



DIGITRAK FALCON F5 SUB-K REBAR

# DCI DigiGuide User Manual

04.17.2024

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# Important Safety Info

## GENERAL SAFETY WARNING

- Only operate your DCI guidance system in accordance with the operating instructions for your system.
- Serious injury and death, as well as property damage, can result if underground drilling equipment strikes a natural gas line, high-voltage electrical cable, or other utility.
- Work slowdowns and cost overruns can occur if you do not use your system correctly.
- You must properly calibrate your DCI guidance system in connection with each drilling project. If you fail to do so, depth readings will likely be inaccurate.
- Interference can lead to inaccurate depth readings and/or interruption of data. See "Special Notes About Interference" for more details.
- DCI guidance systems are used to locate and guide the transmitter (housing) underground. They cannot be used to locate underground utilities.
- Failure to find the front and rear locate points can lead to inaccuracies which may result in drilling off-path and striking an underground utility.
- The locate line on a DCI locator does not indicate the position of the drill head. DCI locators track the transmitter in its housing, which sits behind the drill bit. Also, when drilling steep and/or deep, the locate line may indicate a position behind or ahead of the transmitter. Please see "Steep and Deep" under Advanced Topics for important information about accurately locating the drill head when drilling steep and/or deep.

- Ensure that all underground utilities have been located, exposed, and/or accurately marked prior to drilling. Follow all proper safety precautions, such as potholing.
- DCI equipment is not explosion-proof and should never be used near flammable or explosive substances.
- Wear jobsite protective/safety clothing such as dielectric boots, gloves, hard hat, high-visibility vest, and safety glasses.
- Maintain a minimum distance of 8 inches (20 cm) from the front of the locator to the user's torso to ensure compliance with RF exposure requirements.
- Comply with federal, state, and local governmental regulations (such as OSHA) and all other customary or required safety precautions.

If you have any questions about the operation of your guidance system, please contact DCI Customer Service for assistance.

#### SPECIAL NOTES ABOUT INTERFERENCE

While DCI guidance systems provide you with technology to combat active interference (and passive interference, with the Sub-K Rebar transmitter), no guidance system is immune to all interference.

Interference can lead to inaccurate depth readings and/or interruption or loss of data. Never rely on data that does not display quickly and/or remain stable.

The Falcon frequency optimizer selects frequencies based on measured interference at a specific time and location.

Interference levels change with time and with even minor changes in location. The frequency optimizer is not a substitute for prudent operator judgment. If performance drops while drilling, consider switching to the other selected band (not available on the Falcon F1) or use Max Mode.

An **A** on the screen can indicate signal Attenuation due to the presence of excessive interference, which can make depth readings inaccurate. Attenuation is normal in shallow depths less than 8 ft (2.4 m). If the signal strength is also flashing; this indicates extreme interference. Depth and locate points may be compromised and the locator will not calibrate.

Interference is classified as either active (generating electro-magnetic signals) or passive (material that can conduct or block electro-magnetic signals). Sources of interference may include:

### **Active**

- Traffic signal loops
- Buried dog fences
- Cathodic protection
- Radio communications
- Security systems
- Microwave towers
- Power, phone, fiber-trace and cable TV lines

### **Passive**

- Metal pipes
- Rebar
- Trench plates
- Chain-link fences
- Vehicles
- Saltwater/salt domes
- Conductive earth, such as iron ore

If you have any questions about the operation of your guidance system, please contact DCI Customer Service for assistance.

## ENVIRONMENTAL REQUIREMENTS

System working altitude: up to 6562 ft (2000m).

Storage and transportation temperature: -40° to 149°F (-40° to 65°C).

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 guidance system, please contact DCI Customer Service for assistance.

## STORAGE AND SHIPPING OF BATTERIES

Remove the batteries from all system components during shipping and prolonged storage. Failure to do so may result in battery leakage, which may lead to risk of explosion, health risks, and/or damage.

Store and transport batteries using a suitable protective case that will keep batteries safely isolated from one another. Failure to do so may result in short circuits, which may lead to hazardous conditions including fire.

Lithium-ion batteries must be packaged and shipped by trained and certified personnel only. Never ship damaged batteries.

If you have any questions about the operation of your guidance system, please contact DCI Customer Service for assistance.

# Bootcamp

## HDD LOCATING HISTORY

Locating in the horizontal directional drilling (HDD) industry was initially based on locating a buried cable by sweeping the locator back and forth to find the highest signal strength (peak signal), indicating that the locator was over the cable. Unfortunately, this method did not always guarantee an accurate location of the cable, nor did it provide any depth information.

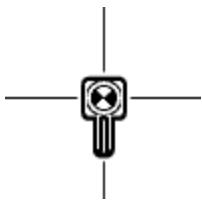
This “peak signal” method was adapted to HDD with the introduction of a transmitter that provides information on the position and depth of the drill head. However, this method is unreliable and inaccurate because the peak signal strength is not always directly above the transmitter housing.

In addition, peak signal locating doesn’t show where the drill tool is headed. Think of drilling like driving a car: it is more effective to look ahead through the windshield to see where you are going than to look down at the road through the floorboard to keep the car (drill tool) on the road (drill path).

## BALL-IN-THE-BOX GUIDANCE

DCI’s design uses a “locate point” in the transmitter signal. The Front Locate Point (FLP), which is out ahead of the transmitter, shows where the **transmitter housing** is heading.

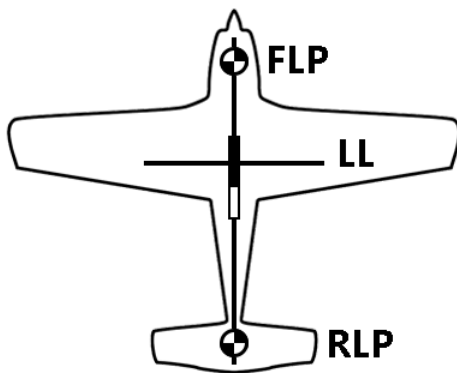
DCI invented the *Ball-in-the-Box* user interface to make it quick and intuitive to find a locate point, speeding up drilling jobs: just move the locator so the ball moves into the box on the screen.



Finding a locate point also helps you find the drill head itself.

There is a second locate point behind the transmitter called the Rear Locate Point (RLP). The two locate points, combined with a Locate Line (LL), pinpoint the precise location of the **transmitter housing** below ground.

They are arranged like an airplane, where the Front Locate Point is the plane's cockpit, the Rear Locate Point is the tail, and the Locate Line is the wings.



If your drill path requires a certain amount of depth or to maintain a constant pitch, use the predicted depth feature at the Front Locate Point. This eliminates the need for depth readings over the transmitter, speeding up the drilling process.

#### INTERFERENCE AND SIGNAL STABILITY

Interference can cause incorrect locate data that reduces locating accuracy. There are two different types of interference that can distort the transmitter signal: active and passive.

Active interference, or “noise”, consists of anything that emits a signal that interferes with the transmitter signal. Example sources include power lines, radio towers, cathodic protection, fiber tracer lines, invisible dog fences, security systems, and traffic signal loops. Falcon's frequency optimizer finds the best frequencies to avoid noise.

Passive interference consists of anything that blocks or distorts the transmitter signal resulting in incorrect depths or missing data. Example sources include rebar, guard rails, bridge abutments, chain link fencing, salt/saltwater, and soil high in metal ore. The Falcon sub-kHz transmitter (available for Falcon F5 and F5+ only) helps cut through passive interference without distorting the signal.

An **A** on the screen can indicate signal Attenuation due to the presence of excessive interference, which can make depth readings inaccurate. Attenuation is normal in shallow depths less than 8 feet (2.4 m). If the signal strength is also flashing, this indicates extreme interference. Depth and locate points may be compromised and the locator will not calibrate.

## OPTIMIZE EVERY JOB

Noise varies by amount and frequency depending on where you are and even the time of day. That's why it's important to find the best frequencies for *every bore*.

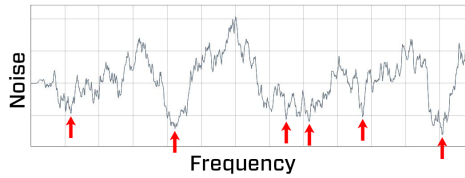
This is called *frequency optimization*, and only Falcon has it. Using frequencies with the highest probability of success against noise increases locating accuracy and reduces the risk of tripping out.

Falcon's frequency optimizer scans through *hundreds* of frequencies, then bundles those with the lowest noise into finely-tuned bands that work best for the current job.

Select two bands and switch between them mid-bore if needed (not available on the Falcon F1 with singleband).

The Falcon Plus locators with *Quick Scan Pair* offer features to make the selection of bands faster and easier. Two clicks select the two preset bands selected for your region.





## MENU NAVIGATION

Falcon F Plus line of locators has a toggle switch on top and a trigger switch under the handle to navigate the menu system and select options.

Use the 4-way toggle switch to access a menu, move between menu options, and open shortcuts.

Shortcuts require you to hold the toggle for a second or longer; we call this a “hold toggle”. For example, from the Locate Mode screen, open a transmitter band selection shortcut by holding the toggle right.

Use the trigger switch to power on the locator, select a menu option, and to take a depth reading.

Pull and release (click) the trigger to select. In some cases, you’ll need to hold the trigger for a second or more to use a function, such as turning the locator on or taking a depth reading.

## BENEFITS OF DATA LOGGING

Utilities increasingly require a digital as-built report to ensure drilling parameters were met.

The DataLog® feature on your locator lets you easily capture and store the rod-by-rod data of your pilot bore.

When used with DCI’s LWD Mobile app, geo-tagging the entry and exit automatically ties the as-built to a physical location.

With a DigiTrak DataLog Management (DDM) subscription, use your mobile device to upload DataLogs to your cloud account even during drilling to show progress to back-office personnel.

After importing your DataLog job into our Log-While-Drilling (LWD) software, you can edit, annotate, and finalize the precise report you or your customer requires.

On the DigiTrak Aurora remote display, use our free LWD Live app to view the drill profile in real-time as each rod is completed.

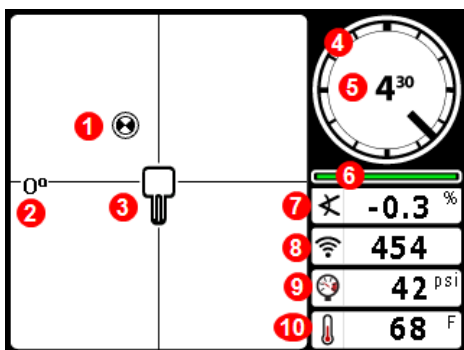
## SCREEN ELEMENTS OVERVIEW

The Locate Mode, Depth, and Predicted Depth screens are the primary screens you will use for locating.

When the locator is detecting a signal from a transmitter, the Locate Mode screen provides real-time data about the transmitter's location, temperature, pitch, roll, and signal strength.

Depth data appears when the trigger is held at the Locate Line (LL) and predicted depth appears when held at the Front Locate Point.

## LOCATE MODE SCREEN

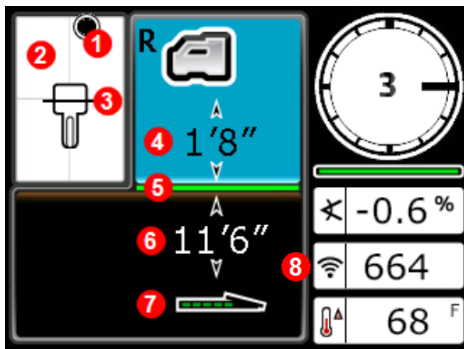


1. Locating ball (FLP or RLP)
2. Yaw indicator

3. Locator
4. Roll indicator
5. Roll value
6. Roll/pitch update meter
7. Transmitter pitch
8. Power Mode and Transmitter signal strength
9. Transmitter fluid pressure
10. Transmitter temperature

## DEPTH SCREEN

The Depth screen displays when the trigger is held with the locator at the Locate Line (LL).



1. Locate point (front or rear)
2. Bird's-eye view
3. Locate Line (LL)
4. Height-Above-Ground (HAG) setting on
5. Ground level
6. Transmitter depth

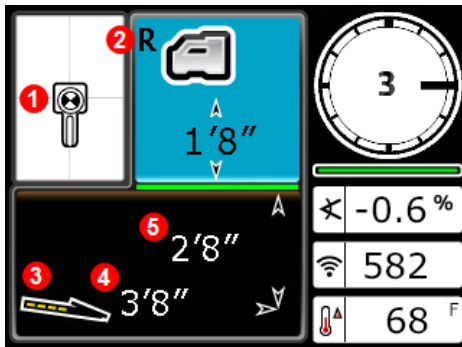
7. Transmitter battery strength
8. Transmitter power level



When the HAG setting is disabled, the locator displays at ground level and must be placed on the ground during depth readings.

### PREDICTED DEPTH SCREEN

The Predicted Depth screen displays when the trigger is held with the locator at the Front Locate Point (FLP).



1. *Ball-in-the-Box* at FLP
2. Reference Lock\* indicator
3. Transmitter battery strength and pitch angle
4. Horizontal distance between transmitter and FLP
5. Predicted depth\* of transmitter

The predicted depth is the depth the transmitter is calculated to be at when it reaches the FLP if it continues on its current path.

In this example, if the drill head travels an additional 3'8" (1.12 m) at -0.6% pitch, it will be directly below the locator at 2'8" (0.81 m).



Do not take a predicted depth reading when the locator is over the Rear Locate Point (RLP).

## GLOSSARY DEFINITIONS

### \*REFERENCE LOCK INDICATOR

Indicates a reference signal has been obtained for displaying the locate line.  
Displays at the top of the Locate Mode screen.

### \*PREDICTED DEPTH

The Predicted Depth screen displays when the trigger is held with the locator at the Front Locate Point (FLP). The predicted depth is how deep the transmitter is calculated to be when it reaches the front locate point if it continues on its current path. The predicted depth will also display when the locator is at the Rear Locate Point (RLP), but it will not be correct.

# Initial Setup

## REGISTERING YOUR EQUIPMENT

### STEP 1 OF 2


#### Stuff You Should Know



Registering your equipment activates the product warranty.

Registering also allows us to contact you if it is recovered after being lost or stolen.

If you want to enable the Lock Out Capability (LOC) feature, contact DCI support.

 See the DCI website for warranty terms and conditions.

### STEP 2 OF 2

Contact your authorized DCI dealer or DCI to register your equipment.

You will need the equipment serial number and your company contact information.

Here's where to find your serial number:

- Locator: in the battery compartment
- Transmitter: engraved on the steel body
- Remote display: decal on the back

## POWER ON

## STEP 1 OF 5

Check the charge level of your battery; each of the five lights on a li-ion battery represents about 20% capacity.

- i** NiMH batteries do not have a power meter. You can view battery life in the top banner of the Main menu.



## STEP 2 OF 5

Insert battery in the locator.



## STEP 3 OF 5

Pull the trigger to turn on the locator.

## STEP 4 OF 5

Click to confirm you've read the manual.

## STEP 5 OF 5

Click again to continue.

## TRANSMITTER SETUP

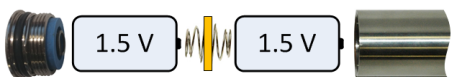
## STEP 1 OF 3

Your transmitter comes with two battery contact springs and one battery cap tool.



## STEP 2 OF 3

Insert batteries positive terminal first. If you are using C-cell batteries, install one spring between batteries to help prevent chatter.



Alkaline batteries are not sufficient for High Power Mode. The locator will display a warning.

Do not use a spring with a SuperCell or the Falcon Tx Adapter (FTA).

## STEP 3 OF 3



## SET HEIGHT-ABOVE-GROUND

## STEP 1 OF 6

**Stuff You Should Know**

Use Height-Above-Ground (HAG) to set a height measurement on the locator so you don't have to put it on the ground for a depth reading.

Raising the locator above the ground also provides separation from underground interference that might otherwise reduce the transmitter's range or cause variable readings.

## STEP 2 OF 6

Hold the locator at your side as if you were holding a suitcase.

## STEP 3 OF 6

Measure the distance between the ground and the bottom of the locator using a tape measure.

## STEP 4 OF 6

From the **Main** menu, select **HAG**.



## STEP 5 OF 6

Select **Set HAG**.



## STEP 6 OF 6

Use the keypad to enter the

value you measured and  
select **Enter**. HAG is now on.



The locator must now be held at the set height for accurate depth readings.




HAG must be turned on manually each time after the locator is powered on or calibrated.

# Jobsite Setup

## POWER ON

### STEP 1 OF 5

Check the charge level of your battery; each of the five lights on a li-ion battery represents about 20% capacity.

-  NiMH batteries do not have a power meter. You can view battery life in the top banner of the Main menu.



### STEP 2 OF 5

Insert battery in the locator.



**STEP 3 OF 5**

Pull the trigger to turn on the locator.

**STEP 4 OF 5**

Click to confirm you've read the manual.

**STEP 5 OF 5**

Click again to continue.

**SELECT/CHANGE TX TYPE**

**STEP 1 OF 4**

**Stuff You Should Know**



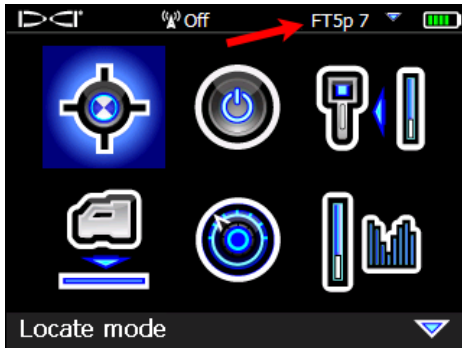
Your locating system can use different transmitters: FT2, FT5, or FTR.

The transmitter selected on your locator must match the transmitter in use.

Transmitter:



**Main** menu:



If they do not match, use the following process to change the transmitter selection on the locator.

STEP 2 OF 4

At the **Main** menu, select **Transmitter selection**.



STEP 3 OF 4

Select **Transmitter selection** (same name, different screen).



STEP 4 OF 4

Select your transmitter.



A transmitter must be paired and calibrated to the locator before it will provide data.

SCAN

### STEP 1 OF 5

Ensure all transmitters are powered off or more than 100 ft (30.5 m) away from the locator.

### STEP 2 OF 5

From the **Main** menu, select **Frequency optimization**.



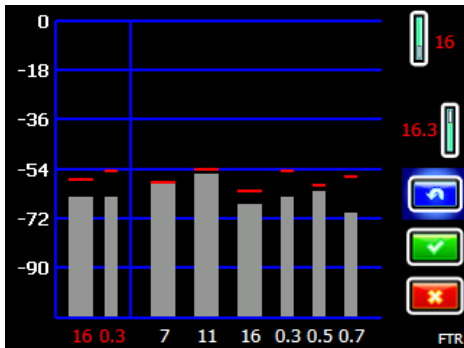
### STEP 3 OF 5

Click the blue arrow to start the scan.



### STEP 4 OF 5

When the noise bars appear, walk your intended drill path while observing the bars and their high-point markers. Higher bars and markers indicate more noise.



### STEP 5 OF 5

Return to the point of most noise and click to rescan.

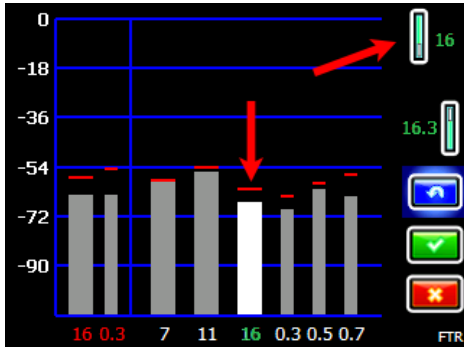


This gives you the best frequencies for this location.

## PICK

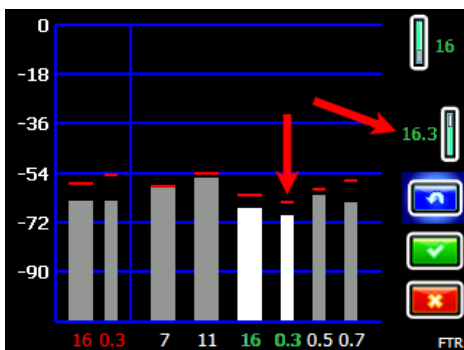
### STEP 1 OF 2

Toggle to the wide band (7, 11, or 16) with the least noise\* and click twice to select and assign it as the Up band.



### STEP 2 OF 2

Toggle to a narrow depth band (0.3, 0.5, or 0.7) and click twice to select and assign as the Down band. The 0.3 kHz band is often the best choice for rebar even if it doesn't show the lowest noise.



## GLOSSARY DEFINITIONS

### \*BAND WITH THE LEAST NOISE

Interference varies with time and location, and no band works perfectly in all conditions. Different bands are better for different kinds of interference. Lower frequency bands tend to perform better in passive interference. Middle bands can perform better in deeper bores and may have longer Target Steering capability.

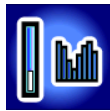
Higher frequency bands have slightly less signal strength but tend to offer better performance around active interference such as power lines.

## PAIR

### STEP 1 OF 5

Pairing sends the frequencies you selected to the transmitter. Pair a transmitter immediately after scanning and picking bands.

To pair any other time, from the **Main** menu select **Transmitter selection**,




**Frequency optimization**, and continue.



### STEP 2 OF 5

Insert battery(ies) positive terminal first and install the battery cap to power on the transmitter.

 The FO noise bars will spike when the transmitter is powered on.

### STEP 3 OF 5

Select **Pair**,



then **Transmitter pairing request**.



### STEP 4 OF 5

Align the transmitter so its IR port is within 2 in (5 cm) of and facing the round IR port on the front of the locator.





#### STEP 5 OF 5

For pairing with standard pitch resolution, select **Transmitter pairing request** again.



If you want to see pitch in 0.1% increments, select **Transmitter pairing request 0.1% / 100%**.



**i** Selecting 0.1% pitch increments decreases fluid pressure resolution.

**!** Falcon F2 and older Falcon F5 transmitters do not support FSSP mode and will not work in FSSP mode even if selected.

#### GLOSSARY DEFINITIONS

\*STANDARD PITCH RESOLUTION

Resolution at:

- 0 – 3% grade (0 – 1.7°) is 0.1%
- 3 – 9% grade (1.7 – 5.1°) is 0.2%
- 9 – 30% grade (5.1 – 16.7°) is 0.5%
- 30 – 50% grade (16.7 – 26.6°) is 2.0%
- 50 – 90% grade (26.6 – 42.0°) is 5.0%

## CALIBRATE INTRO

Calibration is required any time you change your transmitter, locator, drill head, power setting, or perform a new frequency scan and then pair.

Calibrate both bands with the transmitter in the housing (flat on the ground in a low-noise, metal-free environment) immediately after pairing.

To calibrate any other time, from the **Main** menu select

**Calibration**, then **1 pt**

**calibration** before

continuing with the

following steps.



Watch video on YouTube:

Calibrate Your DCI Transmitter and Locator (1:28 min)

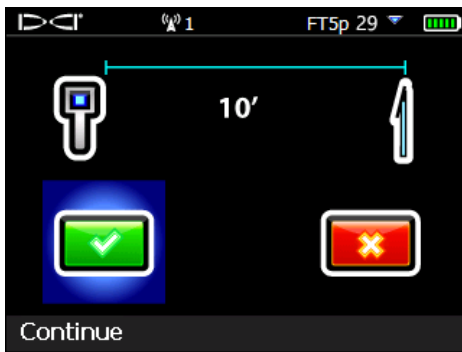
<https://youtu.be/j2c6FvpAa6k>

## CALIBRATE, DOWN

### STEP 1 OF 5

Install the powered-on transmitter in the drill head. Place the cover on, but don't fasten it yet.

### STEP 2 OF 5



### STEP 3 OF 5

Select **Continue** to calibrate the Down band.



The locator beeps and displays a check mark after a successful calibration.



### STEP 4 OF 5

Use the **Above Ground Range (AGR)** that displays next to check the accuracy of your calibration. Move the locator to at least two different distances (including maximum bore depth) and verify distance readings match the measurement.



## STEP 5 OF 5

Click **Cancel** to exit to the Locate Mode screen where you will see clock, pitch, and signal strength.



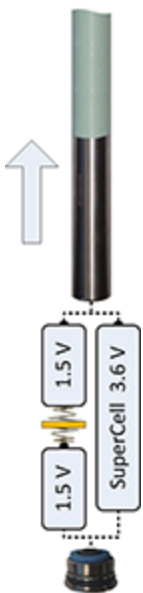
## CALIBRATE, CHANGE BANDS

## STEP 1 OF 4

To change the *transmitter* to the Up band, remove the batteries from the transmitter and observe data disappear from the locator.

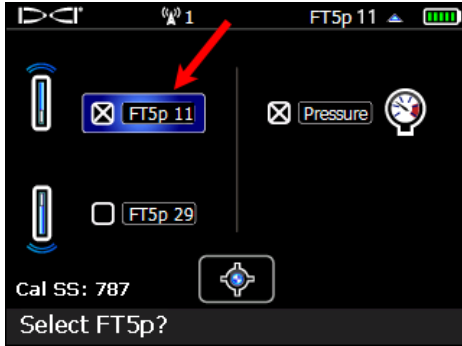
## STEP 2 OF 4

While holding the transmitter vertical with the index cap end pointing straight up, insert the batteries and reinstall the battery cap to power on the transmitter in the Up band.



### STEP 3 OF 4

To change the *locator* to the Up band, from the locate screen, hold toggle right to open the transmitter selection menu and select the Up band.



### STEP 4 OF 4

Select **Locate mode** to return to the Locate screen and verify you see clock, pitch, and signal strength.



The red triangle in the roll indicator shows calibration is needed.



CALIBRATE, UP

### STEP 1 OF 7

From the **Main** menu, select **Calibration**.



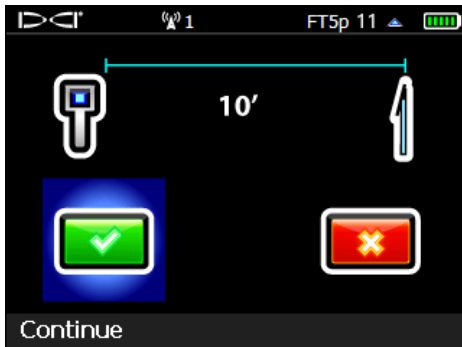
### STEP 2 OF 7

Select **1 pt calibration**.



### STEP 3 OF 7

Put the transmitter back in the drill head, put the cover back on, and ensure the *near edge* of the locator is still parallel to and exactly 10 ft (3 m) from the *center* of the drill head.



### STEP 4 OF 7

Select **Continue** to calibrate the Up band.



The locator beeps and displays a check mark after a successful calibration.



### STEP 5 OF 7

Use the **Above Ground Range (AGR)** that displays next to check the accuracy of your calibration. Move the locator to at least two different distances (including maximum bore depth) and verify distance readings match the measurement.



## STEP 6 OF 7

Click **Cancel** to exit to the Locate screen. Verify you see clock, pitch, and signal strength.



## STEP 7 OF 7

Fasten the drill head cover properly before drilling.

# During Drilling

## TURN ON HEIGHT-ABOVE-GROUND

### STEP 1 OF 2

From the **Main** menu, select **HAG**.



### STEP 2 OF 2

If the height shown at the bottom of the screen is acceptable, select **Enable HAG**. Otherwise, select **Set HAG** to enter a new height.



1. Disable HAG
2. Enable HAG
3. Set HAG



The locator must now be held at this height for accurate depth readings.



HAG must be turned on manually each time after the locator is powered on or calibrated.



## LOCATING THE TRANSMITTER

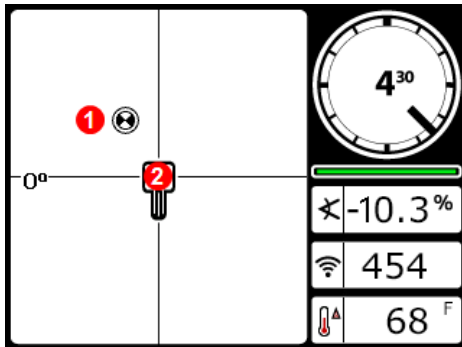
### STEP 1 OF 12

#### Find the Rear Locate Point (RLP)

After the first rod has been drilled in, start at the entry point and face the direction of the bore.

### STEP 2 OF 12

Using the **Locate Mode** screen, move the locator to put the ball in the box.



1. Ball
2. Box

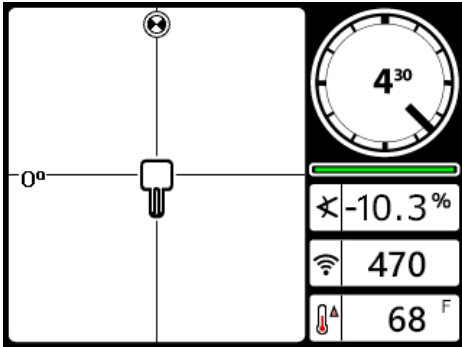
### STEP 3 OF 12

Mark this position on the ground as the Rear Locate Point (RLP).

### STEP 4 OF 12

#### Find the Front Locate Point (FLP)

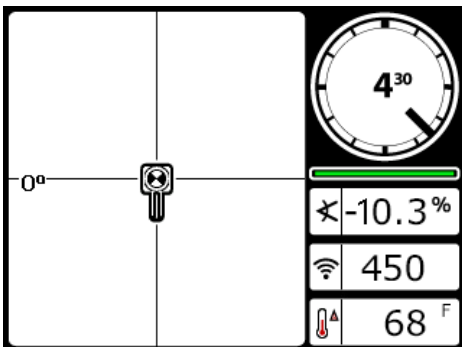
Walk forward. As you pass the transmitter, the ball jumps to the top of the screen. You are now tracking the Front Locate Point (FLP).



- i The signal strength increases as you move toward the transmitter and decreases as you move away from it.
  
- i An A near the roll indicator indicates signal Attenuation is in effect. If the signal strength is red and flashing, this indicates extreme interference.

#### STEP 5 OF 12

Move the locator to put the ball in the box.



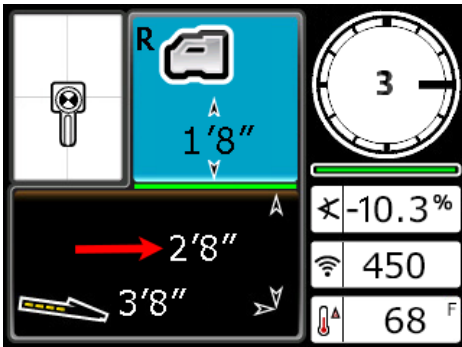
- i The locator can face toward or away from the drill as long as it is parallel to the direction of drilling.

### STEP 6 OF 12

Mark this position on the ground as the Front Locate Point (FLP).

### STEP 7 OF 12

Hold the trigger to show the predicted depth\* of the transmitter at this location.



Hold the trigger for at least one second. The R indicates the signal is locked. The LL will not appear without the reference lock.

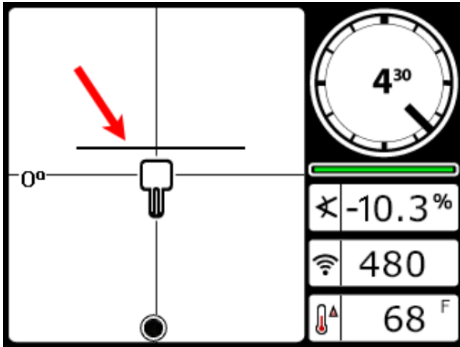
### STEP 8 OF 12

Look back toward the RLP. The transmitter housing is positioned to travel toward you along the line connecting the RLP and FLP.

### STEP 9 OF 12

#### Find the Locate Line (LL)

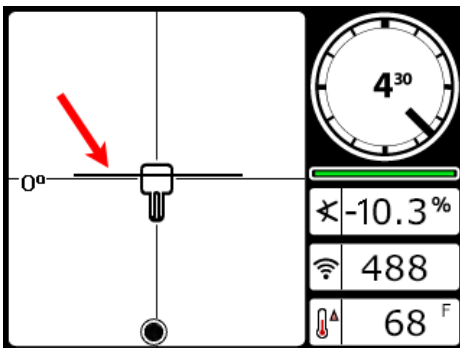
Walk back toward the RLP until the Locate Line (LL) appears.



If the LL does not appear, go to the FLP and hold the trigger to show the predicted depth until the R appears.

#### STEP 10 OF 12

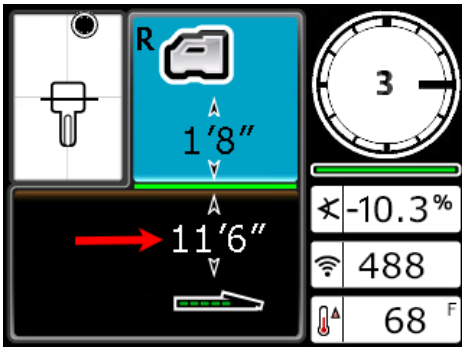
Ensure the locator is on the line connecting the two marked locate points. Position the locator so the LL passes through the center of the box. The transmitter housing should be beneath this point as long as the transmitter is relatively level (see "Steep and Deep" under Advanced Topics).



The locator can face toward or away from the drill as long as it is parallel to the direction of drilling.

#### STEP 11 OF 12

Hold the trigger to take a depth reading.





If the signal strength is red and flashing, this indicates extreme interference. If you hold the trigger for longer than five seconds, the locator will enter Max Mode, which can help with unstable data caused by interference or extreme depths.

#### STEP 12 OF 12

### Continue Locating as the Drill Head Moves

After the drill head moves forward another rod, find the new RLP, FLP, and then the LL.

 If the new FLP is in line with the prior locate points (a straight bore line), it is unnecessary to find a new RLP. For a curved drill path, always identify both the FLP and RLP.

 If you have a straight drill path but the FLP is to the left or right of the line projected from the previous locate points, this may indicate a drill head deflection or interference affecting the transmitter's signal.

#### GLOSSARY DEFINITIONS

##### \*PREDICTED DEPTH

The Predicted Depth screen displays when the trigger is held with the locator at the Front Locate Point (FLP). The predicted depth is how deep the transmitter is

calculated to be when it reaches the front locate point if it continues on its current path. The predicted depth will also display when the locator is at the Rear Locate Point (RLP), but it will not be correct.

#### \*MAX MODE

Max Mode can stabilize roll/pitch data and depth readings when drilling at the transmitter's range limit due to extreme depth or interference, which will vary by jobsite. See the Max Mode topic for use and important safety information.

## CHANGE BANDS

### STEP 1 OF 5

#### Stuff You Should Know



Switching bands on the transmitter may provide better data, better depth, and/or better locate results as interference conditions change.



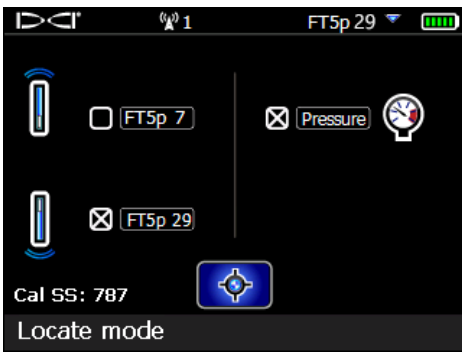
Calibrate BOTH bands before drilling so you get accurate depth readings on both bands.

### STEP 2 OF 5

Observe signal strength drop after the drill operator completes a roll sequence to change bands.

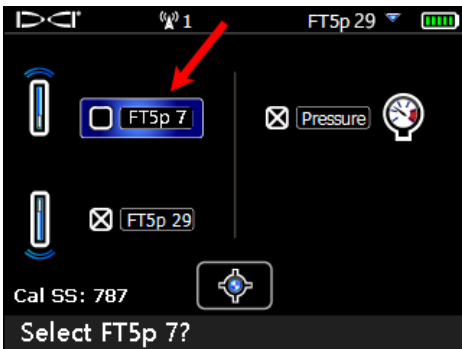
### STEP 3 OF 5

From the Locate Mode screen, hold toggle right to open the Band Selection shortcut menu.



#### STEP 4 OF 5

Toggle to and select the transmitter band without the X in the box (in this case, **FT5p 7**).



#### STEP 5 OF 5

Select **Locate Mode**.



# Post Drilling

## LOCATOR AND BATTERY CARE

### STEP 1 OF 4

Select power icon in the **Main** menu to power off the locator.



### STEP 2 OF 4

Remove the battery and inspect its contacts and those inside the battery compartment for corrosion and debris. Clean and charge as needed.

### STEP 3 OF 4

Wipe the locator clean. Use only an abrasive-free cleaner and soft cloth to clean the screen.



Do not pressure wash.

### STEP 4 OF 4

Store the battery and locator in the original system carry case safe from impact, moisture, and excessive temperatures.



Do not store the battery in the battery charger or locator.



Storage and transportation temperature must remain within -40° – 149°F (-40° – 65°C).



## TRANSMITTER AND BATTERY CARE

### STEP 1 OF 6


Remove the transmitter from the drill head.

### STEP 2 OF 6

Wipe the transmitter clean so dirt doesn't enter the battery compartment or accumulate on the battery cap threads.


### STEP 3 OF 6

Remove the transmitter batteries to power it off.

 The transmitter records run-time for warranty purposes.

### STEP 4 OF 6

Inspect the battery compartment, springs, cap, O-ring, battery adapter, and threads for debris. Clear any debris and replace the battery cap.

 Use conductive lubricant on the threads if the battery cap is difficult to turn.

### STEP 5 OF 6

Store batteries so they do not contact metallic objects or terminals of other batteries.

### STEP 6 OF 6

Store the transmitter in the original system carry case where it will be safe from impact and excessive temperatures.



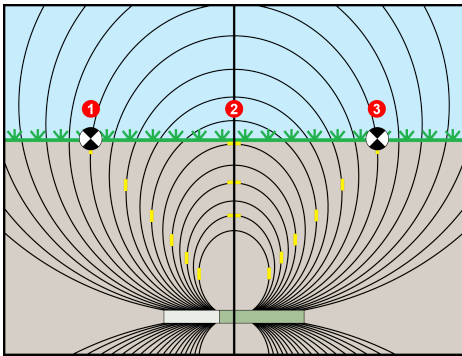
Storage and transportation temperature must remain within 40° to 149° F (-40 to 65 °C).

# Advanced Topics

## STEEP AND DEEP

When a transmitter is level (zero pitch) underground:

- the locate points (FLP and RLP) are at equal distances from the transmitter
- depth displayed on the locator is the actual depth, and
- the Locate Line (LL) indicates a position above the transmitter.



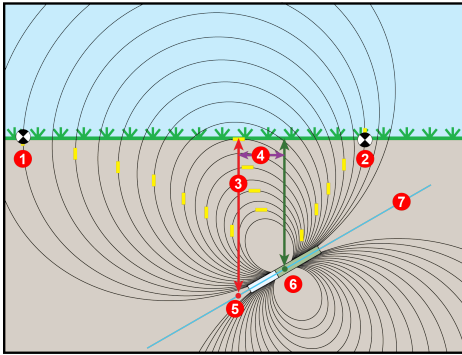
1. RLP
2. LL
3. FLP

When the transmitter is pitched up or down, the transmitter signal field also tilts.

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).

When the transmitter is pitched up (positive pitch, shown below), the locate line on the screen reflects a position behind the transmitter.

The depth reading on the locator is based on the projected depth point, which is not the same as the actual depth of the transmitter.



1. RLP
2. FLP
3. LL
4. Fore/aft offset
5. Projected depth
6. Transmitter at positive pitch
7. 30% (17°)

The differences in position and depth between the projected depth point and the actual location of the transmitter can be relatively small at low pitch and/or shallow depth.

When drilling at a steep pitch and/or significant depth, the differences are greater.

For example, if the transmitter is at a -30% pitch and a 33'1" (10.1 m) depth, the locator depth reading will be 35' (10.7 m) (just under 6% difference from actual depth) and the locate line will be 6'6" (2 m) ahead of the transmitter.

You can use the pitch and the projected depth reading on your locator to determine the actual depth and the position (fore/aft) of the locate line:

### **Actual Depth**

Pitch ↘ Displayed Depth ↓	±10% (5.7°)	±20% (11°)	±30% (17°)
15'	14' 11"	14' 7"	14' 2"
25'	24' 10"	24' 4"	23' 7"
35'	34' 9"	34' 1"	33' 1"
45'	44' 8"	43' 10"	42' 6"

## Fore/Aft Offset

Pitch ↘ Displayed Depth ↓	±10% (5.7°)	±20% (11°)	±30% (17°)
15'	1' 0"	1' 11"	2' 9"
25'	1' 8"	3' 3"	4' 8"
35'	2' 4"	4' 6"	6' 6"
45'	3' 0"	5' 10"	8' 4"

For a given pitch, you can calculate actual or projected depth:

Pitch ↘	±10% (5.7°)	±20% (11°)	±30% (17°)
From Actual to Projected Depth	1.007	1.026	1.059
From Projected to Actual Depth	0.993	0.974	0.944

## IN-GROUND CALIBRATION

This calibration procedure is rarely needed. If you find it necessary to calibrate with the transmitter in the ground, contact DCI customer service for information on this option, and perform the procedure with caution.

## GET TRANSMITTER INFO

### STEP 1 OF 6

From the **Main** menu, select  
**Transmitter selection.**



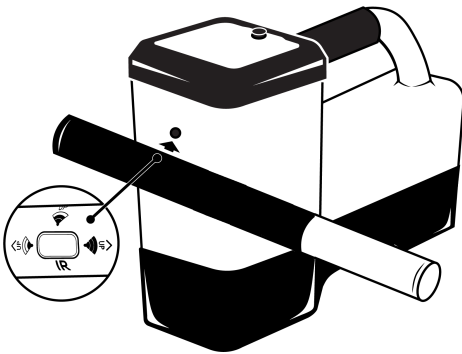
### STEP 2 OF 6

Select **Transmitter**  
**information.**



### STEP 3 OF 6

Align the transmitter so its IR port is near and facing the round IR port on the front of the locator.



The transmitter does not need to be paired for the locator to read the transmitter info.

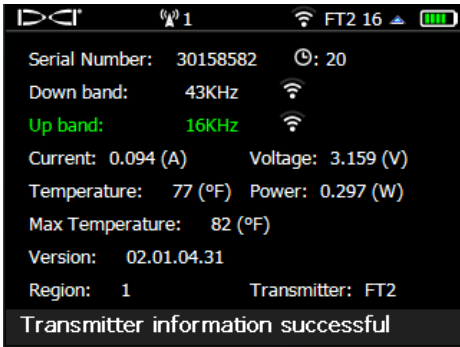
### STEP 4 OF 6

Select **Transmitter**  
**Information request.**



### STEP 5 OF 6

Use the **Transmitter Info** screen to check important information such as runtime hours for warranty coverage, current band (green), operating current , battery voltage\*, and max recorded temperature.



### STEP 6 OF 6

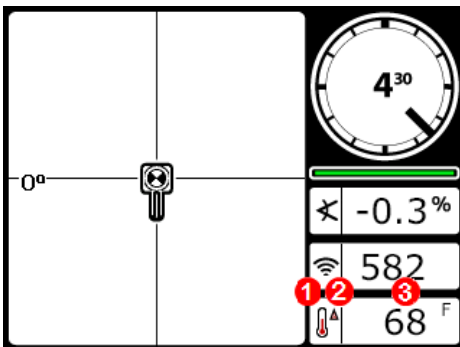
Click to return to the **Main** menu.

### GLOSSARY DEFINITIONS

### TRANSMITTER TEMPERATURE WARNINGS

#### STEP 1 OF 6

DigiTrak transmitters (Tx), with the exception of DucTrak, have an internal digital thermometer. The normal below ground temp range is 63° to 104° F. The Tx temperature displays on the bottom right of the locator screen and remote display screens.



1. Temperature status icon
2. Temp trend up/down arrows
3. Temperature



Suspend drilling when temperatures increase rapidly.  
Temperatures above 111° F are not typical.

#### STEP 2 OF 6

As the transmitter (Tx) temperature increases above 61° F, the locator and remote emits warning beeps and the temperature icon changes on the locator or remote display.

**Tx temp:** 61° to 97° F



**Warning tones:** Double beep (beep-beep) for every 7° F increase.



Watch for an upward trend in temperatures.

#### STEP 3 OF 6

**Tx temp:** 104° to 111° F



**Warning tones:** Two double beeps (beep-beep; beep-beep) for every 7° F increase.



Cool the transmitter.


#### STEP 4 OF 6

**Tx temp:** 118° to 133° F





**Warning tones:** Three double beeps (beep-beep, beep-beep, beep-beep) for every 7° F increase.


 Cooling is critical to avoid irreversible damage.

#### STEP 5 OF 6

**Tx temp:** 140° F and above  
(icon flashing)



**Warning tones:** Three double beeps (beep-beep, beep-beep, beep-beep) for every 20 seconds on the locator and 5 seconds on the remote display.

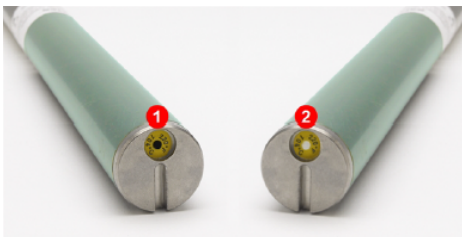
 The transmitter has been exposed to dangerous drilling conditions. Temperatures above 185° F may cause irreversible damage to the transmitter.

#### STEP 6 OF 6

The transmitter records the maximum temperature that it has been exposed to. Use the Transmitter Info screen to view this information. See "Get Transmitter Info" for steps.

#### TRANSMITTER OVERHEAT INDICATOR (TEMP DOT)

DigiTrak transmitters (Tx), with the exception of DucTrak, have temperature overheat indicators (temp dot) on the front end cap.



1. Black temp dot (voids warranty)
2. Normal white temp dot

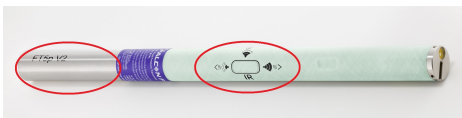
The temp dot has an outer yellow ring with a temperature sensitive 1/8" (3.15 mm) white dot in the center. If the center temp dot is black, the transmitter has been exposed to excessive heat and should no longer be used.



The DCI Warranty does not cover any transmitter that has been overheated or had the temp dot removed.

## V2 TRANSMITTERS MULTIPOWER MODE INTRODUCTION

V2 transmitters have three power modes to balance signal strength and battery life. V2 transmitters are etched with a "V2" on the stainless battery compartment (not on the label) and have a multipower mode sticker around the IR port.



If used with a Falcon locator without the programmable power mode, the mode selected while pairing the Tx determines the signal range and the battery life.

Falcon locators with programmable power mode override any other selection method when used with a V2 transmitter.

Product ID	Power Mode	DCI SuperCell	LIR w/FTA	Alkaline	LJ CR123	Depth	Data Range <sup>1</sup>
19-in FTSp V2 <sup>2</sup> FT2L+ V2	High	14 hrs	8 hrs	-	-	160 ft/49 m	200 ft/61 m
	Std	40 hrs	18 hrs	-	-	125 ft/38 m	150 ft/46 m
	Low <sup>1</sup>	120 hrs	44 hrs	32 hrs	-	100 ft/30 m	125 ft/38 m
15-in FTSp V2 FT2 V2	High	14 hrs	8 hrs	-	-	125 ft/38 m	160 ft/49 m
	Std	80 hrs	30 hrs	20 hrs	-	100 ft/30 m	125 ft/38 m
	Low <sup>1</sup>	140 hrs	60 hrs	36 hrs	-	65 ft/20 m	80 ft/24 m
8-in FT2L V2	High	-	-	-	12 hrs	50 ft/15 m	50 ft/15 m
	Std	-	-	-	16 hrs	40 ft/12 m	40 ft/12 m
	Low <sup>1</sup>	-	-	-	18 hrs	25 ft/8 m	25 ft/8 m

**1** FT2L+ V2 is only compatible with Falcon+ locators.

*2 For Falcon locators with programmable power mode, Low power also gives you a faster pitch update rate*



*3 Range is based on SAE Standard J2520 in AGR mode and Max Mode. Actual range and battery life will vary based on interference, transmitter housings, and frequencies.*

The battery types listed are the only types recommended for that model and size. DCI does not recommend using other battery types. \*Lithium Rechargeable (LiR) battery life is based on 21700 battery with 5000 mAh rating. with a max 4.2 volts. Battery life while asleep is 400 hours for SuperCell and 200 hours for alkaline. Sleep mode starts 15 minutes after last roll change.

FTR (Sub-k Rebar) Tx's do not have MultiPower mode and have Standard power battery life. Depth/data range for Up Band is similar to Standard power; Down band is similar to Low power mode.

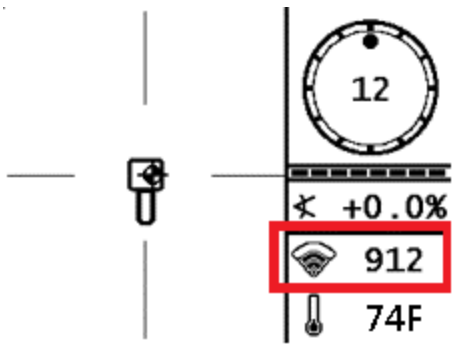
You can see the power mode selected for each band on the Transmitter Info screen. See "Get Transmitter Info" for steps.

---

<b>SN:</b>	<b>30141401</b>
<b>Transmitter:</b>	<b>FT2</b>
<b>Region:</b>	<b>1</b>
<b>Band:</b>	<b>43k</b>  <b>25k</b> 
<b>Current:</b>	<b>0.131A</b>
<b>Voltage:</b>	<b>2.512V</b>
<b>Watts:</b>	<b>0.330W</b>
<b>Temp:</b>	<b>83° F</b>
<b>Max Temp:</b>	<b>85° F</b>
<b>Version:</b>	<b>2.1.4.28</b>
<b>Runtime:</b>	<b>2 hours</b>

---

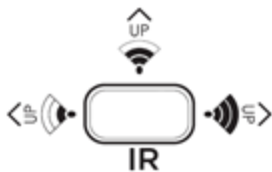
You can also see the Power mode of the current band on the Locate Mode screen and the TX Info pairing screen.



## CHANGE V2 TRANSMITTER POWER MODE

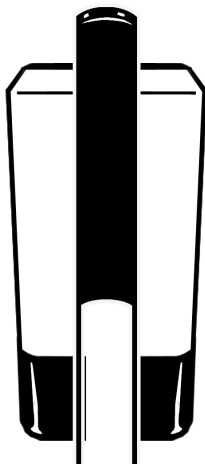
### STEP 1 OF 4

If you are using a V2 transmitter with multipower mode, the direction you hold the transmitter while pairing a new band determines the power mode. See the *V2 Transmitter Multipower Mode Introduction* article for more information about power modes.



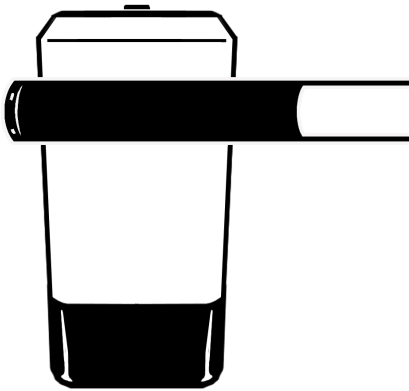
### STEP 2 OF 4

To pair in High Power mode, hold the Tx with the index cap pointing up.



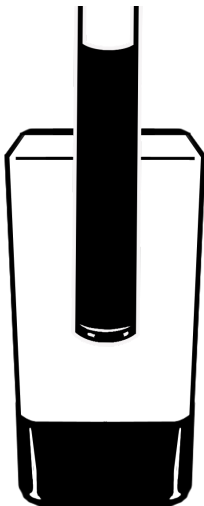
## STEP 3 OF 4

To pair in Standard Power mode, hold the Tx horizontally.



## STEP 4 OF 4

To pair in Low Power mode, hold the Tx with the index cap pointing down



MAX MODE

## STEP 1 OF 4

## Before You Get Started



Max Mode can stabilize roll/pitch data and depth readings when drilling at the transmitter's range limit due to extreme depth or interference, which will vary by jobsite. Use when the roll/pitch update meter shows low signal level or data is unstable.



The drill head must be stationary when taking readings using Max Mode. If the drill head is moving, data readings will not be accurate.

### STEP 2 OF 4

At the **Locate Mode** screen, hold the trigger for longer than five seconds to enter Max Mode.

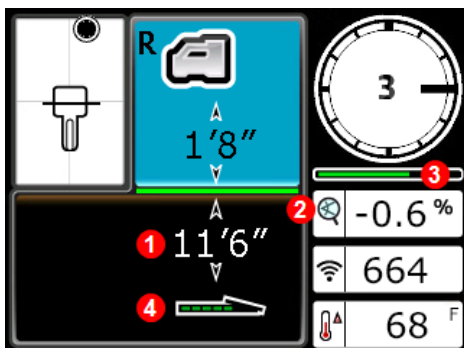


### STEP 3 OF 4

Continue holding the trigger until depth and data stabilize.

If the Max Mode timer fills up before depth and data stabilize, move to a different location near the drill head and hold to restart.

The timer bar will turn green as data is confirmed.



1. Depth
2. Max Mode icon
3. Max Mode timer
4. Transmitter battery strength

#### STEP 4 OF 4

Take **two more** Max Mode readings. All three readings must be consistent.



If the readings are not consistent, change the band and try again. If the readings continue to be inconsistent, turn the locator off and then on again. If the issue continues, contact DCI Customer Support.

## TARGET STEERING

#### STEP 1 OF 6

### Before You Get Started



The Target Steering guidance method allows the Falcon locator to be placed ahead of the drill head and used as a steering target.

Use it to distance the locator from rebar that is causing signal interference and to drill where walkover locating is not possible.


Target Steering is typically only used on a straight drill path under level ground, not a curved path, with terrain changes, or to correct a significantly off-course bore.


The maximum distance the locator can be placed ahead of the drill head for Target Steering is 35 ft (10.7 m).

Within this range, starting with the drill head approximately level, the maximum depth and pitch changes are approximately 4 ft (1.2 m) and 14%, respectively.

Beyond this distance, depth information becomes less accurate.

Data and left / right steering is usable for the entire range of the transmitter.

 Any Height-Above-Ground (HAG) setting is ignored by the locator when Target Steering is used.

 Target Steering is not supported by the Falcon Compact Display.

#### STEP 2 OF 6

Toggle up from the Locate Mode screen.

#### STEP 3 OF 6

The number on the screen shows the last target depth set. If it matches your desired target depth<sup>\*</sup>, select the checkmark.



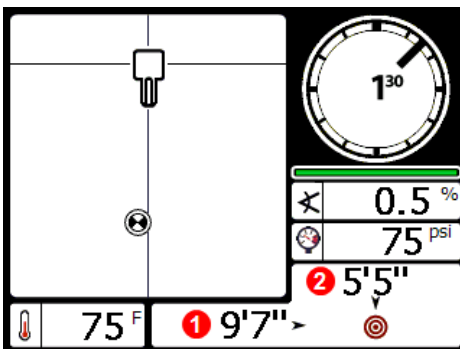
To change the target depth shown, use the keypad.





## STEP 4 OF 6

Place the locator on the drill path with its battery compartment facing the drill head. Target Steering guides the transmitter to be inline with the locator's handle when it reaches the target beneath the locator. For accurate depth information, use the horizontal distance reading on the Target Steering display to ensure the locator is no more than 35 ft (10.7 m) in front of the transmitter.



1. Horizontal distance from transmitter to locator
2. Current transmitter depth below the plane of the locator

**i** At this point, the drill rig operator uses the remote display to drill to the target.

## STEP 5 OF 6

When the horizontal distance is almost the same as the current depth, move the locator farther out to continue Target Steering.

**!** If the drill head passes this point, depth and horizontal distance values on the Aurora become invalid.

## STEP 6 OF 6

Toggle down to turn off Target Steering.

## GLOSSARY DEFINITIONS

### \*TARGET DEPTH

A value programmed into the locator, so it can be positioned ahead of the transmitter housing and used as a steering target. The value programmed should be the desired depth of the transmitter when it reaches the point below the locator. If a locator is placed above ground level, such as to provide separation from interference, that height must be added to the target depth.

**Note:** If using a Falcon Compact Display, only left/right steering information is available. The locator used with the Falcon Compact Display must still have a target depth set. This target depth can be any value.

## USE DIFFERENT SCANS FOR UP AND DOWN BANDS

### STEP 1 OF 9

The Jobsite Setup topic **Find Best Frequencies** describes how to run the frequency optimizer, walk the bore to scan for interference, then optimize both bands at the point of highest noise. You need to be familiar with that topic before reading this one.

For jobsites with extra-challenging interference, consider a scan-pick-pair of the first band at the noisiest point (such as next to the power transformer), then scan-pick-pair the second band at the second-noisiest point (such as over railroad tracks). This gives you a specifically tailored band for each of the two most difficult locations along your drill path.

### STEP 2 OF 9

Ensure all transmitters are powered off or more than 100 ft (30.5 m) away from the locator.

### STEP 3 OF 9

From the **Main** menu, select **Frequency optimization.**



STEP 4 OF 9

Click the blue arrow to start the scan.



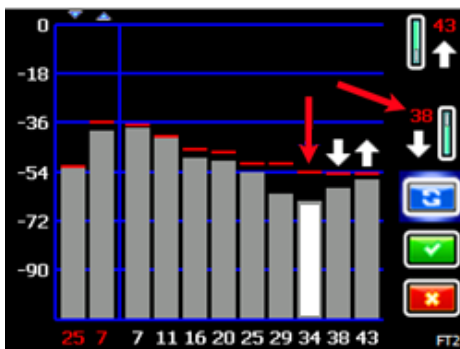
STEP 5 OF 9

When the noise bars appear, walk the intended drill path to find the two locations with the highest levels of noise, then return to one of those locations and scan again.



STEP 6 OF 9

Toggle to the band with the least noise<sup>\*</sup>, click to select, then click again to assign it as the Down band.



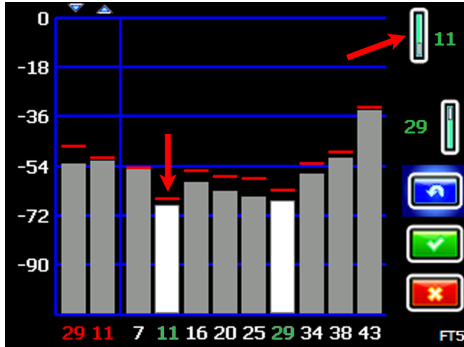
STEP 7 OF 9

Move to the other location with high noise and scan



### STEP 8 OF 9

Toggle to the lowest band, click to select, then click again to assign it as the Up band.



### STEP 9 OF 9

Select **Pair** and proceed as you normally would when pairing both bands at one location.



### GLOSSARY DEFINITIONS

#### \*BAND WITH THE LEAST NOISE

Interference varies with time and location, and no band works perfectly in all conditions. Different bands are better for different kinds of interference. Lower frequency bands tend to perform better in passive interference. Middle bands can perform better in deeper bores and may have longer Target Steering capability. Higher frequency bands have slightly less signal strength but tend to offer better performance around active interference such as power lines.

### 10 FT (3 M) ROD DEPTH CHANGE BASED ON PITCH

#### Depth Increase in Inches (cm)

% Slope	Depth Increase	% Slope	Depth Increase
1	1 (2)	28	32 (81)
2	2 (5)	29	33 (84)
3	4 (10)	30	34 (86)
4	5 (13)	31	36 (91)
5	6 (15)	32	37 (94)
6	7 (18)	33	38 (97)
7	8 (20)	34	39 (99)
8	10 (25)	35	40 (102)
9	11 (28)	36	41 (104)
10	12 (30)	37	42 (107)
11	13 (33)	38	43 (109)
12	14 (36)	39	44 (112)
13	15 (38)	40	45 (114)
14	17 (43)	41	46 (117)
15	18 (46)	42	46 (117)
16	19 (48)	43	47 (119)
17	20 (51)	44	48 (122)
18	21 (53)	45	49 (124)
19	22 (56)	46	50 (127)
20	24 (61)	47	51 (130)
21	25 (64)	50	54 (137)
22	26 (66)	55	58 (147)
23	27 (69)	60	62 (157)
24	28 (71)	70	69 (175)
25	29 (74)	80	75 (191)
26	30 (76)	90	80 (203)
27	31 (79)	100	85 (216)

Slopes between 50% and 100% are provided for reference only and do not represent typical drilling conditions. All numbers are based on math only and do not take into account extremely soft or extremely hard soil conditions, which may cause depth values to vary.

DEPTH INCREASE IN INCHES (CM) PER 15 FT (4.6 M) ROD

**Depth Increase in Inches (cm)**

% Slope	Depth Increase	% Slope	Depth Increase
1	2 (5)	28	49 (124)
2	4 (10)	29	50 (127)
3	5 (13)	30	52 (132)
4	7 (18)	31	53 (135)
5	9 (23)	32	55 (140)
6	11 (28)	33	56 (142)
7	13 (33)	34	58 (147)
8	14 (36)	35	59 (150)
9	16 (41)	36	61 (155)
10	18 (46)	37	62 (157)
11	20 (51)	38	64 (163)
12	21 (53)	39	65 (165)
13	23 (58)	40	67 (170)
14	25 (64)	41	68 (173)
15	27 (69)	42	70 (178)
16	28 (71)	43	71 (180)
17	30 (76)	44	72 (183)
18	32 (81)	45	74 (188)
19	34 (86)	46	75 (191)
20	35 (89)	47	77 (196)
21	37 (94)	50	80 (203)
22	39 (99)	55	87 (221)
23	40 (102)	60	93 (236)
24	42 (107)	70	103 (262)
25	44 (112)	80	112 (284)
26	45 (114)	90	120 (305)
27	47 (119)	100	127 (323)

Slopes between 50% and 100% are provided for reference only and do not represent typical drilling conditions. All numbers are based on math only and do not take into account extremely soft or extremely hard soil conditions, which may cause depth values to vary.

## ACCESSING A DATALOG FROM CLOUD MANAGER

### STEP 1 OF 4

Open **Cloud Manager** on your computer.



### STEP 2 OF 4

Double-click the DataLog row to open.

Cloud Status	Field Edits Done	Job Name	Revision	Device SN
		Edelstrom overpass	1	90000755
		City Port Drainfield	0	90000755
		Northern Rail Yard	0	90000755
		Sewer tunnel	1	90000755

Note how none of these jobs show "Field Edits Done"

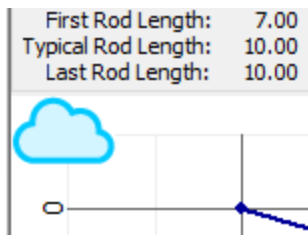


(Complete). To prevent lost work, jobs should first be marked as Complete in LWD Mobile before uploading to Cloud Manager.

See "LWD Mobile Introduction" for more details.

#### STEP 3 OF 4

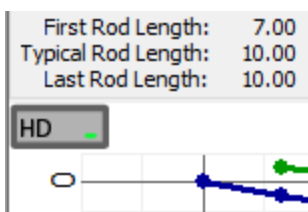
The job opens in LWD. A cloud icon at the top left of the profile chart shows that this job is saved in the cloud.



You can use File > Save As to save a local copy for editing. The



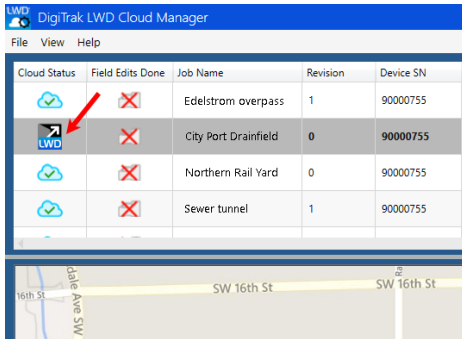
icon changes to show the DataLog is now a local copy (Hard Drive, HD).



Use **File > Save As** later to save it back to the Cloud.

#### STEP 4 OF 4

Note that in Cloud Manager, the **Cloud Status** now shows the job as being open in LWD.



Once you close the job in LWD, the status will return to **Cloud**.



## DATALOG AND LWD INTRO

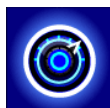
The DataLog feature on your locator lets you record the rod-by-rod data of your pilot bore. When used with the LWD Mobile app, DataLog lets you view a real-time plot of your bore on your smart device, as well as geo-tag the entry and exit.

This data is increasingly required by clients to validate drilling parameters. When you open your DataLog job on Log-While-Drilling (LWD) 3.0 software for your PC, you can edit, annotate, and create the precise report you or your client requires.

## SET TIME AND DATE

### STEP 1 OF 4

From the **Main** menu, select **Settings**.





## STEP 2 OF 4

Select **Set time and calendar**.



## STEP 3 OF 4

Select to enter either **Time** (24-hour format)...



...or **Date** (MM/DD/YYYY).



## STEP 4 OF 4

Select **Enter** to set.



## SET UP DATALOG ON A LOCATOR

## STEP 1 OF 8

From the **Main** menu, select **Drill DataLog**.



## STEP 2 OF 8

If this icon is red, select to enable DataLog (green).



If this icon is green you can set up a job directly from the Locate screen by holding the trigger and toggling right.

## STEP 3 OF 8

Select **Set up job.**



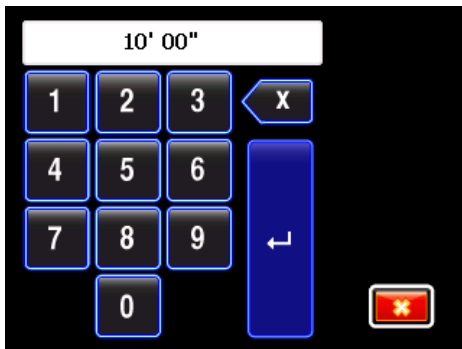
STEP 4 OF 8

Select **Create a new job.**

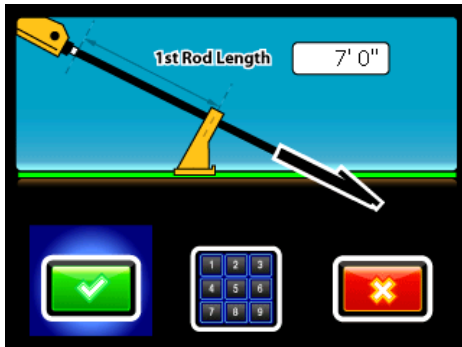


STEP 5 OF 8

Use the on-screen keypad to enter the drill rod length, then select **Enter**.



STEP 6 OF 8



With the drill housing slots half above and half below the ground, measure from the vices to the top of the rod.

If the value on the screen matches the measured value, select **OK** to set this

value and skip to the next step.



If not, select the keypad to enter a new value and then select the green check mark.



If you cannot position the housing as pictured, measure the depth of the drill head from the center of the slots to the ground level. This value (relative elevation at entry) will be used later to modify the uploaded LWD file.

#### STEP 7 OF 8

If you have surveyed the difference in elevation between the entry point and exit point, select **Survey Point**.



Then select the **Job #** and enter this value using the keypad.



This value (relative elevation at exit) can be edited later either through this menu item or on the uploaded LWD file.

#### STEP 8 OF 8

**Exit** to the **Main** menu.



Select **Locate Mode**.



## LOG DATA ON THE F5+/F5 LOCATOR

### STEP 1 OF 6

From the Locate screen, hold the trigger and toggle right.



If you have not yet enabled DataLog, set up a job before continuing.

### STEP 2 OF 6

With the locator positioned within range of the transmitter, record the first data point (rod 0).

The only available option will be **Record Pitch Only**.



If using iGPS, the locator must be positioned directly above the drill head.

### STEP 3 OF 6

Advance the drill head to the end of the first rod and position the locator over the Locate Line (LL) or the Front Locate Point (FLP).

### STEP 4 OF 6

Hold the trigger and toggle right to view and record data.



1. Record depth/pitch (green dots indicate signal quality of optional iGPS module)
2. Record pitch only (ignores depth)\*
3. Record a blank rod\*



If depth is not correct, select Exit and verify locator is positioned over LL or FLP and repeat this step. If depth is still incorrect, select the pitch only recording option.



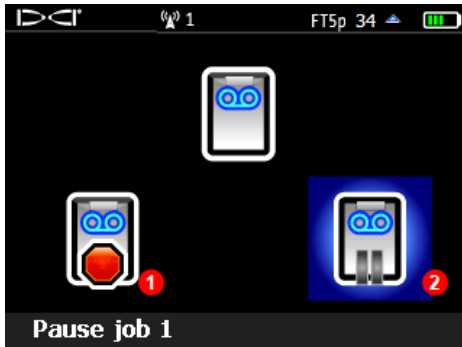
When this screen appears, data from the transmitter and iGPS is locked in and you may move the locator before making a selection.

#### STEP 5 OF 6

Continue drilling, using the trigger/toggle right sequence to record data points at the end of each drilled rod.

#### STEP 6 OF 6

To **Pause**\* or **Close**\* a DataLog job, toggle down from the Locate screen and select the desired option.



1. Close job
2. Pause job

## GLOSSARY DEFINITIONS

### \*PITCH ONLY DATALOG OPTION

Records the pitch value and rod length on the locator. Use it when:

1. The locator cannot be positioned at the LL or FLP
2. If the depth value is incorrect due to the presence of passive interference such as rebar, which can lead to incorrect depth and topography values in the graph.

### \*BLANK ROD DATALOG OPTION

Use **Blank Rod** when the locator is not within the range of the transmitter such as during some river and highway crossings. This records the rod length on the locator to maintain the proper bore length for number of rods drilled. It cannot be used for the first or last rods recorded.

### \*PAUSE DATALOG JOB

Allows you to exit the locate screen and continue to add to the job once you return to locating.

**Note:** A power cycle will automatically close the job. You can still Append to it later.

### \*CLOSE DATALOG JOB

Select this option once you are done logging the bore. You can still Append to it later.

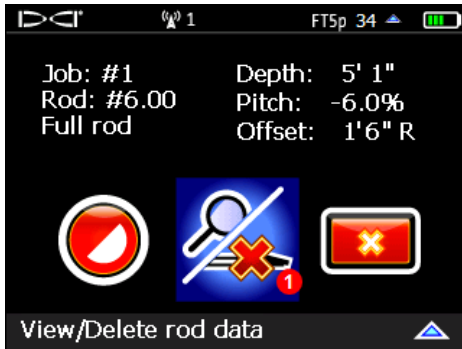
## DELETE RODS ON THE LOCATOR

### STEP 1 OF 5

At the **Locate Mode** screen, hold the trigger and toggle right to view Recording Options.

### STEP 2 OF 5

Toggle down and select **View/Delete rod data**.



1. View/delete rod data (pull back a rod)

### STEP 3 OF 5




The most recent rod (the only one that can be deleted) is highlighted in the top row.

To return to the Locate screen without deleting this rod (data point), toggle left or right.

Rod ID	Position	Depth	Rel Depth	Pitch
5	47' 0"	5' 3"	0' -2"	-0.3 %
4	37' 0"	5' 3"	0' -1"	-0.5 %
3	27' 0"	5' 3"	0' 0"	-0.5 %
2	17' 0"	5' 3"	0' 0"	-0.5 %
1	7' 0"	---	0' 0"	0.3 %
0	0' 0"	---	---	0.4 %

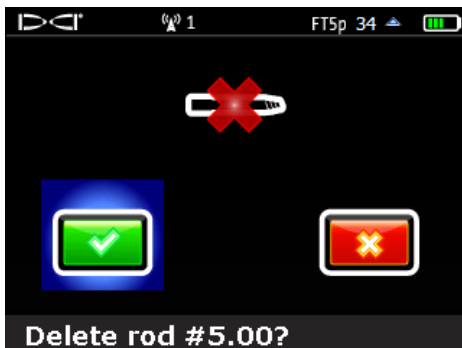
Job: #1 Rod: 10'0" SP: --

1. Data for most recent rod

-  Depths in green were recorded at the LL; depths in white were recorded at a locate point (LP).
-  A blank (---) depth occurs when blank or pitch-only recording options are used.
-  Recording a rod without pitch (blank rod) will result in a blank relative depth value.

#### STEP 4 OF 5

To delete the last rod (required if it was pulled back or accidentally recorded twice), click, then select the check mark, then click again to confirm rod deletion.



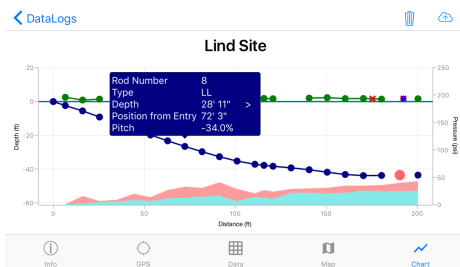
#### STEP 5 OF 5

Continue these steps for each last rod to delete. Ensure that the number of rods deleted matches the number of rods pulled back. When you are finished, toggle left or right in the table to return to the **Locate Mode** screen.




## LWD MOBILE INTRODUCTION

The free LWD Mobile app lets you transfer and view your pilot bore progress any time, right on your mobile device. With a subscription Cloud account, you can upload your DataLog to a cloud location where other users can view and annotate the job.



A job uploaded from LWD Mobile to your Cloud account will automatically overwrite a previously uploaded job of the same name. This lets you upload partial bores of increasing levels of completion for other users of the Cloud account to monitor.

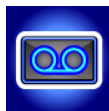
A job marked as **Complete** in LWD Mobile will provide a warning if you try to upload it again. LWD users should never spend time editing a Cloud job on their computer that has not yet been marked as **Complete**.

-  Cloud Manager lets the user right-click and select "Mark Field Edits Complete", but this will not protect the job from being overwritten if the LWD Mobile user uploads the job again.

## TRANSFER DATALOG TO LWD MOBILE

### STEP 1 OF 6

From the **Main** menu, select **Drill DataLog**.



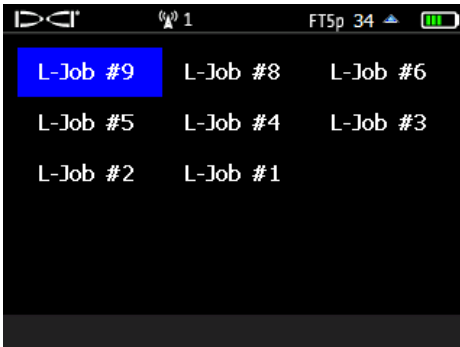
STEP 2 OF 6

Select **Upload job**.



STEP 3 OF 6

Select a job from the list.



STEP 4 OF 6

In LWD Mobile, tap **Add (+)**.

STEP 5 OF 6

Tap on the Falcon F5 icon (skip for Apple iOS).

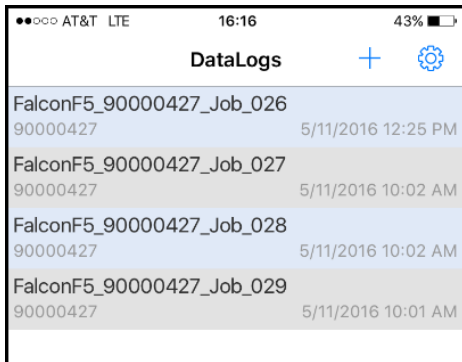


STEP 6 OF 6

Tap the line for your locator when it appears.

DCI F5 30099833

The job you selected transfers to your mobile device and appears at the top of the list of DataLogs.



## EDIT AND UPLOAD DATALOG TO CLOUD ACCOUNT

### STEP 1 OF 5

Open LWD Mobile on your smart device.

### STEP 2 OF 5

Select the job to upload.



Uploading requires a cloud account, available at [www.MyDigiTrak.com](http://www.MyDigiTrak.com).

### STEP 3 OF 5

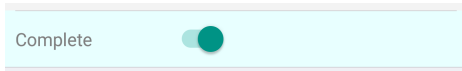
Tap **Edit**.



Add any details or comments to be transferred with your LWD job.

## STEP 4 OF 5

Mark the job as **Complete**, if appropriate.



This lets Cloud users know you will not upload another version that would overwrite work they do on the job in LWD, such as adding annotations or editing data. It will also provide you with a warning if you do try to upload it again.

## STEP 5 OF 5

Tap the **Cloud** to upload this DataLog to your cloud storage, where it can be accessed using Cloud Manager.



## LWD PC INTRO

Most PCs will easily meet the minimum requirements for running LWD. Installation requires admin privileges.

The default location for the LWD program files is c:\Program Files (x86)\DCI.

The default location for sample and DataLog jobs is Documents\DCI.

You can change both of these default locations during installation or whenever you save an uploaded job.

The default file name for DataLog drill data in LWD is DrillData#.lwd, where # is a sequential number. You can change the default file name and location whenever you save an uploaded job by using the **Save As** function. Always use the **Save** function after making changes.

It is recommended that you save two copies of your LWD file, one with raw data as imported from the locator and another with any changes made using LWD software. This ensures you have a fallback file in case you make any unintended and irreversible changes during editing.

## SET UP LWD ON PC

### STEP 1 OF 11

Ensure your computer is connected to the internet.

### STEP 2 OF 11

Insert the Bluetooth USB radio into a USB port on your computer. Drivers will install automatically.



### STEP 3 OF 11

Insert the LWD flash drive into a USB port and view the contents of the drive.



#### STEP 4 OF 11

Open the **FF5 LWD...** folder and double-click the setup file to install the LWD software. Click **Yes** if offered to install the latest version.

#### STEP 5 OF 11

Follow the steps in the Setup Wizard to complete installation.

#### STEP 6 OF 11

Power on the Falcon F5 locator and select **System Information** from the **Main** menu.



#### STEP 7 OF 11

The Falcon F5 serial number (ID) is on the first screen and the Bluetooth (BT) address is on the second. Write these numbers down.

#### STEP 8 OF 11

Open LWD by double-clicking the icon on your desktop.



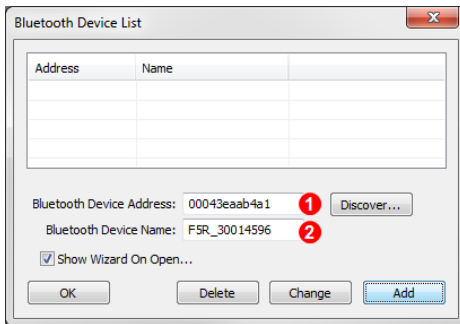
#### STEP 9 OF 11

Bluetooth Device List dialog box.



#### STEP 10 OF 11

Enter the BT address in the **Bluetooth Device Address** field. Enter the locator ID in the **Bluetooth Device Name** field.



1. Bluetooth Device Address
2. Bluetooth Device Name

#### STEP 11 OF 11

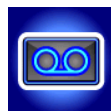
Click **Add** then click **OK**. The device appears in the Bluetooth device list.

You are now ready to upload job data.

### UPLOAD DATALOG TO PC

#### STEP 1 OF 8

From the **Main** menu, open the **DataLog** menu.



#### STEP 2 OF 8

Select **Upload**.



### STEP 3 OF 8

Select the job to upload. "Waiting for PC connection..." appears at the bottom of the screen.

### STEP 4 OF 8

In LWD on the computer, click **New**.



### STEP 5 OF 8

Click **Upload Data**.

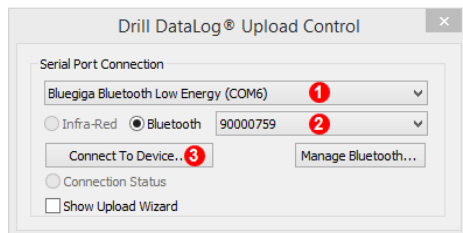


### STEP 6 OF 8

Ensure the locator is within 2 ft (0.5 m) of the computer.

### STEP 7 OF 8

Set the two dropdowns as shown below, then click **Connect to Device**.



An icon on the Locate screen shows that data is uploading.



**i** A large data file may take up to a minute to transfer.



### STEP 8 OF 8

Click **OK** to view the DataLog in LWD, then **Save**.



The default storage location is Documents\DCI. The default file name is FalconF5\_[LocatorName]\_[Job#].

## BUILT-IN HELP

### STEP 1 OF 2

To access the comprehensive built-in Help system, click **Help Topics**.



### STEP 2 OF 2

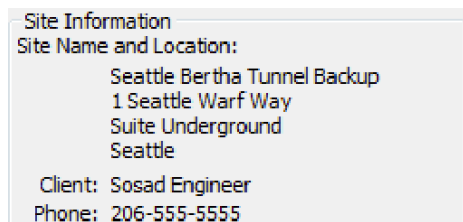
To get help with a particular feature or element of LWD, click **Help**, then click on the item for which you want more information.



## EDIT SITE AND JOB INFO

### STEP 1 OF 2

To change **Site Information**, double-click this section.



## STEP 2 OF 2

To change **Job Information**, double-click this section.

Job Information	
Date:	07/20/2011
Serial Number:	30007324
Job ID:	4
Data Points:	28
First Rod Length:	6.53
Typical Rod Length:	9.33
Last Rod Length:	9.33
Depth:	ft
Pitch:	%
Entry:	0.00



If the drill head was not at ground level for the first data point, or if you surveyed the difference in elevation between the entry and exit points, this is where you can edit the relative elevation at entry and relative elevation at exit.

## ADD UTILITY FLAGS

### STEP 1 OF 2

Shift+click at the desired flag location on the graph to open the Utility Flags dialog box.



### STEP 2 OF 2

Select the utility **Type** (such as Water) and enter a **Comment** (label), then click **Add** to save it to the table. Click **OK** to exit.

Utility ID	Type	X Dist	Depth	Comment

Depth: ft  
 Distance: 42.3037  
 Depth: 8.66384  
 Type: Water  
 Text Slope: -30 (Deg)  
 Comment: 6-inch main

OK      Delete      Change      Add

## EDIT UTILITY FLAGS

### STEP 1 OF 3

Double-click the desired flag to open the Utility Flags dialog box.

### STEP 2 OF 3

Edit flag data as needed, then click **Change** to save the data in the table.

Utility ID	Type	X Dist	Depth	Comment
1	Water	21.88	5.62	6-inch main
2	Gas/Oil	42.30	8.38	4-inch main, gas

Depth: ft  
Distance: 21.8764    Type: Water    Text Slope: -30 (Deg)  
Depth: 5.62405    Comment: 6-inch main

OK    Delete    Change    Add

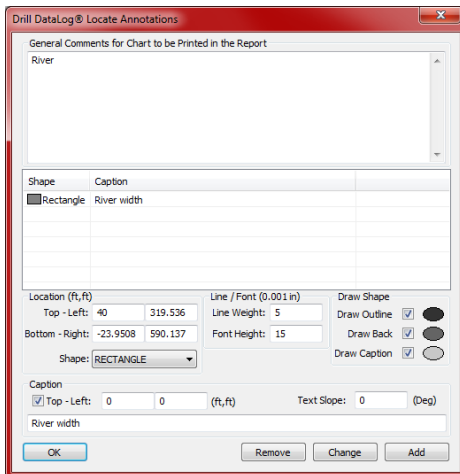
### STEP 3 OF 3

To delete a flag, select its row in the Utility Flags dialog box and click **Delete**. If you accidentally delete a flag, click **Add** to restore it to the table. Click **OK** to exit.

## ANNOTATING CHART

### STEP 1 OF 3

To add annotations<sup>\*</sup>, Shift+drag a box over the desired location on the Profile (Locate) or Pressure graph, then release to open the respective Annotations dialog box.



To edit an existing annotation, simply double-click it on the graph.

### STEP 2 OF 3

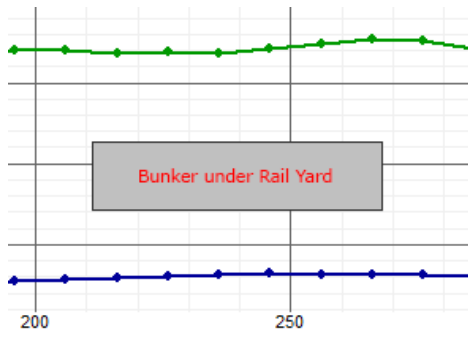
Use the dialog box fields as needed to edit the shape. You can:

- precisely set the location dimensions
- set as a rectangle, ellipse, or basin shape
- set the line weight
- set the font height
- set as outline, filled in, and/or with caption
- double-click the oval color swatch to change colors
- change the caption location and angle (relative to the page).

### STEP 3 OF 3

Click **Add** to save the newly created annotation to the table.

After adding or making changes to an existing annotation, click **Change** to save and see it on the chart.



To delete an annotation, select it in the table and click **Remove**.

Click **OK** to exit.

## GLOSSARY DEFINITIONS

### \*ANNOTATIONS

Comments and drawings that appear on the LWD chart. Typically used to show jobsite features such as entry and exit pits, roadways, rivers, and structures.

## EDIT DATA POINT

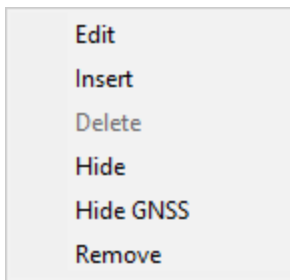
### STEP 1 OF 8

Often it is necessary to edit data in LWD to make the charts more presentable to a client.

For example, **insert** a missing data point\*, **remove** duplicate data, or **hide** an erroneous data point that distorts an otherwise on-track bore plot.

### STEP 2 OF 8

To add, edit, hide, or remove a data point\*, right-click the desired row in the **Data Points** table to access the following options:



### STEP 3 OF 8

Select **Edit** to open the **Edit DataLog Data Point** dialog box. Here you can adjust data like rod length, pitch, and depth, as well as add comments for this point.

### STEP 4 OF 8

Select **Insert** to add a data point beneath the selected row. This will extend the length of the bore. LWD suggests values based on adjacent data points; edit as needed. Use this option when a data point was accidentally not recorded.

### STEP 5 OF 8

Select **Delete** to delete an inserted data point row. Original data points cannot be deleted (see **Hide** or **Remove**).

### STEP 6 OF 8

Select **Hide** to remove this data point from the chart. The data point still appears in the table and is still used for calculations.

### STEP 7 OF 8

Select **Hide GNSS** to remove optional iGPS latitude/longitude data from the report.

## STEP 8 OF 8

Select **Remove** to remove this data point from the list, chart, and calculations. This will reduce the length of the bore. Use this option on original data that was unintentionally recorded twice.

## GLOSSARY DEFINITIONS

### \*DATA POINT

Data recorded by the locator at least once for each rod. There may be more than one data point per rod, such as when logging partial rods.

## EMAIL

### STEP 1 OF 4

To preview the report before emailing, click **Print Preview**.



Make any necessary changes and save before continuing.

### STEP 2 OF 4

Click **Print...** and select your PC's PDF printer. Then click **OK**.

### STEP 3 OF 4

Type the name of the file you are emailing and click **Save**. The PDF will be saved in the same file location as the original LWD file.

### STEP 4 OF 4

Use your email application to create an email and attach the LWD PDF document before sending.

## CHANGE CHART SCALING

### STEP 1 OF 3

To set chart scaling manually,

Click **Profile** chart properties

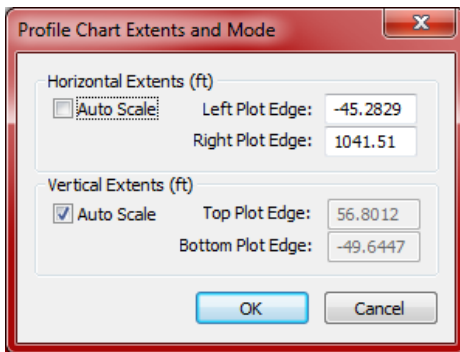




or **Pressure** chart properties.



### STEP 2 OF 3

Clear the **Auto Scale** check box and enter your desired values.



-  To keep data points on the Profile and Pressure charts aligned, use the same horizontal plot edges for both.
  
-  To hide a chart, set all edges to zero.

### STEP 3 OF 3

Click **OK** to save and exit.



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