X10 System Hardware & Software Configuration

Scope

The purpose of this document is to establish a baseline list of Skydio X10 software features and hardware components.

X10 UAS Software Overview

DEVICE	SOFTWARE VERSION
X10 Vehicle	Version 31.1.112
X10 Controller	Version 31.1.140

Table 1 – Skydio X10 software version list

SOFTWARE FEATURES	DESCRIPTION
3D Scan	Automated data capture of a scene with comprehensive coverage and ultra-high resolution for higher-quality inspections. Adaptively maps the scene and uses intelligent flight planning to build a live 3D model. With augmented reality (AR) and AI-driven workflow, the drone plans a path to capture all surfaces using your specified setting to create high-definition reconstructions and upload the images to a third-party photogrammetry provider.
Tower Capture	3D Tower Capture is optimized for capturing vertical structures like telecommunication towers. With a streamlined setup process and default settings, this mode is designed to save battery life and make the scan setup more efficient.
Scout	Skydio Scout flight skill simplify the tracking of moving subjects to offer real-time situational awareness. Scout allows you to follow and track a GPS position at long range, with the ability to adjust and reposition your drone. Skydio Scout supports GPS tracking.

Crosshair Coordinates	Crosshair Coordinates uses Digital Terrain Elevation Data (DTED) maps to display the real-time coordinates on the fly screen of the ground-level position at the center of your crosshairs. To use this feature, you must have DTED map data loaded for your flying location. Location accuracy will vary for the point of interest based on vehicle altitude, position offset, and gimbal angles.
GPS Only	GPS sensors are used to navigate instead of visual and obstacle avoidance navigation for flight at night or in low-light conditions with poor visibility.
Obstacle Avoidance	**Disabled** - Top ground speed using Vision: ~18 mph (8 m/s) / Top ground speed using GPS Only: ~45 mph (20 m/s) **Minimal** - Slight course corrections to avoid obstacles, but primarily relies on the pilot to avoid collisions. Top ground speed: ~18 mph (8 m/s) **Close** - Drone stays 8 in (21 cm) away from obstacles / 5 in (13 cm) in narrow spaces / Top ground speed: ~18 mph (8 m/s) **Standard** - Drone stays 24 in (60 cm) away from obstacles / 15 in (39 cm) in narrow spaces/ Top ground speed: ~35 mph (16 m/s)
Variable margins	Skydio X10 uses AI and visual navigation to reduce obstacle avoidance margins when moving through narrow spaces temporarily. Margins will dynamically expand if the drone detects environmental dangers like wind. Enabled by default. Disable to turn off the dynamic margin behavior.
Stop at Structure	Controlled inspections of structures. When enabled, your drone in manual flight will not deviate from its course when it is within 8 ft (2.5 m) of a structure. The drone will reduce speed and maintain position, allowing more precise maneuvering near the structure. Adjust the maximum speed.
Manual Flight Skill	Traditional flying experience. Obstacle avoidance settings will persist when flying manually, allowing Skydio X10 to route itself around obstacles, modifying any commands that could cause a collision.
Orbit Point Flight Skill	Rotate around a user-selected point-of-interest in either a clockwise or counter-clockwise direction, keeping the point in the center of the frame. Set a GPS position on a map.
Track in Place Flight Skill	Initiate tracking a person or vehicle, and Skydio X10 will hover in a fixed position as if affixed to a virtual tripod. The drone will automatically yaw and adjust the sensor package pitch to maintain tracking. Tracking in both Color and Thermal is available.

Waypoints Flight Skill	Create a multi-waypoint GPS missions, preflight or postflight.
Flight Termination	In the event of an extreme emergency, you have the option to terminate your flight immediately. Simultaneously press and hold the C3 and Launch/Return/Land buttons for three seconds while in flight to immediately stop the motors.
View Last Flights	Displays the feed last viewed from the Flight Screen, even if the drone is disconnected. Designed to assist you with locating your drone in the event of a crash, emergency landing, or low battery landing in an unintended location.
Rapid Descent	Increase the speed to the maximum descent rate when pressing and holding Boost (L1 button). Descent speed: 27 mph (12 m/s)
Height Ceiling	Enabled allows you to set the maximum allowed drone altitude above the Launch Point. • Minimum: 30 ft (9 m) • Maximum: 1500 ft (457 m)
Weak GPS Altitude Limit	When enabled, prevents flight above 66 ft (20 m) when GPS is weak.
Return Types	Vision means the drone will use the visual navigation system to return. However, flying to a set Home Point uses GPS. GPS means the drone will solely rely on GPS data to return.
Return Height	Absolute means your drone will ascend to the specified Return Height above the Launch Point before returning Relative means your drone will ascend to the specified Return Height above the current position before returning.
Low Battery Return	Always Ask (default) to select the return location when the battery level is low. Auto Return means the drone will automatically return to the Launch Point or the Home Point (if set) when the battery is low.
Surround Vision	Uses Skydio X10 navigation cameras to generate an ultra-wide view of your environment for situational awareness.
Thermal Zoom	The thermal camera will zoom up to 16x, but you may continue to zoom in using the color camera. If any Tools are enabled, such as Region of Interest, they will dynamically adjust to fit the screen as you zoom.
Flat Field Correction (FFC)	Mitigates and compensates for errors that build up over time during the thermal camera operation. Automatic at lower zoom levels. Use the Thermal Settings to perform FFC manually.

Isotherm Thermal	Set a range of temperatures to detect. Use this setting to omit unwanted information outside of the specified range. The defined range will appear as the selected palette. Temperatures outside the defined range will appear as the default White Hot or Black Hot palette. If White Hot or Black Hot are currently selected, the temperatures in the Isotherm range will default to Rainbow
Spot Measuring Thermal	Display the specific temperature value of an object on-screen as you drag your finger on-screen. Tap or drag your finger across the screen to view temperatures
Region of Interest Thermal	Display an on-screen box that detects the minimum, maximum, and average temperatures within the outlined area • H represents the highest temperature detected • L represents the lowest temperature detected • A indicates the average temperature detected
Thermal Color Palette	Ironbow - Quickly identify varying temperatures and spot thermal anomalies. Displays a specific range of colors, from blues to reds, which indicate different temperature levels. Warmer objects are presented in lighter colors, and colder objects in darker colors. Rainbow - Uses the colors of a traditional rainbow to distinguish between subtle variations in temperature levels. Covers a broader range of colors without emphasizing specific temperature ranges White Hot - Provides a clear visualization of temperature variations without various colors. Brighter, whiter colors indicate warmer temperatures. Darker colors represent cooler temperatures Black Hot - Displays the inverse of a White Hot palette. Brighter, white colors indicate cooler temperatures. Darker, black colors represent warmer temperatures.
Thermal Mode	Adjust the signal amplification from the camera sensor to enhance temperature differences in an image. Recon - Tuned to increase the contrast between the overall scene and targets and differentiate the scene from people, vehicles, or animals. Inspect - Tuned to decrease the overall contrast so that temperature anomalies.
Thermal Temperature Range	Select the range of temperatures Skydio X10 will detect. Narrow - Detects temperatures ranging from -40°F to 302°F (-40°C to 150°C) / Wide - Detects temperatures ranging from -40°F to 662°F (-40°C to 350°C)

Emissivity Thermal	The measure of how efficiently an object emits thermal radiation. Adjust to match the camera readings to the actual temperature of the object. Higher values - the camera is more sensitive to temperature variations Lower values - the camera is less sensitive to temperature variations
Quick Launch	Quick Launch Tap the battery power button three times to hand launch the vehicle.

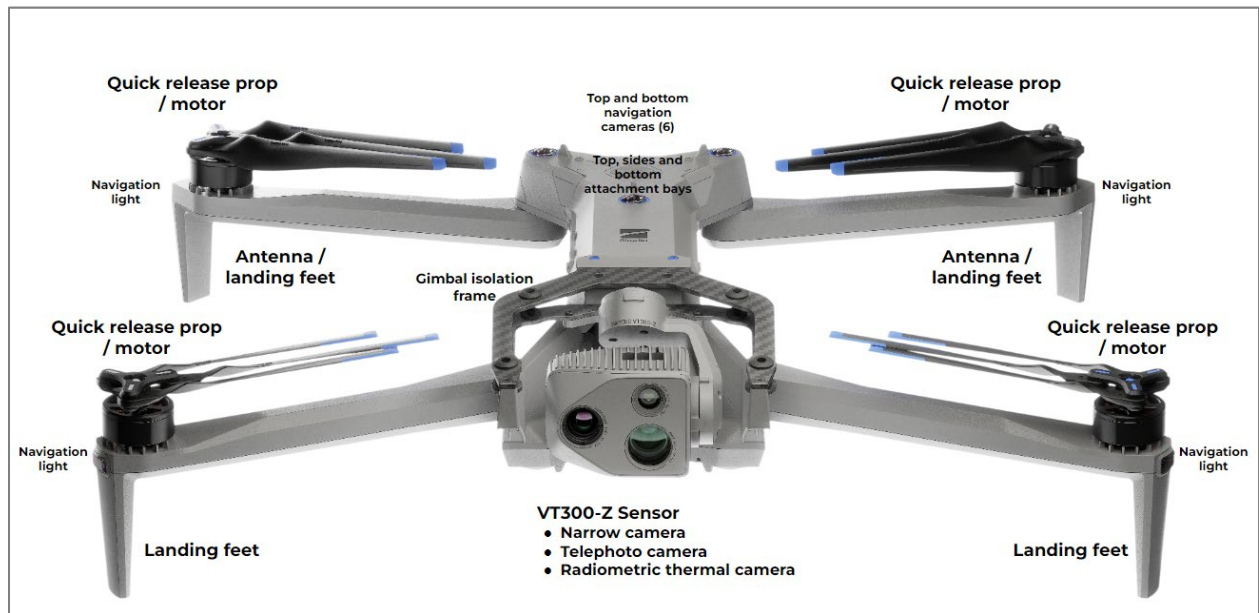*Table 2 – Skydio X10 software feature list*

X10 UAS Hardware Overview

Figure 1 – Main hardware components

SUBSYSTEM	COMPONENT	DESCRIPTION
Chassis	Chassis	Supporting frame body
Chassis	Main Logic Board	Circuitry board
Chassis	Multiband Radio	6-band radio module
Chassis	Navigation Camera	Three navigation cameras on the top and three navigation cameras on the bottom
Chassis	Sensor	Time of flight sensor
Chassis	Attachment bay	Top attachment bay (A2) / Side attachment bay (A3, A4) / Bottom attachment bay (A1)
Chassis	Cooling	Cooling fan outlet
Antenna	Antenna	Rear landing feet and antennas
Gimbal	Frame	Gimbal isolation frame
Arm - Front Left	Motor	Propeller motor hub
Arm - Front Left	Light	Navigation RGB, Strobe, Infrared
Arm - Front Right	Motor	Propeller motor hub
Arm - Front Right	Light	Navigation RGB, Strobe, Infrared
Arm - Rear Left	Motor	Propeller motor hub
Arm - Rear Left	Light	Navigation RGB, Strobe, Infrared
Arm - Rear Right	Motor	Propeller motor hub
Arm - Rear Right	Light	Navigation RGB, Strobe, Infrared
Arm - Front Left	Propeller	Quick release propeller
Arm - Front Right	Propeller	Quick release propeller
Arm - Rear Left	Propeller	Quick release propeller
Arm - Rear Right	Propeller	Quick release propeller
Sensor	Camera	VT300-Z narrow camera
Sensor	Camera	VT300-Z Telephoto
Sensor	Camera	VT300-Z Radiometric thermal

Battery	Battery	X10 battery
GCS	Controller	X10 Controller ground control
UA Accessory	AC power	100 W USB-C charging cable
UA Accessory	AC power	230 W barrel jack charging cable
UA Accessory	Cable	USB-C to USB-C pairing cable
UA Accessory	Battery Charger	X10 dual battery charger
UA Accessory	Case	X10 transport case
UA Accessory	Cloth	Camera cleaning microfiber cloth
UA Accessory	Spare propellers	Quick-release CCW and CW propellers
UA Accessory	Sensor lock	Sensor gimbal stabilizer

Table 3 – Skydio X10 hardware components list