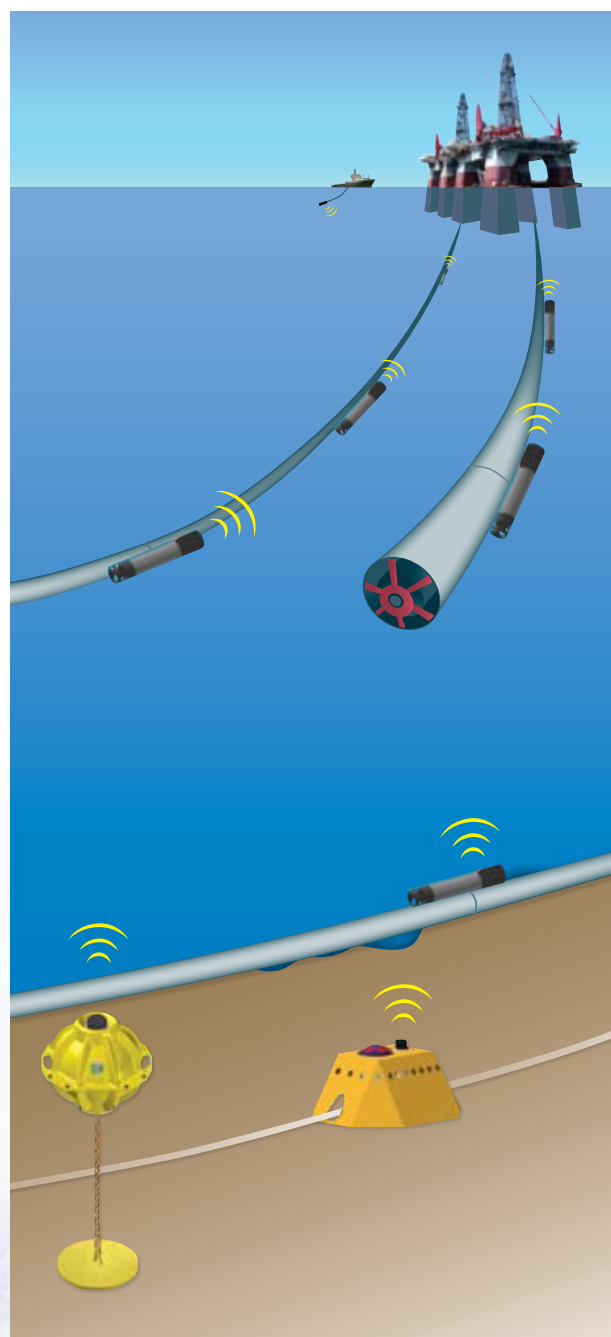


Telesonar

UNDERWATER ACOUSTIC MODEMS

Subsea Wireless Communication

Teledyne Benthos underwater acoustic modems are used in worldwide subsea applications and are the only modems available in a combined modem/acoustic release configuration. Reduce the umbilical clutter by making any subsea sensor a wireless sensor for shallow or deep water applications. OEM configurations are available.



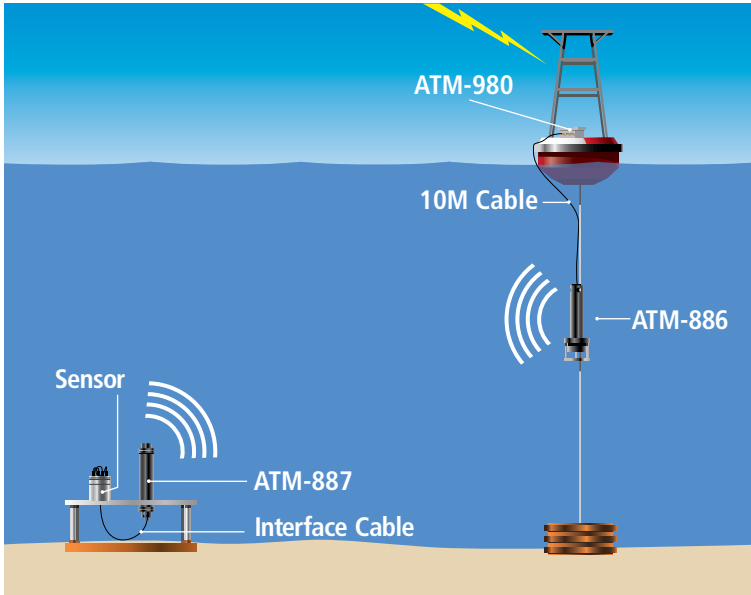
INNOVATIVE UNDERSEA SYSTEMS TECHNOLOGY



**TELEDYNE
BENTHOS**

A Teledyne Technologies Company

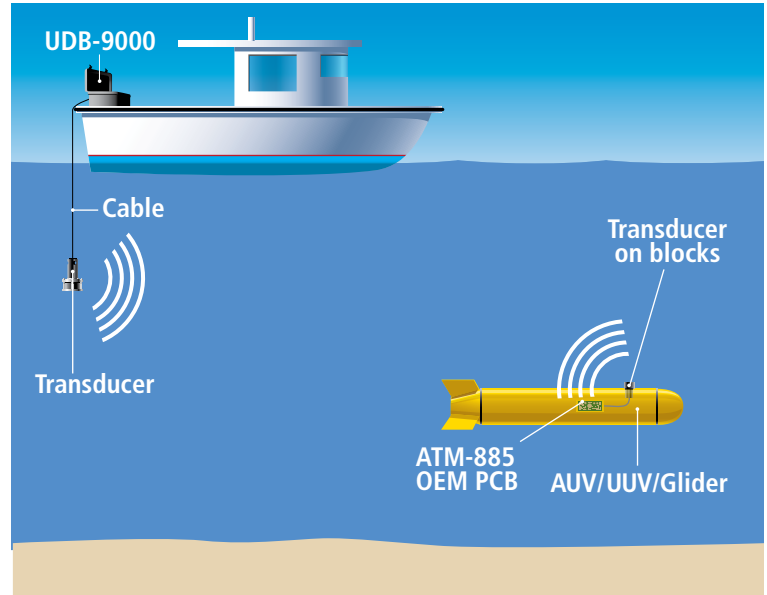
Information on Demand



OCEANOGRAPHIC

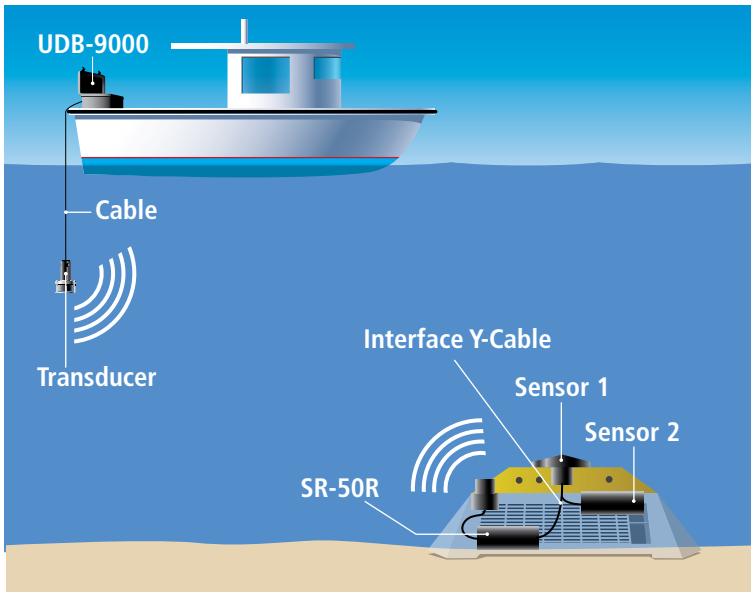
Real-time command, control, and acquisition of data from underwater instrumentation

- Acoustic Doppler Current Profiler
- Current meters
- Tide gauges



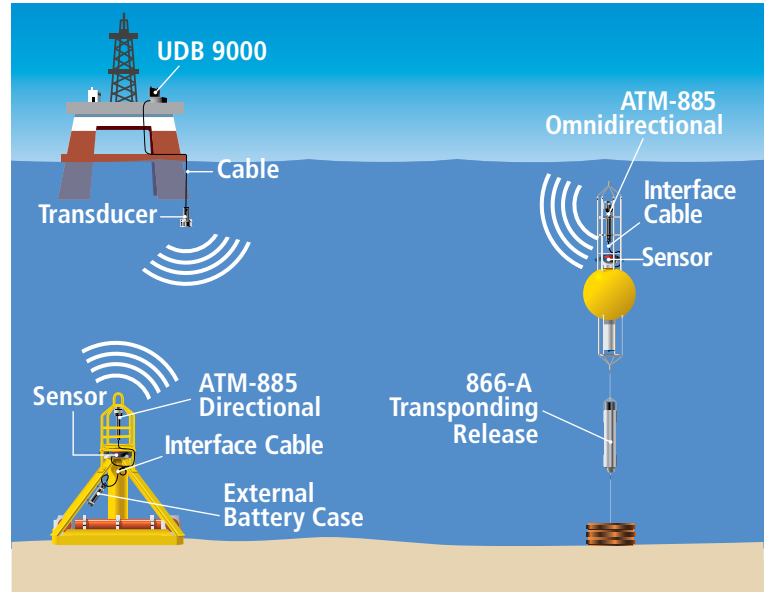
MILITARY

- AUV/UUV communication
- Autonomous ocean sampling network communication (AOSN)
- Tactical underwater local area network communications



OCEAN RESEARCH/OCEAN STUDIES

- Ocean observatories
- Trawl Resistant Bottom Mount (TRBM)
- CTD instruments
- Acoustic Doppler Current Profiler



OFFSHORE OIL/GAS INDUSTRY

- Command, control, and acquisition of data from remote underwater instrumentation
- Long range, low frequency communication with remote wellhead location
- Wireless communications between platform and sea floor instrumentation

SURFACE UNITS

- Each surface unit has a choice of 25m to 200m cables with a transducer choice to go at the end of the cable
- Directional or omnidirectional transducers available



UDB-9000

- Standard deck box
- Good for boats, dock, and other real time environments
- Internal batteries or AC/DC power connector
- Speaker
- Serial port
- Transducer cable connector
- Splash proof case
- Communicates to Acoustic Releases & Modems



ATM-980

- NEMA enclosure
- Good for buoy or remote deployment
- Space for RF radio modem
- DC power
- Serial port
- Requires ATM-886 and cable



ATM-886

- 2000 meter depth rated
- Standard modem electronics
- Integral Transducer, directional or omnidirectional (LF, MF)
- External power

SUBSEA UNITS



ATM-885

- 2000 meter depth rated
- Alkaline batteries, 378 W•HR
- Standard modem electronics
- Integral transducers, directional or omnidirectional (LF, MF)



OEM Options

- For AUV applications
- For mounting in your own pressure housing
- Standard modem electronics



ATM-887

- 6000 meter depth rated
- Alkaline batteries, 588 W•HR
- Standard modem electronics
- Integral Transducer, directional or omnidirectional (LF, MF)

General Specifications

Baud Rate

- 140 - 15,360 bits per second (bps)

Frequency Band

- Customer Specified
 - 9 - 14 kHz (LF)
 - 16 - 21 kHz (MF)

Bit Error Rate

- Better than 10^{-7} with high SNR

Data Storage

- 704K datalogger standard

Processing Features

- Data redundancy, 1/2 rate convolutional coding,
- Multipath guard period selection
- MFSK and PSK modulation schemes

Configurations

- Deck Box
- 2000 meter and 6000 meter depth rated subsea units
- OEM electronics
- Omnidirectional and directional transducers
- Modem/acoustic release combination units available

Interfaces

- Command line terminal emulator
- UDB-9000 Touch Screen

Distances—Range

- 2-6 km common, greater distances possible
- 20 + km available using repeater functionality

Deployment Length

- Up to 2 years
- 3-6 months typical with hourly transmissions
- Unlimited with external power supplied

SMART— Smart Modem Acoustic Release Technology

A new product line from Teledyne Benthos that combines the proven technology of Teledyne Benthos' acoustic releases with the reliable undersea communication functionality of an acoustic modem.

KEY FEATURES OF SMART PRODUCT LINE

- Combined modem and release functionality
- Enables real-time communication with your subsea instrument
- Unit will reserve battery power to release even if the modem side begins to drain batteries
- Deck box connectivity to customer laptop and easy-to-use graphical user interface (GUI) software with visual confirmation of range, release status, battery life, tilt, data transfer status, setup parameters, and much more...

SMART PRODUCT SPECIFICATIONS

General	Model:	SR-100	SM-75	SR-50	
Frequency Range:	9-14 kHz band	Depth:	6000 meters (20,000 ft)	6700 meters (22,000 ft)	300 meters (1000 ft)
Baud Rate:	140-15, 360 BPS	Battery Life & Type:	Up to 2 years Alkaline, 588 W•HR	Up to 2 years Alkaline, 588 W•HR	Up to 2 years Alkaline, 588 W•HR
Bit Error Rate:	<10 ⁻⁷ with high SNR	Release Load Capacity:	5000 kg (11,000 lbs)		227 kg (500 lbs) lift, 454 kg (1000 lbs) load
Transducer:	Omnidirectional	Release Mechanism:	High torque motor	Electrolytic dissolving wire	High torque motor
Connector:	External RS-232	Weight in Air:	45 kg (100 lbs)	13-inch = 18.1 kg (40 lbs) 17-inch = 27.2 kg (60 lbs)	14 kg (30 lbs)
Slant Range:	10 km maximum	Weight in Water:	34 kg (76 lbs)	Positively buoyant	7 kg (15 lbs)
Transducer Pattern:	Omnidirectional from upper hemisphere	Size:	114.3 cm (45 in) long 15 cm (6 in) wide	13-inch = 2.5 kg (5 lbs) 17-inch = 13.6 kg (30 lbs)	74.7 cm (29.4 in) long 19.8 cm (7.8 in) wide
Topside Controller:	UDB-9000M	Housing Type:	17-4 stainless steel	13-inch diameter (33 cm) 17-inch diameter (43.2 cm)	PVC
		Connector:	External RS-232 (1)	13 or 17-inch borosilicate glass sphere with polyethylene hardhat	External RS-232 (1)

What sets us apart?

- Proven reliability
- Known battery life
- Integrated noise filters to work in even the most challenging environment
- Top-notch customer support
- Easy to use command line interfaces
- Over 100 different configurations of modem equipment from OEM packages to 12,000 meter rated units with acoustic release capabilities



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