GeoCue
6/17/2025
Version 1.0

TrueView ONE

Hardware User Guide

Compatible with firmware V2.5.0-5

Compatible with LP360 version 2025.1 and newer.

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ABOUT GEOCUE

GeoCue was founded in 2003 by a group of engineers with extensive experience in developing hardware and software solutions for primary remote-sensed data acquisition. Our initial products were aimed at reducing schedule and cost risk in geospatial production workflows by providing organizational, productivity and data management tools for base geospatial data production. These tools have been realized as the GeoCue product family. Today GeoCue workflow management tools are used by a majority of North American geospatial production shops. In 2005, GeoCue began selling and supporting Terrasolid tools for kinematic LiDAR data production. This was followed in 2009 by our acquisition of QCoherent Software LLC, the creator of the point cloud exploitation toolset, LP360. Today GeoCue is the largest supplier of kinematic LiDAR processing tools in North America and LP360 is the world's most widely used tool for exploiting point cloud data. In 2014, GeoCue started a division focused on using small Unmanned Aerial Systems for high accuracy mapping. Leveraging our expertise in production, risk reduction, and point cloud processing tools, we are continuing to bring new services and products to market to provide surveyors and other geomatics professionals exciting tools for geospatial data extraction using low-cost drones including Loki, our plug-and-play PPK direct positioning system, and now our TrueView LiDAR/Imagery fusion (3DIS) sensors. To learn more, visit www.geocue.com.

ABOUT LP360 DRONE

LP360 Drone is product line containing workflows for processing and exploiting TrueView, microdrones® and sensor data from other drone deployed payloads. Formerly called TrueView EVO, LP360 Drone is GeoCue's LP360 point cloud exploitation product with the addition of a collection of tools and workflows for processing drone data. LP360 Drone is the software used to post-process your raw flight data to generate a 3D LiDAR point cloud in LAS format, colorize the point cloud, and geotag the images collected. LP360 also has many tools for assessing and processing point cloud data, such as accuracy assessment, automatic and manual ground classification, and contour/ surface generation. All details about LP360 Drone floating licensing levels are available at this page: LP360 Product Family – LP360

ABOUT LP360 ONLINE

LP360 Online replaced TrueView Reckon in 2023. Both are Amazon Web Services (AWS) hosted platforms that are used for a variety of purposes in TrueView (and other) workflows. It provides services such as (items marked with a $T are extra cost, paid in LP360 Points):

- Project data hosting and visualization ($T)
- Data archival ($T)
- Management and automatic delivery of sensor calibration files
- Automatic sensor health check
- Transfer of sensor Cycle data to GeoCue for technical support
- Management of Points for services that are paid via a metering scheme (marked in this list with $T)
- Transaction history of sensor usage
- other related services

LP360 Online is accessed from within LP360 in various workflows. These workflows might require an LP360 user to provide their login credentials. LP360 Online has a web interface for data visualization, processing, and account monitoring.

Every customer is provided with an LP360 Online account. Legacy customers may have had a Reckon account that has now been transitioned to an LP360 Online account. For Microdrones users, your LP360 Online account and user credentials are the same as you already have for mdCockPit and mdInfinity.

A CYCLE

All TrueView sensors running the latest firmware write their various data streams to a standard file folder structure called a "Cycle" on the UMS (USB Mass Storage). The original meaning of "Cycle" was the on/off sequence of the sensor. It is possible to have multiple collections (flights, in the case of a drone) in a single "Cycle", so it is not necessarily correct to think of a "Cycle" as being synonymous with flight, though it typically is.

FCC AND IC COMPLIANCE

This device complies with Part 15 of the FCC Rules and Industry Canada License-exempt RSS standard(s). Operation is subject to the following two conditions:

1. This device may not cause harmful interference.

2. This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Parts used in the construction of this device may contain radio components or functionality. The parts are selected based upon availability and are compliant with FCC and Industry Canada rules and standard(s). Compliance statements and / or certification can be obtained within the manufactures' resources.

This device contains the following parts:

Component	Hardware Version ID no.	Product Marketing Name	Firmware Version ID no.	IC no.	FCC no.
Raspberry Pi-4 model B	Raspberry Pi,4 model B	Raspberry Pi,4 model B	n/a	20953-RPI4B	2ABCB-RPI4B
ZED-F9P	UBX 9 00190000	ZED-F9P-02B	n/a	8595A-UBX18ZO01	XPYUBX18ZO01
Hesai PandarXT-32	n/a	n/a	n/a	Please see Manufacturer Compliance Certificate	2ASO2PANDARX

Table 1. Radio components in the TrueView ONE payload.

NOTICE TO USERS

Warnings

Before you use your TrueView ONE payload please read these warnings carefully. Failure to do so can result in serious injury.

WARNING

Do not attempt to take apart, reassemble, or alter the TrueView ONE payload as it will void the warranty. Only qualified personnel can service the payload.

CAUTION

Do not interrupt power to the drone/payload until the payload is fully powered **OFF**.

CAUTION

Do not expose the payload to rain, water, snow, or high moisture environments.

CAUTION

The TrueView ONE payload has an operation range of -15°C up to 50°C. Operation outside this temperature range can lead to damage to the payload.

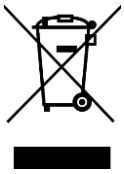
WARNING

This is a Class 1 Laser Product. This product complies with IEC/EN 60825-1: 2014 and complies with FDA performance standards for laser products except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.

WARNING

This device requires adequate airflow to prevent overheating during operation. Do not use this device for prolonged periods without proper ventilation or airflow. Inadequate ventilation can cause the device to overheat, leading to malfunctions, damage, or even fire.

Disposal



Do not put batteries or other electrical equipment into general waste containers. Substances in batteries are harmful to human health and the environment. Dispose of electrical equipment at a collection point or recycling center. Contact your local authority for detailed information.

OVERVIEW

TrueView ONE Payload System Items

No.	Item	Part Number	Quantity
1	TrueView ONE payload		1
2	TrueView ONE payload travel case		1
3	16GB UMS flash drive (Use only the UMS drive provided) [1]		1
4	AV14 GPS antenna		1
5	Debug cable	A005095	1

[1] To purchase additional UMS flash drives please contact GeoCue Customer Support or your Sales Representative. Quote article number A004105.

Table 2. List of TrueView ONE payload system items.

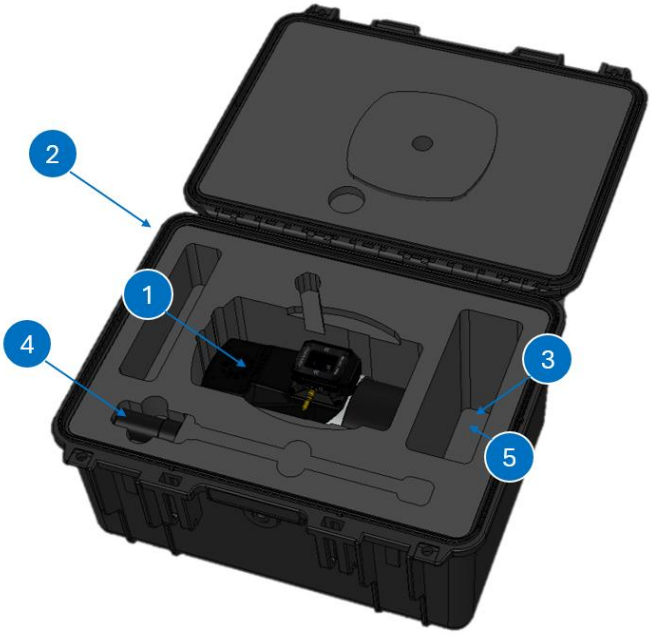


Figure 1. TrueView ONE what's in the box.

TrueView ONE Product Specifications

Model	Year of release	Mass (payload only no accessories)	Dimensions
PLD1001991A00T - with 26MP Camera / Single Base	2025	1400 g	Length: 200 mm Width: 107 mm Height: 147 mm
PLD1001992A00T - with 45MP Camera / Single Base	2025	1520 g	Length: 200 mm Width: 107 mm Height: 155 mm
PLD1001993A00T - with 61MP Camera / Single Base	2025	1520 g	Length: 200 mm Width: 107 mm Height: 155 mm
PLD1001994A00T - with 26MP Camera / No Base Station	2025	1440 g	Length: 200 mm Width: 107 mm Height: 147 mm
PLD1001995A00T - with 45MP Camera / No Base Station	2025	1550 g	Length: 200 mm Width: 107 mm Height: 155 mm
PLD1001996A00T - with 61MP Camera / No Base Station	2025	1550 g	Length: 200 mm Width: 107 mm Height: 155 mm

Table 3. TrueView ONE payload product specifications.

Camera Product Specifications

Model	Resolution (px)	Sensor Size (mm)	Focal Length (mm)	Pixel Size (µm)	Horizontal FOV (°)	Horizontal FOV (m @ 80m)	GSD @ 80m (cm/pixel)
TrueView1 26MP	6252 × 4168	23.5 × 15.7	16	3.76	~82.2°	~97.9 m	~1.57
TrueView1 45MP	8184 × 5460	36 × 24	21	4.39	~81.6°	~120.6 m	~1.17
TrueView1 61MP	9564 × 6376	36 × 24	21	3.76	~81.6°	~120.6 m	~1.26

Table 4. TrueView ONE payload camera product specifications.

TrueView ONE Payload Technical Specifications

Specification	Value
Data Collection	LiDAR + imagery
Laser Scanner	Hesai XT32 M1
LiDAR Beams/Returns	32/2
LiDAR Range	120m @ 20% reflectivity
Pulse Repetition Rate	640 kHz
Cross-track Field of View	120°
Position and Orientation System (POS)	TrueView Navigation System
Accuracy	Typical 3cm*
Precision	Typical 3cm* σ
Camera Sensor	See table about camera product specifications.

***1 σ @ 50m, nadir and with Strip Align**

Table 5. TrueView ONE payload technical specifications.

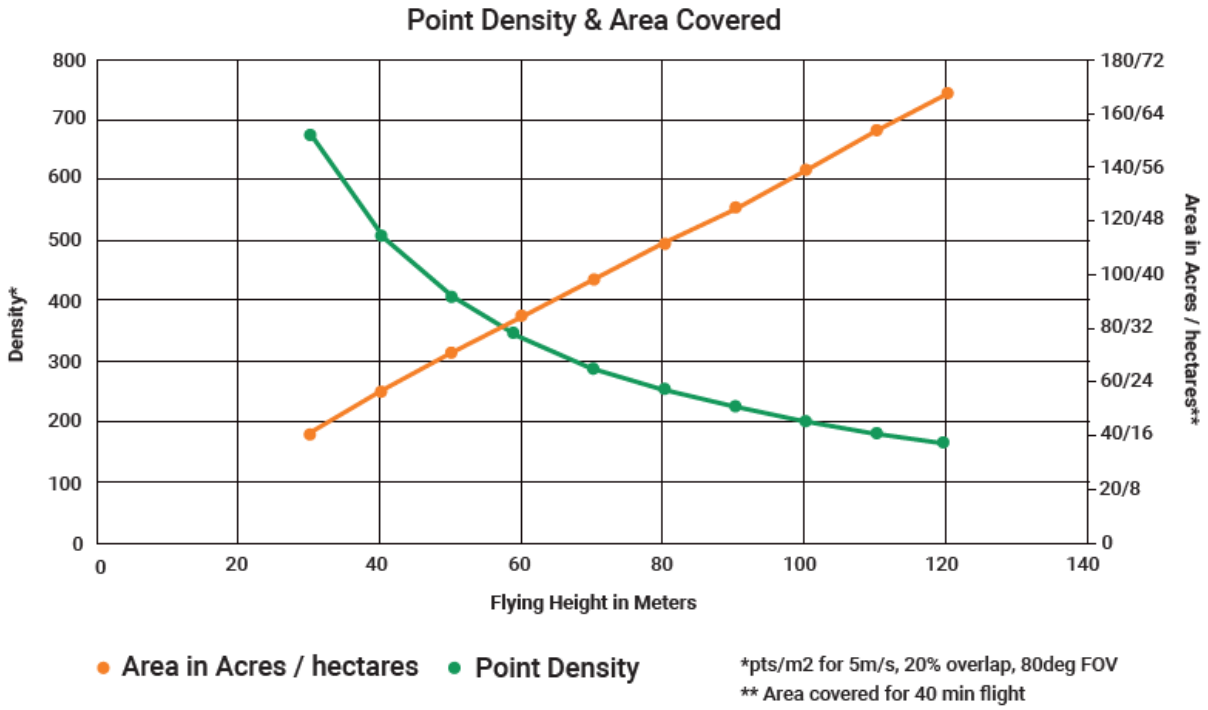


Figure 2. Performance Data

SYSTEM DESCRIPTION

This section describes the TrueView ONE payload. It addresses how it works, how to set it up, and how to configure the system.

Figure 3. TrueView ONE payload.

TrueView ONE Payload Parts

Figure 4. TrueView ONE payload parts.

1. Cooling vents (right and left side)	2. Payload – Drone interface
3. Scanner	4. USB port
5. Multifunction button	6. LED status indicators
7. Debug port	8.Camera lens area

Table 6. Explanation of TrueView ONE payload parts.

USB Port

The USB port is located on the side of the payload. The storage device allows the user to retrieve data after the completed flight.

Figure 5. USB port located on the BACK of the payload.

UMS Drive

The TrueView ONE payload includes one approved UMS (USB Mass Storage) drive with the capacity of 16GB flash storage that guarantees a maximum transfer speed over USB3 technology while minimizing electromagnetic radiation. It is important to only use approved UMS drives to make sure the transfer speed is correct, and the data is collected.

FAT32 is the officially supported format for the UMS. The system is designed to bypass FAT32 file-size limitations. If formatting is needed, please use the native formatting tool of your operating system, and select **FAT32** as the partition format type.

Figure 6. UMS drive.

NOTE

Please note that external storage devices with a capacity equal or larger than 128GB can be used after landing to recover the data from the internal drive of the payload. This limitation is put in place to avoid any EMI interference with the drone carrying the payload. Take note of this restriction and plan accordingly for a successful flight.

WARNING

To avoid corruption, make sure you eject the drive according to your operating system's instructions. If your operating system detects possible corruption when inserting the UMS into the computer's port, proceed to fix the drive according to the operating system instructions. Do not ignore corruption warnings as they may cause the UMS to stop functioning properly with the payload.

EXTENDED FLIGHTS WITH LONG ENDURANCE DRONES

The external storage device for the payload is limited to 16GB and can be filled in just one hour for most TrueView payloads when conducting extended flights with a drone of long endurance. It is highly recommended that you fly **without** the external drive connected and instead rely on the internal storage of 128GB that is available.

For a smooth flight and to avoid any data loss, please monitor the internal storage capacity from the payload TrueView Web UI access that is accessible prior to the flight. It is important to note that external storage devices of a capacity equal or larger than 128GB can only be used after landing to recover the data from the internal drive of the payload.

This limitation is put in place to avoid any Electro Magnetic Interference with the drone carrying the payload. Please take note of this restriction and plan accordingly for a successful flight.

Learn about the TrueView Web UI.

FORMATTING LARGE CAPACITY UMS

Windows does not provide a built-in option to format UMS drives larger than 32GB in the FAT32 file format. We suggest using a third-party tool that can be used to format larger UMS drives in FAT32 format.

A commonly recommended tool is the **FAT32 Format** tool, which can be downloaded from the following link: Fat32-Format Tool.

This tool allows users to format UMS drives up to 2TB in size in the FAT32 file system, which is a file system that is compatible with a wide range of devices, including game consoles, media players, and older operating systems.

It is important to note that formatting a UMS drive will erase all data on the drive. It is important to back up any important files before formatting. Additionally, it is recommended to use a reliable and trustworthy tool when formatting drives to avoid potential data loss or damage to the drive.

Multifunction Button

The multifunction button can be used to start/stop data collection or to abort an operation following the combinations below:

Button Press Type	Payload Reaction	LED Readout
Short press	Start data collection if payload is initialized (SYS LED is solid green).	SYS LED will switch to a slow blink green to indicate data collection started.
Long press (5 seconds)	Terminate and delete current data including log files. Note: This can be triggered at any state of the payload initialization.	SYS LED will fast blink yellow followed by solid white. Note: Once SYS is solid white, payload can be turned OFF.
Short press (after collecting data started)	Switch to stop collecting phase and start downloading data to UMS.	SYS LED will switch to slow blink white followed by solid white or red error state. Note: Payload can be turned OFF once either solid white or error state SYS LED is on.

Table 7. Multifunction button instruction chart.

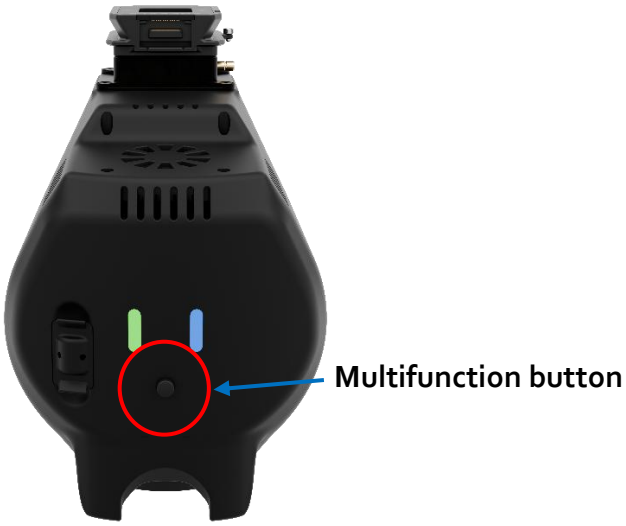


Figure 7. The multifunction button located at the BACK of the payload.

Debug Port

The debug port is located at the bottom of the payload. To access it remove the plastic cover. The debug port is used for service and advanced configuration of the TrueView ONE payload.

WARNING

This port can be used to display the TrueView Web UI in case Wi-Fi is turned off or inaccessible. Only use the debug port for this purpose unless instructed to do so by GeoCue Customer Support.

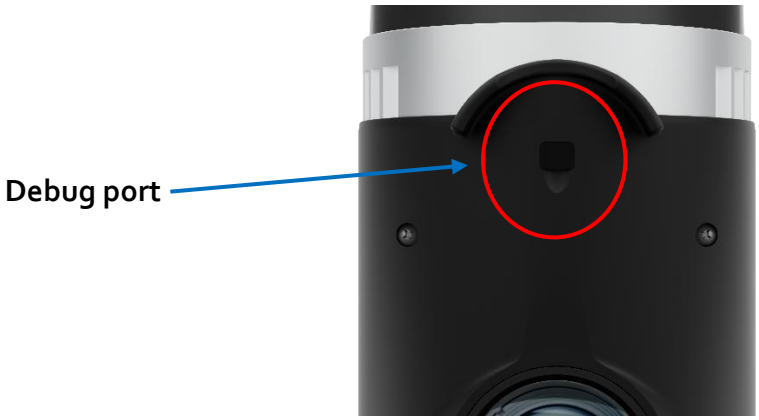


Figure 8. Debug port is located at the bottom right side of the payload.

Debug Cable

The debug cable is a GeoCue approved accessory to use for service or advanced configuration of the TrueView ONE payload through the debug port.

Figure 9. TrueView One payload debug cable.

Power

The TrueView ONE payload can be powered by the drone through the (Payload-Drone Interface). When the power is being drawn from the drone the requirement of the power supply is as follows:

Minimum Voltage	Maximum Voltage	Power Typical (W)	Power Peak (W)	Humidity	
13	34	38.7	48.375	30 ~ 85%RH Non-Condensing	

Table 8. TrueView ONE power draw.

LED Status Indicators

The LED status indicators provide signals to alert the user of the payload state or errors. Further information can be retrieved through the **TrueView Web UI**.

Once the power is turned on, there are a total of two LED status indicators on the front of TrueView ONE payload to display the payload status.

Please refer to **LED status indicators chart**. section LED Status Indicators Operation for all status information.

Figure 10. LED status indicators, SYS (left), GNSS (right).

Table 9 shows all the lighting sequences, LED messages, and their meanings. Table 10 shows how to interpret the symbols in the table.

SYS	GNSS	LED Readout	Meaning
		No light	No power
		Slow blink	Payload is starting
		Fast blink	Initializing
		On - solid	GNSS start up (power on)
		Fast blink	Starting GNSS data recording
		Slow blink	GNSS setup is ready
		On – solid	Initialization completed and ready to fly
		Slow blink	Downloading data to USB drive in progress.
		Any state	Error
		Fast blink	Stop collecting and start downloading data to UMS
		On – solid	System is ready to be turned off
		Simultaneous fast blink	Firmware installation completed

Table 9. LED status indicators chart.

Step	Action
	Black circle with a white outline indicates the LED status indicator is OFF.
	Starburst of any color indicates the LED status indicator is blinking. Speed will be indicated by "fast blink" or "slow blink".
	Circle of any color other than black indicates the LED status indicator is solid.

Table 10. LED status indicators legend.

PROCEDURES

NOTE

The images shown in following section are to demonstrate the procedure only.

Payload Interface

The payload interface is located on the top of the payload and on the payload adapter that is on the drone, the interface currently comes in three variants to cover most common interfaces used in major drone brands. The connectors may need cleaning and inspection on a regular basis to ensure proper functioning. To clean the connectors, it is recommended to only use compressed air. Do not use liquids to clean the connectors and do not put anything in or on the connectors to clean such as a brush or cotton swab.

Payload interfaces

DJI SkyPort **TrueView PLI** **FreeFly Smart Dovetail**

Figure 11. Payload Interfaces

Attach the Payload to the Drone (TrueView PLI Interface)

Figure 12. Direction of flight.

The following steps summarize how to attach the payload to the drone:

1. Make sure the payload adapter tab is locked in the extended position.
2. Verify that the payload is oriented in the proper position (scanner lens facing the front of the drone). Perform a visual inspection of the mating connectors and pegs on the payload and drone. Make sure the connectors and pegs on the payload interface and the drone are dry and free from any dirt or debris. Clean the connectors and pegs with dry compressed air if dirt or debris is present.

CAUTION	Do not connect the payload if the connectors or pegs are damaged, or if dirt or debris cannot be removed. Damage to the payload or drone can occur. Contact GeoCue Customer Service for more assistance.

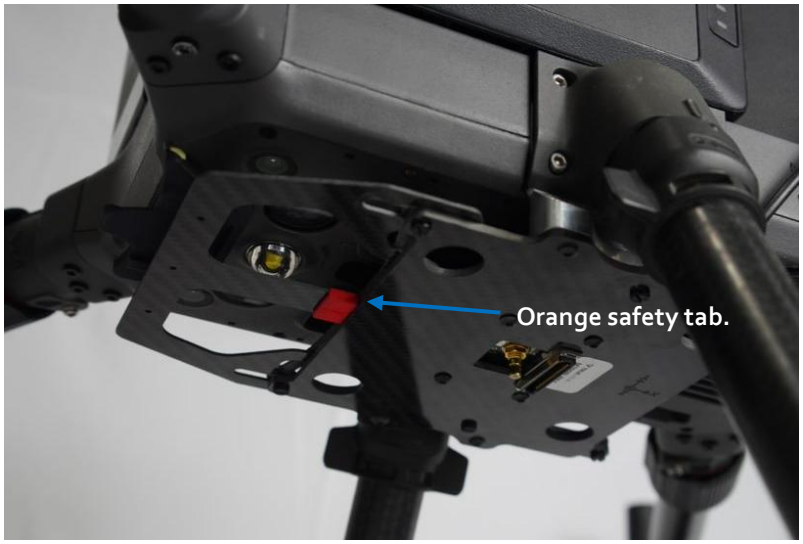


Figure 13. Orange safety tab on the payload adapter clip (open position).

3. Align the front of the payload with the front of the drone. See Figure 12 for front orientation.
4. Push the payload up into the adapter slot. Make sure all four pegs are flush with the mount.
5. Push the locking mechanism clip up to release the lock plate. Make sure to hold the payload while the plate moves into position.

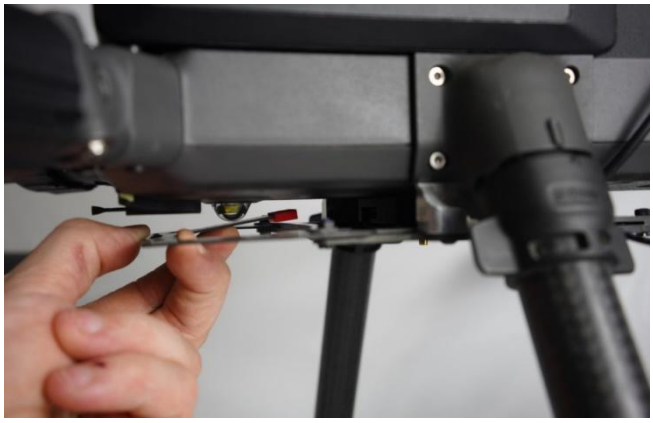


Figure 14. Release the adapter clip.

6. Make sure the locking mechanism is fully engaged. The locking mechanism is engaged if you cannot see the orange safety arrows on the lock plate.
7. Place your hand underneath the payload for support and pull the lock out gently to make sure it is locked and does not disengage.

Figure 15. Make sure the payload clip is in fully retracted position. Confirm orange tab is no longer visible.

CAUTION

If the locking mechanism does not fully engage, remove, and reattach the payload. Light pressure can be applied to the payload and the lock plate to help engage the locking mechanism.

CAUTION

Always hold the payload until the locking mechanism is fully engaged. Do not release the payload until a visual inspection is complete. Severe damage to the payload may occur.

Release the Payload from the Drone (TrueView PLI Interface)

1. To release the payload from the drone:
2. Hold the payload with one hand.
3. Push up on the payload locking mechanism clip and pull the lock plate out into the extended position.
4. Lower the payload from the mount.

Figure 16. Release the payload adapter clip.

CAUTION

Before releasing a payload to attach another payload make sure that the drone and the payload are fully powered **OFF**.

Attach the Payload to the Drone (DJI SkyPort Interface)

Figure 17 DJI Skyport Interface Payload Installation

1. **Power Off the Drone**
   Ensure the drone is completely powered off before attempting installation.

2. **Align the Skyport Connector**
   Hold the TrueView TV1 payload directly below the DJI Skyport mount. Align the central connector (circular port) of the payload with the Skyport connector on the drone. Aligning the red and white dots.

3. **Insert Vertically**
   Push the payload upward gently until the connectors are fully mated. You will feel a soft mechanical click when the lock engages. Rotate counterclockwise until the red dots are aligned.

4. **Verify Lock**
   Gently tug the payload downward to confirm it is securely locked into the DJI Skyport interface.

5. **Screw on antenna**
   Once the payload its secured screw on the antenna mast to Skyport interface extended arm.

Release the Payload from the Drone (DJI SkyPort Interface)

Figure 18 DJI Skyport Interface Payload Release

1. **Power Off the Drone**
   Turn off the drone before attempting to remove the payload.

2. **Screw off the antenna**
   Screw off the antenna mast from the Skyport interface extended arm.

3. **Twist to Unlock**
   Push the release button on the left side of the and rotate the payload clockwise (follow the arrow direction shown in the illustration) to unlock the payload.

4. **Pull Down Gently**
   Once unlocked, slowly pull the payload straight down to detach it from the Skyport interface.

5. **Store Carefully**
   Place the TV1 payload back into its protective case to avoid damage to the lens and connectors.

Attach the Payload to the Drone (FreeFly Smart Dovetail Interface)

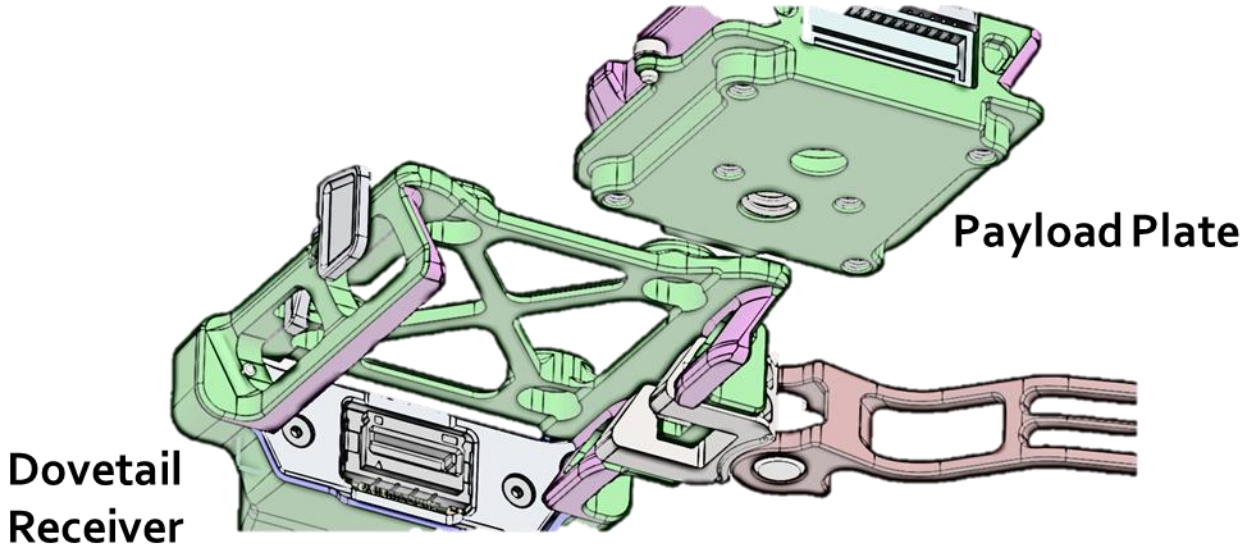


Figure 19 Freefly Smart Dovetail Receiver and Payload Plate

1. **Inspect the Dovetail Receiver**
    - Ensure the red latch lever is in the **open position** (flipped out).
    - Confirm there's no debris or damage on the electrical contacts or guide rails.
2. **Align the Payload Plate**
    - Hold the payload directly below the dovetail receiver.
    - Align the beveled edges of the **payload plate** with the **guide rails** in the **receiver**.
3. **Slide Upward Until Seated**
    - Firmly slide the payload upward into the receiver until you feel it stop.
    - Ensure full mating of the electrical connector.
4. **Latch to Lock**
    - Flip the red lever **closed** to secure the payload.
    - A click will indicate the locking pin has engaged.

5. **Verify Connection**
    - Gently tug on the payload to ensure its securely latched.
    - Check that the payload is flush with the receiver and there's no movement.

Release the Payload from the Drone (FreeFly Smart Dovetail Interface)

1. **Power Off the System**
    - Turn off the drone or payload before removal to prevent data corruption or electrical damage.
2. **Release the Lock**
    - Flip the **red latch lever outward** to disengage the locking pin.
3. **Slide Downward**
    - Carefully pull the payload downward and away from the receiver rails.
    - Avoid twisting or tilting during removal to prevent wear.
4. **Inspect the Plates**
    - After removal, inspect both mating surfaces for wear or contamination

GNSS Antenna Installation & Removal (All drones besides DJIM300)

For optimal system accuracy and performance, the **GNSS antenna installation** is critical. The **only standard antenna configuration officially supported and tested** for the **TrueView1** product is the one **delivered for use with the DJI M300/M350 RTK platform**.

For **all other drone platforms or custom UAV integrations,** please refer to the **delivered Custom Antenna Installation Guide** provided with your system package. This document includes detailed instructions for:

- Correct antenna placement and orientation
- Required separation from other electronics
- Ground plane and mounting recommendations
- Cable routing and RF shielding guidance
- GNSS to IMU reference lever arm measurements (Most deliveries include a profile with this already setup)

Improper GNSS antenna placement can severely affect trajectory accuracy, photogrammetry results, and system calibration. Always follow the applicable guidance for your platform to ensure valid data acquisition.

If additional assistance is needed, contact our technical support team with details about your UAV platform and installation environment.

ADDITIONAL PAYLOAD OPERATION

Cleaning

As with most optical surfaces, minimal cleaning is the best practice. Any contamination, dust, or debris on the scanner optical surfaces can cause the laser light to diffuse or weaken. This will result in poor data collection. Fingerprints or debris on the camera lens can cause image quality loss.

When cleaning the scanner, camera lens, and the payload body only use clean microfiber cloths. If you need to use cleaning liquids, mix mild liquid dish washing soap with clean warm water in a clean spray bottle. Do not use isopropyl alcohol or acetone.

CAUTION

The scanner window can be cleaned with a microfiber cloth. Do not use isopropyl alcohol or acetone.

Scanner and Camera Lens/Sensor Care

When the payload is not being used, it is recommended to install the scanner and camera lens covers if equipped with one. Do not leave the scanner or camera pointing directly towards the sun. This can cause damage to the sensors. This is more important if the lens covers are not installed. For this situation put the payload back into the transportation case.

System Configuration File (SCF)

The System Configuration file (SCF), SystemConfiguration.json, is saved in the internal memory and is copied into the Cycle\System folder upon creation of each Cycle. The SCF contains information on the calibration parameters of all components for each TrueView system and is used by LP360 to process TrueView data. The latest calibration file for each sensor is stored on the TrueView Reckon portal.

FIRMWARE UPDATE

If updates are required, the TrueView ONE payload user can install the firmware update.

Please meet the following conditions before updating the payload firmware.

- ✓ If you have a payload battery, make sure it is fully charged and installed in the payload.
- ✓ If you do not have a payload battery that is fully charged and installed, make sure the payload is mounted and properly connected to the drone.
- ✓ The drone or payload battery is fully charged.
- ✓ The drone with the payload is outside with visibility to the sky where the GPS fix can be found.
- ✓ Make sure the UMS storage device is available.

Firmware installation:

1. Make sure the above prerequisites are met.
2. If not already done, download the latest version of the firmware.
3. Make sure the drone and payload are powered OFF and that the battery is disconnected.
4. Install the TrueView ONE payload UMS device into the computer.
5. Copy all the files with the **.mdpkg** and **.json** extension onto the UMS device.
6. Power ON the TrueView ONE payload as you would do for a normal flight.
7. Firmware will be installed automatically. Allow up to 2 minutes for the process to be completed. The two indicators on the back of the payload will blink cyan for 10 seconds when installation is successful. The payload will be reinitialized automatically upon completion.
8. If no flight is required, follow the instructions in the Multifunction Button section to shut down the payload. Once completed power off the drone battery.

Verification of the update:

1. Remove the UMS storage device from the TrueView ONE payload and insert it into the computer.
2. Navigate to the UMS storage device drive and verify the file extension was changed to **.installed** on every **.mdpkg** and **.json** file. This means the installation of the firmware was successful. **Remove the installation files once the installation process has been successful.**

We recommend completing a flight after the firmware update to quality check the data beforethe next operation. Please contact GeoCue at support@geocue.com if you require assistance.

TRUEVIEW ONE PAYLOAD FIELD OPERATIONS

Base Station

The TrueView 3DIS records GNSS signals during flight which will be corrected later in LP360. This type of system is known as a PPK system. Base station processing methods should be considered during the planning process because the user will need to determine how they plan to correct their flight data before collecting. TrueView GNSS signals can be corrected by one of three methods:

1. **Single base** – Single base, as the name implies, is a static recording from one single base station which is close in proximity to the flight area. Corrections are computed at the base station, then applied to the data collected by TrueView. CORS stations can also be used for single base processing if they are within 12 miles of the flight area and record static data at 1Hz. The base station must also record both L1 and L2 signals and must be during the same time as the flight. Single base is the only processing method if you plan to process with the local option selected.
2. **SmartBase** – SmartBase is a cloud processing option that uses multiple CORS stations to compute base corrections for your flight. Smart base processing allows for longer baselines from the flight area and the user does not have to set up a base station or download CORS data from a nearby station. This option still requires an existing CORS network in the area of flight. Users can go online to the Applanix SmartBase website and determine if their flight location is covered by the SmartBase network and estimate the quality of the results.
3. **PP-RTX –** PP-RTX is a cloud processing option that does not require a base station or CORS network. PP-RTX corrections can be computed anywhere. Accuracy is reduced using this method but can be used as a last resort option in the event of base station failure or lack of CORS network.

More information can be found in our knowledge base articles:
https://support.geocue.com/positioning-options-in-true-view-workflows/
https://support.geocue.com/single-base-vs-smartbase-vs-pp-rtx

Pre-Flight

LED STATUS INDICATORS OPERATION

When the power switch is turned on (if the drone is equipped with one) or power is applied to the system, the system will go through the startup procedure as normal, and all LED indicators will flash yellow. After a few seconds, each LED status indicator will begin to show a sequence. Please see section LED Status for more information.

HEADING ALIGNMENT MANEUVER

The heading alignment maneuver needs to be done after takeoff, before flying the mission, and after the mission prior to landing for each flight. This maneuver is critical for getting accurate heading corrections for the IMU and will impact the results of the data if not performed.

1. Before takeoff, identify a safe direction to perform the heading alignment maneuver. Avoid areas with people, bodies of water, and obstacles.
2. After takeoff, once at mission altitude, let the drone hover in place for two seconds.
3. Push the right stick all the way forward quickly and hold until the drone accelerates to 10m/s. This should take about four seconds. Do not provide any other input. The drone should be accelerating in a straight line.
4. After reaching 10m/s, about four seconds of forward flight, release the stick and leave it centered. The drone will quickly stop. **Note: Speeds beyond 12-14 m/s may yield poorer results.**
5. Wait two seconds, then use the left stick to turn (yaw) the drone about 15-20 degrees, then wait a second. (This is for safety; it is intended to prevent the drone from returning directly overhead when you do step 5. Yaw the drone in a direction so that its return path will be clear of people below, and when it returns, it will be at least 15-20m away, and in front of you.)
6. Pull the right stick all the way back quickly and hold until the drone accelerates to 10m/s. This should take about four seconds. Do not provide any other input. The drone should be accelerating in a straight line backwards.
7. After reaching 10m/s, about four seconds of backward flight release the stick and leave it centered. The drone will quickly stop. Wait at least two seconds after it stops before starting the mission. **Note: Speeds beyond 12-14 m/s may yield poorer results.**
8. Fly the mission you have planned.
9. At the end of the mission allow the drone to return home, but do not let it descend, a final heading alignment maneuver needs to be done.
10. To take back manual control over the drone.
11. Repeat steps 1-6 again. Make sure that when repeating step 4) that you turn the drone sufficiently that it will be several meters (>5) away from the takeoff location at the end of its backwards travel. This is needed so that when returning automatically, the drone will properly

navigate above the takeoff location before beginning its automatic descent. If you are closer than 5m, it will likely begin descending without aligning with the original takeoff location.

12. After the drone has been stationary for two seconds, hold the (Home) button to begin the automatic return and landing. Watch the drone carefully to be certain it is landing in the intended spot. Otherwise, make the necessary adjustments or take manual control to complete a safe landing.

NOTE

On windy days, avoid starting the maneuver into a headwind, as the drone may not be able to achieve accelerations that are high enough. Try doing the maneuver crosswind if possible.

Figure 20. Heading alignment maneuver.

After Landing

1. After landing the SYS LED should be flashing white, indicating the system is transferring data. Do not power off the system during this time or it will interrupt the data transfer.
    a. If proximity mode is disabled or the drone does not land within 25 meters of the home point, the SYS LED will be blinking green after landing. Short press the multi-function button on the TrueView, the SYS LED changes from blinking green to flashing white.
2. The flashing white light indicates the TrueView is writing data to the drive. Be sure not to power off the TrueView or remove the drive during this period.
3. When the system LED changes to solid white, the flight data has been transferred to the UMS drive.
4. Power off the TrueView system.
5. For missions requiring multiple flights, repeat these steps from the "pre-flight" section of this document. The system should be completely powered off between flights (battery swaps) after the data has been successfully written.
6. Check the data for errors before leaving the field.

7. Field check the data to verify all data has been collected. The Field check instructions can be found in the LP360 Users Guide.

CAUTION

The flashing white light indicates the TrueView is writing data to the drive. Do not power off the TrueView or remove the drive while it is writing the data to the UMS drive.

TRUEVIEW MISSION CHECKLIST

Step	Action	Notes
1.	Setup base station and turn ON.	
2.	Check mission plan and modify if necessary.	
3.	Complete a safety briefing and flight plan review with field crew.	
4.	Install the payload on drone mount.	
5.	Verify payload adapter latch is in the locked position and secured.	
6.	Verify safety cable attached between TrueView and drone rails.	
7.	Check all drone GPS antennas upright and secured.	
8.	Verify the TrueView UMS is inserted, and sufficient storage is available.	
9.	Move drone to takeoff location.	
10.	Unfold and secure drone arms, lock in place.	
11.	Unfold drone propellers, visually inspecting for any problems.	
12.	Install fully charged drone batteries. Do not turn the unit ON.	
13.	Double-check all cabling is secure and will not interfere with the props.	
14.	Remove TrueView lens caps; clean lenses/sensor if necessary.	
15.	Turn on drone controller then power on the drone as per normal operations.	
16.	Monitor the TrueView status indicators waiting for: 1. SYS – Solid Green - TrueView has been initialized, ready for takeoff. 2. GNSS – Flashing Cyan - Valid date/time stamp received.	
17.	Wait for drone to initialize and verify there are no errors showing.	
18.	Verify the TrueView is Powered On (Flashing LED lights) if drawing power externally from the drone platform. If the TrueView is powered through the payload battery, switch ON the payload through the power ON switch within the Battery Compartment.	
19.	Safety Check: Area clear of individuals and flight space is clear to fly.	
20.	Manually take-off and ascend to mission altitude. Verify good LOS to drone and planned flight area.	
21.	Manually perform IMU in-air heading alignment maneuver.	
22.	Initiate mission using the flight planning tool.	
23.	Monitor drone/ TrueView during flight as per normal operations.	
24.	When the last flight line of the mission plan is complete, let the drone start the Return to Home sequence. Do not let it descend at the Home point. Toggle the drone to manual control (P->A->P) instead. ***Applicable for M300 DJI drone models only.***	•
25.	Manually perform IMU in-air heading alignment maneuver again.	
26.	Make sure the landing area is still clear; complete the landing using Return to Home or manually as preferred.	
27.	Verify SYS light is flashing white (transferring data).	
28.	Monitor the TrueView SYS LED; flashing white means data is being copied to UMS; solid white data copy is complete. Wait for solid white to go to next step.	
29.	Power TrueView OFF using main power switch in battery compartment (door must be open to toggle). Never power OFF while SYS LED is still blinking white indicating a copy operation is in progress; data loss will occur. If SYS LED turns to blinking or solid red, it is safe to turn off and move to troubleshoot section or contact GeoCue for further instructions.	
30.	Remove UMS drive and pass to post-processing.	

SUPPORT

Our searchable support knowledge base contains information on workflows, tips, hints, and probable resolutions to error messages or commonly encountered situations.

https://support.geocue.com/

Normal support business hours are **Monday - Friday, 8 AM — 5 PM** USA Central Time.

Our GeoCue Support website contains general workflow information, in addition to specific issue and error messages that you may encounter. Click on the link and search for information contained in the knowledge base.

If a support request is sent during business hours a representative will typically get back to you within 4 hours. If received after hours, a response will be sent the following day. To speed response time please include the following information in your request:

- Contact information - please include e-mail address and phone number
- Company name
- Product name and version number
- TrueView Model and Serial Number

If your request includes problems pertaining to a specific error message, please include a screen shot of the error message.

For hardware and software support contact: support@geocue.com

LIST OF TABLES

LIST OF FIGURES