



OPERATING MANUAL

Remote Control and Monitoring for 10Micron Mounts



For SkySwitch PRO V3 (AUX) and SkySwitch PRO V2 (Jack)
Designed for 10Micron Mount controllers

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1. INTRODUCTION

SkySwitch PRO is a compact support device designed for remote operation of 10Micron mounts. It was created for observatory setups where reliable remote access, controlled mount power operation and accurate environmental information are important parts of everyday use.

SkySwitch PRO allows the mount to be switched on or off remotely from the control computer using the SkySwitch PRO Windows application. This makes it possible to manage the mount power state without pressing the physical power button on the controller or being present at the observatory site.

In addition to remote ON/OFF control, SkySwitch PRO provides live environmental and GPS-based data. The internal environmental sensor measures temperature, humidity and atmospheric pressure around the device, while the integrated GPS receiver provides UTC time, geographical coordinates and elevation data. These values can support precise mount configuration, refraction-related workflows and general observatory monitoring.

SkySwitch PRO works together with a dedicated Windows application. The software is used to connect to the device through USB, monitor the current status, generate the remote power-control pulse, display weather and GPS data, configure sensor offsets, control Dark Mode, perform firmware updates and support ASCOM-based synchronization of selected mount parameters.

The device is available in two hardware versions, depending on the 10Micron controller type. SkySwitch PRO V3 is designed for mounts equipped with the newer 10Micron V3 controller and uses the AUX connector for remote ON/OFF control and mount power status monitoring. SkySwitch PRO V2 is designed for older 10Micron controllers and uses a dedicated 3.5 mm Jack connection for remote ON/OFF control.

Both versions are based on the same operating concept, but they use different electrical methods for generating the remote switching pulse. For this reason, the V3 AUX version and the V2 Jack version are hardware-configured differently and are not interchangeable by simply changing the external cable.

2. DEVICE OVERVIEW

2.1 Device Layout

SkySwitch PRO is designed as a compact interface device for remote observatory operation. The main connection to the control computer is made through the USB Type-B port. The mount control cable depends on the selected SkySwitch PRO hardware version: AUX for the V3 controller version or 3.5 mm Jack for the V2 controller version.



The status LEDs and the environmental sensor ventilation opening are located on the top side of the enclosure. The numbered elements shown in the device layout image are described below.

1. USB Type-B port
2. Mount control cable — AUX for V3 controller or 3.5 mm Jack for V2 controller
3. Power indicator LED
4. GPS indicator LED - steady light: GPS fix; blinking: no GPS fix
5. Pulse indicator LED
6. Environmental sensor ventilation grille

2.2 Versions and Mount Connections

SkySwitch PRO is available in two hardware versions, depending on the 10Micron mount controller type.

SkySwitch PRO V3 is designed for 10Micron mounts equipped with the V3 controller. This version uses the AUX connector for remote ON/OFF control and mount power status monitoring. SkySwitch PRO V2 is designed for older 10Micron controllers. This version uses a dedicated 3.5 mm Jack connection for remote ON/OFF control. Direct mount power status monitoring through the AUX MAIN_ON signal is not available in this version.

The AUX cable version and the 3.5 mm Jack cable version are not interchangeable. The reason is that the two controller versions use a different electrical method for remote ON/OFF control. In the V3 version, SkySwitch PRO generates a voltage pulse through the AUX connection. In the V2 version, SkySwitch PRO does not apply a voltage pulse to the mount. Instead, it uses an isolated dry-contact switching output, similar to a relay contact, to momentarily close the remote ON/OFF circuit.

For this reason, SkySwitch PRO is hardware-configured for the selected controller version. The V3 and V2 versions use different internal pulse-output configurations and different mount cables. This hardware separation helps prevent incorrect electrical operation and ensures that the pulse generated by the device matches the input expected by the corresponding 10Micron controller.



SkySwitch PRO V3 — AUX connector

For 10Micron mounts equipped with the V3 controller. The AUX cable is used for remote ON/OFF pulse control and mount power status monitoring.



SkySwitch PRO V2 — 3.5 mm Jack connector

For 10Micron mounts equipped with older V2 controllers. Used for remote ON/OFF control. Direct mount power status monitoring is not available.

2.3 Main Functions

SkySwitch PRO provides the following main functions:

- Remote ON/OFF control of the 10Micron mount
- Mount power status monitoring — available directly in the V3 version
- GPS-based UTC, location and elevation support
- ASCOM-based synchronization of mount time and site data
- Temperature, humidity and pressure measurement
- Dew point calculation
- Weather data logging
- Weather data output for 10Micron refraction support
- USB communication with the SkySwitch PRO Windows application
- LED status indication
- Dark Mode for night-time observatory operation
- Firmware update through the SkySwitch PRO software

The remote ON/OFF control function allows the mount to be switched on or off without physical access to the observatory. In the V3 version, SkySwitch PRO uses the AUX interface to generate the remote power-control pulse and to monitor the mount power status. In the V2 version, the device uses a 3.5 mm Jack connection to generate an isolated dry-contact switching pulse for remote ON/OFF control.

The GPS function provides UTC time, geographical coordinates and elevation data. These values can be used by the SkySwitch PRO software for ASCOM-based synchronization of the 10Micron mount.

The environmental sensor measures temperature, humidity and atmospheric pressure around the device. These values can be displayed in the software, saved to log files, and used to generate weather data for 10Micron refraction support.

The SkySwitch PRO Windows application is used for device connection, status monitoring, mount control, sensor configuration, GPS and ASCOM functions, weather logging, Dark Mode control and firmware update.

2.4 Hardware Protection and Safety Notes

SkySwitch PRO is designed for use with supported 10Micron mount controllers only. Before connecting the device, verify that the SkySwitch PRO hardware version matches the controller version used with the mount.

Use only the cable supplied with the corresponding SkySwitch PRO version. The V3 AUX version and the V2 3.5 mm Jack version are electrically different and are not interchangeable. In the V3 version, the remote ON/OFF command is generated as a voltage pulse through the AUX connection. In the V2 version, the remote ON/OFF command is generated as an isolated dry-contact switching pulse, similar to a relay contact, through the 3.5 mm Jack connection. For this reason, each SkySwitch PRO version is hardware-configured for the required pulse method.

SkySwitch PRO includes several hardware protection features. The USB power input is protected by a resettable fuse, which helps protect both the device and the control computer in case of an abnormal current condition. The USB interface also includes ESD protection to reduce the risk of damage caused by electrostatic discharge.

The mount switching output is implemented using an optically isolated relay-type circuit. This separates the internal SkySwitch PRO electronics from the pulse output circuit used for remote mount control.

Do not open, modify or rewire the device unless instructed by SkySwitch PRO support. Hardware modifications may cause incorrect operation and may damage the device or connected equipment.

3. INSTALLATION AND CONFIGURATION

3.1 Software Installation and USB Driver

The SkySwitch PRO Windows application can be downloaded from the official SkySwitch PRO website. Download the installer version that matches your SkySwitch PRO version and save it on the observatory control computer.

Run the installer and follow the on-screen instructions. Depending on the Windows security settings, Windows may display a warning if the installer is not digitally signed. In this case, confirm that the installer was downloaded from the official SkySwitch PRO website before continuing. If required, select More info and then Run anyway.

After installation, connect SkySwitch PRO to the control computer using the USB cable. The USB connection provides both power and communication between the device and the SkySwitch PRO application.

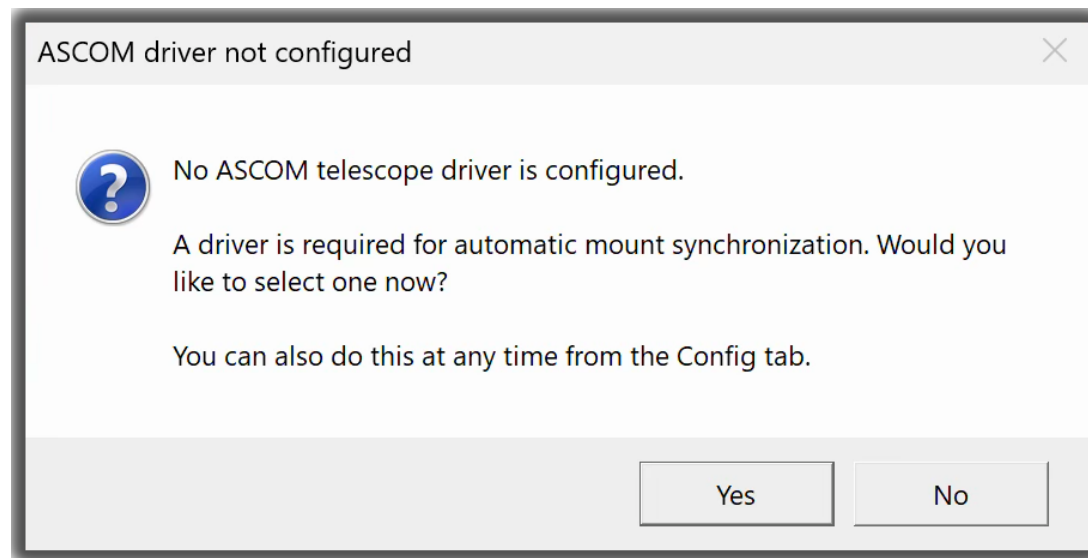
SkySwitch PRO communicates with the computer through a USB serial interface. When the device is connected correctly, Windows should detect it as a COM port. In Windows Device Manager, it may appear under Ports (COM & LPT) as a USB serial device, for example USB-SERIAL CH340 (COM5). The COM number may be different on each computer.

In most cases, Windows will detect SkySwitch PRO automatically after the USB cable is connected. However, depending on the operating system configuration, the CH340 USB serial driver may occasionally be required. If no new COM port appears in Device Manager after connecting the device, install the CH340/CH341 USB serial driver, then disconnect and reconnect SkySwitch PRO. Use the official WCH / Nanjing Qinheng Microelectronics driver package, usually listed as CH341SER.EXE or CH341SER.ZIP, or the driver package provided in the Support section of the SkySwitch PRO website. After the driver is installed correctly, the device should appear in Device Manager as a USB serial COM port.

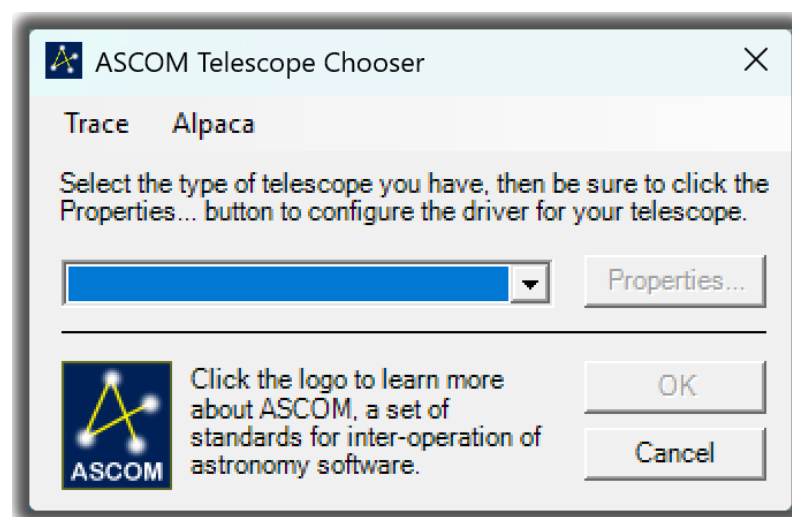
3.2 First Launch and COM Port Connection

Start the SkySwitch PRO Windows application after the device has been connected to the control computer by USB.

When the SkySwitch PRO application is started and no ASCOM telescope driver has been configured yet, the application may display an ASCOM driver configuration prompt before the COM port connection is opened.



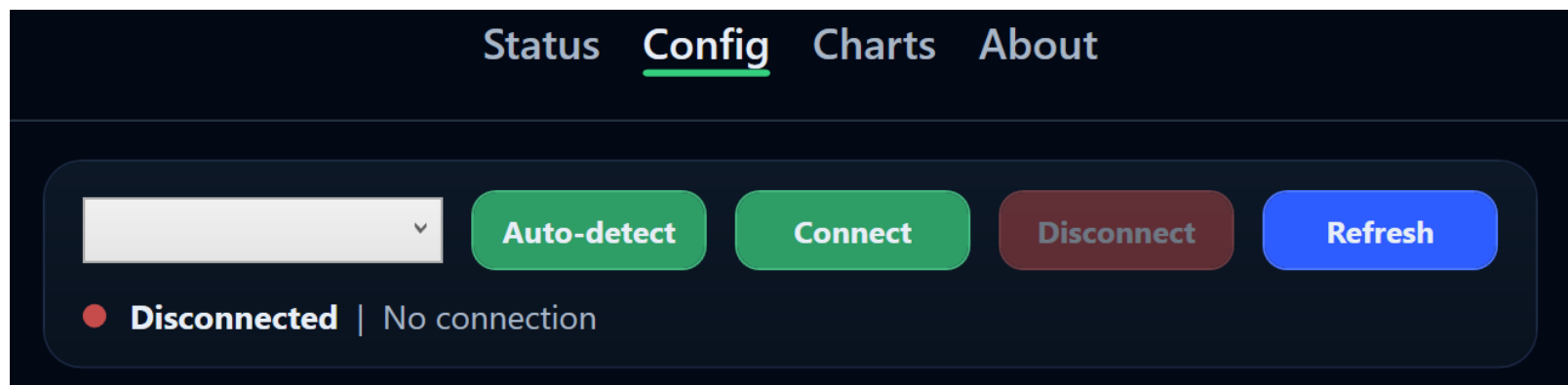
This prompt asks whether the user wants to configure the ASCOM telescope driver. The ASCOM driver is required for GPS-based mount synchronization and, in the V2 version, for mount power state verification through ASCOM.



If Yes is selected, the ASCOM Chooser window opens and the user can select the appropriate telescope driver. After a driver has been selected, it is saved in the application settings and the prompt will not be shown again as long as the selected driver remains configured.

If No is selected, the application continues to the main window without configuring the ASCOM driver. In this case, the prompt will be shown again the next time the application is started, unless an ASCOM driver is selected later in the Config tab.

After the ASCOM prompt has been handled, open the Config tab. The connection section is used to establish communication between the SkySwitch PRO application and the device.



The recommended method is to use Auto-detect. When this button is pressed, the application scans the available serial ports and uses the SkySwitch PRO communication handshake to identify the port where the device is connected. If the device is found, the application selects the correct COM port and establishes the connection automatically.

If automatic detection is not successful, the COM port can also be selected manually. Choose the port assigned to SkySwitch PRO from the list and click Connect. If the expected port is not visible, click Refresh to reload the list of available serial ports.

When the connection is successful, the application will display the connected status and the selected COM port number, for example:

CONNECTED | Port: COM5

The COM port number may be different on each computer. This is normal. If you are not sure which port belongs to SkySwitch PRO, check Windows Device Manager under Ports (COM & LPT) and look for the USB serial device assigned to SkySwitch PRO.

After the connection has been established, the application can read live data from the device and send control commands, including the remote ON/OFF pulse command.

3.3 Application Overview

After the connection with SkySwitch PRO has been established, the application provides access to the main operating and configuration areas through four tabs: Status, Config, Charts and About.

3.3.1 Status Tab

The Status tab is the main live monitoring screen of the SkySwitch PRO application. It provides a quick overview of the current device state, mount status, GPS information and environmental measurements.



The mount status area shows the current mount power state according to the detected SkySwitch PRO hardware version. In the V3 version, the mount status is monitored directly through the AUX connection and reflects the live MAIN_ON signal from the controller. In the V2 version, direct AUX status monitoring is not available. Instead, the application verifies the mount state through the selected ASCOM telescope driver. If no ASCOM driver is selected, or if the ASCOM check is not successful, the mount status is shown as ?, which means that the current mount state is unknown.

The PULSE button generates the remote ON/OFF switching pulse. This pulse is used to switch the mount on or off, depending on the current mount state. After a pulse is generated, the application starts a cooldown period to prevent repeated or accidental switching. In the V3 version, the PULSE button is available only when the mount state is known and the device connection is healthy. In the V2 version, the PULSE button may still be available even when the mount state is shown as ?, provided that the SkySwitch PRO connection is healthy and no cooldown is active.

The connection status area shows whether the application is communicating with SkySwitch PRO and whether the main device functions are available. It includes the USB connection to the SkySwitch PRO device, the weather sensor status, the GPS module status and the mount synchronization state.

The sensor readings area displays live environmental data measured by the internal sensor, including temperature, humidity, atmospheric pressure, dew point and dew margin. These values can be used for observatory monitoring and, when configured, for weather data output and refraction-related workflows. Configuration of weather file output is available in the Config tab. SkySwitch PRO can save weather statistics to CSV files and can also generate a boltwood.txt weather file for atmospheric refraction support.

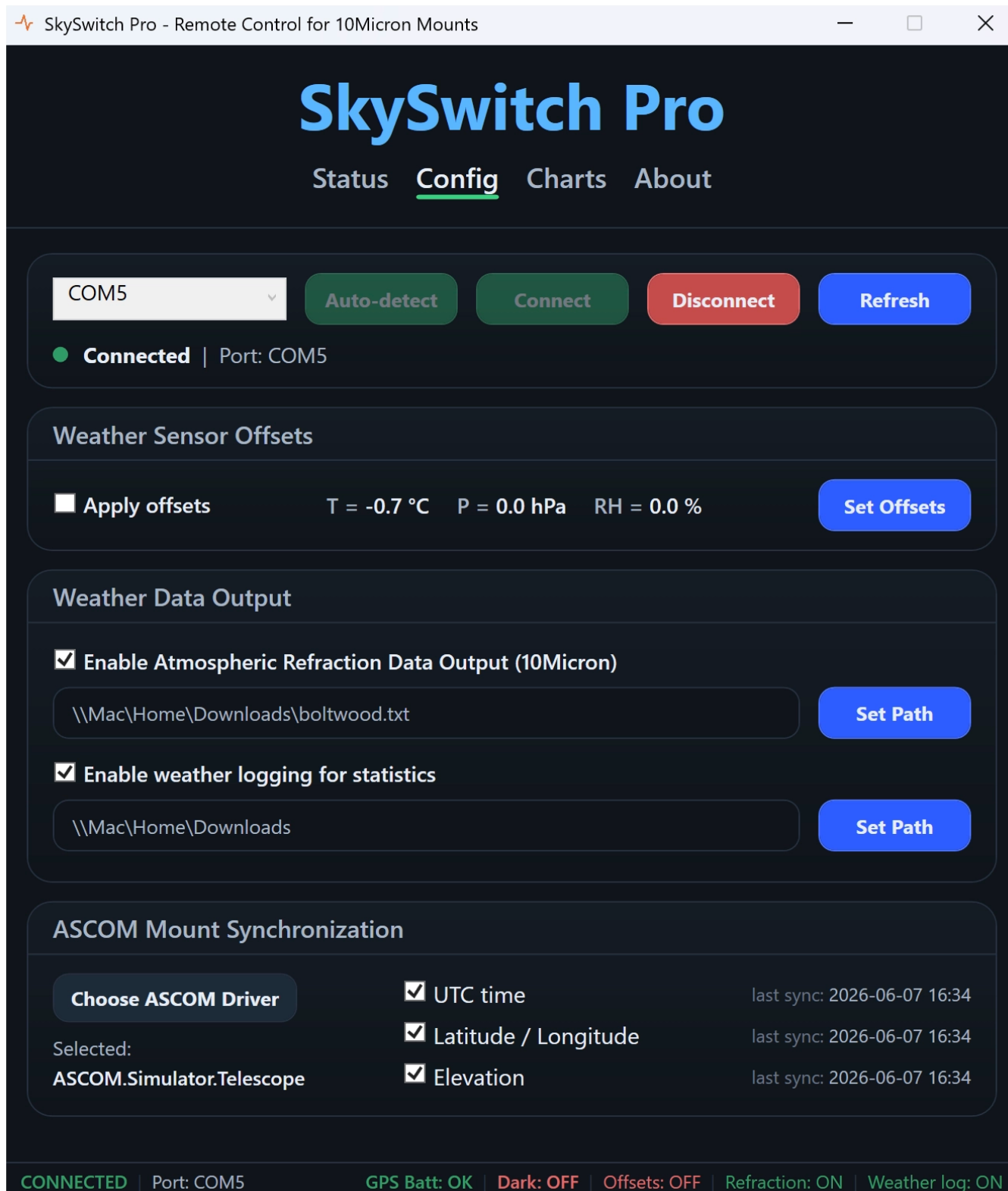
The GPS section displays GPS-derived data such as UTC time, geographical coordinates, elevation, satellite count and GPS quality. A valid GPS fix is required before GPS data can be used reliably for synchronization or mount configuration purposes.

The Quick Settings area provides fast access to selected operating options. Dark Mode can be used to turn off the LEDs on the device during night-time operation. Auto-sync controls whether the application should automatically synchronize selected mount parameters when the required conditions are met. The last synchronization time is shown on the right side of this area.

The bottom status bar gives a compact summary of the current application state. It shows the connection status, selected COM port, GPS backup battery status, Dark Mode state, offset status, refraction file output status and weather logging status.

3.3.2 Config Tab

The Config tab contains the main configuration settings of the SkySwitch PRO application. It is used to manage the device connection, sensor offsets, weather data output and ASCOM mount synchronization.



This screen is normally used during initial setup or when changing configuration paths, correction values or synchronization options. During normal operation, most live information is monitored from the Status tab.

The top connection section is used to establish communication between the application and the SkySwitch PRO device. The recommended method is Auto-detect, which scans the available serial ports and uses the SkySwitch PRO communication handshake to find the correct device automatically. The COM port can also be selected manually from the list. The Refresh button reloads the available port list, while Connect and Disconnect are used to open or close the communication session.

The Weather Sensor Offsets section allows correction values to be applied to the environmental sensor readings. Temperature, pressure and humidity offsets can be entered using the Set Offsets button. When Apply offsets is enabled, the corrected values are used by the application and by the generated weather output files.

The Weather Data Output section controls the files generated by SkySwitch PRO. The Enable Atmospheric Refraction Data Output (10Micron) option generates a weather data file, typically named boltwood.txt. This file contains current atmospheric data measured by SkySwitch PRO, such as temperature and pressure, in a format intended for 10Micron refraction-related workflows.

The selected boltwood.txt file path should later be used in the 10Micron ASCOM driver or 10Micron configuration software as the external weather or refraction data source. When this option is enabled, SkySwitch PRO updates the file automatically during operation.

The Enable weather logging for statistics option saves environmental measurements to log files for later review and analysis. The Set Path buttons are used to select the output file or folder locations for the refraction data file and the weather statistics logs.

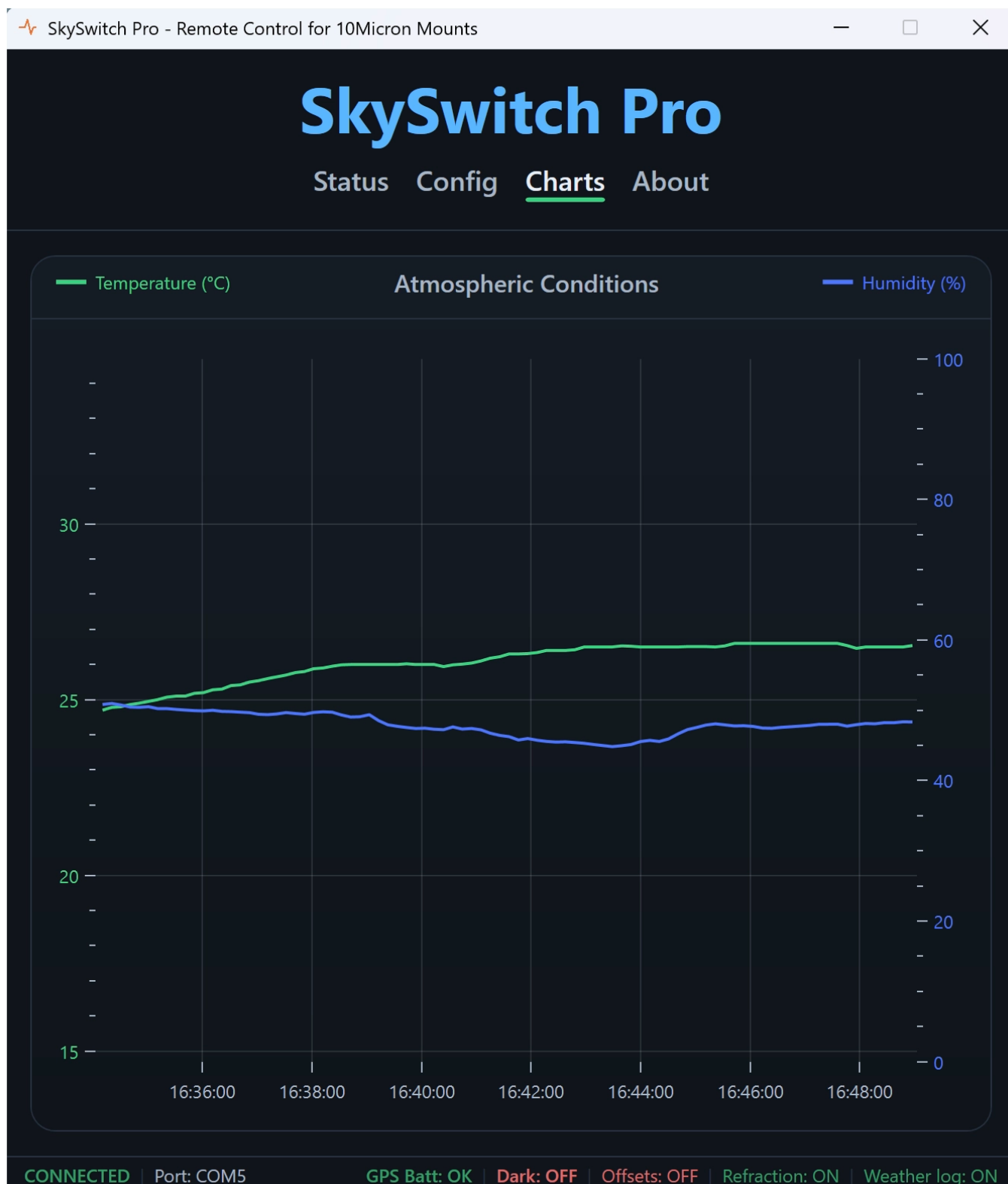
The ASCOM Mount Synchronization section is used to select the telescope driver and define which GPS-derived values should be synchronized with the mount. The Choose ASCOM Driver button opens the ASCOM driver selection window. After a driver is selected, its name is shown in the Selected field.

In the V2 version, the selected ASCOM telescope driver is also used by the application to verify the mount power state. This status check is separate from GPS-based synchronization, but it uses the same selected ASCOM driver. If no ASCOM driver is selected, the V2 mount status may remain shown as ?, which means that the current mount state is unknown.

The synchronization checkboxes define which values may be sent to the mount: UTC time, Latitude / Longitude and Elevation. Each item has its own last synchronization timestamp. Synchronization requires a valid GPS fix and successful communication with the selected ASCOM telescope driver.

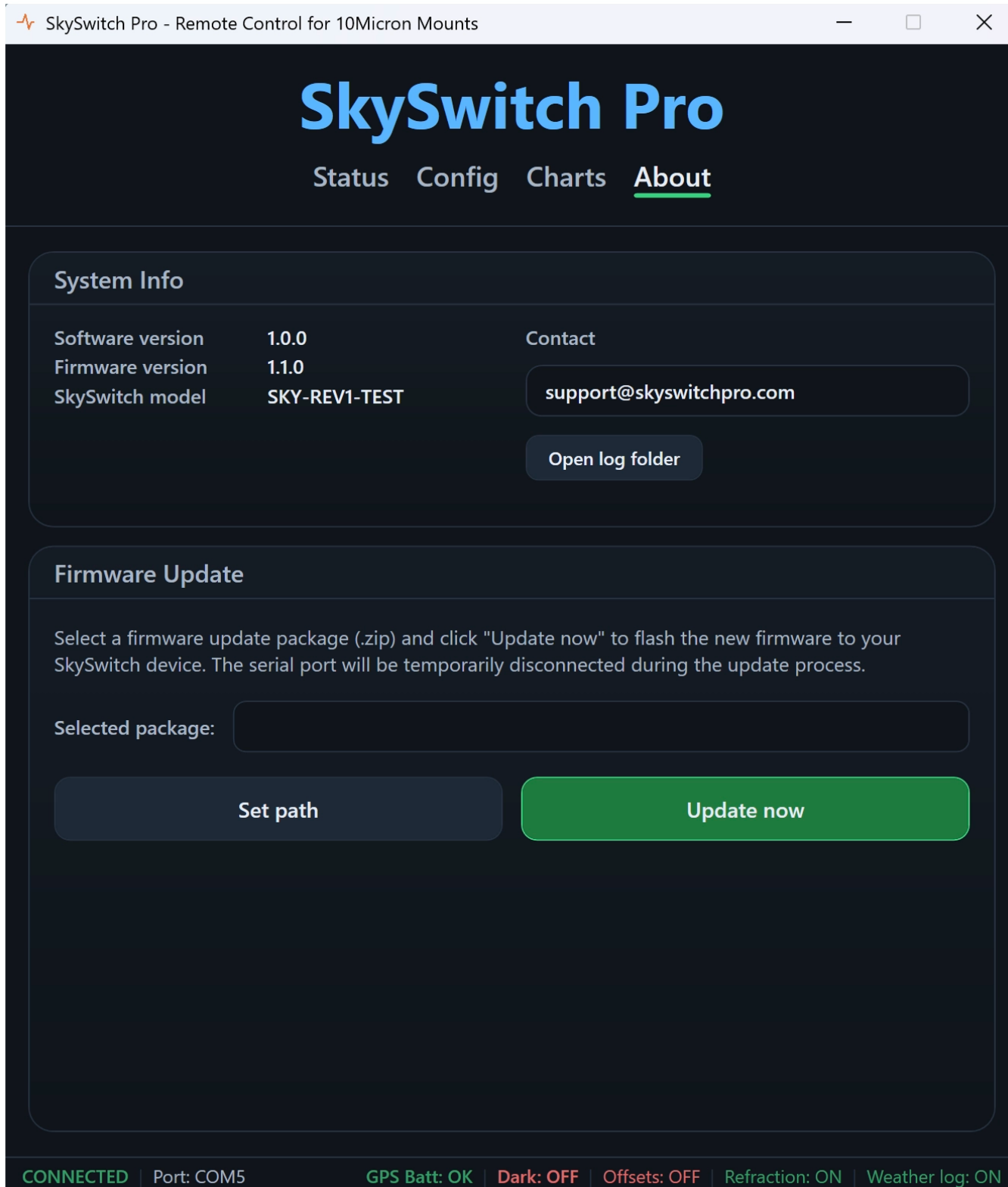
3.3.3 Charts Tab

The Charts tab provides a live graph of the main atmospheric conditions measured by SkySwitch PRO. It displays temperature and relative humidity over time, allowing the user to quickly observe trends during an observing session. The chart is intended for quick visual monitoring of changing environmental conditions. For long-term review or later analysis, enable weather logging in the Config tab. Logged weather data is saved separately and is not dependent on the live chart display.



3.3.4 About Tab

The About tab displays general system information, including the installed software version, firmware version and SkySwitch PRO model. This information is useful when checking the current device configuration or when contacting support. The Open log folder button provides quick access to application log files. The Firmware Update section is used to update the firmware inside the SkySwitch PRO device.



The screenshot shows the SkySwitch Pro web interface in a browser window titled "SkySwitch Pro - Remote Control for 10Micron Mounts". The interface has a dark theme with a blue header. The "About" tab is selected, indicated by a green underline. Below the header, there are two main sections: "System Info" and "Firmware Update".

System Info

Software version	1.0.0	Contact
Firmware version	1.1.0	support@skyswitchpro.com
SkySwitch model	SKY-REV1-TEST	Open log folder

Firmware Update

Select a firmware update package (.zip) and click "Update now" to flash the new firmware to your SkySwitch device. The serial port will be temporarily disconnected during the update process.

Selected package:

Footer: CONNECTED | Port: COM5 | GPS Batt: OK | Dark: OFF | Offsets: OFF | Refraction: ON | Weather log: ON

3.4 Weather Output and Logging Configuration

The Weather Data Output section in the Config tab is used to configure external weather data files generated by SkySwitch PRO. These files can be used either for later review of observing conditions or as a live weather data source for 10Micron atmospheric refraction support.



3.4.1 Weather Statistics Logging – CSV

SkySwitch PRO can save environmental measurements to CSV log files for later review and analysis. This function is intended for documenting observing conditions during a session and for checking how temperature, humidity, pressure, dew point and dew margin changed over time.

To enable this function, select Enable weather logging for statistics in the Config tab. Then use the corresponding Set Path button to select the folder where the weather log files should be saved.

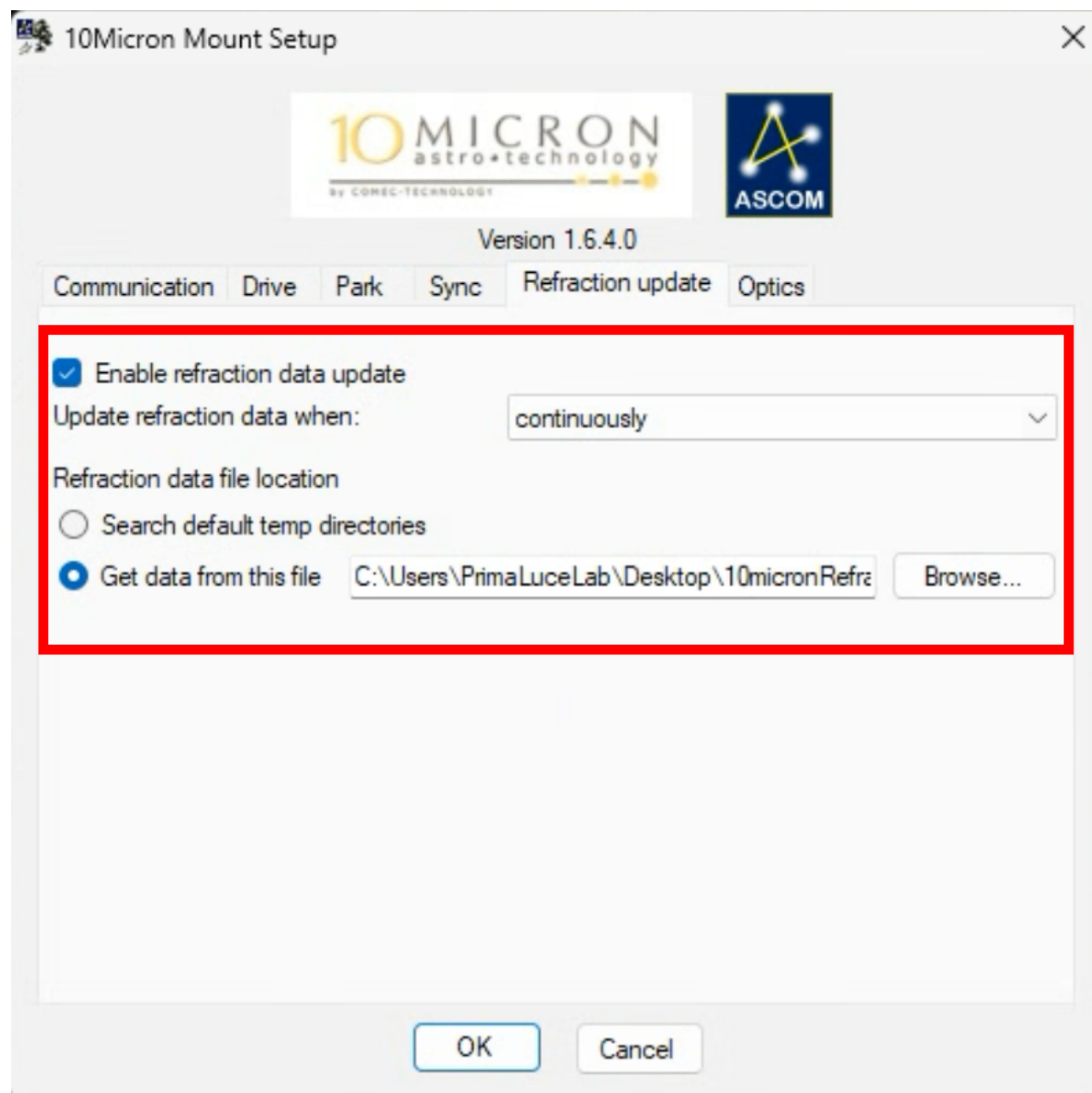
When weather logging is enabled, SkySwitch PRO writes weather data automatically during operation. The CSV files can later be opened in spreadsheet software or used for long-term monitoring of observatory conditions.

3.4.2 Atmospheric Refraction Data Output – boltwood.txt

SkySwitch PRO can also generate a live atmospheric data file for 10Micron refraction-related workflows. This file is typically named boltwood.txt and contains current weather data measured by SkySwitch PRO, such as temperature and atmospheric pressure.

To enable this function, select Enable Atmospheric Refraction Data Output (10Micron) in the Config tab. Then use the corresponding Set Path button to select the location where the boltwood.txt file should be created or updated. When this option is enabled, SkySwitch PRO updates the boltwood.txt file automatically during operation.

In the 10Micron ASCOM driver, open the Refraction update tab. Enable the Enable refraction data update option, then set Update refraction data when according to the desired update mode. For continuous live weather updates from SkySwitch PRO, select continuously.



In the Refraction data file location section, select Get data from this file and use Browse... to choose the same boltwood.txt file that was configured in the SkySwitch PRO application.

After this configuration is completed, the 10Micron ASCOM driver can read the current atmospheric values from the file generated by SkySwitch PRO and use them for atmospheric refraction correction.

Make sure that the selected file path is accessible to both the SkySwitch PRO application and the 10Micron ASCOM driver. If the file is stored in a protected system folder or in a location with restricted permissions, the file may not be updated or read correctly.

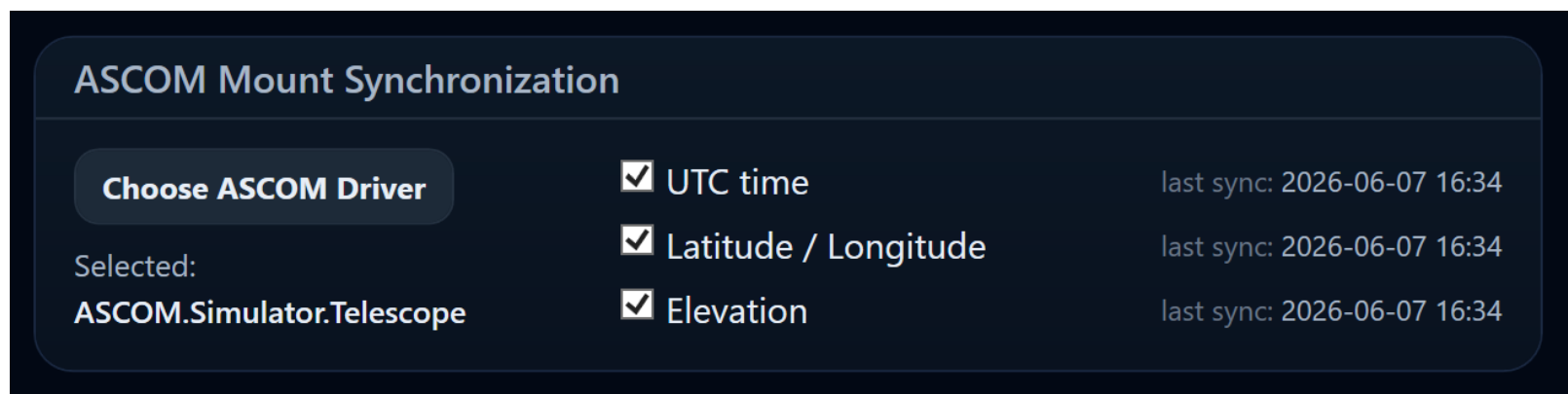
3.5 ASCOM Mount Synchronization Configuration

The ASCOM Mount Synchronization section in the Config tab is used to select the telescope driver and define which GPS-derived values may be synchronized with the 10Micron mount.

To configure this function, click Choose ASCOM Driver and select the appropriate ASCOM telescope driver for the mount. After the driver is selected, its name is displayed in the Selected field. The application must be able to communicate successfully with the selected driver before synchronization can be performed.

In the V2 version, the selected ASCOM telescope driver is also used for mount status verification. This status check is separate from GPS-based synchronization, but it uses the same selected driver. If no ASCOM driver is selected, the V2 mount status may remain shown as ?, meaning that the current mount state is unknown.

The synchronization checkboxes define which values can be sent to the mount:



ASCOM Mount Synchronization		
Choose ASCOM Driver	☒ UTC time	last sync: 2026-06-07 16:34
Selected:	☒ Latitude / Longitude	last sync: 2026-06-07 16:34
ASCOM.Simulator.Telescope	☒ Elevation	last sync: 2026-06-07 16:34

Each option can be enabled or disabled independently. This allows the user to decide whether SkySwitch PRO should synchronize all available GPS-derived parameters or only selected values.

Synchronization requires a valid GPS fix. The GPS data should be stable and reliable before it is used to update mount parameters. If GPS data is not yet valid, synchronization should be delayed until a proper fix is established.

The last sync information shown next to each synchronization item indicates when that value was last successfully synchronized. This makes it easier to verify whether the mount has already received the latest GPS-derived time, location or elevation data.

When Auto-sync is enabled in the Status tab, the application can automatically synchronize the selected parameters when the required conditions are met. If Auto-sync is disabled, synchronization can be handled manually according to the user's operating workflow.

For V2 users, selecting the ASCOM driver is recommended even if GPS-based synchronization is not used. It allows the application to verify whether the mount is responding through ASCOM and to replace the ? mount status with a confirmed ON or OFF state when communication is successful.

3.6 Initial Device Status and GPS Fix

After SkySwitch PRO is powered from USB and the application connection has been established, the device is ready for basic operation. At this stage, the mount can already be switched on or off using the remote ON/OFF pulse function.

The red Power LED indicates that SkySwitch PRO is powered and operating. When this LED is on, the device is active and ready to communicate with the SkySwitch PRO Windows application.

The blue GPS LED indicates the current GPS status. When the LED is blinking, the GPS receiver is operating but has not yet established a valid GPS fix. When the LED remains continuously on, a valid GPS fix is available.

A GPS fix means that the GPS receiver has determined its current position from satellite signals. After a valid fix is established, SkySwitch PRO can provide GPS-derived UTC time, geographical coordinates, elevation and satellite information to the application.

A valid GPS fix does not always mean that automatic mount synchronization will be performed immediately. Before synchronization is allowed, the application checks whether the GPS data is reliable enough to update the mount. This includes valid UTC time and date, valid latitude and longitude, sufficient satellite data, acceptable HDOP, fresh position data and elevation readiness.

The elevation value also has to become stable before it can be used for synchronization. For this reason, the application may temporarily delay synchronization even when the GPS module is working and position data is visible. This is normal behavior and does not necessarily indicate a fault.

After all synchronization conditions are met, SkySwitch PRO performs a short validation period. If the GPS quality drops during this time, the validation is reset and synchronization is delayed until the signal becomes stable again.

Condition checked before Auto-sync	Meaning
Valid UTC time and date	The GPS receiver provides usable time information
Valid latitude and longitude	The GPS receiver provides a real position, not empty or zero coordinates
Sufficient satellite data	The GPS receiver has enough satellite information for a reliable fix
Acceptable HDOP	The horizontal position accuracy is good enough for synchronization
Fresh GPS data	The position and time data are recent, not outdated
Elevation readiness	The elevation data is valid and stable enough to be used
ASCOM driver selected	The application has a telescope driver available for synchronization

The GPS Quality star indicator shown in the Sensor Readings area is a visual signal-quality indicator. It helps the user quickly assess the GPS signal quality, mainly from satellite count, HDOP and, when available, signal strength information. The star rating is informative only; it does not directly decide whether Auto-sync is allowed.

The time required to obtain a usable GPS fix may vary depending on sky visibility and installation conditions. For best GPS performance, place SkySwitch PRO where the integrated GPS antenna has the clearest possible view of the sky. Avoid placing the device under metal covers, inside closed cabinets or directly behind large obstacles.

The red Pulse LED turns on only while SkySwitch PRO is generating the remote ON/OFF pulse. During normal operation this LED remains off. The pulse is used to switch the mount on or off, depending on the current mount state.

Mount status indication depends on the SkySwitch PRO hardware version. In the V3 version, the mount power status is monitored directly through the AUX connection and is shown as a confirmed ON or OFF state in the application.

In the V2 version, direct AUX MAIN_ON status monitoring is not available. The application does not use the firmware MAIN_ON signal as a reliable source of mount state information. Instead, the mount state can be verified through the selected ASCOM telescope driver.

If no ASCOM driver is selected in the V2 version, or if the ASCOM status check is not successful, the mount status is shown as ?. This means that the current mount state is unknown. It does not necessarily indicate a device fault.

In the V2 version, the ? state does not by itself block the PULSE function. The mount can still be switched on or off as long as the SkySwitch PRO device connection is healthy, a recent status frame is being received and no pulse cooldown is active. When the ASCOM telescope driver is selected and the application successfully communicates with the mount, the status can be shown as confirmed ON or OFF.

4. NORMAL OPERATION

4.1 Daily Operation Workflow

After SkySwitch PRO has been installed and configured, normal operation is performed mainly from the Status tab. This tab provides the current mount status, device connection status, GPS information, environmental measurements and quick operating options.

A typical startup workflow is as follows:

1. Connect SkySwitch PRO to the observatory control computer by USB.
2. Start the SkySwitch PRO Windows application.
3. If the ASCOM driver prompt is shown, select Yes to configure the telescope driver or No to continue without ASCOM configuration. Use Auto-detect or select the correct COM port manually.
4. Confirm that the application shows CONNECTED.
5. Check that the weather sensor and GPS module are reported as connected.
6. Confirm that the required options, such as weather logging, refraction output or Auto-sync, are enabled if they are needed for the session.
7. Use the Status tab as the main monitoring and control screen during operation.

If GPS-based synchronization is used, wait until the GPS data quality is sufficient and the application reports that synchronization has been completed. If weather data output is used for 10Micron refraction support, confirm that Refraction: ON is shown in the status bar.

During normal operation, SkySwitch PRO can remain connected to the control computer. The application continuously updates live weather and GPS data, writes enabled output files and monitors the configured synchronization state.

4.2 Remote Mount ON/OFF and Status Confirmation

The mount can be switched on or off from the Status tab using the PULSE button. When the button is pressed, SkySwitch PRO generates the remote ON/OFF switching pulse. The pulse is sent to the mount through the cable appropriate for the selected hardware version.

After a pulse is generated, wait for the cooldown period to finish before sending another pulse. This prevents repeated or accidental switching commands. The Pulse LED on the device is on only while the switching pulse is being generated.

Mount status confirmation depends on the SkySwitch PRO hardware version. In the V3 version, the mount power state is monitored directly through the AUX connection and shown in the application. In the V2 version, direct AUX MAIN_ON status monitoring is not available, so full confirmation requires communication with the selected ASCOM telescope driver.

In the V2 version, direct AUX MAIN_ON status monitoring is not available. The application does not infer a confirmed mount state from the generated pulse. Instead, the mount state can be verified through the selected ASCOM telescope driver.

If no ASCOM driver is selected, or if the ASCOM status check is not successful, the mount status is shown as ?. This means that the current mount state is unknown. In the V2 version, the ? state does not by itself block the PULSE function, provided that the SkySwitch PRO connection is healthy and no pulse cooldown is active.

When the selected ASCOM telescope driver communicates successfully with the mount, the mount status can be shown as confirmed ON or OFF.

4.3 End of Session

At the end of an observing session, switch the mount off if this is required by the observatory operating procedure. Use the PULSE button and wait for the cooldown period to finish before taking any further action.

After the pulse has been sent, confirm the mount status in the application. In the V3 version, the status is read directly through the AUX connection. In the V2 version, status confirmation may require ASCOM communication with the mount.

When the session is complete, the SkySwitch PRO application can be closed. The device may remain connected to the control computer if it is part of a permanent remote observatory installation.

5. TROUBLESHOOTING AND TECHNICAL SPECIFICATIONS

5.1 Troubleshooting

Problem	Possible cause	Recommended action
SkySwitch PRO is not detected by Windows	The USB cable is not connected correctly, the USB port is not working, the device is not powered, or the CH340/CH341 USB serial driver is missing.	Check whether the red Power LED is on. Disconnect and reconnect the USB cable. Try another USB port or another USB cable. Open Windows Device Manager and check Ports (COM & LPT) . If no new COM port appears, install the CH340/CH341 USB serial driver, then reconnect SkySwitch PRO.
Application cannot connect to the device	The wrong COM port is selected, the port is already used by another application, or the port list has not been refreshed after connecting the device.	Click Refresh, then use Auto-detect. If automatic detection is not successful, select the COM port manually and click Connect. Close any other application that may be using the same COM port. If needed, restart the SkySwitch PRO application and reconnect the USB cable.
GPS LED keeps blinking / no GPS fix	The GPS receiver does not have a clear enough view of the sky, the device is placed inside a cabinet or near metal obstacles, or the receiver is still acquiring its first fix after startup.	Place SkySwitch PRO where the integrated GPS antenna has the clearest possible view of the sky. Avoid metal covers, closed cabinets and large obstacles close to the device. Wait a few minutes and check the GPS data in the Status tab.
GPS data is visible, but Auto-sync does not start	The GPS fix is not yet good enough for synchronization, the elevation value is still stabilizing, Auto-sync is disabled, no ASCOM driver is selected, or no synchronization parameter has been enabled.	Wait until the GPS data becomes stable. Check the GPS Quality indicator and the GPS status in the Status tab. Make sure Auto-sync is enabled, an ASCOM telescope driver is selected, and at least one synchronization option, such as UTC time, Latitude / Longitude or Elevation, is enabled in the Config tab.

Problem	Possible cause	Recommended action
Mount does not switch ON/OFF	The mount control cable is not connected, the wrong SkySwitch PRO hardware version is being used, the mount is not powered, or the pulse cooldown period is still active.	Check that the AUX or 3.5 mm Jack cable is connected to the correct mount controller. Verify that the SkySwitch PRO version matches the controller version. Check the mount power supply. Press PULSE only once and wait for the cooldown period to finish before sending another pulse. The Pulse LED should turn on while the switching pulse is being generated.
Mount status is shown as ? in the V2 version	In the V2 version, direct AUX MAIN_ON status monitoring is not available. The application verifies the mount state through the selected ASCOM telescope driver. If no ASCOM driver is selected, or if the ASCOM check is not successful, the mount state remains unknown.	Select and connect the appropriate ASCOM telescope driver in the Config tab. Confirm that the mount is reachable through ASCOM. If the ASCOM check is successful, the mount status will be shown as confirmed ON or OFF. The ? state does not necessarily indicate a device fault and does not by itself block the PULSE function in the V2 version.
Weather data is not saved	Weather logging is not enabled, the output folder has not been selected, or the application does not have permission to write to the selected location.	In the Config tab, enable Enable weather logging for statistics. Use Set Path to select the output folder. Choose a normal user-accessible folder, not a protected system location. Check the status bar to confirm that weather logging is enabled.
boltwood.txt is not updated or not read by 10Micron	Atmospheric refraction output is not enabled, the wrong file path is selected, the 10Micron ASCOM driver points to a different file, or the selected location has restricted write/read permissions.	In the Config tab, enable Enable Atmospheric Refraction Data Output (10Micron) and use Set Path to select the boltwood.txt file location. In the 10Micron ASCOM driver, enable refraction data update and select the same boltwood.txt file. Make sure the file location is accessible to both applications.
Firmware update fails	The selected firmware package is incorrect, the .zip file is corrupted, the USB connection was interrupted, or another application is using the same COM port.	Use only official SkySwitch PRO firmware update packages. Do not disconnect the USB cable during the update. Close other applications that may use the COM port. If the update fails, restart the SkySwitch PRO application, reconnect the device and try again with the correct firmware package.

Problem	Possible cause	Recommended action
GPS backup battery warning is shown	The GPS backup power source is low or not charged enough. This may increase the time needed to obtain the next GPS fix after power-up.	This warning does not block GPS operation or mount synchronization by itself. Keep SkySwitch PRO powered for some time to allow the backup circuit to recharge. If the warning remains permanently visible, contact SkySwitch PRO support.
PULSE button is disabled	The device is not connected, the communication link is unstable, the last status frame is too old, or the pulse cooldown period is still active. In the V3 version, the mount state must also be known before PULSE is available.	Check that the application is connected to SkySwitch PRO and that the link status is healthy. Wait until the cooldown period has finished. If the link is unstable or reconnecting, wait for communication to recover or reconnect the device. In the V3 version, wait until the mount status is shown as confirmed ON or OFF.
ASCOM driver prompt appears at every startup	No ASCOM telescope driver has been saved in the application settings, or the previously selected driver is no longer available.	Select Yes in the prompt and choose the appropriate ASCOM telescope driver in the ASCOM Chooser. After the driver is saved, the prompt will not be shown again as long as the driver remains configured. If ASCOM synchronization and V2 mount status verification are not needed, select No to continue.

5.2 Firmware Update and Logs

The About tab contains general information about the installed SkySwitch PRO software, the firmware version running inside the device and the detected SkySwitch PRO model. This information is useful when checking the current configuration or when contacting support.

The Open log folder button provides quick access to the application log files. These logs may be useful for troubleshooting communication, synchronization or firmware update problems. When reporting an issue, include the software version, firmware version, SkySwitch PRO model and, if requested, the relevant log files.

The Firmware Update section is used to update the firmware inside the SkySwitch PRO device. Firmware updates are provided as official update packages in .zip format. To start an update, select the firmware package using Set path, then click Update now.

During the firmware update process, the serial connection to the device may be temporarily interrupted. This is normal. Do not disconnect the USB cable, do not close the application and do not power off the control computer until the update process has finished.

Use only official firmware update packages provided for SkySwitch PRO. Installing an incorrect or modified firmware package may cause the device to stop working correctly.

5.3 Technical Specifications

Parameter	Specification
Mechanical	
Dimensions	95 × 60 × 25 mm
Weight	120 g
Enclosure material	PETG
Enclosure type	3D-printed enclosure
Operating temperature	-20°C to +60°C
AUX cable length	100 cm
Electrical	
Power supply	USB-powered, 5 V
USB interface	USB-B
Typical operating current	65 mA
Overcurrent protection	Resettable PTC fuse
Electrostatic protection	ESD protection diode
Pulse output protection	Opto-isolated switching output
Sensors and Synchronization	
Environmental sensor	Bosch BME280
Environmental sensor accuracy	±1.0°C, ±1.0 hPa, ±3% RH
GPS/GNSS receiver	Quectel L80RE-M37
GNSS channels	88 channels
GPS antenna	Integrated
Tracking sensitivity	-165 dBm
GPS-derived data	UTC time, latitude, longitude, elevation
Mount synchronization	ASCOT-based synchronization of selected mount parameters
Supported synchronization parameters	UTC time, latitude / longitude, elevation

Parameter	SkySwitch PRO V3	SkySwitch PRO V2
Mount Control Interfaces		
Mount connector	AUX connector	3.5 mm Jack connector
Remote ON/OFF method	Voltage pulse through AUX	Isolated dry-contact switching pulse
Direct mount power status monitoring	Yes, through AUX MAIN_ON	No
Mount status verification	Direct from AUX status signal	Through selected ASCOM telescope driver