

Leica Zeno GIS

Getting Started Guide



Version 1.0
English

- when it has to be **right**

Leica
Geosystems

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1 Installation and Licencing of Zeno Field and Zeno Connect

1.1 Installation on CS10/CS15

1.1.1 Zeno Field

Installing Zeno Field on CS10/CS15

Step	Description
1.	Download the latest Zeno Field installer from myWorld@Leica Geosystems (https://myworld.leica-geosystems.com). You can find it in this location: myDownloads > Software > Zeno Field
2.	Copy the <i>Leica ZenoField.ARM.CAB</i> onto the CS10/CS15 in the Program Files folder and double click the file.
3.	The <i>Leica ZenoField.ARM.CAB</i> gets installed.
4.	To start Zeno Field, double click the shortcut icon on the desktop.

1.1.2 Zeno Connect

Installing Zeno Connect on CS10/CS15

Step	Description
1.	Download the latest Zeno Connect on CS10/CS15 installer from myWorld@Leica Geosystems (https://myworld.leica-geosystems.com). You can find it in this location: myDownloads > Software > Zeno Connect
2.	Copy the <i>Leica ZenoConnect.ARM.CAB</i> onto the CS10/CS15 in the Program Files folder and double click the file.
3.	The <i>Leica ZenoConnect.ARM.CAB</i> gets installed.
4.	To start Zeno Connect, double click the shortcut icon on the desktop.

1.1.3 Licence Activation for CS10/CS15

Licencing Zeno Field/ Zeno Connect

For using Zeno Field and Zeno Connect, a valid licence is required.

In the **Licence Manager**, you can register licences for:

- Zeno Field: Zeno Field licence, Zeno GIS key, CCP keys
- Zeno Connect: Zeno Connect licence, Zeno GIS key, CCP keys
- GS05/GS06: Add GPS and GLONASS licences to GS05/GS06
- GG02 plus: GLONASS option

All Zeno devices are shipped with pre-installed licence keys. Additionally, you receive the keys in printed form. In some cases it is necessary to register new licence keys, for example if the key for a CCP licence has expired.

How to register a licence for Zeno Field

Step	Description
1.	Start Licence Manager on your CS10/CS15 by tapping Start\Programs\Zeno Tools\Licence Manager .
2.	Enter your licence keys in the according fields in the Zeno Field tab. Or tap Browse and browse for you licence file. This will fill in all included keys automatically. These are: <ul style="list-style-type: none">• Zeno GIS Key: Enables the CS10/CS15 for Zeno Field• Zeno Field Key: Licence for Zeno Field• CCP Key: Maintenance key for Zeno Field

How to register a licence for Zeno Connect

Step	Description
1.	Start Licence Manager on your CS10/CS15 by tapping Start\Programs\Zeno Tools\Licence Manager .
2.	Enter your licence keys in the according fields in the Zeno Connect tab. Or tap Browse and browse for you licence file. This will fill in all included keys automatically. These are: <ul style="list-style-type: none">• Zeno GIS Key: Enables the CS10/CS15 for Zeno Connect• Zeno Connect Key: Licence for Zeno Connect• CCP Key: Maintenance key for Zeno Connect

Licences for the Zeno Field GNSS cap GS05/GS06

There are two types of licences for the GNSS cap, which the user can request when purchasing the product:

- a) GPS only
- b) GPS and GLONASS

Step	Description
1.	Start Licence Manager on your Zeno 10/Zeno 15 by tapping Start\Programs\Zeno Tools\Licence Manager .
2.	Enter you licence keys in the according fields in the GS05/06 tab. Or tap Browse and browse for you licence file. This will fill in all included keys automatically.

GLONASS Option for GG02 plus SmartAntenna

In the **Licence Manager** you also can add a GLONASS option for GG02 plus.

Step	Description
1.	Start Licence Manager on your CS10/CS15 by tapping Start\Programs\Zeno Tools\Licence Manager .
2.	Enter you licence keys in the according fields in the GG02 plus tab and enter your GLONASS licence in the according field. Or tap Browse and browse for you licence file. This will fill in all included keys automatically.

1.1.4

Language Packs

Installing language packs



The language pack is based on a specific Zeno Field/Zeno Connect version and can only be installed on the corresponding version.

Step	Description
1.	Download the Zeno Field/Zeno Connect language pack from myWorld@Leica Geosystems (https://myworld.leica-geosystems.com). You can find it in this location: myDownloads > Software > Zeno Field/Zeno Connect .
2.	Copy the file onto the Zeno 10/Zeno 15.
3.	Double click the file. The Zeno Field/Zeno Connect language pack will be installed.



After installing a new WinCE 6 version, other installed applications like Zeno Field/Zeno Connect must be reinstalled.

Updating WinCE6 by Software Loader

Step	Description
1.	Download the latest WinCE6 only Build from myWorld@Leica Geosystems (https://myworld.leica-geosystems.com). You can find it in this location: myDownloads > GNSS Products > Zeno 10/Zeno 15 > Software > WinCE only build
2.	Copy the files onto a SD card.
3.	Insert the SD card into the SD slot of the Zeno 10/Zeno 15.
4.	Double click the Loader.exe shortcut from your desktop. OR Make sure that no files are hidden. Navigate to My Device\Windows\Loader.exe . Double click Loader.exe.

Updating WinCE6 with the start-up

Step	Description
1.	Download the latest WinCE6 only Build from myWorld@Leica Geosystems (https://myworld.leica-geosystems.com). You can find it in this location: myDownloads > GNSS Products > Zeno 10/Zeno 15 > Software > WinCE only build
2.	Create a folder called System on a SD card.
3.	Copy the file to the System folder on a SD card.
4.	Rename the file to <i>software.img</i> .
5.	Insert the SD card into the SD slot of the Zeno 10/Zeno 15.
6.	Restart the Zeno 10/Zeno 15.
	The Zeno 10/Zeno 15 will reboot several times until the software update is finished. Do not disrupt the update. Make sure that enough battery power is available.

1.2

Installation on CS25

1.2.1

Licence Activation for Zeno Field/Zeno Connect on CS25

Entitlement ID

The **Entitlement ID** is the key to initial licence activation as well as for re-ordering additional software options or CCPs.
The Entitlement ID consists of the 25 alphanumeric characters separated by dashes, for example:

Entitlement ID: 00101-64466-00014-03624-4C34F

The Entitlement ID can be found on the **Invoice** and on the **Delivery Note** of the purchased software product. In addition, it can also be found on a separate **Entitlement Certificate**, on paper or in digital form. (i.e. HTML document).

The Entitlement ID for a software product never changes and therefore these documents should be kept carefully.

Installation requirements

To install the software package on a PC and to activate the licences the following is required:

- PC with connection to the internet.
- Invoice, delivery note or Entitlement Certificate with the Entitlement ID for the software package.
- Downloaded setup program for the software package.
- You can find it in myWorld: my Downloads\Software

Installation wizard

The installation of the software and activation of the software package is done with an installation wizard that automatically guides the user through the complete installation and activation process.


The installation steps described may differ slightly depending on the the software package you install.

Step-by-step installation and licencing

Step	Description
1.	Starting the Setup program <ul style="list-style-type: none">• To begin the installation of the software package, start the setup program *Setup.exe from the local hard disk.
2.	Installing the prerequisites <p>The installation program now automatically checks if the required prerequisites are already installed.</p> <ul style="list-style-type: none">• If not installed yet, select Install to install the remaining prerequisites. The prerequisites will now be installed on the PC.
3.	Starting the installation of the software package <p>The installation wizard of the software package is started.</p> <ul style="list-style-type: none">• Select Next to start the installation of the software package.
4.	Accepting the Software Licence Agreement <p>The terms in the Leica Geosystems Software Licence Agreement have to be accepted before the software can be installed.</p> <ul style="list-style-type: none">• Read the Software Licence Agreement and select "I accept...".• Select Next to continue with the installation.
5.	Starting the Licence Activation Wizard <p>To activate your Entitlement the Licence Activation Wizard has to be started.</p> <ul style="list-style-type: none">• Press Next to start the Licence Activation Wizard.• Check Skip Licence Activation if you already licenced a previous software version or if you prefer doing the licencing process later in the Licence Administrator.

Step	Description
6.	Starting the Licence Activation Process The Licence Activation Process has to be started: <ul style="list-style-type: none"> Press Next to start with the Licence Activation Process. If a connection to the internet cannot be established the Proxy Server page is shown.
7.	Checking for existing Entitlements If for the product you are going to install a licence has already been activated before, then a connection to the Leica Geosystems licence server will now be established to check if updates for your product are available. <ul style="list-style-type: none"> Select Next to establish the connection to the Leica Geosystems Licence Server. Please, wait until the check is completed. If the internet connection is slow this may take a few minutes. If the connection to the internet cannot be established the Proxy Server page is shown.
8.	Entering the Entitlement ID If for the product you are going to install a licence has not been activated before, then you will be asked to enter your Entitlement ID. <ul style="list-style-type: none"> Enter the complete Entitlement ID as printed on the invoice, delivery note or Entitlement Certificate. Select Next to activate the Entitlement.
9.	Register Entitlement It is recommended to register the Entitlement on the Customer Web Portal myWorld. <ul style="list-style-type: none"> Select Yes, I would like to register if you want to register the Entitlement ID immediately. Select Next to proceed. The browser will be started with the myWorld start page. For details on how to register the Entitlement refer to "Registering the licence at myWorld". If No, I don't want to register is selected, it is possible to register the Entitlement later. Refer to "Registering the licence at myWorld".
10.	Activation completed The entitlement has now successfully been activated or updated. <ul style="list-style-type: none"> Select Finish to close the Licence Activation Wizard. The Licence Activation Wizard will be closed and the installation of the software package continues. The activated Entitlement can be viewed any time in the Licence Management Tool CLM Administrator.
11.	Select a Destination Folder for the installation Now, the folder for the installation of the software package has to be selected. <ul style="list-style-type: none"> Select Change if you want to install the software in a different folder. Select Next to continue with the installation.
12.	Starting the installation of the Software Package The installation of the software package can now be started. <ul style="list-style-type: none"> Select Install to start the installation of the software. The software will now be installed into the selected folder.
13.	Installation completed After the installation of the software package has successfully been completed. <ul style="list-style-type: none"> Select Finish to exit the Installation Wizard and to start the software product.

Registering the licence at myWorld

Step	Description
	Registering of licences at the Customer Web Portal myWorld is required for rehosting and for accessing product related information and software updates. For the registration of licences the Entitlement ID is required. The registration of licences can be done during the installation process, but also at a later stage.
1.	<p>Starting myWorld myWorld can be started via the following link:</p> <ul style="list-style-type: none"> • http://myworld.leica-geosystems.com • If Yes, I would like to register was selected during installation, myWorld is automatically started in a separate browser window. • myWorld can also be started directly from the CLM Administrator by selecting Register Entitlement after selecting View installed licences and then Return licences. <p>If you already have a user and password for myWorld you can directly log on:</p> <ul style="list-style-type: none"> • Enter your E-Mail and Password and select Log on. <p>If you do not have a user and password for myWorld yet you need to register as a new myWorld user:</p> <ul style="list-style-type: none"> • Select Register to start the Registration Wizard for myWorld. • Follow the Registration Wizard until it is completed and you will receive your user and password via E-Mail. • Enter your E-Mail and Password and select Log on.
2.	<p>Starting myProducts Registering the licence to your user (i.e. company) is done via myProducts. To start myProducts:</p> <ul style="list-style-type: none"> • Select myPrdoucts from the menu on the left.
3.	<p>Add Product myProducts shows all Leica Geosystems products that are registered with the current user. To add an additional product or licence:</p> <ul style="list-style-type: none"> • Select Add Product from the button below the product list.
4.	<p>Register Licence To add a licence:</p> <ul style="list-style-type: none"> • Select Software. Enter the Entitlement ID. Select OK. <p>Now, the licence is registered and the software package added to the myProducts list.</p>

In case activation fails...

In case the licence activation fails:

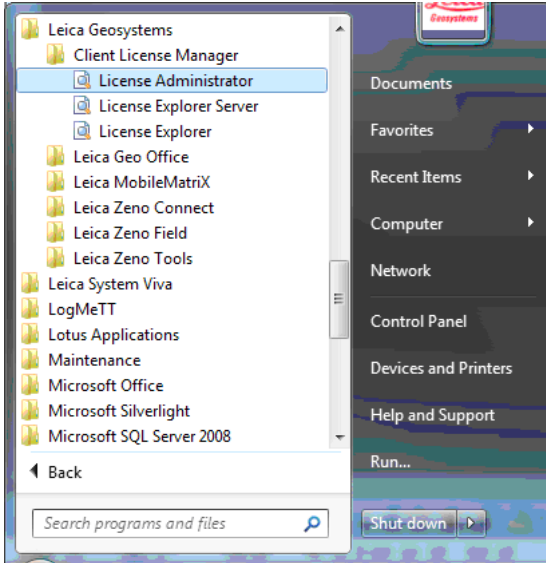
- contact your local Leica Geosystems agency.

OR

- create new support requests on myworld.leica-geosystems.com that will be answered by your local Leica Geosystems Support Team.

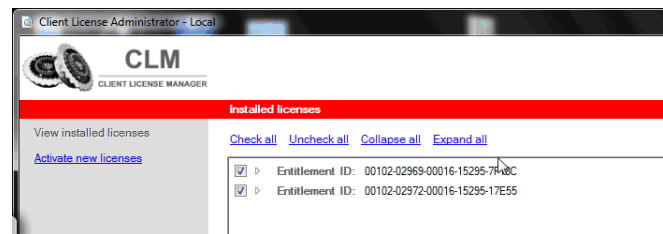
Starting the Licence Administrator

Use the separate Licence Administrator to manage licences on the CS25.

Step	Description
1.	<p>Select Start Menu > All Programs > Leica Geosystems > Client Licence Manager > Licence Administrator.</p> 

Viewing Licences


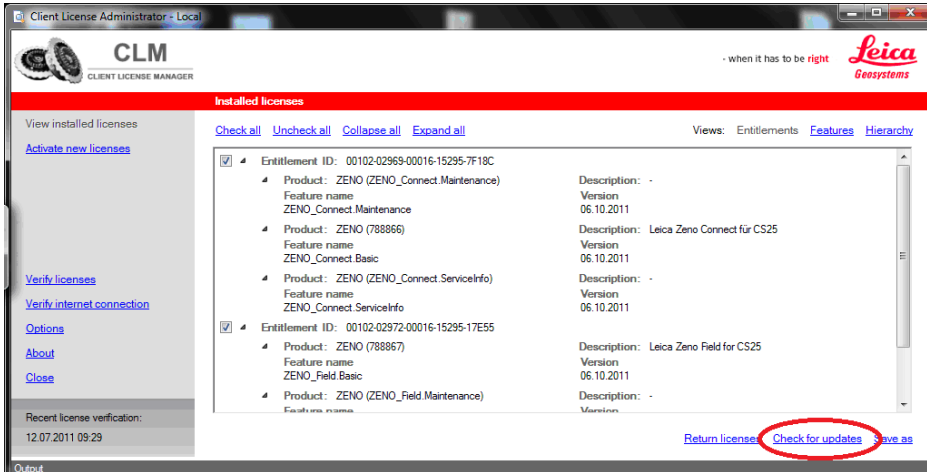
Use **View Installed Licences** to view the licences currently activated on the CS25. No connection to the Internet is not required to view the licences.



The **View Installed Licences** dialog shows:


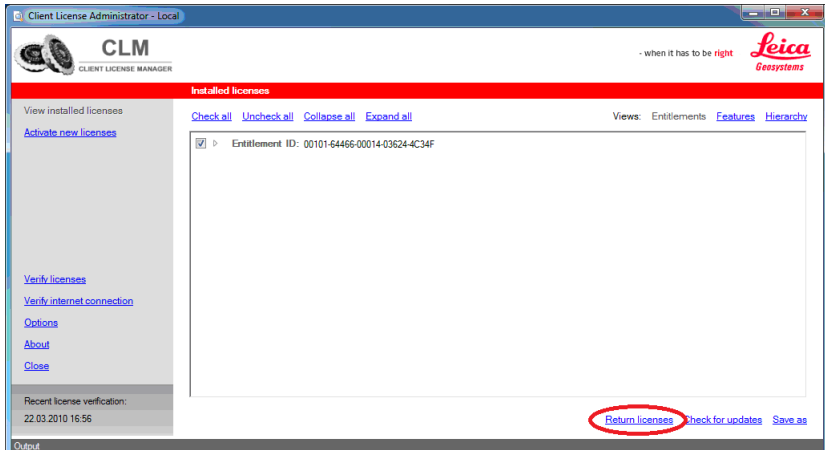
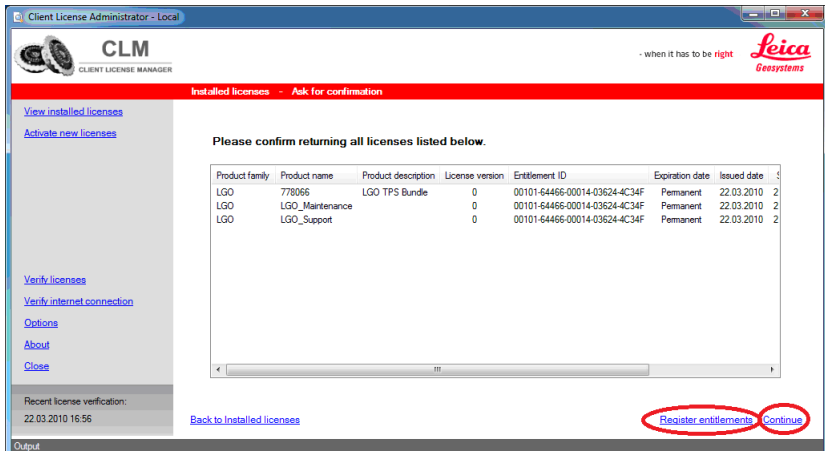
- Entitlement ID
- All currently activated options of the software package

Activating software options or software maintenance

Step	Description	
	An Internet connection is required to allow for a connection to the Leica Geosystems Licence Server.	
1.	Go to View Installed Licences .	
2.	Make sure the PC is connected to the Internet.	
3.	Click Check for updates on the right bottom. A connection to the Leica Geosystems License Server is established and the check for license updates is initiated.	
		
	No licence updates available	Licence updates available
4.	The message No new licences are available appears. Click OK .	The message xxx newly available activatable licences appears. Select Activate new licences on the right bottom of the site.

Transferring licences

Transferring a licence from one PC to another is called rehosting.

Step	Description
	For rehosting, the licence must be registered at myWorld. Refer to "Registering the licence at myWorld".
1.	Select Start Menu > All Programs > Leica Geosystems > Client Licence Manager > Licence Administrator .
2.	Go to View Installed Licences . The currently activated licences Entitlement IDs are shown.
3.	Make sure the PC is connected to the Internet.
4.	Select the Entitlement ID to returned.
5.	Click Return Licences . The licences selected for returning are shown.
	
	<div> <div>Licences are registered at myWorld</div> <div>Licences are NOT registered at myWorld</div> </div>
6.	Click Continue to confirm returning the selected licences. Click Register Entitlements .
	 <p>A connection to the Leica Geosystems License Server is established and the selected licenses are returned.</p>
7.	On a different PC follow the complete installation and activation process. Refer to "1.2.1 Licence Activation for Zeno Field/Zeno Connect on CS25" for information.

1.2.4

Language Packs

Installing language packs



The language pack is based on a specific Zeno Field/Zeno Connect version and can only be installed on the corresponding version.

Step	Description
1.	Download the Zeno Field/Zeno Connect language pack from myWorld@Leica Geosystems (https://myworld.leica-geosystems.com). You can find it in this location: myDownloads > Software > Zeno Field/Zeno Connect.
2.	Copy the file onto the CS25.
3.	Double click the file. Follow the instructions in the installation wizard.

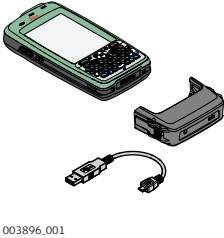
1.3

Installation and Licencing on Zeno 5

1.3.1

Installation for Windows Mobile Embedded Professionals 6.5

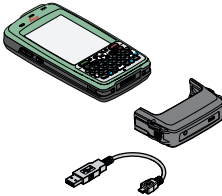

Installation

Step	Description
	Windows Embedded Handheld 6.5 is pre-installed in English. Follow the instruction for installing the operating system in another language.
1.	Ensure the battery is fully charged prior to use.
2.	Attach the USB SnapOn module to the Zeno 5.
3.	Plug in the microUSB to USB adaptor. 
4.	Turn on the Zeno 5.
5.	After the Zeno 5 booted up, plug in the Leica Zeno USB stick.
6.	Select your country in the upcoming screen. This will affect the installed language.
7.	The installation menu shows up.
8.	Select Windows Embedded Handheld 6.5 .
	During the installation, the Zeno 5 will reboot several times. Please do not interrupt the installation process.
9.	After the installation has finished, plug off the Leica Zeno USB stick.
	For entering the USB Loader menu again, plug in the USB drive again.

1.3.2

Zeno Field/Zeno Connect

Installing Zeno Connect/ Zeno Field on Zeno 5

Step	Description
1.	Ensure the battery is fully charged prior to use.
2.	Attach the USB SnapOn module to the Zeno 5.
3.	Plug in the microUSB to USB adaptor.  003896_001
4.	Turn on the Zeno 5.
5.	After the Zeno 5 booted up, plug in the Leica Zeno USB stick.
6.	Select your country in the upcoming screen. This will affect the installed language.
7.	The installation menu shows up.
8.	Select Zeno Field/Zeno Connect.
9.	After the installation has finished, plug off the Leica Zeno USB stick.
	For entering the USB Loader menu again, plug in the USB drive again.

1.3.3

Licence Activation for Zeno Field/Zeno Connect on Zeno 5

Licencing Zeno Field/ Zeno Connect

For using Zeno Field and Zeno Connect, a valid licence is required.

In the **Licence Manager**, you can register licences for:

- Zeno Field: Zeno Field licence, Zeno GIS key, CCP keys
- Zeno Connect: Zeno Connect licence
- GG02 plus: GLONASS option

All Zeno devices are shipped with pre-installed licence keys. Additionally, you receive the keys in printed form. In some cases it is necessary to register new licence keys, for example if the key for a CCP licence has expired.

How to register a licence for Zeno Field

Step	Description
1.	Start Licence Manager on your Zeno 5 by tapping Windows button\Zeno Tools\Licence Manager .
2.	Enter you licence keys in the according fields in the Zeno Field tab. Or tap Browse and browse for you licence file. This will fill in all included keys automatically. These are: <ul style="list-style-type: none">• Zeno Field Key: Licence for Zeno Field• CCP Key: Maintenance key for Zeno Field

How to register a licence for Zeno Connect

Step	Description
1.	Start Licence Manager on your Zeno 5 by tapping Windows button\Zeno Tools\Licence Manager .
2.	Enter you licence keys in the according fields in the Zeno Connect tab. Or tap Browse and browse for you licence file. This will fill in all included keys automatically. These are: <ul style="list-style-type: none">• Zeno Connect Key: Licence for Zeno Connect

GLONASS Option for GG02 plus SmartAntenna

In the **Licence Manager** you also can add a GLONASS option for GG02 plus.

Step	Description
1.	Start Licence Manager on your Zeno 5 by tapping Windows button\Zeno Tools\Licence Manager .
2.	Enter you licence keys in the according fields in the GG02 plus tab and enter your GLONASS licence in the according field. Or tap Browse and browse for you licence file. This will fill in all included keys automatically.

2 Project Creation

2.1 Zeno Office

Functionality of Zeno Office

Zeno Office and Zeno Office on ArcGIS™ are software packages to maintain, manage and post-process GIS, GNSS and surveying data.

Tools of Zeno Office and Zeno Office on ArcGIS™:

- Automated field-office workflows: EasyIn and EasyOut
- Store detailed GNSS quality information in a GIS database
- Integration of surveying measurements in a GIS database

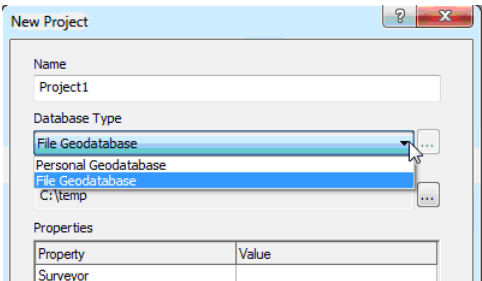
2.1.1


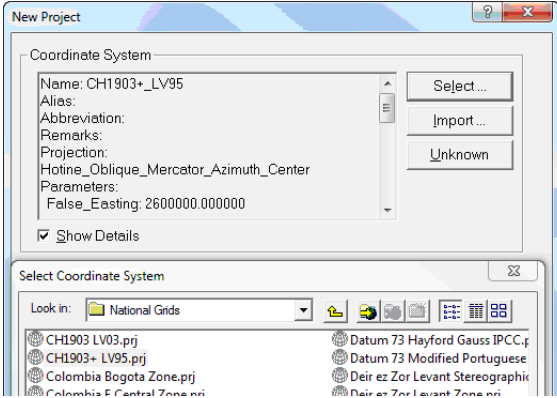

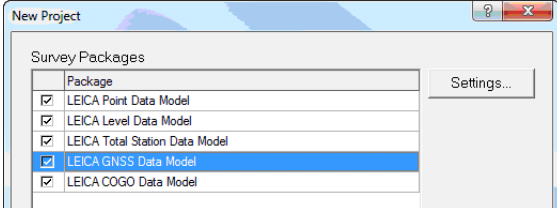
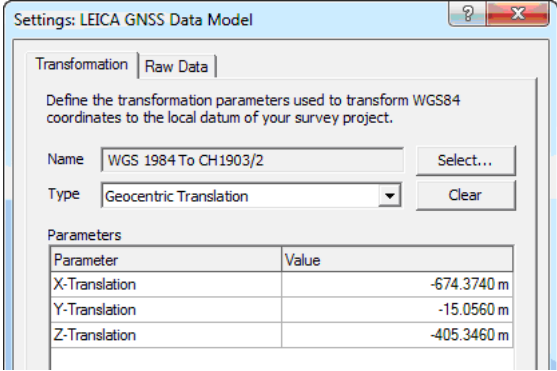
Wizard

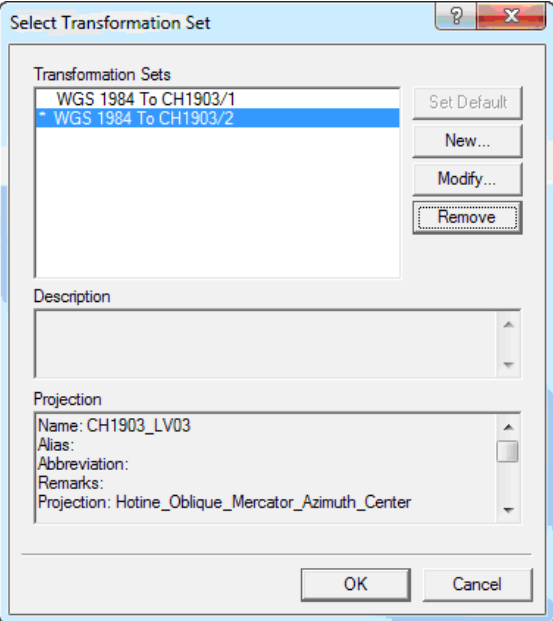




Creating a project

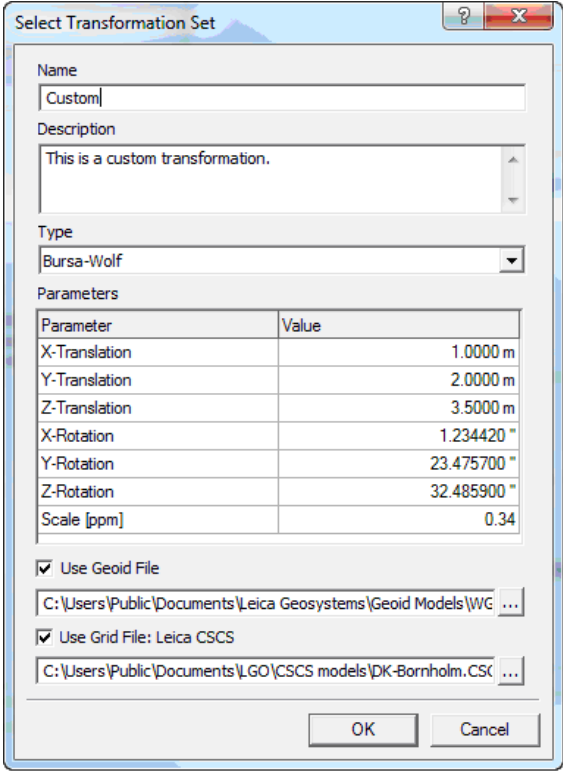
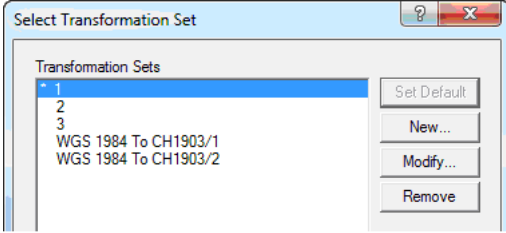
Use the Project Wizard to define:

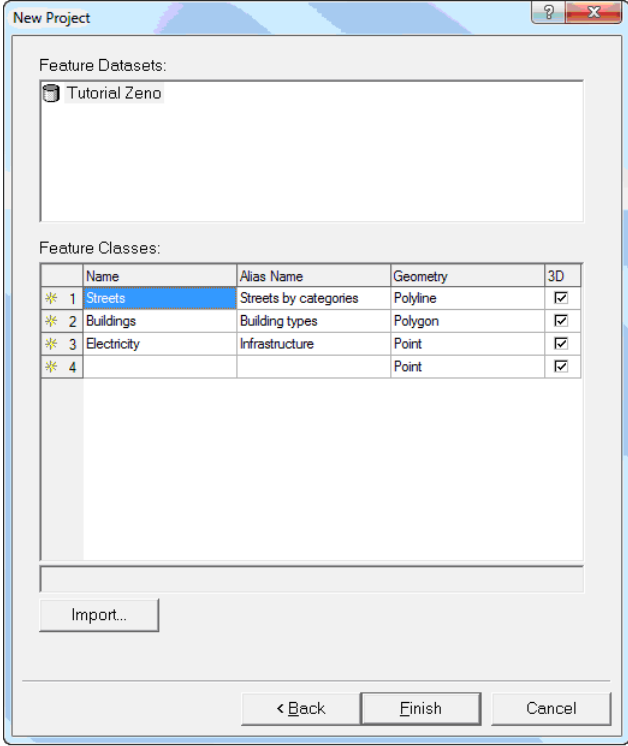
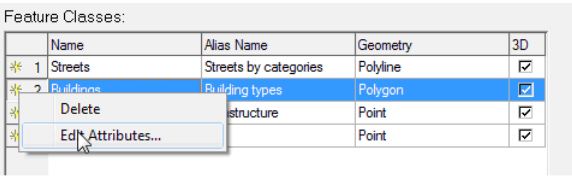
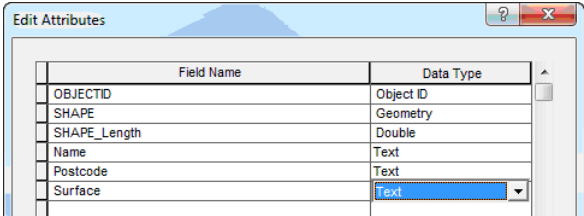
- Coordinate systems
- Transformations
- Data models



Step	Description
1.	Start Zeno Office or Zeno Office on ArcGIS™.
2.	Click File > New Project and enter a project name. If New Project is missing in the File menu, please add it via the Customize dialogue.
3.	Select the Database Type : Personal Geodatabase <ul style="list-style-type: none">• Used for single user working with smaller GIS datasets• Based on single Microsoft Access *.mdb file• Maximum file size of 2 GB• No multiuser editing, versioning, or historical archiving File Geodatabase <ul style="list-style-type: none">• Used for single user working with small- to medium-sized GIS datasets• Stored in a file system• No size limit. Default: 1 TB per table• Better performance than Personal Geodatabase• Vector data can be compressed into a read-only format for better geodatabase performance• Support of multiple editors at the same time when editing different tables, feature classes, or feature datasets• No versioning or historical archiving• Recommended when you start new GIS projects for your own local use 
4.	Browse for a project path.
5.	Enter a project description (optional), for example the surveyor's name and the location.

Step	Description
	If you want to re-use the settings for another project, define a map template.
6.	Click Next .
7.	Click Select to define a coordinate system and browse for the desired coordinate system.
	
8.	Click Add .
9.	Click Next .
	<p>The Survey Package properties can be edited. Steps 10. to 17. are an example for changing the Leica GNSS Data Model settings. the Leica GNSS Data Model settings define:</p> <ul style="list-style-type: none"> • Transformations • Geoid models • CSCS models
10.	Highlight Select Leica GNSS Data Model and click Settings....
	
11.	Click Select... in the Transformation tab to choose a transformation set.
	
12.	<p>Depending on the coordinate system, predefined transformations are available. The options are:</p> <ul style="list-style-type: none"> • Select one of the predefined transformations. Continue with step 14.. • Click Modify to customise the transformation parameters. Continue with step 13.. • Click New... to create a new transformation. Continue with step 13..

Step	Description
	
13.	<p>a) Enter a name and a description.</p> <p>b) Select the Type of transformation.</p> <ul style="list-style-type: none">  With Zeno Office v3.0 or higher, Leica Bursa-Wolf (7 parameter) and Leica Molodensky-Badekas (10 parameter) are included.  If you used Coordinate Frame, Position Vector or Geocentric Transformation transformations so far, select Leica Bursa-Wolf transformations now.  Transformations in existing projects are automatically converted to Leica Bursa-Wolf and will output exactly the same results. <p>c) Enter or edit the transformation parameters.</p> <p>d) Select a Geoid or CSCS file (optional). Check the check box next to Use Geoid File or Use Grid File: Leica CSCS and browse for the file.</p> <ul style="list-style-type: none">  With Zeno Office/Zeno Field v3.0, Geoid and CSCS files are supported directly within Zeno Office/Zeno Field. The Geoid and CSCS files are transferred and applied automatically to the mobile device via EasyOut.

Step	Description
	
14.	Click OK .
15.	<p>A transformation can be set as default. The default transformation is automatically used for the specific coordinate system in the Wizard next time. To set a transformation as default (optional):</p> <p>Highlight the transformation and click Set Default. The transformation is marked by a * left of the name. A transformation set as default is automatically used for this specific coordinate system in the Wizard next time. The transformation is marked by a * left of the name.</p> 
16.	Click OK to return to the Leica GNSS Data Model settings.
17.	<p>Click OK to return to the Survey Packages properties.</p> <p>Your transformation is now defined and you can continue with the next steps of the project wizard.</p>
18.	Click Next .

Step	Description
19.	<ul style="list-style-type: none"> To create new Feature Classes: Click in the first empty Name field and enter a name. Add a description for the Feature Class in the field Alias Name (optional). Create more Feature Classes by double-clicking the Geometry field and select the desired geometry type, for example Point, Polyline or Polygon. To import new Feature Class schemas: Click Import. 
20.	Check the 3D check box for storing height values within the feature.
21.	<p>To add attributes for the Feature Classes:</p> <ol style="list-style-type: none"> Click on the leading column of a feature class to select it. Right-click the leading column and select Edit Attributes....  <ol style="list-style-type: none"> Enter a field name in the next free line. Click the Data Type Field and select the data type, for example Text, Double or Raster. 



Step	Description
	 To store pictures as an attribute in the data, create a text field. Name the text field photo , image or picture . Assign the minimum length of 20 characters. This text field is used for storing the picture link within Zeno Field.
22.	Repeat step 20. for all feature classes
23.	Click OK .
24.	Click Finish after all Feature Classes and attribute fields were defined. The project is created.
	The project can be used as a template.

2.1.2


Image Settings

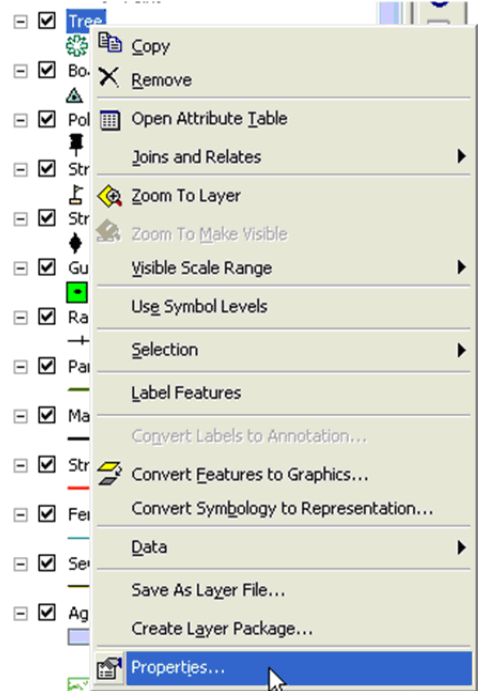
Hyperlink base

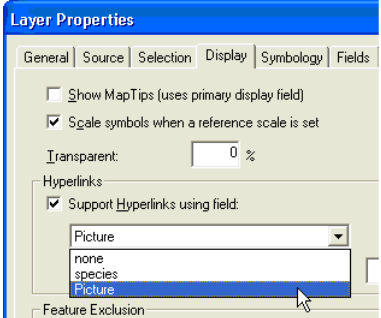

EasyIn will automatically transfer collected images to your office PC. The images are stored in the defined location of the Hyperlink base.

Step	Description
1.	Click File > Document Properties...
2.	Enter the path into the Hyperlink base field, for example c:\images.  Ensure that the defined path exists on your system. If the path does not exist during EasyIn, the images will be copied to the location of the map document.  If the images should be stored in a different location, you can define it in the Hyperlink base setting of the map.

Layer hyperlink settings

Images linked to a feature can be shown in Zeno Office by clicking  on the **Tools** toolbar. The hyperlink support must be defined for each layer which should show images.

Step	Description
1.	Right-click a layer in the Display tab of the TOC and select Properties.... 


Step	Description
2.	Change to the Display tab.
3.	Check Support Hyperlinks using field: . 
4.	Select the field which includes the picture link, for example picture or image .
5.	Click OK .
6.	Repeat this for all layers which contain images.
7.	Save the map.
	You can use the project as map template in the Project Wizard when creating a new project.


2.1.3


Transferring a Project between Zeno Office and Zeno Field using EasyOut

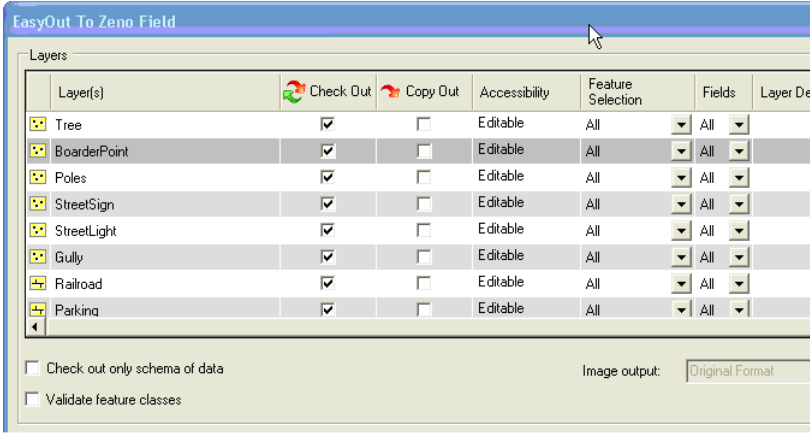

Transfer project from Zeno Office to Zeno Field

With the EasyOut process you can transfer a Zeno Office project to Zeno Office.

 For exporting a database that was not created by the Project Wizard you have to create a Survey Data Set manually. Refer to Zeno Office Office help.

 the EasyOut process works only from one single geodatabase. Make sure that all your data has the same spatial reference. If your project includes data from different geodatabases or your feature classes have different coordinate systems, a message will be displayed.

Step	Description
1.	Click  in the Leica Data Manager Toolbar. If the toolbar is not available, select Customise\Customise Mode in the Tools Menu and mark the check box next to Leica Data Manager.
2.	<p>Tick the check boxes as required:</p> <ul style="list-style-type: none"> • Check Out: For layers you want to transfer to Zeno Field. Measurements can be done in Zeno Field. Layers can then be transferred back to Zeno Office. • Copy Out: For layers you want to use as background in the project because background layers are usually read-only (default). A shape file is created. This file cannot be checked in again with EasyIn. Accessibility Read only: For background data. Accessibility Editable: To modify the shape file in the field.

Step	Description
	
3.	Tick Check out only schema of data to check out the schema without data.
4.	Select current display to export the current extent of the map. You also can export only selected features or areas that are marked with a graphic.
5.	Enter a project name.
6.	Browse for a project location. You can directly browse a mobile connection or the ActiveSync data exchange folder.
7.	Click OK . The project is transferred.
	<p>For Zeno Office/Zeno Field v3.0 or higher:</p> <ul style="list-style-type: none"> • Transformations are transferred automatically to the Zeno device during the EasyOut process. The Datum Configuration Tool is not required anymore. • Geoid and CSCS models are supported directly in Zeno Field. • Review the Geoid file in the Coordinate System tab in the GNSS Settings in Zeno Field. Refer to "2.2.2 New Map". If an EasyOut process was performed, you cannot edit the Geoid file any more as it is already defined in the Zeno Office project. <p>When using Zeno Office/Zeno Field versions lower than v3.0, transformations must be applied manually to the Zeno device via the Datum Configuration Tool. Refer to "2.2.3 Applying a Transformation to the Zeno".</p>

Functionality of Zeno Field

Leica Zeno Field is a version of ArcPad10. Zeno Field provides, additionally to the ArcPad™ functionality,:

- GNSS raw data logging
- Easy handling of GNSS configurations, for example DGPS settings
- Feature accuracy management
- Automated workflow between the field and office

Use Zeno Office to manage feature quality over time and benefit from automated import and export functions to a wide range of different formats such as ArcGIS geodatabase, shapefile, dxf, dgn, and dwg.

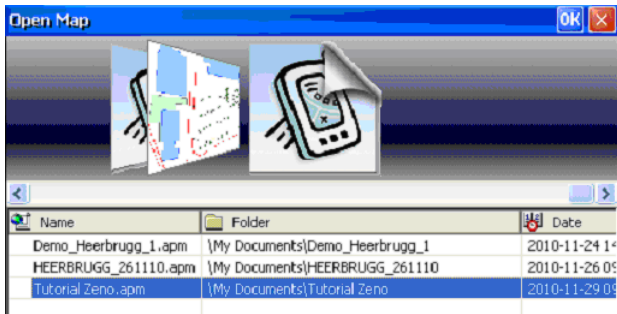

Leica Zeno Field can be used for:

- Field Mapping
- Asset Inventories
- Asset Maintenance
- Inspections
- Incident Reporting
- GIS Analysis and Decision Making



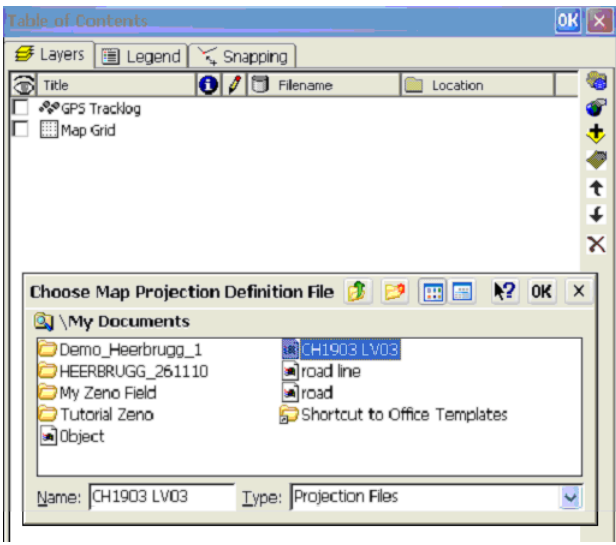



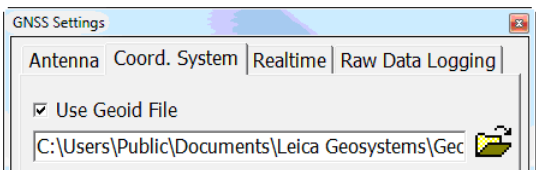
2.2.1

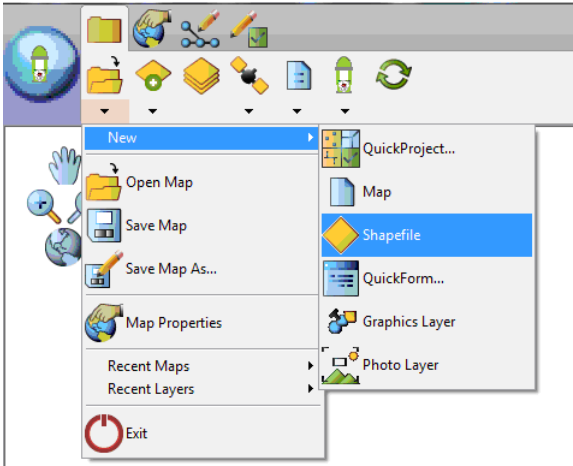

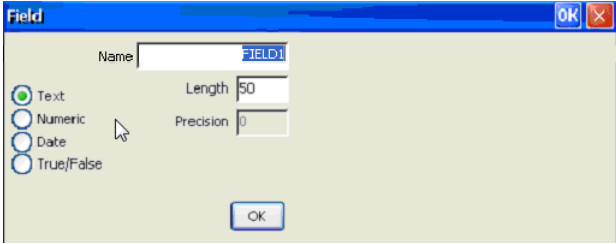

Existing Map

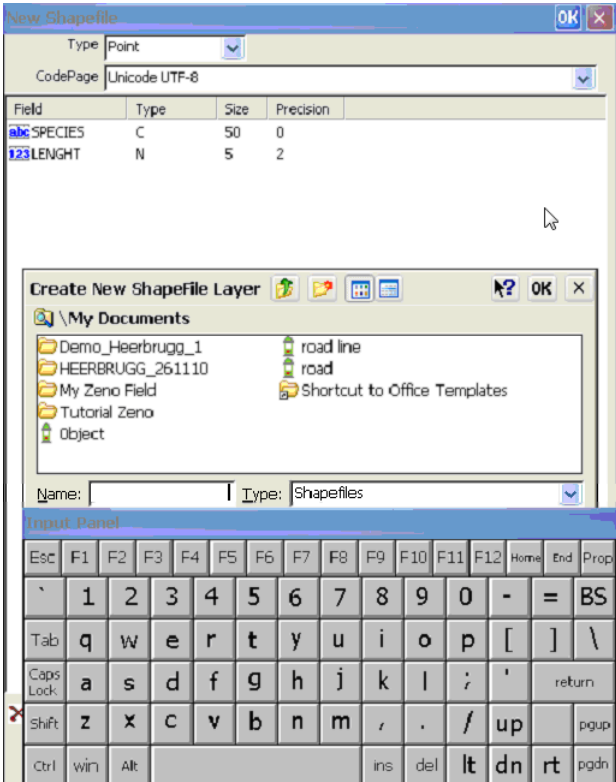
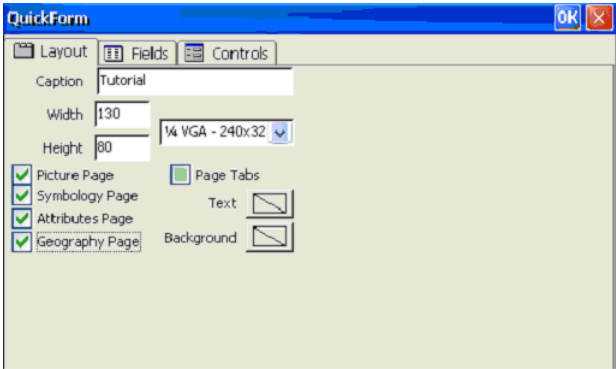
Opening an existing map

Step	Description
1.	Start Zeno Field.
2.	Click Choose map to open . The Open Map dialog is displayed. 
3.	Open an existing map. A map for Zeno Field can be created in Zeno Office.
	In the Open Map dialog, the listed projects are saved in the default data path. To change this path, go in Zeno Field to Options > Paths .

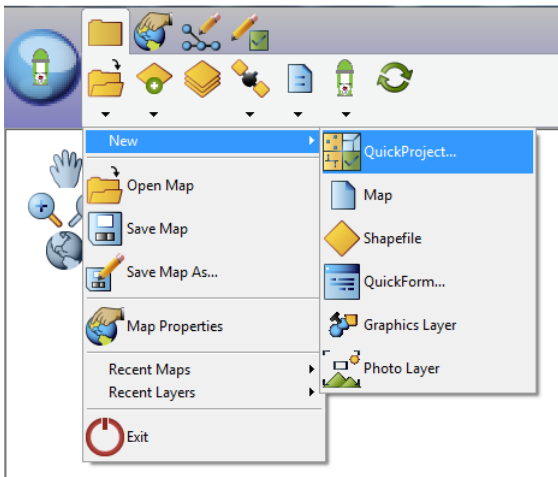


Creating a new map

Step	Description
1.	Start Zeno Field.
2.	Close the Open Map dialogue or select new map.
3.	Select a coordinate system: In Zeno Field you need a *.prj file where the information of the coordinate system is stored. Location of the *.prj file on your PC: In the folder Coordinate Systems in the installation directory of Zeno Office. Copy the desired *.prj file to the Zeno device.
4.	Tap  to open the Table of Contents.
5.	Tap  on the right toolbar. Select the *.prj file that you copied to the Zeno device. 
6.	Click OK to leave the Table of Contents and save your map.
7.	Tap  to save the map.
8.	Optional for Zeno Field v3.0 or higher: Add a Geoid file to achieve high accurate orthometric heights. All height values will be based on the geoid.  A Geoid file can only be added if no other Geoid file was already attached by the EasyOut process.  Geoids are not supported on Zeno 5 used with the internal Sirf-GPS. a) Open the GNSS Settings . b) Switch to the Coord. System tab. c) Check Use Geoid File and browse for your Geoid file. 

Step	Description
9.	<p>Now your map document is ready for creating some shapefiles. In shapefiles you can save point, polygon or polyline geometry plus additional attributes. Tap New and then Shapefile.</p> 
10.	<p>Choose between Point, Polyline and Polygon geometry in the Type combo box. Tap + on the bottom of the page to add some attribute fields to the shapefile.</p> 
11.	<p>Choose a name for the attribute field, select a data type and define the length and precision. Accept the settings with OK.</p>  <p> To store pictures as an attribute in the data, create a text field. Name the text field photo, image or picture. Assign the minimum length of 20 characters. This text field is used for storing the picture link within Zeno Field.</p>
12.	Repeat step 10. and 11. for defining further attributes.

Step	Description
13.	<p>Tap OK. Choose a name for the shapefile and save it.</p> 
14.	<p>After saving the shapefile, Zeno Field asks you to create a QuickForm. What is a Quickform?</p> <p>In order to facilitate data capture in the field, you can create custom input forms for any shapefile in Zeno Field. QuickForms contain basic functions and options for creating forms in the field when you do not have access to your desktop PC.</p>
15.	Tap Yes .
16.	<p>Edit the QuickForm according to your needs.</p> <p>For example specify which tabs should be included, define minimum and maximum values, create predefined values which will appear in the drop-down list (comma delimited, no blank).</p> 
17.	Repeat step 9. to 16. for creating further shapefiles.

Creating a QuickProject

Step	Description
1.	Start Zeno Field.
2.	<p>Tap New > QuickProject...</p>  <p>The screenshot shows the Zeno Field application interface. At the top, there is a toolbar with various icons. Below the toolbar, a menu is open, showing options like 'New', 'Open Map', 'Save Map', 'Save Map As...', 'Map Properties', 'Recent Maps', 'Recent Layers', and 'Exit'. The 'New' option is selected, and a sub-menu is displayed, showing options like 'QuickProject...', 'Map', 'Shapefile', 'QuickForm...', 'Graphics Layer', and 'Photo Layer'. The 'QuickProject...' option is highlighted.</p>
3.	<p>Select a template:</p> <p>Choosing a template will create a QuickProject that contains layers based on the template layers. Zeno Field comes with four sample templates that can be used in place of the default template.</p>
4.	Select a projection.
	<p>A template consists of</p> <ul style="list-style-type: none"> • a *.zip file containing all the layers that make up the template. • an apm file called Template.apm that references all of these layer files. <p>You can create your own template from any layers. The layers can be shapefiles, AXF layers or raster layers.</p>
	You also can attach a geoid file. Refer to "Creating a new map" step 8..



You must use the Datum Configuration Tool and transfer the transformation to your Zeno device if

- a Zeno Office version is lower than v3.0.
- a Zeno Field version is lower than v3.0.
- no EasyOut from Zeno Office was made.

Functionality of the Datum Configuration Tool

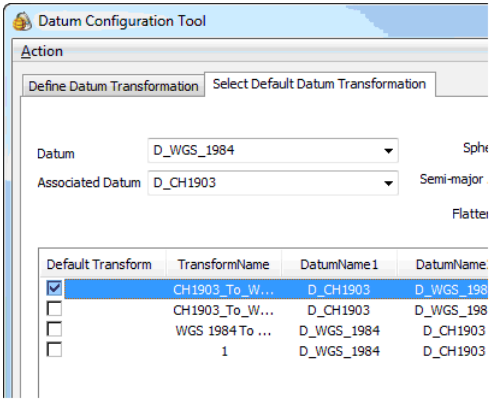
The Datum Configuration Tool is installed with Zeno Field on the Desktop PC and CS25. You can:

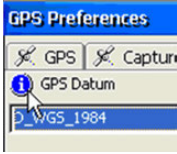

- Define new transformation sets between two datums
- Select default transformations
- Copy transformation files to the Zeno

The Datum Configuration Tool writes editings to two *.dbf files. Both files must be copied manually to your Zeno device.

Applying a transformation to the Zeno using the Datum Configuration Tool

Step	Description
	The process needs to be done only once. The correct transformation will be used automatically for every map which uses the associated datum!
1.	<p>Open the Datum Configuration Tool in Start > All Programs > Leica Geosystems > LeicaZeno Field > Datum Configuration Tool.</p> <p>The Datum Configuration Tool consists of two tabs:</p> <ul style="list-style-type: none"> • Define Datum Transformation tab to create a custom transformation • Select Default Datum Transformation tab to set a transformation as default
2.	<p>In the Define Datum Transformation tab</p> <p>Create a new custom transformation:</p> <ol style="list-style-type: none"> Choose a name for the transformation. Select a Datum Transformation Method. Select Datum 1 from the list (usually WGS84). Select the target Datum 2 from the list. Edit the transformation parameters. For Zeno Field version higher than v2.1 Add a CSCS file: Fill in the name of the CSCS file in the Dataset field. For example, when your CSCS file is called Swiss.csc, fill in Swiss.

Step	Description
3.	<p>For Zeno Field version higher than v2.1: For applying NTV2 files in the Datum Configuration Tool, you first have to convert them to CSCS files.</p> <ol style="list-style-type: none"> Select Start > All Programs > Leica Geosystems > Zeno Tools > CSCS Model Converter Select NTV2 as data format. Browse for the NTV2 file. Select a location for the generated CSCS file. Fill in the generated CSCS file into the Dataset. Refer to 2..
4.	Click Save for saving the transformation.
5.	Switch to the Select Default Datum Transformation tab.
6.	<p>In the Select Default Datum Transformation tab</p> <ol style="list-style-type: none"> Select the Datum and Associated Datum. A list of all available transformations between both datums gets displayed. Check the check box in the Default Transform column to set it as default. The default transformation will be used automatically for every map which uses the associated datum. Click Save to save the default transformation. 
7.	In the Manage screen you can have an overview of all custom transformations.
8.	<p>Copy the transform.dbf and defaulttransform.dbf file from your PC to your Zeno. File locations:</p> <ul style="list-style-type: none"> For Zeno Field v1.0: C:\Program Files\Leica Geosystems\Leica Zeno Field\System\ For Zeno Field v1.1 and higher: C:\Documents and Settings\All Users\Documents\ArcPad\System\
9.	<p>Insert both files to the folder:</p> <ul style="list-style-type: none"> For Zeno 5/Zeno 10/Zeno 15: \\Program Files\Zeno Field\System For CS25: C:\Users\Public\Public Documents\Zeno Field\System
10.	<p>For Zeno Field version higher than v2.1 and a CSCS file defined in the Datum Configuration Tool:</p> <ol style="list-style-type: none"> Check that the file is included in your project folder (same location where the *.apm file is located). The name of the CSCS file must be identical to the name you specified in the Datum Configuration Tool. The CSCS file will be applied when starting the project in Zeno Field. Additionally the file will be copied to the CSCS Models folder.

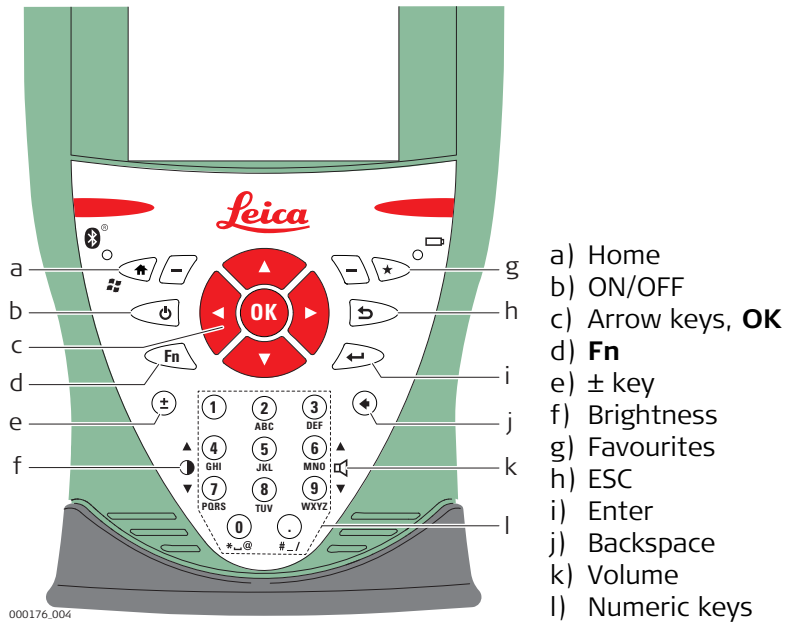
Step	Description
11.	Open Zeno Field to review the used transformation parameters.
12.	Open the GPS Preferences dialog. Switch to the Datum tab.
13.	Tap on the Info icon. 
14.	The transformation details are shown. Review the used CSCS in the line starting with dataset . 

3 Working with Zeno Field

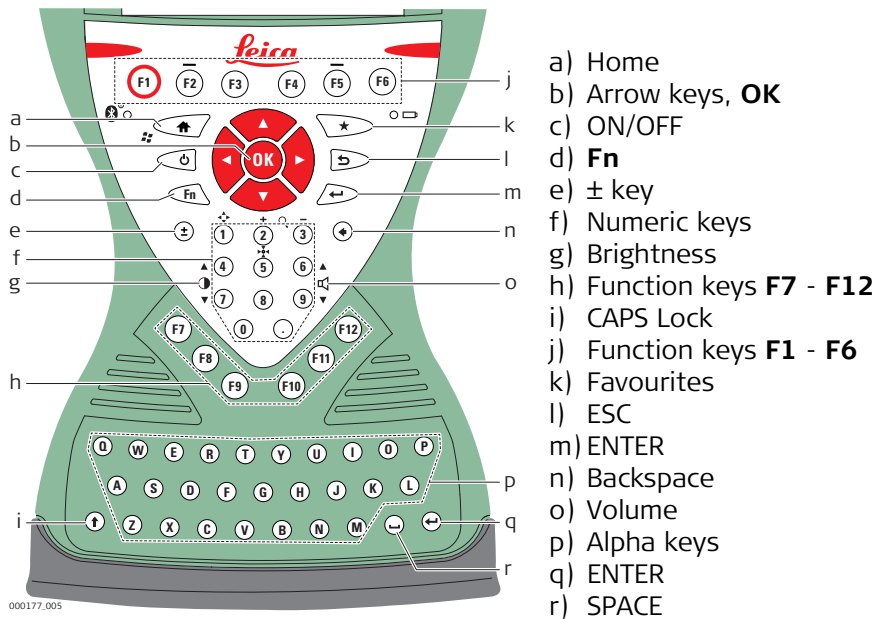
3.1 Editing in Zeno Field

3.1.1 Keys on Zeno 10/Zeno 15

Keyboard display CS10



Keyboard display CS15



Keys

Key	Function
	Measure
	Switches the geometry type from Point to Polyline to Polygon .
	Zoom to full extent
	Zoom in
	Zoom out
	Centre map on GPS position (Auto-pan on/off)
	Map refresh
	Move the focus on the screen.
	OK in all dialogs.

3.1.2

Keys on Zeno 5

Keyboard display

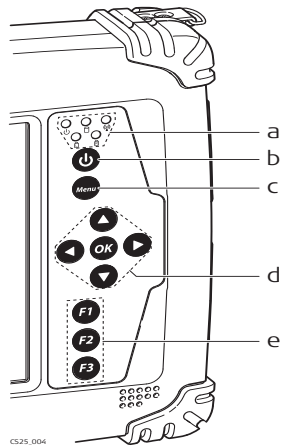


- a) Arrow keys
- b) Talk key
- c) Scan keys
- d) Windows key
- e) Alpha keys/special characters
- f) SHIFT
- g) **ESC/CTRL**
- h) Asterisk
- i) Numeric keys
- j) End key
- k) Power key
- l) Function keys
- m) ENTER
- n) Backspace/DEL
- o) **TAB/ALT**
- p) BLUE/FN modifier
- q) SYM
- r) Space

Keys











Key	Function
	Measure
	<ul style="list-style-type: none"> Left/right: Pan to the left/right Up: Zoom out Down: Zoom in

Keyboard display CS25

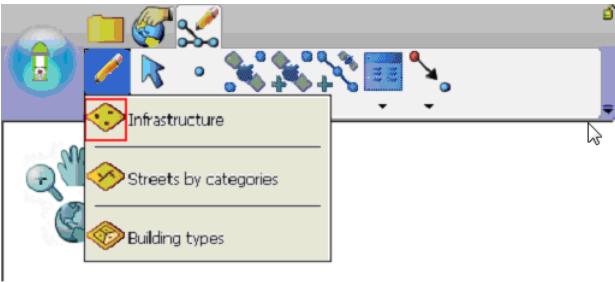





- a) LED indicators
- b) ON/OFF
- c) Menu
- d) Arrow keys, OK
- e) Function keys

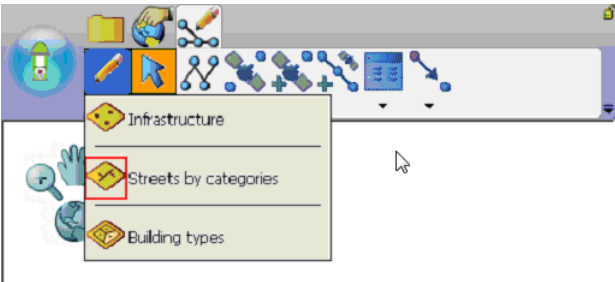


Keys

Key	Function
ON/OFF 	If CS25 already off: Turns on CS25 when held for 5 s. If CS25 already on: <ul style="list-style-type: none"> • Puts CS25 into stand-by mode when held < 4 s. • Turns off CS25 when held for 8 s.
Menu 	Start Menu button options.
Arrow keys    	Move the focus on the screen.
OK 	Selects the highlighted line and leads to the next logical menu / dialog.
Function keys F1-F3   	Programmable hotkeys. F2 short: Measure a feature in Zeno Field v3.11 or higher

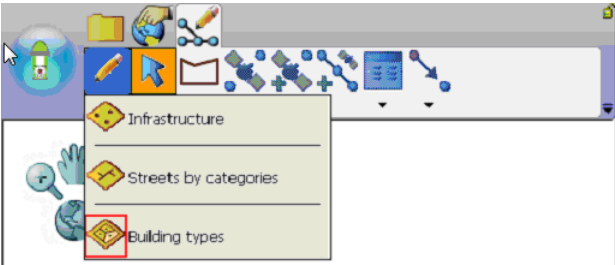


Creating a point feature by digitizing

Step	Description
1.	Tap the Start/Stop Editing button on the Edit toolbar. The drop-down list displays all editable layers in the current map. 
2.	Select a point layer to edit.  You can select one point, one line, and one polygon layer for editing, at one time.
3.	Tap  in the Edit toolbar to start capturing a point feature.
4.	Tap  in the map.
5.	Enter attributes for the new point feature.

Creating a polyline feature by digitizing

Step	Description
1.	Tap the Start/Stop Editing button on the Edit toolbar. The drop-down list displays all editable layers in the current map. 
2.	Select a line layer to edit.
3.	Tap  in the Edit toolbar to start capturing a line feature.
4.	Tap in the map to create the vertices.
5.	Tap  to complete the capture.
6.	Enter attributes for the new line feature.
7.	Tap OK .






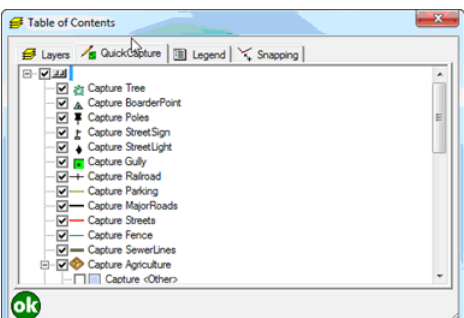
Creating a polygon feature by digitizing

Step	Description
1.	Tap the Start/Stop Editing button on the Edit toolbar. The drop-down list displays all editable layers in the current map. 
2.	Select a polygon layer to edit.
3.	Tap  in the Edit toolbar to start capturing a polygon feature.
4.	Tap in the map to create the vertices.
5.	Tap  to complete the capture.
6.	Enter attributes for the new polygon feature.
7.	Tap OK .

Creating features using the QuickCapture toolbar

What is QuickCapture?

- QuickCapture is available with Zeno Field v2.0 or higher.
- QuickCapture is a toolbar offering an one-click ability to create new features in your maps.
- The QuickCapture toolbar is a dynamic toolbar. The content is defined by the open layers in the map.

Step	Description
1.	Open an existing project or start with a QuickProject.
2.	Tap  .
3.	The first three categories will be represented on the toolbar by default, if a layer has symbology categories defined as it is the case in a QuickProject. 
4.	After selecting one feature you are ready for editing.
	Tap  on the Command toolbar to finish polygon or polyline features.
5.	Enter attributes for the new feature.
	You can define which tools appear on the QuickCapture toolbar by checking/unchecking symbol categories on the QuickCapture tab in the Table of Contents dialog box. 

3.2

GNSS Settings

3.2.1

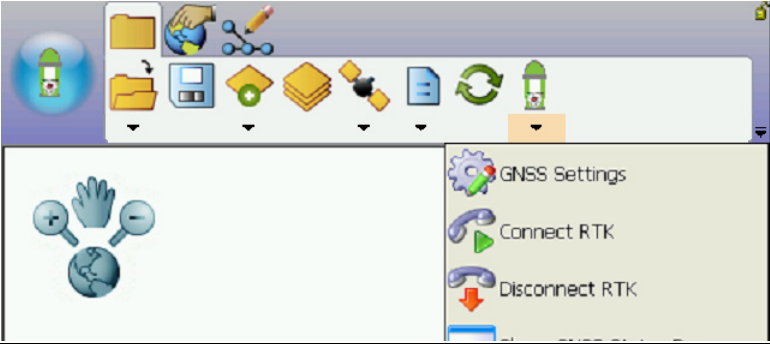
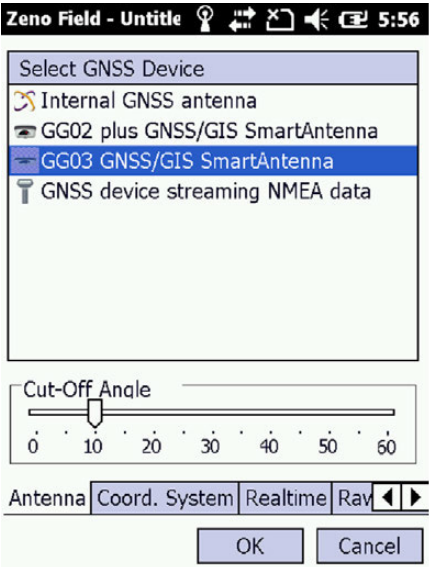



GPS Preferences

Editing GPS Preferences

In Leica Zeno Field the GPS preferences are already preconfigured. The connection of the Zeno GNSS module is automatically warranted.

Step	Description
1.	<p>Open the GPS drop down menu. Select GPS Preferences.</p>
2.	<p>Go to the Capture tab.</p> <p>Enable Averaging:</p> <ul style="list-style-type: none">• Tick the check box for multiple observations of a point feature or for each vertex of a line/polygon.• At least five points or vertices are required for a successful measure. <p>Streaming:</p> <ul style="list-style-type: none">• Used to capture continuous vertices of a polyline or polygon feature when using the Capture Vertices tool.• Position Interval: Every x GPS position will be used.• Distance Interval: A position gets captured after moving the specified distance.
3.	Tap OK .
4.	<p>Go to the GPS Height tab.</p> <p>Define the antenna height above the ground. Examples:</p> <ul style="list-style-type: none">• 1 m when holding the mobile device in the hand• 2 m when working with the pole package
5.	Tap OK .
	On the Quality tab you can define different warnings based on several GNSS quality indicators. In the case of exceeding the defined values, you will receive a message.
	The Estimated Position Error reflects the current accuracy as on the GNSS status bar. The EPE is the most convenient quality measure. If GNSS raw data logging is enabled, the EPE reflects the estimated post processed accuracy.

Connecting to
GG02 plus/GG03

Step	Description
1.	Start Zeno Field.
2.	Open the Zeno Field drop down menu. Select GNSS Settings.  <p>The screenshot shows the Zeno Field application window. At the top, there is a toolbar with various icons. A dropdown menu is open, displaying several options. The 'GNSS Settings' option is highlighted, and a submenu is visible below it, containing 'GNSS Settings', 'Connect RTK', and 'Disconnect RTK'.</p>
3.	Choose a GG02 plus or GG03.  <p>The screenshot shows the 'Select GNSS Device' dialog box. It has a title bar 'Zeno Field - Untitled' and a toolbar. The main area lists four options: 'Internal GNSS antenna', 'GG02 plus GNSS/GIS SmartAntenna', 'GG03 GNSS/GIS SmartAntenna' (which is selected), and 'GNSS device streaming NMEA data'. Below the list is a 'Cut-Off Angle' slider ranging from 0 to 60. At the bottom, there are tabs for 'Antenna', 'Coord. System', 'Realtime', and 'Raw'. 'OK' and 'Cancel' buttons are at the bottom right.</p> <p>Depending on the used device, different sensors can be picked.</p> <ul style="list-style-type: none"> For GG02 plus/GG03 SmartAntenna: You can choose a cut-off angle. For CS25 GNSS: Select the external antenna in an additional setting.
4.	Switch on the SmartAntenna. Connect it with a cable (GEV162) if you don't want to use Bluetooth (optional for Zeno 10/Zeno 15 and CS25).
5.	Tap  .
6.	The dialogue shows all antennas in range. If your antenna is connected via cable go to the Cable tab.
7.	Select your antenna. It will be automatically paired and connected.
8.	A message shows that the connection was successful.
	The connection of the antenna must be done only once at the first time or when switching the antenna. The antenna will be used as default device when activating GNSS next time.
	For switching from one SmartAntenna to another make sure that the previous connected antenna is off. Switch on the new SmartAntenna and activate GNSS. The search dialogue for choosing the new antenna will appear.

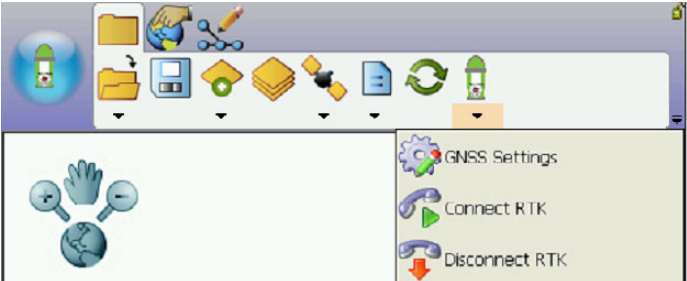
Default configuration

For real-time processing, the **Satellite-Based Augmentation System** is already preconfigured and automatically selected.

To define your own RTK connection details, follow the descriptions in this chapter.

☞ If you want to post-process your data later in Zeno Office, raw data logging must be activated.

Activating raw data logging:



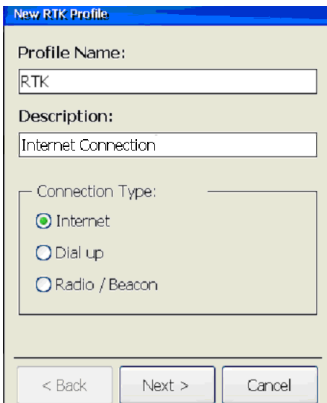
Step	Description
1.	Open the Zeno Field drop down menu. Select GNSS Settings. 
2.	Go to the Raw Data tab. Check the check box Log data for post-processing .
☞	When logging raw data on the Zeno 5 using the internal GPS, averaging is set to 180 s automatically. This setting ensures enough observations for satisfying post-processing results.

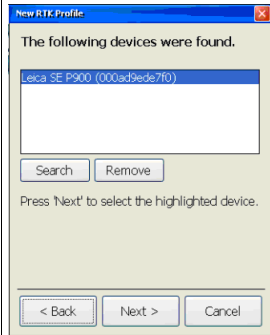
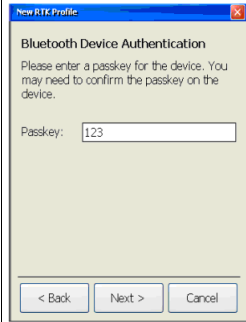
Configuring a real-time source

There are three ways for receiving corrections for real-time survey:


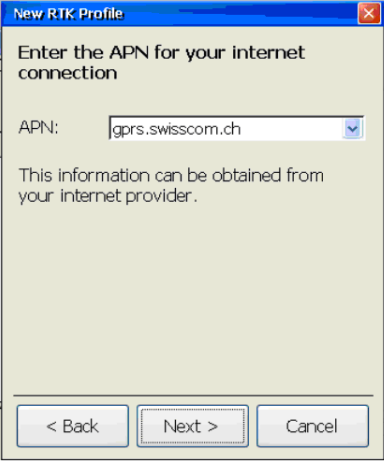

- Internet
- Dial-up
- Radio/Beacon

Configuring Internet connection

Step	Description
1.	Tap  .
2.	Open the Zeno Field drop down menu. Select GNSS Settings.
3.	Tap  to start the New RTK Profile wizard.
4.	Enter the profile name and a description to save the connection setup for later use.
5.	Select Internet as connection type. Tap Next . 

Step	Description	
6.	Select the internet connection to be used: <ul style="list-style-type: none"> • New Connection This can be the internal modem or a wireless modem, for example Bluetooth mobile phone. Continue with 7.. • Active Connection This can be WIFI, LAN or any other existing Internet connection. Continue with section "Configuring RTK server". 	
7.	Choose between internal or external modem. <ul style="list-style-type: none"> • Internal Modem This can be the internal modem or a wireless modem, for example Bluetooth mobile phone. • External Modem This can be WIFI, LAN or any other existing Internet connection. 	
	For Internal Modem	For External Modem
8.	Enter the PIN code for the SIM card. Tap Next .	Ensure that your mobile phone is switched on, Bluetooth is enabled, and the device is ready to be found.
9.	-	Tap Search to search for a mobile device. All Bluetooth phones found will be listed.
10.	-	Select your phone. Tap Next . 
11.	-	Provide any passkey, for example 123. Tap Next . Confirm the passkey in the mobile device. 
12.	A message will show you that your connection was successful. Tap Next .	
13.	Select the type of Internet connection you want to use. You have the choice between: <ul style="list-style-type: none"> • GPRS/CDMA. Refer to "Configuring GPRS/CDMA connection". • Dial-up CSD. Refer to "Configuring Dial-up (CSD) Internet connection". 	

Configuring GPRS/CDMA connection

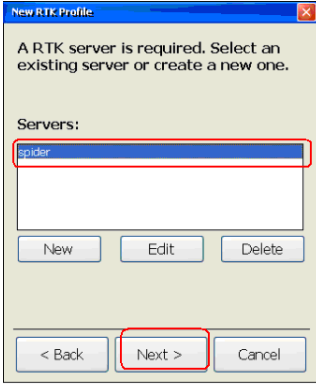
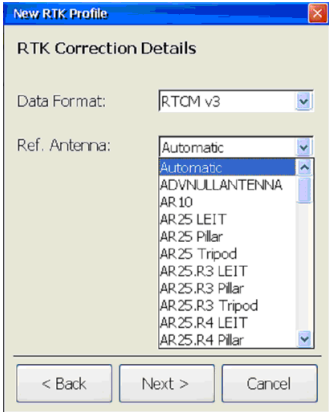
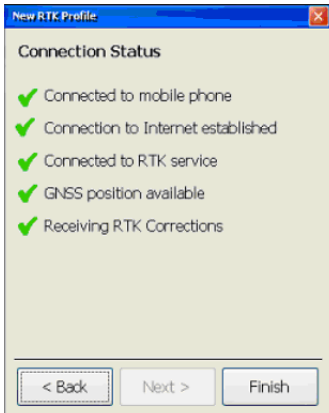

Step	Description
1.	Select Using GPRS/CDMA Internet connection . Tap Next .
	Depending on your mobile phone, it can be necessary to confirm the connection on the phone. Add your device to the known device list on your phone will prevent this in most cases.
2.	<p>Enter the APN of your internet service provider, for example gprs.swisscom.ch. Tap Next.</p> 
3.	<p>Enter your user ID and password for your Internet connection. Tap Next.</p> 
4.	Continue with section "Configuring RTK server".

Configuring Dial-up (CSD) Internet connection

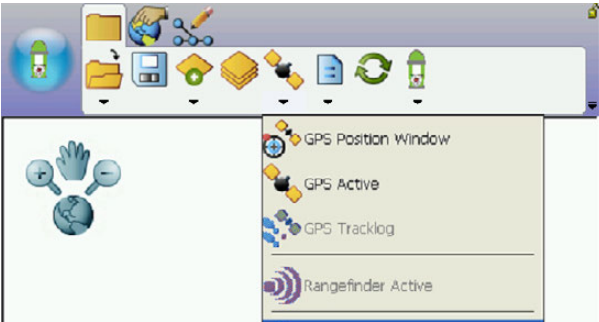




Step	Description
1.	Select Using dial-up (CSD) Internet connection . Tap Next .
2.	Provide a name to save the dial-up station information for later use. Enter the Internet provider phone number and the type of protocol used for connection. Tap Next .
3.	Enter your user ID and password for your Internet connection. Tap Next . The dial-up station details can be obtained from your RTK service provider. You can also edit or delete an existing dial-up station.
4.	Enter the User ID and Password for your dial-up internet connection. Tap Next . <div data-bbox="534 470 821 831" data-label="Form"> </div>
5.	Continue with section "Configuring RTK server".

Configuring RTK server

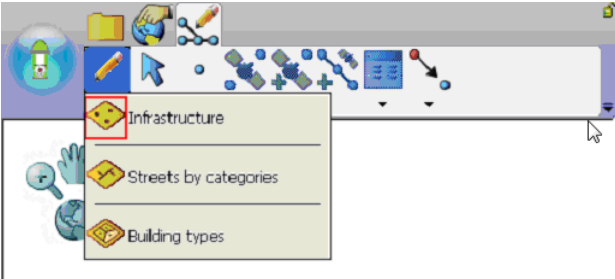


Step	Description
1.	Tap New to create a new server. Or, if available, select an existing RTK server of the list. Refer to 3..
2.	Enter the RTK server details. Check NTRIP if you would like to use NTRIP. Tap Next . <div data-bbox="534 1123 863 1535" data-label="Form"> </div> <div data-bbox="534 1549 1447 1621" data-label="List-Group"> The sever details can be obtained from your RTK service provider. You can also edit or delete an existing RTK server configuration. </div>


Step	Description
3.	<p>Highlight the new created server. Tap Next.</p> 
4.	<p>Either select the mountpoint from a list or enter it manually. Tap Next.</p>
5.	<p>Select the RTK data format for the RTK server based on the required configuration from your RTK service provider.</p> <p>Select an antenna type for the reference antenna. This information can be obtained from the correction network provider. Most correction networks or reference stations are configured to eliminate antenna offsets. In these cases, the ADVNULLANTENNA can be selected.</p> <p>Tap Next.</p> 
6.	<p>The connection status dialog appears checking all required parts of the configuration.</p> <ul style="list-style-type: none"> • Tap Finish after a successful connection test. • Tap Back to correct any mistakes in your configuration. 
	<p>For highest position accuracy it is recommended to use GG03/GG02 plus SmartAntenna.</p>

Preparing feature collection with GNSS

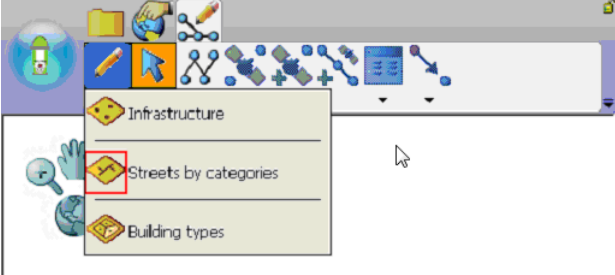




Step	Description
1.	<p>Open the GPS drop down menu. Select GPS Active. You will connect automatically to the antenna you have chosen in the GNSS settings dialogue.</p> 
2.	<p>Satellite tracking starts now. During this process a red window appears at the bottom of the page.</p> 
3.	<p>If a GPS position is available, the red window will turn green and shows some positioning information. The GPS cursor appears in the map as well.</p> 
	<p>If you have checked Log data for post-processing in GNSS Settings, you'll find a symbol in the GNSS status bar that shows you the estimated post-processed accuracy.</p> 

Measuring a point using GPS

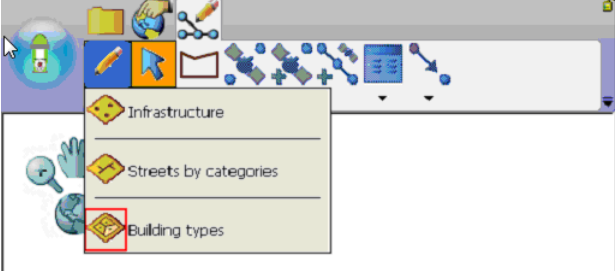




Step	Description
1.	<p>Tap the Start/Stop Editing button on the Edit toolbar. The drop-down list displays all editable layers in the current map.</p> 
2.	Select a point layer to edit.
3.	Tap  in the Edit toolbar to start capturing a point feature.
4.	Tap  to record a point measured by GNSS.
5.	<p>Enter attributes for the new point feature. On the upper edge of the dialogue you can find the progress of the GNSS measurement.</p>

Step	Description
6.	Tap OK . The point was saved in the layer.
	Use the QuickCapture Toolbar to collect a point using GNSS.

Measuring a line using GPS



Step	Description
1.	Tap the Start/Stop Editing button on the Edit toolbar. The drop-down list displays all editable layers in the current map. 
2.	Select a line layer to edit.
3.	Tap  in the Edit toolbar to start capturing a line feature.
4.	Tap  to record a vertex measured by GNSS.
5.	Add several vertices to build a line feature.
6.	Tap  to complete the capture.
7.	Enter attributes for the new line feature.
8.	Tap OK .
	Use the QuickCapture Toolbar to collect a point using GNSS.

Measuring a polygon using GPS

Step	Description
1.	Tap the Start/Stop Editing button on the Edit toolbar. The drop-down list displays all editable layers in the current map. 
2.	Select a polygon layer to edit.
3.	Tap  in the Edit toolbar to start capturing a polygon feature.
4.	Tap  to record a vertex measured by GNSS.
5.	Add several vertices to build a polygon feature.
6.	Tap  to complete the capture.
7.	Enter attributes for the new line feature.
8.	Tap OK .
	Use the QuickCapture Toolbar to collect a point using GNSS.

ArcGIS online layers Zeno Field v2.0 or higher allows the integration of ArcGIS online layers. Layers that can be used as background information in a Zeno Field project are:

- Bing Maps Roads
- Bing Maps Aerial
- Bing Maps Hybrid
- World Physical Map
- World Street Map
- World Topo Map

Step	Description
1.	Choose Add Data from Server to add an ArcGIS online base map to a new map.
2.	Select one of the available ArcGIS online services, for example the ArcGIS World Street Map service.
3.	After saving the ArcGIS online layer, the layer is displayed in Zeno Field.
	Once connected with the Internet, Zeno Field caches the ArcGIS online services for the particular bounding box. These cached base layers can be used in the field without Internet for 24 hours.
	When using ArcGIS online basemaps with existing data, ensure to add your existing data to the ArcPad map first. ArcPad will then re-project ArcGIS online basemaps on the fly, to match your existing data projection.


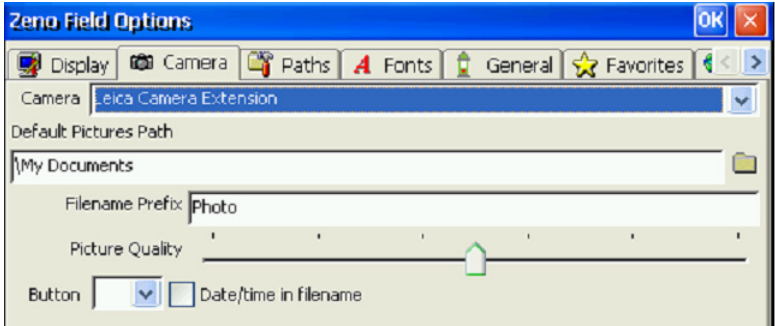
Functionality of camera support in Zeno Field

Zeno Field supports the internal camera of the mobile devices.



Pictures can be used in Zeno Field in two ways:

Type	Description	Preparation
Stand-alone picture	Pictures are not part of an attribute of a GIS layer.	No preparation required.
Picture as part of an attribute	<p>Pictures are saved as additional information of a feature.</p> <p>Example: You have a layer with different tree species. You can add a photo to each tree which will be treated as an attribute.</p>	<p>To store pictures as an attribute in the data, create a text field. Name the text field photo, image or picture. Assign the minimum length of 20 characters. This text field is used for storing the picture link within Zeno Field.</p> <p>You can create such a text field either in the Project Wizard in Zeno Office or directly on Zeno Field when creating a new shapefile.</p>

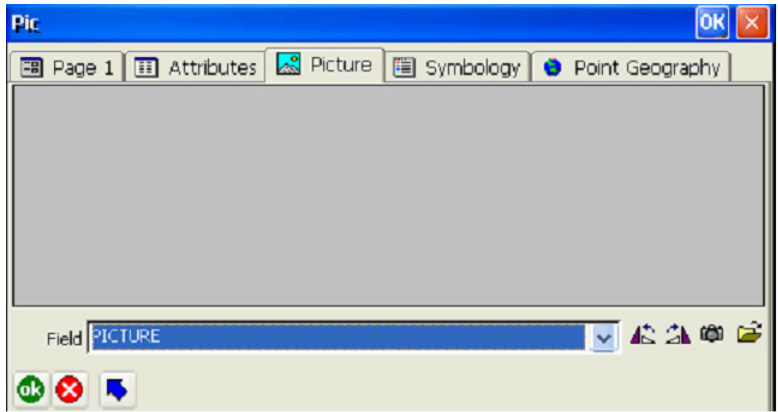




Configuring camera settings

Step	Description		
1.	Tap  .		
2.	Switch to the Camera tab.		
3.	Select your camera in the Camera drop-down menu. The internal camera is already set as default.		
			
	<table border="1"> <tr> <td>For stand-alone pictures</td><td>For picture as part of an attribute</td></tr> </table>	For stand-alone pictures	For picture as part of an attribute
For stand-alone pictures	For picture as part of an attribute		
4.	Set the Default Picture Path where the photos are getting saved.		
5.	Choose a Filename Prefix .		
6.	Move the Picture Quality slider to change the quality of the pictures. The quality and size of the pictures increase from left to right (optional).		
7.	Check Date/time in filename to display date and time information in the file name (optional).		

Taking a stand-alone picture

Step	Description
1.	Start the QuickCapture toolbar.
2.	Tap  .
3.	Tap Capture to take the photo.
4.	Save: To save the picture. Discard: To take a new photo.
5.	After saving the picture, a message shows the path of the picture.
6.	Tap OK .
	The current GPS position is automatically added to the EXIF header of the *.jpg file.

Taking a picture as attribute

Step	Description
1.	Create a point-, line- or polygon-feature.
2.	In the attribute table of the feature: Change to the Picture tab.
	
3.	Tap the Field drop-down list. Select the attribute where you want to store the picture. For the attribute field names photo , image and picture , the field is pre-selected. The path of the photo is stored into the selected field.
4.	Tap  on the bottom of the page.
5.	Tap Capture to take the photo.
6.	Save: To save the picture. Discard: To take a new photo.
7.	Rotate the picture using  .
8.	Tap OK to save the image as an attribute.
	You also can browse a picture as an attribute from disk.
	The current GPS position is automatically added to the EXIF header of the *.jpg file.

Functionality of rangefinder support in Zeno Field







A rangefinder can be used for offset measurements:

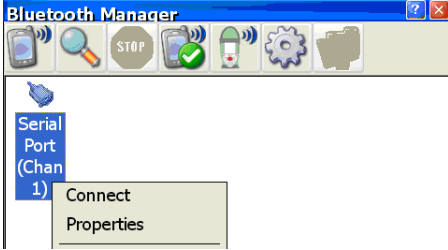
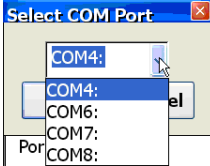


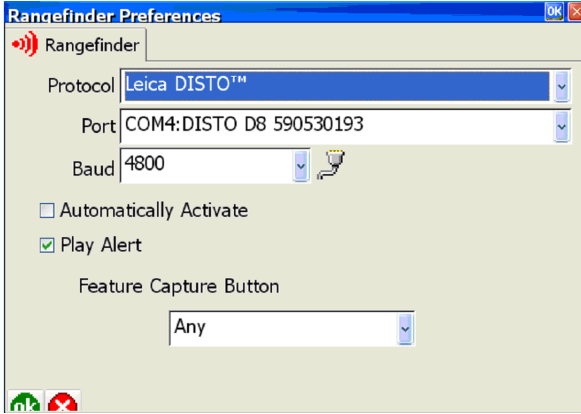
- Distance, bearing, inclination
- Single fixed position
- Two fixed positions

Following protocols are supported:



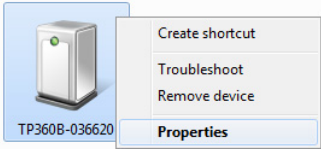
- Leica DISTO interface protocol
- Leica Vector/Laser Locator data transfer format
- Laser Atlanta \$LA1KA (original), \$LA1KD (extended), \$LA1KC (CMT, Corvallis MicroTechnology)
- LaserCraft Contour \$PLCI
- Laser Technology Criterion 400 format (\$PLTIT)
- Measurement Devices Ltd. \$PMDLA

Connecting an external Bluetooth device


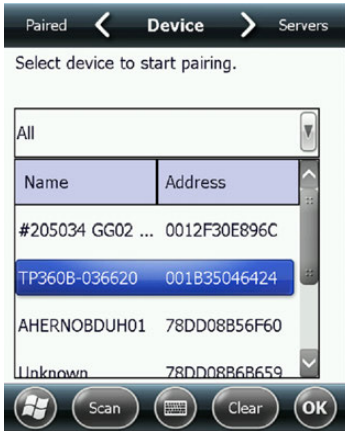
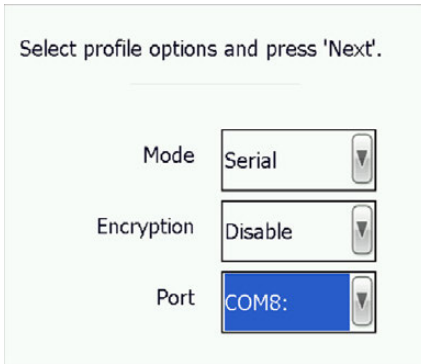
Step	Description
	The screenshots shown belong to a DISTO. Depending on your device, the menus may vary.
1.	Start the Bluetooth app on the Zeno 10/Zeno 15: Tap Start > Programs > Zeno Tools > Bluetooth Manager .
2.	<p>Tap  to search for Bluetooth devices in the range.</p> <p> Ensure, that the Bluetooth on the device is turned on and ready to be found.</p> <p>After the search, new devices are found.</p> 
3.	<p>Tap on the new device to be used. Select Open in the context menu. The services of the device are shown.</p> 
	<p> If pairing is required or not depends on the device. Refer to the user guide of the Bluetooth device for information and the passkey to be used.</p>
	If pairing is required:
4.	Tap Pair to pair the device.

Step	Description
5.	<p>Tap Serial Port Service > Connect in the context menu.</p> 
6.	<p>Select the COM port to be assigned to the device. In this case: COM4</p> 
7.	<p>Tap OK.</p> <p>Pairing is finished</p>
8.	<p>Now the device and the Zeno are connected.</p> <p>Tap  to see all connections to devices including the COM port details.</p>
9.	<p>Tap  to close the Bluetooth Manager.</p>
10.	<p>Go to Zeno Field. Open the Rangefinder Preferences in Zeno Field.</p>
11.	<p>Select the according protocol and COM port to which your device is connected. The device name is written behind the COM port number.</p> 
12.	<p>Now you can work with the connected device.</p>

Connecting an external Bluetooth device to CS25

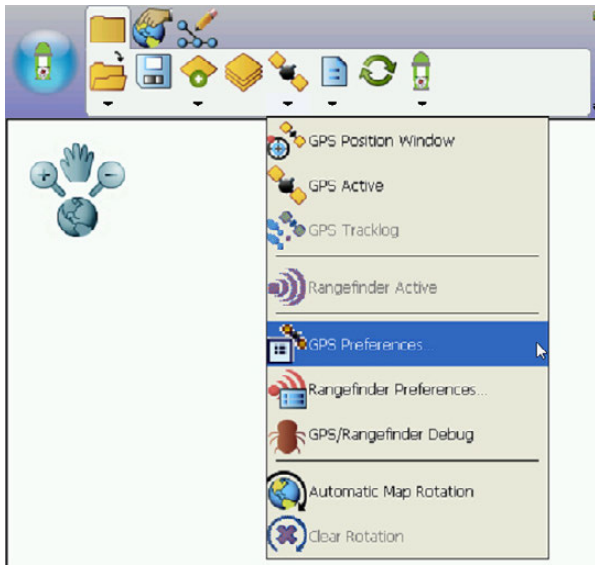
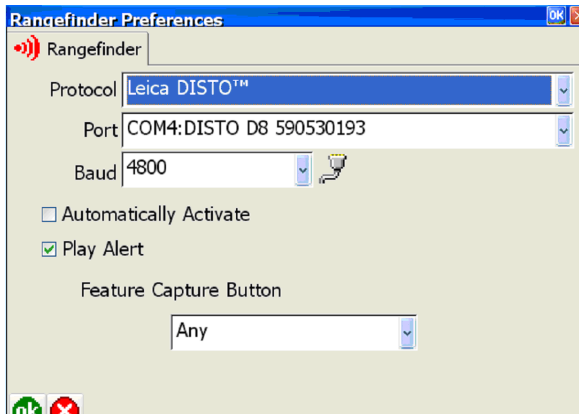
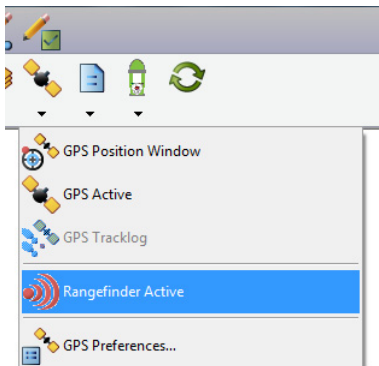
Step	Description
1.	Ensure, that the Bluetooth on the device is turned on and ready to be found.
2.	Open the Bluetooth Devices Menu by clicking  in the taskbar.
3.	Select Add a device .
4.	Wait until the rangefinder is displayed.
5.	Select the rangefinder. Choose Enter the device's pairing code .
6.	Enter the rangefinder's pairing code. Refer to the user manual of the rangefinder.
7.	Tab OK . The device will get connected.
8.	Click again on  in the taskbar.
9.	Open the context menu of the connected rangefinder and select Properties . 
10.	Change to the Services tab. The Bluetooth serial port you are connected with is displayed. Remember the serial port.
11.	The device is now successfully paired with the CS25. Continue with "Using the rangefinder in Zeno Field".

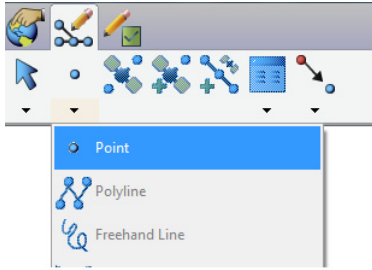
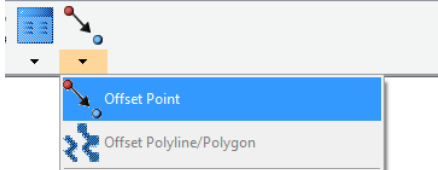
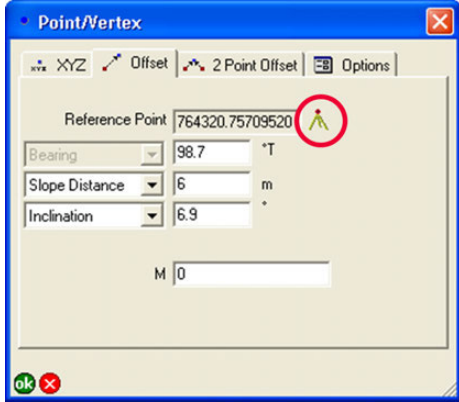

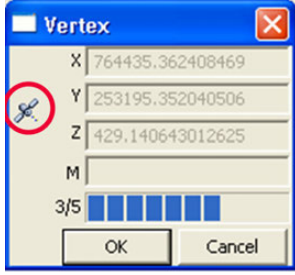
Connecting an external Bluetooth device to Zeno 5

Step	Description
1.	Ensure, that the Bluetooth on the device is turned on and ready to be found.
2.	Open the Wireless Manager in Settings > Connections > Wireless Manager . Switch on Bluetooth.
3.	Open the Bluetooth Menu in Settings > Connections > Bluetooth  .
4.	<p>Change to the Device tab.</p> <p>Tab the Scan to search all Bluetooth devices in range.</p> 
5.	Tab on the rangefinder and select Pair .
6.	Enter the rangefinder's pairing code. Refer to the user manual of the rangefinder.
7.	<p>Tab OK.</p> <p>The device will get connected.</p>
8.	<p>Check the Serial Port for establishing a serial port.</p> 
9.	<p>Select an idle COM port the rangefinder should be connected to.</p> <p>Tab OK.</p>
10.	The device is now successfully paired with the Zeno 5. Continue with "Using the rangefinder in Zeno Field".

Using the rangefinder in Zeno Field

This section explains how to measure an offset with bearing and distance. Therefore your rangefinder should have an integrated compass.


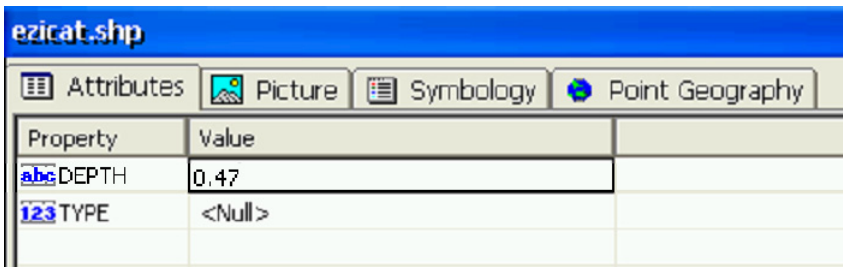
Step	Description
1.	Go to Zeno Field. Open the Rangefinder Preferences in Zeno Field. 
2.	Select the according protocol and COM port to which your device is connected. The device name is written behind the COM port number. 
3.	Define the Baud rate if necessary.
4.	Check Automatically Activate .
5.	Tap OK .
6.	Tap Rangefinder Active . 


Step	Description
7.	<p>Select a point feature for editing.</p> 
8.	<p>Tap Offset Point.</p> 
9.	<p>Take a bearing and distance measurement with the rangefinder. Press the trigger on the rangefinder. The Point/Vertex dialog pops up.</p>
10.	<p>Change to the Offset tab and check the measured values.</p> 
11.	<p>Tap on .</p>
12.	<p>Tap the satellite symbol to measure the reference point A by GPS.</p> 
13.	<p>Tap OK twice.</p>
14.	<p>Enter the necessary attributes. Tap OK.</p>

Working with a Digicat

This section provides step-by-step instructions for storing depth values measured with a Digicat (or an Ezicat) Cable Detection Tool in Zeno Field.

 A Digicat Cable Locator with Bluetooth connectivity and service depth indication is mandatory.

Step	Description
1.	Connect the Zeno with your computer via cable.
2.	Download and install the Digicat PPC software on your PC. You can find it on myWorld. Follow the guidance to deploy the Digicat PPC software on your mobile device.
3.	Start the Digicat transfer tool in Start > Programs > Digicat Transfer .
4.	The Digicat transfer window opens up. No Digicat is detected yet. 
5.	Press and hold the trigger on your Digicat to activate the locator. Be sure that the Bluetooth connectivity is activated on the device. Please read the Digicat manual for further information.
6.	The Digicat transfer tool detects the Digicat device automatically. There is no need of any pairing before. In the Digicat transfer window you will find information on the used device as well as a green dashed indicator. It indicates the response of the locator to a signal. The information is identical to the Signal Strength Indicator on the Digicat device.
7.	Press and hold down the i Button for 2 s until the dashed lines have scrolled through once.
8.	The display readout will indicate the depth of the cable that has to be indicated.
9.	When a depth reading has been taken, the locator will display LOG . To transfer the information to the data logger press the i Button whilst LOG is displayed.
10.	The depth value will be displayed in the transfer window.
11.	Open a project in Zeno Field.
12.	Generate a feature by taping or measuring until the attribute dialogue opens up.
13.	Tap into the appropriate field. Measure the depth following 7. to 9.. The value is transferred into the attribute field in Zeno Field. 

Step	Description
14.	Save the feature.
	The Digicat transfer tool transmits the measured value always to the position of the cursor. This works within different programs like Excel or Notepad.


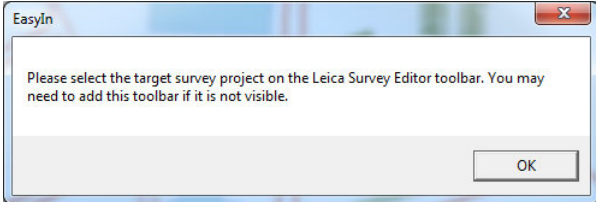
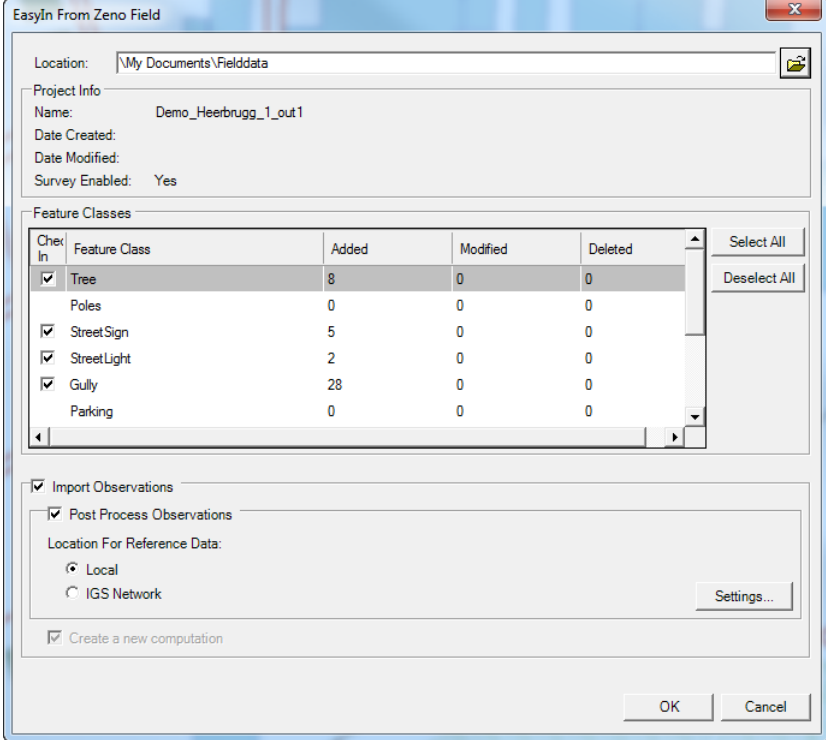
4 Transferring Data Back to Zeno Office with EasyIn


Requirements

For a successful transfer of field data to Zeno Office, four requirements must be fulfilled:

- An EasyIn is only possible with data that was transferred to Zeno Field by the EasyOut process using Check Out.
- The EasyOut and EasyIn process must be done from the same office project.
- The Survey Editor Toolbar must be switched on. Therefore go to **Customise > Customise Mode**. Mark the check box next to **Editor**.
- **Star Editing** must be active.

Importing data using EasyIn

Step	Description
1.	Start Zeno Office.
2.	Open the project into which you want to merge data.
3.	Click Editor > Start Editing .
4.	Click  on the Leica Data Manager toolbar. If this button is not available, go to Customise > Customise Mode and select the Leica Data Manager Toolbar.
5.	If you get this error message, go to Customise > Customise Mode and select the Leica Survey Editor toolbar. 
6.	Browse for the project location. You can directly browse a mobile connection or the ActiveSync data exchange folder. 

Step	Description
7.	Select all feature classes you wish to check in.
8.	Check Import Observations , if you want to post process now or later.
9.	Check Post Process Observations if you want to let EasyIn post-process your raw observations.
10.	Define the location of the reference data: <ul style="list-style-type: none"> • Local: <ul style="list-style-type: none"> • Browse for Reference Data: To browse for the reference data • Auto select Reference Data: To select a folder which contains your reference data. Define the data path in the settings. Put your reference data always into the same folder. EasyIn will automatically grab the adequate reference file out of this folder. • IGS Network: To download reference data automatically.
11.	Click OK .
12.	The EasyIn Live Data Viewer appears and reports all steps done automatically by EasyIn. These processes are: <ol style="list-style-type: none"> 1) Backup of the field project to repeat EasyIn later if required. 2) Import of photos linked to features collected in Zeno Field. 3) Check-in of the features. 4) Survey point creation for every point/vertex. The survey points include for example the quality information of each point/vertex. 5) Import offset measurements. 6) Import rover observations. 7) Import reference station observations. 8) Post-process observations with detailed post-processing report. 9) Update of features to the post-processed positions and re-computation of offset points. 10) Project synchronization between office and field project to prevent double check-in.
	The processe performance depend on the project and contained data.

5 Working with Zeno Office

5.1 Opening a Map Document

Opening a map document

A map document is a *.mxd file.
To open a map document in Zeno Office, use one of the listed methods.

Double-click


Step	Description
1.	In Windows Explorer, navigate to the location of the map document.
2.	Double-click the *.mxd file.

Select a map in the Zeno Office Getting Started dialog box

Step	Description
1.	Start Zeno Office from the Windows Start menu. The Zeno Office Getting Started dialog box is displayed.
2.	Select an existing map.
3.	OK to open the map in Zeno Office.

Opening another map from an Zeno Office session

If you are already working in Zeno Office, you can choose to open another map document. This will close your existing map and open the new map instead.

Step	Description
1.	Click  on the Standard toolbar. OR Click File > Open .

5.2 Adding a Dataset


Adding a dataset

Dataset is a generic term for:


- Feature class
- Shape file
- CAD file (dxf, dgn, dwg)

To add a dataset in Zeno Office, use one of the listed methods.

Using a button














Step	Description
1.	Click  .
2.	Navigate to the desired dataset.
3.	Select the dataset and click Add .

Copying or dragging

Step	Description
	To move datasets between data frames or maps: <ul style="list-style-type: none">• Copy and past the datasets• Drag the layer from one data frame to another

Navigating in the map

The Tools toolbar contains tools for working with the contents within the active data frame, for example, to pan and zoom your map, to identify features or to measure distances.

Icon		Description
Zoom in		To zoom in to a geographic window by clicking a point or dragging a box.
Zoom out		To zoom out from a geographic window by clicking a point or dragging a box.
Pan		To pan a data frame.
Full extent		To zoom to the full extent of a map.
Fixed zoom in		To zoom in on the centre of a data frame.
Fixed zoom out		To zoom out on the centre of a data frame.
Back		To return to the previous extent.
Forward		To go to the next extent.
Select features		To select features graphically by clicking or dragging a box around them.
Clear selection		To unselect all currently selected features in the active data frame.
Select elements		To select/resize/move text/graphics/objects placed on the map.
Identify		To identify a geographic feature or a place in the map by clicking on it.
Hyperlink		To trigger hyperlinks from features.

5.4 Table of Contents

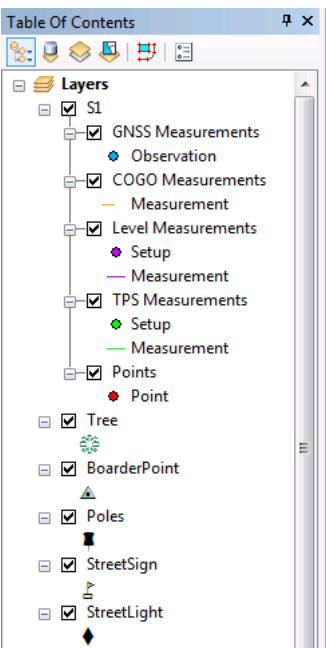
Functionality

- The table of contents shows:
- A list of all the layers in the map.
 - The symbols of each layer.

- Sort the Table of Contents by:
- Drawing Order
 - Source
 - Visibility
 - Selection

- Use the table of contents to:
- Turn layers on and off
 - Access the properties of layers
 - Rearrange layers to change the drawing order

- Right clicking on a feature class to open the context menu.
- Use the context menu to:
- Open the attribute table as an overview of the attribute information
 - Export the feature class to different formats
 - Check and edit the properties of the feature class



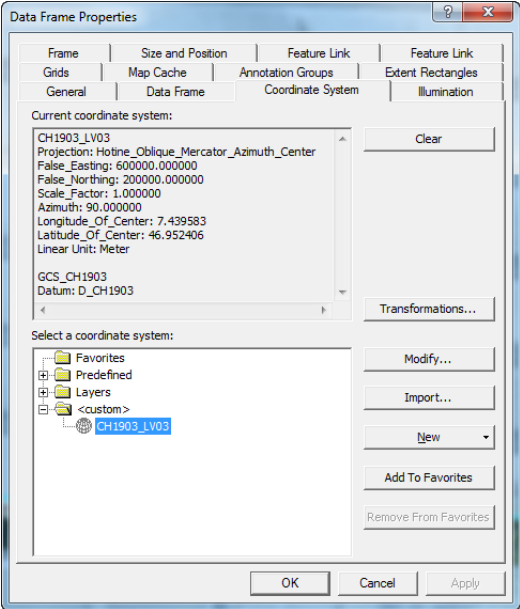
5.5 Data Frame Properties

Data frame properties

- A data frame
- is a geographic window for displaying GIS information.
 - has properties that define the context for displaying and working with the data they contain.

To view and set properties of a data frame

Step	Description
1.	Right-click the data frame's name in the table of contents.
2.	Click Properties .

Step	Description
3.	<p>You can set and review various properties under each tab in this dialog box. The coordinate system is one of the most important properties. The coordinate system defines the map projection for the data frame. The coordinate system of your data frame is determined by the coordinate system of the first dataset you add to your map. You can review and set the data frame's coordinate system from the Coordinate System tab on the Data Frame Properties dialog box.</p> 

5.6

Toolbox

ArcToolbox

The ArcToolbox window is the central place where you manage and execute geoprocessing tools.

The ArcToolbox window contains toolboxes.

The toolboxes contain tools and toolsets.

A toolset is an organizational device similar to a system folder.

Tools must be part of a toolbox and cannot exist outside a toolbox.

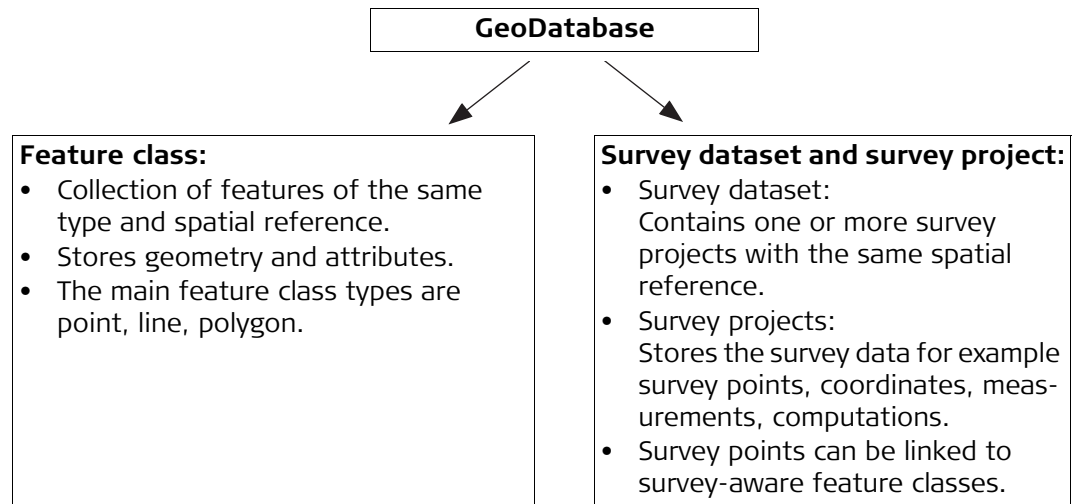
Examples for tools: Data import/export, feature classes conversion, data management.

Step	Description
1.	Click Geoprocessing > ArcToolbox.
2.	The toolbox is displayed as separate window.
3.	<p>To find the appropriate tool:</p> <ul style="list-style-type: none"> • Navigate for the tool in the ArcToolbox. • Search for the name of the tool in the Search Window (Windows > Search).

Overview

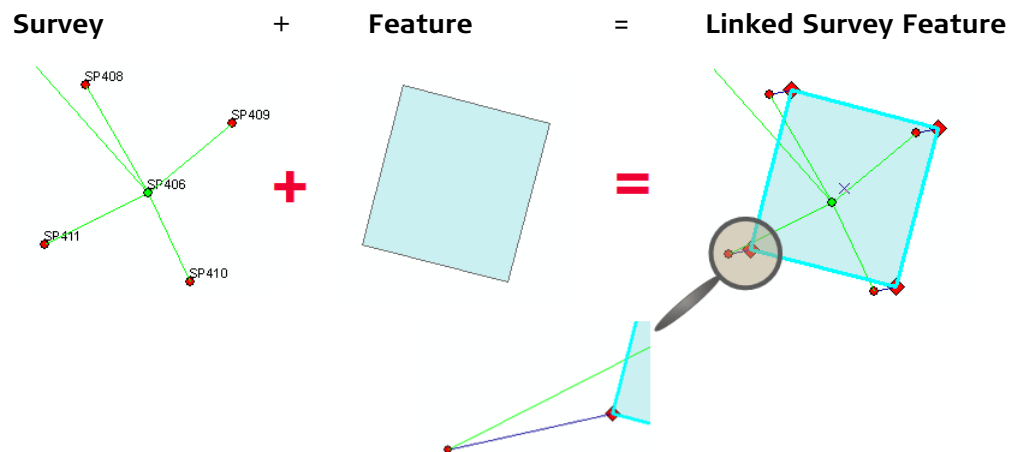
Database


Zeno Office/Zeno Office on ArcGIS stores two different sets of data in the database:



Link concept

Survey points are stored in the Survey dataset and are linked to the features. Survey Point and feature are directly connected.



 EasyIn snaps the measured features automatically to the linked Survey Points.

Review, edit and query

Survey information can be reviewed and edited inside of the Zeno Office project.

Depending on the specific project following information can be queried:

- Data on survey points, for example coordinates and quality information
- GNSS observations with, for example quality values, antenna height and used satellites
- GNSS post-processing: Solution Type and quality

Functionality


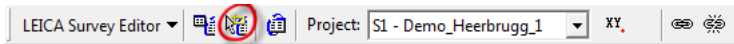
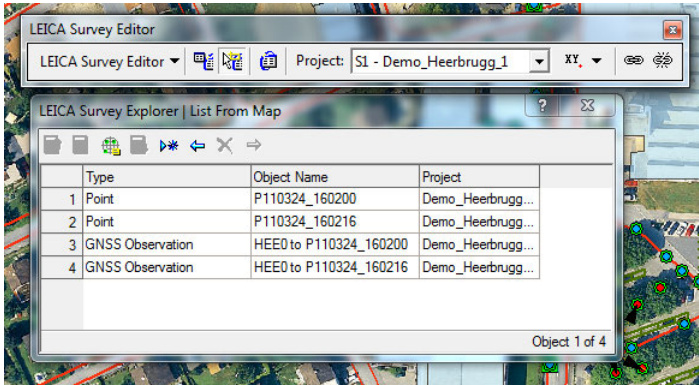
Explore and edit survey objects in the Survey Explorer.

The Survey Explorer is a container for pages of survey information. You create these pages as you work.


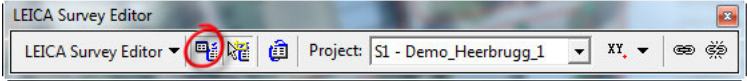
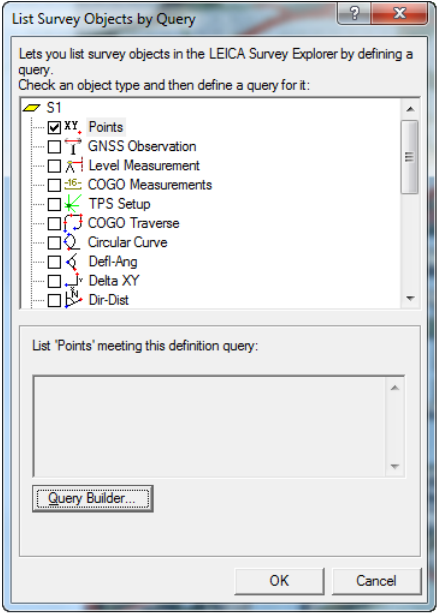
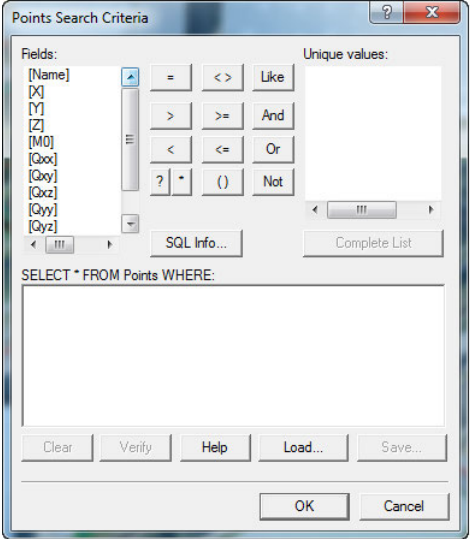
Survey information can be displayed in two ways:

- **List survey objects tool:**
Lists multiple survey objects by query
To select survey information directly out of the map
- **List survey objects by query:**
Displays a detailed view of individual survey objects

List survey objects tool

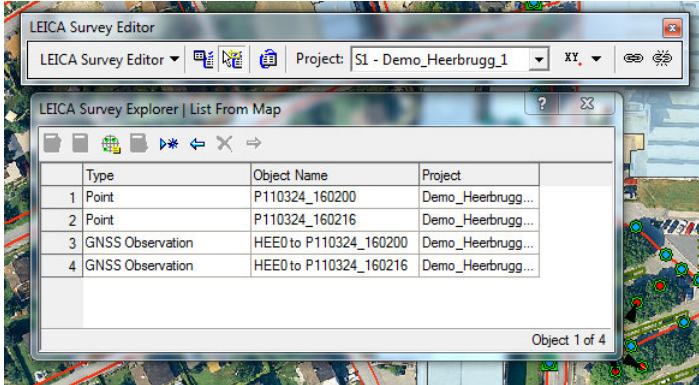
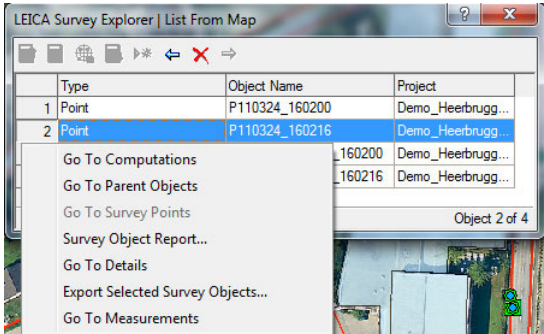




Step	Description																				
	Survey data can only be queried when a survey data Set is applied and survey data is inside of the project.																				
1.	To activate the Leica Survey Editor toolbar:																				
a)	Select Customise > Customise Mode .																				
b)	Change to the Toolbars tab.																				
c)	Check Leica Survey Editor .																				
2.	Click the List Survey Objects Tool button on the toolbar.																				
																					
3.	Click and drag a box around the survey points and measurements you want to list.																				
4.	The Survey Explorer opens, and a new list page is added. The page contains the measurements and points you queried from the map.																				
	 <table><tr><th></th><th>Type</th><th>Object Name</th><th>Project</th></tr><tr><td>1</td><td>Point</td><td>P110324_160200</td><td>Demo_Heerbrugg...</td></tr><tr><td>2</td><td>Point</td><td>P110324_160216</td><td>Demo_Heerbrugg...</td></tr><tr><td>3</td><td>GNSS Observation</td><td>HEE0 to P110324_160200</td><td>Demo_Heerbrugg...</td></tr><tr><td>4</td><td>GNSS Observation</td><td>HEE0 to P110324_160216</td><td>Demo_Heerbrugg...</td></tr></table> <p>Object 1 of 4</p>		Type	Object Name	Project	1	Point	P110324_160200	Demo_Heerbrugg...	2	Point	P110324_160216	Demo_Heerbrugg...	3	GNSS Observation	HEE0 to P110324_160200	Demo_Heerbrugg...	4	GNSS Observation	HEE0 to P110324_160216	Demo_Heerbrugg...
	Type	Object Name	Project																		
1	Point	P110324_160200	Demo_Heerbrugg...																		
2	Point	P110324_160216	Demo_Heerbrugg...																		
3	GNSS Observation	HEE0 to P110324_160200	Demo_Heerbrugg...																		
4	GNSS Observation	HEE0 to P110324_160216	Demo_Heerbrugg...																		
	Refer to "Navigate to survey point details".																				

List survey objects by query

Step	Description
	Survey data can only be queried when a survey data Set is applied and survey data is inside of the project.
1.	To activate the Leica Survey Editor toolbar: a) Select Customise > Customise Mode . b) Change to the Toolbars tab. c) Check LeicaSurvey Editor .
2.	Click the List Survey Objects by Query button on the toolbar. 
3.	The List Survey Objects by Query dialog appears. 
4.	Check the object type you like to query.
5.	To do several queries tap Query Builder .
6.	Define the query according your needs. 
7.	Click OK twice.
8.	The information according your query input is displayed.

Navigate to survey point details

This section explains how to navigate to the detailed page of survey points within the Survey Explorer. You can enter the survey information either with the List Survey objects Tool or by query.

Step	Description
1.	<p>Make sure that you have created a list page with survey points from a selection or a query.</p> 
2.	Right-click on the leading column to select the desired line of a survey point.
3.	<p>Select Go to Details.</p> 
	To enter the GNSS measurement of a survey point, select Go to Measurement .
	To delete a survey point, select the according line and click the red cross.
	To create a text based report of the selected survey data, mark the according line(s) and select Survey Object Report...
	Navigate to the next or previous page with the left and right arrow button.
4.	<p>The Details window for the selected survey points is displayed. The window consists of three tabs:</p> <ul style="list-style-type: none"> • General tab: Shows the editable name of the survey point and the GIS coordinate. The GIS coordinate defines where the survey point is located on the map. • Quality tab: Shows quality parameters, for example the standard deviation. • Coordinate Manager: Shows the coordinates stored with the survey point. The coordinates can be changed manually. A survey point can have more than one coordinate from different computations.

Step	Description
------	-------------

LEICA Survey Explorer | Details [Point: "P110324_140838"]

General Quality Coordinate Manager

Projects:

Project	UseForGis
Demo_Heerbrugg_1	yes

Coordinates of Project Demo_Heerbrugg_1:

	Type	Cu...	E/N	Elev.	Easting	Northing	Elevation	dE	dN
1	Computed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	764443.347m	253037.623m	406.940m	-0.515m	-0.006m
2	Imported	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	764443.347m	253037.433m	412.940m	-0.515m	-0.196m
3	Mean	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	764443.862m	253037.629m	409.859m	-	-

T-Test

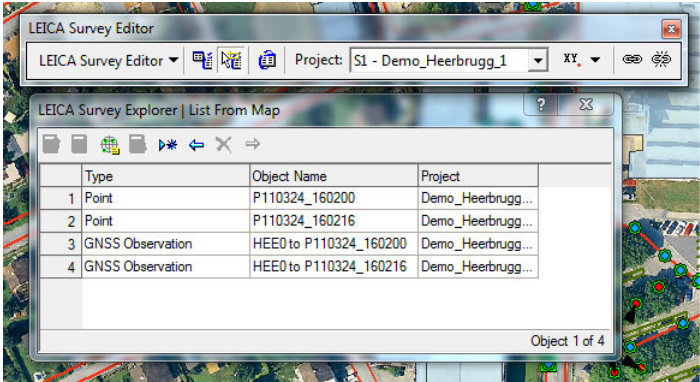
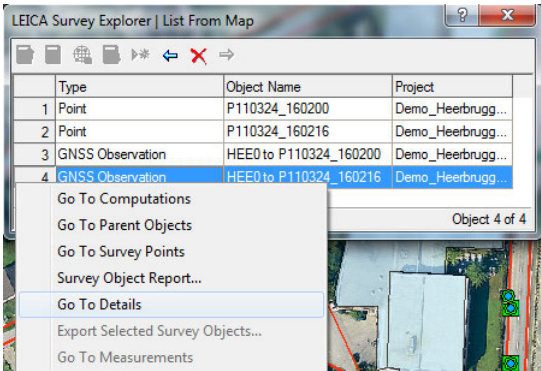
Significance Level: 1%





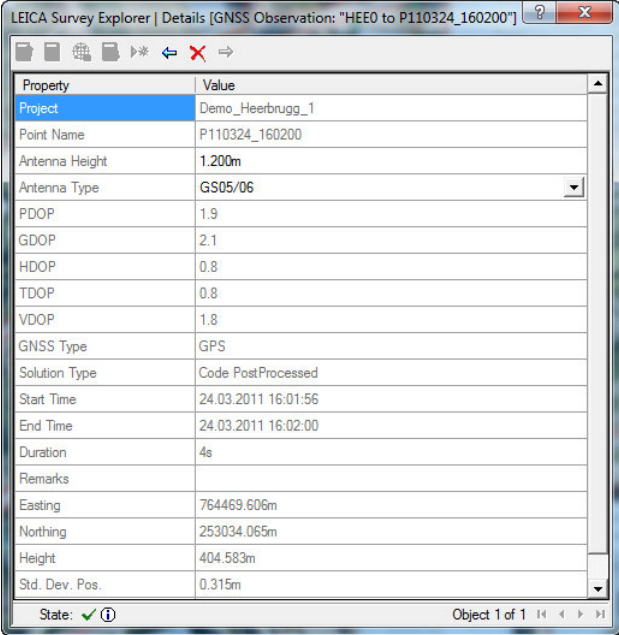
Critical Value (Position): 31.821 Critical Value (Elevation): 63.657

State: ✓ (i) Object 1 of 1

Navigate to GNSS observation details

This section explains how to navigate to the detailed page of GNSS observations within the Survey Explorer. You can enter the survey information either with the List Survey objects Tool or by query.

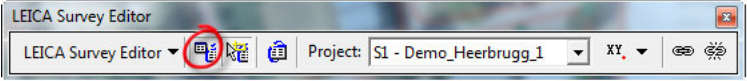
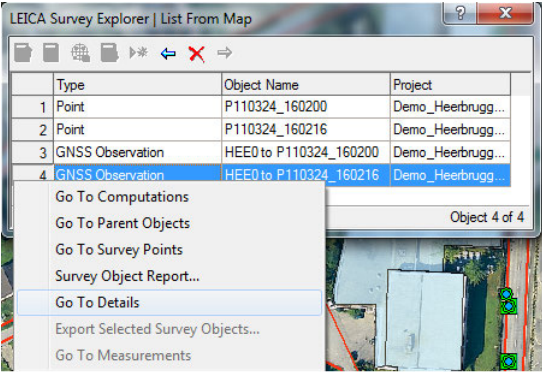
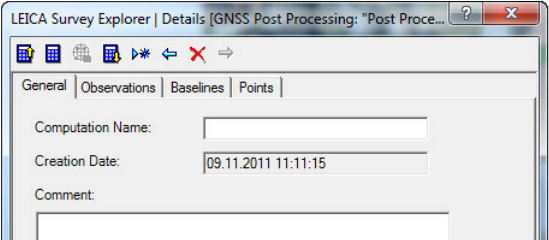
Step	Description
1.	<p>Make sure that you have created a list page with GNSS observations from a selection or a query.</p> 
2.	<p>Right-click on the leading column to select the desired line of a GNSS observation.</p>
3.	<p>Select Go to Details.</p> 

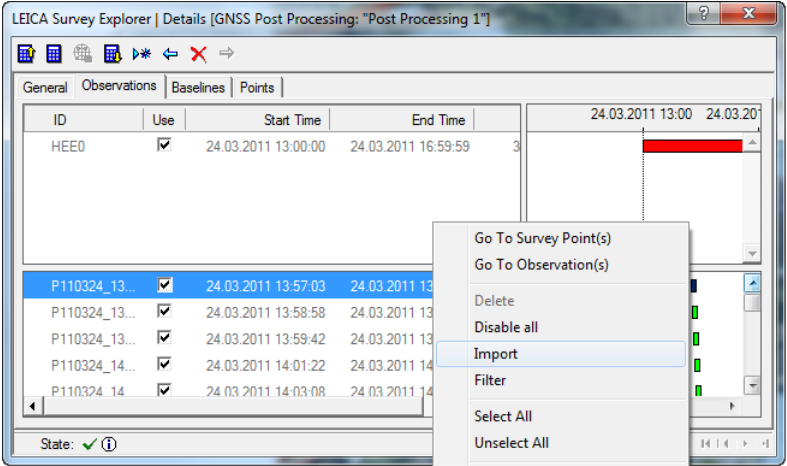

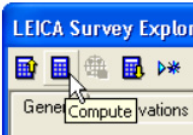
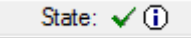
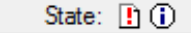
Step	Description
	For entering the survey point which refers to GNSS observation, select Go to Survey Points .
	To delete a GNSS observation, select the according line and click the red cross.
	To create a text based report of the selected survey data, mark the according line(s) and select Survey Object Report...
	Navigate to the next or previous page with the left and right arrow button.
4.	<p>The Details window for the selected GNSS observation is displayed.</p> <p>You can change</p> <ul style="list-style-type: none"> • Antenna height • Antenna type 

Post-processing

This section explains how to navigate to the computation for post-processing within the Survey Explorer.

To follow this guideline a previous EasyIn is recommended to be sure that a computation is available.

Step	Description
1.	Click the List Survey Objects by Query button on the toolbar. 
2.	Check GNSS Post-Processing and click OK .
3.	Select the appropriate computation by clicking on the leading column.
4.	Right-click on the leading column and select Go to Details . 
5.	The Details window for post-processing consists of several tabs.  <ul style="list-style-type: none"> • General tab: Editable are: Cut-off-angle, solution type, GNSS type • Baseline tab: Define the baselines. Check which reference is used for which rover. • Points tab: Review the properties of all computed points, for example GNSS type, coordinates, position/height quality. Review the properties of unprocessed points, for example reference station, GNSS type, solution type, DOP values • Observation tab: Base Station window (upper window): Set a filter to display your GNSS measurements in the observation tab, manually import reference data for the post-processing. Post-processing can also be done automatically during EasyIn. Rover window (lower window): Delete observations, restore all deleted observations, disable (all) observations, import rover data, set a filter to display your GNSS measurements in the Observation tab

Step	Description
	
	<p>After editing values in a GNSS post-processing computation, for example the cut-off-angle or the GNSS type, it is necessary to re-compute.</p> <p>To re-compute, tap Compute in the Survey Explorer.</p>  <p>The computation state is indicated at the bottom of the page:</p> <ul style="list-style-type: none"> •  No re-computation required •  Re-computation is required

5.7.4

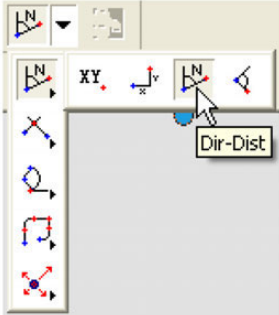
COGO

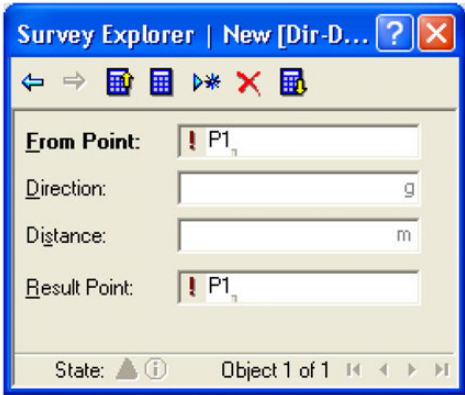
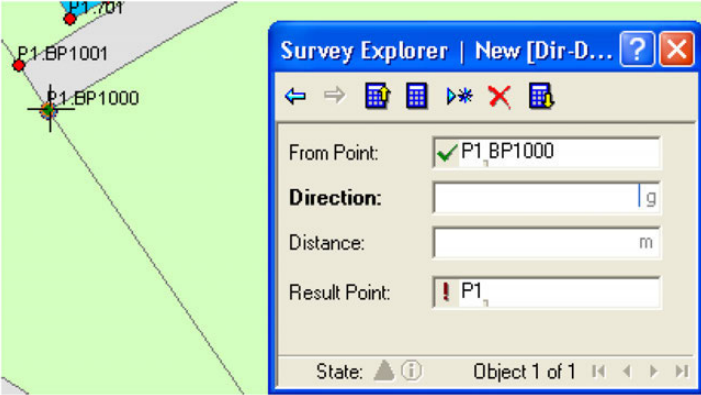
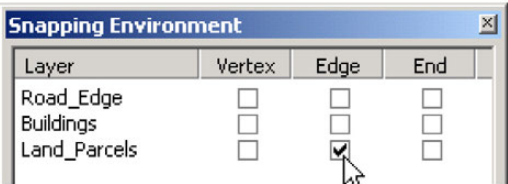
COGO


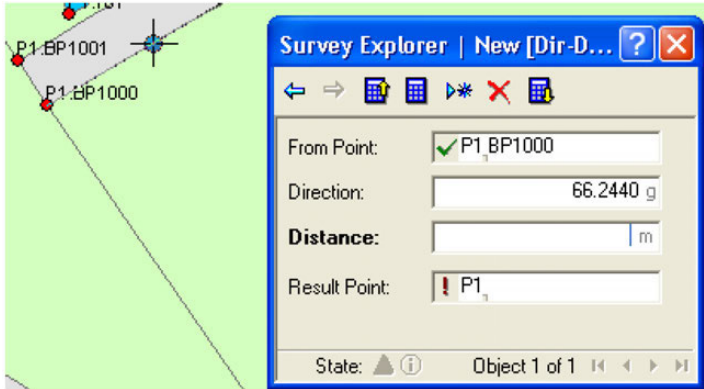
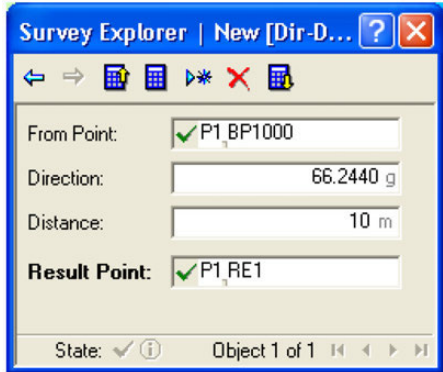

This section gives an overview of COGO constructions.

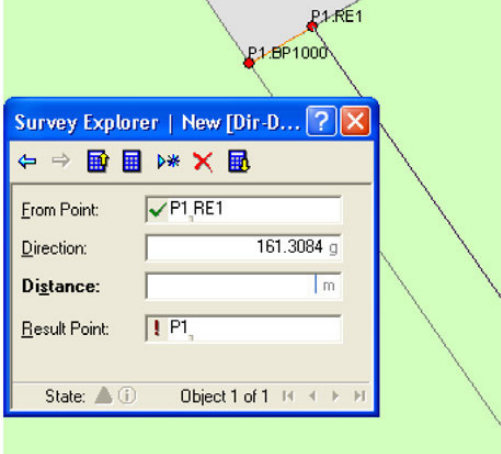
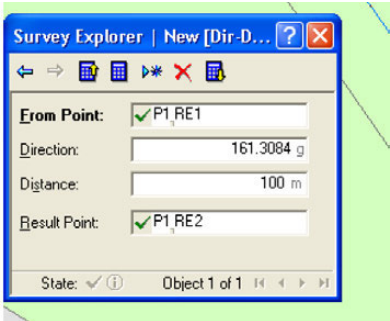
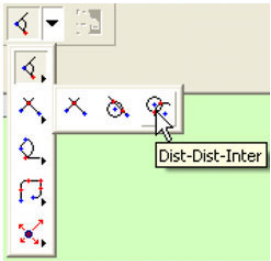
The example workflow in the table explains how to construct the footprints of a road edge.

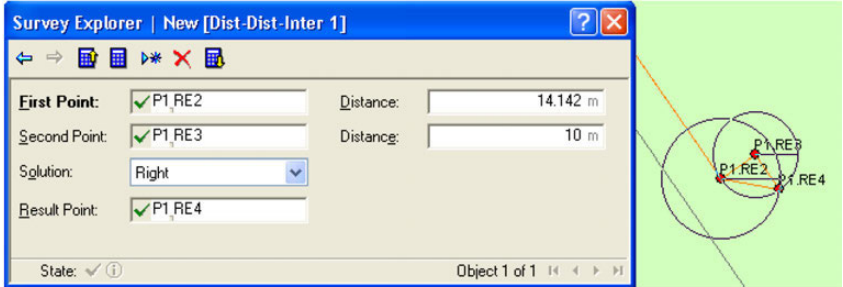
Information from a map can be used in four different ways for COGO constructions in Zeno Office. The workflow covers all four methods of input.

Step	Description
1.	Start Zeno Office and open a project.
2.	Create a polygon feature class called Land_Parcel .
3.	Zoom to the area, where you want to work.
4.	<p>The first computation is the Direction-Distance construction. Tap the Dir-Dist icon on the Survey Editor Toolbar.</p> 

Step	Description
5.	<p>The Survey Explorer window opens on the Dir-Dist page.</p> 
6.	<p>a) Click in the From Point field.</p> <p>b) Click a survey point on the map. P1.BP1000 must be displayed in the From Point field.</p> 
7.	<p>The Direction field is highlighted.</p> <p>Direction entry is active.</p> <p>A line appears on the screen.</p>
8.	<p>Select a feature segment in the map to get the direction. Snapping must be set to a vertex.</p> <ul style="list-style-type: none"> For Zeno Office v3.0 and higher: Check by going to Editor > Snapping > Snapping Toolbar. For Zeno Office lower than v3.0: Check by going to Editor > Snapping. Check the Land_Parcel edge. Close the Snapping Environment dialog. You can go to Snapping Environment while the computation is active – it will not affect the computation. 

Step	Description
9.	<p>Snap to the Land_Parcel edge. Refer to the picture.</p> <p> The direction can differ about 200 gon, depending on the position of the cursor. The line in the middle of the segment divides the two directions.</p> 
10.	<p>a) Left-click to add the direction to the Survey Explorer.</p> <p>b) Check that the direction is pointing to the right direction.</p>
11.	<p>The Distance field is highlighted.</p> <p>A circle appears. Drag the radius of the circle to define the distance.</p> <p>OR</p> <p>Type 10 into the Distance field.</p>
12.	<p>a) Type in a name into the Result point field, for example P1.RE1.</p> <p>b) Tap Enter.</p> <p>The computed point appears on the map.</p> 
13.	Select Editor > Save Edits to save your entries.
14.	Tap  on the Survey Explorer to compute another point of the road edge footprint.
15.	An empty Dir-Dist page appears in the Survey Explorer.
16.	Tap Enter to confirm the suggested point RE in the From Point field.
17.	<p>The Direction field is highlighted.</p> <p>For this direction, we want to snap to a land parcel feature edge again. You want the constructed road to be parallel to the Land_Parcel segment, which starts from BP1000 and goes towards the southeast.</p>
18.	<p>a) Snap to the Land_Parcel segment.</p> <p>b) Left-click to add the direction to the Survey Explorer.</p> <p>c) Check that the direction is pointing to the right direction.</p>

Step	Description
19.	<p>The Distance field is highlighted. Type 100 into the Distance field.</p> 
20.	<p>P1.RE2 is suggested in the Result Point field. Tap Enter.</p> 
21.	<p>Now we want to work with an intersection computation: Tap the Dist-Dist_Inter icon.</p> 
22.	An empty Dist-Dist-Inter page appears in the Survey Explorer.
23.	Select the First Point , for example P1.RE2 by snapping on the point.
24. a)	The Distance field is highlighted.
25. b)	Type in 14.142 m .
25. c)	Tap Enter .
26.	The Second Point field is highlighted. Snap to point P1.RE3 .
27.	The Second Distance field is highlighted. Get the Distance by moving your cursor from P1.RE3 and snap it to P1.RE2 .
28.	Left-click to add the value to the Second Distance field.

Step	Description
29.	The Solution drop-down menu is highlighted. Accept Right as the correct selection.
30.	A Result Point is suggested. Tap Enter to accept the suggested point name.
31.	The Second Point field is highlighted. Snap to point P1.RE3 . 

Description**Use**

To synchronise edits done in Zeno Field over the air with ArcGIS Online and Zeno Office.

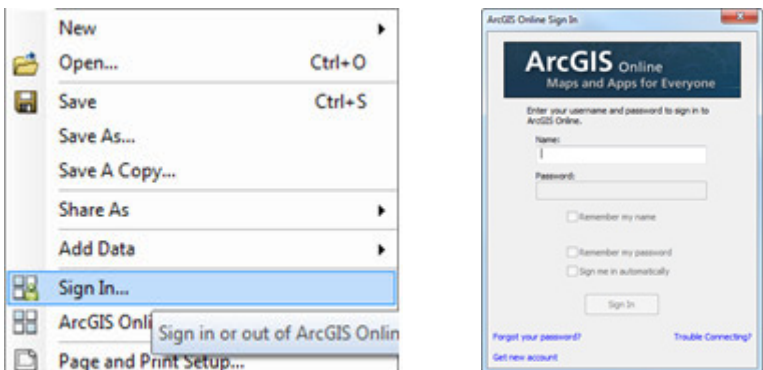
**Requirements**

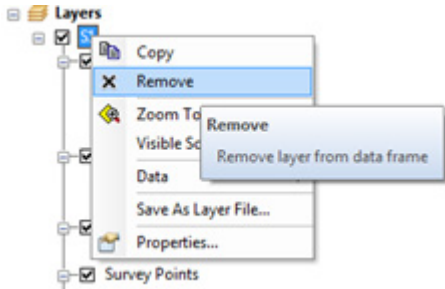
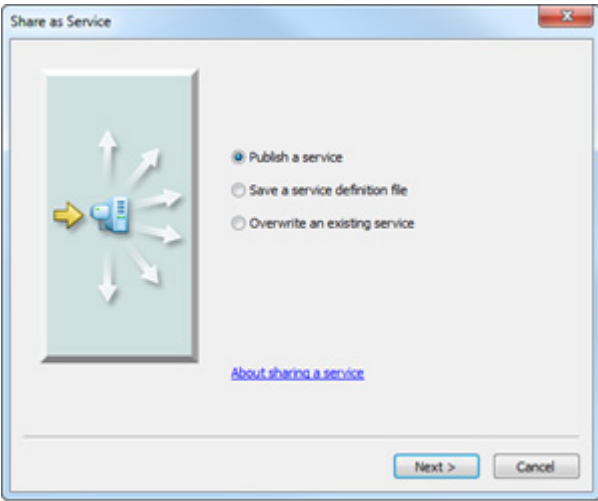
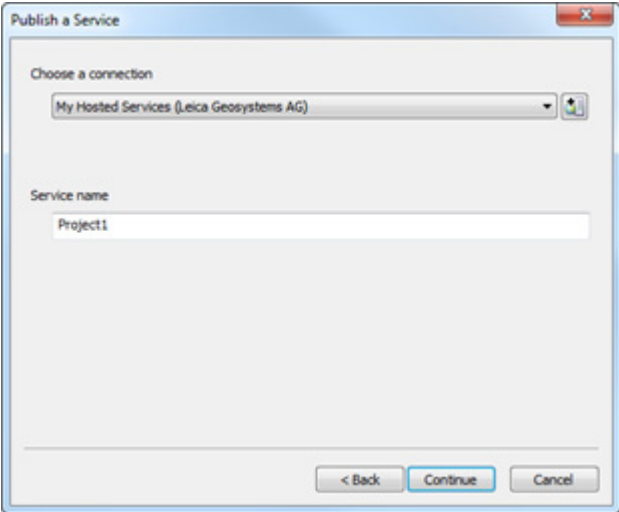
- For Zeno Field v3.2 or higher on CS25/Zeno 5
- Zeno Office on ArcGIS v3.2, ArcGIS v10.1 or v10.2
- ArcGIS Online subscription
- Active the Internet connection established by:
 - Running an RTK correction
 OR
 - For Zeno 5: Starting the Internet Explorer
 OR
 - For CS25: Connecting to the Internet by One Click Internet or AirCard Watcher

Restrictions

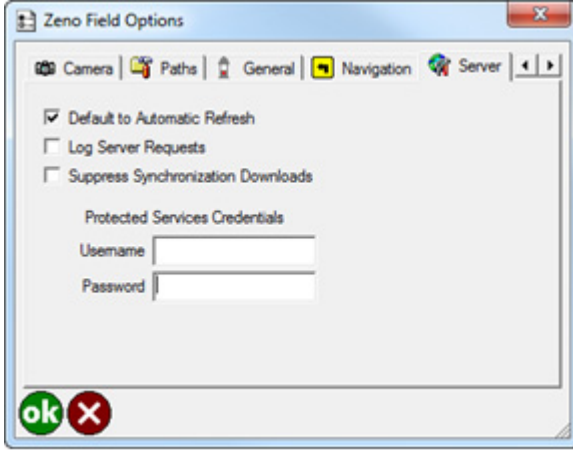
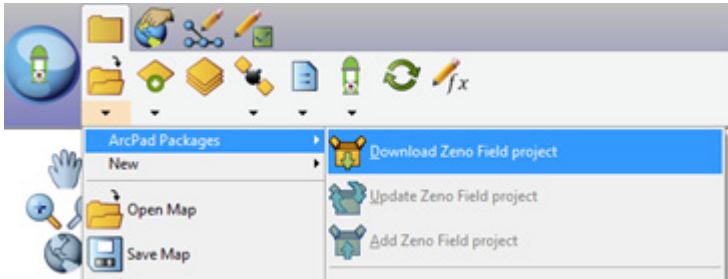
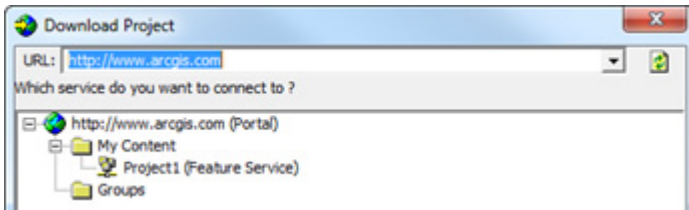
- ArcGIS Online which is mandatory for this service supports WGS84 only. Geoid and CSCS files are not supported.
- Works for feature classes only. No support of survey points or observations.

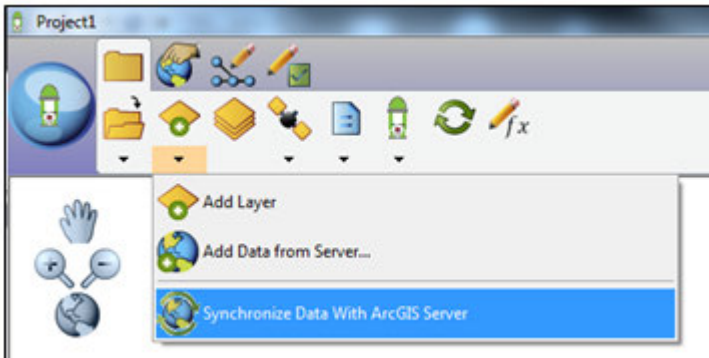
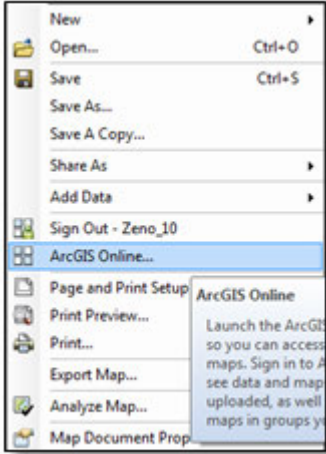
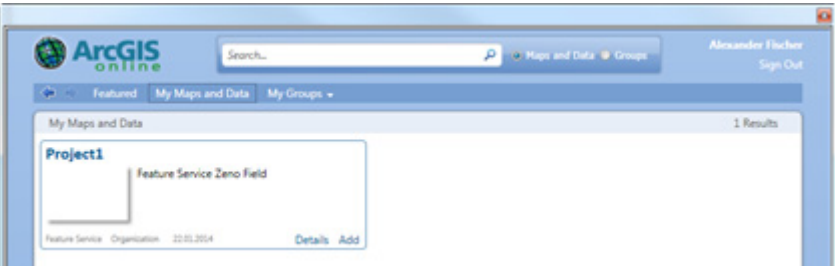
Using Sync

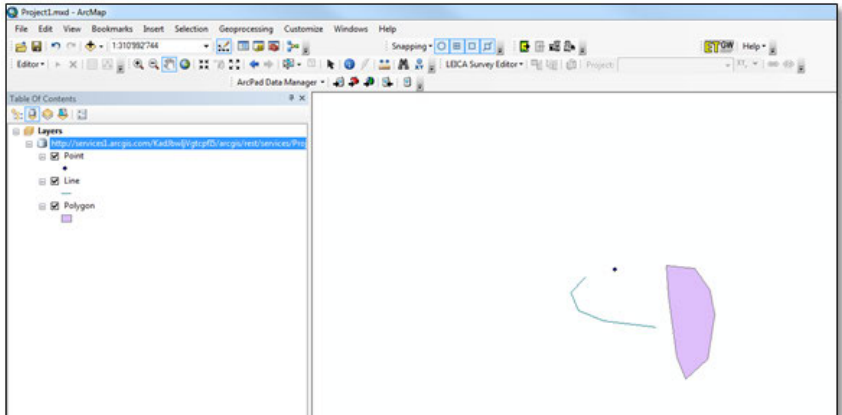
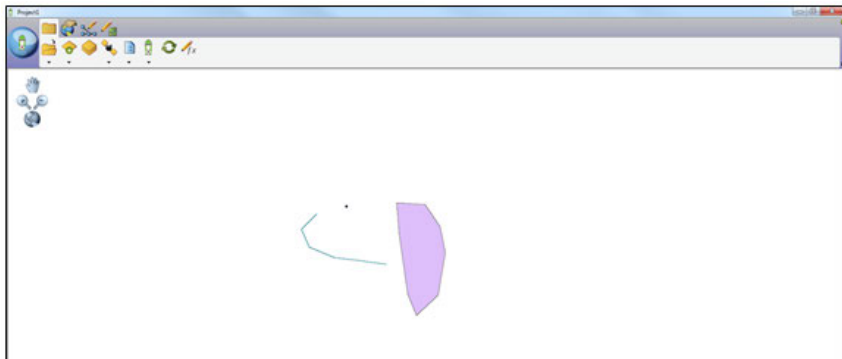

Step	Description
Sync process in Zeno Office	
1.	<p>Start Zeno Office on ArcGIS. Sign in to ArcGIS Online.</p>  <p>The image shows two screenshots. On the left is the 'ArcGIS Online' menu in Zeno Office, with 'Sign In...' highlighted. On the right is the 'ArcGIS Online Sign In' dialog box, which has fields for 'Name' and 'Password', and checkboxes for 'Remember my name', 'Remember my password', and 'Sign me in automatically'. There are also links for 'Forgot your password?', 'Get new account', and 'Trouble Connecting?'.</p>
2.	<p>Create a project in Zeno Office on ArcGIS in WGS84 or use an existing data-base in WGS84.</p>

Step	Description
3.	<p>Remove survey data set layers and MobileMatrix insertion line layers from the project. The feature service deals with feature classes only.</p> 
4.	Select File > Share As > Service .
5.	<p>Select Publish as a service. Tap Next.</p> 
6.	<p>Select your ArcGIS Online connection and enter a name for the service. Tap Continue.</p> 
7.	<p>Service Editor Tap Capabilities in the upcoming Service Editor. Check Feature Access. Uncheck Tiled Mapping. Check Feature Access.</p>

Step	Description
8.	Tap Feature Access . Select all operations.
9.	Tap Item Description . You must enter a description.
10.	Tap Sharing . Share the feature service with your account
11.	Tap Analyze to verify your project. Errors, warnings and messages are displayed at the bottom of the page. You must solve errors with a red cross to continue the feature sync.
12.	Tap Publish to host the service on ArcGIS Online.
13.	The hosted service is available in your ArcGIS Online portal in section My Content .

Step	Description
Sync process in Zeno Field	
14.	Open a new map in Zeno Field.
15.	<p>Open the Zeno Field Options. On the Server tab, type in your ArcGIS Online credentials. Tap OK.</p> 
16.	<p>Select File > ArcPad Packages > Download Zeno Field project.</p> 
17.	<p>Connect to http://www.arcgis.com. Select your feature service.</p> 
18.	The project is being downloaded from ArcGIS Online.
19.	Start with surveying job.
20.	<p>Synchronise your edits from time to time with ArcGIS Online. Open the Add Layer drop-down. Select Synchronise Data with ArcGIS Server. The data is synchronised with ArcGIS Online.</p>

Step	Description
	
Sync process between Zeno Office and ArcGIS Online	
21.	Open an empty map in Zeno Office.
22.	<p>Load again the previously generated office project which was used for the feature sync directly from ArcGIS Online. Otherwise the sync process fails. Select File > ArcGISOnline</p> 
23.	<p>Select MyMaps and Data. Add your project in the upcoming window.</p> 
24.	Now all the edits that were measured in the field are available in Zeno Office project.

Step	Description
	<p data-bbox="528 136 675 170">Zeno Office</p>  <p data-bbox="528 598 659 632">Zeno Field</p> 
	<ul style="list-style-type: none"> • Whenever an edit in Zeno Field was done and uploaded to ArcGIS Online, Zeno Office will synchronise after a map refresh. An edit is a new feature, an edited feature or a removed feature. • Edits done in Zeno Office also affect the content in the project used in Zeno Field depending on the Feature Access settings. • A Feature services on ArcGIS Online can be synchronised on multiple devices, for example GIS handhelds, Desktop GIS.

7 Zeno Tools

7.1 Introduction

Functionality of Zeno Tools

Zeno Tools consists of apps to configure:

- Zeno 5
- Zeno 10/Zeno 15
- CS25
- CS25 GNSS
- GG02 plus
- GG03

Depending on the hardware on which Zeno Tools is installed, the following apps can be used:

Installation on	
Zeno 5	<ul style="list-style-type: none">• Licence Manager
Zeno 10/Zeno 15	<ul style="list-style-type: none">• Bluetooth Manager to connect external Bluetooth devices such as laser rangefinder• Change the System Settings Example: Font size• Add new licence keys Example: New maintenance key or a Glonass key for the GS05/GS06• Uploading a new firmware for the GS05/GS06 caps
CS25	<ul style="list-style-type: none">• Upload a new firmware on a GG03/GG02 plus• Upload upgrade keys on a GG03/GG02 plus or CS25 GNSS

7.2 Zeno Tools on Zeno 10/Zeno 15

7.2.1 Using the System Settings Manager


Functionality

In the System Settings Manager, you can

- Change the font sizes
- Reset the GS05/GS06 cap to factory defaults. The reset deletes the almanac and re-initializes the cap.
- Define the USB speed

Changing the system font size

Use this tool to set the system font size for the Zeno handheld device. The available font sizes are small, medium, large, and Zeno optimized fonts.

 Using larger font sizes will also resize dialog boxes. Some dialogs will not be fully visible anymore.

Step	Description
1.	Start System Settings Manager on your Zeno 10/Zeno 10: Tap Start > Programs > Zeno Tools > System Settings Manager .
2.	Select the preferred text size.
3.	Tap OK . A dialog box will ask you to restart the system. Tap Yes and the system will restart with the new text size settings.

Changing USB settings

The USB speed can be changed from USB Full Speed to the faster USB High Speed setting. The setting is required, because some computers do not support USB High Speed.

Step	Description
1.	Start System Settings Manager on the Zeno 10/Zeno 15: Tap Start > Programs > Zeno Tools > System Settings Manager .
2.	Change to the USB Settings tab.
3.	Select the preferred USB speed.
4.	Tap OK . A dialog box will ask you to restart the system. Tap Yes and the system will restart with the new USB speed setting.

Resetting GS05/GS06 GNSS cap

The reset function for the GS05/GS06 resets to the factory default. This means that, for example, the almanac gets deleted. A reset can be helpful for faster position acquisition after the Zeno device was moved a long distance.

Step	Description
1.	Start System Settings Manager on your Zeno 10/Zeno 15: Tap Start > Programs > Zeno Tools > System Settings Manager .
2.	Change to the Reset tab.
3.	Tap Reset .
4.	Tap OK to close the System Settings Manager.

7.2.2

Using the GS05/GS06 Firmware Loader

Functionality

Use Firmware Loader to upload new firmware to the GS05/GS06.



Always ensure that you have enough battery power during the firmware upload.



To upload a new firmware, a valid CCP key may be required. Prior to browsing and uploading, the new firmware needs to be copied onto the Zeno.

Loading firmware

Step	Description
1.	Download the most recent GS05/GS06 firmware file from https://myworld.leica-geosystems.com .
2.	Copy the GS05/GS06 firmware file into a folder on the Zeno 10/Zeno 15, SD card, Leica Compact Flash card or USB stick via ActiveSync or mobile Device Center, USB memory stick or SD Card.
3.	Start GS05/GS06 Firmware Loader on the Zeno 10/Zeno 15: Tap Start > Programs > Zeno Tools > GS05/GS06 Firmware Loader .
4.	Tap the folder icon on the load firmware dialog.
5.	Browse to the directory of the GS05/GS06 firmware file.
6.	Select the GS05/GS06 firmware file and start the upload.

7.2.3

Using the Licence Manager

Licencing







Refer to "1 Installation and Licencing of Zeno Field and Zeno Connect".

Functionality




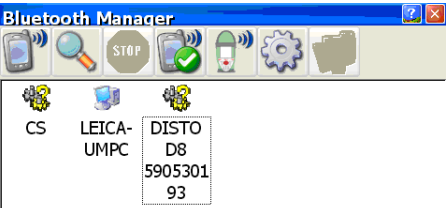
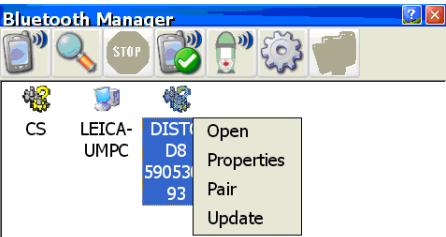

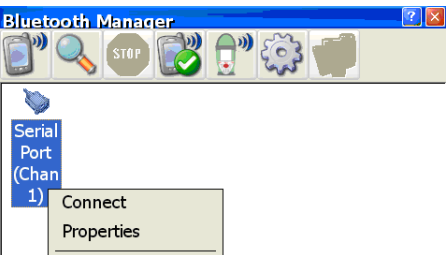
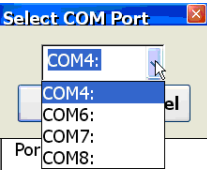

The Bluetooth app is used to configure Bluetooth connections to external Bluetooth devices. This can be a laser rangefinder, which can be used in Zeno Field or a PC to which NMEA should be streamed wireless.


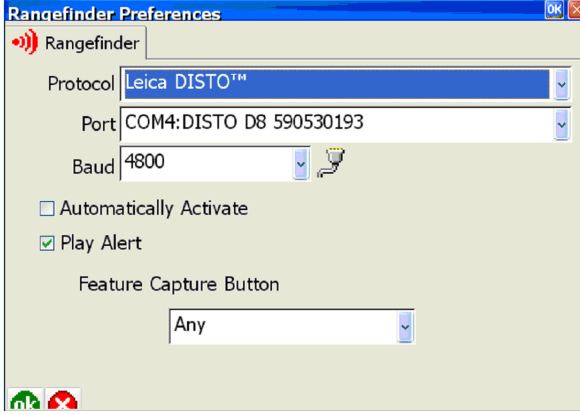
The Bluetooth Manager configures the Bluetooth connection and all required ports and services. The actual Bluetooth connection gets established automatically, as soon as an application like Zeno Field opens the according COM port.

Bluetooth user interface

Icon	Description
	Shows Bluetooth devices in range.
	Searches for Bluetooth devices in range.
	Stops search for Bluetooth devices in range.
	Registered devices Shows devices which where connected in the past are shown here.
	Local services Provides services to remote devices, for example serial port to stream NMEA to a PC.
	Properties

Connecting an external Bluetooth device

Step	Description
	The screenshots shown belong to a DISTO. Depending on your device, the menus may vary.
1.	Start the Bluetooth app on the Zeno 10/Zeno 15: Tap Start > Programs > Zeno Tools > Bluetooth Manager .
2.	<p>Tap  to search for Bluetooth devices in the range.</p> <p> Ensure, that the Bluetooth on the device is turned on and ready to be found.</p> <p>After the search, new devices are found.</p> 
3.	<p>Tap on the new device to be used. Select Open in the context menu. The services of the device are shown.</p> 
	If pairing is required or not depends on the device. Refer to the user guide of the Bluetooth device for information and the passkey to be used.
	If pairing is required:
4.	Tap Pair to pair the device.
5.	<p>Tap Serial Port Service > Connect in the context menu.</p> 
6.	<p>Select the COM port to be assigned to the device. In this case: COM4</p> 
7.	Tap OK .
	Pairing is finished
8.	<p>Now the device and the Zeno are connected.</p> <p>Tap  to see all connections to devices including the COM port details.</p>

Step	Description
9.	Tap  to close the Bluetooth Manager.
10.	Go to Zeno Field. Open the Rangefinder Preferences in Zeno Field.
11.	Select the according protocol and COM port to which your device is connected. The device name is written behind the COM port number. 
12.	Now you can work with the connected device.


Using a Leica DISTO via Bluetooth

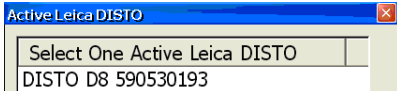

A Bluetooth enabled Leica DISTO can be connected to a Zeno with the Leica DISTO Transfer PPC software. You can download Leica DISTO Transfer PPC from myWorld@Leica Geosystems (<https://myworld.leica-geosystems.com>). The DISTO Transfer PPC software can be used to transfer values to Zeno Field or any other application.

Installing Leica DISTO Transfer PPC software on the Zeno


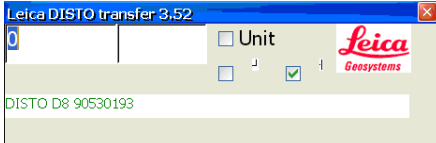

Step	Description
1.	Download the Leica DISTO Transfer PPC software from https://myworld.leica-geosystems.com . Copy the <i>SetupDistoPPC.exe</i> on a PC.
2.	Connect the Zeno to the PC using ActiveSync or Windows Mobile Device center.
3.	Run the <i>SetupDistoPPC.exe</i> on the PC.
4.	Select your language and click OK . The DISTO Transfer PPC Setup Wizard starts.
5.	Click I agree to accept the licence agreement . The installation starts.
6.	Click Yes to install DISTO Transfer PPC in the standard application path on the Zeno.

Connecting a DISTO the first time to DISTO Transfer PPC

Step	Description
1.	Switch the DISTO on. Ensure, that Bluetooth is enabled.  Pressing the Bluetooth key switches Bluetooth on and off.
2.	Start DISTO Transfer PPC on the Zeno: Tap Start > Programs > DISTO Transfer .
3.	Select the desired language and tap OK .

Step	Description
4.	<p>A dialog appears showing all active DISTOs in range. Select your DISTO and tap OK.</p> 
	The next time, DISTO Transfer PPC will connect to your DISTO automatically.

Using DISTO Transfer PPC to transfer values to Zeno Field

Step	Description
1.	<p>Switch the DISTO on. Ensure, that Bluetooth is enabled.</p> <p> Pressing the Bluetooth key switches Bluetooth on and off.</p>
2.	<p>Start DISTO Transfer PPC on the Zeno:</p> <p>Tap Start > Programs > DISTO Transfer.</p>
3.	DISTO Transfer PPC starts and connects to your DISTO automatically.
4.	<p>It is recommended to use following settings:</p> 
5.	<p>Click into the field into which the DISTO measurement should be entered.</p> <p> You can send a measured value to any editable field of any application. In Zeno Field this can be either the distance field in the offset point dialog, or an attribute field, for example the depth of a manhole.</p>
6.	Take a distance measurement with the DISTO.
7.	Press the Bluetooth key on the DISTO to transfer the value to the selected edit field.

Uploading firmware for GG03/GG02 plus

With Zeno Tools installed on the CS25 you are able to upload new firmware to the GG03/GG02 plus.

Step	Description
1.	Connect GG03/GG02 plus to your PC by using Bluetooth or the GEV162 cable.
2.	Start the Firmware Loader Tool on your CS25 by tapping Start > All Programs > Leica Geosystems > Leica Zeno Tools > Firmware Loader GG0X .
3.	Switch on the GG03/GG02 plus.
4.	Click the COM Port drop-down arrow to select the serial port on the CS25 which is connected with the GG03/GG02 plus. The Bluetooth COM port number can be found on the Hardware tab of the Bluetooth Device Properties .
5.	Browse for the new firmware.
6.	Check that the version number of the new firmware is higher than the current version.
7.	Click Upload to start the firmware update.
8.	Click Close when the upload is done.

Uploading firmware for CS25 GNSS

With Zeno Tools installed on the CS25 you are able to upload new firmware to the CS25 GNSS.

Step	Description
1.	Start the Firmware Loader Tool on your CS25 by tapping Start > All Programs > Leica Geosystems > Leica Zeno Tools > Firmware Loader GG0X .
2.	Click the COM Port drop-down arrow to select the COM port with the description CS25 GNSS device .
3.	Browse for the new firmware.
4.	Check that the version number of the new firmware is higher than the current version.
5.	Uploading additional options to a GG03/CS25 GNSS is possible with the GNSS Upgrade Key Tool. Click Upload to start the firmware update.
6.	Click Close when the upload is done.

Uploading GNSS upgrade keys on GG03

With Zeno Tools installed on the CS25 you are able to upload new firmware to the GG03.

Step	Description
1.	Connect GG03 to your PC by using Bluetooth or the GEV162 cable.
2.	Start the Leica Zeno GNSS Upgrade Key Tool on your CS25 by tapping Start > All Programs > Leica Geosystems > Leica Zeno Tools > GNSS Upgrade Key .
3.	Switch on the GG03.
4.	Click the COM Port drop-down arrow to select the serial port on the CS25 which is connected with the GG03. The Bluetooth COM port number can be found on the Hardware tab of the Bluetooth Device Properties .
5.	Enter the Authorization Code. The code is printed on your invoice and can also be downloaded from the device details in myWorld@Leica Geosystems (https://myworld.leica-geosystems.com).
6.	Click OK .

Uploading GNSS upgrade keys on CS25 GNSS

With Zeno Tools installed on the CS25 you are able to upload new firmware to the CS25 GNSS.

Step	Description
1.	Start the Leica Zeno GNSS Upgrade Key Tool on your CS25 GNSS by tapping Start > All Programs > Leica Geosystems > Leica Zeno Tools > GNSS Upgrade Key .
2.	Click the COM Port drop-down arrow to select the COM port with the description CS25 GNSS device .
3.	Enter the Authorization Code. The code is printed on your invoice and can also be downloaded from the device details in myWorld@Leica Geosystems (https://myworld.leica-geosystems.com).
4.	Click OK .

7.4

Zeno Tools on Zeno 5

Functionality

With Zeno Tools installed on a Zeno 5, you can licence your software through Licence Manager.

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