

# Contents

(English Version)

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## **I. Disclaimers, Exclusions and Limitations of Liability**

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PLEASE READ AND NOTE PRESIDIUM WARRANTY TERMS AND CONDITIONS as stated in the warranty card. Presidium warranty for its testers are subject to proper use by its users in accordance with all the terms and conditions as stated in the relevant user handbook and shall cover only manufacturing defects.

Due to continuous product improvement, Presidium reserves the right to revise all documents including the right to make changes to the handbook without notice and without obligation to notify any person of such revisions or changes. Users are advised to check Presidium's website <http://www.presidium.com.sg/> from time to time.

Presidium shall not be responsible for any damage or loss resulting from the use of this tester or handbook, and under no circumstances shall Presidium, its manufacturer or any of its subsidiaries, licensors, distributors, resellers, servants and/or agents be liable for any direct or indirect damages, resulting from the use of this tester.

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, under no circumstances shall Presidium, its manufacturer or any of its subsidiaries, licensors, distributors, resellers, servants and/or agents be responsible for any special, incidental, consequential or indirect damages howsoever caused.

The tester or Presidium Duo Tester II (PDT II) referred to in this handbook is provided and/or sold on an "as is" basis. Except as required by applicable law, no warranties of any kind, either expressed or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

## II. About this book

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Thank you for purchasing the Presidium Duo Tester II (“PDT II” or “tester”).

This handbook is designed to help you set up your tester and describes all you need to know about how to use your tester accurately and take care of it in line with its requirements. Please read these instructions carefully and keep them handy for future reference.

This book also contains the terms and conditions in relation to the use of the tester including the **Disclaimer, EXCLUSION and Limitation of Liability clauses stated above in Section I.**

### **III. About your Presidium Duo Tester II (PDT II)**

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The Presidium Duo Tester II's thermal measurement is based on an invention by Professor Julian Goldsmid, from the University of New South Wales, Australia. It was developed to help distinguish between diamonds and its simulants using the principles of thermal conductivity. Diamonds, with their exceptional heat conductivity properties are unlike any other simulants and are therefore not easily replicable. The Presidium Duo Tester II (PDT II) with a Color Stone Estimator display will assist users to distinguish popular colored gemstones from each other.

The Presidium Duo Tester II (PDT II) also comes with a built-in reflectivity tester, providing an alternative method to identify the gemstones being tested.

It is to be noted that natural and synthetic gemstones have similar physical and optical properties. As such, the Presidium Duo Tester II (PDT II) does not distinguish between natural and synthetic gemstones. As with all thermal testers in the market, the tester is therefore not able to differentiate between natural diamonds and moissanite.

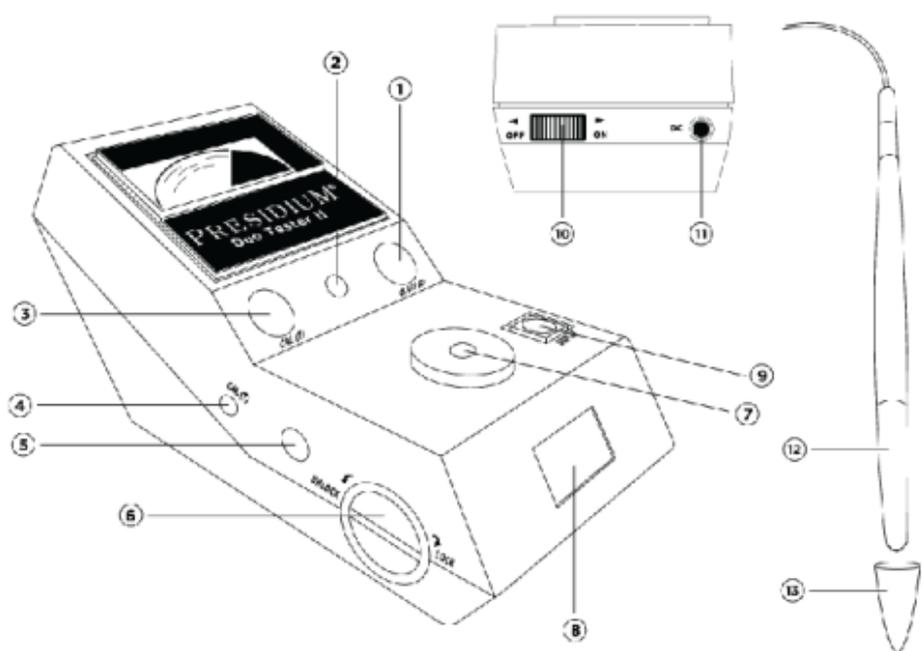
The Presidium Duo Tester II (PDT II) has been subjected to thorough factory quality control, and will generally give a clear and reliable reading of the gemstone being tested under proper use. However, you are advised to conduct further supporting tests.

## **The Presidium Duo Tester II features the following:**

- Retractable thermoelectric probe tip that ensures constant pressure between probe tip and gemstone
- Industry's thinnest probe tip (0.6mm) for testing gemstones as small as 0.02ct
- Metal alert buzzer to ensure that probe tip is in contact with gemstone during testing
- Large easy-to-read analog dial and digital index LED displays
- Built-in glass and sapphire/cal test discs for reference
- Built-in simulant reflectivity chart
- Powered by 5 x AA batteries or AC adaptor
- New and improved thermal calibration function

## **Included in your package:**

- Presidium Duo Tester II
- Probe pen
- AC adaptor
- Built-in simulant reflectivity chart
- Built-in test simulant test discs
- Quick Guide
- QR Code Card
- Protective carrying case
- Calibration Pin



1	Glass Test Disc
2	ON/OFF LED Indicator
3	CAL Test Disc
4	Thermal Conductivity Calibration inlet
5	Reflectivity Calibration Inlet
6	Cylinder Cap
7	Gemstone Test Pad
8	Reflectivity Display Screen
9	ON/OFF Display Button
10	ON/OFF Button
11	DC Power Jack
12	Probe Pen
13	Probe Protective Cap

#### IV. IMPORTANT NOTICE

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- Keep the tester dry. Precipitation and all types of liquids or moisture can contain minerals that will corrode electronic circuits. If your tester gets wet, remove the battery, and allow the tester to dry completely before replacing it.
- Do not use, store or expose the tester in dusty, dirty areas. Its moving parts and electronic components can be damaged.
- Do not use, store or expose the tester in hot areas. High temperatures can damage or shorten the life of the tester, damage batteries, and warp or melt certain plastics.
- Do not use, store or expose the tester in cold areas. When the tester returns to its normal temperature, moisture can form inside the tester and damage electronic circuit boards.
- Do not attempt to open the tester other than as instructed in this handbook.
- Do not drop, knock, or shake the tester. Rough handling may break internal circuit boards and fine mechanics.
- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the tester.
- Do not paint the tester. Paint can clog the moving parts and prevent proper operation.

If the tester is not working properly, kindly contact our Customer Service at [service@presidium.com.sg](mailto:service@presidium.com.sg) or

Presidium Instruments Pte Ltd  
Unit 7, 207 Henderson Road  
Singapore 159550  
Attn: Customer Service Executive

# 1. GETTING STARTED with your Presidium Duo Tester II (PDT II)

## Powering up your Presidium Duo Tester II

This tester can be powered either by the use of an AC adaptor or through the use of batteries. If AC adaptor is used, connect one end of the AC adaptor to the tester and the other end directly into a suitable electrical outlet. Please ensure that only the adaptor supplied by Presidium is used.

If batteries are used (5 x AA batteries), take note of the positive (+) and negative (-) directions of batteries when inserting the batteries into the tester (**Fig. 1.1**). The use of alkaline batteries is preferred, as it should generally give approximately eight hours of continuous operation, while the use of ordinary batteries will give a shorter working life.



Fig. 1.1

## Turning on your Presidium Duo Tester II

Insert the probe pen into the socket at the side of the tester (**Fig. 1.2**). Note that the probe pen must be inserted into the socket before turning on the unit. Otherwise, the indicator will rise to the dark grey zone (Diamond) when turned on.



Fig. 1.2

Slide the **[ON/OFF]** button at the back of the unit to turn on the unit (**Fig. 1.3**) and wait for approximately 10 seconds or until the red LED lights up.

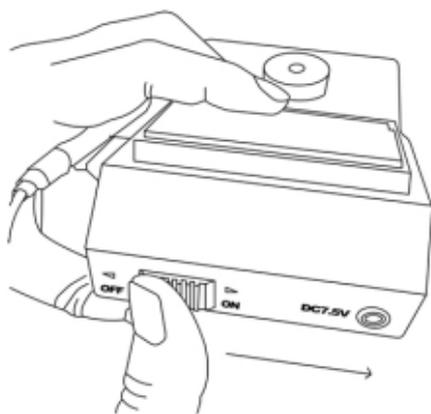


Fig. 1.3

## Testing to ensure your Presidium Duo Tester II is functioning properly

### Glass Test disc

- Press the probe tip onto the Glass test disc located on the right of the indicator lamp (**Fig. 1.4**). Apply sufficient pressure to retract the protruding tip completely into the probe pen. The indicator should rise to and remain within the red strip (preferably at the center of red strip) with "Glass" printed on top, within two to three seconds.



Fig. 1.4

## CAL test disc

- Press the probe tip onto the CAL test disc located on the left of the indicator lamp (**Fig. 1.5**).  
Apply sufficient pressure to retract the protruding tip completely into the probe pen. The indicator should rise to and remain within the red strip (preferably at the center of red strip) with “CAL” printed on top, within two to three seconds.



Fig. 1.5

## CALIBRATING your Presidium Duo Tester II

All testers have been calibrated during the manufacturing process and usually no further adjustment or user intervention to the tester is required.

However, in situations below, calibration will be warranted:

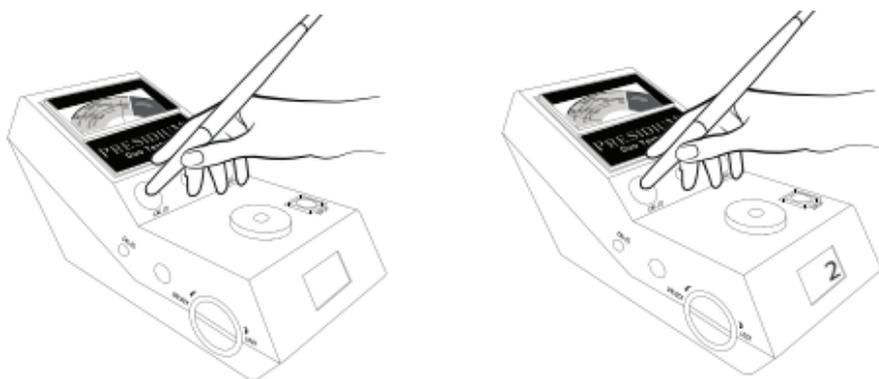
- i. A replacement probe pen is used for the first time
- ii. Inaccurate readings when checking the functionality of the instrument.
- iii. Testing under extreme temperature conditions (See section under “Operating under Extreme Conditions”)

## Thermal Conductivity Calibration

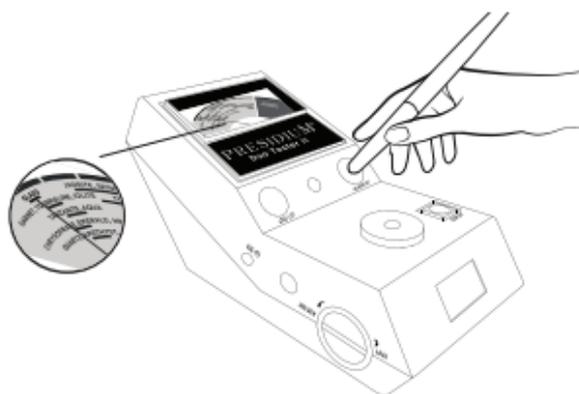
To begin calibration, you will need to access the Thermal Conductivity CAL inlet and depress the tact switch once using the provided Calibration Pin. Once depressed, the Reflectivity Display Screen will show a blinking “1”.



Depress the probe pen against the “CAL” disc and ensure that the probe tip is fully depressed and retracted into the housing of the probe pen. Please ensure that your fingers are touching the metallic chrome area of the probe pen. The needle indicator will calibrate to the red “CAL” strip automatically. The buzzer will beep twice upon completion of “CAL” Calibration.



The Reflectivity Display will then show a blinking “2”. Depress the probe pen against the “Glass” disc and follow the steps above on probe pen handling. The needle indicator will calibrate to the red “Glass” strip automatically. The buzzer will beep twice upon completion of “Glass” Calibration and this ends the calibration procedure.



#### Calibration Notes:

- It is advisable to power the unit via the AC adaptor during the calibration process.
- As a precaution, it is important to allow the “CAL” and “Glass” discs to cool down before subsequent tests.

## Recommended testing conditions

The gemstone should be clean and dry before testing. However, elaborate cleaning procedures are not normally necessary (**Fig. 1.6**).

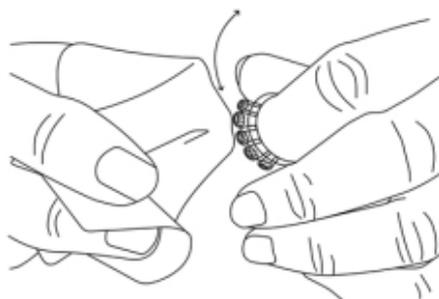


Fig. 1.6

The recommended testing temperature is between 23°C – 27°C or 73°F – 80°F. Please allow the gemstone or jewelry piece to adjust to room temperature prior to testing. Exposure and/or operating the tester outside the recommended testing temperatures will affect the result and performance of the tester.

## Operating under Extreme Conditions

In the event that testing is done outside the recommended operating conditions, the tester must first be calibrated under the same temperature setting as the testing site. This calibration is done to ensure the accuracy and consistency of the testing results.

However please note that the temperature conditions should be kept between 20°C to 33°C.

## Battery information

Do not leave worn out batteries in the battery compartment as the batteries may corrode, leak, and damage the tester. Batteries should be removed when the tester is expected to be stored for any extended period of time.

Batteries do not have to be removed when the AC adaptor is in use.

To prevent inaccurate readings, replace with new batteries if the red LED does not light up after 20 seconds. A test should not be performed when the battery is low or weak.

## Cleaning your gemstone prior to testing

Prepare a clean tissue or jewelry cloth. Carefully retrieve the gemstone with tweezers and place the gemstone face down on its table facet. **(Fig. 1.7a).**

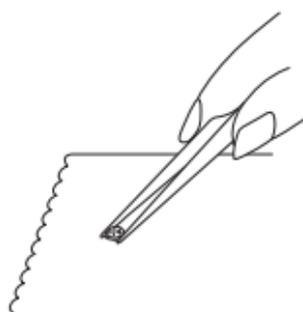


Fig. 1.7a

Gently rub the table of the gemstone against the tissue/ jewelry cloth **(Fig. 1.7b)**

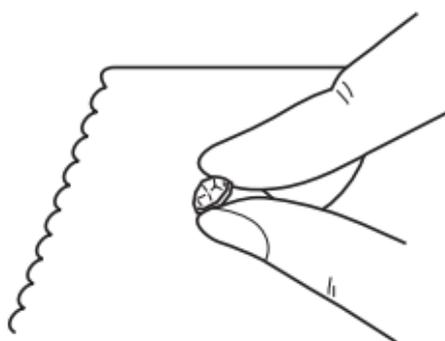


Fig. 1.7b

If your stone is mounted in jewelry, please carefully clean the stone (Fig 1.7c)

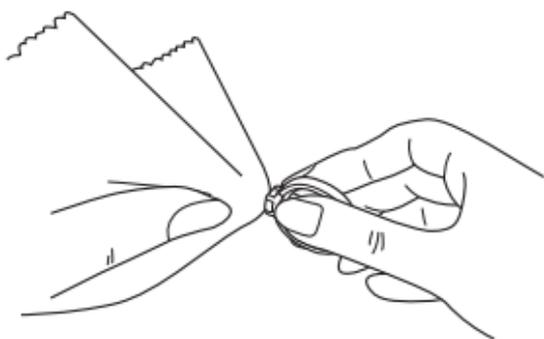


Fig. 1.7c

## 2. PERFORMING A TEST on your Presidium Duo Tester II

Place the tip of the probe pen against the gemstone. Apply minimal pressure to fully depress the tip into the probe pen for correct reading. This is to provide a steady and constant contact made between the probe tip and the gem stone.

When testing a loose stone, place the stone onto the depression of protective cover and press the probe tip on the stone. The test result will be displayed on the meter.

### For mounted jewelry or gemstones:

Hold the jewelry or gemstone with one hand and the tester with the other hand (**Fig. 2.1**). Care should be taken when testing mounted jewelry. User must ensure that the stones are securely mounted before conducting test as gap between stone and setting might lead to inaccurate reading.



Fig. 2.1

### For testing loose gemstones:

Place the gemstone on the metal stone rest and hold the metal stone rest with one hand while holding the probe with the other hand (**Fig. 2.2**).

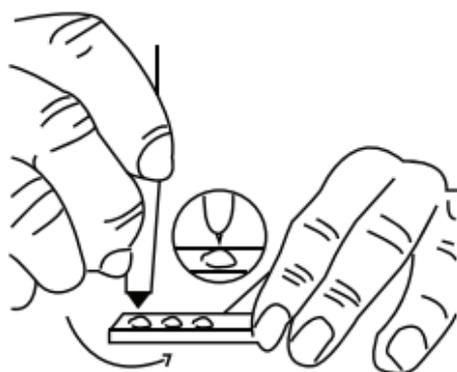


Fig. 2.2

Note: Metal stone rest is not provided by Presidium.

Place the gemstone on the metal stone rest and hold the metal stone rest with one hand while holding the probe with the other hand (**Fig. 2.2**).

### Performing an optical test with your Presidium Duo Tester II

Replace the protective cover with the cylinder and press the “DISPLAY” button. The display will give “000” reading (**Fig. 2.3**).



Fig. 2.3

Remove the cylinder and place a well-cleaned, polished gemstone on the centre of the pad (**Fig. 2.4**)



Fig. 2.4

Cover the gemstone with the recessed cylinder (**Fig. 2.5**).



Fig. 2.5

Press and hold the “DISPLAY” button and wait until the displayed number remains stable (about 2 seconds) (Fig. 2.6).



Fig. 2.6

Note: The 7-simulant gemstones set is used with the aid of the RI chart at the back of the unit for calibration and functional testing of the Reflectivity sensor.

\*7-simulant gemstones set is sold separately as an optional item.

### Tips for using your Presidium Duo Tester II

If the tester is being used for the first time, or if the tester has not been used for a week, it is advisable to clean the probe tip using a piece of paper to attain consistent and accurate reading. Rub the tip gently across the paper surface before testing.

The probe tip must be placed at a right angle or perpendicular to the facet of gemstone for an accurate reading

Tests should be conducted on the table of the gemstone. In the event of any doubt, kindly test on the girdle of the gemstones instead.

When mounted stones are not recessed in their setting, their reflectivity can be measured. Use a black plastic box (e.g., photographic film container) as an alternative to the recessed cylinder.

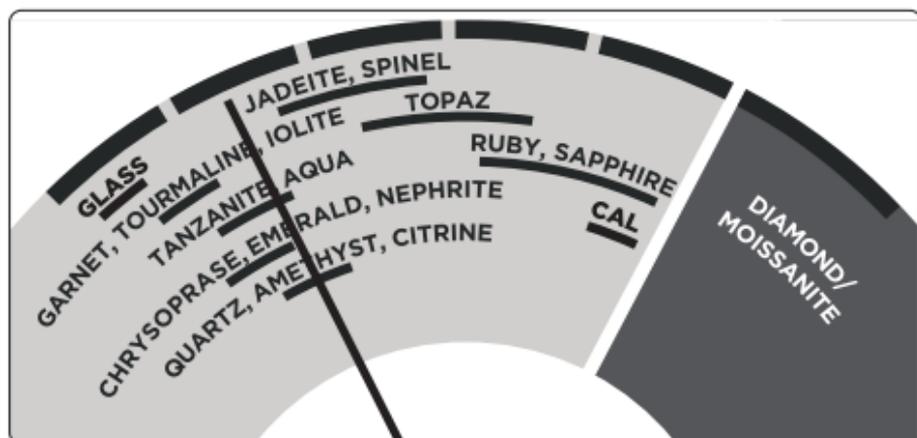
To achieve optimum accuracy for tests involving very small gemstones (10 points and below), it is important to allow the gemstone to cool down before subsequent tests.

It is advisable to take multiple readings regarding the test results indicated.

### 3. READING TEST RESULTS on your Presidium Duo Tester II

The test results are indicated as follows:

- After pressing the probe tip on the stone for about 2 seconds, the indicator will reach its highest position, then slowly fall to a stable position. Take the reading at the stable position.
- The tester will provide all possible results on the display.
- The Presidium Duo Tester II should be used only to confirm the identity of suspected gemstone.
- An example of reading the result on the meter is given below:



When the indicator stops at the above position, the stone tested may be Quartz, Amethyst, Citrine, Tanzanite or Aqua, i.e., any stones that fall within the black strip that the indicator passes.

- **Metal Alert Buzzer:** If the tip of the pen comes in contact with the metal mounting of a stone, an audible signal is emitted.
- Relatively low readings in the dark grey zone must be expected with very small diamonds.
- Based on the thermal test results, Presidium Duo Tester II can help distinguish between :

Sapphire	vs.	Tanzanite	Jadeite	vs.	Chrysoprase
Sapphire	vs.	Iolite	Jadeite	vs.	Aventurine Quartz
Sapphire	vs.	Spinel	Ruby	vs.	Spinel
Sapphire	vs.	Citrine	Ruby	vs.	Garnet
Sapphire	vs.	Topaz	Topaz	vs.	Aquamarine
Sapphire	vs.	Tourmaline	Topaz	vs.	Amethyst
Emerald	vs.	Jadeite	Topaz	vs.	Citrine
Emerald	vs.	Garnet	Spinel	vs.	Garnet
Jadeite	vs.	Garnet	Gemstones	vs.	Glass

The use of the thermal results is restricted to the gemstones listed above and will assist the jeweler to distinguish the many confusing gemstones in the market.

### Reading optical test results

- A Reflectivity Number is displayed. Note the Reflectivity Number and compare it with the reflectivity chart attached in the package.
- In case of a borderline reading, clean the stone and pad again before the next test and/or move stone slightly off center. By repositioning the stone, a distorted reflection from a scratched area of the surface may be avoided. Repeat the test.

- Synthetic Spinel/Synthetic Sapphire and High Zircon/GGG have overlapping Reflectivity Numbers. If in doubt, use thermal conductivity measurement for easy separation.
- Synthetic Sapphire: needle goes to a high position in the light grey zone.
- Synthetic Spinel: Needle goes about halfway into the light grey zone.
- High Zircon: Needle goes 2/3 into the light grey zone.
- GGG: Needle goes 1/3 into the light grey zone.

\*7-simulant gemstones set is sold separately as an optional item.

#### 4. TAKING CARE of your Presidium Duo Tester II

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- The probe and wire tip is extremely sensitive and should be handles with care. Caution should be taken so as not to damage the probe tip.
- Do not leave worn out batteries in the battery compartment as the batteries may corrode,leak or damage the tester. Batteries should be removed when the tester is expected to be stored for an extended period of time.

Your tester is a product of extensive design and craftsmanship and should be treated with care.

Thank you for taking time to go through the user handbook which will enable you to understand your recent purchase better.

Presidium also recommends that you register your warranty by sending the warranty registration card to us or register online at <http://www.presidium.com.sg/>