

SwellPro SD4

Waterproof Flying. Redefined.



All New, All-Weather Waterproof Flight Platform

The SwellPro SD4 is the latest evolution of the waterproof drone.

This **all-new** drone represents over seven years of design improvements and experience - resulting in SwellPro's most powerful all-digital floating & flying platform. A new benchmark for waterproof drones. Simply put, there is no drone in the world like it.

PRACTICAL, MULTIFUNCTIONAL, DURABLE.

With its modular multi-functional payload system and open interface design, the SwellPro SD4 can quickly adapt to different tasks in the field. The SD4 is the 5th generation of waterproof drone from SwellPro – the pioneer and innovator of waterproof drones worldwide.

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High-visibility, innovative waterproof body design

The design of the SD4's fuselage brings together SwellPro engineers' deep experience and understanding of waterproof drones, materials and processes. Its structure is simple in design, attractive in appearance, lightweight, strong and most importantly functional.

The body has been designed to facilitate upgrading, repairing or replacement of parts as well as supporting various custom modifications thanks to integrated mounting points. A hinged, waterproof hatch makes changing the slide-in battery module fast and easy.

Powerful propulsion system with tuned flight computer

Following 18 months of intensive R&D, the SwellPro SD4 marries new motors, digital reflux speed controllers (ESC), an all-new custom flight computer and gyroscope to deliver a fully featured multi-purpose flight platform. Able to fly in challenging weather conditions with variable loads, the new SwellPro SD4 provides a reliable and flexible solution to the challenges of operating safely over water for long distances.

Waterproof motors

The newly designed 3510 motors have strong and stable performance with high load-carrying capacity and excellent flight performance. The motors have been specifically designed for the marine environment with premium materials, excellent waterproof coatings and salt-water rated bearings to resist damage from salt and sand in the marine environment.

Carbon fiber propellers

The SwellPro SD4 utilizes tuned and balanced 12" quick-release carbon-fibre propellers which are proven, durable and unaffected by marine corrosion. Their stiffness and accuracy of pitch make these an ideal solution for high-performance aircraft.

The propellers are secured with quick-release bayonet mounts instead of the more common spin-on propellers that can detach when the drone is on the water.

New Reflux Electronic Motor Speed controllers (ESC)

The SD4 employs new 40A high-speed, digital reflux, energy-saving speed controllers. With fast response, low noise and integrated heat management the SwellPro SD4 has shorter braking distances, more stable flight and lower internal temperatures to help ensure flight safety and reliability.

Microprocessor Controlled Smart Drone Battery

Each slide-in SD4 battery has its own integrated microprocessor controller, teamed with 6500mAh of high-performance lithium technology cells to provide up to 30 minutes of flight time.

The SD4 smart battery provides:

- Real-time power monitoring and alerting
- Integrated balance charging to ensure battery health, safety and long life by constantly monitoring battery health, state-of-charge and temperature.
- Simpler battery storage and maintenance as the controller manages battery health even when not in the aircraft.
- Fast, slide in battery replacement. Integrated connectors allow for wire-free installation and replacement.
- Battery charging and usage data logging to allow for better battery management and event recording.

Payloads up to 2kg

The SD4 can comfortably lift a payload of 1.5kg with a maximum payload weight of 2kg.

Integrated Anti-collision Strobe

On the top of the SD4, a bright white aircraft anti-collision strobe helps the pilot and other aircraft pinpoint the drone in low-light and darkness - meeting the regulatory requirements of many regions. The strobe can be activated or deactivated in flight by the SwellPro app.

Fully waterproof IP66-rated multifunction remote controller

The SwellPro SD4 remote controller has been carefully designed to provide worry-free operation in harsh environments whilst remaining easy to use. Its IP66 rating ensures that it is protected from strong jets of water as well as sand and debris.

Built-In High-Quality Battery

An integrated SONY batteries provide a maintenance-free power solution for the remote controller and up to 8 hours of battery life or 12 flights per charge.

Considered Design

All aspects of the new SD4 remote control have been refined and considered. The layout provides intuitive control of all aircraft features while the milled aluminum phone/tablet bracket ensures that your attached device is secure and can be easily adjusted to the optimum angle for viewing. In addition to audible alarms, the remote controller also vibrates to warn the pilot of issues.

Digital Telemetry Display

The integrated high-brightness 2-inch digital display provides critical aircraft telemetry and flight data giving the pilot real-time aircraft status even when flying without a tablet or phone attached.

Wi-Fi Multi-Point Hotspot

To ensure waterproofing of the remote controller and connected devices, the SD4 remote controller provides for high-speed WiFi connections rather than cables. A pioneering design allows multiple devices to be connected simultaneously, allowing different apps and devices to be used at the same time during flight.

Built-in GPS

The remote controller's built-in GPS module allows the SD4 to include the pilot's precise location in its flight calculations, enabling real-time tracking and dynamic return-home functions, such as returning to a moving boat.

Innovative flight controls

The patented "Smooth+" flight dials allow the pilot to switch from joystick control of roll and yaw to a dial to finely adjust and maintain a desired drone attitude. Whether filming or surveying, with Smooth+ the pilot can "dial-in" just the right amount of aircraft movement to achieve and maintain smooth pans, orbits and sweeps - hands-free!

Fully digital radio systems for clear, long-distance transmission

Using new advanced wireless digital radios, the SD4 can broadcast its image over 5km while airborne. Innovative adjustable antennas can be setup to maximize range depending on the requirements of the mission being flown. When flying just 0.5m above the water, range is still up to 2.8km and floating on the water surface the transmission range is 500m.

Multi-connect

Unlike other drones, the SwellPro SD4 allows for multiple devices and apps to be simultaneously connected to the drone's flight systems either by multipoint WiFi, ethernet or serial interface.

Automatic Flip Function

If the aircraft is flipped in the water by a wave, the SD4 flight computer immediately locks the propellers for safety. When the pilot re-arms the drone, the drone will automatically perform a self-righting action and be ready for take-off.

Dark Mode

For covert, nighttime missions or to prevent startling wildlife at night, the drone's navigation lights can be extinguished via the SwellPro app.

The SwellPro App

To coincide with the launch of the SD4, SwellPro have developed a new, powerful mobile app that enhances and optimizes operation of the SD4. Connected wirelessly to the SD4 remote controller, the app allows logging, planning, recording of missions as well as the control and parameter setting

of cameras and other modules in flight.

Running the SwellPro app when you fly adds advanced functionality like mapping, routing and intelligent modes to the standard flight modes in the remote controller.

Flight modes include:

- GPS mode
- Follow Pilot
- ATTI
- Manual+
- Orbit POI
- Headless orientation
- Cruise
- Dynamic Return Home RTH
- Follow Orbit
- Tap to fly
- Route planning
- Waypoint mission planning
- Grid mission planning

GPS Mode

In this native mode the multi-mode GPS module, barometer, gyroscope and accelerometers work together to realize intelligent flight functions such as accurate height setting, fixed-point hovering, intelligent flight and intelligent return. In this mode the maximum flight speed is 10m/s, the maximum ascent speed is 4m/s, and the maximum descent speed is 3m/s.

Follow Pilot Mode

Utilizing the GPS data stream from the remote controller, the SD4 can faithfully follow the position of the pilot on a moving boat and record stable, high-definition video. The Follow motion algorithm tracks the position and angle of the remote controller relative to the drone and supports leading, parallel or chasing camera positions. Choose your preferred angle and height and the SD4 will keep the subject in frame. With good GPS coverage, the SD4 can follow at speeds up to **XX** km/h.

ATTI Mode

In this mode, the flight computer maintains aircraft altitude and attitude but does not stabilize position. This mode is particularly useful when landing the drone on a moving boat. The maximum flight speed in this mode is 18m/s. With good GPS coverage, automated return home functionality is maintained.

Manual+ Mode

For truly advanced flying, the Manual+ mode allows experienced pilots to directly control the flight characteristics of the aircraft usually managed by the flight computer. In this mode, the aircraft will maintain whatever attitude the pilot chooses. Altitude, speed and attitude of the aircraft are all pilot controlled, providing a truly acrobatic flight experience. Pilots need special training to use Manual+ mode safely and effectively.

Orbit Mode (circle)

Hover above a point of interest (POI) and select Orbit mode. The SD4 will reverse 10m and then automatically orbit, keeping the point of interest in the center of the circle. The remote controller allows adjustment of the height, speed, direction, radius and camera position of the orbit.

Headless Mode

In this mode, regardless of the drone's orientation, pulling back on the remote controller's pitch joystick will make the SD4 fly back towards the pilot's position.

Cruise Mode

Set the speed and direction of flight and in Cruise mode the SD4 will automatically hold these settings for you when you release the joysticks. Height, speed and direction can still be adjusted with the remote controller.

Dynamic Return

The SD4 constantly records the GPS position of the pilot, allowing the aircraft to always return to the pilot even if they have moved from the original take-off point. This dynamic home-point location is used if the aircraft needs to return home due to a loss of control signal error or if the

pilot initiates a return to home command.

Intelligent Orbit

Using the SwellPro app, the pilot can select a map coordinate for a programmed orbit. Set the orbit circle radius, the number of revolutions, speed, height, and direction and the SD4 will fly to the location and perform the maneuver automatically while keeping the camera tracking the point of interest.

Tap-to-Fly

The SD4 can autonomously fly to a selected location on the map and hover awaiting further commands. Tap the desired location on the map or input the coordinates manually, then then set the altitude and speed and the SD4 will do the rest.

Plan routes or Playback Flights

Using the SwellPro app, you can preplan a mission by selecting a series of waypoints on the map with individual speed, approach and hover heights, wait time and camera angle.

Alternatively, you can playback a flight from the logs and the drone will accurately replay a prior flight on autopilot. Name and save your missions to the app library of favorite routes for later replay.

Grid Mission Planning

Connect up to 256 waypoints to form a mission area and the SD4 will perform a uniform grid pattern flight path at the selected speed and interval settings. This is particularly useful for search and rescue, surveys and orthomosaic photography.

Last Known Position

The remote controller always displays the current coordinates of the aircraft. Should the drone be flown out of range or crashed, the remote controller will continue to display the last-known position of the drone to aid recovery.

Surface Navigation (Boat) Mode

With the SD4, SwellPro introduces an innovative and unprecedented new mode which enables the

drone to effectively be controlled like a boat on the surface of the water. With a maximum surface speed of 2m/s, the drone can be driven in all four directions and rotated by remote control. With this feature, the SD4 can fly to a target location and then land on the water to navigate closer to a point of interest, more quietly and safely than if it flew there. Caves and other overhead environments can now be accessed by drone for exploration or photography.

The boat mode can be incorporated into route plans for a multi-modal mission combining air and water legs, ideal for underwater photography, environmental protection, scientific, fisheries management and other tasks.

Integration Options

The all-new SD4 body has been designed for integration with SwellPro accessories as well as custom and third-party modules both above and below the drone. SwellPro accessories like cameras and payload release modules are independent modules that can be mounted together to allow for different combinations according to user needs. Multiple interface ports allow for the simultaneous control and attachment of different modules.

SwellPro SD4 Modules include:

- GCS-S: 3-axis gimbal 4K camera
- GC1-S: 1-axis gimbal camera
- GC2-S: 2-axis low-light gimbal camera
- PL1-S: Single payload release
- FAC: Fixed angle camera
- GC3-T: 3-axis gimbal thermal camera
- GL2: 2-axis gimbal spotlight
- WMP: Wireless remote megaphone
- WTL: Water sample collector
- LB1: Self-inflating rescue lifebuoy
- EXB: Extension mounting bar
- FFD: Sonar fish finder
- GUK: Top mount

Open Platform Integration

Open Flight-Control API Interface

Using the SwellPro Open API, third-party manufacturers and users can interface to the SD4 flight platform. Third-party equipment can gather real-time flight data to provide context to sensor readings and to enable control of aircraft functions, gimbal, camera trigger and third-party instruments for industry-specific uses.

Pass-thru Two-way Serial Data Port

To facilitate third-party integrations, the SwellPro SD4 and remote controller are equipped with a unique pass-thru serial port (UART/TTL) that allows data generated from third-party payload sensors on the drone to be passed directly through to the serial port and WiFi interface of the remote controller. This two-way interface also allows real-time control signals from third-party equipment on the ground to be passed back to the sensor or drone flight computer.

Direct Ethernet Port

As well as multipoint WiFi, the SD4 remote controller also provides a wired ethernet connection. This port replicates the functionality of the WiFi and allows a wired connection for a PC or other physical ethernet equipment.

SDK for Drone, Cameras and Radio System Integration

The SwellPro SDK for SD4 facilitates interfacing to flight instructions and flight telemetry, camera control and settings as well as the digital radio system.

Drone WiFi hotspot

In addition to the WiFi hotspot on the remote controller, the SD4 drone also supports local connections over WiFi for simplified connection of third-party payloads without the need for cables. The drone's WiFi network is transparently extended down to the WiFi network of the remote controller over the SwellPro datalink.