

## IES MODEL 6.2C SPECIFICATIONS

### General

measured parameters	acoustic travel time; bottom pressure & temperature (optional)
data storage	type ATA compact flash card
data capacity	128 Mbytes (opt. to 1 Gbytes) - removable memory card
data playback	memory card adapts to type ATA card reader - or RS-232 download
data format	MS-DOS file formats - data in physical units
communications	RS-232, fixed at 9600 baud, 8 bits, 1 stop, no parity
measurement rate	menu-selectable burst-sampling at 10 minutes to 1 hour interval
battery capacity/life	120 Amp-hr standard; optional 180, 210, 240 A-hr Lithium batt. pack (2-5 year life - depends on water depth, options and sampling rate)

### Acoustic Travel Time

pings/measurement	24 pings/hour, in programmable bursts of 4, 8, 12, or 24 pings each
ping interval	alternating 16 & 18 seconds to avoid aliasing by surface waves
ping duration	6 ms
ping frequency	12.0 kHz (for reception on standard shipboard depth recorders)
operating depth	500 to 6700 m
acoustic transducer	custom transducer with conical radiation beam ( $\pm 45^\circ$ )
bandwidth (-3dB)	150 Hz centered at 12 kHz
acoustic output power (standard)	firmware-adjusted for depth: 170 - 197 dB re $1\mu\text{Pa}$ - check, may change
echo detection	hard-limiting receiver followed by broad & narrow band filters (150 Hz)
echo time resolution	0.06 ms each ping
measurement "noise"	(std deviation of 24-ping sample) typically $< 2.2$ ms in 4500 m @ 25-kt wind; bigger in rain $\sim 3.5$ ms
acoustic telemetry	for 24 pings per hour the uncertainty of first quartile $\sim \frac{2.2}{\sqrt{24}} = 0.45$ ms pulse delay telemetry (PDT) of average travel time after each measurement burst

### Reference Oscillator

crystal	Bliley Model BK2W-4MHz Frequency tolerance: 1.5 ppm (prior to temperature compensation) Aging: 2 ppb/month after 30 days operation
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### Temperature (of reference oscillator)

sensor	Sensirion Model SHT75
accuracy	$\pm 0.4^\circ\text{C}$ (0 to $25^\circ\text{C}$ )

### Temperature (of pressure sensor-option)

sensor	Paroscientific Digi quartz, temperature included in Pressure option
FS range	0 - $125^\circ\text{C}$
resolution	1 millidegree

### Pressure (option)

sensor	Paroscientific Digi quartz model 410K (optionally model 46K)
FS range (standard)	410K = 10000 psi (6000 dbar)
FS range (options)	46K = 6000 psi (4000 dbar)
resolution	0.001 dbar (1mm H <sub>2</sub> O) for 4000 dbar sensor (1 part in $4 \times 10^6$ )
absolute accuracy	$\pm 0.01\%$ FS
drift	typically 4 ppm/month
temperature compensation	coefficients provided with each sensor

### Power System

system battery	Lithium DD cells, up to 8 parallel stacks of 2 cells; max configuration: 240 Amp-hr @ 7.2 Vdc
release battery	Lithium DD cells, 2 stacks of 4 cells; 60 Amp-hr @ 14.4Vdc
operating capacity	2 - 5 years - depends on measurement schedule, options added, water depth and telemetry options used
safety	parallel diodes on cells ensure series battery stack integrity, series diodes on each stack isolate stacks from each other

### Intelligence

processor	Persistor <sup>TM</sup> CF1 with Motorola <sup>TM</sup> MC68CK338 microprocessor
crash protection	Independent system and release functions; "deadman" watchdog timer; low battery detection stops all except release functions

### Mechanical

weight in air	38 kgs(84 lbs) with full (240 Amp-hr) lithium battery pack 36 kgs (80 lbs) with 180 Amp-hr lithium battery pack 34 kgs (76 lbs) with 120 Amp-hr lithium battery pack
buoyancy	10 kgs(22lbs) with 240 Amp-hr lithium battery pack 16 kgs (36 lbs) with 180 Amp-hr lithium battery pack 18 kgs (40 lbs) with 120 Amp-hr lithium battery pack
shipping container	HAZMAT sealed polyethelene barrel (80cm diam. x 100cm high)
total shipping weight	67.5 kgs (149 lbs - with largest battery pack)