


USER MANUAL DIGPILOT TERRA FOR EXCAVATOR

1. GET STARTED

The system is started by pushing the icon  on the screen and then push the green DigPilot – button in the cockpit. When the computer has started the Terra – icon will be visible on the desktop (yellow excavator). Tap on this symbol to start the machine control program. The DigPilot Launcher will then appear. If there are any updates available you will see that the “Update” button is active. When updates are initiated, the system will automatically save a back up of the existing version with respective settings and projects. If you are in a hurry or about to start with critical tasks, you should postpone any updates as this might take up to five minutes.

After you have pushed “Start Terra” in the launcher window, wait until the machine appears on the screen and the numbers are alive. It might take up to a minute for the system to synchronize, depending on the size and amount of active projects.

2. CHANGE MACHINE AND BUCKET VIEW

Wait until the machine appears on the screen and the heights are synchronized. You will automatically get the bucket visible on the left side and the machine to the right. You can change the main view between machine and bucket, just hold your finger in the machine view to swop.

By swiping from left or right towards the center of the screen you can choose to see the machine isometric, from top or from the side. When you are in «top view» you can hold your finger on the red «North arrow» to change the orientation of the machine. You can also zoom in on details by using two fingers directly on the screen.

In the isometric view you can rotate the view with one finger, just hold and swipe to get the best visibility of any details.

At the bottom of the screen there are values for Height above project, Height above sea level and horizontal distance to a chosen line. If you are unsure of the means of any value, just hold your finger on the value, the description of the value will appear after a second.

3 MAIN MENU

The machine is saved with the correct settings, measures and calibration values prior to hand – over. This also applies for machine type, mode, sensors and GNSS settings.

The main menu is available by swiping from the top of the screen and downwards or by tapping the “Home” symbol in the lower right corner. Here you will find all necessary sub - menus :

- Add a new bucket or adjusting existing ones under «Tools»
- Choose between imported projects, import new project or make you own under «Site»
- Save points and lines and export these under «Save»
- Shortcut to «Support»

The other menu's are recommended for use during support or trouble shooting only

4. SELECT MEASURE POINT

You can select measure point on the bucket in the view where the bucket is visualized separately. To change measure point, just tap and hold on the side of the bucket you wish to measure from, center, left or right. If you wish to measure from both sides of the bucket, first select one side. Tap and hold again on this same side until the yellow line appears on the opposite side of the bucket also. You will then see both height values appear on the bottom of the screen.

5. ADD A NEW BUCKET

To add a new bucket you first need to open the main menu. Go to «Tools» and press the + symbol and then select the type of bucket you wish to add from the drop down menu.

It is recommended that you have a pen and paper available and that you write down all measures. Read the instructions carefully and study the pictures in the menu. To add a bucket with tilt rotator you must choose this option in the menu. You must also have the following items available at hand;

- Plumb Line
- 3 meter measuring tape
- 1 meter spirit level
- Pen and paper

You must always verify that the bucket are calibrated correctly before usage. Control the accuracy towards a fixed point with known coordinates and check the bucket when it is fully extracted and in inner position.

6. SELECT BETWEEN SAVED BUCKETS

Swipe with one finger from the lower right corner and upwards or tap on the bucket symbol in the lower right corner. A drop down menu with all stored tools will then appear, letting you quickly select between your existing buckets. You should check the accuracy of the selected bucket regularly towards a fixed point and adjust the bucket length if it is worn down (available function 'adjust' in the tool menu) .

7. LOGGING ON TO CLOUD SOLUTIONS

There are three available cloud solutions available;

1. **Drop Box;** a simple Windows based cloud solution that enables two-way exchange of files and folder structures between office and machine. Your dealer will set up the account in the machine and any office computer and no further log on is required. Simply dump project files directly or in folders into the drop box from either machine or from office and upload them in the other end.

2. **RigelMap;** This is a cloud that provides a user friendly and solid way of exchanging files and AS-BUILT documentation. RigelMap is a full scale site management tool and also a stake out solution. Some specific training of office personnel is required. RigelMap is delivered with an RTK stake out pole and you can easily set out points with this pole and immediately see these points in the excavator. You will find the RigelMap icon under “Clouds” in the main menu. Tap on this icon. You will then be asked for a six digit key to log on. In the desk top version of RigelMap you can assign the excavator to specific projects. When logged on, DigPilot will automatically use the same coordinate system as activated in the assigned project in RigelMap.
3. **Infrakit;** This is an advanced site management tool for larger public projects, and training of office personnel is required. Your dealer will help you to log on and set ups.

8. IMPORT AND SELECT PROJECT

DigPilot reads project files in .DXF, .KOF og .XML. formats. To upload a new project you can use either a USB memory stick or one of our cloud solutions. To import a new project file from any available place, go to «Site» the main menu. Here you will see a list of all available projects. To import a new file, press the **+** symbol. You can then select from where you wish to import the file. After import the file will be available for selection in the «Site» menu.

IMPORTANT: Before you start digging on a new site, verify the accuracy and correct height towards a fixed point with known coordinates. Such points can be ordered from skilled stake – out personnel if not already available. You can also use the synchronized RigelMap stake out kit for this task and make your own fixed points. Verification of accuracy and correct heights should be conducted on daily or at least weekly basis.

If you find deviations of more than 4 centimeters during such controls you should do the following;

1. Check that you have selected the correct bucket
2. Check that the bucket measures correctly when fully extracted and in inner position
3. Check that you are working in the correct coordinate system / zone under “Site” and “Localization” .

9. HEIGHT ADJUSTMENT

If the check points in section 6. is conducted and you still have deviations of more than 4 centimeters you can adjust the machine reference height towards the selected project. This is conducted under «Site» -> «Adjustment» in the main menu. Check your height towards a fixed point after adjustment. If the deviation is doubled after the adjustment you must og back and change the sig non the value. Check again. Please note: Any such adjust is the users responsibility, DigPilot will not bear any responsibility from errors occuring after height adjustments.

10. MEASURE TOWARDS TRIANGULATED SURFACE

If your project file consists of one or several triangulated surfaces the system will automatically measure towards the triangle directly beneath the selected measure point on the bucket. This triangle will then appear yellow so that you at any time can see which surface you measure towards. If the file contains multiple triangulated layers the system will always measure towards the closest triangle. You can zoom and focus on specific triangles by two finger touch above the detail.

11. MEASURE TOWARDS A LINE

To measure towards one specific line, swipe sideways until you see the machine directly from above. You can choose to see the North upwards or the boom upwards by pressing the red arrow. To select a line, **press and hold** above the line. A green circle will appear above the area and all lines within the circle will be selectable from a drop down menu. Swipe up and down and tap on the lines until the one you wish to select becomes yellow. Press Confirm. You will then measure vertically and horizontally towards the selected line. If you want the measuring to cease, press and hold in an area without any lines or points. You can then choose to end the selection by pressing «Confirm».

12. MEASURE TOWARDS A POINT


To measure towards one specific point, swipe sideways until you see the machine directly from above. You can choose to see the North upwards or the boom upwards by pressing the red arrow. To select a point, tap with one finger above the point. A green circle will appear above the area and all points within the circle will be selectable from a drop down menu. Swipe up and down and tap on the points until the one you wish to select becomes yellow. Press Confirm. You will then measure vertically and horizontally towards the selected point. If you want the measuring to cease, press and hold in an area without any lines or points. You can then choose to end the selection by pressing «Confirm».

13. CREATE LINE BETWEEN EXISTING POINTS

If you need a new line between existing points in your project, first select one of the points as described in section 11. Then just select the second point according to same procedure and you will see a new line generated between the points. You can continue this process and generate a consisting line between multiple points. At all time the system will measure towards this new line from the pre-selecte measure point on your bucket.

14. GENERATE, SAVE AND EXPORT POINTS AND LINES



Choose Save from the main menu. A green button will then appear on the right side of your screen and you can use this to maximize and minimize the menu, so that the menu does not disturb you during work. When maximized you will see more buttons that allows you to select between generation of points, lines and multiple points. Before you start saving new objects it is recommended that you give the object a name by using the pen – button. Type the object name and confirm. Start and stop of logging / saving of new objects are conducted with the button to

the lower left in the menu. Single points are selected with the -button. Klick this button to change to Line and remember to give the line a name before you start saving. NOTE: You need to close the line, hence save an end – point, before you can save it. Until the line is closed with an end point the line button will appear red. If you wish to save multiple points you can click on the third button from the left until you see three dots, indicating multiple points. You can undo and delete with the red button the lower right in the menu. If you do not specify a new name between savings, new points and lines will be saved under the same name but with increasing numbers. You can export saved objects to USB, drop box or clouds by using the disc – button. All objects will be exported in an XML file, which can be used in any machine control system later.

15. LOGGING OF MULTIPLE POINTS

Follow the same procedure as in section 13. , but push the third button from the upper left so it shows three dots. Give the points a name before start logging with the start / stop button. NOTE: The logging of points are activated by distance, not by time. Logging of new points are automatically generated 0,15 meters from the last point. If you stand still, new points will not be logged. You need to move your bucket to log new points. If you wish to log and export a ditch, first select measure points from both side of the bucket. Points from both sides will be generated when the logging is initiated. When the logging is stopped you can export the ditch as a cloud in XML - format.

16. CREATE A SURFACE

If you wish to create a work plane at a specific height from where you are standing with the machine, enter the “Create” menu located in the main menu. Tap on the Plus – sign to make a new surface. Select “Plane” and enter a name of the new surface. Save the name by tapping on the  symbol. You can choose to enter coordinates for the center point of the plane or set the center point with your bucket by tapping on the  symbol in the lower right corner. When coordinate is set, you will be directed to the digging window with a menu in the lower right corner. From this menu you can set the shape and size (lower right buttons), slope and cross slope and slope direction (upper right buttons). You can also adjust the height of the slope up or down. When you have completed all settings, tap on the save button. The work plane will be saved and can be found as a landXML project in the site menu.

17. SUPPORT

If you for any reason need remote support on your system you will find a path to Teamviewer under “Support” in the main menu.

When the icon is activated, wait until the system connects to DigPilot’s support center. This can take up to a minute. It is recommended that you first call +47 22 81 39 90 and describe your problem. Internet connection is necessary for activation of the link. The support personnel will see the screen and will be able to trouble shoot and recommend corrective actions. Please note that remote support is a paid service. You are requested to carefully read the section «Trouble shooting» before you contact our support center.

18. TROUBLE SHOOTING – FAQ

Trouble shooting should be conducted if an error message occurs on the screen or the image of the machine on the screen behaves different from the actual machine.

Error message / Error	Possible error source	Possible cause	Corrective action
RTK – Fix Error	GNSS Receiver	The «Rover» is not turned on	Turn on the GNSS receiver by pushing the green DigPilot – button in the cockpit
RTK – Fix Error	Right GPS antenna or belonging COAX cable	Right / Starboard GPS antenna out of function or damage on belonging COAX cable	Choose Rover -> Observe in main menu. You should have between 15 to 30 satellites available and the data shall fluctuate (shall be «live»). If they do not, check that the cable between the right GPS antenna and the green GNSS receiver / rover is tightened and free from damage. If nothing is found, try to physically swop the position of the antennas. If this helps, but you get an error message saying “Direction error” you know that the now left antenna is out of service and needs to be replaced.
RTK – Fix Error	Internet – antenna or belonging COAX cable between antenna and GNSS receiver	Poor internet connection due to damage to antenna, cable or due to poor internet coverage in your area, poor or no correction signal is received	Check that the internet antenna is free from damage (small «puck» on the roof or rear on the excavator. Check for visual damage on the cable and verify that it is properly tightened at both ends. You will need an 8 mm and a 10 mm wrench for this.
Direction Error	Left GPS antenna or connecting COAX cable	Malfunction in antenna, damaged cable or	Try to physically swop the position of the antennas. If the error message is replaced by

		loose cable connector	an error message saying "RTK Fix error" you know that the now right antenna is out of service and needs to be replaced.
"Sensor XX has stopped sending data", or you see that the machine model does not correspond to the actual machine movement	Sensor itself or cable connecting to "upstream" sensor in the sensor chain	Loose cable connector, damaged cable or damaged sensor	Enter the Sensor – menu in from the main menu and check if the sensor data fluctuates. If not, check that the cable connectors are properly tightened. Restart the system and see if the sensors is working. Check for visual damage to the connecting cable or to the sensor. If no visual damage is detected, contact your local DigPilot dealer.