



1. Microcontroller; 2. SD; 3. Ultrasonic sensor; 4. Solar power regulator; 5. Power controller; 6. Real time clock; 7. Antenna; 8. Radio module; 9. Battery.

The *Modular Sensing Ultra (MS Ultra)*, can be used to monitor water levels in a wide range of applications, including rivers, lakes, dams, fishways, tidal areas, and groundwater. The device is easily configurable without needing external applications by standard USB connection. MS Ultra can work standalone as an autonomous independent sensing platform or inside a sensor network, thanks to the on-board LoRa module. This sensor features a high precision ultrasound sensor, solar panel and electronics embedded in durable IP68 ABS housing. The programmable recording time provides an ideal solution for long time recording of water level. Moreover, its architecture makes easy to incorporate other environmental sensor (temperature -air or water-, humidity, barometric pressure, etc.). The system is compatible with our on-line management and configuration platform.

Specifications

Ultrasonic sensor

Sensor type*	JSN-SR04T (Default)
Range	250 a 4500 mm
Accuracy	±10 mm
Resolution	2 mm
Respuesta del sensor	40 kHz

*Default configuration, compatible with different sensors and ranges

Logger

Real-time clock	DS3231 Accuracy ±2ppm from 0°C to +40°C Accuracy ±3.5ppm from -40°C to +85°C
Battery	Battery type: 18650, rechargeable 3.7 Volt lithium, user-replaceable
Battery Life*	Solar powered. Without solar more than 1 years with 5 minute or greater logging interval under a temperature of 20°C
Memory (SD-card)	8 – 246 GB, standard SD card
Weight	Approximately 200 g in air
Dimensions	150x100x70 mm
Housing materials	Polycarbonate tubing; POM caps; Stainless steel bolts and sensor; Viton and Buna-N O-rings;
Logging interval	Configurable.
Battery indication	Battery voltage is logged in the datafile
Environment Rating	IP68

*Tested duration. Higher durations are expected.

Communication

Sensor type*	RFM95
Protocol*	LoRa - radio
Range	> 10 km (in optimal conditions)

*Default configuration, compatible with different modes of communication.