

Astrophotography Weather Widget

Standalone Edition — User Manual

Version 2.0.0



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1. Introduction

The Astrophotography Weather Widget is a compact desktop heads-up display of the observing-relevant weather for your location. It is designed to sit quietly in a corner of the screen and live in the system tray rather than the taskbar, so it stays out of your running-apps list during a session.

Version 2.0.0 is a full rebuild on Python 3.13 / PySide6 (Qt6), sharing the red-on-black night-vision design used across the mh_astro_tools suite. Relative to the v1.1.0.3 PyQt6 build it removes the full-desktop black startup mask (startup now relies on the frameless window and a per-widget fade), moves its settings to a per-user location under your Documents folder, and fixes a latent crash in the no-location branch.

Two ways to get this tool

The Weather Widget is now also included in the mh_astro_tools Suite, alongside the Exposure Calculator, UTC / GPS / Weather, 500 Rule Calculator, Night Vision Overlay and Scientific Calculator, all opened from a common Launcher.

This standalone ZIP remains available for anyone who wants only the Widget and does not need the rest of the suite. The application is identical in both; only the distribution differs.

Distribution	What you get	Best for
Standalone ZIP	The Weather Widget alone, extracted to a folder of your choosing.	Users who want just this tool, or who prefer not to run an installer.
Suite installer	All seven tools, a Launcher, Start Menu and Desktop shortcuts, and the full manual set.	Users who want the complete astrophotography toolset.

Note: Do not run both copies at once. They are the same application and will compete for the same settings.

2. Installation — Standalone ZIP

No Python, runtime libraries or additional software is required — everything is bundled in the compiled application. There is nothing to install and nothing is written outside the folder you extract to, apart from your own settings.

2.1 Extract

Right-click the downloaded archive and choose Extract All..., then pick any folder you can write to — Documents, a tools folder, or a USB stick for field use.

```
mh_astro_weather_widget_v2_0_0.zip
```

 **Important:** Keep the extracted folder structure intact. The application loads its icons, Qt libraries and timezone data from subfolders beside the executable; moving or deleting them will stop it starting.

2.2 What is in the folder

After extracting you will see:

```
mh_astro_weather_widget_v2_0_0\  
  mh_astro_weather_widget_Win_x64_v2_0_0.exe  <- launch this  
  README.txt  
  License.txt  
  License_Agreement.pdf  
  Astrophotography_Weather_Widget_User_Manual.pdf  
  SHA256SUMS.txt          checksums for every file  
  manifest.json           release metadata  
  release_manifest.cat    signed catalogue  
  release_info.txt        build and signing details
```

The folder also contains the Qt libraries, timezone data and icons the application needs. These are hidden to keep the view tidy — turn on Hidden items in the Explorer View tab to see them. Nothing depends on whether they are visible, but they must not be moved or deleted.

2.3 Launch

Double-click mh_astro_weather_widget_Win_x64_v2_0_0.exe. The HUD fades in and a tray icon appears. Section 4 covers starting it automatically with Windows.

 **Tip:** Pin the executable to your taskbar or Start menu for quick access, or create a desktop shortcut to it — shortcuts work normally as long as the extracted folder itself stays put.

2.4 Verifying the download

The executable is code-signed with an RFC-3161 timestamp. Right-click it and choose Properties → Digital Signatures to confirm the publisher before running it. The published SHA-256 for the archive is listed on the download page and in the release notes; SHA256SUMS.txt inside the folder covers the individual files.

If Windows warns on first run: A newly published build has no download history yet, so SmartScreen may show a "Windows protected your PC" prompt. Choose More info → Run anyway once you have confirmed the signature. This is a reputation prompt, not a malware detection.

2.5 Uninstalling

Delete the extracted folder. Nothing is added to the registry except the optional run-at-startup entry described in section 4, which is removed by clearing that setting before you delete the folder. Your saved settings remain under your Documents folder and can be deleted separately if you no longer want them.

3. GUI Overview

The widget has two visible parts: the HUD panel itself, and a system-tray icon.

3.1 The HUD

The HUD is a small frameless panel in the suite night-vision styling. Drag its title bar to reposition it; it stays where you put it. A refresh action pulls the latest data on demand, and the panel also refreshes on a timer.

3.2 System Tray

The widget intentionally lives in the system tray rather than the taskbar, so it does not clutter your running-apps list during a session. Use the tray icon to show, hide or quit the HUD. Closing the HUD window hides it to the tray; quit from the tray menu to exit completely.

3.3 Displayed Fields & Units

The HUD reports the fields most relevant to an imaging session:

- Temperature and dew point, with the temperature-to-dew-point spread.
- A condensation-risk label derived from that spread (section 5).
- Wind speed.
- Barometric pressure with a trend arrow.
- Sky condition (WMO weather text, e.g. Clear / Partly cloudy / Overcast).

A units toggle switches the display between metric and imperial: temperature and dew point in °C or °F, the spread in Δ°C or Δ°F, wind speed in km/h or mph, and pressure in hPa or inHg. Internal calculations and the pressure-trend arrow are always computed in metric for stability — only the display changes.

3.4 Location & Geolocation

On Windows the widget can use native WinRT geolocation for a precise fix; if that is unavailable or declined it falls back to an approximate IP-based lookup. Timezone resolution uses the bundled tzdata, so local-time handling is correct on Windows without any additional download.

 **Tip:** For a fixed observing site, a precise location gives the most reliable dew and pressure context; the IP fallback is only a coarse approximation.

4. Run at Startup

The widget can register itself to launch automatically when you sign in to Windows, using the per-user Run key. Toggle this from the widget settings; clearing it removes the entry again.

 **Standalone note:** The startup entry points at the executable where it currently sits. If you later move or rename the extracted folder, clear the setting and re-enable it so the entry is rewritten to the new path.

5. Dew / Condensation Risk

Optics radiate heat to the cold sky and reach dew point before the surrounding air does, so the temperature-to-dew-point spread is the practical early-warning metric for condensation. The widget colour-labels it the same way across the suite:

```
spread = T_air - T_dew (degrees C)

spread < 1 -> EXTREME (dew imminent; run heaters)
spread < 2 -> HIGH
spread < 4 -> MED
spread >= 4 -> LOW
```

 **Tip:** Switch on dew heaters or fit a dew shield while the risk is still HIGH — once the objective reaches dew point, recovery mid-session is slow.

6. Night Vision Design

The HUD uses the suite true-black and red night theme with a per-widget fade, so it can stay on screen through a session without harming dark adaptation. Deep red light at low intensity bleaches little rhodopsin, which is why observatories have used red illumination for decades.

 **Tip:** Standard Windows dialogs ignore application themes and can appear bright. The Night Vision Overlay, included in the mh_astro_tools Suite, tints the whole desktop including those dialogs.

7. Troubleshooting

Symptom	What to check
Weather fields show N/A	Confirm internet access and use the refresh action. Some networks block public weather API calls.
Pressure trend shows N/A	The trend compares readings within a session, so it needs at least two refreshes to populate.
Location is wrong or coarse	Native geolocation may have been declined; the IP fallback is approximate. Allow location access in Windows privacy settings for a precise fix.
Widget does not start	The extracted folder structure must be intact. Re-extract the archive rather than copying individual files out of it.
Startup entry stopped working	The executable was moved or renamed. Clear the run-at-startup setting and re-enable it (section 4).
HUD has disappeared	It is hidden to the system tray. Click the tray icon to show it again.

8. Licensing

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See [License_Agreement.pdf](#) for a plain-English summary, and [License.txt](#) in the extracted folder for the licence text.

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