

## Tele Vue PMT-2513

# Tele Vue 2.5x Powermate 1.25 inch (PMT-2513) Instruction Manual

Model: PMT-2513 | Brand: Tele Vue

## 1. PRODUCT OVERVIEW

---

The Tele Vue 2.5x Powermate is a high-performance optical amplifier designed to increase the magnification of your telescope's eyepieces while maintaining excellent image quality. Unlike traditional Barlow lenses, the Powermate features a 4-element parfocal, compact amplifying lens system that includes a negative achromatic doublet and a positive "pupil-correcting" doublet. This design ensures that your eyepiece operates with its intended pupil locations, minimizing common optical issues such as vignetting, edge field aberrations, and pupil movement, especially with long focal length eyepieces.

The Powermate is telecentric, meaning field rays leave parallel to the optical axis. This characteristic is particularly beneficial for specialized applications like Hydrogen-alpha filter use, such as with Daystar models. It offers high performance for image amplification, making it suitable for both visual observation and CCD or film imaging. The unit is essentially parfocal and maintains nearly constant magnification regardless of the image distance behind its top surface (with the exception of the 5x model, which increases 1x for every 35mm of image distance).

Key features include full multi-coating for optimal light transmission, a safety undercut on the chrome barrel for secure fitting, and captive lock screws to prevent loss. The 2.5x Powermate is designed to be parfocal with Tele Vue's 1-1/4" 90-degree diagonal, enhancing convenience for various telescope setups.



Figure 1: Tele Vue 2.5x Powermate 1.25 inch optical amplifier.

## 2. WHAT'S IN THE BOX

---

- One (1) Tele Vue 2.5x Powermate 1.25 inch
- One (1) Brass Clamp Ring
- One (1) Captive Screw
- Protective caps for both ends of the Powermate

## 3. SETUP INSTRUCTIONS

---

Follow these steps to properly install and use your Tele Vue 2.5x Powermate:

1. **Prepare Your Telescope:** Ensure your telescope is set up on a stable mount and is ready for observation.
2. **Remove Eyepiece:** Carefully remove the eyepiece currently installed in your telescope's focuser or diagonal.
3. **Insert Powermate:** Insert the Tele Vue 2.5x Powermate into the telescope's 1.25-inch focuser or diagonal. Secure it by tightening the focuser's thumbscrew(s) or the captive screw on the Powermate itself, if applicable.
4. **Insert Eyepiece:** Insert your desired 1.25-inch eyepiece into the top barrel of the Powermate. Secure the

eyepiece with the Powermate's captive lock screw.

5. **Focus:** Adjust your telescope's focuser to achieve a sharp image. The parfocal design of the Powermate minimizes the need for significant focus adjustments when switching between eyepieces of similar focal length.

*Note: The Powermate is designed to work optimally with 1.25-inch eyepieces. Ensure all connections are secure to prevent accidental drops.*



Video 1: Demonstration of eyepiece installation for visual astronomy. This video illustrates the general process of attaching an eyepiece to a telescope, which is similar to installing the Powermate and then an eyepiece into it.

## 4. OPERATING THE POWERMATE

---

The Tele Vue 2.5x Powermate effectively multiplies the magnification of any eyepiece by 2.5 times. For example, a 22mm eyepiece will provide the magnification equivalent to an 8.8mm eyepiece when used with the 2.5x Powermate.

- **Visual Observation:** Insert the Powermate as described in the Setup section. Use it with your favorite eyepieces to achieve higher magnifications for detailed views of planets, the Moon, and smaller deep-sky objects. The Powermate's design preserves the eye relief of your eyepieces, making high-magnification viewing more comfortable.
- **Astrophotography:** The telecentric design of the Powermate makes it an excellent choice for imaging. It provides a flat field and consistent magnification across the field of view, which is crucial for high-resolution planetary and lunar photography with CCD cameras.
- **Specialized Filters:** Its telecentric nature is particularly advantageous when using Hydrogen-alpha (H-alpha) solar filters, as it ensures the light rays remain parallel, optimizing filter performance.



Video 2: Example of a zoom eyepiece in use with a telescope, demonstrating how to adjust magnification and focus for observing distant objects like birds on a rooftop.

## 5. MAINTENANCE

---

Proper care and maintenance will ensure the longevity and optimal performance of your Tele Vue 2.5x Powermate.

- **Cleaning Optics:**
  - Use a soft brush or compressed air to remove loose dust particles from the lens surfaces.
  - For smudges or fingerprints, apply a small amount of optical cleaning fluid to a clean, lint-free microfiber cloth (such as the one provided with some accessory kits) and gently wipe the lens in a circular motion from the center outwards.
  - Avoid touching the optical surfaces directly with your fingers.
- **Storage:**
  - Always replace the protective caps on both ends of the Powermate when not in use.
  - Store the Powermate in its original packaging or a dedicated padded case in a cool, dry, and dust-free environment.
  - Avoid extreme temperatures and humidity.
- **General Care:**
  - Do not disassemble the Powermate, as this can void the warranty and damage the precision optics.

- Handle with care to prevent drops or impacts.

## 6. TROUBLESHOOTING

---

If you encounter issues with your Powermate, consider the following common solutions:

- **Blurry Image:**

- Ensure your telescope's focuser is properly adjusted.
- Check that the eyepiece is securely seated in the Powermate and the Powermate is securely seated in the focuser/diagonal.
- Verify that the Powermate's lenses are clean and free of condensation or smudges.
- Allow the telescope and optics to acclimate to the ambient temperature to prevent thermal currents from distorting the image.

- **Dark Edges (Vignetting):**

- While Powermates are designed to minimize vignetting, it can still occur with certain eyepiece and telescope combinations, especially at very high magnifications. This is often an optical limitation rather than a defect.
- Ensure the eyepiece is fully inserted and secured.

- **Difficulty Inserting/Removing:**

- Ensure all thumbscrews on the focuser/diagonal and Powermate are loosened sufficiently.
- Avoid forcing the Powermate or eyepiece. If there's resistance, check for any obstructions or misalignment.

## 7. SPECIFICATIONS

---

Feature	Detail
<b>Model Name</b>	PMT-2513
<b>Magnification</b>	2.5x
<b>Barrel Size</b>	1.25 inch (1-1/4 inch)
<b>Optical Design</b>	4-element parfocal, telecentric
<b>Lens Coating</b>	Full Multi-Coating (Tele Vue special touches)
<b>Product Dimensions</b>	4.6 x 2.2 x 2.1 inches
<b>Item Weight</b>	8.8 ounces
<b>Compatible Devices</b>	Telescope, Eyepiece (1.25")
<b>Special Features</b>	Safety undercut on chrome barrel, captive lock screws, parfocal with Tele Vue 1-1/4" 90-degree diagonal, T-Ring Adapter compatible (latest version)

## 8. WARRANTY AND SUPPORT

---

For warranty information, technical support, or service inquiries regarding your Tele Vue 2.5x Powermate, please refer to the official Tele Vue Optics website or contact their customer service department directly. Keep your purchase receipt as proof of purchase for any warranty claims.