



A3000 Acquisition Specification

General

Operational time between charge	100 days @ 2 ms
Maximum deployment depth	3000 m
Operating temperature range	-10 to +55 °C

Data acquisition 1)

Number of channels	4
ADC resolution	24 bit
Sample interval	0.5, 1, 2 and 4 ms
Pre-amplifier gain, adjustable	0 to 36 dB in steps of 6 dB
Gain Relative uncertainty	0.5 %
Recording bandwidth (-3dB)	DC – 0.413 x f_{DATA}
Anti-aliasing filter	206.5 Hz (82.6 % of Nyquist) @ 2ms 2) Sinc+FIR, Linear phase
High pass filter	Programmable 0.1 – 10 Hz, or disabled
High pass filter roll off	6 dB/octave
Maximum input signal	± 2500 mV @ 0 dB ± 625 mV @ 12 dB ± 156 mV @ 24 dB ± 39 mV @ 36 dB
Equivalent Input Noise	0.87 μ Vrms @ 0 dB 0.31 μ Vrms @ 12 db 0.21 μ Vrms @ 24 dB 0.20 μ Vrms @ 36 dB
Dynamic Range @ 0dB gain	125 dB
Total harmonic distortion (THD)	< -119 dB @ 0dB gain
Crossfeed	>120 dB (>80dB hydrophone channel)
Common mode rejection ratio (CMRR)	> 90 dB (all channels)

Self-test, diagnostic, and calibration

Impedance test	Yes
Geophone impulse test	Yes
Internal noise (preamp input terminated)	Yes
Internal gain accuracy	Yes
Internal total harmonic distortion (THD)	Yes
Channel separation (Crossfeed)	Yes
Common-mode rejection ratio (CMRR)	Yes
Automatic gain and offset calibration	Yes
Clock stability	Yes

Transponder (Optional)

Type (integrated design)	Sonardyne / Kongsberg 26Khz
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Geophone

Type	ION SM-6 Omnidirectional
Number of Geophones	3
Configuration	Orthogonal
Resonance frequency	14 Hz
Sensitivity	28.8 V/m/s
Damping	0.7
Sensitivity after damping	15.6 V/m/s

Hydrophone

Frequency response (-3dB)	3 Hz – 30 kHz
Sensitivity	- 201 dB re: 1V/ μ Pa (8.9V/bar)
Equivalent Input self noise (1-1000Hz)	78 dB re: 1 μ Pa, (0.08 μ Bar)
Spectral:	54 dB re: 1 μ Pa/ \sqrt Hz @ 10 Hz
	42 dB re: 1 μ Pa/ \sqrt Hz @ 100 Hz
	42 dB re: 1 μ Pa/ \sqrt Hz @ 1000 H

Tilt Sensor

Type	3-axis MEMS inclinometer
Range X and Y (Roll and Pitch)	± 90 °
Relative uncertainty	± 1 °

Magnetometer (azimuth angle)

Range	0 - 360 °
Relative uncertainty	± 5 ° (< ±55 ° from Equator)

Internal Powersupply and Charger

Charger operating voltage range	36–72 VDC
Charger insulation voltage, input/output	1500 VDC
Recharge time to 80% SOC	16 h
Charging temperature range	+4°C – 40°C

Battery and Battery Management System

Chemistry	Li-Ion
BMS	Fuel gauging, diagnostic and protection
Certification	UN38.3

Precision clock

Clock type	Microsemi CSAC
Synchronization	inApril's fast sync solution
Typical error after 30 days	< ± 200us uncorrected
Typical error after 100 days	< ± 1.0 ms (corrected, post-acquisition)

Data capture memory

Type	Embedded managed NAND flash
Storage capacity total	128 GByte

Communication link; data capture and diagnostic

Ethernet over copper	100 base-TX
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Mechanical specification

Position of normal use	±180°
Weight	21 kg (9.5kg in seawater)
Dimensions	330mm(L) x 289mm(w) x 115/143mm(h)

Notes

- @ 2ms sampling interval, 25°C, 31.25 Hz, internal test, unless otherwise noted.
 - Recording bandwidth = 0.413 x f_{DATA}
- f_{DATA} = sampling frequency = 1/SampleInterval (Hz)