MobileCollect™

Extended Setup

User's Guide

MICRORIDGE

Measurement Collection Specialists
Connect Any Gage into Any Software

MobileCollect Extended Setup Program

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1 Introduction

The MobileCollect Extended Setup Program is used to set up and configure MobileCollect Bases, Remotes, and Mobile Modules. The MobileCollect Extended Setup Program also supports the GageWay Wireless System. The GageWay Wireless System was replaced by MobileCollect in May 2010.

If the Setup Program is installed on a network drive rather than a local drive on a PC, access to Help files associated with the Setup Program will be limited. This Help file access limitation is due to restrictions Microsoft has placed on accessing html Help files (.chm) on network drives.

The Setup Program consists of a series of tabs. The Home Setup tab is used for Base and Remote configuration. The other tabs in the Setup Program will be enabled or disabled based upon the unit (Base or Remote) that is being configured.

Most people that use the Extended Setup Program to configure their Mini and RS-232 Mobile Modules could use the MobileCollect Xpress Setup Program. The Xpress Setup Program provides access to the most common setup features required by most users. The Xpress Setup Program is easier to use and faster for simple setups.

In addition to supporting the MobileCollect product line, Extended Setup now supports receiving measurements from the following devices. Refer to the MobileCollect Documentation 63 section for more information.

- CDI Indicators that contain the embedded MicroRidge RM2.4 Radio Module. The RM2.4 Radio Module is the optional Long Range radio module used in the CDI CORE and VRS Indicators.
- Mitutoyo U-Wave Transmitters.

Mobile Collect User's Guides & Tech Notes

There are several User's Guides and Tech Notes that cover MobileCollect operation and setup. These documents are available as PDF documents and can also be accessed from the various MobileCollect software utilities. The User's Guides and Tech Notes for MobileCollect are listed below. All of the documents, except for Xpress Setup, are installed when you install Extended Setup. Refer to the MobileCollect Documentation 63 section for more information about these documents.

- MobileCollect Hardware User's Guide
- MobileCollect Xpress Setup User's Guide (not installed with Extended Setup)
- MobileCollect Extended Setup User's Guide (this document)
- Using CDI Indicator with MobileCollect Tech Note
- Using Mitutoyo U-Wave with MobileCollect Tech Note

Using Multiple Setup Programs

There are 2 different Setup Programs that could be used to configure a MobileCollect system. However, both of these Setup Programs must not be used to configure a Base and its Mobile

Modules. Xpress and Extended Setup parameters are stored in different locations on the devices and operate independently of one another.

Use Xpress Setup or Extended Set to configure a Base and its Mobile Modules. Do not use both of these programs.

Technical Terms & Phrases

To assist in understanding the intent of certain technical terms and phrases, the following provides a description of these items.

Associating vs Pairing

Previously in this document, the process of connecting a transmitter to a receiver was referred to as Associating. However, today the word Pairing is more commonly used to describe this connection process. In this document, the words such as Associate and Associating have been changed to Pair and Pairing.

Receivers

A wireless system contains transmitters and receivers. MobileCollect Bases are the receiver portion of the wireless system. For this document, a Base and a Receiver are the same device.

Transmitters

The transmitters in a MobileCollect wireless system can consist of MobileCollect Mobile Modules (Mini, Command, RS-232, etc.), Mitutoyo U-Wave Transmitters, CDI Indicators with an embedded RM2.4 Radio Module, RS-232 Remotes, and Digital Remotes. When this document refers to a transmitter, it is referring to one or more of the devices listed in the previous sentence.

User's Guide Organization

This User's Guide covers the MobileCollect Extended Setup Program. When viewing the PDF version of this User's Guide, page numbers to the right of links within the PDF document will appear.

2 Getting Started

After installing the Extended Setup Program, there are a few tasks that should be done before configuring MobileCollect.

- In order to use the USB port on a Legacy Base (pre-EVO) for serial communications, the USB driver must be installed. EVO Bases utilize the default Windows serial driver, no additional drivers are needed for Windows PCs.
- All of the configuration files for MobileCollect should be saved to a single setup file folder on the PC or a network drive. When a Base or Remote is found, or sending a configuration file to a Base or Remote, additional files may be created in this setup folder. These additional files are accessed when you pair Remotes with Bases. These files may also be accessed when configuring items on the Base Setup & Pairing Tab 22. To specify the default setup file folder, start the Setup Program and select the "File\Default Setup File Folder…" menu item. If the default installation location is selected, the setup file folder will be created at the following location when the Setup Program is first run. It is recommended that the location of the setup file folder be in a location that is backed up on a regular basis.

  My Documents\MicroRidge\MobileCollect\Setup_Files

- When searching for a connected Base or Remote, the Setup Program will only look at the serial ports that are checked in the Available Serial Ports dialog. This dialog can be accessed by selecting the "Setup\Available Serial Ports…" menu item. Be sure the desired serial ports are checked.

In some cases, the Setup Program is not needed to configure MobileCollect. If all of the following are true, the Setup Program is not needed.

- The baud rate for the Legacy Bases needs to be the default value of 9600-N-8-1. EVO Series Bases communicate over USB and do not need a baud rate set.
- Utilizing default channel 21 for wireless communications.
- Only measurements from the transmitters is needed. Other items such as Module ID, battery condition, channel identifier, etc are not needed.
- Transmitters will be paired with the Base by using the Pairing-on-the-Fly method. Refer to the Hardware Components User's Guide 63 and/or the appropriate Tech Note 63 for more information about Pairing-on-the-Fly.

3 Mobile Module Buttons & Setup Mode

When configuring MobileCollect with the Extended Setup Program, the Mobile Module will need to be in the Setup Mode to send the configuration parameters to and from the Base. The 2 buttons (Setup and Read) on the Mobile Module are used to enter the Setup Mode and the Setup button is used to send the configuration parameters.

Mobile Module Buttons

Mobile Module Buttons and LEDs

The button and LED positions are the same on all of the Mobile Modules. These modules consist of the Mini, Command, and RS-232 V2 Mobile Modules.

Mobile Module Setup Mode

All of the Mobile Module pairing and configuration methods require the Mobile Module to be placed into the Setup Mode. To put the Mobile Module into the Setup Mode, follow the steps below:

- Press and hold the Setup button. The Setup button is the button closest to the gage cable and is gray on newer Mobile Modules
- While holding the Setup button, press the Read button.
- Once both LEDs start to flash, release the Setup button.
- When the Setup Mode is active, both LEDs will flash rapidly. The left LED is red and the right LED is green.

Sending Configuration Parameters from a Mobile Module

To send configuration parameters from a Mobile Module to a Base or a Setup Program, press and release the setup button when the Mobile Module is in the Setup Mode. This procedure is used when sending the configuration parameters to the Setup Program and when doing a

Pairing-on-the-Fly with a Base. Refer to the Hardware Components User's Guide for more information about Pairing-on-the-Fly.

Exiting Setup Mode

The Mobile Module will automatically exit the Setup Mode after a period of no activity. The Command and RS-232 Mobile Modules will automatically exit after 60 seconds and the Mini Mobile Module will automatically exit after 15 seconds.

To manually exit the Setup Mode, press and release the Read Button.

4 How to Set Up MobileCollect

To set up a Base or Remote, connect the unit to a serial or USB port on your PC and then have the Setup Program find the unit. Indicate whether a Base or Remote is being connected, by selecting the Base or Remote option. After selecting the type of unit to find, press the Find Base and Remote Unit button on the Home Setup tab or click the Find button () on the toolbar. The Setup Program will only look for the type of unit that has been specified.

After the Base or Remote has been found, modify the items on the enabled tabs as necessary. When configuring MobileCollect, it is recommended that setup is performed in the following order

1. Configure the Base units before trying to configure Mobile Modules or Remotes.
2. Configure the items on the Home Setup tab and send these parameters to the Base unit. Do not set up the items on the Base Setup & Pairing Tab 22 until steps 3 and 4 have been completed. Be sure to save the configuration to a disk file.
3. Configure the Mobile Modules through the Mobile Module Setup tab.
4. Configure the Remote units. Be sure to transfer the configuration parameters to the Remote units and save the configuration parameters for the Remotes to a disk file.
5. Read the current configuration parameters from the Base unit and configure the items on the Base Setup & Pairing tab. Transfer these parameters to the Base unit and save the configuration to a disk file.

Each time a Base or Remote is found, an information file is created in the setup file folder. These information files have a file name that is the same as the serial number of the unit and the files contain information such as communication parameters, Station IDs, descriptions, network S/N, etc. The user should never directly modify these files. These files are accessed by the setup program and are used by the set up program for paring Bases and Remotes throughout the program.

An information file is also created for a Mobile Module when the Mobile Module setup dialog is accessed from the Mobile Module Setup tab 32.

5 Configuration & Information Files

There are several file types that are stored in the setup file folder. The file extensions of these files have the following meaning. The first 3 characters (gws) on several of the files were used to indicate GageWay Wireless System. The same file extensions are used with MobileCollect in order to maintain compatibility with the previous GageWay Wireless System.

gws_bas	Base parameter file.
gws_rem	Remote parameter file.
BaseSN	Base information file accessed by the Setup Program. Do not modify this file.
RemoteSN	Remote information file accessed by the Setup Program. Do not modify this file.
MobileSN	Mobile Module information file accessed by the Setup Program. Do not modify this file.

6 Transferring Setup Parameters

When changes are made to the setup parameters, these parameters are not automatically saved to a disk file or sent to the Base or Remote. The setup parameters for a Base or Remote can be read from the unit and sent back to the unit. The Base and Remote parameters can also be written to a disk file.

To transfer the setup parameters to and from a Base or Remote, the unit must be found. Press the Find button on the Home Setup tab or press the Find Base or Remote Unit button () on the toolbar. After modifying the parameters, press the Send button () on the toolbar to transfer the modified parameters back to the unit. Use the File/Save menu item to save the parameters to a file.

If the parameters of the Base or Remote were changed in the setup program mistakenly, the saved parameters can be recovered from the Base or Remote by pressing the Read Button () on the toolbar to read the setup parameters from the unit into the Setup Program.

7 Home Setup Tab

The Home Setup tab is where major functions of the Base or Remote are viewed and changed. Information for the connected device is located in the top area of the window. The Home Setup Tab will change information and menu accessibility based on the device connected. The lower sections of the window store the parameters and menus to change/modify the connected device. The Base and Remote radio buttons allow a user to toggle between configuring a Base or Remote and enable access to the Base & Pairing tab or Remote Setup tabs.

Connecting to a Base or Remote

To find a Base or Remote the Setup Program must be put into either Base or Remote mode and then prompted to search for a base. This can be done in 2 ways:

1. Utilize the radio buttons in the middle of the Home Tab window. With the "Base" or "Remote" Radio button selected, click the "Find XXX Unit" Button to the right of the radio buttons to search the available serial ports.

2. In the top icon bar select 

for Bases and 

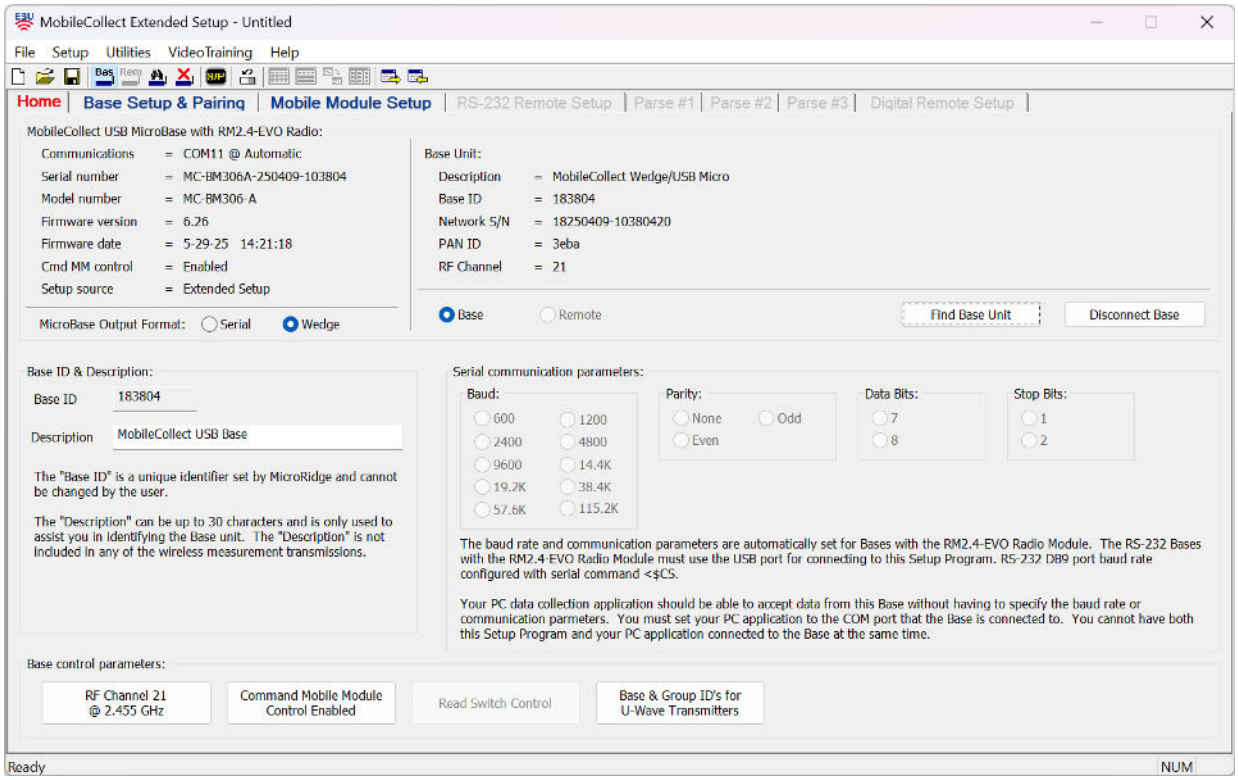
for Remotes. Then press  to search the available serial ports.

Base Setup

If a Base has been found, the following items on the Home Setup tab can be changed or viewed.

- Description - A user defined description of the Base. A unique description can help identify Bases in a complex system. Base Descriptions can be useful when pairing transmitters in the transmitter setup menus.
- Serial communication parameters - Legacy Bases allow for different serial communication parameters. The output parameters of the base must match the parameters of the destination ComPort or data will not transfer properly. EVO Bases automatically assign communication parameters and do not need specific settings.
- RF Channel - See RF Channels 14
- Command Mobile Module Control - See Command Mobile Module Parameters 17
- Read Switch Control - See Read Switch Control 19
- Base & Group ID's for U-Wave Transmitters - Parameters used to pair Mitutoyo U-Wave Transmitters to a MobileCollect Base. Refer to MobileCollect Documentation 63 for more information.

The Base ID is preset by MicroRidge and cannot be changed by the user.

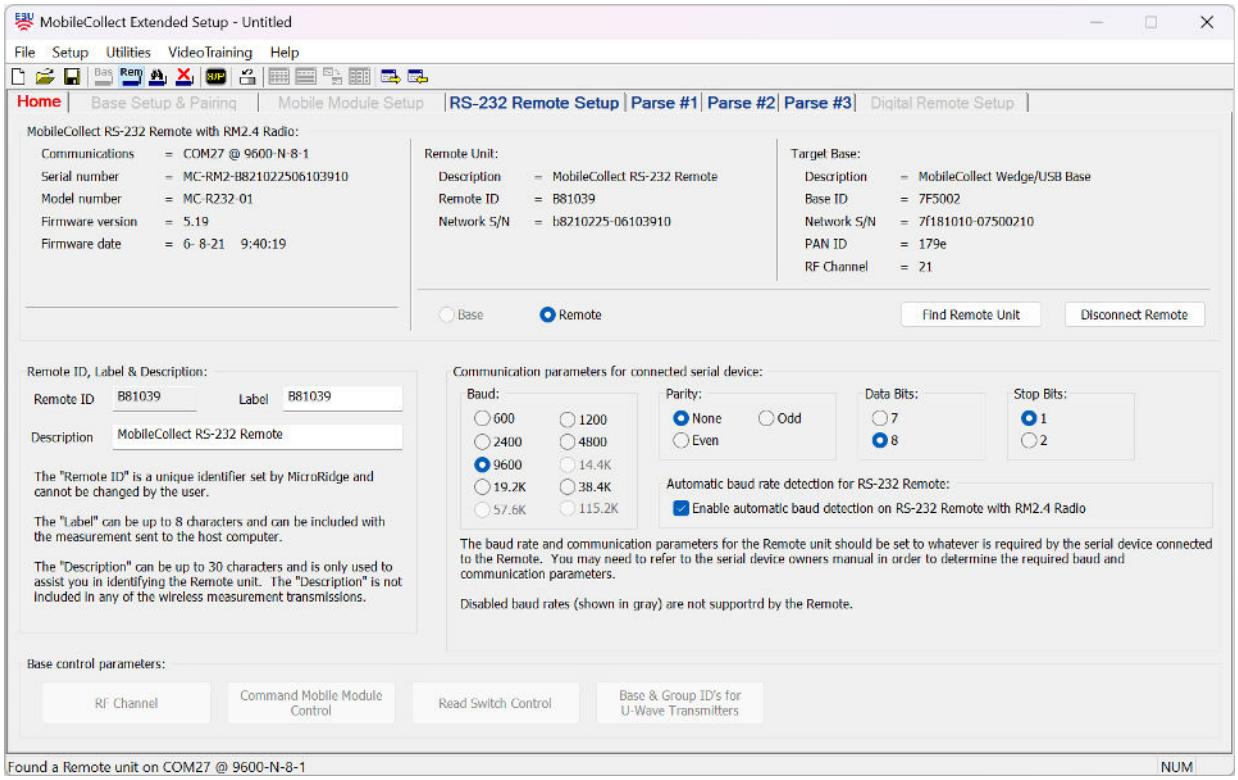


Remote Setup

If a Remote has been found, the following items on the Home Setup tab can be changed or viewed.

- Label - A user configurable, 8 character, transmitter label that can be sent as a part of the data packet.
- Description - A user defined description of the Remote that is used as a reference description when pairing the Remote to a Base.
- Communication parameters for connecting a serial device - See RS-232 Remote Setup Tabs 48 for more info.

The Remote ID is preset by MicroRidge and cannot be changed by the user. Refer to the Remote Setup Tabs 51 section for information on how to configure a Remote



7.1 Sending Setup to Base or Remote

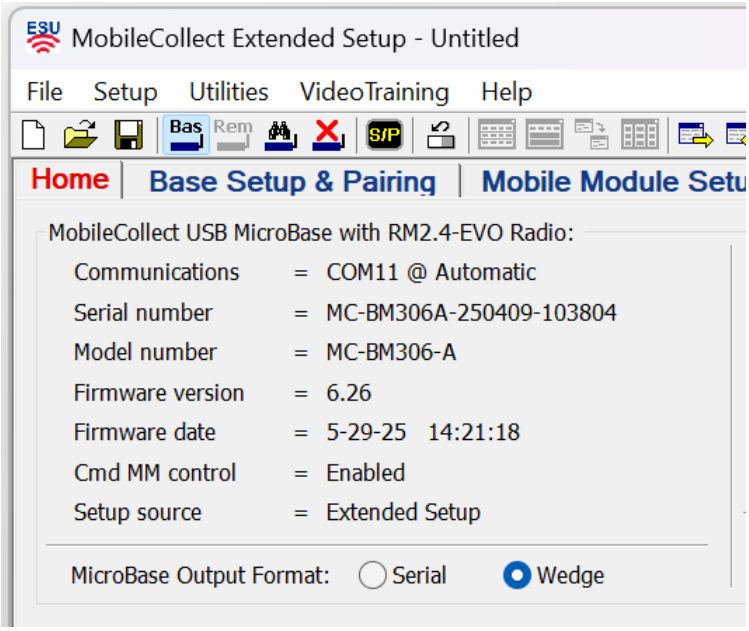
After modifying the setup parameters for a Base or Remote, the modified setup parameters must be sent to the Base or Remote. This is a step that users often miss and then wonder why their Base or Remote is not functioning as expected. Refer to Transferring Setup Parameters 10 for more information.

7.2 Baud Rate

It is strongly recommended that baud rate set as high as possible for Legacy Bases. With only a few Remotes or Mobile Modules sending data to a Base, using a lower baud rate is acceptable. However, for high numbers of Remotes and Mobile Modules, the baud rate must be high enough that the measurement data can be transferred from the Base faster than it is being received. The default baud rate is 9600 for Legacy Bases. EVO Bases automatically assign communication parameters so no setup is required.

7.3 MicroBase EVO Output Mode

The EVO series MicroBases have two output modes: USB Serial and Keyboard Wedge. The USB Serial output utilizes a Virtual Com Port to send data to a virtual serial port on the PC so that dedicated SPC programs can pick up the data. The Keyboard Wedge output allows an operator (person taking measurements) to send gage data to any software including web/cloud-based programs, Microsoft Excel/spreadsheets, and any program that accepts keyboard input.



The output is changed in the Home Tab. The radio buttons for the output types are displayed after the Setup Program has found a MicroBase EVO. Select the desired output mode with the radio buttons located at the bottom of the Base info section located in the upper left of the Home Tab window.

7.4 RF Channels

The RF communication channels can be set for the Bases, Remotes, and Mobile Modules. The RF channels that can be used by MobileCollect range from channels 11 to 25/26. When using GageWay Wireless components with MobileCollect, only channels 12 to 23 are available. Two of the channels have specific designations as shown below.

Channel 14 — This channel is reserved for wireless firmware updates of the Mobile Modules and for parameter transfer. This channel is not used to send any measurement information.

Channel 21 — This is the default communications channel for the MobileCollect system.

The table below shows each channel and the frequency used by each of the channels.

RF Channel	Minimum Frequency, GHz	Middle Frequency, GHz	Maximum Frequency, GHz	Description
11	2.4035	2.405	2.4065	Available RF channel (MobileCollect only)
12	2.4085	2.410	2.4115	Available RF channel
13	2.4135	2.415	2.4165	Available RF channel

RF Channel	Minimum Frequency, GHz	Middle Frequency, GHz	Maximum Frequency, GHz	Description
14	2.4185	2.420	2.4125	Reserved for firmware updates & parameter transfer
15	2.4235	2.425	2.4265	Available RF channel
16	2.4285	2.430	2.4315	Channel may conflict with default WiFi channel 6
17	2.4335	2.435	2.4365	Channel may conflict with default WiFi channel 6
18	2.4385	2.440	2.4415	Channel may conflict with default WiFi channel 6
19	2.4435	2.445	2.4465	Channel may conflict with default WiFi channel 6
20	2.4485	2.450	2.4515	Available RF channel
21	2.4535	2.455	2.4565	Default communications channel
22	2.4585	2.460	2.4615	Available RF channel
23	2.4635	2.465	2.4665	Available RF channel
24	2.4685	2.470	2.4715	Available RF channel (MobileCollect only)
25	2.4735	2.475	2.4765	Available RF channel (MobileCollect only)
26	2.4785	2.480	2.4815	Available RF channel (MobileCollect Legacy Bases only, not available for EVO)

Some of the WiFi wireless network systems also use channels that overlap with the MobileCollect channels. The default WiFi channel is 6. WiFi uses a different channel number system and each WiFi channel covers a wider frequency range. As shown in the table above, WiFi channel 6 will overlap 4 of the MobileCollect channels. In many cases, a WiFi network can use the same channel used by a MobileCollect installation.

7.4.1 What RF Channel Should Be Used

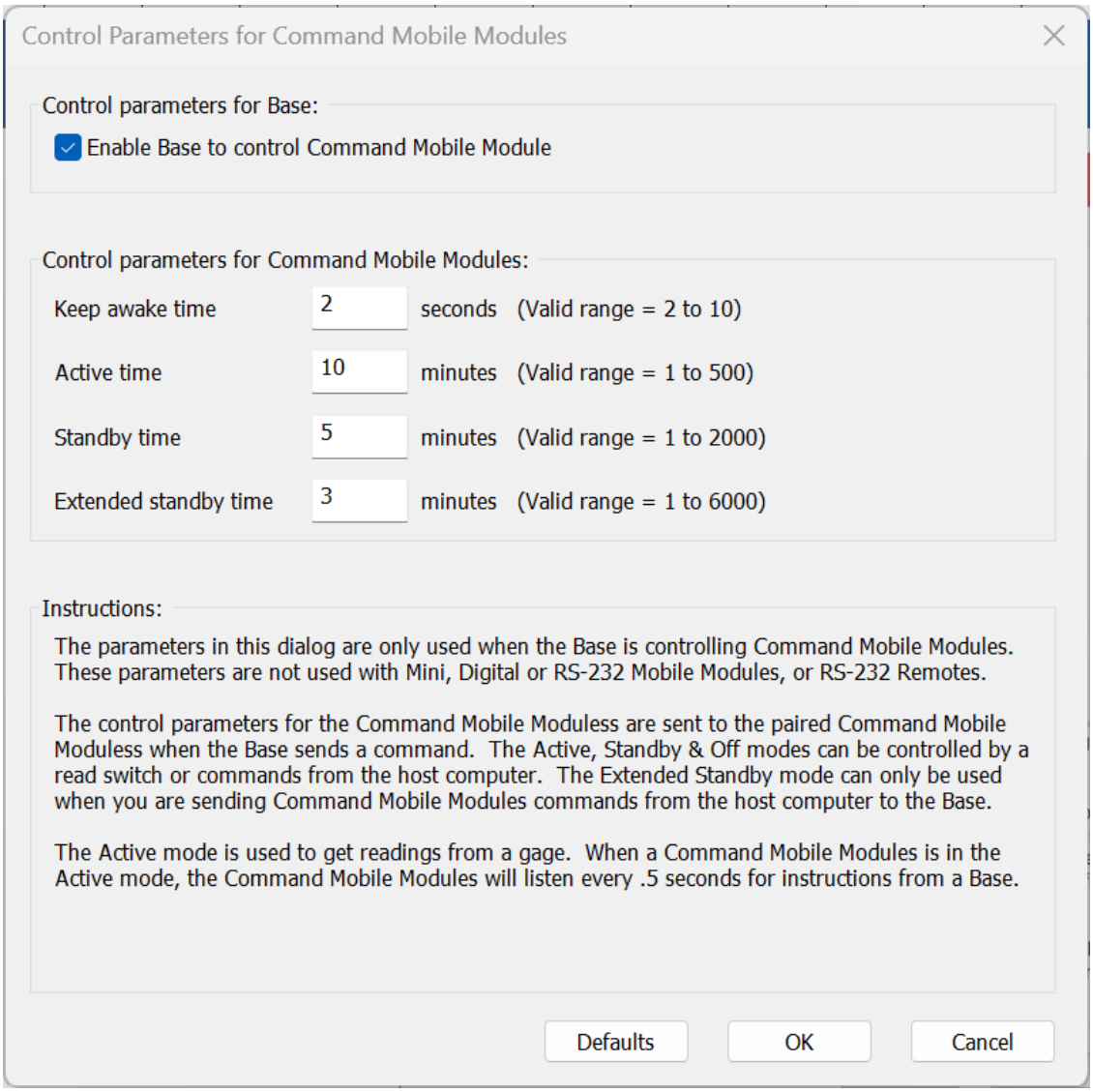
Typically, the default channel, 21, is sufficient and can be used in most environments. The transmission duty cycle for sending a measurement is very short and has a low likelihood of interference. Normally the total time that the transmitters are active for a measurement is less

than 20 msec (0.020 seconds). For 1,000 measurements in an 8-hour period, MobileCollect will be transmitting data for a total time of about 20 seconds.

Sometimes it may be necessary to use a channel other than 21. The reasons for selecting another channel could include the following:

- Pre-existing equipment communicating on the same frequency as channel 21 that requires exclusive access to channel 21.
- Complex system with multiple MobileCollect Bases that are receiving measurements via a continuous read mode. Spreading the traffic over different channels can ensure data transmission.
- When sending commands from a Base to a Command Mobile Module (CMM) and sending measurements from a RS-232 Mobile Module to another Base, it is recommended the Base and its CMMs be on a different channel than the other MobileCollect units.

7.5 Command Mobile Module Parameters



The information in this dialog is only used if a Base is controlling a Command Mobile Module. These values are not used with Mini Mobile Modules, RS-232 Mobile Modules, or Remotes.

In order for a Base to send read requests to a Command Mobile Module, enable the Base control in the above dialog. By default, this Base control is enabled.

The times set in the Control Parameters for Command Mobile Modules section, specify the length of time that a Command Mobile Module will listen for a command from a Base. When a Command Mobile Module receives a command from a Base, the Command Mobile Module will reset its timeout timers. For example, if a Command Mobile Module is in the Active mode and the Active time is set for 10 minutes, the Command Mobile Module will turn off if it has not received a command from the Base for 10 minutes. If the Command Mobile Module receives a command from the Base, the 10 minute timeout period will restart.

Keep awake time

Maximum amount of time a Command Mobile Module will stay awake after it receives a command from the Base. A 2 second waiting period should be sufficient to receive and process all the commands from a Base.

Active Mode

Active Mode is used for measurement taking, the CMM wakes up every 0.5 seconds to listen for a command from the Base. When a user presses and releases the Setup button on a Command Mobile Module, the Command Mobile Module will switch to Active mode. When the Command Mobile Module receives no commands for the specified time period, the Command Mobile Module will turn off. Keep the Active time as low as possible to extend the battery life.

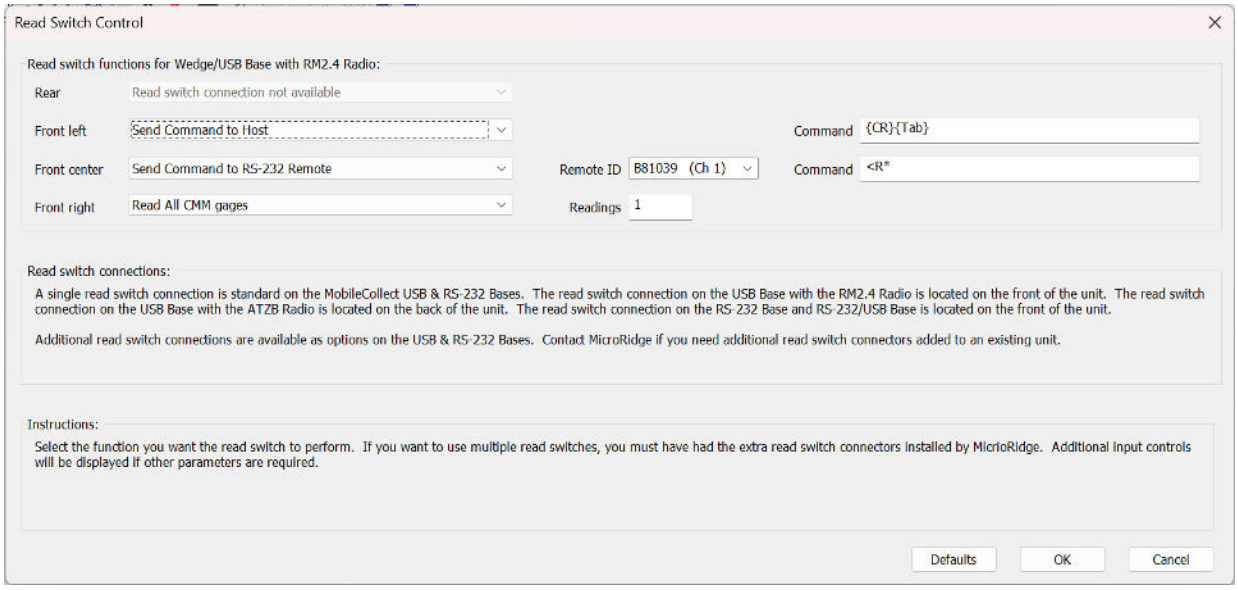
Standby Mode

This mode is a power saving mode and wakes up every 10 seconds to listen for a command from the Base. When the CMM receives no commands for the specified time period, the Command Mobile Module will turn off.

Extended Standby Mode

This mode is a power saving mode and wakes up every 60 seconds to listen for a command from the Base. When the CMM receives no commands for the specified time period, the Command Mobile Module will turn off.

7.6 Read Switch Control



Full size Bases each contain a single read switch connector for a Hand Switch or Foot Switch. There is an option to have a total of 3 read switch connectors installed. Contact MicroRidge[66] if you need to increase the number of read switch connectors on a Base.

Read Switch Functions

There are 15 predefined functions available for each read switch. Some of the functions require additional information as shown in the dialog above. The read switch functions available are listed below.

Disabled	Disable the read switch connector.
Send Command to Host	Send the specified command to the Host computer. For Bases with Wedge output, the command will be sent in the selected output format, serial or wedge.
Read a Digital Remote	Get a single reading from a specific Digital Remote. Specify the Digital Remote IDs in the Base Setup & Pairing tab, then the available Digital Remotes will be shown in the drop-down list.
Continuous read a Digital Remote	Get continuous readings from a specific Digital Remote. Press and release the read switch to start the reading process. Press and release the read switch to stop the reading process. Specify the Digital Remote IDs in the Base Setup & Pairing tab, then the available Digital Remotes will be shown in the drop-down list.

TIR Read a Digital Remote	Do a TIR read process from a specific Digital Remote. Press and release the read switch to start the TIR process. Press and release the read switch to stop the TIR process. Specify the Digital Remote IDs in the Base Setup & Pairing tab, then the available Digital Remotes will be shown in the drop-down list. The output of a TIR process is: Number of readings, Minimum reading, Maximum reading, Range.
Read all Digital Remotes	Read all of the Digital Remotes. Specify from 1 to 2000 measurements to be obtained from the Digital Remotes. When 2 or more measurements are specified, a single measurement will be obtained from each Digital Remote and then another measurement from each Digital Remote, etc. For example, if there are 2 active Digital Remotes and 3 readings are specified, readings will be collected as per the following: Digital #1 Digital #2 Digital #1 Digital #2 Digital #1 Digital #2
Send Command to RS-232 Remote	Send the specified command to the specified RS-232 Remote. Specify the RS-232 Remote IDs in the Base Setup & Pairing tab, then the available RS-232 Remotes will be shown in the drop-down list.
Read all CMM Gages	Read the gages attached to all of the Command Mobile Modules. The Command Mobile Modules must be in the Active mode in order to get a gage reading. Specify from 1 to 250 measurements to be obtained from the Command Mobile Modules. When 2 or more measurements are specified, a single measurement will be obtained from each Command Mobile Module and then another measurement from each Command Mobile Module, etc. For example, if there are 2 active Command Mobile Modules and 3 readings are specified, readings will be collected as per the following: CMM #1 CMM #2 CMM #1 CMM #2 CMM #1 CMM #2
Read Channel 1 CMM Gage	Read the gage attached to the Command Mobile Module for channel 1.
Read Channel 2 CMM Gage	Read the gage attached to the Command Mobile Module for channel 2.
Read Channel 3 CMM Gage	Read the gage attached to the Command Mobile Module for channel 3.

Read Channel 4 CMM Gage	Read the gage attached to the Command Mobile Module for channel 4.
Set all CMMs to Active	Set all of the Command Mobile Modules to the Active mode. Only those Command Mobile Modules in the Standby mode will respond to this command. If a Command Mobile Module is off, press and release the Setup button to put the Command Mobile Module into the Active mode.
Set all CMMs to Standby	Set all of the Command Mobile Modules to the Standby mode. Only those Command Mobile Modules in the Active mode will respond to this command.
Turn off all CMMs	Turn off all of the Command Mobile Modules. If a Command Mobile Module is off, press and release the Setup button to put the Command Mobile Module into the Active mode.

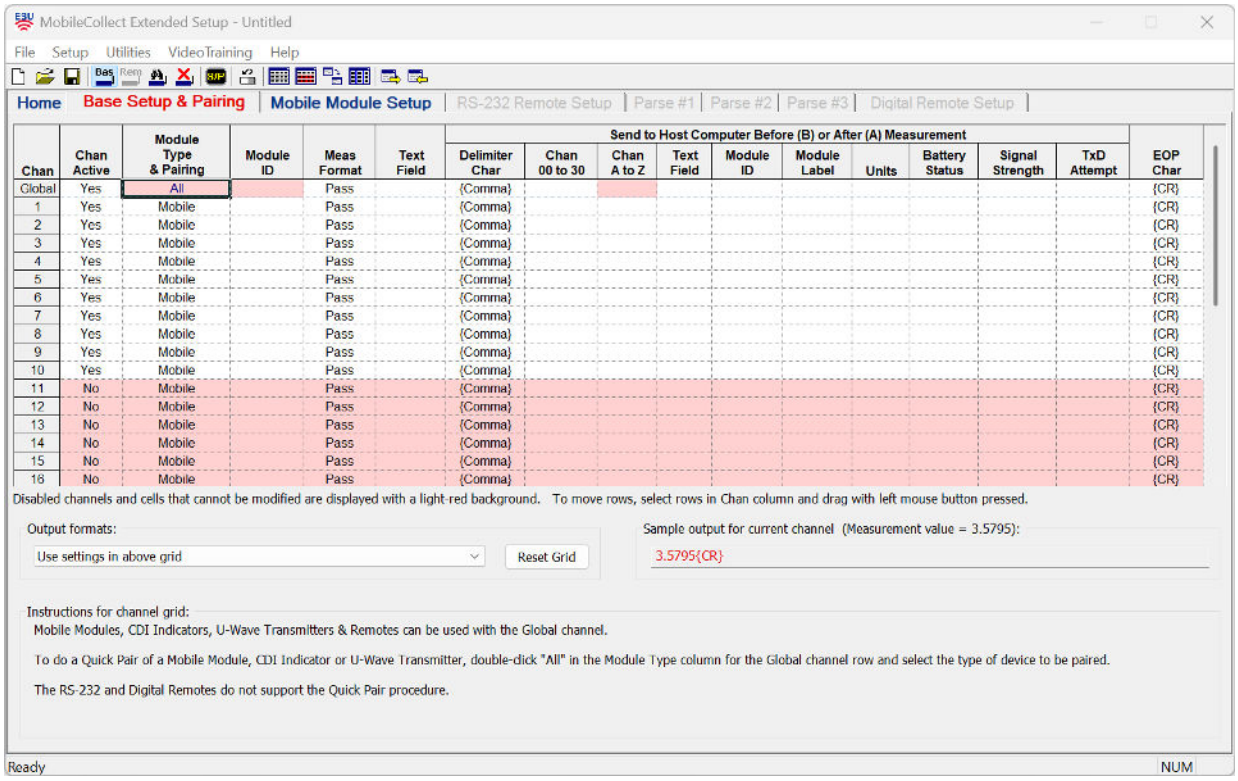
Commands

The maximum length of a command is 25 characters. Place control and extended characters in special character code brackets, { }. The following shows the format of common control characters. The {\x..} format uses the hex value of the character.

Carriage return	{\x0d} or {CR}
Line feed	{\x0a} or {LF}
Tab	{\x09} or {Tab}
Escape	{\x1b} or {Esc}

8 Base Setup & Pairing Tab

The Base Setup & Pairing tab allows configuration of the measurement output that is sent from the Base to PC. It is also possible to pair some devices with the connected Base from this tab. The grid in the Base Setup & Pairing tab is organized by columns, these are used to customize the output from the Base, based on channels and parameters.



Chan Active (Base Parameter)

Status of channel availability to assign Transmitters to.

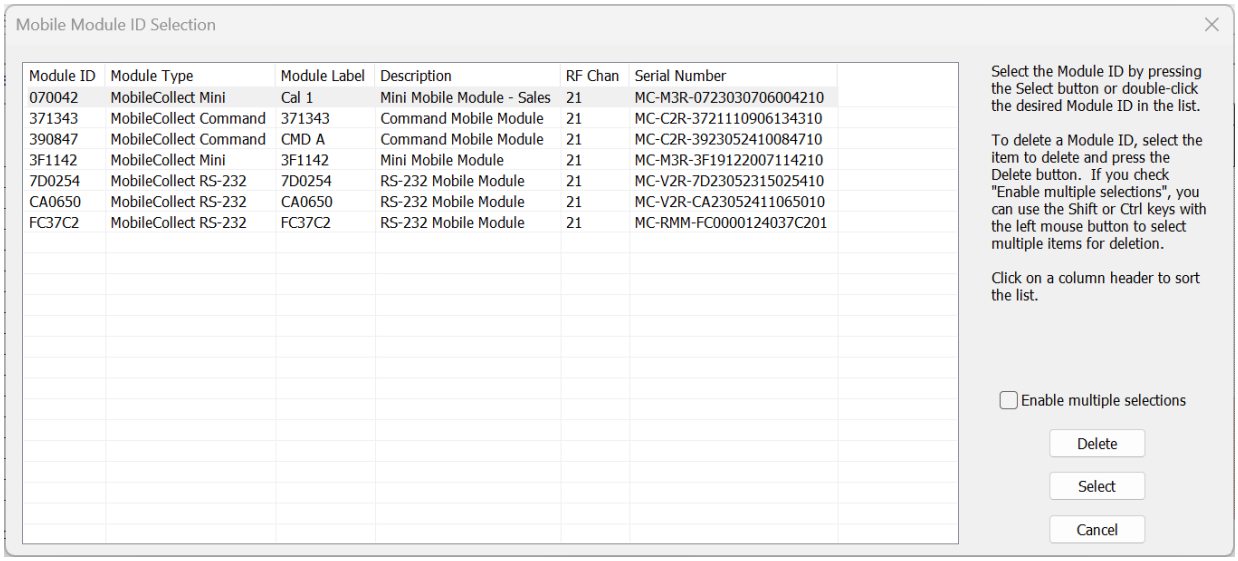
Module Type & Pairing (Base and Transmitter Parameter)

The type of transmitter is specified in this column. If your transmitter is a Mobile Module, a CDI Indicator (with embedded RM2.4 Radio Module), or a U-Wave Transmitter, it can be paired from this tab. Refer to the Module Types & Pairing 25 section for more details.

Module ID (Transmitter Parameter)

The Module ID for Mobile Modules, RS-232 Remotes, and Digital Remotes can be entered directly in the Module ID field to assign a specific Transmitter to a channel. To select the Module ID from a list of transmitters that have been configured by the Extended Setup program, right-

click in the Module ID cell. An ID Selection window will open with all Transmitters recognized by the Extended Setup Program. The Module ID can also be typed in directly. For CDI Indicators and U-Wave Transmitters manual entry of the Module ID is not possible, Module IDs are entered automatically after following the pairing process. Remember, if a Module ID is entered into the cell, it does not mean that the transmitter is paired with the Base. All Transmitters must be paired to the Base.



Meas Format (Base Parameter)

The following measurement formats can be selected to change the output style of a channel.

- Pass-Through: Pass through data as received from the gage
- Right Justified: Right justify data in a 10 character field
- MUX10: Emulate Mitutoyo MUX10 output (ex. 01A+001.1755)
- GagePort: Emulate GagePort Printer output (ex. 2374, 1.1755,inch ,01)
- U-Wave: Emulate Mitutoyo U-Wave output (ex. DT18301+000001.1755I)

Text Field (Base Parameter)

A user defined 8 character text field. This text field can be added to the output of a transmitter entered into a channel.

Delimiter Char (Base Parameter)

The character used to separate data fields in a data packet. Comma is default, but any ASCII character can be used by double clicking the cell to open a selection menu.

Prefix and Suffix Grid

The prefix and suffix grid is where a user can customize the additional info/data that can be sent per channel. For more info refer to the Channel Prefix and Suffix Setup 29 section.

EOP Char (Base Parameter)

The End-of-Packet Character is the final character in a data packet that signals an end to the data packet. Default is a carriage return, {CR}. Other EOP characters can be used by double clicking the cell to open a selection menu.

Output Formats (Base Parameter)

The output format drop down menu below the grid can force all outputs to a predefined uniform format. Note, this will overwrite any configurations in the grid. The selections available are listed below.

- Use settings in above grid
- Meas, Chan xx (right justified)
- Chan xx, Meas (right justified)
- Meas, Module ID (right justified)
- Meas, Chan xx, Module ID, Units, Battery, Signal, Attempts (right justified)

Configuring for Command Mobile Modules (CMM)

If the Base will be sending commands to CMMs, CMM IDs must be paired to a channel in the grid. The Global channel cannot be used for sending commands to a CMM, CMMs paired to the Global channel can still send data from the transmitter.

8.1 Module Types & Pairing

Several Module Types can be paired form the Base Setup & Pairing tab. The Module Types that can be paired with the connected Base on this tab are listed below. MobileCollect RS-232 Remotes and Digital Remotes cannot be paired with the Base on this tab.

- MobileCollect Mobile Modules
  - Mini Mobile Module
  - Digital Mobile Module
  - Command Mobile Module, with Command Mode disabled
  - RS-232 (V2) Mobile Module
- CDI Indicators with embedded MicroRidge RM2.4 Radio Module. The RM2.4 Radio Module is the optional long range radio module used in the CDI CORE and VRS Indicators.
  - CDI CORE Indicator
  - CDI VRS Indicator
- Mitutoyo U-Wave (Non-Bluetooth only)
  - U-Wave-T Transmitters
  - U-Wave-TM/TC (Fit) Transmitters

The MobileCollect Mobile Modules have numerous configuration options that cannot be configured from the Base Tab. If other configuration options are needed, they must be configured from the Mobile Mobile Setup tab 32.

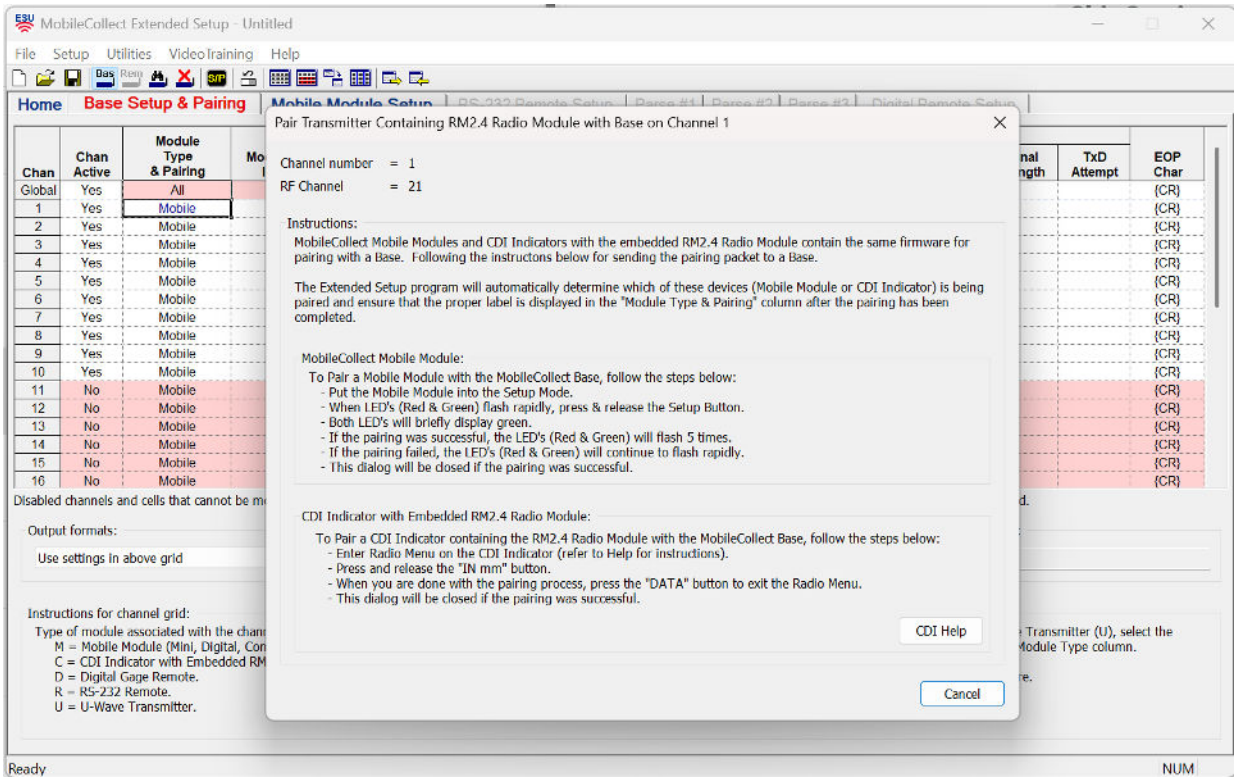
The setup and configuration options for the CDI Indicators and U-Wave Transmitters are described in the Tech Notes that can be accessed from the MobileCollect Documentation 63 section.

8.1.1 Pairing Mobile Modules

The Extended Setup program allows a variety of transmitters to be paired to the global or individual channels. A transmitter must be paired with a Base before the Base will accept measurements from the transmitter. The pairing information (RF channel number, Base network serial number, and Base PAN ID) is stored in the transmitter. When the transmitter sends a measurement to a Base, the address information for the target Base is included in the wireless packet. The wireless packet sent by a transmitter may be received by several Bases; however, only the Base that matches the pairing information will process the measurement packet.

There are 3 methods that can be used to pair a Mobile Module with a Base.

1) Pairing-on-the-fly.
2) Use the Xpress Setup Program. This program is discussed in a separate manual.
3) Use the Extended Setup Program.



Extended Setup Showing a Mobile Module being Paired on Channel 1

Pairing-on-the-Fly for MobileCollect Mobile Module - Full Size Bases (Legacy and EVO)

This is a very quick and easy method used to pair a Mobile Module with a Base. With this method, no setup software is required. This method can be used with Legacy or EVO USB Bases, RS-232 Bases, and Wedge Bases. This method cannot be used with the any of the MicroBases since the MicroBase does not have a Reset button.

1. Be sure no other Transmitters are sending measurements to the Base.
2. Put the Mobile Module into the Setup Mode[6].
3. Press and release the Reset button on the back of the Base.
4. When the left status LEDs (green/green/green) go out and the right LEDs (red/yellow/green) are all on, press and release the Setup button on the Mobile Module.
5. If the pairing was successful, the LEDs (red/green) on the Mobile Module will blink 5 times and all of the Base LEDs, except for the green Pwr LED will be off.
6. If the Base does not receive a pairing request, it will automatically exit the pairing mode after 10 seconds.

Pairing-on-the-Fly for MobileCollect Mobile Module - MicroBases (Legacy and EVO)

This is a very quick and easy method used to pair a Mobile Module with a MicroBase. With this method, no setup software is required. This method can be used with all the Legacy and EVO MicroBase models.

1. Be sure no other Transmitters are sending measurements to the MicroBase.
2. Put the Mobile Module into the Setup Mode[6]..
3. Unplug and replug the MicroBase to enter the start up sequence.
4. When all LEDs (red/yellow/green) are all on, press and release the Setup button on the Mobile Module.
5. If the pairing was successful, the LEDs (red/green) on the Mobile Module will blink 5 times and on the MicroBase the Red and Yellow LEDs will turn off in sequence. After pairing, only the Green LED will be lit on the MicroBase.
6. If the Base does not receive a pairing request, it will automatically exit the pairing mode after 10 seconds.

To pair a Mobile Module 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. 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 Mobile Module module type.
   c. Click the OK button.
   d. Go to step 5.
4. To pair on an Individual Channel click the ***Module Type & Pairing*** cell for the desired channel.
   a. Select the Mobile Module module type by pressing M on the keyboard.
   b. Double-click in the ***Module Type & Pairing*** cell.
5. The Pair Transmitter dialog shown above will be displayed.
6. Put the Mobile Module into the Setup Mode[6].
7. Press and release the Setup button.
8. If the pairing was successful, ***Module Type & Pairing*** and the ***Module ID*** cells for the paired channel will be highlighted in green and the Module ID will be written to the channel. No Module ID will be written to the channel if the global channel was used. (The highlight will disappear in ~4 seconds)

9. The Pair Transmitter dialog will automatically close.
10. Gage readings are ready to send to the Base.

9 Channel Prefix and Suffix Setup

The Extended Setup program allows a user to add a variety of additional information from MobileCollect Transmitters to the data packet. This is done by utilizing the grid area under "Send to Host Computer Before (B) or After (A) Measurement". The Before and After designations will add the additional info as a prefix of suffix to the measurement data. The area where prefixes and suffixes are modified is known as the grid. The grid area has the following columns:

Chan 00 to 30

Channel Number output based on the selected channel.

Chan A to Z

Channel Letter output based on the selected channel. Limited to the first 26 channels, uppercase letters. If the Channel Letter is added beyond channel 36, the default Channel Letter is a lowercase "z"

Text Field

This column is used to place the user entered text in the "Text Field" column found to the left of the "Send to Host Computer Before (B) or After (A) Measurement" grid.

Module ID

This column is used to place the Transmitter ID stored in the "Module ID" column found to the left of the "Send to Host Computer Before (B) or After (A) Measurement" grid.

Module Label

User defined Transmitter Label that can be assigned to a MobileCollect Transmitter. More info can be found in the Mobile Module Setup Tab 32 and RS-232 Remote Setup Tabs 48 sections.

Units

Measurement Unit (if provided from gage).

Battery Status

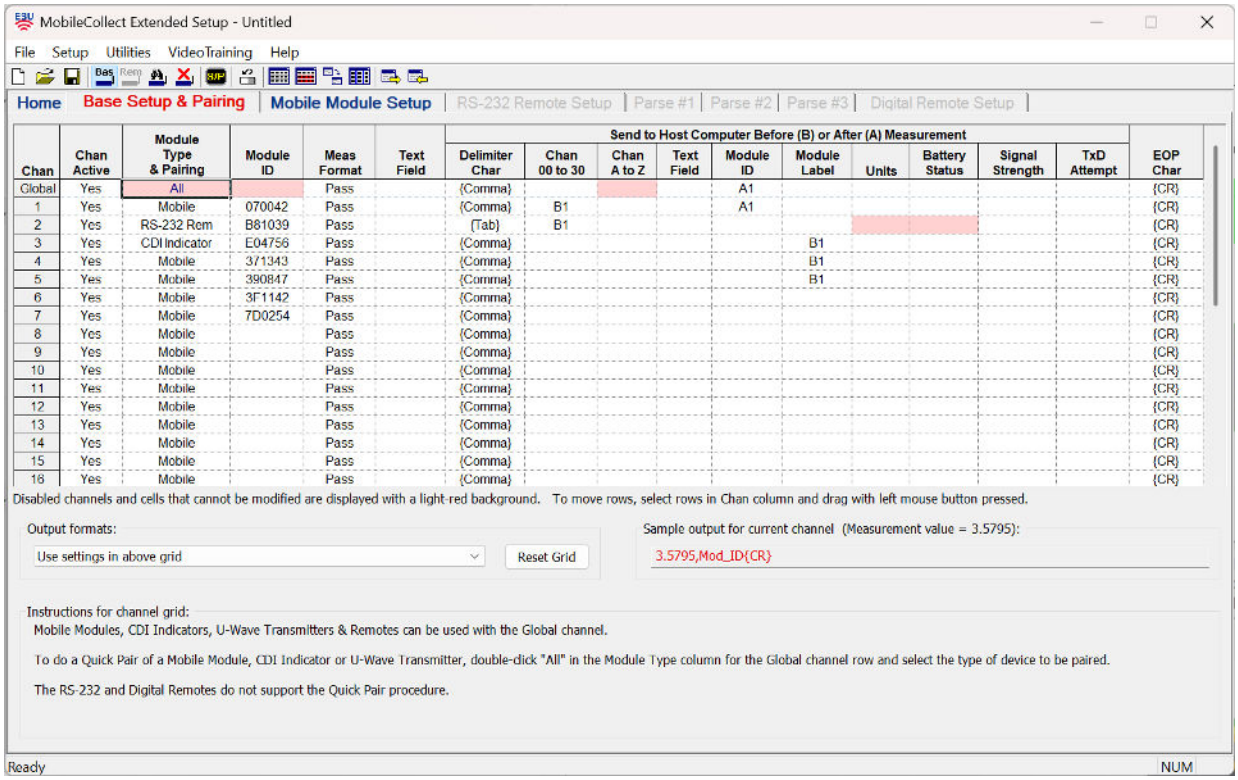
Voltage of the Transmitter battery (Mobile Modules only).

Signal Strength

Strength of the radio signal received from the Base. A lower number indicates a stronger signal.

TxD Attempt

Number of attempts it took to transmit data from the Transmitter to the Base.



The grid operates as a matrix for the user to define what and where in the data packet the additional info will be sent. An A# or B# needs to be entered in the corresponding cell to build the data packet. A# would be used to place the parameter after the measurement reading, while B# would be used to place the parameter before the measurement reading. The # needs to be a number from 1-7 to specify the order of the parameter sent either before or after the data packet.

In the screen capture shown above, Module ID for channel 1 to is 070042. If this Base unit receives a measurement packet from a Mobile Module with a Module ID of 070042, the Base will do the following.

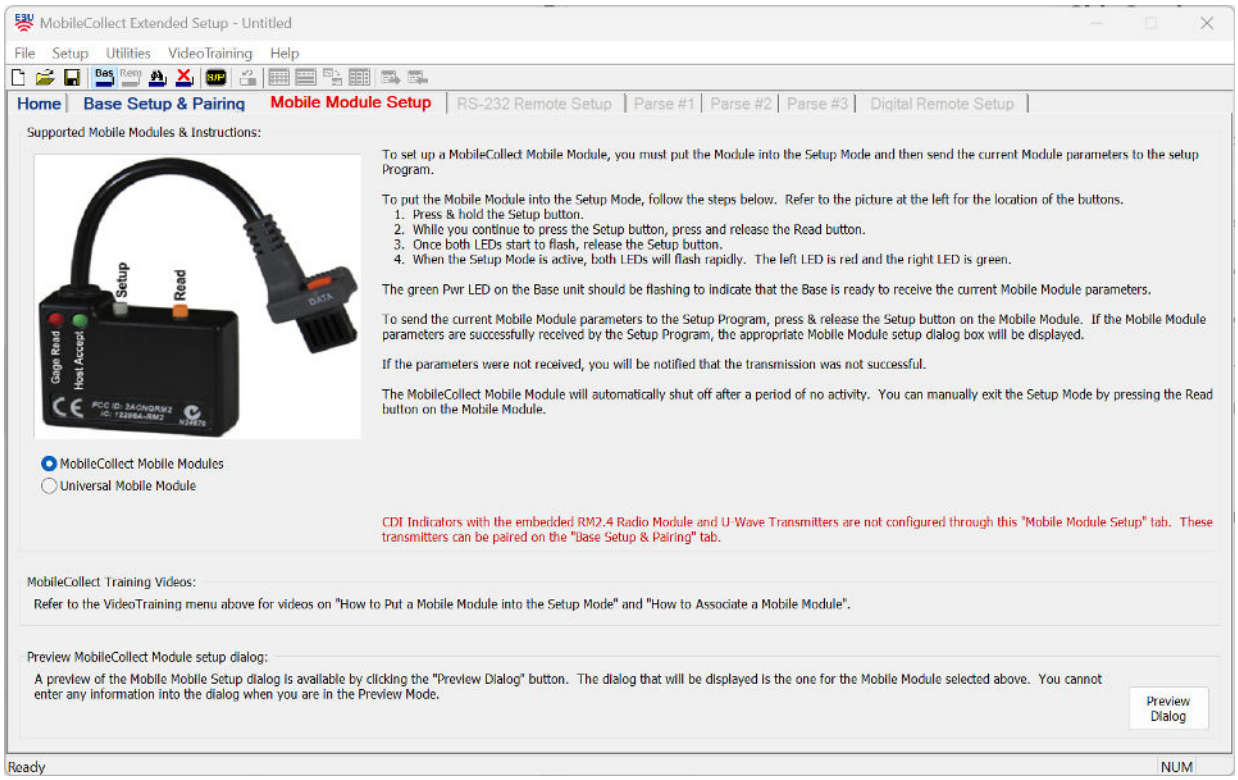
- Meas Format - **Pass**: Left justify the measurement (remove all leading spaces)
- Delimiter Char - **{Comma}**: Use a comma to separate the measurement data from the additional info data.
- Chan 00 to **30 - B1**: Add Channel ID "01" before the measurement
- Module ID - **A1**: Add the Module ID after the measurement

- EOP Char - **{CR}** Add a carriage return to the end of the packet.
- Send the data string to the host computer.

If the Base unit receives a measurement packet from the 3F1142 Mobile Module, the measurement will be sent to the host computer without any modification.

Remember, that in order for a transmitter to send data to a Base, it must be paired with that Base. If a packet is received from a transmitter and the Module ID is not specified in the grid, the measurement packet received from the transmitter will be processed by the Global channel if the Global channel is enabled and the Transmitter has been paired to the Base.

10 Mobile Module Setup



In many of the wireless configurations, Mobile Modules do not need to be configured with the Extended Setup Program. Listed below are some of the reasons the Extended Setup Program may be needed to configure your Mobile Modules. Extended Setup is required for setting up a Command Mobile Module with Command Mode Enabled.

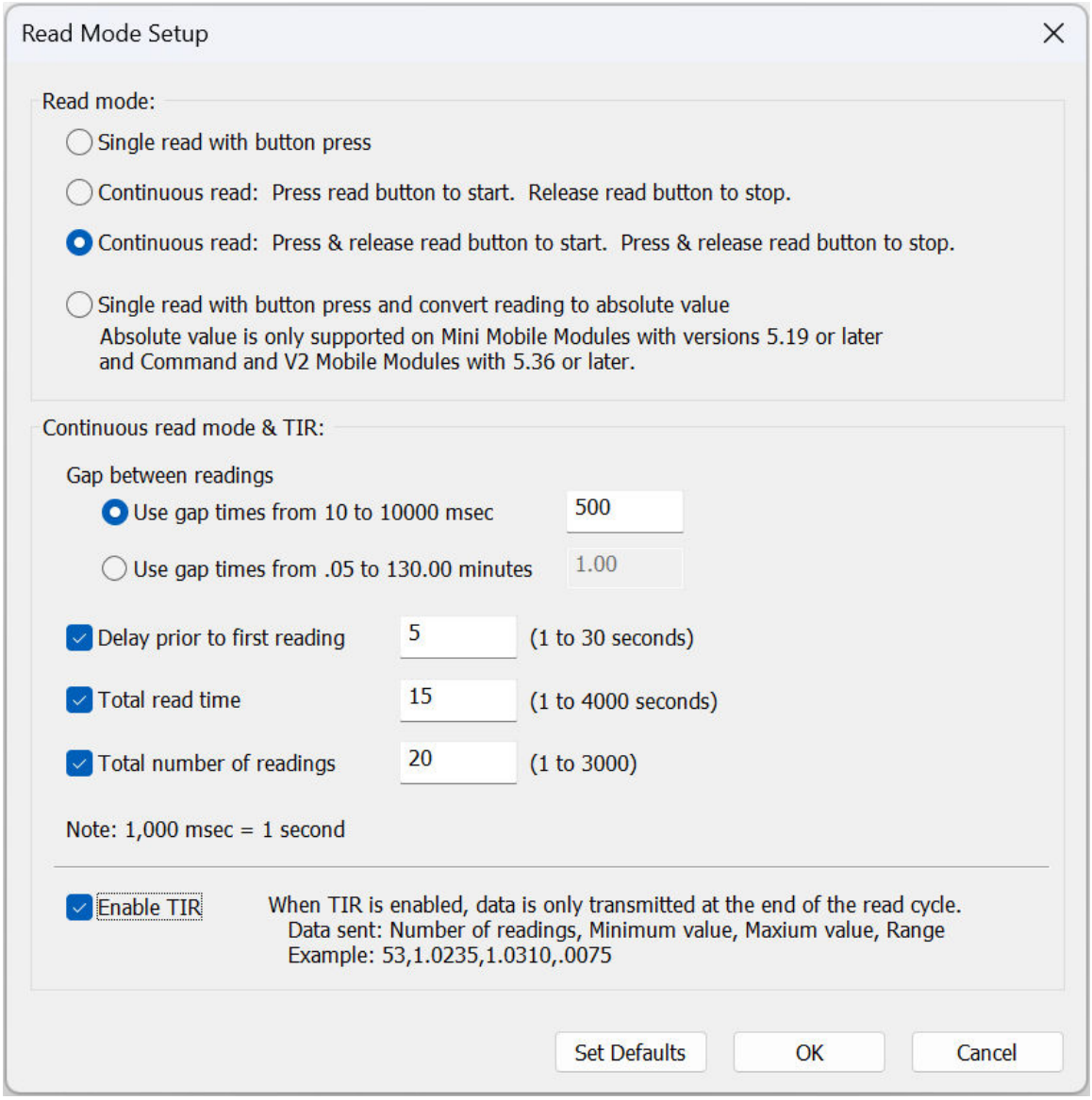
- Pair the Mobile Module with the current Base.
- Pair the Mobile Module with a Base that is not currently connected to the computer. To do this pairing, the desired Base must have previously been found by the Extended Setup Program.
- Change the Mobile Module label or description.
- Configure the Mobile Module for continuous read mode.
- Enable or disable the command feature in a Command Mobile Module.
- Configure an RS-232 Mobile Module.

To configure a Mobile Module with the Extended Setup Program, perform the following steps:

- Click the Set Operational Mode to Base using the toolbar button ().
- Find the Base by pressing the Find Base Unit button or click the Find a Base () toolbar button.
- Select the Mobile Module Setup tab.
- Put the Mobile Module into the Setup Mode.
  - Press & hold the Setup button. The Setup button is the button closest to the gage cable.
  - While holding the Setup button, press and release the Read button.
  - Once both LEDs start to flash, release the Setup button.
  - When the Setup Mode is active, both LEDs will flash rapidly. The left LED is red and the right LED is green.
- Press and release the Setup button. If a complete set of parameters was received by the Setup Program, the Setup Program will automatically display the appropriate Mobile Module configuration dialog.

10.1 Mobile Module Read Modes

Mobile Modules have the ability to read data in single or continuous read modes. Continuous read mode is used primarily with Mini Mobile Modules but Command Mobile Modules can utilize continuous read modes when used locally at a gage and V2 RS-232 Mobile Modules can use continuous read with certain gages. Continuous read modes can be setup with multiple variations. The "Read Mode" menu is access in the Mobile Module Configuration menu that can be entered by the process outlined in the Mobile Module Setup Tab 32 section. Absolute Value and TIR modes are configured in this menu.



Read Mode Selection

Single read with button press (Default)

Mobile Module will send 1 reading for each press of the Read Button.

Continuous read: Press read button to start. Release Read button to stop.

Mobile Module will send data as fast as possible while operator holds down the Read Button. Note, data output rate is usually limited by the gage and not the Mobile Module.

Continuous read: Press & release read button to start. Press & release read button to stop

Mobile Module will send data as fast as possible after operator presses and releases the Read Button, data will stop being sent after operator presses and releases the Read Button again. Note, data output rate is usually limited by the gage and not the Mobile Module.

Single read with button press and convert reading to absolute value

Mobile Module will send 1 reading for each press of the Read Button. The absolute value of the reading will be sent to the base.

Continuous read mode & TIR

These settings only apply to Mobile Modules set to 1 of the Continuous Read modes.

Gap between readings

The output frequency of Continuous Read mode can be set by defining the time between readings. Interval time can be set from 10 milliseconds to 130 minutes.

Delay prior to first reading

A one-time delay can be added. This is useful to prevent unwanted/erroneous initial data. For example, a delay can allow an operator time to setup the fixture before measurements are recorded.

Total read time / number of readings

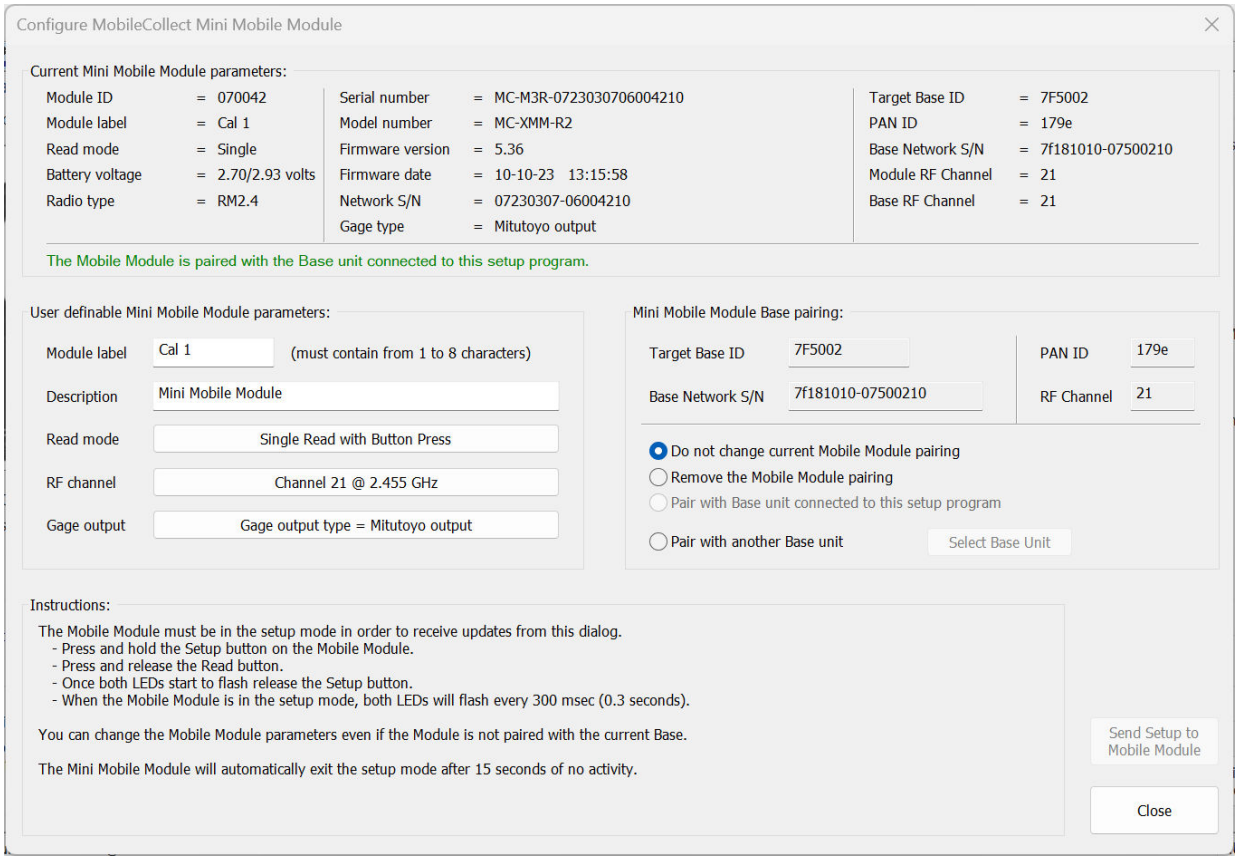
Total read time and/or total number of readings can be set to end continuous read mode. Note: If both parameters are selected, the continuous readings will stop at whichever parameter is met first. Note: If “Press read button to start. Release read button to stop” mode is select, the read button must be held down until the time or number of readings parameter is met.

TIR.

TIR Mode is a special mode where the Mobile Module will take continuous readings based on the selected parameters. After continuous readings have ended, the Mobile Module will output the number of readings taken, minimum value, maximum value, and range.

10.2 Mini Mobile Module

The Mini Mobile Module is the most common Mobile Module in the MobileCollect System. It can connect to many common digital gages such as calipers, micrometers, and indicators. Its small size makes it ideal for use with hand gages.



Module Label

The Module label is a user customizable string that is sent as part of the measurement packet and can be sent to the host computer as part of the measurement string. Sending this label to the host computer is controlled by the setting in the Module Label column on the Base Setup & Pairing tab.

Description

The Description field is to assist in identifying the Mobile Module during setup. The Description is never sent to the Base as part of a measurement. The Description shows up in the Mobile Module ID Selection Window introduced in the Base Setup & Pairing Tab[22] section.

Read Mode

The Read Mode can be Single, Continuous or TIR. If the Read Mode is set to Continuous or TIR, the gap time between the readings must be specified. The minimum gap time be a function of how often that gage actually provides the Mobile Module with a reading. If the gage only sends a reading to the Mobile Module every second, the Read Gap will be at least 1 second (1Hz). Refer to Mobile Module Read Modes[34] for more info.

RF Channel

Specify the RF transmission channel for the Mobile Module. Remember the Mobile Module can only communicate with a Base that is operating on the same channel. Before selecting a channel other than the default channel 21, please read the RF Channels[14] section.

Gage Output

With the Mini Mobile Module, the gage output type must be selected for the cable connected to the Mini Mobile Module. When a Mini Mobile Module is shipped, it is configured for the type of gage cable connected to the module. If a different type of gage is required, a new connector to match the gage will need to be purchased. Then use the "Gage output type" button to display the Gage Output Type[38] dialog to select the Gage type.

The Gage Output Type menu is where the selection for the Transmit Label Field[40] or Remote Read Switch[39] are selected.

Base Pairing

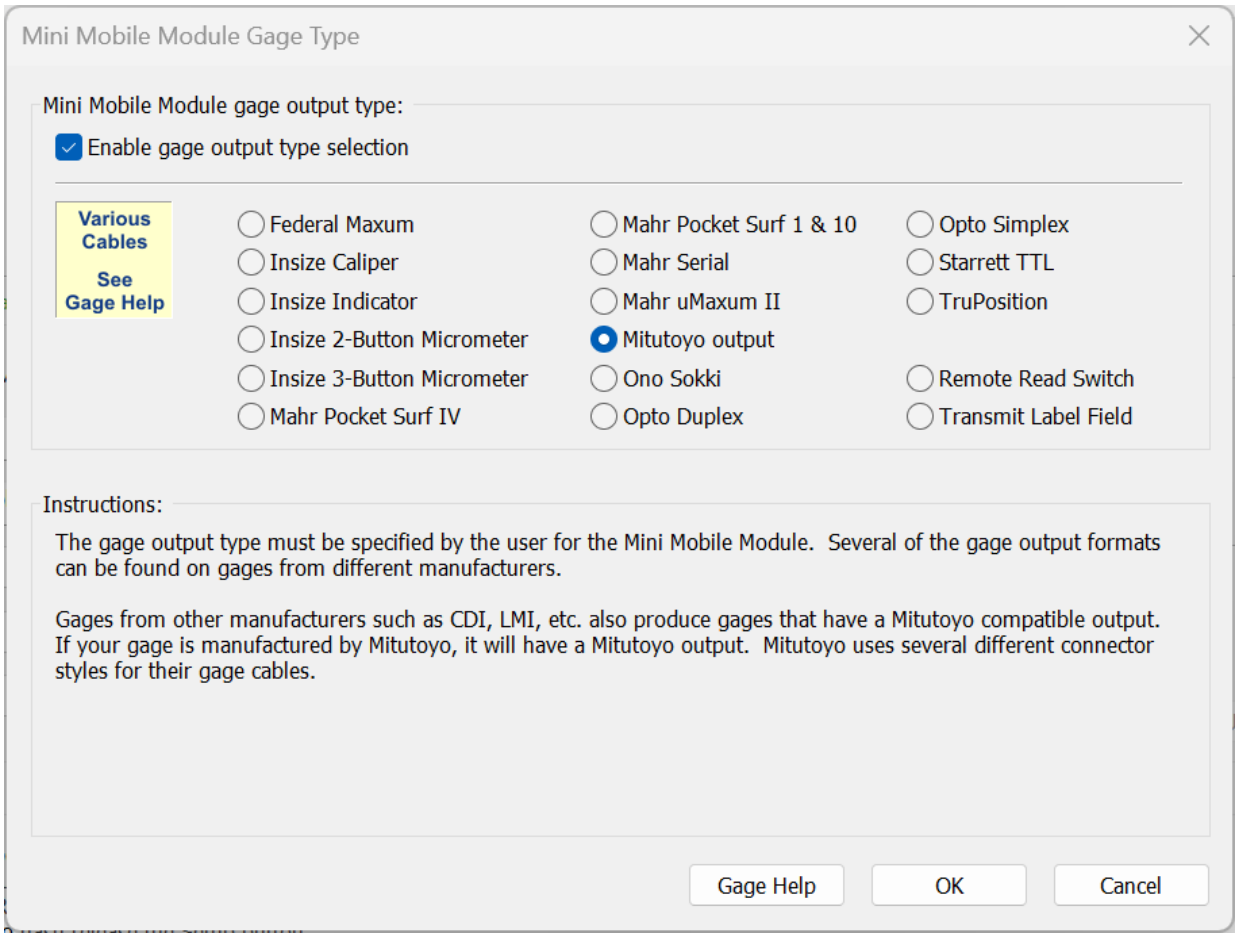
To pair Mobile Module with the current Base, select the “Pair with Base connected to this program” radio button.

The Mobile Module can be paired with a different Base, providing the desired Base has been connected to this Setup Program. Select the “Pair with another Base” radio button and then press the “Select Base” button. A list of Bases that have been identified by this Setup Program will be displayed.

Parameter Transfer - Send Setup to Mobile Module

When the parameters are updated to the desired values, they must be sent to the Mobile Module. Be sure the Mobile Module is in the Setup Mode and then press the “Send Setup to Mobile Module” button. Remember that the Mobile Module will automatically shut down after 15 seconds of no activity. After the parameters are sent to the Mobile Module, the Setup Program will reread and display the parameters currently in the Mobile Module.

10.2.1 Gage Output Type



The Mini Mobile Module requires the user to define the gage output type. When a Mini Mobile Module is shipped from the factory, it is configured for the gage cable attached to the module. The only time a different gage output type is needed is when the mobile module is changed from one brand of gage to another. Spare Mobile Modules are shipped with Mitutoyo Output as the default.

Example 1 The Mini Mobile Module has been used with a Mitutoyo caliper and now the Mini Mobile Module will be used with a Mahr uMaxum II. After sourcing the uMaxum II connector from MicroRidge, select the Mahr uMaxum II gage in the above dialog.

Example 2 The Mini Mobile Module has been used with a Mitutoyo caliper and now the Mini Mobile Module will be used with a Mitutoyo Digital Indicator. Only a new connector is required. All of the Mitutoyo gages use the same output format, with the exception of specialty gages such as the PRO3600 protractor.

Most of the gage output types can be identified by comparing the gage SPC port with the pictures in the Mini Mobile Module Gage Type dialog. Since Mitutoyo has a wide range of ports

used with its gages, it is not reasonable to show all of the possible gage cable connectors. When a replacement Mini Mobile Module connector is purchased, the gage output type will be clearly identified with the replacement connector.

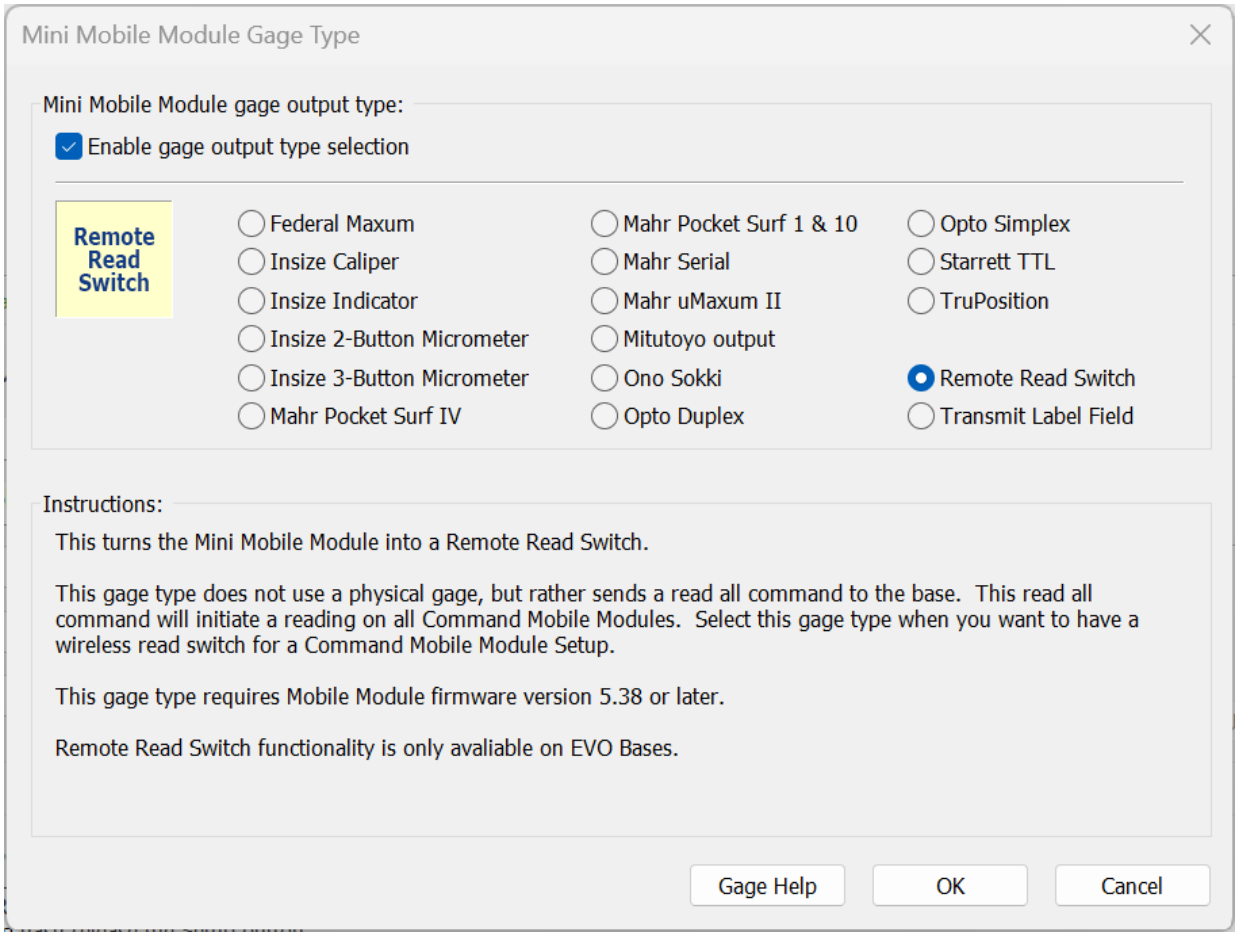
Mitutoyo Gages with External Power Supply

The Mitutoyo ID-H and ID-F series indicators use an external power supply and require a special cable that contains a small circuit board that plugs into the Mini Mobile Module. If this special cable is not used with these indicators, the battery in the Mini Mobile Module will be depleted within in a few weeks.

The other Mitutoyo gages that use an external power supply do not require the special cable with the circuit board.

10.2.2 Remote Read Switch

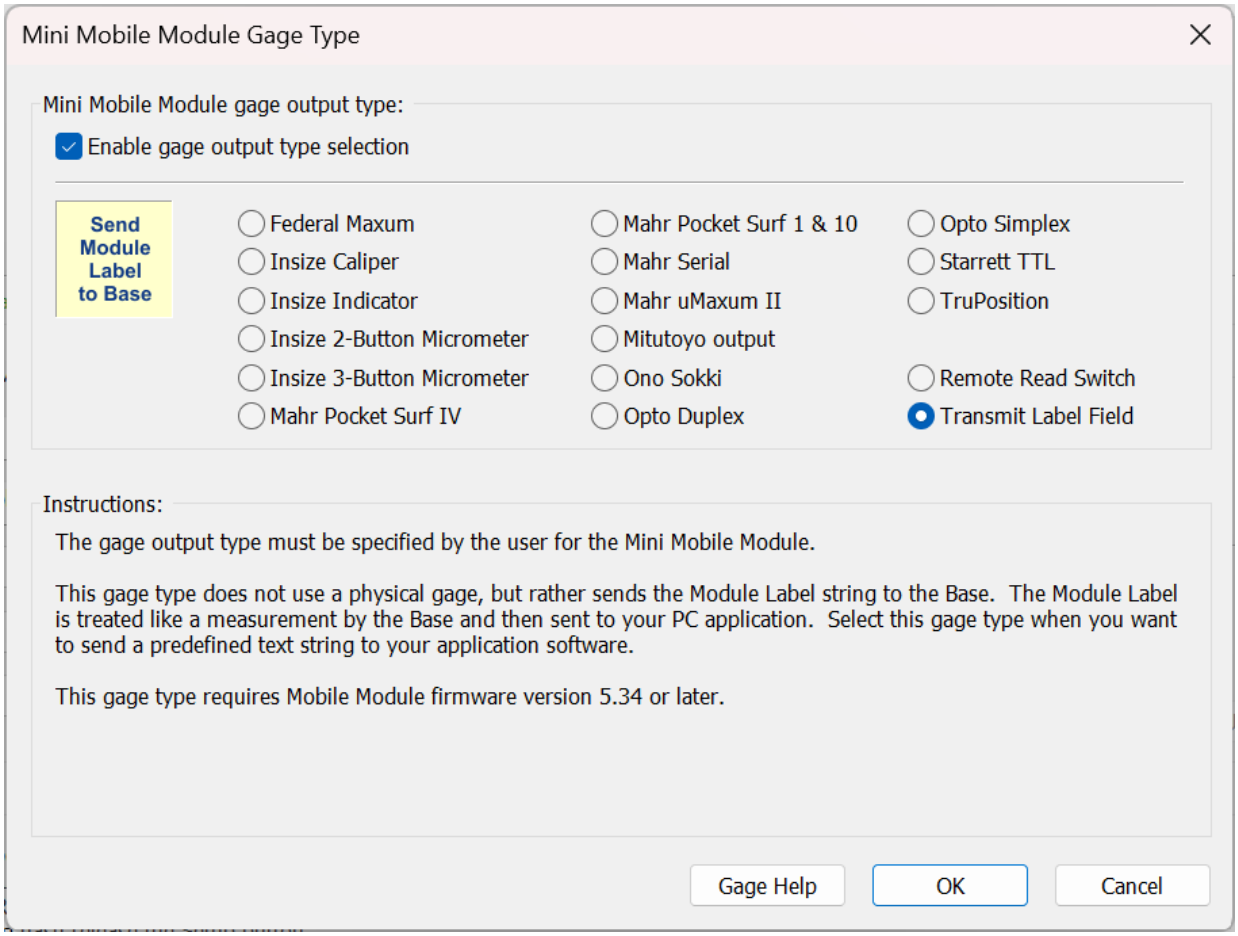
The Remote Read Switch Gage Type is one of the non-measurement gage types that allow the use of a Mobile Module as a wireless Hand Switch. When a Mobile Module is programmed as a Remote Read Switch it will prompt a "Read all CMM Gages" Read Switch Command as described in the Read Switch Control 19 section. When the read button on a Remote Read Switch type Mobile Module is pressed, any active Command Mobile Modules 42 paired to the Base will be sent a read command to remotely initiate a gage reading.



This gage type requires a MobileCollect EVO Base.

10.2.3 Transmit Label Field

The Transmit Label Field Gage Type is one of the non-measurement gage types that allows for a user to send over the Module Label instead of a gage reading. A typical Mini Mobile Module will not send any data over if a gage reading is not detected. The Transmitter Label Field Gage Type allows the 8 character Module Label (Basic ASCII) to be sent instead of a measurement. This function is useful for SPC systems that require a non-numeric data point such as "Pass", "Fail", "Good", "Bad" etc. Note the Channel that the transmitter is paired to on the Base Setup & Pairing Tab 22 as the output format will be used for the Transmit Label Field function, including the EOP character.



Carriage Returns, Tabs, and Spaces can also be sent via the Transmit Label Field Gage Type. This is useful for Keyboard Wedge applications that require additional user input to advance to the next data field or screen by utilizing Enter and Tab keys. Due to the character limit of 8, the typical command prompts for Carriage Return ({CR}, \x0d), Tab ({TAB}, \x09), and Space ({ } , \x20) are replaced by representative characters to save space. To program a Transmit Label Field Gage to send {CR}, {TAB}, or space, enter their respective characters in a set of braces/curly brackets { } with a combination of 6 of the representative characters below. 6 characters must be entered in between the braces, { }, to fill the 8 character positions for this function to operate. Utilize a . (period) as a filler character. C, T, or S must be the first character after the opening brace. For repeat characters, enter the representative character the desired amount. If the format is not followed, then whatever is typed in the Module Label field will be sent as a text packet.

Character for Carriage Return: C

Character for Tab: T

Character for Space: S

Character for filler: . (period)

For example:

To send 2 Carriage Returns with every press of the read button enter the following into the Module ID: {CC....}

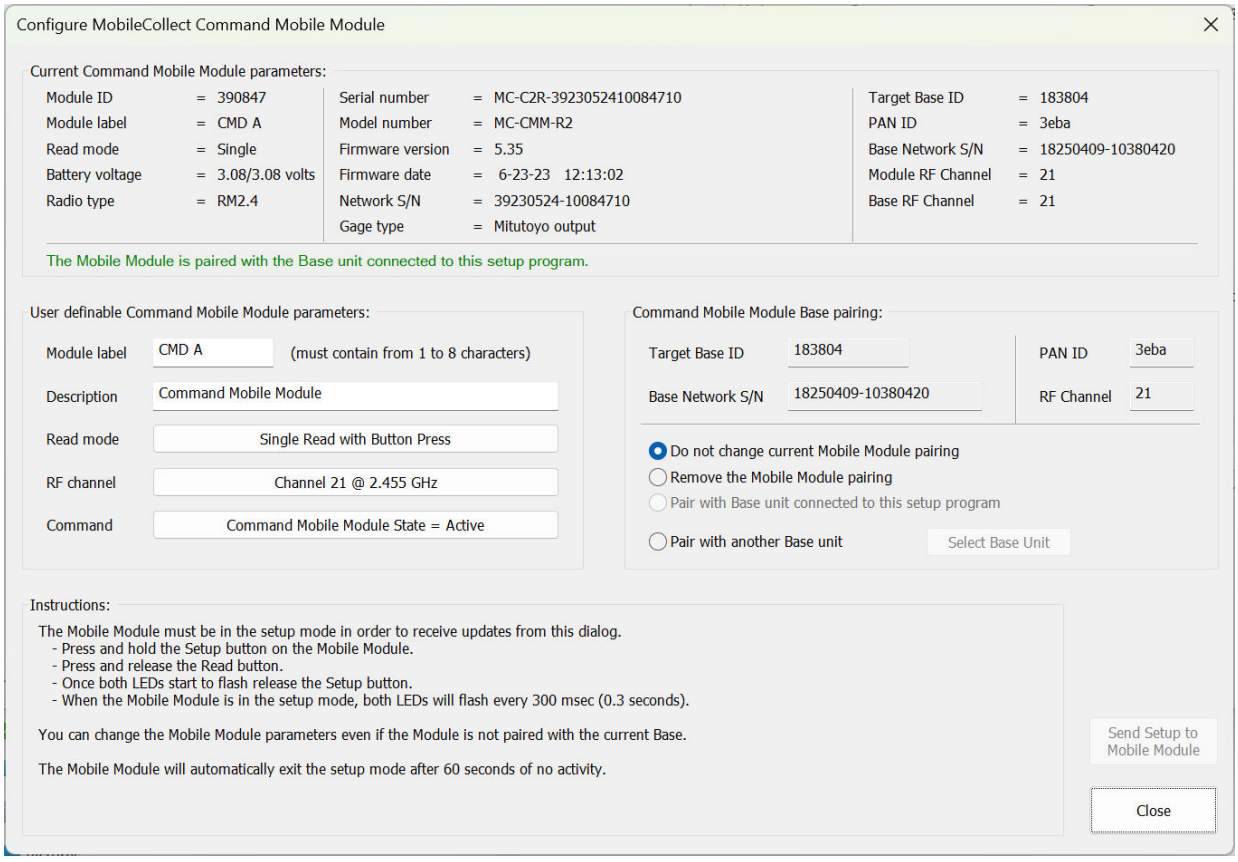
To send 1 Tab with every press of the read button enter the following into the Module ID: {T.....}

To send 1 Tab, 1 Space, and then 2 Carriage Returns, enter the following in the Module ID: {TSCC..}

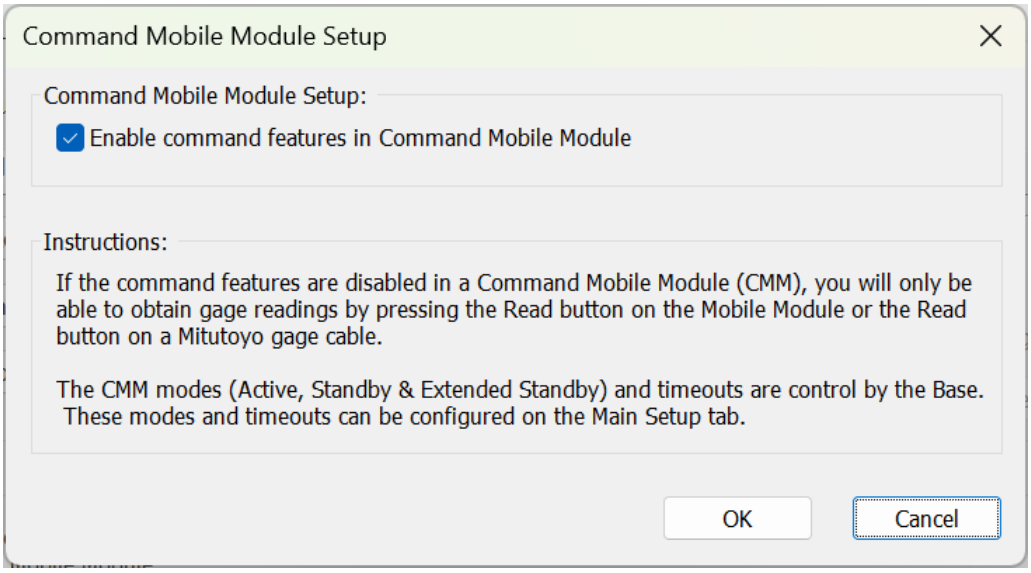
Special Character output requires a MobileCollect EVO Base.

10.3 Command Mobile Module

Command Mobile Modules have the same features as a Mini Mobile Module with the added function of sending read and configuration commands from a Base to the Command Mobile Module.



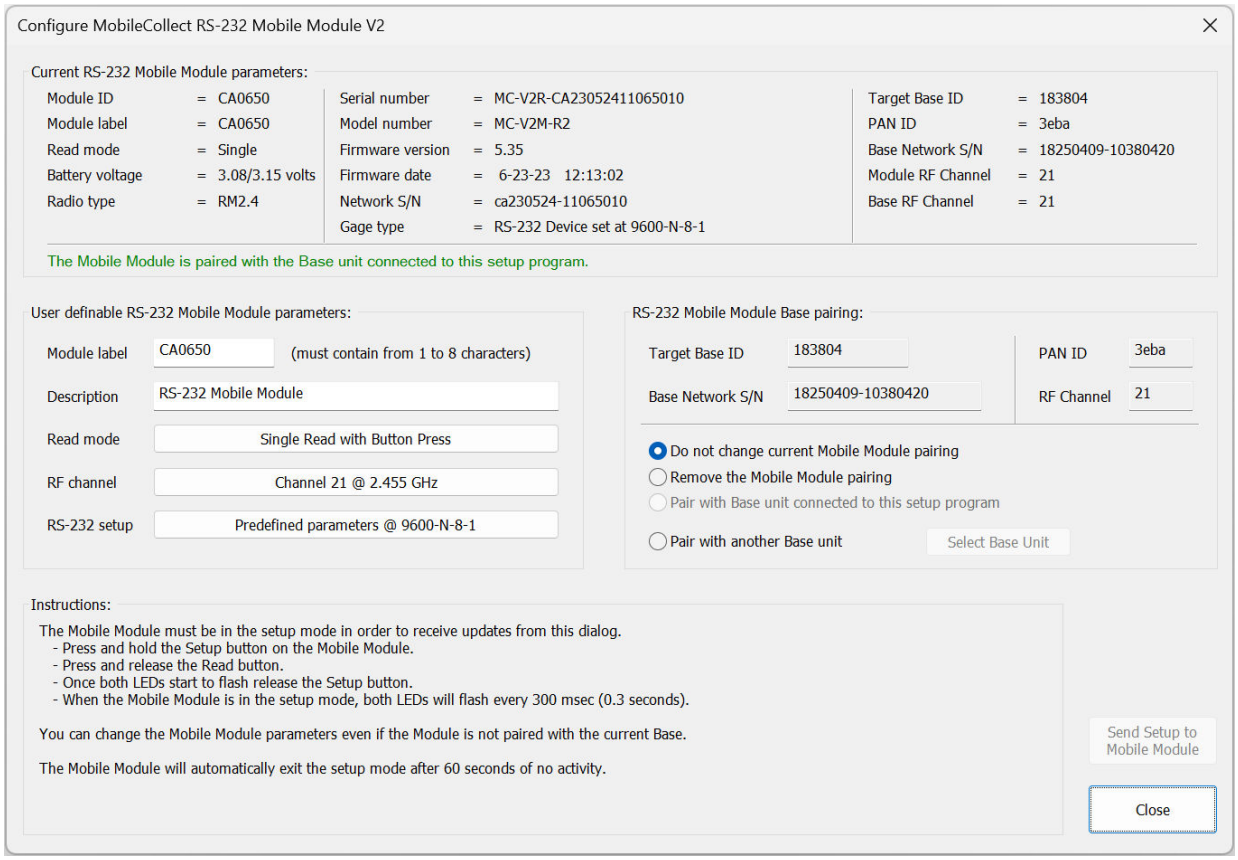
Read commands can be initiated from a Foot or Hand Switch connected to the Base or a serial command from the PC/SPC program connected to the Base. When a Command Mobile Module is shipped from MicroRidge, the command function is disabled. To enable or disable the command function, click the Command button to display the following dialog.



Refer to the Hardware Components User's Guide (Command Mobile Module section in the Mobile Modules chapter) for additional details about the Command Mobile Module.

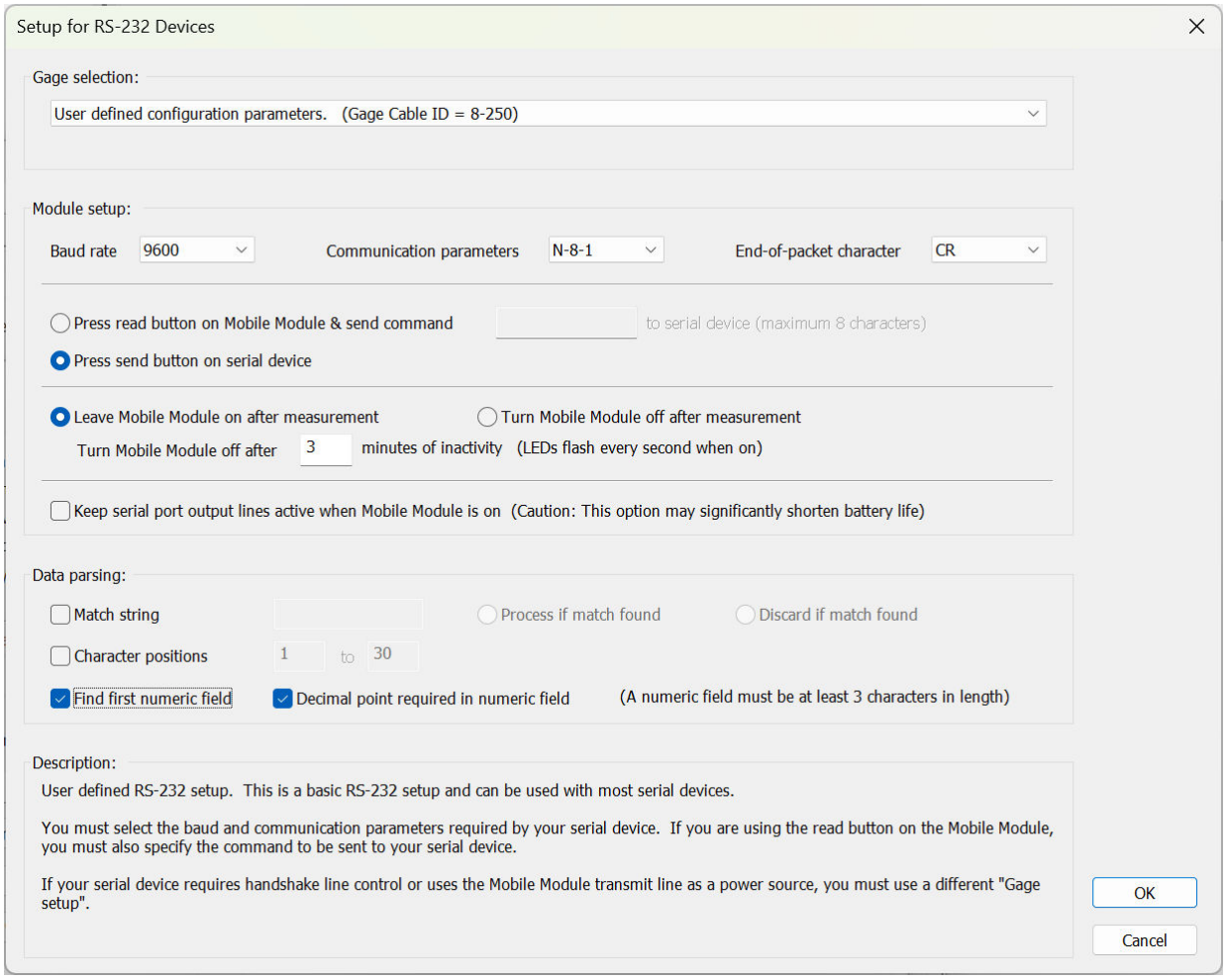
10.4 V2 RS-232 Mobile Module

For most RS-232 devices, the RS-232 Mobile Module needs to be configured through Setup for RS-232 Devices window that is accessed from the Mobile Module Configuration Window. The type and the format of the data sent from serial devices can vary widely. Refer to the manual of the serial device to determine items such as baud rate, communication parameters, data format, end-of-packet character, and how to get a reading from the serial device.



Gages that utilize a DB9/DE9 connector, shown below, will require RS-232 Setup to match the requirement of the connected serial device as described in the RS-232 Setup section below

RS-232 Setup



To set up the RS-232 Mobile Module follow the procedures in the Mobile Module Setup 32 section. After the Configure MobileCollect RS-232 Mobile Module dialog appears, press the RS-232 Setup button to display the dialog shown above. An appropriate RS-232 cable/connector connected to the Mobile Module is required before accessing this dialog is allowed.

In order to complete the setup, the following information is needed. This information can vary widely from device to device, refer to the device manual for this information.

- Baud Rate of the Serial device.
- Communication parameters including the word length, parity, and number of stop bits.
- End of Packet (EOP) Identifier. Most often this will be a carriage return or a line feed.
- How is a reading requested from the serial device? Does a print or data button on the device exist or is a serial command required?
- How long should the Mobile Module remain on after the print or send data button is pressed on the device?

Once the information has been gathered from the manual, the RS-232 Mobile Module can be set up in the Setup window

Gage Selection

MicroRidge Connectors for the V2 RS-232 Mobile Module have jumpers to identify themselves to the module. To override any configuration, select "User defined configuration parameters" in the drop down menu.

Module Setup

Select the appropriate Baud Rate, Communication Parameters, and End-of-Packet Character for the serial device from each drop down menu.

Determine if a serial command needs to be programmed to the Read Button and enter it in the command window to the right. Add any EOP characters the device requires with inbound commands. Type in {CR} for Carriage Return and {CR}{LF} for Carriage Return and Line Feed. If the device has an on board print button, then select "Press send button on serial device"

Some devices will have a delay when sending serial data to the RS-232 Mobile Module. "Leave Mobile Module on after measurement" option allows a set time to be programmed to leave the module on.

Some devices need to be powered by the Mobile Module. If the device requires active handshake lines, check the "Keep serial port output lines active" checkbox.

Data Parsing

Serial devices such as specialty scales may send more data that is required to capture. For example, units, time, stability, measuring mode, etc can come along with the desired measurement. The Data Parsing options will allow the Mobile Module to parse out unwanted data before transmitting it to the Base.

"Match String" will use the entered string to search the data packet for the target string. When multiple data packets are sent from the serial device the RS-232 Mobile Module will search for the "Match String" and process the packet for further parsing or discard it based on the radio button selection. "Match String" is used in cases such as a scale outputting a gross weight data packet and a net weight data packet where only the net weight is desirable. Utilizing "net" as the match string and setting it to process will only send through net weights and discard the gross weights.

"Character Positions" allow the targeted isolation of characters within a range for fixed length data packets. "Character Positions" is used in cases such as a scale outputting a gross weight then net weight in a single packet where only the net weight is desirable. Say gross weight is always output in characters 1-8 and net weight is reported in characters 12-19. Utilizing "Character Positions" allows for the Mobile Module to only pass through data from the range of characters that net weight is being sent in (12-19) while discarding the rest.

"Find first numeric field" will search the data packet for the first numeric set of data (more than 3 characters) and pass that measurement through. This option can be further customized to require a decimal in the data or not. The combination of the two is useful to look only for the precision number that usually represents the measurement from the gage and disregard numbers representing counts or the time and date.

Sylvac Proximity Connector

Gages that utilize the Sylvac Proximity cable shown below have the parameters automatically set and further setup is not required. This Proximity cable can be found on gages such as calipers and digital indicators from manufacturers such as Sylvac, Fowler, Starrett, etc. Due to the voltage level requirements of this cable, gages that use this cable can only be used with the V2 RS-232 Mobile Module.

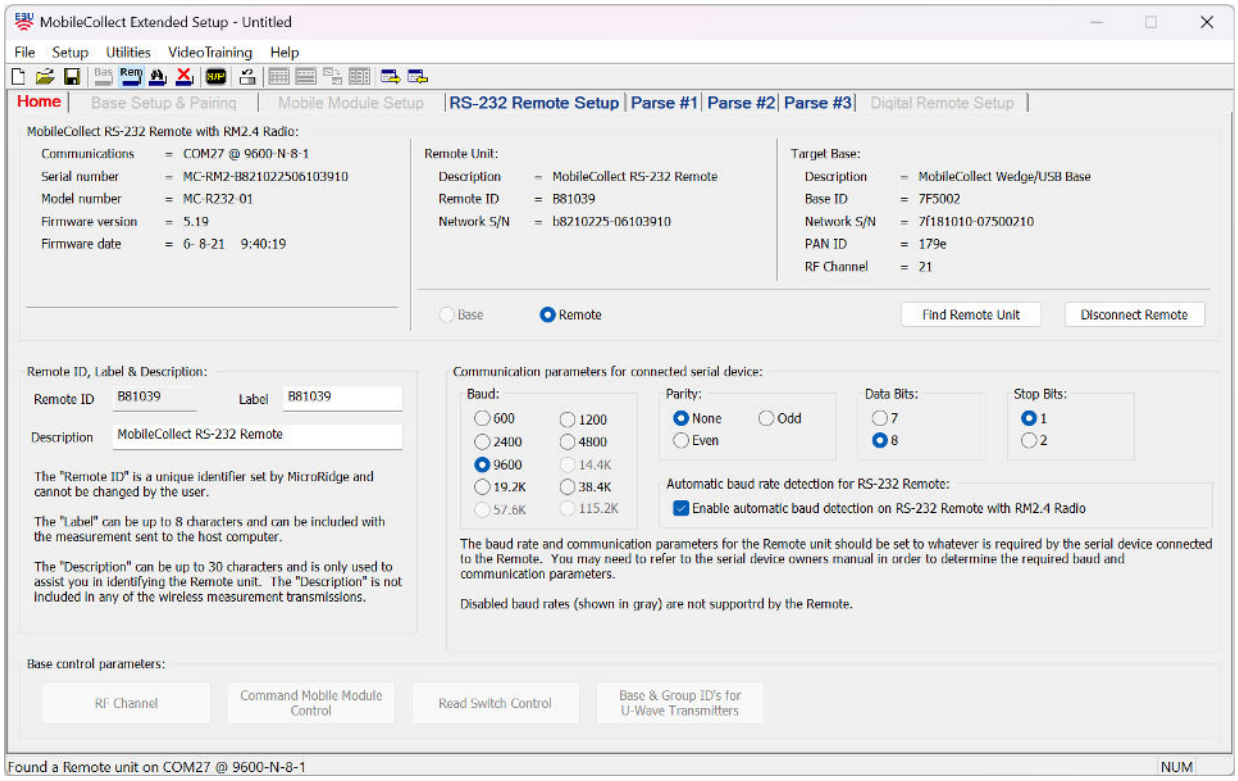
Testing a Serial Device with a PC

The easiest way to verify the required serial parameters is to connect the serial device to a serial port on a computer. A computer compatible serial cable for the device in question is needed and any adapters for the available ports on the computer.

With the device connected to a computer, ComTestSerial[61] can be used to verify communications and the parameters required for the serial device.

11 RS-232 Remote Setup

An RS-232 Remote is set up with the Home, RS-232 Remote Setup, and 3 Parse tabs. These tabs will become selectable once a Remote Transmitter is connected and found through the Setup Program. The Home tab contains the basic information for the RS-232 Remote and is where the serial device's communication parameters must be configured.



Before setting up a Remote, information about the serial device that will be connected to the Remote must be known:

- What is the baud rate of the serial device (ie: 4800, 9600, etc.)?
- What are the communication parameters of the serial device (ie: N-8-1, E-7-1, etc.)?
- What does the data packet from the serial device look like?
- What is the end-of-packet (EOP) character?
- Does the serial device require a command in order to get a data packet?
- What portion of this data packet is desirable to keep and what should be parsed out?

ComTestSerial[61] can be used to send data packets from the serial device for inspection. By viewing the data packet in ComTestSerial, the data structure and EOP can be reviewed. Sending data to ComTestSerial will require the baud rate and communication parameters of the device to be set in the program. If the baud rate and communication parameters of the serial device are

unknown, refer to the serial device's user manual. If a serial command needs to be sent to the device to get a data packet, refer to the serial device manual for the specific command.

Once the above information is known, connect the Remote to the PC and find it with the Setup Program. Start on the Home Setup tab and set the Description and configure serial communication parameters. Automatic Baud Rate Detection[49] may be used to find the baud rate and comm parameters.

11.1 Automatic Baud Rate Detection

Automatic Baud Rate Detection (AutoBaud) is a feature of the RS-232 Remote that analyzes a sample data packet from a connected serial device to detect the baud rate and communication parameters. The RS-232 Remote then sets the serial devices baud rate and comm parameters on the Remote for future use. The serial device must be able to send a data packet from a button from the device for AutoBaud to function.

Automatic Baud Rate Detection (AutoBaud) Process:

1. Press and release the Reset Button on the back of the Remote.
2. The Remote will reset and go through an initialization phase. The right LED stack will be illuminated (red, yellow, green), the left LED stack will flash all 3 green LEDs once.
3. The Remote will then enter AutoBaud mode for ~5 seconds. This is indicated by illuminating all 6 LEDS.
4. During AutoBaud mode, send a reading to the RS-232 remote by pressing the print or send button on the serial device.
5. The RS-232 Remote will automatically detect the baud rate and comm parameters if a full data packet with multiple characters is received during the AutoBaud Mode. If successful, the Lower Right (Pwr) LED will blink 5 times.
6. The RS-232 Remote will automatically set the baud rate and comm parameters detected for the Remote. These settings will remain until they are changed by another AutoBaud calculation, the Extended Setup Program, or a cold start (<Z computer command).

If the Remote does not receive RS-232 data, the Remote will exit the AutoBaud mode after 5 seconds and restore the previously stored parameters.

11.2 Pairing the RS-232 Remote

There are specific steps that must be preformed in order to properly set up a RS-232 Remote so that is can send data to a Base.

- Select the Home Setup tab[11], and click the 

toolbar button.
- Press the "Find Remote Unit" button or the  toolbar button.
- Go to the RS-232 Remote Setup tab[51] and the 3 Parse tabs to configure the RS-232 Remote for the data that will be sent from the serial device. Use ComTestSerial[61] to

verify the baud rate, communication parameters, and determine what the serial device is sending.

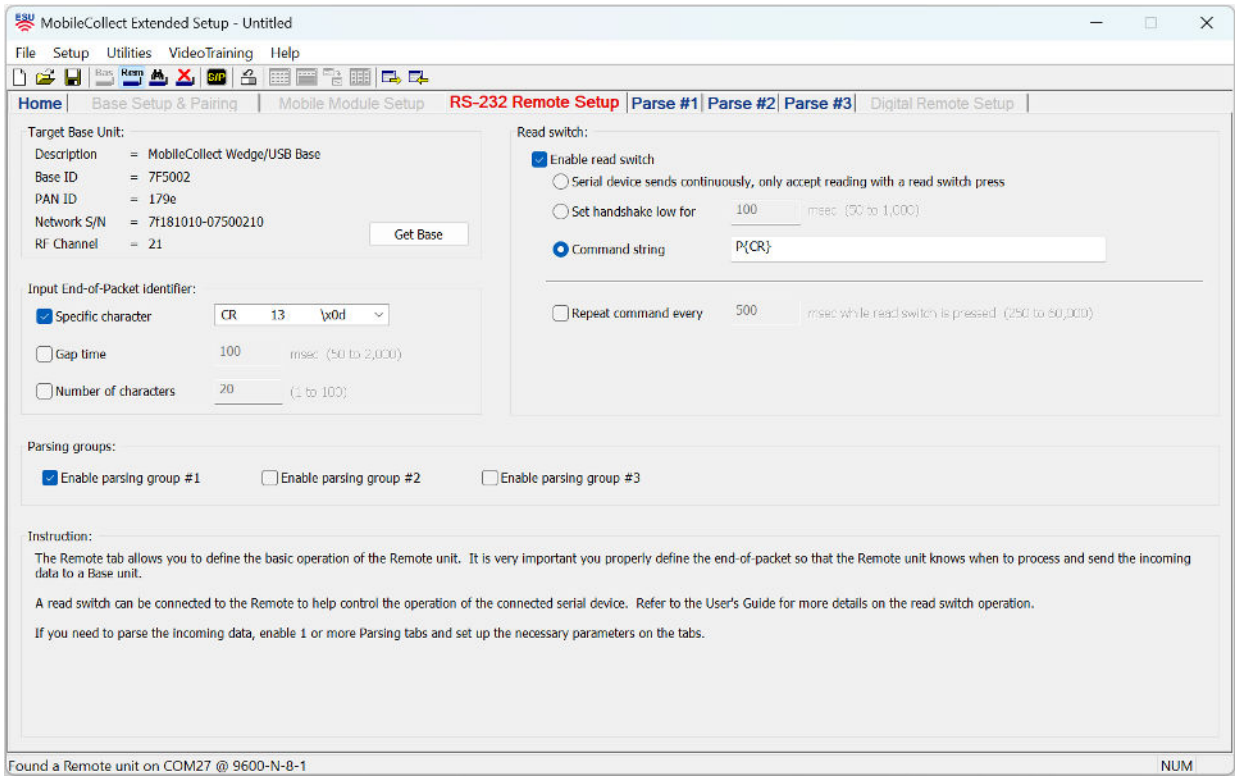
- Pair the RS-232 Remote with the Base that will be receiving the data being sent from the RS-232 Remote. In order to pair the RS-232 Remote with a Base, the Base must have previously been found by the Extended Setup Program. Click the "Get Base" button on the RS-232 Remote Setup Tab to get a listing of the available Bases. Select the desired Base to pair with the RS-232 Remote.
- Send the RS-232 Remote setup parameters to the RS-232 Remote. These parameters are not automatically transferred to the RS-232 Remote. To send the parameters to the RS-232 Remote, press the  toolbar button. These parameters can also be saved to a disk file.
- Select the Home Setup tab and click the "Disconnect" button or the  toolbar button.

The RS-232 Remote setup is complete. Configure the Base connected to your PC.

- Click the  toolbar button.
- Press the "Find Base Unit" button or the  toolbar button.
- Select the Base Setup & Pairing Tab 22.
- Click in the Module Type column for the channel intended for the RS-232 Remote and then press "R" on the keyboard. The word "RS-232 Rem" should appear in the column
- Next enter the 6 character RS-232 Remote ID in the Module ID column manually or can right-click on the Module ID cell. Upon the right-click, a dialog will display a list of the RS-232 Remotes that have been found by the Setup program. Select the intended RS-232 Remote to pair with the channel.
- Send the Base setup parameters to the Base. These parameters are not automatically transferred to the Base. To send the parameters to the Base, press the  toolbar button. These parameters can also be saved to a disk file.

11.3 RS-232 Remote Setup Tab

The Remote Setup tab is used to select the target Base, identify a data packet, read switch operation, and enable parsing tabs.



Input End-of-Packet Identifier

Identifying the End-of-Packet (EOP) is crucial for RS-232 communications as it serves as the signal to the receiving device that the data packet is complete. Without the correct EOP identifier, the RS-232 Remote will not be able to identify when a data packet is complete and will remain "listening". Do not confuse the Remote Input EOP identifier with the Base EOP character defined in the Base Setup & Pairing Tab 22. The EOP character assigned in the Base Setup & Pairing tab is the EOP Character sent from the Base to the PC/application. They can match, but they are not required to match. Multiple Input EOP Identifiers can be selected.

Specific Character

Typically, a specific character or combo of characters defines an EOP. Most devices send a {CR} or {CR}+{LF} as an EOP. The default is {CR} but can be changed with the drop down menu.

Gap Time

A gap time can be specified in lieu of an EOP character. When a Gap Time is selected as the EOP identifier, the RS-232 remotes will send any data through after the set gap time. The gap time can be set between 50 and 2,000 microseconds.

Number of Characters

A defined number of characters can be used to terminate a data packet. This is useful if the serial device sends a long data packet with desired data early or if a data packet is complex and delimited with common EOP Characters such as {CR}.

Read Switch

The read switch port on the back of the RS-232 Remote can be used to trigger readings to be sent from the RS-232 Remote to the Base. This option must be enabled before use.

Serial device sends continuously, only accept reading with a read switch press

Some serial devices, such as scales, output data constantly. This would cause the RS-232 Remote to output a constant data stream (assuming other settings are correct). This Read Switch setting programs the RS-232 Remote to monitor the constant data stream and only send a single reading when the Foot or Hand Switch is pressed.

Set Handshake Low

Sets the Data Terminal Ready (DTR, Pin 4) Handshake Line Low (V-) for the prescribed amount of time. The hardware "Ready" signal is useful for older RS-232 serial devices as a hardware Handshake.

Command String

Many serial devices can accept commands through the serial port. Refer to the serial device manual for the correct command to send a reading. Once found, enter it in the field to the right of the Command String selection. Make sure to include the EOP character in braces {} in the command string line.

Repeat command every...

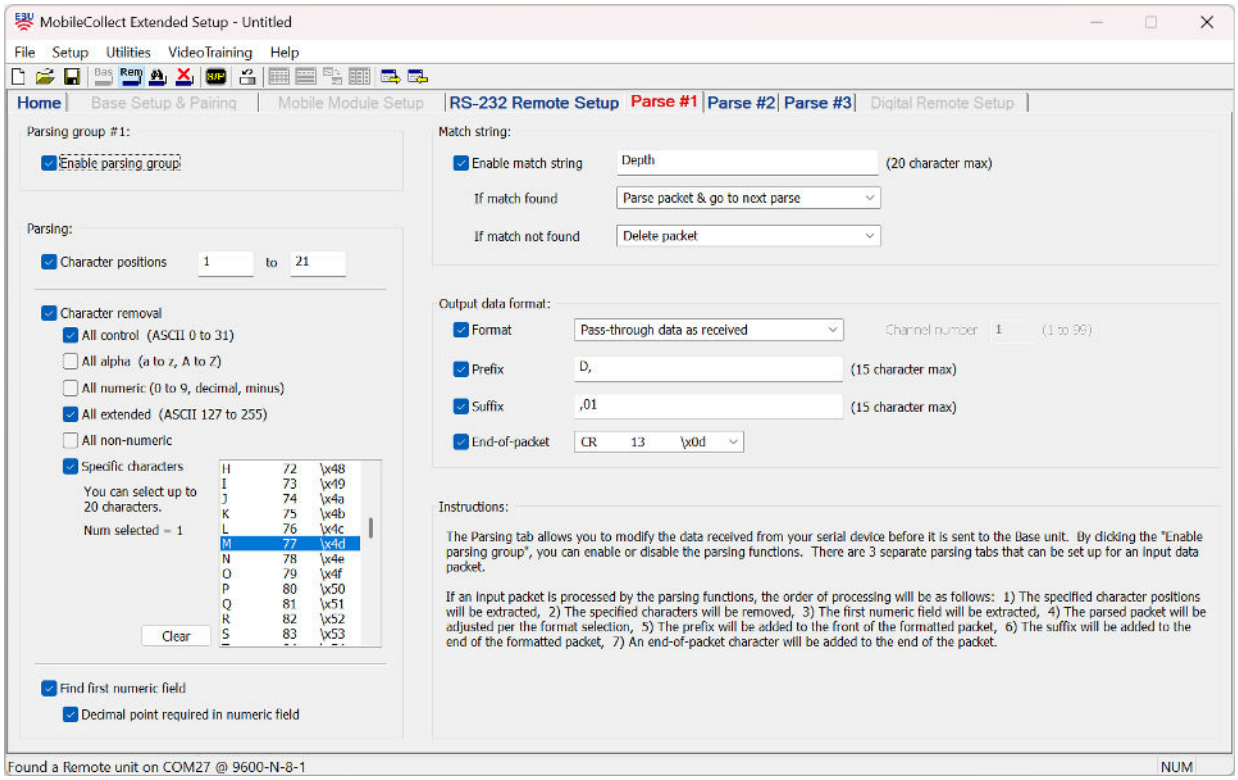
Programs the RS-232 Remote to send the selected Read Switch command at a specified interval for as long as the Read Switch is pressed.

Parsing Groups

The parsing schemes in the 3 Parsing tabs can be toggled active/inactive by these buttons. Refer to the next section, Parsing Tabs 53, for how to utilize parsing.

11.4 Parsing Tabs

Many serial devices will output more data than desired or in cumbersome formats. Parsing is a feature integrated with the RS-232 remote to allow for a user to identify a specific piece of the data packet and either remove or retain it for further processing. The most common use for parsing is to extract the actual measured value from a device, such as a scale, and remove all the extraneous data, such as scale settings, units, and scale stability.



Parsing Group

The parsing functions will only be performed if the parsing group is enabled. Parsing groups will be done in order.

Match String

If the match string is enabled, the Remote will look for a match and proceed per the selections in the "match found" and "match not found" selections. If the match is disabled, parsing will proceed to the next parsing step.

- Delete packet - Data packet is deleted, nothing is sent through the RS-232 Remote
- Parse packet and stop - Data packet will be parsed according to the selected Parse tasks below and no further data parsing will be done to the packet.

- Parse packet and go to next parse - Data packet will be parsed according to the selected Parse tasks below and the data will go through the following Parse tab, if active.
- Go to Next Parse - Data packet will advance to the next Parse tab.

The parsing tasks are performed in the following order:

Character Positions

- The specified character positions will be extracted if character positions are enabled. All other characters will be deleted from the packet.

Character Removal

- The specified characters will be removed if character removal options are selected.

Find First Numeric Field

- The first numeric field will be extracted if this task is enabled. If enabled and no numeric field is located, parsing will stop, the packet discarded, and no data will be sent from the Remote. A numeric field is defined as follows:
  - Minimum length = 3 characters.
  - May contain a decimal point (based on user selection).
  - First character can be a space, plus, minus, decimal or 0 to 9.

Output Data Format

- The packet is formatted per the format selection. If format is not enabled, the parsed packet will not be modified any further and passed to the next step.
  - The Mitutoyo MUX10 format consists of a channel number, the letter A and the measurement (ie: 01A+001.1785). This is a fixed format string and will always be 12 characters long.
  - The GagePort printer mode consists of a measurement counter, the measurement, a units field and a channel number (ie: 2374, 1.1785,inch ,01). Since the Remote cannot determine the units for the measurement, the measurement field will always be 5 blanks. This is a fixed format string and will always be 24 characters long.

Prefix

- A user specified prefix is added to the data packet.

Suffix

- A user specified suffix is added to the data packet.

End-of-Packet

- A user specified End-of-Packet character is added to the data packet.

11.5 Entering Control & Extended Characters

Control and extended characters can be entered into the Match, Prefix, and Suffix fields. Control characters are ASCII characters 0-31 and include such characters as Escape, Backspace, Linefeed, Carriage Return, Enter, etc. Extended characters are characters starting with ASCII 128 and greater. To enter these characters in the Match, Prefix, or Suffix fields, the appropriate character code must be entered within braces { }. The information between the braces can be the hex representation or the 2 to 4 character symbol for the control characters. A list of the hex values and character descriptions is shown in the ASCII Characters 68 section. Examples of several of these characters is shown below.

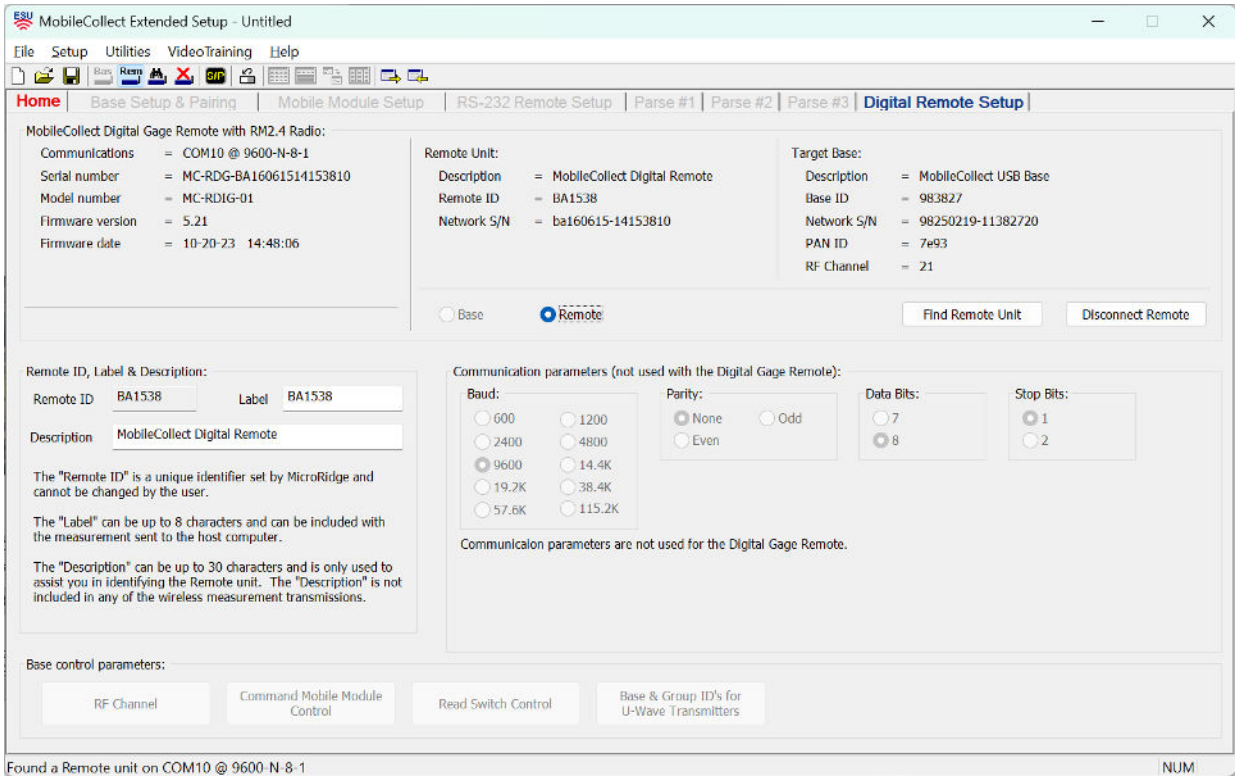
Carriage return	= {\x0d} or {CR}
Tab	= {\x09} or {TAB}
ASCII 137	= {\x89}

12 Digital Remote Setup

The Digital Remote has the same features as a Command Mobile Module but is a desktop USB powered transmitter. The Digital Remote excels at sending measurement data from fixed gages to a Base. The Digital Remote uses a USB power supply, so it does not have the battery limitations that the Command Mobile Module has. The Digital Remote can be triggered via a Foot or Hand switch plugged into the Read Switch port or from commands sent from a MobileCollect Base Receiver. The Digital Remote is always listening for remote commands and does not have the battery saving shutoff and standby modes of the Command Mobile Module. Digital Remotes excel with stationary gage stations that use larger equipment with digital outputs such as height gages, certain DROs, and air gaging systems.

12.1 Pairing the Digital Remote

There are specific steps that must be performed in order to properly set up a Digital Remote so that it can send data to a Base.



- Select the Home Setup tab [11], and click the Rem toolbar button.
- Press the "Find Remote Unit" button or the toolbar button.
- Go to the Digital Remote Setup Tab [57] to configure the Digital Remote.

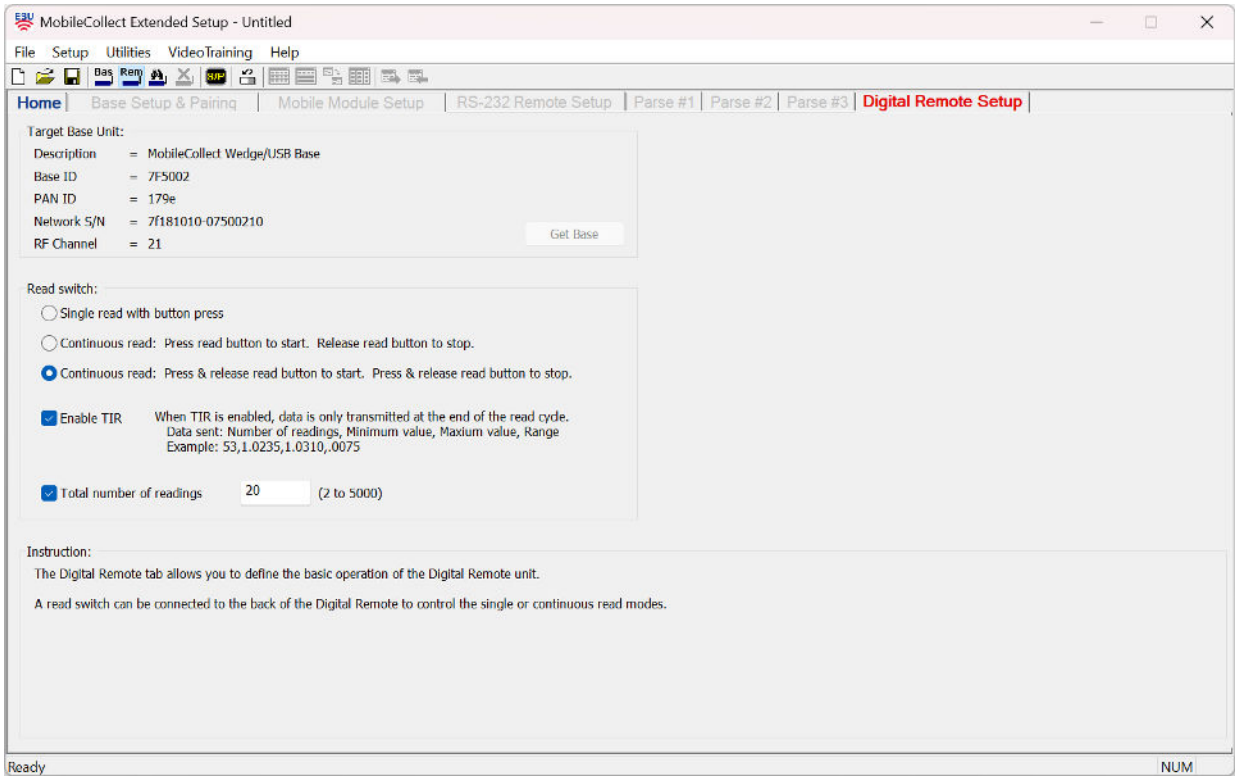
- Pair the Digital Remote with the Base that will be receiving the data being sent from the Digital Remote. In order to pair the Digital Remote with a Base, the Base must have previously been found by the Extended Setup Program. Click the "Get Base" button on the Digital Remote Setup Tab to get a listing of the available Bases. Select the desired Base to pair with the Remote.
- Send the Digital Remote setup parameters to the Digital Remote. These parameters are not automatically transferred to the Digital Remote. To send the parameters to the Digital Remote, press the  toolbar button. These parameters can be saved to a disk file.
- Select the Home Setup tab and click the "Disconnect" button or the  toolbar button.

The Digital Remote setup is complete. Configure the Base connected to your PC

- Click the  toolbar button.
- Press the "Find Base Unit" button or the  toolbar button.
- Select the Base Setup & Pairing Tab 22.
- Click in the Module Type column for the channel intended for the Digital Remote and then press "D" on the keyboard. The word "Digital Rem" should appear in the column
- Next enter the 6 character Digital Remote ID in the Module ID column manually or right-click on the Module ID cell. Upon the right-click, a dialog will display a list of the Digital Remotes that have been found by the Setup program. Select the intended Digital Remote to pair with the channel.
- Send the Base setup parameters to the Base. These parameters are not automatically transferred to the Base. To send the parameters to the Base, press the  toolbar button. These parameters can also be saved to a disk file.

12.2 Digital Remote Setup Tab

The Digital Remote supports gages with Mitutoyo compatible output, Ono Sokki, CDI, and Federal Maxum. The Digital Remote automatically determines the type of gage connected when the reset button is pressed. Due to the relative simplicity of digital gages, setup of the Digital Remote is more straight forward than the RS-232 Remote.



Read Switch

The read switch settings on this tab are used when a Foot or Hand Switch (Read Switch) is connected to the Read Switch port on the back of the Remote.

Single read with button press (Default)

The Digital Remote will send 1 reading for each press of the Read Switch.

Continuous read: Press read button to start. Release read button to stop.

The Digital Remote will send data as fast as possible while the operator holds down the Read Switch. Note, data output rate is usually limited by the gage and not the Digital Remote.

Continuous read: Press & release read button to start. Press & release read button to stop

Digital Remote will send data as fast as possible after the operator presses and releases the Read Switch, data will stop after the operator presses and releases the Read Switch again. Note, data output rate is usually limited by the gage and not the Digital Remote.

Enable TIR.

TIR Mode is a special mode where the Digital Remote will take continuous readings based on the selected parameters. After continuous readings have ended, the Digital Remote will output the number of readings taken, minimum value, maximum value, and range.

Total number of readings

Total number of readings can be set to end continuous read mode. Note: If “Press read button to start. Release read button to stop” mode is select, the Read Switch must be held down until the "Total Number of Readings' parameter is met.

13 Utilities, Video Training, and Help

The following utilities that can be accessed directly from the Extended Setup Program **Utilities** menu.

ComTestSerial	ComTestSerial is a free serial communications test program developed by MicroRidge Systems. ComTestSerial is easy to use and is often needed by the user to help them understand what is being sent from MobileCollect to a PC.

The following utilities that can be accessed directly from the Extended Setup Program **Setup** menu.

Available Serial Ports	Configure which ComPort Xpress Setup will search a MobileCollect Base for.

The following videos can be accessed directly from the Extended Setup Program **VideoTraining** menu.

How to put a Mobile Module into the Setup Mode (with subtitles & sound)

How to pair Mobile Modules Using the Extended Setup Program (with sound)

The following can be accessed directly from the Extended Setup Program **Help** menu.

Contact Info for Support

QuickStart Guide

Feature Guides

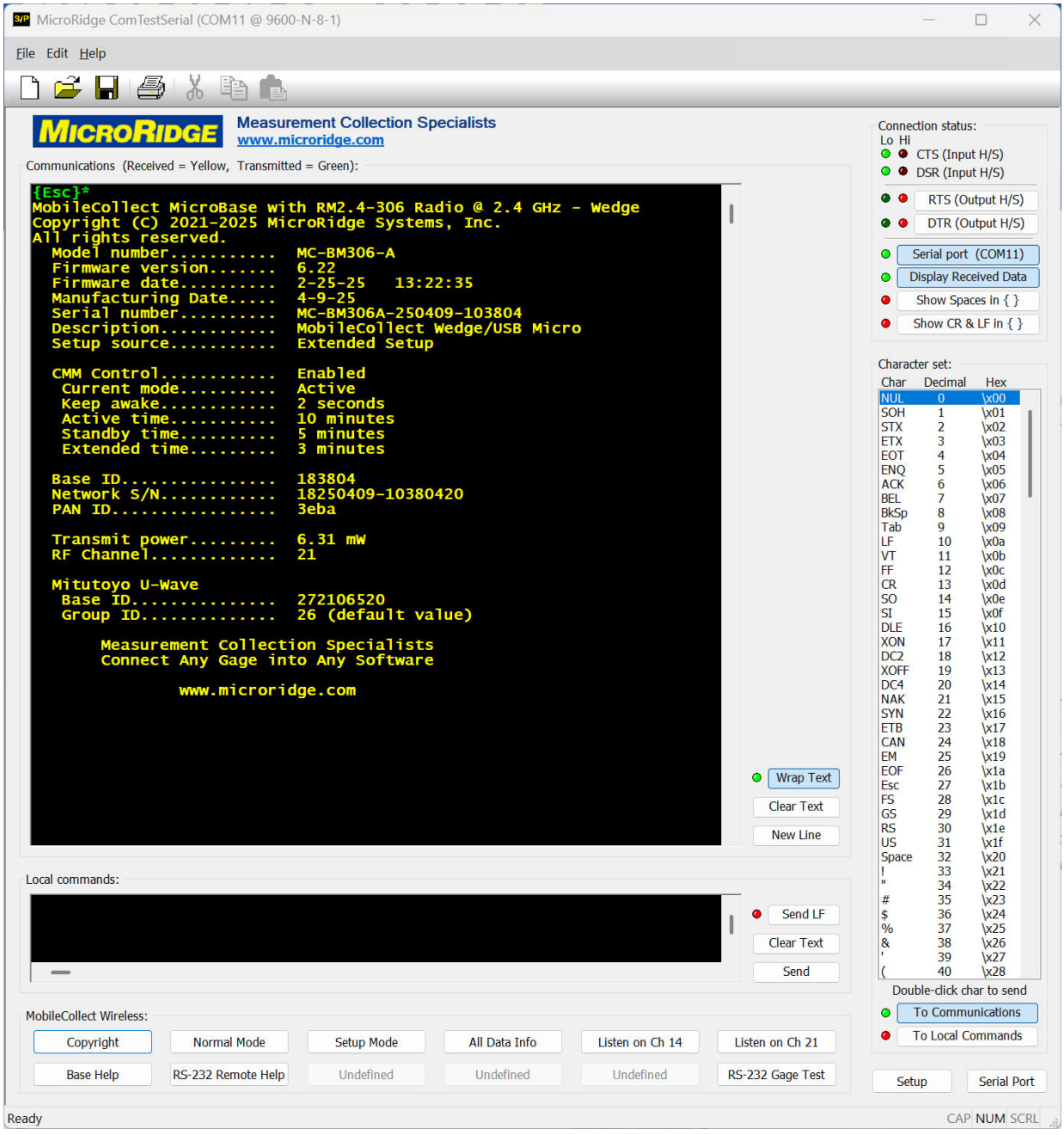
MobileCollect Documentation 63

Firmware and Software Updates

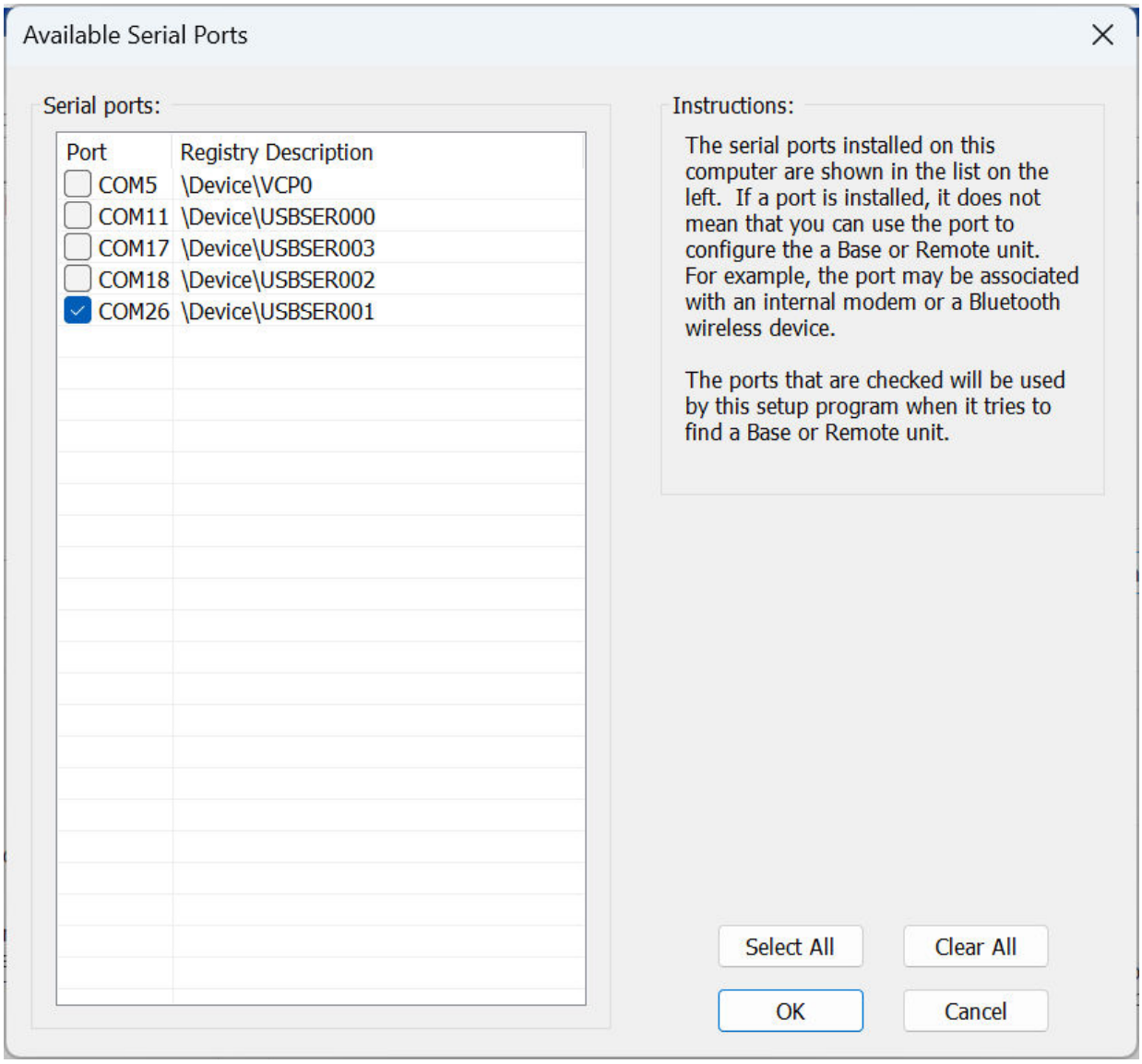
13.1 ComTestSerial

ComTestSerial can be started directly from the Extended Setup Program by pressing the "Load ComTestSerial" button (S/P).

ComTestSerial can be loaded on as many computers as required. To install ComTestSerial on other computers, download the latest version at: https://www.microridge.com/comtestserial. ComTestSerial is designed for use on Windows XP and later.



13.2 Available Serial Ports



The Extended Setup Program will test the checked serial ports when it tries to find a MobileCollect Base. It is possible to limit which Com Ports to check in the event that multiple Com Ports are available. When Extended Setup locates a Base, the program will remember the serial port number and this serial port will be the first one tested each time the program looks for a Base.

14 MobileCollect Documentation

The MobileCollect product line includes numerous items such as multiple transmitters, multiple receivers, support for 3rd party transmitters, and setup programs. To make the information easier to locate, the documentation has been broken up by subject. Much of the documentation is available in different forms:

HTML Help Files	These are files with a .chm extension and are typically used as the Help files that are accessed from a PC application.
PDF User's Guide's	These are detailed User's Guides in PDF documents. They are printable versions of the HTML Help Files.
Tech Notes	These are tech notes covering a specific item such a 3rd party transmitter supported by MobileCollect. The Tech Notes are available as PDF Documents and HTML Help Files.

The links for the documents shown below will only work if the desired document is located in the same folder as the current document. When the Extended Setup program is installed on your PC, all of the available documents are installed in the same folder.

PDF User's Guides

MobileCollect Hardware Components User's Guide	Describes the various hardware components, computer commands, serial communications test program (ComTestSerial), wireless communications, etc.
MobileCollect Extended Setup User's Guide	Current Manual
MobileCollect Xpress Setup User's Guide	This is a setup program that provides fewer setup options than the Extended Setup Program. This document is not installed when Extended Setup is installed.

PDF Tech Notes

Using CDI Indicator with MobileCollect	This Tech Note describes the use of the CDI CORE and VRS Indicators with Mobile Collect. When purchasing these indicators, they must be ordered with the MicroRidge long range radio option.
Using Mitutoyo U-Wave with MobileCollect	Since Mobile Collect and U-Wave both use the ZigBee Wireless Protocol, it is possible to pair U-Wave Transmitters to MobileCollect Bases. This Tech Note describes

how to use U-Wave Transmitters with MobileCollect Bases.

HTML Help Files

The HTML Help Files that are installed with Xpress Setup are listed below.

MobileCollect Hardware Components

MobileCollect Extended Setup (current doc)

Using CDI Indicator with MobileCollect

Using Mitutoyo U-Wave with MobileCollect

15 Warranty Information

The standard MicroRidge warranty for products it manufactures and resells is described below:

- MicroRidge warrants that equipment manufactured by MicroRidge is free from defects in material and workmanship when adequately maintained under normal use for twelve (12) months from the date of purchase of the product (the “warranty period”). The manufacturer of the products warrants some products sold and distributed by MicroRidge.
- The warranty for gage and RS-232 interface cables is 30 days from the date of shipment.
- MicroRidge will determine if products that do not conform to their description or are defective in material or workmanship can be replaced or repaired. At MicroRidge’s option, credit for the original purchase price may be allowed if the reseller or customer notifies MicroRidge in writing of such defect within thirty (30) days of discovery and returns such products following the MicroRidge instructions. No products may be returned without MicroRidge prior written authorization.
- This warranty does not apply to any product subjected to misuse, abuse, negligence, or accident by the reseller, customer or third parties.
- MicroRidge makes no other warranty or representation of any kind with respect to the products, either express or implied, including that of merchantability or fitness for a particular use. Failure to make any claim in writing, or within the thirty (30) day period set forth above, shall constitute an irrevocable acceptance of the products and an admission by the reseller or customer that the products fully comply with all terms, conditions, and specifications of the reseller’s or customer’s purchase order. MicroRidge shall not be liable for direct, indirect, incidental, special, or consequential damages under any circumstances, including, but not limited to, damage or loss resulting from the inability to use the products, increased operating costs or loss of sales, or any other damages. To make a claim under this warranty, the customer or reseller must notify MicroRidge within the warranty period.
- The customer or reseller will pay all shipping charges (including duty and taxes) for equipment returned to MicroRidge for warranty service. MicroRidge will pay shipping charges for equipment returned to the customer. Customers and resellers are responsible for duty and taxes on equipment returned to them.
- Software developed by MicroRidge is warranted to operate under the software documentation on the hardware specified in such documentation for six (6) months from the date of shipment. During the warranty period, MicroRidge will, at no charge, correct any programming error in the software that interferes with the normal operation of the software if MicroRidge can reproduce the error on MicroRidge’s computer.

16 Contact MicroRidge

Email:

Support:	support@microridge.com
Sales:	sales@microridge.com
Information:	info@microridge.com

Phone:

Support:	541.593.5044
Sales:	541.593.3500
Main office:	541.593.1656

Mailing Address:

MicroRidge Systems, Inc.

PO Box 3249

Sunriver, OR 97707-0249

Physical Address:

MicroRidge Systems, Inc.

56888 Enterprise Drive

Sunriver, OR 97707

Note: There is no mail delivery to this address. This address should only be used for UPS and FedEx package delivery services.

Web: www.microridge.com

17 Version History

Version	Date	Updates
2.0	06/20/2025	Updated Contact Info
		Added EVO Base Receiver Information throughout Manual
		Added Sections: Mobile Module Read Modes, Gage output types, Setting up the Digital Remote, Digital Remote Setup Tab
		Various other updates and corrections
2.1	9/19/2025	Typo Corrections
		Added "Available Serial Ports" Section
		Re-ordered Mobile Module Read Modes

18 ASCII Characters

ASCII Control Characters

DEC	HEX	Symbol	Description
0	0	NUL	Null character
1	1	SOH	Start of Heading
2	2	STX	Start of Text
3	3	ETX	End of Text
4	4	EOT	End of Transmission
5	5	ENQ	Enquiry
6	6	ACK	Acknowledge
7	7	BEL	Bell, Alert
8	8	BS	Backspace
9	9	HT	Horizontal Tab
10	0A	LF	Line Feed
11	0B	VT	Vertical Tabulation
12	0C	FF	Form Feed
13	0D	CR	Carriage Return
14	0E	SO	Shift Out
15	0F	SI	Shift In
16	10	DLE	Data Link Escape
17	11	DC1	Device Control One (XON)
18	12	DC2	Device Control Two
19	13	DC3	Device Control Three (XOFF)
20	14	DC4	Device Control Four
21	15	NAK	Negative Acknowledge
22	16	SYN	Synchronous Idle
23	17	ETB	End of Transmission Block
24	18	CAN	Cancel
25	19	EM	End of medium
26	1A	SUB	Substitute
27	1B	ESC	Escape
28	1C	FS	File Separator
29	1D	GS	Group Separator
30	1E	RS	Record Separator
31	1F	US	Unit Separator

ASCII Printable Characters

DEC	HEX	Symbol	Description
32	20	SP	Space
33	21	!	Exclamation mark
34	22	"	Double quotes (or speech marks)
35	23	#	Number sign
36	24	$	Dollar
37	25	%	Per cent sign
38	26	&	Ampersand
39	27	'	Single quote
40	28	(	Open parenthesis (or open bracket)
41	29	)	Close parenthesis (or close bracket)
42	2A	*	Asterisk
43	2B	+	Plus
44	2C	,	Comma
45	2D	-	Hyphen-minus
46	2E	.	Period, dot or full stop
47	2F	/	Slash or divide
48	30	0	Zero
49	31	1	One
50	32	2	Two
51	33	3	Three
52	34	4	Four
53	35	5	Five
54	36	6	Six
55	37	7	Seven
56	38	8	Eight
57	39	9	Nine
58	3A	:	Colon
59	3B	;	Semicolon
60	3C	<	Less than (or open angled bracket)
61	3D	=	Equals
62	3E	>	Greater than (or close angled bracket)
63	3F	?	Question mark
64	40	@	At sign
65	41	A	Uppercase A
66	42	B	Uppercase B
67	43	C	Uppercase C

68	44	D	Uppercase D
69	45	E	Uppercase E
70	46	F	Uppercase F
71	47	G	Uppercase G
72	48	H	Uppercase H
73	49	I	Uppercase I
74	4A	J	Uppercase J
75	4B	K	Uppercase K
76	4C	L	Uppercase L
77	4D	M	Uppercase M
78	4E	N	Uppercase N
79	4F	O	Uppercase O
80	50	P	Uppercase P
81	51	Q	Uppercase Q
82	52	R	Uppercase R
83	53	S	Uppercase S
84	54	T	Uppercase T
85	55	U	Uppercase U
86	56	V	Uppercase V
87	57	W	Uppercase W
88	58	X	Uppercase X
89	59	Y	Uppercase Y
90	5A	Z	Uppercase Z
91	5B	[	Opening bracket
92	5C	\	Backslash
93	5D	]	Closing bracket
94	5E	^	Caret - circumflex
95	5F	_	Underscore
96	60	`	Grave accent
97	61	a	Lowercase a
98	62	b	Lowercase b
99	63	c	Lowercase c
100	64	d	Lowercase d
101	65	e	Lowercase e
102	66	f	Lowercase f
103	67	g	Lowercase g
104	68	h	Lowercase h
105	69	i	Lowercase i
106	6A	j	Lowercase j

107	6B	k	Lowercase k
108	6C	l	Lowercase l
109	6D	m	Lowercase m
110	6E	n	Lowercase n
111	6F	o	Lowercase o
112	70	p	Lowercase p
113	71	q	Lowercase q
114	72	r	Lowercase r
115	73	s	Lowercase s
116	74	t	Lowercase t
117	75	u	Lowercase u
118	76	v	Lowercase v
119	77	w	Lowercase w
120	78	x	Lowercase x
121	79	y	Lowercase y
122	7A	z	Lowercase z
123	7B	{	Opening brace
124	7C	|	Vertical bar
125	7D	}	Closing brace
126	7E	~	Equivalency sign - tilde
127	7F	DEL	Delete

ASCII Extended, Windows-1252

DEC	HEX	Symbol	Description
128	80	€	Euro sign
129	81		Unused
130	82	‚	Single low-9 quotation mark
131	83	*ƒ*	Latin small letter f with hook
132	84	„	Double low-9 quotation mark
133	85	…	Horizontal ellipsis
134	86	†	Dagger
135	87	‡	Double dagger
136	88	ˆ	Modifier letter circumflex accent
137	89	‰	Per mille sign
138	8A	Š	Latin capital letter S with caron
139	8B	‹	Single left-pointing angle quotation
140	8C	Œ	Latin capital ligature OE
141	8D		Unused

142	8E	Ž	Latin capital letter Z with caron
143	8F		Unused
144	90		Unused
145	91	‘	Left single quotation mark
146	92	’	Right single quotation mark
147	93	“	Left double quotation mark
148	94	”	Right double quotation mark
149	95	•	Bullet
150	96	–	En dash
151	97	—	Em dash
152	98	˜	Small tilde
153	99	™	Trade mark sign
154	9A	š	Latin small letter S with caron
155	9B	›	Single right-pointing angle quotation mark
156	9C	œ	Latin small ligature oe
157	9D		Unused
158	9E	ž	Latin small letter z with caron
159	9F	Ÿ	Latin capital letter Y with diaeresis
160	A0	NBSP	Non-breaking space
161	A1	¡	Inverted exclamation mark
162	A2	¢	Cent sign
163	A3	£	Pound sign
164	A4	¤	Currency sign
165	A5	¥	Yen sign
166	A6	¦	Pipe, broken vertical bar
167	A7	§	Section sign
168	A8	¨	Spacing diaeresis - umlaut
169	A9	©	Copyright sign
170	AA	ª	Feminine ordinal indicator
171	AB	«	Left double angle quotes
172	AC	¬	Negation
173	AD	SHY	Soft hyphen
174	AE	®	Registered trade mark sign
175	AF	¯	Spacing macron - overline
176	B0	°	Degree sign
177	B1	±	Plus-or-minus sign
178	B2	²	Superscript two - squared
179	B3	³	Superscript three - cubed
180	B4	´	Acute accent - spacing acute

181	B5	µ	Micro sign
182	B6	¶	Pilcrow sign - paragraph sign
183	B7	·	Middle dot - Georgian comma
184	B8	¸	Spacing cedilla
185	B9	¹	Superscript one
186	BA	º	Masculine ordinal indicator
187	BB	»	Right double angle quotes
188	BC	¼	Fraction one quarter
189	BD	½	Fraction one half
190	BE	¾	Fraction three quarters
191	BF	¿	Inverted question mark
192	C0	À	Latin capital letter A with grave
193	C1	Á	Latin capital letter A with acute
194	C2	Â	Latin capital letter A with circumflex
195	C3	Ã	Latin capital letter A with tilde
196	C4	Ä	Latin capital letter A with diaeresis
197	C5	Å	Latin capital letter A with ring above
198	C6	Æ	Latin capital letter AE
199	C7	Ç	Latin capital letter C with cedilla
200	C8	È	Latin capital letter E with grave
201	C9	É	Latin capital letter E with acute
202	CA	Ê	Latin capital letter E with circumflex
203	CB	Ë	Latin capital letter E with diaeresis
204	CC	Ì	Latin capital letter I with grave
205	CD	Í	Latin capital letter I with acute
206	CE	Î	Latin capital letter I with circumflex
207	CF	Ï	Latin capital letter I with diaeresis
208	D0	Ð	Latin capital letter ETH
209	D1	Ñ	Latin capital letter N with tilde
210	D2	Ò	Latin capital letter O with grave
211	D3	Ó	Latin capital letter O with acute
212	D4	Ô	Latin capital letter O with circumflex
213	D5	Õ	Latin capital letter O with tilde
214	D6	Ö	Latin capital letter O with diaeresis
215	D7	×	Multiplication sign
216	D8	Ø	Latin capital letter O with slash
217	D9	Ù	Latin capital letter U with grave
218	DA	Ú	Latin capital letter U with acute
219	DB	Û	Latin capital letter U with circumflex

220	DC	Ü	Latin capital letter U with diaeresis
221	DD	Ý	Latin capital letter Y with acute
222	DE	Þ	Latin capital letter THORN
223	DF	ß	Latin small letter sharp s - ess-zed
224	E0	à	Latin small letter a with grave
225	E1	á	Latin small letter a with acute
226	E2	â	Latin small letter a with circumflex
227	E3	ã	Latin small letter a with tilde
228	E4	ä	Latin small letter a with diaeresis
229	E5	å	Latin small letter a with ring above
230	E6	æ	Latin small letter ae
231	E7	ç	Latin small letter c with cedilla
232	E8	è	Latin small letter e with grave
233	E9	é	Latin small letter e with acute
234	EA	ê	Latin small letter e with circumflex
235	EB	ë	Latin small letter e with diaeresis
236	EC	ì	Latin small letter i with grave
237	ED	í	Latin small letter i with acute
238	EE	î	Latin small letter i with circumflex
239	EF	ï	Latin small letter i with diaeresis
240	F0	ð	Latin small letter eth
241	F1	ñ	Latin small letter n with tilde
242	F2	ò	Latin small letter o with grave
243	F3	ó	Latin small letter o with acute
244	F4	ô	Latin small letter o with circumflex
245	F5	õ	Latin small letter o with tilde
246	F6	ö	Latin small letter o with diaeresis
247	F7	÷	Division sign
248	F8	ø	Latin small letter o with slash
249	F9	ù	Latin small letter u with grave
250	FA	ú	Latin small letter u with acute
251	FB	û	Latin small letter u with circumflex
252	FC	ü	Latin small letter u with diaeresis
253	FD	ý	Latin small letter y with acute
254	FE	þ	Latin small letter thorn
255	FF	ÿ	Latin small letter y with diaeresis