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DT85 DIGITAL THERMOMETER

Instruction Manual

⚠ ALWAYS READ THESE INSTRUCTIONS BEFORE PROCEEDING

Thank you for buying one of our products. For safety and a full understanding of its benefits please read this manual before use. Technical support is available from 01923 441717 and support@martindale-electric.co.uk.

CONTENTS

MARTINDALE ELECTRIC

Specification
DT85
Digital thermometer

GENERAL

Display: liquid crystal display
Polarity: automatic, positive implied, negative polarity indication
Measurement rate: once per second

Power: 2 x 1.5V, AAA alkaline batteries (IEC LR03, NEDA 24A)
Continuous operating time: 250 hours approx.

Low battery indication: the ▭ symbol is displayed when the battery voltage drops below the operating level

Auto power off: after approx. 10 minutes

Dimensions: 132.9(L) x 50.9(W) x 24.7(D) mm
Weight: 148g approx. including batteries

Includes: 2 x K-Type thermocouples, detachable carry strap, 2 x 1.5V AAA batteries, protective cover and instructions

ENVIRONMENTAL

Operating environment: 0°C to 50°C, <70% R.H.
Storage environment: -20°C to 60°C, < 80% R.H. with batteries removed.

EMC

Conforms to BS EN61326-1

MARTINDALE ELECTRIC

Specification
DT85
Digital thermometer

All specified accuracies are at 23°C ± 5°C, <75% R.H. for 1 year.
Temperature coefficient: 0.1 x (specified accuracy) per °C, (0°C to 18°C, 28°C to 50°C).

TEMPERATURE

Thermocouple type: K

Temperature scale: Celsius or Fahrenheit, selectable

Measurement ranges: -200°C to 1372°C
-328°F to 2501°F

Resolution: 0.1°C (-100°C to 1372°C)
1°C (-200°C to -100°C)
0.1°F (-100°F to 2000°F)
1°F (-100°F to 2000°F), (2000°F to 2501°F)

Accuracy (to ITS90):

-200°C to -60°C	± (0.1% of rdg + 2°C)
-60°C to 1372°C	± (0.1% of rdg + 1°C)
-328°F to 76°F	± (0.1% of rdg + 4°F)
-76°F to 2501°F	± (0.1% of rdg + 2°F)

Note: thermocouple error is not included in the above accuracy.

1 SAFETY INFORMATION

⚠ REMEMBER: SAFETY IS NO ACCIDENT

These instructions contain both information and warnings that are necessary for the safe operation and maintenance of this product. It is recommended that you read the instructions carefully and ensure that the contents are fully understood. Failure to understand and to comply with the warnings and instructions can result in serious injury, damage or even death.

Particular attention should be paid to the Warnings, Precautions and Technical Specifications.

Please keep these instructions for future reference. Updated instructions and product information are available at: www.martindale-electric.co.uk

1.1 Meaning of Symbols and Markings

⚠ **Caution - risk of danger and refer to instructions**

⚠ **Caution - risk of electric shock**

~ **Alternating current (AC)**

⎓ **Direct current (DC)**

CE **Equipment complies with relevant EU Directives**

End of life disposal of this equipment should be in accordance with relevant EU Directives.

1.2 Precautions

This product has been designed with your safety in mind, but please pay attention to the following warnings and cautions before use.

⚠ Warnings

In order to avoid the danger of electrical shock, it is important that proper safety measures are taken when working with voltages exceeding 30V AC rms, 42V AC peak or 60V DC.

The Martindale DT85 must only be used by a skilled and competent person who is familiar with the relevant regulations, the safety risks involved and the consequent normal safe working practices, and under the conditions and for the purposes for which it has been constructed and specified.

Before use check the unit for cracks or any other damage. Make sure the unit is free from dust, grease and moisture. Also check any associated probes and accessories for damage. **Do not** use if damaged.

To avoid electric shock, and damage to the instrument, do not use this instrument and the associated temperature probe when voltages at the measurement surface exceed 24V DC or AC rms.

⚠ Cautions

To avoid burns or damage to equipment, do not take temperature measurements inside microwave ovens.

Avoid severe mechanical shock or vibration and extreme temperature.

To avoid possible corrosion from leaking batteries, remove the batteries if discharged, or when the unit is not in use for an extended period.

5. WARRANTY AND LIMITATION OF LIABILITY

This Martindale product is warranted to be free from defects in material and workmanship under normal use and service. The warranty period is 2 years and begins on the date of receipt by the end user. This warranty extends only to the original buyer or end-user customer, and does not apply to fuses, disposable batteries, test leads or to any product which, in Martindale's opinion, has been misused, altered, neglected, contaminated, or damaged by accident or abnormal conditions of operation, handling or storage.

Martindale authorised resellers shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of Martindale.

Martindale's warranty obligation is limited, at Martindale's option, to refund of the purchase price, free of charge repair, or replacement of a defective product which is returned to Martindale within the warranty period.

This warranty is the buyer's sole and exclusive remedy and is in lieu of all other warranties, expressed or implied, including but not limited to any implied warranty of merchantability or fitness for a particular purpose. Martindale shall not be liable for any special, indirect, incidental or consequential damages or losses, including loss of data, arising from any cause or theory.

Since some jurisdictions do not allow limitation of the term of an implied warranty, or exclusion or limitation of incidental or consequential damages, the limitations and exclusions of this warranty may not apply to every buyer. If any part of any provision of this warranty is held invalid or unenforceable by a court or other decision-maker of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision or other part of that provision.

Nothing in this statement reduces your statutory rights.

4.4 Repair & Service

There are no user serviceable parts in this unit other than those that may be described in section 4. Return to Martindale Electric if faulty. Our service department will provide a quotation to repair any fault that occurs outside the guarantee period.

Before the unit is returned, please ensure that you have checked the unit, batteries, thermocouples and poor connections.

4.5 Storage Conditions

The instrument should be kept in warm dry conditions away from direct sources of heat or sunlight, and in such a manner as to preserve the working life of the unit. It is strongly advised that the unit is not kept in a tool box where other tools may damage it.

2. INTRODUCTION

2.1 Inspection

Examine the shipping carton for any sign of damage. Inspect the unit and any accessories for damage. If there is any damage then consult your distributor immediately.

2.2 Description

The Martindale DT85 has the following functions and features:

- Temperature measurement from -200°C to 1372°C or -328°F to 2501°F using K type thermocouple
- Selectable temperature scale, Celsius or Fahrenheit
- Dual input
- Relative, Hold, Max, Min, Max-Min and Average functions
- Thermocouple offset adjustment
- Auto power off
- Low battery indication
- LCD display with backlight
- Pocket-sized, compact body

2.3 Accessories

The DT85 comes with the following accessories:

- 2 x K-Type thermocouples
- 2 x 1.5V AAA batteries
- Protective cover for safe storage
- Detachable carry strap
- Instructions

2.4 Battery Installation

Refer to Section 4.1 (Battery Replacement) for the battery installation instructions for the DT85.

3. OPERATION

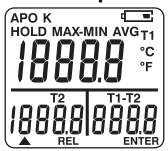
3.1 Low Battery Indication

If the ▭ is displayed, the battery needs replacing as measurement accuracy can no longer be guaranteed (see section 4.1 Battery Replacement).

3.2 Description of Press Buttons

▲	Selects Set mode settings Selects/deselects relative function
⏻	Turns on/off the DT85, turns on backlight
MODE	Selects Set mode and Hold mode functions

3.3 Description of LCD symbols



APO	Auto power off is active
▭	Indicates low batteries
HOLD	Hold mode is active
MAX	Maximum recorded reading is displayed
MIN	Minimum recorded reading is displayed
MAX-MIN	The difference between maximum and minimum recorded readings is displayed
AVG	The average of recorded readings is displayed
T1	T1 input measured value
T2	T2 input measured value

4. MAINTENANCE

4.1 Battery Replacement

The battery compartment is on the rear of the unit.

Push the battery cover up towards the thermocouple inputs and lift away from the back of the unit.

Replace with 2 new AAA batteries (IEC LR03, NEDA 24A), observing correct polarity.

Replace the battery cover.

Note: Do not mix old and new batteries.

4.2 Calibration

To maintain the integrity of measurements made using your instrument, Martindale Electric recommends that it is returned at least once a year to an approved Calibration Laboratory for recalibration and certification.

Martindale Electric is pleased to offer you this service. Please contact our Service Department for details.
Email: service@martindale-electric.co.uk
Tel: 01923 650660

4.3 Cleaning

If contamination is found, clean with a damp soft cloth and if necessary a mild detergent. Do not use abrasives, abrasive solvents, or detergents which can cause damage to the unit. If a mild detergent is used, the unit should subsequently be thoroughly cleaned with a water dampened soft cloth. After cleaning, dry and allow to remain in a dry environment for 2 hours before use.

Press ▲ to select the relative mode and set the current measurement to zero. The LCD will display **REL**.

To store a new reference, press ▲ as required.

To exit the relative mode, press ▲ for 2 seconds.

3.10 Hold Mode

The DT85 has the facility to display the maximum reading, the minimum reading, the difference between maximum and minimum readings and the average of the recorded readings.

To enter the Hold mode press MODE while in Measurement mode.

The LCD will display **HOLD** and the last measured value will be held on the display.

Successive presses of the MODE button will display the following in sequence:

HOLD MAX - maximum recorded reading;
HOLD MIN - minimum recorded reading;
HOLD MAX-MIN - difference between max and min recorded readings;
HOLD AVG - average of the recorded readings.

The unit will return to the Measurement mode at the end of the above sequence.

To **clear the recorded readings**, press MODE for 2 seconds at any point in the above sequence. The unit will return to the Measurement mode.

Note: The Hold mode will not function until at least 3 measurements have been stored to memory.

T1-T2	Difference between T1 and T2 input measured values
°C °F	Selected temperature scale
▲	Indicates press of ▲ button required
REL	Relative function is active
ENTER	Indicates press of MODE button required

3.4 Power On/Off

To power on in Measurement mode, press ⏻ for less than 1 second.

To power on in Set mode, press ⏻ for 2 seconds.

To power off the unit, press ⏻ for 2 seconds.

3.5 Auto Power Off (APO)

If the unit is inactive for a period of 10 minutes it will automatically power off.

To disable this function refer to section 3.7.

3.6 Backlight

Press ⏻ for less than 1 second to turn on the backlight.

It will automatically turn off after 15 seconds if there is no further operation of the unit.

3.7 Set Mode

This mode sets the following in the order shown:

- Auto power off (APO);
- Temperature scale;
- Thermocouple input 1 offset temperature;
- Thermocouple input 2 offset temperature.

The Set mode is selected by pressing ⏻ for 2 seconds with the unit powered off.

If the unit is switched off while in the Set mode, any changed settings will not be saved, and the unit will revert to the previous settings.

APO

The LCD will display **SEt APO** after entering the Set mode.

Press ▲ to select **ON** or **OFF** as required.

Press MODE to advance to the next function.

Temperature Scale

The LCD will display **SEt Unit**.

Press ▲ to select °**C** or °**F** as required.

Press MODE to advance to the next function.

T1 Offset

The LCD will display **SEt OFSt** and **T1** and the right numerical digit will flash.

Press ▲ to increment the digit from 0 to 9 as required. After 9 the digit will step back to 0.

Press MODE to advance to the left numerical digit that will now flash.

Press ▲ to increment the digit from 0 to 9 as required.

If an offset has been entered, pressing the MODE button will allow the selection of the offset polarity.

Press ▲ to select _ (positive offset) or – (negative offset) as required.

Press MODE to advance to the next function.

T2 Offset

The LCD will display **SEt OFSt** and **T2** and the right numerical digit will flash.

Set the T2 offset in the same manner as the T1 offset.

Press MODE to save settings and return to the Measurement mode.

3.8 Measurement Mode

If the thermocouples are not fitted, are open circuit or the measurement limits of the unit have been exceeded **OL** will be displayed for the respective thermocouple input.

The maximum temperature measurement of the DT85 is 1372°C (2501°F), but the thermocouple probe being used may be specified to a lower temperature. Be sure that the thermocouple probe is adequate for the measurement being made.

Connect type K thermocouple probes, suitable for the type of temperature measurement and temperature range being made, to the thermocouple input sockets T1 and T2.

Taking all necessary safety precautions, position the thermocouple at the surface or in the medium to be measured.

Read the measured temperatures **T1, T2** or **T1-T2** from the display.

While in Measurement mode, all measured values are recorded at a rate of once per second for use by the Hold mode (see section 3.10).

Note: Repeated flexing can break the thermocouple leads. To prolong lead life, avoid sharp bends in the leads, especially near the connector.

3.9 Relative Mode

Relative mode allows the current measurements to be zeroed and stored as reference values.