

REMOTE REAL-TIME MONITORING

Link LoRa



Would live, real-time tracking of tagged animals be useful to your project?

The Link LoRa system offers real-time tracking in the comfort of your own chosen location. Real-time visualization of detections, sensor data graphing and download of datasets is available as the data is ticking in. Several nodes of Live hydrophones and Link LoRa with GPS/radio antennas can be deployed in an area. The nodes send radio signals to one single gateway up to 3-5 km away. One SIM card phone subscription or internet access point is enough to access a network of the LoRa nodes. The system offers great flexibility for direct documentation and stakeholder involvement.

What is Link LoRa?

Each Link LoRa sensor node consists of an antenna module with the GPS/LoRa antenna, the Link LoRa main unit with battery canister, and a Live hydrophone. Everything is connected by waterproof connectors (Figure 1). The Link LoRa main unit is delivered in two versions, for a single or two DD cell batteries. The batteries keep the nodes running up to 5 or 10 months for the single/double battery option.



Figure 1. The different components of the Link LoRa system

SPECIFICATIONS

Battery life: ~ 5 or 10 months
Range: 3-5 km
Frequencies: 63-77 kHz

USE WITH

Thelma Biotel transmitters

Transmitters from other manufacturers using open protocol

Rugged Design

The Link LoRa system uses rugged and waterproof casings, cable and connectors. Different lengths of cable can be used between the Live hydrophone and the Link LoRa main unit, up to several hundred meters. A fixed length cable of 1m is used between the Link LoRa and the antenna module. The setup can easily be deployed from buoys, bridges, docs, platforms, on vessels, beaches or any other convenient structures at the site.

How does the Link LoRa system work?

How does the transmitter detections translate into real-time tracking?

As shown in the diagram below, the deployed transmitters' acoustic signals are picked up by the Live hydrophone. Data from the Live is sent through cable to the Link main unit where they are sent to the gateway as radio signals from the LoRa antenna module. The gateway is connected to either WiFi/LAN or phone SIM. The data is then transferred to an online MQTT broker service where you can access your data directly, or we can pull it and visualize it on the website interface we set up for you. The gateway is the only system component needing mains power access and internet or phone coverage. One gateway can be used for over 20 Link LoRa nodes.

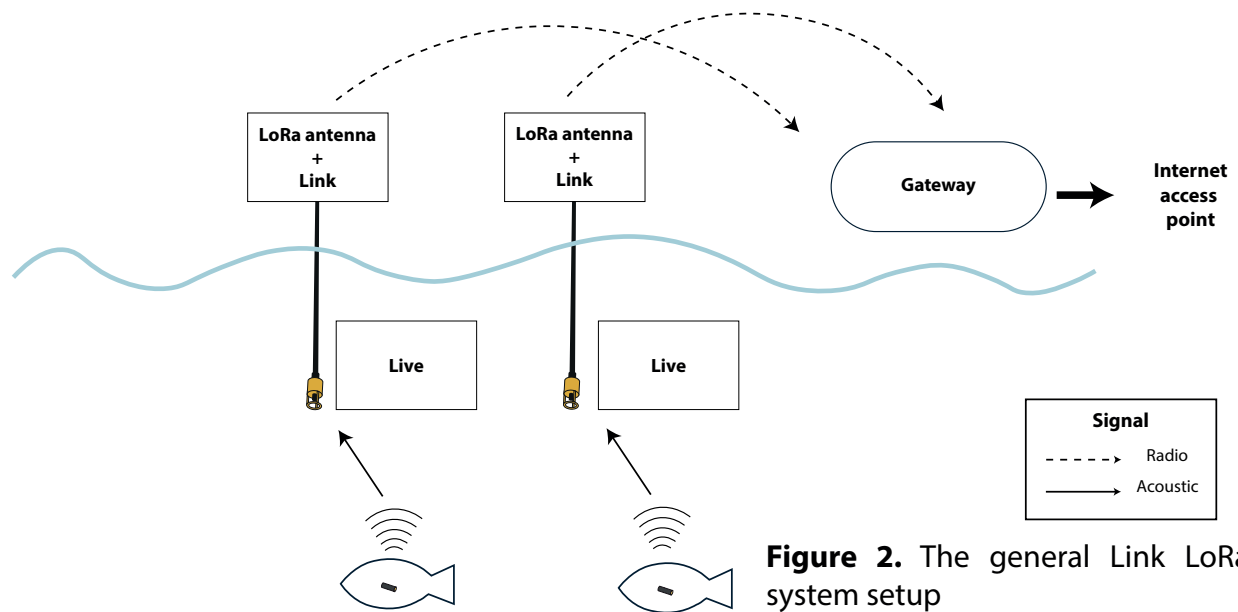


Figure 2. The general Link LoRa system setup

The LoRa module

The Link LoRa sensor node can send radio signals to a gateway up to 3-5 km away. A remote, long-range network is created with the gateway to access the internet. The Link LoRa nodes run independently on their individual batteries and can then be deployed for months on remote locations like smaller buoys close to the coast or in rivers and lakes. The ultra-low power consumption of the Live hydrophone and Link LoRa system makes this possible. The built-in GPS acquires accurate timing for position calculations and can even be used for live, fine-scale 3D positioning. The GPS also tracks the position of the LoRa node itself.



Gateway setup station

Photo: Per Arne Kjelsvik

Study Example: Hellstranda, Norway



Figure 3 . The Link LoRa system setup at Hellstranda, Trondheim, Norway

The deployed Link LoRa system at Hellstranda, Norway, is a great example of an effective setup. In this particular study, salmon, trout and cod was tagged to monitor live fish data as a response to an ongoing site fill at the river estuary.

Different distances between the Link LoRa antenna and the Live hydrophone demonstrate the ability to run the hydrophone cable to a convenient and safe position for the antenna.

INTERNET OF FISH

The Internet of Fish, or IoF, is Thelma Biotel's interface for Link LoRa, designed to visualize data in real time. It is fitted to suit your specific project, adapting and optimizing the filters and plots to suit. Stakeholder and project logos etc., can be added to highlight the correct affiliation and use. The website provides access to view and offloads your data in real-time through any phone or computer with internet service. You can also choose to access the data directly through MQTT and build it into your own web interface.

