



# PRODUCT DATASHEET

## SUBNERO L12L SERIES MODEMS

Software-defined smart modems empowering long-distance connectivity



### KEY FEATURES

- ▶ Up to 8 kbps data rate in challenging conditions
- ▶ Up to 10 km communication range
- ▶ Deep sleep state with <1 mW power consumption
- ▶ Localization & ranging with 0.1 m precision
- ▶ Arbitrary waveform transmission and recordings
- ▶ Enhanced performance with additional receiving channels

### APPLICATIONS

- ▶ Long-range operations in shallow waters
- ▶ Communication and tracking of AUVs
- ▶ Coastal area networks
- ▶ Long term monitoring of subsea sensors and networks



#### HIGH PERFORMANCE

Achieve data rates of up to 8 kbps or over distances of more than 10 km, in the most demanding environments



#### SOFTWARE-DEFINED DESIGN

Unprecedented flexibility to allow in-field configuration to achieve application specific performance using UnetStack



#### BUILT-IN NETWORKING

Fully functional network stack for deploying large underwater networks



#### JANUS COMPATIBILITY

Fully compliant with NATO's JANUS standard, ensuring seamless interoperability with compatible third-party devices



#### AUVS & SENSORS

Enabling reliable remote control and monitoring of AUVs and subsea IoT sensors over extended communication ranges



#### OPTIONAL UPGRADES

A plethora of optional upgrades and accessories to suit your application's needs

# TECHNICAL SPECIFICATIONS

FEATURES	DETAILS
Modem	Subnero L12L Series Modem
Data rate	Up to 8 kbps (depending on channel conditions)
Operating range	More than 10 km (depending on channel conditions)
Ranging precision	0.1 m
Doppler resilience	±4 knots or better
Modulation (sw-defined)	PSK-OFDM, FH-BFSK
Forward error correction	LDPC, Convolution code
Bandwidth	7 kHz (9 - 16 kHz)
Software framework	UnetStack, <a href="http://www.unetstack.net">www.unetstack.net</a>
Software interface	Java, Groovy, Python, C, Javascript, Julia, web UI, JSON/TCP
Waveform player	Transmission and reception, passband and baseband
Hardware interface	Ethernet (10/100 Mbps), RS232, power
Power source	External power: 22-28 V DC (24 V DC recommended)
Power consumption	< 4 W (receive mode, nominal) < 45 W (transmit mode, avg.) < 1 mW (deep sleep mode)
Onboard storage	32 GB (upgradable to 1 TB)
Operating depth	300m (Aluminum)
Available editions	Silver
Available configurations	Standalone (SC), OEM (OC)
Dimensions	SC: ø 127 x 260 mm, OC: ø 100 x 132 mm
Weight (in air / water)	SC: 4.5 / 1.5 kg, OC: 0.8 kg / NA
Operating temperature	SC: 0 to 40 °C, OC: 0 to 70 °C (electronics) 0 to 40 °C (transducer)

Note: Export permits may be applicable

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