

GETTING STARTED GUIDE

MC Start software

Version 10.0
June 2016

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1 Introduction

Welcome to MC Start! This *manual* is a comprehensive guide of the MC Start Easy-To-Use environment and features to get you started using the product right away.

What is the MC Start software?

MC Start software is your link between the construction site and the office. It facilitates the exchange of data between your CAD / BIM software and the total station.

The MC Start software supports Rhino, Revit and AutoCAD software, including AutoCAD LT and BricsCAD. To prepare points in a CAD drawing for setting-out purposes, simply launch your CAD program from within the MC Start software environment. The MC Start functionality is automatically added to your CAD program. All of the CAD programs have the same workflow and functionality, whether you are working with, for example, AutoCAD LT or BricsCAD, so you can work right away.

In addition, the MC Start software allows you to import data from or export data to your Total Station, or a range of other external devices. You can also import from and export to a variety of file formats, enabling you to build, manage, and organize your projects with a minimum of time.

Related information

Sources of related information include the following:

- Help - The MC Start software has built-in help that lets you quickly find the information you need. Access it from the *Help* menu. Alternatively, click the **?** button in a dialog, or press **[F1]**.

Technical support

If you have a problem and cannot find the information you need in the product documentation, please contact your local dealer. Alternatively, you can go to the Support area of the MOUS Software website (www.moussoftware.com). Select the product you need information on. Product updates, documentation, and any support issues are available for download.

If you need to contact MOUS Software, please email support@moussoftware.com

Your comments

Your feedback about the supporting documentation helps us to improve it with each revision. Email your comments to info@moussoftware.com.

2 Installing the Software

This chapter describes how to install the MC Start software on your computer.

System Requirements

Before you install the product, you should make sure that your computer meets the minimum system requirements.

- Microsoft® Windows® XP, Windows Vista, Windows 7, Windows 8 or Windows 10 (32- and 64-bit versions)
- Administrative Privileges on the system
- Pentium Dual-core 1.80 GHz or better recommended
- 1 GB RAM or more recommended
- 100 MB of disk space required
- 1024 x 768 or higher resolution with 256 or more colors (at 96 DPI)
- Keyboard and Mouse or other pointing device
- USB port

Installing the MC Start software

Choose a location on your computer to store the executable program, then save and run the .exe file.

Now follow the instructions in the Setup wizard.

Installing the hardware security device

When the MC Start Software is installed on your computer, a setup installshield wizard will automatically starts to install the hardware security device.

After the security device drivers have been successfully installed, your system will recognize the security device to the USB port.

 **Note** – *The hardware security device is an essential and extremely valuable part of the software. The key effectively provides the license to use the software and as such the replacement cost is equal to the cost of another set of software.*

□ **Note** - *A file named README.TXT may be along the files copied. Be sure to read this file if available. It contains information about MC Start that was not included in this manual at the time of print.*

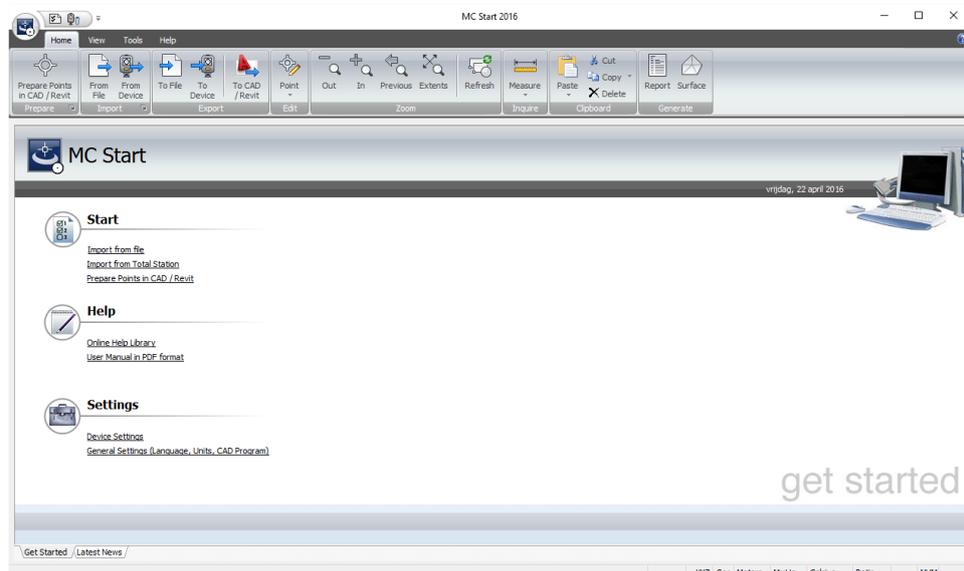
3 A tour of the environment

Starting the software

The best way to get familiar with MC Start is to start it up. You start MC Start the same way you start any Windows-based application. Here are some of the common ways:

- Double-click on the MC Start icon on your desktop.
- From the Windows *Start* menu, select *All Programs* | *MC Start*.

The Welcome screen provides access to the most commonly used features:



Ribbon

The MC Start Ribbon, located in the main window, organizes tools in logical groupings.

The ribbon is composed of a series of tabs, which are organized into panels. Some ribbon panels provide access to a dialog box related to that panel. To display the related dialog box, click the dialog box launcher denoted by an arrow icon, , in the lower-right corner of the panel.

To find out what any button does, point to it for a moment and a hint is displayed.

Working with the database

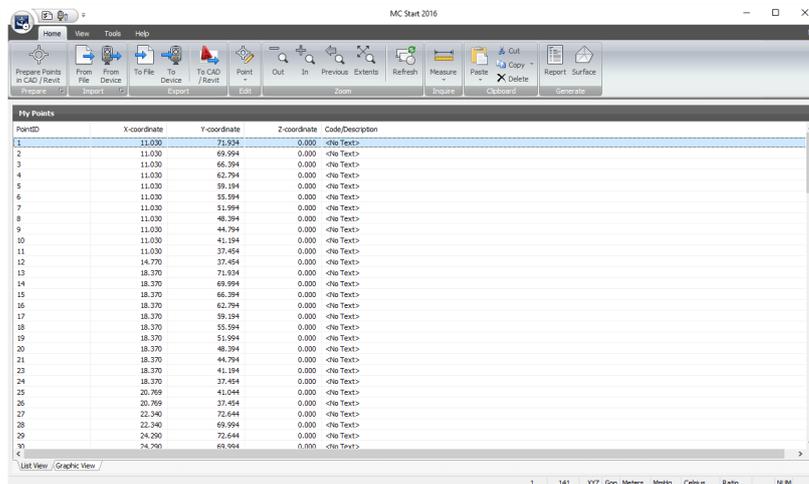
The main window shows your data, and provides data editing and viewing capabilities that allow you to maintain the integrity of your data.

You can modify point numbers, as well as insert and delete points. Additional functionality, such as cut, copy, and paste are also provided.

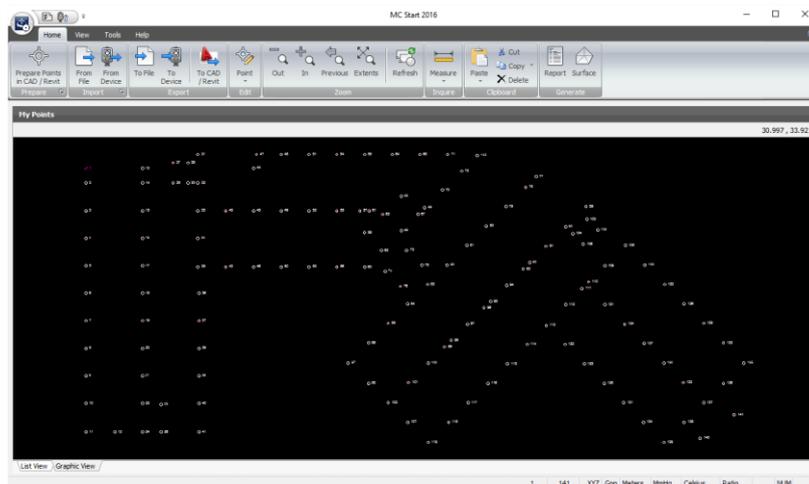
Data views

The main window provides easy access to two separate views of your points:

- ListView shows the points in a list and lets you select and edit items.



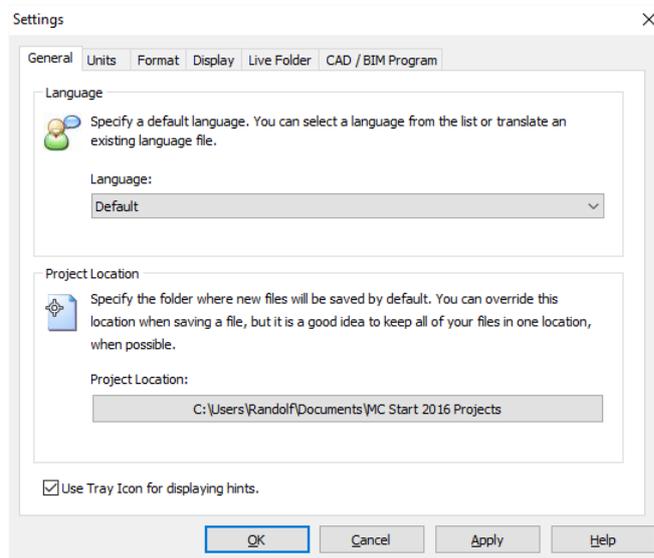
- GraphicView shows a graphical overview of the points and lets you zoom and select items easily.



When you make changes to data in one view, the changes are reflected in the other view.

Setting general options

To change general settings for the software, select *Settings* from the Ribbon Quick Access Toolbar. The *Settings* dialog appears:



Language setting

To select another language for the MC Start software, select it from the *Language* drop-down list.

Project Location

The *Project Location* field defines the default folder for new projects. To select a different location, click the Browse button  and then navigate to the folder.

Note - When you change the project location, you are not moving the folders and files that you had already created under the previous project location. To change the location of existing folders and files, you must save the project with a new name or move the folders yourself.

Units

Select the *Units* tab to select the unit formats for values that the MC Start software displays and outputs. You can define settings for the following units: Coordinate order, Angle, Distance, Temperature, Pressure.

CAD / BIM Program

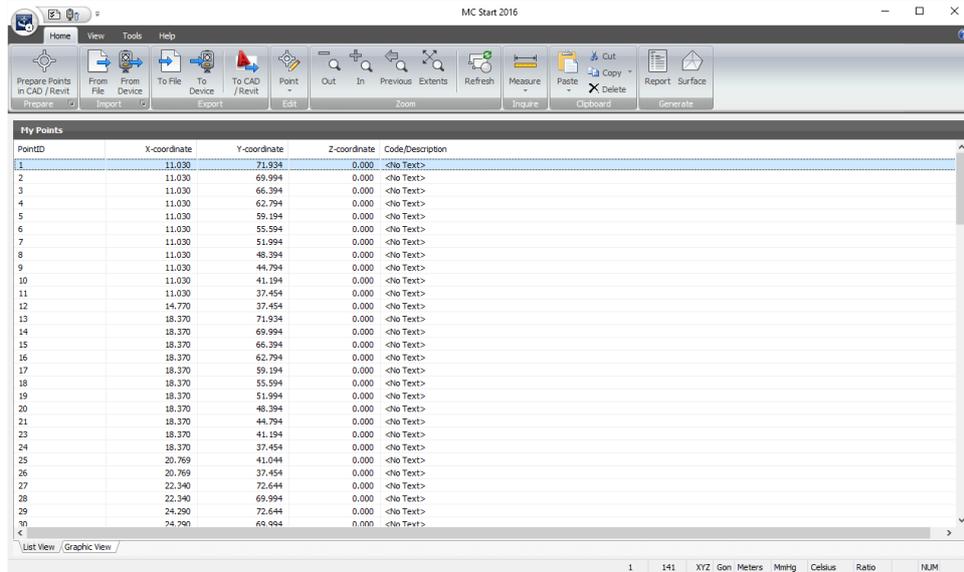
To select the CAD / BIM program to use with the MC Start software, select the *CAD / BIM Program* tab . To add a CAD / BIM program, click the Browse button  next to the *Use program* field and then navigate to the .exe file.

To define additional settings, click **Advanced**.

4 Editing and Viewing Data

Editing data

ListView shows the points in a list and lets you add, edit, or delete points.



To select a range of points, press and hold the **[Shift]** key and then select the points. To add more points to the selection, press the **[Ctrl]** key instead of the **[Shift]** key.

To access shortcut commands, position the cursor over the ListView and then click the right mouse button. A shortcut menu appears.

Editing a single point

To edit any point in the list, highlight the appropriate cell and then enter the new information.

You can cut, copy, and paste information as required to and from the clipboard. You can access these commands from the Ribbon at the top of the screen.

Note - The contents of the clipboard are overwritten with each cut or copy action. To avoid losing data, perform the paste action immediately.

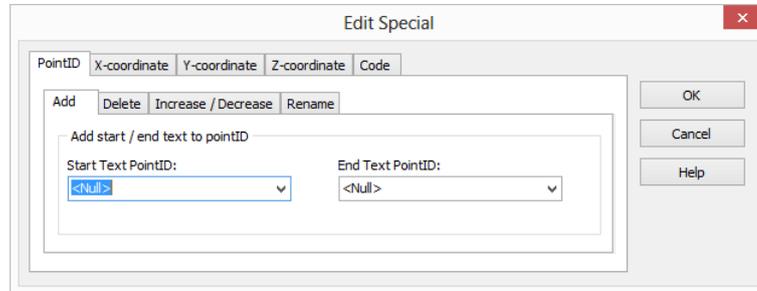
Editing multiple points

You can edit multiple points by pressing **[Ctrl F2]**.

1. Select a range of points in the ListView or GraphicView.

2. Press **[Ctrl F2]**.

The *Edit special* dialog appears.



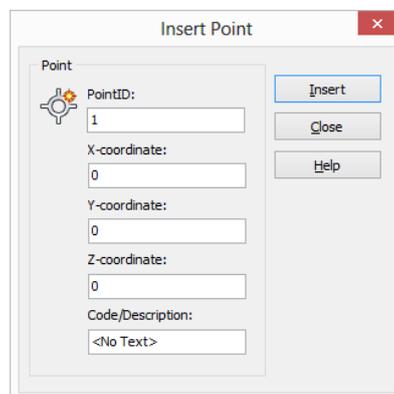
3. Make your changes and press **OK**.

Inserting points

Add points to the database as needed.

1. Select a point in the ListView, directly above where you want the new point to be inserted.
2. Right-click and then select *Insert Point*.

The *Insert point* dialog appears.



3. Enter the appropriate data for the new point.

If required, you can leave the data fields empty, to be filled out at a later time.

4. To insert the data into the database, click **Insert**.
5. To insert another point at the same location, repeat step 3 and step 4.
6. When you are finished inserting points at that location, click **Close**.

Note – To insert multiple points at different locations, it is necessary to close the *Insert dialog* and move the cursor to a new insertion location.

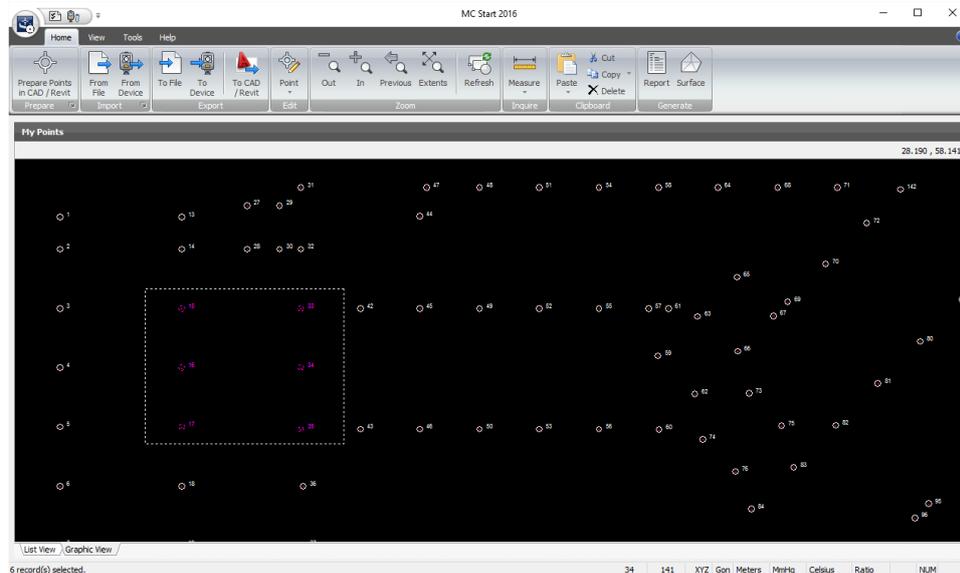
Deleting points

You can delete a point or multiple points by selecting the points in the *List View* or *Graphic View*.

1. Select the points in the *List View* or *Graphic View*
2. From the *Ribbon*, select *Delete*
A confirmation message appears.
3. Click **Yes** to delete the selected point(s).

Viewing data graphically

Graphic View shows a graphical overview of the points and lets you zoom and select items easily.



Use the commands in the *Zoom* panel to zoom in and out or pan around your data.

Select...	To...
Zoom Window	zoom to an area you select by drawing a rectangle in the GraphicView.
Pan	center a point in the drawing by doubleclicking the point in GraphicView.
Zoom In	increase the apparent size of items in the GraphicView.
Zoom Out	decrease the apparent size of items in the GraphicView.
Zoom Previous	display the previous view.
Zoom Extents	display the entire job.
Refresh	cancel all active commands and deselect all items.

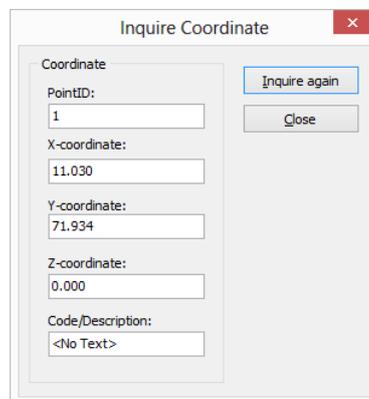
To select a range of points, press and hold the **[Shift]** key and then drag a rectangle around the points. To add more points to the selection, press the **[Ctrl]** key instead of the **[Shift]** key.

To access shortcut commands, position the cursor over the GraphicView and then click the right mouse button. A shortcut menu appears.

Viewing the coordinate of a point

1. From the *Ribbon*, click the *ID Point* button 
2. In the GraphicView, select a point.

The *Inquire Coordinate* dialog appears:



3. Close the dialog, or select another point.

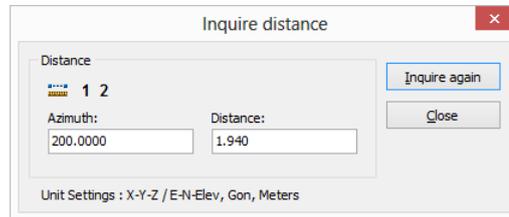
To select a different command, click the Refresh button  on the Ribbon.

Measuring the distance between two points

1. From the *Ribbon*, click the *Measure Distance* button 
2. In the GraphicView, select a begin point.

3. In the GraphicView, select an end point.

The *Inquire Distance* dialog appears:



4. Close the dialog, or select another point.

To select a different command, click the Refresh button  on the Ribbon.

5 Communicating with Devices

The MC Start software communicates directly with devices to receive and send files. You can also exchange files, including DXF background files with Windows Mobile® devices.

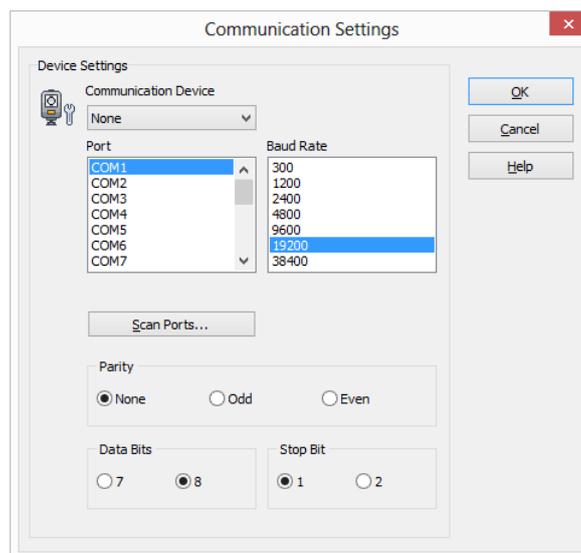
The MC Start software accepts files from some types of device directly into the database. The software also supports standard ASCII formats, such as comma and tab delimited files. You can download an ASCII file from a device to your local drive and then import it into the database.

Setting communication parameters

To set communication parameters for a total station or a mobile device:

1. From the *Ribbon Quick Access Toolbar*, select *Device Settings*.

The *Communications Settings* dialog appears.



2. Select the appropriate settings and then press **OK**.

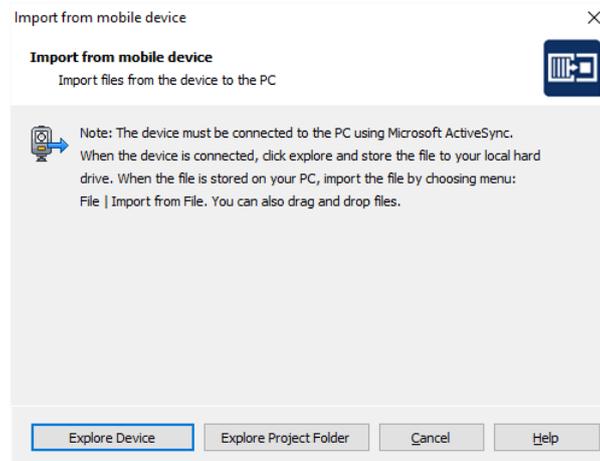
Note – *The MC Start software must be set to the same baud rate and parity as the device for the transmission to work properly.*

Receiving data from a mobile device

1. Connect the mobile device to the computer using Microsoft ActiveSync technology. For more information on ActiveSync, refer to the documentation for the mobile device.

2. From the *Ribbon*, select *Import from Device*.

The *Import from mobile device* dialog appears.



3. Click **Explore** or **Explore Project Folder** to start exchanging files.

☆ **Tip** – *If you copy the files to the local hard drive, you can then drag files to the main window of MC Start to add points to the database.*

Receiving data from a total station

When you receive data from a total station, the screens that appear depend on the type of total station connected. For more information, refer to the user documentation provided with your total station.

1. Connect the total station to the computer
2. From the *Ribbon*, select *Import from Device*.

□ **Note** – *If you are working with a Trimble LM80 or NOMAD SERIE, you can skip the following steps. MC Start presents the Import from LM80 dialog to copy files to your local hard drive. Click on the button Explore to start exchanging files.*

□ **Note** – *If you are working with a Leica TC400/700 SERIE or Leica (Power) Builder SERIE, you can skip the following steps. MC Start presents the Receive dialog and you can exchange files by pressing the button Update Instrument/Files (F5)*

The *Save Receive File* dialog appears.

3. Select the path into which the file will be saved.

4. Enter a destination name for the file to be received in the *File Name* field.
5. Select the file type in the *List Files of type* field.
6. Click on **Save**.

MC Start displays the *Receive* dialog.

Review the currently selected total station and communication settings. If the settings are not correct, see [Setting Communication Parameters](#).

If the total station is a...	Then set...
Sokkia SET500 / 600 or SET5F / 6F	the <i>Checksum</i> option to No and the <i>Xon/Xoff</i> option to Yes . Make sure you send one job at a time and send data in POS view or coordinates.
Topcon GTS200 GPS3000 Series or	the <i>Protocol</i> option to One Way . You must send coordinates or points only.
Topcon GTS500 / 600 / 700 / 800 Series or FC6 / FC6A	the <i>Protocol</i> option to Xon/Xoff . You must send coordinates or points only.

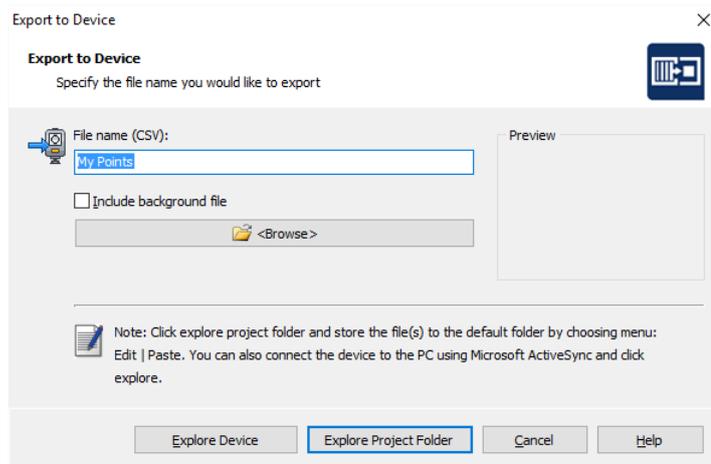
7. Click on **Open Port**.
8. The message *Waiting to receive* appears, indicating that you should prepare the device for transferring a file.
9. The device sends the selected data to MC Start. During transmission, a screen displays on the device, indicating the number of records that are being sent.
10. When the transfer is complete, click on **Close Port**.
11. To save the received file, click **Save**.

Once the file is saved, a message asks if you want to add the received file to the current database. To add the file to the current database, click **Open**. If you do not want to add the received file, click **Cancel**.

Sending data to a mobile device

1. Connect the mobile device to the computer using Microsoft ActiveSync technology. For more information on ActiveSync, refer to the documentation for the mobile device.
2. From the *Ribbon*, select *Export to Device*.

The *Export to mobile device* dialog appears.



3. Enter a name for the file that you will export.
4. If you have created a background file in your CAD software, select the *Include background file* check box.
5. Click **Explore** or **Explore Project Folder** to start exchanging files.

Sending data to a total station

1. Connect the Total Station to the computer.
2. From the *Ribbon*, select *Export to Device*.

The *Export to Device* Dialog appears.

Review the currently selected total station and communication settings. If the settings are not correct, see [Setting Communication Parameters](#).

If the total station is a...	Then set...
Sokkia SET500 / 600 or SET5F / 6F	the <i>Checksum</i> option to No and the <i>Xon/Xoff</i> option to Yes . Make sure you send one job at a time and send data in POS view or coordinates.
Topcon GTS200 GPS3000 Series or	the <i>Protocol</i> option to One Way . You must send coordinates or points only.
Topcon GTS500 / 600 / 700 / 800 Series or FC6 / FC6A	the <i>Protocol</i> option to Xon/Xoff . You must send coordinates or points only.

3. Prepare the total station to accept incoming data. For more information, refer to the user documentation provided with your total station.
4. When the device is ready, on the computer click **Send Now**.

The MC Start software sends the current database to the device. During transmission, a screen displays on the device, indicating the number of records being received.

5. When the transfer is complete, click **OK**.

6 Working with CAD Data

This chapter describes how to insert points such as intersections of gridlines or foundation piles in your CAD drawing for setting-out purposes. It also describes how to import features from and export features to CAD files.

Setting up your CAD environment

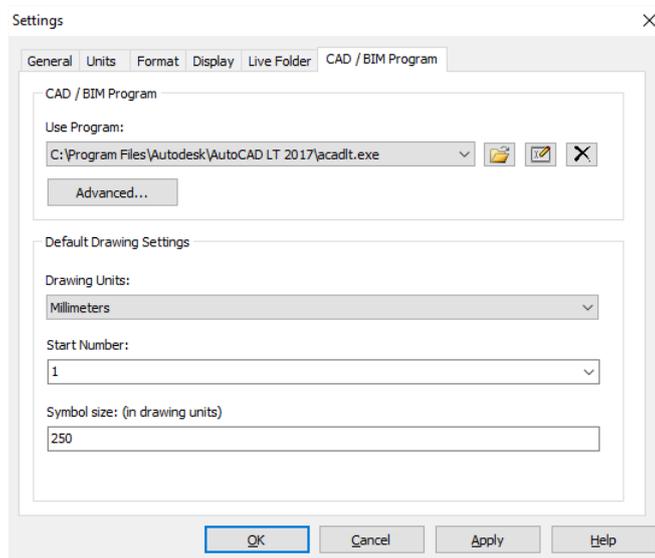
When you launch your CAD software from within the MC Start software, the CAD software automatically displays the tools you need to work with the MC Start software.

To set up the MC Start software so that it starts the correct CAD software:

1. Start the MC Start software, if you have not already done so. To do this, from the Windows *Start* menu select *Programs / MC Start*.
2. From the *Ribbon Quick Access Toolbar* at the top of the screen, select *Settings*.

The dialog *Settings* appears.

3. Select the *CAD / BIM Program* tab:

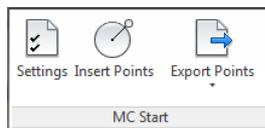


4. Click the Browse button  next to the *Use Program* drop-down list.

5. Open the folder where your CAD program is located (for example c:\Program Files\Autodesk\AutoCAD LT 2017) and then click the executable file (for example acadlt.exe) to select it.
6. Click **Open**.
7. Click **OK** to apply these settings and close the *Settings* dialog.

To start your CAD software from within the MC Start software, select *Prepare points in CAD / Revit* from the *Ribbon*.

The CAD software automatically starts and displays the MC Start toolbar:

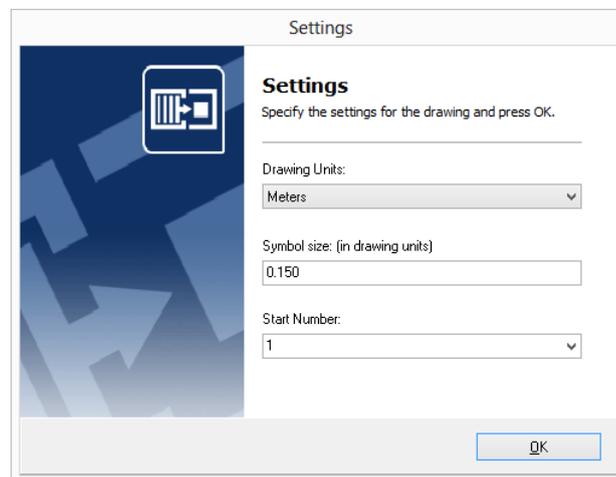


To open a CAD drawing, select *File / Open* in the CAD software.

If you have not already set the settings for drawings in the *CAD Program* tab of the *Settings* dialog in the MC Start software, you should do this the first time you open a CAD drawing for use with the MC Start software.

1. To do this, click the Settings button  on the MC Start toolbar.

The *Settings* dialog appears:



2. Make your changes and then click **OK**.

Inserting points in a CAD drawing

Insert points in a CAD drawing for setting-out purposes. For example, insert points such as the intersections of gridlines or foundation piles.

1. Click the Insert Points button  on the MC Start toolbar.

 **Note** – *The position of the inserted points depends on the current Osnap settings, which means that the position of a point is for example "exactly" the intersection of two lines or the insertion point of a block. To review the current osnap settings enter the command OSNAP in the command line of the CAD software, or use the statusbar of the CAD software.*

2. Insert the points for stake out. The point number is inserted automatically.
3. When you have finished adding points, press **[Esc]**.

Exporting from CAD to the MC Start software

Use the MC Start toolbar in your CAD software to export points and backgrounds.

Exporting points to MC Start

To export points to the MC Start software, click the Export Points button  on the MC Start toolbar.

The points are loaded into MC Start. You can edit the points or send it to a mobile device or total station. For more information, see [Communicating with Devices](#).

Exporting a background file and points to MC Start

When you use a Windows Mobile device, you can export a background file in DXF format, together with your points.

☆ **Tip** – *To reduce the file size of background files, we recommends you first use the LAYISO command in the CAD software to easily isolate layers you need for the background file. To use this LAYISO command, enter **LAYISO** in the command line of the CAD software and then use your mouse to select the entities to include in the background file and then press **Enter**.*

1. On the MC Start toolbar, click the arrow on the Export Points button  and then click the Export Background File & Points button  on the pullout menu.

The message *Select objects for background file* appears.

2. In the drawing, drag a rectangular window around the area to include in the background file and then press **[Enter]**.

The message *Background file is created* appears. The points are now exported to the MC Start software.

You can now send the points to a mobile device. For more information, see [Sending data to a mobile device](#).

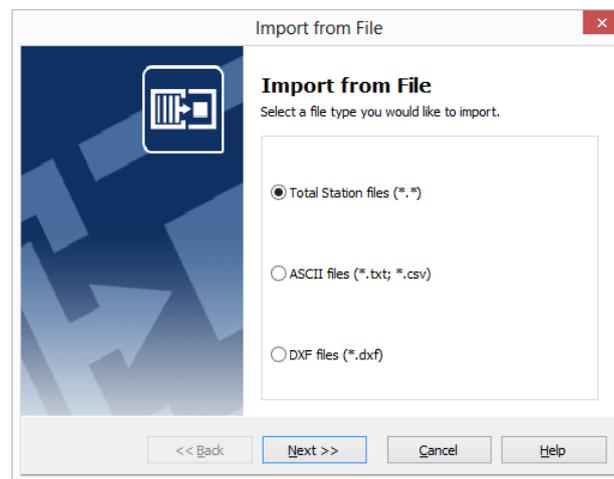
3. To return to the original state of your drawing in the CAD software, enter **LAYUNISO** in the command line of the CAD software.

Importing files into the MC Start software

You can import standard ASCII formats, such as Comma- and Tab delimited files, into the MC Start software. You can also import DXF- or DXX files for setting-out purposes.

1. From the *Ribbon*, choose *Import from file*.

The dialog *Import from file* appears.



2. Select the type of file to import.
3. Follow the instructions in the wizard and then click **Import**.

Importing blocks from a DXF file

You can import blocks with or without attributes or import points (entity POINT) from a CAD drawing for setting out purposes. When importing blocks, you can select them by name or by selecting all blocks in the drawing that have a particular tag.

Normally you can use the insertion point of a block and the value stored in the tag. For example, a design point is displayed as follows in a CAD drawing:



Here a block with the name "DP1" has two linked attributes, "Pointnumber" and "Code". The value "1" is stored in the tag "Pointnumber" and the value "DP" is stored in the tag "Code". To create a coordinate record, the MC Start software uses the insertion point of the block as the X- and Y-coordinate and the value stored in the tag as the point number.

You can also import blocks without attributes from a CAD drawing. The MC Start software uses the insertion point of the block as the X- and Y-coordinate and numbers the blocks in random order.

 **Note** – The MC Start software can export a DXF file for you to print the numbering on the original CAD drawing. For more information, see [Exporting to a file](#).

Importing design points from a DXF or DXX file

1. From the *Ribbon*, choose *Import from file*.

The *Import from File* dialog appears.

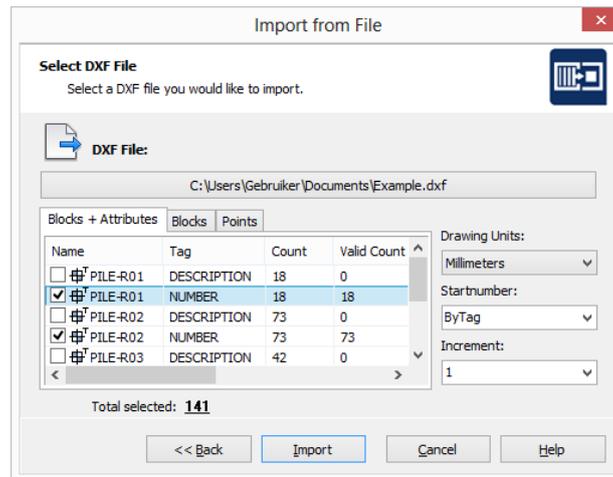
2. Select the *DXF-Files (*.dxf)* option and then click **Next**.
3. Click the Browse button  to select a file.

 **Note** – To open a DXX file, select the file type in the *List Files of Type* field.

 **Tip** – A DXX file contains only blocks and attribute information and is therefore much smaller in file size.

4. To open the file, double-click it.

The *Import from File* dialog lists the entities found in the file:



5. Select the CAD data to import by clicking the box next to the appropriate symbol. Remember to check each tab. For more information, see [Selecting CAD data and establishing settings](#) below.
6. To add the points to the MC Start software, click **Import**.

Selecting CAD data and establishing settings

Blocks and Attributes tab

The Blocks and Attributes tab displays the information for each block in four columns. The first two columns display the name and tag of the user block. The Count column the number of blocks that exist in the CAD drawing with that particular name and tag, and the Valid Count column displays the number of blocks that are valid. A block is invalid if the attribute (tag) contains no value. You cannot select invalid blocks.

Blocks tab

The Blocks tab displays only the blocks – it does not show attributes. You can easily select the blocks you want by clicking the box near the symbol. You can also select a start number and increment for the blocks.

Points tab

The Points tab enables you to select the points by layer that you want to import from the CAD drawing.

Exporting from the MC Start software

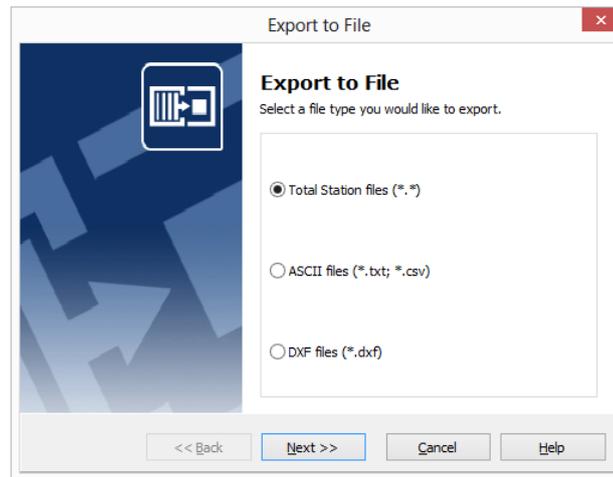
You can export data from MC Start as Total Station files, DXF files, or to standard ASCII file formats, such as comma separated (.csv) or tab delimited (.txt) files.

Alternatively, export points directly to your CAD software. You can export points to a new drawing or to an existing drawing.

Exporting to a file

1. From the *Ribbon*, choose *Export to file*.

The dialog *Export to file* appears.



2. Select the file type that you want to export data to.
3. Follow the instructions in the wizard and then click **Export**.

Exporting to the CAD software

1. From the *Ribbon*, choose *Export to CAD / Revit*.

The dialog *Export to CAD* appears.



2. Select the *Export points to a new drawing* option or the *Export points to an existing drawing* option.
3. Follow the instructions in the wizard and then click **Export**.

Generating Reports

Use the Generate Report option in the MC Start software to obtain detailed inverse information for setting out or other field operations.

1. From the *Ribbon*, select *Generate Report*.

The dialog *Generate Reports* appears.



2. Select the *Generate Coordinate List* option to generate coordinates for each point or the *Inverse Report* option to include angle and distance data as well as coordinates for each point.
3. Follow the instructions in the wizard and then click **Generate**.

 **Note** – You can sort the list by any column. To do this, click the column header for the column you want to sort by.

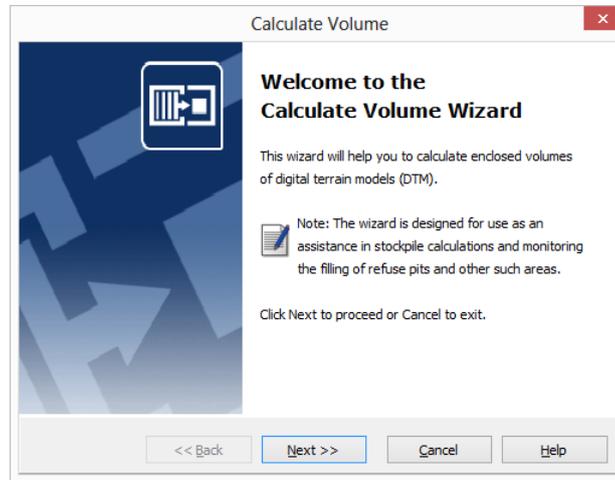
Generating Surface and calculate Volume

To calculate enclosed volumes of digital terrain models (DTM), use the Calculate Volume wizard in the MC Start software.

The wizard is designed to assist with stockpile calculations and monitoring the filling of refuse pits and other such areas. You can report the calculation results and export the DTM to a drawing.

1. From the *Ribbon*, select *Generate Surface and calculate Volume*.

The *Calculate Volume Wizard* appears on the screen.



2. Follow the instructions in the wizard and then click **Export**.

To add a selection of points to the DTM, specify an enclosed boundary. Points outside the boundary are not added to the DTM. When the DTM is created, you can review the results of the volume calculation and export the DTM to a CAD drawing.

7 Working with Revit Data

This chapter describes how to insert points such as intersections of gridlines or foundation piles in your Revit project for setting-out purposes. It also describes how to import features from and export features to Revit files.

Setting up your Revit environment

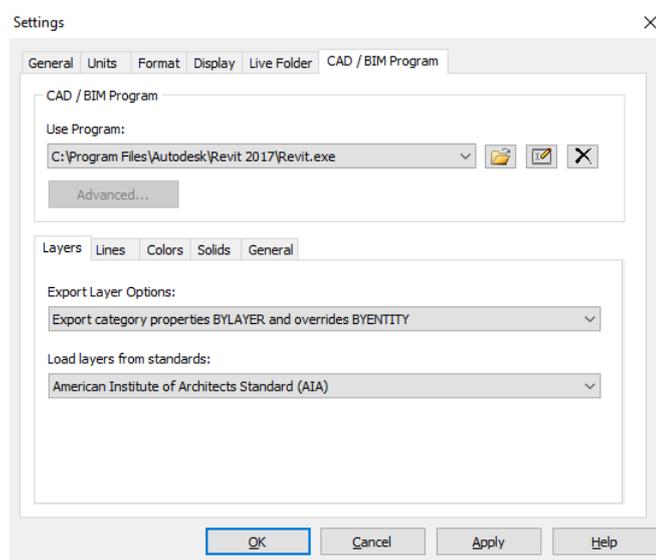
When you launch your Revit software from within the MC Start software, the Revit software automatically displays the tools you need to work with the MC Start software.

To set up the MC Start software so that it starts the correct Revit software:

1. Start the MC Start software, if you have not already done so. To do this, from the Windows *Start* menu select *Programs / MC Start*.
2. From the *Ribbon Quick Access Toolbar* at the top of the screen, select *Settings*.

The dialog *Settings* appears.

3. Select the *CAD / BIM Program* tab:

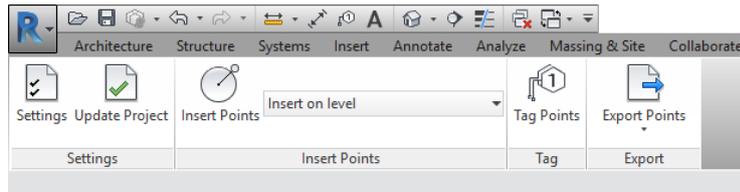


4. Click the Browse button  next to the *Use Program* drop-down list.
5. Open the folder where your Revit program is located (for example c:\Program Files\Autodesk\Revit 2017) and then click the executable file (for example Revit.exe) to select it.

6. Click **Open**.
7. Click **OK** to apply these settings and close the *Settings* dialog.

To start your Revit software from within the MC Start software, select *Prepare points in CAD / Revit* from the Ribbon.

The Revit software automatically starts and displays the MC Start toolbar:

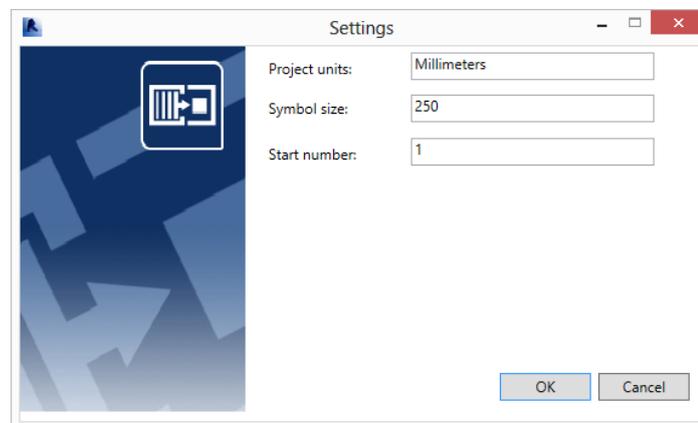


To open a Revit project, select *File / Open* in the Revit software.

If you have not already set the settings for projects in the *CAD / BIM Program* tab of the *Settings* dialog in the MC Start software, you should do this the first time you open a Revit project for use with the MC Start software.

1. To do this, click the Settings button  on the MC Start toolbar.

The *Settings* dialog appears:



2. Make your changes and then click **OK**.

Inserting points in a Revit project

Insert points in a Revit project for setting-out purposes. For example, insert points such as the intersections of gridlines or foundation piles.

1. Click the Insert Points button  on the MC Start toolbar.

 **Note** – *The position of the inserted points depends on the current Snap settings, which means that the position of a point is for example "exactly" the intersection of two lines. To review the current snap settings go to the Manage tab and then click SNAPS.*

2. Insert the points for stake out. The point number is inserted automatically.
3. When you have finished adding points, press **[Esc]** twice.

Adding point tags in a Revit project

To add point tags to the points in a Revit project, select a plan view from the Project Browser and then click the Tag Points button on the MC Start toolbar.

The points are now being tagged with a point number.

Exporting from Revit to the MC Start software

Use the MC Start toolbar in your Revit software to export points and backgrounds.

Exporting points to MC Start

To export points to the MC Start software, click the Export Points button  on the MC Start toolbar.

The points are loaded into MC Start. You can edit the points or send it to a mobile device or total station. For more information, see [Communicating with Devices](#).

Exporting a background file and points to MC Start

When you use a Windows Mobile device, you can export a background file in DXF format, together with your points.

1. Select a view to include in the background file, if you have not already done so. To do this, select a view from the project browser.
2. On the MC Start toolbar, click the arrow on the Export Points button  and then click the Export Background & Points button  on the pullout menu.

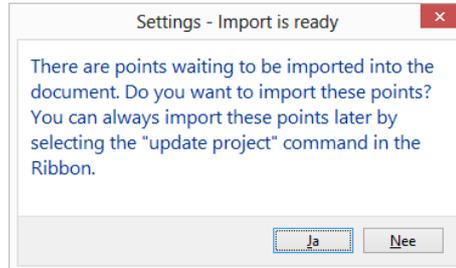
The points are now exported to the MC Start software and the background file is created.

You can now send the background and the points to a mobile device. For more information, see [Sending data to a mobile device](#).

Exporting to the Revit software

1. From the *Ribbon*, choose *Export to CAD / Revit*.

The message *Import is ready* appears.



2. Choose **Yes** to import the points into the current project or choose **No** to cancel. You can always import the points later by selecting the Update Project button in the Ribbon.

8 Working with Rhino Data

This chapter describes how to insert points such as intersections of gridlines or foundation piles in your Rhino project for setting-out purposes. It also describes how to import features from and export features to Rhino files.

Setting up your Rhino environment

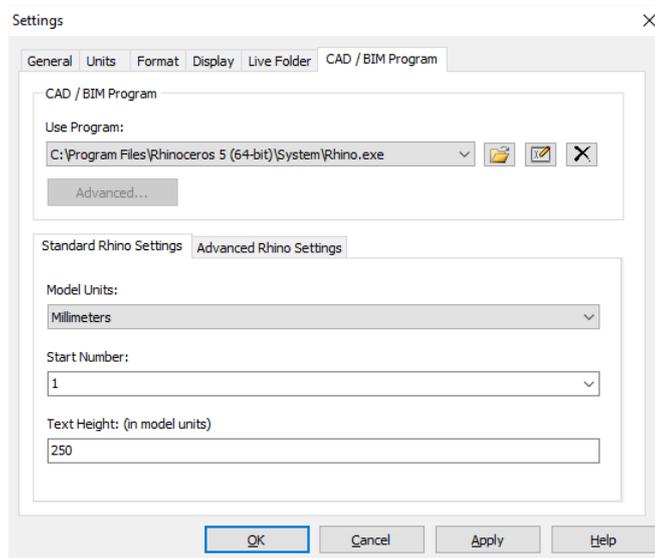
When you launch your Rhino software from within the MC Start software, the Rhino software automatically installs the MC Start Plug-in and displays the tools you need to work with the MC Start software.

To set up the MC Start software so that it starts the correct Rhino software:

1. Start the MC Start software, if you have not already done so. To do this, from the Windows *Start* menu select *Programs / MC Start*.
2. From the *Ribbon Quick Access Toolbar* at the top of the screen, select *Settings*.

The dialog *Settings* appears.

3. Select the *CAD / BIM Program* tab:

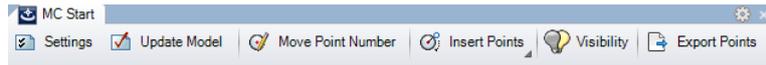


4. Click the Browse button  next to the *Use Program* drop-down list.
5. Open the folder where your Rhino program is located (for example `c:\Program Files\Rhinoceros 5 (64-bit)\System`) and then click the executable file (for example `Rhino.exe`) to select it.

6. Click **Open**.
7. Click **OK** to apply these settings and close the *Settings* dialog.

To start your Rhino software from within the MC Start software, select *Prepare points in CAD / Revit* from the Ribbon.

The Rhino software automatically starts and displays the MC Start toolbar:

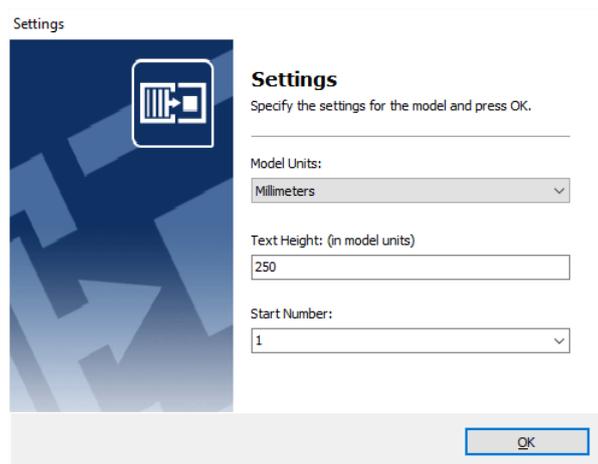


To open a Rhino 3D model, select *File / Open* in the Rhino software.

If you have not already set the settings for projects in the *CAD / BIM Program* tab of the *Settings* dialog in the MC Start software, you should do this the first time you open a Rhino 3D model for use with the MC Start software.

1. To do this, click the Settings button  on the MC Start toolbar.

The *Settings* dialog appears:



2. Make your changes and then click **OK**.

Inserting points in a Rhino 3D model

Insert points in a Rhino 3D model for setting-out purposes. For example, insert points such as the intersections of gridlines or foundation piles.

1. Click the Insert Points button  on the MC Start toolbar.

 **Note** – The position of the inserted points depends on the current Snap settings. To review the current snap settings, go to menu *Tools* and then click *Object Snap*.

2. Insert the points for stake out. The point number is inserted automatically.
3. When you have finished adding points, press **[Esc]**.

Moving point numbers or points in a Rhino 3D model

To move point numbers or points in a Rhino 3D model, click the Move Point Number button  on the MC Start toolbar.

1. Click the Move Point Number button  on the MC Start toolbar.

 **Note** – Right-click on the Move Point Number button to move the point and then move the point number to a new location.

2. Select a point number
3. Move the point number to the new location. The point is updated automatically.
4. When you have finished moving point numbers, press **[Esc]**.

Exporting from Rhino to the MC Start software

Use the MC Start toolbar in your Rhino software to export points and backgrounds.

Exporting points to MC Start

To export points to the MC Start software, click the Export Points button  on the MC Start toolbar.

The points are loaded into MC Start. You can edit the points or send it to a mobile device or total station. For more information, see [Communicating with Devices](#).

Exporting a background file and points to MC Start

When you use a Windows Mobile device, you can export a background file in DXF format, together with your points.

1. On the MC Start toolbar, right-click on the Export Points button .

The message *Select objects for background file* appears.

2. In the 3D model, drag a rectangular window around the area to include in the background file and then press **[Enter]**.

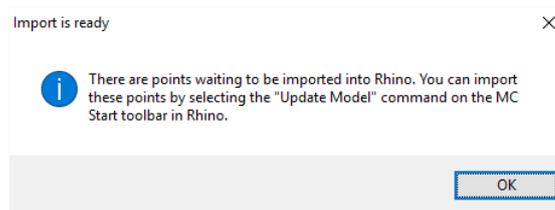
The message *Background file is created* appears. The points are now exported to the MC Start software.

You can now send the points to a mobile device. For more information, see [Sending data to a mobile device](#).

Exporting to the Rhino software

1. From the *Ribbon*, choose *Export to CAD / Revit*.

The message *Import is ready* appears.



2. Choose **OK**, go to Rhino and then click on the Update Model button  to import the points into the current 3D model.

A Tutorial

This tutorial has lessons about settings, importing and exporting files, preparing points in a CAD drawing, generating reports and calculating volumes.

You can work through these lessons sequentially, or you can do one lesson at a time. However, within each lesson you should complete the exercises in the order presented, as the first exercises provide you with the information you need for the later exercises in that lesson.

Before you begin

Each lesson, except for the first one, has a tutorial drawing and/or data file.

Note – *Working through these lessons will result in alteration of the example files. Backup copies of these example files can be found in the \Program Files\MOUS Software\MC Start <Version Number>\Tutorial folder.*

If a lesson has been previously run, copy these unaltered example files to the \Documents\MC Start <Version Number> Tutorial folder when starting a new tutorial session to ensure that the sequence outlined in each lesson can be properly followed.

Lesson 1: Apply settings

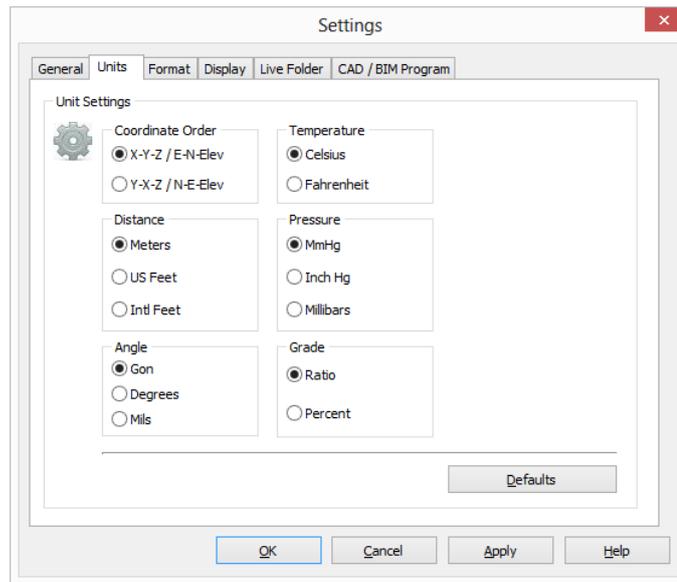
Applying general software settings

In this exercise, you will select the units and a CAD program for MC Start. To work through this lesson follow these steps:

1. Start the MC Start software, if you have not already done so. To do this, from the Windows *Start* menu select *Programs / MC Start*.
2. From the *Ribbon Quick Access Toolbar* at the top of the screen, select *Settings*.

The *Settings* dialog appears.

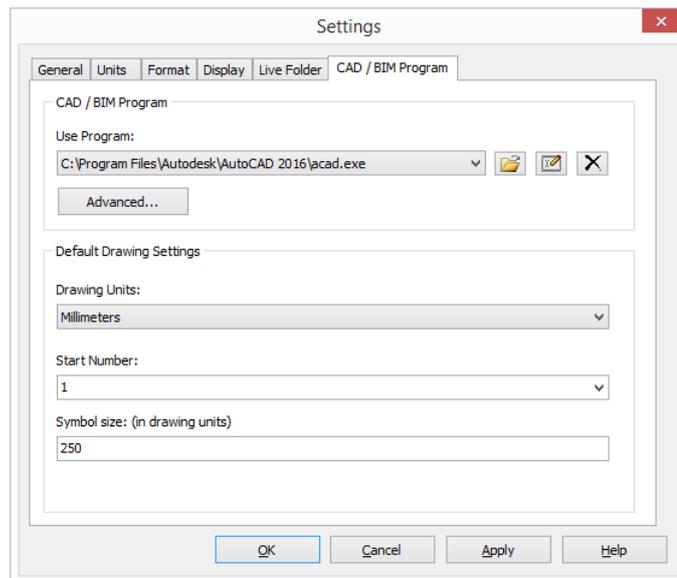
3. Select the *Units* tab:



4. Select the following settings:
 - Coordinate Order: X-Y-Z / E-N-Elev
 - Distance: Meters
 - Angle: Gon

These units will now be the standard units that MC Start uses for your projects.

5. Select the *CAD / BIM Program* tab:



6. Click the Browse button  next to the *Use Program* drop-down list.

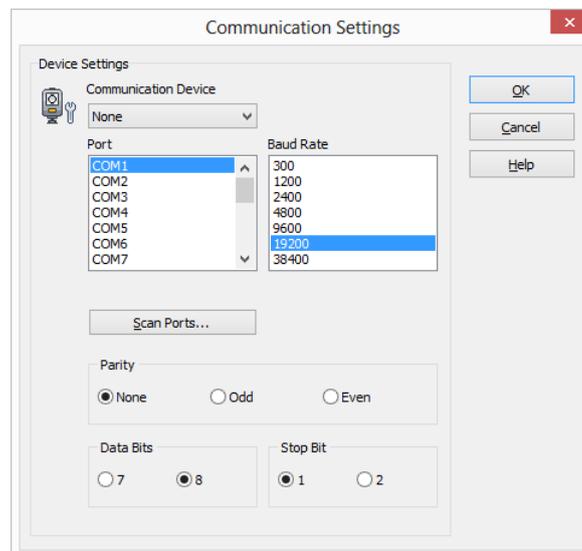
7. Open the folder where your CAD program is located (for example c:\Program Files\Autodesk\AutoCAD 2016) and then click the executable file (for example acad.exe) to select it.
8. Click **Open**.
9. Click **OK** to apply these settings and close the *Settings* dialog.

Applying total station communication settings

In this exercise, you will select the total station and settings that the MC Start software will use.

1. From the *Ribbon Quick Access Toolbar* at the top of the screen, select *Device Settings*.

The *Communication Settings* dialog appears:



2. In the *Communication Device* drop-down list, select your total station.
3. Select the appropriate settings for port, baud rate, data bits and stop bit.

Note – *The MC Start software must be set to the same baud rate and parity as the device for data transmission to work correctly.*

4. Click **OK** to apply these settings and close the dialog.

This concludes the Apply Settings lesson. In the next lesson, you'll learn how to import and export files.

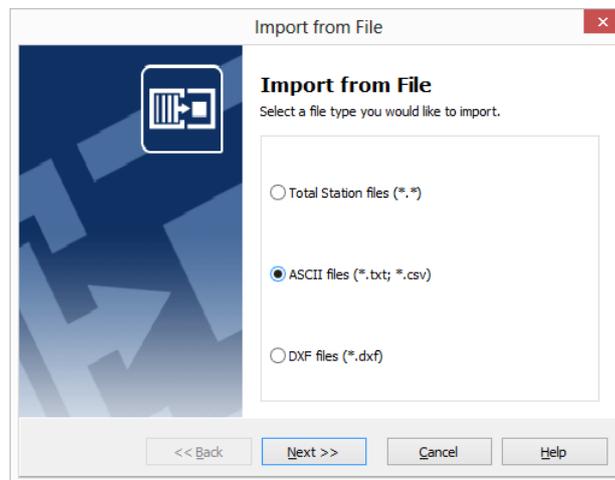
Lesson 2: Import and export files

Importing a file

In this exercise, you will learn how to import a file.

1. Start the MC Start software, if you have not already done so.
2. From the *Ribbon*, select *Import from File*.

The *Import from File* wizard appears:



3. Select the *ASCII files* option and then click **Next**.
4. Click the Browse button  and then navigate to the \ Documents \ MC Start <Version Number> Tutorial \ MC Example Project Meters folder. Select the file 2_Terrain.txt.
5. Click **Open**.
6. Click **Import**.

The file is imported into the MC Start software. Notice that the contents of the file is displayed in both the ListView and the GraphicView.

☆ **Tip** – You can also import files by dragging them from your local hard drive and dropping them into the MC Start software window.

Exporting files to CAD

In this exercise, you will learn how to export a file to your CAD program.

1. From the *Ribbon*, select *Export to CAD / Revit*.

The *Export to CAD* wizard appears:



2. Select the *Export points to a new drawing* option and then click **Next**.
3. Select the units. For *Units (XY)* and *Units (Z)*, select Meters.
4. Click **Details**.
5. For the *Point Type* option, select Block. For the *Annotation Type* option, select PointID + Code.
6. Click **Next**.
7. Select the following options:
 - With coordinates as measured
 - Set all coordinates in CAD to 0 (zero)
 - Draw Polyline between continuous range of points
8. Click **Export**.

Your CAD software starts and automatically opens the CAD drawing you have just exported.

Exporting control points only file

In this exercise, you will learn how to export a file that contains only control points.

1. In the ListView of the MC Start software, select the points to export. Press and hold the **[Shift]** key as you click the left mouse button on point 9000 and then click the left mouse button on point 9050.

The points 9000 to 9050 are now selected.

2. From the *Ribbon*, select *Copy*.

The points 9000 to 9050 are saved to the clipboard.

3. From the *Ribbon Application Menubar* at the top of the screen, select *New*.
4. From the *Ribbon*, select *Paste*.

The control points 9000 to 9050 are added to the new database.

5. From the *Ribbon*, select *Export to File*.

The *Export to File* wizard appears.

6. Select the *ASCII files* option and then click **Next**.
7. Click the Browse button  and then navigate to the \ Documents \ MC Start <Version Number> Tutorial \ MC Example Project Meters folder. Enter the file name **ControlPoints.txt**.
8. Click **Save**.
9. Click **Export**.

The file is exported.

This concludes the Import and Export Files lesson. In the next lesson, you'll learn how to prepare points in a CAD drawing.

Lesson 3: Prepare points in a CAD drawing

In this lesson, you will familiarise yourself with terms commonly used in CAD drawings and learn how to prepare points in a CAD drawing.

Understanding terms used in a CAD drawing

The table below defines some of the terms that the MC Start software uses when referring to CAD drawings:

Term	Definition
Attribute	An Attribute depends on a User block. You can see it as a label linked with a User block, which contains information of that User block. A "Pointnumber" or "Code" are examples of attributes. They are giving information of the User block. An attribute is always displayed as text.
Block	A block (or User block) is a group of entities. For example a symbol, which can contain a number of lines.
CSV	A CSV file is a Comma Separated Value File. A CSV file is a text file and contains per line information of a point separated with a comma sign. For example: PointID, X, Y, Z, Code
DXF	The DXF format is a standard Drawing eXchange Format for CAD drawings. You can easily save a CAD drawing as a DXF file in your CAD application.
DXX	The DXX format is an Attribute Information format. You can save a CAD drawing as a DXX file. A DXX file contains only information of User blocks with attributes in a CAD drawing, and is therefore much smaller in file size than a DXF file.
Entity	An entity is a single object in a CAD drawing. For example a line, circle or text.
Insertion point	The insertion point of a User block is the base point of a User block, which you are using to insert the User block in a CAD drawing
Tag	A Tag is the name of the attribute. For example "Pointnumber" or "Code".
TXT	A TXT file is a Tab Delimited File. A TXT file is a text file and contains per line information of a point separated with a tab sign. For example: PointID X Y Z Code

Inserting points in a CAD drawing

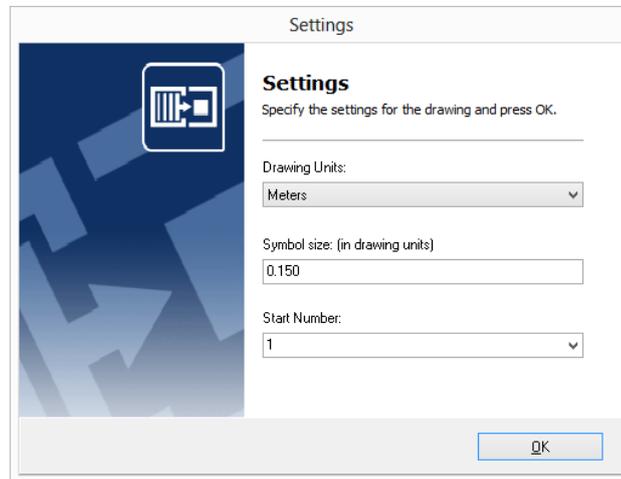
1. Start the MC Start software, if you have not already done so.
2. From the *Ribbon* at the top of the screen, select *Prepare Points in CAD / Revit*.

Your CAD software automatically starts and displays the MC Start toolbar.

3. In the CAD software, select *File / Open* and then navigate to the \ Documents \ MC Start <Version Number> Tutorial \ MC Example Project Meters folder. Select the file MC_Example_clean.dwg.

4. When the CAD drawing opens, click the Settings button  on the MC Start toolbar.

The *Settings* dialog appears:

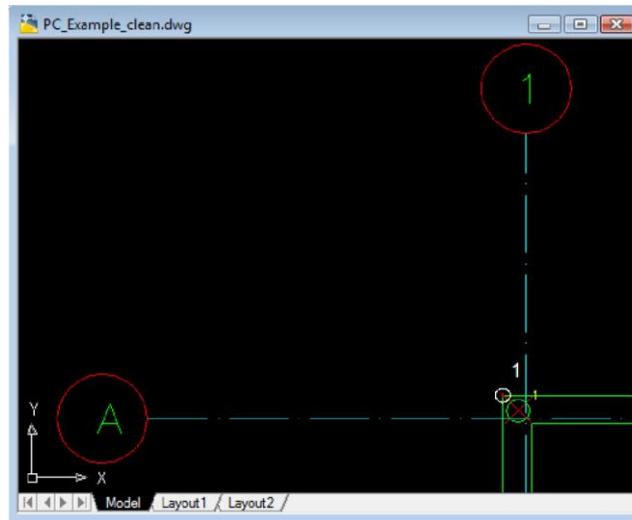


- a. In the *Drawing Units* drop-down list, select **Meters**.
 - b. In the *Start Number* field, enter **1**.
 - c. Click **OK** to apply these settings.
5. In the command line of your CAD software, enter **OSNAP**. For the snap function, select Intersection and then click **OK**.

☆ **Tip** – *The position of the inserted points depends on your current OSNAP settings, which means that the position of a point is for example "exactly" the intersection of two lines or the insertion point of a block. To review the current OSNAP settings, enter the command OSNAP in the command line of the CAD software, or use the status bar of the CAD software. Make sure that the Object Snap is on.*

6. On the MC Start toolbar, click the Insert Points button .
7. With your left mouse button, click one of the outside corners of the extension foundation at the left of the drawing.

□ **Note** – *The snap function activates as you approach the intersection with the mouse cursor. Make sure you zoom in far enough to visually see the snap position of the point. The point number is inserted automatically.*



8. Click each of the remaining points on the outside corners of the foundation.
9. When you have finished selecting the points, press **[Esc]**.
10. From the *File* menu of your CAD software, select *Save* to save the current drawing.

This concludes the Prepare Points in a CAD Drawing lesson. In the next lesson, you'll learn how to export inserted points to the MC Start software and then send it to your mobile device or total station.

Lesson 4: Export points to a device

In this lesson, you will learn how to export points from your CAD software to the MC Start software and then send them to your mobile device or total station.

Exporting points from the CAD software

1. Start the MC Start software, if you have not already done so.
2. From the *Ribbon* at the top of the screen, select *Prepare Points in CAD / Revit*.

Your CAD software automatically starts and displays the MC Start toolbar.

3. In the CAD software, select *File / Open* and then navigate to the \ Documents \ MC Start <Version Number> Tutorial \ MC Example Project Meters folder. Select the file MC_Example_WCS.dwg.
4. When the CAD drawing opens, click the Export Points button  on the MC Start toolbar.

The points are loaded into the MC Start software. You can now send the points to a mobile device or total station.

Exporting background file and points from the CAD software

When you use a Windows Mobile device, you can export a background file in DXF format, together with your points.

☆ **Tip** – *To reduce the file size of background files, we recommend you first use the LAYISO command in the CAD software to easily isolate layers you need for the background file. To use this LAYISO command, enter **LAYISO** in the command line of the CAD software and then use your mouse to select the entities to include in the background file and then press **[Enter]**.*

1. Return to the CAD software, if you have not already done so.
2. On the MC Start toolbar, click the arrow on the Export Points button  and then click the Export Background File & Points button  on the pullout menu.

The message *Select objects for background file* appears.

3. In the drawing, drag a rectangular window around the area to include in the background file. For now, select the entire drawing.
4. Press **[Enter]**.

The message *Background file is created* appears. The points are now exported to the MC Start software.

5. To return to the original state of your drawing in the CAD software, enter **LAYUNISO** in the command line of the CAD software.

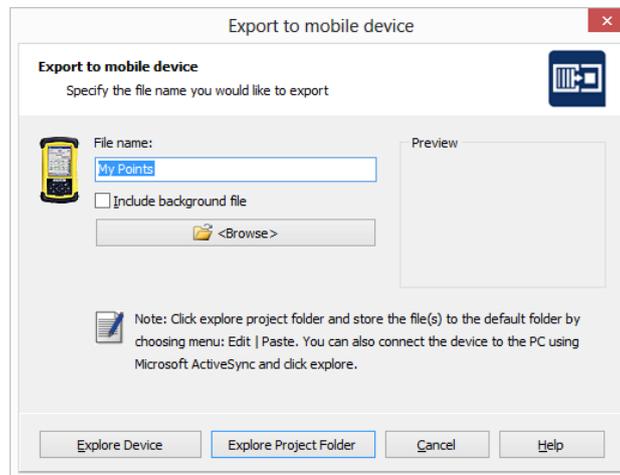
You can now send the points to a mobile device.

Exporting data to a mobile device

In this exercise, you will learn how to export points and a background file to a mobile device.

1. Return to the MC Start software, if you have not already done so.
2. Connect the mobile device to the computer, using Microsoft ActiveSync technology. For more information on ActiveSync, refer to the documentation for the mobile device.
3. From the *Ribbon*, select *Export to Device*.

The *Export to mobile device* dialog appears:



4. Enter a name for the file that you want export.
5. If you have created a background file in your CAD program, select the *Include background file* check box.
6. Click **Explore** or **Explore Project Folder** to start exchanging files.

The file(s) are now saved on the clipboard.

7. To store the file(s) to the default folder, select *Paste* from the *Edit* menu. You can also create a new destination folder, if required.

Exporting data to a total station

In this exercise, you will learn how to export points to a total station.

1. Return to the MC Start software, if you have not already done so.
2. Connect the total station to the computer.
3. From the *Ribbon*, select *Export to Device*.
4. Prepare the total station for transmission.
5. When the device is ready, click **Send Now**.
6. The MC Start software sends the points to the device. During transmission, a message on the total station indicates the number of records being received.
7. When the transfer is complete, click **OK**.

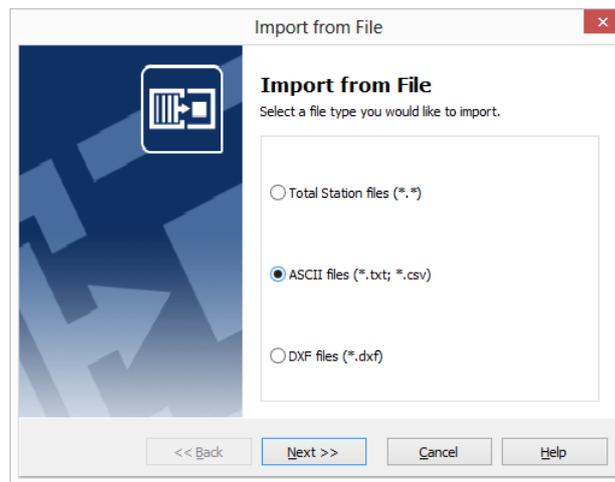
This concludes the Export Points to a Device lesson. In the next lesson, you'll learn how to generate reports.

Lesson 5: Generate a report

In this lesson, you will learn how to generate a report that lists the coordinates in a file.

1. Start the MC Start software, if you have not already done so.
2. From the *Ribbon*, select *Import from File*.

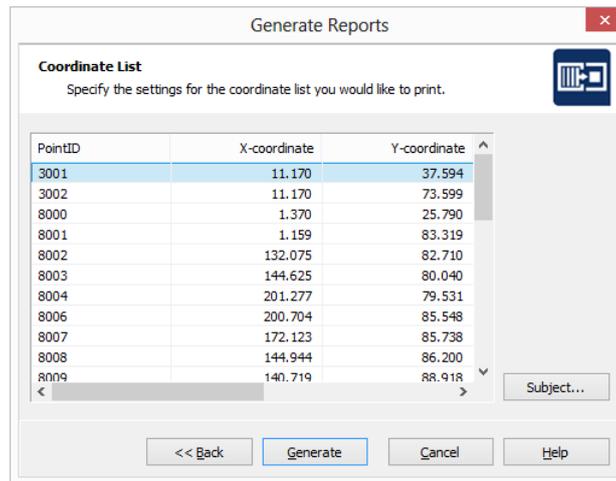
The *Import from File* wizard appears:



3. Select the *ASCII files* option and then click **Next**.
4. Click the Browse button  and then navigate to the \ Documents \ MC Start <Version Number> Tutorial \ MC Example Project Meters folder. Select the file 2_Terrain.txt.
5. Click **Open**.
6. Click **Import** to import the file into MC Start.
7. From the *Ribbon*, select *Generate Report*.

The *Generate Reports* dialog appears.

8. Select *Generate a Coordinate List* and then click **Next**. A coordinate list similar then the one below appears:



9. Click **Generate** to view the report in the active internet browser for printing.

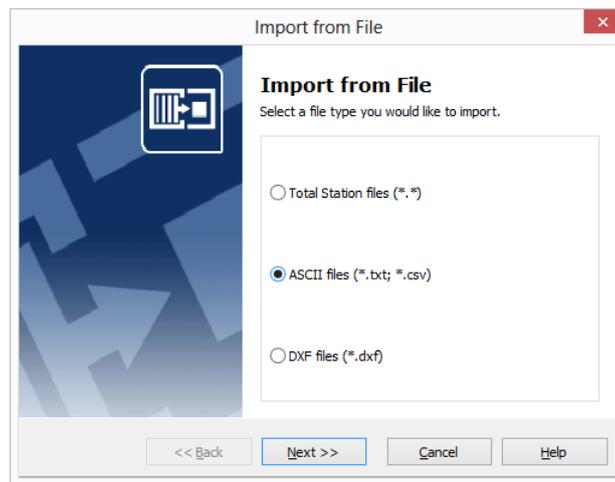
This concludes the Generate a Report lesson. In the next lesson, you'll learn how to generate a front view of a façade.

Lesson 6: Generate a front view

In this lesson, you will learn how to generate a front view of a façade and then export it to your CAD software.

1. Start the MC Start software, if you have not already done so.
2. From the *Ribbon*, select *Import from File*.

The *Import from File* wizard appears:



3. Select the *ASCII files* option and then click **Next**.
4. Click the Browse button  and then navigate to the \ Documents \ MC Start <Version Number> Tutorial \ MC Example Project Meters folder. Select the file 3_Facade.txt.
5. Click **Open**.
6. Click **Import** to import the file into MC Start.
7. From the *Ribbon* menu, select *Export to CAD / Revit*.

The *Export to CAD* wizard appears:



8. Select the *Export points to a new drawing* option and then click **Next**.
9. Select the units. For *Units (XY)* and *Units (Z)*, select Meters.
10. Click **Details**.
11. For the *Point Type* option, select Block. For the *Annotation Type* option, select PointID + Code. Click **Next**.
12. Select the *With different axes and/or view* option and then click **Next**.
13. Select the points to export and then click **Next**. By default, all points are selected.
14. For the alignment of the drawing, select the *By 2 points (Origin and +X-axes direction)* option and then click **Next**.

 **Note** – You can specify a new origin and +X-axes (East direction) for the survey. In this exercise, the survey will first be positioned on the origin and X-Axes direction by specifying two points, and then generating a front view. Point 1 is measured on the facade at the left-bottom corner and Point 2 is measured on the facade at the right-bottom corner.

15. Select point 1 in the list and then click the button with the arrow for New Origin.
16. Select point 2 in the list and then click the button with the arrow for New +X-Axes direction. Click **Next**.
17. Select the *Front View* option and then select the *Draw polyline between continuous range of points* option.
18. Click **Export**.

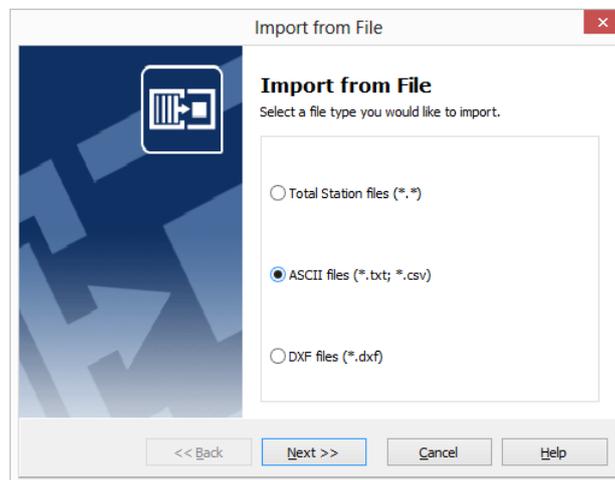
Your CAD software starts and automatically opens the CAD drawing you have just exported. This concludes the generate a front view of a facade lesson. In the next lesson, you'll learn how to generate a DTM of a stockpile and calculate volumes.

Lesson 7: Generate a DTM and export to CAD

In this lesson, you will learn how to generate a DTM (Digital Terrain Model) of a stockpile. You will calculate the total volume of the stockpile and then export the created DTM to your CAD software.

1. Start the MC Start software, if you have not already done so.
2. From the *Ribbon*, select *Import from File*.

The *Import from File* wizard appears:

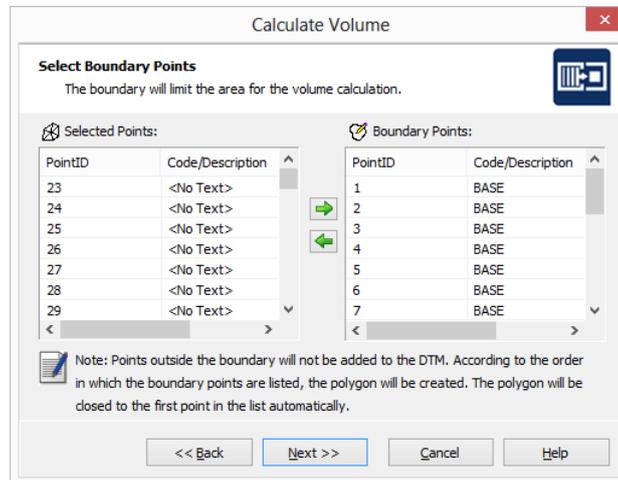


3. Select the *ASCII files* option and then click **Next**.
4. Click the Browse button  and then navigate to the \ Documents \ MC Start <Version Number> Tutorial \ MC Example Project Meters folder. Select the file 7_Stockpile.txt.
5. Click **Open**.
6. Click **Import** to import the file into MC Start.
7. From the *Ribbon*, select *Generate Surface and calculate Volume*.

The *Calculate Volume* wizard appears:

8. Click **Next**.
9. Select the first (stockpile) option to calculate volumes and then click **Next**.

10. Select the range of points to use for the DTM. By default, all points are selected. For this exercise, we select all points and then click **Next**.
11. The Select Boundary Points screen appears:



12. For this exercise, in the *Selected Points* list select Point 1 to Point 20 (this is the base of the stockpile) as boundary points for the DTM. Click the right arrow button to add the points to the *Boundary Points* list and then click **Next**.
13. Click **3D Preview** to view the created DTM.
14. Click **Close** and then **Next**.
15. Review the results of the volume calculation and then click **Next**.
16. Check the CAD settings for the DTM and then click **Export**.

Your CAD software starts and automatically opens the CAD drawing showing the DTM of the stockpile.

17. Use the commands **SHADE** and **ORBIT** to view the DTM in your CAD software. For more information, refer to the documentation for your CAD software.

B Frequently Asked Questions

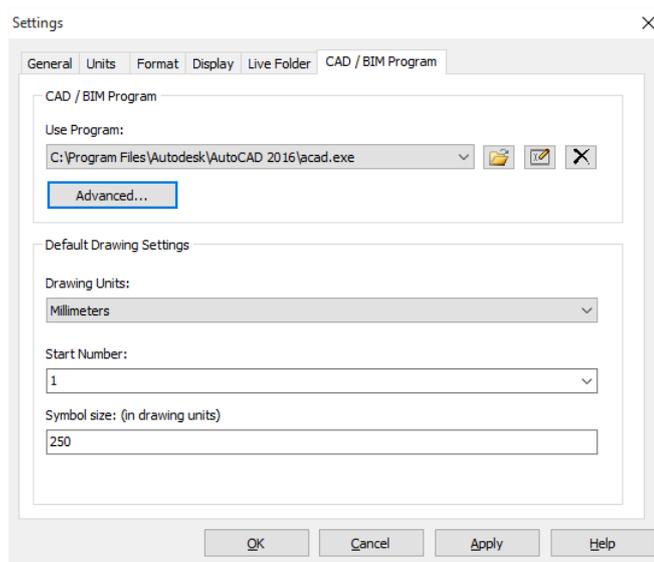
This chapter describes the most frequently asked questions with the MC Start software.

1 The MC Start toolbar in CAD is not displayed

If you want to display the (classic) MC Start toolbar in CAD again, then do the following;

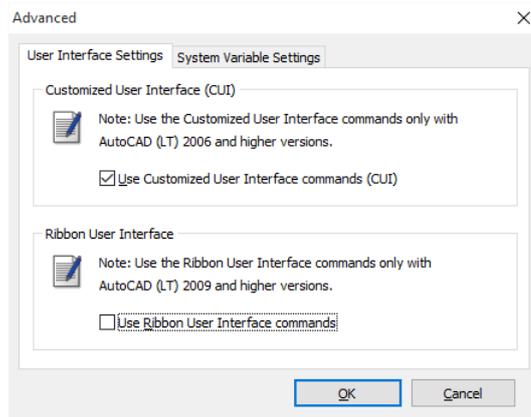
1. First close your CAD software.
2. Start the MC Start software, if you have not already done so.
3. From the *Ribbon Quick Access Toolbar* at the top of the screen, select *Settings*.

The *Settings* dialog appears.



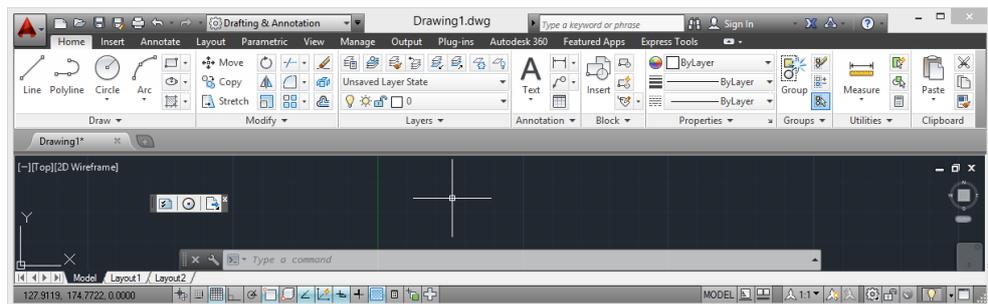
4. Select the *CAD / BIM Program* tab.
5. Click the **Advanced** button under the *Use Program* drop-down list.

The *Advanced Settings* dialog appears.



6. Uncheck the option *Use Ribbon User Interface commands*. Press **OK** and then **OK** again.
7. From the *Ribbon* at the top of the screen, select *Prepare points in CAD / Revit*.

Your CAD software automatically starts and the MC Start toolbar should be visible again in CAD, see screenshot below.



2 Export background file and points in CAD is not working

When Export background file and points in CAD is not working any more than most likely the CAD drawing file (. dwg) has become damaged or corrupt in some way. To recover the CAD drawing, follow these steps:

1. Start the MC Start software, if you have not already done so.
2. From the *Ribbon* at the top of the screen, select *Prepare Points in CAD / Revit*.

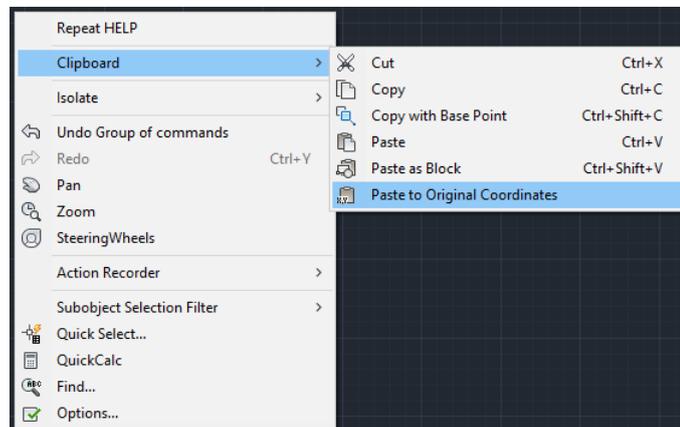
Your CAD software automatically starts and displays the MC Start toolbar.

3. In the CAD software, select *File / Open* and then navigate to the damaged or corrupt drawing file.

4. When the CAD drawing opens, press **[Ctrl + C]** (Copy to Clipboard in CAD).

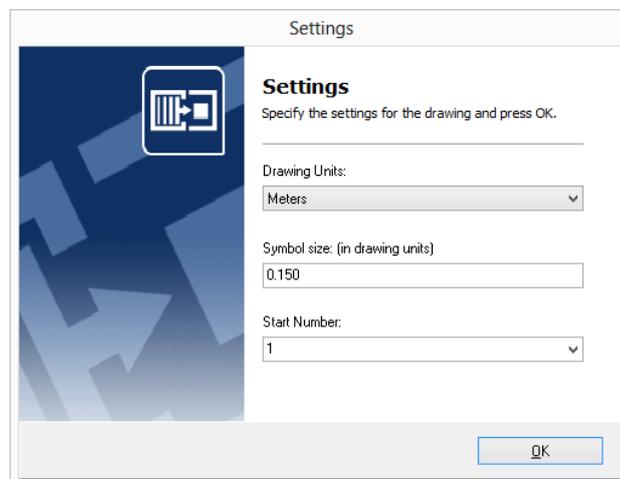
The message *Select objects* appears.

5. In the drawing, drag a rectangular window around the area that you want to copy to the clipboard. For now, select the entire drawing.
6. Press **[Enter]**.
7. In the CAD software, select *File | New* to create a new drawing. Select a default Template for the drawing (“acadiso.dwt”) and then click **Open**.
8. When the new CAD drawing opens, right-click and a shortcut menu appears. From the shortcut menu, select *Clipboard* and then *Paste to Original Coordinates*.



9. On the MC Start toolbar, click the *Settings* button .

The Settings window appears:



10. Select the *drawing units* and then press **OK**.

11. On the MC Start toolbar, click the arrow on the Export Points button  and then click the Export Background File & Points button  on the pull-out menu.

The message *Select objects for background file* appears.

12. In the drawing, drag a rectangular window around the area to include in the background file. For now, select the entire drawing.
13. Press **[Enter]**.

The message *Background file is created* appears. The points are now exported to the MC Start software.

If the drawing persists with problems, try the following steps:

1. In the CAD software, select *File | Save as*.

The Save dialog appears.

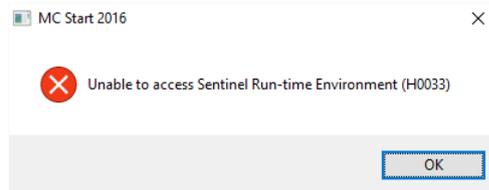
- a. In the *files of type* drop-down list, select AutoCAD R12/LT2 DXF (*.dxf).
 - b. In the *file name* field, key in a new name for the drawing.
 - c. Click **Save** to save the drawing.
2. Close the drawing.
 3. In the CAD software, select *File | Open* and navigate to the saved DXF file.
 4. When the CAD drawing opens, select *File | Save As* and save the drawing in DWG file format.
 5. On the MC Start toolbar, click the *Settings* button .

The Settings window appears.

6. Select the *drawing units* and then press **OK**.
7. Export the background file and points again to the MC Start software by choosing *Export background file and Points*.

3 The message “Unable to access Sentinel Run-time Environment (H0033)” appears

When you launch MC Start, the following message appears on the screen:



To recover the Sentinel Run-time Environment, try the following steps:

1. Reinstall the MC Start software.

Don't worry, you don't lose any settings. Download the installation package from our web site www.moussoftware.com. Choose a location on your computer to store the setup file, then save and run the .msi file.

The Setup window appears:



2. Select *Uninstall* and then click **Next**.
3. Follow the instructions in the wizard and then click **Finish**.
4. When the MC Start software is uninstalled, launch the .msi file again.
5. The Setup window appears:

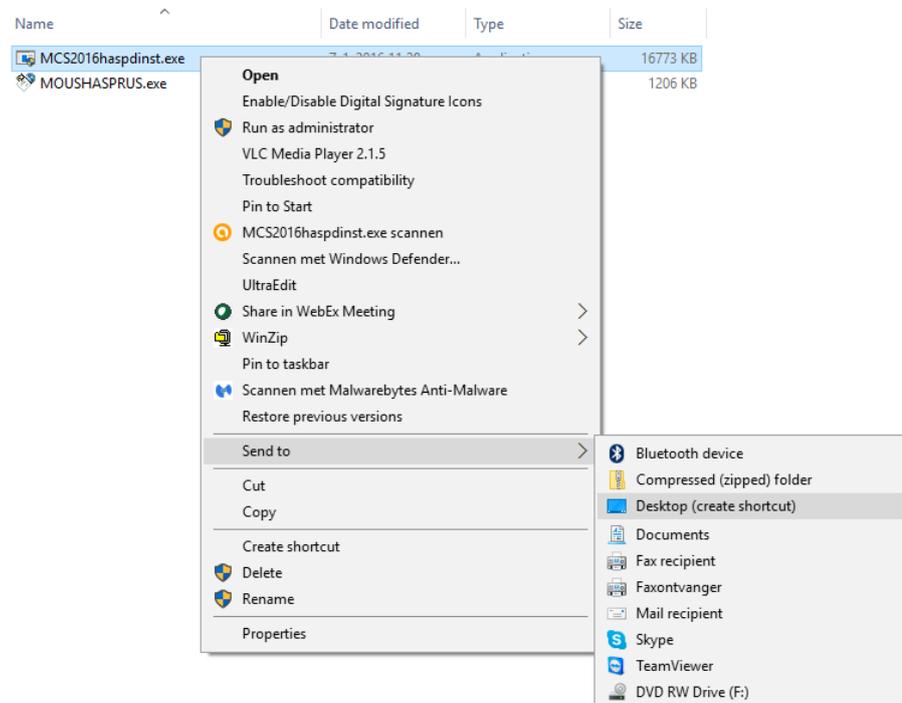


6. Follow the instructions in the wizard and then click **Finish**.

Launch MC Start and see if the message appears.

If the message still appears, then try the following steps:

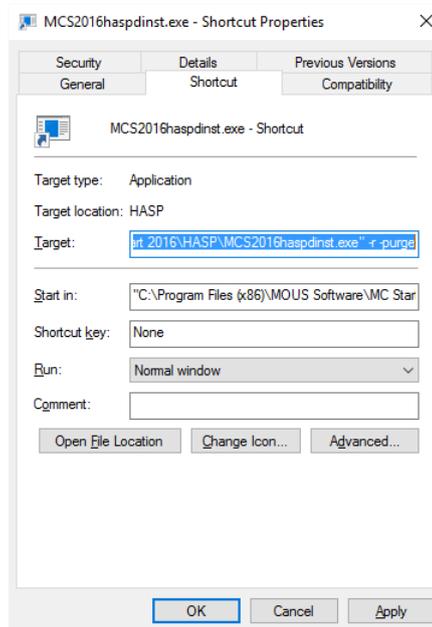
1. Open Windows Explorer and navigate to the folder where your MC Start program is located (default *c:\Program Files (x86)\MOUS Software\MC Start 2016*).
2. Go to the *HASP* folder and right-click on the file: *MCS2016haspdinst.exe*
3. From the shortcut menu, select *Send to | Desktop (create shortcut)*.



A shortcut is created on the desktop.

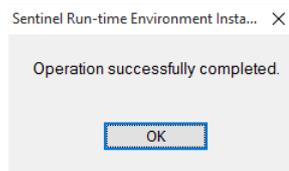
4. Go to the desktop and right-click on the shortcut icon. From the shortcut menu, select *Properties*.

The Properties window appears:



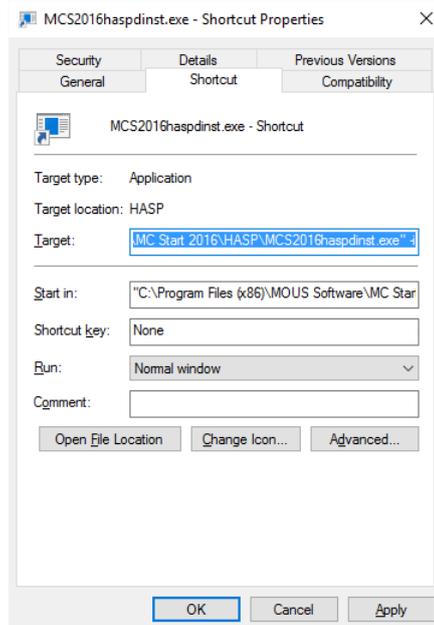
5. In the *Target* field, key in at the end (after the ”-sign) a **space** sign and then **-r** and then a **space** sign and then **-purge** (see screenshot).
6. Click **Apply** and then click **OK**.
7. Double click on the shortcut icon to run the executable.

This will remove the Sentinel Run-time Environment. When the Sentinel Run-time Environment is removed, the following message appears:



8. Right-click again on the shortcut icon. From the shortcut menu, select *Properties*.

The Properties window appears:



9. In the *Target* field, first delete **-r -purge** and then key in at the end (after the **”**-sign) a **space** sign and then **-i** (see screenshot).
10. Click **Apply** and then click **OK**.
11. Double click on the shortcut icon to run the executable.

This will install the Sentinel Run-time Environment. When the Sentinel Run-time Environment is installed, the following message appears:

