Hydra Series Portable Data Acquisition

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

The Hydra Series is available in three models to fit many application requirements. The 2620A Hydra Data Acquisition Unit is a compact front end for use with your PC. The portable 2625A Hydra Data Logger features non-volatile memory that stores more than 2000 scans, for stand-alone applications. And the 2635A Hydra Data Bucket with its removable memory card for data and set-up storage is the most versatile model - ideal for remote monitoring applications.

All models are easy to set up and reconfigure from the front panel. Additionally, all units have bi-directional communication via RS-232C, which enables control from a host computer. The RS-232C interface also supports stand-alone use with a serial printer. An optional GPIB/IEEE-488 interface is available for the 2620A only.

The Hydra Series is extremely rugged and able to operate in diverse environments. Its operating range is 0 to 60ºC, and it is tested to stringent shock and vibration standards. Hydra's sturdy metal chassis effectively shields against electromagnetic interference, maintaining high measurement accuracy on low level signals. The analog circuitry is also isolated from the digital circuitry so you can measure high voltages directly (up to 300V ac rms). And it conforms to I.E.C., C.E. and CSA safety standards. What's more, all set-up information is battery-backed, so it's immune to power failure. Hydra will return from a power loss and resume scanning, while all configuration information and stored data remain intact.

Download Hydra Logger with Trend Link [Demonstration Software](#) now!

Download [Data Acquisition Software and Hardware Demonstration Guide](#) that contains exercises designed to quickly familiarize you with the features and functions of Fluke's software and hardware for data acquisition and analysis. NetDAQ Logger, Hydra Logger, and Trend Link for Fluke demonstrations are covered in this guide.
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Download [application notes](#) for more information on data acquisition procedures.

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Hydra Series Portable Data Acquisition Features

Hydra Series Portable 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.

- 2635A Hydra Data Bucket
- 2625 Hydra Data Logger
- 2620 Hydra Data Acquisition Unit
- Universal Input Module
- Data Collection
- Data Logger Operation
- Software
- Printer Operation
- Current Measurements

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.

2625 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.

2620 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.

Universal Input Module

The removable Universal Input Module enables fast, convenient set-up and reconfiguration. Any combination of dc voltage, ac voltage, thermocouple, RTD, resistance, or frequency measurements can be connected to the input module without the need for additional signal conditioning. Thermocouple reference junction compensation is automatically performed by sensing the

temperature of the input module's isothermal block. For applications with multiple measurement locations, purchasing additional input modules provides the ability to quickly connect and disconnect a Hydra to these various sites while leaving all sensor wiring intact.

Data Collection

Portable Operation

The 2635A Hydra Data Bucket has been designed for applications where data is gathered in a stand-alone manner "on location" and later uploaded to a PC for analysis and/or archiving. Three models of the Hydra Data Bucket are available with PC memory cards ranging in size from 256K, 1 Mb, 2Mb and 4Mb in size. Up to 450,000 readings may be stored on a 2M byte memory card. For applications where large amounts of data are generated, you may swap memory cards without interrupting the Data Bucket's scanning.

Memory Card Drive

The optional Memory Card drive provides an easy way to transfer your data from the Data Bucket's memory card to a PC. It may also be used to download your latest Data Bucket set up to the memory card for later use in the field.

Data Logger Operation

The Hydra 2625A Data Logger is differentiated by its built-in non-volatile recording capability. This feature makes data capture and offline storage very flexible and convenient. The memory holds 2047 sets of readings on each of the 21 analog input, 12 digital I/O, and totalizer channels - enough to hold one scan per minute for more than 24 hours. The Hydra Data Logger is ideal for recording data during environmental stress screening, thermal testing, design testing, and other applications that require data logger with up to twenty analog measurement channels.

Software

The Hydra Logger Package is an optional DOS Based software package that allows you to set up all channels and functions of one or two Hydras using your PC.

The Logger Package controls Hydra's scanning, collects data, graphs any eight channels in real-time, and creates a data file which may be directly imported into Lotus 1-2-3 or other spreadsheets for further analysis. All these capabilities are controlled via simple menus on your PC's display, either through a keyboard or mouse.

Download Hydra Logger with Trend Link <u>Demonstration Software</u> now! System Requirements:

- 486 (or better) PC
- Windows 95 or Windows NT
- 4MB RAM
- 5MB Free disk space

Data Acquisition Software and Hardware Demonstration Guide

This <u>demonstration guide</u> contains exercises designed to quickly familiarize you with the features and functions of Fluke's

software and hardware for data acquisition and analysis. NetDAQ Logger, Hydra Logger, and Trend Link for Fluke demonstrations are covered in this guide.

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PC Operation

The Hydra 2620A Data Acquisition Unit provides a low-cost solution for PC-based applications requiring up to twenty analog inputs. Hydra can be connected in real time to your PC. Hydra's bi-directional RS-232C interface and computer command set provide complete remote control, duplicating all front panel functions. For IEEE-488 based systems, the 2620A/05 comes equipped with an IEEE-488 interface which duplicates the remote capabilities of the RS-232C interface.

Hydra Logger for Windows

The Hydra Logger for Windows software package gives you a powerful data acquisition system when combined with a Hydra instrument and your PC. Hydra Logger gives you control of Hydra's powerful functions, including scanning, signal conditioning, sensor linearization, alarm detection and reporting, non-volatile data memory, advanced trend plotting and more. "Logger" supports the 2625A and 2635A Hydra models. With Hydra Logger's optional, trend plotting package, Trend Link for Fluke, you can control how your data is displayed. You can quickly scroll through real time and historical data, or view data from all channels simultaneously, on a single screen. Or, you can plot one or multiple channels in real time, even superimposing channels on other channels. Zoom in and out features, and statistics make this optional package ideal for report and analysis needs.

Hydra LabVIEW Driver

The Hydra LabVIEW driver is available from this site for LabVIEW 4.0 or later. LabVIEW is available from National Instruments.

Printer Operation

For stand-alone use without a PC, the print function in all Hydra models controls the data flow to a local serial printer. Autoprint has three operating modes: print all data; print all data if any channel is in alarm; or print all data if any channel has transitioned into or out of alarm. The 2625A Hydra Data Logger and the 2635A Data Bucket are also able to store and print data simultaneously, thereby allowing you to access the data later for further analysis on your PC.

Current Measurements

AC or dc current measurements may be accomplished using either 2620A-101 current shunts or external current probes. Using Mx+B scaling provides direct readings in amps. For lower current levels, shunts may be located in the input module.

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Hydra Series Portable Data Acquisition Specifications

- [Technical Specifications](#)
- [2625A Data Memory Specifications](#)
- [2635A Memory Card Capacity Specifications](#)
- [General Specifications](#)

Technical Specifications	
DC Volts	**Range:** 90 mV to 300/150V **Resolution:** 1 µV to 10 mV **Accuracy** (3-Sigma)± 0.018%
AC Volts	**Range:** 300 mV to 300/150V **Resolution:** 10 µV to 10 mV **Accuracy:** (3-Sigma)± 0.13%
Resistance	**Range:** 300Ω to 10 MΩ **Resolution:** 10 mΩ to 1 KΩ **Accuracy:** (3-Sigma)± 0.013%
Frequency	**Range:** 15 Hz to 1 MHz **Resolution:** 0.01 Hz to 1 kHz **Accuracy:** (3-Sigma)± 0.05%
RTD (Pt 100)	**Range:** -200 to 600ºC **Resolution:** 0.02ºC **Accuracy:** (3-Sigma)± 0.05ºC
J Thermocouples	**Range:** -100 to 760ºC **Resolution:** 0.1ºC **Accuracy:** (3-Sigma)± 0.39ºC
K Thermocouples	**Range:** -100 to 1372ºC **Resolution:** 0.1ºC **Accuracy:** (3-Sigma)± 0.45ºC
T Thermocouples	**Range:** -150 to 400ºC **Resolution:** 0.1ºC **Accuracy:** (3-Sigma)± 0.39ºC
Other Thermocouple types	R, S, B, C, E, N

2625A Data Memory Specifications

2625A Data Storage	Stores 2047 scans; stored with each scan: time stamp, all defined analog input channels, the status of four alarm outputs and eight digital I/O, and the totalizer count
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

2635A Memory Card Capacity Specifications

256k Card Size	**4 Channels in Scan** 8900 **10 Channels in Scan** 4800 **20 Channels in Scan** 2710
1M Card Size	**4 Channels in Scan** 36,860 **10 Channels in Scan** 19,860 **20 Channels in Scan** 11,210
2M Card Size	**4 Channels in Scan** 74,110 **10 Channels in Scan** 39,910 **20 Channels in Scan** 22,550
4M Card Size	**4 Channels in Scan** 149,039 **10 Channels in Scan** 80,251 **20 Channels in Scan** 45,359

General Specifications

Channel Capacity	Analog Inputs: 21; Digital I/O & Alarm Outputs: 12 total; Totalizer: 1
Power	90V ac to 264V ac (50 Hz or 60 Hz), or 9V dc to 16V dc; less than 10W. (If both sources are applied simultaneously, the greater of ac or dc is used. At 120V ac the equivalent dc voltage is ~14.5V)
Temperature, Humidity (non-condensing)	Operating: 0 to 28°C, <=90% RH; 28°C to 40°C, <=75% RH; 40°C to 60°C, <=50% RH; Storage: -40°C to 75°C, 5 to 95% RH
Altitude	Operating: 3050m (10,000 ft); Storage: 12,200m (40,000 ft)
Common Mode and Normal Mode Voltage	300V dc or ac rms (channels 0,1,11); 150V dc or ac rms (all other channels) IEC Overvoltage Category II.
Isolation	Analog input to analog input, and analog input to any digital input: meets IEC 1010 for 300/150 volts reinforced and ANSI/ISA-S82.01-1988 and CSA 231 for 250 volts single insulation
Safety	Complies with applicable sections of the IEC1010, ANSI/ISA-S82.01-1988, CSA231, UL 1244, CSA 556B, CE.
RF Emissions	Passes FCC EMI Class A Equipment and VDE 0871B

Size	9.3 cm x 21.6 cm x 31.2 cm (3.67" x 8.50" x 12.28")
Weight	2.95 kg (6.5 lb)
Memory life	10 years typical for real-time clock, set-up configuration and measurement data in 2625A, memory cards typically 5 years for the 256 kB card
Interfaces	RS-232C connector: nine pin male (DB-9P)
Signals	TX, RX, DTR, GND
Modem Control	Full duplex
Baud Rates (Set from front panel)	300, 600, 1200, 2400, 4800, 9600, 19.2k, 38.4k
Echo (Set from front panel)	On/Off
Flow Control	XON/XOFF
IEEE-488 (Optional, 2620A Only)	Complies with IEEE-488.1 Standard; disables RS-232C Interface while in use

Hydra Series Portable Data Acquisition Models, Options & Accessories

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

Available Accessories and Options

Model Name	Accessory or Option Description
2600A-101	Extra SPRT Probe, 100 ΩPT, Probe with soft case only
2600A-904	Trend Link for Fluke
2620A-05K	IEEE-488 Interface Kit (2620A only)
2620A-100	Extra I/O Connector Set: includes Universal Input Module, Digital I/O and Alarm Output Connectors
2620T	Recording Thermometer with probe and software
2635A-805	1 MB Memory Card
2635A-806	2 MB Memory Card
2635A-807	4 MB Memory Card
2635A-901	Hydra Logger for Windows

2635A-902	Hydra Logger for Windows with Trending
[2635T](#)	Recording Thermometer with probe, software and 256 KB PC memory card
263XA-803	Memory Card Drive
263XA-804	256 KB Memory Card
2640A-904	Trend Link for Fluke
264XA-801	Ethernet Card (10Base2, 10BaseT)
264XA-802	Parallel-to-Lan Adapter (10Base2)
264XA-803	PCMCIA to LAN Adaptor (Set of 12) (10Base 2, 10Base T)
26XXA-600	Portable Battery Pack
942615	NetDAQ Service Manual
C40	Carrying Case
C44	Transit Case
M00-200-634	Rack Mount Kit
RS40	RS-232C to Terminal Cable: Connects to PC/XT, PS/2
RS41	RS-232C to Modem Cable (Join w/RS40 to connect to PC/AT)
RS42	Printer Cable (DB9 to DB25)
RS43	RS-232C DB9 to DB9 for PC to unit, 6'
Y2641	19 Rackmount kit, single/dual
Y2642	Wall/Cabinet Mounting Plate
Y2643	4m Ethernet Cable Kit
Y2644	NEMA-4X (IP65) Enclosure
Y8021	Shielded IEEE-488 Cable, 1m
Y8022	Shielded IEEE-488 Cable, 2m
Y8023	Shielded IEEE-488 Cable, 4m