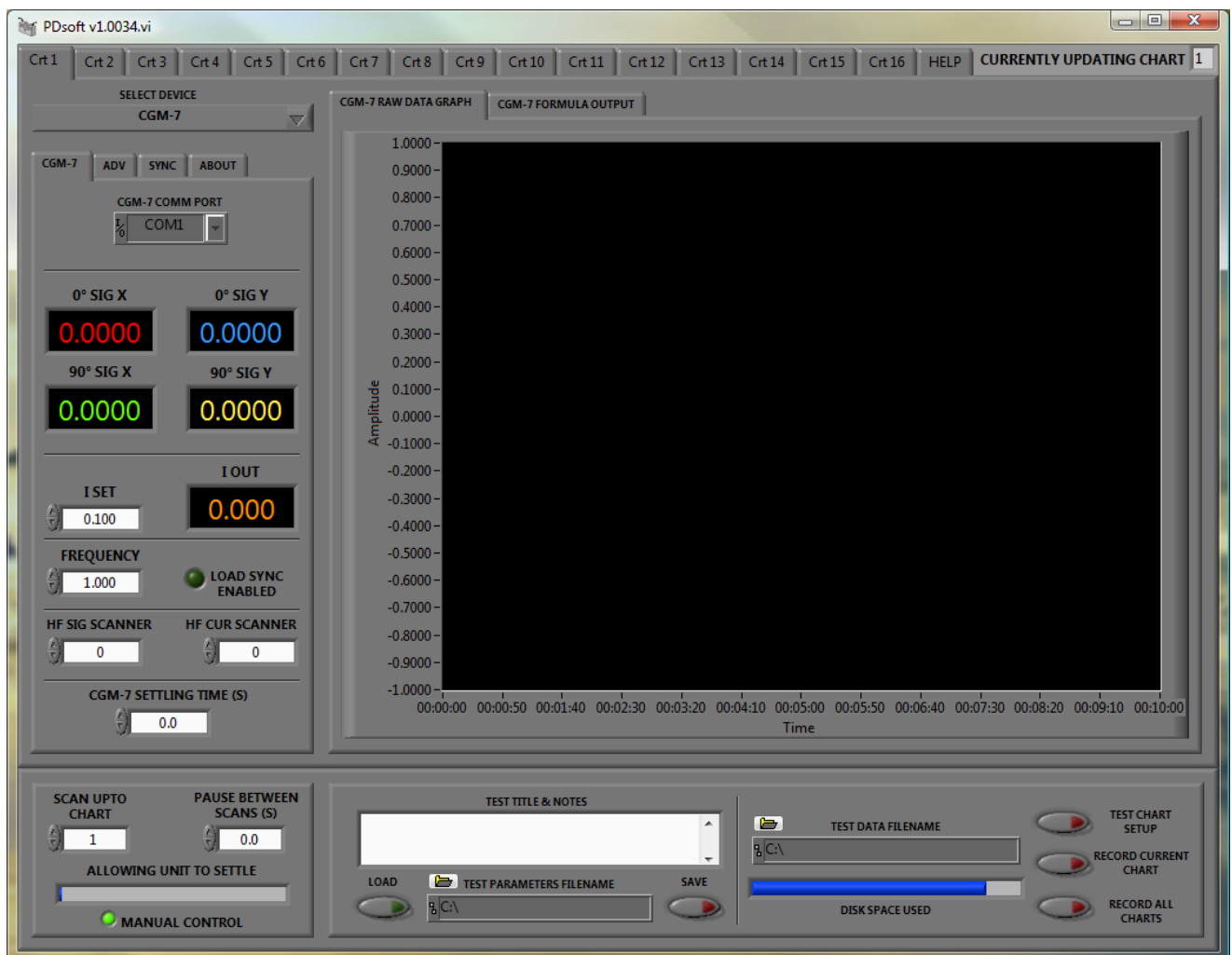


MATELECT LTD

PDsoft v1.0034



INSTRUCTION MANUAL

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SYSTEM REQUIREMENTS

PDsoft requires a fairly up to date PC system to work effectively, the following are the absolute minimum system requirements.

- An IBM compatible PC running Windows NT, 2000, XP, or Windows Vista.

This version of PDsoft will not work on windows 98 or earlier operating systems. If you require software to run on these platforms please get in touch with Matelect directly.

- A Pentium 4 processor or higher.
- 1 GB of system memory.
- A video resolution of 1024x768.
- 100 MB of free hard disk space.

TECHNICAL SUPPORT

Matelect prides itself with its technical support and willingness to help. If at any point during the installation or running of this application you require assistance please do not hesitate to contact Matelect. This can be done via phone or via email at:

PDsoftsupport@matelect.com

You can expect a response within 24hours under normal circumstances. If after using PDsoft you have and suggestions that could improve the application please email,

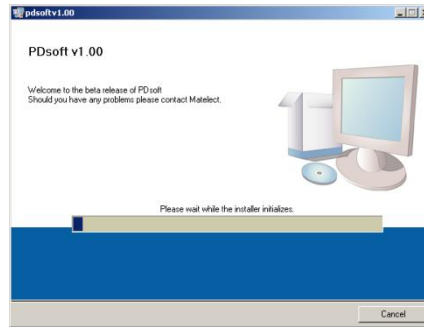
PDsoftimprovement@matelect.com

If you would like bespoke software written to your specific requirements, Matelect is capable of providing a quick turnaround service. Please get in touch to discuss your requirements.

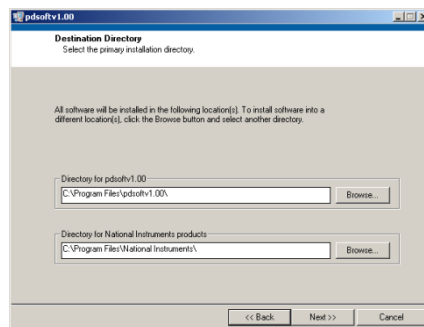
INSTALLING THE SOFTWARE

If you are using the PICO ADC-11 device for load synchronisation with the ACPD range of units please read and follow the instructions at the back of this manual before proceeding. If you are using the Matelect load synchronisation module please just follow the instructions below.

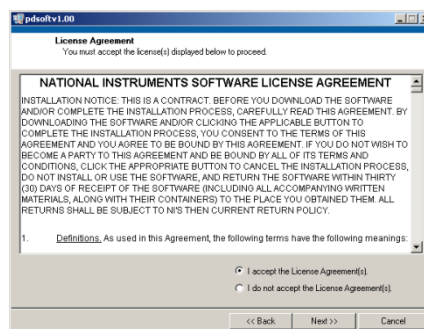
- Insert the PDsoft CD into your drive. After a time you should see the screen below.
- If the setup screen does not start automatically navigate to your CD-ROM drive and double click on setup.exe



- After a while the following screen should appear.

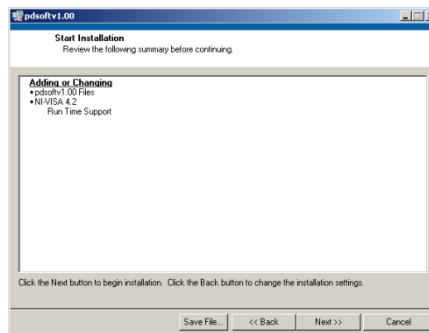


- Hit 'NEXT' to continue.

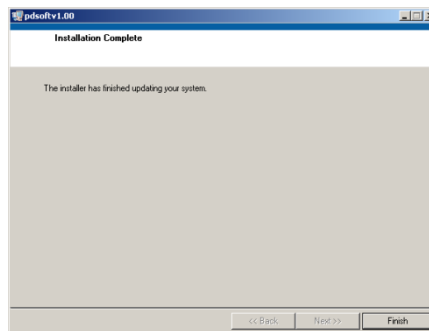


- Accept the license agreement and hit 'NEXT'.

- The following screen should appear.



- Hit 'NEXT' and after a while you should see the following.



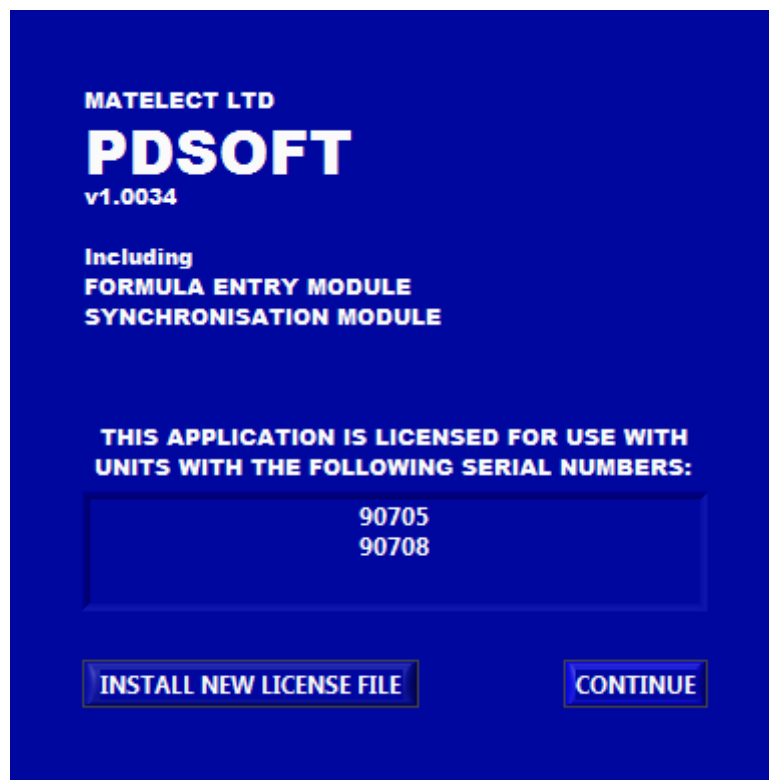
- Hit 'FINISH'.
- Depending on your OS you may be asked to restart your computer.

INSTALLING THE LICENSE FILE

A license file arrangement is incorporated into PDsoft. In order to use all the advanced features of PDsoft a valid license file must be installed, if it is not you will still be able to use PDsoft in a trial version, however you will not be able to save any data and you will not be able to use the 'TEST CHART SETUP', 'RECORD CURRENT CHART' or 'RECORD ALL CHART' facilities, as well as some other features such as load synchronisation.

The license file locks the software to a particular potential drop (PD) unit's serial number or group of serial numbers. The software interrogates the unit(s) connected to the PC at various points during execution of the programme and checks to see if they match with the license file information. If they do not then a popup display informs the user of this and as mentioned above will not allow certain aspects of the program to function.

When initially installing the software a valid license file will be installed, however if a user wishes to add more PD units to be controlled by PDsoft a new license file can be installed at any time by clicking 'INSTALL NEW LICENSE FILE' from the splash screen and following the onscreen instructions.



The splash screen interrogates the license file on start-up and shows a list of valid serial numbers that may be used with the application, see screenshot above. If you wish to use PDsoft with a unit whose serial number is not shown on the splash screen, please contact Matelect for a new license file.

ABOUT PDsoft

PDsoft has been developed to work with all of Matelect's potential drop units. PDsoft will work with the ACM-1A, CGM-5R, CGM-7, DCM-1, and DCM-2. The basic function of PDsoft is to log the output data from the selected PD unit and if appropriate set up any parameters.

PDsoft is also capable of controlling any scanner devices connected.

Dependent on the PD unit used with PDsoft the application has multiple advanced features (some of which may need to be independently purchased), these include formula entry to give a real time 'mm' output, load synchronisation for ACPD units, (load synchronisation is built into our DCPD products).

The logged data is stored in a simple comma separated file for easy importation to other applications for further investigation.

A GUIDED TOUR OF THE USER INTERFACE

The application can be broken down into 4 main sections, these are clearly distinguished, see image below. The four main sections are as follows,

1. Unit selection and setup.
2. The graph and formula entry section.
3. The scan setup section.
4. The data recording section.

Each of these sections will be described in turn. The usual approach when setting up a test sequence is to first configure PDsoft for the type of PD equipment being used, then to set up the particular equipments parameters, then any scanning sequence required and finally the data recording options.

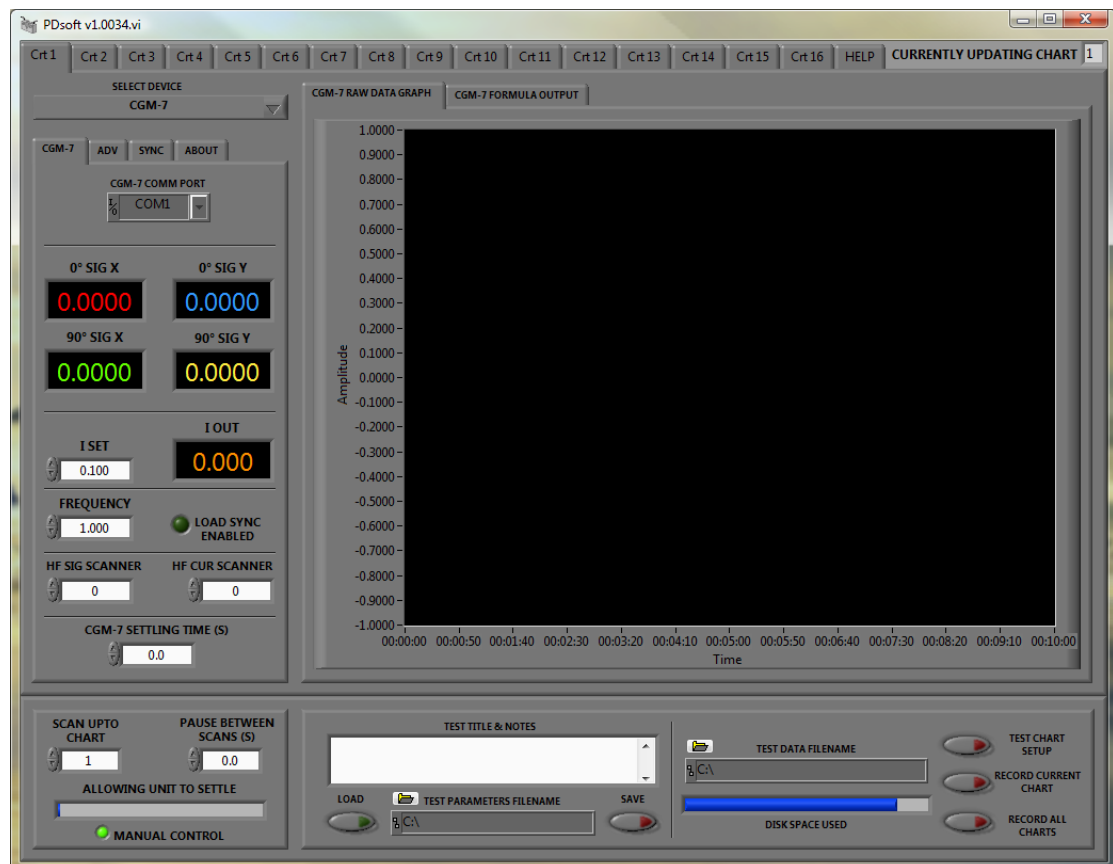
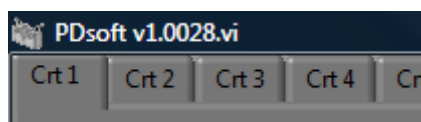


CHART TABS



The first thing to note is the row of tabs along the top of the screen, each one of these represents a separate chart, you can think of a chart as a separate experiment. Each chart can be set up completely independently from each other. Click on any chart tab along the top row to select and set-up the Matelect PD instrument that will be used. The user should start at chart 1 and work their way down to chart 16, adjusting parameters and setting channels etc. as they go. Once they have finished a scan of all adjusted charts can be tested or initiated.

SELECT DEVICE



This is a simple pull down menu, within which any current Matelect PD product can be selected, if the user is working with a CGM-7 for example they should selected this device from the list, the available parameters and outputs will change accordingly and the relevant tabs will appear below in the application window.

Please note: Not all PD units may be currently available for use in PDsoft, more will be added as time allows, please contact Matelect for a list of currently available units.

As already mentioned this application has been written to control multiple devices. Please refer to the relevant section at the back of this manual for further detailed information concerning your specific device setup.

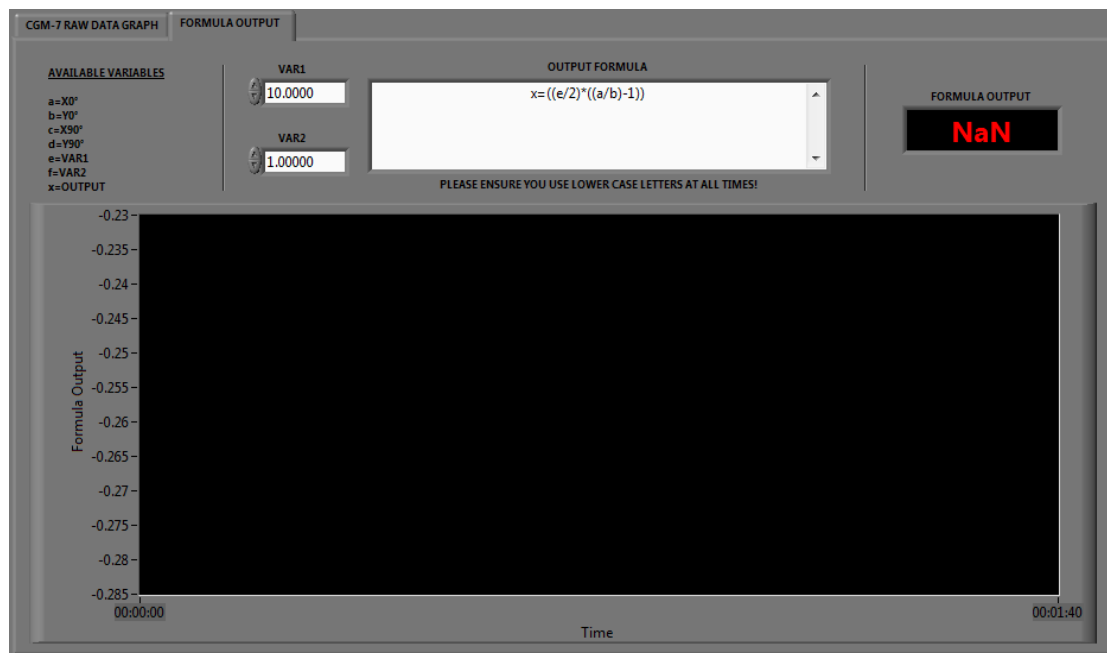
CHART SCANNING CONTROL



The chart scanning window controls the timing and how many charts PDsoft scans through. If you have setup charts 1 to 5 let's say you should adjust the 'SCAN UPTO CHART' parameter to 5. Once either the 'TEST SCAN SETUP' or 'RECORD ALL CHARTS' button is pressed (see data recording for further information) the program will set the chart tab to chart 1 and start scanning through the charts sequentially until it reaches the 'SCAN UPTO CHART' value. At this point the program will pause for so many seconds, (if set up by the user under 'PAUSE BETWEEN SCANS') and start the process again until the user stops it by depressing either the 'TEST SCAN SETUP' or 'RECORD ALL CHARTS' buttons.

The 'ALLOWING UNIT TO SETTLE' bar shows how long before PDsoft will take the next reading, this is set up under each specific devices user interface, if applicable. The 'MANUAL CONTROL' indicator is on whilst the user is setting up the charts, whenever a scan or recording is taking place this indicator will be off showing the user that they should not adjust any of the parameters, and that the program is under automated control.

FORMULA ENTRY AND OUTPUT



Independent of the PD unit selected, a formula output window is available for direct entry of formulas allowing, for example, a real time 'mm' output display, this can be found by clicking the 'FORMULA OUTPUT' tab behind the standard 'RAW DATA GRAPH'. The user is advised to use a dual channel unit such as the DCM-2 or CGM-7 for a more accurate result, although this is not an absolute necessity. (The use of dual channel systems will allow for a reference and active signal to be measured concurrently.)

As can be seen above, (this is with a CGM-7 unit selected), a list of available variables from the CGM-7 are shown on the left hand side, these can be entered into the 'OUTPUT FORMULA' window in order to give a 'mm' output display, or anything else the user wishes to produce. A list of available expressions for use with the formula entry window is shown towards the rear of this manual.

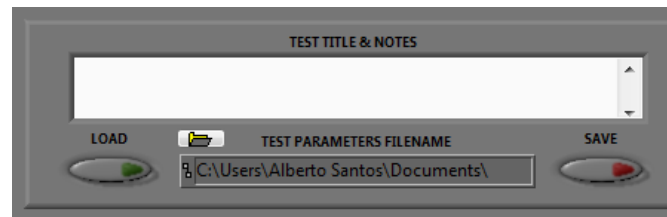
It should be noted that once a user has finished entering a formula they must click outside the 'OUTPUT FORMULA' window for the changes to take effect and everything must also be written in lower case.

VALID MATHEMATICAL EXPRESSIONS FOR FORMULA ENTRY

The following expressions may be used with the formula entry system in PDsoft.

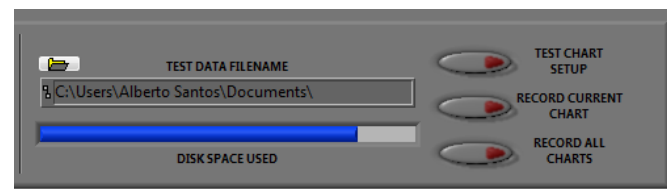
Function	Description
abs(x)	Returns the absolute value of x.
acos(x)	Computes the inverse cosine of x in radians.
acosh(x)	Computes the inverse hyperbolic cosine of x.
asin(x)	Computes the inverse sine of x in radians.
asinh(x)	Computes the inverse hyperbolic sine of x.
atan(x)	Computes the inverse tangent of x in radians.
atan2(y,x)	Computes the arctangent of y/x in radians.
atanh(x)	Computes the inverse hyperbolic tangent of x.
ceil(x)	Rounds x to the next higher integer (smallest integer x).
ci(x)	Evaluates the cosine integral for any real nonnegative number x.
cos(x)	Computes the cosine of x, where x is in radians.
cosh(x)	Computes the hyperbolic cosine of x.
cot(x)	Computes the cotangent of x (1/tan(x)), where x is in radians.
csc(x)	Computes the cosecant of x (1/sin(x)), where x is in radians.
exp(x)	Computes the value of e raised to the x power.
expm1(x)	Computes one less than the value of e raised to the x power ((e^x) - 1).
floor(x)	Truncates x to the next lower integer (largest integer x).
getexp(x)	Returns the exponent of x.
gamma(x)	Evaluates the gamma function or incomplete gamma function for x.
getman(x)	Returns the mantissa of x.
int(x)	Rounds x to the nearest integer.
intrz(x)	Rounds x to the nearest integer between x and zero.
ln(x)	Computes the natural logarithm of x (to the base of e).
lnp1(x)	Computes the natural logarithm of (x + 1).
log(x)	Computes the logarithm of x (to the base of 10).
log2(x)	Computes the logarithm of x (to the base of 2).
max(x,y)	Compares x and y and returns the larger value.
min(x,y)	Compares x and y and returns the smaller value.
mod(x,y)	Computes the remainder of x/y, when the quotient is rounded toward -Infinity.
pow(x,y)	Computes x raised to the y power.
rand()	Produces a floating-point number between 0 and 1 exclusively.
rem(x,y)	Computes the remainder of x/y, when the quotient is rounded to the nearest integer.
si(x)	Evaluates the sine integral for any real number x.
sec(x)	Computes the secant of x, where x is in radians (1/cos(x)).
sign(x)	Returns 1 if x is greater than 0, returns 0 if x is equal to 0, and returns -1 if x is less than 0.
sin(x)	Computes the sine of x, where x is in radians.
sinc(x)	Computes the sine of x divided by x (sin(x)/x), where x is in radians.
sinh(x)	Computes the hyperbolic sine of x.
sizeOfDim(ary,di)	Returns the size of the dimension di specified for the array ary.
spike(x)	Generates the spike function for any real number x.
sqrt(x)	Computes the square root of x.
step(x)	Generates the step function for any real number x.
tan(x)	Computes the tangent of x, where x is in radians.
tanh(x)	Computes the hyperbolic tangent of x.

TEST SETUP



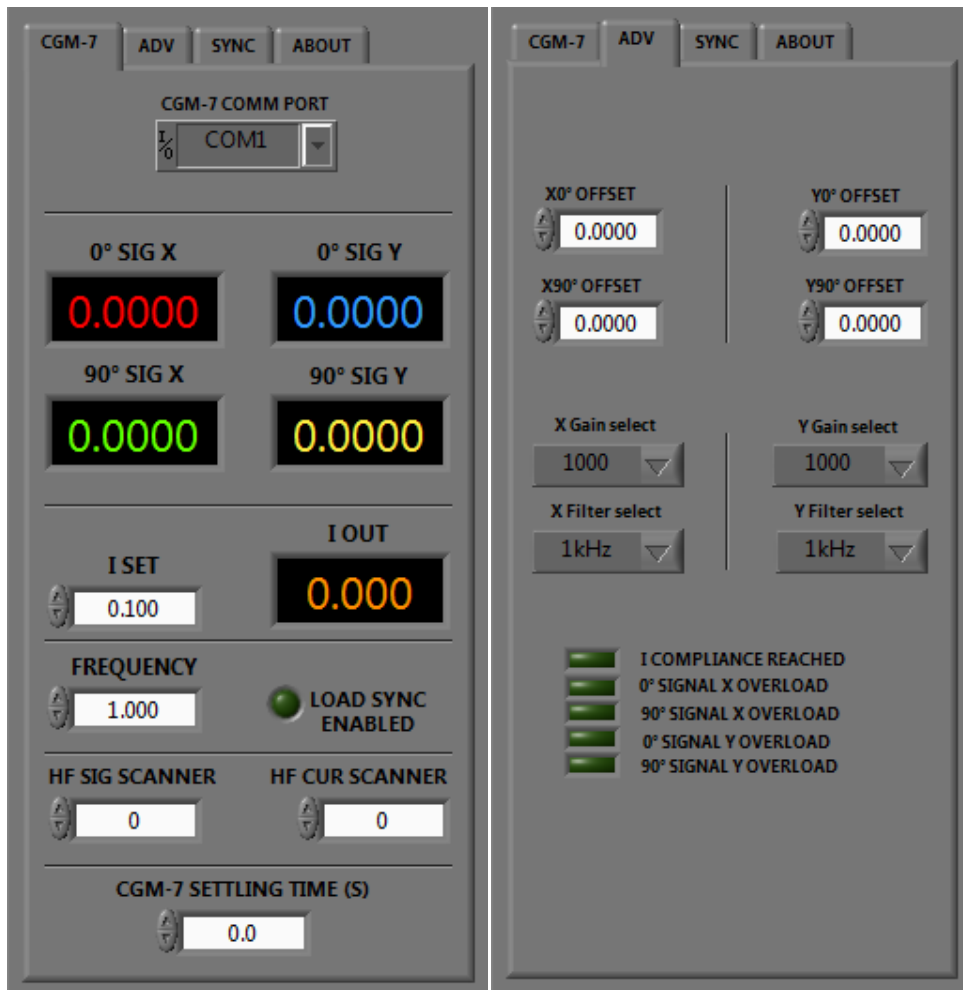
The test setup section allows the user to store or retrieve a previous setup. When setting up a test that involves all 16 charts this can take a long time to achieve, however once a user is happy with a particular setup they may store the test parameters to file for retrieval at a later date. Simply enter a valid file location and filename under 'TEST PARAMETERS FILENAME', no extension is required, or browse to a location by clicking the folder icon. Once you have done this click on 'SAVE' to store the file or 'LOAD' to retrieve a previously saved test file. A user may also enter a description under 'TEST TITLES & NOTES' this will also be saved at the beginning of the comma separated data file. It is often a good idea to fill this in with as much information as possible to remind the user of the particular test which was undertaken at the time.

DATA RECORDING



The data recording section allows the user to store the data gathered from the selected unit into a date and time stamped comma separated file. Enter the desired data filename in the 'TEST DATA FILENAME' box or browse to a location by clicking the folder icon. To test the user setup, hit the 'TEST CHART SETUP' button, the programme will run through your setup and any corrections can be made during this time. Once satisfied that your setup is correct you may proceed to use either the 'RECORD CURRENT CHART' or 'RECORD ALL CHARTS'. The 'DISK SPACE USED' bar gives an up to date display of the hard disk space left in the location the user has chosen to save their data file to.

CGM-7 USER INTERFACE



This section of the manual concerns itself with the specific CGM-7 user interface. Once a user has selected the CGM-7 from the drop down menu the following screen appears.

Set the correct 'com' port for the attached CGM-7, the user should start to see the data from the CGM-7 being displayed in real time.

Items in a black background window are data out readings whilst those in a white background window are user input values.

The data out values signal and current are colour coded, these match up to the colours on the graph output display, so that the orange line on the graph is the current output.

The user can set the current and frequency values as well as any scanners that may be connected within this tab.

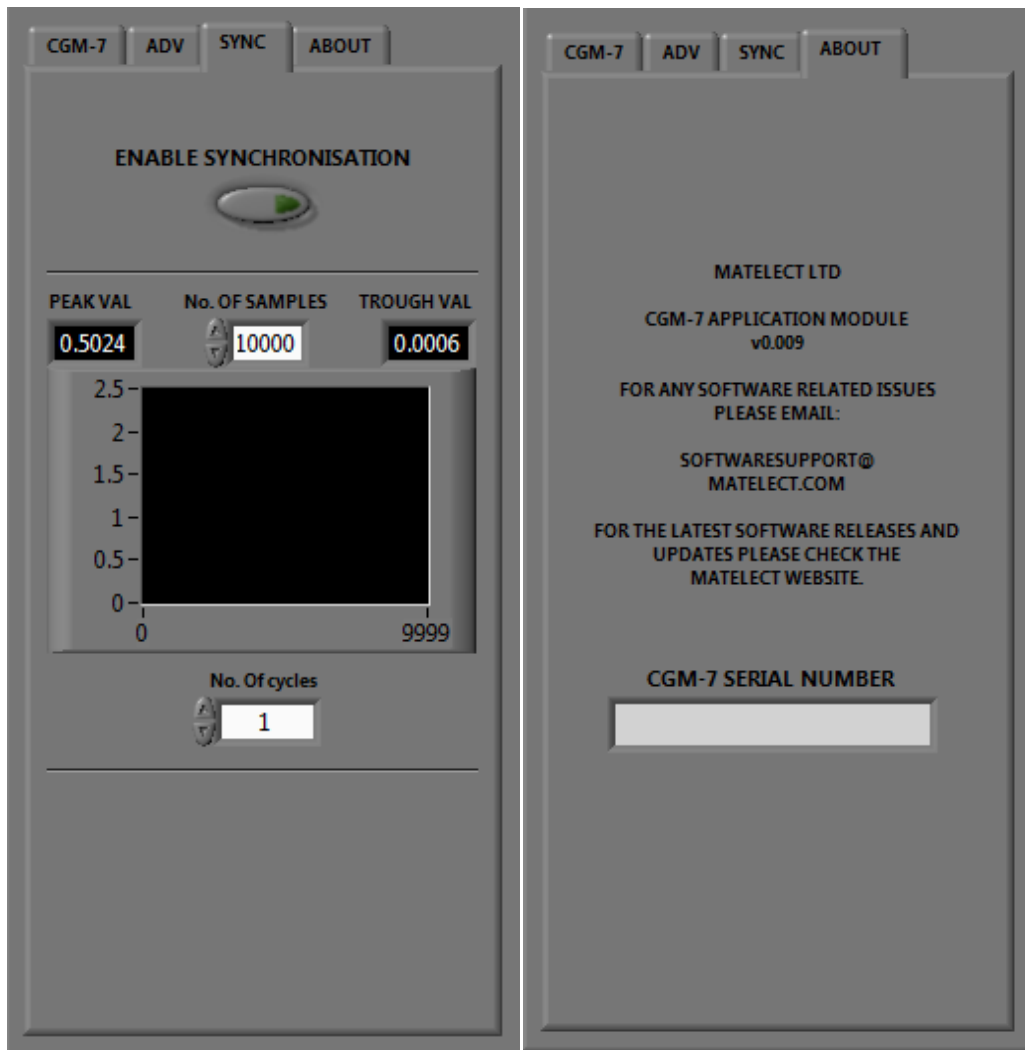
The final user setting, the 'SETTLING TIME' is used to allow the CGM-7 to settle in order to stabilize, this is only used when scanning between charts, when scanning is commenced the program changes the chart selected then applies the user settings and waits for a period as set by the settling time before taking a reading and proceeding to the next chart.

Finally the 'LOAD SYNC ENABLED' indicator is used to show the user when the application is waiting for a load signal before taking a reading, it should be noted that if a settling time is set the program will wait the set time and then wait for a load signal before taking a reading.

CGM-7 ADVANCED FEATURES

The user can access the advanced features of the CGM-7 by pressing the 'ADV' tab, here the user can adjust the offset of each signal as well as select filter options and gain settings for both the X and Y signals of the CGM-7.

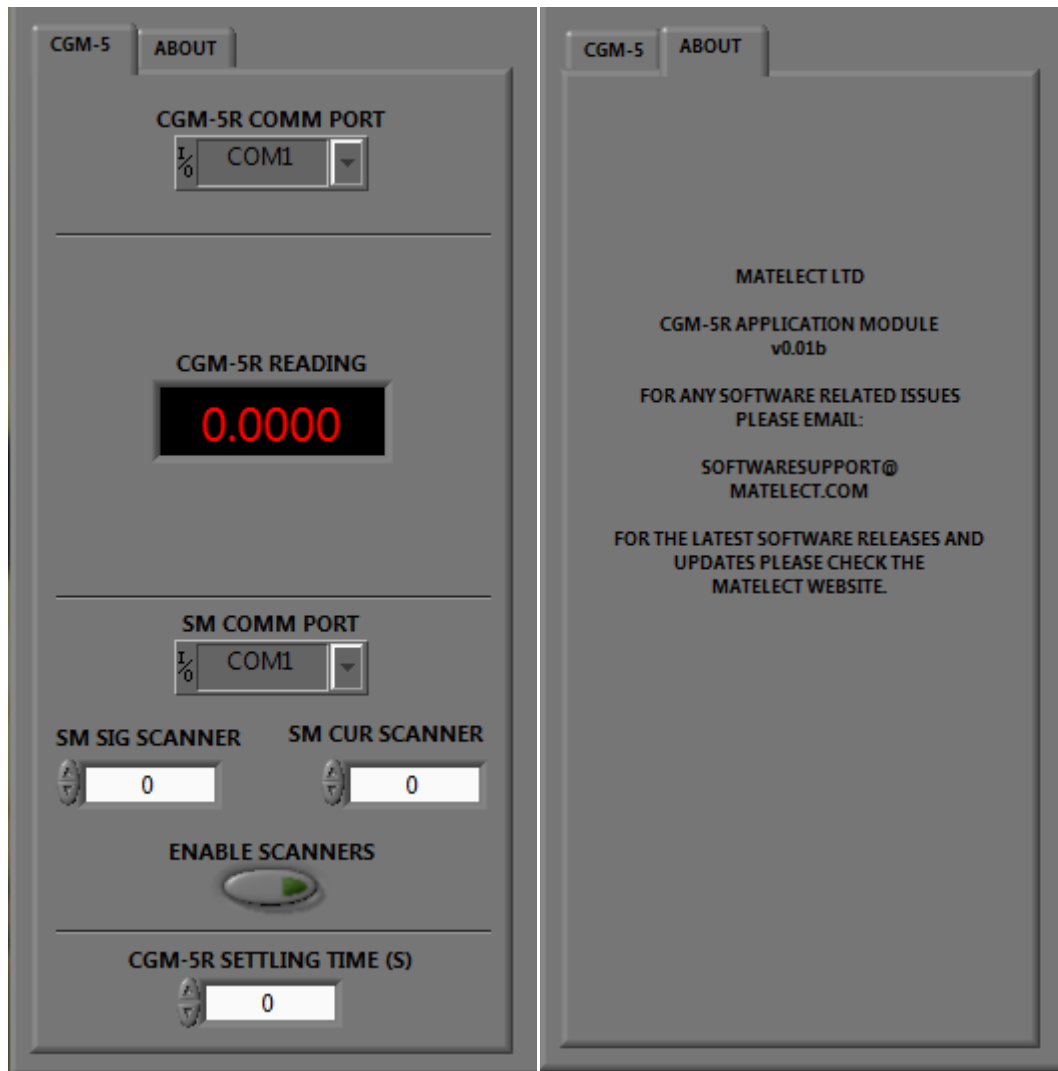
CGM-7 LOAD SYNCHRONISATION



The CGM-7 PDsoft interface is capable of taking a reading in sync with the load signal of a testing machine. If the user wishes to do this they will require extra hardware usually in the form of a small USB module capable of reading the test machines load signal, please contact Matelect for further information on this, two models are available, the PICO ADC-11 and Matelect's load synchronisation module. Once the hardware is correctly installed press the 'ENABLE SYNCHRONISATION' button, after a time a load signal will appear on the graph, if the user switches back to the 'CGM-7 BASICS' tab they will note that the 'LOAD SYNC ENABLED' indicator is now on and the display will only update on the falling edge of the load signal.

The final tab shows the version number of the CGM-7 interface along with the serial number of the connected CGM-7. The serial number shown here must match that of the license file for complete operation of PDsoft, please refer to the license file section at the beginning of this manual for further information.

CGM-5R USER INTERFACE

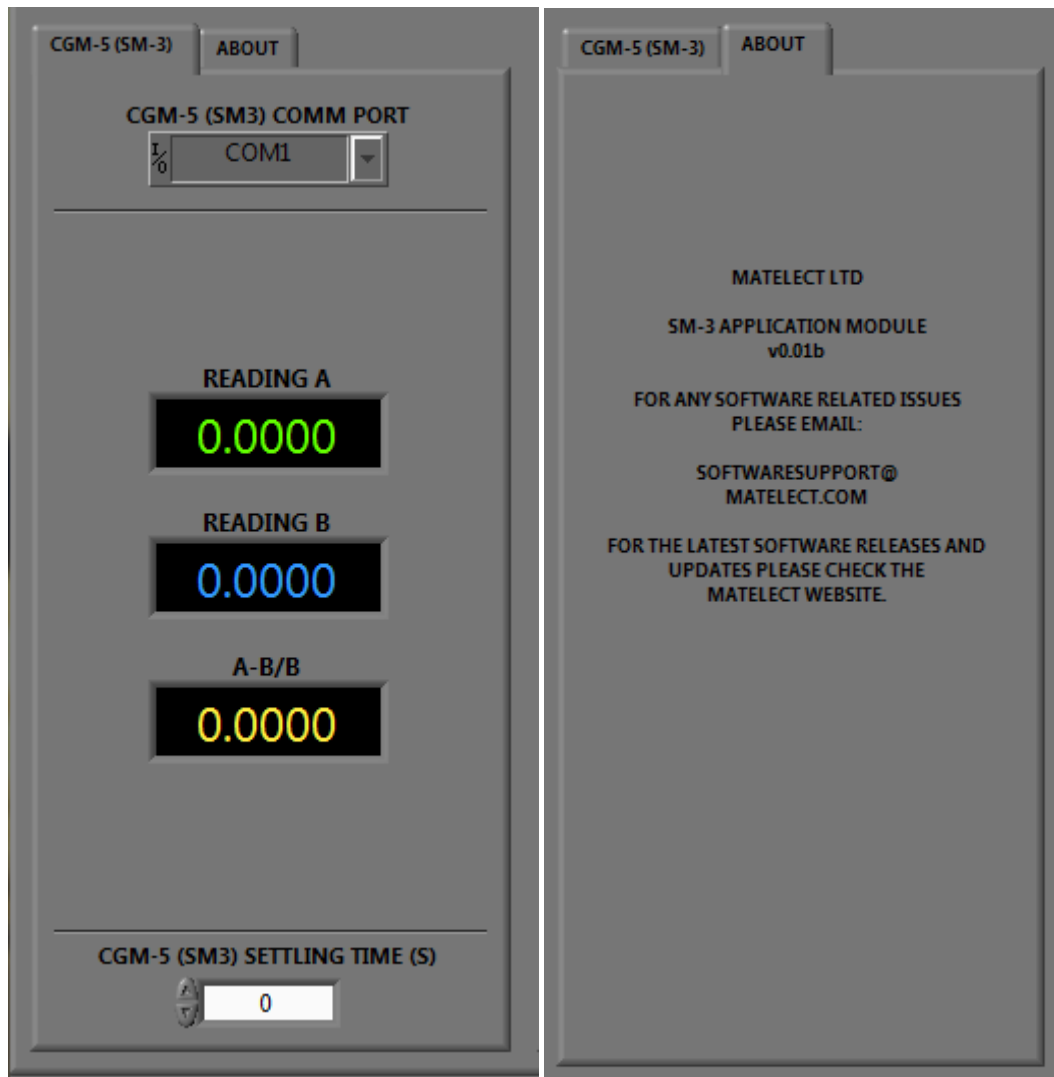


This section of the manual concerns itself with the specific CGM-5R user interface. Once a user has selected the CGM-5R from the drop down menu the following screen appears. Set the correct 'com' port for the attached CGM-5R, the user should start to see the data from the CGM-5R being displayed in real time.

Items in a black background window are data out readings whilst those in a white background window are user input values.

The CGM-5R does not have two-way communication, so all values such as current and frequency must first be set on the CGM-5R manually, see the unit's manual for further advice. The final user setting, the 'SETTLING TIME' is used to allow the CGM-5R to settle in order to stabilize, this is only used when scanning between charts, when scanning is commenced the program changes the chart selected then applies the user settings and waits for a period as set by the settling time before taking a reading and proceeding to the next chart.

CGM-5R (With SM3 control) USER INTERFACE



If you are using the CGM-5R with the SM3 thermal compensation unit then wire up the two units as described in the SM3 manual. Select the SM-3 tab and set the correct 'com' port for the attached SM3, the user should start to see the data from the SM3 being displayed in real time.

The final user setting, the 'SETTLING TIME' is used to allow the CGM-5R to settle in order to stabilize, this is only used when scanning between charts, when scanning is commenced the program changes the chart selected then applies the user settings and waits for a period as set by the settling time before taking a reading and proceeding to the next chart.

DCM-2 USER INTERFACE



This section of the manual concerns itself with the specific DCM-2 user interface. Once a user has selected the DCM-2 from the drop down menu the following screen appears. Set the correct 'com' port for the attached DCM-2, set the desired current and press the 'start/stop' button, the user should start to see the data from the DCM-2 being displayed in real time.

Items in a black background window are data out readings whilst those in a white background window are user input values. The data out values signal and current are colour coded, these match up to the colours on the graph output display, so that the orange line on the graph is the current output. The user can set the current value as well as any scanners that may be connected within this tab.

The final user setting, the 'SETTLING TIME' is used to allow the DCM-2 to settle in order to stabilize, this is only used when scanning between charts, when scanning is commenced the program changes the chart selected then applies the user settings and waits for a period as set by the settling time before taking a reading and proceeding to the next chart.

DCM-2 ADVANCED FEATURES

The screenshot displays the 'ADV' (Advanced) settings menu for the DCM-2. At the top, there are three tabs: 'DCM-2', 'ADV', and 'ABOUT', with 'ADV' being the active tab. The settings are organized as follows:

- NO OF FILTER READINGS:** A numeric input field with a circular arrow icon on the left, containing the value '64'.
- NO OF FILTER SAMPLES:** A numeric input field with a circular arrow icon on the left, containing the value '2'.
- RUN MODE:** A dropdown menu currently set to 'FREE RUNNING'.
- X VOLTAGE RANGE:** A dropdown menu currently set to '4.5mV'.
- X OFFSET VOLTAGE:** A numeric input field with a circular arrow icon on the left, containing the value '0'.
- Y VOLTAGE RANGE:** A dropdown menu currently set to '4.5mV'.
- Y OFFSET VOLTAGE:** A numeric input field with a circular arrow icon on the left, containing the value '0'.

DCM-2 ADVANCED FEATURES

The user can access the advanced features of the DCM-2 by pressing the 'ADV' tab, here the user can adjust the offset of each signal as well as select filter for both the X and Y signals of the DCM-2.

DCM-1 USER INTERFACE



This section of the manual concerns itself with the specific DCM-1 user interface. Once a user has selected the DCM-1 from the drop down menu the following screen appears. Set the correct 'com' port for the attached DCM-1, the user should start to see the data from the DCM-1 being displayed in real time.

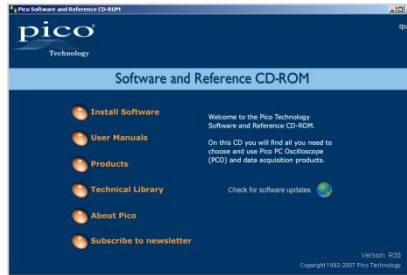
Items in a black background window are data out readings whilst those in a white background window are user input values.

The DCM-1 does not have two-way communication, so all values such as current must first be set on the DCM-1 manually, see the unit's manual for further advice. The final user setting, the 'SETTLING TIME' is used to allow the DCM-1 to settle in order to stabilize, this is only used when scanning between charts, when scanning is commenced the program changes the chart selected then applies the user settings and waits for a period as set by the settling time before taking a reading and proceeding to the next chart.

PICO ADC SOFTWARE INSTRUCTIONS

If you are using the PICO ADC-11 device for load synchronisation you will need to follow the instructions below before installing and using PDsoft. If however you are using the Matelect synchronisation module please install PDsoft normally as outlined at the beginning of this manual.

- Do not plug in the ADC-11 at this stage.
- Insert the 'Pico Technology software and reference CD-ROM R.35' CD into your drive.
- The following screen should eventually appear.



- Select 'INSTALL SOFTWARE'



- Select 'INSTALL SOFTWARE'



- Select 'INSTALL PICOSCOPE AND PICOLOG'



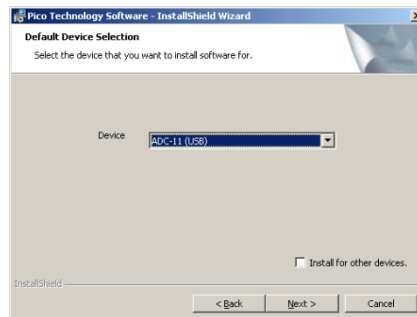
- Select 'INSTALL PICOSCOPE 5 AND PICOLOG'



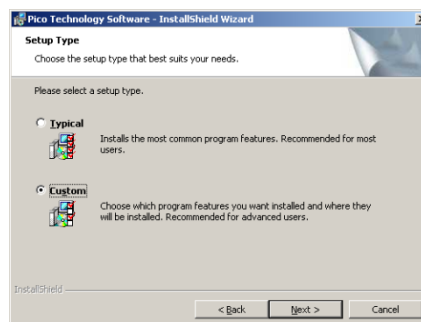
- Hit 'NEXT'



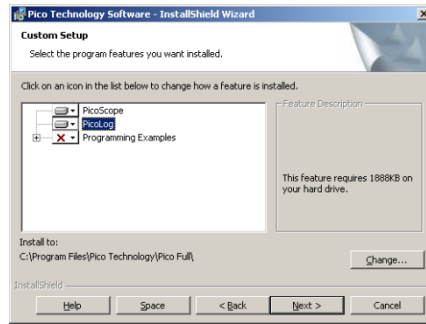
- Agree to the license terms and hit 'NEXT'



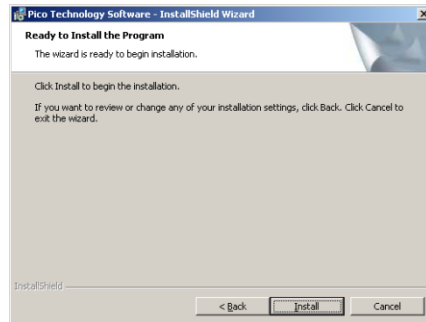
- Select 'ADC-11 (USB)' from the pull down menu and hit 'NEXT'



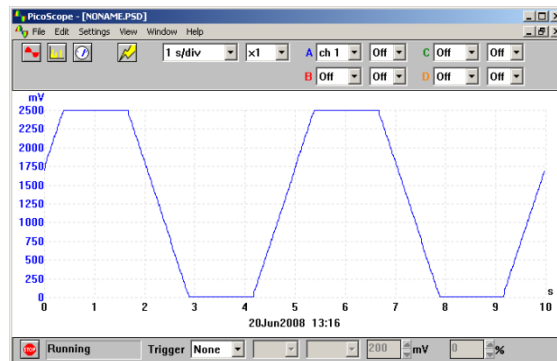
- Select 'CUSTOM' and hit 'NEXT'



- Hit 'NEXT'



- Hit 'INSTALL'
- Once complete quit the Pico install program.
- Remove the CD-ROM from the drive.
- Connect the Pico device to a spare USB slot on your PC. The found hardware wizard should appear and find the drivers for the device automatically.
- Connect the coax cable provided from the Pico device to the load output of your test unit. Make sure the output from the load does not exceed 2.5v!
- To confirm the load signal is being picked up correctly start the 'Picoscope' software and confirm you can see a waveform on the screen. It should look something like the image shown below.



- You have successfully installed the ADC-11 device, shut down Picoscope and proceed to the PDsoft installation guide at the beginning of this manual.

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