

# **MobileCollect<sup>TM</sup>**

***Using CDI Indicator***

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**Tech Note**

# Using CDI Indicator with MobileCollect

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## 1 Introduction

MobileCollect wireless is available as an embedded option in 2 models of digital indicators manufactured by Chicago Dial Indicator (CDI). These gages are available from CDI and as private labeled gages from other companies. These gages along with Mobile Modules manufactured by MicroRidge, are supported by the Bases manufactured by MicroRidge. MobileCollect provides a simple way to send wireless data to a PC via a serial/USB or keyboard wedge connection. Applications such as Statistical Process Control (SPC) programs and Microsoft Excel can be used with MobileCollect. In order to use these gages in a MobileCollect setup, the gages must be ordered with the optional built-in long range wireless radio. The long range radio available for these gages uses the MicroRidge RM2.4 Radio Module that is used in the MobileCollect product line. The RM2.4 Radio Module operates in the Industrial, Scientific and Medical (ISM) frequency band of 2.4 GHz and uses the ZigBee wireless protocol. These gages can communicate with any Base that displays the following logo on the product label.



Logo on products containing the MicroRidge RM2.4 Radio Module

### Gage Models

The wireless gage models that can be used with MobileCollect, include the CORE and VRS digital indicators.



CORE Indicator



VRS Indicator

## What does MicroRidge Support?

### Gage Support

Support for the CDI gage operation is provided by CDI or one of its private label resellers. MicroRidge cannot provide support for the operation of the gage.

### Wireless Support

MicroRidge will provide support for the pairing of the gage to a MobileCollect Base when using Xpress Setup, Extended Setup or Pairing-on-the-Fly.

## Next Steps

The next sections will help you get familiar with the Radio Menu on the gage and how to pair the gage with a MobileCollect Base. Depending on how you want the gage measurement formatted for your PC application, you may also need to install the MobileCollect Xpress or Extended Setup program on your PC. If you only want the gage measurement sent to your PC, you may not need to install either of the Setup programs.

## Tech Note Organization

If you are viewing the PDF version of this Tech Note, you will see page numbers to the right of links within the PDF document. For example the number to the right of the [Support Information](#)<sup>15</sup> link indicates the actual page number this link is directed to.

## 2 Radio Menu & Radio Icon

The Radio Menu needs to be accessed when you want to pair a gage with a Base, update the wireless firmware in the gage, or turn off or on the Radio Module. The procedure for accessing the Radio Menu for each of the gage models is very similar. The main difference is that for the VRS gage, you will have to press and release the **2 ND** button for some of the functions.

The following images display the labels associated with the buttons on each of the gage models.



CORE Indicator



VRS Indicator

### Accessing & Exiting the Radio Menu

To access the Radio Menu for the CORE gage follow the steps below.

1. Press & hold the **DATA** button.
2. Release the **DATA** button when the word **rAdio** appears on the display
3. To exit the Radio Menu press and release the **OFF** or the **DATA** button.

To access the Radio Menu for the VRS gage follow the steps below.

1. Press & release the **2 ND** button
2. Press & hold the **HOLD** button.
3. Release the **HOLD** button when the **rAdio** appears on the display
4. To exit the Radio Menu press and release the **OFF MODE** or the **DATA** button.

## Enable Radio and Set Update Rate

The radio can be enabled and disabled from the Radio Menu. The measurement update rate can also be set from the Radio Menu. Refer to the gage Instruction Manual for the specific procedures.

If you are using the wireless feature of the gage, you would normally turn the radio on and leave it in that state. When the radio has finished sending information to the Base, the radio goes into a deep sleep mode and draws very little power. When the gage has a new measurement for the radio, the gage wakes up the radio, the radio sends the measurements and waits for a response from the Base, and then the radio goes back to sleep.

## Pairing the Gage With a Base

When you pair a gage with a Base, you must be in the Radio Menu. You will need to press the **IN mm** button when doing the pairing. Refer to the [Pairing with the Base](#)<sup>5</sup> section for more details.



### Radio Icon

The Radio Icon is located in the lower left corner of the gage display. The Radio Icon will be displayed in one of the following state.

- |               |   |
|---------------|---|
| Icon Off      | The Radio Module has been turned off by the Radio Menu. In order to send measurements via a wireless connection, you must manually turn the radio back on.  |
| Icon On       | The radio is available and is probably sleeping. The radio spends most of its time in the sleep mode. Even if the radio is available, it does not mean that measurements can be sent via a wireless connection. If the gage has not been paired with the Base, no measurements can be sent.   |
| Icon Flashing | The radio is available to be updated or the radio is starting up. When you turn the gage on using the <b>ON zero</b> button on the gage panel, the Radio Icon will briefly flash while the radio is starting up. If the Radio Module has application firmware installed, the Radio Icon will go to an On state after a few seconds. If there is no valid application firmware installed in the Radio Module, the Radio Icon will continue to flash. Normally, the constant flashing would only occur if you tried to update the Radio Module firmware and the process failed. |

### 3 Pairing with Base

In order to send measurements to a Base, the gage must be paired with the Base. A gage can only be paired with one Base at a time. In the pairing process, the address information of the Base is captured by the gage. When the gage sends a measurement to a Base, only the Base that matches the address information in the measurement packet will accept and process the measurement packet.

There are 4 different MobileCollect Base models that can be paired with a gage. All of the Bases have the ability to send the measurement to a PC via a USB virtual serial port. The differences between the Base models is summarized below. For more information about the Base options refer to the MicroRidge Web page at [www.microridge.com/wl\\_bases.htm](http://www.microridge.com/wl_bases.htm).

USB Base	This is the most commonly used Base. It is connected to your PC via a USB cable and can send information to any application that can receive data from a serial port. This Base is powered via the USB connection.
RS-232/USB Base	This Base contains the features of the USB Base and also includes a DB-9 serial port connection. If you are using the DB-9 connection on this Base, you will need a separate USB power supply.
Wedge/USB Base	This Base contains the features of the USB Base and also includes a USB Keyboard Wedge port. With this Base you can send information to applications that only take keyboard input. The most common use of this Base is to send information to Microsoft Excel.
USB MicroBase	This Base is packaged in small case the size of typical USB flash drives. It cannot be used with the On-the-Fly pairing method since this Base does not have a Reset button.

There are 3 methods available for pairing a gage with a Base.

- [On-the-Fly](#)<sup>6</sup> This method uses the Reset button on the back of the Base to start the pairing process and does not require a setup program. If you are only interested in sending the measurement without any gage ID or channel information to your computer, this is the quickest way to pair the gage. Since the MicroBase does not contain a Reset button, this method cannot be used with the MicroBase.
- [Xpress Setup](#)<sup>7</sup> This method requires that you have the Xpress Setup program installed on your PC. This method is recommended if you want the gage ID or channel number included with measurement that is sent to your PC.
- [Extended Setup](#)<sup>9</sup> This method requires that you have the Extended Setup Program installed on your PC. This method is required if you want the greatest flexibility in formatting the measurement packet that is sent to your PC.



### 3.1 Paring On-the-Fly

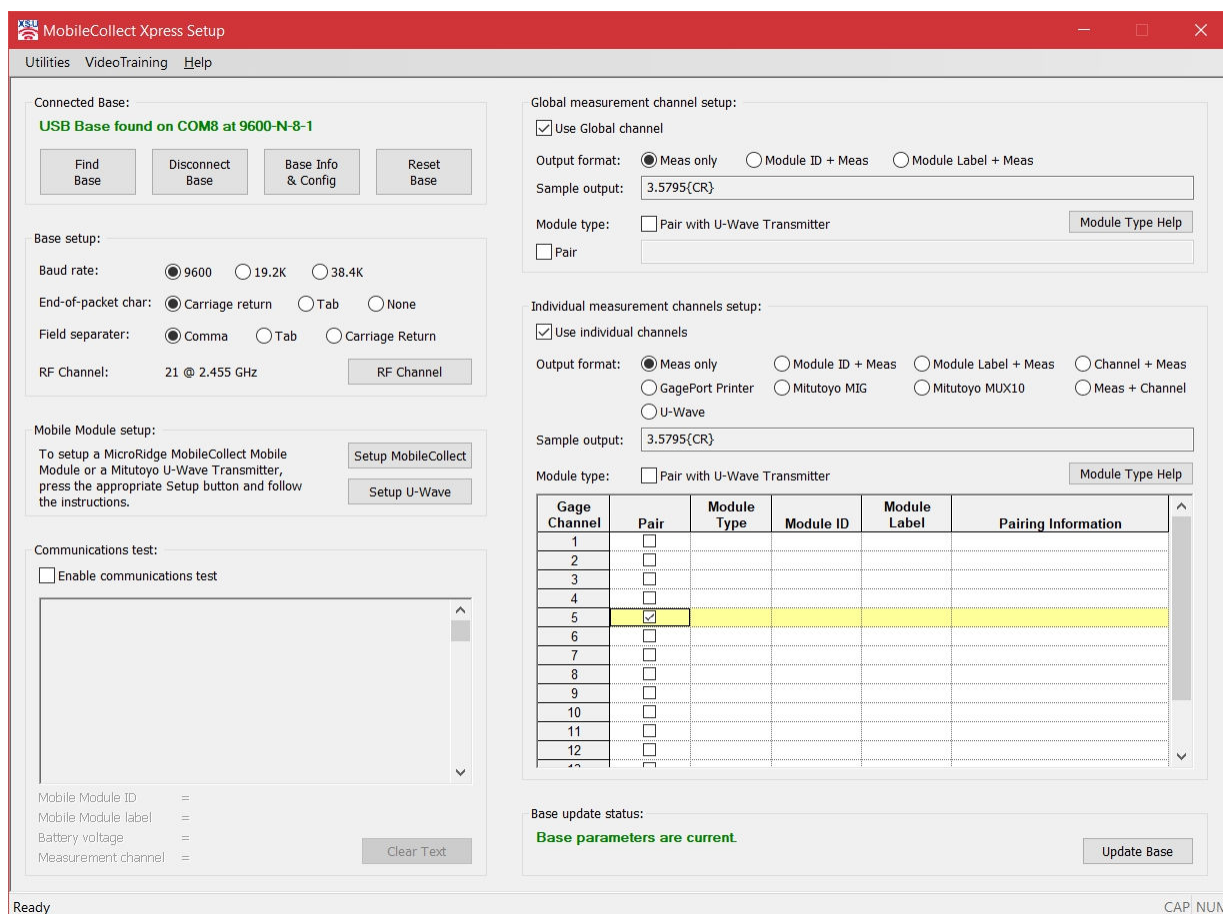
The On-the-Fly pairing method does not use any of the setup programs. Since the USB MicroBase does not contain a Reset button, you cannot use the MicroBase with this method.

To pair a gage using On-the-Fly, follow the steps below.

1. Be sure the radio is enabled in the gage. The Radio Icon in the lower left corner of the display will be on if the radio is on and ready to use.
2. Enter the Radio Menu by following the procedures in the [Radio Menu & Radio Icon](#) <sup>3</sup> section.
3. The Radio Menu should display **rAdio**.
4. Press and release the reset button on the back of the Base.
5. When you release the reset button, both LED stacks on the front of the Base will turn on.
6. In about 2 seconds, the left hand LED stack will turn off. The right LED tack should show red-yellow-green. You now have 10 seconds to complete the pairing process.
7. Press and release the **IN mm** button on the gage.
8. If the process was successful, the left LED stack will briefly indicate the RF signal strength and the right LED stack will briefly display yellow-green. All but the lower right green LED will then turn off.
9. If the Radio Menu is still displayed on the gage, press and release the **DATA** button on the gage to exit the Radio Menu.
10. You are now ready to send gage readings to the Base.

## 3.2 Paring with Xpress Setup

The Xpress Setup program allows you to add the gage ID or channel number information to the measurement packet sent from the Base to your PC. If you do not have the Xpress Setup program installed on your PC, install it now from your Product Resources DVD that was included with your Base.

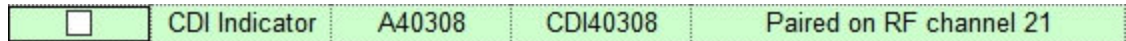


Xpress Setup Program Ready to Pair a Gage on Channel 5

To pair a gage using the Xpress Setup program, follow the steps below.

1. Start Xpress Setup and press the **Find Base** button.
2. Be sure the radio is enabled in the gage. The Radio Icon in the lower left corner of the display will be on if the radio is on and ready to use.
3. Enter the Radio Menu by following the procedures in the [Radio Menu & Radio Icon](#) <sup>3</sup> section.
4. The Radio Menu should display **rAdio**.

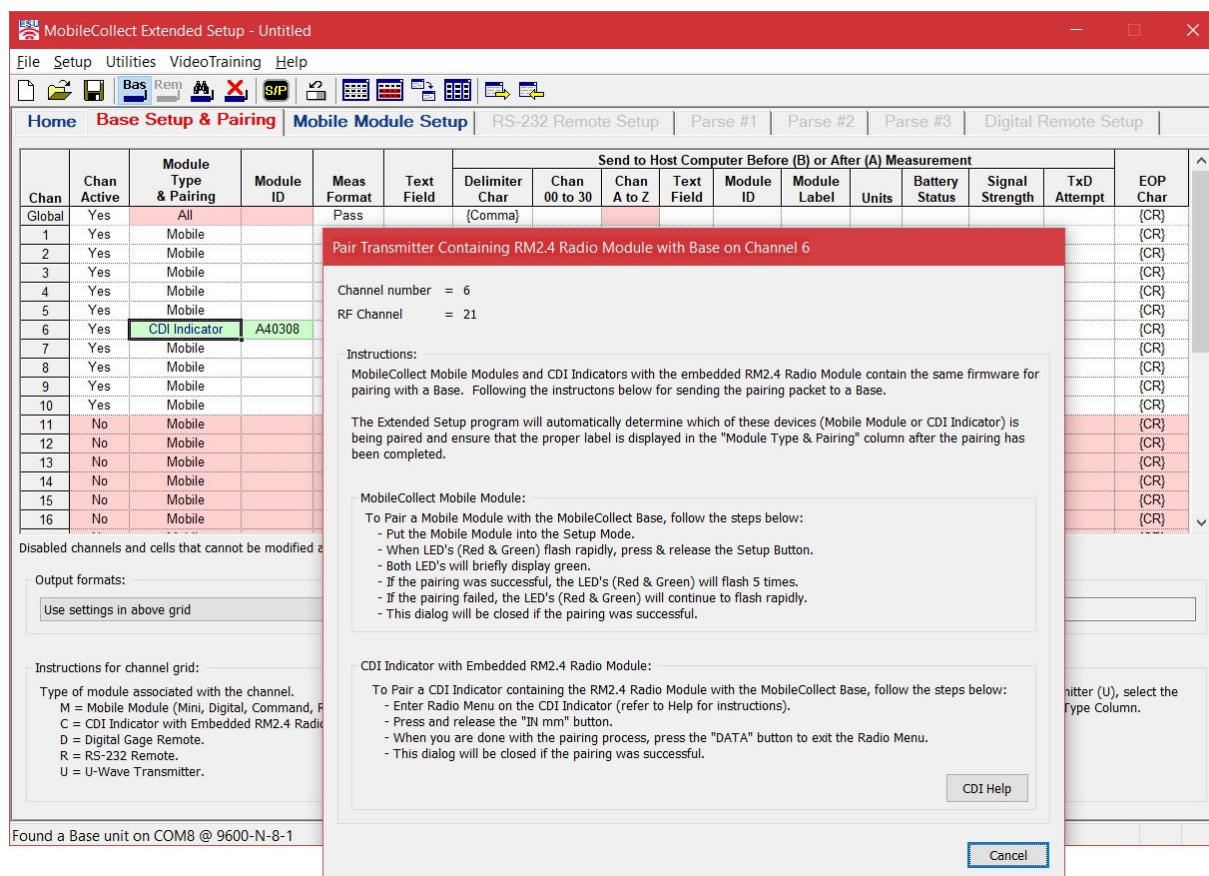
5. Select the Pair checkbox in the **Global measurement channel setup** group or in the **Individual measurement channel setup** group. The example above shows channel 5 in the grid selected.
6. Press and release the **IN mm** button on the gage.
7. If the pairing was successful, you will see the following message when pairing on an individual channel. If you did the pairing on the Global channel, the message will be slightly different.



8. The initial message will briefly have a bright green background and then change to a light green background as shown above.
9. If the Radio Menu is still displayed on the gage, press and release the **DATA** button on the gage to exit the Radio Menu.
10. You are now ready to send gage readings to the Base.

### 3.3 Pairing with Extended Setup

The Extended Setup program allows you to add a variety of prefix and suffix information to the measurement packet sent from the Base to your PC. If you do not have the Extended Setup program installed on your PC, install it now from your Product Resources DVD that was included with your Base.



Extended Setup Showing a CDI Indicator being Paired on Channel 6

To pair a gage using the Extended Setup program, follow the steps below.

1. Start Extended Setup and press the **Find Base Unit** button on the Home Tab.
2. Go to the **Base Setup & Pairing** tab.
3. If you are going to pair on the Global Channel, double-click the **Module Type & Pairing** cell for the Global Channel row.
  - a. A dialog will appear showing the available Global Channel module types.
  - b. Select the CDI Indicator module type.

- c. Click the OK button.
  - d. Go to step 5.
4. If you are going to pair on an Individual Channel click the **Module Type & Pairing** cell for the channel you want to pair on.
  - a. Select the CDI Indicator module type by pressing C on the keyboard.
  - b. Double-click in the **Module Type & Pairing** cell.
5. The Pair Transmitter dialog shown above will be displayed.
6. Be sure the radio is enabled in the gage. The Radio Icon in the lower left corner of the display will be on if the radio is on and ready to use.
7. Enter the Radio Menu by following the procedures in the [Radio Menu & Radio Icon](#) <sup>3</sup> section.
8. The Radio Menu should display **rAdio**.
9. Press and release the **IN mm** button on the gage.
10. If the pairing was successful, the green hi-lite will be displayed in the **Module Type & Pairing** and the **Module ID** columns.
11. The Pair Transmitter dialog will automatically close.
12. The green hi-lite will be turned off in about 4 seconds.
13. If the Radio Menu is still displayed on the gage, press and release the **DATA** button on the gage to exit the Radio Menu.
14. You are now ready to send gage readings to the Base.

### 3.4 Unpair from Base

If you previously paired a gage with a Base and no longer want to use the gage with the Base, you can remove the pairing by 2 different methods.

1. Pair the gage with a different Base. The address information of where a gage will send its measurements is stored in the gage. By pairing with a different Base, the address information of the previous Base is overwritten in the pairing process.
2. Clear the current pairing information in the gage. To clear the pairing information follow the steps below.
  - [Enter the Radio Menu](#) <sup>3</sup>
  - Press and hold the **IN mm** button on the gage until **dEL** appears on the gage display. The **dEL** message should appear in about 6 seconds.
  - Release the **IN mm** button.
  - The Base address information fields (Base ID, Base Network S/N and PAN ID) will be reset to zero's.
  - You can verify the address fields have been set to zero's by viewing the [Copyright Information](#) <sup>12</sup>.

## 4 Gage Reading & Format

### Getting a Gage Reading

After you have paired the gage to a Base, you can get a gage reading by pressing the appropriate button(s) on the front of the gage. After you press and release the button(s), there is a brief delay before the gage actually takes a reading. You would not want to be pressing a button on the gage while the gage is actually taking a reading.

The button(s) that need to be pressed depend on the model of the gage.

**CORE Gage** Press and release the **DATA** button. There are no LED's on this gage to indicate if the read request was successful.

**VRS Gage** Press and release the **2 ND** button and then press and release the **DATA** button. If the read request was successful, 2 green LED's near the top of the gage will flash. If the read request was not successful, 2 red LED's will flash.

A successful read request occurs when the radio in the gage receives an acknowledgment from the Base that the measurement packet was received.

### Measurement Output Format

The measurement information sent from the gage to the radio consists of the measurement and the measurement units. Examples of the measurement format are:

0.20350

-0.20350

5.168


-5.168

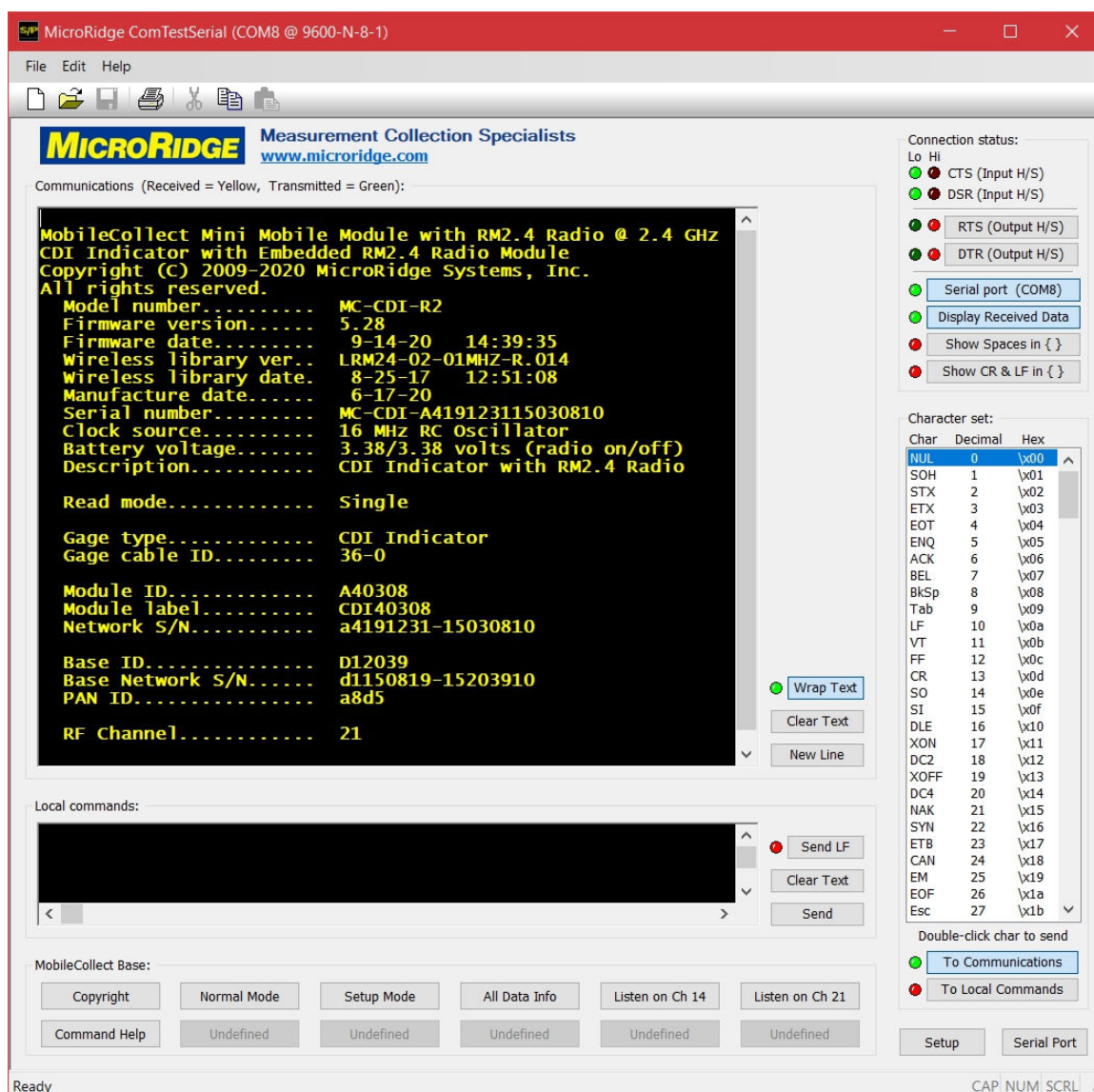
The units information sent to the radio indicate inches or mm.

The actual format of the measurement sent from the Base to you PC is controlled by the Base and can be configured by the Xpress or Extended Setup programs. The information that can be added to the gage measurement include, channel number, gage ID, user defined text, etc. Refer to the Xpress Setup or Extended Setup User's Guide for more details.

## 5 Copyright Information

Copyright Information and other information, as shown in the screen capture below, can be obtained from the CDI CORE and VRS Indicators with ComTestSerial (serial communications test program). ComTestSerial is included on the Product Resources DVD and will be installed when you install a Setup Program. ComTestSerial can be started directly from the Xpress or Extended Setup Programs. Before starting ComTestSerial you should have the Setup Program find the Base. The method for starting ComTestSerial from each Setup Program is described below.

- Xpress Setup      Select the Utilities\ComTestSerial Communications Test Program menu item
- Extended Setup    Click the “Load ComTestSerial” toolbar button ().



After ComTestSerial starts, click the Setup Mode button near the bottom of the window. You should see the lower-right green LED on the Base blink slowly.

### **Sending Copyright Information from the CDI Gage**

The copyright information that is sent from the gage is for the RM2.4 Radio Module. Information about the firmware running the gage functions is not available in this copyright information. To send the copyright information enter the Radio Menu as described in the [Radio Menu & Radio Icon](#)<sup>3</sup> section. Next, press and release the **IN mm** button of the gage.

In addition to the Copyright Information, data near the bottom of the output show the unique identifies for the radio module in the gage and the identifiers for the Base the gage is paired with.



## 6 Firmware Updates

The firmware in the RM2.4 Radio Module contained in the CORE and VRS gages can be updated via a wireless connection to a MobileCollect Base. Typically the only time a firmware update is required is when a new feature is released and you need to use this new feature in your gage application. When updates are available, they will be posted on the MicroRidge web site downloads page at [www.microridge.com/wl\\_downloads.htm](http://www.microridge.com/wl_downloads.htm).

## 7 Support Information

### Gage Support

Support for the CDI gage operation is provided by CDI or one of its private label resellers. MicroRidge cannot provide support for the operation of the gage.

### Wireless Support

MicroRidge will provide support for the pairing of the gage to a MobileCollect Base when using Xpress Setup, Extended Setup or Pairing-on-the-Fly.

#### Email:

Support: [support@microridge.com](mailto:support@microridge.com)

Sales: [sales@microridge.com](mailto:sales@microridge.com)

Web: [www.microridge.com](http://www.microridge.com)