User's Guide
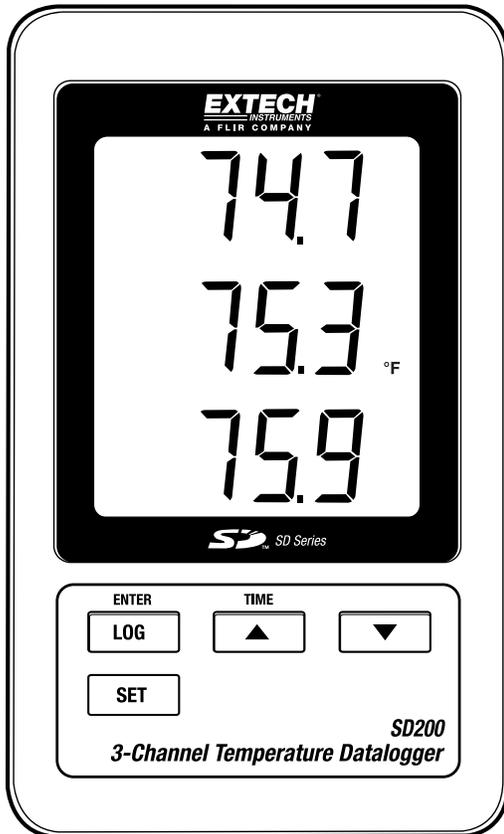
EXTECH ®
INSTRUMENTS
A FLIR COMPANY

3 Channel Datalogging Thermometer

Model SD200

Introduction

Congratulations on your purchase of the Extech SD200 3-Channel Temperature Datalogger. This meter displays and stores temperature readings from one to three type k thermocouple temperature probes. Data is stored on a SD card for transfer to a PC. This meter is shipped fully tested and calibrated and, with proper use, will provide years of reliable service

Features

- Triple LCD simultaneously displays 3 Type-K Temperature channels

- Datalogger date/time stamps and stores readings on an SD card in Excel® format for easy transfer to a PC

- Selectable data sampling rate: 5, 10, 30, 60, 120, 300, 600 seconds

- Long battery life or AC adaptor

- -Temperature range of -58 to 2372°F / -100 to 1300°C with 0.1°F/°C resolution

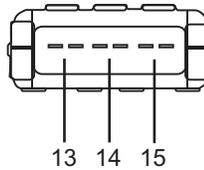## *Product Description*

1. T1 Display
2. T2 Display
3. T3 Display
4. LOG (ENTER) button
5. SET button
6. Temperature Units icon
7. ▲(TIME) button
8. ▼ button
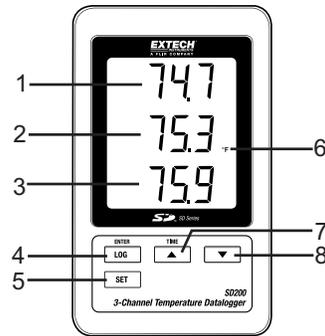
9. AC adaptor socket
10. Reset button
11. RS-232 output
12. SD memory card socket
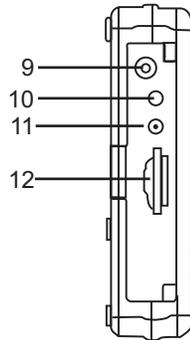
13. T1 thermocouple input
14. T2 Thermocouple input
15. T3 thermocouple input

Note: Battery Compartment and Tilt Stand are located on the back of the meter.

Operation

Battery Low Warning, Installation and Replacement

1. When the ⌷⊠ icon appears in the display the batteries are weak and should be replaced. However, in-spec. measurement may still be made for several hours, after low battery indicator appears, before the instrument become inaccurate.

2. To replace or install batteries, remove the Philips head screw that secures the rear battery cover and lift off the cover.

3. Replace the six AAA batteries (use alkaline heavy duty type), observing polarity

4. Replace and secure the cover.

Connecting thermocouples

1. Insert the Type K thermocouple mini-connector plug into the mini-connector socket on the bottom of the datalogger observing polarity (wide blade/narrow blade)

2. Up to three probes may be installed.

3. The temperature for inserted probes will be displayed T1, T2, T3 from top to bottom.

4. "-------" will be displayed for open or unused inputs.

Datalogging

1. Open the left side door and insert a formatted SD card

    Note: The SD card should be at least 1GB in capacity

    Note: Do not use memory cards formatted by other meters or cameras. Use the SD card formatting procedure under the advanced features section of this manual to correctly format the card.

    Note: The internal clock must be set to the correct time See the advanced features section of this manual to set the clock.

    Note: The default data structure uses a decimal point "." as the numeric decimal indicator. See the advanced features section of this manual to change this to a comma ",".

    Note: If the SD memory card is not installed, "**EMPTY**" will appear in the display

    Note: If the temperature probe is not installed, random numbers may appear in the data file.

    Note: If the temperature probe is not installed, after data download the temperature units symbol may not appear in the display.

    Note: Displayed error messages:

    | CH-
    CArd | The memory card is full or there is a problem with the card

    | LobAt | The battery is low and datalogging is disabled

    | no
    CArd | The SD card is not inserted

2. Press the LOGGER button for >2 seconds to begin logging. "DATALOGGER" will appear in the display (between T2 and T3 displays) and the meter will beep each time the data is recorded (if the beeper is enabled).

3. To stop datalogging, press the LOGGER button for >2 seconds. "DATALOGGER" will change to "DATA" and the meter will count down through the recorded data.

   NOTE: To avoid corrupting any data, do not remove the memory card without properly ending the record function.

Time/Date/Sample Rate Check

Press and Hold the TIME button for >2 seconds and the display will cycle through the date, time and sample rate information.

SD Card Data Structure

1. When the SD card if first inserted into the datalogger the folder TMC01 is created.

2. The first datalogging session will then create a file TMC01001.XLS. All data will be saved to this file until the number of columns reaches 30,000.

3. After 30, 000 columns a new file, TMC010**02**.XLS is created. This is repeated every 30,000 columns until TMC010**99**.XLS. At this point a new folder, TMC**02** is created and the process is repeated. TMC**10** is the final folder.

Transferring Data to a PC

1. Remove the memory card from the datalogger and plug it into the SD card slot on the PC.

2. Launch Excel and open the data file on the memory card. The file will appear similar to the figure below.

	A	B	C	D	E	F	G	H	I	J
1	Position	Date	Time	Ch1_Value	Ch1_Unit	Ch2_Value	Ch2_unit	Ch3_Value	Ch3_unit	
2	1	5/26/2011	13:48:50	75.3	DEGREE F	76.8	DEGREE F	75.7	DEGREE F	
3	2	5/26/2011	13:48:54	75.5	DEGREE F	76.8	DEGREE F	76.4	DEGREE F	
4	3	5/26/2011	13:49:59	75.7	DEGREE F	76.8	DEGREE F	76.2	DEGREE F	
5	4	5/26/2011	13:49:04	75.9	DEGREE F	76.8	DEGREE F	75.5	DEGREE F	
6	5	5/26/2011	13:49:09	75.7	DEGREE F	76.8	DEGREE F	75.7	DEGREE F	
7	6	5/26/2011	13:49:14	75.9	DEGREE F	77	DEGREE F	75.9	DEGREE F	
8	7	5/26/2011	13:49:19	75.9	DEGREE F	77	DEGREE F	75	DEGREE F	
9	8	5/26/2011	13:49:24	75.9	DEGREE F	76.8	DEGREE F	74.6	DEGREE F	
10	9	5/26/2011	13:49:29	75.9	DEGREE F	76.8	DEGREE F	74.3	DEGREE F	
11	10	5/26/2011	13:49:34	75.9	DEGREE F	76.8	DEGREE F	74.6	DEGREE F	
12	11	5/26/2011	13:49:39	75.9	DEGREE F	76.8	DEGREE F	74.4	DEGREE F	
13	12	5/26/2011	13:49:44	75.9	DEGREE F	76.6	DEGREE F	74.3	DEGREE F	
14	13	5/26/2011	13:49:49	75.9	DEGREE F	76.8	DEGREE F	74.3	DEGREE F	
15	14	5/26/2011	13:49:54	75.9	DEGREE F	76.8	DEGREE F	74.4	DEGREE F	
16	15	5/26/2011	13:50:59	75.9	DEGREE F	76.8	DEGREE F	74.1	DEGREE F	
17	16	5/26/2011	13:50:04	75.9	DEGREE F	76.8	DEGREE F	74.6	DEGREE F	
18	17	5/26/2011	13:50:09	75.9	DEGREE F	76.8	DEGREE F	74.6	DEGREE F	
19	18	5/26/2011	13:50:14	75.9	DEGREE F	76.8	DEGREE F	75.2	DEGREE F	
20	19	5/26/2011	13:50:19	75.9	DEGREE F	76.8	DEGREE F	75.5	DEGREE F	
21	20	5/26/2011	13:50:24	75.9	DEGREE F	77	DEGREE F	75.3	DEGREE F	
22	21	5/26/2011	13:50:29	75.7	DEGREE F	76.6	DEGREE F	75.3	DEGREE F	
23	22	5/26/2011	13:50:34	75.7	DEGREE F	76.8	DEGREE F	75.5	DEGREE F	

Advanced Settings

The SET function is used to:

- Format the SD memory card
- Set the date and time
- Set the sampling time
- Set the beeper sound ON/OFF
- Set the SD card Decimal character
- Select the Temperature units
- Set the RS232 data output ON/OFF

1. Press and Hold the SET button for >2 seconds to enter the setting mode. The first function (Sd F) will appear in the display. Press the SET button to step through the seven functions. Use the ▲ and ▼ buttons to adjust the selected function. Use the "LOGGER" button to step through fields within a function. In the SET mode, if no button is pressed within 5 seconds the logger will revert back to the standard mode.

2. Sd F – Format the SD card. Press the ▲ button to select yES or no. For yES, press the Enter button to format the card and erase all existing data.

3. dAtE – Set the date and time. Press the ▲ or ▼ buttons to adjust the selected (blinking) field. Press the Enter button to store the value and to step through the various fields.\

4. SP-t – Set the sample rate. Press the ▲ button to select the desired sample rate and press Enter to store the selection. The selections are: 5, 10, 30, 60, 120, 300, 600 seconds and AUTO. In AUTO, the data will be stored every time there is a temperature change of >1 degree.

5. bEEP - Set the beeper ON or OFF. Press the ▲ button to select ON or OFF and press Enter to store the selection.

6. dEC - Set the SD card Decimal character. Press the ▲ button to select USA (decimal) or Euro (comma) and press Enter to store the selection.

7. t-CF - Set the Temp. unit to °F or °C

8. rS232 - Set the RS232 data output ON/OFF. Press the ▲ button to select ON or off and press Enter to store the selection

9. ESC – Exit the setting mode. Press the SET button to return to normal operation.

System RESET

If a condition appears where the CPU does not respond to keystrokes or the meter seems frozen, press the RESET button on the side of the datalogger (use a paper clip or similar pointed object) to return the meter to a working state.

RS232 Interface

A serial output is provided to link the meter to a PC's serial port. Call Technical Assistance for more information on this interface.

Specifications

Display	60 mm x 50 mm (2.4 x 2.0") LCD
Temperature probes	Type K thermocouple
Memory Card	SD memory card, 1 GB to 16 GB.
Datalogger Sampling Time	5/10/30/60/120/300/600 seconds or Auto.
Temperature Compensation	Automatic
Display update rate	Approx. 1 second
Data Output	RS 232
Operating Temperature	0 to 50 °C
Operating Humidity	Less than 85% R.H.
Power Supply	6 AAA (UM4) Alkaline or heavy duty 1.5 V batteries or 9V AC adaptor.
Battery life	Dependent on sample rate, for new alkaline batteries and 60 second sampling time, > one month is typical. Fast sample rates will significantly reduce battery life.
Weight	199 g /0.44 LB
Dimension	132 x 80 x 32 mm (5.2 x 3.1 x 1.3")

Type K Thermometer		
Range	Resolution	Accuracy
-50.0 to 1300.0 °C	0.1°C	±(0.5 % + 0.5°C)
-50.1 to -100.0°C		±(0.5 % + 1°C)
-58.0 to 2372.0°F	0.1°F	±(0.5 % + 1°F)
-58.1 to -148.0°F		±(0.5 % + 1.8°F)

Note: Above specification tests under the environment RF Field Strength less than 3 V/M & frequency less than 30 MHz only.

You, as the end user, are legally bound (**EU Battery ordinance**) to return all used batteries, **disposal in the household garbage is prohibited!** You can hand over your used batteries / accumulators at collection points in your community or wherever batteries / accumulators are sold!

Disposal: Follow the valid legal stipulations in respect of the disposal of the device at the end of its lifecycle