

CATS – Cam

Wireless multi sensor-controlled HD Cam

Data sheet

Highlights:

- Fully wireless charging
- CATS UI via WiFi
- 14-channel sensor (IMU, Depth, temp, etc.)
- Multi-sensor-controlled Cam triggering
- Fully customizable
- Small footprint
- HD up to 60 fps
- Low-light optimized
- High-depth rating



CATS-Cam

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Document status explanation

<i>Objective Specification</i>	Document contains target values. Revised and supplementary data will be published later.
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1. Overview

The CATS-Cam is a highly advanced multi-sensor platform for applications in animal research and other industries. Sensors record up to 800Hz and are geared toward facilitating the capture of high-definition video and still images. The entire unit has a relatively small footprint with the bare device being appr. 115mm in length and 40mm in diameter. It is optimized for low-light assignments and is rated to about 250m (with a special deep-rated version up to 500m).

The CATS-Cam can be fitted with LEDs in the visible or infrared range. At the moment there is no automatic switch between the two modes. As every CATS-Cam is customized for the individual application, power supply can provide sensor and video recording up to 35 hours, however, the recording time of the standard-sized CATS-Cam is around 8-12 hours.

The CATS-Cam is charged and programmed wirelessly, so no cables or contacts are required. The device comes, like the CATS-Diary, with a charger station.

The CATS-Cam can be used in all environments, whether terrestrial, marine or avian. For a more flexible sensor configuration, please contact CATS about different CATS-Cam versions.

2. Product features

Model	Sensors	Supply	Interfaces	Features	User level
CATS-Diary v3.4.r2.	Pressure (Depth, 300m, 500) [standard] Barometer Accelerometer [standard] Gyroscope [standard] Magnetometer (compass) [standard] Pitot (Air pressure) Temperature [standard] Light [standard] Speed (speed wheel) [optional] Conductivity [optional] Sound [optional] GPS (RAW) [optional] GPS [optional] CATS-Visualizer analysis possible GSM (see CATS GSM Tag) Video (see CATS Cam)	Primary cells Li-Ion Primary cell or Li-Ion	USB Wireless USB and wireless (optional)	Choose your own sensors Pre-defined set of sensors Infrared (IR) capable IR LEDs (optional) Visible light LEDs (optional) Solar-recharge (optional)	Professional Advanced Beginner
Available sensors	• • • • • • • • • • • •	•	•	• •	•

3. Pricing

The standard CATS-Cam with wireless charger comes at a price of 5900 Euro. This does not include any customization, which is needed for float, animal attachment and/or retrieval mechanism, such as VHF or satellite transmitter.

4. Detailed description

The CATS-Cam is a high-resolution multi-sensor recorder, which is capable of resolving fine-scale movement in addition to having the advantage of recording video too. In the past IMU analysis often failed to accurately pinpoint the exact behaviour that was recorded, leaving many results open to the researcher's interpretation. With the CATS-Cam, scientists are now able to verify these recordings via the video images. The CATS-Cam even overlays the data recordings onto the footage, thereby enabling the analyst to pair the sensor recordings directly with the video recording.



Further it is possible to program the CATS-Cam to start at certain events recorded by the on-board sensors. The user has the choice to either set the cam to record continuously or to duty-cycle the recordings; this can be done for the cam module or the sensor module. That way it is possible to obtain footage over an extended period of time [days and weeks], or of many different behaviours. To that effect it is possible to prioritize trigger options, such as light over depth and again depth over acceleration, for example.

All communication with the CATS-Cam (and its charging) takes place wirelessly. The CATS-Cam user interface is windows-based. There is also a CATS-Cam app in development, which allows to change simple parameters of the CATS-Cam in the field and will provide the possibility to start recording via a simple smartphone, thereby making it easier to deploy without a PC.






Storage capacity for videos can go up to 256GB, whereby all parameters of the video recording can be fine-tuned to the user's demand in order to optimize recording type and duration. Whether contrast, bitrate, aperture etc. This allows to maximize the recording time. The frame rate of the CATS-Cam lies for VGA image size at 120 fps, 1280x720 60fps and for 1920x1080 at 30fps.

When used in marine applications the CATS-Cam is capable of withstanding up to 300m, with a special (optional) deep-rated version up to 500m (for special versions please contact CATS).

5. Sensor performance

Sensor type	Max. sampling rate (Hz)	Range	Accuracy	Resolution (bit)	Comments
Accelerometer	40 (3-axis)	2 g - 16 g	0.0000061 g	16	
Gyroscope	40 (3-axis)	250 - 2000 dps	0.00763 mdps - 0.06 mdps	16	
Magnetometer	40 (3-axis)	±4800µT	0.15 µT /LSB	16	
Pressure (depth)	40	0-2000 m	+/- 20 cm	24	Various sensors
Temperature	40	(-45°C) - (+85°C)	+/- 0.8°C	24	
Light	10	500 lux	-	16	Not calibrated

6. Application examples

Application	Deployment duration	Example
Great white shark	6 days	
Basking shark	2 days	
Humpback	1 day	
Whale shark	4 days	
Hammerhead	2 days	
Blue whale	12 hours	