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FLUKE®

Calibration

1586A Super-DAQ Precision Temperature Scanner

Extended Specifications



The 1586A Super-DAQ is the most accurate and flexible temperature data acquisition system on the market. It scans and records temperature, dc voltage, dc current, and resistance for up to 40 input channels and scan speeds as fast as 10 channels per second. The Super-DAQ can be configured for use as a multi-channel data logger in the factory or as a precision reference thermometer for benchtop sensor calibration in the lab.

- Measure thermocouples, PRTs, thermistors, dc voltage, dc current, and resistance
- Best-in-class temperature measurement accuracy:
 - PRTs: $\pm 0.005\text{ }^{\circ}\text{C}$ (using external DAQ-STAQ Multiplexer)
 - Thermocouples: $\pm 0.5\text{ }^{\circ}\text{C}$ (using High-Capacity Module and internal CJC)
 - Thermistors: $\pm 0.002\text{ }^{\circ}\text{C}$
- Input Channels: Up to 40 isolated universal inputs
- Flexible configuration: Internal High-Capacity Module and/or DAQ-STAQ Multiplexer
- Selectable scan speed: Up to 10 channels per second
- Four modes of operation: Scan, Monitor, Measure, Digital Multimeter (DMM)
- Real-time color trending: Chart up to four channels simultaneously
- Automated sensor calibration: Control Fluke Calibration temperature sources such as dry-wells or micro-baths for automated calibration routines
- Data storage: Records up to 20 MB of data and setup files to internal non-volatile memory or to an external USB drive. Transfer data to a PC using the USB drive or LAN connection and view data in Microsoft® Excel
- Data security: Administrator and user profiles for protecting settings and ensuring test traceability
- Mx + B scaling and channel offset zero function
- Alarms: Two independent, user-defined alarms for each channel indicate when an upper or lower range has been exceeded

1586A Super-DAQ at a glance

Color display with channel status indicators. Chart up to 4 channels simultaneously.

Five-way binding post for reference thermometers. Also measures dc voltage, dc current, and resistance.

USB support for easy transfer of data and setup files.

Navigation keys for fast selection of information.

Front panel



Back lit main function keys—always know the mode of operation and recording status.

Memory management—for downloading and moving data and setup files.

Measure/DMM function for quick measurements and recording with minimal setup.

Function soft keys support fast setup and operation.

Standby key turns the display and keypad off—eliminates warm-up time.

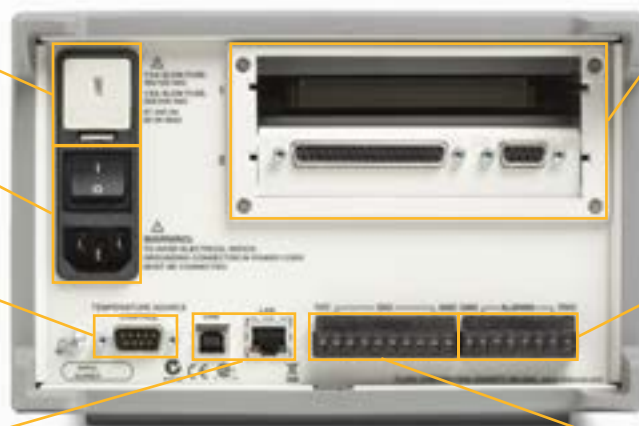
Back panel

Line voltage and fuse selector.

Power switch and line cord connector.

Dedicated connector for control of Fluke Calibration dry-wells or temperature baths for automated tests.

USB and Ethernet ports used for remote operation.



Two rear panel slots can be configured for the internal High-Capacity Module or the external DAQ-STAQ Multiplexer—or one of each.

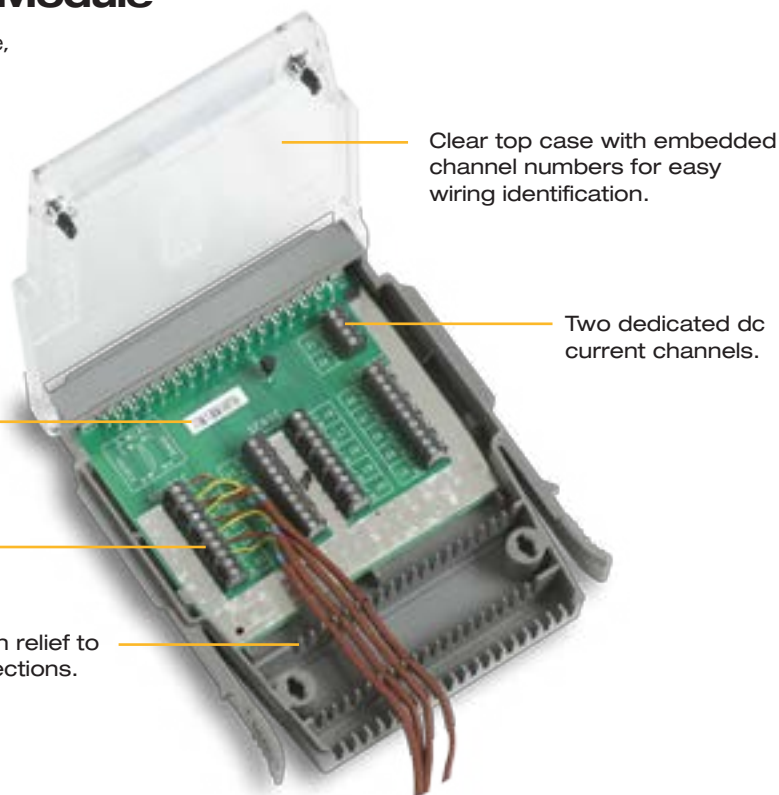
Digital external alarm trigger outputs.

Totalizer and Digital I/O input ports.

1586A modules at a glance

1586-2586 High-Capacity Module

Universal input channels designed to measure temperature, resistance, dc voltage, and dc current for data acquisition applications on the factory floor where channel count and scan speed are important.



Clear top case with embedded channel numbers for easy wiring identification.

Two dedicated dc current channels.

Electronic ID with serial number and calibration date reports to the 1586A Super-DAQ.

Twenty 2-wire or ten 3-, or 4-wire connections.

Built-in cable strain relief to help secure connections.

1586-2588 DAQ-STAQ Multiplexer

Designed for high-accuracy measurements in secondary temperature calibration labs. Easily connect/disconnect thermocouples, PRTs, and thermistors.

Twenty mini-jack thermocouple inputs and up to ten four-wire, gold-plated PRT/thermistor connectors.



1586A Super-DAQ general specifications

General		
Maximum input		50 V
Offset voltage		<2 μ V
3-wire internal resistance mismatch		<50 m Ω
Basic CJC accuracy		0.25 °C

Mains Voltage	100 V Setting	90 V to 110 V
	120 V Setting	108 V to 132 V
	220 V Setting	198 V to 242 V
	240 V Setting	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
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, external (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	Control and data transfer
	Command protocol	SCPI

LAN	Function	Control and data transfer
	Network protocols	Ethernet 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 control 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 edition	

1586-2586 High-Capacity Module specifications

General	
Maximum input	50 V
Offset voltage	<2 μ V
3-wire internal resistance mismatch	<50 m Ω
Basic CJC accuracy	0.6 °C

1586-2588 DAQ-STAQ Multiplexer specifications

General	
Maximum input	50 V
Offset voltage	<2 μ V
3-wire internal resistance mismatch	<50 m Ω
Basic CJC accuracy	0.25 °C

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 one 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	4 ½ to 6 ½ digits, depending on function and Sample Rate (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 internal 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 Multiplexer 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 k Ω	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 $^{\circ}\text{C}$ to the accuracy specification for internal resistance mismatch and voltage offset if using Channel 1, or add 0.15 $^{\circ}\text{C}$ 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 Multiplexer and Channel 1	High-Capacity Module	T.C./ °C Outside 18 °C to 28 °C
Slow	-200 $^{\circ}\text{C}$	0.002 $^{\circ}\text{C}$	0.008 $^{\circ}\text{C}$	0.002 $^{\circ}\text{C}$
	0 $^{\circ}\text{C}$	0.005 $^{\circ}\text{C}$	0.008 $^{\circ}\text{C}$	0.003 $^{\circ}\text{C}$
	300 $^{\circ}\text{C}$	0.012 $^{\circ}\text{C}$	0.018 $^{\circ}\text{C}$	0.006 $^{\circ}\text{C}$
	600 $^{\circ}\text{C}$	0.02 $^{\circ}\text{C}$	0.03 $^{\circ}\text{C}$	0.01 $^{\circ}\text{C}$
Medium	-200 $^{\circ}\text{C}$	0.005 $^{\circ}\text{C}$	0.008 $^{\circ}\text{C}$	0.002 $^{\circ}\text{C}$
	0 $^{\circ}\text{C}$	0.005 $^{\circ}\text{C}$	0.008 $^{\circ}\text{C}$	0.003 $^{\circ}\text{C}$
	300 $^{\circ}\text{C}$	0.012 $^{\circ}\text{C}$	0.018 $^{\circ}\text{C}$	0.006 $^{\circ}\text{C}$
	600 $^{\circ}\text{C}$	0.02 $^{\circ}\text{C}$	0.03 $^{\circ}\text{C}$	0.01 $^{\circ}\text{C}$
Fast	-200 $^{\circ}\text{C}$	0.013 $^{\circ}\text{C}$	0.015 $^{\circ}\text{C}$	0.002 $^{\circ}\text{C}$
	0 $^{\circ}\text{C}$	0.013 $^{\circ}\text{C}$	0.015 $^{\circ}\text{C}$	0.003 $^{\circ}\text{C}$
	300 $^{\circ}\text{C}$	0.014 $^{\circ}\text{C}$	0.018 $^{\circ}\text{C}$	0.006 $^{\circ}\text{C}$
	600 $^{\circ}\text{C}$	0.02 $^{\circ}\text{C}$	0.03 $^{\circ}\text{C}$	0.01 $^{\circ}\text{C}$

PRT/RTD measurement characteristics

Range	Temperature Display Resolution		Source Current
	Slow / Medium Sample Rate	Fast Sample Rate	
0 Ω to 400 Ω	0.001 $^{\circ}\text{C}$	0.01 $^{\circ}\text{C}$	± 1 mA
400 Ω to 4 k Ω	0.001 $^{\circ}\text{C}$	0.01 $^{\circ}\text{C}$	0.1 mA

Thermistor	
Temperature range	-200 $^{\circ}\text{C}$ to 400 $^{\circ}\text{C}$ (depending on the sensor)
Resistance range	0 Ω to 1 M Ω

Thermistor resistance accuracy

Accuracy is given as $\pm$ (% 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 internal resistance if using Channel 1 or 1.5 Ω if using channels x01 through x20, and add external lead wire resistance.

Range	Slow Sample Rate	Medium Sample Rate	Fast Sample Rate	T.C./ °C Outside 18 °C to 28 °C
0 Ω to 2.2 k Ω	0.004 % + 0.2 Ω	add 0.3 Ω	add 1 Ω	0.0005 % + 0.05 Ω
2.1 k Ω to 98 k Ω	0.004 % + 0.5 Ω	add 0.5 Ω	add 1.3 Ω	0.0005 % + 0.1 Ω
95 k Ω to 1 M Ω	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 internal 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.

Range	Accuracy 2.2 k Ω Thermistor			
	Slow Sample Rate	Medium Sample Rate	Fast Sample 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

Range	Accuracy 5 k Ω Thermistor			
	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

Range	Accuracy 10 k Ω Thermistor			
	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

Range	Temperature Display Resolution		Source Current
	Slow / Medium Sample Rate	Fast Sample Rate	
0 Ω to 2.2 k Ω	0.0001 $^{\circ}\text{C}$	0.001 $^{\circ}\text{C}$	10 μA
2.1 k Ω to 98 k Ω	0.0001 $^{\circ}\text{C}$	0.001 $^{\circ}\text{C}$	10 μA
95 k Ω to 1 M Ω	0.0001 $^{\circ}\text{C}$	0.001 $^{\circ}\text{C}$	1 μA

Thermocouple	
Temperature range	–200 $^{\circ}\text{C}$ to 2315 $^{\circ}\text{C}$ (depending on the sensor)
Voltage range	–15 mV to 100 mV

Thermocouple voltage accuracy

Accuracy is given as $\pm$ (|% 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. $\times 01 - \times 20$	Fast Sample Rate	T.C./ $^{\circ}\text{C}$ Outside 18 $^{\circ}\text{C}$ to 28 $^{\circ}\text{C}$
–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./ $^{\circ}\text{C}$ Outside 18 $^{\circ}\text{C}$ to 28 $^{\circ}\text{C}$
DAQ-STAQ Multiplexer	0.25 $^{\circ}\text{C}$	0.02 $^{\circ}\text{C}$
High-Capacity Module	0.6 $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$

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/external 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 / External CJC		Internal CJC	
		Channel 1	Ch. $\times 01 - \times 20$	DAQ-STAQ Multiplexer	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 k Ω unbalance in LOW lead) $\pm$ 50 V peak maximum
Normal mode rejection	55 dB for power line frequency $\pm$ 0.1 %, $\pm$ 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 $\pm$ (% 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
$\pm$ 100 mV	0.0037 % + 0.0035 %	add 2 μ V	add 0.0008 % of range	0.0005 % + 0.0005 %
$\pm$ 1 V	0.0025 % + 0.0007 %	add 2 μ V	add 0.0008 % of range	0.0005 % + 0.0001 %
$\pm$ 10 V	0.0024 % + 0.0005 %	–	add 0.0008 % of range	0.0005 % + 0.0001 %
$\pm$ 50 V	0.0038 % + 0.0012 %	–	add 0.0008 % of range	0.0005 % + 0.0001 %

DC voltage input characteristics

Range	Resolution		Input Impedance
	Slow / Medium	Fast	
$\pm$ 100 mV	0.1 μ V	1 μ V	10 G Ω ¹
$\pm$ 1 V	1 μ V	10 μ V	10 G Ω ¹
$\pm$ 10 V	10 μ V	100 μ V	10 G Ω ¹
$\pm$ 50 V	100 μ V	1 mV	10 M Ω $\pm$ 1 %

¹ Input beyond $\pm$ 12 V is clamped. The clamp current is up to 3 mA.

DC current	
Input protection	0.15 A resettable PTC

DC current accuracy

Accuracy is given as $\pm$ (% 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.



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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

Range	Resolution		Burden Voltage
	Slow / Medium	Fast	
±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 internal resistance if using Channel 1, or 1.5 Ω if using channels x01 through x20, and add external 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	0.0001 % + 0.0005 %
1 kΩ	0.003 % + 0.001 %	add 0.001 % of range	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	0.006 % + 0.001 %	add 0.002 % of reading plus 0.0008 % of range	0.0005 % + 0.0002 %
10 MΩ	0.015 % + 0.001 %	add 0.002 % of reading plus 0.0008 % of range	0.001 % + 0.0004 %
100 MΩ	0.8 % + 0.01 %	add 0.001 % of range	0.05 % + 0.002 %

Resistance input characteristics

Range	Resolution		Source Current (open-circuit voltage)
	Slow / Medium	Fast	
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)

Ordering information

1586A Super-DAQ Precision Temperature Scanner

Super-DAQ and DAQ-STAQ Multiplexer

1586A/1DS	Super-DAQ, 1 DAQ-STAQ Multiplexer
1586A/1DS/C	Super-DAQ, 1 DAQ-STAQ Multiplexer, Accredited Calibration
1586A/2DS	Super-DAQ, 2 DAQ-STAQ Multiplexers
1586A/2DS/C	Super-DAQ, 2 DAQ-STAQ Multiplexers, Accredited Calibration

Super-DAQ and High-Capacity Module

1586A/1HC	Super-DAQ, 1 High-Capacity Module
1586A/1HC/C	Super-DAQ, 1 High-Capacity Module, Accredited Calibration
1586A/2HC	Super-DAQ, 2 High-Capacity Modules
1586A/2HC/C	Super-DAQ, 2 High-Capacity Modules, Accredited Calibration

Super-DAQ, High-Capacity Module, and DAQ-STAQ Multiplexer

1586A/DS-HC	Super-DAQ, 1 High-Capacity Module, 1 DAQ-STAQ Multiplexer
1586A/DSHC/C	Super-DAQ, 1 High-Capacity Module, 1 DAQ-STAQ Multiplexer, Accredited Calibration

Accessories

1586-2586	High-Capacity Module without Relay Card
1586-2586-KIT	High-Capacity Module with Relay Card
1586-2588	DAQ-STAQ Multiplexer without Adapter Card
1586-2588-KIT	DAQ-STAQ Multiplexer, Adapter Card, Interface Cable
1586-2588-CBL	DAQ-STAQ Multiplexer Interface Cable
Y1586S	Rack Mount Kit, Single (half rack)
Y1586D	Rack Mount Kit, Dual (full rack)
1586-CASE	Super-DAQ Carrying Case (mainframe and internal modules)
1586/DS-CASE	Super-DAQ/DAQ-STAQ Carrying Case (mainframe and external module)


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Electrical	RF	Temperature	Pressure	Flow	Software
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Printed in U.S.A. 9/2013 6000790B_EN
Pub-ID 12118-eng

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