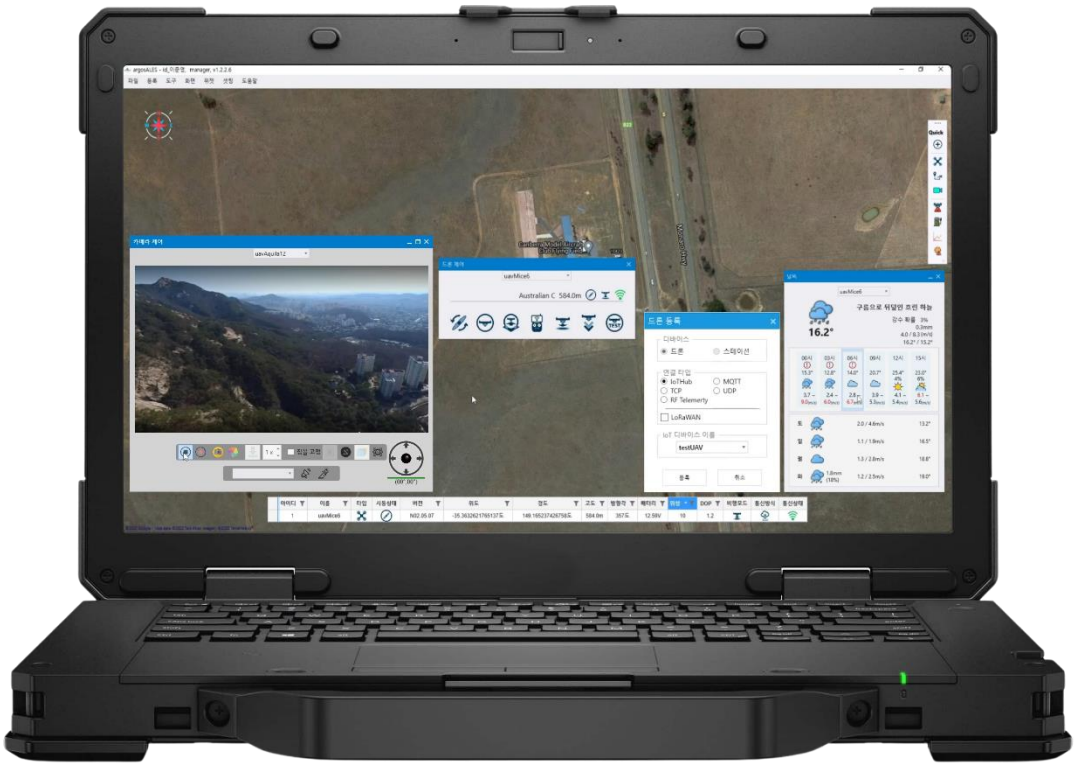
argosALES

User manual



ARGOSDYNE

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■ **Pilot's Code of Conduct**

Pilots of ultralight flying devices (drones) must comply with the regulations stipulated by the Ministry of Land, Infrastructure, and Transport to prevent damage to people or property caused by ultralight aircraft

- ●No night flights from sunset to sunrise
- ●If it is difficult to fly safely due to blurred vision such as fog or rain, and if the flight cannot be seen with the naked eye, it is prohibited to fly in the non-visible area
- ●Control zone (within a radius of 9.3 km from the airfield) No flights
- ●Prohibition of flying in areas where flights are prohibited for national defense or security reasons, such as the area around the ceasefire line, Gangbuk in Seoul, around the nuclear power plant (radius of 18.6 km), airports or airfields where aircraft take off and land, etc.
- ●Do not fly in the airspace where the aircraft's flight route is installed (at an altitude of more than 150 m)
- ●Do not fly in densely populated areas or places where there is a risk of casualties if the aircraft falls, such as over a crowded area
- ●Prohibition of dropping objects during flight
- ●Prohibition of flying under the influence of alcohol

Tip. No-fly zone check app: Ready to fly

■ **Safety Checks:**

Please be sure to conduct a safety inspection before, during, and after the flight of the ultralight flying device (drone).

- ●Pre-flight safety checks
  - Check remote controller on and charging status
  - Check battery power connection and charging status
  - Check for propeller damage and motor binding
  - Check the appearance of the arms, landing gear, frame, etc.
  - Check airspace, weather, and obstacles and secure a safe distance (15m)
  - Final check of communication status such as GPS, wifi

- ●Check the operation after takeoff
  - Move up, down, forward, backward, left, right, and check the left and right

hovering movements before flying

●Post-flight safety checks

- Disconnect battery power
- Remote Controller Off
- Inspection of the propeller, motor, arm, landing gear, frame, etc.

1. ArgoALES Overview

① Software Overview

argosALES software is an installable software that can
control multiple drones and stations for multiple drones
.If the drone, station, and argosALES are in the Internet environment, they
can be controlled through integrated control anywhere.
You can use the platform effectively through various features and customization.

argosALES Key Features

- Display device information
  - Device-specific status information display function through various information windows
  - Device-specific operation and flight control functions via the control panel
  - Various default settings change function through the setting window
- Patrol Planner
  - Ability to control and edit the drone's flight path and detailed movements
  - Mission upload and download function
  - PC save and load function of missions
  - Survey Mode automatic conversion of flight paths
  - Provides the ability to repeat the saved flight path
- Providing essential convenience functions
  - Provides an information window that makes it easy to check on-site weather information
  - Ability to change GCS default settings for the main use environment

Provides detailed operation function of the camera mounted on the aircraft
(limited to the company's aircraft, the other type can be adjusted after consulting with the company)

② Recommended Specifications

Operator	MS Windows 10 (64bit)
Processor	Intel Core i5 3.2 GHz or faster
Memory	8 GB RAM or more
Low longitudinal volume	500 GB or more
Internet	Internet required

2. Screen configuration – main menu

① argosALES screen configuration

② Main Menu Area

- File Menu (Flie Menu)
  - Provides the ability to terminate the program.
- Registration Menu
  - You can assign a task by registering an aircraft to argosALES, or you can disconnect it from the program.
- Tool Menu
  - This menu allows you to manipulate the payload mounted on the drone, enter commands to the camera, and use additional functions such as patrol control, drone navigation, and screen locking.

- Display Menu
  - When argosALES is enabled, the 'Flight Map' screen that can be seen for the first time is provided as a screen function that suits the user's preference. In addition, it also provides the ability to display drone information and station device information.
- Widget Menu
  - This is a menu that provides indicators that display status information such as drones, stations, and weather provided by argosALES.
- Settings Menu
  - It provides the ability to adjust the theme of the argosALES, adjust the overall settings, and modify the operation of the drone and station.
- Help
  - This is a feature that provides support for using the program.

③ Information Areas

- ID
  - Represents an ID value that shows the order in which the devices are connected.
- name
  - Displays the name of the connected aircraft.
- type
  - Displays the frame shape of the aircraft.
- Start-up status
  - Indicates whether the aircraft is started or not.
- version
  - Indicates the firmware version of the BirdCom board on which the aircraft is mounted. The firmware must be kept up-to-date.
- latitude

- Displays the latitude value of the aircraft.

- longitude
  - Displays the hardness value of the aircraft.
- height
  - The gas represents its absolute altitude from sea level.
- Direction angle
  - 0/360 °: North,
  - 90°: East
  - 180°: South
  - 270 °: West

- battery
  - It numerically indicates the voltage of the battery installed in the aircraft.

- Number of satellites
  - The number of satellites recognized by the GPS mounted on the aircraft. At least 10 aircraft are operating normally.

- DOPE
  - Displays the quality of the drone's GPS. It works most accurately below 0.8.

- Flight Mode
  - Indicates the command status that the aircraft received from the GCS.

- Communication method
  - When registering a drone, indicate the connection type with an icon.

- Communication Status
  - Displays the communication status of the aircraft with an icon.

3. Getting ready

argosALES is shipped to licensed drones and stations with pre-registration and basic settings completed. Registration of new equipment can only be done through the Customer Support Center.

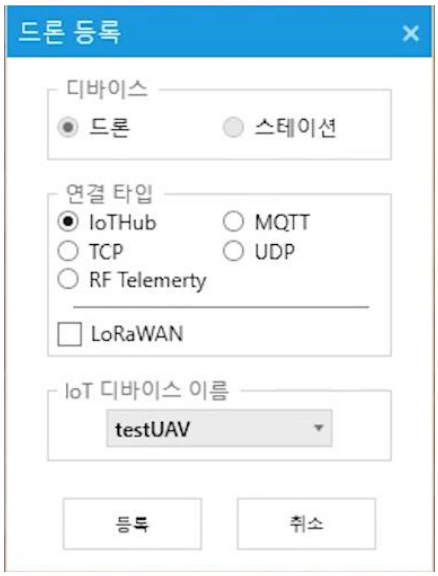
① Drone Registration

- In the 'Register Drones' menu, you can connect pre-registered drones to argosALES.
  - Check 'Drone' in the 'Drone Registration' window and select 'Connection Type'
    1. Drone: Set the device (device) to be registered as 'Drone'.
    2. Click the list of equipment registered in 'Device Name' and register the station.

3. When the registration is successfully completed, the 'Device Information Window' displays information about the registered aircraft and the connection status.

아이	이름	타입	시동상태	버전	위도	경도	고도	방향각	배터리	위성	DOP	비행모드	통신방식	통신상태
1	uavMice4			M02.00.01	-35.3634223937988도	149.165313720703도	583.9m	111도	12.59V	10	1.2			
2	uavMice5			N02.01.01	-35.3634338378906도	149.165328979492도	583.8m	101도	12.59V	10	1.2			
3	PortusSim-01			S01.00.01	-35.3621891833559도	149.165056943893도	581.3m	90도	25.10V	0	0.0			
4	PortusSim-02			S01.00.01	-35.3634184748151도	149.165309071541도	581.3m	270도	25.10V	0	0.0			

② Connection type - Connection settings according to the communication environment



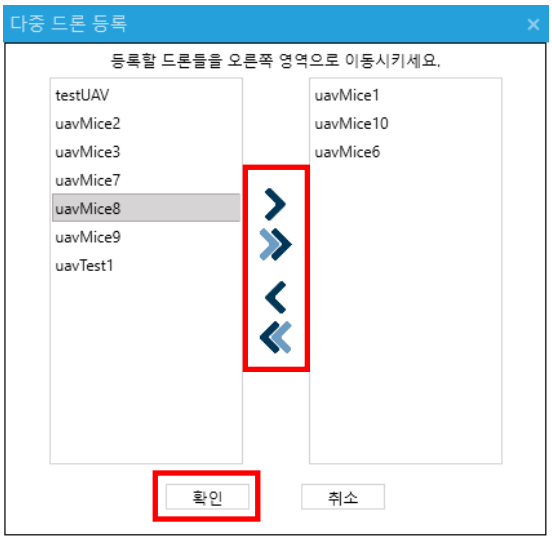
1. IoTHub – A service hosted in the cloud and serves as a central hub for two-way communication between IoT applications and the devices they manage.
2. MQTT – This protocol is optimized for mobile devices and small devices with low bandwidth. Messages can be transmitted reliably even in slow, low-quality network environments.
3. TCP – Set the communication connection type to a TCP type that supports connected services on top of the protocol.
4. UDP – Set the communication connection type to UDP. It's less reliable than TCP, but it' s faster.
5. RF Telemetry - Connect using telemetry or radio communication. There is a limit to the communication distance depending on the transmission distance of the antenna. In the same way as Cloud Link, you can remotely control the drone and receive status information.
6. LoRaWAN – a protocol that enables long-distance transmission with low power consumption.

■ IoT device name

- You can load a list of aircraft registered in ALES-C and assign a task to the aircraft by registering it.

③ Multi-drone registration

- When you want to register multiple drones at once, you can register multiple drones quickly and easily through the 'Multiple Drone Registration' function.
  - Click the arrow > to register all >> the gases in the list at once.
  - Aircraft wishing to cancel < registration <<should be restored to the pre-registration state using or .



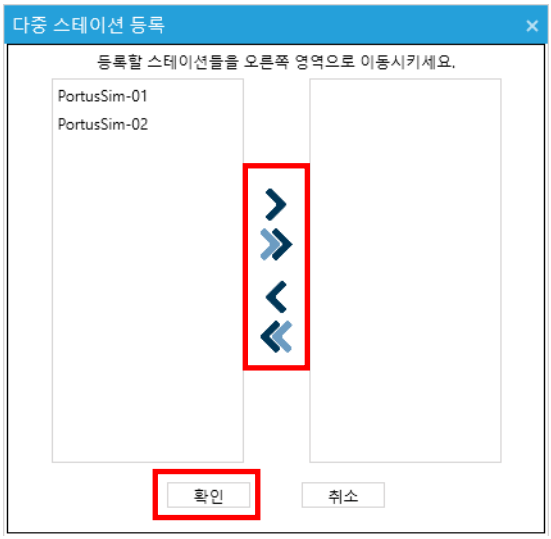
④ Station Registration

- In the 'Register Station' menu, you can connect a pre-registered drone to argosALES.
  - Check 'Station' in the 'Register Station' window and select 'Connection Type'
    1. Station: Set the device (device) to register as 'Station'.
    2. Click the list of equipment registered in 'Device Name' and register the station.

3. When the registration is successfully completed, the 'Device Information Window' displays information about the registered aircraft and the connection status.

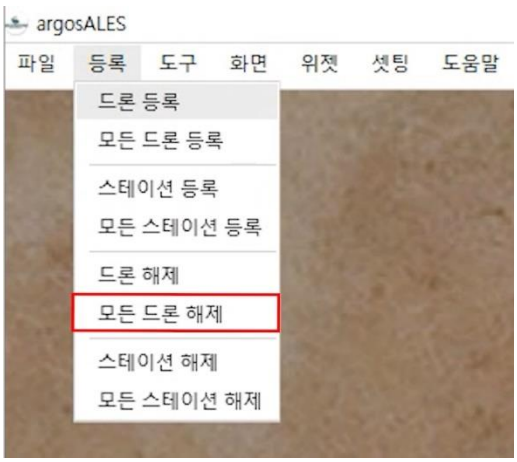
⑤ Multi-station registration

- If you want to register multiple stations at once, you can quickly and easily register multiple stations through the 'Multi-Station Registration' function.
  - Click the › arrow to register all stations in the list at once.
  - Stations that wish to deregister ‹ will be reinstated to their pre-registration status using or .



⑥ Terminate the connection

- 'Disconnection'
  1. You can terminate the drone connection in argosALES with the 'Disarm drone' or 'Disarm all drone' button in the 'Register Menu'.
- 'All Drones Disconnection'
  1. This function allows you to disconnect all aircraft currently connected to argosALES at once.



4. Pre-flight setup

Before performing full-fledged drone flight control with argosALES, you can make a safer flight by adjusting the main settings of the drone in consideration of the surrounding environmental factors.

① Set drone defaults (drone settings)

- Set flight defaults
  - Setting path: Setting → Drone Drone → Settings
    1. Flight speed
       - Set the maximum flight speed of the aircraft in km/h.
    2. RTL Altitude
       - RTL commands set the default altitude value when the drone returns to its home position.
    3. Landing altitude
       - Specifies the altitude at which the 'Landing Speed' setting applies when the aircraft lands. Above the landing altitude, it descends at the default landing speed, and from the set altitude it descends at the landing descent speed and lands.
    4. Landing speed
       - Set the descent speed upon landing.
    5. Home Location
       - Set the latitude and longitude coordinates of the aircraft.
    6. Set up FailSafe
       - Battery voltage: When the remaining battery reaches the set voltage value, the aircraft automatically returns.
       - GPS quality: When the set DOP value is reached, the aircraft will automatically return.

7. Automatic heading at RTL

   - At RTL, it is decided whether to return to the drone's heading angle at the time of takeoff. If this setting is enabled, the drone will land after RTL and maintain the heading angle at the time of takeoff when landing.

5. Basic flight

You can control the drone you want to fly by selecting the connected drone from 'Tools' '→ Drone Control'.

① Configure the 'Drone Control Window'

- Starting/turning off the engine

icon	Ming Ching	Establishment
	Arming	It is used to turn on/off the engine of the aircraft.

② Drone Flight Control – Using the 'Drone Control' function

- Control window configuration

- 1. Aircraft List Window – After setting the registered aircraft through the list list, you can operate the aircraft using the controller pad.
- 2. Start Control Button – This button starts the aircraft with the guide mode set and puts it in a waiting state for takeoff.
- 3. Flight mode control button – The types of flight modes are as follows.

- Control Mode

icon	Ming Ching	Establishment
	Guide Mode	Apply a mode that allows you to steer the aircraft with GCS. It is used for pause and resumption during missions.
	Altitude holding mode	The altitude of the aircraft is fixed.
	Return Mode	Land where you took off.
	Position-locked mode	Both the altitude and position of the aircraft are fixed.
	Automatic flight mode	Use to resume a suspended mission.
	Landing Mode	The aircraft lands in its current position.
	Manual Mode	This is the default before changing the control mode. This is a condition in which you need to directly control all the attitudes of the aircraft.
	Reuters Mode	(Unimplemented)

- 4. Take-off button – The 'Start Control' button takes off the aircraft in the arming state.
- 5. Remote Control Button – Utilizes the controller pad implemented in argosALES to enable movement and operation of the aircraft .
- 6. RTL button – Return the aircraft to the point where it took off and land.
- 7. Landing button – Lands from the point where the aircraft is currently located.

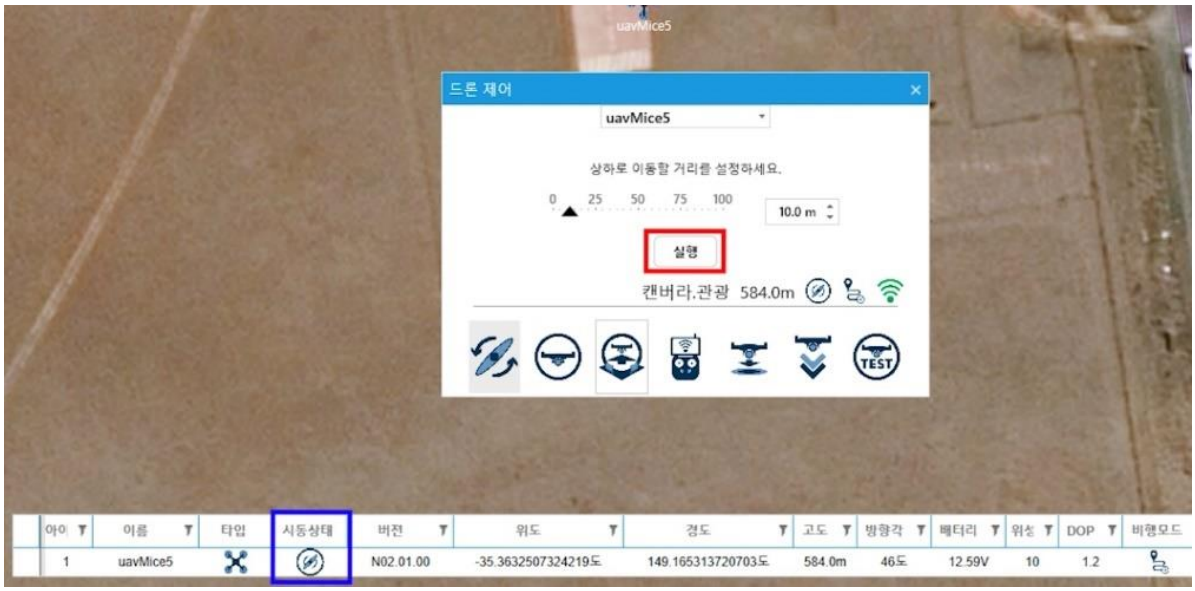
- 8. Test flight button – Performs basic flight testing of the aircraft in automated step-by-step steps.
- 9. Grid Map Display – Displays the location of the aircraft in coordinates supported by the map service.
- 10. Meter display – indicates the absolute altitude of the aircraft from sea level.
- 11. Vehicle Start-up Status Display – Indicates the current start-up and operation status of the aircraft.
- 12. Aircraft Flight Mode Indication – Indicates the status of the command received by the aircraft from the GCS.
- 13. Communication Connection Status Display – Indicates the status of the communication connection between the aircraft and the GCS.

- Starting the engine
  - In the 'Drone Control' window, click 'Guide Mode' to make the drone controllable for argosALES. If the 'Guide Mode' is activated, release the  'Safety Button' on the aircraft, secure a safe distance, and press the 'Start Control' button to start the drone. 
- Poetry East Sea
  - Before the drone takes off from the arming state, the user will release the drone's arming by pressing the 'Start Control'  button once more, if desired.

> **Patience**
>
> Depending on the type of aircraft, a GPS safety button may be provided. Before starting the engine, please release the safety button and keep a safe distance before starting the engine.

- Set take-off altitude and take off

■ In the 'Drone Control' window, click the 'Takeoff Control' icon at the bottom, and then move the drag bar or adjust it with the arrow keys to set the take-off altitude. Once the take-off altitude is set, tap the 'Run ' icon in the



middle to take off.

Patience

It won't work until the drone starts up.

- Getting there

■ With the drone taking off, you can move the drone forward/backward/left/right/up/down through 'remote control ' .After clicking the 'Remote Control' icon, set it to the aircraft you want to control in the aircraft list window ((1)) at the top of the status window, check the distance you want to move on each axis of X, Y, and Z ((2)), enter a number, and click the move button ((3)) of the 'Controller' to move to the corresponding location. If you enter a value after checking the angle input window ((4)), the aircraft will rotate according to the entered value.

- Landing

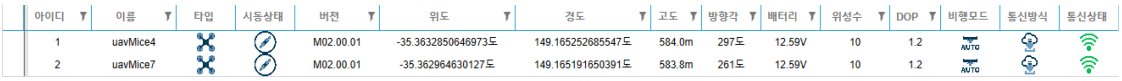
icon	Ming Ching	explanation
	Land	It lands directly below the current flight position.
	RTL	Return to the location from which you took off and land.

- Basic flight test
  - After selecting the aircraft you want to control, you can control the test flight with 'Basic Flight Test'. 
  - In the 'Application Settings' window, you can modify the default flight test (test flight setpoints) settings.

③ Flight Information Monitoring

- In the 'Screen' tab, you can select the desired map from the satellite view/street view functions to monitor.
- Satellite view
  - You can monitor aircraft registered as ALES on a map taken by satellite.

- Street view
  - The map is implemented in Street View, and aircraft registered with ALES can be monitored.
- Device Information
  - At the bottom of the main screen, information about the aircraft is displayed with icons and numerical values to understand the drone's status, location, altitude, and communication status.



아이디	이름	타입	시동상태	버전	위도	경도	고도	방향각	배터리	위성수	DOP	비행모드	통신방식	통신상태
1	uavMice4			M02.00.01	-35.3632850646973도	149.165252685547도	584.0m	297도	12.59V	10	1.2	AUTO		
2	uavMice7			M02.00.01	-35.362964630127도	149.165191650391도	583.8m	261도	12.59V	10	1.2	AUTO		

  - ID: An ID value that shows the order in which the devices are connected.
  - Name: Displays the name of the connected drone.
  - Type: Displays the frame shape and station of the drone.

icon	Ming Ching	explanation
	Quadcopter	The form of the connected drone is a quadcopter.
	Hexacopter	The form of the connected drone is a hexacopter.
	Octacopter	The form of the connected drone is an octacopter.
	Station	The type of connected equipment is the station.

  - Start-up status: Displays whether the drone is started or not.

icon	Ming Ching	explanation
	Ignition off	The connected drone is turned off.
	Ignition on	The connected drone is in a state where it is ignited and can take off immediately.

  - Version: Indicates the firmware version of the BirdCom board on which the aircraft is mounted. The firmware must be kept up-to-date.
  - Latitude, longitude: Indicates the coordinates of the gas' latitude and longitude.

- Altitude: Indicates the absolute altitude of the gas from sea level.
- Direction Angle: Displays the direction angle of the aircraft. The directions are as follows.
  - 90 °: East- 270 °: West- 180 °: South-
  0/360 °: North,
- Number of satellites: The number of satellites recognized by the drone's GPS. It works most accurately in 10 or more.
- DOP: Displays the quality of the drone GPS. It works most accurately below 0.8.
- Flight Mode: Indicates the status of the command received by the aircraft from the GCS.
- Communication method: Indicates the communication connection method between the aircraft and the GCS. If the connection is not successful, it will be marked as an indication.
  - IoTHub - Cloud hosting-based service.
  - MQTT – This protocol is optimized for mobile devices or small, low-bandwidth devices.
  - RF Telemetry - A connection using telemetry or radio communication.
  - TCP - This is a setting that supports connected services on top of the protocol.
  - UDP - This is a less reliable, but faster connection type than TCP.
  - LoRa - A type of connection that enables long-distance transmission with low power consumption.

- Communication Status: Indicates the communication status of the aircraft or station. If  it is connected normally, it will be displayed, and if it is not connected, it will be  displayed as an indication.

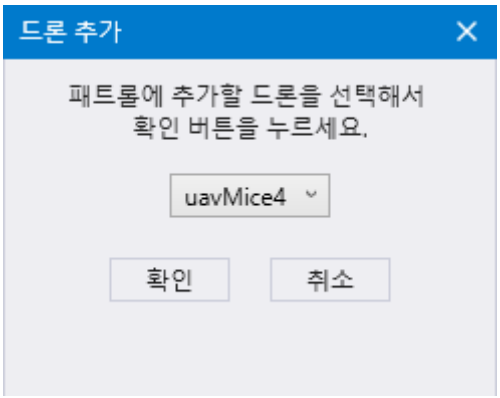
- Take advantage of the device control area and notification area
  - In 'Drone Control' and 'Remote Control→' , simple information such as the starting status and the current flight mode are displayed as icons.
  - In the notification area, you can also check the start-up, mode, communication type, link, and battery capacity with icons.
- Take advantage of other convenience features
  - Take advantage of 'drone navigation'
    - If the selected drone is off-map, → you can use the tool 'Drone Navigation' to move the map screen to the drone's current location.
  - Zoom in and out of the map
    - You can roll the mouse wheel to zoom out and zoom in on the map. It changes around the position of the cursor. If the drone icon and the cursor are in close proximity, zooming out and zooming out will not work to prevent mistyping.

6. Automatic flight using Patrol Planner – Mission Flight

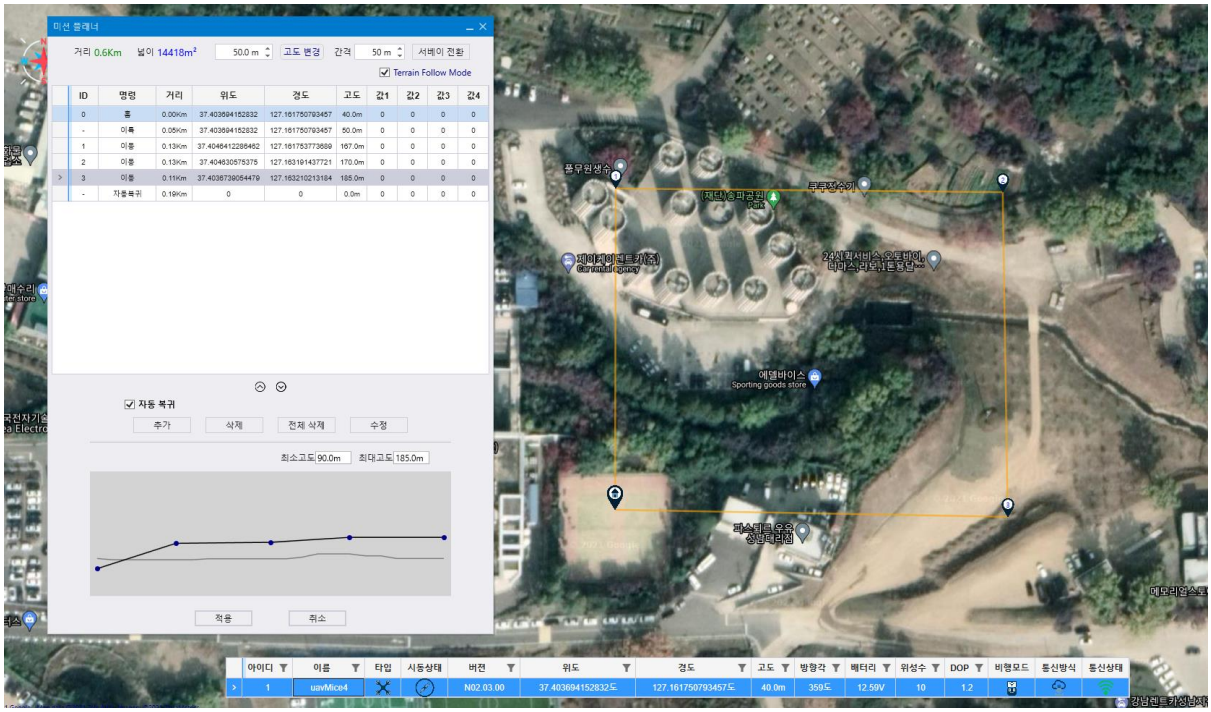
Mission flight is a function that creates and flies a straight path in the area to be controlled and monitored, and it is a function that allows the user to fly in the desired area by connecting multiple waypoints.

① Create a 'Mission Flight' route using the Mission Planner

- Import the Mission Planner: In the Tools tab, click 'Patrol Control' to create a Patrol Planner.
- When the 'Patrol Planner' window is created, click 'Add Drone' in the planner window to select one of the registered aircraft.



- After 'Add drone', click 'Add mission' in the 'Patrol Planner' window, create a 'mission planner', double-click the desired route on the map to create a route, add commands to create a flight route.



- Flight range: A numerical representation of the total distance traveled by the drone.
- Altitude change: Set the altitude of the 'waypoint' you want to move to and take off to the desired height.
- Survey switching: When setting 3 or more waypoints, the optimized route for patrols is automatically set.
- ID: Displays the order corresponding to each waypoint of the drone by number.
- Command: Indicates the command that is applied to the drone.

- 'Mission Flight' starts with 'Home Point' and flies, and the mission path double-clicks on the desired point on the map to create a waypoint, and then adds the desired command to each waypoint so that you can perform actions suitable for the mission.

- To add a 'command', click the 'Mission Planner' 'Add ' tab to grant the desired command.

- The types and functions of the commands are as follows.

Honorable mention	explanation
groove	This is the first point where the drone waits before takeoff.
takeoff	The drone gains altitude from the ground.
movement	The drone will move to the waypoint you want to move.
landing	Land your drone at a designated waypoint.
delay	Hovers the drone at the designated waypoint.
NEW HOME	Specify the point at which the drone will land in a new place.
Return	The drone will return to the designated home point location.
Rotation	Rotate the aircraft in the desired direction.
Start of Filming	Start recording video from the camera mounted on the aircraft. (If the camera is attached)
Stop Shooting	End the recording.
Photography	Perform the command to take a picture of the camera and save it as an image file.

Patience

※ The mission information generated by the Mission Planner can be accessed from W aypoint files (*.wps) format and can be saved and loaded to a PC.

② Managing Waypoints/Mission Lists (Waypoint List)

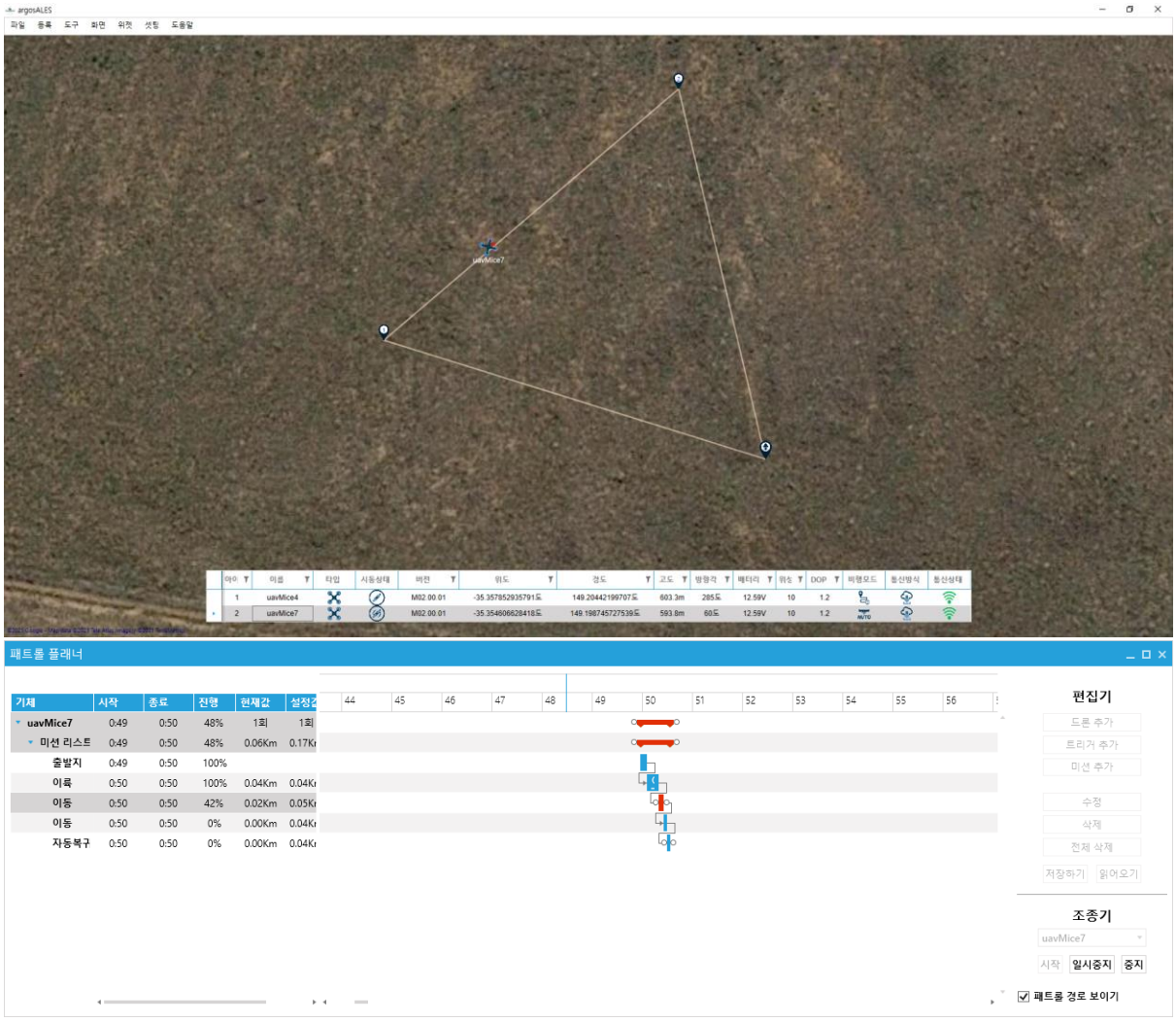
- If you want to execute a waypoint command with a different command, you can click the 'Edit' tab at the bottom of the 'Mission Planner' to change the existing command to a different command.

③ Delete waypoints/missions

- You can delete them by specifying the waypoints you want to delete.
- The 'Delete' tab at the bottom of the 'Mission Planner' deletes only the specified waypoints and missions, and the 'Delete All' tab deletes all waypoints that have been created so far except for 'Home '.

④ Applying waypoints/missions

- After creating a waypoint/ mission, click the 'Apply' tab at the bottom of the 'Mission Planner' and click the OK button in the notification message window, and the information about the specified aircraft (drone) and mission will be displayed in the 'Patrol Planner ' window.



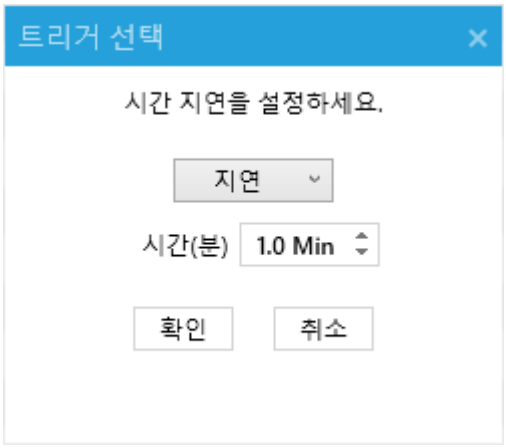
⑤ Running a Mission Flight

- Click the 'Patrol Planner', -> list at the bottom of the remote controller to set it to the drone corresponding to the mission you created, click the 'Start' button, and the aircraft will start performing the mission flight according to the command entered.

- Information on the aircraft's position, altitude, angle, and battery status can be found in the 'Device Information' window at the bottom of the map screen.

⑥ Using the Patrol Planner to add multiple missions and 'triggers'

- You can create a mission flight path in the order of '(1) Create a 'Mission Flight' route using the Mission Planner', and then add another route you want in the same way to create a flight path.
- You can use the 'Add Trigger' function in the 'Editor' list of the 'Patrol Planner' to set the flight start conditions to the desired settings when the flight starts.



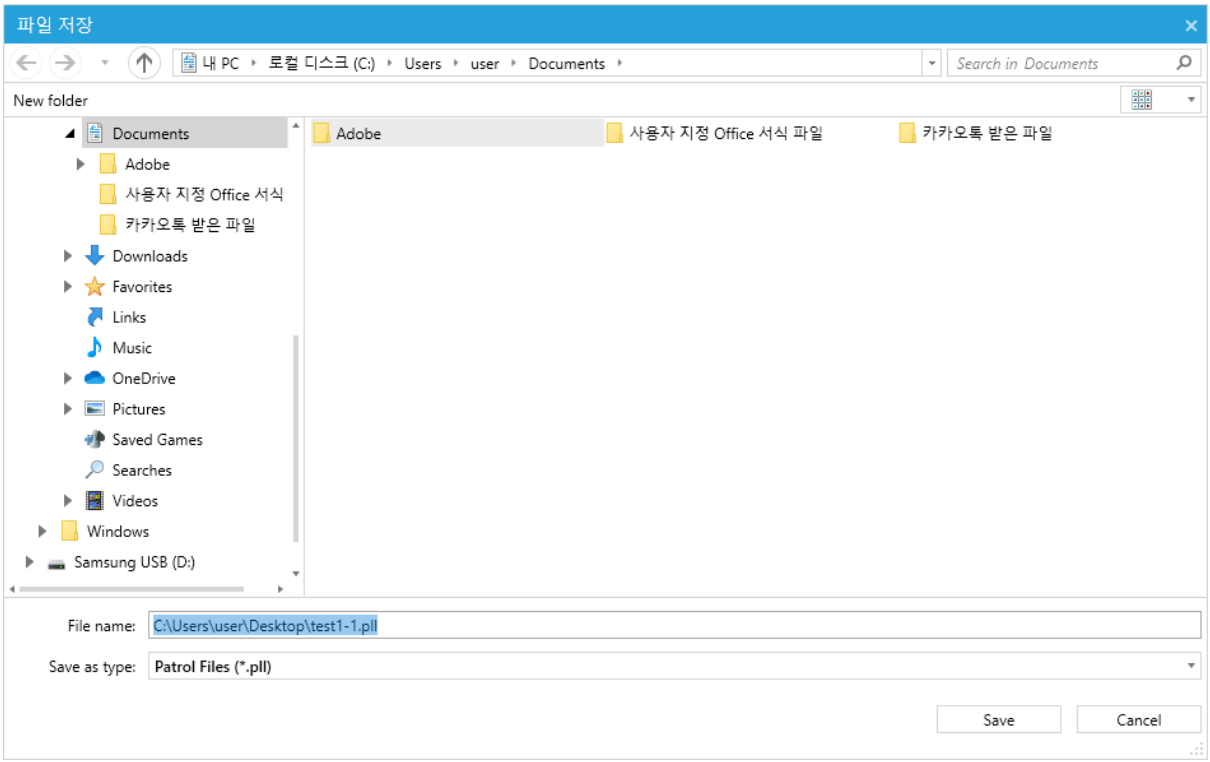
- Delay: The aircraft waits on the ground for a set amount of time before performing the mission flight.
- Timer: Set the mission time on the PC, and when the set time is reached, the mission flight begins.
- Full Charge: When the battery reaches its full charge voltage value, the mission flight begins.
- Charging voltage setting: Set the target charging voltage value of the battery installed in the aircraft arbitrarily, and when the set value is reached, the mission flight begins.
- Iterations: You can set the total patrol repeat count.

Patience

If the patrol repeat count is 0, the mission is repeated indefinitely.

⑦ Saving and reading flight paths

- You can use the save/retrieve function to save and retrieve 'Mission Flight' so that you can continue to use previously used missions without having to rewrite them.



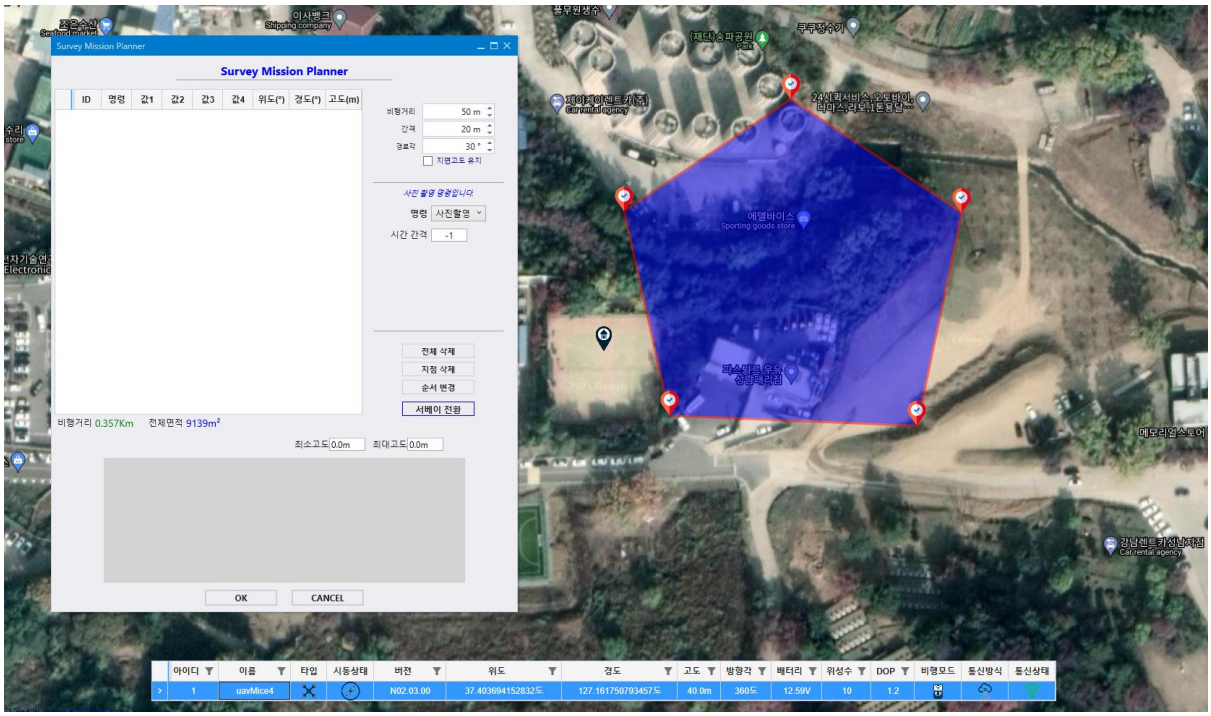
- Save: Click 'Save' in the editor list to save the mission to the desired path.
- Read: You can click 'Read' in the editor list to reload a saved mission to perform the same task.

7. Automatic flight with Patrol Planner – Survey mode flight

'Survey Mode Flight' is a specialized function used to produce a single orthophoto of the area to be photographed, as well as control and monitoring functions, and it is a function that provides convenience for orthophoto production by creating a zigzag flight path in an area corresponding to the specified area, and shooting and saving an image file with GPS information input for each route.

① Create a 'Survey Flight' route using the Survey Mission Planner

- In the 'Patrol Planner' window, click 'Add drone' to select one of the registered aircraft.
- After 'Add drone', click 'Add Survey' in the 'Patrol Planner' window, create 'Survey Mission Planner' and double-click the area you want to survey or map on the map to create a blue area within the specified waypoint.

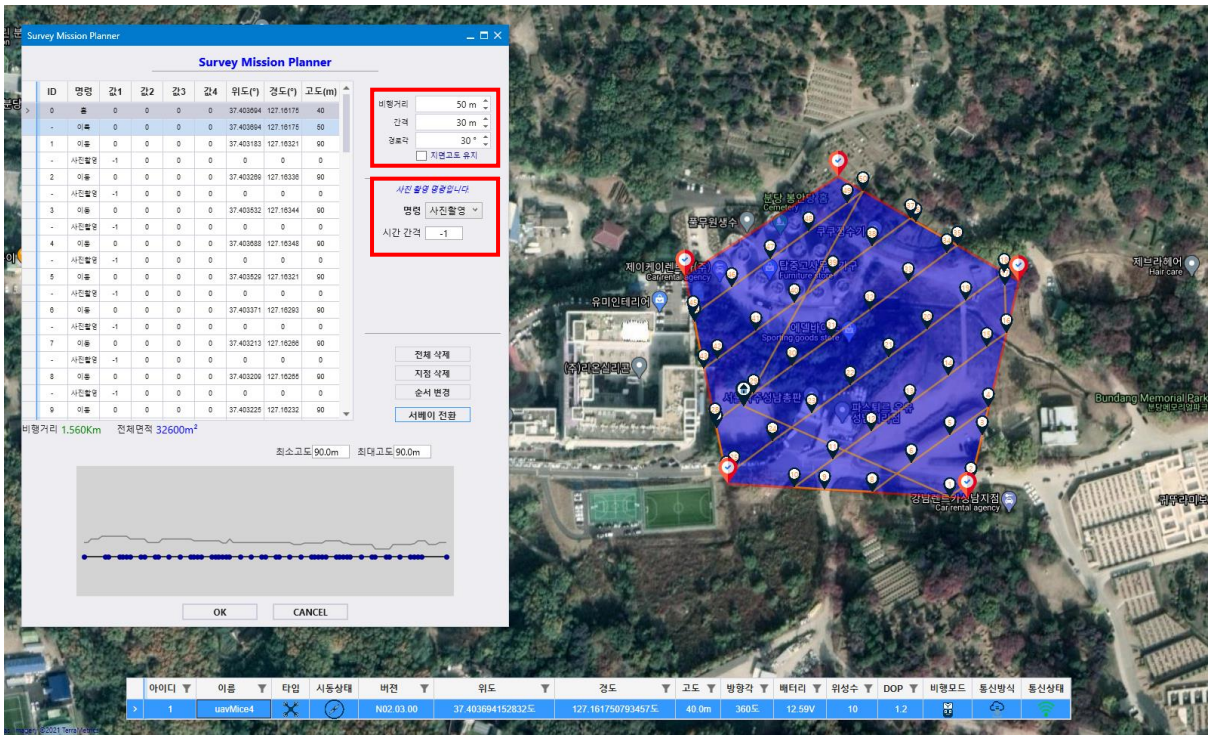


- In the planner window, set the flight altitude, flight interval, and route angle associated with the flight.
- In the 'Commands' tab, you can set 'Shoot' or 'Delay' for each waypoint created after 'Switch Survey' to apply the desired mission.
- The default value for the time interval is -1, and you need to set it to perform the

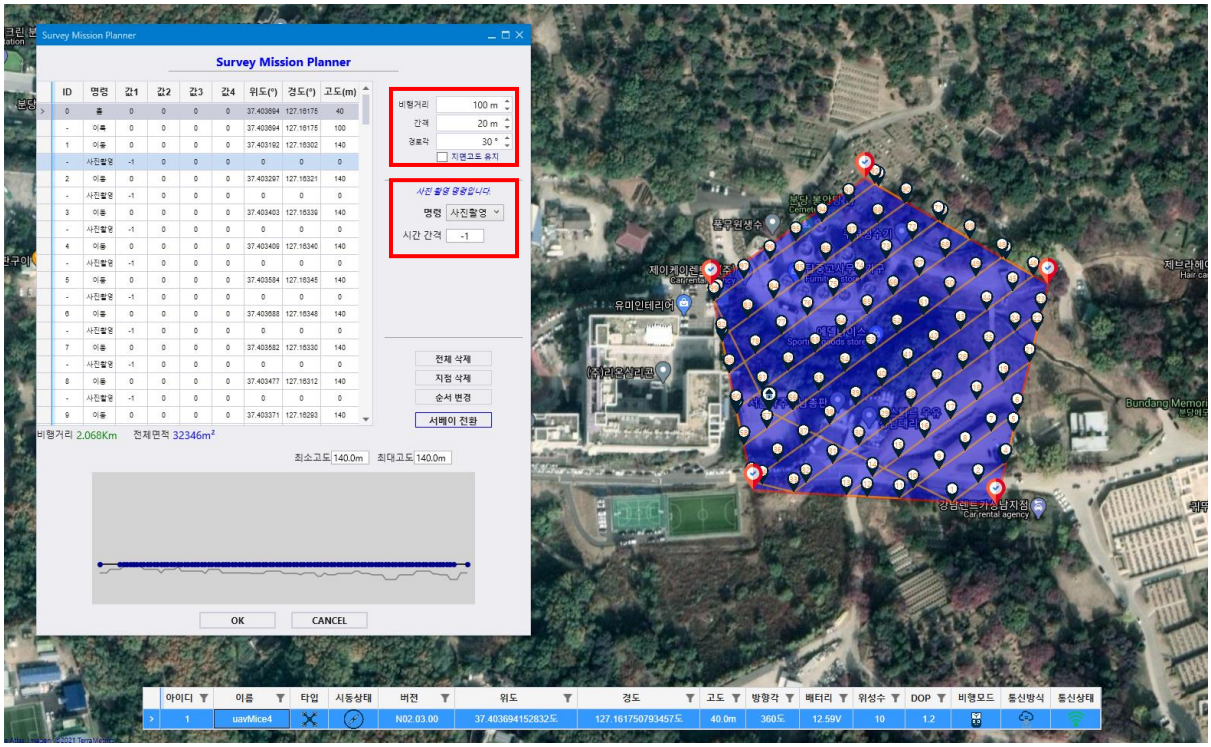
correct task for each waypoint section.

- After entering the setting values for flight distance and shooting, click 'Switch Survey' to form a zigzag flight area as shown in the following screen, and waypoints are created every certain section.

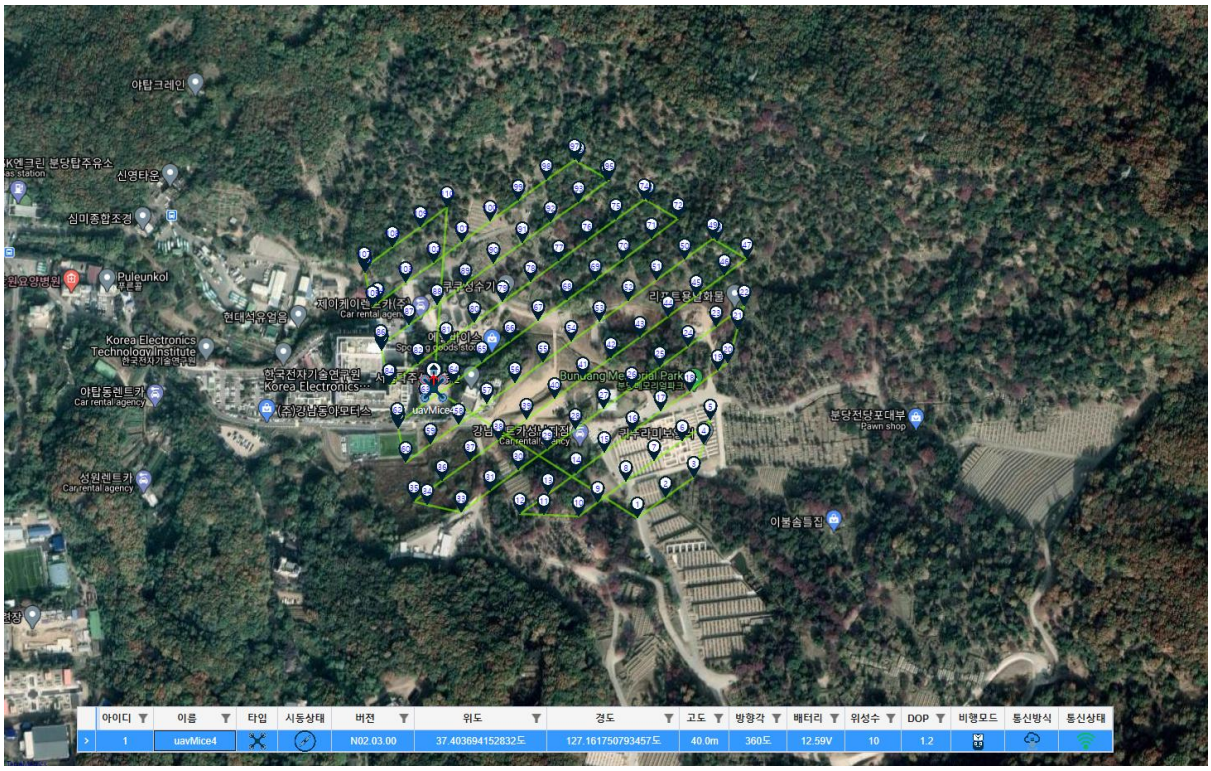
② After detailed settings, 'Switch Survey'



- Even after 'Survey Switch', if you move the waypoint and press the 'Switch Survey' button again, the modified area will be modified and applied.
- 'Flight Altitude', 'Interval', 'Route Angle' and Photo Shooting commands can also be applied by clicking 'Switch Survey' after editing.

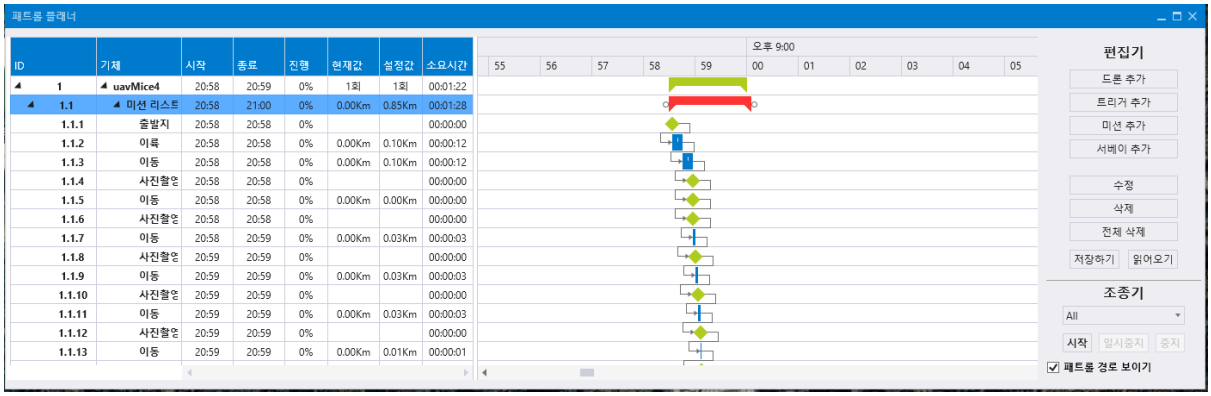


- After adjusting the settings required for flight, press the 'OK' button, and the flight path will be applied to the map as shown in the screen below, and a progress mark will be generated for each waypoint in the 'Patrol Planner' window.

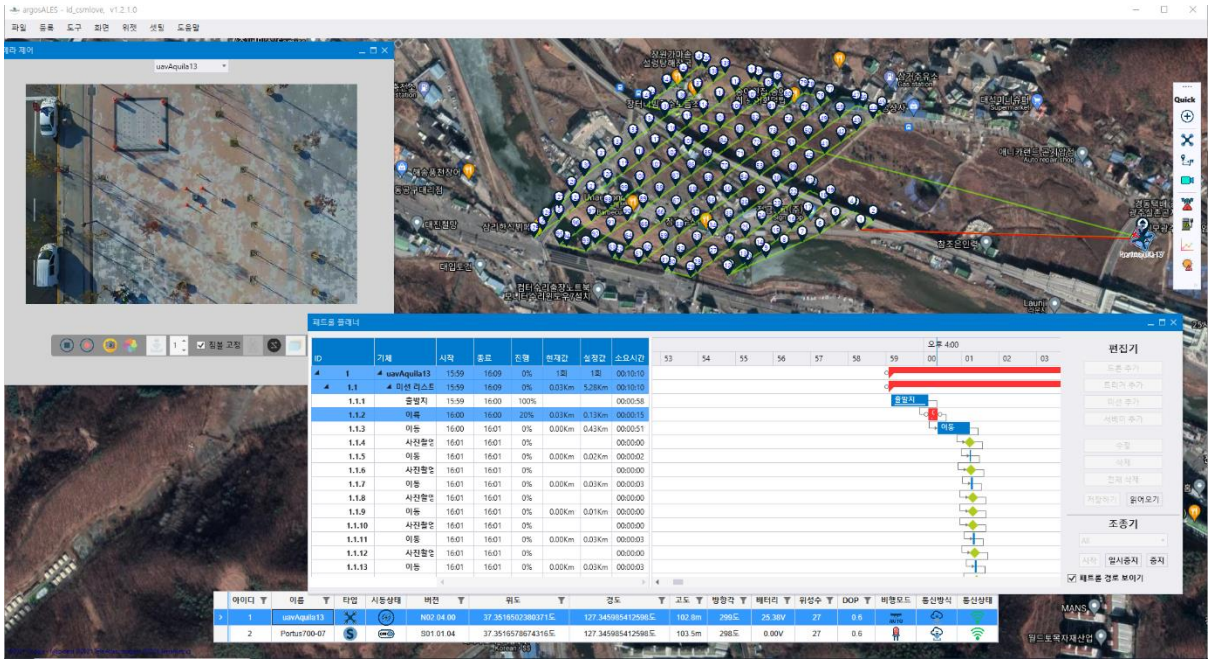


③ Start flying a survey mission

- Once all the settings have been completed, press the 'Start' button in the 'Patrol Planner' window to start the automatic flight.



- Once the flight begins, the aircraft will take off after loading for a short period of time to upload waypoints, start flying on the specified route, complete mapping or recording tasks along the flight path, and return to the 'home point' for landing.



<Example of actual use screen>

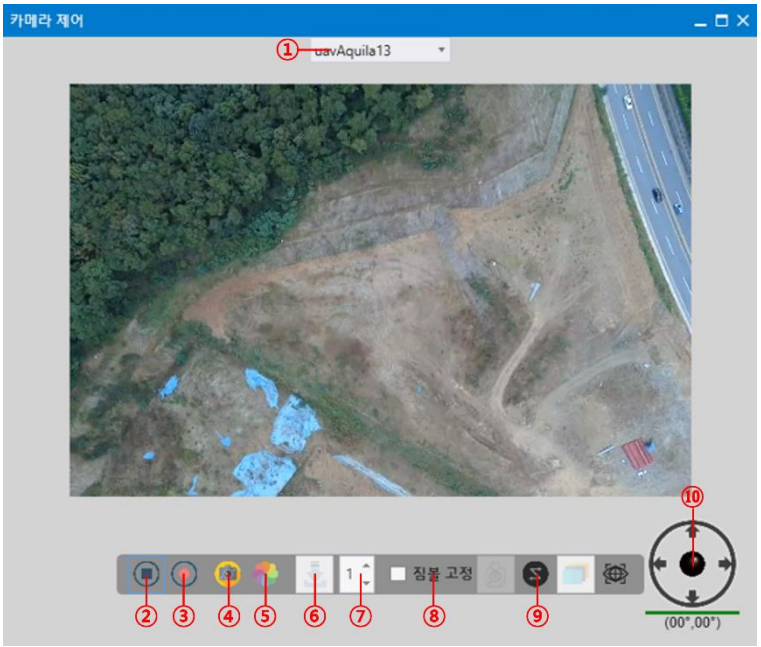
Patience

The 'Save' and 'Load' flight path functions can be used in the same way as regular 'Mission Flight'.

8. Camera Control

① Camera, gimbal control

- You can adjust the angle of the 'Camera' and 'Camera Gimbal' mounted on the aircraft.
- In the 'Tools' tab, click 'Camera Control' to select the camera of the aircraft you want to control.



- 1. Aircraft List Window - After setting the registered aircraft through the list window, you can operate the camera/gimbal using the camera control pad.
- 2. Play/Stop – Click to connect to the camera mounted on the aircraft and monitor it. When you want to end monitoring, click the button again to end playback.
- 3. Record - Performs a recording command to the camera.
- 4. Shooting Mode/Video Mode - This is a mode that can be saved as a single image file through the camera during the mission. 5.Press the 'Shoot' button to save the image file to the SD card after shooting . If you press the recording mode again, it will switch to 'Video Mode' and the ' Shoot ' button in 5.0 will change to the recording function button, allowing you to save the video file to the SD card.

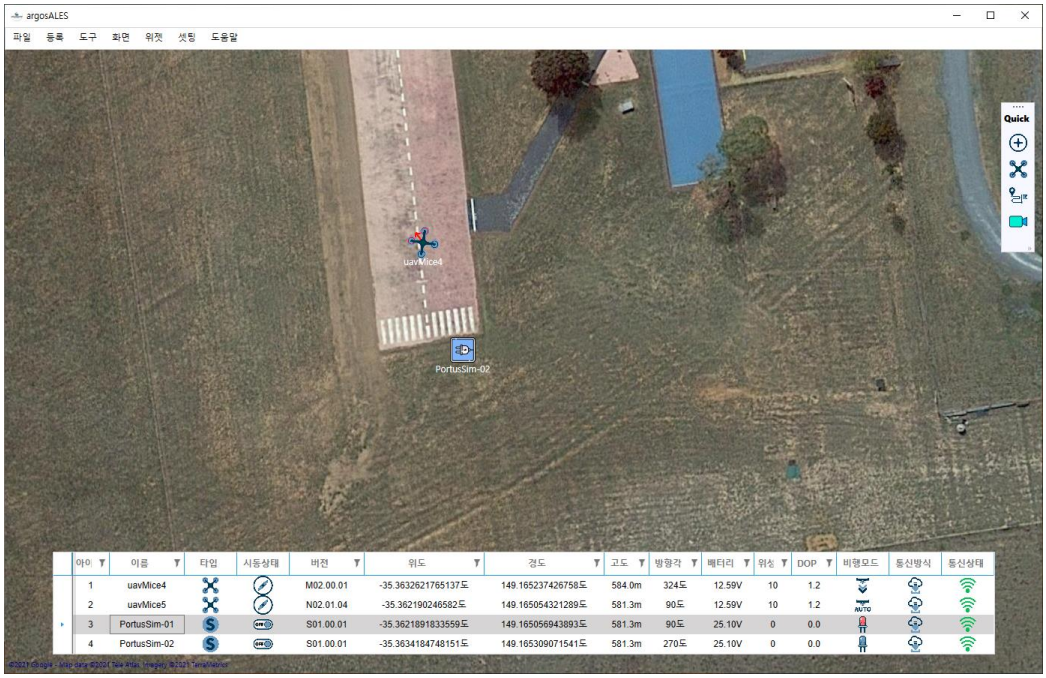
- 5. Shooting  - You can select and click on 4 shooting/video modes to shoot or record.
- 6. Download – Download the recorded video and save it as the specified file.
- 7. Zoom In/Out – Zoom in and out of the camera lens to zoom in and out of the desired subject.
- 8. Secure Gimbal – Secure the gimbal at a set angle. When unchecked, the gimbal realigns.
- 9. Gimbal Scanning Mode – You can automatically set the gimbal move to shoot a wider area you want to monitor.
    - Turn off automatic scan mode (None) – This is the default state where there is no operation of the gimbal.
    - Horizontal Scan Mode – The gimbal automatically operates in the left and right horizontal directions.
    - Vertical Scan Mode – The gimbal automatically operates in the vertical direction up and down.
    - Horizontal Zigzag Scan Mode – The gimbal moves from top to bottom and operates horizontally left and right.
    - Vertical Zigzag Scan Mode – The gimbal moves up and down in a W shape.
- 10. Gimbal Angle Adjustment – You can adjust the gimbal angle via the controller or keyboard arrow keys.

9. Station Control

① Station Registration

- In the 'Register Station' menu, you can connect a pre-registered drone to argosALES.

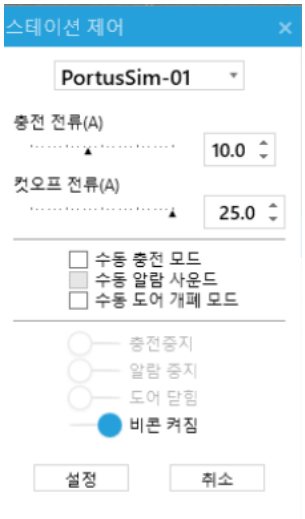
  - Check 'Station' in the 'Register Station' window and select 'Connection Type'
    - Station: Set the device (device) to register as 'Station'.
    - Click the list of equipment registered in 'Device Name' and register the station.
    - When the registration is successfully completed, the 'Device Information Window' displays information about the registered aircraft and the connection status.



  - On the map, the station is  marked with ,  so you can identify the location of the drone and the station.

② Station Control

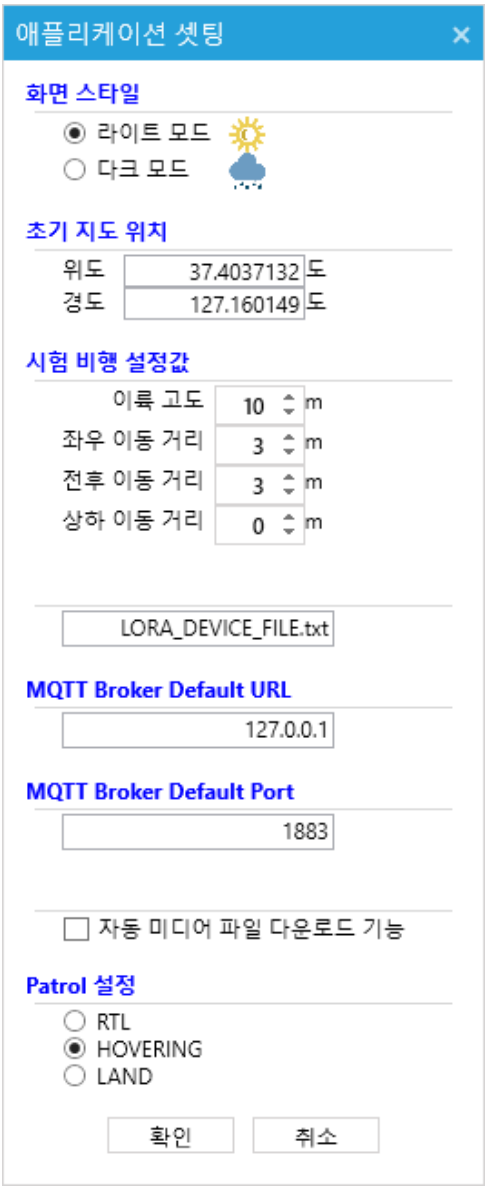
- The station provides a place for the drone to take off and land, and the auto-charging function automatically charges the drone battery after landing before takeoff or after returning.
- In the 'Tools' tab, click 'Control Station' to select the station you want to control.



- Charging Current (A) – Set the current value at which the battery is charged through the station to make the battery charge time and battery maintenance cycle more efficient.
- Cut-off current (A) – When the battery reaches the set current value, stop charging and allow it to switch to the charging OFF state.
- Manual Charging Mode – Rather than automatically starting charging as soon as the drone finishes landing, let the user set whether or not to charge. After checking the manual charging mode, use the following functions.
  - Stop Charging – Disables the station's automatic charging. Drones that are set to 'Stop Charging' will wait at the station without charging immediately after landing at the station.
  - Beacon on – Activates the landing beacon mounted on the station to facilitate the drone to make a precision landing. You can check the display when the landing beacon is on , and the display when it is turned off through the 'Device Information' window.

10. Other setup instructions

① Application Settings



Screen Style: Allows you to change the program theme color.

■ Initial map location: You can set the location of the map screen displayed when the program is launched.

(Enter Latitude and Longitude to change.)

■ Test flight settings: When using the 'Basic Flight Test' provided by the 'Drone Control ' panel, you can perform the test by entering the desired test settings.

● MQTT Broker Default URL: Allows you to enter the default URL settings for the MQTT protocol.

● MQTT Broker Default Port: You can enter the MQTT default port settings.

● Patrol Settings: When the patrol flight is stopped, the aircraft will operate at the specified settings.

1. RTL: The aircraft returns to the home point.

2. HOVERING: Hovers from the point where the aircraft stopped patrolling flight.

3. LAND: Land at the point where the aircraft stopped patrolling flight.

Patience

If the patrol setting is LAND, you may land at a point where you cannot land normally (sea level, mountainous terrain, or other places with many obstacles).

② Drone Settings

You can adjust the speed and altitude for specific commands on the aircraft, as well as the

Failsafe settings.

- Flight Speed: The maximum flight speed of the aircraft can be adjusted.
- RTL Altitude: The aircraft will move by the altitude set when returning to the home point (RTL).
- Landing altitude: The aircraft rises to the altitude set when landing.
- Landing Speed: The descent speed can be set when the aircraft lands.
- Home Location: Displays the location of the home point in latitude/longitude.
- FailSafe setting – In case of an abnormal phenomenon such as low battery or poor communication quality in the aircraft, it provides a function to automatically return when the set value is reached.
    - Battery voltage: When the corresponding voltage value is reached, the aircraft will automatically return.

- GPS Quality: The aircraft will automatically return when the communication quality value is reached at the corresponding setpoint.

- Automatic Heading at RTL: This function checks whether the aircraft keeps the direction of the drone in the current direction or switches to the front before takeoff when the aircraft is running RTL.

10. CUSTOMER SUPPORT

For additional information about argosALES' products, including instructions for troubleshooting S/W issues, please contact our Customer Support Center.

Q: The drone is not connected to the program.

A: argosALES is a program that is in charge of controlling drones and stations in the drone automatic operation system of Argosdyne Co., Ltd. Since drones and station devices are customized and provided to the customer, only devices that are pre-registered under the contract can be connected to a rgosALES.

Q: It seems like the drone is taking longer than usual to connect.

A: This can be caused by poor network quality.

- Main cause
  - If it is outside the communication distance limit
  - When interacting with a program in a communication shadow area
  - Communication disturbances caused by surrounding objects
  - Deterioration of signal sensitivity due to bad weather

- resolution plan
  - Check the connection settings according to the communication environment.
  - Connecting the aircraft with RF Link It is recommended to use the default communication speed (57600 baud).
  - Connect the aircraft with Cloud Link Please check the Internet signal sensitivity.

- Use in areas where there is no radio interference and signal sensitivity is strong.

Q: When I press Move to Location, the location of the drone does not appear on the map.

A: Check the connection status of your device. If the drone or station is not properly connected to argosALES, the default location will be displayed on the map because valid location information cannot be received.

Q: I don't fly on the route I created in Mission Planner.

A: Make sure that you have uploaded the route you created with the Patrol Planner to the drone via the 'Read' function. It flies according to the information you uploaded at the very end.

Q: Pressing the Arming button won't start the drone.

A: First check whether the drone's Link connection status is normal and whether the FC is in the standby state. In addition, the operating sequence for automatic flight must be observed. In order to control the drone with argosALES, the 'Guide Mode' state must be prioritized. Drone Control > Guide Mode > Start Control > Takeoff Control > in the order of 'Altitude setting and execution'.

Q: The flight does not start when I press the Start Mission button.

A: First check whether the drone's Link connection status is normal and whether the FC is in the standby state. In addition, the operating sequence for automatic flight must be observed. In order to control the drone with argosALES, the 'Guide Mode' state must be prioritized. Drone Control > Guide Mode > Start Control > Takeoff Control > in the order of 'Altitude setting and execution'.

Q: The drone does not work when I press the Start Mission button again after landing.

A: The operating sequence for automatic flight must be observed. The drone automatically turns off the engine when the aircraft lands, so if the flight is terminated by Land or RTL, the aircraft is in a disarming state. To resume automatic flight, check the mission in the Patrol Planner and press the 'Start' button to proceed.

Q: I want to pause a drone that is in automatic flight.

A: To pause a drone in autoflight and return it to hovering, press the pause button in the

Patrol Planner. To resume the automatic flight of a suspended drone, press the restart button button.

Q: Can the pilot control the motion with the remote controller in the middle of an automatic flight?

A: By changing the mode, it is possible to switch from automatic flight to remote controller manual operation. Press the pause button in the 'Patrol Planner' to keep the drone in a pause state, and then press the A ltHold Mode or PosHold Mode button to switch flight modes. If the mode conversion is successful, manual operation is possible via the remote controller.

Q: When do I use AltHold and PosHold Mode?

A: This flight mode is a mode that allows manual control through the remote controller, and is intended to respond to special situations that require pilot intervention (such as an emergency landing). You can stop the mission in the middle of an automatic flight and take over control from the pilot's remote controller to control it yourself.

Q: The TAKEOFF command does not work after the drone's Move action.

A: This is the command sequence that is blocked in the drone's F C for safety. Basic, for altitude gain during automatic flight, please use the 'Drone Control' -> 'Remote Control' function while the aircraft is hovering.

Q: The TAKEOFF command does not work after the drone's Move action.

A: This is the command sequence that is blocked in the drone's F C for safety. Basically, for altitude gain during automatic flight, please use the 'Drone Control' -> 'Remote Control' function while the aircraft is hovering.

Q: I turned on the auto-login function, but it doesn't work.

A:

① Delete C:₩Users₩username₩argosAles.msalcache.bin

② Automatic login check

③ Ales turns off and on

④ confirmation

- Argosdyne Customer Support

  ☏ +82 70-5102-1388

  ※ If you are using a communication network such as LTE / wifi, you can solve any problems that arise related
  to the use of the tariff plan, etc., by contacting the contracted telecommunications company.

- Feedback on this document

  If you would like to help us improve this article, please send us your suggestions, comments, or errors to info@argosdyne.com.