NEW! AOIP FD5
Advanced Digital Data Logger

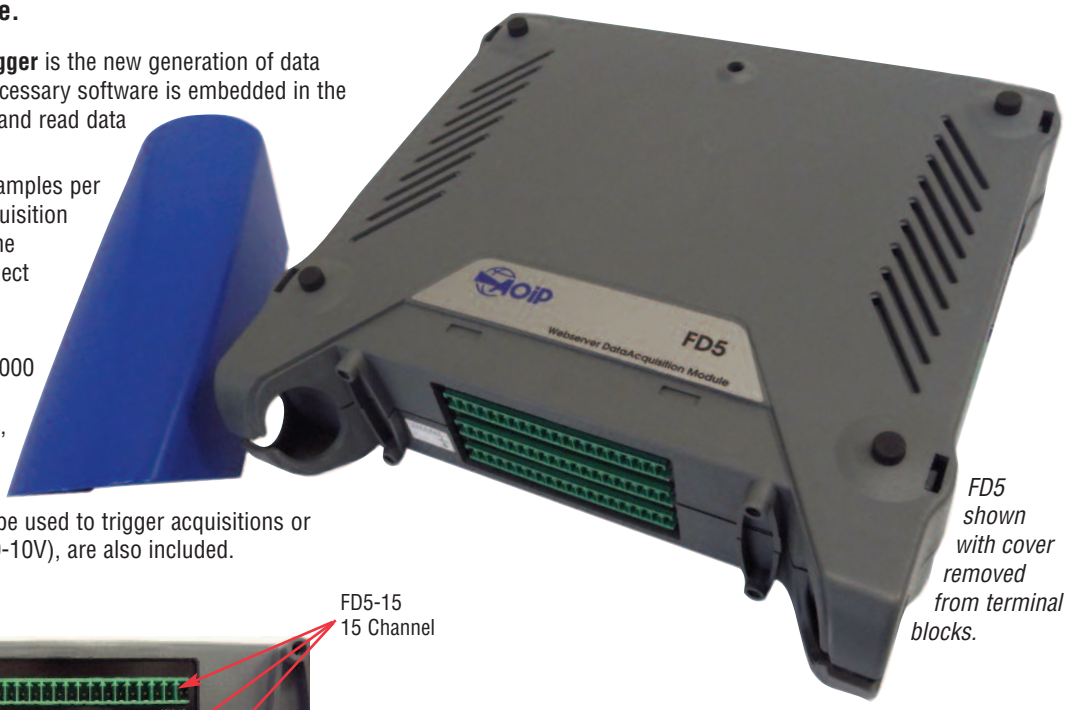
Versatile data logger, each output channel can be custom configured for current, voltage, resistance, frequency, and temperature.

The **NEW! FD5 Digital Datalogger** is the new generation of data acquisition systems. All the necessary software is embedded in the unit, allowing you to program and read data from any computer!

FD5 acquires up to 400 data samples per second from one channel. Acquisition speed is the same no matter the number of active channels. Select between 5, 10 or 15 channels, depending on model.

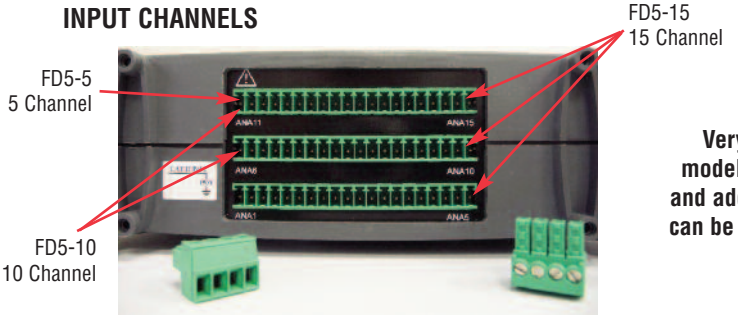
The internal memory of 1,000,000 data samples can be expanded using an SD card or USB drive, offering several months of storage.

The 5 TTL inputs/outputs can be used to trigger acquisitions or events. Two analog outputs, (0-10V), are also included.



FD5 shown with cover removed from terminal blocks.

INPUT CHANNELS



Very flexible, 3 base models to choose from and additional channels can be added modularly

FD5 Specifications	
Temperature	Thermocouples and RTDs Process signals Resistance up to 200 KΩ Voltage up to 100 V
High Accuracy	0.0015% RDG 0.08 % RDG (RTD)
Channels	5 to 15 analog universal inputs 5 TTL inputs/outputs 2 analog outputs (0-10V) 2 relay outputs
Measurement Mode	Synchronous input channels
Sampling	Up to 470 samples / per second / per channel
Internal Memory	1,000,000 values
Network Interfaces	Modbus, Ethernet, TCP/IP...
Power Supply	12-28 V
Communication Modes	TCP/IP (RJ45 10/100) RS485 / RS232 / USB / WiFi (802.11g) using external access point
Additional Functions	E-mail alerts

Specifications subject to change without notice.

Features

- **Scale each channel for sensor correction or to apply special scales**
- **Embedded operating and programming software**
- **Collect up to 400 data samples per second per channel**
- **Web server allows access to real time data through your web browser**
- **Accepts 5 to 15 synchronous differential and universal analog inputs**
- **Expand internal memory with an SD card or USB drive to store several months of data**
- **Multiple communication modes available including; Ethernet, USB, RS232, and RS485**
- **Data processing, statistics, conditioning, Boolean calculations**
- **No interruption to data acquisition when downloading**
- **Includes 2 analog outputs of 0-10V**
- **24VDC supply capable of powering up to five 4/20 mA sensors**

CE

ONE YEAR 1 WARRANTY

Calibration Services Available

FD5 Functions

Advanced Functions of the FD5

5, 10 or 15 universal inputs: (depending on selected model) Program name, scaling, and up to 4 alarm levels for each channel. Each input channel is equipped with one ADC regardless of the number of programmed inputs. The acquisition will remain the one programmed in opposition with multiplexed systems.

Scanning Rate: FD5 offers 3 scanning frequencies, which directly effects accuracy levels. Synchronous input channels so the number of programmed channels does not influence the scanning rate.

Voltage: Standard (ranges: 0-10mV, 0-1V, 0-10V and 0-100V).

Current: 0-20 mA and 4-20 mA with external shunts.

Resistance: 0-3000 ohms and 0-200KΩ.

Frequency: up to 10KHz measuring frequency and counting.

Thermocouples: Thermocouples (type K, T, J, E, R, S, B, U, L, C, N, PlatineL, Mo, NiMo/NiCo, D, and G) with or without cold junction compensation.

RTD: Temperature sensors as Pt50, Pt100, Pt200, PT500, PT1000, NI100, NI120, NI1000, Cu10, and Cu50. In 2, 3 or 4 wires.

Calculation channels: Calculations between channels, or any calculation (Average, Min, Max, etc.) simulation of ramps and steps, synthesizer, square root, and statistical functions.

Alarms: Each channel can be configured with 4 alarm levels for monitoring purposes. Alarm events are stored in a dedicated file with access to authorized users only.

Scaling: Each channel can be scaled for sensor correction or to apply a special scale for 4-20 mA or 0-10V sensors.

2 Analog Outputs: (0-10V).

5 TTL Inputs/Outputs.

2 Output Relays.

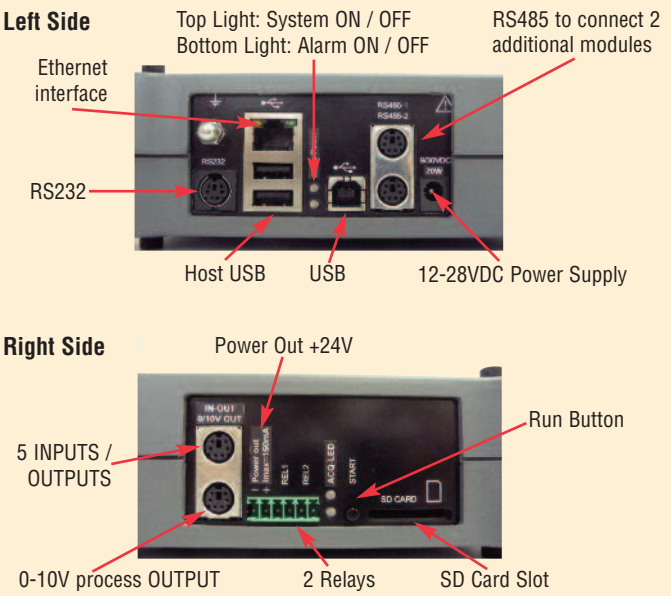
FD5 Models and Software	
FD5-5	5 Channel Acquisition System
FD5-10	10 Channel Acquisition System
FD5-15	15 Channel Acquisition System
VISULOG Lite	Monitoring software 32 Bits
12423-06	Carrying Case

Wahl manufacturers a wide range of sensors as input devices for the FD5 including: TC and RTD, infrared sensors, current transmitters, and pressure transducers. For custom sensor configurations please call Customer Service.

Bluetooth: Connect with Bluetooth enabled sensors wirelessly using onboard functionality.

- 50K ohm range, Steinhart-HART equation.
- Drive dry-blocks, furnaces, and baths with. the 4-20mA OUT signal.
- Transmitter function, Switch test.
- Stores up to 1,000,000 values.

COMMUNICATION OPTIONS



Specifications are subject to change without notice.

Software and Resources

- **Embedded web server software** for programming, control and reading of data. Real-time data monitoring, using web browser. No need to install software.
- **Allows programming**, data viewing, instrument start/stop, and memory management.
- **Compatible** with Windows, Linux, MacOS.
- **Communications:** TCP/IP (RJ45 10/100), RS485, RS232, USB, WiFI (802.11g) using external access point.
- **File and data stamping.**
- **External memory extensions:** SD card or USB drive.
- **Power supply:** 12-28V powered by main or external rechargeable battery.
- **XML Protocol**: Software outputs in XML for use with common interfaces like Labview, C++.
- **Optional Software: VISULOG** follows and stores data on a computer in real-time, with a maximum acquisition rate of 10 HZ.
- **Visulog Lite** can also be used to download data from the FD5.

ONE YEAR 1 WARRANTY

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For complete specifications please visit: www.palmerwahl.com/dataloggers

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FD5 Specifications

FD5 Technical Specifications

Scanning Rate

FD5 offers 3 scanning frequencies, in direct connection with accuracy levels
FD5 offers synchronous input channels, so the number of programmed channels is not influencing the scanning rate.

Accuracy Level	Scanning Rate	Scanning period	Number of sample/second/channel
High	4.17 Hz	240 ms	4 Samples/second/channel
Normal	123 Hz	8.13 ms	123 Samples/second/channel
Low	470 Hz	2.13 ms	470 Samples/second/channel

Accuracy is given in ± % of reading + a fixed value. I.....I means absolute value.

DC Voltage

Range Name	Measuring Range	1yr accuracy High Accuracy (4 m/s)	1yr accuracy Standard Accuracy (123 m/s)	1yr accuracy Low Accuracy (470 m/s)	Notes
100mV	+/-100mV	0.015% L + 3 µV	0.015% L + 7 µV	0.015% L + 15 µV	10 MΩ+/- 10%
1V	+/-1V	0.015% + 30 µV	0.015% L + 70 µV	0.015% L + 150 µV	10 MΩ+/- 10%
10V	+/-10V	0.015% + 300 µV	0.015% L + 700 µV	0.015% L + 1.5 mV	1 MΩ+/ 10%
50V	+/-50V	0.015% + 1 mV	0.015% L + 3 mV	0.015% L + 7 mV	1 MΩ+/ 10%
100V	+/-100V	0.015% + 3 mV	0.015% L + 7 mV	0.015% L + 15 mV	1 MΩ+/ 10%

DC Current

Range Name	Measuring Range	1yr accuracy High Accuracy (4 m/s)	1yr accuracy Standard Accuracy (123 m/s)	1yr accuracy Low Accuracy (470 m/s)	Notes
0-20 mA	0 mA to 20 mA	0.025% L + 6 µA	0.025% L + 13 µA	0.025% L + 30 µA	With shunt ER 44007-024
4-20 mA	4 mA to 20 mA	0.025% L + 6 µA	0.025% L + 13 µA	0.025% L + 30 µA	With shunt ER 44007-024

Resistance

Range Name	Measuring Range	1yr accuracy High Accuracy (4 m/s)	1yr accuracy Standard Accuracy (123 m/s)	1yr accuracy Low Accuracy (470 m/s)	Notes
400 Ω	0 Ω to 400 Ω	0.008% L + 10 m Ω	0.008% L + 20 m Ω	0.008% L + 40 mΩ	4 wires accuracy
3600 Ω	0 Ω to 3600 Ω	0.008% L + 100 m Ω	0.008% L + 200 m Ω	0.008% L + 400 mΩ	4 wires accuracy
200 KΩ	0 Ω to 200 KΩ	0.1% L + 5 Ω	0.3% L + 8 Ω	0.5% L + 10 Ω	4 wires accuracy*

* short and shielded wires

Frequency and Counting

Range Name	Measuring Range	Measuring Range	Notes
10 kHz	1 Hz to 10 KHz	0.005%	Vin min = 1V

- Trigger level 1V
- Scale in pulse/min and Hz
- Measuring on frequency output or dry relays
- For counting measurement, the time can be defined or the counting can be performed on infinite time.

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FD5 Data Acquisition

FD5 THERMOCOUPLES					
Type	**Measuring Range**	**Resolution**	**1yr accuracy High Accuracy (4 m/s) Periodic mode**	**1yr accuracy Standard Accuracy (123 m/s) Periodic mode**	**1yr accuracy Low Accuracy (470 m/s) Continuous mode**
K	-250° to -200°C -200° to -120°C -120° to -0°C +0° to +1372°C	0.2°C 0.1°C 0.05°C 0.05°C	1.1%R+1.9°C 0.12%R °C 0.04%R +0.1°C 0.015%R +0.1°C	1.1%R +1.9*1.79°C 0.12%R *2.2°C (0.04%R +0.1)*2°C (0.021%R +0.2) °C	1.11%R +1.9*3.85°C 0.12%R *4.5°C (0.04%R +0.1)*4°C (0.025%R +0.4) °C
T	-250° to -200°C -200° to -100°C -100° to -0°C -0° to +400°C	0.2°C 0.05°C 0.05°C 0.05°C	0.75%R +1.25°C 0.13%R°C 550ppmR +0.09°C 0.09°C	(0.75%R + 1.25)*2°C 0.13%R*2°C (550ppmR +0.09)*2°C 0.18°C	(0.75%R +1.25)*4°C 0.13%R *4°C (550ppmR +0.09)*4 0.39°C
J	-210° to -120°C -120° to -0°C +0° to +1200°C	0.05°C 0.05°C 0.05°C	800ppmR +0.05°C 300ppmR +0.08°C 100ppmR +0.08°C	(800ppmR +0.05)*2°C (300ppmR +0.08)*1.9°C (100ppmR +0.08)*1.9°C	(800ppmR +0.05)*4°C (300ppmR +0.08)*3.8°C (100ppmR +0.08)*3.8°C
E	-250° to -200°C -200° to -100°C -100° to -0°C +0° to +1000°C	0.1°C 0.05°C 0.05°C 0.05°C	0.6%R +1°C 760ppmR +0.03°C 270ppmR +0.07°C 150ppmR +0.07°C	(I0.6%R +1)*1.8°C (I760ppmR +0.03)*1.9°C (I270ppmR +0.07)*1.9°C (I150ppmR +0.13) °C	(0.6%R +1)*3.6°C (760ppmR +0.03)*3.7°C (270ppmR +0.07)*3.7°C (150ppmRI +0.26) °C
R	-50° to +150°C +150° to +550°C +550° to +1768°C	0.5°C 0.2°C 0.1°C	1°C 0.4°C 0.5°C	2°C 0.9°C 0.9°C	4°C 1.9°C 1.5°C
S	-50° to +150°C +150° to +550°C +550° to +1450°C +1450° to +1768°C	0.5°C 0.2°C 0.1°C 0.1°C	1°C 0.4°C 0.45°C 0.6°C	2°C 0.8°C 0.8°C 1°C	4°C 1.6°C 1.6°C 1.8°C
B	+400° to +900°C +900° to +1820°C	0.2°C 0.1°C	0.9°C 0.65°C	1.8°C 1°C	3.8°C 1.95°C
U	-200° to -100°C -100° to +50°C -100° to +660°C	0.05°C 0.05°C 0.05°C	0.25°C 0.15°C 0.15°C	0.45°C 0.25°C 0.2°C	0.85°C 0.55°C 0.4°C
L	-200° to -40°C -40° to +900°C	0.05°C	0.2°C 0.17°C	0.3°C 0.22°C	0.55°C 0.35°C
C	-20° to +300°C +300° to +900°C +900° to +2310°C	0.1°C 0.1°C 0.1°C	0.25°C 250ppm +0.15°C 400ppm°C	0.55°C 250ppm +0.4°C 600ppm°C	1.15°C 250ppm +0.95°C 1000ppm°C
N	-240° to -190°C -190° to -110°C -110° to -0°C +0° to +1300°C	0.2°C 0.1°C 0.05°C 0.05°C	0.8%R +1°C 0.7%R +1°C 0.17°C 150ppmR +0.15°C	2%R +3°C 0.7R%+1* 2.1°C 0.2°C 100ppmR +0.3°C	4%R +6°C 0.7%+1 *4.2°C 0.4°C 80ppmR +0.6°C
PlatineL	-100° to +850°C +850° to +1400°C	0.05°C 0.05°C	0.2°C 0.02%R +0.1	0.3°C 0.028%R +0.2	0.5°C 0.03%R +0.4°C
Mo	0° to +1375°C	0.05°C	0.02 %R +0.1°C	0.02 %R +0.2°C	0.02 %R +0.4°C
NiMo/NiCo	-50° to +400°C +400° to +1410°C	0.05°C	0.35°C 0.25°C	0.45°C 0.3°C	0.55°C 0.45°C
D	+0° to +310°C +310° to +1000°C +1000° to +2315°C	0.1°C 0.05°C 0.05°C	0.3°C 0.3°C 0.04%°C	0.50°C 0.30°C 0.06%°C	1.6°C 0.9°C 0.1%°C
G	+0° to +50°C +50° to +100°C +100° to +200°C +200° to +300°C +300° to +1400°C +1400° to +2315°C	0.5°C 0.2°C 0.05°C 0.05°C 0.05°C 0.05°C	2.3°C 0.95°C 0.6°C 0.35°C 0.3°C 300ppm°C	5.4°C 2.1°C 1.35°C 0.8°C 0.65°C 450ppm°C	11.5°C 4.5°C 2.9°C 1.7°C 1.3°C 750ppm°C

Specifications are subject to change without notice.

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Sensors types :
- According to CEI 584-1/1995 (K, T, J, E, S, B, N).
- According to Din 43710 (U and L).
- According to ENGELHARD (PlatineL)
- According to ASTM E 1751-00 (G)
- According to ASTM E 988-96 (D W3Re/W25Re ; C W5Re/W26Re)

When using Cold Junction Compensation, (CJC), add an additional uncertainty at 0°C of +/- 0.5°C (High and standard accuracy scanning level). +/- 0.8 (Low accuracy scanning level).

Calibration Services Available

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PW1214
03/13 Rev A

FD5 Data Acquisition

FD5 RTD'S					
Sensor	**Measuring Range**	**Resolution**	**1yr accuracy High Accuracy (4 m/s) Periodic mode**	**1yr accuracy Standard Accuracy (123 m/s) Periodic mode**	**1yr accuracy Low Accuracy (470 m/s) Continuous mode**
Pt 50 (α = 3851)	-220° to +850°C	0.01°C	0.08% R + 0.04°C	0.08% R + 0.07°C	0.08% R + 0.14°C
Pt 100 (α = 3851)	-220° to +850°C	0.01°C	0.08% R + 0.035°C	0.08% R + 0.06°C	0.08% R + 0.12°C
Pt 100 (α = 3916)	-200° to +510°C	0.01°C	0.08% R + 0.035°C	0.08% R + 0.06°C	0.08% R + 0.12°C
Pt 100 (α = 3926)	-210° to +850°C	0.01°C	0.08% R + 0.035°C	0.08% R + 0.06°C	0.08% R + 0.12°C
Pt 200 (α = 3851)	-220° to +850°C	0.01°C	0.08% R + 0.04°C	0.08% R + 0.07°C	0.08% R + 0.14°C
Pt 500 (α = 3851)	-220° to +850°C	0.01°C	0.08% R + 0.04°C	0.08% R + 0.07°C	0.08% R + 0.14°C
Pt 1000 (α = 3851)	-220° to +850°C	0.01°C	0.08% R + 0.035°C	0.08% R + 0.06°C	0.08% R + 0.12°C
Ni 100 (α = 618)	-60° to +180°C	0.01°C	0.08% R + 0.04°C	0.08% R + 0.07°C	0.08% R + 0.14°C
Ni 120 (α = 672)	-40° to +205°C	0.01°C	0.08% R + 0.04°C	0.08% R + 0.07°C	0.08% R + 0.14°C
Ni 1000 (α = 618)	-60° to +180°C	0.01°C	0.08% R + 0.04°C	0.08% R + 0.07°C	0.08% R + 0.14°C
Cu 10 (α = 427)	-70° to +150°C	0.01°C	0.2°C	0.3°C	0.55°C
Cu 50 (α = 428)	-50° to +150°C	0.01°C	0.08% R + 0.06°C	0.08% R + 0.08°C	0.08% R + 0.11°C

Calculation Channels

FD5 is able to perform data calculations and store calculation results. (Data processing, statistics, conditioning, Boolean calculations).
Calculation channels can be used to condition outputs (relays, analog outputs).

Alarms

Each channel can be configured with 4 alarms levels for monitoring purpose. Alarms events are stored in a dedicated file (alarm file). Only allowed users can access to the file.

Scaling

Each channel can be scaled for sensor correction or to apply a special scale for 4-20mA or 0-10V sensors.

FD5 Additional Specifications	
Power Supply	12 to 28 V powered by main or external rechargeable battery.
Power	6 watts per hour without sensor power supply
Working Conditions	10° to 50°C (50°F to 122°F)
Storage Conditions	-40° to 80°C (-40°F to 176°F)
Internal RAM	FIFO or LIFO, 256 MB: >1,000,000 Data.
External RAM	SD Card, USB Drive
Communication	TCP/IP (RJ45 10/100) RE485 / RS232 / USB / WiFi (802.11g) using external access point
Case, Dimensions and Weight	ABS, L 8.32 x W 7.66 x H 2.24 in (L 211.5 x W 194.7 x H 57 mm) 1.76 lbs. (800 grams)

Specifications are subject to change without notice.

CE ONE YEAR 1 WARRANTY

Calibration Services Available