AQUATEC GROUP

BUYER'S GUIDE

AQUA*modem*® Op2

Subsea optical modems

AQUA*modem* Op2

The AQUA*modem* Op2 is an advanced optical modem that provides a seamless interface between the user and any subsea instrumentation with RS232 serial interfaces, such as our AQUA*logger* oceanographic instruments and HYDRO*log* hydrotest loggers. The connection is made typically via an ROV umbilical, providing simple use and deployment of the instrument. The AQUA*modem* Op2 features individual unit addressing and automatic optical or serial data wake-up, to conserve the life of the external battery pack and prolong the service of the device. The instrument permits short range interrogation, commanding, and data download for your subsea monitoring equipment, providing you with a cost-effective and efficient solution to solve your subsea communication needs.

KEY FEATURES

Subsea optical links

- Short range interrogation, commanding and data download from subsea instruments
- Create a wireless serial data link
- Compatible with instruments with RS232 serial interfaces, including Aquatec's HYDRO*log* 3000 range, AQUA*logger* 310TY and AQUA*logger* 310PT
- New higher speed data transfer
- Suitable for ROVs and divers

User friendly features

- Interchangeable models– The standard and light modems can be used to communicate with each other within the same system
- Unit addressing– individual or universal addressing to suit the application.
- Alignment– the two modems do not need to be perfectly aligned to communicate, allowing for ROV motion

More than data download

As well as downloading data subsea, optical links can be used to...

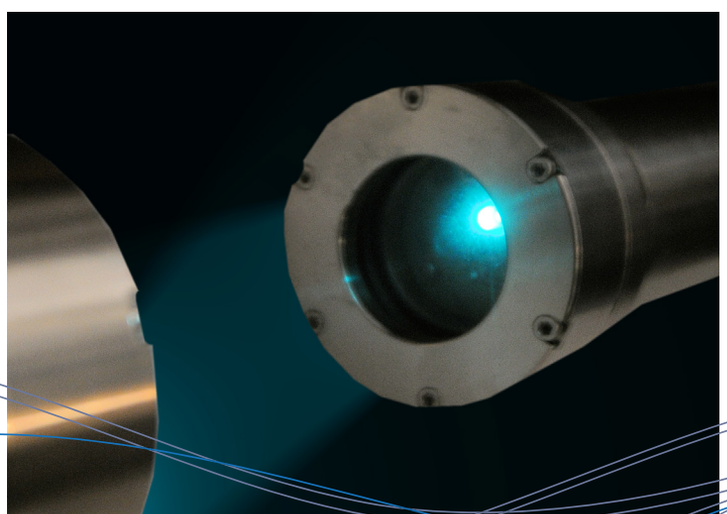
- Check the status of instruments
- Change the settings before leaving on deployment
- Get a real time data view
- Redeploy instruments subsea

Modem packages

- Complete modem set - including modem pair, subsea battery pack, and ROV, surface & subsea cable sets
- ROV side modem set - including ROV and test cables
- Subsea modem set - including subsea cable set and battery

Aquatec services

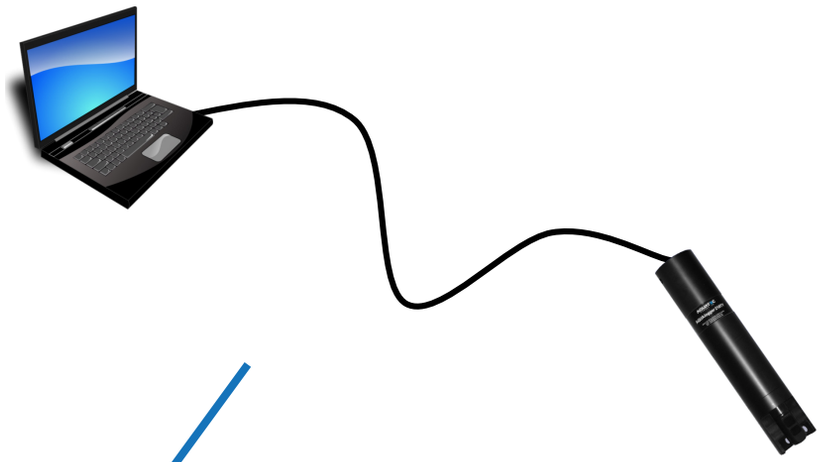
- Custom instruments and accessories – design services for new instruments, customisation and systems integration

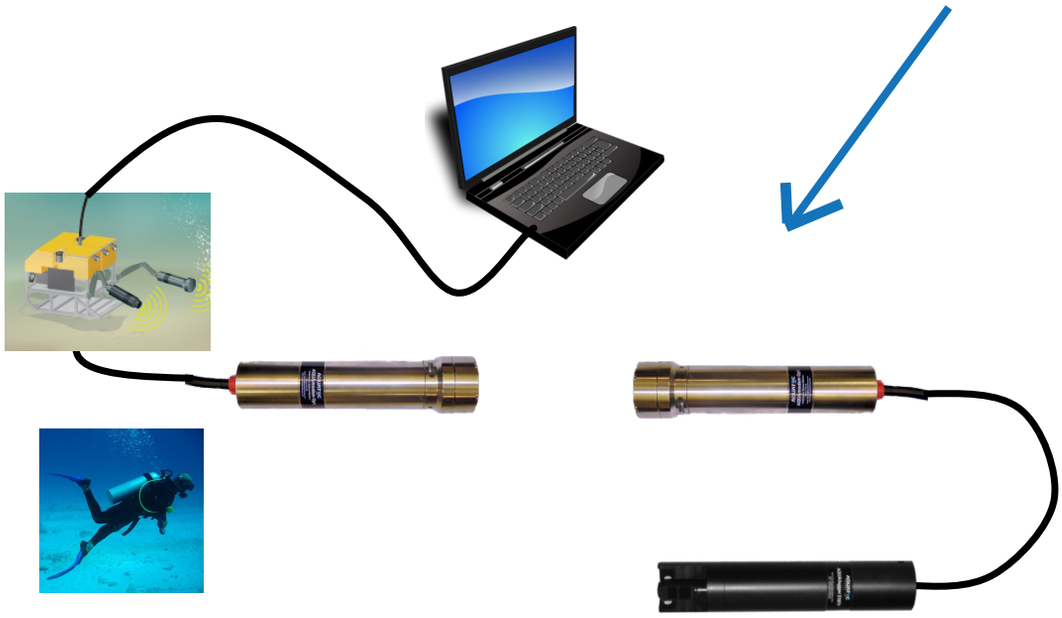


The AQUA*modem* Op2 optical link

The system

The AQUAmodem Op2 provides a seamless interface between a subsea instrument and a PC. Using the optical modems allows you to communicate with the instrument as if you had a cabled connection in the office.





A subsea modem is connected to the subsea instrument prior to deployment.

The second modem is connected to a surface PC via an ROV umbilical or cabled and held by a diver.

The two modems are held a maximum of 1 metre apart and a data link is established when a serial message is received. The instrument can then be interrogated or re-programmed and data downloaded using the PC.

Benefits

There are 4 main reasons to access an instrument and data subsea:

1. Check your instruments are working

Connecting to the instrument using an optical modem means you can check the set up before they are left on deployment.

2. Change the settings

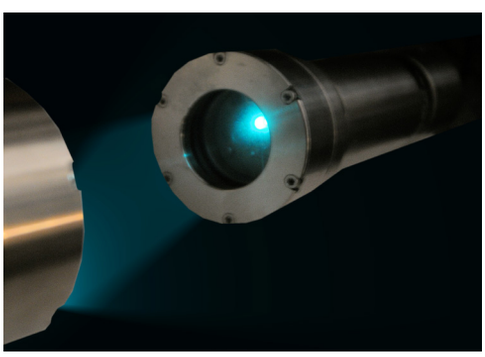
If you discover the instruments are not set up correctly when you do a status check (above), connection with an optical modem means you can change the settings subsea without having recover the kit.

3. Access your data subsea

After deployment or during a service visit, data can be downloaded and real time data viewed if the instrument is set up in this way.

4. Reprogramme your instrument

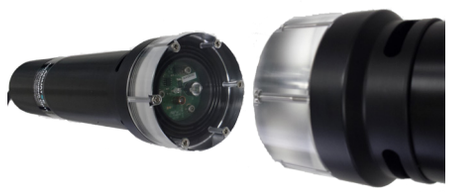
After accessing the data subsea, the sampling regime can be changed based on data gathered so far to refine the experiment, explore certain phenomenon further, or improve resolution.



Using the AQUA*modem* Op2

Models

The AQUA*modem* Op2 is available in 2 models - a standard model rated to 3500 m and a lite model rated to 500 m. The only difference between the two models is the depth rating - the functionality is identical. The standard model is suitable for inspection and work class ROVs due to the robust nature of the housing. The lite model is nearly neutrally buoyant in water, and is therefore suitable for much smaller ROVs and divers. Due to the identical functionality, the models are interchangeable. For example, you could use a standard ROV unit with a lite subsea unit.



Unit addressing

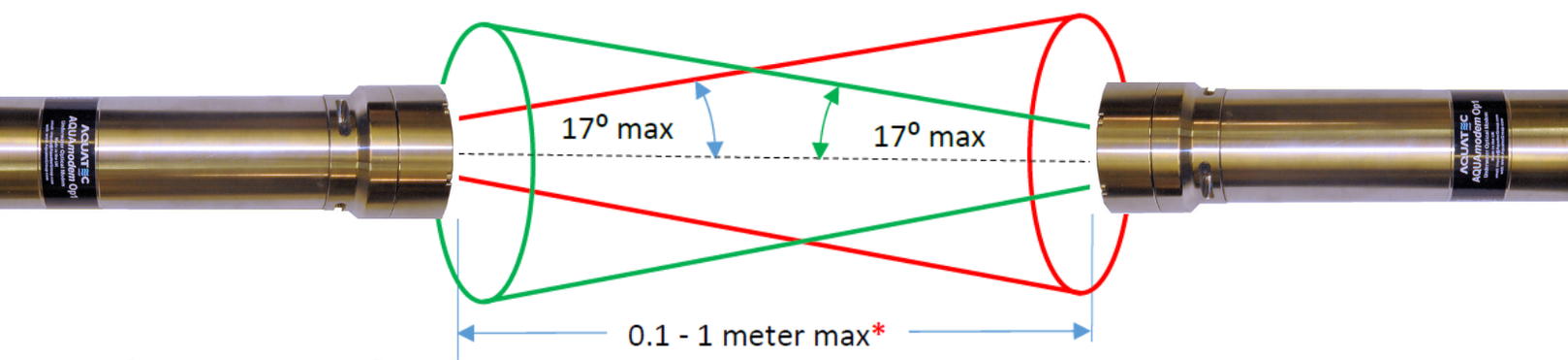
ROV modems can be set up in one of 2 ways: individual or universal addressing. In universal mode, the ROV modem can talk to any subsea modem. This is useful if you have one ROV interrogating many geographically separate subsea modems. Individual addressing is beneficial if you have many subsea modems closely located and only want to communicate with one. This is a user-changeable option.

Activation

The ROV side modem will wake up and start transmitting when it receives serial input from the PC. The subsea logger will not do this and instead wakes up when it detects a light pulse from the ROV side modem.

Alignment

The two modems do not need to be perfectly aligned to communicate effectively.



Selecting your modem

Instruments

Standard optical modem

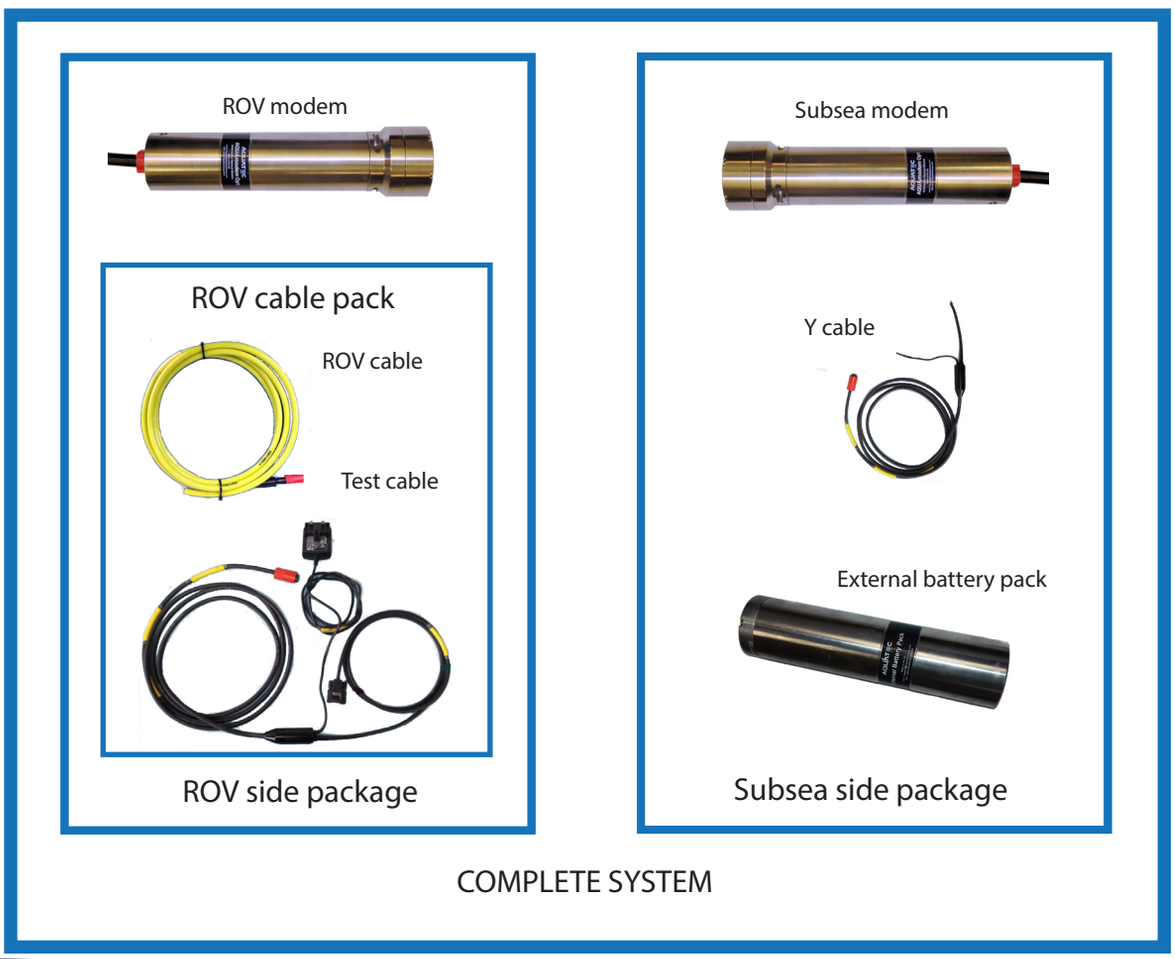
AQUA*modem* Op2
3500 m rated

Lite optical modem

AQUA*modem* Op2L
500 m rated

Build a system

The optical links are available as a complete system, ROV or subsea side packages, or component parts:



AQUA*modem* Op2 specification

Technical specification - standard modem (Op2)

Environmental	Operating Depth	3500 m
	Temperature	Operating: -5°C to 40°C Storage: -40°C to 65°C
Telemetry	Light band	Cyan visible light
	Operating Range	Typically 1 m depending on environment
	Transmission type	Digitally coded telemetry with error detection
	Typical Maximum Data Throughput*	10.2 kBytes/s
	Addressing	Up to 3 unique addresses, plus a universal / broadcast address
Mechanical	Dimensions	285 mm long by 72 mm max diameter; main housing diameter 60 mm
	Weight	4 kg in air, 3 kg in water
	Material	Stainless Steel 316 with Perspex window
Power	External Power	ROV unit 9 – 36 Vdc Subsea unit 6.5 - 32 Vdc
Wake up	Serial Wake Up	On receipt of RS232 serial data for subsea unit Optional on receipt of RS232 serial data for ROV unit
	Optical Wake Up	On receipt of optical interrogation
Interface	Electrical	RS232 levels
	Protocol	Any format – transparent link (link deals with communication protocol)
	Baud rate	115200 baud

Technical specification - lite modem (Op2L)

Environmental	Operating Depth	500 m
	Temperature	Operating: -5°C to 40°C Storage: -40°C to 65°C
Telemetry	Light band	Cyan visible light
	Operating Range	Typically 1 m depending on environment
	Transmission type	Digitally coded telemetry with error detection
	Typical Maximum Data Throughput*	10.2 kBytes/s
	Addressing	Up to 3 unique addresses, plus a universal / broadcast address
Mechanical	Dimensions	285 mm long by 72 mm max diameter; main housing diameter 60 mm
	Weight	~1 kg in air, ~0 kg in water
	Material	Acetal with Perspex window
Power	External Power	ROV unit 9 – 36 Vdc Subsea unit 6.5 - 32 Vdc
Wake up	Serial Wake Up	On receipt of RS232 serial data for subsea unit Optional on receipt of RS232 serial data for ROV unit
	Optical Wake Up	On receipt of optical interrogation
Interface	Electrical	RS232 levels
	Protocol	Any format – transparent link (link deals with communication protocol)
	Baud rate	115200 baud

* Measured by transmitting packets of 2000 bytes, sending a packet every 250 ms. An average of 100 transmissions was used to calculate the speed.

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