



OPERATING MANUAL

Remote Control and Monitoring for 10Micron Mounts



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

1. Introduction	4
2. Device Overview	5
2.1 Device Layout	5
2.3 Main Functions	7
2.4 Hardware Protection and Safety Notes	8
3. INSTALLATION AND INITIAL SETUP.....	9
3.1 Software Installation and USB Driver	9
3.2 First Launch and Mount TCP/IP Configuration.....	10
3.3 SkySwitch PRO USB Connection	11
3.4 Initial Device Status and GPS Fix	12
4. APPLICATION INTERFACE	14
4.1 Status Tab	14
4.1.1 Mount Status and PULSE Control	15
4.1.2 Connection Status	15
4.1.3 Sensor Readings.....	16
4.1.4 Quick Settings and Status Bar.....	16
4.2 Config Tab	18
4.2.1 USB Device Connection	19
4.2.2 Mount TCP/IP Configuration	19
4.2.3 Weather Sensor Offsets.....	20
4.2.4 Weather Data Output and Logging	20
4.3 Charts Tab	21
4.3 About Tab	22
5. Normal Operation.....	23
5.1 Daily Operation Workflow	23
5.2 Remote Mount ON/OFF and Status Confirmation	24
5.3 End of Session	25
6. Troubleshooting and Technical Specifications	26

6.1 Troubleshooting.....26

6.2 Firmware Update and Logs.....29

6.3 Technical Specifications30

1. INTRODUCTION

SkySwitch PRO is a compact device designed for the remote operation and monitoring of 10Micron mounts. It allows the mount to be switched on or off from a Windows computer without pressing the physical power button or being physically present at the observatory site.

The device also provides live environmental data, including temperature, humidity and atmospheric pressure, together with GPS-based UTC time, geographical coordinates and elevation. These values support mount configuration, atmospheric refraction calculations and general observatory monitoring.

The dedicated SkySwitch PRO Windows application is used to control the mount, monitor its status, display environmental and GPS data, configure sensor offsets, manage Dark Mode and perform firmware updates. Communication with the 10Micron mount is handled directly over the local network using the mount's native TCP/IP protocol. This allows selected time, location and environmental parameters to be transferred without using an ASCOM telescope driver.

SkySwitch PRO is available in two hardware versions. The V3 version connects to the AUX port of newer 10Micron controllers and uses the dedicated MAIN_ON signal for immediate and continuous monitoring of the mount power state. The V2 version connects to older controllers through a 3.5 mm Jack connector and determines mount availability through TCP/IP communication with the mount over the local network.

The two versions use different electrical methods for remote switching and are therefore not interchangeable simply by replacing 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

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

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 direct monitoring of the mount power state through the dedicated MAIN_ON signal.

SkySwitch PRO V2 is designed for mounts equipped with older 10Micron controllers. This version uses a dedicated 3.5 mm jack connection for remote ON/OFF control. Direct hardware-based monitoring through the AUX MAIN_ON signal is not available in this version. Instead, the application determines the mount state through TCP/IP communication with the mount over the local network.

The AUX cable version and the 3.5 mm jack cable version are not interchangeable because the two controller generations use different electrical methods 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 voltage to the mount input. Instead, it uses an electrically isolated dry-contact 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 prevents 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. Indirect mount status monitoring via TCP/IP.

2.3 Main Functions

SkySwitch PRO provides the following main functions:

- Remote ON/OFF control of the 10Micron mount
- Mount power status monitoring for V3 controllers — immediate and continuous hardware-based detection using the dedicated MAIN_ON signal.
- Mount status monitoring for V2 controllers — indirect monitoring through direct TCP/IP communication with the mount.
- GPS-based UTC, location and elevation support
- IP-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 state directly through the MAIN_ON signal. In the V2 version, the device uses a 3.5 mm jack connection to generate an isolated dry-contact switching pulse, while mount status is monitored indirectly through TCP/IP communication.

The GPS function provides UTC time, geographical coordinates and elevation data. These values can be transferred directly to the 10Micron mount by the SkySwitch PRO software using the mount's native TCP/IP protocol.

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 transferred directly to the mount for atmospheric refraction support.

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

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 INITIAL SETUP

3.1 Software Installation and USB Driver

The SkySwitch PRO Windows application can be downloaded from the official SkySwitch PRO website.

<https://skyswitchpro.com/index.php/support/#downloads>

A single installer supports both the V2 and V3 hardware versions. Download the latest version and save the installer 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.

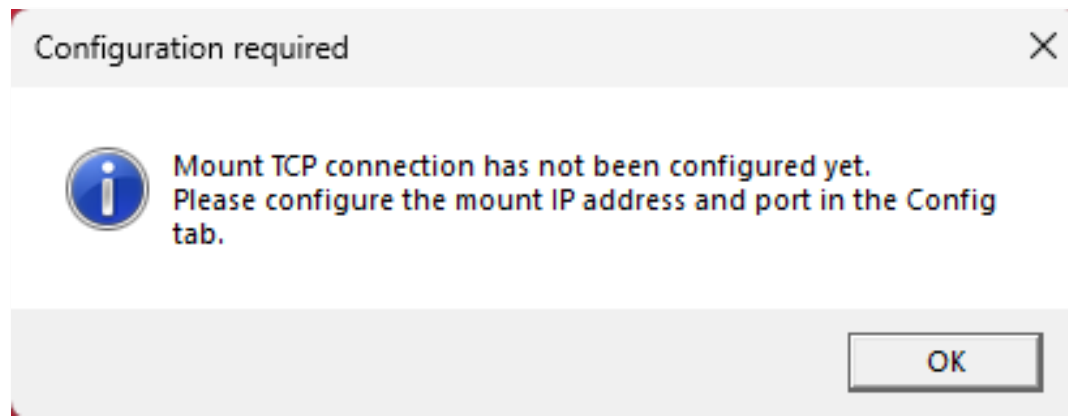
SkySwitch PRO communicates with the computer through a USB serial interface. When the device is connected correctly, Windows should detect it as a COM port. In Windows Device Manager, it may appear under Ports (COM & LPT) as a USB serial device, for example USB-SERIAL CH340 (COM5). The COM number may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

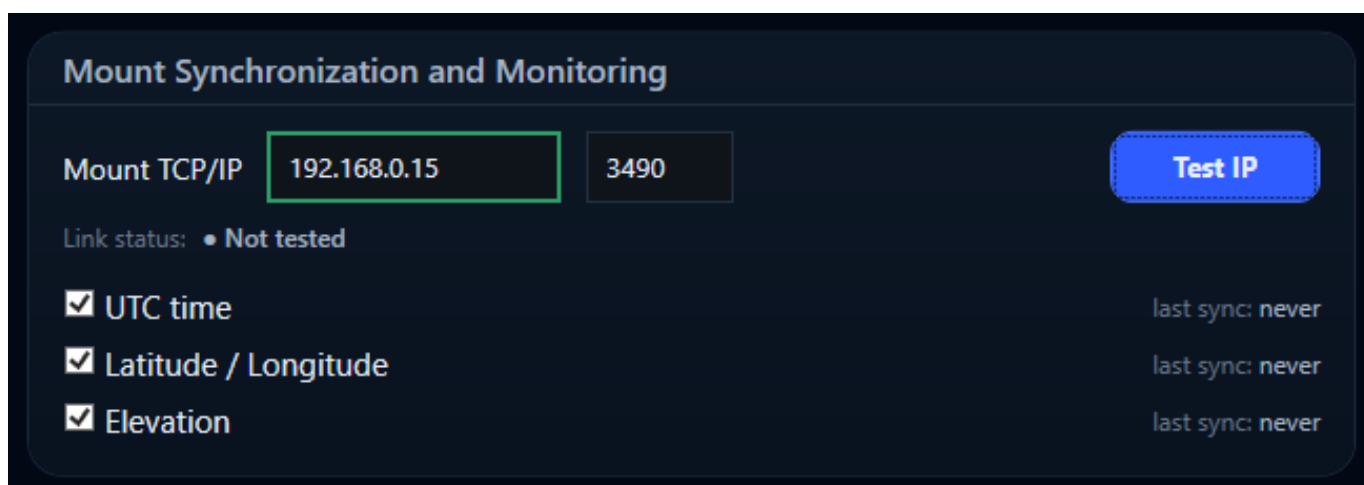
Start the SkySwitch PRO Windows application after the device has been connected to the control computer by USB.

When the SkySwitch PRO application is started and no mount IP address has been configured yet, a notification may be displayed prompting the user to configure the TCP/IP connection to the 10Micron mount.



This prompt asks whether the user wants to configure the TCP/IP connection to the 10Micron mount. Entering the correct mount IP address is essential for full SkySwitch PRO functionality.

In the V2 version, the TCP/IP connection is required both for ON/OFF state monitoring and for synchronization of time, location and environmental data. In the V3 version, the mount power state is monitored directly through the MAIN_ON signal, but the TCP/IP connection is still required for data synchronization.



Without a configured mount IP address, SkySwitch PRO is limited to generating the remote ON/OFF pulse. In the V2 version, the application cannot confirm the resulting mount state, and in both versions it cannot transfer synchronization or environmental data to the mount.

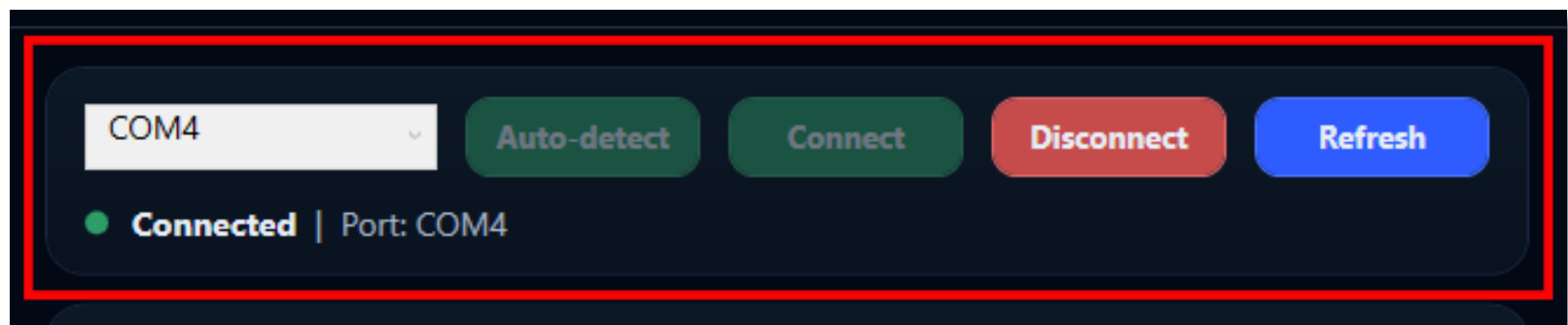
In the Config tab, enter the IP address of the 10Micron mount in the Mount Synchronization and Monitoring section. Port 3490 is used by default, as specified by 10Micron.

As soon as a valid IP address is entered, the application automatically begins attempting to establish a TCP/IP connection with the mount. If the mount is powered on and reachable over the network, the application identifies its current operating state as ON or OFF. In the V2 version, this TCP/IP connection is also used for mount-state monitoring.

The Test button checks whether the mount can be reached using the IP address and port entered by the user. A successful test confirms that the network settings are correct and that communication with the mount can be established.

3.3 SkySwitch PRO USB Connection

The connection section at the top of the page is used to establish USB communication between the SkySwitch PRO application and the device.



The recommended method is to click Auto-detect. The application scans the available serial ports and uses the SkySwitch PRO communication handshake to identify the correct device. If SkySwitch PRO is found, the appropriate COM port is selected and the connection is established automatically.

If automatic detection is unsuccessful, select the required COM port manually and click Connect. Click Refresh if the expected port is not shown in the list.

A successful connection is confirmed by the green status indicator and a message such as:

Connected | Port: COM4

The Disconnect button closes communication with SkySwitch PRO. While disconnected, the application cannot read live device data or send control commands, including the remote ON/OFF command.

3.4 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

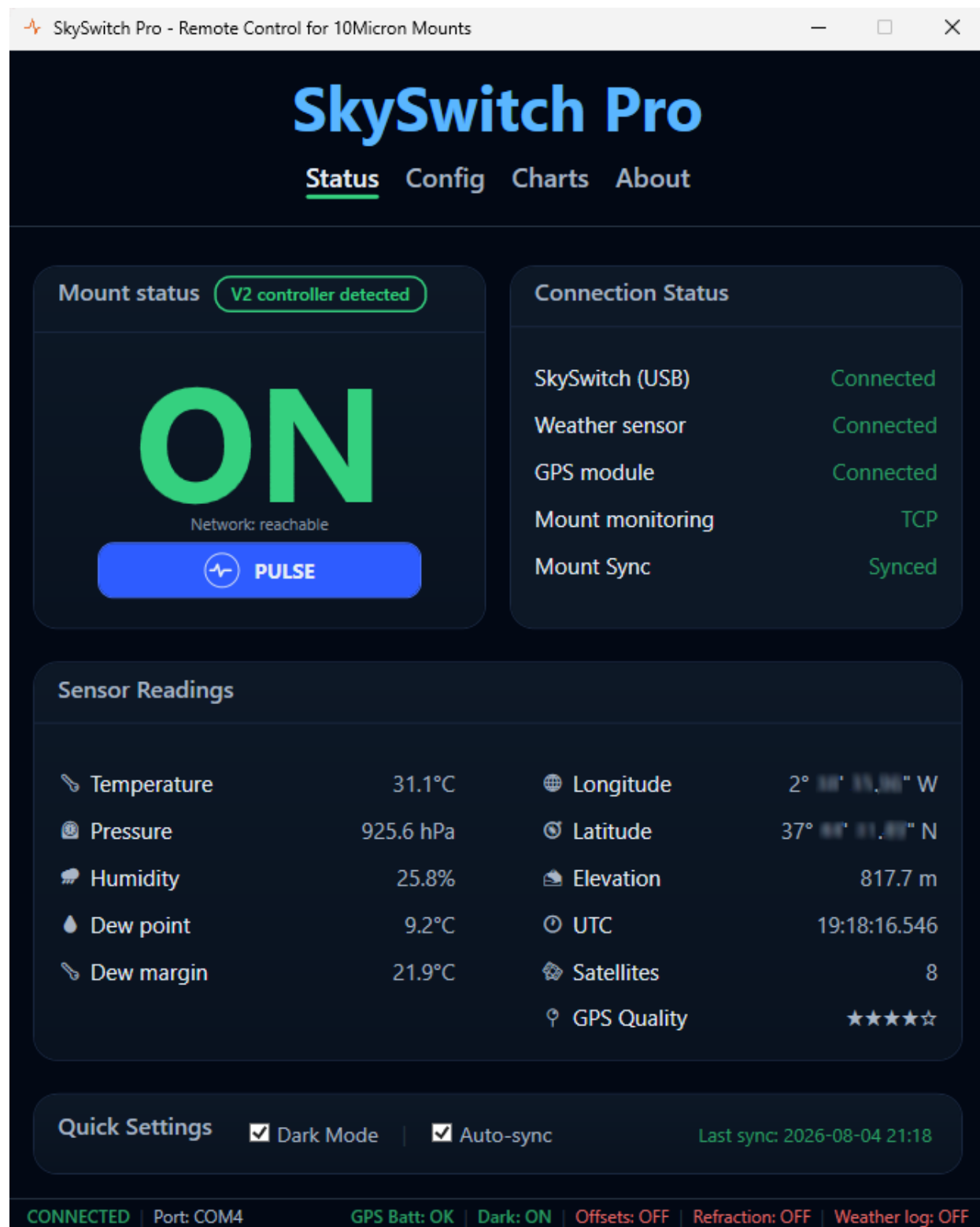
The GPS Quality star indicator shown in the Sensor Readings area is a visual signal-quality indicator. It helps the user quickly assess the GPS signal quality, mainly from satellite count, HDOP and, when available, signal strength information. The star rating is informative only; it does not directly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

4. APPLICATION INTERFACE

4.1 Status Tab

The Status tab is the main operational view of the SkySwitch PRO application. It provides an immediate overview of the mount power state, device and mount communication, and the operating status of the environmental sensor and GPS module. The tab also displays current weather and GPS readings, while the bottom status bar provides a compact summary of the most important connection and configuration states.



4.1.1 Mount Status and PULSE Control

The Mount Status panel shows the detected SkySwitch PRO hardware version and the current operating state of the 10Micron mount.

In the V3 version, the mount state is determined directly from the live MAIN_ON signal available through the AUX connection. This provides immediate and unambiguous status information, so the application reports the mount as either ON or OFF.

In the V2 version, the mount state is determined indirectly through TCP/IP communication. Correct configuration of the mount IP address in the Mount Synchronization and Monitoring section of the Config tab is therefore required. If the TCP/IP connection has not been configured correctly, the application cannot determine the mount state and displays:

? — TCP connection not configured

The PULSE button generates the remote ON/OFF switching pulse. After each pulse, a 30-second cooldown period is applied in accordance with the mount manufacturer's recommendation. This reduces the risk of accidentally sending a second pulse and also allows the mount sufficient time to complete its startup or shutdown sequence. No additional pulse should be sent while the cooldown is active.

4.1.2 Connection Status

The Connection Status panel provides a compact overview of communication with the SkySwitch PRO device, the operating condition of its measurement modules and the current mount synchronization state.

SkySwitch (USB) indicates whether the Windows application is connected to the SkySwitch PRO device through the selected COM port. Weather sensor and GPS module confirm whether the corresponding internal modules are responding correctly and providing data to the application.

The Mount monitoring entry shows the method currently used to determine the mount state. This depends on the detected hardware version: the V3 version uses the AUX connection and the live MAIN_ON signal, while the V2 version uses direct TCP/IP communication with the mount.

The Mount Sync entry indicates whether the selected mount parameters have been synchronized successfully. A Syncedstatus confirms that the required data were transferred to the mount through the configured TCP/IP connection.

4.1.3 Sensor Readings

The Sensor Readings panel displays the current environmental measurements and GPS-derived information received by the application. When sensor offsets are enabled in the Config tab, the displayed temperature, pressure and humidity values already include the configured correction values.

The current temperature and atmospheric pressure values, including any active offsets, are transferred continuously to the 10Micron mount through the TCP/IP connection. This provides the mount with up-to-date atmospheric data required for calculating atmospheric refraction corrections.

In addition to the temperature and pressure values used by the mount, the internal environmental sensor also measures relative humidity. The application combines these measurements to calculate the dew point and dew margin. Dew margin is the difference between the current temperature and the calculated dew point, providing a simple indication of the risk of condensation. When the dew margin reaches 3 °C or less, the value is highlighted with a warning colour to draw attention to an increased risk of dew formation.

The GPS section displays longitude, latitude, elevation, UTC time, the number of visible satellites and an overall GPS Quality indication. The presence of coordinate and time values on the screen does not by itself mean that they are ready for synchronization. Before any data are transferred to the mount, the application validates the GPS fix and checks that the readings are sufficiently stable and reliable.

Synchronization can begin only after the required GPS quality and stability criteria have been met. When synchronization is enabled in Quick Settings, the application waits for this validation to be completed before transferring the selected UTC time, geographical coordinates and elevation data to the mount.

4.1.4 Quick Settings and Status Bar

The Quick Settings section provides immediate access to functions that may need to be changed during normal operation. These controls are placed on the Status tab so that they can be enabled or disabled without opening the full configuration screen.

Dark Mode switches off the SkySwitch PRO device LEDs to reduce unwanted light during night-time operation. This setting affects only the device indicators and does not interrupt communication or measurement functions.

Auto-sync enables automatic synchronization of the mount parameters selected in the Config tab. When this option is active, the application waits until the TCP/IP connection is available and the GPS data have

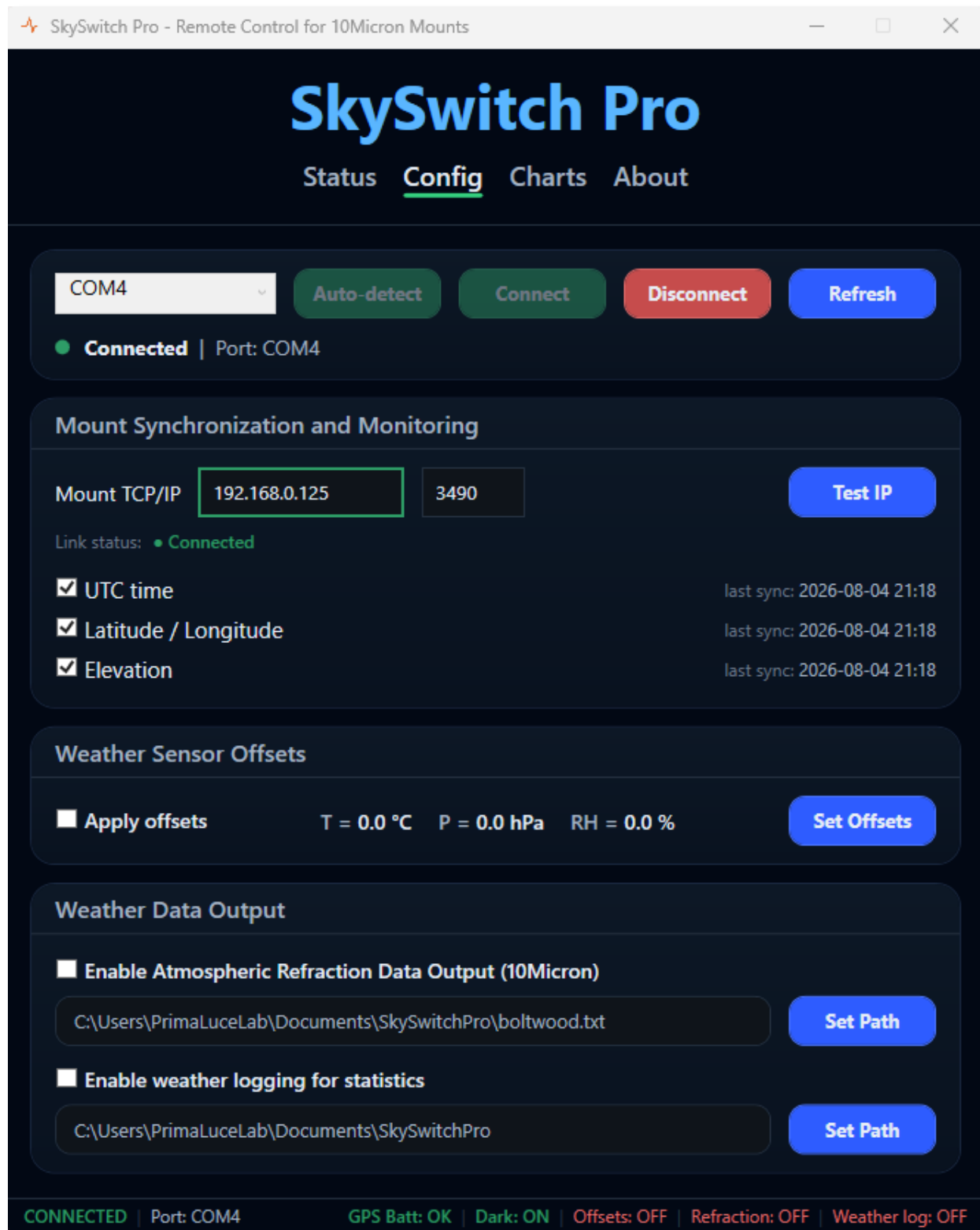
passed the required quality and stability validation. It then transfers the selected UTC time, geographical coordinates and elevation values to the mount. The Last sync field shows the date and time of the most recent successful synchronization.

The bottom Status Bar provides a compact summary of the most important application states. It shows whether SkySwitch PRO is connected, the selected COM port, the GPS backup battery condition, and the current state of Dark Mode, sensor offsets, atmospheric refraction data output and weather logging.

Green entries indicate functions that are active or operating correctly, while red entries indicate functions that are disabled or unavailable. The status bar allows the user to confirm the essential operating configuration at a glance without leaving the main Status screen.

4.2 Config Tab

The Config tab contains the main configuration settings of the SkySwitch PRO application. It is used to manage the USB connection to the device, configure TCP/IP communication with the 10Micron mount, select synchronization options, apply sensor offsets and define weather data output paths. This screen is normally used during initial setup or whenever connection settings, correction values or output paths need to be changed. During normal operation, most live information is monitored from the Status tab.



The screenshot shows the SkySwitch Pro application window with the 'Config' tab selected. The interface is dark-themed and includes the following sections:

- Header:** SkySwitch Pro logo and navigation tabs: Status, Config, Charts, About.
- Connection Section:**
 - COM4 dropdown menu.
 - Buttons: Auto-detect, Connect, Disconnect, Refresh.
 - Status: ● **Connected** | Port: COM4
- Mount Synchronization and Monitoring:**
 - Mount TCP/IP: 192.168.0.125 (highlighted with a green box), 3490.
 - Test IP button.
 - Link status: ● **Connected**
 - Checkboxes:
 - ☒ UTC time (last sync: 2026-08-04 21:18)
 - ☒ Latitude / Longitude (last sync: 2026-08-04 21:18)
 - ☒ Elevation (last sync: 2026-08-04 21:18)
- Weather Sensor Offsets:**
 - ☐ Apply offsets
 - Values: T = 0.0 °C, P = 0.0 hPa, RH = 0.0 %
 - Set Offsets button.
- Weather Data Output:**
 - ☐ Enable Atmospheric Refraction Data Output (10Micron)
 - Path: C:\Users\PrimaLuceLab\Documents\SkySwitchPro\boltwood.txt
 - Set Path button.
 - ☐ Enable weather logging for statistics
 - Path: C:\Users\PrimaLuceLab\Documents\SkySwitchPro
 - Set Path button.
- Footer:**
 - CONNECTED | Port: COM4
 - GPS Batt: OK | Dark: ON | Offsets: OFF | Refraction: OFF | Weather log: OFF

4.2.1 USB Device Connection

The top connection section is used to establish USB 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 identify 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 USB communication session.

4.2.2 Mount TCP/IP Configuration

The Mount Synchronization and Monitoring section is used to configure direct TCP/IP communication with the 10Micron mount. Enter the mount IP address in the Mount TCP/IP field. Port 3490, specified by 10Micron for communication with the mount, is used by default and should normally be left unchanged.

After a valid IP address has been entered, the application automatically begins attempting to establish communication with the mount. The current result is shown in the Link status field. The Test IP button performs an immediate connection test using the IP address and port entered by the user. A successful test confirms that the mount is powered on, reachable over the local network and accepting TCP/IP communication on the configured port.

The TCP/IP connection is required for synchronization of mount data in both hardware versions. In the V2 version, it is also used for indirect monitoring of the mount ON/OFF state. If the mount IP address is not configured or the TCP/IP connection cannot be established, synchronization is unavailable and the V2 mount state may remain shown as ?. In the V3 version, the mount power state is monitored independently through the dedicated MAIN_ON signal.

The synchronization checkboxes define which GPS-derived values may be transferred directly 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 TCP/IP communication with the mount.

4.2.3 Weather Sensor Offsets

The Weather Sensor Offsets section allows correction values to be applied to the environmental sensor readings when another trusted reference instrument or measurement point is available in the observatory. Temperature, pressure and humidity offsets can be entered using the Set Offsets button, allowing the sensor data to be fine-tuned to the local installation conditions.

When Apply offsets is enabled, the corrected values are used not only for display on the Status tab, but also for weather logging, generated output files and the data transmitted continuously to the 10Micron mount for atmospheric refraction calculations.

The offset values should therefore be configured carefully. Any correction applied in this section directly affects the atmospheric data supplied to the mount and may influence the resulting refraction correction.

4.2.4 Weather Data Output and Logging

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

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

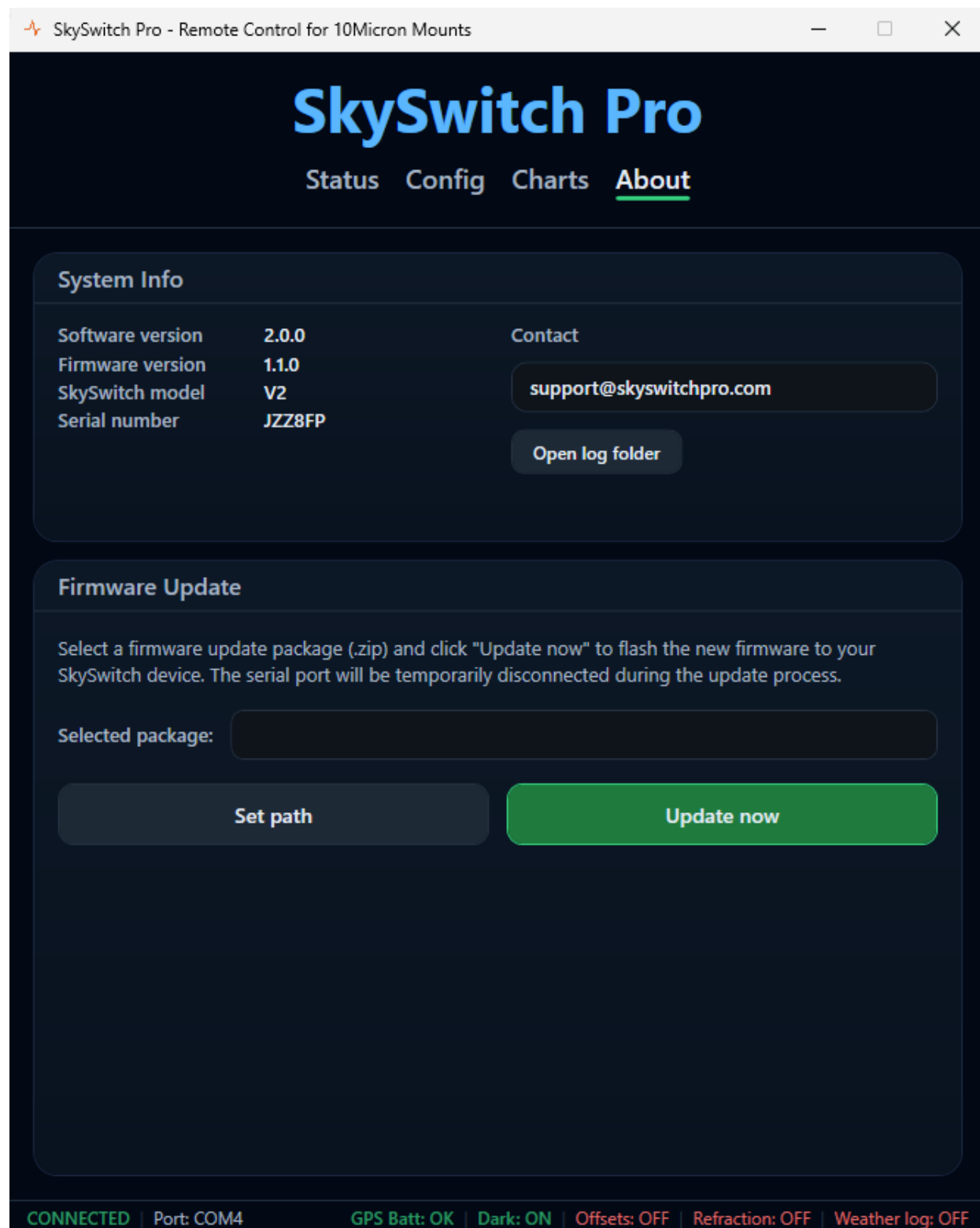
4.3 Charts Tab

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.



4.3 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.



5. NORMAL OPERATION

5.1 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 via USB.
2. Start the SkySwitch PRO Windows application.
3. If no mount IP address has been configured yet, confirm the TCP/IP configuration prompt and enter the correct 10Micron mount IP address in the Mount Synchronization and Monitoring section of the Config tab. Leave port 3490 unchanged unless a different port is required.
4. Use Auto-detect or select the correct COM port manually, then confirm that the application shows CONNECTED.
5. Confirm that TCP/IP communication with the mount is established. In the V2 version, this connection is also required for mount ON/OFF state monitoring.
6. Check that the weather sensor and GPS module are reported as connected.
7. Confirm that the required options, such as weather logging, atmospheric refraction output or Auto-sync, are enabled for the session.
8. 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.

5.2 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 a remote ON/OFF switching pulse and sends it to the mount through the cable appropriate for the hardware version.

After a pulse has been generated, a 30-second cooldown period begins. This interval follows the mount manufacturer's recommendation, reduces the risk of an accidental repeated command and allows the mount to complete its startup or shutdown sequence. No additional pulse should be sent while the cooldown is active. The red Pulse LED on the device is illuminated only while the switching pulse is being generated.

Mount status monitoring depends on the SkySwitch PRO hardware version.

In the V3 version, the mount power state is monitored directly and continuously through the dedicated MAIN_ON signal available on the AUX connection. The result is deterministic: the application shows either ON or OFF, and any change in the mount state is detected immediately.

In the V2 version, the 3.5 mm jack connection does not provide a dedicated mount-status signal. The application therefore determines the mount state indirectly through direct TCP/IP communication with the mount. Correct configuration of the mount IP address and port in the Mount Synchronization and Monitoring section of the Config tab is required.

The application does not infer the V2 mount state from the generated pulse alone. If the TCP/IP connection is not configured correctly or communication with the mount cannot be established, the status is shown as ?. This means that the current state is unknown and 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 as long as the SkySwitch PRO device connection is healthy, valid status data are being received and no pulse cooldown is active. When TCP/IP communication with the mount is established successfully, the application displays a confirmed ON or OFF status.

5.3 End of Session

At the end of an observing session, switch the mount off if required by the observatory operating procedure. Use the PULSE button and allow the full 30-second cooldown period to finish before sending another command or taking further action.

After the pulse has been sent, confirm the mount status in the application. In the V3 version, the state is read directly through the AUX connection using the live MAIN_ON signal. In the V2 version, the state is confirmed indirectly through the configured TCP/IP connection to 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.

6. TROUBLESHOOTING AND TECHNICAL SPECIFICATIONS

6.1 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 monitors mount availability using periodic network PING checks to the configured mount IP address and may use the selected ASCOM telescope driver for additional verification. If the IP address is incorrect, background monitoring is disabled, the mount does not respond to PING, or ASCOM verification is unavailable or unsuccessful, the mount state may remain unknown.	Confirm that the correct mount IP address is entered in the Config tab, click Test connection, and enable Monitor mount network (background ping). Also select the appropriate ASCOM telescope driver and confirm that the mount can be reached through ASCOM. If the application successfully verifies the mount state, the status will be shown as 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.

Problem	Possible cause	Recommended action
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.

6.2 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.

6.3 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	TCP/IP 10Micron protocol
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 TCP/IP protocol