FLUKE®

51-54 Series II

Thermometer

Product Overview

PN 1276114
September 1999 Rev.1, 6/01

LIMITED WARRANTY & LIMITATION OF LIABILITY

This Fluke product will be free from defects in material and workmanship for 3 years from the date of purchase. This warranty does not cover fuses, disposable batteries or damage from accident, neglect, misuse or abnormal conditions of operation or handling. Resellers are not authorized to extend any other warranty on Fluke's behalf. To obtain service during the warranty period, send your defective tester to the nearest Fluke Authorized Service Center with a description of the problem.

THIS WARRANTY IS YOUR ONLY REMEDY. NO OTHER WARRANTIES, SUCH AS FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSED OR IMPLIED. FLUKE IS NOT LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, ARISING FROM ANY CAUSE OR THEORY. Since some states or countries do not allow the exclusion or limitation of an implied warranty or of incidental or consequential damages, this limitation of liability may not apply to you.

10/96

51–54 Series II

Introduction

The Fluke Models 51, 52, 53, and 54 Thermometers (“the thermometer”) are microprocessor-based, digital thermometers.

This guide provides an overview of the thermometers. Detailed *Users Manuals* are available on the accompanying CD-ROM. Each thermometer comes with a 3-year warranty, which is described in the *Users Manual.*

Model	Inputs	Thermocouple Types
51	Single	J, K, T, E
52	Dual	J, K, T, E
53	Single	J, K, T, E, R, S, N
54	Dual	J, K, T, E, R, S, N

The Models 53 and 54 have logging and PC interface capabilities.

Replacement Parts and Accessories

Accessory	Part Number
Holster and Flex Stand™ Assembly	1272438
AA NEDA 15A IEC LR6 batteries	376756
80PK-1 K-Type Bead Thermocouple	773135
CD-ROM	1276106
Service Manual	1276123

Safety Information

⚠ Warning

A Warning identifies conditions and actions that pose hazards to the user. To avoid electrical shock or personal injury, follow these guidelines:

- **Before using the thermometer inspect the case. Do not use the thermometer if it appears damaged. Look for cracks or missing plastic. Pay particular attention to the insulation around the connectors.**
- **Disconnect the thermocouple(s) from the thermometer before opening the case.**
- **Replace the batteries as soon as the battery indicator ( ) appears. The possibility of false readings can lead to personal injury.**
- **Do not use the thermometer if it operates abnormally. Protection may be impaired. When in doubt, have the thermometer serviced.**
- **Do not operate the thermometer around explosive gas, vapor, or dust.**
- **Do not apply more than the rated voltage, as marked on the thermometer, between the thermocouple(s), or between any thermocouple and earth ground.**

⚠Warning (cont.)

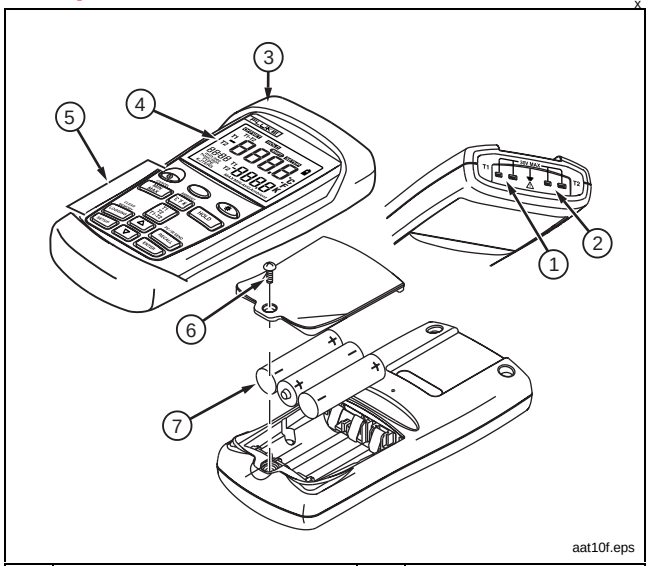
- ***Models 52 and 54:*** **Measurement errors may occur if voltages on the measurement surfaces result in potentials greater than 1 V between the two thermocouples. When potential differences are anticipated between the thermocouples, use electrically insulated thermocouples.**
- **When servicing the thermometer, use only specified replacement parts.**
- **Do not use the thermometer with any part of the case or cover removed.**

Caution

To avoid damaging the thermometer or the equipment under test.

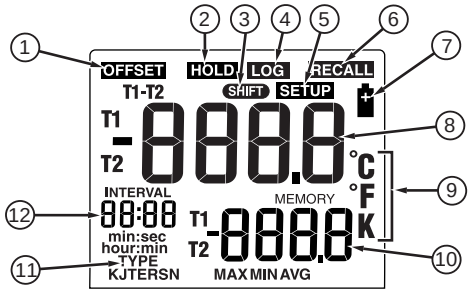
- **Use the proper thermocouples, function, and range for your thermometer.**
- **Do not attempt to recharge the batteries.**
- **Do not throw batteries into a fire to prevent explosion.**
- **Follow local laws or regulations when disposing batteries.**
- **Match the + and – polarities of the battery with the battery case.**

Components



1	Thermocouple T1 input	5	Buttons
2	*Models 52 and 54:* Thermocouple T2 input	6	Battery door
3	Holster	7	Batteries
4	Display		

Display Elements



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1	Measurement includes an offset.	7	Low battery.
2	Displayed readings are frozen.	8	Primary Display.
3	Shift function is in progress.	9	Temperature units.
4	Readings are being logged.*	10	Secondary Display.
5	Setup is in progress.	11	Thermocouple type.
6	Logged readings are displayed.*	12	Time Display.

** Models 53 and 54*

Buttons

⏻	Turn the thermometer on or off.
(Shift function)	, MIN MAX = stop displaying the minimum, maximum, and average readings. , LOGGING = delete logged readings from memory. , RECALL = toggle the IR port on and off.
☼	Turn the backlight on and off.
MIN MAX	Step through the maximum, minimum, and average readings.
°C°F K	Switch between Celsius (^{o}C), Fahrenheit (^{o}F), and Kelvin (K).
HOLD	Freeze or unfreeze the displayed readings.
T1 T2 T1-T2	Toggle showing the T1, T2, and T1-T2. *(Models 52 and 54)*
SETUP	Start or exit Setup.
△	Scroll to a Setup option or increase the displayed setting.
▽	Scroll to a Setup option or decrease the displayed setting.
ENTER	Enter a Setup option or store the displayed setting.
LOGGING	Start or stop logging.*
RECALL	Show toggle showing logged and MIN MAX readings.*
** Models 53 and 54*	

Changing Setup Options

1. Press [SETUP] to start or exit Setup.
2. Press [△] or [▽] to scroll to the setup option you want to change.
3. Press [ENTER] to indicate that you want to change this setting.
4. Press [△] or [▽] until the setting you want to use appears on the display.
5. Press [ENTER] to store the new setting in memory.

Setup Options

Option	Menu Item	Settings
Logging Interval*	**INTERVAL**	**0**, **1**, **2**, **3**, **4**, or USEr
Thermocouple	**TYPE**	**JKTERSN**
Offset	**OFFSET**	**T1** or **T2**
Sleep Mode	SLP	on or OFF
Time*	**- - : - -**	**0** to **24** for hours **0** to **60** for minutes
Line Frequency Noise Rejection	LInE	**60 H** (60 Hz North America) **50 H** (50 Hz other countries)

** Models 53 and 54*

Specifications

General

Weight	280 g (10 oz)
Dimensions (without holster)	2.8 cm × 7.8 cm × 16.2 cm (1.1 in × 3 in × 6.4 in)
Battery	3 AA batteries
Certification	CE, c SP us, TÜV
Safety	CSA C22.2 No. 1010.1 1992 EN 61010 Amendments 1, 2
CAT I	OVERVOLTAGE (Installation) CATEGORY I, Pollution Degree 2 per IEC1010-1*
* Refers to the level of Impulse Withstand Voltage protection provided. Equipment of OVERVOLTAGE CATEGORY I is equipment for connection to circuits in which measures are taken to limit the transient over voltages to an appropriate low level. Example include protect electronic circuits.	

Environmental

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	Non condensing <10 °C (<50 °F) 95% RH: 10 °C to 30 °C (50 °F to 86 °F) 75% RH: 30 °C to 40 °C (86 °F to 104 °F) 45% RH: 40 °C to 50 °C (104 °F to 122 °F)

Electrical

Measurement Range	J-type: –210 °C to +1200 °C (–346 °F to + 2192 °F) K-type: –200 °C to +1372 °C (–328 °F to +2501 °F) T-type: –250 °C to +400 °C (–418 °F to +752 °F) E-type: –150 °C to +1000 °C (–238 °F to +1832 °F) N-type: –200 °C to +1300 °C (–328 °F to +2372 °F) R- and S-type: 0 °C to +1767 °C (+32 °F to +3212 °F)
Display Resolution	0.1 °C / °F / K < 1000° 1.0 °C / °F / K ≥ 1000°
Measurement Accuracy	J-, K-, T-, E-, and N-type: ±[0.05 % of reading + 0.3 °C (0.5 °F)] [Below –100 °C (–148 °F): add 0.15 % of reading for J, K, E, and N; and 0.45 % of reading for T] R- and S-type: ±[0.05 % of reading + 0.4 °C (0.7 °F)]
Temperature Coefficient	0.01 % of reading + 0.03 °C per °C (0.05 °F per °F) outside the specified +18 °C to 28 °C (+64 °F to +82 °F) range [Below –100 °C (–148 °F): add 0.04 % of reading for J-, K-, E-, and N-type; and 0.08 % of reading for T-type]
Electromagnetic Compatibility	Susceptibility: ±2 °C (±3.6 °F) for 80 MHz to 200 MHz in 1.5 V/m field, for 200 MHz to 1000 MHz in 3 V/m field. Emmisions: Commercial Limits per EN50081-1
Maximum Differential Common Mode Voltage	1 V (Maximum voltage difference between T1 and T2)
Temperature Scale	ITS-90
Applicable Standards	NIST-175
Accuracy is specified for ambient temperatures between 18 °C (64 °F) and 28 °C (82 °F) for a period of 1 year. The above specifications do not include thermocouple error.	