

PULSAR *ultra*



PULSAR
Process Measurement Ltd



User Manual

Ultra PC

ULTRA PC (FIRST EDITION)

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COMMENTS AND SUGGESTIONS

If you have any comments or suggestions about this product, then please contact:

Pulsar Process Measurement Limited
Oak House
Bromyard Road
Worcester
Worcestershire
WR2 5HP
United Kingdom

Tel: 0870 6039112 (*International +44 870 6039112*)

Fax: 0870 6039114 (*International +44 870 6039114*)

Web Site: <http://www.pulsar-pm.com>

e-mail: info@pulsar-pm.com (general information)

e-mail: support@pulsar-pm.com (product support)

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Congratulations on your purchase of an UltraPC software package. This software system has been developed over many years and represents the latest in high technology software for ultrasonic level measurement and control.

It has been designed to give you years of trouble free performance, and a few minutes spent reading this operating manual will ensure that your installation is as simple as possible.

About this Manual

It is important that this manual is referred to for correct installation and operation.

There are various parts of the manual that offer additional help or information as shown:

Tips



TIP

At various parts of this manual you will find tips to help you.

Additional Information

Additional Information

At various parts of the manual, you will find sections like this that explain specific items in more detail.

About the Ultra PC Software

The UltraPC Software Package is a powerful tool that can be used in conjunction with Pulsar, Ultra Series, Process Measurement Equipment to aid you in getting the most from your Ultrasonic Level System.

It can be used to record all the Parameters for your applications, these can be saved to a floppy disk and stored. All parameters can be changed and downloaded to the instrument via your laptop. Remember it is most important to note that Parameters downloaded to an instrument must be extracted from the same software version as the system to which they are downloading otherwise errors due to incompatibility may occur.

The software can also be used to view Echo Profiles of your applications, these can be saved for your records or sent via e-mail back to Pulsar for expert analysis. Or, if you prefer you can print off an echo profile and fax it to us for an immediate response.

UltraPC software can be used to re-program your unit to the latest version of software, with any enhancements that it may contain.

System Requirements

Operating Sytem	Windows 9X, 2000, ME, XP
Processor Speed	133 Mhz (Minimum)
Memory	32 Mb (Minimum)
Disk Space	6 Mb (approx)

Chapter 2 Installation and Connections

Installing Your Software

Installation of the UltraPC Software is simple, just insert the CD into your drive and follow the instructions on the screen.

UltraPC will create its own directory under C:\Program Files\Ultra PC Version xx called 'UltraPC'.

If Autorun is not enabled on your computer, then you will need to click on your Start menu, click on Run, then use the Browse facility to locate the Set-up file in your CD drive.

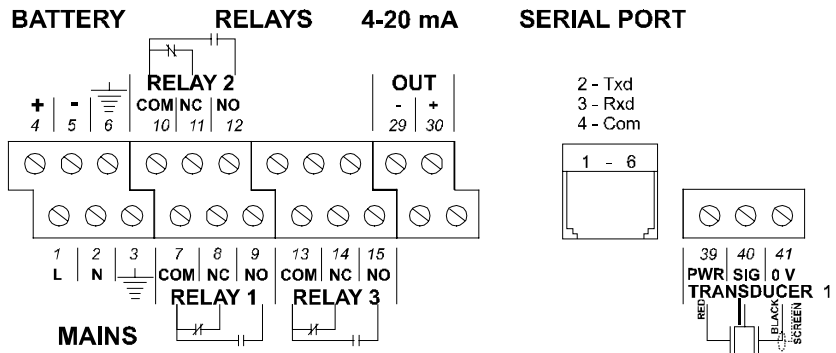
Once the installation is complete, a shortcut icon will be created and installed onto your desktop, labelled 'UltraPC' simply double click on this icon to open the initial screen . As shown on page 8.

Connection Details

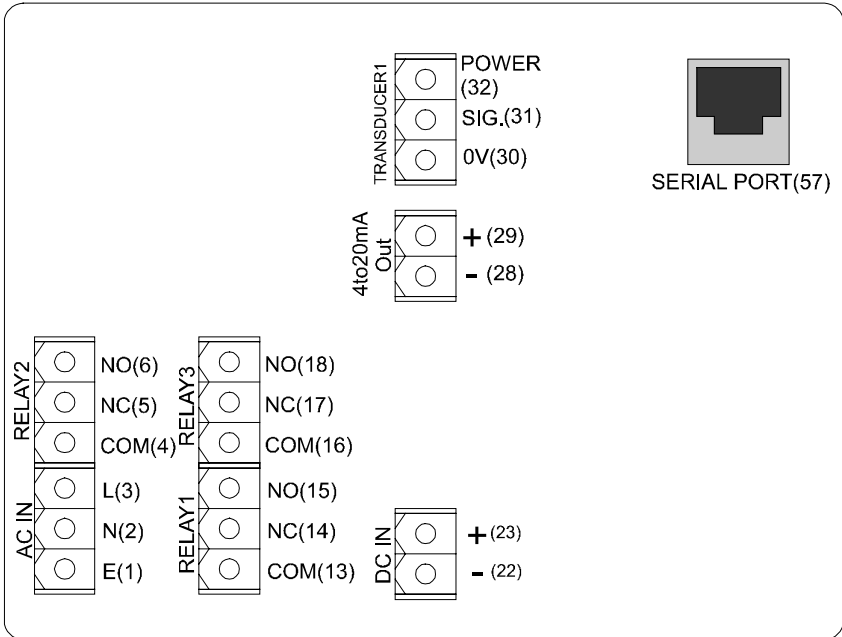
Connection to your computer is via a standard RS232 serial connection. A connector and lead can be supplied with your software package if requested.

Connection to the Ultra integrator is via an RJ11 plug, the connector socket can be found in line with the terminal blocks in the Wall Mount Unit, on the front panel of the Rack and Panel Mount Unit and at the rear of the Fascia Mount Unit, as detailed below:

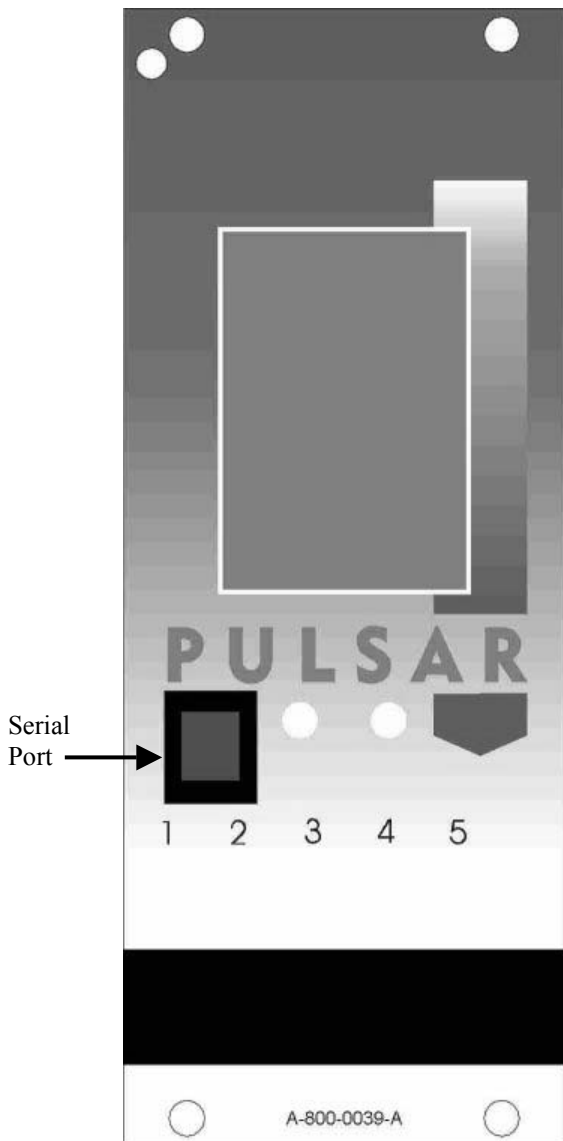
Wall Mount



Fascia Mount

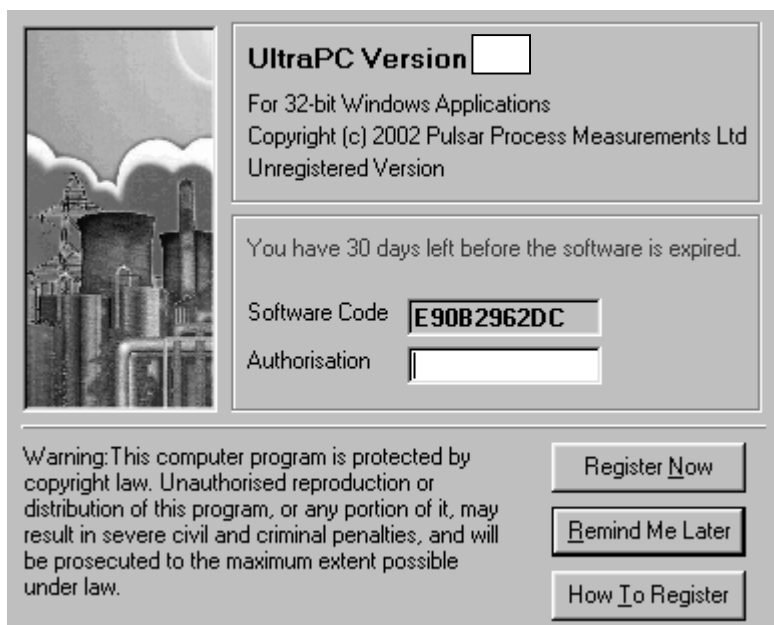


Rack and Panel



In order to run UltraPC once the installation is complete, double click the shortcut icon that has been installed onto your desktop, labelled 'UltraPC' this will open the initial screen . As shown below.

Screen 1.



UltraPC Version

For 32-bit Windows Applications
Copyright (c) 2002 Pulsar Process Measurements Ltd
Unregistered Version

You have 30 days left before the software is expired.

Software Code

Authorisation

Warning: This computer program is protected by copyright law. Unauthorised reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.

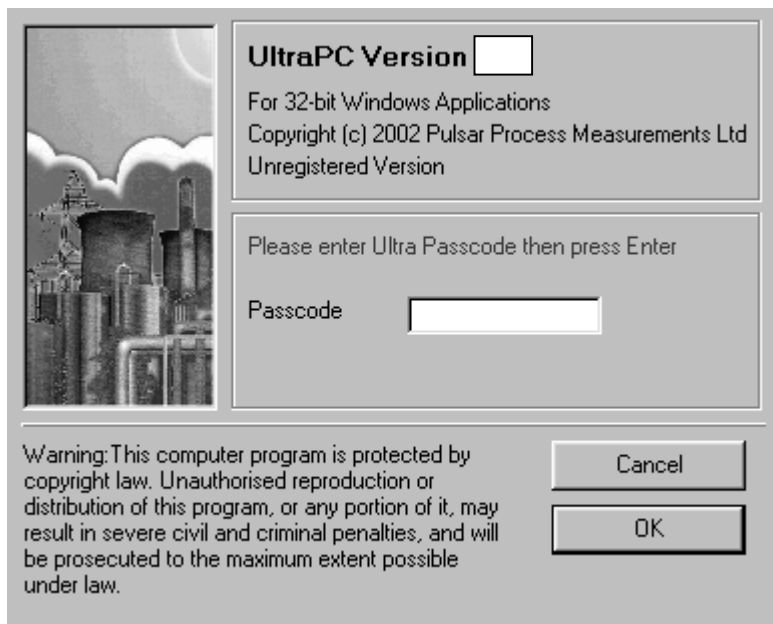
[Register Now](#)

[Remind Me Later](#)

[How I_o Register](#)

In order to continue press the (remind me later) key and the screen below will appear on your desktop.

Screen 2



Key in the passcode 1997 and press enter to run your program.

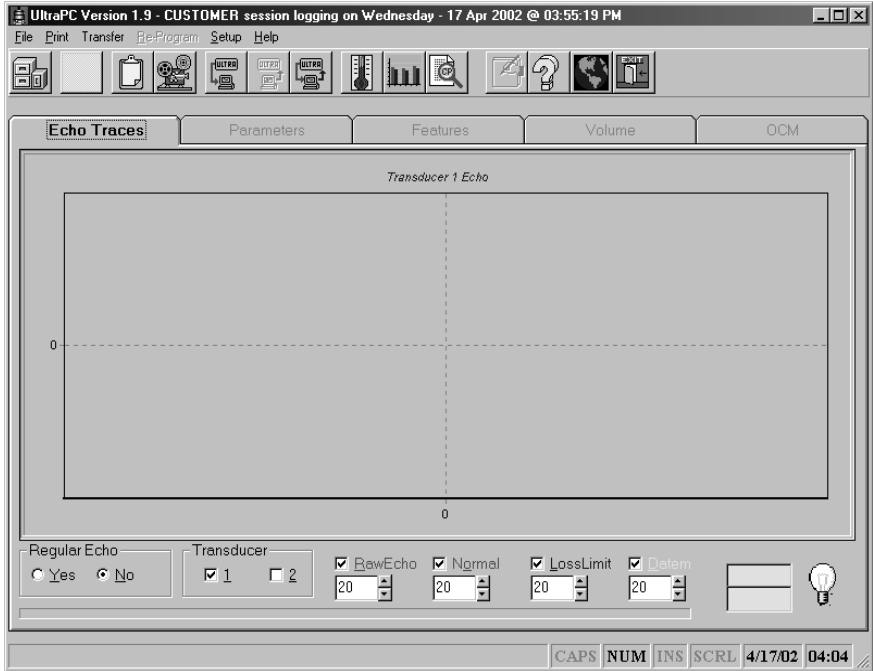
Your UltraPC program will run for 30 days until you register with us. To register, you will require your CD Serial Number (found on the back of the CD Jewel case) and the Software Code (displayed in the initial screen after starting up PC Ultra), we will then provide you with an authorisation key to remove the evaluation limitation.

To obtain an authorisation key you can contact us by telephone on 0870 6039 112 or alternatively e-mail us at <http://www.pulsar-pm.com>, you can also use this e-mail address for any support issues that you may have.

When you obtain your authorisation key enter it into the Authorisation window in the opening screen and press the Register now key, your program will then be validated.

When UltraPC has opened you will see a display similar to the one below.

Display Screen



Communication Port Configuration

Once UltraPC is open click on Setup choose your Comms Port then press Save and Exit, alternatively press start searching, UltraPC will then find the comms port for you.

Ultra will set up the comms port you will be using to the following configuration.

Baud Rate 19200, 8 (data bits), 1 (stop bit), N (no parity).

After exiting Setup go to Regular Echo at the bottom left of the screen and press yes. After a few moments an echo profile should appear, if not an error message will appear, consult the trouble shooting section of this manual.

Security and Passwords

Your UltraPC will cease to function after 30 days unless it has been registered with us and you have received your unique authorisation code.

UltraPC has two layers of password protection. The password is entered at the opening screen, 1997 is the operator passcode and will give access to all the parameters required to program your application.

The service passcode is available if required from Pulsar this will give you access to service parameters which can be used to enhance the functionality of the Ultra unit in difficult application, these adjustments should only be undertaken under the guidance of Pulsar personnel.

General Navigation and Icons.

Once you have successfully opened your program you will see some drop down menus and icons at the top of the screen. (see **Display Screen** above)

Drop Down Menus.

None of the drop down menus can be accessed if you are viewing echo profiles. To access the drop down menu's click the 'no' button in the regular echoes box.

File.

The top left hand dropdown menu is File. Clicking on it will give you the option of opening a previously stored parameter file, opening a previously stored echo file, saving parameters to file (provided you have first uploaded them from your Ultra unit), or, logging off the unit and exiting UltraPC.

Print.

The print menu gives you three options, the first, Print echo traces will open a TeeChart preview of the current displayed profile which you can alter to suit your requirements before printing.

The second option is to print (all) parameters, and the third to print only parameters that have been changed from their factory default values. You can either print directly or, print to a file.

The best way to obtain a hard copy of your parameter list is to print the parameters to a file, the parameter list will then be copied to a file of your choice in an Excel format. The list can then be printed out from Excel at your convenience.

Transfer.

The transfer menu enables you to get parameters from the unit, send parameters to the unit, and program single parameters. These three options, are mimicked by the icons with the Computer and Ultra motif. For sending and receiving parameters follow the on screen commands. When you have uploaded the parameters from your unit a list of changed parameters will appear in the right hand side of your screen, pressing the toggle parameters icon (fourth from right) will, alternately clear the screen, show all parameters, clear the screen and show changed parameters again.

For single parameter programming, press the connector icon and, when the Interactive Programming display window appears, press the connector icon, this will connect your computer to your unit, key in the required parameter number, and press the read key. Change the value to the required amount and press send, the changed will be verified. Note: pressing the Hard Default or Factory Default icons will restore factory parameters to your unit and information will be lost if not previously saved.

Re-Program.

You can re-program your Ultra unit with new editions of software if you feel this will benefit your application, always consult Pulsar before attempting to re-program your unit as a failure during programming may result in an unserviceable unit. You will need a software version from Pulsar that can be e-mailed to you. Once you press the Re-program icon read the instructions on the screen before attempting to upgrade your software.

Make sure you take a copy of the parameters before Re-programming as once the procedure is complete you will need to default the unit back to its factory settings (hard default) before re entering the original parameter list.

Setup.

Click on to Setup, choose your Comms Port then press Save and Exit, alternatively press Start Searching, UltraPC will then find the comms port for you, and correctly set the required variables.

Help.

Contact Pulsar for assistance.

Icons.

If an icon is greyed out then that function is not accessible, for example, if you are viewing echoes then you cannot access files, to access files you must click no in the regular echo box then a file can be accessed.

File.



File.ico

Clicking on this icon will enable you to search for any echo profiles or parameter files that you wish to open, view, or examine.

Clipboard.



Clip.ico

Clicking on this icon will paste the current viewed echo profile onto your clipboard, from there it can be pasted into a document such as word for recording, viewing or reporting.

Recording.



Record.ico

Clicking on the Record icon will open a small sub-screen. If you are viewing echoes you will see four buttons appear.

Red Circle	Record
Green Triangle	Playback
Blue Dashes	Pause
Black Square	Stop

The 'red circle' will begin recording any echoes you are currently viewing.

The 'green triangle' will playback any previously recorded echo profiles.

The 'blue dashes' will pause any playback.

The 'black square' will stop any recording or playback, if you are stopping recording the program will ask you for a file name for your echo profile.

Parameter Manipulation.



Upload.ico



download.ico



singleprogram.ico

The next three icons are to do with parameter extraction, parameter download and single parameter programming.

The first icon enables you to get parameters from the unit, the second icon enables you to send parameters to the unit, and the third icon enables you to alter single parameters. For sending and receiving parameters follow the on screen commands. When you have uploaded the parameters from your unit a list of changed parameters will appear in the right hand side of your screen, pressing the toggle parameters icon (fourth from right) will, alternately clear the screen, show all parameters, clear the screen and show changed parameters again.

For single parameter programming, press the single programming icon and, when the Interactive Programming display window appears, press the connector icon, this will connect your computer to your unit, key in the parameter number required, and press the read key. Change the value to the required amount and press send, the changed will be verified. Note: pressing the Hard Default or Factory Default icons will restore factory parameters to your unit and information will be lost if not previously saved.

Temperature Display.



Temp.ico

Clicking on this icon will enable a small graph of temperature in the top right hand corner of the screen to be displayed. Clicking the icon again will switch the display off.

Level Display.



Level.ico

Clicking on this icon will enable a small graph of level in the top right hand corner of the screen to be displayed. Clicking the icon again will switch the display off.

Status Display.



Status.ico

Clicking on this icon will enable a small list of relevant information about the performance of the unit to be displayed in the top right hand corner of the screen. Clicking the icon again will switch the display off.

Changed Parameters Display.



Refresh.ico

When you have uploaded the parameters from your unit (or from your laptop) a list of changed parameters will appear in the right hand side of your screen. Pressing the toggle parameters icon (fourth from right) will, alternately clear the screen, show all parameters, (with the changed parameters highlighted in red) clear the screen and show changed parameters again.

System Information.



Info.ico

Clicking on this icon will enable a small list of relevant information regarding the type of unit you have serial numbers, software version, hardware version, number of relays etc, to be viewed. Clicking the icon again will switch the display off.

The World.



Earth2.ico

Clicking on this icon will bring up a screen with a list of four subjects. Re-Programming, Upload/Download Parameters, View/Record/Playback Tapes and Registration and Support. Clicking on any subject will give you some more user information.

Exit.



Exit1.ico

Clicking on the exit icon will take you out of the program.

Other Features.

Backlight Display.

Clicking on the backlight icon which is in the bottom right hand corner of the screen will turn the backlight for the echo display on and off.



Lightoff.ico



Lighton.ico

Two Transducer Viewing.

In order to view a second transducers echo profile as in the case of a differential application, you should tick the transducer two tab at the bottom of the screen. Two profiles will now appear in the display (these will take twice as long to update). Toggling between the two will switch either on or off.

Cross Hairs.

You can use the cross hairs as a measuring tool. Simply use your mouse to position the arrow where the measurement is required and view the readings for distance and signal return (milli-volts) in the boxes at the bottom right hand corner of your display. You can also use this tool to magnify any part of the echo you would like to view more closely, use the right mouse button to draw a box around the part of the echo you wish to view. To return the display to normal draw a box on any part of the display that is blank.

Chapter 4 How to Use Ultra PC

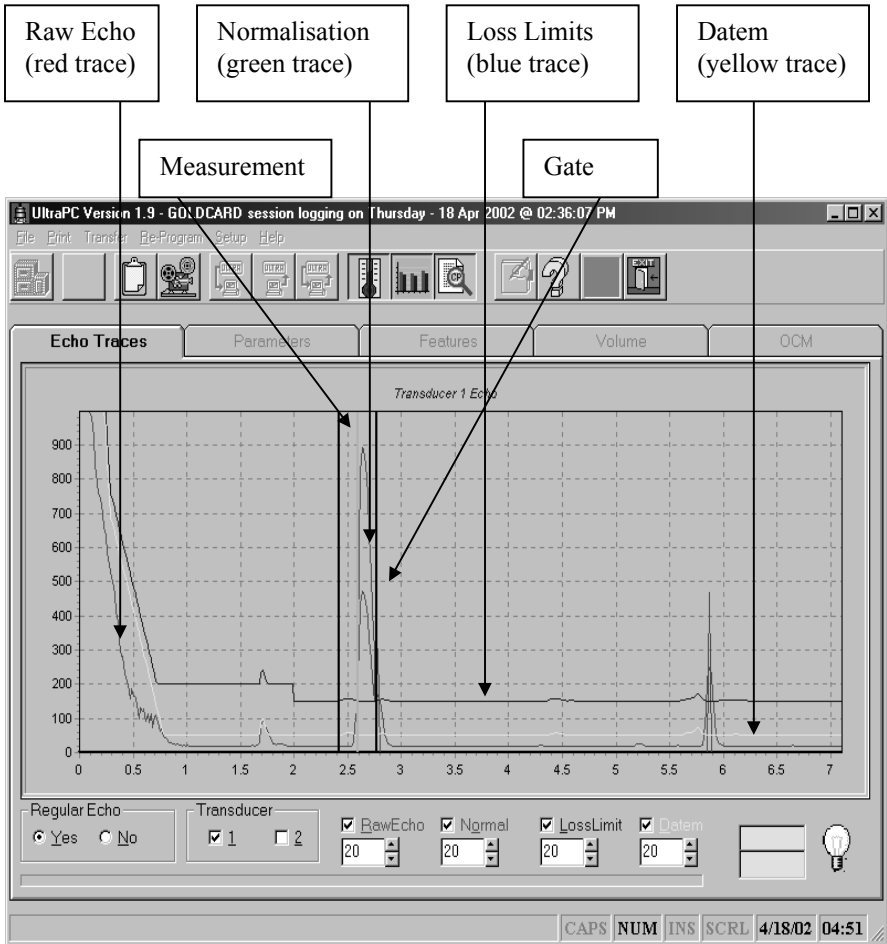
This chapter focuses on how to use the main features of Ultra PC in greater detail.

How to record and view echo profiles.

How to record and alter parameters

How to upgrade the instruments software.

Once you are hooked up to a working application and have opened the program, highlight the Regular echo tab and a display similar to the one shown below should appear in your screen.



Echo Profile Examination and Recording.

Viewing

When you have pressed the Regular Echoes tab and obtained a display similar to the one on the previous page then you are viewing current echoes, the display will continually update itself every 20secs.

The screen shows a normal display with all the traces viewed and the 'gate' wrapped around the true echo. The horizontal axis of the display is in metres, and the vertical axis is in millivolts. The echo is approx 2.6m away from the transducer.

There are four main traces to the display as indicated on the previous page.

Raw Echo

The raw echo trace is shown in red, the height of the echo is known as the echo strength and can be accessed via the hot keys on the integrator keypad. The left hand side of the screen shows the 'ringdown' of the transducer, this is the area where the crystal within the transducer is still vibrating thus making measurements up to 0.3m from the transducer face difficult. The peak between the vertical black lines (the gate) is the echo from the object being measured. The vertical blue line indicates the actual measurement on the bottom scale. If the echo falls below the Loss Limit trace then it will not be seen as a valid echo and the unit will failsafe.

Normalisation Trace

The green trace known as the normalised trace, this shows the user which of the echoes are being considered whilst the unit is performing its echo extraction algorithms to determine the correct echo, the largest green trace being above the true echo. As you can see in our example there is a secondary echo at 5.8m that is also being 'normalised' the unit considers both echoes and choose the best based on Pulsars unique algorithms.

Loss Limit

The blue trace is known as the loss limit values, the trace shown has the normal default values, these can be altered if required to enhance the system performance on difficult applications. Any part of the raw echo trace that is above this blue line can be considered by the unit as a valid echo. Anything below is not considered an echo. The blue line is distorted at 1.7 meters this is due to datem (the yellow trace) moving to cover a false echo and the loss limit trace moving to maintain its set distance from the yellow trace. These values can be adjusted if required in the integrator service parameters.

Datem

The yellow trace is known as the D.A.T.E.M. Trace (Digitally Adaptive Tracking of Echo Movement). This is the clever part of the system and is designed to ensure any false echoes that occur are masked out as and when they appear in front of the true echo thus ensuring the integrator maintains its fix on the true echo. Other ultrasonic units can be set up at the commissioning stage but if a false echo occurs after this, i.e. scum lines in wet wells, chains to pumps being moved or new installations causing problems then a re-commission may be required. The Pulsar unit will dynamically mask these false echoes out as they occur, the Yellow trace will move to cover any false echoes ensuring they will not cause problems with incorrect readings and pumps being held on.

The Gate

The gate is the two vertical lines that surround the echo. It acts as an agitator filter, in that, any spurious echo which appears in the profile that is seen by the unit to be better than the true echo has to be in the same place for five shots (adjustable) before the gate will move to it. It is also a damping filter, in that, when the gate moves (either to a new echo or to follow the echo that is moving within the gate) it will do so at the set damping rate.

The Measurement Line

The measurement line, this is the light blue line within the gate that marks where the unit is measuring, the measured value can be read off the horizontal axis on the echo profile. The blue line picks up on the most vertical part of the leading edge of the echo where it is deemed to be the most accurate.

Recording & Playback

In order to record profiles you must of course be connected to your instrument, at the bottom left of the page click on Yes and an echo profile should appear in your display.

Clicking on the Record icon will open a small sub-screen. If you are viewing echoes you will see four buttons appear.



Red Circle	Record
Green Triangle	Playback
Blue Dashes	Pause
Black Square	Stop

The 'red circle' will record any echoes you are currently viewing.

The 'green triangle' will playback any previously recorded echo profiles.

The 'blue dashes' will pause any playback.

The 'black square' will stop any recording or playback, if you are stopping recording the program will ask you for a file name for your profile.

There is also a recording interval adjustment underneath the four buttons in case a recording over a long period of time is required

Saved echo profiles can be e-mailed to Pulsar for expert analysis.

Parameter Editing and Recording.

In order to download parameters from a unit click on the 'get parameters from unit' icon and follow the on screen instructions. You cannot upload parameters from your unit whilst you are viewing echoes. Your parameters will be saved in a file with the name of your choice.

The best way to view and alter parameters is to use the file tabs in the main screen. For example if you wanted to change a relay setpoint, you would initially upload parameters from the unit. Then, once the program has updated click on the Parameters tab. Another array of file tabs will appear in the main display, click on the Relays tab and the relays settings will appear. If a box is highlighted red it means that this parameter has been changed from its factory setting, click on the parameter you wish to change for example the 'on' setpoint for relay 1 (Relay 1 Set 1) then clear the screen using the backspace key and enter the new value required.

When you have finished making all the necessary adjustments go to the 'send parameters to unit' icon and follow the on screen instructions. Alternatively if you are remote from site you can save an amended file and download it when you get to site.

Additional Information

Remember you must always use the same software version or higher, when you are uploading parameters that have been down loaded from another unit. E.g. if you have downloaded a parameter program from a unit with 4.6.1E software version then it can only be uploaded to a unit containing software version 4.6.1E or higher.

If in doubt contact Pulsar.

Upgrading your Instrument Software

Ultra PC Upgrades

Advanced Users Only

Upgrading your instrument software may be necessary, if, in close consultation with Pulsar it is felt that you require certain features for your application that your unit may not support. This may be the case if you have an older version of software. Alternatively, as Pulsar have an in house software facility we may have created a version of software that will fulfil your specific requirements.

In either instance before attempting to upgrade your instrument software you should consult Pulsar to ensure that you have received the most current version of software and that it is compatible with your unit.

Additional Information

If you attempt to upgrade your unit software with an incorrect version then your instrument could become unserviceable and will have to be returned to Pulsar for repair.

You will need to save your original Parameters as these will need to be re-entered manually after successfully re-programming your unit. Remember that you cannot upload parameters from an old version of software to a new version of software.

Once you press the Re-program icon read the instructions on the screen before attempting to upgrade your software.

After upgrading your software you will need to enter the Service Passcode and perform a Hard Default (Par 88) on the unit prior to re-entering your parameters.

This section describes some problem symptoms, with suggestions as to what to do.

Symptom	What to Do
The program will not install correctly.	Check that your computer is running Windows 9x or better.
The program will not open.	Close down all other Windows applications that you may be running. UltraPC needs up to 65% of your resources to be able to run. To check this go to your Start menu click Settings then System then click the Performance tab.
The registration period has ended.	Contact the distributor of your software with your software code (see page 4).
The program and unit will not communicate.	Is your unit switched on, and stabbed for the correct voltage. Check the cable is installed correctly. Check that your comms port has been set correctly, (see page 8 for details).
The display will not show echo profiles.	The unit is not communicating with your computer (see above).
The unit is slow to accept key presses.	The unit is busy displaying regular echo profiles, switch the Regular echo tab to 'no'.