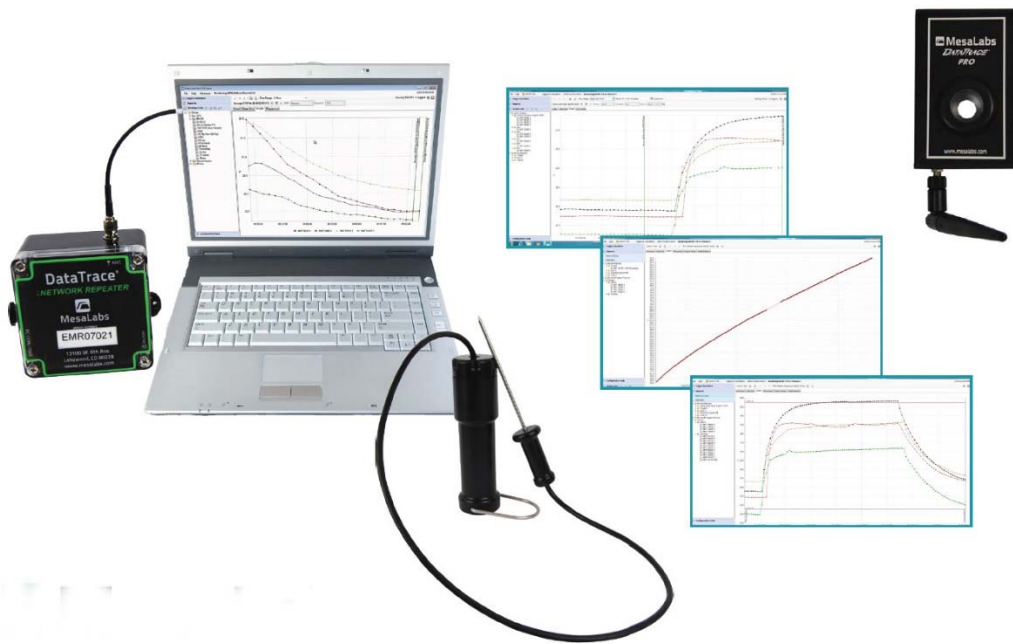


# Sentinel Installation Reference Guide



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## How to Prepare DataTrace Pro for a Sentinel Install

### Configuring System and Testing Interface

Ensure Wireless is enabled in the System Setup

**Wireless**

No RF Devices

View RF Only (requires network connection)

Receive Data

RF Domain Name:

Manual Start

Auto-Start Reception

Environmental Monitors Only

Set Units of Measure to °F and Display Decimal Places to 2

### Data Display Settings

Measurement Type:

Unit of Measure:

Display Decimal Places:

Enable Allow Study Manual Start Stop Control and Check the box for Advanced Study Controls

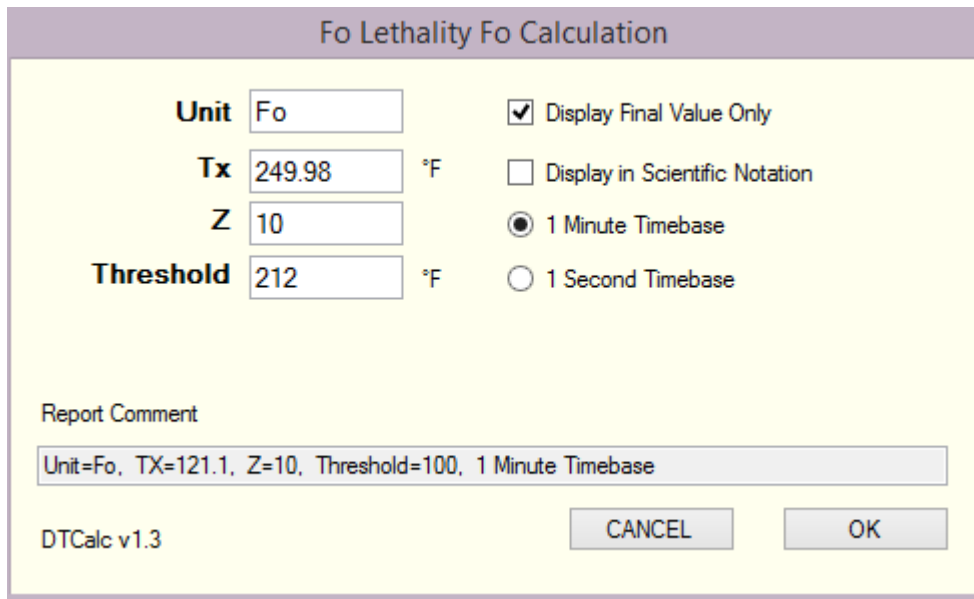
**RF Real-Time View**

Allow Study Manual Start / Stop Control

Allow Advanced Study Control

Allow Group assignment in RF View screen

Configure lethality to "Display Final Value Only as Unchecked



The dialog box is titled "Fo Lethality Fo Calculation". It contains the following fields and options:

- Unit:** Fo
- Tx:** 249.98 °F
- Z:** 10
- Threshold:** 212 °F
- Display Final Value Only
- Display in Scientific Notation
- 1 Minute Timebase
- 1 Second Timebase

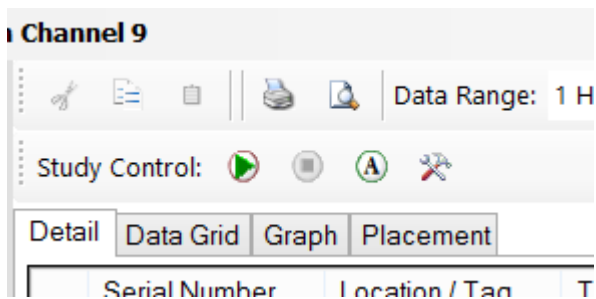
Report Comment:  
Unit=Fo, TX=121.1, Z=10, Threshold=100, 1 Minute Timebase

DTCalc v1.3

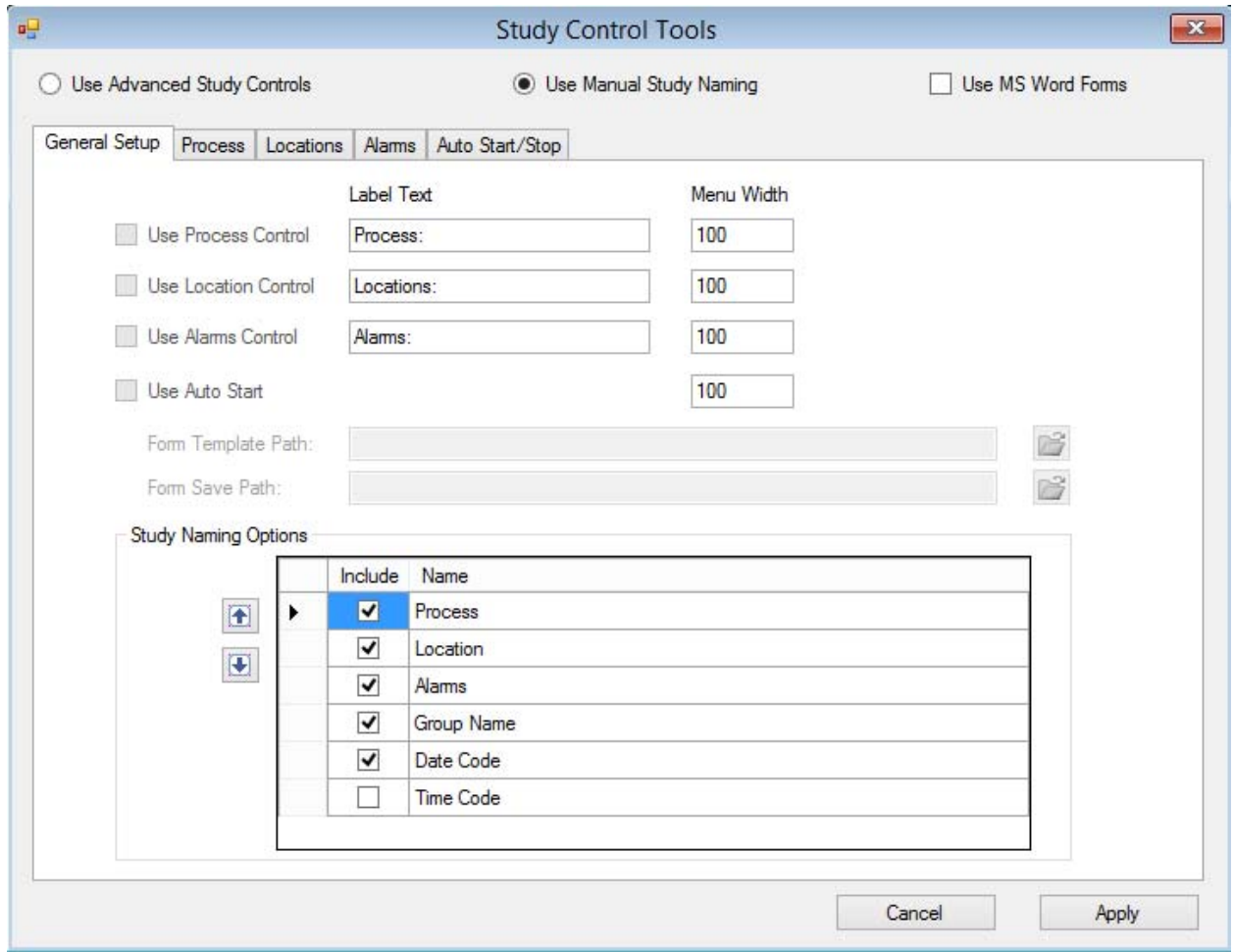
CANCEL OK

### Setting Up and Customizing Process Controls

Enable Wireless Data with an interface attached  
Select a group with at least one logger in it, in wireless data view.  
Click the "Tools" button for advanced study controls



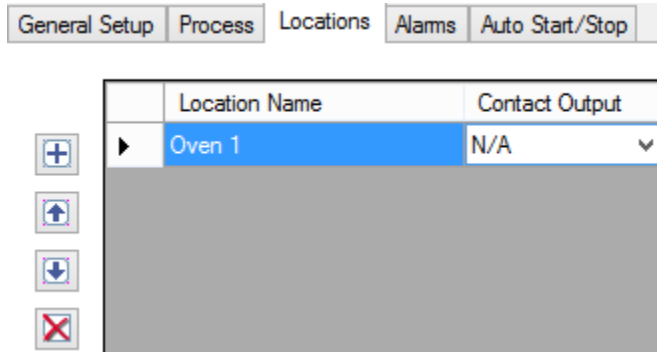
This displays the advanced study controls. Select the radio button for “Use Advanced Study Controls”



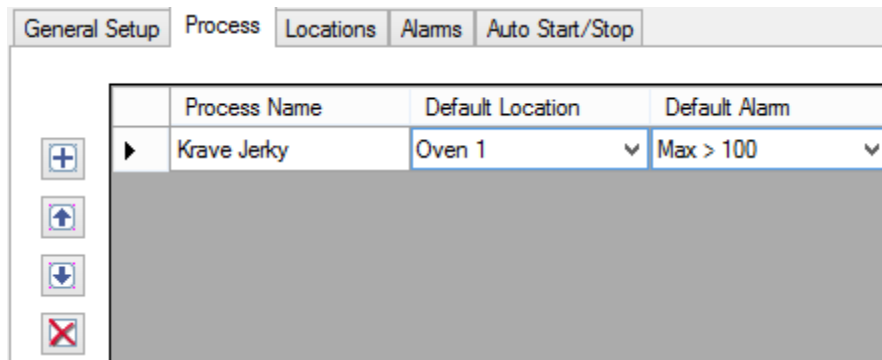
By selecting “Use Advanced Study Controls” you can now select and should configure, “Alarm” temperatures, “Location” values, such as ovens or retort names, and the type of process. For example, Alarm = 160C for 4 Min, Location = Smokehouse 2, Process = Hot Jerky. To set these up, start with the alarms tab and add the alarm temperatures that are relevant for the customer’s process by clicking the plus button and changing the fields to the desired values.

	Alarm Name	Type	Logic	Limit		Time Delay (minutes)
	Max > 100	Temperature	Max >	100	°F	0

Next, select the Locations tab and add all the locations that the customer may use, such as smokehouse numbers or oven numbers or locations within a facility



Finally, add the processes.



When you do this, you'll notice that you can also now assign a default location for each process and a default alarm value. Configure those according to the customers needs.


## Setting Up Reports


Configure a basic report (Go to historical data under reports and pick an study, then click the report manager tab to set up the tabs as per the Sample Screens below)


Selected Report: Smokehouse Report

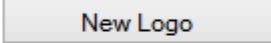

Standard Setup | Item Selection | Cover Page | Calculations | Data Evaluation | Report Manager

Report Header

Title: Smokehouse Temperature Re 

SubTitle: 

Company Name: Company Name 


Company Logo:  

Report Footer

Prepared By:   With Date  First page only  
 (Name / Title)  Last page only

Verified By:   With Date  First and last pages  
 (Name / Title)  All pages

Logger Identification Preference

Serial Number  Tag ID 

Selected Report: Smokehouse Report

- Standard Setup
- Item Selection
- Cover Page
- Calculations
- Data Evaluation
- Report Manager

Include Standard Items

<input type="checkbox"/> Cover Page	<input type="checkbox"/> Data Evaluation	<input type="checkbox"/> Alarms Summary
<input checked="" type="checkbox"/> Graph	<input type="checkbox"/> Placement	<input type="checkbox"/> Security Summary
<input type="checkbox"/> Data Summary		

Include Data

<input checked="" type="checkbox"/> All Data	<input checked="" type="checkbox"/> Compress Data
<input type="checkbox"/> Row Summary	Data Interval (sec.) <input type="text" value="480"/>

Phase Handling

<input type="checkbox"/> Include Phase Summary	<input type="checkbox"/> Warn if No Phases are Defined
<input type="checkbox"/> Include Phase Data	
<input type="checkbox"/> Include Phase Graph	

Miscellaneous Items

<input type="checkbox"/> Programming Report	<input type="checkbox"/> Pre-Cal Verification
	<input type="checkbox"/> Post-Cal Verification

Selected Report: Smokehouse Report

- Standard Setup
- Item Selection
- Cover Page
- Calculations
- Data Evaluation
- Report Manager

	Label	Text
<input type="button" value="+"/>		
<input type="button" value="↑"/>		
<input type="button" value="↓"/>		
<input type="button" value="X"/>		



Selected Report: Smokehouse Report

Include	Groups	Description	Calculation Report Comment
<input checked="" type="checkbox"/>	All Loggers	Fo Lethality	Unit=Fo, TX=121.1, Z=10, Threshold=
<input type="checkbox"/>	All Loggers	Pu Lethality	Unit=Pu, TX=60, Z=10, Threshold=3
<input type="checkbox"/>	All Loggers	CV Lethality	Unit=CV, TX=71.1, Z=10, Threshold=
<input type="checkbox"/>	All Loggers	Ao Lethality	Unit=Ao, TX=80, Z=10, Threshold=6
<input type="checkbox"/>	All Loggers	FH Lethality	Unit=FH, TX=135.0, Z=10, Threshold=
<input type="checkbox"/>	All Loggers	Mean Kinetic Temp.	

Some Customers may want Lethality, some may not

Selected Report: Smokehouse Report

Devices	Data Type	Range	Operate On	Logic	Limit	Limit 2
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						

Selected Report: Smokehouse Report

Standard Setup | Item Selection | Cover Page | Calculations | Data Evaluation | Report Manager

### Report Management

Report: Smokehouse Report



Create New

Import

Lock Template

Delete

Export

Edit Template

### Advanced Preferences

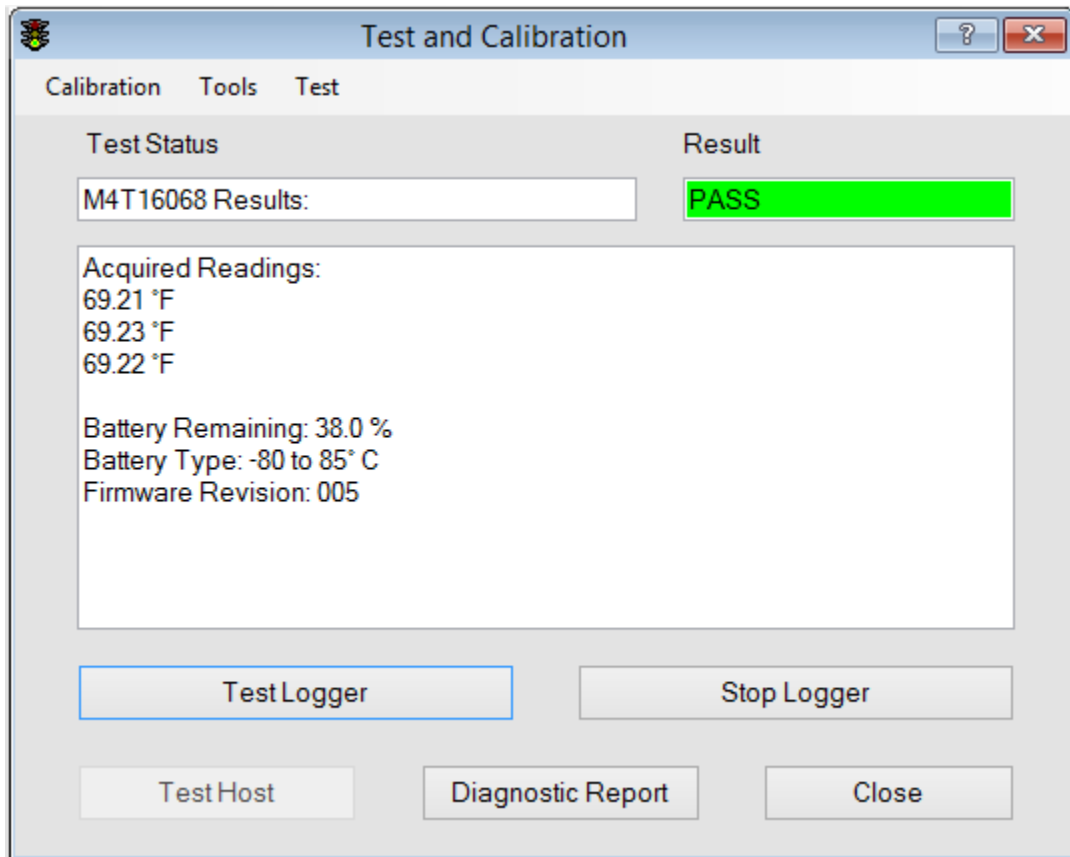
- Include Page Numbers
- Include Total Pages
- Use separate pages when printing calculated values
- Use separate pages for each unit of measure when printing data
- Exclude Temperature data reported by RH or Pressure devices
- Use Current Tag instead of Logged Tag
- Create Phases from Alarms
- Show Current Alarm Setpoints on Graph

Data Font: 12.345

## How To Prepare the Armored Flex Loggers for a Sentinel Install

### Testing

Remove the logger from the case, ensure the logger has a new battery and perform test logger on the test and calibration screen



Confirm good status on the loggers by making sure they have passed comm test and have reasonable temperature readings during the test

## Programming

Program the loggers for 1 min interval (or two) depending on customer making sure radio is enabled and channel is set. Always use the same channel after programming the host on a given channel.

No Radio (Logger Only)

Use Radio

### Select Radio Options

Number of Loggers in Group:

Channel Number:

### Enter Data Logging Parameters

Start Time

Interval

Run ID

Enable Run ID Auto-Numbering

Use Logger's Existing Run ID

### Program Loggers

Logger Identified

# of Units Programmed

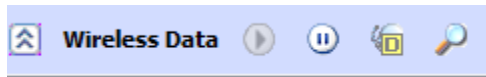
Battery Remaining  Type: -80 to 85° C

Run ID

Start Time

Interval

Enable wireless using the "Wireless On" button and ensure good communication from the loggers

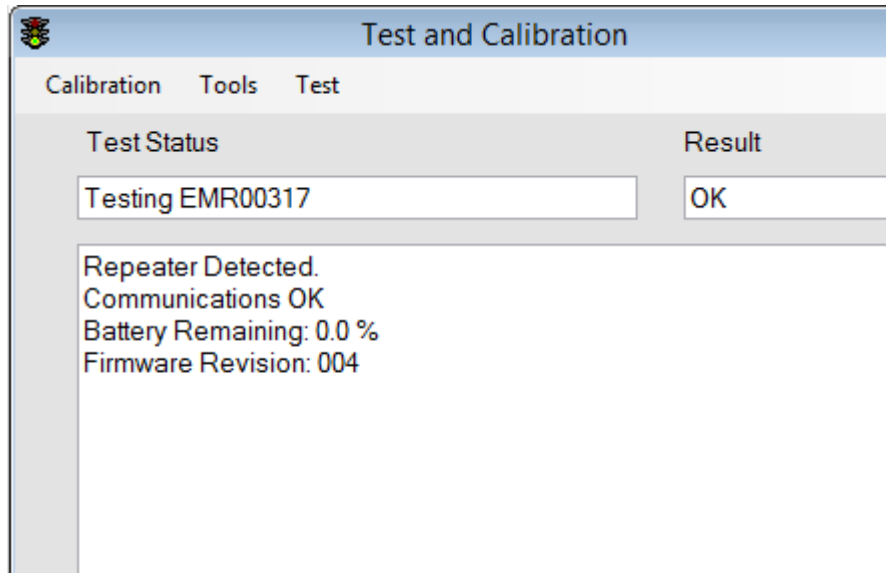


Detail	Data Grid	Graph	Placement				
Serial Number	Location / Tag	Time Stamp	Value	Comm	Elapsed	Signal	>>
M4T16068 °F	M4T16068-1	18-May-2015 22:11:00	69.24 °F		43		

## How to Prepare the Network Repeaters for a Sentinel Install

### Testing

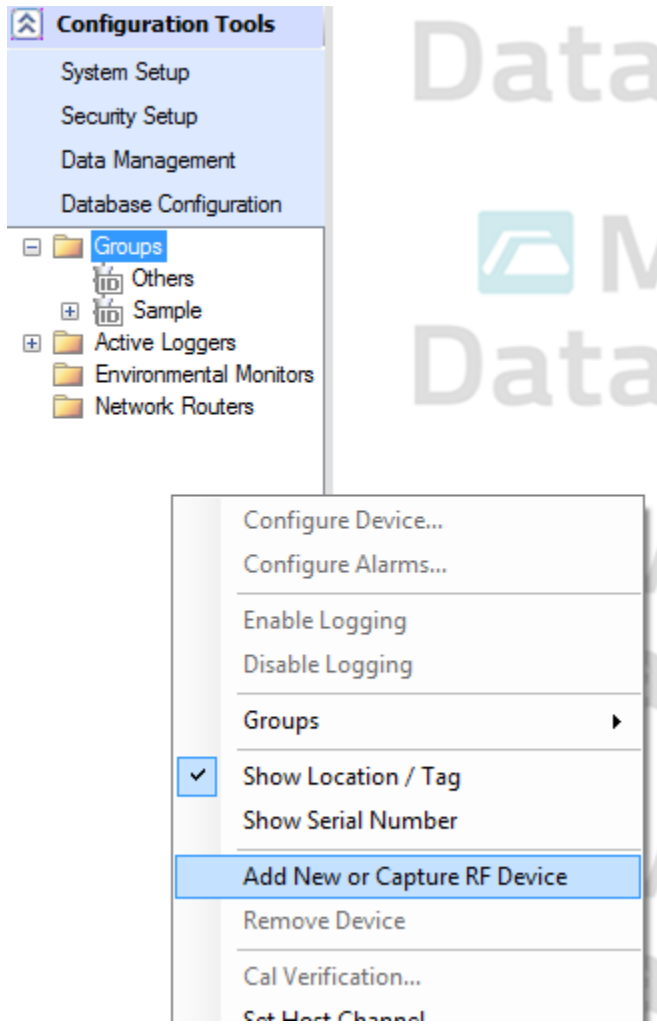
Connect repeater to the PC using USB Repeater Programming Cable  
Click "Test Logger" from the Test and Calibration window from Logger Functions.



The repeater should show the latest firmware installed and that it is functioning.

## Configuring For Wireless

Turn on network repeaters and capture the RF Device using “Add New or Capture RF Device”



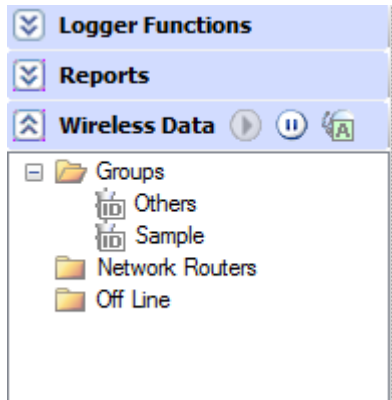
If this fails, you can program a repeater like a logger for 2 minute intervals using the regular program screen and the Repeater Programming Cable

Cycle power on all repeaters and ensure that they are connecting with good communication (green blinking light)

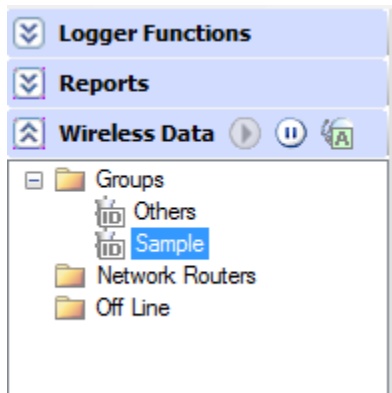
## How to Use the System

### Viewing Wireless Data

Enable Wireless Data by clicking the enable radio button on the “Wireless Data” bar.



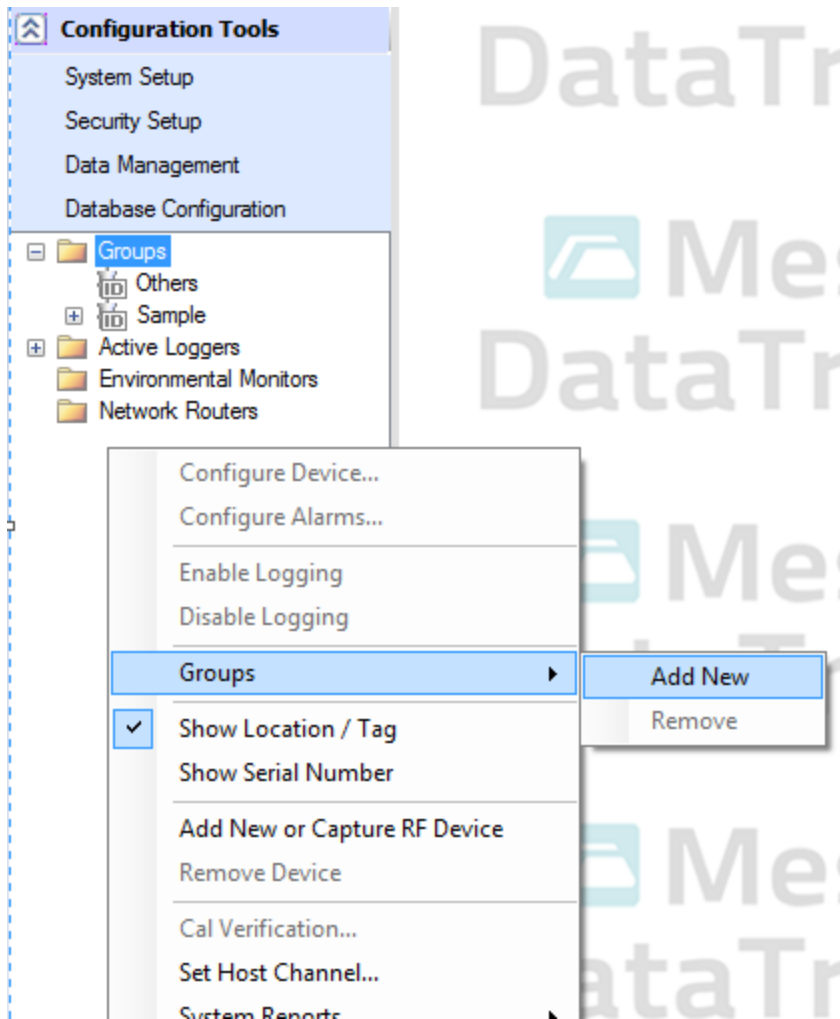
Then select the group you wish to view to view its latest radio data. Graph and data grid will be accessible



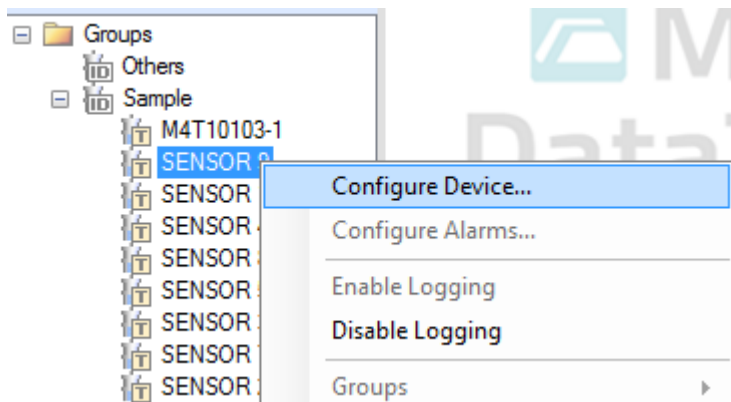
### Creating Groups

Groups are helpful for organizing loggers specific to a customer’s process or even if they have multiple. Make sure you place the loggers in groups that make sense. Dog tags are helpful for identifying and tagging loggers quickly into groups.

Create a group by going to configuration tools and right clicking in the white space under the menu anywhere to bring up the context menu. Click groups, Add New.

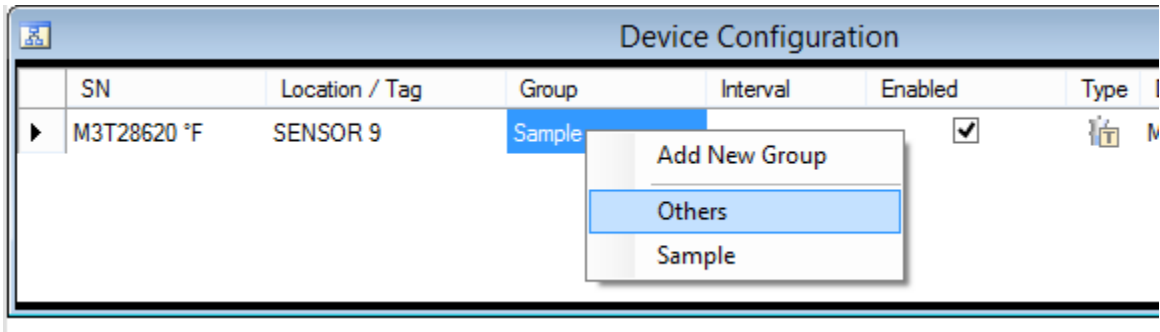


To place a logger in a group, bring up the context menu again and this time right click on the device to be grouped and click "Configure Device..."



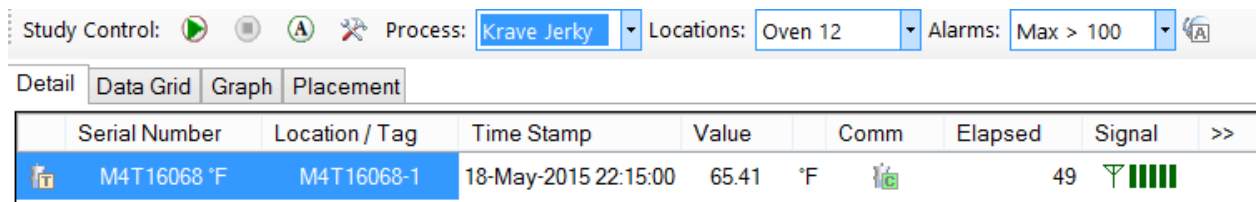
In the resulting screen, click the group column menu for that device and select the desired group



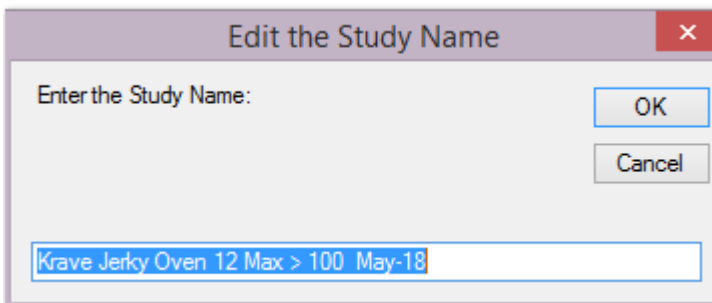


## Starting / Stopping Studies

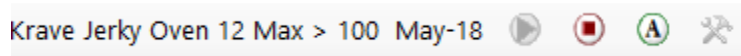
Start a study by selecting the correct dropdowns to identify the process and location the group of loggers is being placed and the correct alarm value if applicable that the process should end at, then selecting the Play button within the group's wireless view



When the dialog pops up asking for information about the study, press enter to accept the automatically entered text (assuming advanced study controls have been properly configured)



To stop a study, return to the wireless group view for the group that you wish to end the study for, and click the stop button within the group's wireless view



## Troubleshooting Common Issues

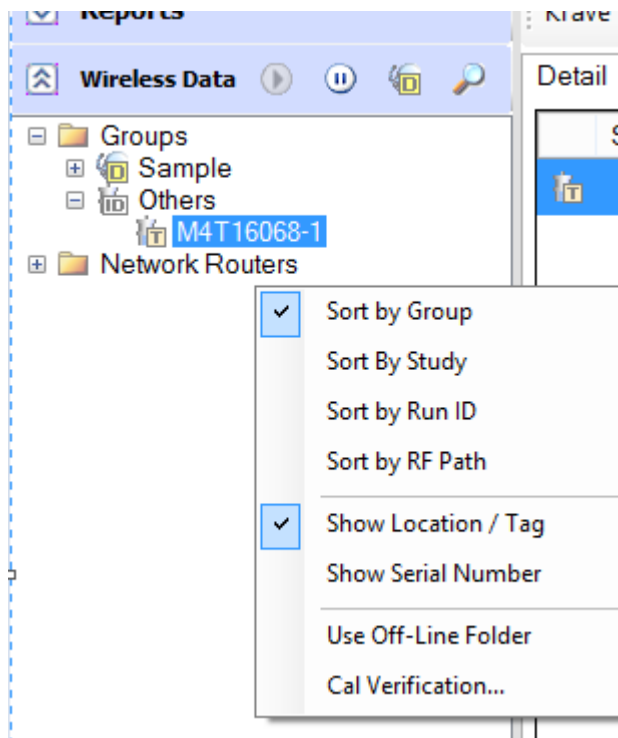
### Network Path Issues

Network path issues need to be resolved before leaving a customer's site and can only be evaluated while at a customer's site. Network path issues are typically when a data logger is not locking into a specific repeater or losing communication frequently. These can typically

be resolved by placing another repeater in the chain closer to either the logger or the host to resolve communication for a specific logger or group of loggers. To identify what routing is being used on the system, be sure to view RF Path.

## How To View RF Path

RF Path can be viewed by selecting the wireless data section, and right clicking in the white area below the groups section



Click "Sort by RF Path." This will list the loggers, repeaters and hosts in a hierarchical view from host descending down to all the repeaters and their "child" objects. If a device is a "child" of something in this list, it is communicating through its "parent" device. Use this to help diagnose poor or spotty communication.

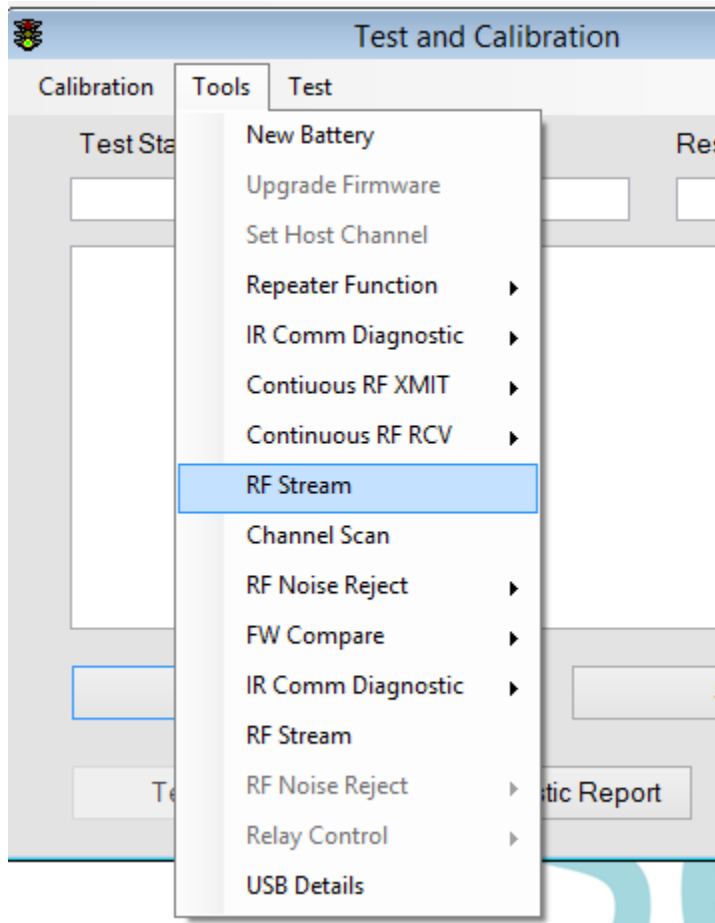
## Interface Failures

### Troubleshooting Wireless Comm Failures

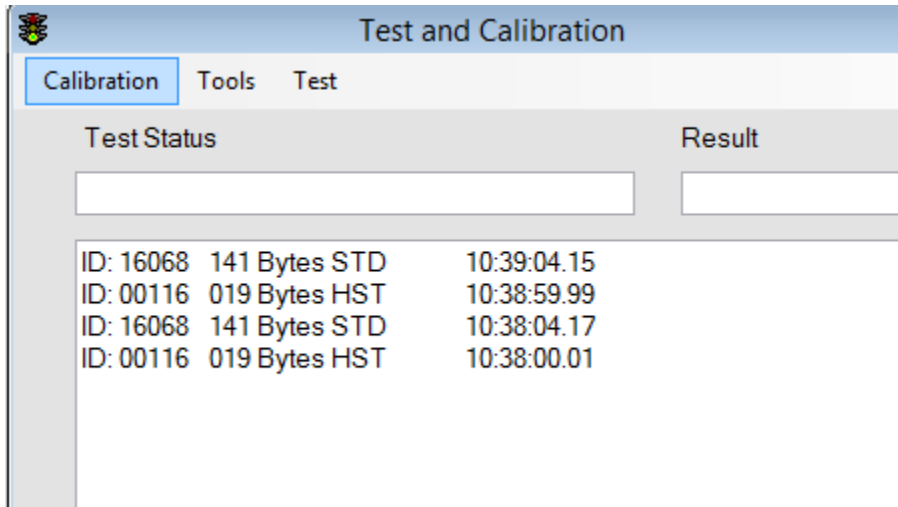
When you have wireless communication failures, the most common reasons are a device is not configured or programmed correctly or it is not within good RF range. Check battery levels and replace a battery if necessary. Reprogram the logger if a battery is replaced. Bring the logger closer in range to the host to see if it appears. REMEMBER!: Devices ONLY communicate on the interval they have been programmed for. That means that 1 minute interval loggers will only try to communicate once a minute. You may have to be patient to diagnose problems with the network. If you continue to have problems, you can look for the loggers using RF Stream.

## How to Use RF Stream

Using RF Stream is pretty straightforward. Bring up the test and calibration window under “Logger Functions.” Make sure wireless is enabled and then click tools, “RF Stream”



This will display a stream of RF data as the Host interface receives it on the channel it is monitoring, even if the data was not meant for it. That means that noise can be detected as well as other loggers with malformed packets. If a malformed packet or noise occurs, it will be detected with 3 question marks.



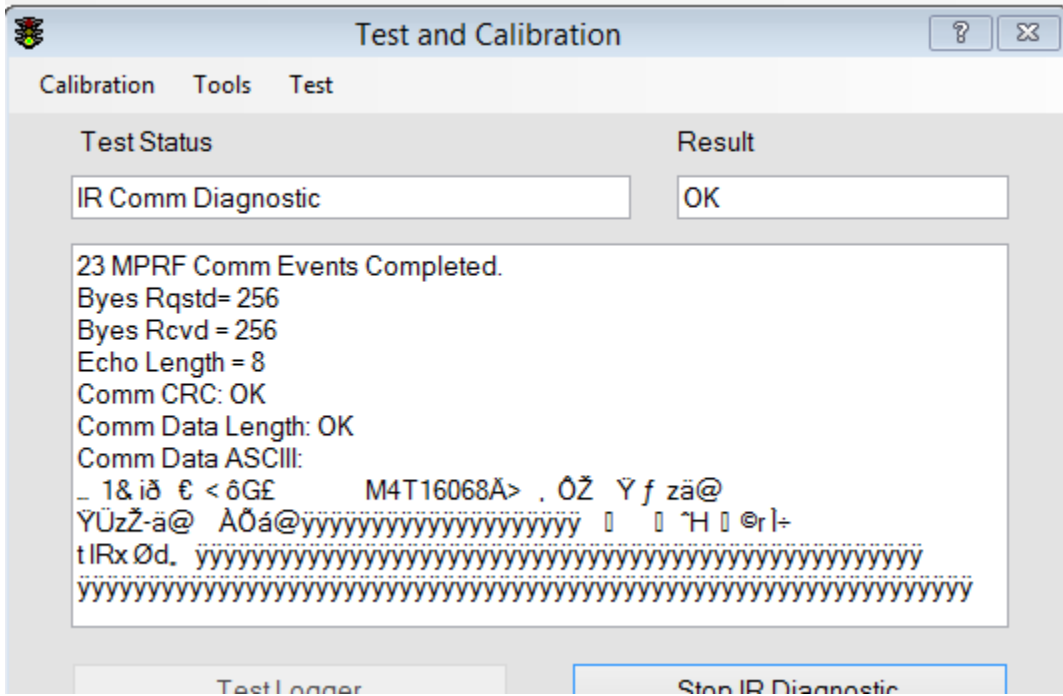
The ID is the serial number of the device broadcasting. Next listed is the number of bytes received and what type of packet it was "HST" (Host) or "STD" (Standard) and the precise time the radio chip on the interface received it. Use this tool to help detect problems with the radio functions of the loggers.

### Troubleshooting InfraRed Comm Failures

If a logger fails to communicate by infrared, the first step is to change the battery, or cause the logger to have a reset by popping the battery compartment open momentarily, and then closing it back up. If this does not resolve the issue, the problem may either be with the logger's diodes, or the interfaces diodes. IR Comm diagnostics can help.

To activate the IR Comm diagnostics, select "Test and Calibration" from the Logger Functions menu

Click Tools and highlight "IR Comm Diagnostics" and select comm for the type of logger you have. Make sure it is in the interface. This will initiate comm diagnostics.



What this will tell you is whether there are certain parts of the interface that do not produce communication with the logger, and whether communication for the logger fails after a certain amount of bytes transmitted. If the logger appears to be failing completely, place another logger in the interface and check it at all points by rotating it slowly in the interface as the test continues. If it appears to not fail communication using this test, then the logger is the point of failure. If however this test fails as well, sometimes, or all the time, then the interface is failing and should be replaced.

## Data Logger Failures

### How to Resolve a Reset and what it means

A reset can be resolved very simply by testing the logger. When the message regarding a reset occurs, click "No, a battery has not been recently replaced" and this will clear the reset.



One should consider how the reset occurred however. Resets are not normal and should be avoided or resolved through troubleshooting. If a reset has occurred, it means the battery voltage dropped below acceptable levels, or a disconnect from the battery has occurred. This means that either the battery needs to be replaced, or the proper battery type needs to be installed for the customer's process type, or there is a hardware failure. Checking the battery will resolve 90% or more of these failure types.

### Making sure you are using the right battery

Making sure you are using the right battery type can resolve one of the common failures for resets. If your customer is using a process that is 100C or below (212F), make sure to have the "Low-Temp" spiral wound battery installed. This will ensure the best performance at these temp processes and these batteries can source more current. If the customer's process is a higher temperature application, make sure that the standard battery is installed. If the battery is not the cause of the resets and they continue to occur, have the logger serviced.

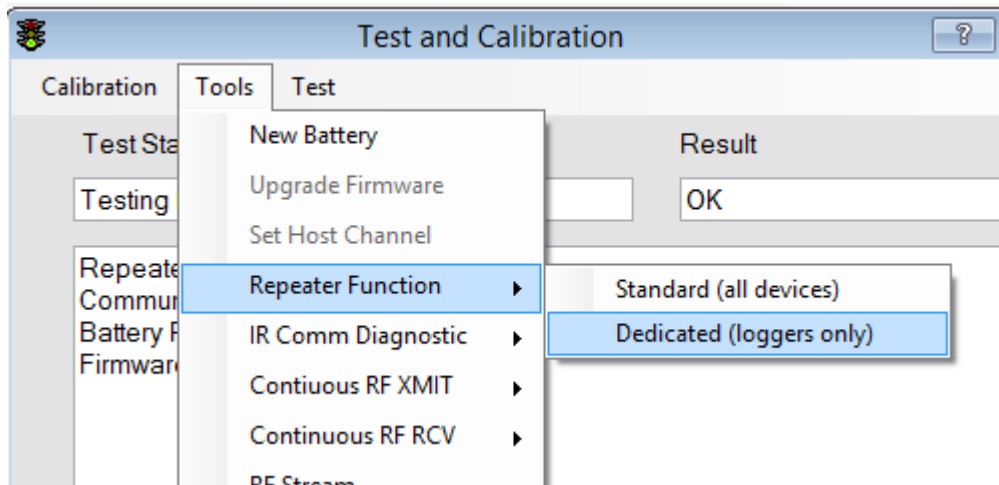
## Network Repeater Failures

### Checking for Dedication

Network dedication mode for network repeaters is a mode that any repeater can be configured for and will allow the repeater to repeat ONLY other loggers and NOT other nearby repeaters. This is useful for a repeater that is installed with an antenna directly in a chamber such as a smokehouse or retort. This can however cause unexpected problems and should be checked first if a network repeater appears to be misbehaving.

You can check for and configure network dedication mode on a repeater by attaching it through the repeater programming cable to the PC and opening the “Test and Calibration” window from Logger functions.

Then selecting “Repeater Function” and “Dedicated Mode.”



This will set dedicated mode for the repeater. The same can be done in reverse, by selecting “Non-Dedicated” (Standard Function).

Check this before diagnosing any further radio issues.

### Diagnosing Radio Failure

Use the blinking lights on the outside of the repeater as a guide. Each time the repeater checks in, it should have at least one green blink. If the repeater does not, bring it to within a few feet of the interface and watch it for 2-3 intervals. If it still continues to fail on RF, power cycle the unit. If no lights are blinking, power cycle the unit immediately or replace the battery. If the device still continues to malfunction and dedication is not set, have the unit serviced.