TECHNICAL DATA

Fluke 1586A Super-DAQ Precision Temperature Scanner



Key features

- Measure thermocouples, PRTs, thermistors, DC voltage, DC current, and resistance, with up to 40 isolated universal inputs.
- Precision measurements (PRTs ± 0.005 °C, thermocouples: ± 0.5 °C, thermistors: ± 0.002 °C).
- Scan up to 10 channels per second, great for high-speed applications.
- Four operation modes - Scan, Monitor, Measure, Digital Multimeter (DMM), and features real-time color trending for up to four channels.
- Records up to 20 MB of data and setup files to internal non-volatile memory or an external USB drive, with administrator and user profiles for data protection and test traceability.

Product overview: Fluke 1586A Super-DAQ Precision Temperature Scanner

1586A Super-DAQ Precision Temperature Scanner

The 1586A Super-DAQ collects time-stamped precision temperature and electrical measurements for data analysis by technicians, engineers, and quality control personnel to verify process control, analyze interactive systems, ensure conformance to quality standards, or to correlate related events for R&D or troubleshooting. Measurement data and statistics can be viewed in tabular format for all active channels. With the graphing feature, up to four channels can be

plotted at the same time, making it easy to quickly assess test setup and results before analyzing the data on a PC.

When configured with the DAQ-STAQ Multiplexer, the Super-DAQ has the accuracy of the best benchtop reference thermometer readouts for calibration of PRTs, RTDs, thermistors, or thermocouples. Lab efficiency can be increased when the Super-DAQ is connected to a Fluke Calibration drywell or bath and Automated Sensor Test routines are run.

The 1586 is ideal for a number of applications such as thermal mapping, temperature validation, process sensor calibration, and more. These applications are found in a various industries including pharmaceutical, biotechnology, food processing, aerospace, and automotive.

There are six key features that set the Super-DAQ apart from other products in its class:

1. Best temperature measurement accuracy
2. Flexible configuration for the factory or benchtop
3. Multiple modes of operation
4. Real-time graphing in color
5. Data portability and security
6. Automated sensor calibration

1. Best temperature measurement accuracy

The 1586A Super-DAQ reads PRTs, thermocouples, and thermistors with best-in-class accuracy:

- PRTs ±0.005 °C (using external DAQ-STAQ Multiplexer)
- Thermocouples: ±0.5 °C (using High-Capacity Module and internal CJC)
- Thermistors: ±0.002 °C

2. Flexible configuration for the factory or benchtop

For factory applications, the Super-DAQ is configured with the internal High-Capacity Module. Connecting thermocouples or RTDs to input terminals can be time consuming—especially if you're using many sensors of the same type for one job, and then switching to a different sensor type for another job. The internal High-Capacity Module allows you to pre-configure multiple input modules and simply exchange one module for another, depending on your test requirements. Recall a stored test setup to make the changeover even faster. And if you prefer, you can always measure a variety of different input types at the same time in a single High-Capacity Module, including thermocouples, RTDs, voltage, resistance, or current.

For a calibration lab where accuracy is of primary importance, the Super-DAQ is best configured with a DAQ-STAQ Multiplexer. The external DAQ-STAQ features mini-jack thermocouple terminals—each with its own reference junction sensor—and patented mini-DWF, gold-plated input terminals, which accept bare wire, spade lug, or mini-banana-plug terminations. Easily connect and disconnect PRTs, thermistors, and thermocouples for benchtop temperature calibration. It can be stacked on the 1586 to reduce footprint in busy labs. Flexibility to configure the Super-DAQ for factory or calibration lab use reduces your equipment needs and cost.

3. Multiple modes of operation

The Super-DAQ can operate in four modes that let you scan, monitor, measure, or function as a digital multimeter from a single instrument. Sequentially scan through channels based on a user defined test. Monitor any single channel during a scan, without interrupting the scan. Measure and record data on a single channel without the need of a pre-configured test file. Or in DMM mode, use the front panel channel like a familiar benchtop digital multimeter to quickly measure dc voltage, dc current, or 2-wire and 4-wire resistance without the need to configure the channel.

4. Real-time graphing in color

Most data acquisition systems only let you view data on one channel. But now the Super-DAQ, lets you view real time data for all channels in table format, or you can chart up to four channels in color at the same time. You can zoom in or out to see data of interest and monitor trends. A history mode lets you scroll through collected data within a scan file—all without a PC and expensive charting programs. Switch between chart view and table view of various measurement data and statistics

5. Data portability and security

The Super-DAQ includes 20 MB internal memory that can store over 75,000 time-stamped readings. Data and set-up files can be easily moved to a PC for analysis using a USB flash drive or over a network using the LAN interface connection. The Super-DAQ also includes two levels of data security to prevent unauthorized users from tampering with or forging test data or setup files. This security feature is especially important to industries that are regulated by government agencies where data traceability is required.

6. Automated sensor calibration

With the Automated Test feature, you can automate sensor calibration without a PC and software. When connected to a Fluke Calibration drywell or fluid bath via the RS-232 interface, the Super-DAQ takes control of the temperature source and runs your calibration automatically. You simply program the number of setpoint temperatures and their values, select a scan sequence (linear, alternate, up/down), assign a reference channel, and set the required stability band. The Super-DAQ monitors the temperature source's stability via the reference channel, collects the data once stabilized, and then advances to the next setpoint temperature. After you configure and start the test, you can walk away to work on other things. The Super-DAQ just made your day a whole lot easier.

Specifications: Fluke 1586A Super-DAQ Precision Temperature Scanner

General Specifications	
Mains Voltage	100 V Seing: 90 V to 110 V 120 V Seing: 108 V to 132 V 220 V Seing: 198 V to 242 V 240 V Seing: 216 V to 264 V
Frequency	47 Hz to 440 Hz
Power Consumption	36 VA peak (24 W average)
Environment Temperature	Operating: 0 °C to 50 °C Full accuracy: 18 °C to 28 °C Storage: −20 °C to 70 °C Warm-up: 1 hour to full accuracy specifications
Relative Humidity (non-condensing)	Operating: 0 °C to 30 °C <80 %; 30 °C to 50 °C <50 % Storage: −20 °C to 70 °C <95 %
Altitude	Operating: 2,000 m Storage: 12,000 m
Vibration and Shock	Complies with MIL-PRF-28800F Class 3

Channel Capacity	Total analog channels: 45 Voltage/resistance channels: 41 Current channels: 5 Digital I/O: 8 bits Totalizer: 1 Alarm outputs: 6 Trigger input: 1
Channel Input Connector Types	1586A Channel 001 (front panel): gold pins, bare wire, spade lugs, banana plugs DAQ-STAQ Multiplexer: gold pins, bare wire, mini spade lugs, mini banana plugs, mini-jack thermocouple High-Capacity Module: gold pins, bare wire
Input Protection	50 V all functions, terminals and ranges
Math Channels	Number of channels: 20 Operations: sum, difference, multiply, divide, polynomial, power, square root, reciprocal, exponential, logarithm, absolute value, average, maximum, minimum
Triggers	interval, exteal (trigger input), alarm, remote (bus), manual, automated test
Memory	Scan data RAM: 75,000 readings with timestamp Data/Setup flash memory: 20 MB
USB Host Port	Connector type: Type A Function: Memory File system: FAT32 Memory capacity: 32 GB
USB Device Port	Connector type: Type B Class: Instrument Function: Cool and data transfer Command protocol: SCPI
LAN	Function: Cool and data transfer Network protocols: Etheet 10/100, TCP/IP Command protocol: SCPI
RS-232	Connector: D-sub 9 pin (DE-9) Baud rates: 1200, 2400, 4800, 9600, 19200, 38400 Function: Temperature source cool output
Dimensions	Height: 150 mm Width: 245 mm Depth: 385 mm Weight: 6 kg (typical configuration) Shipping Weight: 9.5 kg (typical configuration)
Conformity	CE, CSA, IEC 61010 3rd ed.
Measurement Specifications	
Accuracy specifications generally apply with medium and slow sample rates (unless otherwise noted), after a warm-up time of 1 hour, and within an environment temperature range of 18 °C to 28 °C, and may depend on the channel. The confidence level for accuracy specifications is 95 % within 1 year of calibration.	
Scan rate	Fast: 10 channels per second max (0.1 seconds per channel) Medium: 1 channel per second (1 second per channel) Slow: 4 seconds per channel
Display Resolution	6 1/2 digits (see Measurement Characteristics tables below to find the display resolution of temperature readings)
PRT/RTD	
Temperature Range	−200 °C to 1200 °C (depending on the sensor)

Resistance Range	0 Ω to 4 kΩ
Offset Compensation	0 Ω to 400 Ω, 4-wire: automatic current reversal 400 Ω to 4000 Ω or 3-wire: none
Source Current Reversal Interval (0 Ω to 400 Ω range)	Fast sample rate: 2 ms Medium sample rate: 250 ms Slow sample rate: 250 ms
Maximum Lead Resistance (4-wire Ω)	2.5 % of range per lead for 400 Ω and 4 kΩ ranges

PRT/RTD Resistance Accuracy

Accuracy is given as % of measurement or ohms, whichever is greater. Basic accuracy is for 4-wire PRT/RTD. When using 3-wire PRT/RTD add 0.013 Ω to the accuracy specification for inteal resistance mismatch and voltage offset if using Channel 1, or add 0.05 Ω if using channels x01 through x20. If the environment temperature is outside the specified range, multiply the temperature coefficient numbers by the temperature deviation and add to the accuracy specification.

Range	Sample Rate	DAQ-STAQ Module and Channel 1	High-Capacity Module	T.C./ °C Outside 18 °C to 28 °C
0 Ω to 400 Ω	Slow	0.002 % or 0.0008 Ω	0.003 % or 0.003 Ω	0.0001 % or 0.0008 Ω
	Medium	0.002 % or 0.002 Ω	0.003 % or 0.003 Ω	0.0001 % or 0.0008 Ω
	Fast	0.002 % or 0.005 Ω	0.003 % or 0.006 Ω	0.0001 % or 0.0008 Ω
400 Ω to 4 kΩ	Slow	0.004 % or 0.06 Ω	0.006 % or 0.06 Ω	0.0001 % or 0.008 Ω
	Medium	0.004 % or 0.1 Ω	0.006 % or 0.1 Ω	0.0001 % or 0.008 Ω
	Fast	0.004 % or 0.18 Ω	0.006 % or 0.18 Ω	0.0001 % or 0.008 Ω

PRT/RTD Temperature Accuracy

Accuracy is for 4-wire 100 Ω nominal PRT/RTD. When using 3-wire PRT/RTD add 0.039 °C to the accuracy specification for inteal resistance mismatch and voltage offset if using Channel 1, or add 0.15 °C if using channels x01 through x20. If the environment temperature is outside the specified range, multiply the temperature coefficient number by the temperature deviation and add to the accuracy specification. Linear interpolation may be used between points in the table. Specifications do not include sensor accuracy. The practical range of temperature measurement depends on the sensor and characterization.

Sample Rate	Temperature	DAQ-STAQ Module and Channel 1	High-Capacity Module	T.C./ °C Outside 18 °C to 28 °C
Slow	−200 °C	0.002 °C	0.008 °C	0.002 °C
	0 °C	0.005 °C	0.008 °C	0.003 °C
	300 °C	0.012 °C	0.018 °C	0.006 °C
	600 °C	0.02 °C	0.03 °C	0.01 °C
Medium	−200 °C	0.005 °C	0.008 °C	0.002 °C
	0 °C	0.005 °C	0.008 °C	0.003 °C
	300 °C	0.012 °C	0.018 °C	0.006 °C
	600 °C	0.02 °C	0.03 °C	0.01 °C

Fast	−200 °C	0.013 °C	0.015 °C	0.002 °C
	0 °C	0.013 °C	0.015 °C	0.003 °C
	300 °C	0.014 °C	0.018 °C	0.006 °C
	600 °C	0.02 °C	0.03 °C	0.01 °C

PRT/RTD Measurement Characteristics

	Temperature Display Resolution		
Range	Slow / Medium Sample Rate	Fast Sample Rate	Source Current
0 Ω to 400 Ω	0.001 °C	0.01 °C	±1 mA
400 Ω to 4 kΩ	0.001 °C	0.01 °C	0.1 mA

Thermistor

Temperature Range	−200 °C to 400 °C (depending on the sensor)
Resistance Range	0 Ω to 1 MΩ

Thermistor Resistance Accuracy

Accuracy is given as ± (% of measurement + Ω). The basic accuracy specification is for 4-wire thermistor, slow sample rate. When using medium or fast sample rate, add the number given in the table to the accuracy specification. If the environment temperature is outside the specified range, multiply the temperature coefficient numbers by the temperature deviation and add to the accuracy specification. For 2-wire thermistor add 0.02 Ω inteal resistance if using Channel 1 or
1.5 Ω if using channels x01 through x20, and add exteal lead wire resistance.

Range	Slow Sample Rate	Medium Sample Rate Rate	Fast Sample Rate	T.C./ °C Outside18 °C to 28 °C
0 Ω to 2.2 kΩ	0.004 % + 0.2 Ω	add 0.3 Ω	add 1 Ω	0.0005 % + 0.05 Ω
2.1 kΩ to 98 kΩ	0.004 % + 0.5 Ω	add 0.5 Ω	add 1.3 Ω	0.0005 % + 0.1 Ω
95 kΩ to 1 MΩ	0.015 % + 5 Ω	add 5 Ω	add 13 Ω	0.001 % + 2 Ω

Thermistor Temperature Accuracy

Accuracy specifications are for 4-wire thermistor. When using 2-wire thermistor, add the number given in the table to the specification for inteal resistance. If the environment temperature is outside the specified range, increase the accuracy specification by 25 % for every 1 °C outside the specified environment temperature range. Specifications do not include sensor accuracy. The practical range of temperature measurement depends on the sensor.

Accuracy 2.2 kΩ Thermistor

Temperature	SlowSample Rate	MediumSample Rate	FastSample Rate	2-wire
−40 °C	0.001 °C	0.001 °C	0.01 °C	add 0.001 °C
0 °C	0.003 °C	0.004 °C	0.01 °C	add 0.004 °C
25 °C	0.006 °C	0.011 °C	0.02 °C	add 0.016 °C
50 °C	0.008 °C	0.018 °C	0.04 °C	add 0.05 °C
100 °C	0.047 °C	0.114 °C	0.28 °C	add 0.34 °C
150 °C	0.23 °C	0.56 °C	1.34 °C	add 1.7 °C

Accuracy 5 kΩ Thermistor

Temperature	Slow Sample Rate	Medium Sample Rate	Fast Sample Rate	2-wire

−40 °C	0.003 °C	0.004 °C	0.01 °C	add 0.001 °C
0 °C	0.002 °C	0.002 °C	0.01 °C	add 0.002 °C
25 °C	0.004 °C	0.006 °C	0.01 °C	add 0.007 °C
50 °C	0.005 °C	0.009 °C	0.02 °C	add 0.022 °C
100 °C	0.022 °C	0.052 °C	0.13 °C	add 0.16 °C
150 °C	0.096 °C	0.24 °C	0.57 °C	add 0.7 °C

Accuracy 10 kΩ Thermistor

Temperature	Slow Sample Rate	Medium Sample Rate	Fast Sample Rate	2-wire
−40 °C	0.003 °C	0.004 °C	0.01 °C	add 0.001 °C
0 °C	0.002 °C	0.002 °C	0.01 °C	add 0.002 °C
25 °C	0.003 °C	0.004 °C	0.01 °C	add 0.004 °C
50 °C	0.005 °C	0.009 °C	0.02 °C	add 0.011 °C
100 °C	0.011 °C	0.024 °C	0.06 °C	add 0.067 °C
150 °C	0.04 °C	0.098 °C	0.24 °C	add 0.29 °C

Thermistor Measurement Characteristics

	Temperature Display Resolution		
Range	Slow / Medium Sample Rate	Fast Sample Rate	Source Current
0 Ω to 2.2 Ω	0.0001 °C	0.001 °C	10 µA
2.1 Ω to 98 Ω	0.0001 °C	0.001 °C	10 µA
95 Ω to 1 MΩ	0.0001 °C	0.001 °C	1 µA

Thermocouple

Temperature Range	−270 °C to 2315 °C (depending on the sensor)
Voltage Range	−15 mV to 100 mV

Thermocouple Voltage Accuracy

Accuracy is given as ± (|% of measurement| + µV). Basic accuracy specification is for medium or slow sample rate. When using a fast sample rate add the number given in the table to the accuracy specification. If the environment temperature is outside the specified range, multiply the temperature coefficient numbers by the temperature deviation and add to the accuracy specification.

Range	Accuracy Channel 1	Ch. x01 – x20	Fast Sample Rate	T.C./ °C Outside 18 °C to 28 °C
−15 mV to 100 mV	0.004 % + 4 µV	add 2 µV	add 1 µV	0.0005 % + 0.0005 mV

Thermocouple Reference Junction Accuracy

Module	CJC Accuracy	T.C./ °C Outside 18 °C to 28 °C
DAQ-STAQ Module	0.25 °C	0.02 °C
High-Capacity Module	0.6 °C	0.05 °C

Thermocouple Temperature Accuracy

Accuracy specifications apply using medium or slow sample rate. When using fast sample rate, increase the accuracy specification by 25 %. If the environment temperature is outside the specified range, increase the accuracy specification by 12 % for every 1 °C outside the specified environment temperature range. Accuracy with fixed/exteal CJC does not include the accuracy of the reference junction temperature. Linear interpolation may be used between points in the table. Specifications do not include sensor accuracy. The practical range of temperature measurement depends on the sensor.

Type (Range)	Temperature	Accuracy			
		Fixed / Exteal CJC		Inteal CJC	
		Channel 1	Ch. x01 – x20	DAQ-STAQ Module	High-Capacity Module
K −270 °C to 1372 °C	−200 °C 0 °C 1000 °C	0.28 °C 0.10 °C 0.14 °C	0.41 °C 0.15 °C 0.20 °C	0.76 °C 0.29 °C 0.32 °C	1.60 °C 0.62 °C 0.64 °C
T −270 °C to 400 °C	−200 °C 0 °C 200 °C 400 °C	0.27 °C 0.10 °C 0.08 °C 0.08 °C	0.40 °C 0.15 °C 0.12 °C 0.11 °C	0.76 °C 0.30 °C 0.23 °C 0.20 °C	1.60 °C 0.65 °C 0.47 °C 0.41 °C
R −50 °C to 1768 °C	0 °C 300 °C 1200 °C 1600 °C	0.76 °C 0.42 °C 0.33 °C 0.34 °C	1.13 °C 0.63 °C 0.47 °C 0.49 °C	1.16 °C 0.64 °C 0.48 °C 0.50 °C	1.28 °C 0.71 °C 0.52 °C 0.54 °C
S −50 °C to 1768 °C	0 °C 300 °C 1200 °C 1600 °C	0.74 °C 0.45 °C 0.37 °C 0.39 °C	1.11 °C 0.67 °C 0.54 °C 0.56 °C	1.14 °C 0.68 °C 0.55 °C 0.57 °C	1.26 °C 0.76 °C 0.60 °C 0.63 °C
J −210 °C to 1200 °C	−200 °C 0 °C 1000 °C	0.20 °C 0.08 °C 0.11 °C	0.29 °C 0.12 °C 0.14 °C	0.65 °C 0.28 °C 0.25 °C	1.41 °C 0.61 °C 0.53 °C
N −270 °C to 1300 °C	−200 °C 0 °C 500 °C 1000 °C	0.42 °C 0.15 °C 0.12 °C 0.14 °C	0.62 °C 0.23 °C 0.17 °C 0.19 °C	0.90 °C 0.34 °C 0.24 °C 0.26 °C	1.69 °C 0.64 °C 0.44 °C 0.45 °C
E −270 °C to 1000 °C	−200 °C 0 °C 300 °C 700 °C	0.17 °C 0.07 °C 0.06 °C 0.08 °C	0.25 °C 0.10 °C 0.09 °C 0.10 °C	0.64 °C 0.27 °C 0.21 °C 0.21 °C	1.42 °C 0.61 °C 0.46 °C 0.45 °C
B 100 °C to 1820 °C	300 °C 600 °C 1200 °C 1600 °C	1.32 °C 0.68 °C 0.41 °C 0.38 °C	1.97 °C 1.02 °C 0.60 °C 0.55 °C	1.97 °C 1.02 °C 0.60 °C 0.55 °C	1.97 °C 1.02 °C 0.60 °C 0.55 °C
C 0 °C to 2315 °C	600 °C 1200 °C 2000 °C	0.23 °C 0.28 °C 0.44 °C	0.33 °C 0.40 °C 0.60 °C	0.37 °C 0.45 °C 0.66 °C	0.54 °C 0.63 °C 0.91 °C
D 0 °C to 2315 °C	600 °C 1200 °C 2000 °C	0.22 °C 0.26 °C 0.39 °C	0.32 °C 0.36 °C 0.53 °C	0.34 °C 0.39 °C 0.56 °C	0.44 °C 0.49 °C 0.69 °C
G 0 °C to 2315 °C	600 °C 1200 °C 2000 °C	0.24 °C 0.22 °C 0.33 °C	0.36 °C 0.32 °C 0.46 °C	0.36 °C 0.32 °C 0.46 °C	0.36 °C 0.33 °C 0.46 °C

L −200 °C to 900 °C	−200 °C 0 °C 800 °C	0.13 °C 0.08 °C 0.09 °C	0.19 °C 0.12 °C 0.12 °C	0.45 °C 0.28 °C 0.23 °C	0.99 °C 0.62 °C 0.48 °C
M −50 °C to 1410 °C	0 °C 500 °C 1000 °C	0.11 °C 0.10 °C 0.10 °C	0.16 °C 0.15 °C 0.14 °C	0.30 °C 0.25 °C 0.21 °C	0.64 °C 0.51 °C 0.41 °C
U −200 °C to 600 °C	−200 °C 0 °C 400 °C	0.25 °C 0.10 °C 0.08 °C	0.37 °C 0.15 °C 0.11 °C	0.71 °C 0.30 °C 0.20 °C	1.48 °C 0.63 °C 0.40 °C
W 0 °C to 2315 °C	600 °C 1200 °C 2000 °C	0.24 °C 0.22 °C 0.33 °C	0.36 °C 0.32 °C 0.46 °C	0.36 °C 0.32 °C 0.46 °C	0.36 °C 0.33 °C 0.46 °C

Thermocouple Measurement Characteristics		
Range	Temperature Display Resolution	
	Slow / Medium Sample Rate	Fast Sample Rate
−270 °C to 2315 °C	0.01 °C	0.1 °C

DC Voltage	
Maximum Input	50 V on any range
Common Mode Rejection	140 dB at 50 Hz or 60 Hz (1 kΩ unbalance in LOW lead) ±50 V peak maximum
Normal Mode Rejection	55 dB for power line frequency ±0.1 %, ±120 % of range peak maximum
A/D Linearity	2 ppm of measurement + 1 ppm of range
Input Bias Current	30 pA at 25 °C

DC Voltage Accuracy

Accuracy is given as ± (% measurement + % of range). Basic accuracy specification is for Channel 1, medium or slow sample rate. For channels x01 through x20 or when using Fast sample rate, add the numbers given in the table to the accuracy specification. If the environment temperature is outside the specified range, multiply the temperature coefficient numbers by the temperature deviation and add to the accuracy specification.

Range	Accuracy Channel 1	Ch. x01 – x20	Fast Sample Rate	T.C./ °C Outside 18 °C to 28 °C
±100 mV	0.0037 % + 0.0035 %	add 2 µ	add 0.0008 % of range	0.0005 % + 0.0005 %
±1 V	0.0025 % + 0.0007 %	add 2 µ	add 0.0008 % of range	0.0005 % + 0.0001 %
±10 V	0.0024 % + 0.0005 %	–	add 0.0008 % of range	0.0005 % + 0.0001 %
±50 V	0.0038 % + 0.0012 %	–	add 0.0008 % of range	0.0005 % + 0.0001 %

DC Voltage Input Characteristics			
	Resolution		Input Impedance
Range	Slow / Medium	Fast	
±100 mV	0.1 µ	1 µ	10 GΩ [1]
±1 V	1 µ	10 µ	10 GΩ [1]
±10 V	10 µ	100 µ	10 GΩ [1]

±50 V	100 µ	1 mV	10 MΩ ±1 %
[1] - Input beyond ±12 V is clamped. The clamp current is up to 3 mA.			

DC Current	
Input Protection	0.15 A reseable PTC

DC Current Accuracy

Accuracy is given as ± (% measurement + % of range). Basic accuracy specification is for medium or slow sample rate. When using a fast sample rate, add the number given in the table to the accuracy specification. If the environment temperature is outside the specified range, multiply the temperature coefficient numbers by the temperature deviation and add to the accuracy specification.

Range	Accuracy	Fast Sample Rate	T.C./ °C Outside 18 °C to 28 °C
±100 µA	0.015 % + 0.0035 %	add 0.0008 % of range	0.002 % + 0.001 %
±1 mA	0.015 % + 0.0011 %	add 0.0008 % of range	0.002 % + 0.001 %
±10 mA	0.015 % + 0.0035 %	add 0.0008 % of range	0.002 % + 0.001 %
±100 mA	0.015 % + 0.0035 %	add 0.0008 % of range	0.002 % + 0.001 %

DC Current Input Characteristics

	Resolution		
Range	Slow / Medium	Fast	Burden Voltage
±100 µA	0.1 nA	1 nA	<1 mV
±1 mA	1 nA	10 nA	<1 mV
±10 mA	10 nA	100 nA	<1 mV
±100 mA	100 nA	1 µA	<1 mV

Resistance	
Max. Lead Resistance (4-wire ohms)	10 Ω per lead for 100 Ω and 1 kΩ ranges. 1 kΩ per lead on all other ranges.

Resistance Accuracy

Accuracy is given as ± (% measurement + % of range). Basic accuracy specification is for 4-wire resistance, medium or slow sample rate. For 2-wire resistance add 0.02 Ω inteal resistance if using Channel 1, or 1.5 Ω if using channels x01 through x20, and add exteal lead wire resistance. When using Fast sample rate, add the numbers given in the table to the accuracy specification. If the environment temperature is outside the specified range, multiply the Temperature Coefficient numbers by the temperature deviation and add to the accuracy specification

Range	Accuracy	Fast Sample Rate	T.C./ °C Outside 18 °C to 28 °C
100 Ω	0.004 % + 0.0035 %	add 0.001 % of range[1]	0.0001 % + 0.0005 %
1 kΩ	0.003 % + 0.001 %	add 0.001 % of range[2]	0.0001 % + 0.0001 %
10 kΩ	0.004 % + 0.001 %	add 0.001 % of range	0.0001 % + 0.0001 %
100 kΩ	0.004 % + 0.001 %	add 0.001 % of range	0.0001 % + 0.0001 %
1 MΩ	0.004 % + 0.001 %	add 0.006 % of reading plus 0.0008 % of range	0.0005 % + 0.0002 %

10 MΩ	0.015 % + 0.001 %	add 0.2 % of reading plus 0.0008 % of range	0.001 % + 0.0004 %
100 MΩ	0.8 % + 0.01 %	add 0.01 % of range	0.05 % + 0.002 %

Notes:
For conducted disturbances on mains input >1 V from 10 MHz to 40 MHz, add 0.6 % of range. For disturbances >3 V, accuracy is unspecified.

[1] 0.15 % of range for 2-wire
[2] 0.015 % of range for 2-wire

Resistance Input Characteristics

Range	Resolution Slow / Medium	Fast	Source Current (open-circuit voltage)
100 Ω	0.1 mΩ	1 mΩ	1 mA (4 V)
1 kΩ	1 mΩ	10 mΩ	1 mA (4 V)
10 kΩ	10 mΩ	100 mΩ	100 µA (6 V)
100 kΩ	100 mΩ	1 Ω	100 µA (12 V)
1 MΩ	1 Ω	10 Ω	10 µA (12 V)
10 MΩ	10 Ω	100 Ω	1 µA (12 V)
100 MΩ	100 Ω	1 kΩ	0.1 µA (12 V)

Digital I/O

Absolute Voltage Range	–4 V to 30 V
Input Minimum Logic High	2.0 V
Input Maximum Logic Low	0.7 V
Output Type	open drain active low
Output Logic Low (<1 mA)	0 V to 0.7 V
Maximum Sink Current	50 mA
Output Resistance	47 Ω

Totalizer

Absolute Voltage Range	–4 V to 30 V
Minimum Logic High	2.0 V
Maximum Logic Low	0.7 V
Minimum Pulse Width	50 µs
Maximum Frequency	10 kHz
Debounce Time	1.7 ms
Maximum Count	1048575 (20 bits)

Trigger

Absolute Voltage Range	–4 V to 30 V
Minimum Logic High	2.0 V

Maximum Logic Low	0.7 V
Minimum Pulse Width	50 µs
Maximum Latency	100 ms
Alarm Output	
Absolute Voltage Range	–4 V to 30 V
Output Type	open drain active low
Output Logic Low (<1 mA)	0 V to 0.7 V
Maximum Sink Current	50 mA
Output Resistance	47 Ω
1586-2588 DAQ-STAQ Input Module Specifications	
Maximum Input	50 V
Offset Voltage	<2 µV
3-Wire Inteal Resistance Mismatch	<50 mΩ
Basic CJC Accuracy	0.25 °C
1586-2586 High-Capacity Input Module Specifications	
Maximum Input	50 V
Offset Voltage	<2 µV
3-Wire Inteal Resistance Mismatch	<50 mΩ
Basic CJC Accuracy	0.6 °C

Ordering information



1586A/1DS
1586A/1DS Super-DAQ Precision Temperature Scanner
1 DAQ-STAQ Multiplexer

1586A/1DS/C
Super-DAQ Precision Temperature Scanner, 1 DAQ-STAQ Multiplexer, Accredited Calibration

1586A/2DS
Super-DAQ Precision Temperature Scanner, 2 DAQ-STAQ Multiplexers

1586A/2DS/C
Super-DAQ Precision Temperature Scanner, 2 DAQ-STAQ Multiplexers, Accredited Calibration

1586A/DS-HC
Super-DAQ Precision Temperature Scanner, 1 High-Capacity Module, 1 DAQ-STAQ Multiplexer

1586A/DSHC/C
Super-DAQ Precision Temperature Scanner, 1 High-Capacity Module, 1 DAQ-STAQ Multiplexer, Accredited Calibration

1586A/1HC

Super-DAQ Precision Temperature Scanner, 1 High-Capacity Module

1586A/1HC/C
Super-DAQ Precision Temperature Scanner, 1 HIgh-Capacity Module, Accredited Calibration

1586A/2HC
Super-DAQ Precision Temperature Scanner, 2 High-Capacity Modules

1586A/2HC/C
Super-DAQ Precision Temperature Scanner, 2 High-Capacity Modules, Accredited Calibration

2680A-APSW v6.0
Fluke DAQ 6.0 Application Software for Fluke data acquisition products.

TQSOFT-IQ/OQ
TQSoft Pharma Process Analysis and Validation Software

TQAERO
TQAero Furnace Validation Software

VAL-BNDR-TQS
Validation Reference Binder

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