



**CK-14**



**CODEVINTEC**

Tecnologie per le Scienze della Terra e del Mare

# HULL

## CK-14

### **Compact ASV** **Totally made in Italy**

CE marked, highly customizable, equipped with a large moon pool, CK-14 is the smallest marine drone capable of supporting more than 40 kg of payload.

CK-14 accepts a wide range of sensors for various hydrographic applications, both in inland waters (rivers, lakes, dams) and coastal waters (ports, coastal areas).



### **Materials**

Carbon fiber and Kevlar are the materials which guarantee lightness, strength and durability and offer an extraordinary resistance to salinity and UV, with the great advantage of being easily fixable.

All the drone is finished with GELCOAT, providing even more protection, further resistance to UV rays, increase waterproof qualities and maintaining its appearance and beauty for a long time.

### **Type**

The peculiar design of the hull, displacement type, based upon strict nautical standards, offers an extraordinary stability and buoyancy, despite its reduced size (only 140 cm length) even with 40 Kg of payload.

The space and stability offered by this hull allows to host all type of equipment: from single beam echosounder to top-end multibeam, ADCPs, SSS, SBP and even a combination of these sensors.

### **Propulsion**

Two low maintenance brushless propellers can work independently and counteracting, so to give the best manoeuvrability to the CK-14: no rudder, nor leverage, no additional components that can break.

The propellers are protected directly by the design of the hull itself.

### **Interior**

The wide removable cover, free from any obstruction above it, allows full and easy access to the interior of the boat for easy operations and maintenance on batteries and instruments.

Inside, the wide Moon-Pool (33x27 cm) can host a wide variety of instruments and most of multibeam, beamformer or interferometric, without negatively impacting on drone's strength and rigidity.

The availability of customized supports, allows the integration of third parties sensors like SBES, MBES, ADCP, SSS, SBP, Cameras, Lidar, Multiparameters profiling probes... Even at a later stage, preserving the investment.

## Transportation

Two carrying handles on each side of the drone, a carrying eyebolt in the bow for lifting and towing, a load-bearing rollbar on the stern of the CK-14 allow the USV to be moved easily and with little effort.

The rollbar is also designed to host antennas, instruments and accessories, even by the end user, without having to modify the hull, hence maintaining its sturdiness.

The two thrusters are protected directly by the hull itself, allowing for trouble-free missions and transport.

Also, the contrarotating thrusters provide the maneuverability of the drone avoiding the use of delicate rudders or levers that can easily break during transportation.



# ELECTRONICS

## Power

The CK-14's electrical system offers two completely separate and independent lines and wiring to serve itself and the payload, all with redundant protection circuits and thermal magnetic switches.

The payload line is then separated into other two power lines for greater versatility: 12 and 24 Volt.

CK-14 uses high-end professional batteries yet easily available on the market: 16.000mA Lithium polymer with low self-discharge.

The battery autonomy can reach up to 12 hours, depending on the payload and number of batteries used. The large internal space allows the installation of a number of battery packs, and the numerous housings in the compartment allow to distribute weights and dimensions depending on the payload used, thus balancing the stability during navigation.

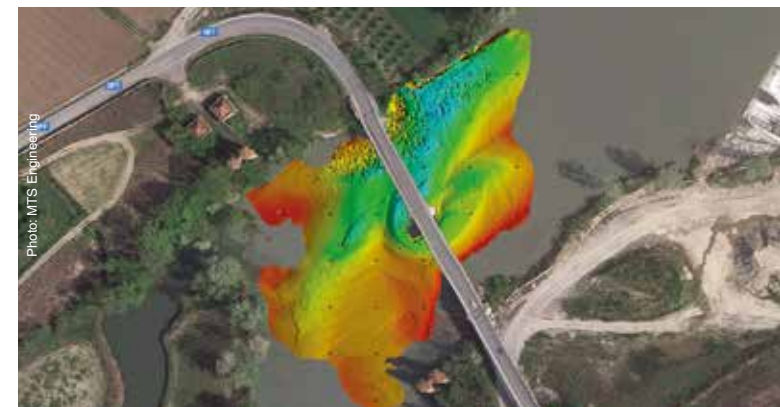
## Control

The control of the drone and its payload is entrusted to a powerful industrial PC with an Intel processor and Windows operating system.

The control system is responsible for managing and controlling navigation, communication lines and all on-board instruments.

It capable to host the most popular hydrographic software, including Teledyne PDS, Hypack and Qinsy, even in their most advanced versions.

CK-14 can be controlled via standard professional remote control (6-channel, 2.4GHz band with 30 programmable presets and integrated display). When equipped with the Sextant module, control can be managed via PC, Tablet and/or Smartphone.



# SESTANTE

## Autopilot - Sestante

Sestante is the optional autopilot module entirely designed by Codevintec which allows to transform the CK-14 from USV (Unmanned Surface Vessel) to ASV (Autonomous Surface Vessel).

Sestante allows full control and management of the on-board PC and navigation in different modes: totally autonomous (ASV mode) or manually controlled via Long-Range Wi-Fi or via 4G network without range limits, selectable in real time.

Sestante consists of an on-board unit powered by the CK-14, a compact ground control unit with integrated 16-hour battery, a 7" touchscreen console with 10-hour battery life and mission planning software.

Sestante allows multiple users to control and manage both navigation and on-board instruments simultaneously. For example: while the pilot controls the navigation using the Sestante's console, the operator can manage the data acquisition with a laptop PC, and the customer's representative can follow the survey from a third station. At the same time, a supervisor can follow the operation in real time from a situation room located on the other side of the world.

## The Sestante with remote controller

Console



Ground Control Unit



## Optional Winch for easy casts

Sound velocity profile data are essential to ensure high-precision accuracy bathymetric surveys.

With CK-14 there is no need to duplicate efforts to monitor these parameters.

Thanks to the optional profiling winch, speed of sound probes, as well as any multiparameter probes, can now be seamlessly integrated in the CK-14's stern, providing an automatic and remotely controlled all-in-one solution.



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Rollbar can be equipped with accessories like antennas, cameras or Lidar.

# SPECIFICATIONS

<b>Materials</b>	Carbon fiber and Kevlar with Gelcoat finish and PVC reinforcements
<b>Dimension</b>	Length: 140 cm – Width: 90 cm – Height: 35 cm (45 cm with rollbar)
<b>Type</b>	Displacement hull
<b>Weight</b>	15 kg (excluded Payload)
<b>Draft</b>	18 cm
<b>Moon pool</b>	31,5 x 25 cm
<b>Payload</b>	Up to 40 kg
<b>Propulsion</b>	Two fully-flooded, low-maintenance three-phase brushless motors with counter-rotating propellers of 6.7 kg thrust each. Propulsion and propellers protected by hull shape
<b>Performance</b>	Max speed: 4 kts – Cruise speed: 3 kts – Hi-Speed option: 6 kts
<b>Power</b>	Dual independent power lines for drone and payload Two separated lines 12 / 24V for the payload 4S, 15C, 16,000 mA LiPo batteries with low self discharge Navigation autonomy: up to 12 hours
<b>Remote control</b>	2.4 GHz radio control, 6 independent channels, 30 programmable memories, integrated display
<b>Standard payload</b>	Industrial PC Intel with Windows 10 GNSS receiver
<b>Optional payload</b>	Sestante autopilot with 7" smartcontroller 4G Communication Integrated winch MBES, SBES, SSS, ADCP, SBP, CTD, Multiparametric probes, Magnetometers, GNSS RTK receivers, GNSS Compass, MRU, IMU, INS, Lidar, Third-party instruments (subject to technical validation)



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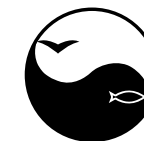
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