EK60 Wireless

Remote wireless control and data transfer

We've done it for years.
Using standard off-the-shelf computer hardware, the *Simrad EK60* scientific echo sounder system can be remotely operated.
At any field location.

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MAXIMIZING YOUR PERFORMANCE AT SEA

The Simrad EK60 scientific echo sounder system has been on the market for several years. Many scientists, both in the marine and freshwater environments, have chosen a wireless solution for data transfer and echo sounder control. Remote control and data transfer has become a natural part of several EK60 installations.

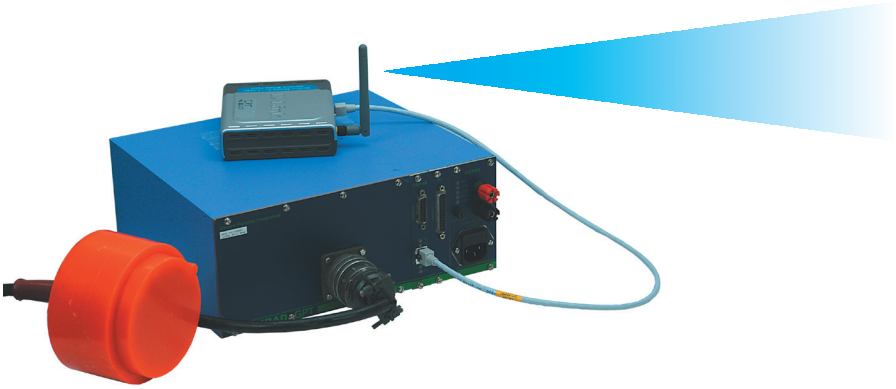
Vessels of opportunities

A recent trend among Marine Institutes is to establish a reference fleet of commercial fishing vessels to collect scientific data. EK60 echo sounders onboard fishing vessels are remotely operated via satellite link from the respective research institutes, where the scientist can take full control of all echo sounder functions.

***F/V Libas** is a modern Norwegian fishing vessel equipped with a six-frequency EK60 system as well as SP70 and SH80 sonars. All systems collect data for the Institute of Marine Research in Bergen, Norway. (Photo by Jørn Grønlund)*

River surveys

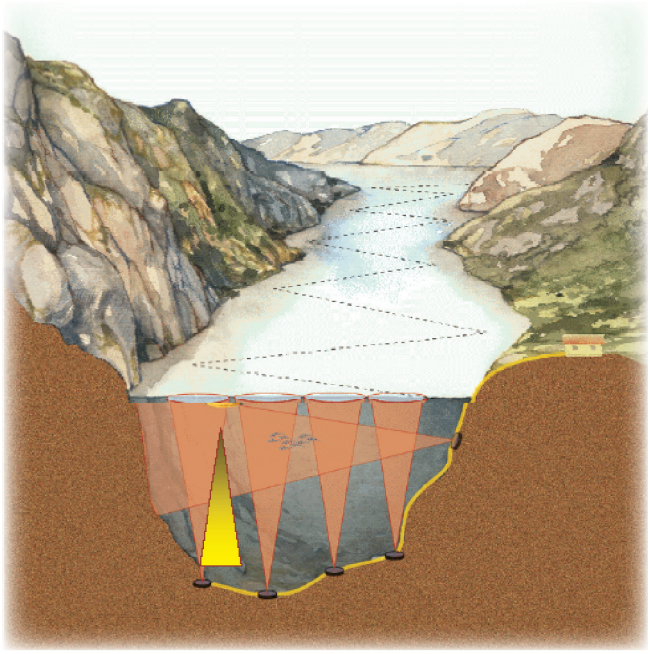
The simplest way of remotely controlling and transferring data from the EK60 is by using a plug-and-play off-the-shelf radio link. The cost is less than 50 Euro, and ranges are up to 1000 m. This is an ideal solution for rivers and other freshwater applications.



Ocean HUB

The **Ocean HUB** project uses EK60s in special water- and pressure proof housings. These are mounted on the bottom of a Norwegian fjord at 400 m depth. The transducers are pointed upwards creating an acoustic fence to monitor the flux of herring to their winter habitat. The echo sounders are connected to a remote land station using cables. From there, they are controlled, and data transferred, by means of a telemetry link.

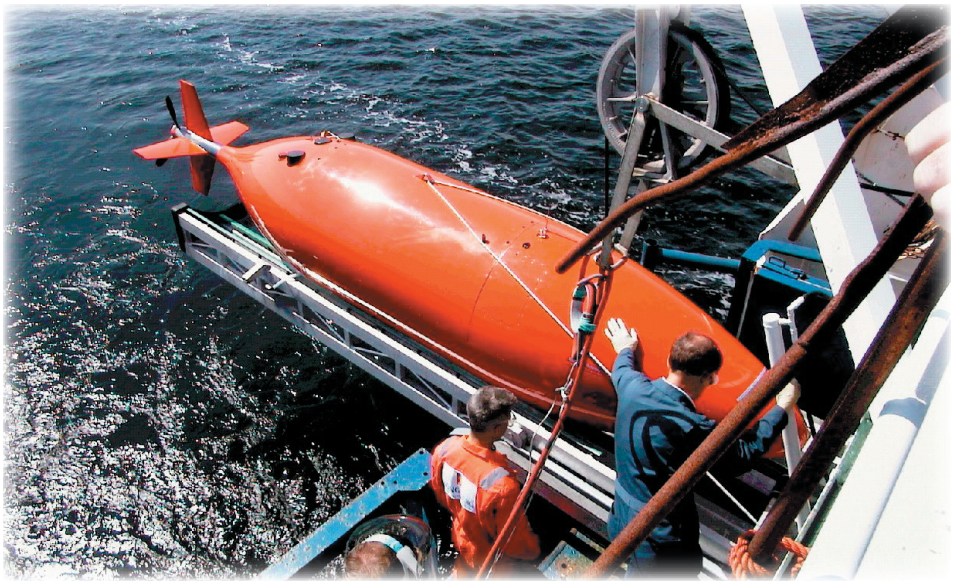
Illustration of the EK60 acoustic fence in the Ofoten Fjord in Norway.

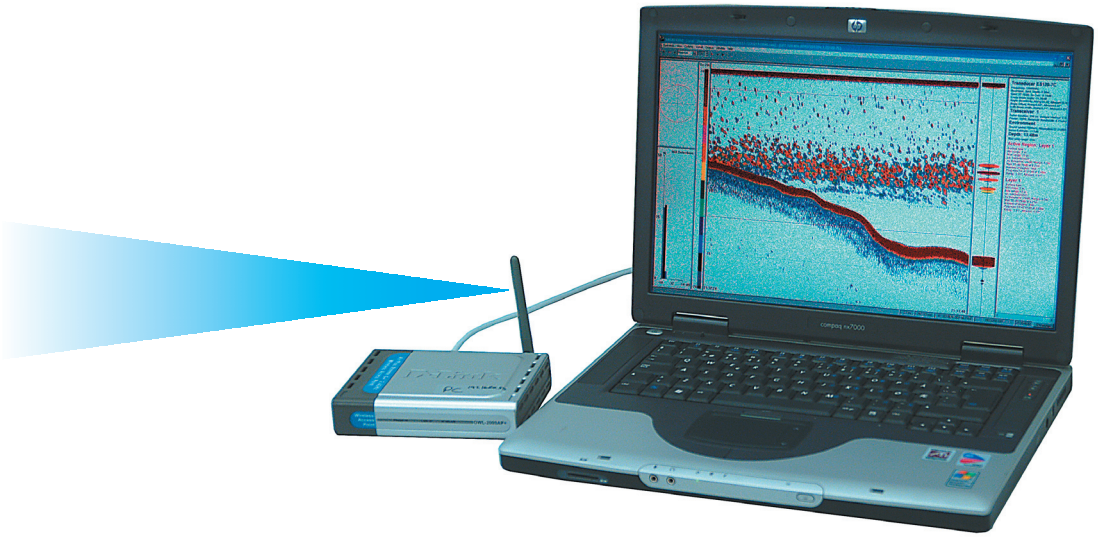


(The illustration is used with kind permission from the Institute of Marine Research (IMR), Norway.)

The Hugin AUV

The Hugin Autonomous Underwater Vehicle (AUV) manufactured by Kongsberg Maritime is used for many offshore applications, including fisheries research. The Hugin operates autonomously or operator supervised for up to 60 hours using inertial navigation. EK60 echo sounders onboard the Hugin are controlled, and data are transferred, via an acoustic telemetry link to the research vessel.





The EK60 is here shown with a D-link communication using off-the-shelf computer hardware. The range is approximately 1000 meters using the equipment shown, but this can be extended using directional antennas.

Oceanographic buoys

Several thousand oceanographic buoys are drifting in the oceans. Many are equipped with the EK60 echo sounders for fish and plankton monitoring. The EK60s in these ocean buoys log and transfer their data using radio modems. With ranges up to 100 km, one remote control station can both control and download echo sounder data from several buoys.

EK60 Transceiver (GPT)

- Frequency: 12, 18, 38, 70, 120, 200, 400, 710 kHz
- High pressure transducers: 38, 120, 200 kHz
- Power requirement: 10,5 to 14 Vdc or 110 to 230 Vac
- Ping rate: Up to 40 s^{-1}
- Range: 0 to 15000 m
- Operating temperature: 0 to 55°C
- Output power: 20 to 2000 W (frequency dependant)
- Power consumption: typical 10-30 W
- Pulse duration: 0,064 to 8,192 ms (frequency dependant)
- Transceiver control: Up to seven (7) frequencies can be used simultaneously
- Calibration: Easy-to-use built in calibration
- Synchronization: Internal or external
- Sensor input: GPS, Log-counter, Heave, Roll, Pitch, Trawl, Purse seine
- Data output: Raw or processed data to user defined file
- Data subscription: Ethernet datagram based system for remote subscription of data

Wireless communication

The echo sounder system consists of the transducer, the General Purpose Transceiver (GPT) and the Processor Unit (PC). Wireless communication can be introduced between the GPT and the PC, and/or between PC and PC. There is a trade-off between range and data transmit capacity of the link. You have many technologies to choose from.

A simple and low-cost solution for short range wireless echo sounder control is to use a pair of WLAN transmitters.

Wireless technology comparison

Features	WLAN (802.11g)	Mobile phone	Radio modems	Satellite
Range	Up to 1000 m	Mobile phone network	Up to 100 km	Global
Receiver sensitivity	-70 to -90 dBm	-100 to -125 dBm	-98 to -120 dBm	-120 dBm
Supported interfaces	USB, PCI, Ethernet	Serial, USB	Serial, USB, Ethernet	Serial, USB
Transmit speed	108.5 Mbps	GSM: 38.4 Kbps GPRS: 144 Kbps UMTS: 384 Kbps	115.2 Kbps	128 Kbps
Frequency band	2.4 GHz	900 MHz 1.8 GHz	910 MHz 2.4 GHz	1.6 GHz

Note that technical specifications can be altered without prior notification. The data in the comparison table has been retrieved from various internet resources in March 2005. This information is for guidance only.

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Simrad AS
Strandpromenaden 50
P.O.Box 111
NO-3191 Horten
Norway
Telephone: +47 33 03 40 00
Facsimile: +47 33 04 29 87