DigiPro2

User Manual

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This equipment should be installed, maintained, and operated by technically qualified personnel. Any errors or omissions in data, or the interpretation of data, are not the responsibility of DGSI. The information herein is subject to change without notification.

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Introduction

About DigiPro

DigiPro2 creates databases, manages inclinometer data, and generates plots and reports. It also provides advanced routines for identifying and correcting systematic errors.

Compatibility

DigiPro2 works with both the Digitilt Classic system and the Digitilt AT system. It replaces the original DigiPro for Windows and it also replaces DMM, since it can retrieve surveys from the DataMate directly

DigiPro2 features a new database engine and a new database format. The new database files have a .dpw extension. DigiPro2 cannot directly open DMM databases (.mdb files) but it can convert or import them.

- The convert command generates a dpw database from an mdb database. The new database has the same name and appears in the same location as the old database. This is the easiest way to use existing data.
- The import command is slightly different. You create a new dpw database first. Then you can import data from a variety of formats, including DMM mdb files.

Installing DigiPro2

1. Direct your browser to www.slopeindicator.com.
2. Click Downloads > Software > DigiPro2.
3. Run the "digipro2setup.exe" program after it downloads.

About DigiPro2 Licenses

DigiPro2 starts with advanced features enabled for 45 days. After 45 days, it reverts to a basic version, unless a license is purchased. See Appendix 1 for information about purchasing and installing a license.

The basic version has no time limits and is free to use.

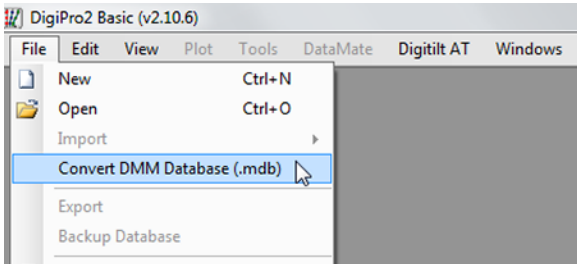
Converting DMM Databases

MDB to DPW

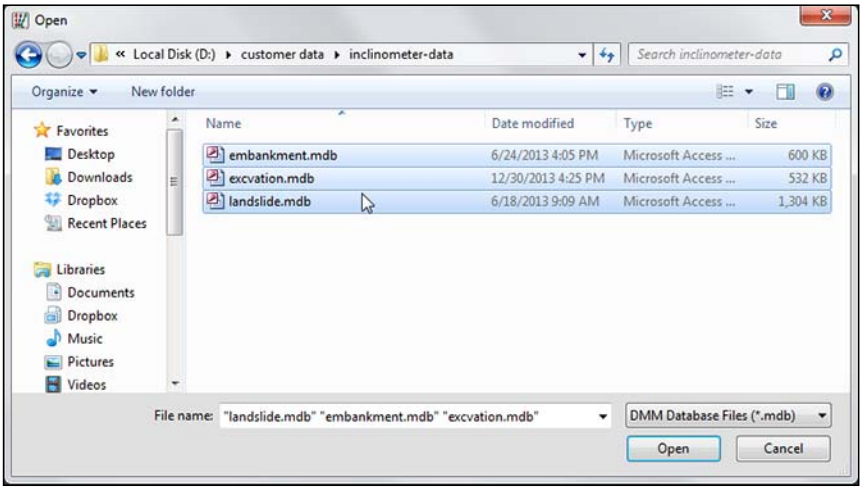
DigiPro2 can create .dpw databases from your existing .mdb databases. The new databases have the same name and are placed in the same folder as the original database. The dpw extension shows that it is a DigiPro2 database.

Convert

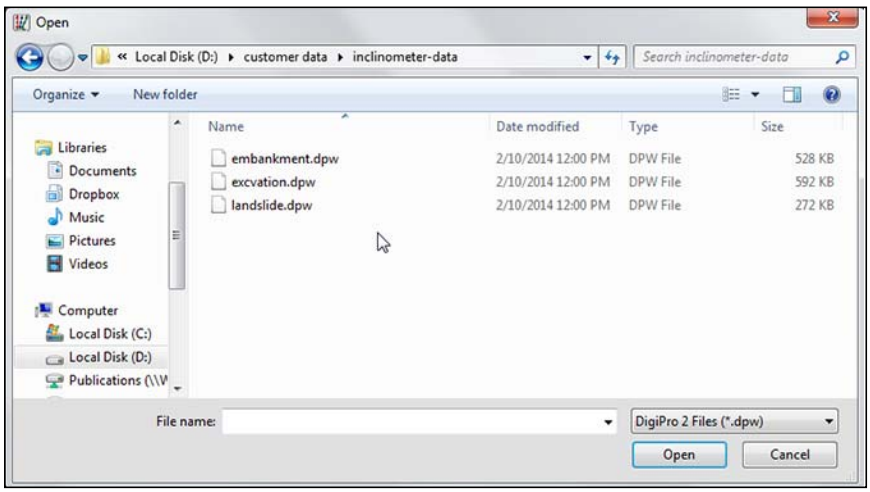
1. Start DigiPro2.
   Choose File -> Convert DMM Databases



2. Select the mdb files to convert. You can select multiple files..



3. DigiPro2 creates dpw files from the mdb files. The original mdb files are not altered and are still in the same folder.



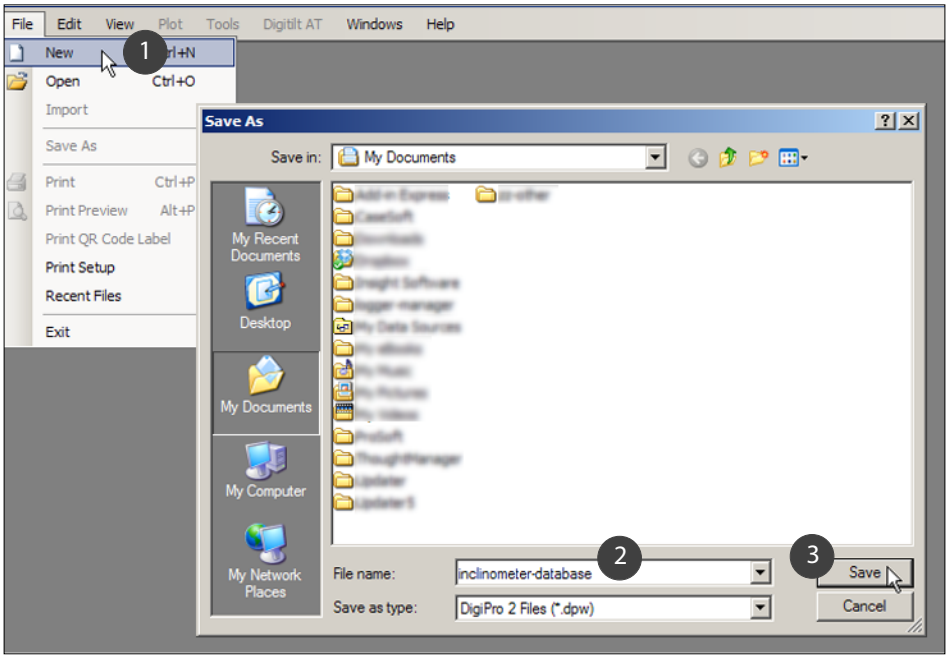
Creating a Database

Introduction

The previous chapter explained how to create create dpw databases from DMM databases. This chapter explains how to create new, empty databases, as you would if you had no previous databases.

Creating a Database

1. Start DigiPro. The File menu appears.
2. Click New.
3. Enter a name for the database.
4. Click Save.



Notes

- The default folder is “My Documents” or “Documents.”

  To set a different default folder, click Edit > Preferences > Database Folder. Be sure to create your new database in that folder.
- Choose your own filename for the database. All DigiPro2 databases have a .dpw extension.

Next Steps

The new database is empty. To fill it, you can:

- Retrieve surveys from a Digitilt DataMate readout.
- Import dux files from the Digitilt AT system.
- Import other inclinometer data.

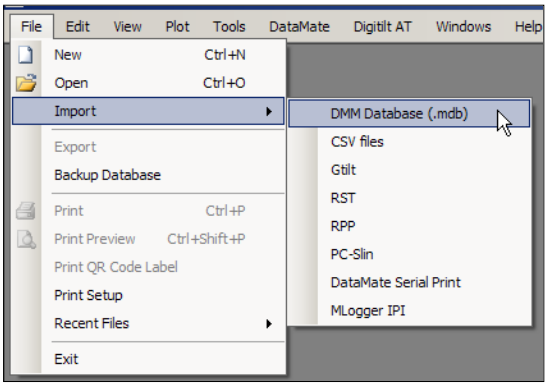
Importing Data

Importing DMM Data

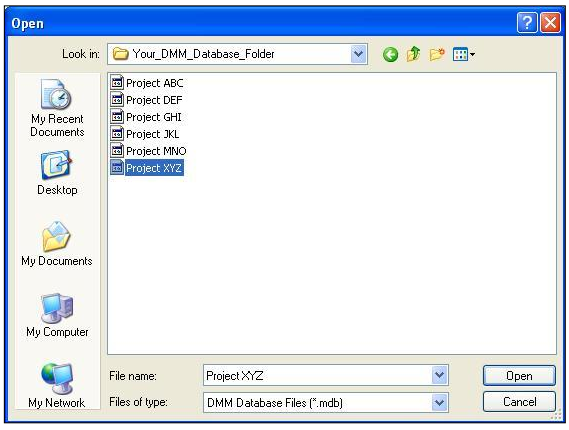
After you create a database, you can import surveys from a number of different inclinometer file formats. The examples below show importing mdb files.

1. Create a database, as explained in the previous chapter.

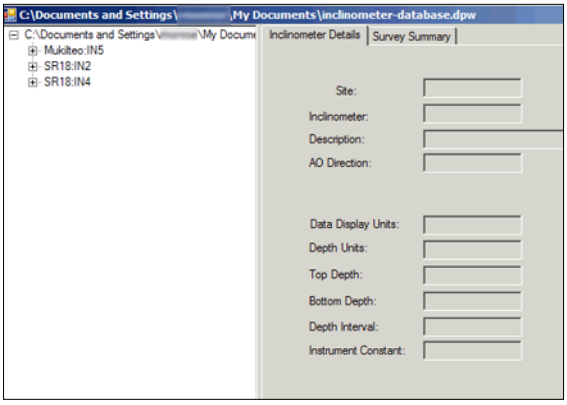
2. Click File > Import > [some format].



3. Navigate to the data file, select it, and click Open.



4. The screen refreshes to show the imported inclinometers and surveys



Inspecting a Database

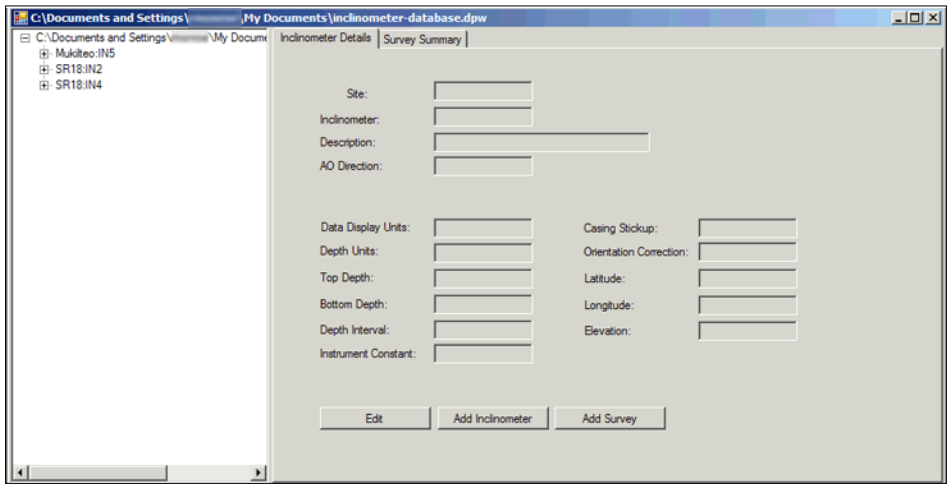
Opening a Database

Open the dpw database that you just created. Or, if you have no data yet, open the sample database, as explained below.

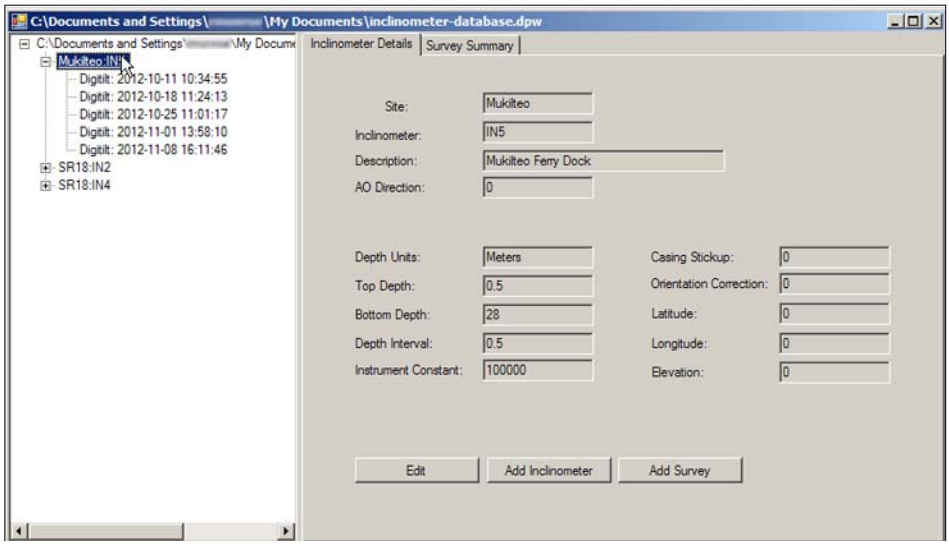
1. Start DigiPro2 from the desktop icon or the start menu.
2. The File menu appears. Choose Open.
3. Click My Documents (left side) or navigate to My Documents.
4. Double-click the folder named "Inclinometer-Data."
5. Choose "sample.dpw."

Inclinometer List

A list of inclinometers appears on the left.

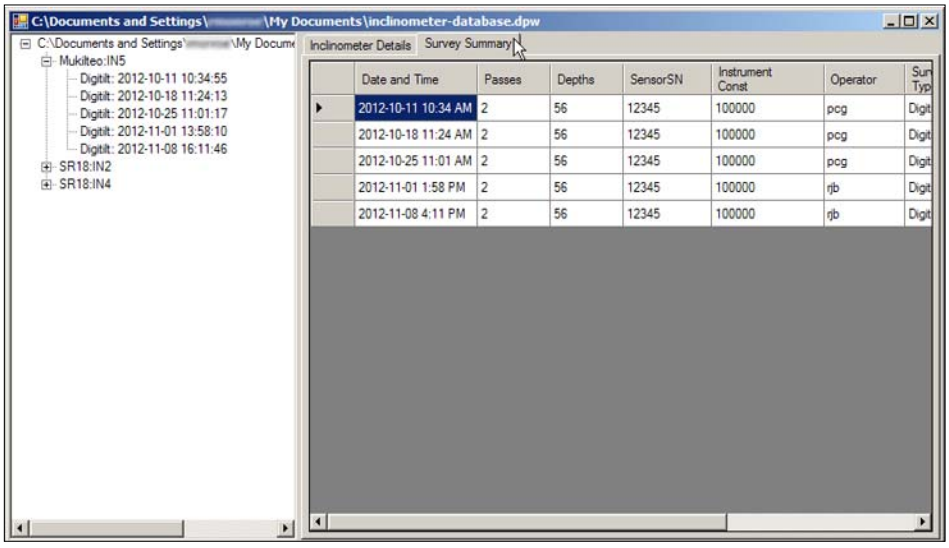


Double-click any inclinometer to see its details on the right. To modify any of the details, click the Edit button.



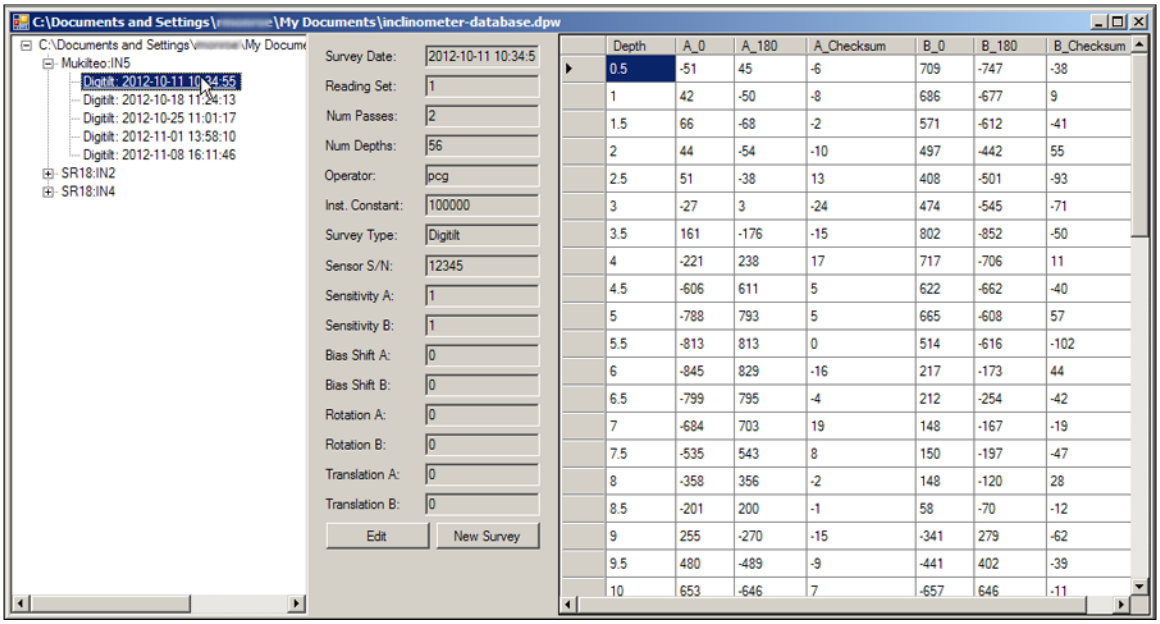
Survey Summary

Click the survey summary tab to see a summary of the surveys for this inclinometer. Double-click any date (left side or right side) to see data values, as shown in the next screen shot.



Survey Data

Double-click a survey (date) to see readings and checksums. Readings from the Classic system are shown in the traditional sine units. Readings from the AT system are shown in the units set by the AT Reader.



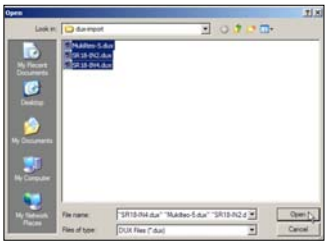
Working with the DataMate

System Workflow

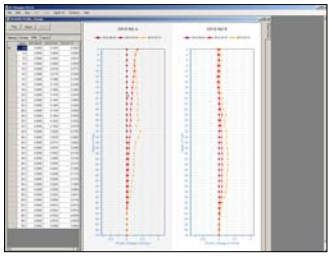
1. Survey the inclinometers with the Digitilt Classic system. The Digitilt DataMate readout stores the surveys in memory.

2. Connect the DataMate to a PC.

3. Open a database (.dpw only), establish a connection with the DataMate, and then retrieve surveys from the DataMate.



4. Use DigiPro2 to display and print inclinometer plots.

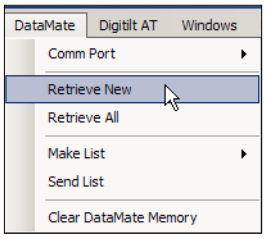


Terminology

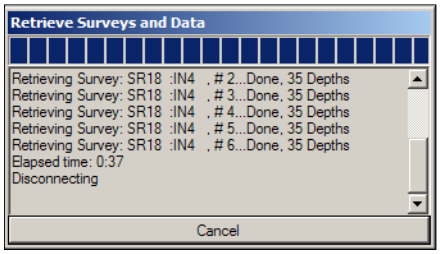
DigiPro2 uses “inclinometer” to refer to the installed portion of the inclinometer system. The DataMate, DMM, and the previous DigiPro use “installation” to refer to the same thing.

Retrieving Surveys

1. Connect the Datamate to the PC.
2. Switch on the DataMate.
3. Choose “Comm.” The DataMate displays “Waiting for PC.”
4. Start DigiPro2 and open the appropriate database.
5. Click DataMate > “Retrieve All” or “Retrieve New.”



6. DigiPro2 shows a progress bar as it imports data.



Communications Problems

1. If DigiPro reports a communications problem, click DataMate > Comm Port to choose a different comm port.
2. Additional help is available at www.slopeindicator.com. Go to: Support > Tech Notes > DataMate Communications FAQ.

Managing the DataMate

The DataMate holds a list of installations. It is convenient to create the list in DigiPro2 and send it to the DataMate. Please remember the following:

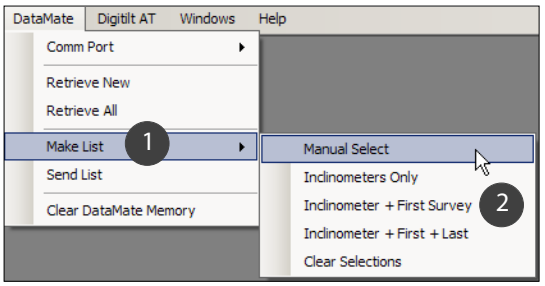
- DigiPro2 completely replaces the list held in the DataMate and also clears all surveys from the DataMate's memory.
- First you create the list. Then you send the list.

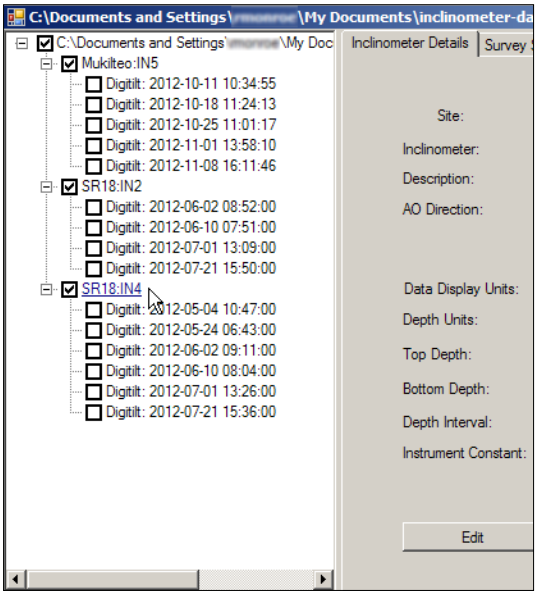
Create the List

1. Open a database and click DataMate > Make List.
2. Choose one of the options. DigiPro2 places checks next to the items selected for the list. In the example at right, only inclinometers were selected for the list.

   The original DataMate has room for 40 inclinometers. Keep as memory free for new surveys.

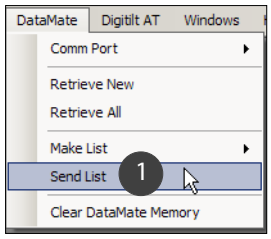
   The DataMate II has room for 160 installations and 320 surveys.

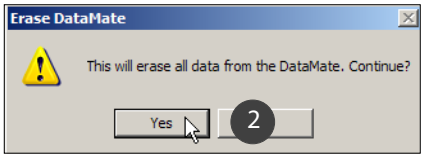




Send the List

1. Click DataMate > Send List.
2. DigiPro shows a warning. This is normal. Click Yes to continue.

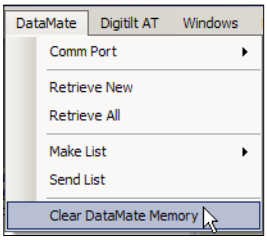




Clearing Memory

DigiPro2 offers an erase command that can clear the memory of the DataMate, if necessary. This erases all installations and surveys.

Click DataMate > Erase Memory.

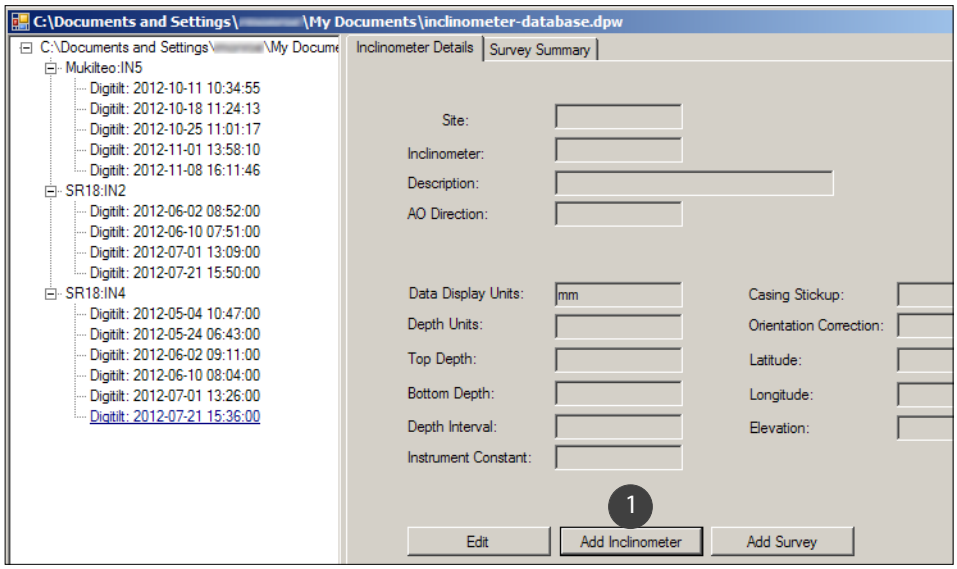


Adding Inclinometers to the Database

If you are in the field, you can create a new "installation" on the DataMate. Then, when you retrieve surveys with DigiPro2, the new installation will appear as an inclinometer in the database.

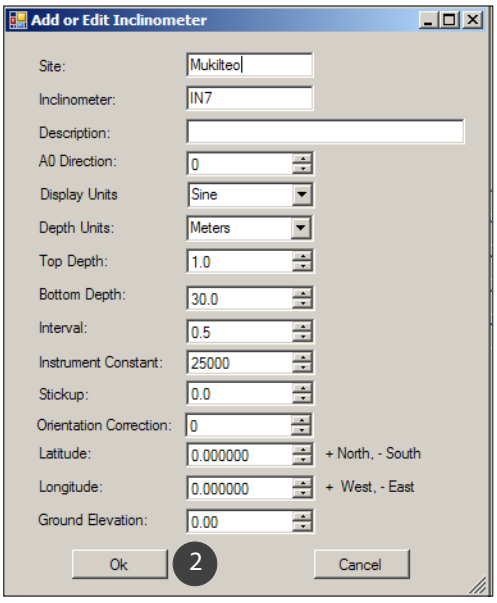
If you are in the office, you can use DigiPro2 to create new inclinometers. Afterwards, you make a list that includes the new inclinometers and send the list to the DataMate, as explained above. Here are instructions for creating an inclinometer in the database:

1. Open the database and click "Add Inclinometer." DigiPro2 clears the fields and starts a new inclinometer



Adding Inclinometers continued

2. Enter the information. Starred fields are required.



***Site:** The Site and Inclinometer fields together make a unique ID for the inclinometer. DigiPro2 allows 12 characters for the Site ID but sends only 6 characters to the DataMate.

***Inclinometer:** Enter an ID for the inclinometer. Again DigiPro2 allows up to 12 characters (for the Digitilt AT system) but sends only 6 to the DataMate.

Description: Optional field that does not appear in the DataMate. Accepts up to 35 characters.

AO Direction Optional field for the compass heading (0-359) of the inclinometer "A" grooves. Not used in calculations.

Display Units: Choose sine, mm, or inches. Sine refers to the units displayed by the DataMate readout. Millimeters assumes a .5m gauge length. Inches assumes a 2-foot gauge length. Default is sine units.

***Depth units:** Choose feet or meters.

***Top Depth:** Typically 0.5 for metric-unit systems or 2 for English-unit systems.

***Bottom Depth:** Depth of deepest reading. With English-unit systems, use an even number to match the two-foot cable graduations.

***Depth Interval:** Typically 0.5 for metric-unit systems or 2 for English-unit systems.

***Instrument Constant:** Enter 25000 for metric-unit systems , 20000 for English unit systems, 100000 for AT system.

Reserved Fields

Casing Stickup: Distance from the top of the casing to ground level. Allowed values from -10 to + 10. Used by DigiPro.

Elevation: The elevation of the ground surface. Used by DigiPro.

Orientation Correction: Range is -180 to +360. Used by DigiPro.

Latitude, Longitude: Information field not used by DataMate.

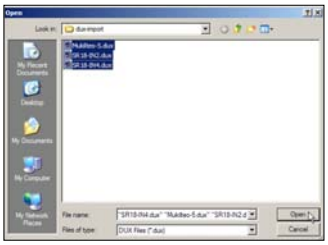
Working with the Digitilt AT

System Workflow

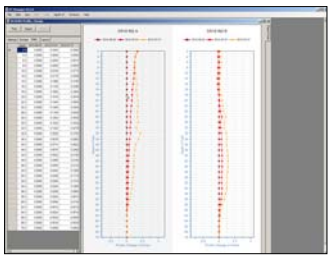
1. Use the Digitilt AT system to to survey the inclinometers. The Reader stores the surveys in inclinometer files.

2. Use the Reader to send the inclinometer files to the PC, where they are saved in an import folder for easy access by DigiPro2.

3. Use DigiPro2 to import the inclinometer surveys.



4. Use DigiPro2 to display and print inclinometer plots.

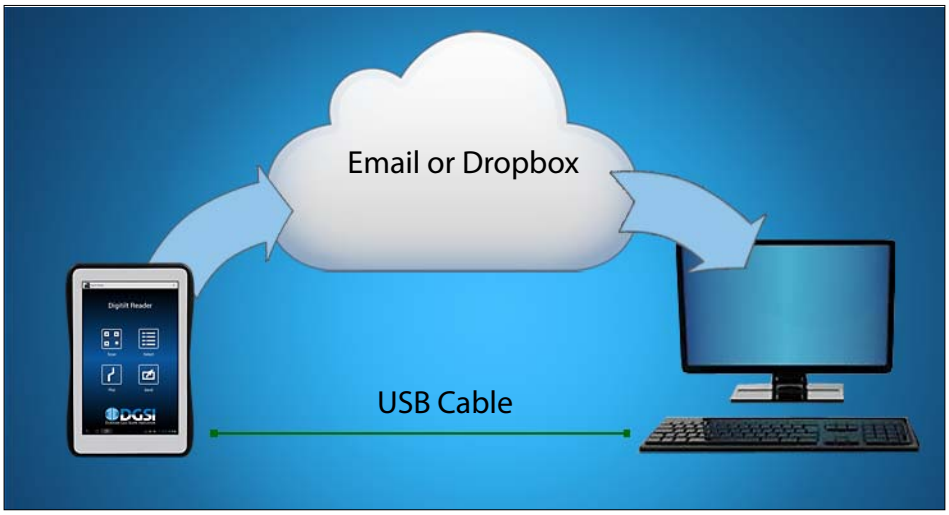


Transfer of Dux Files

The Reader stores surveys in inclinometer files. For convenience, we call these “dux” files because they have a .dux extension. (dux mean DigiPro Uniform eXchange).

Transfer Methods

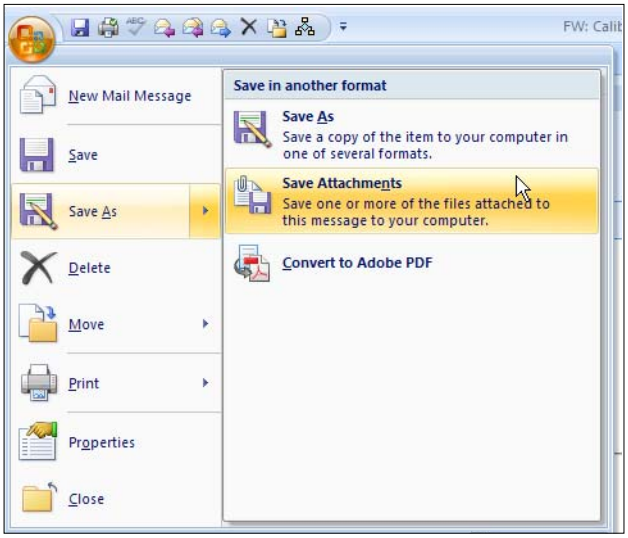
The Reader can send dux files to the PC by email or Dropbox. If the internet is not available, you can use a USB cable and the Windows file manager to copy files from the Reader to the PC.



Email Transfers

The Reader sends dux files as attachments to an email message.

1. Use Outlook, Gmail, or some other email program to open the email message.
2. Save the attached dux files into the import folder. (The import folder is explained in the next chapter.)



Dropbox Transfers

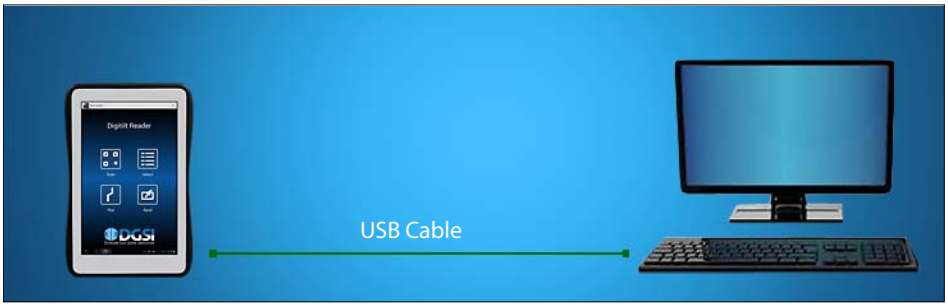
The Reader sends dux files to Dropbox. A few minutes (or seconds) later, the files appear in the Dropbox folder on the PC. No user actions are required.

The convenience of Dropbox is well worth the time that it takes to set up. Other cloud services such as Google Drive can be set up in a similar way.

1. Visit Dropbox.com using your web browser. Create a free Dropbox account. Enter an email address for the User ID, then create a Dropbox password. User ID and password are used again in the next steps
2. Download Dropbox for Windows. Run the setup program and then log in to Dropbox, using your User ID and password. Now your PC is linked to Dropbox in the cloud.
3. Start DigiPro2 and create a default import folder in Dropbox, as explained in the next chapter.
4. Visit the Google Play store using your Android device. Search for Dropbox and install it. You already have a Dropbox account, so login using your User ID and password. Now the Android device is linked to Dropbox, too.
5. The Dropbox listing on your Android device now shows the default import folder. That is where the Reader app will send dux files.

USB Transfers

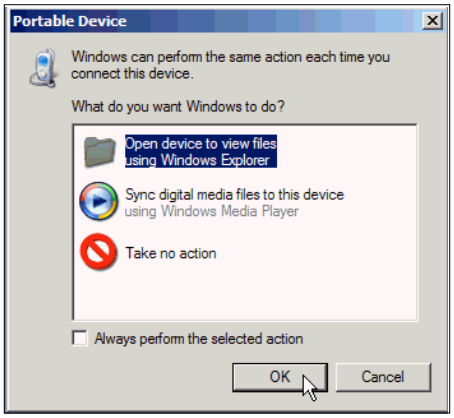
Use the Windows file manager and the USB cable supplied with your Android device. No USB drivers are required.



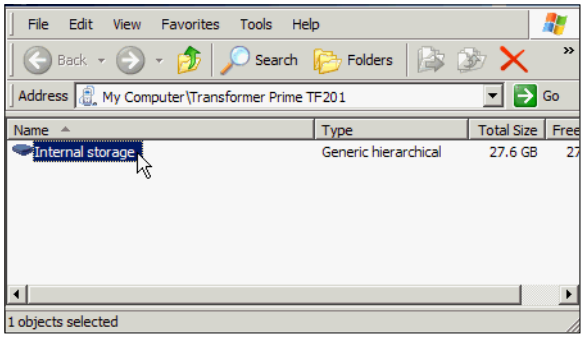
1. Connect the Reader to the PC using the USB cable.

   Switch on the Reader.

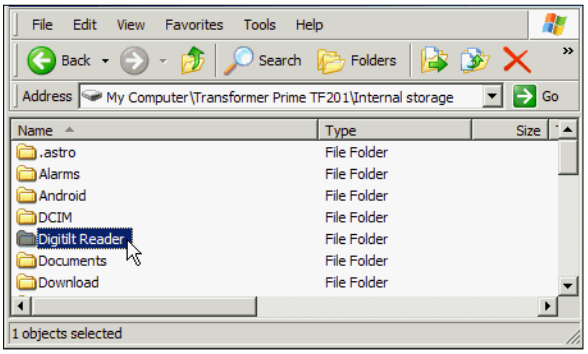
   A dialog appears on your PC. Choose “Open device ...”



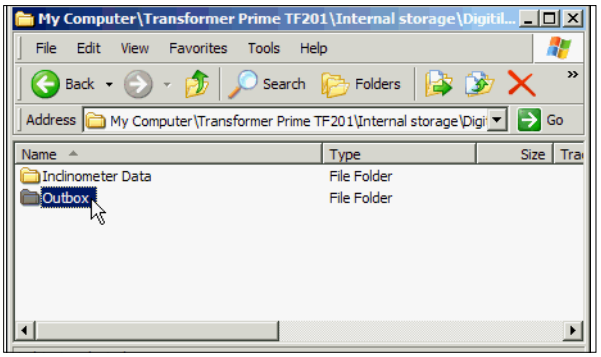
2. Windows opens the device. Click on “Internal storage.”



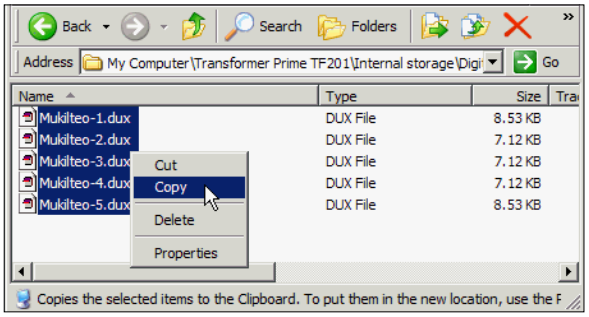
3. .Windows displays list of folders. Click on the “Digitilt Reader” folder.



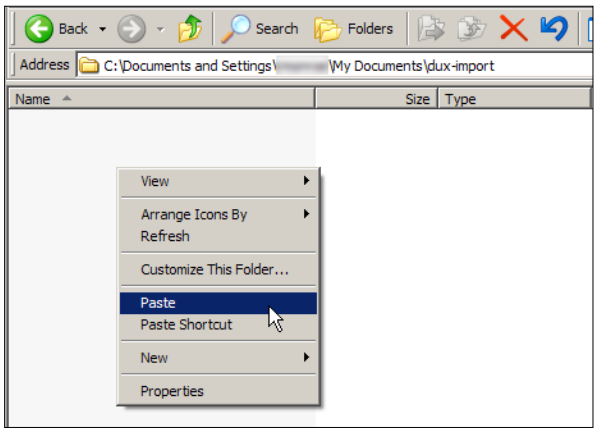
4. Click on the Outbox folder. This folder holds the dux files that should be transferred.



5. Select all the dux files in the Outbox, then right-click, and choose Copy.



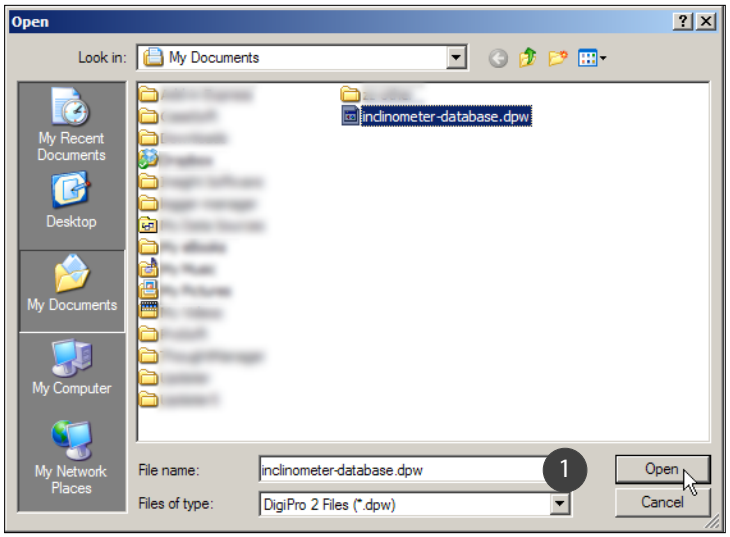
6. Now paste the dux files into the default import folder (which is explained in the next chapter).



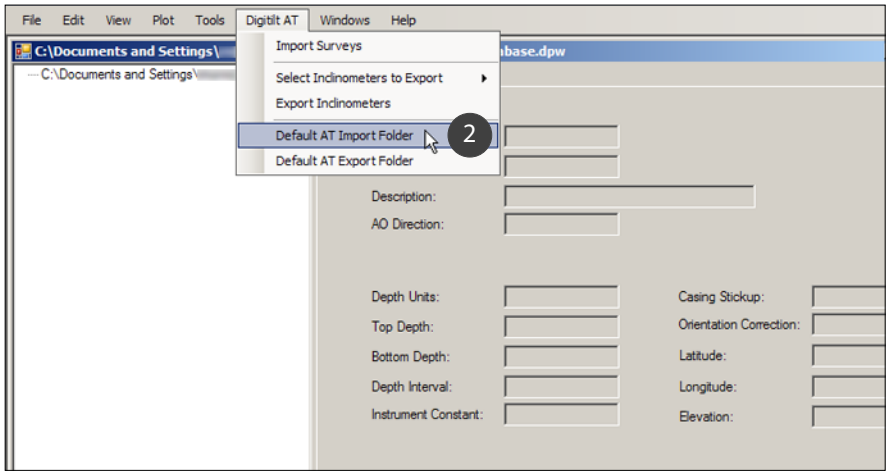
Create an Import Folder

Use DigiPro2 to create an import folder for dux files transferred from the Digitilt Reader. That will simplify importing the data into DigiPro.

1. Start DigiPro. Open the database that you just created.



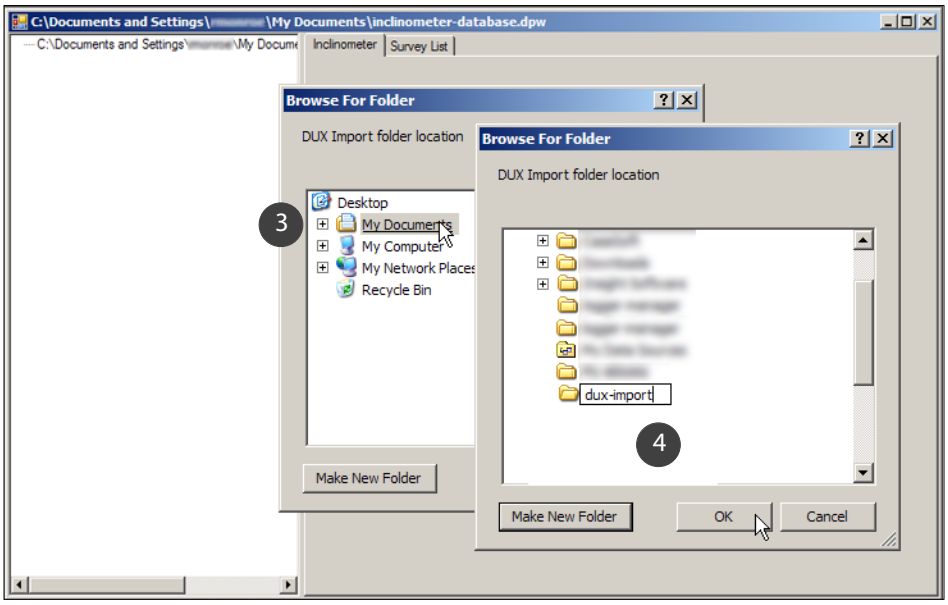
2. Click Digitilt AT > Default Import Folder.



...for Email or USB Transfers

3. Click “My Documents” (XP) or “Documents” (Win 7 & 8).

4. Click “Make New Folder,” enter a name for the folder, and click OK. In the example below, the folder is named “dux-import,” but you can choose your own name.



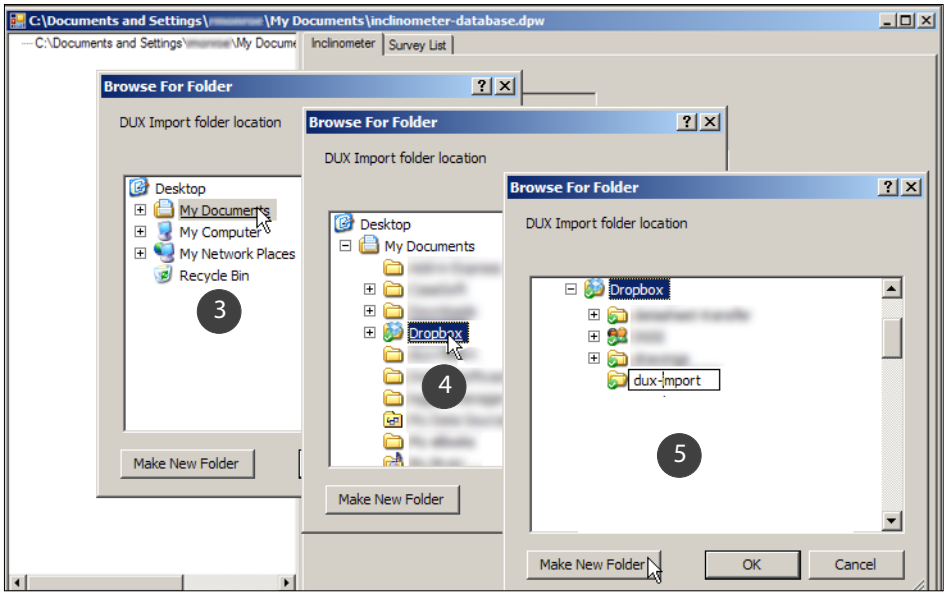
... or for Dropbox Transfers

After you install Dropbox, you can see a Dropbox folder in My Documents.

3. Click My Documents.

4. Click the Dropbox Folder.

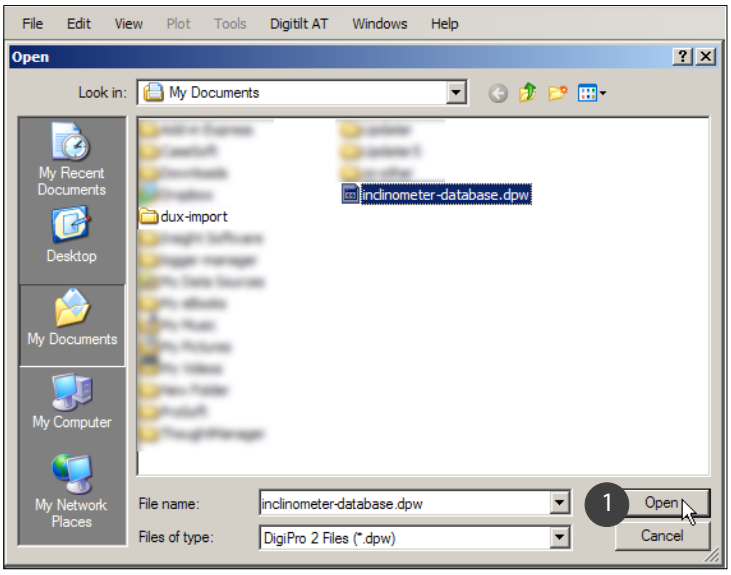
5. Click “Make New Folder,” enter a name for the folder, and click OK. In the example, the folder is named “dux-import,” but you can choose your own name.



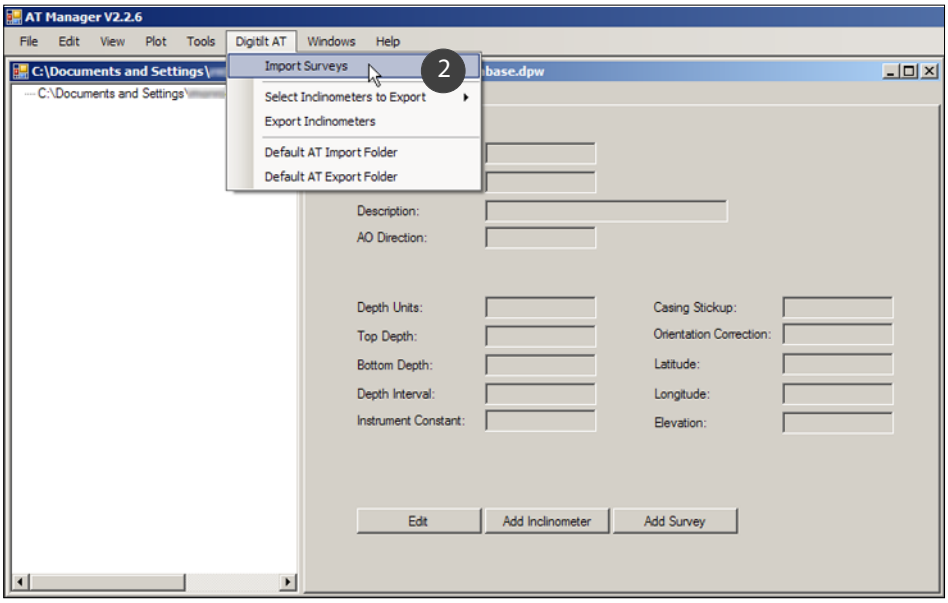
Import AT Surveys

Now it is time to import data from the dux files.

1. Open the .dpw database.



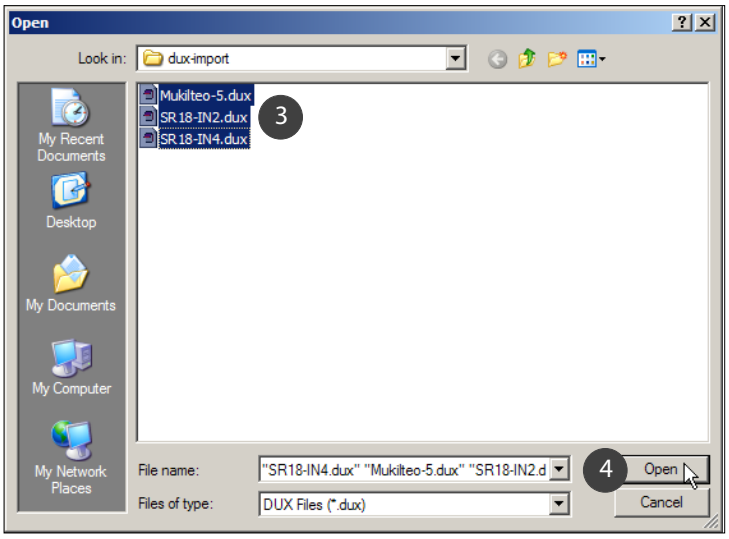
2. Click Digitilt AT > Import Surveys. DigiPro2 opens the default import folder.



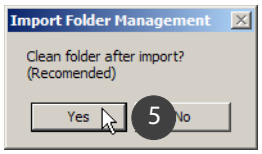
Import continued

3. Select the dux files that you want to import (Ctrl-A for All).

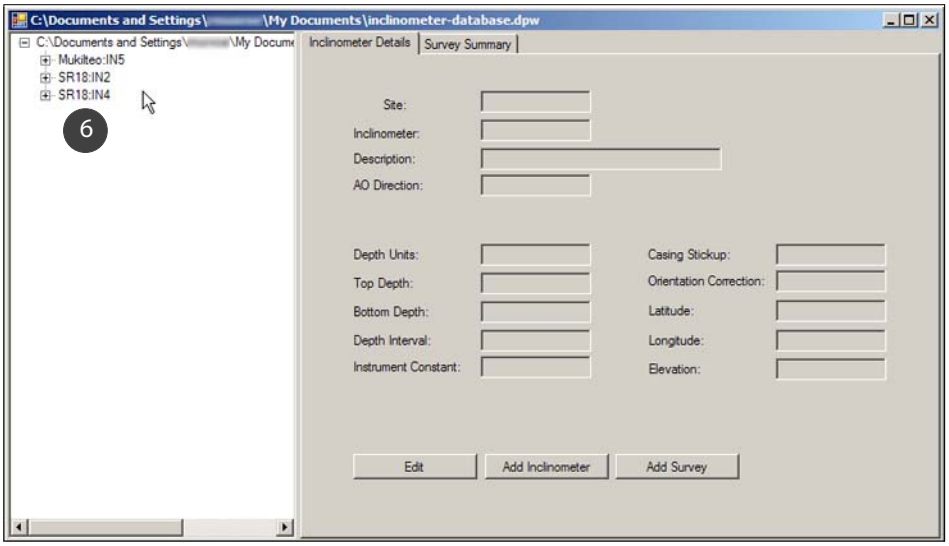
4. Click Open.



5. Click "Yes" to allow DigiPro2 to delete dux files that are imported successfully. These are no longer needed. The Reader keeps the original files and the database has the transferred readings.



6. DigiPro2 imports the surveys and clears the imported files from the folder.



Generating Plots

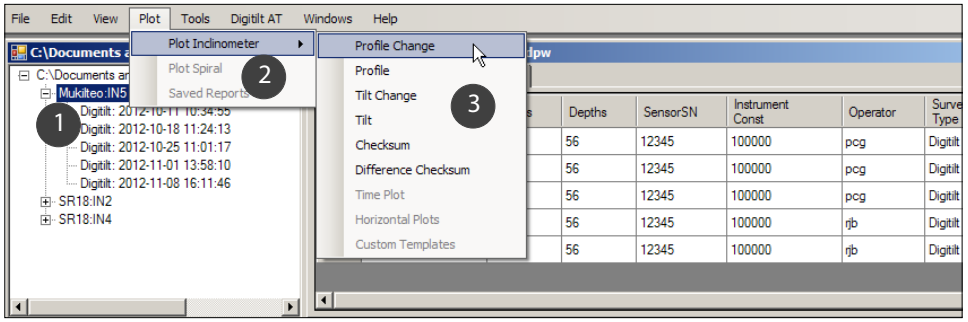
Overview

DigiPro2 can generate, print, and export a variety of plots. Plots can be saved as reports and reused with new surveys. DigiPro2 can also apply a variety of corrections to inclinometer data.

Some features explained below exist only in the Advanced version of Digi-Pro2, which requires purchase of a license key. The appendix presents a comparison of features available in the basic and advanced versions.

Plotting

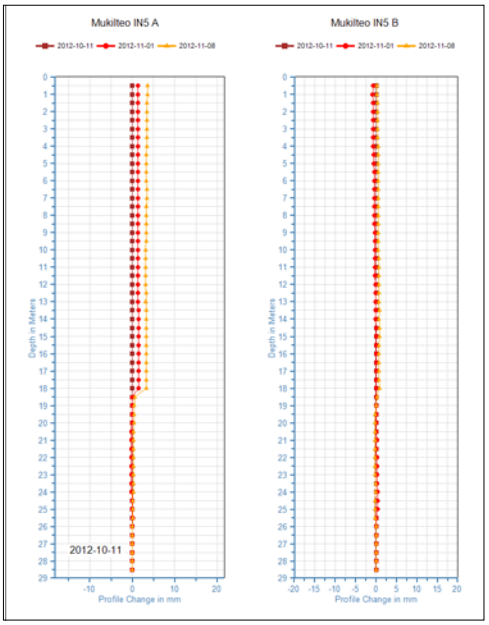
1. Click on an inclinometer
2. Click Plots
3. Choose a plot. Plot types are discussed below.



Profile Change-Plot

This change plot is most common way to present inclinometer data. The plot compares compares the current profile to the initial profile. Changes are understood to be movement (displacement).

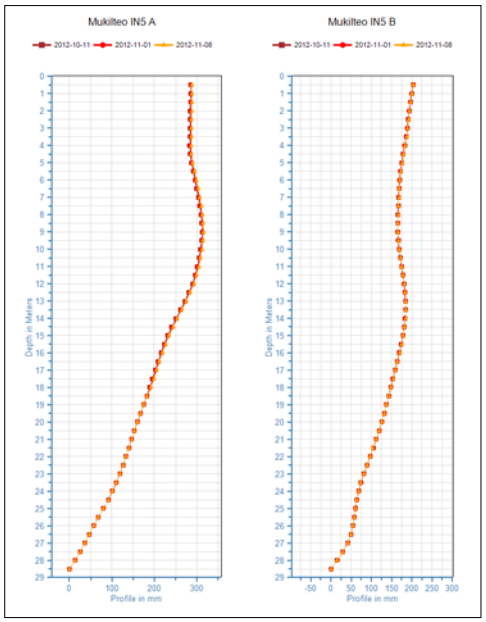
The previous name for this plot was "Cumulative Displacement."



Profile Plot

This is a diagnostic plot. It accumulates tilt readings (in mm or inches) to show the profile of the installed casing. The plot is used to evaluate borehole verticality and is also used in diagnosing and correcting error.

The previous name for this plot was "Cumulative Deviation." It is also known as an "absolute position" plot.

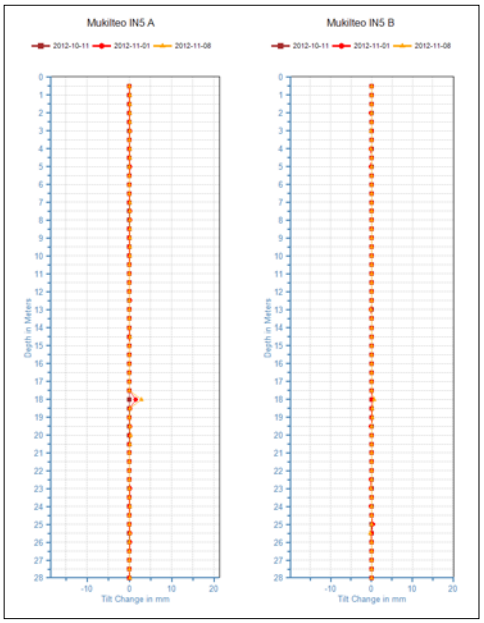


Tilt Change-Plot

This change plot compares the current tilt reading at a given depth to the initial reading at the same depth. Changes are understood to be movements (displacement).

Tilt change plots do not accumulate values, so are immune to systematic error. Movement appears as a growing spike, typically centered on one or two depths.

The previous name for this plot was "Incremental Displacement."

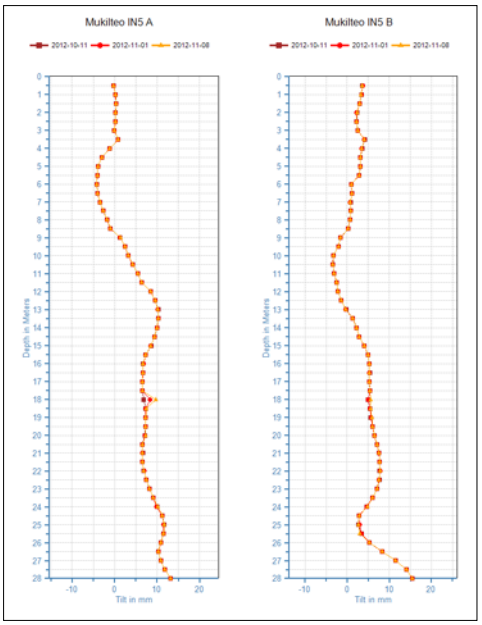


Tilt Plot

This is a diagnostic plot that shows tilt in mm or inches at each depth.

It can be used to evaluate the installed "straightness" of an inclinometer and the potential for depth control errors.

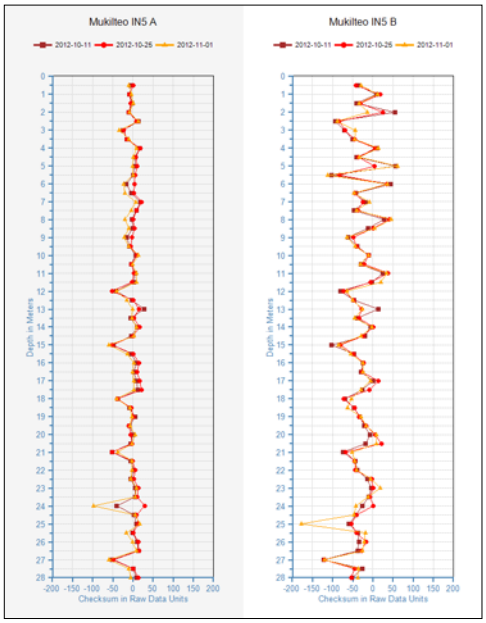
The previous name for this plot was "Incremental Deviation."



Checksum Plot

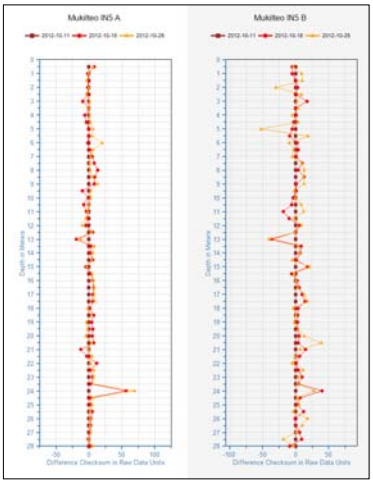
This is a diagnostic plot that shows the checksum at each depth. A checksum is the sum of the 0 and 180 readings.

Generally speaking, the magnitude of the checksums is less important than the uniformity of checksums within a survey. In that regard, you would hope to see plots that are straight and vertical rather than curved and off vertical.



Difference Checksum Plot

This is a diagnostic plot that attempts to remove casing irregularities from the analysis of checksums. The initial checksum is subtracted from the current checksum. This eliminates variations that are due to characteristics of the casing, such as telescoping couplings.

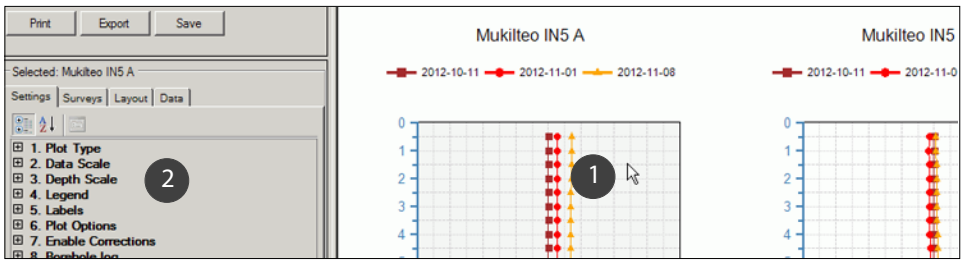


Modifying Plots

Overview

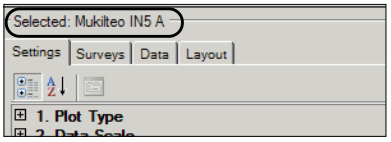
A tabbed control panel provides access to settings, surveys, and layout.

1. Click to select a plot. The plot background turns gray.
2. Double-click to open a settings.

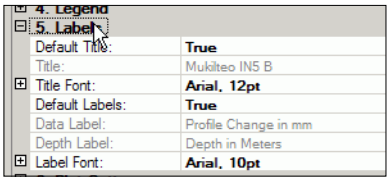


Helpful Hints

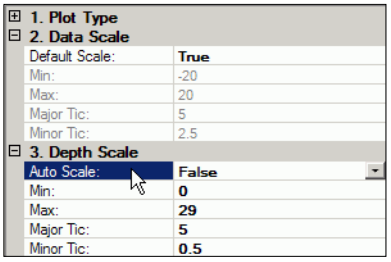
- The name of the selected plot appears above the settings tab.



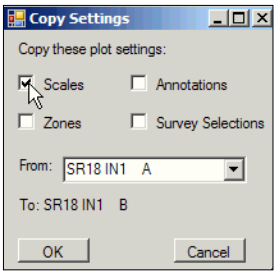
- To open a settings group, double-click on the name of the setting. You can also click the + mark.



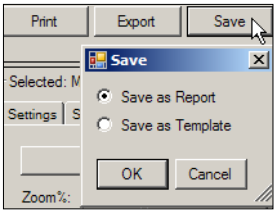
- To change default or automatic settings, first double-click the label to turn off the automation (false = off). Then you can edit the settings.



- To copy plot A settings to plot B, right-click on the B plot and choose “copy settings.” Then choose which settings to copy.



- To save settings, click the “Save” button and choose Save as Report. When you have new surveys, choose “Saved Reports” to plot the new surveys with all the same settings

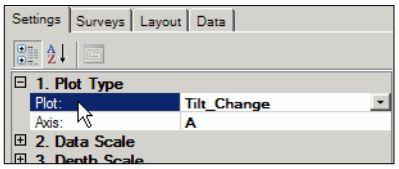


Settings Tab

Use the Settings tab to control the appearance of the plots.

Plot Type

DigiPro normally plots A and B using the same type of plot. Use this setting if you want a different type for one of the plots.



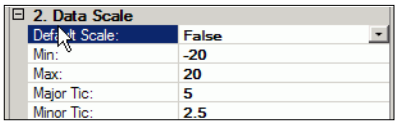
Plot: Double-click on "Plot" to iterate through the available plot types.

Axis: Double-click on "Axis" to iterate through the following choices:

- A shows tilt in the plane of the wheels.
- B shows tilt in the plane rotated 90 degrees to the wheels.
- Magnitude shows the magnitude of the tilt vector: sqrt(A^2 + B^2).
- Angle shows the direction of the tilt vector: arctan(B/A).

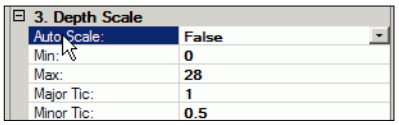
Data Scale

DigiPro2 sets default scale according to the depth of the inclinometer. To enter your own scales, turn off the default scale by double-clicking "Default Scale."



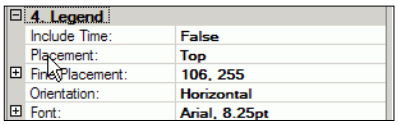
Depth Scale

DigiPro2 sets depth scales automatically. To enter your own depth scales, turn off the autoscaling by double-clicking "Auto Scale."



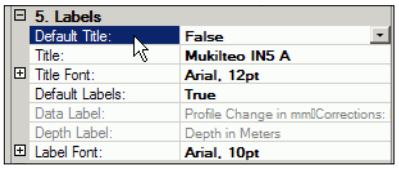
Legend

Legends usually show a date only. If time is important, double-click "Include Time." Double-click "Placement" to view available locations for the legend. Fine Placement adjusts X Y placement of the plot starting from top left corner of the page. This adjustment is useful for printed plots. Double-click "Orientation" to place dates vertically or horizontally.

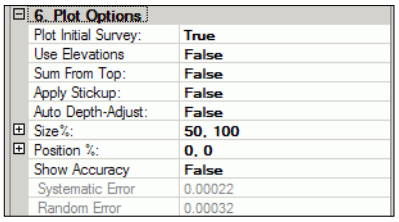


Labels

DigiPro2 automatically generates titles and labels.To turn off automation, double-click "Default Title" or "Default Labels," and then enter your own text.

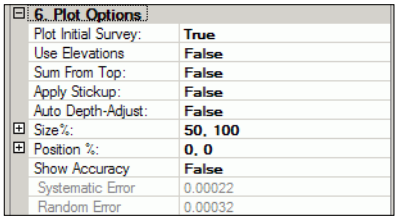


Plot Options



Plot Initial Survey: DigiPro2 automatically shows the initial survey in all plots. Double-click if you want to hide the initial survey.

Use Elevations: DigiPro2 shows depths by default. If you have entered elevation in the inclinometer header, double-click to show elevations.



Sum from Top: Profile plots are created by summing values. Summing from bottom is the default, since the bottom is normally assumed to be stable. To sum from top, double-click to change the value to "true."

Apply Stickup: Double-click to enable or disable. When enabled, and a stickup value has been entered in the inclinometer header, DigiPro2 plots values at their real depths (or elevations) rather than at cable depths.

We record readings at depths indicated by depth marks on the cable. We align depth marks to an index, such as the top of the casing or the top of a pulley assembly. Stickup is the distance from the index to the surface of the ground. If the index is 0.5m above the ground, the real depth of the probe is 0.5m shallower than the depth indicated by the cable. Applying a stickup of 0.5m will cause values to be plotted at their real depth (or elevation).

Auto Depth-Adjust: This adjustment is used with Classic systems, which have cabled marked from the middle of the probe. When turned on, readings are plotted at the depth of the top wheels rather than at cable depth. Auto depth-adjust should be off (false) for AT systems. Please note that the setting applies to all surveys on a plot.

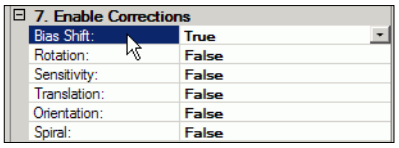
Size: This setting controls the width and height of the chart area (the area including the white space around the plot). It may be useful when you display only one plot. Double-click to make entries. Value are percent of page.

Position: This setting moves the chart area. It may be useful when you display only one plot. Double-click to make entries. Value are percent of page.

Show Accuracy: Field accuracy generates lines showing the approximate "Field Accuracy" of profile change plots, assuming systematic error increasing with the number of readings and random error increasing with the square-root of the number of readings. Double-click to toggle the accuracy lines on and off.

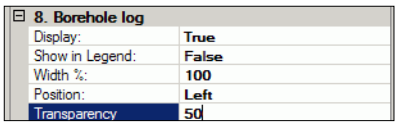
Enable Corrections

This settings group allows corrections to be double-clicked on and off. True is on, False if off. Corrections are discussed in a later chapter.



Boring Log

This settings group shows or hides a graphic representing a boring log. The graphic appears in the background of the plot.



Display: Double-click to show or hide the boring log graphic. Note that the details of the boring log are entered elsewhere: Edit>Add/Edit Boring Log.

Show in Legend: Double-click to show or hide boring log labels in the legend area.

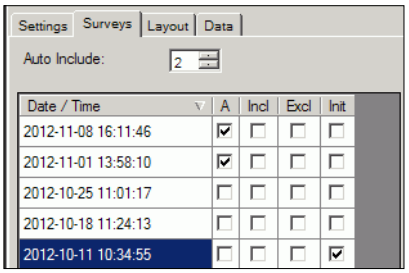
Width: Set width of the graphic. 100% is the full width of the plot. Try 10 for a narrow graphic.

Position: Move the graphic to the right side or left side of the plot.

Transparency: Make the graphic more transparent with a smaller number.

Survey Tab

Click the "Surveys" tab to select surveys to include in the plot.



Auto-Include: Automatically includes this number of recent surveys in the plot.

A: Shows which surveys are included by the Auto-Include setting.

Inc (Include): Check the box to always include this survey in the plot.

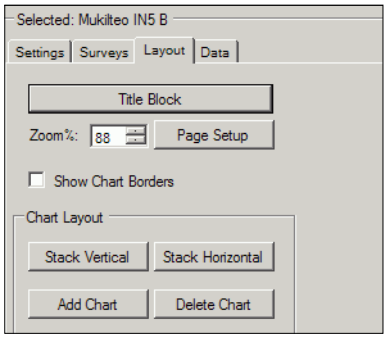
Exc (Exclude): Check the box to always exclude this survey.

Init (Initial): Check this box to choose the initial survey.

Note

DigiPro2 Basic is limited to three surveys: the initial plus two others.

Layout Tab



The layout tab provides mostly page-related settings.

Title Block: Click to add a title block. Details are explained below.

Zoom: This is a display setting. DigiPro2 sizes plots for your display automatically. Use zoom to adjust, if necessary.

Page Setup: DigiPro2 displays settings related to printing, such as paper size and margins. These are discussed in the next chapter.

Show Chart Borders: Check the box to draw borders around each chart. A chart includes the white space around each plot.

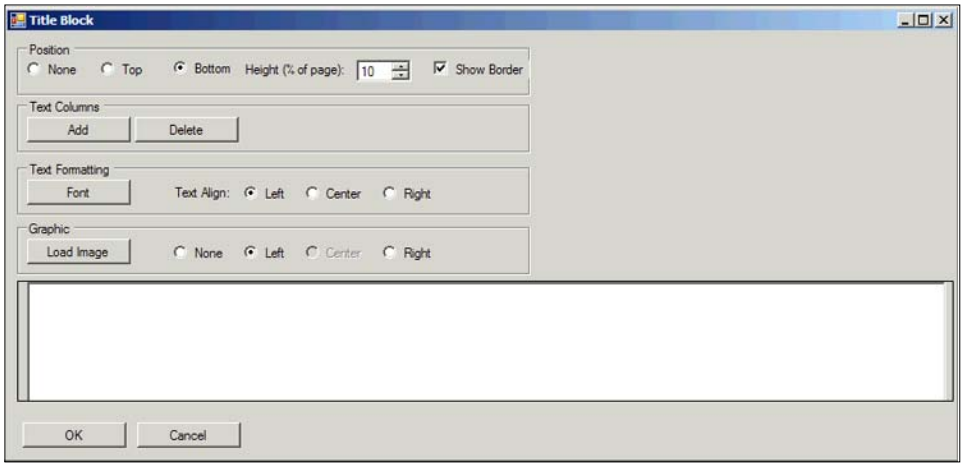
Stack Vertical / Stack Horizontal: Controls layout of charts. Click to see the effect. Horizontal is the default. Vertical may be useful for horizontal inclinometers.

Add Chart: Click to add an additional chart (and plot) to the page. It is not possible to add plots from other inclinometers.

Delete Chart: Removes a chart from the page.

Title Block Details

The title block dialog lets you add a logo and descriptive text to the plot.

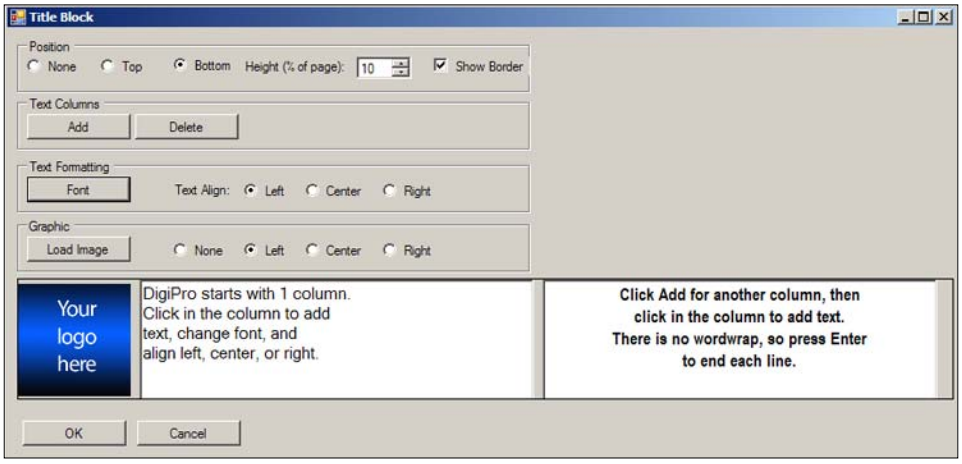


Position: Controls visibility, location, and size of the title block:

- None hides the title block but does not delete it. You can set the title block to none while inspect the plots and then set to top or bottom before you print.
- Top places the title block at the top of the page.
- Bottom places the title block at the bottom of the page.
- Height sets the vertical size of the title block.
- Show Border draws a line around the title block, if checked.

Title Block Details continued

Add columns, text, and a graphic:



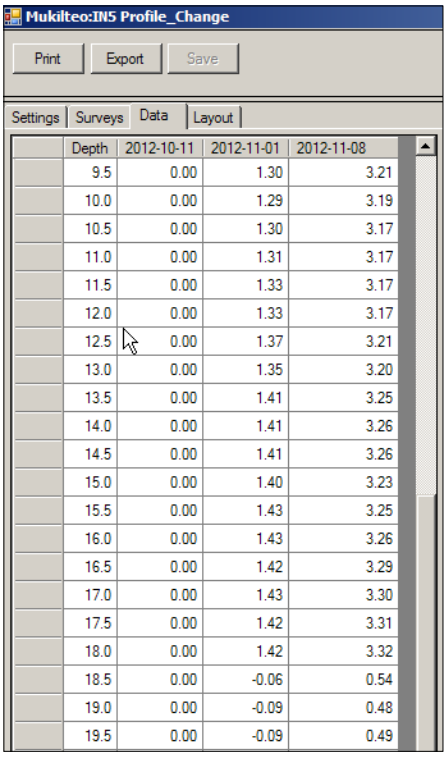
Text Columns: DigiPro starts with one column. Click in the column to enter text. Press Enter to end each line. There is no wordwrap. Click Add if you want more columns.

Text Formatting: Click in a column first, then adjust the font and alignment of the text. You cannot adjust individual lines within a column. The printed page is not the same as the displayed page, so you may need to experiment with line lengths and font sizes for a good appearance.

Graphic: Click the Load Image button to browse for a jpeg, gif, png, emf, or bmp graphic file. DigiPro resizes the graphic to fit the vertical space. You can choose left, center, or right alignment.

Data Tab

Click the "Data" tab to display values used in the plot. Survey dates appear at the top of each column. Use the scroll bar to see other depths.

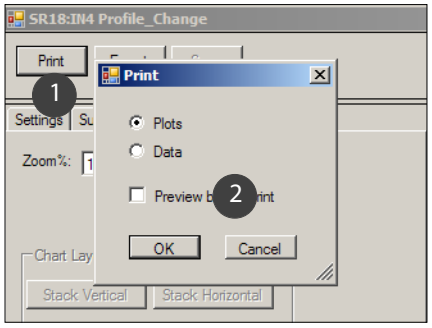


Depth	2012-10-11	2012-11-01	2012-11-08
9.5	0.00	1.30	3.21
10.0	0.00	1.29	3.19
10.5	0.00	1.30	3.17
11.0	0.00	1.31	3.17
11.5	0.00	1.33	3.17
12.0	0.00	1.33	3.17
12.5	0.00	1.37	3.21
13.0	0.00	1.35	3.20
13.5	0.00	1.41	3.25
14.0	0.00	1.41	3.26
14.5	0.00	1.41	3.26
15.0	0.00	1.40	3.23
15.5	0.00	1.43	3.25
16.0	0.00	1.43	3.26
16.5	0.00	1.42	3.29
17.0	0.00	1.43	3.30
17.5	0.00	1.42	3.31
18.0	0.00	1.42	3.32
18.5	0.00	-0.06	0.54
19.0	0.00	-0.09	0.48
19.5	0.00	-0.09	0.49

Printing & Exporting Plots

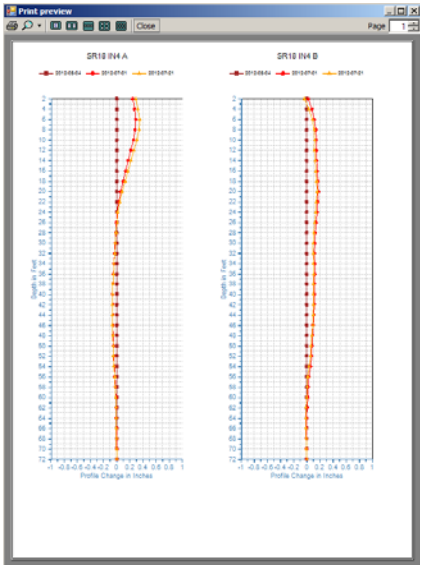
Printing Plots

1. Click the “Print” button.
2. Choose “Plots” or “Data.” Click the checkbox for a print preview. Then click OK.



Preview

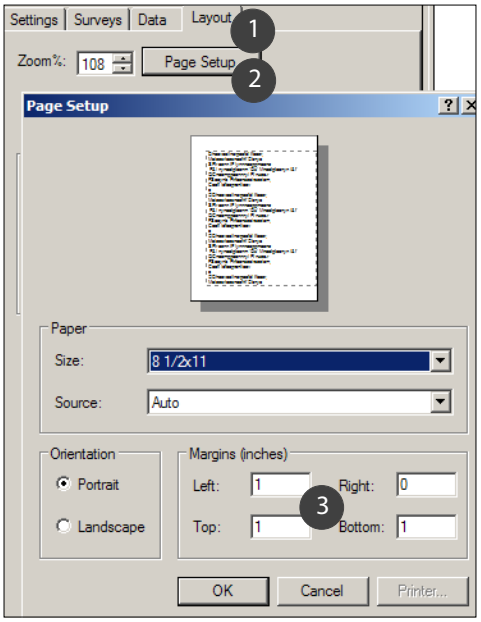
Print preview lets you inspect the page before you print it. Click the print button to print.



Page Layout

To adjust page margins:

1. Click the “Layout” tab.
2. Click the “Page Setup” button.
3. Adjust margins as required, then click OK.

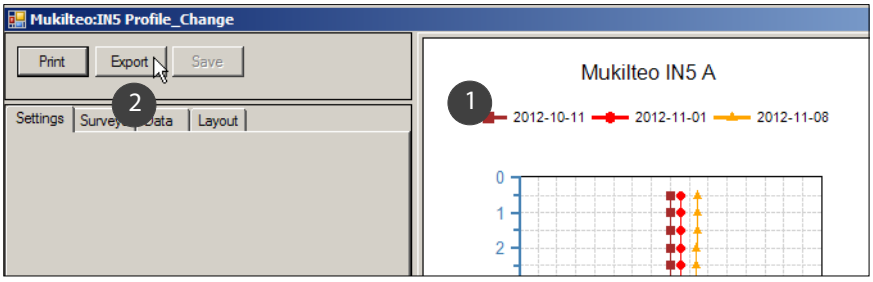


Exporting Plots

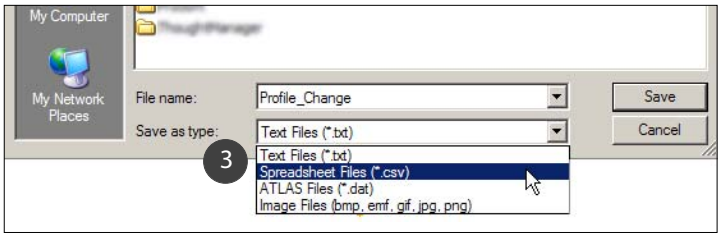
DigiPro2 can export plots as text files or graphic files.

1. Generate the plot.

2. Click the Export button.



3. The Save-As dialog appears. Choose a file type from the drop menu.

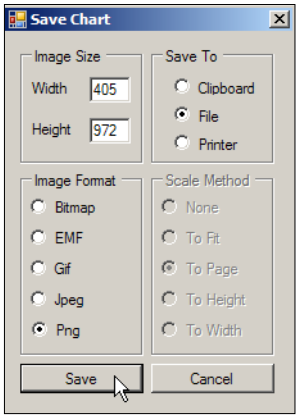


Text File: Printable file with tab separated values.

Spreadsheet File: Spreadsheet-ready file with regionalized field separators and decimals.

Atlas File: Data arrays formatted for Atlas. Each array has a date stamp followed by depth-value pairs. A values first, then B values.

Image File: First select the A or B plot, and then click Export. Choose an image format and click save. PNG and GIF provide the sharpest results.



Using Reports & Templates

What is a Report?

Reports are customized plots that are saved for reuse. You create a plot, modify scales, labels, title blocks, survey selections, etc. as needed, and then save it. Each inclinometer can have any number of reports.

When you have new surveys, you open the report rather than create a new plot. When the report is displayed, the new surveys are automatically included (according to the auto-select setting) and the plots are generated with all the saved settings.

Creating a Report

Modify the plot as needed, then click Save, enter a name, and click OK.

Using a Report

Open: Choose the inclinometer. Click Plot>Saved Reports. Select the report and click OK.

Modify: You can modify a report if necessary. Click Save when you are done.

Delete: The report dialog provides a delete button. Select the report that is no longer needed, then click "Delete."

What is a Template?

A template is similar to a report, in that it saves certain settings, but it is not dedicated to a particular installation.

- You may want all of your plots to include a standardized title block with the company logo.
- You may want a different combination of plots on the page.

Creating a Template

Generate a plot. Modify the plot as necessary and then click Save. Choose "Save as Template" and click OK.

Using a Template

1. Choose an inclinometer.
2. Click Plot > Plot Inclinometer >Custom Templates.
3. Choose a template and click OK.
4. After the template loads, make any extra modifications needed and save as a report.

Applying Corrections

Introduction

DigiPro2 provides correction routines that can improve the presentation and understanding of data. There are two categories of routines: those that apply to single surveys, and those that apply to all surveys of a particular inclinometer.

- Routines that affect single surveys are bias-shift, rotation, and sensitivity corrections, which are related to the inclinometer probe, and translation corrections, which are related to the inclinometer casing.
- Routines that affect all surveys are orientation correction and spiral correction. Orientation correction can help when casing grooves are not aligned with the real direction of movement. Spiral correction can help when casing was twisted during installation.

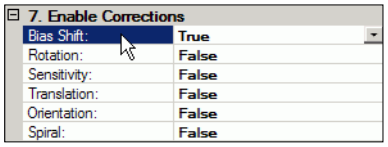
Most corrections routines involve a minimum of three steps:

1. Generate a plot.
2. Enable corrections in the plot settings panel.
3. Enter a correction value and check the result. This may be an interative process with different values entered until a satisfactory plot is generated.

Enabling Corrections

DigiPro2 stores correction values separately from readings. Correction routines apply these values on-the-fly when plots are graphs are generated. Thus corrections can be enabled and disabled at any time. To enable correction routines.

1. Generate a plot.
2. Double-click to open Enable Corrections.



3. Double-click on the particular correction that you want to enable. In the example, Bias-Shift correction has been enabled.
4. To disable a correction, double-click to toggle the value to false..

Bias-Shift Error

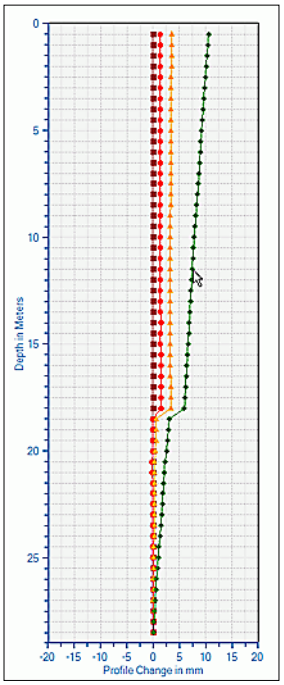
Here is a simple introduction to bias shift error. Refer to the support pages of www.slopeindicator.com for more information.

What is Bias Shift?

Bias: Bias is the value returned by the probe when it is held absolutely vertical. In theory, the value should be zero, but in practice, the value is non-zero. This non-zero value is embedded in every reading.

Bias Shift: It is normal for the bias of the probe to change from time to time. This is not a problem because the bias value is normally eliminated in the data reduction process, when 0 readings are combined with 180 readings.

Bias-Shift Error: If the bias shifts during a survey, the data reduction process cannot competely eliminate the bias. The remaining value is bias shift error. The error becomes visible when readings are accumulated, as in the profile change plot at right.



Identifying Bias-Shift Error

Appearance: The plot above shows the typical appearance of a bias-shift error: a straight-line that is tilted away from vertical. The tilt may be in either direction.

Unlikely Behavior: The plots above shows tilt over the entire span of the inclinometer. This unlikely behavior suggests error in the data.

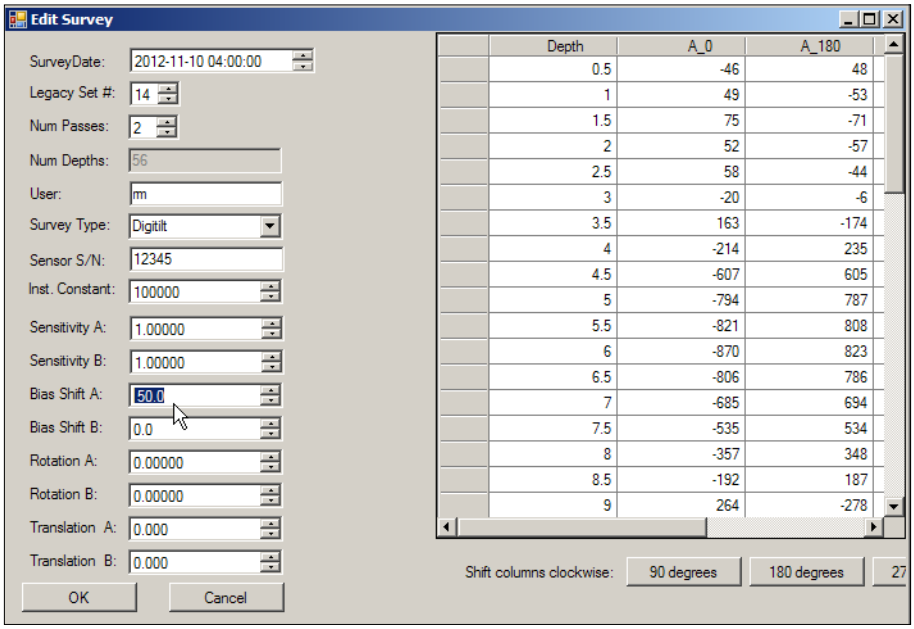
Site Knowledge: The plot shows movement where there should be no movement. Typically, the bottom 5 depths (or more) of the casing are anchored in stable ground. Any movement appearing there is generally error in the data.

Checksum Plots: Checksum plots show that a bias-shift has occurred.

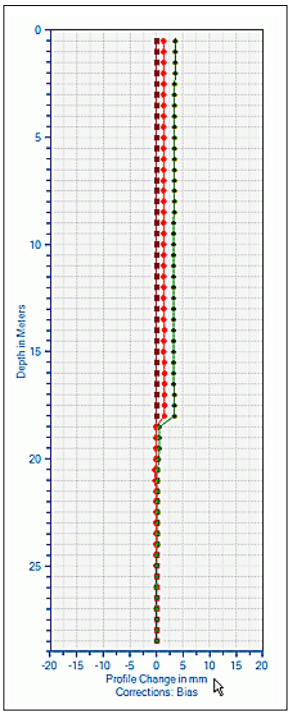
Correcting Bias-Shift Error

You identified bias-shift error in a profile change plot. Then you verified that a bias shift occured by plotting checksums. Now you want to correct for bias shift.

1. Generate the profile change plot again.
2. Enable bias-shift corrections in the settings panel.
3. Double-click the survey (the plot of the survey) that you want to correct.
4. DigiPro2 displays the Edit Survey dialog. Find the Bias-Shift field.



5. Enter a value. If the plotted survey was tilted to the right, try a positive value. If the tilt was to the left, try a negative value. The exact value doesn't matter yet. Click OK.
6. DigiPro2 redraws the plot. Inspect zones were no movement should have occurred (the bottom, for example). Have you eliminated the tilt in those zones?If necessary, double click the survey again and enter a different value. Continue until the tilt is eliminated.
7. The bias-shift error has been removed from the offending survey. The label for the data axis shows the type of correction that was applied.



Rotation

Here is a simple introduction to “rotation” error.

What is Rotation Error?

Rotation is a small change in the alignment of the measurement axis of the inclinometer probe. The change is usually less than one degree.

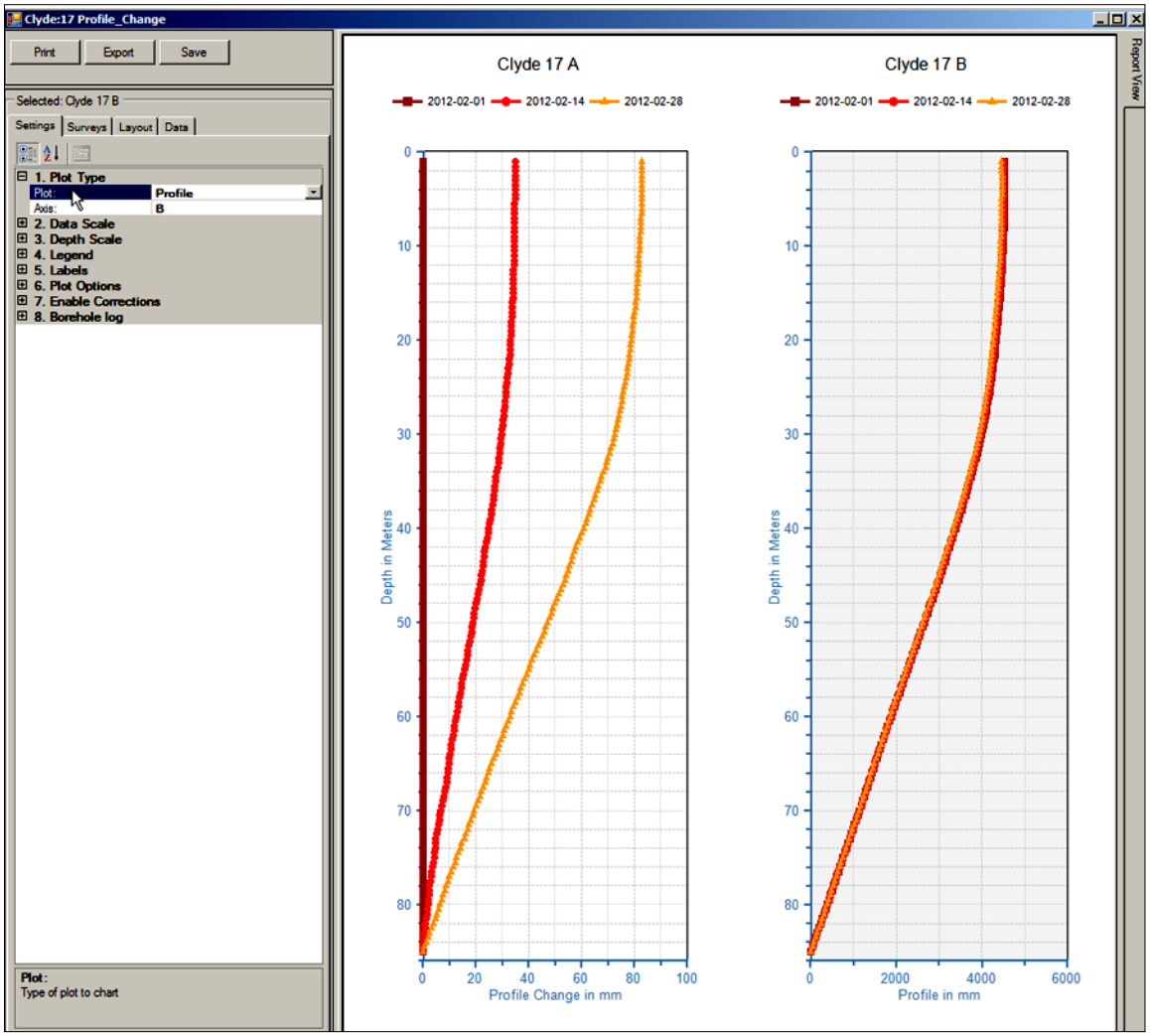
Ideally, each sensor is aligned to measure tilt in only one plane. If the mechanicals of the probe are rotated slightly towards the cross-axis plane, the A-axis sensor also measures some of the tilt in B and vice versa.

Rotation Error is the cross-axis component in a reading: for example, the B-axis tilt value that is embedded in the A-axis tilt reading. Rotation error becomes visibile when when two conditions combine:

- There is significant inclination in the cross axis.
- The change in the alignment of the probe occurs after the initial set was taken.

Identifying Rotation Error

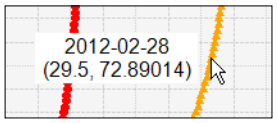
- The profile-change plot is curved.
- The profile plot of the cross axis shows significant tilt.
- The two plots have a similar shape, as shown below.



Correcting Rotation Error

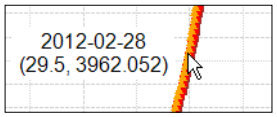
In the example on the previous page, a rotation error was identified in the profile change plot for A axis. To check, we selected the B plot and changed its plot type from profile change to profile. We saw that the A change plot looked similar to the B profile plot. Now we want to apply a correction.

1. Enable rotation correction in the settings panel.



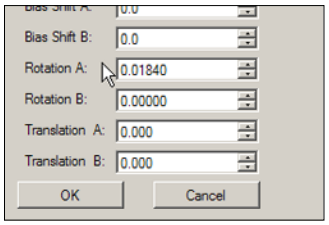
2. Move the cursor to the maximum profile change value in the A-axis plot. Note the depth and value that DigiPro displays: 29.5m and 73mm.

3. Move the cursor to the same depth on the B-axis plot. Note the profile value.



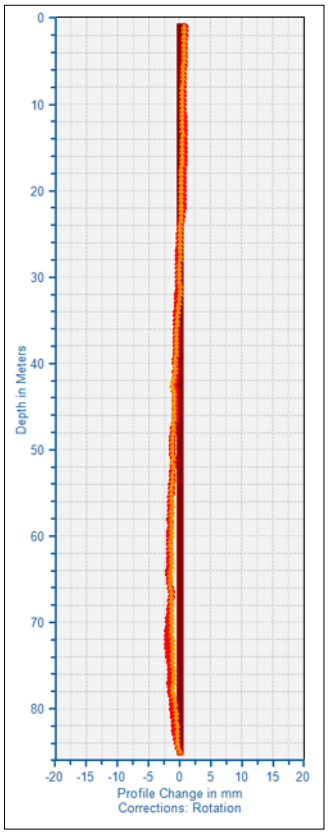
4. Find a starting correction value by dividing the the A profile-change value by the B profile value: 73 / 3962 = 0.0184. (Normally values are smaller than the sine of 1 degree: 0.01745).

5. Double-click the offending survey on the A plot. DigiPro2 displays the Edit Survey dialog. Enter the value into Rotation A field. Click OK.



6. Inspect the plot, and double-click to reopen the edit dialog as necessary.

7. Repeat these steps for any other surveys that show rotation error. The plots become useable, if not perfect.



Sensitivity Correction

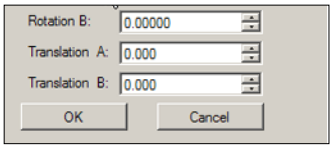
Sensitivity drift is not easy to recognize. It can easily be detected by the factory and is a reason for sending probes in for calibration at regular intervals. An example will appear in a future edition of this manual.

The error is directly proportional to reading magnitudes. Typical errors are 1 to 2 percent. Correction involves the same steps as others:

1. Generate a plot.
2. Click on a survey to call up the Edit Survey dialog.
3. Enter the sensitivity value and check the resulting plot.

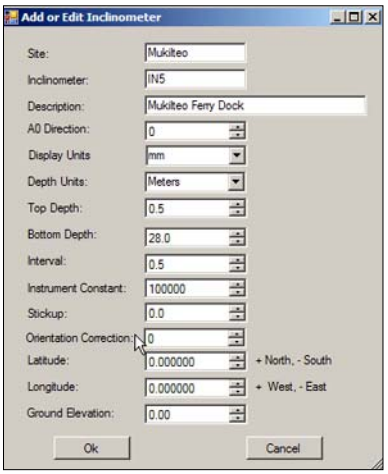
Translation Correction

This correction can be applied to shift all plotted values in the A or B direction. Values in inches or mm are determined by survey or other means and entered in the Edit Survey dialog.



Orientation Correction

Inclinometer casing is installed so that one set of grooves is aligned with the expected direction of movement. If the real direction of movement is some other direction, DigiPro2 can mathematically rotate the orientation of the measurement axes into the direction of interest.

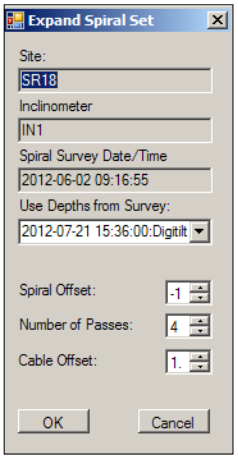


1. Select the inclinometer.
2. Click the Edit button to display the Edit Inclinometer dialog.
3. Enter a value in degrees into the Orientation Correction field. Enter a positive value to rotate orientation clockwise. Enter a negative value to rotate the orientation counter-clockwise.
4. When you plot the inclinometer, enable the Orientation Correction in the settings panel.

Spiral Correction

A spiral survey, obtained with a spiral sensor, provides measurements that can be used to correct for spiraled (twisted) casing. DigiPro2 retrieves the spiral survey from the DataMate.

Readings in the spiral survey are taken at 5 foot or 1.5m intervals. Readings in an inclinometer survey are taken at 2 foot or 0.5m intervals. DigiPro must "expand" the spiral survey to provide a correction value to be used with each inclinometer reading.



1. Select the inclinometer.
2. Select the spiral survey.
3. Click Plot > Plot Spiral
4. If the reported spiral is less than 10° it is generally not necessary to correct for spiral, as the error created by this small amount of twist is usually deemed negligible.
5. If the reported spiral is greater than 10°, close the plot and Click Tools > Expand Spiral Survey.
6. Enter the spiral offset, cable offset, and passes. The recommended number of passes is 4.

   The two offset values are important for calculations. This information must be obtained from the person who took the spiral survey.
7. DigiPro2 expands the spiral set.
8. Enable Spiral Correction in the settings panel. DigiPro will then automatically apply the spiral corrections to any surveys that you plot.

DigiPro2: Basic vs Advanced

DigiPro 2

DigiPro2 is distributed as a trial version with all the advanced features enabled. After 45 days, the advanced features are disabled and DigiPro reverts to a “basic” version unless you purchase and install a license key. The "basic" version is free to use and can be converted to the advanced version at any time. The table below provides a comparison between basic and advanced versions.

DigiPro2 Features	Basic	Advanced
Create dpw databases	☒	☒
Import dux files from Digitilt AT system	☒	☒
Retrieve surveys directly from Digitilt DataMate	☒	☒
Import mdb databases created by DMM	☒	☒
Import Gtilt and other file formats	☒	☒
Export surveys data to many formats	☒	☒
Export processed data to txt, csv, dat, and image file	☒	☒
Standard vertical plots	☒	☒
Surveys per plot	3	Unlimited
Spiral plot	☒	☒
Title block with multiple columns, graphic logo		☒
Time displacement plot, Resultant plot		☒
Horizontal plots		☒
Copy settings from one plot to another		☒
Mixed plot types, additional plots on page		☒
Field Accuracy Indicator		☒
Represent boring log on plot		☒
Corrections for Inclinometer: Orientation, Spiral		☒
Corrections for Surveys: bias shift, rotation, sensitivity, xy translation, settlement		☒
Save plots for reuse on new surveys		☒
Save plots as templates for use with other inclinometers		☒

Licensing DigiPro2

Overview

DigiPro2 is distributed as a trial version with all the advanced features enabled. After 45 days, the advanced features are disabled unless you purchase and install a license key.

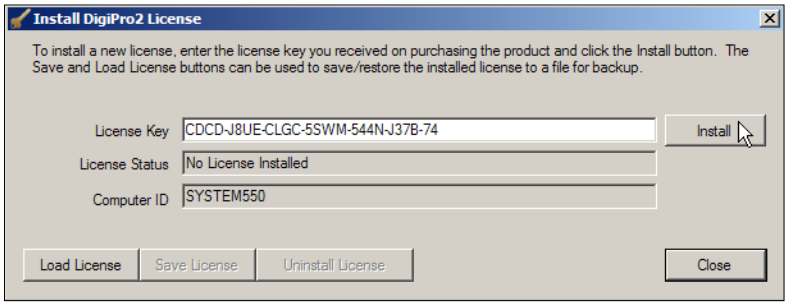
When you purchase DigiPro2, we make an entry in the license database and email the required number of keys to you. If you purchased DigiPro2 through a distributor, we typically email the keys to the distributor.

Installing a Key

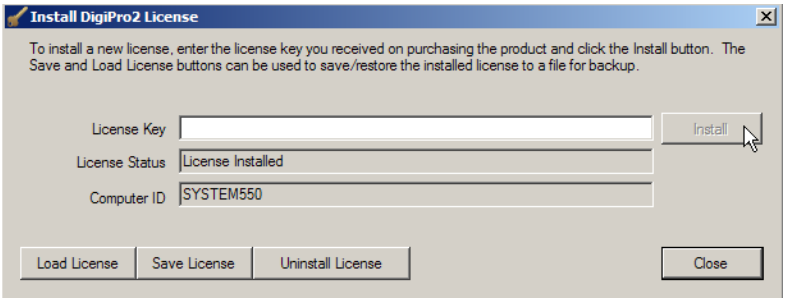
1. Start DigiPro2 and click "License."

   In the example at right, DigiPro2 has reverted to the basic version.

2. DigiPro2 displays the license dialog. Cut and paste the key from your email into the License Key field. Then click "Install.

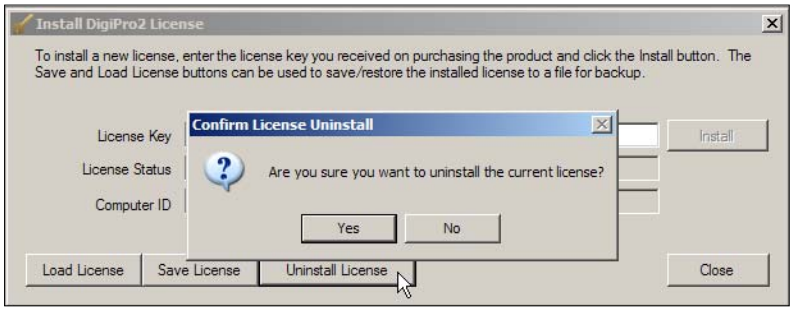


3. DigiPro2 activates the license via the internet. When the activation is successful, the License Key field goes blank, but the License Status field shows "License Installed." Click "Close" to complete the process.



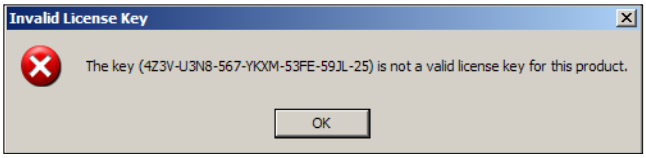
Uninstalling a Key

If you wish to move a key from one computer to another, you can uninstall a key and reinstall it on another computer. Click “Uninstall License” and then click “Yes.” DigiPro2 then reverts to the basic version .



Invalid Key

If DigiPro2 cannot activate a key, it displays this message:.



Possible reasons for this message:

- The key has been used too many times. Perhaps the key was not uninstalled before it was reused on this PC.
- The internet connection was bad.

Contact DGSI or your distributor to correct the situation.

No Internet

If it is not possible to activate DigiPro via the internet, contact DGSI or your distributor. Other solutions are available.