



TERATRAK R1

DCI DigiGuide User Manual

04.17.2024

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Advanced Topics

Important Safety Info

GENERAL SAFETY WARNINGS

The precision of TeraTrak R1 data depends on maintaining as much contact between the crown of R1's tires and the ground surface as possible at all times during operation. Losing ground contact for even a moment can reduce the accuracy of R1 measurements. Ensure wheels are free of debris. Walking speed and bumpiness of the surface can reduce wheel contact with the ground. Follow the Dynamic Speed Gauge carefully and minimize "red zone" readings while using R1. Don't use R1 on snow or sand, and walk particularly slowly over cobble. Also take care to proceed slowly over curbs. Keep R1 upright while operating, do not tilt to a side.

Since R1 is designed to produce precision measurements, it is critical that all inputs be as precise as possible. Inaccurate input data will impact the accuracy of R1 output.

The foregoing factors, failure to carefully follow the operating instructions, as well as other factors may reduce the accuracy of R1 data. Imprecise R1 data can lead to inaccurate positioning of the drill rig and inaccuracies in your bore planning. Therefore, to avoid striking underground utilities, inaccurate installations and/or lost time, you must also continue following customary safety protocols at the jobsite, including identifying buried utilities and maintaining a customary safety buffer. Do not rely solely on R1 data. DCI strongly recommends matching up DCI locating system measurements against R1 data points to ensure alignment.

ENVIRONMENTAL REQUIREMENTS

System working elevation: up to 1981.2 m

Operating temperatures:

- **Run mode:** -20° to 60°C

- **Charge mode:** 0°C to 40°C
- **Storage and transportation:** -40° to 65°C

Relative Humidity: <90%

Dust and Water Ingress: IP65 per IEC 60529

Handling Drop (1 meter): IEC 61010

Vibration: MIL-STD-810G

Electrostatic Discharge: IEC 61000-4-2

Operation may be compromised if the equipment is subjected to conditions outside these specified limits.

Ship in original carrying case or packaging of sufficient durability to prevent mechanical shock to equipment during transportation.

If you have any questions about the operation of your TeraTrak R1 App or R1, please contact DCI Customer Service for assistance.

Disposal

This equipment must adhere to the WEEE Recast Directive (2012/19/EU) and cannot be disposed of with household waste. For more information about how to properly dispose of this equipment, contact our customer service department.



Bootcamp

WHAT IS A TERATRAK R1?

The TeraTrak R1 lets you gather data about the terrain and elevation changes of your job site in real-time. The R1 connects via Bluetooth to the TeraTrak R1 App installed on your mobile device.

In the App, you can mark utilities and define reference points, called waypoints, while walking the bore path. TeraTrak also generates maps, charts, and rod-by-rod bore plans.

The collected terrain data and job site data can be used for bore planning in the application of your choice.

HOW THE R1 GATHERS TERRAIN DATA

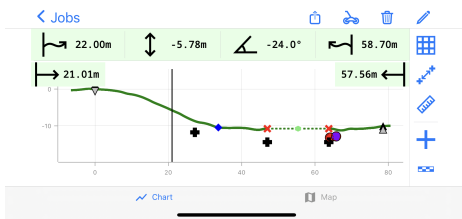
The R1 uses multi axis sensors to measure the angle between the two wheels. These sensors are a key reason the R1 is able to map terrain precisely. As it travels over the terrain it continually collects angle and distance data which the mapping algorithms turn into elevation data. As you work with longer paths, (greater than 38 m) small errors in the elevation measurements can accumulate. By following the same path back to the original starting point, many of the accumulated errors can be averaged out by the compensation algorithm.

However, a drawback with the multi-axis sensors is that with precision it is also more sensitive to fast movements. When a user goes over bumpy terrain the user introduces fast movements (shock) that are difficult to filter out. Following the speed gauge will ensure the most accurate data collection.

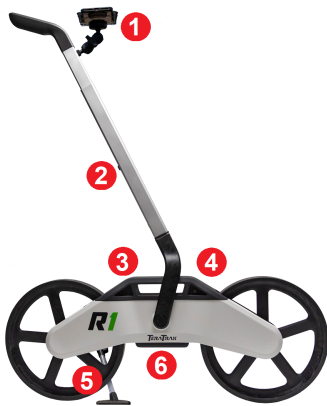


The terrain and distance data are referenced from the starting (or the entry point if it has been moved) point which is set at 0 distance and 0 elevation. A distance of 22.0 m and an elevation of -5.78 m, the point being measured is the distance and elevation from the starting point.

The terrain and distance data are referenced from the starting point (or the entry point if it has been moved), which is set initially as distance=0 and elevation=0. For example, distance= 22.0 m and elevation= -5.78 m, the point being measured is the distance and elevation from the starting point.



PARTS OF THE TERATRAK R1



1. RAM Mount (Device not included)
2. Handle adjustment
3. Battery strength and Bluetooth indicator
4. Charging plug outlet
5. Kickstand

6. Reference Point

COLLECTING THE BEST DATA

- Keep a steady pace with both wheels on the ground, rotating smoothly and without bouncing. You may need to go slower than the speed gauge suggests to ensure accurate readings over bumpy ground. If measurements are taken while the gauge is in the red area, data may be suspect.
- Mark the ground where you start gathering data and at every mark made in the TeraTrak R1 App. The reference point ^{*} is the center point between the wheels where the handle is attached.
- To ensure the accuracy of the data, always walk the return path as closely as possible to the original. The return path is shown in orange and then changes back to green after the two paths are compared and determined to be accurate.
- If the forward and return path is too dissimilar, the App cannot combine the two paths. A message will advise you to rewalk the path to gather additional data.

GLOSSARY DEFINITIONS

*DYNAMIC SPEED GAUGE


TeraTrak R1 speed gauge displays while the R1 is gathering data and provides feedback on optimum speed for data gathering. The indicator must be in the green zone for the most accurate data.

*R1 REFERENCE POINT

This is the spot on the R1 that is used as the position recorded for the R1. It is the center point between the wheels where the handle is attached. See the "Parts of the TeraTrak R1" in the Bootcamp Chapter for an illustration.

SCREEN ELEMENTS OVERVIEW

Use the TeraTrak R1 App to start, stop, pause, and add markers to charts as you gather data. After the data is collected, there are additional controls to measure and evaluate the charts. Some controls are only available when the App is connected to the R1, or while actively collecting and working with data.

 In this guide, screenshots come from both Android and iOS devices. Some buttons and screens may appear differently than on your device.

DEPTH DISPLAY OPTIONS

The R1 App allows the user to choose to display depth readings two ways: Locator Depth and Depth Below Terrain.

Locator Depth matches the depth the DigiTrak locator displays on the Locate Mode screen. R1 bore plans display depth readings that uniquely match the DCI locator's display. Use Locator Depth to ensure that your R1 Boreplans match the expected depth readings from a DCI locator.

Depth Below Terrain is the vertical depth to the drill head from the terrain. This measurement is useful with non-DCI equipment. This could be a physically measured depth. For example, taken with a tape measure.

TERATRAK APP MENU

These controls appear on the top of most of the TeraApp App screens.

Back - Returns to the previous screen



Export - Exports charts as CSV* and PDF* files



Devices - Paired and discovered R1s



Delete - Delete a job



Edit - Edit job information



GLOSSARY DEFINITIONS

*PDF

"Portable Document File" - PDF stands for "portable document format". PDF files cannot be modified.

DATA COLLECTION CONTROLS

Use these buttons to control the collection of data. Some buttons only appear when you are connected to an R1 and actively collecting data.

Pause Job - Pause recording while mapping



Start/Resume Job - Start or resume mapping



Return path - Mapping the return path to validate measurements



Finish Job - Completes the job.



Add Markers - After

Pausing, add markers to the chart. See "Add Markers for Utilities and Waypoints" in the Collect Data chapter.



Quick Add - Only available while collecting data. Adds a generic marker, which can be edited later, and restarts collecting data automatically.



JOB TYPES OVERVIEW

There are four kinds of jobs that display terrain information. Choose the type of job before you begin collecting data: Standard Terrain, Two-Point Calculation, Setback Calculation, and Distance Measurement.

Use the **Standard Terrain Job** to survey a job site and create complete bore plans. The chart displays distances, elevations, and pitch.

When using R1 to determine where to set your rig, the **Setback Calculation** helps you calculate where to set your drill rig to reach a specific depth and pitch.

When planning a drill path between two points, the **Two-Point Calculation** uses the terrain, waypoints^{*}, and utilities you've marked to give you a rod-by-rod plan.

When measuring terrain distance, use the **Distant Measurement**.

Use the TeraTrak R1 App to start, stop, pause, and add markers to the chart to indicate utilities and other important features.

i In this guide, screenshots come from both Android and iOS devices. Some buttons and screens may appear differently than on your device.

watch video on Youtube:

Digital Control Inc. - Terrain Mapping with TeraTrak R1 - English - (1:24 min)

<https://youtu.be/AIVJLe3CvRs>

GLOSSARY DEFINITIONS

*WAYPOINT

A reference point on a bore path.

TERRAIN DATA CONTROLS

Stuff You Should Know



These controls appear on the side and bottom of the TeraTrak R1 App screens and are only available after you have finished a job. They allow you to measure and calculate distances and pitch from the chart, display tables, and change the chart.

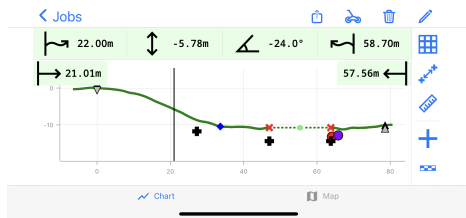


Table - Calculate and display the Rod by Rod table.



Pitch Calculation - Calculates the

two waypoints, as well as depth difference.



Measurement Mode -

Measures surface distance, horizontal distance, elevation difference, and pitch between two points on the terrain.



Add Markers - Add waypoints, utilities, and other markers.



Scaling - Choose how the chart is scaled in the R1 app and in PDFs.



Chart/Map - Toggle between chart and bird's eye view.



Chart - Toggle between bird's eye view and chart.

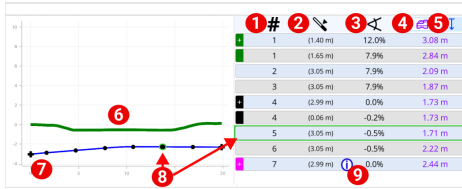


You can use the pinch and spread controls to zoom in or zoom out of data, maps, and charts.

ROD BY ROD TABLE

The rod by rod table is available for Standard, Setback, and Two Point Calculation jobs types. After you finish mapping, tap **Table**.

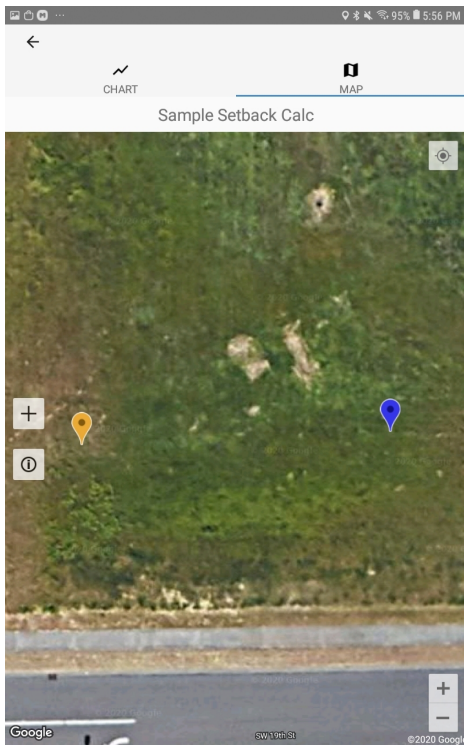
A rod by rod plan is generated based on your default settings and your data collected.



1. Rod number
2. Rod length or rod remaining
3. Pitch
4. Locator depth
5. Vertical depth
6. Terrain topography
7. Entry point (for Setback job) or current starting point
8. Rod and corresponding rod data
9. More information available on this data point. See "App Messages" in the Advanced Topics chapter.

MAP VIEW WITH BIRDS EYE VIEW

You can toggle between a chart view and a bird eye's view.



Pin - Start position

Orange pin - End position

White dot - Current position (not shown)

To add a pin - Use current location or tap on the map for position

Display options - Toggle on and off Start, End, and Current Position



The App uses the native map software for your device's operating system, Apple Maps or Google maps. Map markings may differ.

Initial Setup

ASSEMBLING THE R1

STEP 1 OF 3

Insert the handle into the socket until it locks in place.

STEP 2 OF 3

Use the buttons on the back to adjust the handle to a comfortable height.

STEP 3 OF 3

Attach the optional RAM mount.

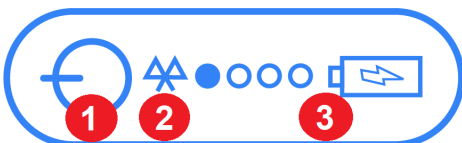
CHARGE THE BATTERY

STEP 1 OF 4

Plug the charger cable into the R1, then into the power brick. Plug the power brick plug into a power outlet.



STEP 2 OF 4




The battery life indicator is on the top of the R1.

1. Power button
2. Bluetooth indicator
3. Battery level

STEP 3 OF 4


The power button is red when the battery life is low. Flashes red while charging and a steady green when charged.



-  Always check the battery level before using the R1. The R1 battery drains at the rate of 2% per day while in storage.

STEP 4 OF 4

When the battery reaches less than 10%, a warning message appear in the TeraTrak App.

-  The T1 uses the same charging cable as the Falcon locator battery charger.

TERATRAK APP INTRODUCTION

The free TeraTrak App on your mobile device is required to collect and map terrain data from your TeraTrak R1 Rover. The

TeraTrak App is available for both iOS and Android smart devices.



INSTALL TERATRAK R1 APP ON MOBILE DEVICES (ANDROID)

STEP 1 OF 5

TeraTrak R1 requires the TeraTrak app on your mobile device to collect terrain data. Download and install the free TeraTrak App from the App Store or Google Start/Resume. The TeraTrak app is compatible with Android 8.0 or later.

STEP 2 OF 5

On your mobile device, go to the App Store.

STEP 3 OF 5

Search for "TeraTrak."

STEP 4 OF 5

Tap **Install**.

STEP 5 OF 5

The TeraTrak App shortcut appears on your Home screen. Tap the icon to open.



INSTALL TERATRAK R1 APP ON MOBILE DEVICES (IOS)

STEP 1 OF 5

TeraTrak R1 requires the TeraTrak R1 App on your mobile device to collect terrain data. Download and install the free app from the App Store. The TeraTrak R1 App is compatible with iOS 11.0 or later on iPad and iPhone.

STEP 2 OF 5

On your mobile device, go to the App Store.

STEP 3 OF 5

Search for "TeraTrak."

STEP 4 OF 5

Tap **Install**.

STEP 5 OF 5

The TeraTrak App shortcut appears on your Home screen. Tap the icon to open.



TERATRAK R1 SETUP WIZARD

STEP 1 OF 4

Before You Start



The TeraTrak First-time Setup Wizard guides you through the initial setup and default configuration steps for your R1 and TeraTrak R1 App.

- Location Services permissions
- Bluetooth permissions

- Preferred units of measurement (feet and inches, feet with decimals, or metric), including pitch units (percent or degrees)
- Rod parameters, including Max Bend per Rod and Rod Length
- Bore parameters, including entry angle, entry depth, first-rod length, straight drill, and exit angle angle.
- Connect to your R1

This wizard only runs the first time you open the app and cannot be repeated. You can find the manual setup instructions in the "Advanced Topics" chapter of this manual.



The First-time Setup Wizard will not run if you are upgrading an existing version of the TeraTrak R1 App.

STEP 2 OF 4

After installing the TeraTrak R1 App, tap the App icon on your smart device.



STEP 3 OF 4

Follow the steps of the wizard.

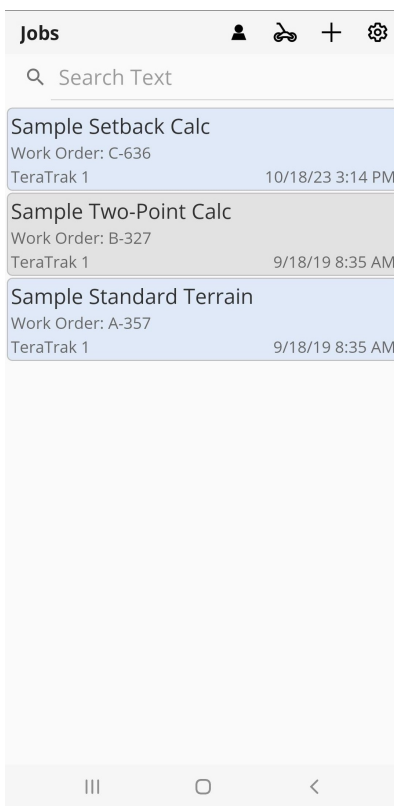
- Click **Continue** to go to the next step and save changes.
- Click **Skip** to go to the next step without making changes. Not recommended.
- Click **Back** to go to the previous step.



You must allow the TeraTrak App to use your location and Bluetooth connection or the App will not function correctly.

STEP 4 OF 4

When the setup wizard is complete, it will close, and you will see the Jobs screen with the sample jobs.



The First-time Setup Wizard will not run if you are upgrading an existing version of the TeraTrak R1 App.

CREATE A DDM ACCOUNT

STEP 1 OF 7

Before You Start



A DigiTrak Datalog Management subscription can be linked with:

- A Falcon F5+ Locator (any version) + an Apple mobile device (iOS 11.0 or higher) or Android mobile device (Android 8.0 or higher)
- A Classic F5 Locator (version 3.04 or higher) + an Android mobile device (Android 8.0 or higher)
- A TeraTrak R1 (version 2.0 or higher) + an Apple mobile device (iOS 11.0 or higher) or Android mobile device (Android 8.0 or higher)
- A Windows PC (Windows 10.0.18362.0 or higher)



If you already have a DDM account and want to add or update a subscription, go to <https://mydigitrak.com> and Sign In.

STEP 2 OF 7

Go to <https://mydigitrak.com/>^{*} and select **Create New Account**. Read the description and select **Next**.


STEP 3 OF 7

Fill in your company information, and then select **Next**.




The Tax ID is not required for some countries including the U.S.A.

STEP 4 OF 7

-  To change the language after the account is created, contact DCI Customer Support.

STEP 5 OF 7

Complete the user form. Enter and verify a password.

-  This user will be the initial manager of the company. All other users can be added through the myDigiTrak user page after the account has been created.

STEP 6 OF 7


Review the new account information, and read and accept the following:

- DigiTrak Datalog Management Subscription Agreement
- Data Privacy Policy
- Consent to Store Data

Select **Back** to make any corrections, or next to **Confirm** your account.

STEP 7 OF 7

Your application will be sent to the DCI Customer Service team and an email will be sent to the address entered in the form with the next steps.

-  If you do not receive an activation email, check your junk email folder.

GLOSSARY DEFINITIONS

ADD OR RENEW A DDM SUBSCRIPTION

STEP 1 OF 10

Things You Should Know



A DigiTrak DataLog Management (DDM) account and a current subscription are required for Log While Drilling (LWD) with the Falcon F5+/F5 and for bore planning with the TeraTrak R1.

- Locator subscriptions can be purchased online or through a dealership.
- R1 subscriptions can be obtained for free [using this form](#) * or contacting DCI Support.


If you do not have a DDM account, go to mydigitrak.com *, select **Create New Account**. See the "Create a DDM Article" for instructions.

When you sign into the app, an icon in the header notifies you if a subscription is expired or about to expire.



STEP 2 OF 10

Go to <https://mydigitrak.com> * and sign in.

-  If sign-in is unsuccessful, the app will provide an option to help with a forgotten password.

STEP 3 OF 10

Select the **Subscriptions** tab.

STEP 4 OF 10

To add a new subscription, you can either:

- Select **Purchase a Subscription**
- Select **Redeem Code**

STEP 5 OF 10

Select the **Quantity** for the number of subscriptions to purchase, and then select **Add to Cart**.



Each locator or R1 requires a separate DDM subscription.

STEP 6 OF 10

If you selected **Add a Subscription**, complete the PayPal information and click **Next**.



You can either use a Paypal account or the Paypal Credit/Debit card service.

If you selected **Redeem Code**, enter the code and click **Redeem**.





If you select more subscriptions than the prepaid Redeem Code covers, you will receive an error. Select Cancel and start over with the correct number of prepaid subscriptions. You can use Add a Subscription to pay for additional subscriptions with Paypal.

STEP 7 OF 10

For each subscription added, select **Choose Locator**.

If the locator is not in the list of equipment, select Add Equipment and follow the instructions.

-  Locator serial numbers can be found in the battery compartment, on the Start-up screen, or under System Information in the main menu.
-  R1 serial numbers can be found on a sticker in the rear wheel well.

STEP 8 OF 10

Use the dropdown to choose the equipment to link the subscription, and then select **Select**.

STEP 9 OF 10


In the Add Equipment window, confirm the serial number and friendly name, and then select **Save Changes**.

STEP 10 OF 10

watch video on Youtube:

How to Register Your R1 and Apply a DDM Redemption Code in Your myDigiTrak Account (1:19 min)

<https://www.youtube.com/watch?v=NEoM4pk2pRU>

-  Some videos are only available in English. If needed, please turn on subtitles and automatic translations.

GLOSSARY DEFINITIONS

Jobsite Setup

TURN ON THE R1

Press the Power button for three seconds.



The power button will turn from red to green.

When the battery reaches less than 10%, a warning message appears in the TeraTrak App.

VIEW R1 INFORMATION IN THE TERATRAK APP

STEP 1 OF 2

In the App, tap **R1 Information**.



STEP 2 OF 2

TeraTrak Information

GENERAL

Name R1-90001187AJ

Serial Number
90001187[Forget](#)

VERSIONS

Firmware
3.0.0.126Bluetooth
1.5.0.212 (2 0)

Your firmware is up to date

BATTERY

Battery Status

R1 friendly name

Rename - Tap to rename the R1

Serial Number - Unique identifier for this R1

Forget - Unpair this R1 and remove it from the list of paired devices

Firmware - Version of the R1 firmware

Bluetooth - Version of the Bluetooth firmware and confirmation that your Bluetooth and firmware is up to date

Battery Status - Amount of total charge of the R1's power

Charge Cycles - The number of times that the R1 has been charged.

Total Runtime - The total number of hours that the R1 has been powered on

Total Distance - The number of miles/kilometers that the R1 has measured

Max Temperature - The maximum temperature that the R1 has been subjected to

Self Test - Tap to start a Self Test of the R1

SELECT A JOB TYPE

STEP 1 OF 4

Stuff You Should Know



Once you select a job, you cannot change the job type. For more information on Job Types, go to "Job Types" in the Bootcamp chapter.

STEP 2 OF 4

On the Jobs screen, tap **Add**.



STEP 3 OF 4

On the Add screen, tap the type of job you want to create.

STEP 4 OF 4

Tap **Create**.

SIGN INTO DDM

STEP 1 OF 2

Before You Start



Some features in DCI Products require that you are signed into DDM (DigiTrak DataLog Management) with a current subscription:

- In the TeraTrak R1 App, you need a current subscription for your R1 to create and share complete bore plans and to exceed the 45.7 meter limit between waypoints.
- In the LWD (Log While Drilling) Mobile App, you need a current subscription for your locator to store and retrieve logs, and to create PDF reports.

STEP 2 OF 2

Go to <https://mydigitrak.com/>*. Enter the e-mail address and password created when you purchased your DDM subscription.



✉ demo@digital-control.com

🔒 password

Sign In

Continue without signing in >

- In areas of poor mobile phone service or if you want to transfer data to your mobile device without logging in, tap Continue without signing in.

If sign-in is unsuccessful, the app will provide an option to help with a forgotten password.

GLOSSARY DEFINITIONS

Collect Terrain Data

COLLECT DATA ON STANDARD TERRAIN

STEP 1 OF 12

Before You Start



Physically mark the starting point on the ground using the center of the R1 reference point (1). This is where you will begin gathering data.



STEP 2 OF 12

On the Jobs page, tap **Add Job**, and then select **Standard Terrain**.



If you know the intended entry point, mark it as a waypoint and mark that spot on the ground.

STEP 3 OF 12

Enter the **Job Name**. Optionally, enter a **description** and **work order**.

STEP 4 OF 12

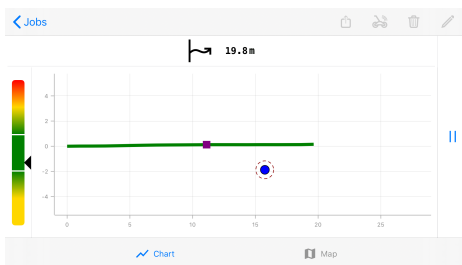
Verify or edit the drill parameters.

STEP 5 OF 12

Position the R1 20-30 feet before your intended entry, mark the spot on the ground, and tap **Start/Resume Job**.



STEP 6 OF 12



Start walking to begin collecting data. As you walk, the drill path appears as a green line.



For accurate data collection, maintain a walking speed that keeps the indicator in the optimum green zone.

STEP 7 OF 12

Use the Data Gathering controls to pause, resume, or add markers. For more information, see "Data Gathering Controls" in the Bootcamp chapter.



If you are crossing a road or other hazard, pause and use quick flag to create a temporary marker and immediately resume mapping. You can edit the information when you are in a safe location.

STEP 8 OF 12

When you reach the desired
End of your planned bore,
continue walking and
gathering data for an
additional 6 to 9 meters. Put
a physical mark on the
ground at the reference
point, then tap **Pause Job**.



You must come to a complete stop to pause and record markers.

STEP 9 OF 12

Turn the R1 around, placing
the reference point* directly
over the physical mark. This
is where you will start the
return path*.



Tap **Return Path**. The R1
begins to gather data right
away.



For the most accurate readings, maintain the same speed as the forward path.

STEP 10 OF 12

When you reach the
physical mark where you
started collecting data, tap



STEP 11 OF 12

Tap **Finish**.

STEP 12 OF 12

Review the path, complete any temporary markers, and make any corrections to the Entry and Exit Points. For more information, see "Data Gathering Controls" in the Bootcamp chapter.



If you are not signed into DDM with a current subscription for this R1, the maximum distance between two waypoints is 45.7 meters. For more information on DDM, go to the article, "Create a DDM Account" in the Initial Setup chapter.

GLOSSARY DEFINITIONS

CALCULATE A PATH BETWEEN TWO WAYPOINTS

STEP 1 OF 9

Things You Should Know

Use the Two-Point Calculation to determine a rod-by-rod plan between two waypoints*. Place the R1 at the current drill head location, facing the direction of the bore.



For this type of job, you do not walk a return path.

STEP 2 OF 9

On the Jobs screen, tap **Add Job**, select **Two-Point Calc.**



STEP 3 OF 9

Enter the Job name and the current pitch and depth of the transmitter housing.

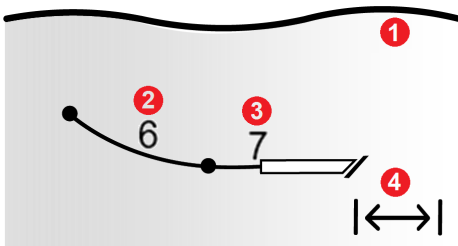
STEP 4 OF 9

If you are using the locator depth^{*} from the locator's Locate Mode screen, toggle **Use Locator Depth** on.

If you manually measured the depth, leave the **Use Locator Depth** off.

STEP 5 OF 9

You can set the current rod number (optional) and the length of that rod remaining in the current position.



1. Surface Terrain
2. Rod 6
3. Rod 7 (partial)
4. Rod 7 (remaining)

STEP 6 OF 9

STEP 7 OF 9

Review and verify the max bend and rod length. Make changes as needed


-  The default drill parameters were defined in Settings.

STEP 8 OF 9

Use the Data Gathering controls to play, pause, resume, or add markers. For more information, see the "Data Gathering Controls" article in the Bootcamp chapter.

STEP 9 OF 9

Once the bore path turns solid blue, you have reached a viable drill path. If you haven't reached the desired position, you can continue mapping to the desired position.

-  If the bore path has not turned blue when you reach your desired position, tap Finish Job. For more information, see "Working with Invalid Paths" in the Advanced Topics chapter.

GLOSSARY DEFINITIONS**USE THE NUDGE FEATURE TO MOVE A WAYPOINT****STEP 1 OF 6****Before You Start**

You can adjust the waypoint placement on a chart using the Nudge control. Like the d-pad on a TV remote or game controller, you can move the waypoint up, down, left, and right in real-time on the chart.

STEP 2 OF 6

Tap a waypoint and then tap **Nudge**.







STEP 3 OF 6

On the Nudge Controller, tap the arrows to move the waypoint or enter the **Distance, Depth, or Pitch** manually in the text boxes.



☀ Maintain grade ⓘ

Distance

 

Depth

 

Pitch Type

Pitch

STEP 4 OF 6

You can lock a specific distance or depth to limit how the waypoint can be moved. Tap the lock icon next to the field to lock and unlock a measurement.



You cannot nudge an entry or exit point with depth that a user entered.

STEP 5 OF 6

To change how far the waypoint moves with each nudge, tap the number in the center of the Nudge control and select the increment (1 cm, 10 cm, 50 cm, 1 m).

**STEP 6 OF 6**

Tap **Revert Changes** to go back to the original placement or tap **Save**.

CALCULATE THE SETBACK**STEP 1 OF 9****Things you should know**

Use the Setback Calculation to determine where to set your drill rig.

The bore plan is limited to 38 meters feet of surface distance.

Determine the waypoint where the drill head needs to be at a specific depth on your bore path. Make a physical mark on the ground. This is where you will place the R1 and start to collect data.

i For this type of job, you do not have to walk a return path.

STEP 2 OF 9

On the Jobs screen, tap **Add Job**, and then select **Setback Calc.**

**STEP 3 OF 9**

Enter the Job name and other descriptive information.

STEP 4 OF 9

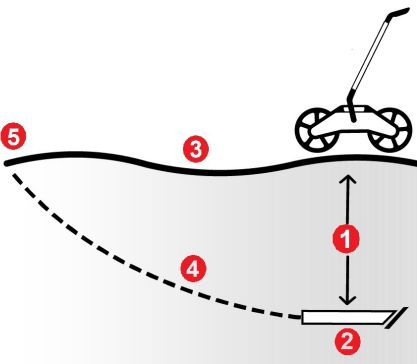
Under **Desired Position**, enter the Depth that you need the drill head to reach.

If you would like to specify the pitch, toggle the **Specify Pitch** option on. Enter the desired pitch.

STEP 5 OF 9

Review and verify the entry pitch and starting depth, and make changes as needed.

As you gather data, the R1 uses these parameters to calculate the minimum setback distance.



1. Desired depth
2. Desired pitch (optional)

3. Terrain
4. Valid bore path for setback
5. Valid drill entry point



The data in the Drill Parameters section is also from the default parameters in Settings.

STEP 6 OF 9

Tap **Create**, and then tap **Start/Resume Job**.

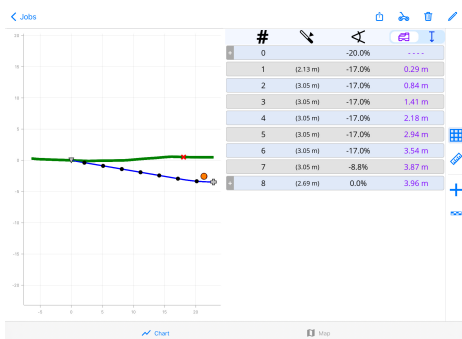


STEP 7 OF 9

Place the R1's reference point over the spot marked on the ground.

Walk towards your anticipated rig location. A dotted red line indicates that the rig cannot be positioned there without breaking one of the drill parameters, such as the bend radius rules.

When a solid blue line appears, pause the R1 and make another mark on the ground at the R1's reference point. This is the shortest distance for a setback.



STEP 8 OF 9

Use the mapping controls to pause, resume, or add markers. See the "Use the Mapping Controls" article for more information.

STEP 9 OF 9

You can continue to a more convenient position as long as the line is blue and up to 44.2 meters.

Anywhere on the blue line is a viable rig position.

ADD MARKERS FOR UTILITIES AND WAYPOINTS

STEP 1 OF 5



Failure to mark a utility accurately, or at all, may increase the risk of a utility strike. Even proper use of R1 is not a guarantee against a utility strike, normal additional safety protocols must also be followed.

You can add markers to your map to indicate features on the path. You can add markers for:

- **Waypoint** - Mark an intended point along the path and enter a depth and intended pitch
- **Utility** - Mark utilities including depth and a safety clearance
- **Flag** - Mark landmarks or points of interest on the bore path, such as a curb
- **Pin** - Enter landmarks or points of interest to the left of right of the bore path, such as a fire hydrant
- **Obstruction** - Mark an obstruction that interrupts the bore path, such as busy roadway or waterway that can't be safely crossed

STEP 2 OF 5

Stop the R1 over the point,
and tap **Pause Job**.



Do not move the R1 while adding a marker. Keep the R1's reference point over the position.



STEP 3 OF 5

Tap **Add Marker**.



For safety reasons, or if you do not have information, you can tap Quick Add for a temporary marker and restart collecting data immediately.

STEP 4 OF 5

Select the type of marker to use and fill in the appropriate information. This screenshot is an example of the information entered for a utility.


Cancel Save


UTILITY INFO


Utility Type
Drinking Water


Comment


UTILITY PARAMETERS

Distance
 73.00 m

Depth
 1.52 m

Product Diameter
 100 mm


Clearance
 0.50 m

 For utilities, the depth is the center of the utility.

STEP 5 OF 5

To resume mapping, tap **Start/Resume** and continue walking the path.



 All the markers can be edited, as needed, as long as you are not actively collecting data.

WALK THE RETURN PATH AND FINISH A STANDARD TERRAIN JOB

STEP 1 OF 4

Stuff You Should Know



While working with a Standard Terrain job, to accurately gather data on the terrain of a site, you must use the same path in the opposite direction at a similar pace as the forward path. Use the speed gauge^{*} to monitor your speed on the return path^{*}.

STEP 2 OF 4

Stop the R1 and tap **Pause Job** to pause data collection. Place a physical mark on the ground under the R1 reference point.



STEP 3 OF 4

Rotate the R1 around to face toward the start point, tap **Return Path** to resume recording.



i As you walk the return path, you can add or edit markers.

STEP 4 OF 4

As soon as you start the return path, your path will display as an orange line.

When you reach the start point, tap **Finish Job**. The paths will be compensated and merge into a green line.



GLOSSARY DEFINITIONS

*DYNAMIC SPEED GAUGE

TeraTrak R1 speed gauge displays while the R1 is gathering data and provides feedback on optimum speed for data gathering. The indicator must be in the green zone for the most accurate data.

*RETURN PATH

To gather the most accurate data, you must retrace your path from the opposite direction and create a "return path." The TeraTrak R1 App takes the data from the forward and return paths, compensates for any minor differences, and then displays the terrain and data on the chart.

Use Terrain Data

FIND THE MOST EFFICIENT ENTRY POINT FOR A BOREPLAN

STEP 1 OF 6

Things You Should Know




After placing a tentative entry point and your first waypoint, use the **Auto-place entry** option to adjust the location of the entry point along the surveyed terrain.

The TeraTrak app uses the bore parameters defined in **Settings** to minimize the steering required to reach the first waypoint.

STEP 2 OF 6

On the chart, tap the first waypoint after the original entry point. The Nudge Control pane opens and displays the current Distance, Entry Depth, and Entry Angle.

 To add an waypoint at the entry, turn on the option.

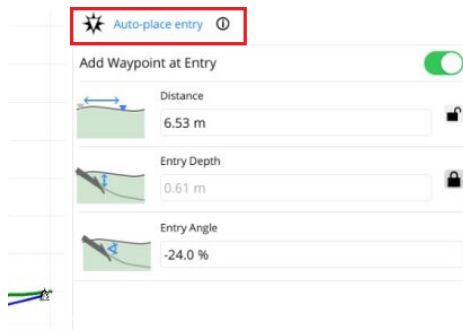
STEP 3 OF 6

If needed, you can lock the Distance or Entry Depth. Confirm the measurement and then tap the lock icon beside the field.



STEP 4 OF 6

Tap **Auto-place Entry**.



STEP 5 OF 6

If the **Entry Angle** has not been defined, you must enter it. 0.0% is the default value.

Enter the desired pitch, and then tap **Save**.


STEP 6 OF 6

The blue bar at the top of the pane gives you the distance and direction the entry point moved.

- To use the new entry point, tap **Save**.
- To reject the change, tap **Revert changes**.

★ Auto-place entry ⓘ

Entry point moved forward 9' 11"

Distance

 

Entry Depth

Entry Angle


⌂ Revert changes Save Cancel

EDIT MARKERS

STEP 1 OF 4

Things You Should Know



After a job is finished, all markers except obstructions can be added or edited.

STEP 2 OF 4

To edit a marker, tap the marker on the chart. The Marker Detail window opens.

STEP 3 OF 4

Tap **Edit** below the marker information to make changes. For more information on markers, see "Add Markers for Utilities and Waypoints" in the Collect Data chapter.



If there are multiple markers near the same location, you can scroll inside the tooltip to see the other markers.

The screenshot shows a mobile application form for editing utility marker information. At the top, there are 'Cancel' and 'Save' buttons. The form is divided into two sections: 'UTILITY INFO' and 'UTILITY PARAMETERS'. Under 'UTILITY INFO', there is a 'Utility Type' field with 'Drinking Water' entered and a 'Comment' field. Under 'UTILITY PARAMETERS', there are four fields: 'Distance' (73.00 m), 'Depth' (1.52 m), 'Product Diameter' (100 mm), and 'Clearance' (0.50 m). Each parameter field includes a small icon and a unit label.

STEP 4 OF 4

Tap **Save**.

USE THE NUDGE FEATURE TO MOVE A WAYPOINT

STEP 1 OF 6

Before You Start



You can adjust the waypoint placement on a chart using the Nudge control. Like the d-pad on a TV remote or game controller, you can move the waypoint up, down, left, and right in real-time on the chart.

STEP 2 OF 6

Tap a waypoint and then tap **Nudge**.



STEP 3 OF 6

On the Nudge Controller, tap the arrows to move the waypoint or enter the **Distance, Depth, or Pitch** manually in the text boxes.



☀️ Maintain grade ⓘ

Distance

Depth

Pitch Type
 Auto Manual

Pitch

STEP 4 OF 6

You can lock a specific distance or depth to limit how the waypoint can be moved. Tap the lock icon next to the field to lock and unlock a measurement.



You cannot nudge an entry or exit point with depth that a user entered.

STEP 5 OF 6

To change how far the waypoint moves with each nudge, tap the number in the center of the Nudge control and select the increment (1 cm, 10 cm, 50 cm, 1 m).



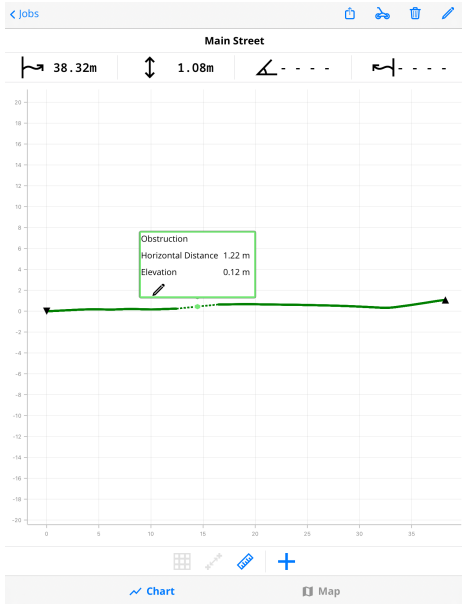
STEP 6 OF 6

Tap **Revert Changes** to go back to the original placement or tap **Save**.

EDIT AN OBSTRUCTION

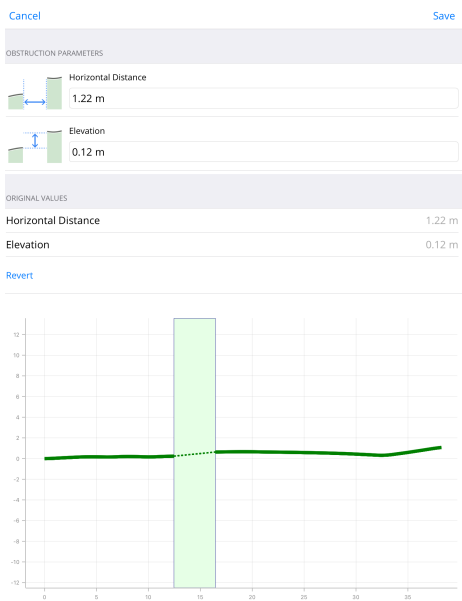
STEP 1 OF 3

To edit an obstruction, tap the marker on the chart.



STEP 2 OF 3

Tap **Edit**.



STEP 3 OF 3

Tap **Save**.

MAINTAIN THE GRADE BETWEEN WAYPOINTS

STEP 1 OF 6

Things You Should Know

When you need to maintain a specific grade between waypoints, such as drilling for a sewer line, you can use the Maintain grade option to automatically adjust the grade of a specific waypoint to either the previous or the next waypoint.

STEP 2 OF 6

On the chart, tap the waypoint you want to adjust. The Nudge Control pane opens and displays the current Distance, Entry Depth, and Entry Angle.

STEP 3 OF 6

If needed, you can lock the **Distance** or **Entry Depth**. Confirm the measurement and then tap the lock icon beside the field.



STEP 4 OF 6

Tap **Maintain Grade**.

STEP 5 OF 6

If the **Pitch** has not been defined, you must enter it. 0.0% is the default value. Enter the desired pitch, and then tap **Save**.

STEP 6 OF 6

The blue bar at the top of the pane gives you the distance and direction the waypoint moved.

- To use the new entry point, tap **Save**.
- To reject the change, tap **Revert changes**.

ADD REFERENCE ELEVATION

STEP 1 OF 4

In the chart view, tap **Add Marker**.



STEP 2 OF 4

Tap **Reference Elevation** and fill in the appropriate information.



STEP 3 OF 4

To add the Reference Elevation to the chart, tap **Create**.

STEP 4 OF 4

Reference Elevation can be edited like other markers by tapping on the marker on the chart.



GET INFORMATION ABOUT A SPECIFIC POINT ON A CHART

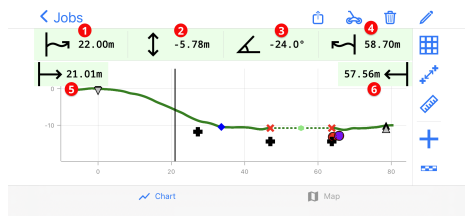
STEP 1 OF 3

On the **Jobs** list, tap the name of the Job.

STEP 2 OF 3

To view details on a specific terrain point, touch and hold on the screen to activate the trackball and drag to the specific point of interest. Continue to hold to view the data.

STEP 3 OF 3



1. Surface distance from the Start
2. Elevation difference from Start
3. Pitch of the specific point
4. Terrain distance from the End
5. Horizontal Distance from the Start
6. Horizontal Distance from the End

COMPARE DATA BETWEEN TWO POINTS

STEP 1 OF 4

On the **Jobs** list, tap the name of the Job.

STEP 2 OF 4

To compare data between two points, tap **Measure**.

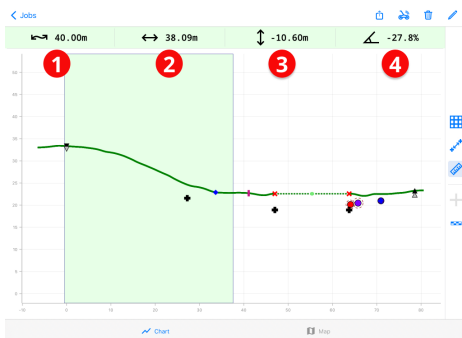


A green box appears between the Start and End Point of your path by default.

STEP 3 OF 4

To change the area being measured, tap and hold the sides of the box and drag the vertical lines to the points of interest.

STEP 4 OF 4




1. Terrain distance of selected area
2. Horizontal distance of the selected area
3. Elevation distance between the selected terrain points
4. Average slope of the terrain of the selected area

HOW TO USE PDFS AND CSV FILES

The two types of exports are meant to be used for bore planning in other applications.

Accurate terrain data, as well as details on utilities, waypoints, entry and exit points, can all be gathered bore planning.

The CSV file is a raw data file that includes all the collected data in 30 cm increments. That file allows data to be imported directly into other applications that accept CSV imports.

-  For Vermeer Projects users, go to Settings > Projects > Vermeer Projects to enable the Vermeer-specific CSV export.

The PDF file includes much more detail including the chart, map and details on all the added markers. During the export the user can decide frequency of terrain data points to reduce the amount of data.

SAVE CONTRACTOR INFORMATION

STEP 1 OF 5

Contractor information can be saved and included in PDFs.

STEP 2 OF 5

Tap **Settings**.



STEP 3 OF 5

Tap **Contractor Information**.

STEP 4 OF 5

Enter the contractor's contact information.

Cancel

Save

Contractor Information

Name

Contact

Address 1

Address 2

Address 3

City

State/Province

Name: Name

Contact: Contact

Address 1: Address 1

Address 2: Address 2

Address 3: Address 3

City: City

State/Province: State/Province

Country: Country

Postal Code: Postal Code

Work Phone: Work Phone

Cell Phone: Cell Phone

STEP 5 OF 5

Tap **Save**.

SHARE A PDF AND CSV OF A TERATRAK JOB

STEP 1 OF 6

Open the job you want to send.

 The job needs to be finished before it can be sent.

STEP 2 OF 6

Tap **Upload**.



STEP 3 OF 6

Tap **Email**.

STEP 4 OF 6

Scroll through the report. If you need to make any corrections, tap **Back** and then make any changes.

STEP 5 OF 6

To share the PDF* and a CSV* file, tap **Share**. Select the app and follow the directions.



The PDF and CSV's are generated automatically, but you cannot view the CSV file on your device.



If you do not want to use the native email editor for your device, select Share and then select another email app. You can enter a default email recipient in Settings, and update the recipients before sending.

STEP 6 OF 6

If you are sharing a PDF file, the PDF Generation Options dialog pops up. You can change the paper size and select the options not to include the map or terrain data.

You can select which depth information to include:

- **Locator Depth*** - The best option for DCI locators
- **Depth below Terrain*** - Usually used with non-DCI locators

For more information on locator depth, see the article, "Depth Display Options" article in the Bootcamp chapter.

Select your options and then tap **Continue**.



You can also set the PDF defaults under Settings.

GLOSSARY DEFINITIONS

*PDF

"Portable Document File" - PDF stands for "portable document format". PDF files cannot be modified.

*CSV

"Comma-separated value" is a plain text file that stores data. Each line of the file is a data record with fields separated by a comma. The CSV file is used by applications to export and import data.

*LOCATOR DEPTH

The recorded depth from the locator to the transmitter.

*DEPTH BELOW TERRAIN

The vertical depth to the drill head from the terrain. This is often a physical measurement taken with a measuring tape.

Advanced Topics

R1 SPECIFICATIONS

TECHNICAL SPECIFICATIONS

Product ID/Model Number: TTR1

Accuracy Two-way (elevation): ± 5 cm in over 152 m (on firm ground when following speed gauge)

Accuracy One-way (elevation): ± 5 cm in over 38 m (on firm ground when following speed gauge)

Power Source: Built-in lithium-ion battery pack

Battery Life: 40 hrs

Controls: Power button and battery gauge

Voltage, current: 5.0VDC nominal, 500 mA max

Dimensions: 104.1 x 89.7 x 11.4 cm

Weight with Battery: 6.35 kg

Smart Device Operating Systems: iOS 11.0 or newer, Android 5.0 or newer

POWER RATINGS

Operational Voltage: 12VDC (nominal)

Operational Current: 5A Max

ENVIRONMENTAL REQUIREMENTS

Operating Elevation: up to 1981.2 m

Operating temperatures:

- **Run mode:** -20°C to 60°C

- **Charge mode:** 0°C to 40°C
- **Storage and transportation:** 40° to 65°C

Relative Humidity: <90%

Dust and Water Ingress: IP65 per IEC 60529

Handling Drop (1 meter): IEC 61010

Vibration: MIL-STD-810G

Electrostatic Discharge: IEC 61000-4-2

COMPLIANCE RATINGS

This equipment complies with the following: Part 15 of the Rules of the FCC; Industry Canada license-exempt RSS standards; ACMA Radio Communications (Short Range Devices) Standard (2014). Operation is subject to the following two conditions: (1) this equipment may not cause harmful interference, and 2) this equipment must accept any interference received, including interference that may cause undesired operation.

This equipment contains Bluetooth Smart Ready Module, Model No. BT121, FCC ID QOQBT121. BT121 operates at 24.02- 2480 MHz frequency. Max output power is 0.013 W.

Patents - <https://www.digital-control.com/patents/>*

Trademarks - <https://www.digital-control.com/warranty/>*


Limited Warranty

All products manufactured and sold by Digital Control Incorporated (DCI) are subject to the terms of a Limited Warranty. A copy of the Limited Warranty is at <https://www.digital-control.com/warranty/>*

GLOSSARY DEFINITIONS

CLEANING AND STORING THE TERATRAK R1

Cleaning the R1

- Press the Power button  for 5 seconds to power off the R1.
- Inspect the Power level and charge as needed.
- Wipe the R1 clean, especially the wheels.
- Do not pressure wash.
- Store the R1 in the original system carry case safe from impact, moisture, and excessive temperatures.

Storage and Transportation

- Store in the original system carry case safe from impact, moisture, and excessive temperatures.
- Ship in original carrying case or packaging of sufficient durability to prevent mechanical shock to equipment during transport.
- Storage and transportation temperatures must remain within -40° to 149° F.
- The batteries contained in this equipment are lithium-ion. Lithium batteries are considered Class 9 Miscellaneous Dangerous Goods under International Air Transportation Association (IATA) regulations. UN 3481 regulations (Lithium ion batteries contained in equipment) apply to this equipment. These batteries must be packaged and shipped by trained and certified personnel only and in accordance with Packing Instructions 970. Never ship damaged batteries.

BATTERY SAFETY

The batteries contained in this equipment are lithium-ion. Lithium batteries are considered Class 9 Miscellaneous Dangerous Goods under International Air Transportation Association (IATA) regulations. UN 3481 regulations (Lithium ion batteries contained in equipment) apply to this equipment. These batteries must be packaged and shipped by trained and certified personnel only and in accordance with Packing Instructions 970. Never ship damaged batteries.



PROLONGING BATTERY LIFE

To prolong the internal Li-Ion battery life:

- Inspect the power level after every use and charge as needed.
- Keep the power level between two and three bars (40%-70%) and recharge frequently without fully charging the battery.
- Store the R1 between with the battery charge at approximately two bars (40-50%).
- Store at room temperature.



Do not store the R1 for long periods with an empty battery or in high temperature. This will shorten the battery life.



Always check the battery level before using the R1. The R1 battery drains at the rate of 2% per day while in storage.

CONNECT THE R1 TO YOUR MOBILE DEVICE

STEP 1 OF 5

Before You Start



The TeraTrak App needs to be installed before you can pair with the R1.

STEP 2 OF 5

Turn on the R1. The Bluetooth icon will flash blue.



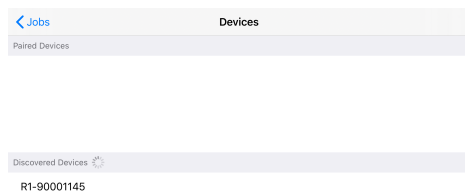
STEP 3 OF 5

In the TeraTrak app, tap the R1 Information icon.



STEP 4 OF 5

In the list of devices, under **Discovered Devices**, tap the name of your R1.

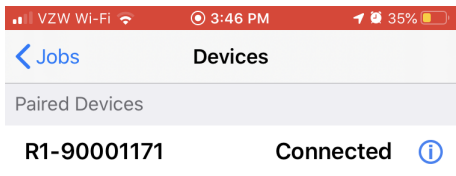




If your device doesn't show up on the list, try these solutions. 1) Make sure that the R1 is on and the Bluetooth is enabled on the mobile device. 2) The App has access to Bluetooth.

STEP 5 OF 5

The paired device will appear under **Paired Devices**, and the Bluetooth icon turns a steady blue.



SET DISTANCE UNITS

STEP 1 OF 4

Tap **Settings**.



STEP 2 OF 4

Tap **Distance Units**.

STEP 3 OF 4

Select one of the options:

X' XX" - feet and inches

X.XX' - decimal feet only

X.XX m - meters

STEP 4 OF 4

Tap **Done**.

SET PITCH UNITS

STEP 1 OF 5

Angle or pitch can be represented as either degrees (°) or percentages (%).

STEP 2 OF 5

Tap **Settings**.



STEP 3 OF 5

Tap **Pitch Units**.

STEP 4 OF 5

Select either X.X% (percentage) or X.X (degrees.)

STEP 5 OF 5

Click **Done**.

SET DEFAULT DRILL PARAMETERS

STEP 1 OF 7

Stuff You Should Know

Drill parameters are the defaults for drill calculations. Drill parameters typically do not change much from job to job, especially when using the same drill rig.



If you change the drill parameters for specific jobs, it does not change the default settings.



Go back to the Settings screen and tap Distance Units to change between standard and metric.

STEP 2 OF 7

Tap **Settings**.




STEP 3 OF 7


Tap **Drill Parameters**.

STEP 4 OF 7


Cancel Save


ROD PARAMETERS


 Max Bend per Rod
4.0 %


 Rod Length
3.05 m

ENTRY PARAMETERS

 Entry Angle
-24.0 %


 Entry Depth
0.00 m


 First Rod Length
2.13 m

 Straight Drill
1.52 m

EXIT PARAMETERS


Exit Angle Type
Auto Manual

 Exit Angle
24.0 %

 Exit Depth
0.00 m

Enter the **Rod Parameters**:

- Max Bend per Rod
- Rod Length

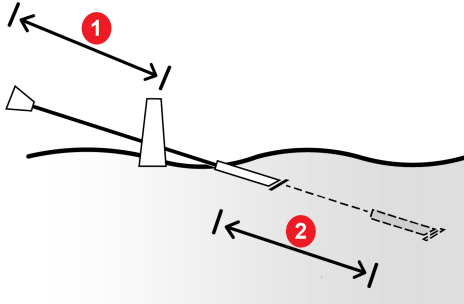
 Max bend per rod can be set to the limits of the drill rod, typically 10% for a 10 ft rod or it can be set to the limits of the product being installed. Enter the Max Bend per Rod in percent.

STEP 5 OF 7

Enter the **Entry Parameters**:

- Entry Angle
- Entry Depth*

- First Rod Length
- Straight Drill Distance*



1. First rod length
2. Straight drill

STEP 6 OF 7

Enter the **Exit Parameters**.

- Exit angle
- Exit depth

STEP 7 OF 7

Tap **Save**.

GLOSSARY DEFINITIONS

*ENTRY DEPTH

The depth below the surface of the entry point.

*STRAIGHT DRILL DISTANCE

The distance drilled straight before any steering takes place and can include as many rods as needed.

CHANGE THE DATA POINT FREQUENCY IN REPORTS

STEP 1 OF 5

Stuff You Should Know



You can select the intervals at which data points will be displayed in reports. For example, every meter or every 5 meters for longer maps.

STEP 2 OF 5

Tap **Settings**.



STEP 3 OF 5

Tap the value for **Export Steps Size**.

STEP 4 OF 5

Select one of the options (1, 5, 10, 15, 20, 30) which are in meters.

STEP 5 OF 5

Tap **Done**.

TURN ZOOM ON OR OFF WHILE COLLECTING DATA

STEP 1 OF 3

Before You Start



With Zoom on, you will only see the portion of the path that you are walking. With Zoom off, you can view the whole path.



You can use your fingertips to "pinch" and "spread" when you are not collecting data to shrink and enlarge the chart.

STEP 2 OF 3

Tap **Settings**.



STEP 3 OF 3

Tap the **Automatically Zoom When Collecting Data** to toggle the option on and off.

WORKING WITH INVALID PATHS

An invalid drill path is one where the user defined maximum allowable bend per rod has been exceeded. When using the drill calculator functionality (setback and two-point) invalid drill paths are indicated by red dashed lines on the chart view and in the drill table the rods in question are marked as red.



There are a few suggestions to achieve drill path valid drill path result.

- **Maximum allowable bend per rod:** Ensure it is not set too conservatively (but note that this value is determined by the drill rod or product pipe specifications).
- **Desired depth:** Try changing the desired depth to reduce the steering required to get to the waypoint.
- **Desired pitch:** Try changing the desired pitch or use Auto pitch for a more likely valid path.
- **Length of the plan:** Try extending the plan (up to max of 38 m) by gathering further data if possible.

TERATRAK R1 APP INFO WARNING MESSAGES

When a rod-by-rod plan appears invalid or the App has made assumptions about terrain, an "i" icon may appear in the table. The messages in this section explain the potential issues.

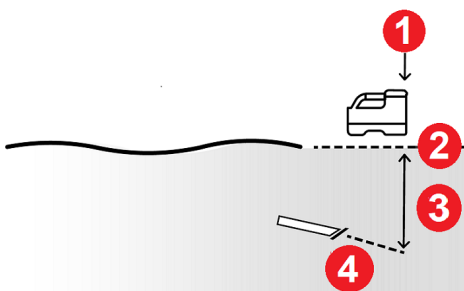
| | | | | | | |
|---|---|----------|-------|---|--------|--------|
| + | 7 | (2.60 m) | 15.0% | i | 0.63 m | 0.61 m |
|---|---|----------|-------|---|--------|--------|

BASED ON DESIRED DEPTH AND PITCH ...

What You Should Know



When the transmitter is pitched down (negative pitch), the locate line on the screen reflects a future position of the transmitter assuming the transmitter stays on the same trajectory (projected depth). The TeraTrak R1 App assumes the terrain to be flat between where the data collection ended and the locate line.



1. Locate Line (LL)
2. Assumed flat terrain
3. Predicted depth reading on locator
4. Depth and pitch at desired location

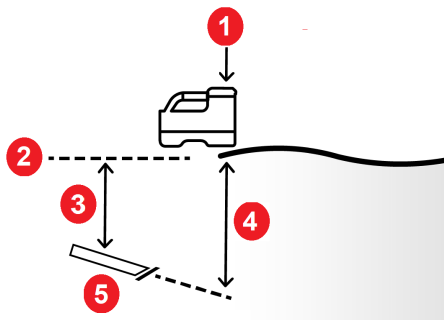
BASED ON CURRENT DEPTH AND PITCH, THE APP HAS ASSUMED A SEGMENT ...

What You Should Know



When the transmitter is pitched down (negative pitch), the locate line on the screen reflects a future position of the transmitter assuming the transmitter stays on the same trajectory (projected depth).

Since the terrain data collection was started at the locate line, the terrain over the transmitter is unknown. The TeraTrak R1 App assumes the terrain to be flat between the locate line and where data collection began.



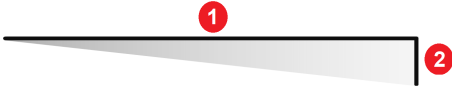
1. Locate Line (LL)
2. Assumed flat terrain
3. Predicted vertical depth
4. Projected depth reading on locator
5. Current depth and pitch

WHEN USING PERCENT TO DISPLAY PITCH VALUES, STEEPER PITCH VALUES ...

What You Should Know

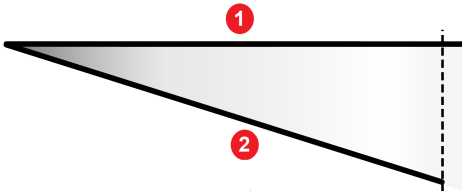


Pitch in percent (%) is defined as vertical distance divided by horizontal distance, often referred to as *Rise over Run*. The key thing in the calculation is that the **horizontal** and **vertical** distances are being used.



1. Run
2. Rise

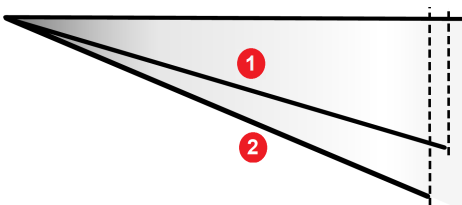
For a 3 m rod being drilled level (0 %) the horizontal distance is 3 m, for that same 3 m rod drilled at 30% pitch the horizontal distance or run is shorter (2.9 m) which then affects the pitch calculation.



1. Rod at 0%
2. Rod at -30%

When drilling at a steeper pitch using percent, the horizontal distance is further shortened as seen in the image. The rise over run calculation will indicate that the maximum bend was exceeded (because of the shorter run) when it was not.

When measuring pitch in degrees this is not an issue as degrees are calculated differently.



1. Rod at -30%

2. Rod at -40%

TERATRAK R1 VIDEOS

STEP 1 OF 8

Watch a selection of training videos or go to the full library of DigiTrak training videos at www.Youtube.com/DCIKent *.



Some videos are only available in English. If needed, please turn on subtitles and automatic translations.

STEP 2 OF 8

watch video on Youtube:

TeraTrak R1 - The Wheel, Reinvented - English (1:35 min)

https://youtu.be/az0j5pb0_Z0

STEP 3 OF 8

watch video on Youtube:

TeraTrak R1 Features and Benefits - English (2:00 min)

<https://youtu.be/wsptJck5mcM>

STEP 4 OF 8

watch video on Youtube:

DCI TeraTrak R1 Terrain Mapping and Bore Planning - English (2:03 min)

<https://youtu.be/sZt6zehjPaM>

STEP 5 OF 8

watch video on Youtube:

Terrain Mapping with TeraTrak R1 – Three terrain mapping methods -
English (1:24 min)

<https://youtu.be/AIVJLe3CvRs>

STEP 6 OF 8

watch video on Youtube:

DCI TeraTrak R1 Set-back Calculation - English (1:32 min)

<https://youtu.be/OwQ1n7Tcmnk>

STEP 7 OF 8

watch video on Youtube:

How to Register Your R1 and Apply a DDM Redemption Code in Your
myDigiTrak Account (1:19 min)

<https://youtu.be/NEoM4pk2pRU?si=EfhxPq6OCy4vZqng>

STEP 8 OF 8

watch video on Youtube:

How to: Create a Full Bore on the R1 - English (2:10 min)

https://youtu.be/8P2PE_rsvZM?si=6XWpDtVhhCoKvWT_

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