

Compact Hydro Acoustic Modem

HAM.BASE is the compact version of our HAM.NODE communication system optimized for transmission ranges up to 1000m (Basis HF Version). Our HAM.BASE is available with all HAM.NODE transducer options as well. The compact composite corrosion proof housing is rated to 750m depth. Furthermore compact deep water housings rated to 6000m depth and standard MCH housing solutions (required for lower frequency transducer options) are available on demand.

Our standard HF Base modem is able to operate with carrier frequencies in between 40 and 65Hz. This relatively wide frequency band, together with the proven efficiency of the modulation and coding algorithms of our HAM.NODE systems, is significantly less affected by environmental acoustic emissions. Therefore new applications concerning transmission lines not available by now can be provided.

Our system technics are designed to work reliably within a bandwidth of 2.5kHz to 70kHz. Maximal transducers drive voltage is 780Vpp and is able to afford up to 200W electric power to the transducer. Since the power amplifier has a direct drive, transducer tuning is not necessary.

The HAM.BASE standard version includes two combined RS232/422 and two RS232 communication ports with configurable supply of external sensors. Besides our SDHC data logging solution (already supported or easy configurable) is included to interface oceanographic sensors such as current meters/profilers, CTD-probes etc.

develogic HAM.BASE modem is available with an integrated battery compartment. This complete solution helps acquiring and transmitting submarine sensor data up to several months. Additional MCH battery housings provide energy for long term deployments. A HAM.BASE without integrated battery department can be provided as well.

We offer a customization package including C++ libraries as well as the necessary documentation for our OEM customers. This enables our customers to implement their own communication algorism on the HAM.BASE platform.

Communication

Modulation and Coding

- Non coherent n-mFSK modulation for maximum performance in shallow water transmission channels
- m-DPSK for highest communication performance in channels with limited multipath complexity.
- Variable rate convolutional forward error correction
- Doppler correction up to 10 m/s and 1g acceleration
- Bidirectional, handshaked transmission for maximum transmission reliability
- Transparent data compression
- Compatible with HAM.NODE systems within same frequency band
- User data rates up to 10kbps (HF 40-65kHz / 4-DPSK)

HF Standard Transducer

- hemispherical directivity
- 40kHz - 65kHz carrier band
- SPL max. 190 dB re 1uPa/1m
- Range up to 1200m with standard transducer
- Other transducers available upon request (2.5-4kHz, 8-13kHz, 11-19kHz, 18-28kHz)

Networking Capabilities

- IP based Net work protocol with routing

Compact Hydro Acoustic Modem



HAM.BASE compact hydro acoustic modem in composite housing



HAM.Base in titanium housings with transducers and connectors

Compact
Hydro
Acoustic
Modem



Custom HAM.NODE/Base solution in Vitrovex housing

INFORMATION

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HAM.BASE



Product Specification

System Electronics

Interfaces:

- 4 serial interfaces (2xRS232/422, 2xRS232)
- Configurable supply for external sensors (5V, 9V, 12V)
- System Extension bus

Data Logger & Storage

- max. 32GB SDHC

CPU

- Texas Instruments TMS320C67xx floating point DSP, 300MHz
- 2xMSP430 for low power system management & wakeup processing
- 32MB RAM, 2MB Flash

Power Supply:

- 11V to 50V (down to 6V in receive/standby mode)
- 10mW power consumption in standby mode, up to 250W during transmit

- OEM electronics board available: 80x180mm

Pressure Housing

- composite compact housing - absolute corrosion resistance backed by 5 years warranty
- depth rated to 750m or 6000m

Accessories

Mooring Frame

- Stainless steel mooring frame, 10kN safe operating load

Surface Cable

- Rugged surface interface and suspension cable

Configuration and Control Software

- Delivered with configuration, control and data management software

Customization package

- C++ libraries, documentation
- GNU Radio compatible