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#### **Materials**

Carbon fiber and Kevlar were the go-to-materials to guarantee lightness, resistance and durability and offer an extraordinary resistance to the elements, seasalt 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.

#### Туре

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

The space and stability offered by this hull allow to host any kind of load: from single beam echosounder to top-end multibeams, ADCPs and even a combinations of these type of sensors.

#### **Propulsion**

Two brushless propellers, low maintenance, can work independently and counteracting each other, so to give the best manoeuvrability to the CK-14: no rudder, no other components nor leverage that can break. The blades are protected directly by the design of the hull itself.

#### Internal

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

Internally the wide Moon-Pool (33x27 cm) can host a wide variety of instruments and most of the multibeams with MillCross transducers, even the big ones, without negatively impacting on the resistance or on the stiffness.

The availability of customised supports allows to integrate third parties sensors like SBES, MBES, ADCP, SSS, Lidar, multiparameters probes, winches, etc.



#### **compact ASV** totally made in Italy

CE Marked, highly customizable, equipped with large moon pool is the smallest marine drone capable to support more than 40kg of payload.

Accept a wide range of sensors for various hydrographic applications in inland (rivers, lakes, dams and coastal waters (harbors, coastal areas).



#### **Transportations**

2 load-bearing handles on each side of the vehicle, a load-bearing eyebolt on the bow for lifting and towing, a load-bearing roll-bar on the stern of the CK-14 allow the USV to be moved easily and with little effort.

The roll-bar is designed also to host antennas, instruments and accessories, even from the enduser, without having to modify the hull, hence maintaining its sturdiness.

Two independent contrarotating low-maintenance brushless thrusters provide the maneuverability, avoiding the use of delicate rudders or levers that can break and must be maintained, and are protected directly by the hull itself, allowing for trouble-free missions and transport.







## ELECTRONICS

#### Power

The electrical system of the CK-14 offers two completely separate and independent lines for the drone and for the payload, all with redundant protection circuits and thermal magnetic switches.

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

CK-14 uses high-end professional batteries, however easily available on the market: 16.000mA Lithium polymer with low self-discharge. The autonomy offered is about 10 hours, which varies depending on the payload and use.

Numerous housings in the compartment allow you to distribute weights and dimensions depending on the payload used, thus balancing the stability during navigation.

#### Control

The management of the entire drone and its payload is entrusted to a powerful industrial PC with Intel processor and Windows OS.

It deals with the management and control of navigation, communication lines and all the on-board instrumentation.

Its power allows to accommodate the most popular hydrographic software, including Teledyne PDS, Hypack and Qinsy, even in their most advanced versions.

The control of the CK-14 can take place with a normal professional 6-channel remote control, 2.4GHz band with 30 programmable presets and integrated display or via PC, Tablet or Smartphone when equipped with the Sestante module.







#### **Autopilot - Sestante**

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

Sestante allows full control and management of the onboard PC and the navigation in different mode: totally autonomous or manual with radiocontroller, long range Wi-Fi, unlimited 4G, all selectable in real-time.

Sestante is made of an onboard unit, a compact Ground Control Unit with 16 hours battery life, a 7" touchscreen console with 10 hours battery life and a software to plan the survey.

The control and management of both navigation and onboard instrumentation are allowed to multiple users simultaneously, as an example: while the pilot controls the route with the console, the operator can manage the acquisition with a normal PC, and the client representative can follow the survey from a third station, at the same time the end client can follow the survey from the other side of the world.

### The Sestante with remote controller























### SPECIFICATIONS

Materials	Carbon fiber and Kevlar with Gelcoat finish and PVC reinforcements
Dimension	Lenght: 140 cm – Width: 90 cm – Height: 35 cm (45 cm with rollbar)
Туре	Displacement hull
Weight	15 kg (excluded Payload)
Draft	18 cm
Moon pool	31,5 x 25 cm
Payload	Up to 40 kg
Propulsion	Two fully-flooded, low-maintenance brushless three-phase motors with counter-rotating propellers of 6.7 kg thrust each. Propulsion and propellers protected by hull shape
Performance	Max speed: 4 kts – Cruise speed: 3 kts – Hi-Speed option: 6 kts
Power	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 20 hours
Remote control	2.4 GHz radio control, 6 independent channels, 30 programmable memories, integrated display
Standard payload	PC Intel with Windows 10
	GNSS receiver
Optional payload	Sestante autopilot with 7" smartcontroller
	4G Communication
	MBES sonars, SBES, SSS, ADCP, SBP
	CTD sensors, magnetometers and multiparameters sonar
	GNSS RTK, GNSS Compass, MRU, INS
	Third-party instrumentation (subject to technical verification)







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