

Datasheet

Nano Transponder



The Wideband® Nano Transponder is specially designed for acoustic positioning of divers or small underwater vehicles. The small lightweight family of transponders allow for easy, unobtrusive attachment to a diver or vehicle.

Available in three variants: NFC, with connector (Cabled) and OEM; there is a Nano Transponder for every use case.

All variants are depth rated to 500 m and have an acoustic source level and beam shape that is designed to operate over a 995 m slant range under normal conditions. Three months battery life means they are suitable for long term deployments, marker beacons and for vehicle recovery.

A 500 m pressure sensor optimises acoustic performance at long horizontal ranges by constraining the depth measurement, making the nano perfect for Towed vehicle, AUV and Diver tracking.

The Nano Transponder family operates in the Medium Frequency (MF) band and is compatible with Sonardyne's Mini-Ranger 2 6G® Wideband USBL system.

The NFC Nano Transponder features a unique connector-less design that is recharged and programmed via the Nano Docking Station. The NFC technology allows full configuration of the Nano whilst maintaining its rugged "strap on and go" form factor.

The Cabled Nano Transponder features an industry standard Subconn connector allowing the Nano to be permanently powered and can also be used in Responder mode.

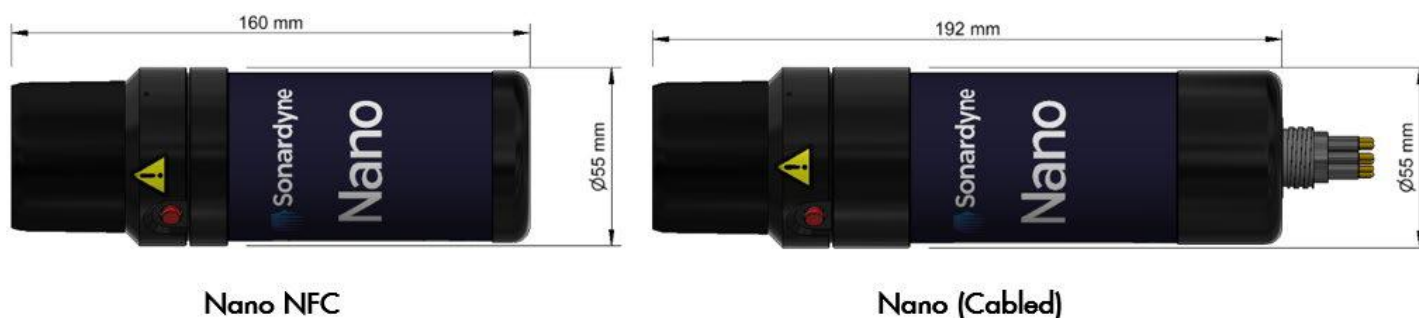
For vehicle programs and integrators, the Nano OEM when paired with an OEM transducer provides all the functionality of the housed transponders, in a form factor that can be mounted in any system.

Key features

- Miniature size for fitting on divers and small ROVs
- Variety of form factors
- Depth rated to 500 m
- Powerful acoustic transmission level
- Medium Frequency operation
- Compatible with Sonardyne Ranger 2 USBL systems
- Configuration using the Nano Docking Station wireless communications
- Battery disconnect storage mode
- Integrated pressure sensor for depth aiding
- >300 independent acoustic addresses
- Wide dc voltage input range
- Gainless for ease of use
- Common form factor with AvTrak 6 Nano so common transponders can be used across a fleet

Specifications

Nano Transponder



Feature	Type 8262 NFC	Type 8262 Cabled
Operating range	995 m ¹	995 m ¹
Depth rating	500 m	500 m
Operating frequency	MF (20–34 kHz)	MF (20–34 kHz)
Transducer beam shape	Omni-directional ±130°	Omni-directional ±130°
Source level (re 1 µPa @ 1 m)	184/175 dB	184/175 dB
Range precision	Better than 15 mm	Better than 15 mm
Communication interface	USB in dock	RS232, 3V3 TTL
Depth sensor	50 bar abs +/-0.7% FS	50 bar abs +/-0.7% FS
Power supply ²	USB dock	12–28 V dc
Power consumption	Wideband listening (battery)	n/a
	Wideband listening (ext. power) ³	n/a
	Battery charging	n/a
	Peak (during transmission)	n/a
Battery life	Quiescent listening	>90 days
	1 sec ping rate	>12 hours
Battery charge time	12 Hours ⁴	12 Hours
External connections	n/a	Subconn MCIL8M
Mechanical construction	Polymer	Polymer
Operating temperature ⁵	-10 to 45°C	-10 to 45°C
Storage temperature ⁶	-20 to 55°C	-20 to 55°C
Dimensions (length x diameter)	160 x 55 mm	192 x 55 mm
Weight in air/water	486/149 g	584/162 g

¹ When used with Micro-Ranger 2/range limited Ranger 2 systems.

² Noise on the external dc supply may have an effect on the acoustic performance of the instrument.

³ Includes top-up charging of the li-ion battery, which could be disabled, or managed intelligently for better efficiency

⁴ When using ac mains charger

⁵ The battery will not charge above 45°C or below 0°C.

⁶ To maximise battery life, the instrument should not be stored above 30°C.

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Wideband Sub-Mini 6+ (WSM 6+) Transponder/Responder



The Wideband® Sub-Mini 6+ (WSM 6+) is Sonardyne's latest generation of versatile Ultra-Short BaseLine (USBL) transponders/responders that support Wideband 2 signals. The WSM 6+ is designed for positioning Remotely Operated Vehicles (ROVs), towfish and other mobile targets in water depths up to 4,000 m.

The compact and rugged design is based on the field proven WSM mechanics and is available in Medium Frequency (MF) directional and MF omni-directional versions. The latest Sonardyne Wideband 2 signal technology has been incorporated, which offers superior ranging accuracy and fast USBL position updates.

The WSM 6+ improves on its predecessors by offering full two-way Wideband support – Interrogation and reply signals. All Wideband 2 and Wideband 2+ signals are supported. Legacy support is also available for Wideband 1 and HPR 400. The configuration is programmable using supplied software and a serial link or it can be configured acoustically via iWAND.

This allows the WSM 6+ to be configured for use with all of the popular MF frequency acoustic navigation systems.

The Type 8370-1111 WSM 6+ is equipped with an omni-directional transducer and is depth rated to 1,000 m making it suitable for a wide range of general USBL tracking applications.

The Type 8370-4112 WSM 6+ is a 4,000 m rated unit and features a higher power directional transducer.

Both types of WSM 6+ have a depth sensor fitted as standard to aid USBL positioning accuracy and an external on/off switch to save the battery when not in use.

WSM 6+ variants are available with acoustically controlled output lines suitable for external motor drive, burnwire or contact closure releases.

Typical applications

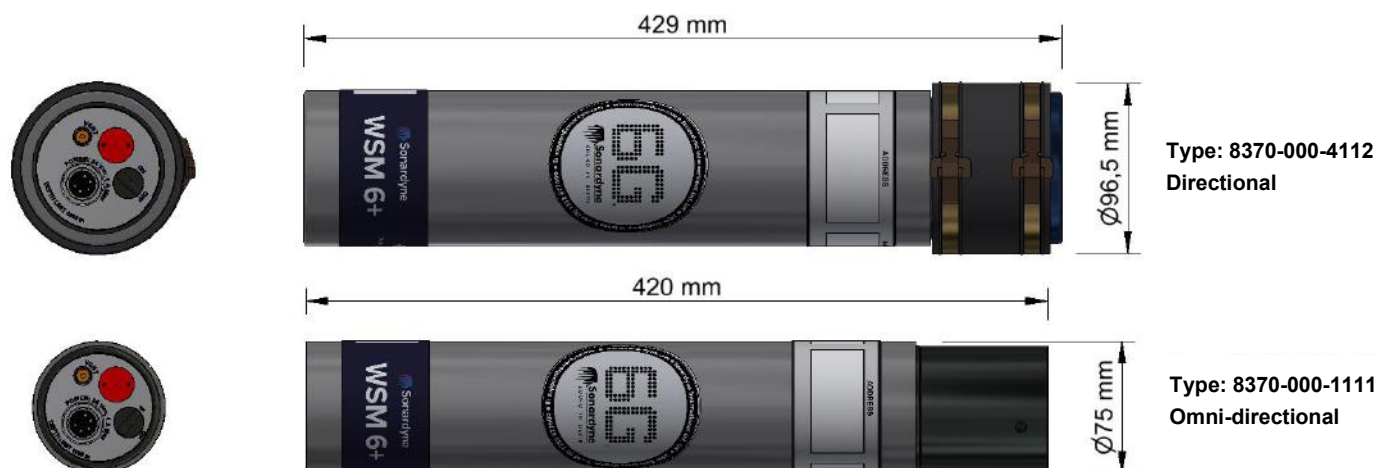
- Subsea vehicle tracking – ROV/towfish/crane wire
- Tether Management Systems (TMS)

Key features

- Full two-way Sonardyne Wideband 2 interrogation and reply – Mitigates interference and multi-path issues
- More than 500 unique Sonardyne Wideband 1 and 2 addresses
- Sonardyne Wideband 1 and HPR 400 navigation compatible
- Choice of 1,000 or 4,000 m depth rating
- Choice of omni-directional or directional beam-shape
- Transponder or responder operating modes
- Depth sensor for improved USBL positioning performance
- Rechargeable NiMH battery
- External on/off switch for saving battery when not in use
- Compact and rugged design
- Release variants available

Specifications

Wideband Sub-Mini 6+ (WSM 6+) Transponder/Responder



Feature		Type 8370-1111	Type 8370-4112
Depth rating		1,000 m	4,000 m
Operational frequency		MF (20–34 kHz)	MF (20–34 kHz)
Transceiver beam shape		Omni-directional	Directional
Transmit source level (dB re. 1 μ Pa @ 1 m)	External power	187 dB	196 dB
	Battery	184 dB	193 dB
Tone equivalent energy (TEE) ¹ (external power)		193 dB	202 dB
Receive sensitivity (dB re 1 μ Pa)		<85 dB	<80 dB
Power supply		Rechargeable NiMH battery or external. 24 V via ROV umbilical	
Operating channels		All Sonardyne Wideband HPR 400 channels	
Depth sensor		\pm 0.5% full scale (100 bar)	\pm 0.5% full scale (400 bar)
Operating life (1 s update rate, max. power, Wideband 2)		>6 days	>3 days
Update rate (maximum)		>2 Hz	>2 Hz
Quiescent life (battery)		>35 days	>35 days
Connector	5-way (standard)	Subconn MCBH5M	Subconn MCBH5M
	8-way (burnwire/motor release)	Subconn MCBH8F	Subconn MCBH8F
Operating temperature		-5 to 40°C	-5 to 40°C
Storage temperature		-20 to 55°C	-20 to 55°C
Mechanical construction		Anodised aluminium alloy	Anodised aluminium alloy
Dimensions (length x diameter)		420 x 75 mm	429 x 96.5 mm
Weight in air/water		3.2/1.3 kg	5.5/3.2 kg
Battery charger		8370-011-01	8370-011-01

¹ WBv2 & WBv1 signals are 2x the duration of Sonardyne tone signals, therefore the TEE figure gives the user an idea of the operational performance when comparing Wideband and tone systems.

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AvTrak 6 Nano Transceiver



The AvTrak 6 Nano Transceiver is a specially designed variant of the established AvTrak 6 for small underwater vehicles. It combines the functions of transponder, transceiver and telemetry link for intelligent subsea operations. It is available in OEM and Cabled form factors allowing for easy integration into many different platforms.

The integrated li-ion rechargeable battery has up to 3 months emergency standby life, allowing sufficient time to relocate and recover a lost vehicle or asset.

The AvTrak 6 Nano operates in the Medium Frequency (MF) band and is compatible with Sonardyne's Ranger 2 family of 6G® Wideband® USBL system and beacons. It supports the standard 6G command language, thereby simplifying development across the 6G instrument range.

The AvTrak 6 Nano supports Sonardyne's Messaging Service (SMS) telemetry and MODEM functionality, allowing it to command and communicate with multiple subsea assets.

As part of a 6G USBL system, the AvTrak 6 Nano supports high update rate position information via robotics pack in Ranger 2 USBL, where the prior position is communicated to the vehicle on each navigation cycle. This considerably reduces the position aiding latency.

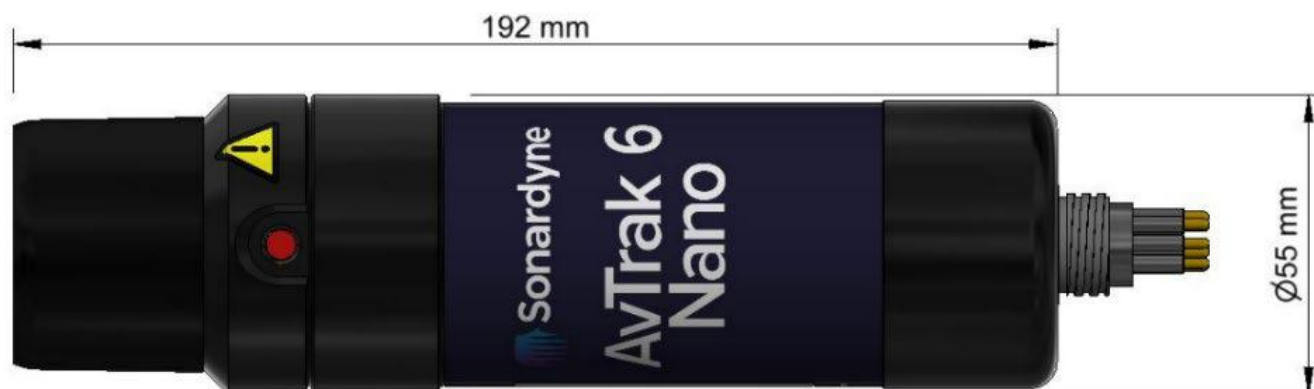
Common functionality with the established AvTrak 6 ensures that the AvTrak 6 family can be used across a range of vehicles and development programmes.

Key features

- Incorporates Sonardyne Wideband 2 acoustic navigation and telemetry technologies
- Full transceiver functionality for remote command and control.
- Standard 6G command language to allow easy migration from AvTrak 6 to AvTrak 6 Nano and vice versa
- Compatible with Sonardyne Ranger 2 USBL systems
- Supports AUV to AUV ranging and telemetry (transceiver mode)
- Emergency relocation mode
- Miniature size for fitting in small AUVs or ROVs
- Operating range approximately 3000 m
- Solid omni-directional transducer
- High update rate, low latency telemetry position aiding capability
- Full modem capability
- OEM version available

Specifications

AvTrak 6 Nano Transceiver



Feature		Type 8262 AvTrak 6 Nano
Operating range		>3,000 ¹ m
Depth rating		500 m
Operating frequency		MF 20–34 kHz
Transducer beam shape		Omni-directional ±130°
Source level (re 1 µPa @ 1 m)	Modem	175 dB
	Tracking and telemetry ²	184/175 dB
Range precision		Better than 15 mm
Communication interface		RS232, 3V3 TTL
Depth sensor		50 bar abs +/-0.7% FS
Power supply ³		12–28 V dc
Power consumption	Wideband listening (battery)	5 mW
	Wideband listening (ext. power) ⁴	20 mW (including trickle charge)
	Battery charging	60 mW to 2.5 W (depending on battery charge state)
	Peak (during transmission)	<30 W SMS, <20 W modem
Battery life	Quiescent listening	>90 days
	1 sec ping rate	>12 hours
Battery charge time		12 hours
External connections		Subconn MCIL8M
Mechanical construction		Polymer
Operating temperature ⁵		-10 to 45°C
Storage temperature ⁶		-20 to 55°C
Dimensions (length x diameter)		192 x 55 mm
Weight in air/water		584/162 g

¹ Range dependent on environment.

² Configurable.

³ Noise on the external dc supply may have an effect on the acoustic performance of the instrument.

⁴ Includes top-up charging of the li-ion battery, which could be disabled, or managed intelligently for better efficiency.

⁵ The battery will not charge above 45°C.

⁶ To maximise battery life, the instrument should not be stored above 30°C.