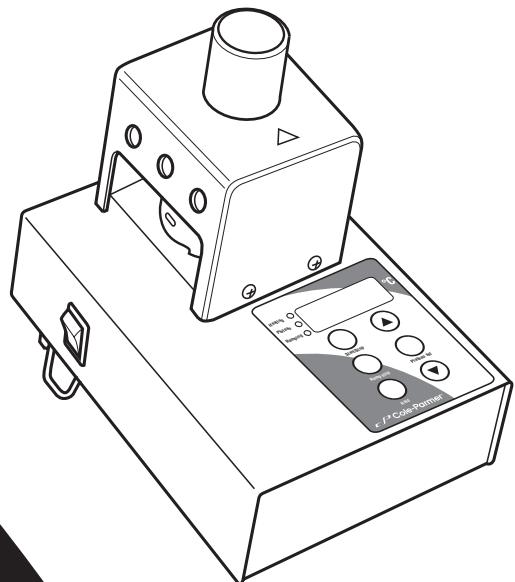


Digital Melting Point Apparatus



User Guide

CP Cole-Parmer®

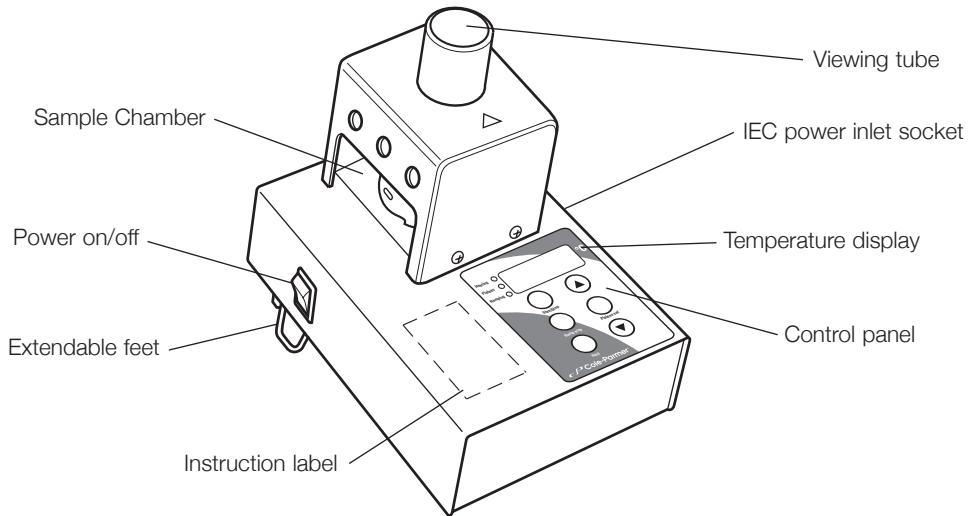


Figure 1

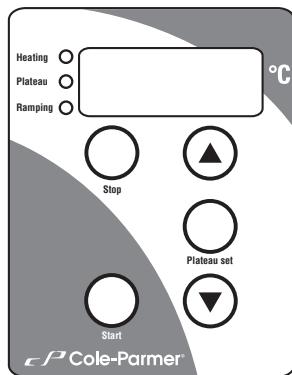


Figure 2

03011-30 & 03011-35
Control panel

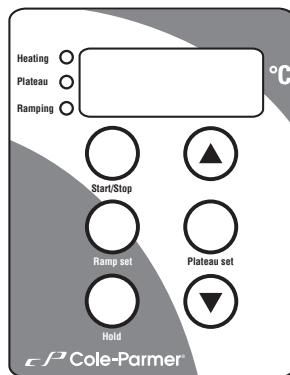


Figure 3

03012-07 & 03012-17
Control panel
(High-resolution version)

Digital Melting Point Apparatus

Introduction

Thank you for purchasing this Cole-Parmer product. To get the best performance from the equipment, and for your own safety, please read these instructions carefully before use. Before discarding the packaging check that all parts are present and correct.

This equipment is designed to operate under the following conditions:

- ❖ For indoor use only
- ❖ Use in a well ventilated area
- ❖ Ambient temperature range 5°C to 40°C (41°F to 104°F)
- ❖ Altitude to 2000 m (6500ft)
- ❖ Relative humidity not exceeding 80%
- ❖ Power supply fluctuation not exceeding 10% of nominal
- ❖ Overvoltage category II IEC60364-4-443
- ❖ Pollution degree 2 IEC664
- ❖ Use with a minimum distance all round of 200 mm (8 in.) from walls or other items

If the equipment is not used in the manner described in this manual and with accessories other than those recommended by the manufacturer, the protection provided may be impaired.

Electrical Installation



THIS EQUIPMENT MUST BE GROUNDED

Before connection please ensure that the line supply corresponds to that stated on the rating label.

Power requirements:

120 V Models

03011-30	75 W	03011-35	75 W
03012-07	75 W	03012-17	75 W

230 V Models

The Digital Melting Point Apparatus is provided with a NEMA 5-15 plug for 120 V installations and a UK 3-pin and a "Schuko" 2-pin plug for 230 V installations.

Should the cable not be suitable for connecting to the power supply, replace the plug with a suitable alternative.

THIS OPERATION SHOULD ONLY BE UNDERTAKEN BY A QUALIFIED ELECTRICIAN.

NOTE: Refer to the equipment rating plate to ensure that the plug and fusing are suitable for the voltage and wattage stated.

The wires in the power cable (120 V) are colored as follows:

BLACK - HOT/LIVE
WHITE - NEUTRAL
GREEN - EARTH

The wires in the power cable (230 V) are colored as follows:

BROWN - HOT/LIVE

BLUE - NEUTRAL

GREEN/YELLOW - EARTH

IF IN DOUBT CONSULT A QUALIFIED ELECTRICIAN

Should the power cable need replacing, a cable of 1mm² of harmonized code H05W-F connected to an IEC320 plug should be used.

The appropriate power cable should be connected BEFORE connection to the power supply.

General Description

The Cole-Parmer Digital Melting Point Apparatus has been designed for maximum safety and ease of use. The temperature is selected, measured and displayed digitally, ensuring accuracy and avoiding the need for a glass thermometer. Two samples can be tested simultaneously. They are viewed via a magnifying lens with clear observation aided by built-in illumination. Extendable feet allow the unit to be operated at the optimum viewing angle. Full access to the block allows easy cleaning and maintenance.

Optional Instruction Label

Select the appropriate choice of self-adhesive instruction label from the multi-language set provided. Peel off the backing and apply the label onto the left side of the control panel. Apply the label carefully using a flat object to smooth away air bubbles.



Safety Advice

Users should be aware of the following safety advice:

- ❖ HIGH TEMPERATURES ARE DANGEROUS as they can cause serious burns to operators and ignite combustible material.
- ❖ USE CARE AND WEAR PROTECTIVE GLOVES TO PROTECT HANDS.
- ❖ DO NOT use combustible substances near hot objects.
- ❖ NEVER lift or carry the instrument until it has been switched off and allowed to cool for at least 30 minutes. The Heating light will give guidance.
- ❖ The unit should be carried using both hands with the fingers under the side edges.
- ❖ NEVER move or carry the unit while still connected to the power supply.
- ❖ DO NOT position the unit such that it is difficult to disconnect it from the power by removing the power cable from the socket at the back.

Before Use

Place the Digital Melting Point Apparatus on a firm, level surface and extend the feet at the rear of the instrument so that the unit is at a convenient viewing angle.

Connect to the power supply and switch the unit ON using the power On/Off switch. The actual block temperature will now be shown on the three-digit LED display and the illumination in the sample chamber will come on.

Operation

The Digital Melting Point Apparatus has been designed to give both quick and accurate results as well as maximum convenience in use. Melting point samples are placed in a glass capillary tube which is placed in the aluminum block inside the sample chamber. This block is heated and the sample observed through the magnifying lens on the viewing tube until the melt occurs. The melting point temperature may then be easily read from the large LED display. In order to avoid the necessity to continually watch the sample, the unit is equipped with a "plateau" function. This allows a temperature to be set a few degrees below the expected melting point. The unit will then heat to this temperature very rapidly (20°C per minute) and hold it until the operator is ready to begin measuring. It is safe to leave the unit unattended during this plateau function.

03011-30 and 03011-35

The unit will heat slowly (2°C per minute) from the plateau temperature until the melt occurs. This slow rate of heating allows very accurate melting points to be obtained.

03012-07 and 03012-17 (High-resolution version)

It is possible to adjust the ramp rate between 1°C per minute and 10°C per minute. This allows either a fast result to be obtained or a more accurate slow one.

Measuring a Melting Point



Caution: The heating block may be HOT.

NOTE: If the unit has been used recently the block may be too hot for your sample. If this is the case, press the stop button and allow the unit to cool before proceeding.

1. Prepare sample by placing a small amount in the end of a glass capillary tube.
2. Decide on a suitable plateau temperature. This should be approximately 10°C below the expected melting point of the sample.
3. Check that all three function lights are extinguished. If not, press the stop button.
4. Press and hold the Plateau Set button (the plateau light will flash). The display will now show the current plateau temperature.
5. The desired plateau temperature may now be set using the arrow keys to scroll the display up or down as required.
6. Release the Plateau Set button. The new plateau temperature is now set and all function lights will go out. (The plateau setting can be checked at any time during operation by pressing and holding the Plateau Set button. This action will not interfere with the operation of the unit.)

7. **High-resolution version only:** Decide on an appropriate ramp rate, between 1°C and 10°C per minute. Results obtained at 1°C per minute will be the most accurate, while more approximate results can be obtained faster at higher ramp rates. Setting the ramp rate is the same procedure as setting the plateau except you need to use the Ramp Set button instead of the Plateau Set button.
 8. Insert the tube into the side of the heating block via the holes provided. For convenience this can be done from either side of the block. Look down the magnifier and position the viewing tube so that the sample can be observed clearly.
 9. Press the Start or Start/Stop key. The unit will quickly heat up to the plateau temperature (the heating light will be illuminated - see Figures 2 and 3).
 10. Once the plateau temperature has been reached the plateau light will be illuminated as well as the heating light - see Figures 2 and 3).
- NOTE:** At low plateau temperatures, there may be some overshoot. Wait until the plateau light comes on before proceeding in order to ensure that the temperature has stabilized.
11. Press the Start button again. The block will begin to heat at the pre-set ramp rate (high-resolution units) or at the fixed 2°C per minute (the plateau light will go out and the ramping and heating lights will both be illuminated - see Figures 2 and 3).
 12. Observe the sample until the melt occurs and record the temperature from the digital display.
 13. **High-resolution version only:** It is possible to freeze the temperature display using the Hold button. Once pressed, the temperature display will hold (ramping light flashing) to allow more time to record the melt temperature. Press Hold again to return to the actual block temperature.
 14. After the melt has occurred, press the Stop or Start/Stop button. All function lights will go out and the unit will cool to ambient temperature.
 15. Pressing the Start button again will cause the unit to return to the plateau temperature instead of ambient. The heating light will come on even if the temperature is above the plateau and the unit is, in fact, cooling.

Cleaning and Care

 **WARNING:** Ensure the unit is disconnected from the power supply before attempting maintenance or servicing.

The unit should be cleaned using a damp cloth and a mild detergent solution.

Cleaning is made easier if spillages are attended to promptly. In any case, spillages of acids and alkalies MUST be removed immediately as these chemicals can attack and damage the casework finish. Ensure that the appropriate safety precautions are observed.

Broken melting point tubes may be removed from the block simply by pushing them through with a piece of wire or similar tool.

For access to the block the sample chamber cover must be removed.

1. Remove the three retaining screws and lift off the cover.
2. Loosen the screw retaining the metal plate but do not remove completely.
3. Push the plate to one side.
4. The glass window in the top of the block may now be removed.

Servicing and Repair

This product range does not require any routine servicing.

NOTE: There are no internal user replaceable parts.

NOTE: There are fuses mounted on both the live and neutral line.

In the event of product failure it is recommended that any repair is only undertaken by suitably qualified personnel. For advice, please contact Cole-Parmer quoting the model and serial number. Only spare parts supplied by the manufacturer or its agent should be used. Fitting of non-approved parts may affect the performance of the safety features of the instrument.

If in doubt, please contact Cole-Parmer.

Warranty

Cole-Parmer warrants this equipment to be free from defects in material and workmanship, when used under normal laboratory conditions, for a period of **three (3)** years. In the event of a justified claim, Cole-Parmer will replace any defective component or replace the unit free of charge.

This warranty does NOT apply if:

- ❖ Any repair has been made or attempted other than by the manufacturer or its agent.
- ❖ Any minor coating chips or scratches occur during normal use (i.e., wear and tear).
- ❖ Damage is caused by fire, accident, misuse, neglect, incorrect adjustment or repair, damage caused by installation, adaptation, modification or fitting of non-approved parts.

Calibration Certificate

Catalog Number _____

Serial Number _____

Calibration Date _____

Temperature readings

Set temp.	°C	Measured temperature °C
60°C	±0.5	_____
100°C	±0.5	_____
200°C	±1.0	_____

Quality Assured



 Cole-Parmer®

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Technical Specification	03011-30	03012-07
Number of samples	2	2
Temperature range	Ambient to 300°C (572°F)	Ambient to 300°C (572°F)
Temperature resolution	1°C	0.1°C (High-resolution)
Temperature accuracy at 20°C	±1.0°C	±1.0°C
Digital display	3-digit LED	4-digit LED
Light source	White LED	White LED
Sensor	PT100	PT100
Ramp rates	20°C/minute to plateau 2°C/minute to melt	20°C/minute to plateau Between 1 and 10°C/min
Dimensions (WxDxH)	160 x 220 x 170 mm (6.3 in. x 8.6 in. x 6.7 in.)	160 x 220 x 170 mm (6.3 in. x 8.6 in. x 6.7 in.)
Electrical supply	120 V, 50/60 Hz	120 V, 50/60 Hz
Fuses	T1 A	T1 A
Net weight	1.8 kg (3.9 lbs)	1.8 kg (3.9 lbs)

	03011-35	03012-17
Number of samples	2	2
Temperature range	Ambient to 300°C (572°F)	Ambient to 300°C (572°F)
Temperature resolution	1°C	0.1°C (High-resolution)
Temperature accuracy at 20°C	±1.0°C	±1.0°C
Digital display	3-digit LED	4-digit LED
Light source	White LED	White LED
Sensor	PT100	PT100
Ramp rates	20°C/minute to plateau Fixed 2°C/minute to melt	20°C/minute to plateau Between 1 and 10°C/min
Dimensions (WxDxH)	160 x 220 x 170 mm (6.3 in. x 8.6 in. x 6.7 in.)	160 x 220 x 170 mm (6.3 in. x 8.6 in. x 6.7 in.)
Electrical supply	230 V, 50/60 Hz	230 V, 50/60 Hz
Fuses	T1 A	T1 A
Net weight	1.8 kg (3.9 lbs)	1.8 kg (3.9 lbs)



These products meet the relevant EC harmonized standards for radio frequency interference and may be expected not to interfere with, or be affected by, other equipment with similar qualifications. We cannot be sure that other equipment used in their vicinity will meet these standards

and we cannot guarantee that interference will not occur in practice. Where there is a possibility that injury, damage or loss might occur if equipment malfunctions due to radio frequency interference, or for general advice before use, please contact the manufacturer.

Declaration of Conformity

Catalog Number:	Description:
03011-30	DIGITAL MELTING POINT APPARATUS 120 V
03011-35	DIGITAL MELTING POINT APPARATUS 230 V
03012-07	HIGH-RESOLUTION DIGITAL MELTING POINT APPARATUS 120 V
03012-17	HIGH-RESOLUTION DIGITAL MELTING POINT APPARATUS 230 V

This product complies with the requirements of the EU Directives listed below:

2004/108/EC	EMC Directive
2006/95/EC	Low Voltage Directive (LVD)
2011/65/EC	RoHs Directive



For technical, sales or
servicing information,
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