# Datasheet
# Micro-Ranger 2 Integrator



**Micro-Ranger 2 has been designed as a true one box battery powered USBL solution, small enough to be carried as hand luggage on commercial flights and mobilised at short notice.**

The Micro-Ranger 2 integrator kit comes equipped with Robotics Pack and an AvTrak 6 Nano is provided. This provides an ideal low cost, portable system for Autonomous Underwater Vehicle (AUV) development programmes. This system is suitable for AUV integrators and manufacturers alike.

Micro-Ranger 2 uses a positioning technique known as Ultra-Short BaseLine (USBL) to calculate the position of underwater targets. A transceiver at the surface transmits an acoustic signal to transponders attached to each of the targets you wish to track. Using the return signal from each transponder, Micro-Ranger 2 determines its range (distance), bearing (heading) and depth, displaying the results on a radar-style software display, all whilst simultaneously exchanging telemetry for command and control (C2).

If you're a first-time user of USBL technology, you'll find Micro-Ranger 2 robotics incredibly easy to use. Connect your laptop to the inbuilt Wi-Fi, then attach an AvTrak 6 Nano to each target you want to monitor and control. With the transceiver lowered into the water, you're ready to start communicating with up to 10 AvTrak 6 Nanos.

To deliver the best possible positioning performance and operator experience, Micro-Ranger 2 uses the same market-leading 6G® hardware and Wideband®2 digital acoustic technology you'll find in Sonardyne's family of deepwater USBL systems, but with significantly less cost and complexity.

Built around Sonardyne's Micro-Ranger Transceiver, the USBL system can be deployed from the quayside or a vessel and is optimised for tracking and command at all elevation angles.

Note: The PC is not included.

## Key Features

- One box tracking solution for AUVs, ROVs and instruments
- Wide input voltage range for powering + charging on the job
- Optimised for shallow water high elevation tracking
- Track and actuate Sonardyne releases
- Internal rechargeable battery with external on/off switch
- Industry standard IP68 external connectors
- Global database of sound velocity profiles for ease of use and accuracy
- Available as an integrator kit with Marine Robotics Pack for AUV communication
- Export license free

# Specifications
# Micro-Ranger 2 Integrator



| Feature | | Type 8241 - Micro-Ranger 2 Integrator |
|---|---|---|
| Dimensions | | 524 x 428 x 206 mm |
| Weight | | 13.5 kg |
| External Power + Charge | | 12/24 V dc, 115–230 V ac, 30 W maximum, 3.5 W typical |
| Internal Battery | | Li-Ion 33 Wh[1] |
| Battery Life | | >10 hours at 1 Hz ping rate |
| Connection Type | | Ethernet or Wi-Fi (DHCP) to PC |
| User Connection Ports[2] | | X1 RJ45 Ethernet port/X2 USB charging ports/RS232 via PC |
| Operating Temperature | | -15 to 45°C |
| Storage Temperature | | -20 to 45°C |
| IP rating | | IP67[3] |
| **Performance & Acoustics** | | |
| Accuracy[4] | Array | <3.5% of slant range 1DRMS |
| | System | <5% of slant range 1DRMS |
| Repeatability | | 0.3% of slant range 1DRMS |
| Range | | <995 m |
| Update Rate | | Up to 3 Hz |
| Beam Shape | | Omni-directional |
| Frequency | | 19–34 kHz |
| **Included in System Kit** | | |
| Software | | Micro-Ranger 2 Marine Robotics Pack |
| Transponder | | X1 AvTrak 6 Nano |
| Transceiver | | Micro-Ranger USBL Transceiver (MRT) USBL |
| Internal GNSS | | Single frequency GNSS |
| Cabling | | 10 m USBL cable/5 m GNSS cable |
| Charger | | Portable topside charger/AvTrak 6 Nano charger |
| Documentation | | Manual, quick start guide, integration videos |

[1] UN 38.3 certified with electronic disconnect for transport.
[2] Additional user connections possible to Micro-Ranger 2 software via UDP.
[3] IP67 when operating with a closed box.
[4] System accuracy includes internal Heading, Pitch, Roll and GNSS. Array accuracy excludes GNSS error and incorrect Heading, Pitch and Roll.