flow, volumes, pressure, and more.
- **Count more than four billion "on/off" events.** Both NetDAQ models include a totalizer input channel which is continuously sampled and recorded.

NetDAQ® 2640A

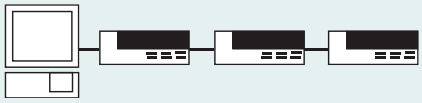
The Fluke NetDAQ 2640A delivers extremely high accuracy and resolution to provide calibration-level performance:

- Measures up to 300 V at up to 100 rps
- Offers 0.01 % volts dc—0.3 °C TC accuracy and 18-bit resolution
- Scans from 6 to 100 channels per second

NetDAQ® 2645A

The NetDAQ 2645A delivers higher speed data acquisition making it ideal for applications that require more dynamic signal capture.

- Directly measures multiple inputs of up to 50 V at 1,000 rps
- Delivers 0.01 % V dc – 0.3 °C TC accuracy and 18 bit resolution
- Scans 48 to 1,000 channels per second



A system of up to 400 channels can be configured by connecting multiple NetDAQ units to one PC.

NetDAQ® Logger and optional trending software give you the data you need where you need it

Fluke's intuitive NetDAQ Logger software makes it easy to set up and configure up to 20 NetDAQs. Combining NetDAQ Logger software with our 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:

- Setting up multiple NetDAQ units, distributed throughout your facility in a grouped mode to create a "virtual instrument" that synchronizes and directs all data to a single data file
- Recording only readings outside the range of your normal process limits to save valuable disk space
- A choice of languages at installation, including English, French, Spanish, or German
- Easy network configuration
- Advanced triggering modes
- File Rollover feature that automatically creates a new data file at a specific time or when your file reaches a specified size limit

Optional Developer's Toolbox speeds system integration

The optional Fluke NetDAQ Developer's Toolbox allows 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.

Ordering information

2640A	NetDAQ Data Acquisition Unit (100 rps)
2645A	NetDAQ Data Acquisition Unit (1,000 rps)

Includes: Instrument, NetDAQ Logger Software, Universal Input Module and 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

2620A-100	Extra Universal Input Module
2620A-101	Current Shunts, 10_, for 0 to 100 mA, Qty (12)
Y2641	19" Rack Mount Kit, single/dual

- **Universal Input Module:** Connect 20 analog inputs of virtually any sensor type without external signal conditioning
- **NetDAQ Interfacing:** Ports for both 10Base-2(coaxial) and10Base-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 107-264 V ac, or 9-16 V dc. Can operate from both simultaneously for fail-safe power operation

Fluke NetDAQ® rear panel (Universal Input Module removed)

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 300 Ω 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 300 Ω 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 @ 50/60 Hz, ±10.1 %
Common mode and normal mode voltage maximum
2640A: 300 V dc or V ac rms (channels 1,11); 150 V dc or V ac rms (all other channels)
2645A: 50 V dc or 30 V ac rms (all channels)

Isolation
2640A: Analog input to analog input, and analog input to any digital input; meets IEC 1010-1 Category II ANSI/ISA-82.01-1994 and CSA-C22.2 No. 1010.1-92 for 150/300 volts reinforced
2645A: Analog input to any digital input; meets IEC 1010 Category II, ANSI/ISA-82.01-1994 and CSA-C22.2 No. 1010.1-92 for 150/300 volts reinforced

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

NetDAQ Specifications

Model 2640A NetDAQ®

Input	Range	Resolution	Accuracy (3-Sigma)[1]
DC Volts	90 mV to 150/300 V	0.3 µV to 1 mV	0.01 %
AC Volts[2]	300 mV to 150/300 V	10 µV to 10 mV	0.3 %
Resistance	300 Ω to 3 MΩ	1 mΩ to 10 Ω	0.015 %
Frequency	15 Hz to 1 MHz	0.01 Hz to 100 Hz	0.05 %
RTD (Pt100)	-200 to 600°C	0.003 °C	0.06 °C
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			

Model 2645A NetDAQ®

Input	Range	Resolution	Accuracy (3-Sigma)[1]
DC Volts	90 mV to 50 V	3 µV to 10 mV	0.02 %
AC Volts[2]	300 mV to 30 V	10 µV to 1 mV	0.3 %
Resistance	300 Ω to 3 MΩ	10 mΩ to 100 Ω	0.02 %
Frequency	15 Hz to 1 MHz	0.01 Hz to 100 Hz	0.05 %
RTD (Pt100)	-200 to 600°C	0.03 °C	0.16 °C
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			

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 107 V ac to 264 V ac.

[2] Accuracies for crest factor to 2.0.

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

Digital inputs
Threshold: 1.4 V
Hysteresis: 500 mV
Maximum input: +30 V, min -4 V; 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": 2.0 V min, 7.0 V max
Input "Low": -0.6 V min, 0.8 V max non-isolated, contact closure and TTL compatible

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

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

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 (6,500 ft)
Storage: 12,200m (40,000 ft)

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 (8.2 lbs)

Dimensions (HxWxD)
9.3 cm x 21.6 cm x 39.4 cm (3.67" x 8.50" x 15.50")

Battery life
10 years minimum for real-time clock

Interfaces
Ethernet: Conforms to IEEE 802.3 Ethernet standard. Compatible with 10Base-2 and 10Base-T standards. Uses TCP/IP protocol.
RS-232C: For calibration only. The optional NetDAQ Service Manual provides step-by-step calibration instructions.

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.