

User's Guide



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MPS-21 Melting Point Device



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The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

WARNING: These products are not designed for use in, and should not be used for, human applications.

BEFORE USE:

Please read the following instructions:



Read the Manual first before operating the instrument



For indoor use only



Ambient temperature range +5°C to +40°C



Use in a well-ventilated area.



Relative humidity not exceeding 80%



Voltage supply fluctuation not exceeding 10%

Warning



ALL UNITS MUST BE GROUNDED

Check that the line supply is sufficient to meet the power requirement of the unit!

Overview

The MSP-21 is a portable and easily operated melting point device. It has been developed for replacement of the glass thermometer type melting point apparatus. A clear vision view is obtained via a magnified lens, appropriate view angle from the extendible feet, and bright vision through the built in LED light.

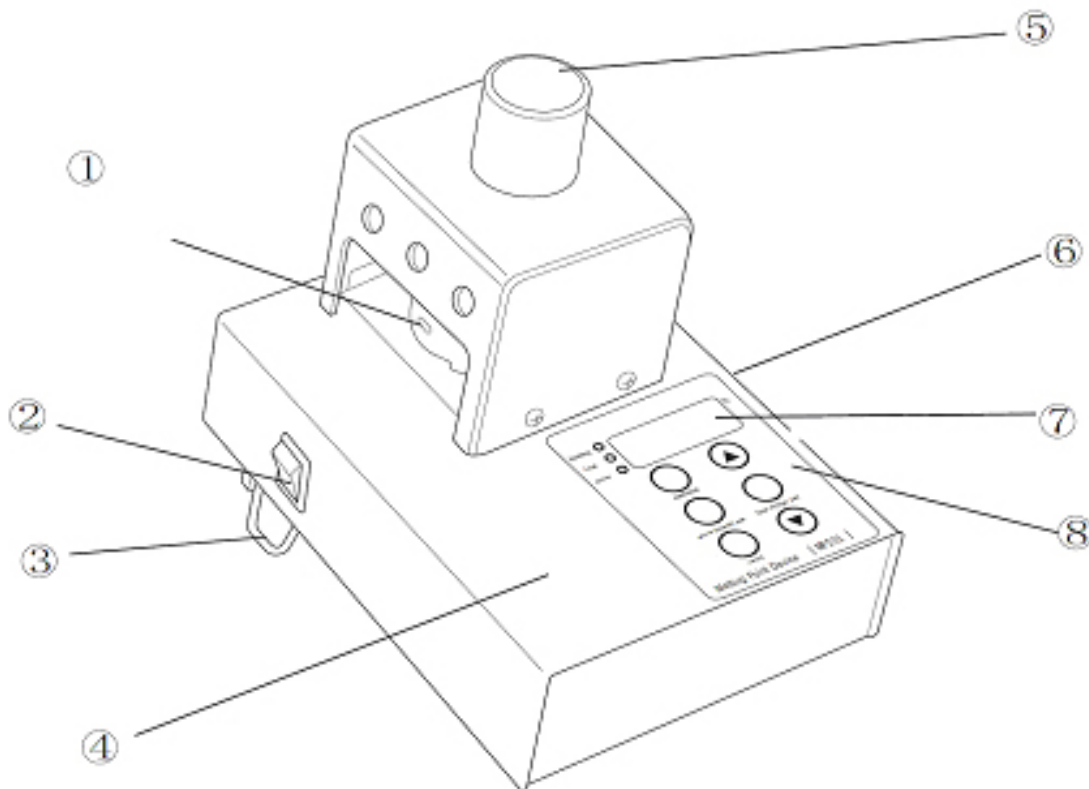


Figure 1: Overview of the Melting Point Device (MPS-21). ① Sample tube chamber; ② Switch; ③ Extendible feet; ④ Main body; ⑤ Viewer; ⑥ Electrical socket; ⑦ Temperature display; ⑧ Control panel

The MPS-21 can measure two different samples simultaneously. The product includes one pack of 100 glass capillary tubes (SMP10/1), open one end. Samples are placed in one or two tubes and inserted into the two holes of the sample chamber (Figure 1, ①). When starting the device, the heated block in the sample chamber is heated and the samples are viewed through the viewer (Figure 1, ⑤) until the samples melt. The melting point temperature can be easily read from the temperature display (Fig 1, ⑦). To minimize the viewing time, the heating rate has two different speeds: fast and slow speed. The fast speed runs at less than or equal to 20°C/min to reach a certain temperature point which is called “fast stage”. The user does not need to keep viewing samples at this point. Once attained, the “Fast” light comes on, and the temperature holds steady until further action. The fast stage point can be empirically or experimentally determined. The fast stage is normally set at 10°C below the known melting point of the samples.

The slow speed can be set at any point between 1°C/min to 10°C/min. The user can start the slow speed and view the melt only after the “Fast” light comes on.

Technical Specification

Temperature range (°C)	Ambient to 300
Temperature accuracy (°C)	± 1.0 at 20°C, ± 2.5 at 300°C
Display	Four digit LED
Display resolution (°C)	0.1
Readout hold	Yes
Number of samples	2
Fast Stage Ramp rate/°C/min*	< /= 20°C
Slow Ramp rates	adjustable between 1 to 10
Dimensions (w x d x h)	160 x 220 x 170mm
Net weight	1.8 Kg
Electrical supply	230V, 50Hz, 75W

*Fast stage rate is dependent upon the variance from the ambient temperature.

Operation

Place the unit on a firm and flat surface and make sure that the extendible feet are in a position that provides a good viewing angle.

1. Plug the unit into an electrical outlet with correct voltage.
2. Turn on the unit. Be certain all the indicating lights (heating, fast and slow) are off. If not, press the “start/stop” button. The light in the viewer will be on at this time and the temperature display will show the current heated block temperature.

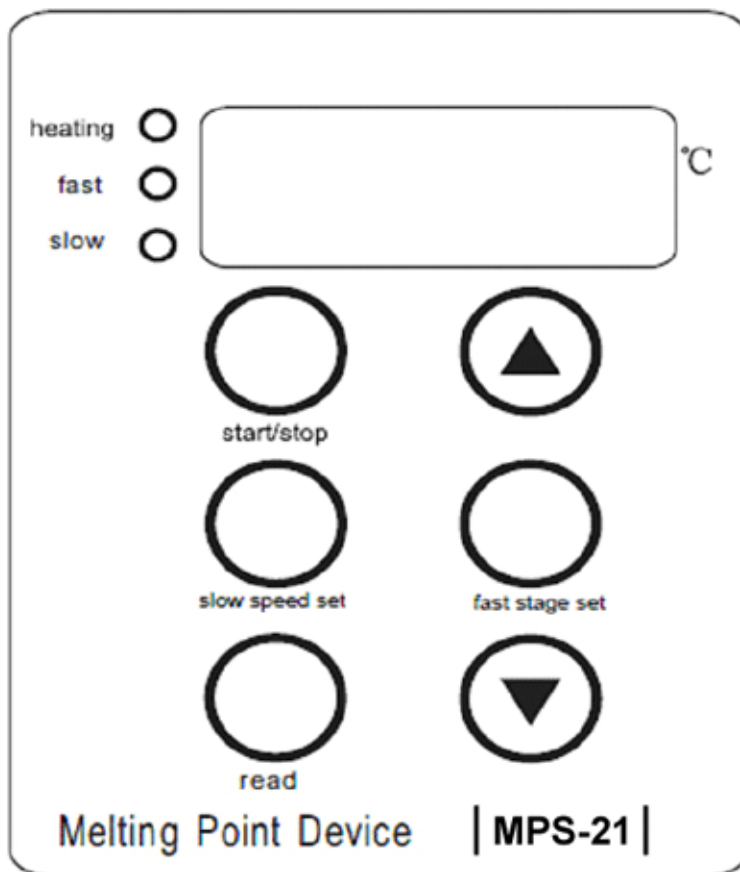


Figure 2: Overview of the control panel of the Melting Point Device (MPS-21).

3. Prepare the samples: place the sample into the capillary tube, and slightly tap the tubes to move the samples all the way to the bottom of the closed end of the tube.
4. Setting the fast stage point: Press the “fast stage set” button; the temperature display will show the previous set value. Use the two arrow keys to scroll up or down to the desired value and then release the “fast stage set” button.
5. Setting the slow speed: Press the “slow speed set” button; the temperature display will show the previous set value. Use the two arrow keys to scroll up or down to the desired value and then release the “slow stage set” button.
6. Carefully insert the one or two sample tubes separately into the two holes in the sample chamber. Look through the viewer to see whether the tubes are placed correctly or not.

7. Press the “start/stop” button to start the fast stage heating. The “heating” indicator light will come on and will be on even if the block temperature is above the fast stage set temperature. The temperature display will indicate the rising temperature. The “fast” indicator light will come on and blink when the fast stage set temperature is attained. At the same time the device will beep to remind the user that the fast stage temperature has been attained. Before proceeding further, be certain the “fast” light is on.
8. Press the “start/stop” button again to start the slow speed heating. At this time, the “fast” indicator light will go off and the “slow” indicator light will come on.
9. Continuously view the samples until the samples melt. Press the “read” button once to hold the reading; the “slow” indicator light will blink, indicating the temperature is held at that temperature point through the PID control mode. Record the reading.

To continue, press the “read” button again. The “slow” indicator light will stop blinking and remain on. The temperature will start ramping again at the slow speed setting. This function allows users to measure two different samples that have different melting points.
10. After finishing the measurement, press the “start/stop” button. The unit starts to cool down to room temperature and all indicator lights go off.
11. For the next measurement repeat/adjust procedures 2 – 10.
12. Device is calibrated at factory. Consult Omega Flow Engineering for assistance with calibration.

Maintenance and Service

Be certain that the unit is disconnected from the electricity supply and has cooled to room temperature before attempting any cleaning or repair work.

Cleaning: The unit must be cleaned routinely using a soft cloth. To clean the heating block:

- 1) unscrew the sample chamber cover by removing the three screws; and lift the cover.
- 2) loosen the screws that connect the black plate; do not completely remove it.
- 3) push the plate to one side.
- 4) remove the glass window for cleaning by turning the unit upside-down.
- 5) after cleaning, tighten the screws and put the cover back on.

Changing the fuse: A fuse may need replacement if the display and/or block light remains off. To replace the fuse: disconnect the unit from the electricity supply; unscrew the four screws from the bottom of the base and find the two fuses mounted on the electrical outlet; remove the old fuses and replace them with new fuses. Please **NOTE:** the fuse used in 220V is T1A while T1.6A is used in the 110V. Reassemble the base and check for electrical safety before using the unit again. **This must be done by qualified personnel!**

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **36 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to normal **three (3) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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