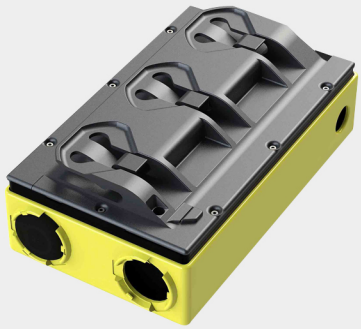

A400 Node (Preliminary)

General

Operational time between charge	55 days @ 0.5 ms
Maximum deployment depth	400 m
Operating temperature range	-10 to +55 °C

Data acquisition 1)

Number of channels	4
ADC resolution	24 bit (34 bit optional)
Sample interval	0.25, 0.5, 1 and 2 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 µVrms @ 0 dB 0.31 µVrms @ 12 db 0.21 µVrms @ 24 dB 0.20 µVrms @ 36 dB
Dynamic Range @ 0dB gain	125 dB
Total harmonic distortion (THD)	< -119 dB @ 0 dB
Crossfeed	> 90 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

Geophone

Type	Omnidirectional
Number of Geophones	3
Configuration	Orthogonal
Resonance frequency	14 Hz
Sensitivity	80.0 V/m/s
Resonance frequency	14 Hz
Damping	0.7
Sensitivity after damping	15 .6 V/m/ s
Sensitivity after damping	39,42 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 @ 100 Hz

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	8 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 / inApril's OCXO
Corrections	inApril's patented
Typical error after 30 days	< ± 200us uncorrected
Typical error after 50 days	< ± 100 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

Mechanical specification

Weight (air / water)	12,7 kg (6,1kg in seawater)
Dimensions	350mm(L) x 207mm(w) x 85/113mm(h)

Notes

1) @ 2ms sampling interval, 25°C, 31.25 Hz, internal test, unless otherwise noted.

2) Recording bandwidth = 0,413 x f_{DATA}

f_{DATA}= sampling frequency =1/SampleInterval (Hz)

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