

USB1512 Quick Installation Guide

PC Specification

- Minimum of 300MHz Pentium III processor with 32Mb RAM graphics card with 4MB of video memory, 3.5" floppy disk drive and at least 5Mb of hard disk space
- Spare USB 1.0 or 2.0 port for installation of 1512 USB Interface box.
- Spare RS232 serial port if using "White Line" profile output
- Windows 9x / ME / XP operating system

Installing USB Interface Box



Before connecting the USB Interface box to an available USB port on the PC with the supplied USB cable, ensure that the installation CD is inserted into the CD drive. When it is connected, Windows will detect the interface box and inform the user that it has found a new device. Follow the instructions on the screen and select "Have Disk" when prompted for the manufacturers drivers. If the operating system is Windows XP then a warning message will appear informing the user that the driver is not digitally signed, select "Continue Anyway". This whole procedure will be repeated twice. Once the installation is finished, the 1512 software can be installed as described later in this document.

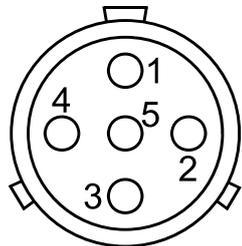
USB Interface Connections

The 9-way “D-type” connector on the USB Interface Box provides the telemetry connections to the Sonar Underwater Unit, inputs for a quadrature cable counter and synchronization pulse output. The connections required for just the sonar are Data +ve and Data –ve only.

Pin 1	Shaft Encoder Ch B
Pin 2	Shaft Encoder Ch A
Pin 3	Synchronization Pulse
Pin 4	Sonar Data -ve
Pin 5	Sonar Data +ve
Pin 6	+5V output for shaft encoder (100mA max)
Pin 7	+5V output for shaft encoder (100mA max)
Pin 8	0V ground return for shaft encoder
Pin 9	0V ground return for shaft encoder

Sonar Underwater Unit Connections

The following is the connection details to connect the 1512 USB Interface to the Underwater Scanner. The connector used to mate to the Scanner is a Jupiter Type FEDF10MT05-16-A-110 socket female or Pattern 105-19 pin. The connection to the USB Interface is via a 9-way D-type connector.



05-16
5 pin Jupiter layout
Pin Layout viewed from rear
looking at solder buckets

Pattern 105 19 Pin

U/W Scanner 5 Pin Jupiter	U/W Scanner Pattern 105 19 Pin	USB Interface Unit Pattern 105-10-pin	USB Interface Unit 9 way D-type	Function
1	G	E	N/C	+ 26 volts (floating)
2	C	B	4	Data -
3		No Connection		
4	B	C	5	Data +
5	K	D	N/C	0 volts (floating)

NOTE: It is essential that a fully floating 26VDC power supply is used to power the sonar underwater unit which is completely isolated from mains earth. An ohmmeter should be used to verify that there is no connection between the 0v of the sonar power supply and the 0v of the P.C.'s power supply or the Data –ve telemetry line.

The sonar telemetry should be connected to the USB Interface Box with the Data +ve to the Data +ve and the Data –ve to the Data –ve. If a coaxial cable is used then the Data +ve should be connected to the inner and the Data –ve to the outer of the coax. If a twisted pair cable is used the Data +ve should be connected to both conductors of the pair in parallel and the Data –ve to the shield/foil/drain wire.

Software Installation

The 1512 software runs under the Windows operating system and is supplied on a CD. Insert the CD in the CD ROM drive and run the program “setup.exe” and follow the instructions on the screen.

The default installation will put a “PipeProf” icon on the desktop which may be double-clicked to start the program.

NOTE: The installation CD also contains a viewer program “PipeView” which may be freely distributed to clients for post-processing and viewing stored images. The PipeView program has the same look and feel as the main PipeProf program except that all hardware control of the sonar underwater unit is disabled.

Software changes from the manual

FastPlot dll

The Pipe Profiler is now shipped with an extra file, the Fastplot dll. This dll does the new sector and circle plotting. This file is essential to the software, and the program will not run without it.

Version Numbers

The software version number of the new FastPlot dll and the software version number of the underwater scanner unit are now reported in the about box.

If the program cannot find the scanner unit then the software version will not be reported.

If the software version of the underwater scanner unit is reported as 0, then a communications error has occurred, usually caused by hot plugging a scanner unit. This is not recommended and requires the software to be closed and re-started to correctly identify the underwater unit.

New Sector mode

Traditionally the Pipe Profiler scanning head will rotate through a full 360 degree arc. To enable quicker scanning and a visual 2x zoom mode, the latest version of the Pipe Profiler allows a choice of scan angles.

A circle/sector choice button allows easy switching between the complete circle view, and the smaller sector view. To change the angle of the sector view, radio buttons on the **Control** tab of the **System Control** dialog enable easy angle selection.

To take advantage of this new scan facility, you must have software version 2 or above in the underwater unit firmware and the P.C. software. Earlier scanners will still work with version 2 P.C. software, but will only run in 360 degree mode, and the circle/sector choice button will be disabled.

View menu and viewing options

The **view** menu offers a choice of control reports on the main view screen. If the underwater scanner unit has internal pitch and roll sensors, or a cable counter is fitted, the figures from these instruments can be reported onscreen. If these instruments are not fitted to the attached scanner, or not required, these onscreen options can be removed from the display.

When viewing a saved image, the onscreen controls will report the condition at the time of the file save. Current feedback from these instruments is always reported on the status bar below the main screen.

The view menu also offers options to enable the graticule or cursor tools, and the useful **Annotation Off** allows speedy removal of all onscreen reports when that elusive target needs uncluttered examination.

Roll and Rotation

The Pipe Profiler software supports roll or rotation options.

Roll angle is the figure reported by the internal roll sensor. Rotation is a user selected angle which may be used to compensate for angular alignment errors in mounting the sonar underwater units.

The display onscreen can be rotated by an appropriate angle by selecting the **Auto roll correction** on the **Auxillary** tab of the **System Control** dialog.

If the **Auto roll correction** is ticked and the **Manual Rotate** is clear, then the screen display will be rotated by the internal roll sensor automatically so as always to align the display with the vertical axis. This setting is not appropriate if the sonar is not mounted horizontally and facing downwards.

If the **Auto roll correction** and the **Manual Rotate** is ticked, then the screen display will be rotated by a user selected angle. To change the rotation angle, ensure that the main view window is selected and then press the left or right arrow keys.

Autostart

If **Autostart**, on the **System** menu, is selected the program will endeavour to talk to its underwater scanner unit and gather data from it, whenever possible. If **autostart** is enabled when the program closes down, the software will go into play mode as soon as the program starts.

Outline capture to serial port

If the **RS232 Output** on the **Outline** menu is checked, the target will be captured on each live scan. The target co-ordinates will be transferred in an ASCII format out a serial port.

The **Blanking** slider on the **Image** tab of the **System Control** dialog, controls a minimum exclusion zone, in which no image can be outlined. This blanking zone is shown on the screen as a grey crosshatch. Increase this slider to exclude nearer targets.

The **Threshold** slider on the **Image** tab of the **System Control** dialog, controls the colour representation of the signal strengths, and also the minimum level of a valid signal. Increase this slider to exclude weaker targets.

A 3 character identifier for the underwater scanner or the system can be set in the **Unit Id** box on the **Titling** tab of the **System Control** dialog.

Serial Output Format

Serial link	115200 Baud, no parity, 8 data bits, 1 stop bit, no handshake
Format	\$MEPPA,UNITCODE, +XXXX,-YYY,+X,+YY.....-XXX,+YYYY,*[CS][CR][LF]
\$,	Specifies start of a new message
MEPPA,	Marine Electronics Pipe Profiler, message type A
UNITCODE,	3 "ASCII" characters, unit identifier e.g. A2Z
+X,-YY,	+/-x ,+/-y coords of an "outline" first character '-' or '+' 1..4 characters representing distance (measured in mm from head at centre origin 0,0) +X,+Y are xy coordinate pairs repeated as necessary
*	terminator – signals end of message
[CS]	2 hexadecimal ASCII characters checksum, being the 8 bit sum (modulo 256) of the characters between \$ and * inclusive
[CR][LF]	carriage return, line feed for terminal formatting

Setting Serial Port Numbers in the Windows Registry

The Windows Registry is used to store a lot of the setup parameters of the 1512 Sonar System. The only settings that should be manually changed are those to setup the RS232 serial port numbers.

To edit these values click the "Start" button on the Windows Taskbar and then click "Run...".

In the Run dialogue box enter C:\Windows\Regedit.exe and then click "OK".

The "Registry Editor" window should open showing "My Computer" with a number of Registry keys below it in the left-hand pane.

Click the "+" plus sign next to "HKEY_CURRENT_USER".

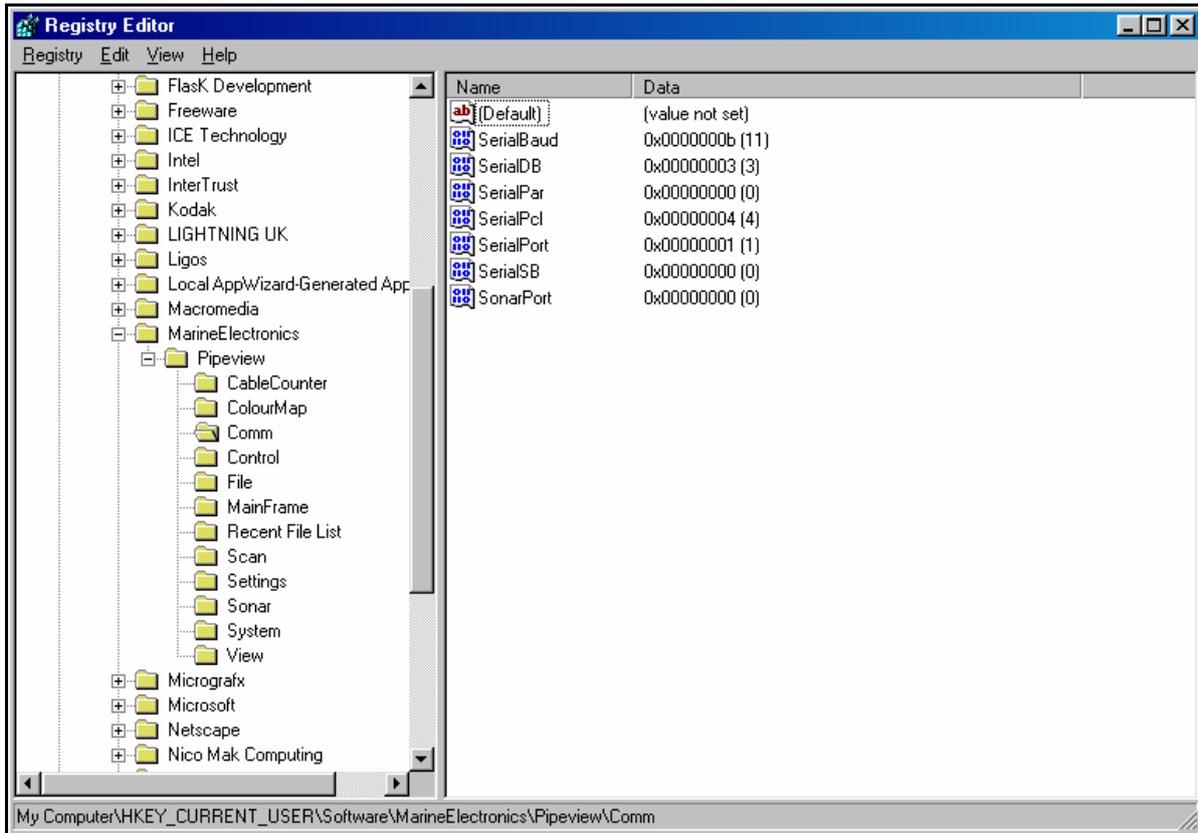
Click the "+" plus sign next to "Software".

Click the "+" plus sign next to "Marine Electronics".

Click the "+" plus sign next to "Pipeview".

Click the "Comm" folder.

Your screen should now look something like this:-



The sonar serial port is “SonarPort” and the RS232 serial output port is “SerialPort”, here the values are set to 0 for COMM1: and 1 for COMM2:.. To change the values double-click the name and enter the required number in the “Value Data” field using the keyboard. Note that the Pipeview program must be closed whilst editing registry values and then re-started to re-load the new changed values. The allowable range for serial port numbers is from 0 to 7, i.e. COMM1: to COMM8:.

Note that the SonarPort is only relevant for systems using an ISA Interface card to communicate with the sonar underwater unit, USB systems do not use this port. Consequently if operating from a notebook PC with only one serial port the SonarPort may be set to the number of a non-existent port.