

Miniature underwater communication – Modem M16

The Water Linked M16 modem is a miniature 16 bits per package underwater acoustic modem which has been designed for use in the most challenging of environments, where a reliable connection is of utmost importance.

Utilising the latest technology, developed for Aquaculture, Water Linked has produced a modem which provides a robust half duplex communication link with an acoustic range of 1,000m.

With a rapid boot-up time, the M16 modem is ideal for use with subsea vehicles or instrumentation that has limited available power.

When transmitting and receiving data, the M16 modem continues to offer the benefits of a low

power solution requiring less than 2 watt seconds during transmission.

With 12 channels to choose from, operating around a 58.5 kHz centre frequency, multiple modems can be operated at the same time in the same area without interference.

Maintaining a small physical size and being lightweight was critical when designing the M16 modem for OEM integration, allowing the M16 modem to be integrated with little impact on the design of the overall system.

A transparent UART interface allows for simple low power connection to sensors, while an extended cable variation of the M16 modem is available with RS422 communication.

Key features

- Robust bi-directional communication
- 1,000m acoustic range
- Low power requirement
- Rapid boot-up time

- 600m depth rated
- 16 bits per package
- <300 mW Rx power
- Serial interface



35.5 mmOEM housing



47.5 mm Flange housing



47 mm Standard/Extended



Acoustic | performance

| Carrier frequency | 58.5 kHz |
|---------------------|---------------------|
| Frequency bandwidth | 7812 Hz |
| Transmitter source | 160dB re 1µPa at 1m |
| Directivity | Omnidirectional |
| Acoustic range | 1,000m |
| Bits per package | 16 |
| Package duration | 1.6 seconds |
| Communication type | Half duplex |

Electrical | interface

| Туре | OEM | Flange | Standard | Extended cable | |
|---------------------|---|---|---|----------------|--|
| Input voltage | 3.0 - 4.2 Vdc | 3.0 - 4.2 Vdc | 3.0 - 4.2 Vdc | 10 - 30 Vdc | |
| Power (Tx) | <1.5 W | <1.5 W | <1.5 W | <2.0 W | |
| Power (Rx) | <300 mW | <300 mW | <300 mW | <400 mW | |
| Cable length | 0.3m | 0.3m | 2m | 15m | |
| Communication | Serial UART (2.5-3.3V CMOS, 2.5-5V TTL) | Serial UART (2.5-3.3V CMOS, 2.5-5V TTL) | Serial UART (2.5-3.3V CMOS, 2.5-5V TTL) | RS422 | |
| Onboard data buffer | 16 bits (while transmitting) | | | | |

Mechanical

| Dimensions (excludes cabling) | Ø3.0 x 3.6 cm | 4.1 x 4.1 x 4.8 cm | Ø3.0 x 4.7 cm | Ø3.0 x 4.7 cm | |
|------------------------------------|----------------------------------|--------------------|-----------------|-----------------|--|
| Weight in air (excludes cabling) | 27 g | 62 g | 40 g | 40 g | |
| Weight in water (excludes cabling) | 12 g | 32 g | 14 g | 14 g | |
| Cable jacket diameter | N/A | N/A | Ø6.0 +/- 0.2 mm | Ø6.0 +/- 0.2 mm | |
| Depth rating | 600 meters | | | | |
| Material | POM (housing), PEEK (transducer) | | | | |

Approvals

CE

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