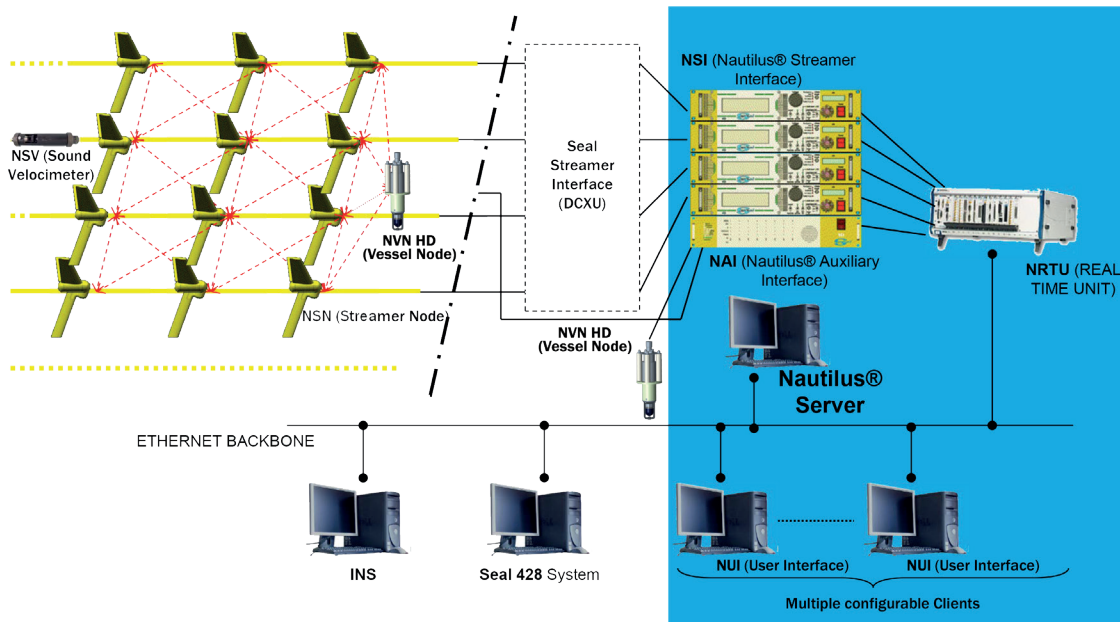# Nautilus®

General

Integrated acoustic range measurement and streamer control system designed for full-bracing acoustic operation and depth and steering control of streamers.

ACOUSTIC	
Central frequency	65 kHz
Frequency bandwidth	20 kHz
Number of channels	8
Maximum Acoustic Range	1000 m
Range Resolution	15 µs (22 mm @ 1500 m/s)
System Accuracy	66 µs (99 mm @ 1500 m/s)
Max number of ranges per cycle time and per node	16 (NSN)
Max number of received channels per node	3
Max number of nodes per streamer	49
Max number of streamers	16
Telemetry data rate	57600 bauds

		Best Cycle Time (ms)	Nb Ranges
12 x 8 km	max.	10190	3744
	typ.	6896	2696
16 x 8 km	max.	10573	5164
	typ.	7279	3652

SERCEL

Shipboard Equipment

NAUTILUS® SERVER	
Function	Workstation running the server application: • Interface to navigation system • Formatting of acquired positioning measurements • Status and control interface to NUI
Workstation	PC 19" rackable
Operating System	Linux Red Hat

NAUTILUS® USER INTERFACE (NUI)	
Function	Set of client user interface applications that can be run locally or remotely and interact with Nautilus® server application to fully control operations of Nautilus® system. Several clients can be connected to a server
Station	PC desktop, local or remote
Operating System	Windows, Linux

NAUTILUS® REAL TIME UNIT (NRTU)	
Function	Hardware used to generate real time commands for Nautilus® in sea equipment
Workstation	Real Time Embedded Controller PXI PC
Operating System	LabView RT

NAUTILUS® STREAMER INTERFACE (NSI)	
Rackable equipment used to interface the NRTU to the streamers. It has the following functions:	• Generation and control of high voltage power supply for in-sea equipments (local and remote operations) • Telemetry conversion
Nominal Voltage	Up to 600 VDC (+/- 300 VDC compared to ground)
Maximum current	2.50 A @ 600 VDC
Safety Features	• Overload protection • Overthermal detection • Remote emergency switch off and flashing light warning • Leakage fault detection

NAUTILUS® AUXILIARY INTERFACE (NAI)	
Rackable equipment used to interface the NRTU auxiliary acoustics. It has the following functions	• Generation and control of low voltage power supply for Vessel hull (NVN HD) and impulsive source (NGN) acoustics (Up to 8 nodes) • Telemetry conversion
Nominal Voltage	48 VDC
Maximum Power	20 W per node (NVN HD or NGN)
Safety features	Overload detection and protection

| STORAGE AND OPERATING CONDITIONS (SHIPBOARD)	
Operating temperature	+5°C to +40°C (41° to 104°F)
Storage temperature	−15°C to +55°C (5° to 131°F)
Operating humidity	10 to 90% relative humidity, non-condensing
Storage humidity	5 to 95% relative humidity Sercel recommends storing the NSI in dry conditions for about 24 hours before power on

In-Sea Equipment

NAUTILUS® STREAMER NODE (NSN)

In line electronics streamer-powered canister with easy connect/disconnect leveling and steering wings. Supplied with protective jacket, float as option.

|	
Functions	• Acoustic range measurement • Combined depth and steering control • Telemetry redundancy • Power redundancy, built-in rechargeable battery Exist in 50 or 70 mm diameter connector size
Autonomy (when disconnected from main power)	10 hours, Typ. [1]
Depth Sensor Accuracy	± 0.3 m
Tx Acoustic Power	181 dBa ref 1 µPa @ 1m
Operating Depth	60 m
Survival Depth of wings	100 m
Survival Depth of module	300 m
Operating Temperature	-10°C to +50°C
Storage Temperature	-35°C to +60°C
Physical specifications	
Module dimensions (L x OD)	396.4 mm x 100 mm (NSN50); 439.6 x 100 mm (NSN70)
Wings Assembly Dimensions (L x W x H)	582 mm x 850 mm x 1170 mm
Module Weight in air	4.3 kg (NSN50) ; 5 kg (NSN70)
Module Weight in fresh water	2.3 kg (NSN50) ; 2.7 kg (NSN70)
Wings Assembly Weight in air	13.1 kg (± 10%)
Wings Assembly HD Weight in air	15 kg (± 10%)
Overall Weight in sea water	3.3 kg (± 20%)
Maximum lift force	400 N @ 6 knots
Maximum generated drag	100 N @ 6 knots

(1) Considering a fully loaded battery and depth control only

NSN50

NSN70
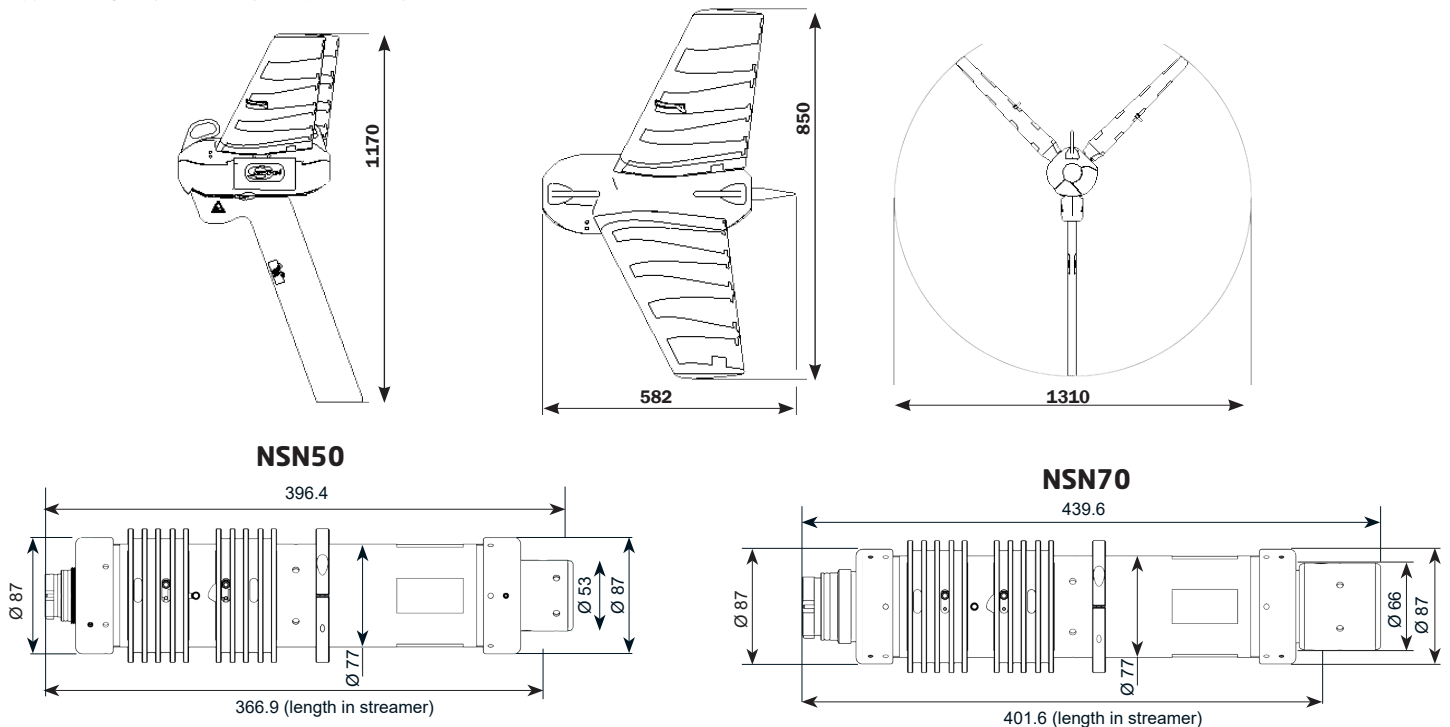
NAUTILUS® VESSEL NODE (NVN HD)

Acoustic transceiver designed to be mounted on the vessel hull, head buoy or tail buoy.
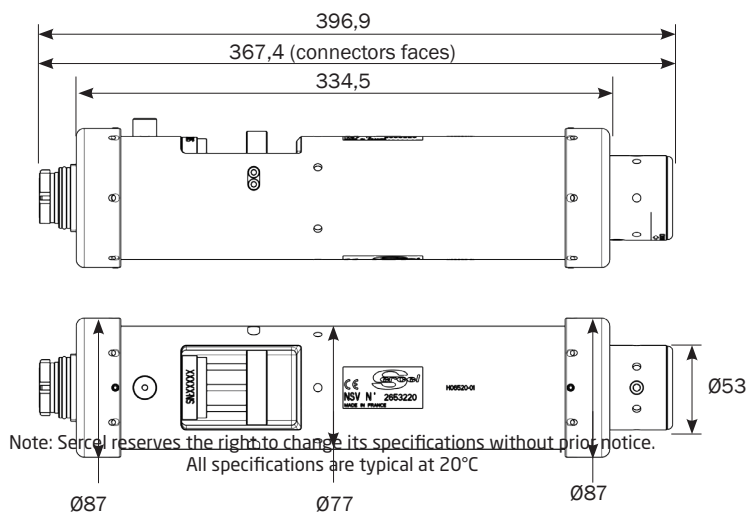
Functions	• Acoustic range measurement • Telemetry and power-supply through NAI (hull-mounted and head buoy NVN HD) or NSI (tail buoy NVN HD)
Nominal Voltage	48V
Max Power	14W @48V
Tx Acoustic Power	191 dB ref 1 µPa @ 1m
Operating Depth	20 m
Survival Depth	40 m
Operating Temperature	-10℃ to +50℃
Storage Temperature	-35℃ to +60℃
Physical specifications	
Weight in air	9.0 kg (± 2%)
Weight in seawater	6.6 kg (± 2%)
Dimensions (L x W x H)	460 mm x 150 mm
Interface	AG connector, AGM-1604-M - 1.4462 DUPLEX • 1 telemetry pair • 1 power supply pair,

Ø 150

4 Mounting Holes Ø12,2mm
equaly spaced on Ø125mm

460

Ø 82
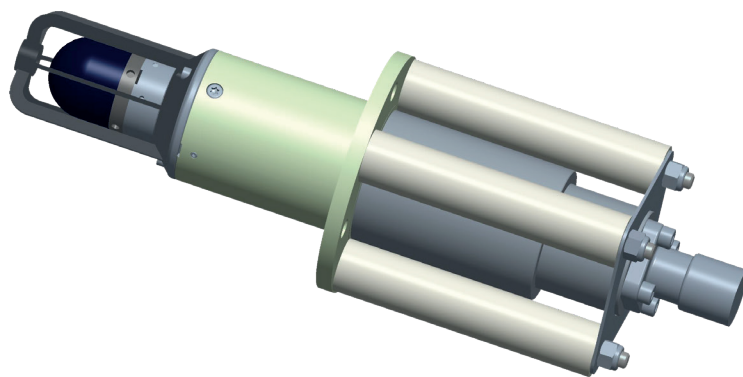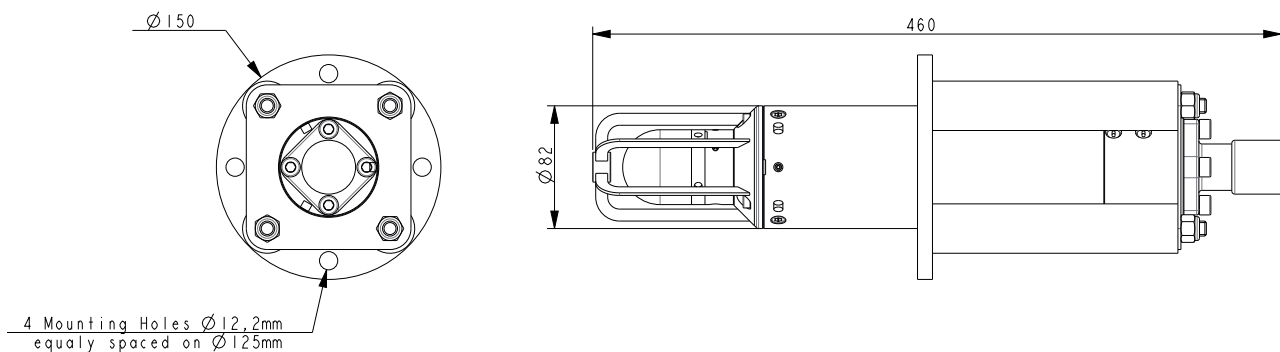
NAUTILUS® SOUND VELOCIMETER (NSV)

In line streamer-powered canister. Supplied with protective jacket and float.

Functions	• Speed of sound measurement • Telemetry and power redundancy through NSI
Autonomy (when disconnected from main power)	10 hours, Typ.
Speed of Sound	
Measurement range	1400.0 to 1550.0 m/s
Resolution	0.1 m/s
Accuracy (RMS)	0.5 m/s
Operating environment	
Storage temperature	-35°C to +60°C
Operating temperature	-10°C to +50°C
Operating depth	60 m
Survival depth	300 m
Physical Characteristics	
Length	396.9 mm
Diameter	87 mm
Length with float	510 mm
Diameter with float	155 mm
Weight with float	6 kg (± 5%) in air -1.1 kg (± 10%) in seawater

Note: Sercel reserves the right to change its specifications without prior notice.
All specifications are typical at 20°C