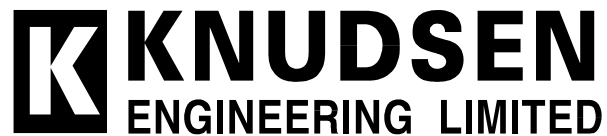# 320 SERIES ECHOSOUNDER

SERIAL CONFIGURATION UTILITY SOFTWARE MANUAL

Supports Software: SerialUtility.exe: D40-02347 V2.00

D10 - 02194
Revision 3.0
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CONTENTS

1   INTRODUCTION

1.1   About this manual

This manual provides information about the Windows-based Serial Configuration Utility program, Part #: D40-02347, SerialUtility.exe. This program is designed to communicate with the 320 Series Echosounder to configure mission-specific parameters. This program is essential for users of the 320M series of echosounders since there is no other means of setting some of these parameters.

1.2   Technical Support

For technical support or to report problems please contact your local representative or:

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2   OPERATING INSTRUCTIONS

2.1   Overview

The Serial Configuration Utility, SerialUtility.exe, is a specialized Windows communications program designed to link a PC to a 320 series echosounder via the sounder's COM 3 monitor port. The program sends the appropriate control string to the sounder to perform a selected action from the user. (See D10-02390 Serial Computer Interfacing Manual for detailed descriptions of these control strings.)

2.2   Description

When the program is invoked, it brings up a dialogue box requesting from the user the PC port to be used to establish the communications link.
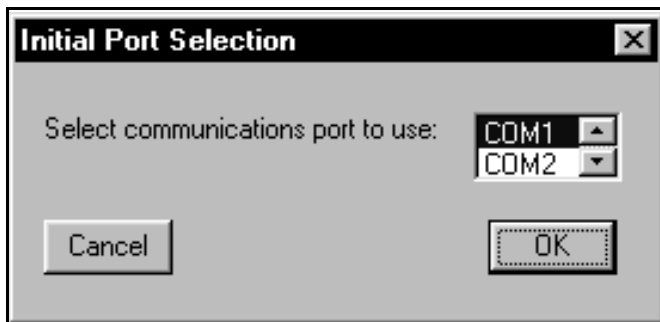
Once the user selects and accepts a particular port, the program confirms that it can initialize the PC port. If port initialization fails, the user will be informed of the failure and the detected fault. Most commonly, the port initialization fails because some other program/device is already using the port.

If PC port initialization passes, the program starts to scan for the actual port configuration settings on the echosounder. It starts with the last configuration stored in the program's main INI file, assuming that the last settings should still be correct. If these settings are no longer correct (PC is now connected to a different sounder perhaps), the program starts to scan all possible combinations of settings supported by the echosounder, starting at the highest baud rate first.

When a working combination of port settings is detected (which may take a while to find), the program then sends data requests to the sounder to determine the current parameter configuration in the sounder. As part of the data request the program runs a verification of the firmware version in the sounder; if the firmware version number is below a certain number, this program cannot interface completely with the echosounder and will inform the user of such a condition.
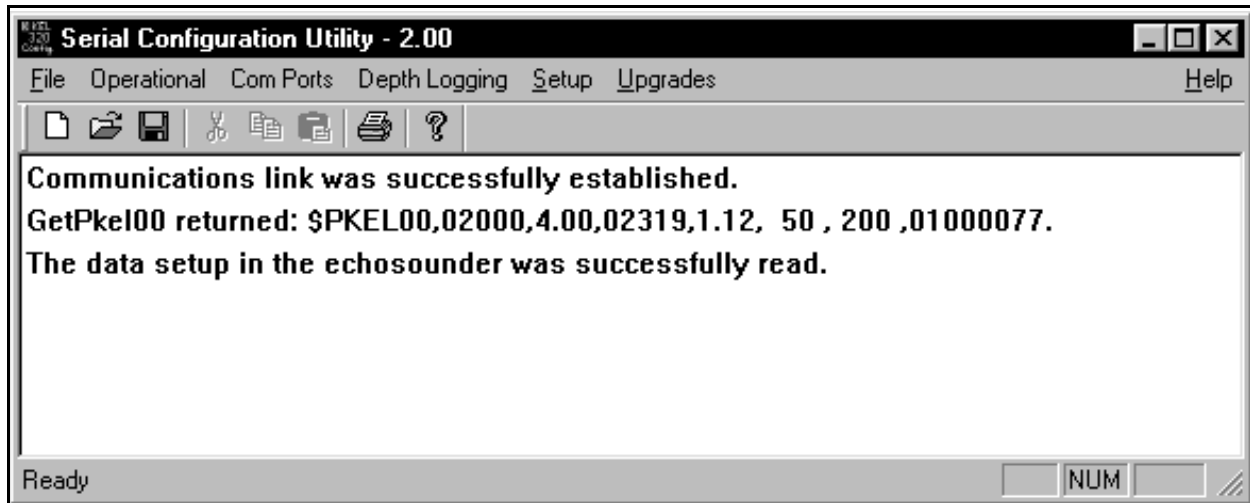
Once the data configuration has been read, a window pops up with seven control groups on the main menu, and a blank display area used for communications feedback messages.

2.3   File

Echosounder parameter configuration settings can be saved to and loaded from special INI files. The menu items in this group allow access to the saving and loading functions.

2.3.1   Load

When this menu item is selected, the program provides the user with a dialogue box to select the INI file to open. Once a file has been selected and accepted, the program reads the parameter settings and attempts to load them into the echosounder. It reports if an error has occurred during the loading of the echosounder.

2.3.2   Save

When this menu item is selected, the program provides a dialogue box for the user to select an INI file name to use for saving the data. Once a filename has been entered and accepted, the program takes the current data parameter settings loaded into the PC program, and writes them to the desired file.

2.3.3 Exit

The user can terminate the application using the **Exit** command. The current port configuration settings are saved in the main program INI file and used as a starting reference the next time the application is invoked.

2.4 Operational

2.4.1 HF Controls
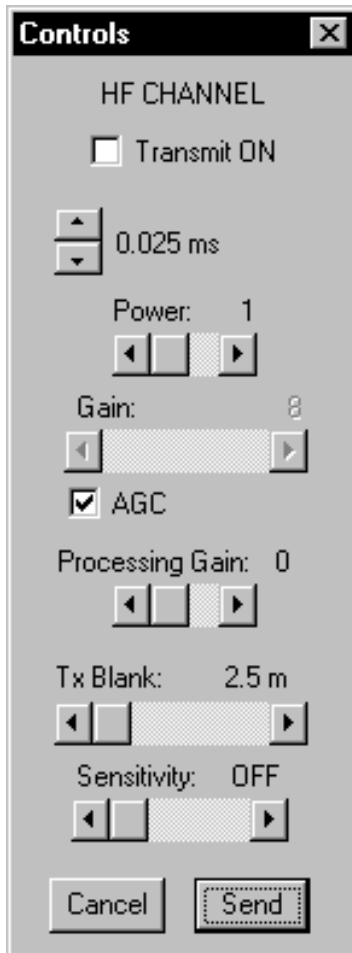
The **Transmit On** check box is used to start/stop the HF channel's transmit, receive and datalogging actions.

The next control in the box is the **Pulse Type** parameter. This parameter allows the user a small amount of control over the pulse length used by the transmitter. The echosounder will override the user's selection if the **Range/Phase** selection cannot support it. By specifying the pulse length, the user directly specifies the bandwidth of the digital noise rejection filter applied to the incoming acoustic signal data. The filter bandwidth is usually set to the inverse of the pulse length. Normally, long pulses with narrow bandwidth

filters provide better noise rejection in deeper water or noisy conditions, while the short pulses with wide bandwidth filters provide better resolution when conditions permit or the water is shallow.

The **Power** parameter adjusts the amplitude of the pulse being transmitted by controlling the duty cycle of the switchmode transmitter output stage. Although high power signals will always give the strongest echoes, they also produce more reverberation, which may obscure the bottom echo in shallow water. Using high receive gain in combination with high transmit power in shallow water may cause signal levels high enough to saturate (overload) the receiver, which will mask any echoes. This control is disabled if the **Transmit On** check box is de-selected.

The **Gain** parameter is designed to adjust the sensitivity of the analog receiver. Reducing the analog gain is useful when sounding in extremely shallow water. This reduces the overall noise while not seriously affecting the echo strength. Increasing the analog gain is useful when sounding in very deep water.

The **AGC** check box invokes automatic gain control. **AGC** is active when there is a check mark in the check box. Under most circumstances, the system should be left in **AGC** mode and the sounder will make the necessary gain changes required for proper data acquisition and presentation.

The **Processing Gain** parameter provides for additional gain in the digital signal processing software which can be used with very low level signals. It is mainly used for the very low frequency sub-bottom profiling systems (under 10 kHz) where very low amplitude echoes from sub-bottom layers are of interest. The default processing gain value is zero and this should be suitable for almost all conditions. Each level above 0 is effectively a 1-bit left shift in the processed digital data (a 1-bit left shift is equivalent to multiplying the data by a factor of 2).

The **Tx Blank** value is the distance, measured from the face of the HF transducer, to the point in the water column at which the bottom detection software begins to look for the bottom. Transmit blanking must be set large enough that transducer ringing following the tail end of the transmit pulse is not falsely interpreted as the echo from a very shallow bottom, but small enough not to unduly limit the minimum depth capability of the echosounder. The optimum value depends on the expected depth conditions, the pulse length, the transmit power level and the signal frequency. It is best determined by experimentation. Note that transmit blanking has effect only when it extends into the *window*, typically when **PHASE** is 1.

The **Sensitivity** parameter is useful in areas where soft sediments overlay harder materials, and where buried layers may often produce stronger echoes than the real bottom. If **Sensitivity** is **OFF** (the default condition), the bottom detection software will always select the strongest echo in the *window*. With layered bottoms, the strongest echo is not necessarily the shallowest echo. Increasing the **Sensitivity** causes the bottom detection software to accept a weaker but shallower echo. The higher the **Sensitivity**, the weaker the echo, relative to the strongest echo in the *window*, that will be selected. On the other hand, if the **Sensitivity** is too high, the bottom detection software will often trigger on noise or small items in the water column.

2.4.2   LF Controls
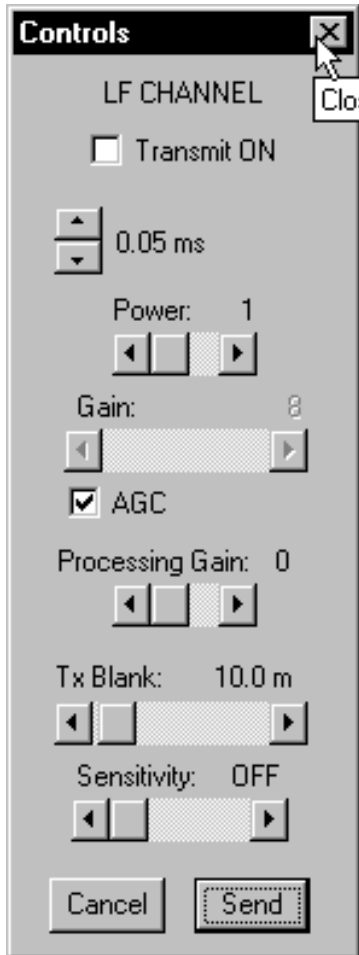
The channel controls for the LF channel are identical in performance to the controls for the HF channel.

2.4.3   Main Settings
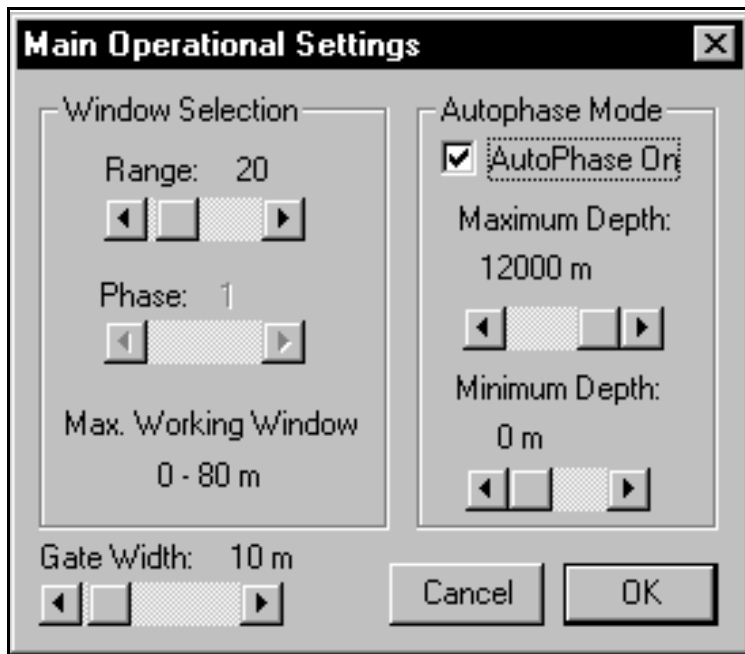
Window Selection controls:

The **Range** parameter selects the size of the active window in the water column. The active window is the only part of the water column in which the echosounder operates. It is the portion of the water column which is printed on the hard copy recorder, and in which the bottom detection software looks for the bottom echo. The bottom *must* be in the selected *window* for the echosounder to function.   Nine ranges are available: 10, 20, 50, 100, 200, 500, 1000, 2000, and 5000 in metres, feet, or fathoms dependent on working units.   The **Max. Working Window** description displays the actual limits corresponding to the current combination of the **Range** and **Phase** selections as well as Minimum Depth and Maximum Depth in autophase search mode.

The **Phase** parameter selects the depth, or location in the water column, of the active window. The effect of the **Phase** switch depends on the current range setting. The standard software compilation provides a 50% overlap between **Phase** settings. A software compilation option is available for a smaller 20% overlap between phases, but this is only recommended for the special case where a very small window is autophased in an area with extended steep slopes.

AutoPhase Mode controls:

The **AutoPhase On** check box function is used to select or de-select autophase mode. In autophase mode, the echosounder adjusts the phase setting automatically in response to information provided by the primary channel bottom tracking algorithm. The autophasing software adjusts the phase setting automatically to maintain the bottom in the active window, provided the bottom is not deeper than the maximum depth available for the given **Range** selection. The **Max. Working Window** description displays the maximum

limits supported by the current **Range** selection in Autophase Mode.

The **Minimum Depth** and **Maximum Depth** parameters define the search *window* for bottom acquisition during auto phasing. When **AUTO PHASE** is first invoked, or when the bottom tracking algorithm for the **primary channel** loses bottom lock, the auto phasing software opens up the *window* to the full extent of the water column from **autophase minimum search depth** to **autophase maximum search depth** until it finds the bottom. These parameters only have effect during the bottom search phase. They do not limit the auto phasing process once the **primary channel** bottom tracking software has located the bottom.

Gate Width is used by the bottom tracking algorithm to determine the validity of the current depth value. It is a depth variability tolerance value, defined as a distance above or below the bottom depth trend established by the current and several previous samples. If the most recent depth value fits this established trend to within the range defined by the **tracking gate**, it is considered valid and is displayed on the four-digit LCD. If a depth return falls outside of this range, it is deemed invalid and "----" is displayed on the LCD.

2.4.4   BarCheck Parameters
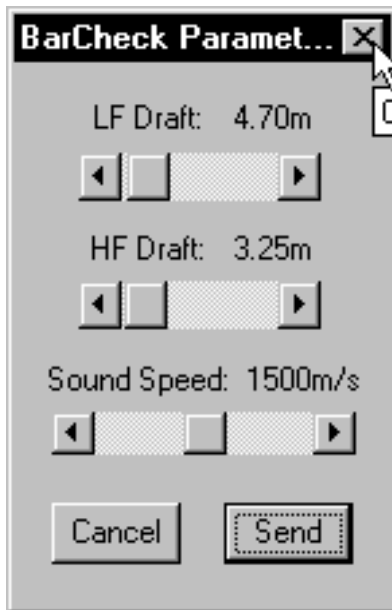
The BarCheck dialogue box provides access to the **Draft** and **Sound Speed** parameters. These parameters are usually adjusted during a bar check.

2.4.4.1 Draft

Draft indicates the vertical distance from the surface of the water to the active face of the transducer. Its main use is to ensure that the echosounder's output is corrected for transducer depth. The draft can be set

independently for the low frequency and high frequency channels.

2.4.4.2 Sound Velocity

This feature allows the adjustment of the velocity of sound value used by the echosounder for all depth calculations. The user adjusts this value in the course of a bar check, or enters the average expected velocity of sound over the water column of interest, obtained from a sound speed sensor.

2.4.5   Multiplexers: HF/LF
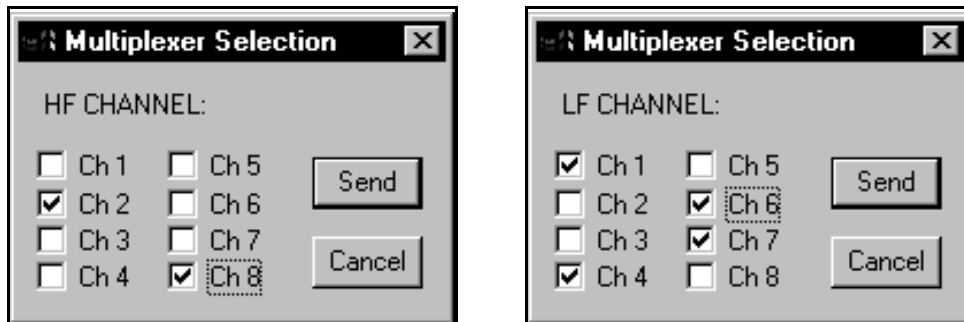
The **Multiplexer** controls are only needed for echosounder systems using the KEL 8:1 Multiplexer box. The Multiplexer allows for more than one transducer channel to be connected to a single echosounder transmitter output. The Multiplexer Selection dialogue box lets the user select which channels of the Multiplexer are to be used. A special compilation code read from the echosounder when this application initializes, indicates if the sounder is configured to use any multiplexer boxes; this application will enable only those control options supported by the sounder.

2.4.6   Rescan Sounder Setup

This option can be used to re-read the current settings of all the control parameters in the echosounder.

2.5   Com Ports

There is one very important connection detail that must be understood to ensure the configuration application works correctly. The PC com port must be configured to match the *current* settings for the echosounder's COM3 port.

2.5.1   PC Port
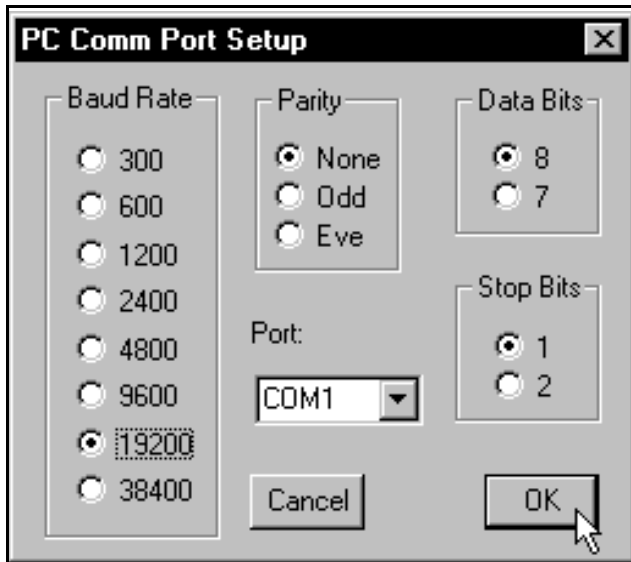
The **PC Port** option pops up a dialogue box that allows the user to select the desired com port to use on the host PC and the communications settings to be used by the selected port. The PC port's communication settings must match those on the echosounder's Com3 port. The echosounder is shipped with the settings at the following defaults: 19200 baud, no parity, 8 data bits, 1 stop bit. Clicking on **OK** accepts the current PC port settings, and the program will initialize the port to the selected settings. Pressing **ESC** or clicking on **CANCEL** eliminates the changes, and restores the original settings.

2.5.2 320 Ports: Com 1/ Com 2/ Com 3/ Com 4
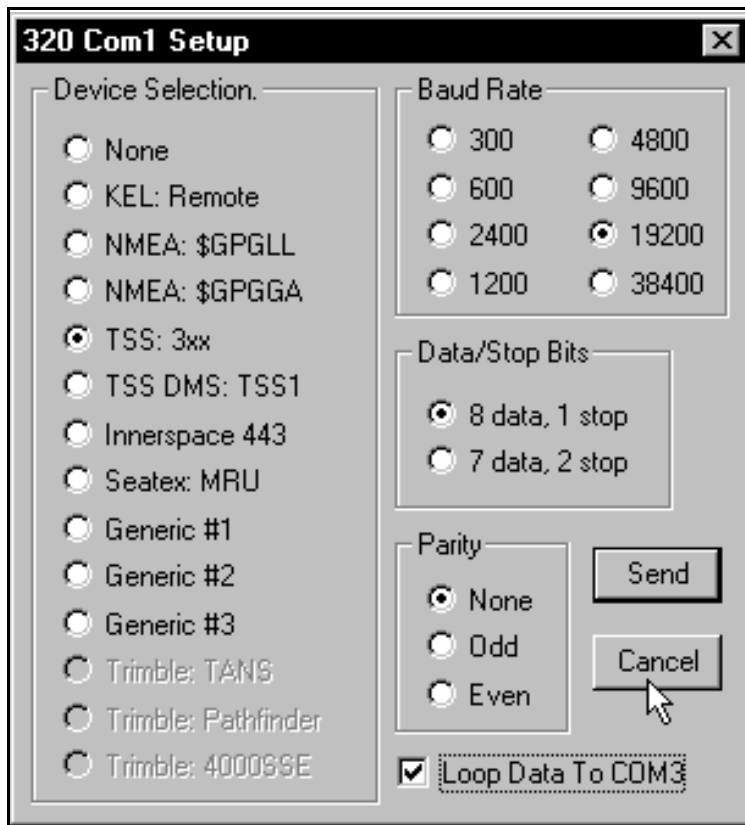
For the menu options for the 320's Com Ports 1, 2, and 4, a dialogue box like the one illustrated above is activated. These three ports can be configured to accept input from external devices. Simply select the desired device driver, and then setup the baud rate, parity, and data/stop bits settings to match those required by the external device. Com Port 4 option will be inactive (greyed out) if the echosounder firmware configuration flags indicate that a front panel is supported (320Ms typically).

If the **Loop Data to COM3** box is check and the selected peripheral device outputs printable ASCII strings, the echosounder will echo these strings upon receipt out Com3 to any attached survey computer/datalogger.

```
┌─ 320 Com3 Setup ──────────── ✕ ┐
│ ┌─Baud Rate─┐  ┌─Parity─────┐  │
│ │ ○ 300     │  │ ⦿ None     │  │
│ │ ○ 600     │  │ ○ Odd      │  │
│ │ ○ 1200    │  │ ○ Even     │  │
│ │ ○ 2400    │  └────────────┘  │
│ │ ○ 4800    │   ┌──────────┐   │
│ │ ○ 9600    │   │   Send   │   │
│ │ ⦿ 19200   │   └──────────┘   │
│ │ ○ 38400   │                  │
│ └───────────┘   ┌──────────┐   │
│                 │  Cancel  │   │
│ ┌─Data/Stop Bits┐└──────────┘  │
│ │ ⦿ 8 data, 1 stop │           │
│ │ ○ 7 data, 2 stop │           │
│ └──────────────────┘           │
└────────────────────────────────┘
```
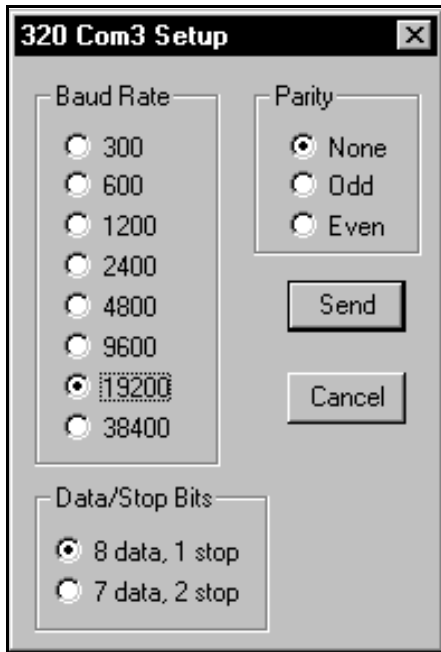
The Com 3 on the echosounder is a special com port. It cannot be connected to other external devices like the other three ports. It is used for data logging to survey computers, and for remote control from a host PC; thus the only settings to be adjusted on this port are the actual communication settings of baud rate, parity, and data/stop bits. When these com settings are modified and accepted, the application automatically attempts to modify the PC port configuration to match the sounder port settings, and tests for successful reconnection.

2.6   Depth Logging

This menu provides access to the echosounder's depth log format options and the data logging rate controls.

2.6.1   Formats

The echosounder is capable of outputting different types of depth log strings to fit individual customer needs, or to not output any data at all, if desired. To select a depth format simply click on the appropriate menu item; a check mark indicates which a format is selected. Note: only one format can be selected at any given time.

2.6.1.1   None

This option simply turns off the depth logging on the echosounder.

2.6.1.2 Configurable

The **Configurable** option pops up a dialogue box that allows the user to customize the depth logging string with certain limitations. The fields can only appear in the order listed (ie header string, HF depth, LF depth, checksum) separated only by commas (except hhmmss and milliseconds), and terminated only at the very end by <CR>< LF>.

As various fields are selected or deselected, the **Example String** at the bottom of the dialogue box changes to illustrated the expected output format.

Some fields can only be selected if other fields are also selected and will be inactive (greyed out) if the required field is not selected. For example: the Position Latency field is an active option only if the Position field is selected.

2.6.1.3 ISAH: Knudsen

The **ISAH: Knudsen** option selects the depth format shown below. This format outputs the depth to surface uncorrected for heave offset for a dual channel system. (ie. LF and HF channels.)

    $PKEL,007,hhmmss,LF,x.x,HF,x.x*hh<cr><lf>

    where: hhmmss = 320 B system's time
            x.x = depth expressed in meters.

2.6.1.4 ISAH: Elac

The **ISAH: Elac** option selects the depth format that will interface with the Elac, STG 721C Depth Digitizer record format option on the ISAH package from Questor Tangent. This format outputs the depth to surface uncorrected for heave offset.

        Low Frequency: AxxxxxxxO<cr><lf>
        High Frequency: ExxxxxxxO<cr><lf>

        where: xxxxxx = depth expressed in centimetres.

2.6.1.5 Echotrac

The **Echotrac** option selects the Echotrac emulation string. This format outputs depth to surface corrected for heave.

        HF Frequency only: fcceH xxxxx<CR>
        LF Frequency only: fcceL yyyyy<CR>
        Both Frequencies: fcceB xxxxx yyyyy <CR>

        where: f = space if no event mark, F if event mark condition
                cc = ET for [dm], et for [cm]
                e = space if depth data okay, E if data bad
                H,L,B = data indicators: H=HF, L=LF, B=both
                xxxxx = HF channel depth,
                yyyyy = LF channel depth

Note: The echosounder only emulates the Echotrac output string. It cannot accept the annotation commands normally sent to an Echotrac system.

2.6.1.6 Digitrace [dm]

The **Digitrace [dm]** option selects the Digitrace emulation string for units that output the depth to decimeter resolution. This format outputs depth to surface corrected for heave.

HF Frequency only:	fDTeH xxxxx<CR>
LF Frequency only:	fDTeL xxxxx<CR>

where: f = space if no event mark, F if event mark condition
        e = space if depth data okay, E if data bad
        H,L = data indicators: H=HF, L=LF
        xxxxx = depth

Note: The echosounder only emulates the Digitrace output string. It cannot accept the annotation commands normally sent to a Digitrace system.

2.6.1.7 Digitrace [cm]

The **Digitrace [cm]** option selects the Digitrace emulation string for units that output the depth to centimetre resolution. This format outputs depth to surface corrected for heave.

HF Frequency only:	fDTeH xxxxx<CR>
LF Frequency only:	fDTeL xxxxx<CR>

where: f = space if no event mark, F if event mark condition
        e = space if depth data okay, E if data bad
        H,L = data indicators: H=HF, L=LF
        xxxxx = depth

Note: The echosounder only emulates the Digitrace output string. It cannot accept the annotation commands normally sent to a Digitrace system.

2.6.1.8 Simrad EA200 (6 byte)

The **Simrad EA200 (6 byte)** option selects the Simrad EA200 - 6 byte format emulation string. This format outputs depth to surface corrected for heave. Depth value expressed is HF depth value if HF channel is turned on (regardless if LF is on), LF depth value if LF channel only is on.

Dxxxxx

where: xxxxx = depth expressed in decimeters

Note: The echosounder only emulates the Simrad EA200 output string. It cannot accept the annotation commands normally sent to an Simrad system.

2.6.1.9 Simrad EA200 (7 byte)

The **Simrad EA200 (7 byte)** option selects the Simrad EA200 - 7 byte format emulation string. This format outputs depth to surface corrected for heave. Depth value expressed is HF depth value if HF channel is turned on (regardless if LF is on), LF depth value if LF channel only is on.

> Dxxxx.x

> where: xxxx.x = depth expressed in metres

Note: The echosounder only emulates the Simrad EA200 output string. It cannot accept the annotation commands normally sent to an Simrad system.

2.6.1.10   Deso 20

For this emulation mode, the depth log output format supported is as follows:

> Both frequencies: DAXXXXX.XX mDBXXXXX.XX m<CR><LF>
> High Frequency only: DBXXXXX.XX m<CR><LF>
> Low Frequency only: DAXXXXX.XX m<CR><LF>

> where: DB = high frequency channel identifier
>   DA = low frequency channel identifier
>   X = number 0 .. 9
>   m = meter units identifier.

The text annotation format supported is as follows:

> TXxxxx....xxxx<CR><LF>

> where   TX = text identifier
>   x = ASCII character between 20h and 7Fh.

When this line is received by the sounder, the ASCII characters are stored in the event mark annotation buffer. If an invalid character or more than 50 characters are received, the entire data line received is discarded and the event mark annotation buffer is cleared.

> EM3<CR><LF>

When this line is received by the echosounder, it creates an event mark with the current contents of the event mark annotation buffer.

2.6.1.11   NMEA: SDDBT (HF)

The **NMEA:SDDBT** option selects the NMEA depth below transducer format string. This format outputs depth to transducer for the HF channel only, in either feet, metres, or fathoms in the appropriate field location dependent on the current working units.

$SDDBT,x.x,f,x.x,M,x.x,F*hh<CR><LF>

2.6.1.12   NMEA: SDDBT (LF)

This is the same format as NMEA: SDDBT (HF) except it outputs LF channel data.

2.6.1.13   Serial to BCD (HF)

The **NMEA:SDDBT** option is a special compilation option that provides interface capability for the 320 echosounder to a specific external Serial-to-BCD converter. This format outputs depth to surface corrected for heave for the Hf channel only.

<STX><POL><DATA><L/K><G/N><STATUS><CR><LF>

where: STX = 02h
       POL = polarity = 02h for plus, 2Dh for minus
       DATA = seven character with embedded decimal point, leading zeros suppressed as 02h
       L/K = units: L(4Ch) for pounds, K(4Bh) for kilograms: arbitrarily set to K
       G/N =Gross or Net mode: G(47h) or N(4Eh): arbitrarily set to G
       STATUS = Space (02h??) for normal, M(4Dh) for motion, I(49h) for invalid data,
                O(4Fh) for over/under range

2.6.1.14   Serial to BCD (LF)

This is the same format as **Serial to BCD (HF)** except it outputs LF channel data.

2.6.2   Logging Rate

The Logging Rate option allows the user to control the output rate of the depth logging string to allow for data loggers unable to cope with the fast ping rates encountered at shallow ranges. There are eight selections available as sub-menu items, with the active selection indicated by a check mark.

2.7   Setup

This group of menu items allows access to many unrelated parameter controls, most modified only once per survey session.

2.7.1   Printer Setup

This menu item brings up a dialogue box that allows access to 320M printer control parameters. This option is not active (greyed out) if the echosounder firmware configuration flags indicate printer code is not included (for 320B systems)

2.7.1.1 Basic
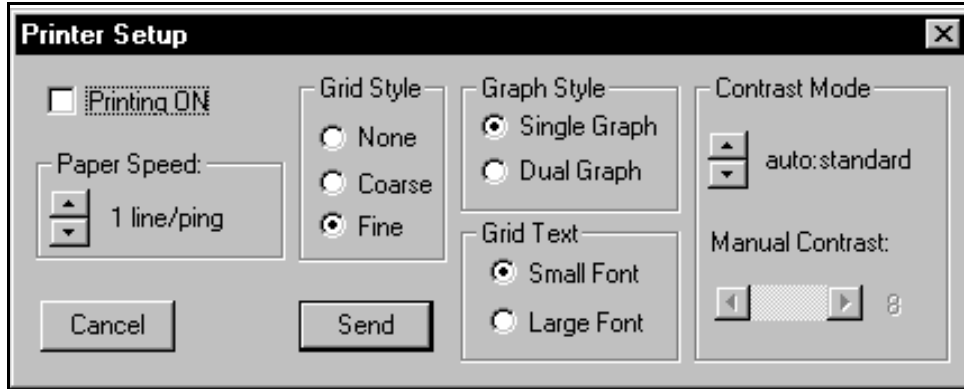
The **Printing ON** check box is used to start/stop the hardcopy recording on the 320M's thermal printer. If this box is de-selected, all the other printer controls are disabled (greyed out).

The **Paper Speed** control is used to select the desired printing rate; the available options are 1 line/ping, or 8, 16, 32, 128, 215, and 315mm/min.

The **Grid Style** controls allow the user to adjust the grid presentation on the hardcopy recorder. For the single graph format, the coarse grid prints the major division markers and the half division markers; the fine grid prints the tenths division markers as well. For the dual graph format, the coarse grid prints the major division markers only; the fine grid prints the fifths division markers as well. For both modes, the None option simply prints the outside borders.

The **Graph Style** controls are used to select the presentation mode for the channel displays. In Single Graph mode, the data for the two channels is "or'ed" together and displayed in one large presentation of 1600 pixels. In the Dual Graph mode, the HF channel data is displayed in the upper 800 pixels and the LF channel data is displayed in the lower 800 pixels.

The **Grid Text** option sets the size of the grid and annotation text characters overlaid on the hardcopy printout. Note: this control has no effect on the upper and lower banner annotation text. Due to space constraints, these lines are always printed in the small font.

The 320M's printer displays data in 32 level greyscale format. The **Contrast Mode** control allows the user to let the system control the scaling of the data for display (auto modes: standard, HF black, black & white, or with depth), or to select a fixed scale factor (manual). When automatic print contrast is on, the system

uses the signal returns to determine the best scaling factor to make the most effective use of the greyscale format. When the manual print contrast mode is selected, the system uses a fixed scale factor on the data, regardless of the return strengths. It is possible to set the scale too high or too low for meaningful hardcopy records, although the fixed scaling can be useful for basic comparative measurements of return signal strengths. When the manual contrast mode is selected, the control for the **Manual Contrast** level control is enabled.

2.7.1.2 Overlays
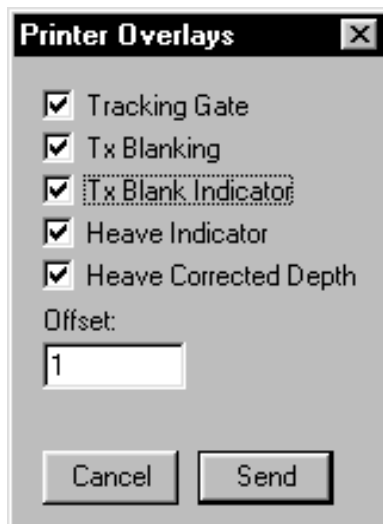
The **Overlay** controls allow the user to select one or more of the following parameter overlay traces on the hardcopy record.

When **Tracking Gate** is selected (checked), the tracking gate is displayed on the hardcopy record as a pair of solid lines framing the detected bottom. If the system is in Single Graph mode, only the gate overlay for the primary channel is displayed, unless the channel is inactive; then the system will display the overlay for the other channel. If the system is in Dual Graph mode, the gate overlays for each channel are displayed.

When the **Tx Blanking** option is selected the chart record is blanked (set white) up to the Tx Blanking value, if it is visible in the current window. If the system is in Single Graph mode, only the blanking for the primary channel is applied, unless the channel is inactive; then the system will apply the blanking for the other channel. If the system is in Dual Graph mode, the blanking for each channel is applied.

The **Tx Blank Indicator** option allows the Tx Blanking values to be displayed on the hardcopy record as a thin solid line. If the system is in Single Graph mode, only the Tx Blanking overlay for the primary channel is displayed, unless the channel is inactive; then the system will display the overlay for the other channel. If the system is in Dual Graph mode, the overlays for each channel are displayed.

When **Heave** is selected, the heave value received from the sensor is displayed on the hardcopy record as

a thin solid line located near the top of the record. The heave line overlay provides a quality indicator via the thickness of the line; a heave data value with a good quality flag is represented by a thin line, and a poor quality value is represented by a thickening of the line.

The **Heave Corrected Depth** option allows the heave-corrected depth for a channel to be displayed on the hardcopy record as a thick line overlay located at the corrected depth position plus some user selected offset. The greyscale record is the uncorrected bottom, (uncorrected in terms of heave, but corrected in terms of draft). The corrected depth overlay is corrected in terms of heave as well as draft. The option for both overlays is accessed only if the printer display selection is set for two graphs.

If the **Corrected Depth** option is selected, the **Offset** parameter edit box is made active. This parameter allows the user to select the vertical offset (position) for the corrected depth overlay. The overlay is printed on the graph at the corrected depth plus the offset value. (ie., If the corrected depth = 5m and the offset = -2 m, the overlay will be printed at 3m.)

2.7.1.3 Banners

On the 320M, there are three user-configurable banners on the hardcopy record; two full lines (72 characters) at the very top of the record above the grid (the Upper Banner), and 32 characters inserted in the second line at the very bottom of the record (the Vanity Banner). The banner edit boxes allow the user to set the various text strings to any desired value. The Vanity Banner is preserved in the echosounder's non-volatile memory upon power down, but the Upper Banner lines 1 & 2 are lost in the sounder on power down.

2.7.2 Alarm Setup
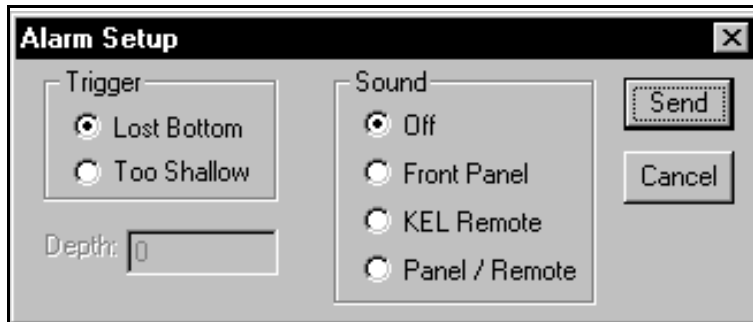
This item pops up a dialogue box that allows the user to adjust the alarm trigger and sounding options for 320M systems. There are two alarm trigger conditions available, but only one can be selected at a time.

If **Lost Bottom** is selected, the echosounder will sound its alarm any time the bottom is not located. As soon as the bottom is re-detected, the alarm will shut off.

If **Too Shallow** is selected, the echosounder will sound its alarm any time the returned depth is a shallower value than the **Depth** indicated. Once the depth return is deeper again, the alarm will shut off.

2.7.3 Event Marks
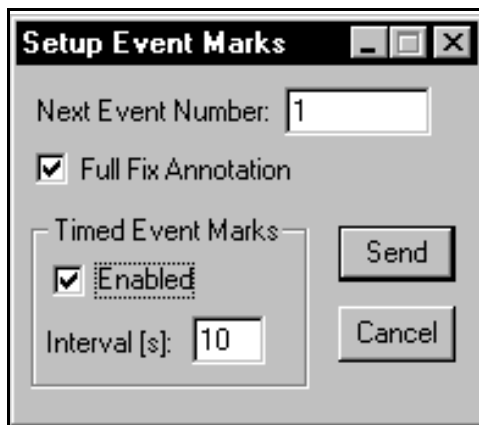
The **Event Marks** option pops up a dialogue box that allows the user to adjust the event marking options. The **Next Event Number** will set the echosounder's event counter to the desired value when the **Send** box is clicked. The **Timed Event Marks** check box allows the user to select the echosounder's internally timed event marks. If this box is checked, the echosounder will cause internally generated event mark at the time interval selected in the **Timed Event Interval** box. The units for this interval measurement are seconds.

WARNING: Sending the data to the sounder will always cause the Event Number to be modified in the

sounder. This application does not monitor what is currently set in the sounder, but simply what was last modified by this application so it is possible to reset the event number to an undesired value.

2.7.4   Set Time
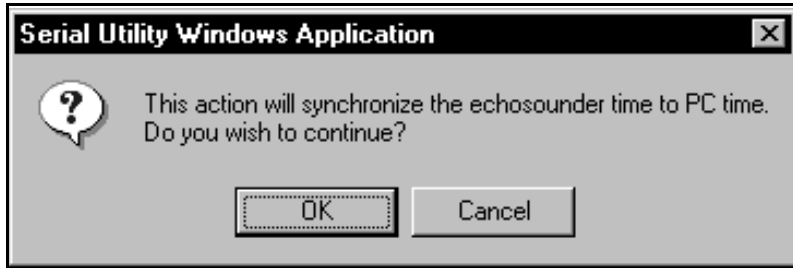
The **Set Time** option brings up a dialogue box that prompts the user to set the echosounder to the current PC time. If the user accepts the action, the sounder is set to PC time to a hundredth of a second.

2.7.5   Set Date
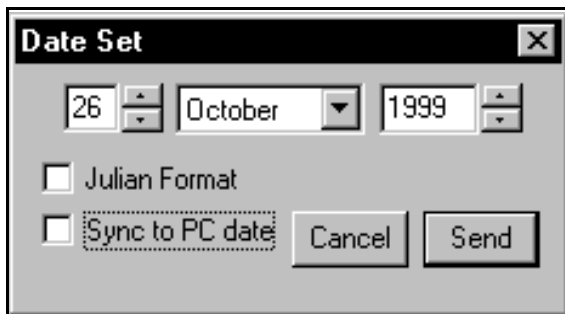
The **Set Date** option brings up a dialogue box that allows the user to set the date manually, or to tell the program to synchronize the echosounder to the current PC date. If the **Sync to PC date** check box is marked, the program ignores the date value displayed in the box and automatically sends the current PC date to the sounder. If the **Julian Format** check box is marked, the application sends the Julian calendar equivalent form of the date to the echosounder, and toggles the echosounder's date format presentation mode to Julian.

2.7.6   Units

There are three selections available in sub-menus of this option: Metres, Feet, or Fathoms. A check mark indicates the currently selected option. The selection can be changed by simply clicking on the desired menu item.

2.7.7   Sync Mode

The **Sync Mode** option allows the user to select between the echosounder's own internal timebase-controlled ping cycle synchronization, or an external ping cycle synchronization signal.

WARNING: If the **Sync Mode** is toggled to external sync, the echosounder will not ping unless there is an external sync signal fed to the appropriate signal on the sounder. Currently, only the 320B/R provides an external connector for this signal connection. Please contact KEL if you wish to use this feature on any other 320 models.

2.7.8   Pinger Mode

This option allows the user to toggle the echosounder's specialized **Pinger Mode** on or off from two sub-menu items. The currently active mode is indicated by a checkmark on the sub-menu item.

The **Pinger Mode** is a special operational mode that is currently only supported on 3.5kHz and 12kHz frequency channels. When the **Pinger Mode** is on, the echosounder does not transmit at all but simply listens, typically for an external pinger device, and displays the received data on one second intervals. The only channel control that has any effect in **Pinger Mode** is Manual **Gain**, (**AGC** must be toggled off). For frequencies that have **Processing Gain** support, the sounder will use the gain value used during the last normal transmit/listen ping cycle; any attempt to modify the parameter during **Pinger Mode** will be ignored.

This menu item is active only if the compilation option is set in the echosounder; this option is made available by customer request.

2.7.9   TVG

This option allows the user to select **TVG** (time varied gain) on the analog receivers. The OFF setting provides constant receive gain throughout each pulse-echo cycle (note that receive gain will still vary from ping to ping if AGC is on). When set to 20 log R, the receive gain is increased linearly (logarithmically if gain is expressed in decibels) with time and range from the instant of transmission, to compensate for signal amplitude loss due to spherical spreading. The 40 log R setting provides for spherical spreading of both outgoing and returning signals. The bottom referenced setting provides a gain ramp at the bottom (as determined from the previous ping) to provide approximate compensation for attenuation in sub-bottom sediments. The last setting is intended for sub-bottom profiling applications.

TVG may help to prevent the depth digitizer from falsely triggering on fish or other water column targets at the expense of slightly greater susceptibility to locking on the second echo from the bottom. TVG operates in addition to the AGC or manual gain settings which are applied to each channel independently, and which effectively define the starting gain for each channel at the instant of transmission. A check mark indicates the currently selected option.

2.7.10   Print Setup on Recorder

This option allows the user to trigger the data parameter print on the echosounder's hardcopy record (320M systems only). This parameter print records the current settings of all the configuration parameters in the echosounder onto the hardcopy record.

2.8   Upgrades

This group of controls is used strictly for echosounder firmware updates and should not be used if no updates are required.

2.8.1   Download Tag

The **Download Tag** option is used for echosounder firmware upgrades. The file selection box that pops up lets the user select the desired tag file to be downloaded to the echosounder. Once a file has been selected by the user, the program downloads it to the echosounder over the serial connection. The transfer time is dependent on the baud rate of the communications link. The tag files are usually a few hundred kilobytes, so faster baud rates such as 19200 or 38400 are recommended.

2.8.2   Initialize NVM

An **Initialize NVM** can be executed at any time to restore all the echosounder's operating parameters to factory default settings.

NOTE: This will cause all previously user-selected parameter values to be lost.

2.8.3   Program PS

The **Program PS** option is only needed after a **Load Tag** command has been performed, to program the new firmware permanently into the echosounder's FLASH eproms. If a new tag file has been downloaded, and the echosounder is powered down before a **Program PS** command has been performed, the new firmware is lost and the echosounder will power back up with the old firmware.

2.8.4   Program Tx

The **Program TX** option is only needed after a **Load Tag** command and a **Program PS** command have been performed, to program the transmit prom data permanently into the echosounder's FLASH eproms. If this command is not executed after a new tag file has been loaded and programmed, the system may not perform properly, since the transmit data in the transmit flash eprom may not be correct.

2.9   Help

The **Help** menu provides access to two options that provide the user with system configuration information that is most useful when contacting the factory for technical assistance. There are no other help features implemented yet.

2.9.1   Identification
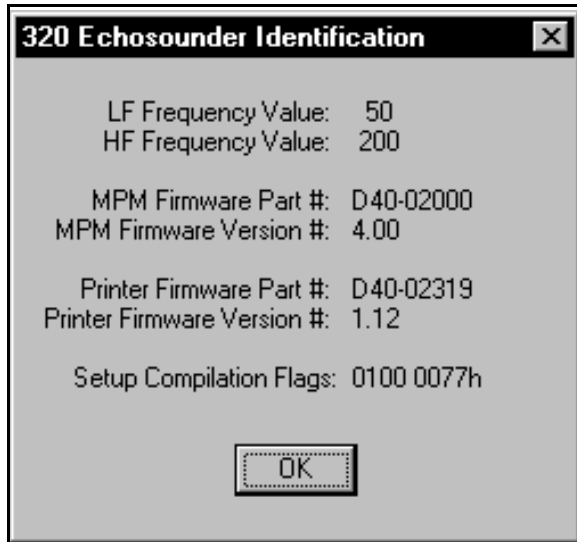
This option pops up a dialogue box that reports the system information read from the echosounder when the program was invoked and initiated communications with the echosounder. It reports the system's serial number, frequency configuration, and controlling firmware part number and version.

The setup compilation flags are merely an indicator of the particular code options compiled into a user's specific system. This information is really only useful to KEL personnel, and it is helpful if it can be provide when user's contact the factory for assistance.

2.9.2   About Serial Utility...
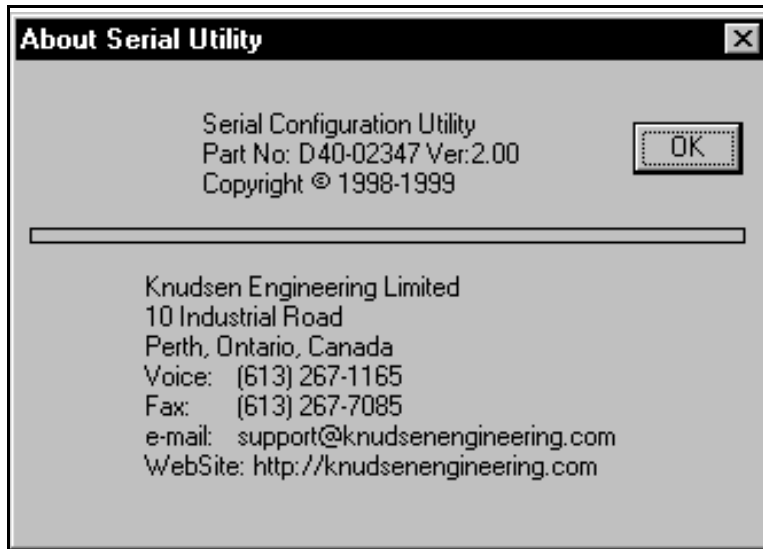
The **About Serial Utility...** menu item brings up a simple dialogue box stating the name of the PC software program, the KEL part number for the program and the latest revision number, and technical support contact information.