

**FLUKE®**



## Data Acquisition where you need it when you need it how you need it



- Accurate
- Flexible
- Easy-to-use
- Portable
- Networked
- Expandable  
to thousands  
of channels

# Fluke data acquisition solutions adapt to your needs

## Get the data you want, where, how and when you want it.

Fluke gives you a broad choice in how you collect and transfer data for process monitoring and laboratory test systems. You can choose a stationary or portable system. Transfer data to internal memory, to a removable memory card, or to your PC. Choose a standalone or distributed networked units. And you can expand your system from 20 to 1,000+ channels, depending on the series.

Regardless of which you choose you'll always get Fluke's well known accuracy, reliability, speed, and ease of use. All Fluke data acquisition products feature unique, built-in universal signal conditioning and a plug-in Universal Input Module to enable you to measure virtually any type of signal without having to purchase extra equipment. Plus, powerful, easy-to-use Windows-based software supports easy configuration, advanced trend analysis, professional-quality reporting, and enables you to quickly build human-machine-interfaces without any programming.

Any data acquisition application that requires high accuracy, easy setup, and convenience calls for Fluke data acquisition products, which is why you'll find them widely used for:

- R & D applications
- Environmental testing
- Product testing and process validation
- Troubleshooting
- Manufacturing test systems

Whether you're gathering data at a high-voltage substation, a nuclear power plant, in a clean room, on a production line, or on an automotive test track, Fluke data acquisition products can make your job easier by delivering the data you need, when and where you need it.

## Accuracy, flexibility and ease of use come standard

From a 20 channel Hydra™ Series portable data logger to a 1,000+ channel precision temperature measurement 2680 data acquisition system, Fluke data acquisition products share several unique advantages.

- **Built-in signal conditioning saves time and money**

Fluke's data acquisition products were the first to integrate signal conditioning directly into the instrument. Assign any measurement function—thermocouple, RTD, volts, frequency, or ohms—to any or all channels.

- **Removable universal input module connects any signal**

Our unique, patented Universal Input Module 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 °C 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 1500 V 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, supporting direct measurement of voltages up to 300 V ac rms.
- **Scan triggers**, including interval, push button, external, and alarm triggers, scan all defined channels.
- **Mx+B scaling** is available on each channel
- **Channel monitoring from the front panel.** Select measurement rates from 4 readings per second (rps) up to 1,000 rps, depending on model. Front panel lockout prevents unauthorized tampering or accidental setup changes.
- **Two alarms** can be set for each channel
- **Real-time clock** offers precise time stamping of data
- **Closed-case calibration** delivers reliability and traceability





### The Fluke 2680 Series: Precise and versatile standalone or networked data acquisition

The Fluke 2680 Series delivers the precision necessary for meticulous lab work along with the rugged flexibility to meet the ever changing needs of industrial applications. Run one standalone data logging system with 20 to 120 universal channels or connect several networked data acquisition systems to serve 2,000+ channels on your LAN.

### The Fluke Hydra™ Series: Portable, flexible data acquisition anywhere you need it.

The portable 20 channel Fluke 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).

Model series	Universal signal conditioning	Basic dc accuracy	PC interface	Channels per system	Max throughput rate (rdgs/s)
Hydra Series	Yes	0.018 %	RS-232 PCMCIA IEEE-488	21 to 42	17
NetDAQ	Yes	0.01 %	Ethernet 10BaseT	20 to 400	1000
2680 Series	Yes	0.01 %	Ethernet 10/100BaseT	20 to 2000+	3000

### The Fluke NetDAQ® Series: Distributed, networked data acquisition that works with what you have

Distributed Fluke 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.

### Versatile software for easy setup

Windows®-based software makes our data acquisition instrument configuration and data analysis as easy as a few mouse clicks.

- **Powerful, flexible, and easy-to-use Fluke DAQ software**, included with every 2680 Series unit, makes it easy to instantly configure your 2680A Data Acquisition System or your 2686A Data Logging System.

You can add OLE for Process Control (OPC) and/or powerful Human-Machine-Interface (HMI) development system modules at any time to expand your application's capability.

- **Data logger software** for the Hydra Series and for NetDAQ enables you to create multiple setup files and save them to a hard disk or to a memory card for quick reconfiguration. It also enables you to save data in a variety of file formats and establish Dynamic Data Exchange (DDE) link with spreadsheet programs to analyze the data in real time.
- **Optional Trend Link for Fluke software** provides comprehensive trend plotting, batching, and analysis capabilities for the Hydra and NetDAQ systems. It combines the look and feel of a chart recorder with the analytical power of a PC.

## Top precision and scalability for standalone or networked data acquisition

The Fluke 2680 Series data acquisition systems combine the best of lab precision with the rugged flexibility required in rapidly changing industrial applications. Whether you choose the 2680A Data Acquisition System with high-speed 10/100BaseT Ethernet network support or the 2686A Data Logging System, you can seamlessly expand your system any time, from 20 to more than 2,000 channels, just by adding modules and chassis.

Both models feature six slots in each chassis that you can fill with modules as needed to meet your application requirements. Five slots in each chassis are available for any combination of 2680 Series 20-channel analog input modules. The sixth slot is reserved for a 2680 Series digital I/O relay module to add control capabilities to your system. If you don't need the sixth slot for control, you can plug in an additional analog input module, increasing your channel count to 120 in a single chassis.

You can also link multiple 120 channel systems together seamlessly for the widest possible view of your data. And with TCP/IP connectivity you



2686A Data Logging System

can connect to existing LANs to distribute information wherever it needs to go. Whether you need speed and throughput, isolated precision, or digital I/O and relays, the Fluke 2680 Series can scale up to thousands of channels to meet your needs.

### The Fluke 2680 Series: Key features

- **120 channel capacity chassis** designed for small- and large-scale precision data acquisition applications.
- **User-scalability from 20 to 120 universal analog input channels**, which can include digital input/output and alarm contact outputs in a single chassis.
- **De facto standard Ethernet TCP/IP protocols** which provide a network interface to 10/100BaseT.
- **Universal input modules** provide precision measurement of thermocouples, dc voltage, ac voltage, Ohms, RTDs, thermistors, current, frequency. Connect any input type to any channel to match your application requirements – no “wasted” channels.
- **Superior thermocouple measurement accuracy** (J, K, R, S, T, N, L, U, C, B)
- **Multiple speed and scan selections**
- **Universal input conditioning** for any input, on any channel, any time (V dc, V ac, Ohms, frequency, RTD, thermocouple, thermistor or current)
- **Optional precision, high-isolation analog universal input module (PAI) or fast scanning analog universal input module (FAI)** to connect and measure virtually any electrical or physical parameter
- **Computed channels**, in addition to the 20 analog channels, that 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.



# 2680 Series

## Fluke 2680 Series chassis and module selection chart

Chassis	Analog channels/chassis	On board memory	PC interface	DIO/chassis
2680A	120*	none	Ethernet 10/100BaseT	20 DIO + 8 relay DPST relays
2686A	120*	PCATA Flash to 1 GB	Ethernet 10/100BaseT	20 DIO + 8 DPST relays
Module	Readings/sec (max)	Channels/type	Isolation (volts dc)	Basic TC accuracy (type K)
2680A-FAI	1000	20/universal analog	50	
2680A-PAI	100	20/universal analog	150 / 300	
2680A-DIO**	N/A	20/digital; 8/relay	30	N/A

- **Fluke DAQ software** which controls all functions and data files, communicates with and controls Fluke 2640A, 2645A NetDAQ® products, provides real-time and historical trending.
- **Powerful optional software** for reporting, HMI development, and OPC server.
- **20 digital I/O and 8 form C, 1 A relay output module** for hard control of equipment.
- **Multiple power sources:** 100 V to 240 V and 9 V dc to 45 V dc.

## Choose your chassis for standalone or networked data acquisition

The Fluke 2680 Series offers the choice of networked data acquisition, stand-alone data logging, or a combination of both. Choose from two basic chassis models—the 2680A Data Acquisition System or the 2686A Data Logging System and then add the modules as needed to meet your requirements.

### 2680A Data Acquisition System chassis

The Fluke 2680A Data Acquisition System is the choice for multi-channel applications requiring reliable Ethernet communications. It features a front-end style data acquisition system that communicates and distributes data anywhere you need it to go. The 10BaseT and 100BaseT communications interface makes it compatible with both older and newer network platforms.

### 2686A Data Logging System chassis

The Fluke 2686A Data Logging System writes data to a memory card for easy retrieval and storage, making it ideal for remote locations and mobile or non-computer assisted data logging applications. The system comes with a 128 MB PCATA flash memory card, and supports memory cards of up to 1 GB to log data in standalone mode for easy storage and retrieval. The 2686A is easily configured for stand-alone data logging operations by simply selecting a preset configuration from the memory card. It can also be used in networks in tandem with the 2680A to provide the extra data security of a memory card.

## Choose your modules

You can equip each 2680 Series chassis with up to six modules of the same type or combine fast-analog input (2680A-FAI) and precision analog input modules (2680A-PAI) along with a digital I/O (2680A-DIO) and relay module. Both the 2680A-FAI and the 2680A-PAI modules support a wide range of inputs including dc volts, ac volts, RTD, Ohms, thermocouple, thermistor, dc current, ac current, and frequency. Other sensors and transducers, such as load cells, pressure sensors, and displacement sensors can be easily incorporated into your measurement system. Buy just the modules you need in the combinations you need them and expand your system as your requirements grow.

### 2680A-FAI: The speed to capture dynamic process changes

The Fluke 2680A-FAI module is a perfect choice when you need a lot of information in a hurry and still need to maintain a high degree of accuracy for your measurements. The 2680A-FAI module provides chassis throughput rates of more than 3,000 channels-per-second. Specially manufactured



2680 Series DIO Module and Universal Input Module



field effect transistors (FETs) allow up to + 50 V input, well above the 15 V industry norm, and channel-to-channel isolation to give you more confidence in the integrity of your measurements.

### 2680A-PAI provides high precision and high isolation for the most demanding jobs

The Fluke 2680A-PAI 20-channel high precision, high isolation module serves the most demanding jobs where precision and isolation are critical. Some of the most notable applications for this module include temperature measurement in semiconductor and pharmaceutical manufacturing, as well as nuclear plant performance monitoring. The 2680A-PAI module offers 300 V of isolation on two channels and 150 V on 18 channels, as well as 18 bit resolution and excellent thermocouple accuracy, all in a scalable system.

### 2680A-DIO: Digital I/O and relay outputs add control

For data acquisition systems that also require control functionality, the Fluke 2680A-DIO digital I/O and relay output module provides 20 digital I/O and eight hard-contact 1 A relays to provide the security and control you need. This equips each chassis to respond to a wide range of alarm or control situations. The 2680A-DIO also includes an up/down counter with preset start count capability, so you don't need to begin all counts at zero.

## Model 2680A-PAI Module

Input	Range	Resolution	Accuracy (3-Sigma) <sup>1</sup>
DC Volts	90 mV to 150/300 V	0.3 mV to 1 mV	0.01 %
AC Volts <sup>2</sup>	300 mV to 150/300 V	10 mV 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 °C to 600 °C	0.003 °C	0.06 °C
<b>Thermocouples</b>			
J	-100 °C to 760 °C	0.02 °C	0.35 °C
K	-100 °C to 1372 °C	0.02 °C	0.4 °C
T	-100 °C to 400 °C	0.02 °C	0.3 °C
<i>Other Thermocouple types R, S, B, C, E, N, L, U</i>			

## Model 2680A-FAI Module

Input	Range	Resolution	Accuracy (3-Sigma) <sup>1</sup>
DC Volts	90 mV to 50 V	3 mV to 10 mV	0.02 %
AC Volts <sup>2</sup>	300 mV to 30 V	10 mV 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
<b>Thermocouples</b>			
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
<i>Other Thermocouple types R, S, B, C, E, N, L, U</i>			

<sup>1</sup> 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.

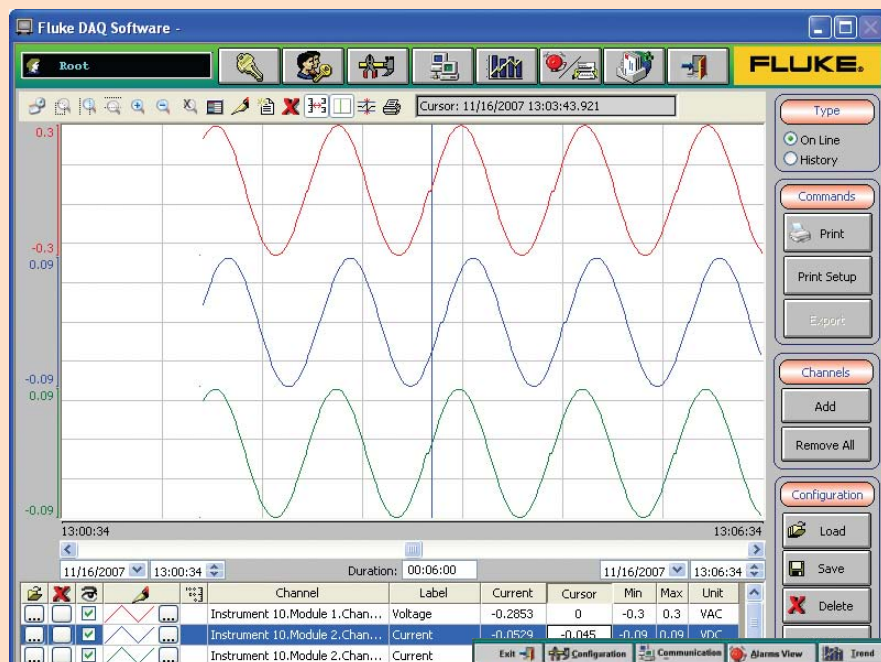
<sup>2</sup> Accuracies for crest factor to 2.0.

## 2686A active channels and memory card capacity (scans)

Memory Card / Active Channels	20 ch	40 ch	60 ch	80 ch	100 ch	120 ch
128 MB	800,000	528,000	400,000	320,000	264,000	224,000
256 MB	1.6 M	1.056M	800,000	640,000	528,000	448,000
512 MB	3.2 M	2.112 M	1.6 M	1.28 M	1.056 M	896,000
1 GB	6.2 M	4.224 M	3.2 M	2.56 M	2.112 M	1.792 M

Estimating space: 80 bytes/scan + 4 bytes/channel scanned. (Allow 4.5% overhead for card formatting)

# 2680 Series



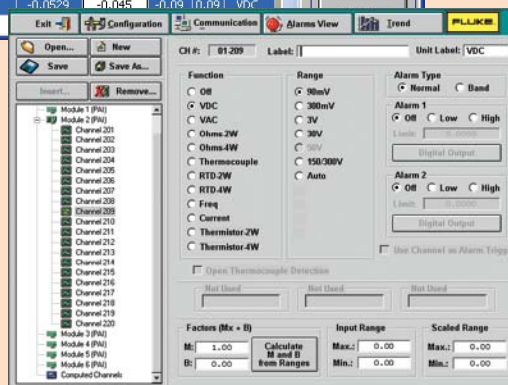
2680 Series Fluke DAQ Software

## Powerful Fluke DAQ software streamlines setup and performance

Each Fluke 2680A and 2686A comes with our powerful, highly flexible, and easy-to-use Fluke DAQ configuration software. Fluke DAQ software enables you to instantly configure your 2680 Series unit for any situation, configuring each input for:

- Input type
- Alarms
- Math functions
- Totalizer function
- Digital I/O lines
- Scan speed
- Interval
- Trigger type

You can also use Fluke DAQ software to set up data files, collect and chart data in real-time or historical mode, and manage PC card files. And you can use Fluke DAQ to collect data from your system the way you need to and distribute it where you want it. You can share data with others, anywhere on your LAN or anywhere around the world using web servers.



Fluke DAQ software also enables you to integrate Fluke NetDAQ® data acquisition products (2640A and 2645A) into your 2680 Series system, providing almost unlimited channels working together seamlessly.

## Optional software extends system capabilities

Fluke has partnered with industrial software developer Indusoft to create additional tools to extend the power of your 2680 Series system. These optional software tools enable you to create HMI's and develop custom applications that interact with other equipment and software packages. Refer to the Optional Software section at the back of this brochure for more information.

## Fluke 2680A-DEVSU: HMI development software

The optional 2680A-DEVSU Indusoft Web Studio development software is an object-oriented development program that works with Fluke DAQ software. This unique development software enables programmers and non-programmers to develop modern HMI's which open graphical windows to your application.

## Fluke 2680A-OPC: Communicate with any application supporting OLE for process control

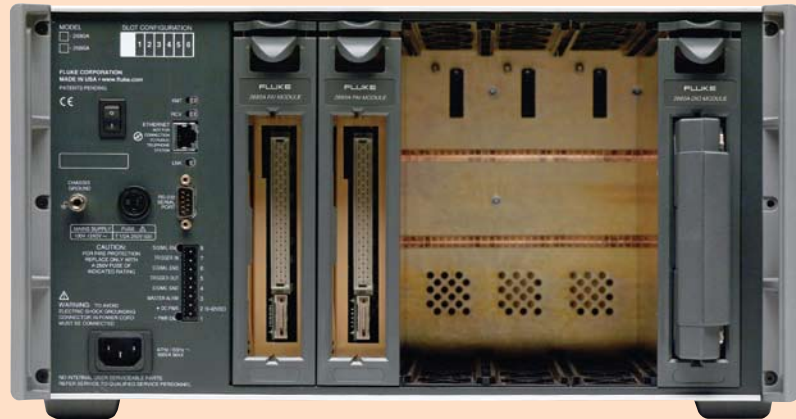
This OPC server software provides the configuration interface for the 2680 Series and also offers a common communication link to any software package that supports OPC. Create custom applications

using 2680A-OPC software and just about any popular industrial software package such as Wonderware®, LabVIEW™, Test Point, or Indusoft Web Studio, as well as software from Canary Labs, Daisy Labs, and others. Open, non-proprietary OPC support enables you to use the software you choose or the software you create.

## Fluke 2680A-DLL library: For developing or modifying applications

The 2680A DLL library provides the full DLL toolbox for application software developers who need to write original programs for the 2680 Series, using Visual C++, Visual Basic, and other languages.

- **Universal input module:** Connect 20 analog inputs or virtually any sensor type without external signal conditioning
- **2680A Series interfacing:** Compatible with 100BaseT and 10BaseT standards; uses TCP/IP protocol via RJ45 connector, Cat 5. RS-232 input for calibration.
- **External trigger:** Activate scanning with real-world events
- **Totalizer:** Pre-settable starting count up/down counter
- **Alarm outputs:** Flag out-of-limit conditions to external devices
- **Power:** Accepts 100 V ac to 240 V ac, or 9 V dc to 45 V dc. Can operate from both simultaneously for fail-safe power operation.



2680 Series Chassis

### Channel capacity (2680A or 2686A)

20 to 120 channels per chassis  
(6 analog input modules of  
20 channels each)  
One master alarm (open collector)  
per chassis

### Communications:

10BaseT/100 BaseT, TCP/IP via  
RJ45 connector, Cat 5

### Math functions

In addition to its analog and digital  
input channels, each system  
supports 60 computed channels.  
Calculations include time and  
rate, addition, subtraction, multi-  
plication, division, log, natural  
log, exponent, square root,  
absolute value, integer function  
and average.

### Measurement speed (2680A-PAI)

**Slow:** 6 readings/second  
nominal

**Medium:** 41 (50 Hz), 48 (60 Hz)  
readings/second nominal

**Fast:** 143 readings/second  
nominal (5 readings/second for  
V ac nominal, 140 readings/  
second on 300  $\Omega$  range,  
37 readings/second on 3 M $\Omega$   
range)

### Measurement speed (2680A-FAI)

**Slow:** 45 (50 Hz), 54 (60 Hz) read-  
ings/second nominal

**Medium:** 200 readings/second  
nominal

**Fast:** 1000 readings/second  
nominal (5 readings/second for  
V ac nominal, 370 readings/  
second on 300  $\Omega$  range,  
44 readings/second on 3 M $\Omega$   
range)

### Analog to digital converter

**2680A-PAI:** 18 bit, multi-slope  
type

**2680A-FAI:** 16 bit, multi-slope  
type

### Common mode rejection

**2680A-PAI:**

AC:  $\geq 120$  dB (50/60 Hz,  $\pm 0.1$  %  
max 1 k $\Omega$  source imbalance)

DC:  $\geq 120$  dB

**2680A-FAI:**

AC:  $\geq 100$  dB (50/60 Hz,  $\pm 0.1$  %  
max 1 k $\Omega$  source imbalance)

DC:  $\geq 100$  dB

### Normal mode rejection

50 dB @ 50/60 Hz,  $\pm 0.1$  %

### Common mode voltage maximum

**2680A-PAI:** 300 V dc or V ac rms  
(channels 1,11); 150 V dc or V ac  
rms (all other channels)

**2680A-FAI:** 50 V dc or 30 V ac  
rms (all channels)

### 2680A-DIO

#### Totalizing input

Pre-settable starting count  
up/down counter

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



# 2680 Series specifications

## Digital inputs/outputs: 20

Threshold: 1.4 V  
Hysteresis: 500 mV  
Maximum input: +30 V,  
min -4 V; non-isolated  
Logical "zero" output:  
0.8 V max |out = -1.0 mA  
(1 LSTTL load equivalent)  
1.8 V max |out = -20 mA  
3.25 V max |out = -50 mA  
Logical "one" output:  
Output voltage depends on  
external load  
3.8 V min|out = 0.05 mA  
(1 LSTTL load equivalent)

## Relays

Quantity: 8  
Type: Form C; DPST  
Current: 1 amp, non-inductive  
Operation time: 75 ms

## Alarm associations

Each Digital I/O may be randomly  
assigned as a digital input, status  
output, or alarm output (associated  
with any input channel or channels)

## Trigger input

Minimum pulse: 5  $\mu$ s  
Minimum latency: 100 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 °C to 50 °C range

## General specifications

### Power

100 V ac to 240 V ac, 50 Hz  
or 60 Hz  
100 VA max, or 9 V dc to 45 V dc  
(50 W max - all slots filled  
+ memory card installed) (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 °C to 28 °C,  $\leq$ 90% RH;  
28 °C to 40 °C,  $\leq$ 75% RH;  
40 °C to 60 °C,  $\leq$ 50% RH  
Storage:  
-40 °C to 70 °C, 5% to 95% RH

## Altitude

Operating: 2000 m  
Storage: 12,200 m

## Standards

All inputs: IEC Measurement  
Category II  
Product conforms to the following  
safety and emission standards:  
EN610000-4-2,3,4,6,8  
EN61326  
EN61010-1, CAT II  
CAN/CSA C22.2 No. 61010-1:2004

## Operating temperature

-20 °C to 60 °C (-4 °F to +140 °F)

## Storage temperature

-40 °C to 70 °C (-40 °F to +158 °F)

## Size

473 mm x 423 mm x 237 mm  
(18.6 in x 17 in x 9.3 in)

## Weight

2680A/2686A chassis only:  
8.47 kg (18.86 lbs.)  
2680A-FAI: 0.79 kg (1.74 lbs.)  
2680A-PAI: 1.21 kg (2.66 lbs.)  
2680A-DIO: 0.80 kg (1.75 lbs.)

## Interfaces

Ethernet: Conforms to IEEE 802.3  
Ethernet standard,  
compatible with 100 BaseT and  
10 BaseT standards, uses TCP/IP  
protocol  
RS-232C: For calibration only

## System Requirements

- IBM compatible, Pentium II processor
- Microsoft Windows® NT/98/2000/XP/Vista
- 64 MB RAM
- 150 MB free hard disk space
- VGA or SVGA display, 100% IBM compatible with 2 MB Video RAM (VRAM)
- CD-ROM drive
- Microsoft Internet Explorer 4.0 or later

## Ordering information

### Hardware:

Model #	Description
2680A	Data Acquisition System Chassis, 6 slots
2686A	Data Logging System Chassis, 6 slots, with ATA Flash memory drive, includes 128 Mb memory card
2680A-FAI	Fast Analog Input module 20 universal channels, 50 V max isolation, 1000 ch/sec scan rate, 16 bit resolution
2680A-PAI	Precision Analog Input module 20 Universal channels, 300 V max isolation, 18 bit resolution 140 ch/sec scan rate
2680A-DIO	Digital I/O and relay module, 20 DIO, 8, 1 A contacts, Totalizer (one per chassis max)

### Software:

Application	Description
2680A-APSW	Fluke DAQ configuration software for 2680 Series (included with 2680A and 2686A)
2680A-904	Trend Link for 2680 Series; includes 2680A-OPC server software
2680A-DEVSW	Indusoft Web Studio, Development software for Fluke DAQ
2680A-DLL	DLL Library for 2680 Series
2680A-OPC	OPC software for 2680 series

### Accessories:

Model #	Description
2680A-180	Universal Input Module, extra connector
2680A-102	2680A-DIO connector module, extra connector
2620A-101	Shunt resistor set (12 ea), 10 $\Omega$ , 0.1 %
2680A-801	128 MB ATA Flash memory card for 2686A
2680A-802	256 MB ATA Flash memory card for 2686A
2680A-805	512 MB ATA Flash memory card for 2686A
2680A-810	1 GB ATA Flash memory card for 2686A
Y2680	19-inch rack mount kit for 2680 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 Fluke 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.

Choose from three Fluke Hydra Series models, all 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.



Hydra Data Bucket

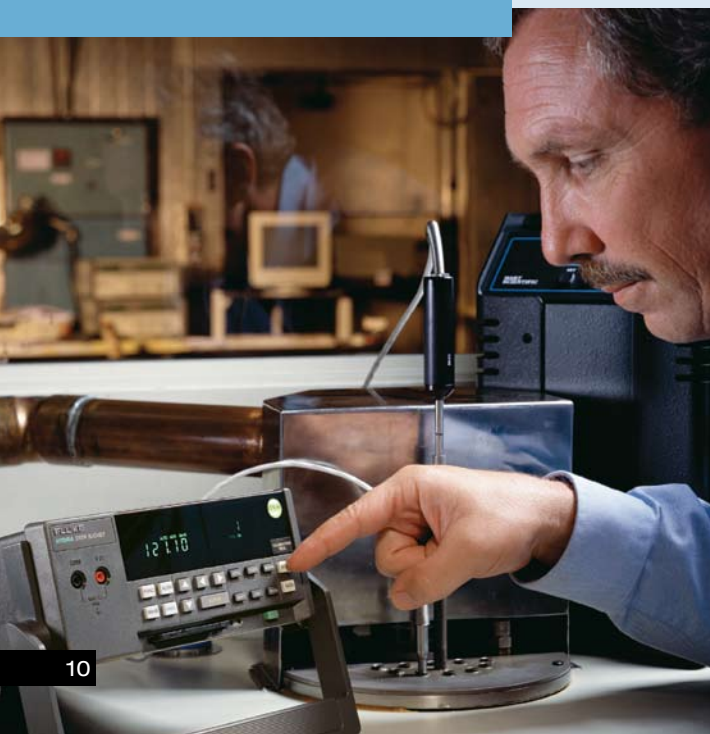
### Key Hydra™ Series features

- 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

### 2635A Hydra Data Bucket

The versatile Hydra Data Bucket is the ideal choice for gathering and transporting large volumes of data and for working extended periods from remote locations. It offers:

- **Flexible storage.** The Hydra Data Bucket comes with a 256K PCMCIA card and can be equipped with optional 1 MB, 2 MB, or 4 MB memory cards to suit your data storage needs.
- **Versatile data transfer.** 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. You can transfer real-time data to a PC at the same time it is recorded to the memory card.
- **Quick setup.** Simply push a few front panel buttons or load instrument setups from the memory card.
- **Fail-safe features.** The Hydra Data Bucket warns 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 and replaced.



# Hydra™ Series

## Choose the Hydra Series that matches your requirements

Model	Universal Signal Conditioning	Nonvolatile Data Storage	Interface
2635A Data Bucket	Yes	PCMCIA Card	RS-232
2625A Data Logger	Yes	Internal	RS-232
2620A Data Acquisition Unit	Yes	None	RS-232
2620A/05 Data Acquisition Unit	Yes	None	IEEE-488

### 2625A Hydra™ Data Logger

The Hydra 2625A provides a low-cost alternative for standalone monitoring operations with:

- **Built-in nonvolatile memory** that can store more than 2000 scans.
- **Flexible data retrieval** that enables you to upload stored data, or transfer real-time data via modem or directly to your PC via the RS-232 port.

### 2620A Hydra™ Data Acquisition Unit

The Hydra 2620A 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 allows you to easily 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

Hydra Logger software, included with all Hydra models, provides an intuitive graphical interface that makes it even easier to configure and access the powerful features of your Hydra units without any programming.

## 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, Hydra Logger Software, RS43 cable*

### 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 (6 ft)
2620A-101	Current Shunt, 10 $\Omega$ 0.1 % for 0 to 100 mA, Qty (12)
M00-200-634	19" Rack Mount Kit
Y8021	Shielded IEEE-488 Cable, 1 Meter
P/N 889589	Service Manual

### Application software\*

2635A-901	Hydra Logger
2635A-902	Hydra Logger with Trending
2600A-904	Trend Link for Fluke

\*IEEE-488 not supported



- **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 90-264 V ac, or 9-16 V dc. Can operate from both simultaneously



Hydra Series (Universal Input Module Removed)

## Hydra™ Series

### 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  
(1.5 Rdgs/s for V ac, Hz and  $\Omega$  inputs nominal)

### Analog to digital converter

Dual slope type, linear to 17 bits  
Common mode rejection  
AC:  $\geq 120$  dB (50/60 Hz,  $\pm 0.1\%$  max 1 k source imbalance); dc:  $\geq 120$  dB

### Normal mode rejection

53 dB (60 Hz,  $\pm 0.1\%$ )  
47 dB (50 Hz,  $\pm 0.1\%$ )

### Common mode and normal mode voltage maximum

300 V dc or V ac rms (channels 0,1,11) 150 V dc or V ac rms (all other inputs)

### Isolation

Analog input to analog input, and analog input to any digital input: meets IEC/EN 61010-1:2001 for 300/150 V reinforced and ANSI/ISA-61010-1(82.02.01):2004 and CAN/CSA C22.2 No. 61010-1:2004 for 250 V single insulation

### Current measurements

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

### Totalizing input

DC coupled, non-isolated, max +30V, min -4 V  
Max count: 65,535  
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/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).

# Hydra™ Series specifications

## Hydra™ Series

Input	Range	Resolution	Accuracy (3-Sigma) <sup>1</sup>
DC Volts	90 mV to 150/300 V	1 µV to 10 mV	0.018%
AC Volts <sup>2</sup>	300 mV to 150/300 V	10 µV to 10 mV	0.13%
Resistance	300 Ω to 10 MΩ	10 mΩ to 1 KΩ	0.013%
Frequency	15 Hz to 1 MHz	0.01 Hz to 1 kHz	0.05%
RTD (Pt100)	-200 °C to 600 °C	0.02 °C	0.05 °C
<b>Thermocouples</b>			
J	-100 °C to 760 °C	0.1 °C	0.39 °C
K	-100 °C to 1372 °C	0.1 °C	0.45 °C
T	-150 °C to 400 °C	0.1 °C	0.39 °C
<i>Other Thermocouple types R, S, B, C, E, N</i>			

Detailed specifications are available on request.

<sup>1</sup> 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 90 V ac to 264 V ac.

<sup>2</sup> Accuracies for crest factor to 2.0.

## Hydra™ 2635A Memory Card capacity—number of scans

Memory Card Size	Channels in Scan		
	4	10	20
256 KB	8900	4800	2710
1 MB	36860	19860	11210
2 MB	74110	39910	22550
4 MB	149039	80251	45359

### Trigger input

Minimum pulse: 5 µs

Maximum latency: 100 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

90 V ac to 264 V ac, 50 Hz or

60 (<10 watts), or 9 to 16 V dc

(<4 W). (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:

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 IEC/EN 61010-1:2004, ANSI/ISA-61010 (82.02.01):2004, 61010-1 (82.02.02) :2004, CAN/CSA C22.2 No. 61010-1:2004, and CE standards as noted above

### Weight

3.0 kg (6.5 lbs)

Dimensions (HxWxD)

9.3 cm x 21.6 cm x 31.2 cm

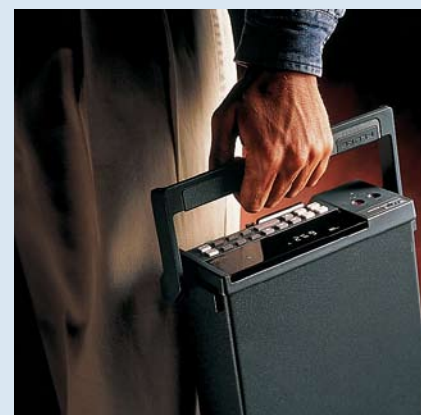
(3.67 in x 8.50 in x 12.28 in)

### 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

## 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 connect your NetDAQ unit 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.
- **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

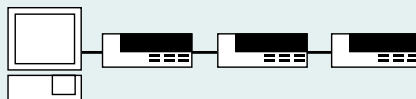
The Fluke NetDAQ 2640A delivers extremely high accuracy and resolution to provide calibration-level performance:

- Measures up to 300 V at up to 100 rps
- Offers 0.01% V 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
2680A-APSW	Fluke DAQ Software

### Options and accessories

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

- **Universal input module:** Connect 20 analog inputs of virtually any sensor type without external signal conditioning
- **NetDAQ interfacing:** 10Base-T (twisted pair) 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 to 264 V ac, or 9 to 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  $\Omega$  range, 37 Rdgs/s on 3 M $\Omega$  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  $\Omega$  range, 44 Rdgs/s on 3 M $\Omega$  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:  $\geq 120$  dB (50/60 Hz,  $\pm 10.1$  % max 1 k source imbalance); DC:  $\geq 120$  dB

**2645A:** AC:  $\geq 100$  dB (50/60 Hz,  $\pm 10.1$  % max 1 k source imbalance); DC:  $\geq 100$  dB

### Normal mode rejection

50 dB @ 50/60 Hz,  $\pm 10.1$  %  
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 measurement category II, ANSI/ISA 61010-1 (82.02.01) :2004, CAN/CSA C22.2 No. 61010-1:2004 for 150/300 V reinforced

**2645A:** Analog input to any digital input; meets IEC measurement category II, ANSI/ISA 61010-1 (82.02.01) :2004, CAN/CSA C22.2 No. 61010-1:2004 for 150/300 V reinforced

### Current measurements

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

# NetDAQ specifications

## Model 2640A NetDAQ®

Input	Range	Resolution	Accuracy (3-Sigma) <sup>1</sup>
DC Volts	90 mV to 150/300 V	0.3 $\mu$ V to 1 mV	0.01 %
AC Volts <sup>2</sup>	300 mV to 150/300 V	10 $\mu$ V to 10 mV	0.3 %
Resistance	300 $\Omega$ to 3 M $\Omega$	1 m $\Omega$ to 10 $\Omega$	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
<b>Thermocouples</b>			
J	-100 °C to 760 °C	0.02 °C	0.35 °C
K	-100 °C to 1372 °C	0.02 °C	0.4 °C
T	-100 °C to 400 °C	0.02 °C	0.3 °C
<i>Other Thermocouple types R, S, B, C, E, N</i>			

## Model 2645A NetDAQ®

Input	Range	Resolution	Accuracy (3-Sigma) <sup>1</sup>
DC Volts	90 mV to 50 V	3 $\mu$ V to 10 mV	0.02 %
AC Volts <sup>2</sup>	300 mV to 30 V	10 $\mu$ V to 1 mV	0.3 %
Resistance	300 $\Omega$ to 3 M $\Omega$	10 m $\Omega$ to 100 $\Omega$	0.02 %
Frequency	15 Hz to 1 MHz	0.01 Hz to 100 Hz	0.05 %
RTD (Pt100)	-200 °C to 600 °C	0.03 °C	0.16 °C
<b>Thermocouples</b>			
J	-100 °C to 760 °C	0.2 °C	0.7 °C
K	-100 °C to 1372 °C	0.2 °C	0.8 °C
T	-100 °C to 400 °C	0.2 °C	0.7 °C
<i>Other Thermocouple types R, S, B, C, E, N</i>			

Detailed specifications are available on request.

<sup>1</sup> 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.

<sup>2</sup> 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  $\mu$ s  
 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 °C to 50 °C range

### Power

107 V ac to 264 V ac, 50 Hz or 60 (<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 °C to 28 °C,  $\leq$ 90% RH  
 28 °C to 40 °C,  $\leq$ 75% RH  
 40 °C to 60 °C,  $\leq$ 50% RH  
 Storage: -40 °C to 70 °C, 5 to 95% RH

### Altitude

Operating: 2000 m (6,500 ft)  
 Storage: 12,200 m (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/EN 61010-1:2001, ANSI/ISA-61010-1 (82.02.01) :2004, CAN/CSA C22.2 No. 61010-1:2004, 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 in x 8.50 in x 15.50 in)

### Battery life

10 years minimum for real-time clock

### Interfaces

Ethernet: Conforms to IEEE 802.3 Ethernet standard. Compatible with 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.



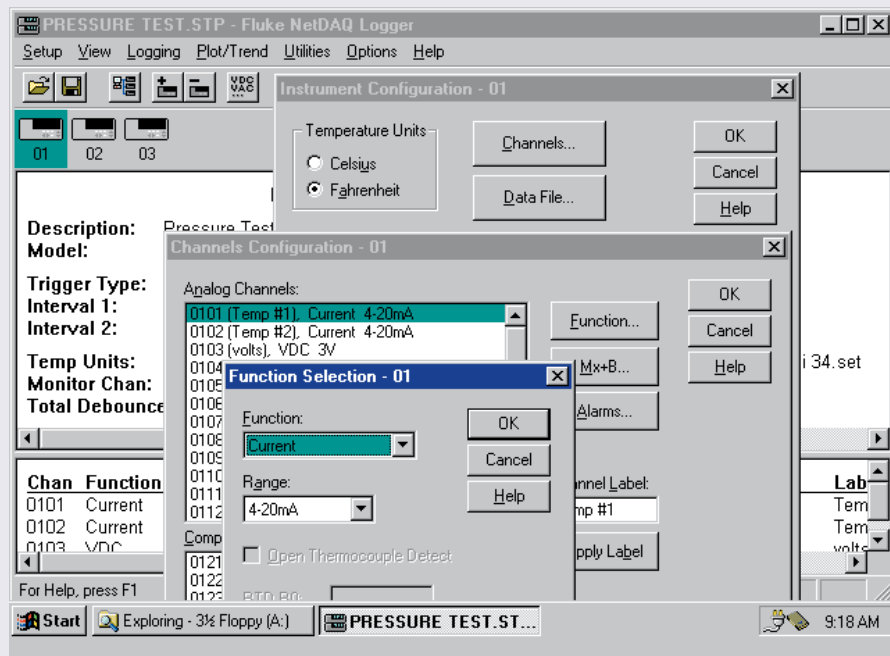
Fluke data acquisition systems are supported by a wide variety of optional software and development tools to support almost any research or industrial application.

## Add OPC and HMI capabilities to the 2680 Series without programming

### Fluke 2680A-DEVSU: HMI design software

The optional Fluke 2680A-DEVSU tool is based on Indusoft Web Studio, an object-oriented development program that works with Fluke DAQ software. This unique development software enables programmers and non-programmers to develop modern HMI's which open graphical windows to your application. Key features of this powerful development package include:

- An extensive graphics library
- Drag and drop programming
- More than 140 device drivers
- OPC client/server compliance
- Support for DNA, OPC, DDE, ODBC, XML, SOAP, and Active X
- Automatic language translation at run-time
- Internationalization using Unicode
- Web display and alarm paging
- Support for imported graphics formats
- The ability to view multiple clients from one web browser



All Logger software features point-and-click configuration dialogs.

### Fluke 2680A-OPC: Create custom applications with OLE for process control

Optional Fluke 2680A-OPC software gives you the freedom to integrate your 2680 Series into any OPC-compliant application. Create custom applications using 2680A-OPC software and just about any popular industrial software package such as Wonderware®, LabVIEW™, Test Point, or Indusoft Web Studio, as well as software from Canary Labs, Daisy Labs, and others. Open, non-proprietary OPC support enables you to use the software you choose or the software you create.

### Fluke 2680A-DLL library: For developing or modifying applications

The Fluke 2680A DLL library is designed for programmers who want to develop or modify their own applications for the 2680 Series, using Visual C++, Visual Basic, and other languages.

### Hydra™ Logger software

Hydra Logger software, included with all Hydra models, provides easy access to all the powerful features in the Hydra Series, enabling you to:

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



# Optional software

## Trend Link for Fluke software

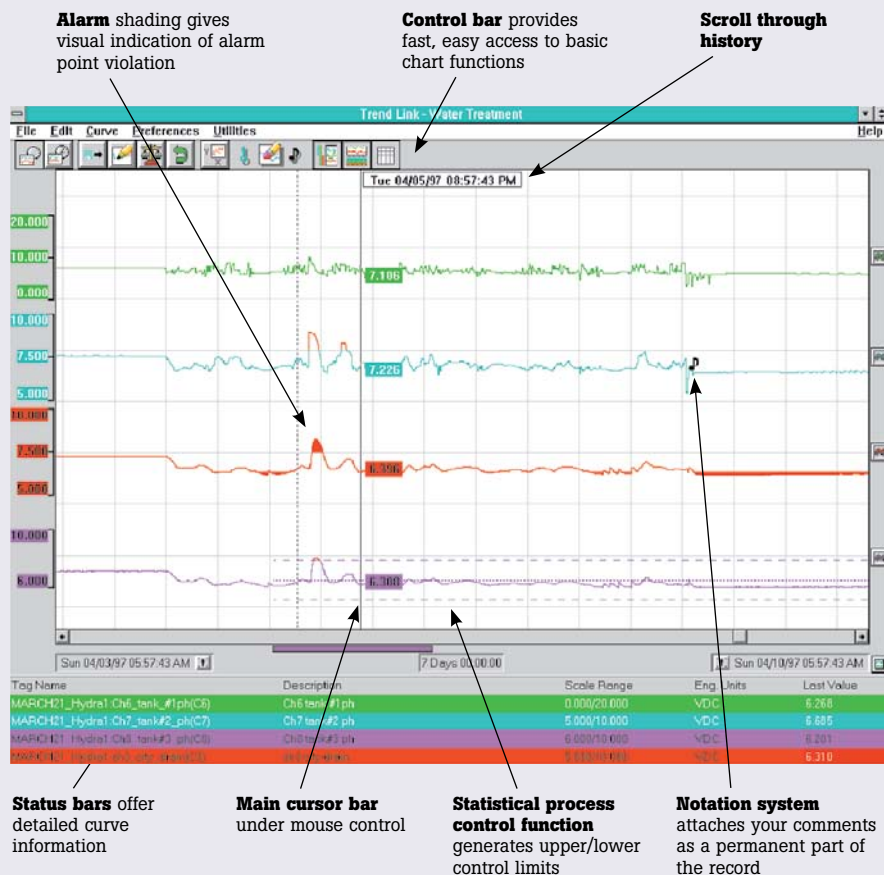
### Gain advanced trending capabilities

Optional Trend Link for Fluke software, available for Hydra, NetDAQ and 2680 Series—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 makes it easy to:

- Review real-time data in the context of historical data for performance or batch comparisons
- Automatically view statistics on any channel and 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

With Trend Link you can quickly scroll through volumes of historical and real-time data looking for key events or changes in the process. The dead-banding feature lets you limit recording to only those readings outside of the range of your normal process limits, saving you valuable disk space. Trend Link time stamps data with millisecond resolution so you can find just the data you're looking for. Then you can compare multiple traces on the same screen or zoom in on a particular point in time.



### Manage your data

The File Rollover feature lets you manage data file size, which is a big advantage for long duration data collection. You can create new data files when the file reaches a certain size, at a specific time interval, or at a specified hour each day.

### Document your results

Cut and paste the data and trend plots you generate with Trend Link software into spreadsheet and word processing programs to generate presentation-quality reports. Or print plots directly for hard copy documentation.

### 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 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 various setup files
- Change Mx+B values for each channel on an instrument
- Control digital I/O channels
- Access and control the NetDAQ serial port

## Fluke measurement specification philosophy

The accuracy specifications for the Fluke 2680 Series, Hydra Series, and NetDAQ Series instruments are calculated conservatively so that they include three standard deviations from the nominal value—this is referred to as 3-Sigma. More than 99.7 % of the instruments produced will perform within the error limits. Rigorous screening and testing procedures catch and correct the three out of 1,000 instruments which could have fallen outside their published specifications.

Many other products use a "rootsum-square" scheme, or only specify the error band within one standard deviation (1-Sigma) of nominal. This method produces a specification that appears to be more accurate, but the resulting "typical" specifications correctly characterize only ~66 % of the instruments produced. This method is kind of like knowing how accurate "most of the instruments" will be. The 3-Sigma specifications for the 2680 Series, Hydra, and NetDAQ tell you how accurate ALL of the instruments will be.

**Note:** Listed specifications are summary in nature. Accuracies listed are most favorable within the stated range. You may obtain detailed specifications by contacting the offices listed on this brochure.

For complete product specifications or information on other Fluke products, contact your local Fluke sales representative.

## Customer support

Choosing a data acquisition system that meets your specifications is only 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.®**

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