



*Rackmount  
high power  
system for  
Full Ocean  
Depth Survey*

 *Open your Windows<sup>®</sup> to Survey!*

- ▶ 3.5 and 12 kHz dual frequency
- ▶ Built-in digitizers
- ▶ Correlation processing
- ▶ High power 5 or 10 KW main transmitter and 2 KW second transmitter with efficient switchmode operation
- ▶ Windows<sup>®</sup> interface/data display (optional control panel available)
- ▶ Standard interface to all modern survey tools including: GPS, data loggers, and heave sensors
- ▶ SCSI plus 4 serial ports
- ▶ Supplied with transducer or easy interface to installed transducers



*Shown installed in an optional rackmount case  
with a Pentium computer*

## Technical Specifications (subject to change without notice):

### Main Ranges:

Metres, Feet	10
Or Fathoms	20
	50
	100
	200
	500
	1,000
	2,000
	5,000

**Phased Ranges:** Multiple 50% overlapped phases of each range (20% overlap optional), manual or automatic selection.

**Frequencies:** 3.5 kHz and 12 kHz. Higher frequencies to 250 kHz available on request

**Power:** 4 to 8 selectable levels for each frequency.  
LF to 5 or 10 KW, HF to 2 KW.

**Resolution:** 1 cm (0-99.99), 1 dm (100-999.9), 1 m (>1000)  
1/100 ft (0-99.99), 1/10 ft (100-999.9), 1 ft (>1000)  
1/100 fm (0-99.99), 1/10 fm (100-999.9), 1 fm (>1000)

**Sound Velocity:** 1300 - 1700 m/s Resolution: 1 m/s  
4265 - 5577 ft/s Resolution: 1 ft/s  
710 - 929 fm/s Resolution: 1 fm/s

**Clock:** Internal battery backed time and date clock.

**Draft:** 0 - 100 m, in 1 cm steps.

**Pulse Length:** Automatically selected, with operator override.

**Gain Controls:** AGC, TVG plus manual receive gain for each frequency.

**TX Blanking:** 0 - 300 m. Resolution: 0.1 m  
0 - 984.3 ft. Resolution: 0.1 ft  
0 - 164.0 fm Resolution: 0.1 fm

**Serial Ports:** Four RS 232 ports, 300-38,400 baud, optional RS 422.

**SCSI Port:** Standard.

**Heave:** TSS and Seatex compatible.

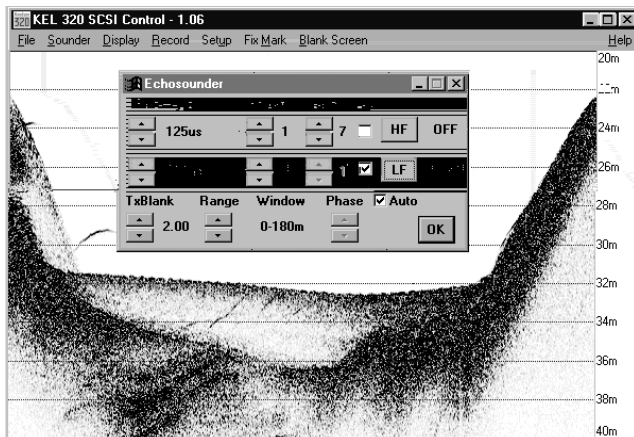
**Position:** Compatible with all popular GPS receivers.

**Power Supply:** Universal input, 95 to 240 VAC

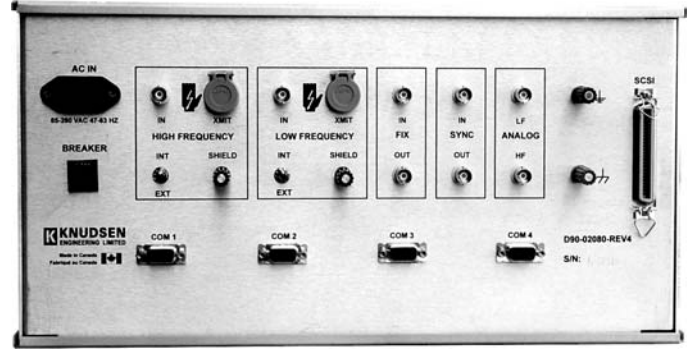
**Dimensions:** Standard 5U 19" rackmount, 19" deep

**Weight:** Approximately 25 kg. depending on configuration. Shipping weight 43 kg.

**Units:** Metres, feet, fathoms



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### Host Software:

MS Windows compatible.  
Full function remote control of echosounder.  
Simultaneous operation with other Windows applications such as HYPACK.

### SCSI Output Data:

Full resolution envelope data, SEG-Y or KEL format.

### Serial Output Data:

NMEA compatible heave corrected depths for both frequencies.  
Uncorrected depths, time, date, position (if available), and raw heave.  
Loophrough from external devices (ASCII).

### Options:

Single frequency (upgradeable to dual frequency)  
Transducers (many are available)

### Field Programmable Software Upgrades

KEL 320 Echosounders are unique in their use of in-circuit-programmable flash program memory for storage of all firmware including signal processing algorithms and communications drivers. Echosounder firmware can be field upgraded with the latest revision provided via the internet or on a disk from KEL. This firmware can be downloaded into the echosounder using the survey computer. Users can thus benefit from the improvements and additions to the software which are continually being developed.

### SCSI 2 Interface

A standard feature of KEL echosounders is a SCSI 2 port. This interface is an effective high speed data link between small computers and peripheral devices. It provides the ability to transfer grey scale image data to the survey computer or data logger, plus such data as digitized depths, position, and heave. Raw data can be recorded on disk or magnetic tape and used in post processing for bottom or sub-bottom classification studies.

### WINDOWS Interface Software

Windows application software provided with the KEL 320B/R Echosounder uses the built-in SCSI port to provide a full-function user interface which provides real-time control of all operating parameters, plus real-time display of the greyscale printer data in a Window. This user interface also includes a flexible data logging facility which produces both ASCII files and/or binary image files.

### Connectability

In addition to the SCSI 2 interface, the 320B/R has four RS232 (or optional RS 422) serial ports available on connector panel for general purpose interface. Drivers for most standard accessories (ie, GPS receivers, heave sensors etc.) are provided.

### Digital Signal Processing (DSP)

The 320 echosounders do all signal processing digitally, using a separate DSP processor for each channel. There are many advantages to an all-digital system, including the inherently higher performance and greater stability of digital filters. The processing is performed in software which can be programmed to accommodate any frequency, bandwidth, or pulse length, eliminating the need for multiple analogue hardware filters.

### Transducer interface

The 320B/R can be easily interfaced to customer-owned existing ship installed transducers, saving the expense of new transducers and dry dock installation costs.