FLUKE.

New!

Look inside for:

Loop Calibrators

Pressure Calibrators

Temperature Calibrators

Multifunction Process Calibrators

Intrinsically Safe Calibrators

Documenting Process Calibrators

ProcessMeter Calibration Tools

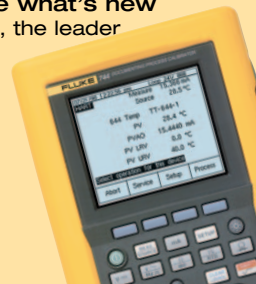Industrial Test Tools

Hart Scientific Calibrators

Thermometers

Process Tools Selection Guide

for industrial instrumentation and electrical technicians

2005/2006

Plus see what's new from Fluke, the leader in process calibration tools

What's New from Fluke

Fluke 63, 66 and 68 — pistol grip infrared thermometers

The new Fluke 63, 66 and 68 pistol grip thermometers offer superb optics and accuracy for quickly measuring temperature in hard-to-reach, hot, rotating, or dangerous situations.

See page 17 for more information

Fluke 710 Series — temperature, pressure and process calibrators

This upgraded line of handheld tools, designed to improve process technicians' productivity, includes improved source and measurement performance, better battery life with configurable power settings, an upgraded protective holster, flash firmware upgradeability, and a variety of other device-specific enhancements.

See page 18 for more information

Fluke Ti30™ Thermal Imager

The Fluke Ti30™ Thermal Imager includes all necessary accessories, unlimited-use InsideIR software, and two days of professional thermography training, making it the best complete imaging solution available. It is an ideal tool for process troubleshooting and for predictive maintenance in a process environment.

See page 37 for more information

Fluke 433 and 434 — power quality analyzers

The Fluke 433 and 434 three-phase power quality analyzers help you locate, predict, prevent and troubleshoot problems in power distribution systems. These easy-to-use handhelds are a "must have" for any person who maintains or troubleshoots three phase distribution.

See page 38 for more information

2

Fluke 744 Documenting Process Calibrator-HART

The newly upgraded model features additional HART calibration and configuration support for Micro Motion Coriolis Mass Flow Devices (models 9712, 9701, 9739, 2700, 2700_IS) as well as improved support for controlling Hart Scientific Dry Blocks (models 9009, 9100, 9102, 9103, 9140, 9141, 9150) and Hart Micro-Baths (models 6102, 7102, 7103, 9011, 9105, 9107, 9122A, 9132, 514).

See page 4 for more information

Fluke intrinsically safe products — a full line of IS tools

Fluke offers a full line of intrinsically safe tools to help keep you and your co-workers safe while working in potentially explosive environments. The NEW 725Ex Multifunction Calibrator along with the 718Ex pressure calibrator, the 707Ex Loop Calibrator and eight 700Ex pressure modules offer a complete solution to get your job done safely in hazardous environments.

See page 13 for more information

Process Tools Selection Guide

FLUKE ®

	Loop Calibrator	Pressure Calibrators	Temperature Calibrators	Multifunction Process Calibrator	Intrinsically Safe Calibrators	Documenting Process Calibrators	ProcessMeter™ Test Tools
Model	**715**	**718**	**724**	**725**	**725Ex**	**744**	**789**
Measure							
V dc	25 V		30 V	30 V	30 V	300 V	1000 V
V ac (true-rms)							1000 V
Resistance			3200 Ω	3200 Ω	3200 Ω	11 kΩ	40 MΩ
A dc	24 mA		24 mA	24 mA	24 mA	110 mA	30 mA, 1 A
A ac							•
Frequency				10 kHz	10 kHz	50 kHz	20 kHz
Pressure		100G: 100 psig/ 7 bar²; 30G: 30psig/ 2 bar²		•[1]	•[5]	•[1]	
Temperature: RTDs			7 types	7 types	7 types	8 types	
Temperature: TCs			12 types	12 types	10 types	11 types	
Source/Simulate							
V dc	20 V		10 V	10 V	10 V	15 V	
Resistance			3200 Ω	3200 Ω	3200 Ω	11 kΩ	
mA dc/% scale	24 mA			24 mA	24 mA	22 mA	24 mA
mA source; auto step, auto ramp	•			•	•	•	•
Frequency				10 kHz	10 kHz	50 kHz	
Temperature: RTDs			7 types	7 types	7 types	8 types	
Temperature: TCs			12 types	10 types	10 types	13 types	
Record							
Min/Max		•				•	•
Hold		•					•
As Found/As Left results							
Log data							
Upload data to PC							
Remote operation				•			
Features							
24 V loop supply	•	•	•	•	12 V	•	•
Hart communication						•	
Integrated hand pressure pump		•					
Intrinsically safe (ATEX)					•		
Warranty	3 years	1 year	3 years	3 years	1 year	3 years	3 years
NIST traceable certification	•	•	•	•	•	•	
Accessories	A/B	C	A/B	A/B			A/B
Pressure enabled [4]		•		•	•	•	
See Catalog Page	15	18	8	8	13	4	10

1. Fluke 700 Pressure Modules required.   **2**. Either the internal sensor or a Fluke 700 Pressure Module may be used.
3. Accessories: **A**. Compatible with LockPak **B**. Compatible with ToolPak **C**. Accepts hanging straps from ToolPak   **D**. Optional accessories
4. Fluke Process Calibrators in this guide displaying the Pressure Enabled symbol display readings from the 700 Series Pressure Modules.
5. Fluke 700PEx Pressure Module required.

Documenting Process Calibrators

Pressure Enabled

744 Documenting Process Calibrator.
Communicate, calibrate and configure HART instrumentation

The Fluke 744 offers the ability to perform every day calibration, maintenance, and troubleshooting of HART® instrumentation with just one tool.

With one powerful tool, you can:

- Monitor, control and calibrate HART instrumentation with integrated communication functions.
- Generate precision electrical, temperature or pressure signals for analog stimulus or sensor simulation.
- Simultaneously measure electrical, temperature or pressure signals from transmitter output.
- Interrogate HART devices to determine type, manufacturer, model and tag-ID.
- Read HART PV, smart transmitter digital output.

- Make field adjustments to ranging, damping and other top-level configuration settings.
- Change/assign the tag of HART transmitter smart transmitters.
- Re-configure HART temperature sensor (e.g., TC to RTD).
- Perform HART sensor trim and output trim.
- Perform loop test with simultaneous analog and digital mA readout.
- Control selected Hart Scientific Dry Blocks.

Versatile HART protocol support (744 only)

The 744 supports these classes of instructions:

- Universal commands — such as "read manufacturer and device type," "read primary variable (PV)," or "read current output and percent of span"

- Common practice commands — such as "read multiple variables," "set damping time," or "loop test"
- Device-specific commands — functions unique to a particular field device, like "sensor trim" or output trim

Recommended accessories — 741B, 743B and 744 calibrators

C789
Meter and Accessory Case
See page 42

80PK-8
Pipe Clamp Temperature
See page 40

Fluke-700Pxx
Pressure Modules
See page 7

80PK-25
SureGrip Piercing Temperature Probe

TL220
SureGrip Industrial Test Lead Set

For more detailed information, go to www.fluke.com/744

Summary one year specifications for Fluke 741, 743B and 744 calibrators

Measure		Source	
Range (full scale)	Accuracy (% of reading + % of full scale)	Range (full scale)	Accuracy (% of reading + % of full scale)
Volts dc			
110.000 mV dc	0.025 % + 0.015 %	110.000 mV	0.01 % + 0.005 %
1.10000, 11.0000 V dc	0.025 % + 0.005 %	1.10000 V	0.01 % + 0.005 %
110.000, 300.00 V dc	0.05 % + 0.005 %		
Volts ac			
V ac, 20 to 40 Hz	2 % + 10 counts		
V ac, 40 to 500 Hz	0.5 % + 5		
V ac, 500 to 1 kHz	2 % + 10		
V ac, 1 kHz to 5 kHz	10 % + 20		
mA			
30.000 mA dc	0.01 % + 0.015 %	Source 22.000 mA	0.01 % + 0.015 %
110.00 mA dc	0.01 % + 0.015 %	Simulate 22.000 mA	0.02 % + 0.03 %
Resistance			
11.000 Ω	0.05 % + 50 mΩ	11.000 Ω	0.01 % + 20 mΩ
110.00 Ω	0.05 % + 50 mΩ	110.00 Ω	0.01 % + 40 mΩ
1.1000 kΩ	0.05 % + 0.5 Ω	1.1000 kΩ	0.02 % + 0.5 Ω
11.000 kΩ	0.1 % + 10 Ω	11.000 kΩ	0.03 % + 5 Ω
Frequency			
1.00 to 109.99 Hz	0.05 Hz	0.00 to 0.99 Hz	0.01 Hz
110.0 to 1099.9 Hz	0.5 Hz	11.00 to 109.99 Hz	0.1 Hz
1.100 to 10.999 kHz	5 Hz	110.0 to 1099.9 Hz	0.1 Hz
11.00 to 50.00 kHz	50 Hz	1.100 to 21.999 kHz 22.000 to 50.000 kHz	2 Hz 5 Hz
Temperature			
10 thermocouples	0.3 °C		0.2 °C
11 RTDs*	0.3 °C		0.1 °C

*Addresses pulsed transmitters and PLCs with pulses as short as 1 ms. For pressure specifications, see page 7.

General specifications for Fluke 741, 743B and 744 calibrators

Loop power: Selectable, 24 V or 28 V; 22 mA max

Environmental: 741/743 specifications apply from +18 °C to +28 °C

Operating temperature: –10 °C to 50 °C (typical specs to –20 °C) Pressure modules are totally compensated and specs apply 0 °C to 50 °C

Storage temperature: –20 °C to 60 °C

Safety: Complies with CAN/CSA C22.2 No. 1010.1–92, ANSI/ISA S82.01–1994, UL3111 and EN610–1:1993. 300 V, Over-voltage Category II

Size/weight: 130 x 236 x 61 mm (5.1 x 9.3 x 2.4 in), weight 1.4 kg (3 lbs, 1 oz)

Battery: Internal battery pack NiCd, 7.2 V, 1700 mAh; NiMH (744 only) 7.2 V, 3500 mAh, typical usage, greater than 8 hours

Warranty: Three years

Ordering information

Fluke-741B Documenting Process Calibrator

Fluke-743B Documenting Process Calibrator

Fluke-744 Documenting Process Calibrator

Each calibrator includes TL224 Industrial Test Leads (2 sets), AC220 Test Clips (2 sets), TP220 Test Probes (1 set), BP7217 Battery Pack, BC7217 Battery Charger, instruction manual, NIST traceable calibration certificate with data, three-year warranty, serial port cable (743B and 744 only), DPC/TRACK Sample Version with free PC communication utility software (743B and 744 only). With the 744 you also get a HART communication cable, HART Users Manual and a NiMH battery (instead of NiCad).

700SW DPC/TRACK Software
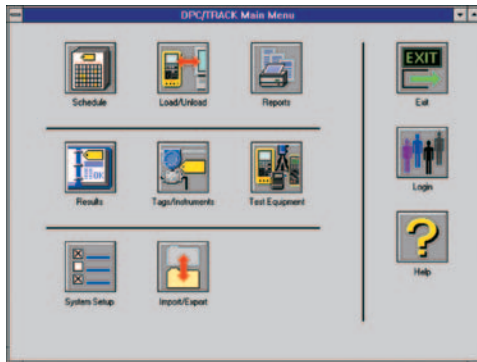
Fluke DPC/TRACK is an easy-to-use, single-user, entry-level instrumentation manager. For more sophisticated software, you may wish to investigate products from one of Fluke's software partners below.

For more detailed information, go to www.fluke.com/software

DPC/TRACK Software is a specialized database that can help you manage your instrumentation and address the documentation requirements of quality programs and regulations. With DPC/TRACK and a 743 or 744 DPC you can:

- Manage your inventory of tags and instruments.
- Schedule tag IDs for calibration.
- Create tag specific procedures, including instruction on how to locate an instrument and how to safely isolate and connect.
- Load those procedures to your DPC.
- Select and execute automated as found/as left procedures in the field, automatically capturing the results data.
- Include comments as to Reasons for Work, Problems Found, and Actions taken (743 and 744 only).
- Unload your results to a PC.
- Print a selection of pre-formatted reports.
- Examine the calibration histories of your tags and instruments.
- Import instrument data and procedures as ASCII text.
- Export instrument data, procedures, and results as ASCII text. DPC/TRACK operates in the same languages as the DPCs: English, French, German, Italian, and Spanish.

Ordering information

Fluke-700SW DPC/ TRACK Software

Supports Fluke 743 and 744 Documenting Process Calibrators and include software CD-ROM, instruction manual, serial port cable and DB9 to DB25 adapter.

Honeywell Loveland DocuMint

On Time Support

Prime Technologies

Cornerstone
The Open Platform for Instrument Management

AMS *aware*™

beamex

PRM
Plant Resource Manager

INTERGRAPH

AMS from Emerson Process Management, (formerly Fisher-Rosemount).

PRM (Plant Resource Manager) from Yokogawa Electric Corporation.

700 Series Pressure Calibration Modules

Best accuracy available in handheld pressure modules

- 0.025 % reference uncertainty
- Rugged, chemical resistant packaging
- Temperature compensated using proprietary micro–technology linearized output
- Digital communication to calibrators, no analog losses or errors
- Broad selection of ranges

Models	Range/ resolution	Range (approx)/ resolution	Reference uncertainty (23 ± 3 °C)	Highside media	Low side media	Fitting material
Differential						
Fluke 700P00	1 in. H20/0.001	0.25 kPa/0.0002	0.300 %	Dry	Dry	316 SS
Fluke 700P01*	10 in. H20/0.01	2.5 kPa/0.002	0.200 %	Dry	Dry	316 SS
Fluke 700P02	1 psi/0.0001	6900 Pa/0.7	0.150 %	Dry	Dry	316 SS
Fluke 700P22	1 psi/0.0001	6900 Pa/0.7	0.100 %	316 SS	Dry	316 SS
Fluke 700P03	5 psi/0.0001	34 kPa/0.001	0.050 %	Dry	Dry	316 SS
Fluke 700P23	5 psi/0.0001	34 kPa/0.001	0.025 %	316 SS	Dry	316 SS
Fluke 700P04	15 psi/0.001	103 kPa/0.01	0.025 %	Dry	Dry	316 SS
Fluke 700P24*	15 psi/0.001	103 kPa/0.01	0.025 %	316 SS	Dry	316 SS
Gage						
Fluke 700P05*	30 psi/0.001	207 kPa/0.01	0.025 %	316 SS	N/A	316 SS
Fluke 700P06*	100 psi/0.01	690 kPa/0.07	0.025 %	316 SS	N/A	316 SS
Fluke 700P27*	300 psi/0.01	2070 kPa/0.1	0.025 %	316 SS	N/A	316 SS
Fluke 700P07	500 psi/0.01	3400 kPa/0.1	0.025 %	316 SS	N/A	316 SS
Fluke 700P08	1000 psi/0.1	6900 kPa/0.7	0.025 %	316 SS	N/A	316 SS
Fluke 700P09*	1500 psi/0.1	10 M Pa/0.001	0.025 %	316 SS	N/A	316 SS
Absolute						
Fluke 700PA3	5 psi/0.0001	34 kPa/	0.050 %	316 SS	N/A	316 SS
Fluke 700PA4*	15 psi/0.001	103 kPa/	0.050 %	316 SS	N/A	316 SS
Fluke 700PA5	30 psi/0.001	207 kPa/	0.050 %	316 SS	N/A	316 SS
Fluke 700PA6	100 psi/0.01	690 kPa/	0.050 %	316 SS	N/A	316 SS
Vacuum						
Fluke 700PV3	–5 psi/0.0001	–34 kPa/0.001	0.040 %	316 SS	Dry	316 SS
Fluke 700PV4	–15 psi/0.001	–103 kPa/0.01	0.040 %	316 SS	Dry	316 SS
Dual						
Fluke 700PD2	±1 psi/0.0001	±6900 Pa/0.7	0.150 %	316 SS	Dry	316 SS
Fluke 700PD3	±5 psi/0.0001	±34 kPa/0.001	0.040 %	316 SS	Dry	316 SS
Fluke 700PD4	±15 psi/0.001	±103 kPa/0.01	0.025 %	316 SS	Dry	316 SS
Fluke 700PD5	–15/30 psi/0.001	–100/207 kPa/0.01	0.025 %	316 SS	N/A	316 SS
Fluke 700PD6	–15/100 psi/0.01	–100/690 kPa/0.07	0.025 %	316 SS	N/A	316 SS
Fluke 700PD7	–15/200 psi/0.01	–100/1380 kPa/0.1	0.040 %	316 SS	N/A	316 SS
High						
Fluke 700P29*	3000 psi/0.1	20.7 M Pa/0.001	0.050 %	C276	N/A	C276
Fluke 700P30	5000 psi/0.1	34 M Pa/0.001	0.050 %	C276	N/A	C276
Fluke 700P31	10000 psi/1	69 M Pa/0.007	0.050 %	C276	N/A	C276

* Intrinsically safe version available for use with 718Ex and 725Ex.

Pressure Enabled

Fluke Process Calibrators in this guide displaying this symbol are Pressure Enabled units and display readings from these Precision 700 Series Pressure Modules.

Each pressure module includes NIST traceable certificate, metric adapter and instruction sheet.

Multifunction Calibrators

Fluke 725 Multifunction Process and 724 Temperature Calibrators.
Compact multifunction calibrators

The Fluke 725 and 724 Multifunction Calibrators are versatile, easy-to-use field calibrators. Use them to test and calibrate almost anything with:

- Easy-to-read measure/source back lit screens let you view input and output simultaneously
- Perform fast linearity tests with auto step and auto ramp features
- Power transmitters with internal loop supply
- Store frequently-used test setups for later use

In addition, the 725 can:

- Measure pressure and frequency to test sensors and transmitters
- Source/simulate mA, frequency and pressure to calibrate transmitters
- Measure pressure using any of the Fluke 700Pxx Pressure Modules
- Source mA with simultaneous pressure measurement to conduct valve and I/P tests

Pressure Enabled

Ordering information
Fluke-725 Multifunction Process Calibrator

Fluke-724 Temperature Calibrator

Each calibrator includes TL75 Test Leads, AC70A Test Clips, one pair of stackable test leads, product overview manuals, users manuals on CD-ROM; NIST-traceable certificate of calibration; CE and CSA markings.

8

Fluke 725 and 724

Simultaneous Function Capability	Channel A	Channel B
24.000 mA dc	M	M or S[1]
24.000 mA dc with 24 V loop supply	M	
100.00 mV dc		M or S
30.000 V dc measure	M	
20.000 V dc measure 10.000 V dc source		M or S
3200 Ohms		M or S
T/C: J, K, T, E, R, S, B, L, U, N, XK, BP		M or S
RTD Ni120; Pt100 (3926); Pt100 (JIS); Pt100, 200, 500, 1000 (385)		M or S
Pressure (requires Fluke 700Pxx Modules)	M[1]	M[1] used as S[1]
Frequency; squarewave, 1 CPM to 10 kHz; fixed amplitude 5 V p-p		M[1] or S[1]

M = Measure   S = Source/Simulate   [1] 725 only

Recommended accessories — 724 and 725 calibrators

TL75
Hard Point
Test Lead Set

TL220
SureGrip Industrial
Test Lead Set

C125
Meter Case
See page 43

ToolPak
Meter Hanging Kit
See page 43

80PK-27
SureGrip Industrial
Surface Temperature Probe
See page 40

For more detailed information, go to www.fluke.com/725

Summary specifications (18 °C to 28 °C for one year)
(Fluke 724/725)

Function Measure or Source	Range	Resolution	Accuracy	Notes
Voltage	0 to 100 mV 0 to 10 V (source) 0 to 30 V (measure)	0.01 mV 0.001 V 0.001 V	0.02 % Rdg + 2 LSD	Max load, 1 mA
mA (724 measure only)	0 to 24	0.001 mA	0.02 % Rdg + 2 LSD	Max load, 1000 Ω
mV (TC terminals)	–10.00 mV to + 75.00 mV	.01 mV	0.025 % of range + 1 LSD	
Resistance	0 Ω to 3200 Ω (measure) 15 Ω to 3200 Ω (source)	0.01 Ω to 0.1 Ω	0.10 Ω to 1.0 Ω	
Frequency source (725 only)	2.0 to 1000.0 CPM 1 to 1000 Hz 1.0 to 10.0 kHz	0.1 CPM 1 Hz 0.1 kHz	±0.05 % of setting ±0.05 % of setting ±0.25 % of setting	For frequency source, waveform is 5 V p–p squarewave, –0.1 V offset
Frequency measure (725 only)	1 CPM to 10 kHz	5 digits	0.05 % Rdg + 1 count	1 V p–p min.
Loop Supply	24 V dc	N/A	10 %	

Temperature coefficient, –10 °C to 18 °C, 28 °C to 55 °C, ±.005 % of range per °C.

Thermocouple (T/C) accuracy specifications (Fluke 724/725)

T/C	Measure or Source	
J	–200 to 0 °C 0 to 1200 °C	1.0 °C 0.7 °C
K	–200 to 0 °C 0 to 1370 °C	1.2 °C 0.8 °C
T	–200 to 0 °C 0 to 400 °C	1.0 °C 0.8 °C
E	–200 to 0 °C 0 to 950 °C	0.9 °C 0.7 °C
R	–20 to 0 °C 0 to 500 °C 500 to 1750 °C	2.5 °C 1.8 °C 1.4 °C
S	–20 to 0 °C 0 to 500 °C 500 to 1750 °C	2.5 °C 1.8 °C 1.5 °C
B	600 to 800 °C 800 to 1000 °C 1000 to 1800 °C	2.2 °C 1.8 °C 1.4 °C
L	–200 to 0 °C 0 to 900 °C	0.85 °C 0.7 °C
U	–200 to 0 °C 0 to 400 °C	1.1 °C 0.75 °C
N	–200 to 0 °C 0 to 1300 °C	1.5 °C 0.9 °C

T/C	Measure or Source	
XK	–200 to –100 °C –100 to 800 °C	0.5 °C 0.6 °C
BP	0 to 800 °C 800 to 2500 °C	1.2 °C 2.5 °C
Resolution		
J, K, T, E, L, N, U, XK, BP	0.1 °C, 0.1 °F	
B, R, S	1 °C, 1 °F	

Note: Accuracy specifications include 0.2 °C cold junction uncertainty.

RTD ranges and accuracy specifications
(Fluke 724/725)

RTD Types, Ranges and Accuracies		Measure (4 wire)	Source
Ni 120	–80 °C to 260 °C	0.2 °C	0.2 °C
Pt 100 – 385	–200 °C to 800 °C	0.33 °C	0.33 °C
Pt 100 – 3926	–200 °C to 630 °C	0.3 °C	0.3 °C
Pt 100 – 3916	–200 °C to 630 °C	0.3 °C	0.3 °C
Pt 200 – 385	–200 °C to 250 °C 250 °C to 630 °C	0.2 °C 0.8 °C	0.2 °C 0.8 °C
Pt 500 – 385	–200 °C to 500 °C 500 °C to 630 °C	0.3 °C 0.4 °C	0.3 °C 0.4 °C
Pt 1000 – 385	–200 °C to 100 °C 100 °C to 630 °C	0.2 °C 0.2 °C	0.2 °C 0.2 °C
Resolution			
RTD	0.1 °C, 0.1 °F		

General specifications for Fluke 724 and 725 calibrators

Maximum voltage: 30 V
Storage temperature: –20 °C to 71 °C
Operating temperature: –10 °C to 55 °C
Relative humidity: 90 % (10 °C to 30 °C); 75 % (30 °C to 40 °C); 45 % (40 °C to 50 °C); 35 % (50 °C to 55 °C)
Shock: 30 g, 11ms, half–sine shock
Vibration: Random, 2 g, 5–500 Hz
Safety: CSA C22.2 No.1010.1:1992
EMC: EN50082–1:1992 and EN55022:1994 Class B
Size/weight: 96 x 200 x 47 mm (3.8 x 7.9 x 1.9 in) 650 g (23 oz)
Battery: Four AA alkaline batteries.
Battery life: 25 hours typical
Warranty: Three years

9

ProcessMeter™ Test Tools

Multimeter and Loop Calibrator — all in one

Fluke 789 ProcessMeter™ Test Tool

The Fluke 787 was the first tool in the industry to combine a loop calibrator with a DMM, giving process technicians double the power in one tool. Now it's even better.

The Fluke 789 has a display that's not only twice as large, but twice as bright. With its built-in selectable 250 ohm HART resistor, it eliminates the need to carry a separate resistor with you.

New features:
• 24 V loop power supply
• 20 mA drive into 1200 ohms
• Double sized dual display with two brightness settings
• 0–100 % mA Span Check buttons to toggle from 4–20 mA

• Infrared I/O serial port compatible with FlukeView® Software
• 5 V measurement capability on the 4 V range for precise 1–5 V measurements
• **PLUS** all the proven 787 features below

Fluke 787 ProcessMeter™ Test Tool

• Simultaneous mA and % of scale readout on mA output
• 25 % Manual Step plus auto step and auto ramp on mA output
• Clear LCD with backlight; 4,000 counts (30,000 counts for dc current)
• Min, Max, Average, Hold, Relative modes
• CAT III 1000 V safety–rated multimeter

Ordering information

Fluke-789 ProcessMeter™ Test Tool

Includes TL71 Premium Test Lead Set plus Alligator Clips, 4 AA alkaline batteries (installed), product overview and users manual (CD-ROM) in 14 languages.

Fluke-787 ProcessMeter™ Test Tool

Includes protective yellow holster with test lead storage, TL75 Test Lead Set plus AC70A Alligator Clips, one 9 V alkaline battery (installed), product overview and users manual (CD-ROM) in 14 languages.

Recommended accessories – 787 and 789 ProcessMeter Test Tools

TL220
SureGrip Industrial
Test Lead Set

ToolPak
Meter Hanging Kit
See page 43

C125
Meter Case
See page 43

PV350
Pressure Vacuum Module
See page 40

For more detailed information, go to
www.fluke.com/processmeters

789 and 787 specifications (18 °C to 28 °C, one year)

Measurement function	Best accuracy range and resolution	(% of reading + LSD)	
V dc	400.0 mV, 4.000 V, 40.00 V, 400.0 V, 1000 V	0.1 % + 1	
V ac (true-rms) to 500 Hz	400.0 mV, 4.000 V, 40.00 V, 400.0 V, 1000 V	0.7 % + 2	
mA dc	30.000 mA	.05 % + 2	
A dc	1.000 A (0.440 A continuous)	0.2 % + 2	
A ac	1.000 A (0.440 A continuous)	1 % + 2	
Resistance	400.0 Ohms, 4.000 k, 40.00 k, 400.0 k, 4.0 M, 40 M	0.2 % + 1	
Frequency (0.5 Hz to 20 kHz)	199.99 Hz, 1999.9 Hz, 19.999 kHz	.005 % +1	
Diode Test	**789:** 2.000 V (shows diode voltage drop) **787:** 2.400 V (shows diode voltage drop)	2 % + 1	
Continuity	Beeps for resistance < approx. 100 ohms		

Output function	Range and resolution	Drive capability	Accuracy (% of span)
DC current output (internal battery operation)	0.000 to 20.000 mA or 4.000 to 20.000 mA (selectable at power-up) Over-range to 24.000 mA	**789:** 24 V compliance or, 1200 Ω @ 20 mA **787:** 12 V compliance or, 500 Ω @ 24 mA	.05 %
DC current simulate (ext. 24 Volt loop supply)	0.000 to 20.000 mA or 4.000 to 20.000 mA, (selectable at power-up) Over-range to 24.000 mA	**789:** 15 V to 48 V **787:** 15 V to 30 V	.05 %
24 V loop supply	**789:** Minimum 24 V **787:** not available	≥ 24 V @ 24 mA, 1200 Ω (789 only)	
Current adjustment modes	Manual: Coarse, Fine, 25 % step (100 % step in 789) Automatic: Slow Ramp, Fast Ramp, 25 % step		

Temperature range of 18 °C to 28 °C, for one year after calibration

General specifications for the Fluke 789 and 787 ProcessMeter Test Tools

Maximum voltage applied between any jack and earth ground: 1000 V rms
Storage temperature: –40 °C to 60 °C
Operating temperature: –20 °C to 55 °C
Temperature coefficient: 0.05 x (specified accuracy) per °C (for temperatures < 18 °C or > 28 °C)
Relative humidity: 95 % up to 30 °C; 75 % up to 40 °C; 45 % up to 50 °C; 35 % up to 55 °C
Vibration: Random, 2 g, 5-500 Hz

Shock: One meter drop test
Safety (789 and 787): Designed in accordance with EN61010-1, ANSI/ISA S82.01-1994 and CAN/CSA C22.2 No. 1010..1-92 Over-voltage Category III
Size/weight (789): 50 mm H x 100 mm W x 203 mm L (1.97 in H x 3.94 in W x 8.00 in L), 600 g (1.3 lbs)
Size/weight (787 with holster and test lead storage): 52 mm H x 98 mm W x 201 mm L (2.06 in H x 3.86 in W x 7.93 in L), 22.5 oz

Battery (787): Single 9 V alkaline battery
Battery life (787): 12 to 50 hours typical
Battery (789): Four AA alkaline batteries
Battery life (789): 14 to 140 hours typical
Warranty: Three years

Intrinsically Safe Products

ATEX and NEC-500

ATEX is the directive concerning equipment and protective systems intended for use in potentially explosive atmospheres. Commonly called ATEX ("Atmosphères Explosibles"), a directive (94/9/EC) whose stated goal is to "help ensure the free movement of products in the European Union" by minimizing the number of safeguard clause applications, at least those originating from divergent interpretations. The ATEX rules were in place as a voluntary standard starting March 1, 1996 and are now mandatory on electrical and electronic equipment for use in environments subject to explosion hazard sold in the EU.

The NFPA (National Fire Protection Association) 70, National Electrical Code, also known as the NEC, is the basis for all electrical codes in the United States. Classifications and related product markings for hazardous areas are covered in NEC 500 and 505.

Two of the leading bodies that certify products as meeting these regulations are Factory Mutual (FM) and the Canadian Standards Association (CSA).

Making sense of Factory Mutual certification

Fluke 707Ex is Factory Mutual–certified N.I. Class I, Div 2, Groups A–D T4 — but what exactly does that mean? Below is a brief explanation of the Factory Mutual designations.

Example: Fluke 707Ex is certified by Factory Mutual: N.I. Class I, Div, Groups A–D T4, Ta = –10 °C +50 °C

NEC-500 Marking	Type of protection
FM APPROVED	The Factory Mutual Approved mark
NI	Non-incendive apparatus, internal energy is limited so a specified atmosphere cannot be ignited by its use
Class I	For use with gasses, vapors and liquids (not dust, fibers or filings)
Div 1	Certified for use in Zone 1, flammable material present continuously or intermittently
Div 2	Certified for use in Zone 2, explosive atmospheres not normally present, may rarely exist for short duration
Groups A-D	Rated for use with explosive gasses as defined by groups A-D, including acetylene, hydrogen acetylene and propane
Groups B-D	Rated for use with explosive gasses as defined by groups B-D, including acetylene, hydrogen acetylene, hydrogen and propane
T4	Temperature class gives the user the maximum temperature of a surface that may be in contact to the Ex-atmosphere under fault condition. T4 is rated at 135 °C
CSA LR 110460 CSA 221839	The CSA mark for Canada and the U.S. with Certificate of Compliance master contact numbers (LR 110460 for the 718Ex, 725Ex and 221839 for the 700PEx)

For more information and detailed specifications, turn to the corresponding non-intrinsically safe product pages (Fluke 707, 718, 725) or go to www.fluke.com/ex

Fluke 725Ex

What is "intrinsically safe"?

Intrinsic safety is a protection method employed in potentially explosive atmospheres. Devices that are certified as "intrinsically safe" are designed to be unable to release sufficient energy, by either thermal or electrical means, to cause ignition of flammable material (gas or dust/particulates).

Fluke 725Ex Multifunction Process Calibrator

The Fluke 725Ex Multifunction Process Calibrator offers all the features of the standard 725 plus an ATEX rating.
- Certified by CSA: I.S. Class I, Div. 1, Groups B–D 171 °C, Ta = –10 °C to +55 °C

Fluke 707Ex Loop Calibrator

The Fluke 707Ex Loop Calibrator offers all the features of the standard 707 plus an ATEX rating.
- Certified by Factory Mutual: N.I. Class I, Div 2, Groups A–D T4, Ta = –10 °C to +50 °C

Fluke 718Ex Pressure Calibrator and 700PEx Pressure Modules

The Fluke 718Ex Pressure Calibrator offers high performance in an ATEX-rated pressure calibrator. A complete, self-contained calibration and switch test solution.
- Certified by CSA: I.S. Class I, Div 1, Groups A–D T4, Ta = –10 °C to +55 °C (718Ex) and Ta = 0 °C to 50 °C (700PEx)

Fluke 707Ex

Fluke 718Ex

Fluke 700PEx
(8 available ranges)

700PEx pressure modules enable the 725Ex to measure and source pressure and extend the pressure measurement of the 718Ex.

Ordering information

Fluke-707Ex IS Loop Calibrator

Fluke-718Ex IS Pressure Calibrator

Fluke-725Ex Multifuction Process Calibrator

Fluke-700PEx Pressure Modules (700P01Ex, 700P05Ex, 700P06Ex, 700P09Ex, 700P24Ex, 700P27Ex, 700P29Ex and 700PA4Ex)

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Loop Calibrators

Fluke 705   Fluke 707   Fluke 715

CE CSA

All Fluke mA – loop calibrators feature:
- Simultaneous mA and % readout for quick, easy, interpretation of readings
- Push button 25 % steps for fast, easy linearity checks
- Selectable ramp, step modes to provide smooth outputs for valve slewing and loop functional tests
- 24 V internal loop supply

715 Volt/mA Calibrator
- Source voltage to 200 mV or 20 V
- Measure loop current with 0.010 % accuracy and 0.001 mA resolution
- Measure voltage output process signals

Summary specifications (18 °C to 28 °C, one year)

Function	705, 707, 715 Range	Resolution	705 Accuracy	707 Accuracy	715 Accuracy
mA measure	0 to 24 mA	.001 mA	.02 % Rdg + 2 LSD	.015 % Rdg + 2 LSD	0.01 % Rdg + 2 LSD
mA source[1]	0 to 24 mA	.001 mA	.02 % Rdg + 2 LSD	.015 % Rdg + 2 LSD	0.01 % Rdg + 2 LSD
mA simulate[2]	0 to 24 mA	.001 mA	.02 % Rdg + 2 LSD	.015 % Rdg + 2 LSD	0.01 % Rdg + 2 LSD
Voltage measure	0 to 28 V	.001 V	.025 % Rdg + 1 LSD	± (.015 % Rdg + 2 counts)	± (.01 % Rdg + 2 counts)
Voltage source (715 only)	0 to 10 V	.001 V (715)	N/A	N/A	0.01 % + 2 counts

Temperature coefficient, –10 to 18 °C, 28 to 55 °C, ± .005 % of range per °C
[1] Max load, 1200 Ohms; 950 Ohms at 20 mA in HART mode   [2] Max applied voltage for simulation, 30 V

14 Ordering information

Fluke-707 Loop Calibrator

Fluke-705 Loop Calibrator

Fluke-715 Volt/mA Calibrator

Each calibrator includes test leads, test clips, holster, instruction sheets, NIST-traceable certificate of calibration; CE and CSA markings and 9 V alkaline battery.

Recommended accessories – 707, 705 and 715 calibrators

TL28A
Heavy Duty
Test Lead Set

TL220
SureGrip Industrial
Test Lead Set

C25
Large Soft Case
See page 43

C550
Tool Bag
See page 42

PV350
Pressure Vacuum
Module
See page 40

For more detailed information, go to www.fluke.com/loop

Temperature Calibrators

712 RTD Calibrator
Complete RTD calibration tool

- Measure temperature from RTD output
- Simulate RTD output
- Rosemount pulsed RTD transmitter compatible
- Operates with seven types of RTDs
- Auto step and auto ramp output function

714 Thermocouple Calibrator
Complete thermocouple calibration tool

- Measure temperature from TC output
- Simulate TC output
- Nine types of thermocouples
- Auto step and auto ramp output function
- Calibrate linear TC transmitter with mV source function

Summary specifications (18 °C to 28 °C, one year)

	Function	Range	Resolution	Accuracy	Notes
RTD (712)	Measure/simulate RTD(712)	–200 to 800 °C (Pt 100)	0.1 °C, 0.1 °F	0.2 °C, 0.4 °F (Pt 100)	Pt; 100 200 500 1000 (385); Pt 100 (3926); Pt 100 (3916) JIS; Ni 120 (672)
	Measure/simulate Resistance	15 Ω to 3200 Ω	0.1 Ω	0.025 % + 0.1 Ω to 0.5 Ω	
TC (174)	Measure/simulate Thermocouple	–200 to 1800 °C, depending on type (K,–200 to 1370 °C)	0.1 °C or °F (1 °C or °F; BRS)	0.5 °C or 0.9 °F (K,–200 to 1370 °C)	9 TC types; J K T E R S B per NIST, 175 and ITS–90 L U per DIN 43710 and IPTS–68
	Measure/simulate mV	–10 to 75 mV	0.01 mV	0.015 % + 1 count	

General specifications for Fluke 712 and 714 calibrators

Maximum voltage: 30 V
Non-operating temp.: –40 °C to 60 °C
Operating temperature: –10 °C to 55 °C
Relative humidity: 95 % (10 °C to 30 °C); 75 % (30 °C to 40 °C); 45 % (40 °C to 50 °C); 35 % (50 °C to 55 °C)

Safety: CSA C22.2 No. 1010.1:1992
EMC: EN50082–1:1992 and EN55022:1994 Class B
Size/weight, (with holster): 201 mm L x 98 mm W x 52 mm D (7.93 in L x 3.86 in W x 2.06 in D)/600 g (21 oz)

Ordering information

Fluke-712 RTD Calibrator

Fluke-714 Themocouple Calibrator

Fluke-724 Temperature Calibrator
Each 71X calibrator includes: Protective yellow holster with test lead storage, test leads and alligator clips (excluding model 714), single 9 V alkaline battery and instruction sheet in 14 languages.

Recommended accessories – 712 and 714 calibrators

TL75 (712)
Hard Point
Test Lead Set

C550
Tool Bag
See page 42

ToolPak
Meter Hanging Kit
See page 43

C25
Large Soft Case
See page 43

80PK-24 (714)
SureGrip Air
Temperature Probe

Thermometers

Fluke 54 Series II Contact Thermometer
Lab accuracy in a field thermometer

- Accuracy: ± (0.05 % + 0.3 °C)
- Large backlit dual display presents all the information you need at a glance
- Min, Max, and Avg — with time reference — captures major events
- Electronic Offset function maximizes overall accuracy by allowing you to compensate for thermocouple errors
- Supports a wide range of thermocouple types
- Temperature displayed in °C, °F, or Kelvin (K)
- Splash and dust resistant case design

Powerful data logging capabilities
- User-adjustable recording intervals
- Real-time clock captures the exact time of day of events
- Recall function allows logged data to be easily reviewed on the meter display
- For further analysis and graphing, data can be exported to optional FlukeView® PC software using the thermometer's IR communication port

Specifications for 54-2 thermometer

Feature	54-2
Thermocouple types	K,J,T,E,N,R,S
Number of inputs	Dual
Time stamp	Time of day
Temperature measurement accuracy (for temperatures above -100 °C)	Type J,K,T,E,N: ± [0.05 % + 0.3 °C (0.5 °F)] Type R,S: ± [0.05 % + 0.4 °C (0.7 °F)]
Measurement range (depending on thermocouple type)	-250 °C (-418 °F) to 1767 °C (3212 °F)
Display resolution	0.1 °C /°F/K < 100° 1° °C/°F/K ≥ 1000°
Operating temperature	-10 °C to 50 °C (14 °F to 122 °F)
Storage temperature	-40 °C to 60 °C (-40 °F to 140 °F)
Humidity	0 % to 90 %; 0 °C to 35 °C (32 °F to 95 °F), 0 % to 70 %; 0 °C to 50 °C (32 °F to 122 °F)

Recommended accessories — 54 Series II Thermometer

TPak
ToolPak Meter
Hanging Kit
See page 43

80PK-8
Pipe Clamp
Temperature Probe
See page 40

80PK-22
SureGrip™ Immersion
Temperature Prove
See page 40

80PK-25
SureGrip™ Piercing
Temperature Probe

FVF-SC1
FlukeView Forms
Software

For more detailed information, go to www.fluke.com/thermometers

New Product

NEW! Fluke 68 Infrared Thermometer
Great for measuring temperature in dangerous situations

The new Fluke 68 pistol grip thermometer offers an easy-to-use solution for temperature measurement in hard-to-reach, hot, rotating or dangerous situations.
- Wide temperature range and quick response time
- Superb optics for measuring temperature of surfaces from a distance
- Adjustable emissivity for more accurate temperature measurement

Fluke 61 and 65
- Easy-to-use, one-button operation
- Easy targeting with bright laser
- Shock-absorbing holster increases ruggedness
- MIN/MAX readings provide variations in any measurement (65 only)
- Store and recall any single temperature (65 only)

Fluke 61 Infrared Thermometer

Fluke 65 Infrared Thermometer

CE ℂ N10140   CE CSA

Specifications for 61, 65 and 68 infrared thermometers

Feature	61	65	68
Response time	< 1 second		≤ 0.5 second (95% of reading)
Spectral response	7 to 18 µm	8 to 14 µm nominal	8 to 14 µm
Resolution	0.2 °C (0.5 °F)	0.1 ° up o 200 °, 1 ° over 200 °	0.1 °C (0.1 °F)
Repeatability	± 2 °C or ± 2 %, whichever is greater	± 1 °C or ± 1 %, whichever is greater	± 0.5 % or ≤ ± 1 °C (± 2 °F), whichever is greater
Ambient operating temperature	0 to 50 °C (32 °F to 120 °F)		
Relative humidity	10 to 90 % RH non-condensing, at < 50 °C (120 °F)	10 to 90 % RH non-condensing at <30 °C (86 °F) ambient	10 to 90 % RH non-condensing,
Storage temperature	–20 to 60 °C (–4 to 140 °F) without battery	–20 to 70 °C (–4 to 158 °F) without battery	–20 to 60 °C (–13 to 158 °F) without battery
Dimensions	190 x 51 x 41 mm (7.5 x 2 x 1.6 in)	185.4 x 63.5 x 38.1 mm (7.3 x 2.5 x 1.5 in)	200 x 160 x 55 mm (8 x 6 x 2 in)
Typical distance to target	1 m (3 ft)	1 m (3 ft)	8 m (25 ft)

Recommended accessories – 61, 65 and 68 Thermometers

80PR-60
Temperature Probe
(68 only)

C550
Tool Bag
See page 42

C90
Meter Case

C50
Meter Case

LVD1
Volt Light

For more detailed information, go to www.fluke.com/thermometers

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Ordering information

Fluke-68 Thermometer
Includes carrying case, hand strap, instruction manual, users manual on CD-ROM and 9 V battery (also available in Fluke 63 and 66)

Fluke-61 Thermometer
Includes holster, instruction sheet and 9 V battery

Fluke-65 Thermometer
Includes holster, soft case, overview manual, users manual on CD-ROM and two AA batteries

Pressure Calibrators

Fluke 718

Fluke 717

Ordering information

**Fluke-718 30US
Pressure Calibrator**

**Fluke-718 100US
Pressure Calibrator**

**Fluke-717 30G
Pressure Calibrator**

**Fluke-717 100G
Pressure Calibrator**

Each calibrator includes protective holster, test leads and alligator clips, 9 V alkaline battery (two on the 718), product overview in 14 languages, users manual on CD-ROM (718 only), NIST-traceable certificate of calibration; CE and CSA markings. Fluke-718 includes protective in-line filter.

Fluke 718 Pressure Calibrator.
Compact, self contained calibration solutions

The 718 offers:
- Built-in pressure/vacuum hand pump, with vernier and bleed valve.
- Pressure measurement to 0.05 % of full span, with internal sensor.
- Pressure measurement to 10,000 psi /700 bar using any of the 29 Fluke 700Pxx Pressure Modules.
- Wide range of selectable measurement units.
- Current measurement with 0.025 % accuracy and 0.001 mA resolution.
- New pressure switch test.
- 24 volt loop power supply.
- 1/8 inch NPT female pressure fitting.

717 30G and 717 100G Pressure Calibrators

- Measure pressure and vacuum to 0.05 % of full scale with internal 30 psig sensor (717 30G) or internal 100 psig sensor (717 100G)
  - 1/8 NPT pressure fitting
  - Compatible with non-corrosive gases and liquids
- Measure pressure to 10,000 psi / 700 bar using one of the Fluke 700Pxx Pressure Modules
- Measure mA with 0.025 % accuracy and 0.001 mA resolution, while sourcing 24 V loop power
- New pressure switch test.

Recommended accessories – 717 and 718 calibrators

700ILF
In-Line Filter
See page 41

700LTP
Low Pressure
Test Pump
See page 41

TL220
SureGrip Industrial
Test Lead Set

C25 (717 only)
Large Soft Case
See page 43

700HTP
Hydraulic Test Pump
See page 41

For more detailed information, go to www.fluke.com/pressure

Specifications (18 °C to 28 °C, one year)

	717 100G	717 30G	718Ex/718 30G	718Ex/718 100G	Function	Range	Resolution	Accuracy	Notes
Pressure		•	•		Measure pressure[1] (internal sensor) Over pressure 3xFS	–12 to 30 psi (–83 to 207 kPa)	0.001 psi scale (0.01 kPa)	0.05 % full	Gases/liquids 717 only (non-corrosive) Use the 718 with non-corrosive gases only Zero, Min, Max, Hold, Damp
	•			•	Measure Pressure[1] (internal sensor) Over pressure 2xFS	–12 to 100 psi (–83 to 690 kPa)	0.01 psi (0.1kPa)	0.05 % full scale	Gases/liquids 717 only (non-corrosive) Use the 718 with non-corrosive gases only Zero, Min, Max, Hold, Damp
	•	•	•	•	Measure pressure[1] (with pressure modules, modules) Over pressure per pressure module specs[2]	29 Pressure 1.0 in. H20/ 0.25 kPa to 10,000 psi/ 69 MPa	To 0.0001 psi, per pressure module specs[2]	To 0.05 % of full span, per pressure	Media compatibility per Pressure Module Specs[2] Zero, Min, Max, Hold, Damp
		•	•		Source pressure, built-in pump	–11 psig to full scale	N/A	N/A	Use the 718 with non-corrosive gases only
	•	•	•	•	Measure mA	0 to 24 mA	0.001 mA	0.025 % + 1 count	
	•	•	(718 only)	(718 only)	Loop supply	24 V dc	N/A	± 10 %	Drive; 20 mA into 1000 Ω

1 Supported pressure units; psi, in. H_2O (4 °C), in. H_2O (20 °C), cm H_2O (4 °C), cm H_2O (20 °C), bar, mbar, kPa, inHg, mmHg, kg/cm^2

2 Pressure module specifications, see page xx

General specifications for all Fluke 717 and 718 calibrators

Maximum voltage: 30 V

Non-operating temperature: –40 °C to 60 °C

Operating temperature: –10 °C to 55 °C

Relative humidity: 95 % (10 °C to 30 °C); 75 % (30 °C to 40 °C); 45 % (40 °C to 50 °C); 35 % (50 °C to 55 °C)

Operating altitude: 3,000 m max

Shock: 1 m drop test

Vibration: Random, 2 g, 5–500 Hz

Safety: CSA C22.2 No. 1010.1:1992 (Call Fluke for 718Ex safety ratings)

EMC: EN50082-1:1992 and EN55022:1994 Class B

Size/weight, (717 with holster and Flex-Stand™): 201mm L x 98 mm W x 52 mm D (7.93 in L x 3.86 in W x 2.06 in D) 600 g (21 oz)

Size/weight, (718 with holster): 216 mm L x 94 mm W x 66 mm D (8.50 in L x 3.72 in W x 2.60 in D) 992 g (35 oz)
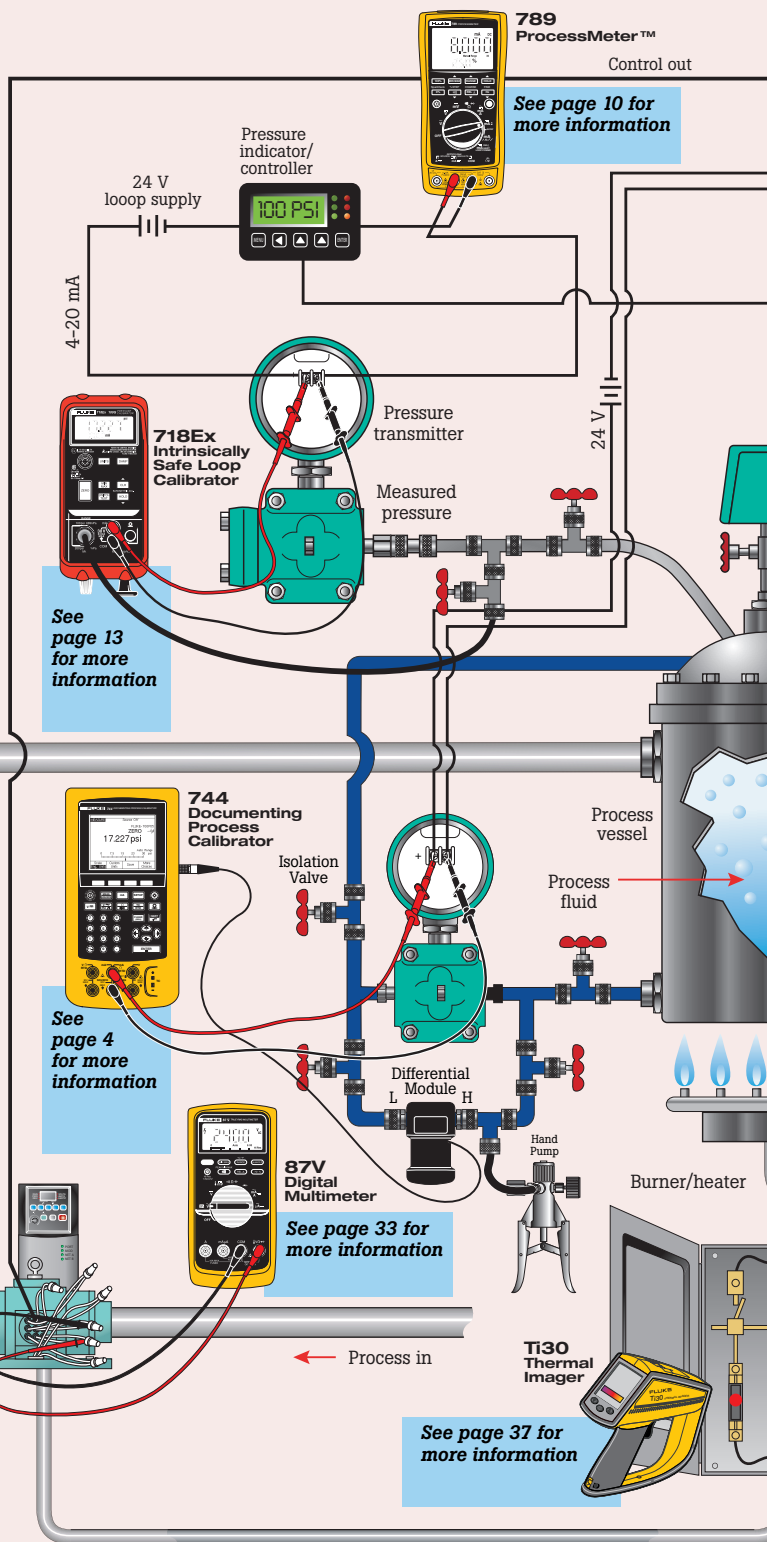
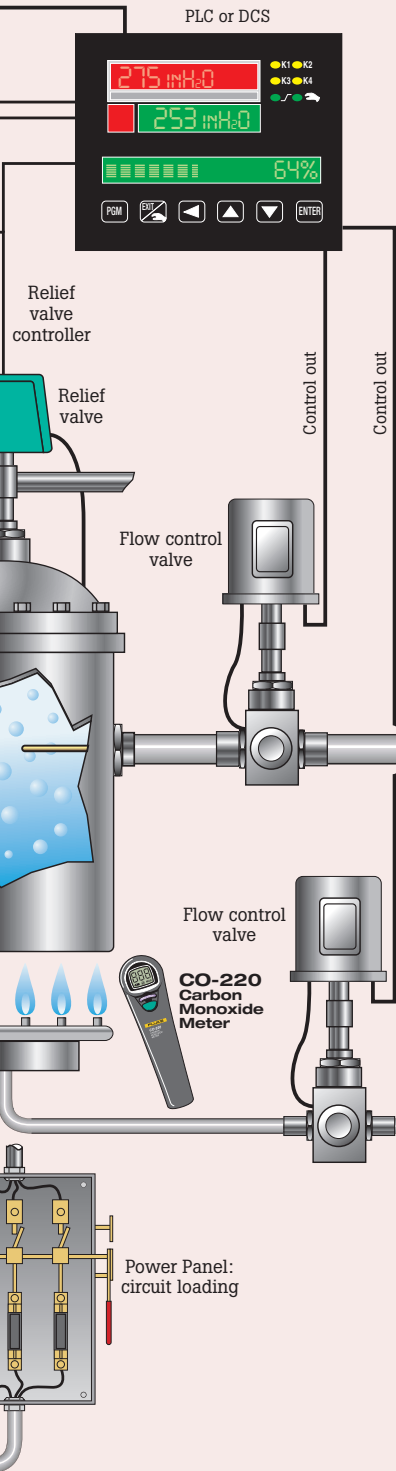**Power:** 9 V battery ANSI/NEDA 1604 A or IEC 6LR61 9V alkaline; two batteries in 718

Battery Life: 4 to 20 hours, typical, depending on functions used

Warranty: Three years (one year on pressure pump in Fluke 718); one year for 718Ex.

Process Pressure Measurement

Regular process instrument mainte-
nance and calibration can improve
product quality, operational efficiency,
safety, environmental compliance and
corporate profitability. Fluke tools are
designed to perform multiple func-
tions to assist you in this effort. This
diagram shows just a few examples
of Fluke tools in use, measuring and
servicing process pressures.

789 ProcessMeter™

Control out

See page 10 for more information

Pressure indicator/controller

100 PSI

24 V loooop supply

4–20 mA

24 V

Pressure transmitter

Measured pressure

718Ex Intrinsically Safe Loop Calibrator

See page 13 for more information

744 Documenting Process Calibrator

17.227 psi

Isolation Valve

Process vessel

Process fluid

See page 4 for more information

Differential Module
L   H

Hand Pump

Burner/heater

87V Digital Multimeter

See page 33 for more information

68 Handheld Infrared Thermometer

See page 17 for more information

Bearing temperature

Process in

Ti30 Thermal Imager

See page 37 for more information

PLC or DCS

275 inH2O
253 inH2O
●K1 ●K2
●K3 ●K4
64%
PGM EXIT ◄ ▲ ▼ ENTER

Relief valve controller

Relief valve

Flow control valve

Control out

Control out

Process out →

Pressure conversion chart

to obtain multiply factor by number of	psi	bar	kPa	in H₂O	ft H₂O	m H₂O	in Hg	torr (mm Hg)	kg/cm2	in H2O @ 60F	mm H₂O
psi	1.000000	6.89476e-2	6.89476	27.67990	2.3066583	0.730696	2.036021	51.715095	7.030696e-2	27.707048	703.10138
bar	14.50377	1.000000	100.000	401.46293	33.455244	10.197162	29.52997	750.06375	1.019716	401.8647	1.019716e4
kPa	0.1450377	1.00000e-2	1.000000	4.0146293	0.3345524	0.1019716	0.2952997	7.5006375	1.019716e-2	4.018647	101.9716
in H₂O	3.61272e-2	2.4908e-3	0.249089	1.000000	8.33333e-2	2.54000e-2	7.35559e-2	1.8683263	2.548169e-3	1.00100	25.400
ft H₂O	0.4335264	2.98896e-2	2.989068	12.0000	1.000000	0.3048	0.8826708	22.4199156	3.057803e-2	12.012	304.8
m H₂O	1.422334	9.80665e-2	9.80665	39.370064	3.2808387	1.000000	2.895901	73.556127	1.0000e-1	39.4095	1000.0
in Hg	0.4911541	3.38639e-2	3.38639	13.5951	1.132925	0.3453156	1.000000	25.40000	3.45316e-2	13.6087	345.3157
torr	1.93367e-2	1.3332e-3	0.133322	0.5352384	4.46032e-2	1.3595e-2	3.93701e-2	1.000000	1.35951e-3	0.535774	13.595
kg/cm2	14.223344	9.80665e-1	98.0665	392.43867	32.70322	10.000	28.95901	735.5589	1.000000	394.0946	10000.0
in H₂O @ 60F	3.60919e-2	2.4884e-3	0.24884	0.999001	11.988	2.53746e-2	7.34824e-2	1.866459	2.53746e-2	1.000000	25.3746
mm H₂O	1.42227e-3	9.80665e-5	9.80665e-3	3.93701e-2	3.28084e-3	1.000e-3	2.89590e-3	7.35559e-2	1.000e-4	3.94095e-2	1.000000

63 Handheld Infrared Thermometer

800.00 psi
744 Documenting Process Calibrator

See page 4 for more information

Flow control valve

CO-220 Carbon Monoxide Meter

Flow computer calibration

Natural gas in

Pressure module

Power Panel: circuit loading

Calibrators
Selection Guide

Model	Dry-Well Calibrators				Field Dry-Well		Thermocouple Furnace	
	9100S Page 24	9102S Page 24	9009 Page 25	9141 Page 25	9103 Page 25	9140 Page 25	9150 Page 25	610 Page
Measure								
Temperature RTD								
Temperature, thermometer								
Accuracy								
Resolution								
Source/Simulate								
Temperature, dry-well	35 °C to 375 °C	–10 °C to 122 °C	50 °C to 350 °C: Hot –15 °C to 110 °C: Cold	50 °C to 650 °C	–25 °C to 140 °C	35 °C to 350 °C	150 °C to 1200 °C	
Temperature bath								35 °C to
Temperature infrared								
Stability	.07 °C	0.05 °C	.05 °C	.05 °C	0.02 °C	0.03 °C	0.5 °C	0.02
Accuracy	0.25 °C	0.25 °C	0.6 °C: Hot 0.2 °C: Cold	0.5 °C	0.25 °C	0.5 °C	5.0 °C	0.25
Record								
Min Max								
Upload data to PC								
Logging to PC								
Logging, internal memory								
Features								
Remote operation*	•	•	•	•	•	•	•	•
Serial interface	•	•	•	•	•	•	•	•
Warranty	2 years	2 years	1 year	1 year	1 year	1 year	1 year	1 ye
NIST-Traceable certification	•	•	•	•	•	•	•	•
Power	Line	Line/Battery	Line	Line	Line	Line	Line	Lin

* Interface–*it* software, model 9930, is included with all dry-wells and baths in this selection guide. See page 37.

Fluke is pleased to offer a selection of Hart Scientific dry–wells and reference thermometers made specifically for industrial applications. See your local Fluke distributor or go to www.fluke.com/hartscientific.

	Micro-Baths		Infrared Calibrators		Thermometer Readouts				Thermo-Hygrometer
...02 Page 30	7102 Page 30	7103 Page 30	9132 Page 27	9133 Page 27	1521 Page 29	1522 Page 29	1502A Page 28	1529 Page 28	1620-S Page 31
					•	•	•	•	
					−200 °C to 962 °C	−200 °C to 962 °C	−200 °C to 962 °C	−189 °C to 962 °C	0 °C to 50 °C
					0.025 °C to 0.15 °C	0.025 °C to 0.15 °C	0.004 °C to 0.024 °C	0.004 °C to 0.024 °C	0.25 °C 2.0 % RH
					0.001 °C	0.001 °C	0.001 °C	0.001 °C	0.001 °C 0.01 % RH
...200 °C	−5 °C to 125 °C	−30 °C to 125 °C							
			50 °C to 500 °C	−30 °C to 150 °C					
...2 °C	.015 °C	.03 °C	0.1 °C	0.1 °C					
...5 °C	0.25 °C	0.25 °C	0.5 °C	0.4 °C					
					•	•		•	•
						•		•	•
					•	•	•	•	•
						10,000 points		8,000 points	400,000 points
	•	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	•	•
...ear	1 year	1 year	1 year	1 year	1 year	1 year	3 years	2 years	1 year
	•	•	•	•	•	•	•	•	•
...ne	Line	Line	Line	Line	Battery	Battery	Line	Battery	Line

Handheld Dry-Wells

Hart Scientific 9100S and 9102S Handheld Dry-Well Temperature Calibrators
The smallest, lightest and most portable dry-wells in the world

- 9100 model weighs only 2 pounds, 3 ounces (1 kilogram)
- Temperature ranges from –10 °C to 375 °C
- Stability during calibrations to ± 0.05 °C
- Fast and easy calibrations of RTDs and thermocouples
- Includes RS-232 interface, instrument control software
- Direct interface to the Fluke 744

Ordering information

9100S-A-156 Dry-Well, Block A [1]
9100S-A-256 Dry-Well, Block A [2]
9100S-B-156 Dry-Well, Block B [1]
9100S-B-256 Dry-Well, Block B [2]
9100S-D-156 Dry-Well, Block D [1]
9100S-D-256 Dry-Well, Block D [2]
9300 Rugged Carrying Case, 9100
9102S-156 Dry-Well, –10 to 122 (2 Wells) [1] [3]
9102S-256 Dry-Well, –10 to 122 (2 Wells) [2] [3]
9320-156 Battery Pack, 9102 [1]
9320-256 Battery Pack, 9102 [2]
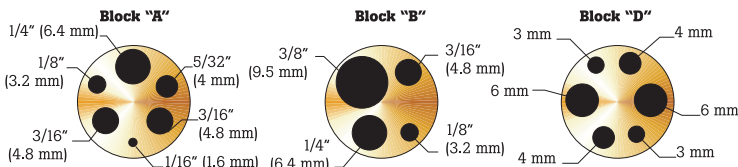
9102S and 9009 inserts

3102-1 Insert, AL 1/16 in (1.6 mm)
3102-2 Insert, AL 1/8 in (3.2 mm)
3102-3 Insert, AL 3/16 in (4.8 mm)
3102-4 Insert, AL 1/4 in (6.4 mm) (Standard)
3102-6 Insert, AL 3/8 in (9.5 mm) (Standard)
3102-7 Insert, AL 7/16 in (11.1 mm) (Standard)
3102-8 Insert, AL 5/32 in (4 mm) (Standard)
9308 Hard Carrying Case, 9102/9132

[1] 156 Blocks are 115 V 50/60 Hz
[2] 256 Blocks are 220 V 50/60 Hz
[3] Specify two 3102 inserts

Summary specifications

	9100	9102
Range	35 °C to 375 °C (95 °F to 707 °F)	–10 °C to 122 °C (14 °F to 252 °F) at 23 °C ambient
Accuracy	± 0.5 °C	± 0.25 °C
Stability	± 0.1 °C at 100 °C ± 0.3 °C at 375 °C	± 0.05 °C at 0 °C
Well-to-well Uniformity	± 0.2 °C with sensors of similar size at equal depths within wells	
Stabilization	5 minutes	7 minutes
Well depth	102 mm (4 in); 1.6 mm (1/16 in) hole is 89 mm (3.5 in) deep	102 mm (4 in)
Removable inserts	N/A	1/4 in, 3/16 in (Standard) 1/16 in, 1/8 in, 3/8 in (Optional)
Power	115 VAC (± 10 %), 1.5 A or 230 VAC (± 10 %, 0.8 A, specify, 50/60 Hz, 175 W	94–234 V AC (± 10 %), 50/60 Hz, 60 W; or 12 V DC
Size	57 x 125 x 150 mm (2.25 H x 4.9 W x 5.9 in D)	99 x 140 x 175 mm (3.9 H x 5.5 W x 6.9 in D)
Weight	1 kg (2 lb. 3 oz.)	1.8 kg (4 lb.)
NIST-traceable calibration	Data at 50 °C, 150 °C, 200 °C, 250 °C, 300 °C and 350 °C	Data at –10 °C, 24 °C, 50 °C, 55 °C, 100 °C and 122 °C

9100 fixed-block options

Block "A"
1/4" (6.4 mm)
1/8" (3.2 mm)
3/16" (4.8 mm)
5/32" (4 mm)
3/16" (4.8 mm)
1/16" (1.6 mm)

Block "B"
3/8" (9.5 mm)
3/16" (4.8 mm)
1/8" (3.2 mm)
1/4" (6.4 mm)

Block "D"
3 mm
4 mm
6 mm
6 mm
4 mm
3 mm

Field Dry-Wells and Furnaces

Hart Scientific 9103, 9140 and 9141 Field Dry-Wells and 9150 Thermocouple Furnace
Easy and productive to use

- Lightweight and very portable
- Accuracy to 0.25 °C
- RS-232 and Interface-*it* software included
- Interchangeable inserts

The 9103 covers below-ambient temperatures as low as –25 °C. The 9140, weighing only 6 pounds (2.7 kg), has a temperature range of 35 °C to 350 °C and reaches its maximum temperature in 12 minutes. The 9141 upright dry-well unit calibrates up to 650 °C, weighs only 8 pounds (3.6 kg) and heats up to 650 °C in 12 minutes.

You can control all functions from the front panel or connect it to your PC or Fluke 744 for fully automated temperature calibration.

Each dry-well has four removable well inserts available, an optional carrying case, a NIST-traceable calibration, and the best price in the industry.

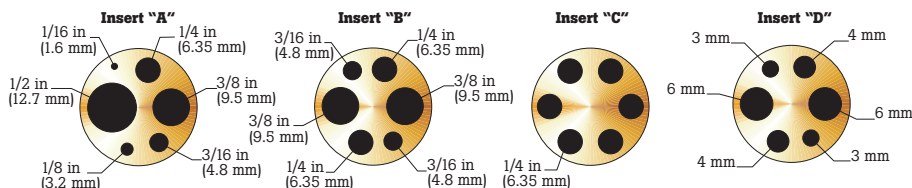The 9150 thermocouple furnace extends up to 1200 °C covering a wide range of T/C types.

Hart Scientific 9009 Industrial Dual-Block Calibrator
Double your productivity or cut your calibration time in half

Hart's 9009 Dual-Block Calibrator lets you calibrate temperature probes from –15 °C to 350 °C. Each temperature well is independently controlled, so while you're checking your transmitter sensor at one temperature, the other well can be heating or cooling to your next set-point.

Everything you need to calibrate thermometers is self-contained in a rugged, watertight case including four removable inserts, power cord and removal tool. It's portable, covers a wide range and interfaces directly with the Fluke 744.

Ordering information
9103-X Dry-Well, 110 V 50/60 Hz (specify X, X = A, B, C, or D included insert, also specify 110 V or 220 V)

9140-X Dry-Well, 110 V 50/60 Hz (specify X, X = A, B, C, or D included insert, also specify 110 V or 220 V)

9141-X Dry-Well, 110 V 50/60 Hz, (specify X, X = A, B, C, or D included insert, also specify 110 V or 220 V)

9150-X Thermocouple Furnace (specify X, X = A, B, C, or D included insert, also specify 110 V or 220 V)

3150-1 Custom Insert
3150-2 Insert A
3150-3 Insert B
3150-4 Insert C
3150-6 Insert D
9315 Rugged Carrying Case
9009-B-110 V Dry-Well, Industrial Dual-Block
See page 24 for inserts

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9103, 9140, 9141 and 9150 Insert Options

Insert "A": 1/16 in (1.6 mm), 1/4 in (6.35 mm), 3/8 in (9.5 mm), 1/2 in (12.7 mm), 1/8 in (3.2 mm), 3/16 in (4.8 mm)

Insert "B": 3/16 in (4.8 mm), 1/4 in (6.35 mm), 3/8 in (9.5 mm), 3/8 in (9.5 mm), 1/4 in (6.35 mm), 3/16 in (4.8 mm)

Insert "C": 1/4 in (6.35 mm)

Insert "D": 3 mm, 4 mm, 6 mm, 6 mm, 4 mm, 3 mm

Field Dry-Wells and Furnaces

Summary specifications for 9103, 9140 and 9141

	9103	9140	9141
Range	−25 °C to 140 °C (−13 °F to 284 °F) at 23 °C ambient	35 °C to 350 °C (95 °F to 662 °F)	50 °C to 650 °C (122 °F to 1202 °F)
Accuracy	± 0.25 °C	± 0.5 °C (holes greater than 1/4 in [6.35 mm]: ±1°C)	± 0.5 °C to 400 °C; ± 1.0 °C to 650 °C (holes greater than 1/4 in: ± 2 °C)
Stability	± 0.02 °C at −25 °C, ± 0.04 °C at 140 °C	± 0.03 °C at 50 °C, ± 0.05 °C at 350 °C	± 0.05 °C at 100 °C, ± 0.12 °C at 500 °C, ± 0.12 °C at 650 °C
Well-to-well Uniformity	± 0.1 °C between similarly sized wells	± 0.1 °C with similarly sized wells	± 0.1 °C below 400 °C, ± 0.5 °C above 400 °C with similarly sized wells
Heating times	18 minutes from ambient to 140 °C	12 minutes from ambient to 350 °C	12 minutes from ambient to 650 °C
Cooling times	20 minutes from ambient to −25 °C	15 minutes from 350 °C to 100 °C	25 minutes from 650 °C to 100 °C
Stabilization time	7 minutes		
Immersion depth	4.875 in (124 mm)		
Power	115 VAC (± 10 %), 1.3 A or 230 VAC (± 10 %), 0.7 A, switchable, 50/60 Hz, 150 W	115 VAC (± 10 %), 4.4 A or 230 VAC (± 10 %), 2.2 A, switchable, 50/60 Hz, 500 W	115 VAC (±10 %), 8.8 A or 230 VAC (±10 %), 4.4 A, switchable, 50/60 Hz, 1000 W
Size	5.63 W x 10.25 H x 9.63 D in (143 x 261 x 245 mm)	6 W x 3.375 H x 7.75 D in (152 x 86 x 197 mm)	4.3 W x 9.3 H x 7.3 D in (109 x 236 x 185 mm)
Weight	12 lb. (5.7 kg)	6 lb. (2.7 kg)	8 lb. (3.6 kg)
Computer interface	RS-232 included with free Interface-*it* software		
NIST-traceable certificate	Data at −25 °C, 0 °C, 25 °C, 50 °C, 75 °C, 100 °C,and 140 °C	Data at 50 °C, 100 °C, 150 °C, 200 °C, 250 °C, 300 °C, and 350 °C	Data at 100 °C, 200 °C, 300 °C, 400 °C, 500 °C and 600 °C

Summary specifications for 9009

Range	
Hot block	50 °C to 350 °C (122 °F to 662 °F)
Cold block	−15 °C to 110 °C (5 °F to 230 °F) in 23 °C ambient (−8 °C with hot block at 350 °C)
Accuracy	
Hot block	± 0.6 °C
Cold block	± 0.2 °C
Stability	
Hot block	± 0.05 °C
Cold block	± 0.05 °C
Well-to-well uniformity	± 0.1 °C
Stabilization time	8 minutes
Well depth	4 inches (101.6 mm)
Removable inserts	Two 1.4 in (6.4 mm) and two 3/16 in (4.8 mm) inserts included; see ordering information for other available inserts
Power	115 V ac (± 10 %), 50/60 Hz; 230 V ac (± 1 %), 60/60 Hz; specify
Size	7 in H x 10.5 in W x 9.75 in D (178 x 267 x 248 mm)
Weight	10 lb. (4.5 kg)
7-point NIST Traceable Calibration	
Hot block	50 °C, 100 °C, 150 °C, 200 °C, 250 °C, 300 °C and 350 °C
Cold block	−18 °C, 0 °C, 25 °C, 50 °C, 75 °C, 100 °C and 122 °C

Summary specifications for 9150

	Range
Temperature range	150 °C to 1200 °C (302 °F to 2192 °F)
Display resolution	0.1° to 999.9° 1° above 1000°
Stability	± 0.5 °C
Display accuracy	± 5 °C
Well diameter	1.25 in (32 mm)
Well depth	5.5 in (140 mm); (4 in [101 mm] in removable insert plus 1.5 in [38 mm] in insulator)
Heating time	35 minutes to 1200 °C
Cooling time	140 minutes with block
Well-to-well uniformity	± 0.5 °C to ± 1.0 °C (Insert "C" at 1200 °C)
Stabilization	20 minutes
Power	115 VAC (± 10 %), 10.5 A or 230 VAC (± 10 %), 5.2 A, switchable, 50/60 Hz, 1200 W
Size	12.4 H x 8.2 W x 12.4 D in (315 x 208 x 315 mm)
Weight	28 lb. (13 kg)
NIST-traceable calibration	Data at 150 °C, 300 °C, 450 °C, 600 °C, 800 °C, 1000 °C, and 1200 °C

Infrared Calibrators

Hart Scientific 9132 and 9133 Infrared Calibrators
Precision when you need it for infrared temperature calibration

Whether you're using in-line or handheld pyrometers, the 9132 Portable IR Calibrator can handle your workload to 500 °C (932 °F). For calibrating IR guns at cold temperatures, the 9133 Portable IR Calibrator reaches –30 °C (22 °F) in normal ambient conditions.

Simply "point and shoot" to check your IR guns. For higher precision, a well is located directly behind the blackbody

surface for contact calibration of the blackbody using a calibrated PRT and readout. The 2.25 in (57 mm) target offers a large field of view area for optical variations in infrared thermometers. Emissivity of the target is 0.95 (± 0.02) and its temperature may be controlled in increments of 0.1 °C.

No other IR calibrators offer this performance in a compact package!

Summary specifications for 9132 and 9133

	9132	9133
Temperature range	50 °C to 500 °C (122 °F to 932 °F)	–30 °C to 150 °C at 23 °C ambient (–22 °F to 302 °F at 73 °F ambient)
Accuracy	± 0.5 °C at 100 °C ± 0.8 °C at 500 °C	± 0.4 °C
Stability	± 0.1 °C at 100 °C ± 0.3 °C at 500 °C	± 0.1 °C
Target size	2.25 in (57 mm)	
Target emissivity	0.95 (± 0.02 from 8 to 14 mm)	
Resolution	0.1 °	
Heating time	30 minutes (50 °C to 500 °C)	15 minutes (25 °C to 150 °C)
Cooling time	30 minutes (500 °C to 100 °C)	15 minutes (25 °C to –20 °C)
Power	115 VAC (± 10 %), 3 A or 230 VAC (± 10 %), 1.5 A, switchable, 50/60 Hz, 340 W	115 VAC (± 10 %), 1.5 A, or 230 VAC (± 10 %), 1.0 A, switchable, 50/60 Hz, 200 W
Size	4 H x 6 W x 7 D in (102 x 152 x 178 mm)	6 H x 11.25 W x 10.5 D in (152 x 286 x 267 mm)
Weight	4 lb. (1.8 kg)	10 lb. (4.6 kg)
Computer interface	RS-232 included with free Interface-*it* software	
NIST-traceable contact calibration	Data at 50 °C, 100 °C, 200 °C, 250 °C, 300 °C, 400 °C and 500 °C	Data at –30 °C, 0 °C, 25 °C, 75 °C, 100 °C, 125 °C and 150 °C

Ordering information
9132-156 IR Calibrator, 110 V 50/60 Hz
9132-256 IR Calibrator, 220 V 50/60 Hz
9133-156 IR Calibrator, 110 V 50/60 Hz
9133-256 IR Calibrator, 220 V 50/60 Hz
9308 Hard Carrying Case (9132)
9302 Hard Carrying Case (9133)

Thermometer Readout

Ordering information

1529 Chub-E4, 2 TC and 2 PRT/Thermistor Inputs
1529-R Chub-E4, 4 PRT/Thermistor Inputs
1529-T Chub-E4, 4 TC Inputs
(Specify 110V or 220V power)
2506-1529 IEEE Option
9322 Rugged Carrying Case
1502A-156 "Tweener" PRT Thermometer (110 V)
1502A-256 "Tweener" PRT Thermometer (220 V)
2502 DC Power Option
2506 IEEE Option
2508 Serial Cable Kit
9313 Battery Pack
9301 Carrying Case, fits Tweener and 12 in. probe
9308 Carrying Case, fits Tweener and 6 in. probe

Hart Scientific 1529 Chub-E4 Thermometer
Lab-quality accuracy on four channels

- Four channels for PRTs, thermistors and thermocouples
- Displays eight user-selected data fields
- Logs up to 8,000 readings
- Battery provides eight hours of continuous operation

Hart Scientific 1502A "Tweener" Thermometer
Best performance thermometer in its price range

- PRT readout with accuracy to ± 0.006 °C
- Reads both 100 Ω and 25 Ω probes
- 0.0001 °C resolution
- Optional battery pack available
- Compatible with Log*Ware* and MET/TEMP II software

Summary specifications for 1502A and 1529

	PRT / RTD	Thermistor	Thermocouple		Tweener
Inputs	2 channels PRT/thermistor and 2 channels TC, or 4 channels PRT/thermistor, or 4 channels TC, specify when ordering; PRT/thermistor channels accept 2, 3, or 4 wires; TC inputs accept B, E, J, K, N, R, S, T, and Au-Pt TC types				
Temperature range	−189 °C to 960 °C (-308 °F to 1760 °F)	−50 °C to 150 °C (-58 °F to 302 °F)	−270 °C to 1800 °C (-454 °F to 3272 °F)		-200 °C to 962 °C (-328 °F to 1764 °F)
Measurement range	0 to 400 Ω	0 to 500 KΩ	−10 to 100 mV		0 to 400 Ω
Characterizations	ITS-90, IEC-751 (DIN "385"), Callendar-Van Dusen	Steinhart-Hart, YSI-400	NIST Monograph 175, 3-point deviation function applied to NIST 175, 6th-order polynomial		ITS-90 subranges 4, 6 thru 11, IPTS-68 Callendar-Van Dusen
Temperature accuracy, typical (meter only)	± 0.006 °C at 0 °C ± 0.009 °C at 100 °C	± 0.0025 °C at 0 °C ± 0.025 °C at 100 °C	Ext. RJC K at 600 °C ± 0.15 °C: T at 200 °C ± 0.1 °C:	Int. RJC ± 0.4 °C ± 0.3 °C	± 0.006 °C at 0 °C ± 0.009 °C at 100 °C
Temperature resolution	0.001°	0.0001°	0.01 to 0.001°		0.001 °C
Operating range	16 °C to 30 °C				
Logging intervals	0.1, 0.2, 0.5, 1, 2, 5, 10, 30, or 60 seconds; 2, 5, 10, 30, or 60 minutes				
Communications	RS-232 (tweener) and IR ports included, IEEE-488 (GPIB) optional				
Size (HxWxD)	4.0 x 7.5 x 8.2 in (102 x 191 x 208 mm)				2.4 x 5.6 x 7.1 in (61 x 143 x 181 mm)
Weight	4.5 lb (2 kg)				2.2 lb (1.0 kg)
Calibration	Accredited NIST-traceable resistance calibration and NIST-traceable voltage calibration provided				

Handheld Thermometer Readouts

Hart Scientific 1521 and 1522 Handheld Thermometers
Highest precision available in a battery-powered, handheld thermometer

These handheld thermometers feature measurement accuracy to ± 0.005 °C and .001° resolution. Accept inputs from RTDs or thermistors and with Hart's INFO–CON connector there's no need to program probe coefficients into the meter. All data is stored in the INFO–CON and conveniently downloaded when connected to the 1521 and 1522.

The 1522 is also a data logger. Log up to 10,000 readings. Download logged data via RS–232 with Hart's 9934 Log*Ware* software.

Summary specifications for 1521 and 1522

	Pt 25 to Pt 100	Thermistor
Temperature range	–200 °C to 962 °C (–328 °F to 1764 °F)	–50 °C to 150 °C (–58 °F to 302 °F)
Resistance range	0 Ω to 400 Ω	0 Ω to 500 KΩ
Temperature accuracy (meter only)	–200 °C to 100 °C: ± 0.025 °C 100 °C to 400 °C: ± 0.05 °C 400 °C to 800 °C: ± 0.1 °C	0 °C to 50 °C: ± 0.005 °C 50 °C to 75 °C: ± 0.01 °C 75 °C to 100 °C: ± 0.02 °C
Excitation current	0.5 mA	5 µA
Operating range	0 °C to 40 °C	
Memory	**1521** – Stores 6 readings in "Hold" mode **1522** – Logs 10,000 readings in "Auto Logging" mode, 100 readings in "Demand Logging" mode	
Power	Rechargeable nickel–metal–hydride batteries (ac adapter included)	
Size	7.75 in H x 4.2 in W x 1.5 in D (197 x 107 x 38 mm)	
Weight	1 lb. (0.4 kg)	
Calibration	10–point, NIST-traceable resistance calibration provided	

Ordering information
1521–156
Thermometer, handheld, 1 channel, 110 V
1521–256
Thermometer, handheld, 1 channel, 220 V

1522–156
Thermometer, handheld, 1 channel data logger, 110 V
1522-256
Thermometer, handheld, 1 channel data logger, 220 V
9934–S
Software, Log*Ware* 1-channel, single user

9934–M
Software, Log*Ware* 1–channel, multi user
9318
Case, 1521/1522, probe carrying
Included: Adapter/charger

Micro-Baths

Ordering information

7103 Micro-Bath, 30 °C to 125 °C (includes a transport seal lid and a 2085 test lid)

7102 Micro-Bath, –5 °C to 125 °C (includes a transport seal lid and a 2082–P test lid)

6102 Micro-Bath, 35 °C to 200 °C (includes a transport seal lid and a 2082–M test lid)

(Specify 110V or 220V power)

5010–L Silicone oil, type 200.05, 1 liter (usable range: –40 °C to 130 °C)

5013–L Silicone oil, type 200.20, 1 liter (usable range: 10 °C to 230 °C)

9317 Carrying case for 7103

9310 Carrying case for 6102

9311 Carrying case for 7102

Hart Scientific 6102, 7102 and 7103 Micro-Baths
Portability and extreme stability

- Stability to ± 0.015 °C
- Ranges from –30 °C to 200 °C
- Accepts oddly shaped sensors
- Exceptional bath portability
- Direct interface to Fluke 744

Summary specifications

	6102	7102	7103
Range	35 °C to 200 °C (95 °F to 392 °F)	–5 °C to 125 °C (23 °F to 257 °F)	–30 °C to 125 °C (–22 °F to 257 °F)
Accuracy	± 0.25 °C		
Stability	± 0.02 °C at 100 °C (oil 5013) ± 0.03 °C at 200 °C (oil 5013)	± 0.015 °C at –5 °C (oil 5010) ± 0.03 °C at 121 °C (oil 5010)	± 0.03 °C at –25 °C (oil 5010) ± 0.05 °C at 125 °C (oil 5010)
Operating temperature	5 °C to 45 °C		
Heating time	25 °C to 200 °C: 40 minutes	25 °C to 100 °C: 30 minutes	25 °C to 100 °C: 35 minutes
Cooling time	200 °C to 100 °C: 35 minutes	25 °C to 0 °C: 30 minutes	25 °C to –20 °C: 45 minutes
Well size	2.5 in dia. x 5.5 in deep (64 x 139 mm) (access opening is 1.9 in [48 mm] in diameter)		
Size	5.5 W x 10.38 H x 8 D in (14 x 26 x 20 cm)	7.2 W x 12 H x 9.5 D in (18 x 31 x 24 cm)	9 W x 13.2 H x 10.5 D in (23 x 34 x 26 cm)
Weight	10 lb. (4.5 kg) with fluid	15 lb. (6.8 kg) with fluid	22 lb. (9.8 kg) with fluid
Power	115 VAC, 230 VAC (± 10 %)	115 VAC, 230 VAC (± 10 %)	94–234 VAC (± 10 %)
Computer interface	RS-232 included with free Interface-*it* software		
NIST-traceable calibration	Data at 50 °C, 100 °C, 150 °C, and 200 °C	Data at –5 °C, 25 °C, 55 °C, 90 °C, and 121 °C	Data at –25 °C, 0 °C, 25 °C, 50 °C, 75 °C, 100 °C, and 125 °C

Thermo-Hygrometer

Hart Scientific 1620
Graphical temperature/humidity logger

- Two channels measure ambient temperature to ± 0.25 °C and relative humidity to ± 2 %
- On-board memory holds up to 400,000 time/date-stamped readings; PC card holds millions more
- Detachable probes contain their own calibration data for easy recalibrations
- Optional software logs in real time or shows graphical/statistical data
- User configurable display for trend graphs and data
- Visual and audio alarms for numerous alarm or fault conditions

Summary specifications

	Description
Temperature range	0 °C to 50 °C (32 °F to 122 °F)
Temperature accuracy	15 °C to 35 °C: ± 0.25 °C (calibrated) 0 °C to 15 °C, 35 °C to 50 °C: ± 0.5 °C (uncalibrated typical)
Delta temperature accuracy	± 0.025 °C for ± 1 °C changes within 15 °C to 35 °C
Temperature resolution	User selectable up to 0.001 °C
RH range	0 % to 100 % RH
RH accuracy	20 % to 70 % RH: +2 % RH (calibrated) 0 % to 20 % RH, 70 % to 100 % RH: ± 3 % RH
Delta humidity accuracy	± 1.0 % for ± 5 % changes within 20 % to 70 % RH
RH resolution	User selectable up to 0.01 %
Inputs	Up to two sensors, each measuring temperature and relative humidity; remotable
Display	LCD, displays data graphically, numerically and statistically; 16 setups are included
Memory (internal)	400,000 typical individual time-stamped readings
Alarms	Visual and audio alarms for temperature, temperature rate, RH, RH rate, and fault conditions
Communications	RS-232 and IrDA
PC card interface	64 MB flash memory for downloading data to a PC
Power	12 V dc from external 100-240 VAC power supply
Operating range	0 °C to 50 °C
Size (DewK)	4.9 H x 8.3 W x 2.0 D in (125 x 211 x 51 mm)
Weight	1.5 lb. (0.7 kg)
Calibration	Certificate of NIST-traceable calibration included

Software and Optional Probes

Ordering information*
9938 MET/TEMP II Software (package includes CD–ROM, RS–232 emultiplxer box, adapter, and PC cable), (specify 110 V or 220 V)
9934 Log*Ware*
9935 Log*Ware* II
* Requires Windows® 98 or higher

Hart Scientific MET/TEMP II Software
Easy-to-use temperature calibration automation software
- Fully automated calibration of RTDs, thermocouples, thermistors and many heat sources
- Calibrates up to 100 sensors at up to 40 points
- Performs coefficient calculations and generates tables and reports
- Reports conform to ANSI and NCSL standards

Hart Scientific Log*Ware* Data Logging and Analysis Software
Turns any Hart Scientific thermometer readout into a real-time data logger
- Calculates statistics and displays customized graphs
- User–selectable alarms, delayed start times, and sample intervals
- Logging intervals from 1 second to 24 hours
- User–settable alarm functions

Each probe includes:
- Individual report of calibration
- Probe linearization coefficients
- Resistance vs. temperature table
- Termination to match your thermometer readout (see spec chart)

Summary specifications

Model	Type	Range	Size	Basic Accuracy
5626-12-X	High-Temp PRT, 100 ohm	−200 to 661 °C (-328 to 1221 °F)	1/4 in x 12 in (6.35 x 305 mm)	± 0.007°C at 0 °C
5614-12-X	Secondary PRT, 100 ohm	−200 to 420 °C (-328 to 788 °F)	1/4 in x 12 in (6.35 x 305 mm	± 0.018 °C at 0 °C
5613-6-X	Secondary PRT, 100 ohm	−200 to 300 °C (-328 to 572 °F)	3/16 in x 6 in (4.76 x 152 mm)	± 0.018 °C at 0 °C
5612-9-X	Secondary PRT, 100 ohm	−200 to 420 °C (-328 to 788 °F)	3/16 in x 9 in (4.76 x 229 mm)	± 0.018 °C at 0 °C
5627-6-X	RTD, 100 ohm	−200 to 300 °C (-328 to 572 °F)	3/16 in x 6 in (4.76 x 152 mm)	± 0.050 °C at 0 °C
5627-9-X	RTD, 100 ohm	−200 to 420 °C (-328 to 788 °F)	3/16 in x 9 in (4.76 x 229 mm)	± 0.050 °C at 0 °C
5627-12-X	RTD, 100 ohm	−200 to 420 °C (-328 to 788 °F)	1/4 in x 12 in (6.35 x 305 mm)	± 0.050 °C at 0 °C
5618A-9-X	PRT, 100 ohm	−200 to 500 °C (-328 to 932 °F)	1/8 in x 9 in (3.2 x 229 mm)	± 0.050 °C at 0 °C
5622-05-X	Fast-response RTD	−200 to 350 °C (-328 to 662 °F)	0.02 in x 4 in (0.5 x 100 mm)	± 0.15 °C at 0 °C, uncalibrated; ± 0.04 °C, calibrated*
5610-9-X	Thermistor, Stainless	0 to 100 °C (32 to 212 °F)	1/8 in x 9 in (3.2 x 229 mm)	± 0.015 °C at 0 °C
5611-X	Thermistor, Bare Silcone Bead	0 to 100 °C (32 to 212 °F)	0.07 in x 0.55 in (1.8 x 14 mm)	± 0.015 °C at 0 °C

*These probes do not come with an individual certificate if a calibration is not ordered separately. Order calibration 1923–4–N if needed, (186 to 300 °C).
Model Info: X = I for 1521 or 1522, D for 1502A, L for 1529. 5610 and 5611 not applicable for 1502A.

Fluke 87V Industrial Multimeter
Designed to troubleshoot adjustable speed drives

The new Fluke 87V has improved measurement functions, troubleshooting features, resolution and accuracy to solve more problems on motor drives, plant automation, power distribution, and electro-mechanical equipment.

- Unique function for accurate voltage and frequency measurements on adjustable speed motor drives.
- Built–in thermometer.
- Measures A and mA.
- Large display with bright white backlight.

Fluke 189 Logging Multimeter
Designed to solve complex problems

The Fluke 189 can measure and log electrical parameters required to troubleshoot problems in power distribution and industrial automation.

- Built–in data logger to record voltage, current, temperature and other parameters unattended.
- Recorded data can be transferred to a PC with optional FlukeView® Forms software.
- Measure and display two parameters simultaneously. Monitor VAC and frequency at the same time.

87V and 189 capabilities	87V	189
Built–in data logger		•
Optically isolated serial port		•
Selectable filter for accurate voltage and frequency measurements on motor drives	•	
True–rms ac voltage and current for accurate measurements on non linear signals	•	•
True–rms ac + dc mode to measure composite signals		•
Basic dc accuracy	0.05 %,	0.025 %
High resolution for precise readings	10 µV,	1 µV
AC bandwidth for high frequency signals	20 KHz,	100 KHz
Built–in thermometer lets you carry one less tool	•	•
10,000 uF capacitance range for components and motor caps	•	•
Peak capture to record transients as fast as 250 µs	•	•
Resistance, continuity and diode test	•	•
Frequency and % duty cycle	200 KHz,	1 MHz
Db and pulse width		•
Min/Max and average recording to capture variations automatically	•	•

Ordering information

**Fluke 87–5
Industrial Multimeter**

**Fluke 189
Logging Multimeter**
Both meters include test leads, alligator clips, batteries (installed), Getting Started manual, operators manual and application notes on CD. Model 87V includes a temperature probe.

Also available:

BP189 Extended Life Battery Pack

87V/E Combo Kit

ScopeMeter® 120 Series Handheld Oscilloscope
For industrial electrical, electronic and process troubleshooting applications

The compact ScopeMeter® 124 is the rugged solution for industrial troubleshooting and installation applications. This is a truly integrated test tool, with oscilloscope, multimeter and "paperless" recorder in one affordable, easy-to-use instrument. Find fast answers to problems in machinery, instrumentation, control, industrial control networks and power systems.

- Dual-input 40 MHz or 20 MHz digital oscilloscope
- Two 5,000-count true-rms digital multimeters
- A dual-input TrendPlot™ recorder
- Connect-and-View™ trigger simplicity for hands-off operation
- Shielded test leads for oscilloscope, resistance and continuity measurements
- Up to seven hours battery operation
- 600 V CAT III safety certified
- Rugged compact case

Ordering information

Fluke 124/S
Industrial ScopeMeter Handheld Oscilloscope, 40 MHz, with SCC120

Fluke 124
Industrial ScopeMeter Handheld Oscilloscope, 20 MHz

Fluke 124S includes Hard-shell carrying case, optically isolated RS-232 adapter/cable and FlukeView for ScopeMeter Windows® software

Summary specifications

Bandwidth	40 MHz and 20 MHz
Max. real time sample rate	25 MS/s
Max. equivalent time sample rate	up to 2.5GS/s
Number of inputs/digitizers	2
Glitch capture	40 ns
Trigger types	Connect-and-View™, Free run, Single Shot, Edge, Video
Scope measurements	26 automatic measurements
Cursors	Yes
Dual input TrendPlot	Yes
Memory for screens and set-ups	20
True-rms multimeter	5000 counts, Volts, Amps, Ohms, Continuity, Diode, Temp
Safety certified (EN61010-1)	600 V CAT III (instrument and included accessories)
Battery (installed)	Fluke 124: 7 hr NiMH
Line power	Adapter / battery-charger included
Size	232 x 115 x 50 mm (9.2 x 4.5 x 2 in)
Weight	1.2 kg
PC and printer interface	Using optional Optically Isolated RS-232 adapter / cable
Warranty	3 years on main instrument, 1 year on the standard accessories

Fluke 337 Clamp Meter
The Fluke 337 is the ultimate clamp meter for troubleshooting variable speed drives and motors

- Inrush current function for measuring starting current for motors, lighting, etc.
- Small body and jaws fit perfectly in your hand and into tight places
- Improved low current measurement accuracy from new microprocessor technology
- Meter controls are positioned so current measurements can be done with one hand (index finger on clamp opening lever and thumb on rotary switch)
- Large, backlit display is easy to see
- Auto shut-off maximizes battery life so the meter works when you need it

- Handy display hold keeps measurements on the display
- Backed by Fluke technical phone support, repair, parts and calibration service
- Three-year warranty

Features	337
Backlight	●
Amps ac	999.9
Amps dc	999.9
True-rms	●
Volts ac/dc	600.0
Basic current accuracy	2 %
Resistance (Ohms)	600.0/6 K
Continuity beeper	●
Frequency (Hz)	400.0
Min/Max capture	●
Inrush current	●
DC zero button	●
Jaw size	1.7 in/43mm
Maximum wire size	750 MCM

Ordering information
Fluke 337
Meter includes soft carrying case, test leads, two batteries, instruction card and safety information.

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Recommended accessories — 337 clamp meter

TL223
SureGrip™ Electrical Test Lead Set

H3
Clamp Meter Holster

LVD1
Volt Light

TL71
Premium Test Lead Set

AC72
Alligator Clips

For more detailed information, go to www.fluke.com/clamps

Fluke 1550B MegOhmMeter
Digital insulation testing from 250 to 5000 volts for troubleshooting and preventive maintenance

The Fluke 1550B is a versatile, rugged digital MegOhmMeter capable of testing switchgear, motors, generators, and cables at up to 5000 V dc, making it a powerful preventive and predictive maintenance tool.

- Standard test voltages of 250 V, 500 V, 1000 V, 2500 V and 5000 V
- Programmable test voltages available in 50 volt steps from 250 to 1000 volts and 100 volt steps from 1000 to 5000 volts
- High capacity batteries allow longer testing between recharge

- Automatic calculation of Dielectric Absorption and Polarization Index with no additional setup, reduces testing time
- Improved ramp function (0 to 5000 V dc) for breakdown testing
- Measures resistances up to one teraohm
- Measures cable or insulation capacitance and leakage current
- Warning voltage function alerts the user that voltage is present and gives the voltage reading up to 600 V ac or dc
- Auto discharge of capacitance voltage

Ordering information

Fluke 1550B MegOhmMeter

Includes test leads, 5000 V-rated probes, alligator clips, interface adapter and cable, FlukeView® Forms Basic software, line cord, soft carrying case and user's manual

Recommended accessories – 1550B MegOhmMeter

FVF-UG
FlukeView Forms
Software Upgrade

TL1550EXT
25 Foot Extension
Test Lead Set

L206
Deluxe LED Hat Light

For more detailed information, go to www.fluke.com/1550

Thermal Imager

Fluke Ti30™ Thermal Imager
Everything needed for everyday imaging

- **Complete imaging solution** – The Ti30 thermal imager is packaged with all necessary accessories, unlimited–use InsideIR™ companion software, and two days of professional thermography training.
- **Lowest cost of ownership** – An exceptional value for a high–performance imager, the Ti30 also offers affordable instrument service and calibrations.
- **Fast and easy predictive maintenance inspection routing** – Plan your equipment inspection route, load it once into the imager, and then follow the easy, on–camera instructions each time you perform inspections.

New

Summary specifications for Ti30™ Thermal Imager

Detector	
Detector type	120 x160 thermal element uncooled focal plane array microbolometer
NETD (Noise equivalent temp. difference)	200 mK
Thermal	
Temperature range	–10 °C to 250 °C (14 °F to 482 °F)
Accuracy	±2 % or ±2 °C (+/– 3 % or 3 °C from –10 to 0 °C)
Optical	
Optical resolution	90:1
Minimum diameter measurement spot	7 mm (0.27 in) at 61 cm (24 in)
Field of view (FOV)	17° Horizontal x 12.8° Vertical
Target sighting	Single laser dot (Meets IEC Class 2 & FDA Class II requirements)
Controls and adjustments	
Focus	Focusable, 61 cm (24 in) to infinity
Temperature scale	°C or °F selectable
Palettes	Gray, ironbow or rainbow
Measurement modes	Automatic, semi-automatic or manual
Adjustable emissivity	0.10 to 1.00 by 0.01
Reflected background temperature	–50 °C to 460 °C (–58 °F to 860 °F)
Environmental	
Ambient operating temperature	–10 °C to 50 °C (14 °F to 122 °F)
Relative humidity	10 to 90 % non-condensing
Storage temperature	–25 °C to 70 °C (–13 °F to 158 °F) [without batteries]
Other	
Storage capacity	100 images
Power	Rechargable battery pack or 6AAs (not included)
Battery life	Minimum 5 hours continuous use
Image frame rate	20 Hz
Thermal analysis software	InsideIR (included)
PC software operating systems	Microsoft® Windows® 98®, 2000® or XP®
Weight (includes batteries)	1 kg (2.2 lb)
Warranty	1 year (U.S. only)

Ordering information

Fluke Ti30™ Thermal Imager
Includes docking station with universal power adapter and USB connection, hardshell carrying case, USB field cable, rechargeable battery pack, interactive CD, training presentation CD, carrying pouch, wrist strap and quick reference card.

Optional:
NIST Calibration Certificate
The Fluke Ti30 Thermal Imager is sold exclusively through thermography representatives. To request a demonstration or order a Ti30 imager, visit **www.fluke.com/thermography** or call (800) 866-5478.

Power Quality Analyzers

New

Electrical Safety
600 V CAT IV

Electrical Safety
1000 V CAT III

Ordering information

Fluke-433 Power Quality Analyzer (three-phase)

Fluke-434 Power Quality Analyzer (three-phase)
Includes four dual-range (40 A and 400 A) current clamps, five voltage test leads and clips, line adapter/battery charger, color localization input decals, color wire clips for test leads, carrying case, manual and quick start guide.

Fluke-433UGK Upgrade Kit for Fluke 433

Fluke 433 and 434 Power Quality Analyzers
Three-phase power quality analyzers

The Fluke 433 and 434 three-phase power quality analyzers help you locate, predict, prevent and troubleshoot problems in power distribution systems for process plants.

These easy-to-use handhelds are a "must have" for any person who maintains or troubleshoots three phase distribution. The new IEC standards for flicker and power quality are built right in to take the guesswork out of monitoring.

433 and 434 feature:

- Four voltage and four current channels
- Captures waveform data on all phases simultaneously
- System-Monitor: Six power quality parameters on one dashboard
- Autotrend – Analyze trends using cursors and zoom while background recording continues
- Minimal setup required with intuitive menus
- Highest safety rating in the industry
- Rugged, handheld recorder
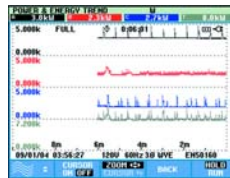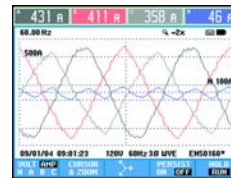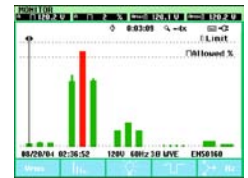- Transfer data files to your PC for reporting and analysis using FlukeView software

- Automatic transient display: never miss an event
- Auto trend: don't waste time setting up recordings

- Four voltage and four current channels.
- Captures waveform data on all phases simultaneously

- System-Monitor: Six power quality parameters on one dashboard

Summary specifications for 433 and 434 power quality analyzers

Function	433	434
Application	Three-phase	
Inputs	4 voltage and 4 current (for 3 phases and ground)	
Measurements		
Vrms, Arms, Hz, W, VAR, VA, PF, Cos φ (DPF), Crest Factors	●	●
Harmonics and THD (V,A,W), k-factor	●	●
Inter-harmonics	Optional*	●
kWh and kVARh (forward and reverse), kVAh, demand interval	Optional*	●
Flicker (Plt, Pst, PF5)	●	●
Unbalance	●	●
Recorder/AutoTrend	●	●
System-Monitor	●	●
Real time scope/phasor diagrams	●	●
Dips and swells/half cycle based	●	●
Transient display	Optional*	●
Inrush current	Optional*	●
EN50160 compliance	●	●
IEC61000-4-30 compliance	●	●
Memory (screens/data)	25/5 standard 50/10 Optional*	50/10
FlukeView® software and interface cable	Optional*	●

* Optional functionality can be added with upgrade kit. For details see ordering information.

Recommended accessories

i2000PQ4
4 pack i2000A Flexclamp

Fluke 43B Power Quality Analyzer
Power quality analysis plus a scope and a multimeter

The Fluke 43B features:
- Voltage and current waveforms displays
- Watts, power factor, VA and VARs
- Voltage, current and power harmonics up to 51st
- Record V and A on a cycle by cycle basis
- Catch and display up to 40 transients
- Calculates 3-phase power on balanced loads
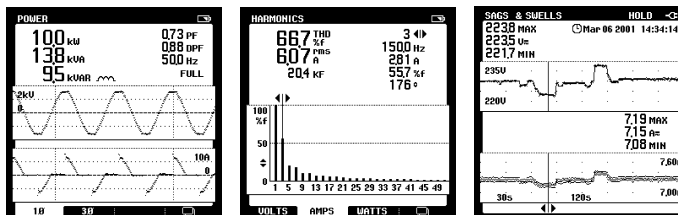
Ordering information
Fluke 43B Power Quality Analyzer

Includes a hard case, voltage and current probes, FlukeView® PC software and power quality instructional CD, interface cable, line voltage adapter/battery charger and user's manuals.

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TL224 SureGrip™ Silicone Insulated Test Leads
- 1.5 m silicone–insulated wire resists heat and cold
- CAT III 1000 V, 10 A, CAT IV 600 V, 10 A

TP220 SureGrip™ Industrial Test Probes
- Sharp, 1/2 in. stainless steel tip provides reliable contact
- CAT III 1000 V, 10 A, CAT IV 600 V, 10 A

AC280 SureGrip™ Hook Clips
- Profile narrows to .22 in. at tip
- CAT III 1000 V, CAT IV 600 V, 3 A

AC283 SureGrip™ Pincer Clips
- 4.5 in. flexible, insulated shaft
- CAT III 1000 V, CAT IV 600 V, 1 A

TLK-225 SureGrip™ Master Accessory Kit
- **AC220** plunger style alligator clips
- **AC280** plunger style hook clips
- **AC283** plunger style pincer clips
- **AC285** large jaw alligator clips
- **TP220** sharp test probes
- **TL224** right to straight test leads
- 6-pocket storage pouch

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L200 Probe Light
- Small, rugged light easily attaches to any Fluke test probe
- Bright white LED never burns out
- 120 hours of battery life

80PK-8 Pipe Clamp Temperature Probe
- Designed for pipe surfaces from 6.4 mm (1/4 in) to 34.9 mm (1–3/8 in) diameter
- Measurement range: –29 °C to 149 °C

80PK-27 SureGrip™ Industrial Surface Temperature Probe
- For flat or slightly curved surfaces
- Compatible with K-Type instruments
- Measurement range: –127 °C to 600 °C

80PK-22 SureGrip™ Immersion Temperature Probe
- For use in liquids or gels
- Compatible with K-Type instruments
- Measurement range: –40 °C to 1090 °C

80PK-24 SureGrip™ Air Temperature Probe
- For air and non-caustic gas measurements
- Compatible with K-Type instruments
- Measurement range: –40 °C to 816 °C

PV350 Pressure Vacuum Module
- Digital pressure and vacuum measurements in a single module
- Measures HVAC/R, hydraulic and pneumatic pressures to 350 psig/2413 kPa
- Measures to 29.9 in Hg/76 cm Hg vacuum

MeterCleaner Wipes
- Industrial strength cleaning formula removes surface dirt, oil and grease
- Comes in two sizes: 6-pack (MC60) and 50-pack (MC50)

Fluke 700PMP Pressure Pump
The Fluke 700PMP is a hand-operated pressure pump to provide pressures up to 150 psi/1000 kPa. Output fitting is 1/8 FNPT.

Fluke 700PTP Pneumatic Test Pump
The Fluke 700PTP is a handheld pressure pump designed to generate either vacuum to –11.6 psi/–0.8 bar or pressure to 600 psi/25 bar.

Fluke 700HTP Hydraulic Test Pump
The Fluke 700HTP is designed to generate pressures up to 10,000 psi/700 bar. Use the Fluke–700PRV adjustable relief valves to limit pressures to 1360 psi and 5450 psi.

Fluke 700HTH Hydraulic Test Hose
The Fluke 700HTH is a 10,000 psi, 700 bar test hose that connects to a calibration unit under test from a Fluke 700HTP hydraulic test pump.

Fluke 700LTP Low Pressure Test Pump
The Fluke 700LTP is designed to generate either vacuum to –12 psi/–.85 bar or pressures to 30 psi/2000 mbar. The Fluke 700 LTP is primarily intended for low pressure applications and features a find adjust vernier and an adjustable slow–bleed relief valve.

Fluke 700ILF In-Line Filter
The Fluke 700ILF can be used to isolate the calibrator from incidental contact with fluids. Particularly useful with the 718 calibrator to help keep moisture or oils from contaminating the on–board pump.

87-Retrofit Kit for 787, 83, 85, 87-3 meters
Breathe new life into your old meter.
• **Replacement holster**, **DR80** LCD display upgrade kit, **TL71** premium DMM test leads, **AC72** slide–on style alligator clips, **F1** and **F2** replacement fuses, **MeterCleaner Wipes**

Fluke 700PMP

Fluke 700HTP   Fluke 700PTP

Fluke 700HTH

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Fluke 87-Retrofit Kit   Fluke 700ILF   Fluke 700LTP

Accessories — Cases, Storage, Shunts and Battery Packs

Carrying cases

Fluke 700-IV

Battery pack

Fluke C550 Tool Bag

C700 Hard Carrying Case (700 Series)
Hard carrying case with custom-cut foam liner

C781 Soft Carrying Case
Rugged, close-fitting fabric carrying case for documenting process calibrator. A separate, detachable pouch holds test leads and accessories.

C789 Soft Carrying Case
Rugged, three-compartment fabric carrying case for documenting process calibrator and accessories

C550 Tool Bag
- Steel reinforced frame
- Rugged ballistic cloth with heavy duty hardware
- Large zippered storage compartment with 25 pockets
- Weather resistant
- Carry all your tools to the job

Fluke 700-IV Current Shunt
Conversion factor: $10 \text{ mV} = 1 \text{ mA}$
Accuracy (% of input, 1 year): 0.025 %
Input current: 0 to 55 mA
Input resistance: 250 Ω nominal
Output resistance: 10 Ω nominal Accuracy specification applies from +18 °C and 28 to 50 °C
Maximum input voltage: 30 V dc

BP7235 NiMH Battery Pack
7.2 V 3500 mA-hour rechargeable NiMH battery pack

BP7217 NiCd Battery Pack
7.2 V 1700 mA-hour rechargeable NiCd battery pack

80PK-8 Pipe Clamp Temperature Probe
Type-K thermocouple for fast temperature and super heat measurements of pipe surfaces. Measurement range: -29 to 149 °C (-20 to 300 °F) for pipe surfaces from 6.4 mm to 34.9 mm.

i1010-Kit
- i1010 1-600 A ac rms, 1-1000 A dc current clamp
- Zippered vinyl carry case with moveable divider

Fluke i1010 Kit

Accessories Compatibility Chart

	743B, 744	741B	725	717, 718	712	714	724	715	707	705	78X	61, 65	51/52, 53/54	87V	433, 434	43B
700Pxx Pressure Modules	•	•	•	•												
BP7217 NiCd Battery Pack	•	•														
BP7235 NiMH Battery Pack	•	•														
BE9005 Battery Eliminator	•	•														
BC7217 Battery Charger	•	•														
700BCW Bar Code Wand	•															
700BCA Bar Code Adapter	•				•											
TPAK Magnetic Hangar			•	717	•	•	•				•			•	•	
700TC1 and TC2 Thermocouple Plug Kits	•	•	•			•	•				•					
80CJ-M or 80CK-M Mini-connectors	•	•	•			•	•							•	•[3]	
80PK Thermocouple Probes (all)	•	•	•			•	•							•	•[3]	
700-IV Current Shunt	•	•														
700ILF In-line Filter					•											
700LTP Low-pressure Test Pump	•	•	•	•												
700PMP Pressure Pump	•	•	•	•[2]												
700PTP Pneumatic Test Pump	•	•	•	•[2]												
700HTH Hydraulic Test Hose	•	•	•	•[2]												
700HTP Hydraulic Test Pump	•	•	•	•[2]											•	
i400 AC Current Clamp														•		
i410 AC/DC Current Clamp	•	•							•			•[1]		•	•	•
i1010 AC/DC Current Clamp	•	•							•			•[1]		•	•	•
C10 Holster, C12A Case				•		•	•	•		•	•			•		
C25/C100 Cases			•	•	•	•	•	•	•	•	•			•		
C781 Soft Carrying Case	•	•														
C789 Soft Carrying Case	•	•														•
C700 Hard Carrying Case	•	•														
C120/C125 Cases			•				•				•			•		
C510 Leather Case			•	•	•	•	•	•	•	•	•	•		•		
C530 Leather Accessory Case	•	•	•	•	•	•	•	•	•	•	•	•		•		
C550 Tool Bag	•	•	•	•	•	•	•	•	•	•	•	•		•	•	
PV350 Pressure Vacuum Module	•	•						•	•	•	•			•	•	
Fiber Optic Meter FOM	•	•						•	•	•	•			•		

1. 20 amps ac minimum   **2.** External pump required only when using high pressure modules   **3.** Requires 80AK adapter

Fluke – Commited to keeping your world up and running

FLUKE ®

Fluke Education Program

We've teamed up with colleges, trade, technical and vocational schools, and apprenticeship programs to bring the latest application information and tools into the classroom. If you're an educator, this program can provide you with curriculum materials and product discounts for your classes.
(available in the U.S., Canada, Singapore, Mexico and Australia)

For more information, visit **www.fluke.com/education**

Fluke Electrical Safety Program

Every day, an average of 9,000 U.S. workers suffer disabling injuries on the job. To help you reduce the level of risk in your work environment, Fluke has created a Safety Program for electrical measurement - including a free safety video.

For more information, visit **www.fluke.com/safety**

FlukePlus Members Only Program

FlukePlus is the first members-only program created for professional test tool users. Your membership in FlukePlus gives you exclusive access to product tips, "how-to" articles, exclusive offers, promotions, discounts and more. Best of all, its FREE to join.

Fluke Plus

For more information, visit
www.fluke.com/flukeplus

Fluke. *Keeping your world up and running.*

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Fax (31 40) 2 675 222
In Canada (800)-36-FLUKE or
Fax (905) 890-6866
From other countries +1 (425) 446-5500 or
Fax +1 (425) 446-5116
Web access: http://www.fluke.com

Fluke Service and repair locations worldwide

To contact Fluke or to locate an authorized service center, call one of the following telephone numbers:
USA: 1-888-99-FLUKE (1-888-993-5853)
Canada: 1-800-36-FLUKE (1-800-363-5853)
Europe: +31 402-675-200
Japan: +81-3-3434-0181
Singapore: +65-738-5655
Other countries: +1-425-446-5500

Or visit Fluke's web site at **www.fluke.com**