

# SWT AquaLink UWOC Modem AquaLink 405



**SWT PhotonLink Optical Communication Modem provides subsea wireless optical communications with data rates from 5 to 70 Mbps and communication ranges up to 80 m, with longer range optimization available for deep and clear water applications. Designed for easy alignment and wide angle optical transmission, PhotonLink enables a range of subsea application options including high speed wireless data recovery, underwater telemetry, AUV and ROV data exchange, and tether free subsea vehicle control.**

The system is designed for medium to low turbidity water conditions and high ambient light operations. It uses a near UV optical transmission band of 395 to 405 nm together with a near UV band pass optical filter to suppress visible light interference and improve communication performance in environments with strong ambient light or operating lights from subsea vehicles.

SWT PhotonLink uses a high power optical transmitter with up to 20 W radiated light output and a wide angle optical design with up to 180° omnidirectional transmitting and receiving capability, reducing alignment difficulty during underwater operation. Highly sensitive receivers detect weak optical signals and decode the data for the user through a Gigabit Ethernet interface, which is also compatible with 100 Mbps and 10 Mbps Ethernet connections.

The system provides a bi directional high speed, low latency communication link supporting TCP/IP based network protocols. It uses Time Division Multiple Access, TDMA, with adaptive bandwidth allocation between both directions, making it suitable for applications where large volumes of data need to be transferred primarily in one direction while still maintaining two way communication.

SWT PhotonLink is available with a working depth of up to 4,500 m, with optional configurations for deeper water applications. The standard system uses 24 to 36 V DC power input, titanium housing, and a 13 pin underwater connector. Typical receiver and emitter dimensions are approximately 300 × 130 mm and 190 × 130 mm, respectively. The receiver weighs approximately 7.1 kg in air and 3.0 kg in water, while the emitter weighs approximately 3.4 kg in air and 2.2 kg in water. The system is suitable for AUV and ROV data recovery, wireless telemetry, subsea equipment communication, and operations where vehicle lights or high ambient light may affect conventional optical communication links.

## Key features

- Wide angle optical transmission  $\geq 60^\circ$
- Net data rate  $\geq 40$  Mbps
- Communication range  $\geq 15$  m
- Real time duplex transmission
- Up to 4,500 m depth operation

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Feature	PhotonLink Optical Communication Modem
Depth rating	Up to 4,500 m
Data rate	5–70 Mbps
Optical communication range	Up to 80 m
Communication mode	Bi-directional high-speed low-latency link; TCP/IP supported; TDMA with adaptive two-way bandwidth allocation
Suitable water / environment	Medium- to low-turbidity water; high ambient visible-light conditions
Anti-ambient-light design	Near-UV band-pass optical filter blocking visible light
Mechanical construction	Titanium
Connector	13-pin connector
Supply voltage	24–36 V DC
Communications interface	Gigabit Ethernet interface, compatible with 100 Mbps and 10 Mbps Ethernet
Network function	TCP/IP network protocol supported
<b>Receiver unit</b>	
Receive wavelength	Near-UV, band-pass filtered to block visible light
Receive angle	Up to 180° omni-directional
Receiver weight in air / water	7.1 / 3.0 kg
Power consumption	20 W
<b>Emitter unit</b>	
Optical transmit power	20 W radiated light
Optical wavelength options	395–405 nm, near-UV
Emitter beam shape	Up to 180° omni-directional
Emitter weight in air / water	3.4 / 2.2 kg
Power consumption	25 W
<b>Environmental and dimensions</b>	
Operating temperature	–5 to 40°C
Storage temperature	–30 to 40°C
Dimensions (length x diameter)	Receiver: 300 x 130 mm
	Emitter: 190 x 130 mm
Application scenarios	AUV/ROV data recovery, wireless telemetry, ROV/AUV remote control, high-ambient-light near-surface operation, operation with subsea vehicle lights on
Remarks	Transmission range in deep-sea conditions can be optimized up to 160 m