A3000 Acquisition Specification

General

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

Data acquisition *

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 **
	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 ***	0.95 µVrms @ 0 dB ****
	0.31 µVrms @ 12 dB
	0.21 µVrms @ 24 dB
	0.20 µVrms @ 36 dB
Dynamic Range @ 0dB gain	125 dB Geophone, 120 dB Hydrophone
Total harmonic distortion (THD)	< -100 dB Geophone @ 0 dB gain
	< -119 dB Hydrophone @ 0 dB gain
Crossfeed	>120 dB
Common mode rejection ratio (CMRR)	> 90 dB (Geophone)
	> 88 dB (Hydrophone)

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

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/µPa (8.9V/bar)
Equivalent Input self noise (1-1000Hz)	78 dB re: 1µPa, (0.08µBar)
Spectral	54 dB re: 1µPa/√Hz @ 10 Hz
	42 dB re: 1µPa/√Hz @ 100 Hz
	42 dB re: 1µPa/√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 Power supply 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 (Optional: OCXO)
Time drift correction	inApril's proprietary solution
Typical error (corrected, post-acquisition)	< ± 1.0 ms after 100 days (CSAC)
	< ± 1.0 ms after 70 days (OCXO)

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

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)

*** for geophone channel, and hydrophone channel above 10 Hz

**** 1.2 µVrms @ 0 dB for frequency above low cut

inApril Seabed Seismic Solutions

Tærudgata 1, 2004 Lillestrøm, Norway
phone: +47 2230 3000, mail: post@inapril.com

www.inapril.com