Leica iCON site

Machine control software **Excavator**

User manual (UM)

Version: 1.0

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975907 ID: Version: 1.0 Released: 07/10/2022 AS, JEHA Made by: Content: User workflows relating to the Leica "iCON site" machine control software for excavators. Leica iCON site excavator. Software: Software version: Excavator. Machine type: All. Brand: All. Model: All rights reserved. No part of this manual may be Limitations: reproduced in any form, or by any means, without prior written permission from LMC support. LMC support: Support: Mail: Phone:

User manual (UM).

Manual type:

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Introduction

In this user manual (UM) you will find essential workflows to help you gain success with your iCON site excavator machine control application.

iCON site is used on a control panel connected via Bluetooth to your remaining machine control solution.

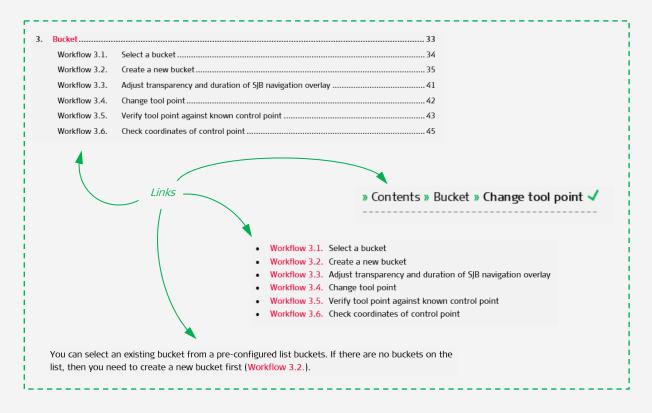
If you have the additional license for ConX (cloud solution), look into section 7. for related workflows.

Every workflow begins with a short explanation of the task you may be facing, followed by a step by step procedure to help you finish your task successfully.

If you want to dive deeper into the functionality of iCON site and all its applications, you can find a lot of information and guidance in the general reference manual for iCON site (793692).

NOTE:

- In the digital PDF version of this manual, you can navigate the workflows through links in:
 - The list of content.
 - o The breadcrumb header at top of each section.
 - o The bulleted list of workflows at the beginning of each section.
 - The workflow references throughout the text.



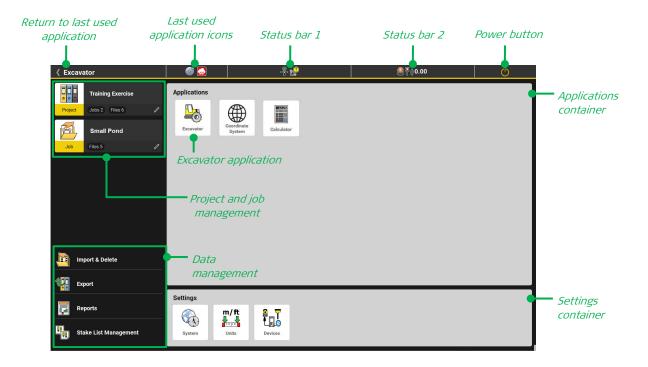
Setup

» Contents » Setup 🗸

Setup for the iCON site excavator is performed from the home page.

The operator can perform the following:

- Workflow 1.1. Select an existing project
- Workflow 1.2. Import a project from USB
- Workflow 1.3. Create a new project
- Workflow 1.4. Select a job
- Workflow 1.5. Create a new job
- Workflow 1.6. Import data
- Workflow 1.7. Select an existing device profile
- Workflow 1.8. Create a new device profile
- Workflow 1.9. Change display units

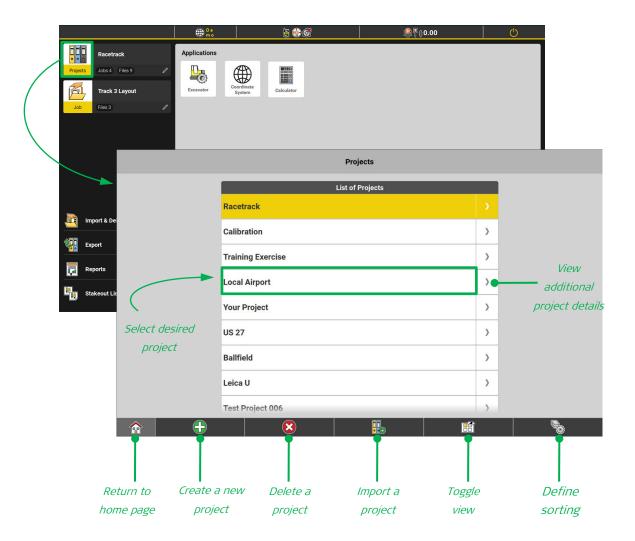


Workflow 1.1. Select an existing project

» Contents » Setup » Select an existing project 🗸

The "Projects" menu is where you can change your working project, add a new project, or delete one that is no longer needed. You access the "Projects" menu from the home page.

- **Step 1:** Press the "Projects" button. A list of preconfigured projects on your device appears. The current project is highlighted in yellow.
- **Step 2:** If needed, tap the sorting icon to define a different sorting method. Projects can be sorted by import/creation date, alphabetically, or last used first.
- **Step 3:** Select the desired project. The selected project will become active and you will be returned to the home page.



Workflow 1.2. Import a project from USB

» Contents » Setup » Import a project from USB \checkmark

This workflow describes how to import a project from a USB stick, but you may also have the option to import projects from the controller's internal memory or Leica ConX (when configured - Workflow 7.5.).



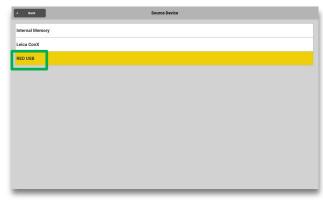
Step 1: Press the "Project" button.



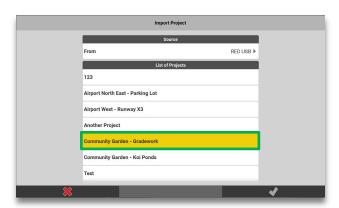
Step 2: Press the import icon.



Step 3: Press the "From" menu.



Step 4: Press "RED USB".



Step 5: Press the desired project from the displayed list.



 The iCON logo briefly appears while the project is being loaded.

Workflow 1.2. Import a project from USB (continued)



Step 6: The imported project appears in the list. Press the home icon to exit.

NOTE:

• The file name of an imported project in iCON site is limited to 20 characters.

Workflow 1.3. Create a new project

» Contents » Setup » Create a new project 🗸

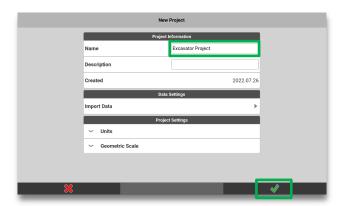
iCON site projects contain reference and control data, accessible by all jobs created within it.



Step 1: Press the "Project" button.



Step 2: Press the add new button (plus sign).



Step 3: Give the new project a name. If needed you can import data now, in this menu. You can also import the necessary data after the project has been created (Workflow 1.6.). Press the green tick mark to complete project creation.



 The newly created project becomes active, and you are returned to the home page.

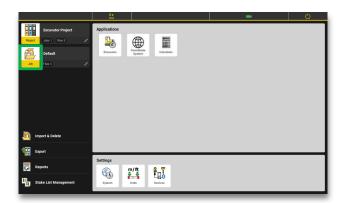
NOTE:

• Project display units are defined in the "Units" menu (Workflow 1.9.), accessed through the settings container on the home page.

Workflow 1.4. Select a job

» Contents » Setup » Select a job 🗸

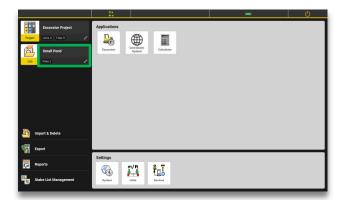
The "Job" menu is where you can change, add, or delete jobs. You will benefit from keeping your data organized in multiple jobs within a project. Each job, created in a project, has access to all imported reference and control data. All reports, measured data, and calculated results are job specific.



Step 1: Press the "Job" button.



Step 2: Press the desired job.



• The selected job becomes active, and you are returned to the home page.

NOTE:

• See Workflow 1.5. for how to create a new job.

Workflow 1.5. Create a new job

» Contents » Setup » **Create a new job** ✓

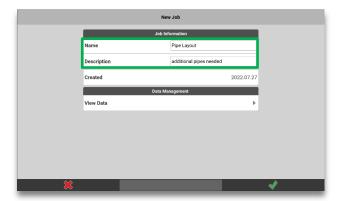
Jobs are always created within the active project, and all imported data is available for all jobs within that project. You may want to create a new job to perform a report, measure data (as-built), or calculate results.



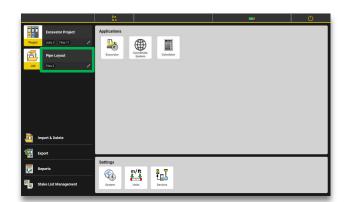
Step 1: Press the "Job" button.



Step 2: Press the add new button (plus sign).



Step 3: Give the new job a name and description. Press the green tick mark to complete job creation.



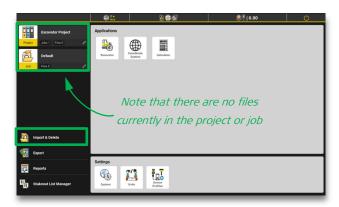
• The newly created job becomes active, and you are returned to the home page.

Workflow 1.6. Import data

» Contents » Setup » Import data 🗸

Data can be imported while creating a new project, or after. Regardless of method, all imported reference and control data is available to all jobs within the active project.

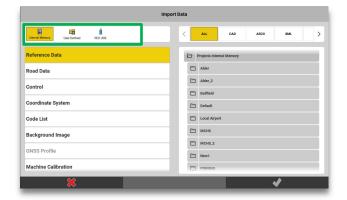
The steps below illustrate how to import multiple types of data in one import (reference surface, coordinate system, and a code list).



Step 1: Press the "Import & Delete" button.

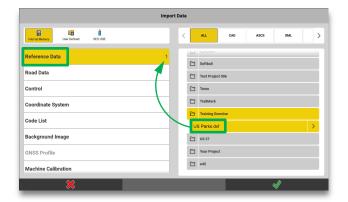


Step 2: Press the add new button (plus sign).



Step 3: Select source location for your data:

- **Internal Memory:** data from other projects stored on your controller.
- USB: data from a USB stick, if inserted.
- User Defined: data from any folder on your controller.



Step 4: Select your reference data:

- **a)** Verify that "Reference Data" is selected in the left side column. This is the default selection.
- **b)** Find, and select, your reference surface/linework in the right side column.

In the left side column you can see how many reference files have been selected for import.

Continued on next page...

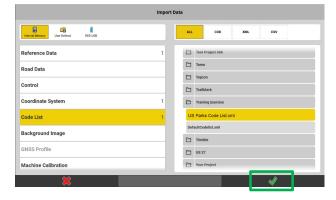
Workflow 1.6. Import data (continued)



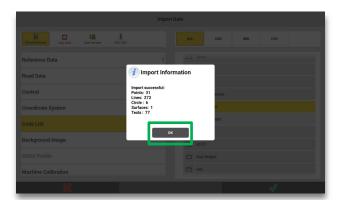
Step 5: Select a coordinate system:

- **a)** Verify that "Coordinate System" is selected in the left side column.
- **b)** Find, and select, your coordinate system in the right side column.

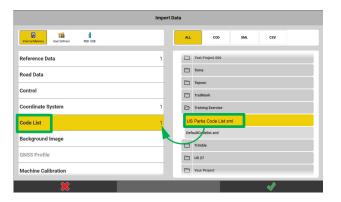
In the left side column you can see how many coordinate systems have been selected for import.



Step 7: Press the green tick mark to start importing the selected data.



Step 8: An import summary appears with a list of the imported data. Press "OK".



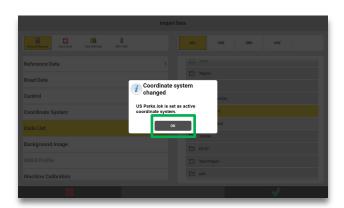
Step 6: Select a code list:

- **a)** Verify that "Code List" is selected in the left side column.
- **b)** Find, and select, your code list system in the right side column.

In the left side column you can see how many code lists have been selected for import.

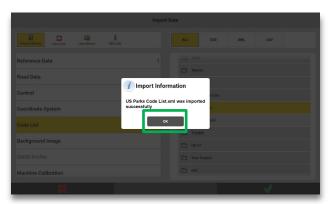


A progress window appears while your data is imported.

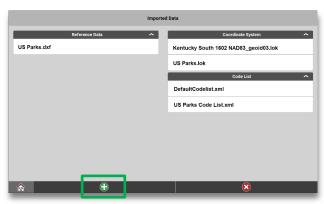


Step 9: Press "OK".

Workflow 1.6. Import data (continued)



Step 10: Press "OK".



Step 11: Verify that the imported data is listed in their respective categories. Press the home page button.

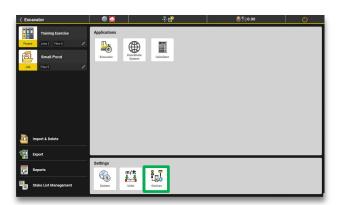


• The number of imported files appear beneath the "Project" and "Job" buttons.

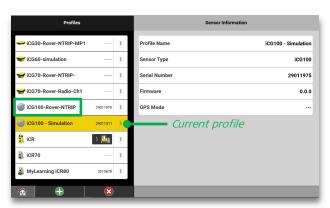
Workflow 1.7. Select an existing device profile

» Contents » Setup » Select an existing device profile 🗸

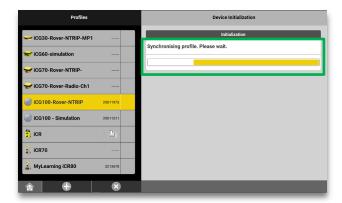
If your tablet has been used with a different GNSS receiver or TPS, you must first connect to your machine's iCG100 receiver before beginning work.



Step 1: Press "Devices".



Step 2: Select the desired device profile by tapping it in the left column. If multiple iCG100 profiles are in the list, then verify correct device by observing the serial number listed beside the device name.



• A progress bar is shown while the device profiles are being switched.



• When the switch is complete, you are returned to the home page.

Workflow 1.8. Create a new device profile

» Contents » Setup » Create a new device profile 🗸

If no device profile has been created for your iCG100 receiver, you must create a new device profile.



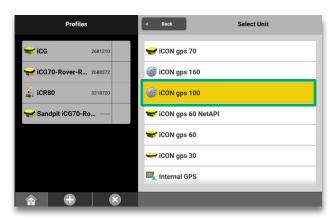
Step 1: Press "Devices".



Step 2: Press the add new button (plus sign).



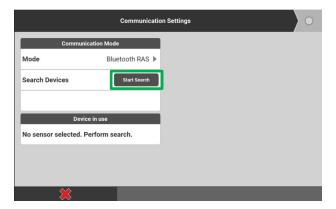
Step 3: Press "Model".



Step 4: Press "iCON gps 100".

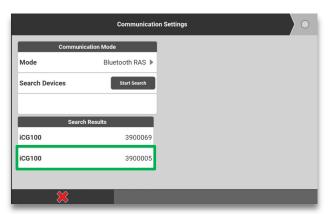


Step 5: Press the green tick mark.

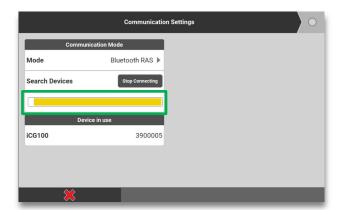


Step 6: Ensure Bluetooth is selected. Press "Start Search".

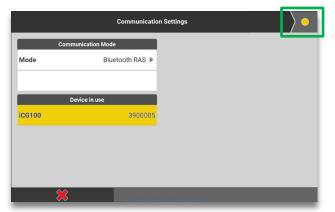
Workflow 1.8. Create a new device profile (continued)



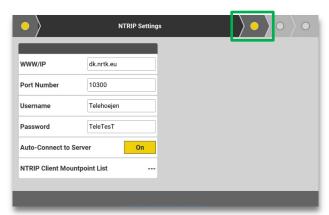
Step 7: Select your iCG100 from the search results, compare SN if multiple found.



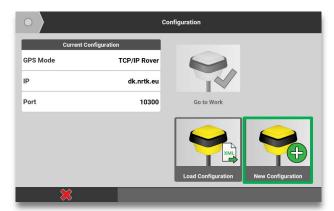
 A progress bar is shown while search is performed.



Step 8: When a successful connection to the iCG100 has been made, press the yellow dot to continue.



Step 9: Adjust NTRIP settings as desired. Press the yellow dot to proceed.

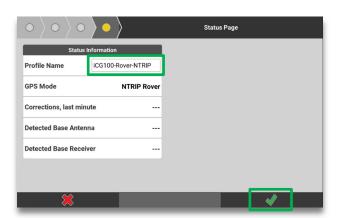


Step 10: Press "New Configuration".



Step 11: Adjust antenna settings as desired. Press the yellow dot to proceed.

Workflow 1.8. Create a new device profile (continued)



Step 12: Rename the profile if desired and press the green tick mark.



 The new device profile is now visible in the list.

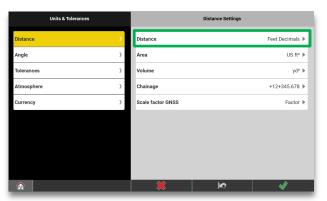
Workflow 1.9. Change display units

» Contents » Setup » Change display units 🗸

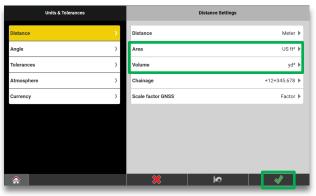
How to configure your project display units.



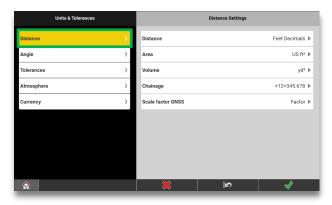
Step 1: Press the "Units" button.



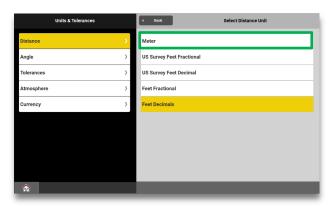
Step 3: Press a unit category in the right side column (in this example "Distance").



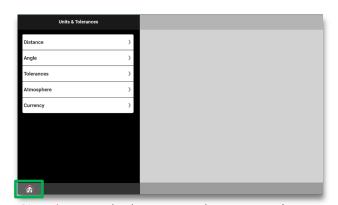
Step 5: Repeat steps 3 and 4 to change the "Area" and "Volume" categories. Press the green tick mark when done.



Step 2: Press the "Distance" menu in the left side column.



Step 4: Press the new preferred unit.



Step 6: Press the home page button to exit.

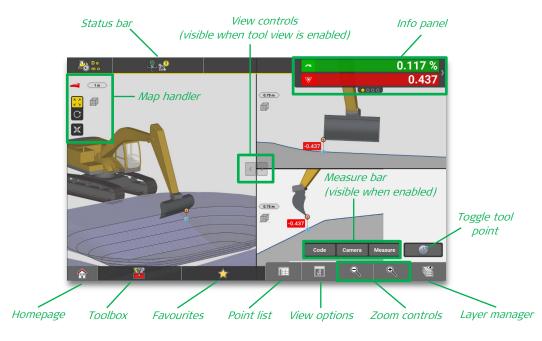
2. Run-screen

» Contents » Run-screen 🗸

How to get the most of the run-screen in your iCON site excavator application:

- Workflow 2.1. Change run-screen orientation
- Workflow 2.2. Disable or enable tool view
- Workflow 2.3. Expand map or tool view to full-screen
- Workflow 2.4. Change map/tool view ratio
- Workflow 2.5.
 Zoom in or out
- Workflow 2.6. Rotate map view to 3D perspective
- Workflow 2.7. Enable cut/fill view
- Workflow 2.8. Change configuration of cut/fill view
- Workflow 2.9. Customize info panel
- Workflow 2.10. Enable lightbars
- Workflow 2.11. Enable cross slope indicator
- Workflow 2.12. Enable dual cut/fill indicators





Workflow 2.1. Change run-screen orientation (CC200)

» Contents » Run-screen » Change run-screen orientation (CC200) 🗸

Depending on the controller, you may be able to view the run-screen in landscape or portrait mode (applications used in each display mode have the same functionality).

CC200: Landscape or portrait mode.

• CC70/CC80: Landscape mode only.

- Step 1: Press the "System" button in the home page, then press "Controller settings".
- **Step 2:** Press the "Off" button next to "Portrait orientation". Press "Ok" to restart the software as instructed.
- **Step 3:** Rotate the CC200 controller into portrait orientation the run-screen switches automatically into portrait display mode.





CC200 - Landscape



CC200 - Portrait



CC70 - Landscape only



CC80 – Landscape only

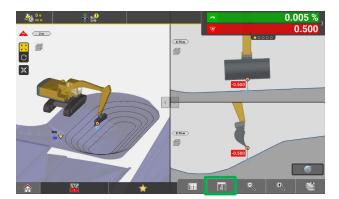
Workflow 2.2. Disable or enable tool view

» Contents » Run-screen » Disable or enable tool view 🗸

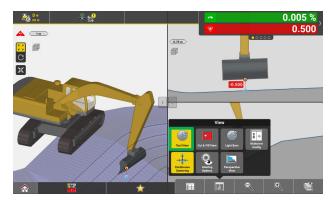
The tool view allows you to see a cross-section and profile view of your tool and model reference. By default your run-screen shows the map view and tool view at the same time, also referred to as the multi view.

If needed, you can disable the tool view entirely - and enable it again later (see the steps below).

You can also expand map view to full-screen while tool view is still enabled, which will allow you to focus on the map view without disabling tool view.



Step 1: Press the view options button.



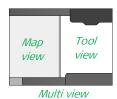
Step 2: Press the yellow "Tool View" button to disable tool view. The button background turns grey when tool view is disabled.



 When tool view is disabled, you will see a fullscreen map view, and the view controls (left/right arrows) are hidden.



Step 2: Press the view options button again, and then the "Tool View" button, to re-enable the tool view. The button background turns yellow when tool view is enabled.



Workflow 2.3. Expand map or tool view to full-screen

» Contents » Run-screen » Expand map or tool view to full-screen \checkmark

In the multi view you can expand the map or tool view to full-screen.

If the tool view has been disabled, the map view will automatically expand to full-screen.

You can expand the map view to full screen manually, even though tool view is still enabled.

Expand map view:



Step 1: In the multi view, press the right arrow to expand the map view to full-screen.

Step 2: In the expanded map view, press the arrow pointing left to return to multi view.

Expand tool view:



Step 2: In the expanded tool view, press the arrow pointing right to return to multi view.

Step 1: In the multi view, press the left arrow to expand the tool view to full-screen.

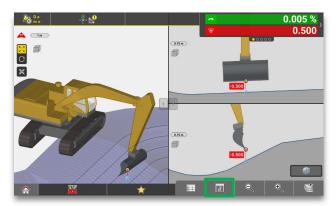
NOTES:

- Workflow 2.2. explains how to disable or enable tool view.
- Workflow 2.4. explains how to change the amount of space one view takes up compared to the other (map/tool view ratio).
- Workflow 2.7. explains how to replace map, tool, or multi view with a cut/fill view.

Workflow 2.4. Change map/tool view ratio

» Contents » Run-screen » Change map/tool view ratio 🗸

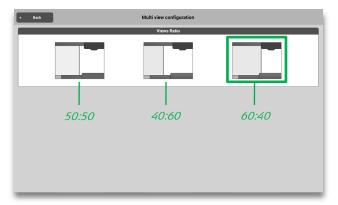
The map/tool view ratio is by default set to 50:50. This means that the map view and tool view takes up equal amount of space in the run-screen. This ratio can be changed to 40:60 or 60:40.



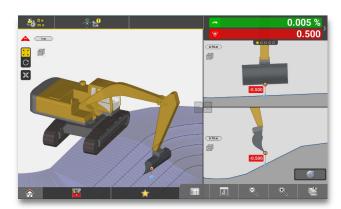
Step 1: Press the view options menu.



Step 2: Press the "MultiView Config" button.



Step 3: Select the desired ratio.



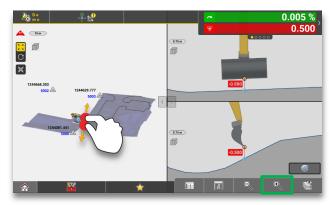
 The run-screen updates to reflect the selected ratio.

Workflow 2.5. Zoom in or out

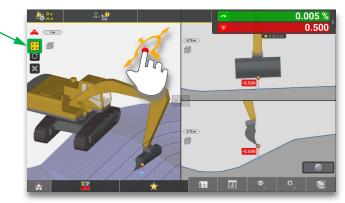
» Contents » Run-screen » Zoom in or out 🗸

Zoom controls are accessible by touch-screen navigation or by icon. You can zoom any run-screen view, with the exception of the text-only cut/fill view.

Zoom in:



Step 1: Pinch open or press "+" to zoom in.

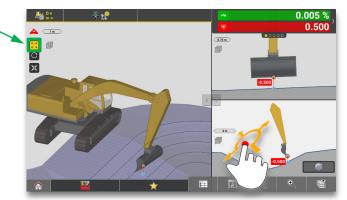


Step 2: Reposition the machine/tool if needed (press the pan button, touch the screen, and drag to reposition).

Zoom out:



Step 1: Pinch close or press "-" to zoom out.



Step 2: Reposition the machine/tool if needed (press the pan button, touch the screen, and drag to reposition).

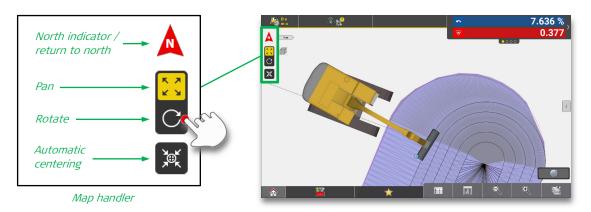
Workflow 2.6. Rotate map view to 3D perspective

» Contents » Run-screen » Rotate map view to 3D perspective \checkmark

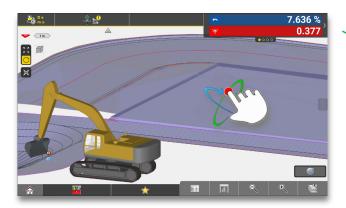
The default map view is a 2D plan view, with north up.

From the map handler you can rotate the machine and design to obtain a 3D perspective. This can be done in any version of the map view (expanded map view, or as part of the multi view).

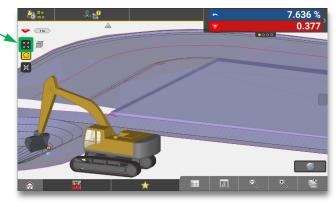
Automatic centering enables automatic panning, which keeps the machine tool point centered in the map view. When using the panning functionality from the map handler, the automatic centering will be disabled.



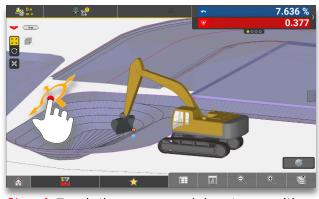
Step 1: Press the rotate button in the map handler.



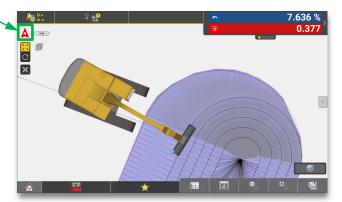
Step 2: Touch the screen, and drag to rotate.



Step 3: Press the pan button.



Step 4: Touch the screen, and drag to reposition.



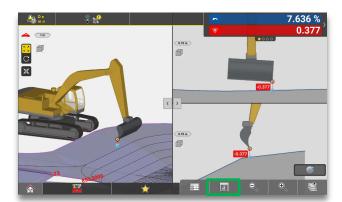
Step 5: Press the north button to return to default 2D plan view.

Workflow 2.7. Enable cut/fill view

» Contents » Run-screen » Enable cut/fill view 🗸

It is possible to replace the map or tool view (or both) with a cut/fill view.

If the default multi view (map + tool view) is displayed in the run-screen, the cut/fill view, when enabled, will replace the map view. Afterwards you can change which view should be displayed in combination with the cut/fill view (Workflow 2.8.).



Step 1: Press the view options menu.



Step 2: Press the "Cut & Fill View" button.



The map view is now replaced by the cut/fill view.

Workflow 2.8. Change configuration of cut/fill view

» Contents » Run-screen » Change configuration of cut/fill view 🗸

You can change how the cut/fill view is displayed:

- Expand cut/fill view to full-screen.
- Display map + cut/fill view.
- Display cut/fill + tool view.

Please note that there is no tool point indicator visible in the full-screen cut/fill view. Memorize current tool point before expanding to full-screen cut/fill view. Controls such as zoom, rotate, and pan are still applicable in the map view.

See Workflow 2.7. for how to enable the cut/fill view.



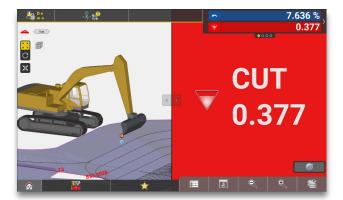
Step 1: In the cut/fill + tool view, press the right arrow to expand the cut/fill view to full-screen.



Step 2: In the expanded cut/fill view, press the arrow pointing left to return to cut/fill + tool view.



Step 3: Press the view options button again, and press yellow "Tool View" to disable it.



 The cut/fill view moves to the right and map view is now displayed to the left.

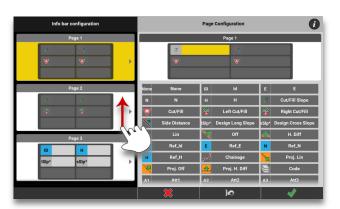
Workflow 2.9. Customize info panel

» Contents » Run-screen » Customize info panel 🗸

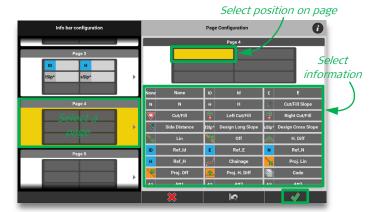
You can customize the info panel to show the information you want to see. The info panel contains multiple pages. Each page can be configured to include up to six different types of information.



Step 1: Press and hold on the info panel. This will open the info panel configuration menu.



Step 2: Scroll up to see all available pages (left side of the screen). Some pages are preconfigured, while others are empty/not yet used. Press the page you want to configure.



Step 3: Press the position in the info panel page where you want to see a certain type of information (selected position is highlighted in yellow). Select information, from the list, to add to the highlighted position. Press the green tick mark to confirm your selection.



Step 3: Press right arrow to toggle the different pages. If you have configured a previously empty page in the info panel, that page is now available from the run-screen (in this case "Page 4").

Workflow 2.10. Enable lightbars

» Contents » Run-screen » Enable lightbars 🗸

Horizontal and vertical lightbars can be enabled to provide directional guidance:

- Vertical guidance cut/fill (surface models and alignments).
- Horizontal guidance (alignments).



Step 1: Press the view options button.



Step 2: Press the "Light Bars" button.



 Two flashing, colour coded, lightbars are now displayed in the run-screen.



Step 3: Press, hold, and drag a lightbar to reposition it on the run-screen.

NOTES:

- The position of the lightbars remain the same until you change it.
- The lightbars are visible in every run-screen view.

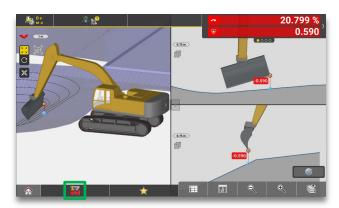
Workflow 2.11. Enable cross slope indicator

» Contents » Run-screen » Enable cross slope indicator 🗸

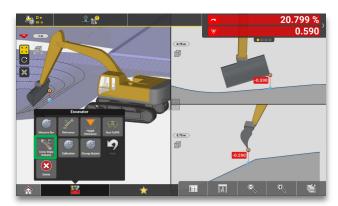
The cross slope indicator gives you guidance for the cutting edge of your bucket. You can find the indicator in the toolbox menu.

When enabled, the cross slope indicator appears beneath the bucket in the cross-section tool view. It is used to emphasize the difference in the design slope and bucket position. When the bucket is aligned to the slope, the indicator will be illustrated as a green line.

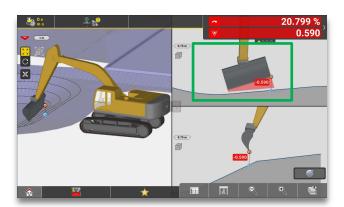
Only one cut/fill value is offered when the cross slope indicator is enabled.



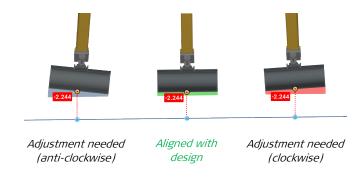
Step 1: Press the toolbox button.



Step 2: Press the "Cross Slope Indicator" button.



• The cross slope indicator is displayed in the tool view.



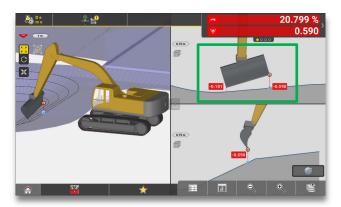
Workflow 2.12. Enable dual cut/fill indicators

» Contents » Run-screen » Enable dual cut/fill indicators 🗸

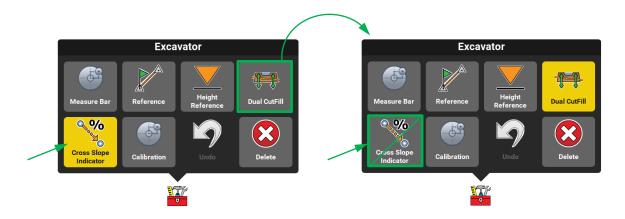
The tool view can display two cut/fill values at the same time, one for the left and one for the right tool point.



Step 1: Press the toolbox button. Then press the "Dual CutFill" button.



 Cut/fill values for left and right tool point are displayed in the tool view.



• When dual cut/fill values are enabled the cross slope indicator is automatically disabled.

3. Bucket

» Contents » Bucket 🗸

How to handle buckets in your iCON site excavator application.

- Workflow 3.1. Select a bucket
- Workflow 3.2. Create a new bucket
- Workflow 3.3. Adjust transparency and duration of SJB navigation overlay
- Workflow 3.4. Change tool point
- Workflow 3.5. Verify tool point against known control point
- Workflow 3.6. Check coordinates of control point

Workflow 3.1. Select a bucket

» Contents » Bucket » Select a bucket 🗸

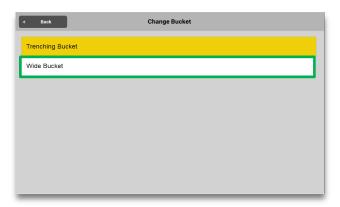
You can select an existing bucket from a pre-configured list buckets. If there are no buckets on the list, then you need to create a new bucket first (Workflow 3.2.).



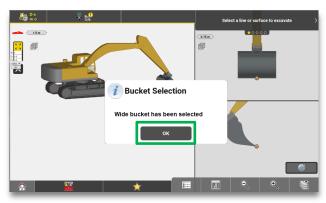
Step 1: Press the toolbox button.



Step 2: Press the "Change Bucket" button.



Step 3: Select the desired bucket.



Step 4: Press "OK".



• The new bucket is ready for use.

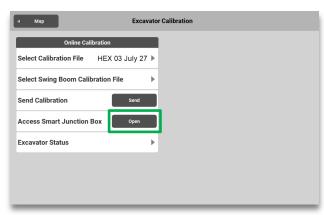
Workflow 3.2. Create a new bucket

» Contents » Bucket » Create a new bucket 🗸

New buckets are created in the web based user interface of the smart junction box (SJB2x). Supported web browsers for the SJB web UI are Microsoft Edge, Google Chrome, and Mozilla Firefox. Internet Explorer is NOT supported.



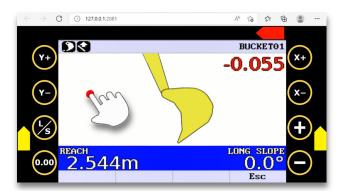
Step 1: Press the toolbox button.



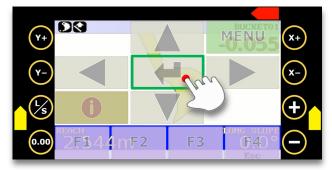
Step 2: Press "Open" next to "Access Smart Junction Box".



Step 3: Press "yes". The SJB software will launch in a webpage on your tablet.



Step 4: Tap the screen to display navigation overlay buttons.



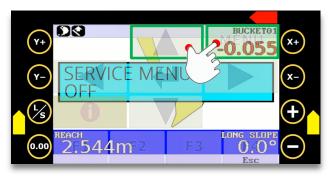
Step 5: Press Enter to access the menus. If needed, you can adjust the transparency of the navigation overlay buttons (Workflow 3.3.).



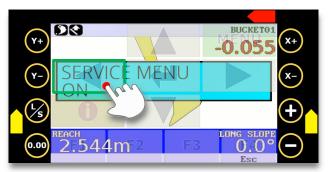
Step 6: Press right arrow until "SERVICE MENU" is displayed.

Continue on next page...

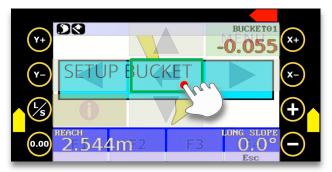
» Contents » Bucket » Create a new bucket <



Step 7: Press up arrow and the "MENU" button at the same time to turn the service menu "ON".



Step 8: Press left arrow until "SETUP BUCKET" is displayed.



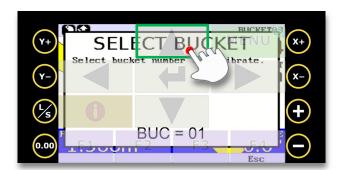
Step 9: Press Enter when "SETUP BUCKET" is displayed.



Step 10: Press Enter when "CALIB. WIZARD" is displayed.

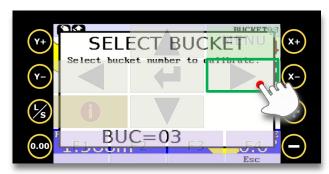


Step 11: Press right arrow until "SELECT BUCKET" is displayed.

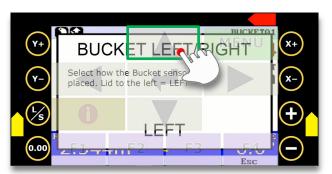


Step 12: Press up/down arrows to toggle between available buckets. The selected bucket can be renamed later (Step 29).

» Contents » Bucket » **Create a new bucket** ✓



Step 13: Press right arrow when desired bucket is displayed.



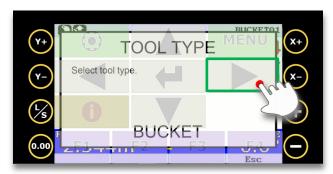
Step 14: Press up/down arrows when "BUCKET LEFT/RIGHT" is displayed. This will toggle between left and right bucket sensor position (Lid to the left = LEFT / Lid to the right = RIGHT).



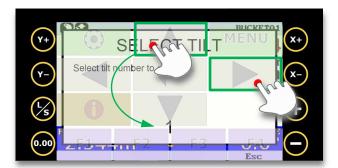
Step 15: Press right arrow when sensor position is displayed.



Step 16: Press up/down arrows to toggle between available tool types.

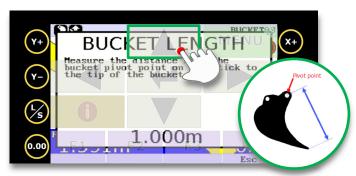


Step 17: Press right arrow when correct tool type is displayed.

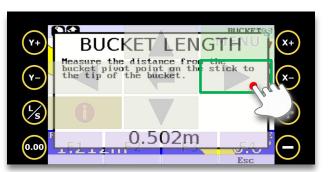


Step 18: Press up/down arrows to select the number of tilt units that will be calibrated. Press right arrow to continue.

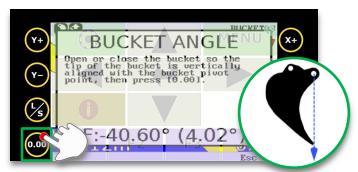
» Contents » Bucket » Create a new bucket 🗸



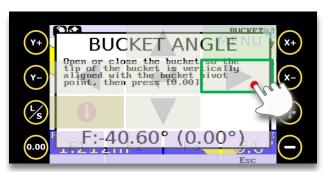
Step 19: Measure the distance between bucket pivot point and cutting edge. This is the bucket length. Press up/down arrows to enter measured distance (tap and hold to change value faster).



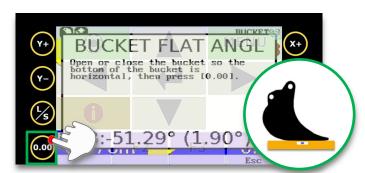
Step 20: Press right arrow when desired bucket length is displayed.



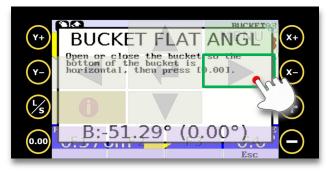
Step 21: Open or close the bucket until cutting edge is vertically aligned with bucket pivot point. Press the "0.00" button.



Step 22: Press right arrow to continue.

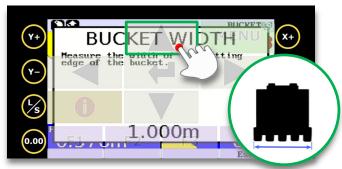


Step 23: Open or close the bucket until bottom of bucket is horizontal. Press the "0.00" button.

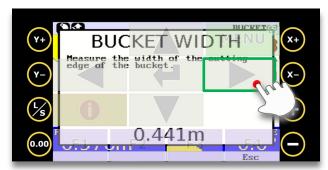


Step 24: Press right arrow to continue.

» Contents » Bucket » Create a new bucket 🗸



Step 25: Press up/down arrows to adjust bucket width.



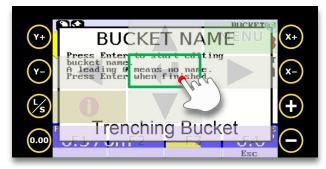
Step 26: Press right arrow when correct bucket width is displayed.



Step 27: Press L/S to begin the tilt zero calibration. Follow the on-screen instructions.



Step 28: Press right arrow when calibration is complete.



Step 29: Press Enter to change bucket name. Press up/down and left/right arrows to enter the new name. Press Enter when finished.

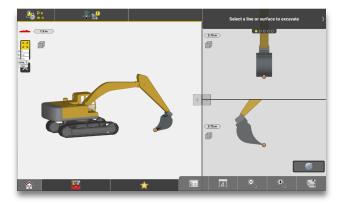


Step 30: Press "Esc" to exit the bucket wizard.

» Contents » Bucket » Create a new bucket 🗸



Step 31: Exit service mode before exiting the SJB software. Select iCON site from the open programs, or close the webpage to exit.

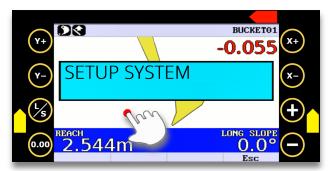


 When returning to the run-screen the newly created bucket will be active.

Workflow 3.3. Adjust transparency and duration of SJB navigation overlay

» Contents » Bucket » Adjust transparency and duration of SJB navigation overlay \checkmark

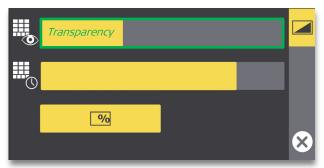
You can adjust the transparency, and duration, of the navigation overlay buttons. This enables you to make the overlay more or less noticeable.



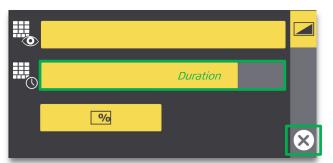
Step 1: Tap the screen to display navigation overlay buttons.



Step 2: Press the settings menu.



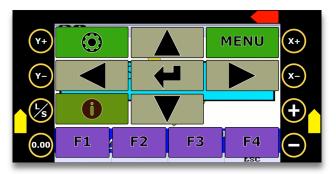
Step 3: Press the top row to adjust transparency of the navigation overlay.



Step 4: Press the second row to adjust duration of the navigation overlay. Press the "X" to accept changes, and to exit settings menu.



Step 5: Tap the screen to display navigation overlay buttons.



 When returning to the run-screen the newly created bucket will be active.

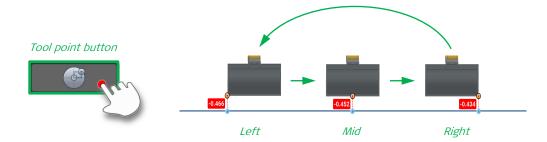
Workflow 3.4. Change tool point

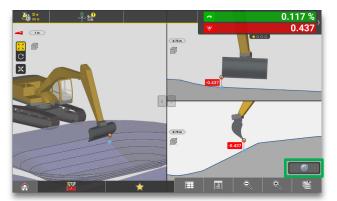
» Contents » Bucket » Change tool point <

You can set the tool point to left, mid, or right position on the bucket cutting edge. When you press the tool point button in the run-screen, the active tool point shifts right (from **Left** to **Mid** to **Right**, and back to **Left**).

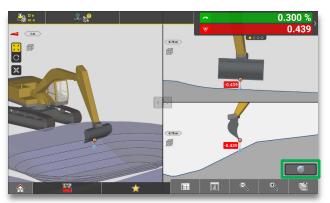
The iCON site excavator application reads the following values directly below the currently selected tool point:

- Height from active model or alignment (surface and line model).
- Cross slope from active model (surface model).
- Horizontal distance to selected alignment (line model).

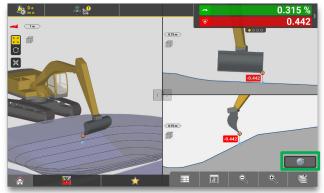




Step 1: Press the tool point button to change the currently active tool point from **Left** to **Mid** position.



Step 2: Press the tool point button to change the currently active tool point from **Mid** to **Right** position.



Step 3: Press the tool point button to change the currently active tool point from **Right** to **Left** position.

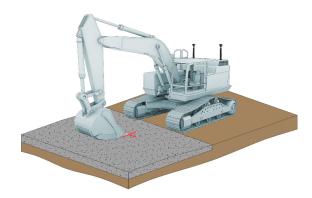


• Active tool point is now back in **Left** position.

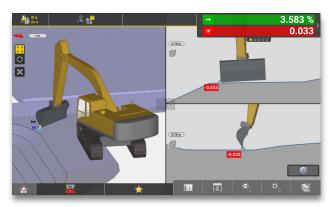
Workflow 3.5. Verify tool point against known control point

» Contents » Bucket » Verify tool point against known control point 🗸

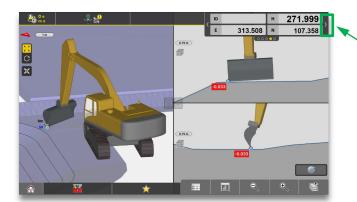
For machine check-in, you should ideally use a control point that will not be disturbed for the duration of your project. During the check-in you verify the active tool point against a known control point. The location of the control point should allow for a level cross slope of your machine and the cutting edge of the bucket. It is recommended to use a spotter on the ground to position the cutting edge precisely.



Step 1: Identify a control point to use for the check-in. If coordinates are provided, it does not have to be a point in your project.



Step 2: Identify a control point to use for the check-in. If coordinates are provided, it does not have to be a point in your project.

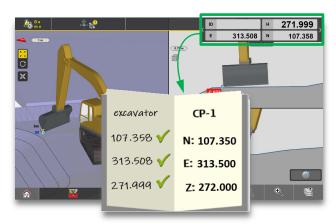


Step 3: Press the > button in the info panel until page 4 is displayed.

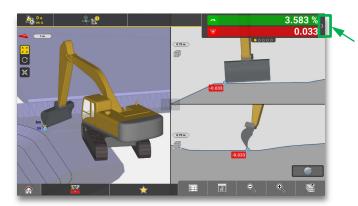


 By default, page 4 displays the position of currently active tool point (if a surface is used as reference).

Workflow 3.5. Verify tool point against known control point (continued)



Step 4: Compare position of tool point with actual benchmark values for the control point (CP-1).



Step 5: Press the > button twice to return to page 1 of the info panel.

NOTE:

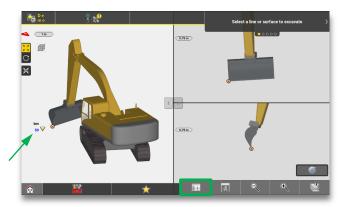
• If the coordinates for your control point have not been provided, you can view the point details in the iCON site excavator application (Workflow 3.6.).

Workflow 3.6. Check coordinates of control point

» Contents » Bucket » Change tool point 🗸

You can view the control point details in the iCON site excavator application by following the steps below.

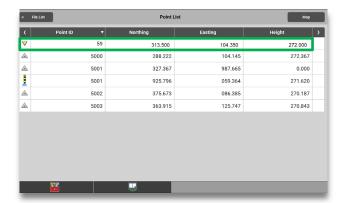
You may need to enable point information on map before proceeding with this workflow (Workflow 4.4.).



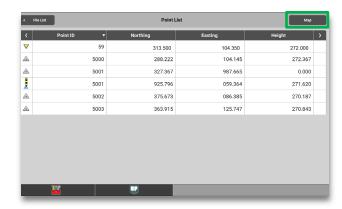
Step 1: Note down the "Point ID" of the point you wish to use as control point, and that you want to see the details for. Press the point list button.



Step 2: All point lists and control files in the current job are selected by default. Press the green tick mark to continue.



Step 3: Note down Northing (N), Easting (E), and Height (H) for the control point.



Step 4: Press the "Map" button.

4. References

» Contents » References 🗸

How to work with references in your iCON site excavator application:

- Workflow 4.1. Select a reference
- Workflow 4.2. Show/hide elements of the map view
- Workflow 4.3. Lock/unlock elements of the map view
- Workflow 4.4. Enable point information on map
- Workflow 4.5. Excavate to a known height reference
- Workflow 4.6. View stationing/chainage of a line

Reference: Line



Reference: Surface



Reference: Known height



Workflow 4.1. Select a reference

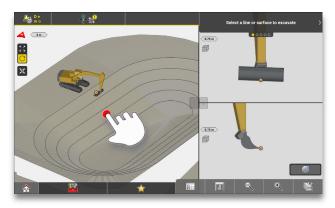
» Contents » References » Select a reference 🗸

Before beginning work in the iCON site excavator application, a reference must be selected.

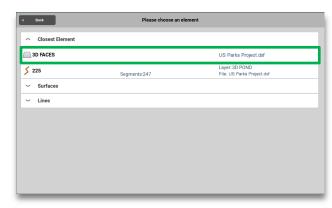
The reference can be a surface, line, or road line.

Supported surface references: TRM, XML, and DXF.

Supported <u>line</u> references: **Any 3D line**, **.LMD**, and **XML road model**.



Step 1: Press the desired surface or line in the map view.



Step 2: If there are multiple references near the selected area, choose a surface or line from the pop up window.



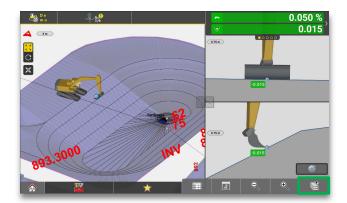
• Guidance will be provided to the selected reference.

Workflow 4.2. Show/hide elements of the map view

» Contents » References » Show/hide elements of the map view 🗸

When a new reference is loaded into your project all layers will be turned ON by default.

You can turn off design elements in the layer manager, so that only necessary elements are visible. To help you select layers, a map preview updates real-time to reflect your selections. To prevent lag in large files, the real-time map preview can be disabled (to do this, press the real-time map button indicated in Step 2).



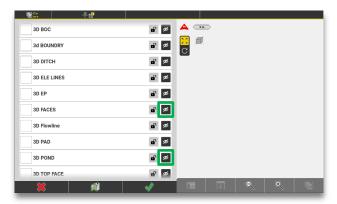
Step 1: Press the layer manager button.



Step 2: Press the down arrow next to your design file. This will expand the file into individual layers.



Step 3: Press the eye icon next to "All" to deselect, and turn off visibility for all layers in that file. When deselected the background of the eye icon turns grey.



Step 4: Scroll down and press the eye icon next to layers you want to see in the map view.

Workflow 4.2. Show/hide elements of the map view (continued)



Step 5: Verify your selection by looking at the map preview to the right. Press the green tick mark to accept and return to run-screen.



 Only the selected layers are now visible in the map view. After exiting the layer manager, you may need to reselect your reference.

Workflow 4.3. Lock/unlock elements of the map view

» Contents » References » Lock/unlock elements of the map view 🗸

Sometimes it is helpful to use elements for visual aid only. To prevent excavating to a specific reference while maintaining its visibility in the map view, you can lock the layer in the layer manager.



Step 1: Press the layer manager button.



Step 2: Press the down arrow next to your design file. This will expand the file into individual layers.



Step 3: Press the lock icon next to the layers that should be visible but no longer selectable. When locked the background of the lock icon turns grey.



Step 4: Press the green tick mark to complete locking of layers and return to map view.



 When returning to the map view, the locked layers are visible, but cannot be selected.

Workflow 4.4. Enable point information on map

» Contents » References » Enable point information on map \checkmark

All points related to your current job are visible by default. You can configure two attributes, and have them displayed with the point in the map view.

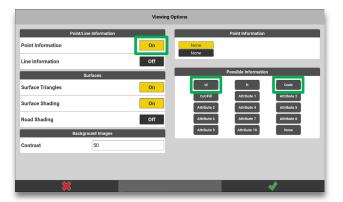
If you need coordinates of a point for verification of your tool point position (Workflow 3.5.), you must first turn on point ID and code (Workflow 3.6.). This workflow will show you how to turn on point ID and code.



Step 1: Press the view options button.



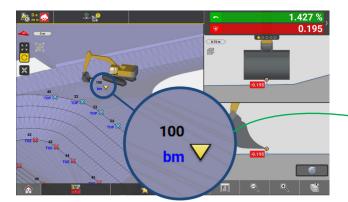
Step 2: Press "Viewing Options".

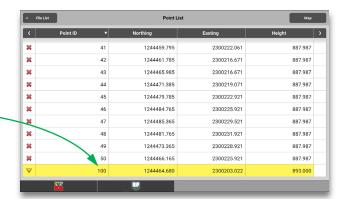


Step 3: Ensure "Point Information" is "On". Select "Id" and "Code" from the list of "Possible Information".



Step 4: Verify that "Identification" and "Code" are listed under "Point Information". Press the green tick mark.



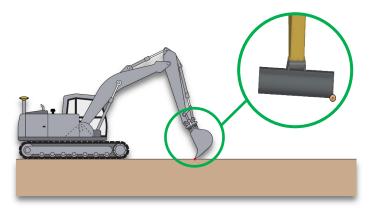


 Points are now displayed in the map view with their ID and code. Check coordinates in the point list if needed (Workflow 3.6.).

Workflow 4.5. Excavate to a known height reference

» Contents » References » Excavate to a known height reference 🗸

If a preconfigured surface or alignment is not available, you can instead excavate to a known height reference (benchmark). This will essentially create a flat pad at the selected elevation.



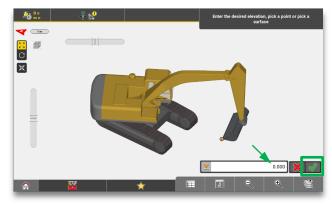
Step 1: Place active tool point on desired height reference without disturbing its position - change tool point if necessary (Workflow 3.4.).



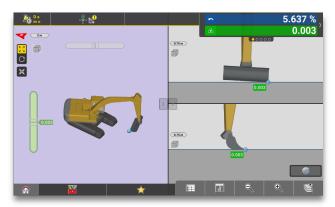
Step 2: Press the toolbox button.



Step 3: Press the "Height Reference" button.



Step 4: Ensure the value is set to 0 (zero). Alternatively, change the value to offset the known height reference. Press green tick mark to confirm height value.



 A surface is created at the current, or offset, height of your active tool point.

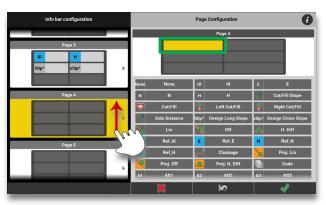
Workflow 4.6. View stationing/chainage of a line

» Contents » References » View stationing/chainage of a line 🗸

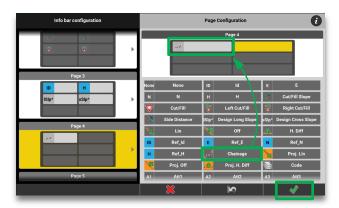
Follow the process below to display chainage of a line in the info panel.



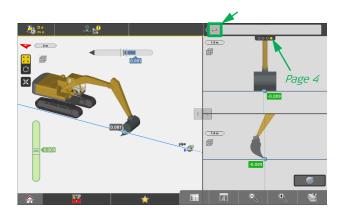
Step 1: Press and hold on the info panel. This will open the info panel configuration menu.



Step 2: Scroll up to find, and select, an empty page (in this case "Page 4"). Press the top left position of the page.



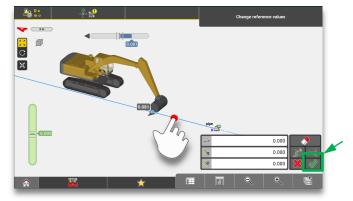
Step 3: Select "Chainage" from the list. Press the green tick mark to confirm your selection and return to run-screen.



Step 4: Press right arrow until page 4 is displayed. You should see the chainage icon in the info panel.

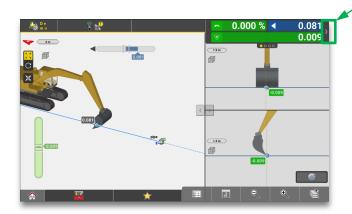


Step 5: Press the toolbox button, then press "Reference".

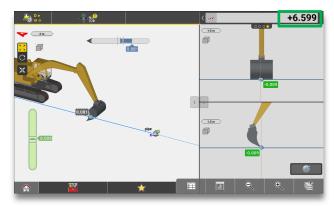


Step 6: Press the desired line, then press the green tick mark.

Workflow 4.6. View stationing/chainage of a line (continued)



Step 7: Press right arrow until page 4 is displayed.



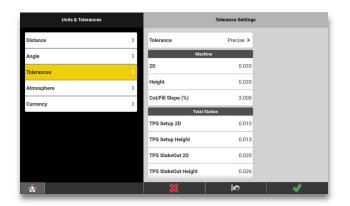
 Stationing/chainage of the selected line at your tool point position is now displayed in the info panel.

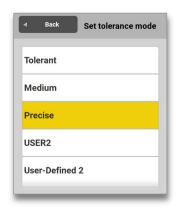
5. Tolerances

» Contents » Tolerances 🗸

How to apply tolerances in your iCON site excavator application.

- Workflow 5.1. Change tolerance mode
- Workflow 5.2. Set user defined tolerances





Workflow 5.1. Change tolerance mode

» Contents » Tolerances » Set the tolerance mode 🗸

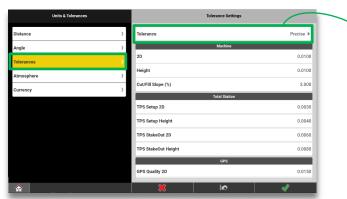
You can choose between three different pre-defined tolerance modes (Tolerant, Medium, or Precise). If you need more control, you can also set your own user defined tolerances (Workflow 5.2.).



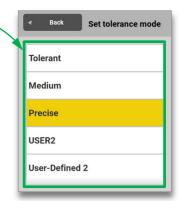
Step 1: Press the home page button.



Step 2: Press the "Units" button in the "Settings" area of the home page.



Step 3: Press "Tolerances" (left side of your screen), then press "Tolerance" (right side of your screen).



Step 4: Select the desired tolerance mode (Tolerant, Medium, or Precise). Press "Back", then press the green tick mark to confirm new settings.

Measurement	Tolerant	Medium	Precise
2D [m]	± 0.050	± 0.020	± 0.010
Height [m]	± 0.050	± 0.020	± 0.010
Cut/fill slope [%]	± 7.000	± 5.000	± 3.000

• The tolerance modes include pre-defined tolerances for three types of measurements (2D, height, and slope).

Workflow 5.2. Set user defined tolerances

» Contents » Tolerances » Set user defined tolerances 🗸

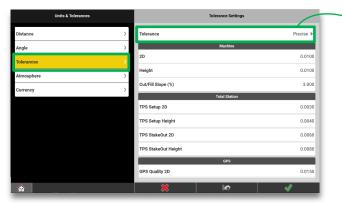
Follow the process below to set your own user defined tolerances.



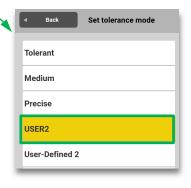
Step 1: Press the home page button.



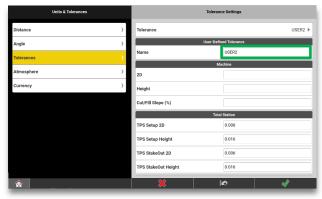
Step 2: Press the "Units" button in the "Settings" area of the home page.



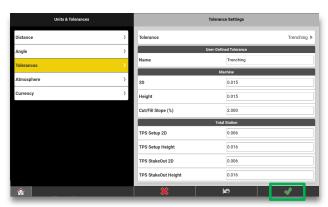
Step 3: Press "Tolerance" menu.



Step 4: Select any of the user defined tolerance modes.



Step 5: If needed, change the name of your new tolerance mode.



Step 6: Set your tolerances, then press the green tick mark.

6. As-built

» Contents » As-built 🗸

How to create and share as-built data in your iCON site excavator application.

- Workflow 6.1. View and configure the "Measure" bar
- Workflow 6.2. Use a pre-defined point code
- Workflow 6.3. Create a new point code
- Workflow 6.4. Link a photo to a measured point
- Workflow 6.5. Export as-built data (point logs)
- Workflow 6.6. Create a report

Workflow 6.1. Activate and configure the measure bar

» Contents » As-built » Activate and configure the measure bar 🗸

You can use the measure bar to record as-built data, in the form of point logs. The bar can be configured to show up to three functions related to point measurement.

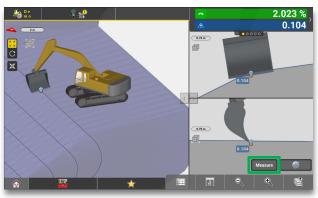
Choose between the following functions:

- None
- Measure
- Point ID
- Code
- Attributes
- Camera

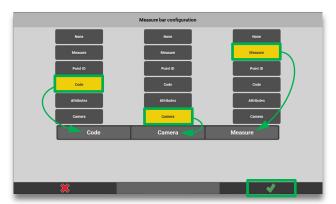
In this example we choose "Code", "Camera", and "Measure".



Step 1: Press the toolbox button, then press "Measure Bar".



Step 2: Press and hold the "Measure" button.



Step 3: Press one function in each of the three columns (in this case "Code", "Camera", and "Measure"). Press the green tick mark when the three functions have been selected.



• The selected functions are now displayed as buttons (measure bar) in the run-screen.

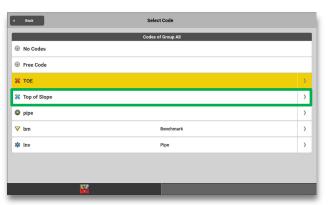
Workflow 6.2. Use a pre-defined point code

» Contents » As-built » **Use a pre-defined point code <**

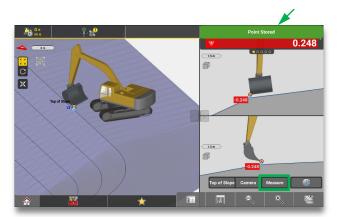
You can quickly assign a predefined code to the next point you want to measure. To do this you need to activate and configure the measure bar first (Workflow 6.1.).



Step 1: Press and hold the code button (currently active code "TOE" is displayed).



Step 2: Select a code from the list. Currently active code is highlighted in yellow.



Step 3: Press the "Measure" button. A message, on a green background in the info panel, indicates that a point has been stored.



 The selected code now applies to all new measured points, until changed.

NOTES:

- See Workflow 6.3. for information on how to create a new point code.
- See Workflow 6.4. for information on how to link a photo to a measured point.

Workflow 6.3. Create a new point code

» Contents » As-built » Create a new point code 🗸

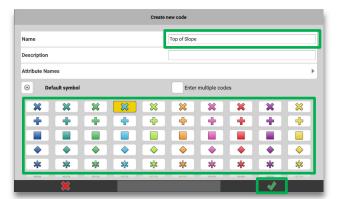
You can create new point codes if needed. To do this you need to activate and configure the measure bar first (Workflow 6.1.).



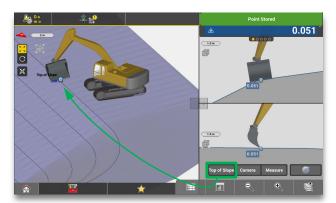
Step 1: Press the code button (when no code is currently active, the name of the button is "Code", otherwise the code name is displayed instead).



Step 2: Press "New" (plus sign).



Step 3: Enter a name for the new code. Select a symbol. Press the green tick mark to complete point code creation.

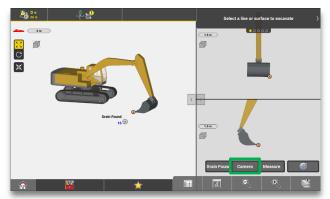


• The new point code is created and displayed in the measure bar (made active).

Workflow 6.4. Link a photo to a measured point

» Contents » As-built » View and configure the "Measure" bar 🗸

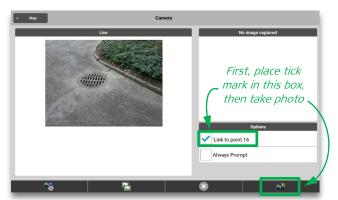
The "Camera" function allows you to capture images using the integrated camera of the controller. For documentation and reporting purposes, you can link captured images to measured points. To do this you need to activate and configure the measure bar first (Workflow 6.1.).



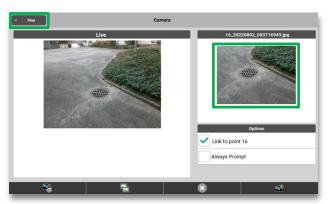
Step 1: Press the "Camera" button in the measure bar.



Step 2: A live view of the controller camera is displayed. Un-dock the controller and approach the previously measured point.



Step 3: Ensure "Link to point..." is selected. Take a photo of the measured point. You can select "Always Prompt" to automatically launch the camera after measuring a point.



Step 4: The last captured image appears on right side of your screen. Additional photos can be stored for the same point. Press "Map" to exit.

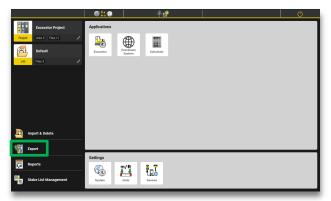


• An image icon now appears over the point that stores the photo.

Workflow 6.5. Export as-built data (point logs)

» Contents » As-built » Export as-built data (point logs) 🗸

You can export measured points to various formats.



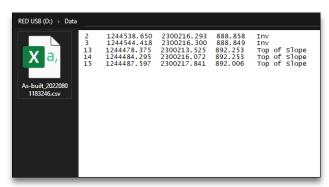
Step 1: Press "Export".



Step 2: Select "Data" as content type. Select the job containing the as-built data. Specify the export destination and file format. Press the green tick mark.



Step 3: If needed, rename the file. Press the green tick mark to confirm export.



 The exported data is now available in the export destination folder.

NOTES:

- See Workflow 6.2. for instructions on how to create point logs.
- To include any linked photos with the data, you must select XML or DXF export.
- If more information about the points are required, you can create a report (Workflow 6.6.).

Workflow 6.6. Create a report

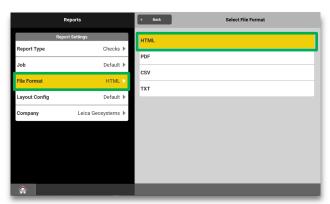
» Contents » As-built » Create a report 🗸

There are numerous report types available in iCON site, but as an excavator operator you will mainly use the "Data Collection" report type (the type described in the workflow below).

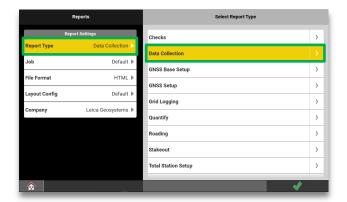
Additionally (not described), you can configure the template of a report type according to your needs.



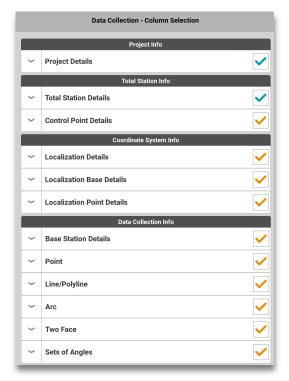
Step 1: Press "Reports".



Step 2: Press "File Format" in left side of the screen, then select a file format to the right.

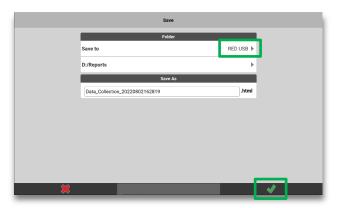


Step 3: Press "Report Type" in left side of the screen, then select report type to the right. The most relevant for excavator application is "Data Collection".

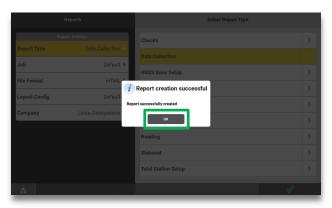


• If needed you can turn individual report elements on or off (remove or add tick mark).

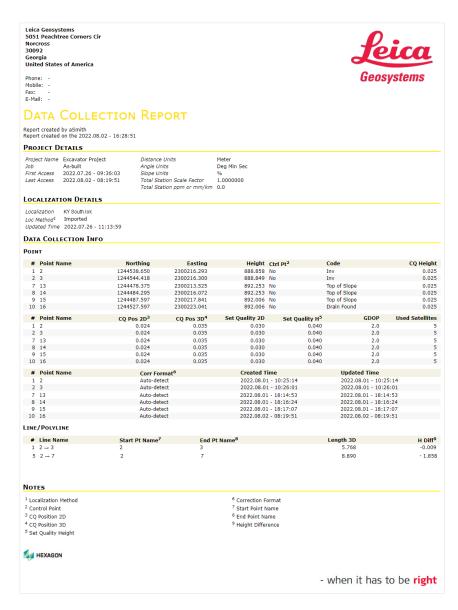
Workflow 6.6. Create a report (continued)



Step 4: Press arrow next to "Save to" and specify report destination. Change file name if needed. Press the green tick mark.



Step 5: Press "OK".



• Example of an exported HTML "Data Collection" report.

7. ConX cloud solution

» Contents » ConX cloud solution <

If you have the additional license for a ConX cloud solution, you may find helpful workflows in this section.

- Workflow 7.1. Establish connection to the Internet
- Workflow 7.2. Pair your controller with ConX
- Workflow 7.3. Configure ConX settings
- Workflow 7.4. Connect to ConX
- Workflow 7.5. Import a project from ConX

Workflow 7.1. Establish connection to the Internet

» Contents » ConX cloud solution » Establish connection to the Internet \checkmark

You need to connect your controller to the Internet before you can synchronize projects to ConX.

This workflow describes how to create a WIFI connection to the Internet. See the iCON site how-to guide (793692) for information on other methods (LAN cable or3G/4G modem).

- **Step 1:** Minimize or exit the iCON site software.
- **Step 2:** Within the Windows desktop, select WIFI to open the "Network Connections" dialogue.
- Step 3: Hold the stylus pen on the "TIWLNAP|1" icon and press "Enable" from the menu. Close the dialogue.
- **Step 4:** In the Windows taskbar, double-click the network icon. Switch to the "Wireless" information tab.
- **Step 5:** Select the desired network from the list, and enter the network key.
- **Step 6:** Press "OK" to connect.
- **Step 7:** Re-enter iCON site from the "Start" menu within Windows.

Workflow 7.2. Pair your controller with ConX

» Contents » ConX cloud solution » Pair your controller with ConX \checkmark

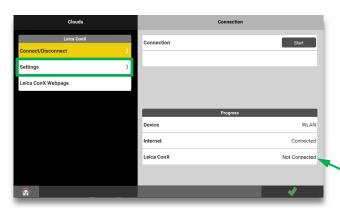
You can pair your controller with ConX once it is connected to the Internet (Workflow 7.1.).

Once connected to the Internet, you must log into the Leica ConX website. You must have the rights to add a unit to your project to successfully pair a controller.

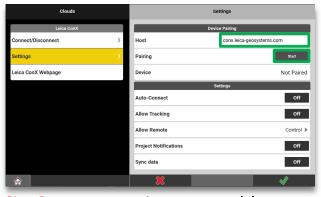
This process is only necessary for the first time the controller is connected to the Leica ConX webpage. If your controller is already connected, then go ahead and connect to ConX (Workflow 7.4.).



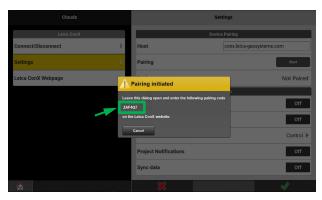
Step 1: Press the "Clouds" button.



Step 2: Press the "Settings" menu. Note that "Leica ConX" is currently "Not Connected".



Step 3: Ensure "Host" is set to "conx.leicageosystems.com". Press "Start".



Step 4: Note down the displayed pairing code. Leave this dialogue open, and access the Leica ConX website.

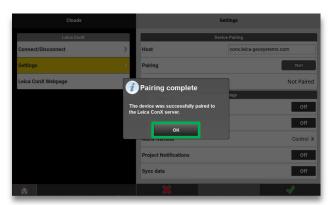


Step 5: Enter the pairing code into the "ConX New Unit" dialogue. Press "Pair".

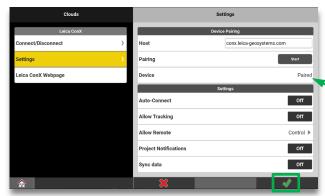


Step 6: Press "Finish" when you see this dialogue indicating that pairing was successful.

Workflow 7.2. Pair your controller with ConX (continued)



Step 7: Return to iCON site "Clouds", then "Settings". You should see a notification of successful pairing. Press "OK".



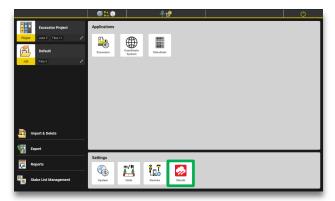
Step 8: Note that device/controller status has changed to "Paired". Press the green tick mark.

Workflow 7.3. Configure ConX settings

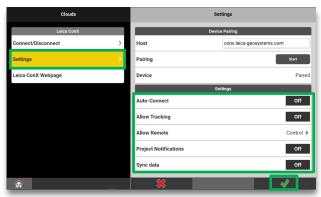
» Contents » ConX cloud solution » Configure ConX settings \checkmark

There are various settings that can be enabled within the "Clouds" menu:

- Connection protocols
- Tracking
- Remote assistance
- Notifications
- Synchronization



Step 1: Press the "Clouds" button.



Step 2: Press "Settings". Turn desired settings ON/OFF (right side of your screen). Press the green tick mark to confirm.

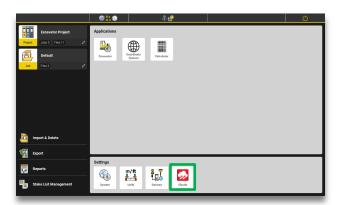
Settings	
Auto-Connect:	Controller automatically connects to the Leica ConX webpage after every startup of iCON site.
Allow Tracking:	If using GPS, the location of equipment is shared with ConX.
Allow Remote:	View Only: Remote user may connect and view iCON site software on your controller. Control: Remote user may connect and control iCON site software on your controller. No: Remote use of your controller is blocked.
Project Notifications:	Pop-up message appears every time a new file is uploaded to the Leica ConX webpage.
Sync data:	Transfer of measured data to the Leica ConX webpage is allowed. Synchronization of measured data occurs once every minute.

Workflow 7.4. Connect to ConX

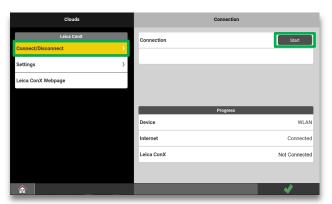
» Contents » ConX cloud solution » Connect to ConX \checkmark

This workflow describes how to connect your controller panel to ConX. Before this can happen, you must establish connection to the Internet (Workflow 7.1.), and pair your controller with ConX (Workflow 7.2.).

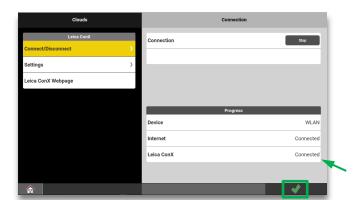
If "Auto-Connect" is enabled (Workflow 7.3.), then this workflow can be skipped.



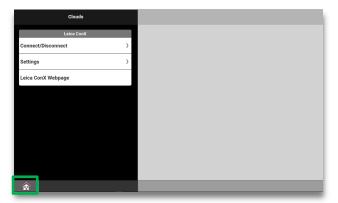
Step 1: Press the "Clouds" button.



Step 2: Ensure "Connect/Disconnect" has been selected, then press the "Start" button.



Step 3: Verify that the status for "Leica ConX" has changed to "Connected". Press the green tick mark.



Step 4: Press the home page button.

NOTE:

• See Workflow 7.5. for how to import a project from ConX.

Workflow 7.5. Import a project from ConX

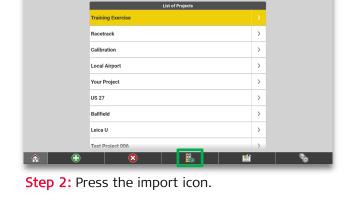
» Contents » ConX cloud solution » Import a project from ConX \checkmark

This workflow describes how to import a project from ConX.

Before you can proceed, you need to establish connection to the Internet, pair your controller with ConX, configure settings, and ensure the controller is connected to ConX (Workflows 7.1. to 7.4.).



Step 1: Press the "Project" button.

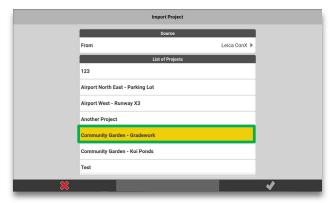




Step 3: Press the "From" menu.



Step 4: Press "Leica ConX".

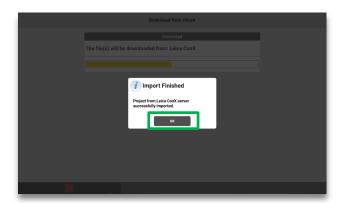


Step 5: Press the desired project from the displayed list.



 A progress bar is displayed while the project is being loaded.

Workflow 7.5. Import a project from ConX (continued)



Step 6: Press "OK" to complete the import. The imported project is now active.



Step 7: Press the home icon to exit.

NOTE:

• The file name of a project in iCON site is limited to 20 characters.