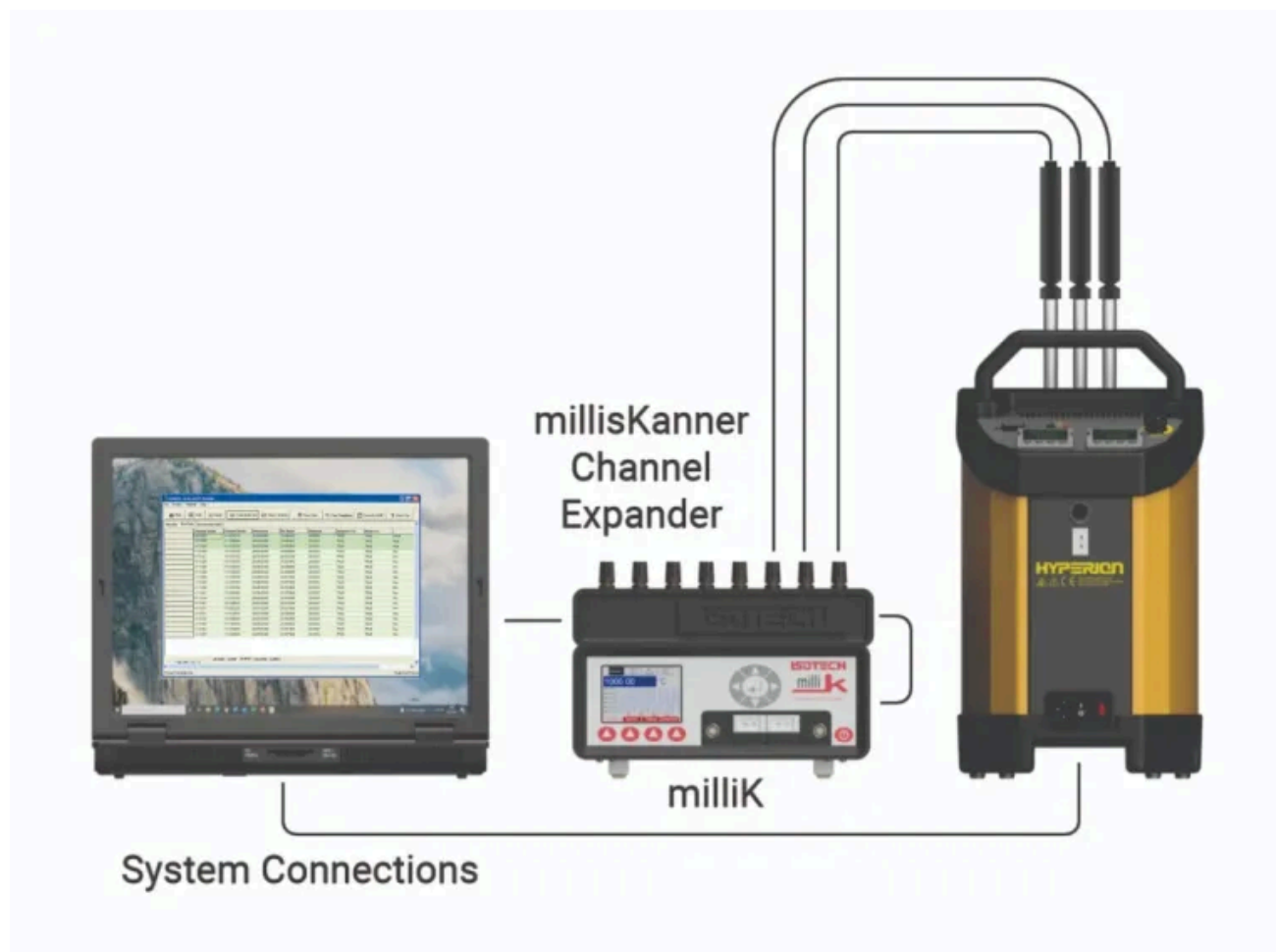


## DOCUMENT

# I-Cal-EASY

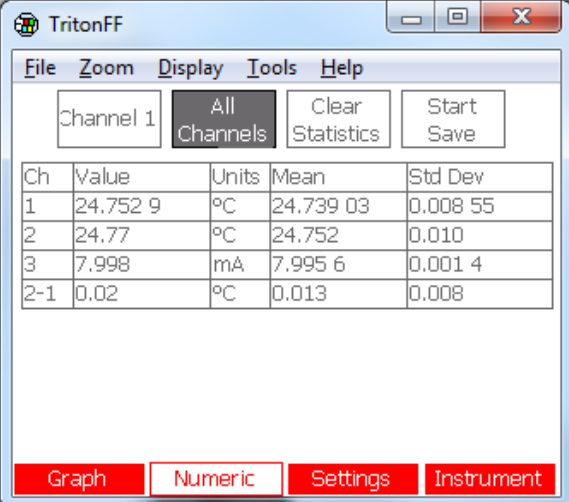
Isotech

Distributed by AKRIBIS



# Using Isotech milliK and I-Cal Easy

- Configure milliK
- In this example we have
  - Reference PRT on Channel 1
  - Thermocouple on Channel 2
  - Current Transmitter on Channel 3

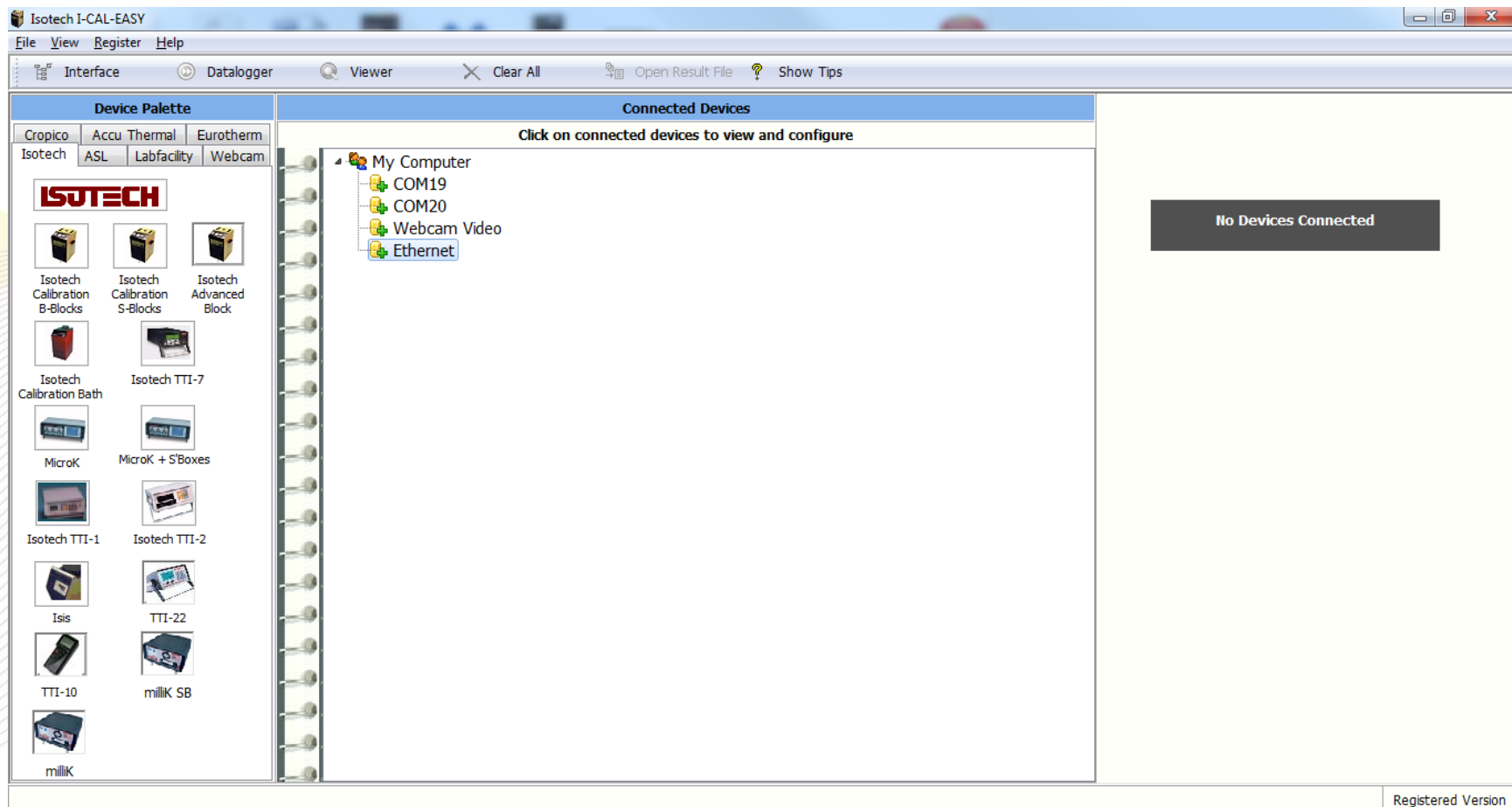


The screenshot shows the TritonFF software window. It has a menu bar with File, Zoom, Display, Tools, and Help. Below the menu bar are four buttons: Channel 1, All Channels (selected), Clear Statistics, and Start Save. The main area contains a table with the following data:

| Ch  | Value    | Units | Mean      | Std Dev  |
|-----|----------|-------|-----------|----------|
| 1   | 24.752 9 | °C    | 24.739 03 | 0.008 55 |
| 2   | 24.77    | °C    | 24.752    | 0.010    |
| 3   | 7.998    | mA    | 7.995 6   | 0.001 4  |
| 2-1 | 0.02     | °C    | 0.013     | 0.008    |

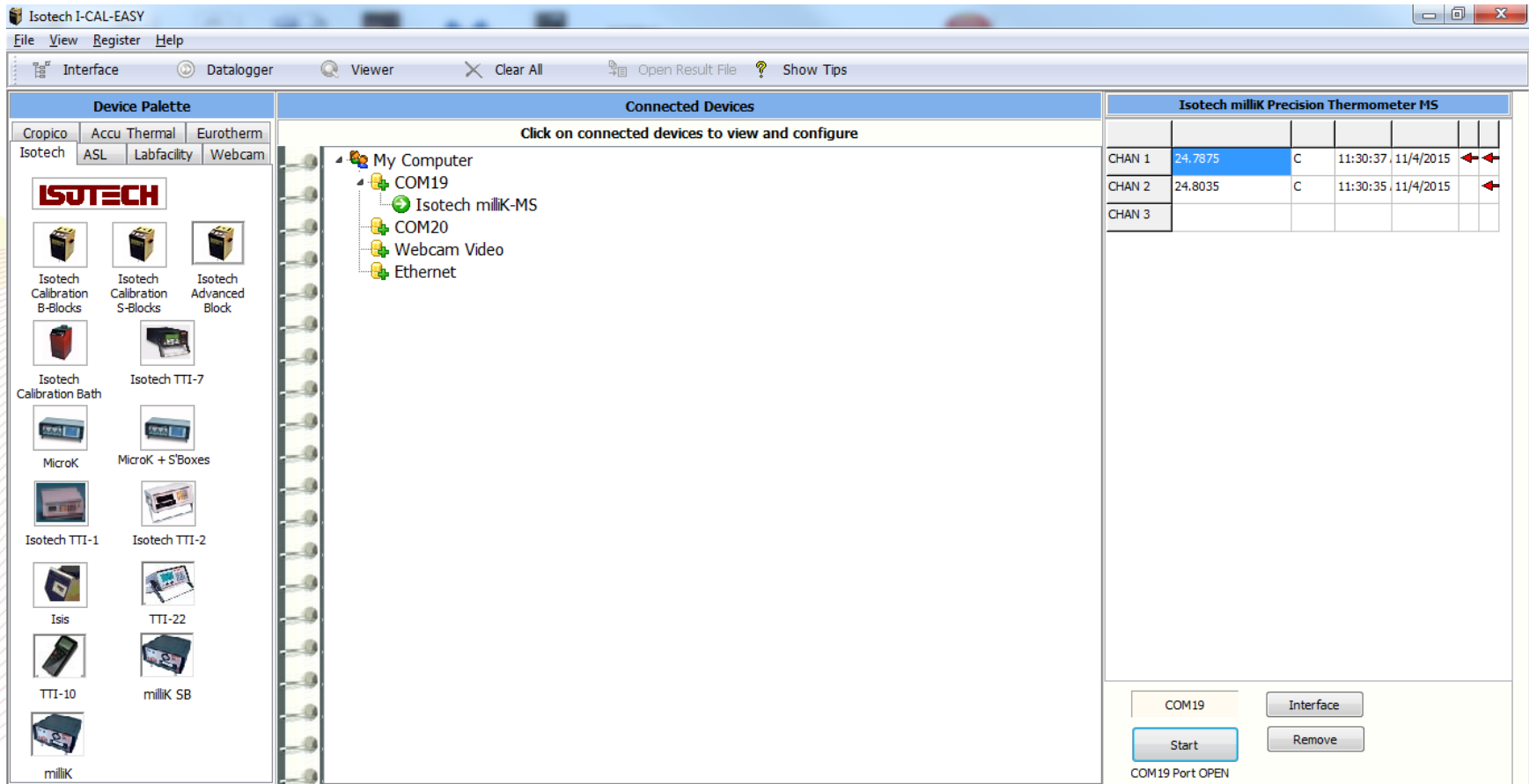
At the bottom of the window are four buttons: Graph, Numeric, Settings, and Instrument.

# Start the Laboratory Interface



Registered Version

# Drag the milliK to the COM Port



The screenshot shows the Isotech I-CAL-EASY software interface. The top menu bar includes File, View, Register, and Help. Below the menu is a toolbar with buttons for Interface, Datalogger, Viewer, Clear All, Open Result File, and Show Tips. The main window is divided into three panels:

- Device Palette:** Contains various Isotech devices including Calcro, Accu Thermal, Eurotherm, ASL, Labfacility, Webcam, Isotech Calibration B-Blocks, Isotech Calibration S-Blocks, Isotech Advanced Block, Isotech Calibration Bath, Isotech TTI-7, MicroK, MicroK + S'Boxes, Isotech TTI-1, Isotech TTI-2, Isis, TTI-22, TTI-10, milliK SB, and milliK.
- Connected Devices:** Displays a tree view of connected devices under 'My Computer', including COM19, Isotech milliK-MS, COM20, Webcam Video, and Ethernet.
- Isotech milliK Precision Thermometer MS:** A table showing data for three channels (CHAN 1, CHAN 2, CHAN 3). The table includes columns for temperature, unit, time, date, and status.

At the bottom of the interface, there are buttons for COM19, Interface, Start, and Remove. The status bar indicates 'COM19 Port OPEN'.

Drag and Drop devices from Device Pallet to connect

Registered Version

# Press START and Select CHAN 3

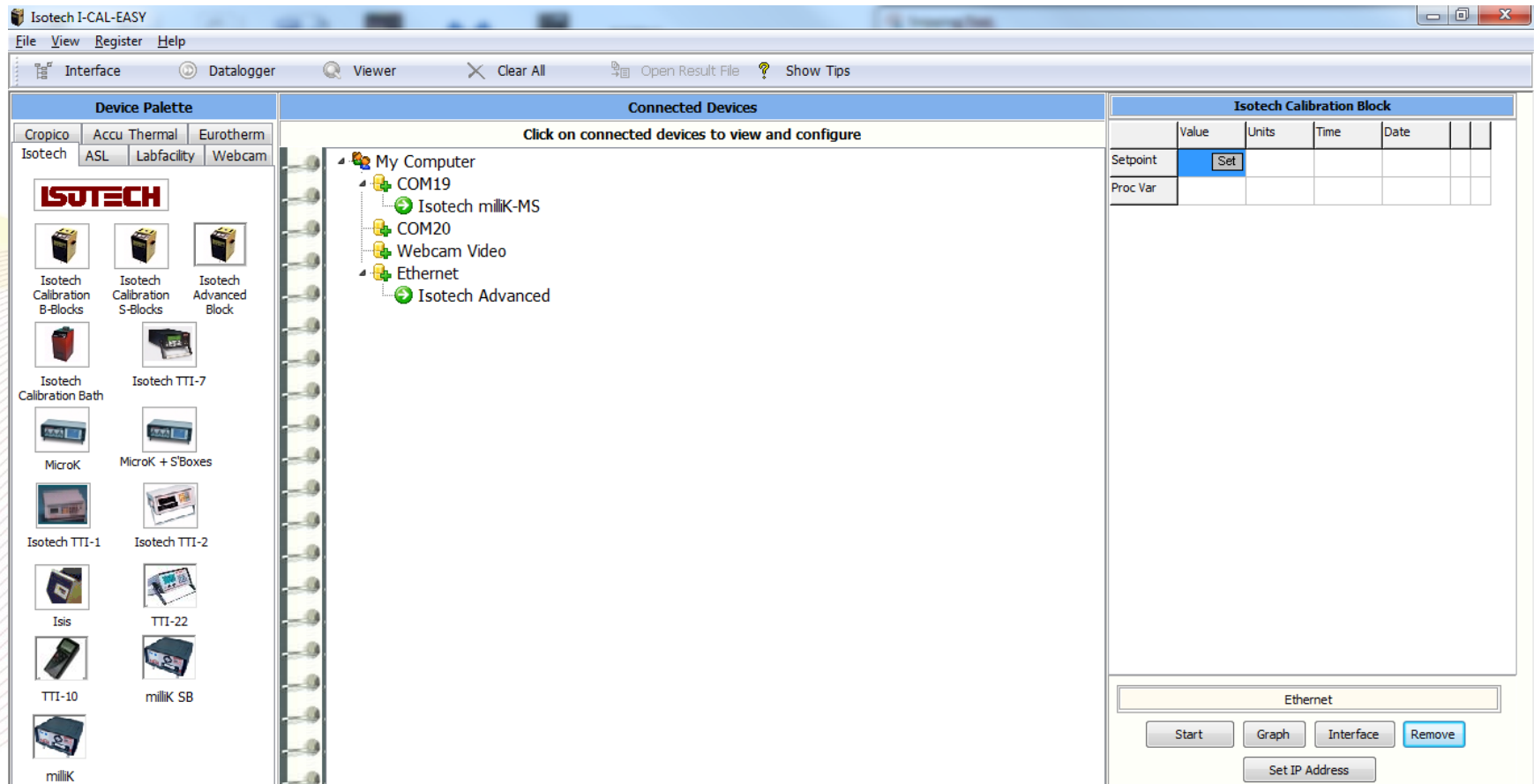
- The measurements from the milliK channels can now be seen

| Isotech milliK Precision Thermometer MS |         |    |          |           |   |   |
|-----------------------------------------|---------|----|----------|-----------|---|---|
| CHAN 1                                  | 24.7921 | C  | 11:31:50 | 11/4/2015 |   | ← |
| CHAN 2                                  | 24.8122 | C  | 11:31:53 | 11/4/2015 | ← | ← |
| CHAN 3                                  | 8.00395 | mA | 11:31:48 | 11/4/2015 |   | ← |

COM19 Interface Start Remove

COM19 Port OPEN

# Now Drag the Dry Block Across



**Isotech I-CAL-EASY**

File View Register Help

Interface Datalogger Viewer Clear All Open Result File Show Tips

**Device Palette**

Cropico Accu Thermal Eurotherm  
Isotech ASL Labfacility Webcam

**ISOTECH**

Isotech Calibration B-Blocks Isotech Calibration S-Blocks Isotech Advanced Block

Isotech Calibration Bath Isotech TTI-7

MicroK MicroK + S'Boxes

Isotech TTI-1 Isotech TTI-2

Isis TTI-22

TTI-10 millik SB

millik

**Connected Devices**

Click on connected devices to view and configure

My Computer

- COM19
- Isotech millik-MS
- COM20
- Webcam Video
- Ethernet
- Isotech Advanced

**Isotech Calibration Block**

|          | Value | Units | Time | Date |  |  |
|----------|-------|-------|------|------|--|--|
| Setpoint | Set   |       |      |      |  |  |
| Proc Var |       |       |      |      |  |  |

Ethernet

Start Graph Interface Remove

Set IP Address

Drag and Drop devices from Device Palette to connect

Registered Version

# Dry Block Configuration

- Here we are using the ADVANCED model which connects to Ethernet and the IP Address is set
- The Basic and Site models are dragged to the COM Ports

The screenshot displays the 'Isotech Calibration Block' software window. At the top, there is a table with columns: Value, Units, Time, Date, and two empty columns. The 'Setpoint' row has a 'Set' button in the 'Value' column. The 'Proc Var' row is empty. Below the table, there is a large empty area. In the center, a dialog box titled 'Ethernet connection' is open, asking the user to 'Please enter a valid IP address'. The input field contains '192.168.111.222'. There are 'OK' and 'Cancel' buttons. Below the dialog box, there is a section labeled 'Ethernet' with a yellow background. It contains four buttons: 'Start', 'Graph', 'Interface', and 'Remove'. At the bottom of this section is a blue button labeled 'Set IP Address'.

|          | Value | Units | Time | Date |  |  |
|----------|-------|-------|------|------|--|--|
| Setpoint | Set   |       |      |      |  |  |
| Proc Var |       |       |      |      |  |  |

Ethernet connection

Please enter a valid IP address

192.168.111.222

OK Cancel

Ethernet

Start Graph Interface Remove

Set IP Address

# Dry Block Configuration

- Press Start and we see the Dry Block Data

| Isotech Calibration Block |       |       |             |           |   |  |
|---------------------------|-------|-------|-------------|-----------|---|--|
|                           | Value | Units | Time        | Date      |   |  |
| Setpoint                  | 25.00 | Set   | 11:39:17 AM | 11/4/2015 | ✓ |  |
| Proc Var                  | 25.01 |       | 11:39:17 AM | 11/4/2015 | ✓ |  |
| Chan 1                    | 24.09 |       | 11:39:18 AM | 11/4/2015 |   |  |
| Chan 2                    | 26.37 |       | 11:39:16 AM | 11/4/2015 | ✓ |  |
| Chan 3                    | 24.51 |       | 11:39:17 AM | 11/4/2015 | ✓ |  |

Status: Connected with

Start

Graph

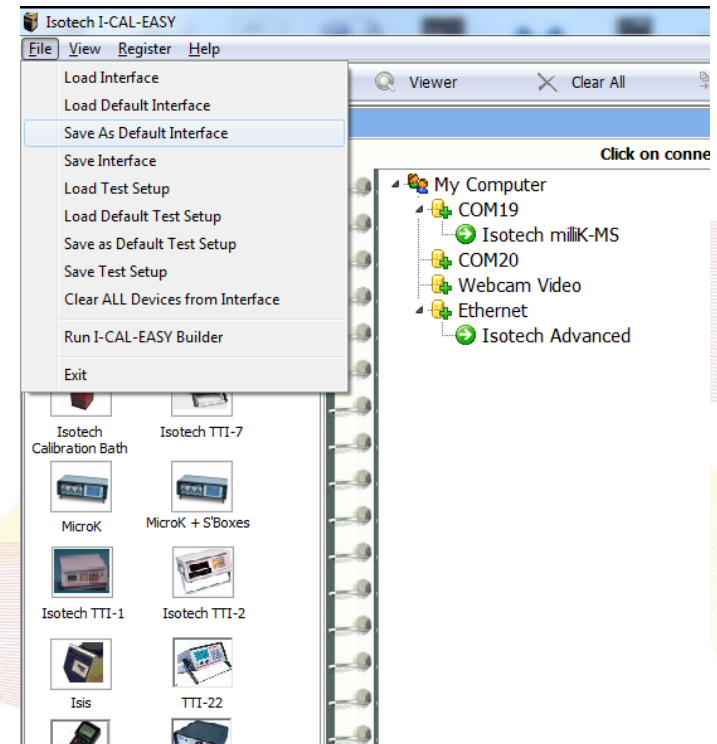
Interface

Remove

Set IP Address

# Saving Interface

- You can save the interface configuration or make it to the default
- Saving the need to drag the equipment each time



# Dry Block Configuration

- Press Start and we see the Dry Block Data

| Isotech Calibration Block |       |       |             |           |   |  |
|---------------------------|-------|-------|-------------|-----------|---|--|
|                           | Value | Units | Time        | Date      |   |  |
| Setpoint                  | 25.00 | Set   | 11:39:17 AM | 11/4/2015 | ✓ |  |
| Proc Var                  | 25.01 |       | 11:39:17 AM | 11/4/2015 | ✓ |  |
| Chan 1                    | 24.09 |       | 11:39:18 AM | 11/4/2015 |   |  |
| Chan 2                    | 26.37 |       | 11:39:16 AM | 11/4/2015 | ✓ |  |
| Chan 3                    | 24.51 |       | 11:39:17 AM | 11/4/2015 | ✓ |  |

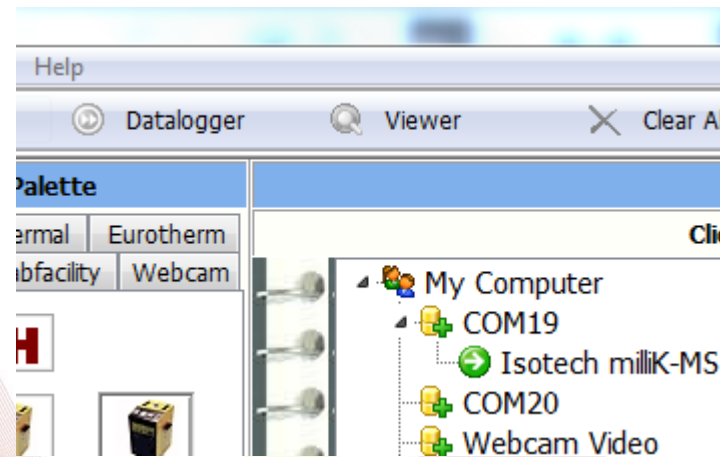
Status: Connected with

Start Graph Interface Remove

Set IP Address

# Configuring the Test

## ■ Click Datalogger



# Configuring the Test

## Click Datalogger

Isotech I-CAL-EASY

File View Register Help

Interface Datalogger Viewer Clear All Open Result File Show Tips

Current Interface Data Last Data Logged Trend Graph °C Test Setup Units Under Test

|                      | Value     | Units | Time        | Date      | Ref | SP | Decimals |     |
|----------------------|-----------|-------|-------------|-----------|-----|----|----------|-----|
| 1milliK CHAN 1 COM19 | 24.800500 | C     | 11:49:38 AM | 11/4/2015 |     |    | 0.000000 | Set |
| 2milliK CHAN 2 COM19 | 24.798000 | C     | 11:49:40 AM | 11/4/2015 | ←   |    | 0.000000 | Set |
| 3milliK CHAN 3 COM19 | 8.005810  | mA    | 11:49:35 AM | 11/4/2015 |     |    | 0.000000 | Set |
| 4 ABlock Setpoint    | 25.000000 |       | 11:49:39 AM | 11/4/2015 |     |    | 0.000000 | Set |
| 5 ABlock Proc Var    | 25.000000 |       | 11:49:39 AM | 11/4/2015 |     |    | 0.000000 | Set |
| 6 ABlock Chan 1      | 24.220000 |       | 11:49:40 AM | 11/4/2015 | ←   |    | 0.000000 | Set |
| 7 ABlock Chan 2      | 26.440000 |       | 11:49:40 AM | 11/4/2015 |     |    | 0.000000 | Set |
| 8 ABlock Chan 3      | 24.500000 |       | 11:49:41 AM | 11/4/2015 |     |    | 0.000000 | Set |

# Configuring the Test

- In the Ref Column Click to Tick which Channel is used as the **reference** – here milliK CHAN 1

Isotech I-CAL-EASY

File View Register Help

Interface Datalogger Viewer Clear All Open Result File ?

Current Interface Data Last Data Logged Trend Graph °C Test Setup

|         |              | Value     | Units | Time        | Date      | Ref                                 | SP |
|---------|--------------|-----------|-------|-------------|-----------|-------------------------------------|----|
| 1milliK | CHAN 1 COM19 | 24.801300 | C     | 11:51:23 AM | 11/4/2015 | <input checked="" type="checkbox"/> |    |
| 2milliK | CHAN 2 COM19 | 24.845600 | C     | 11:51:26 AM | 11/4/2015 | <input type="checkbox"/>            |    |
| 3milliK | CHAN 3 COM19 | 8.005810  | mA    | 11:51:21 AM | 11/4/2015 | <input type="checkbox"/>            |    |

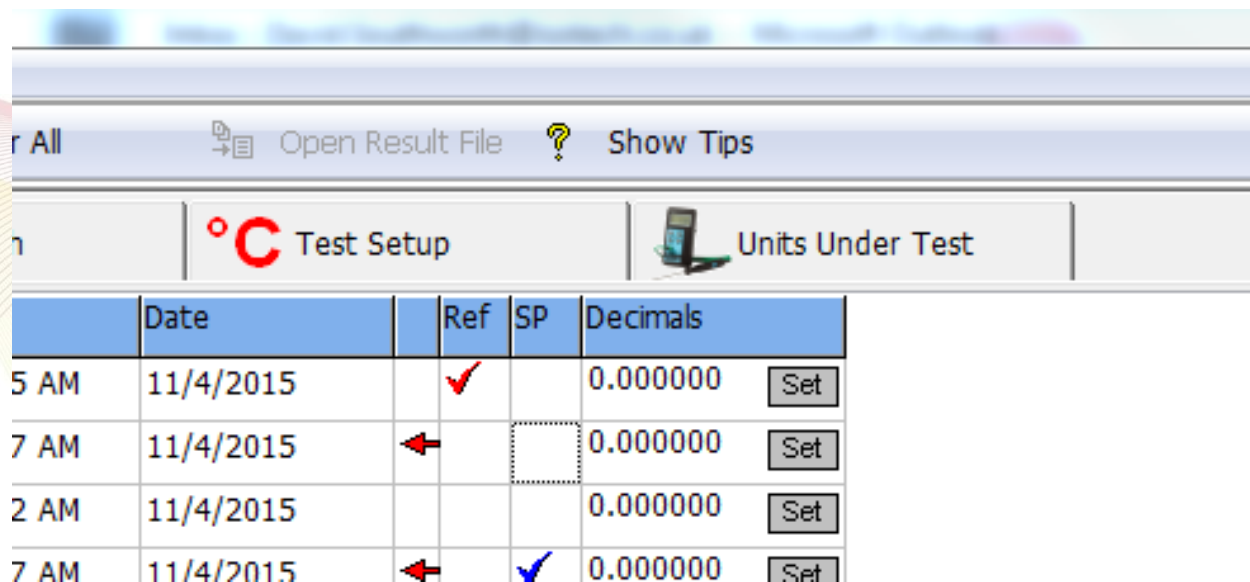
# Configuring the Test

- In the SP Column Click to Tick which channel is set the **setpoint**
- Here 4 ABlock Setpoint

|                      | Value     | Units | Time        | Date      | Ref | SP | Decimals |     |
|----------------------|-----------|-------|-------------|-----------|-----|----|----------|-----|
| 1milliK CHAN 1 COM19 | 24.802600 | C     | 11:53:01 AM | 11/4/2015 |     | ✓  | 0.000000 | Set |
| 2milliK CHAN 2 COM19 | 24.832400 | C     | 11:53:04 AM | 11/4/2015 |     |    | 0.000000 | Set |
| 3milliK CHAN 3 COM19 | 8.005810  | mA    | 11:53:06 AM | 11/4/2015 | ←   |    | 0.000000 | Set |
| 4 ABlock Setpoint    | 25.000000 |       | 11:53:07 AM | 11/4/2015 |     | ✓  | 0.000000 | Set |
| 5 ABlock Proc Var    | 25.000000 |       | 11:53:07 AM | 11/4/2015 |     |    | 0.000000 | Set |
| 6 ABlock Chan 1      | 24.250000 |       | 11:53:05 AM | 11/4/2015 |     |    | 0.000000 | Set |
| 7 ABlock Chan 2      | 26.470000 |       | 11:53:06 AM | 11/4/2015 |     |    | 0.000000 | Set |
| 8 ABlock Chan 3      | 24.510000 |       | 11:53:07 AM | 11/4/2015 |     |    | 0.000000 | Set |

# Configuring the Test

- Click °C Test Setup



|      | Date      | Ref | SP | Decimals |     |
|------|-----------|-----|----|----------|-----|
| 5 AM | 11/4/2015 | ✓   |    | 0.000000 | Set |
| 7 AM | 11/4/2015 | ←   |    | 0.000000 | Set |
| 2 AM | 11/4/2015 |     |    | 0.000000 | Set |
| 7 AM | 11/4/2015 | ←   | ✓  | 0.000000 | Set |

# Configuring the Test

Click °C  
Test Setup

Current Interface Data | Last Data Logged | Trend Graph | °C Test Setup

Test Parameters | Reference Standard | Default Decimal Places

Number of Test Points

☐ Set Temperature Manually 3

Stability of Reference Temperature

Spread Tolerance: ± 0.5 | Offset Limit: ± 0.5

Use last 10 readings for stability check

Readings Per Setpoint AFTER Stability

Record 3 readings after stability

Setpoint Parking Temperature °C

25.0

☒ Park when test is finished

Logging Interval: 1 minute

Test Controls

Setpoint = 25.00 | Reference = 24.8 | Point | Uncorrected

|               | Setpoint |
|---------------|----------|
| Temperature 1 |          |
| Temperature 2 |          |
| Temperature 3 |          |

# Configuring the Test

- In this quick test four temperatures have been entered
- We check for stability over 10 minutes
- And take 3 measurements at each point when stable

The screenshot displays the 'Test Setup' window of the ISOTECH software. The interface includes tabs for 'Current Interface Data', 'Last Data Logged', 'Trend Graph', and 'Test Setup'. The 'Test Parameters' tab is active, showing various settings for the test.

**Test Parameters:**

- Number of Test Points:** Set to 4 (via slider and 'Set Temperature Manually' checkbox).
- Stability of Reference Temperature:**
  - Spread Tolerance:**  $\pm 0.1$
  - Offset Limit:**  $\pm 4$
  - Use last:** 10 readings for stability check
- Readings Per Setpoint AFTER Stability:** Record 3 readings after stability
- Setpoint Parking Temperature °C:** 25.0
- Park when test is finished:** ☒
- Logging Interval:** 1 minute

**Temperature Setpoint Table:**

|               | Setpoint |
|---------------|----------|
| Temperature 1 | 25       |
| Temperature 2 | 50       |
| Temperature 3 | 75       |
| Temperature 4 | 100      |

**Test Controls:** Includes buttons for Start, Stop, Pause, and other test functions.

**Status Bar:**

- Setpoint = 25.00
- Reference = 24.8
- Point
- Uncorrected

# Configuring the Test

- Under the Units Under Test option we can optionally enter operator data and identifications.
- This data can then be exported to a certificate

|                    | Serial Number | Device Type | Model | Job Reference | Comments |
|--------------------|---------------|-------------|-------|---------------|----------|
| 1milk CHAN 1 COM19 |               |             | Set   |               |          |
| 2milk CHAN 2 COM19 |               |             | Set   |               |          |
| 3milk CHAN 3 COM19 |               |             | Set   |               |          |
| 4 ABlock Setpoint  |               |             | Set   |               |          |
| 5 ABlock Proc Var  |               |             | Set   |               |          |
| 6 ABlock Chan 1    |               |             | Set   |               |          |
| 7 ABlock Chan 2    |               |             | Set   |               |          |
| 8 ABlock Chan 3    |               |             | Set   |               |          |

Test Comments 1:

Test Comments 2:

Test Comments 3:

Test Comments 4:

Test Comments 5:

Test Comments 6:

Test Memo:

# Configuring the Test

 Current Interface Data
  Last Data Logged
  Trend Graph
  Test Setup
  Units Under Test

Units Under Test

|                      | Serial Number | Device Type | Model                              | Job Reference | Comments                           |
|----------------------|---------------|-------------|------------------------------------|---------------|------------------------------------|
| 1milliK CHAN 1 COM19 |               | Pt100       | <input type="button" value="Set"/> |               |                                    |
| 2milliK CHAN 2 COM19 |               | Type N      | <input type="button" value="Set"/> | EG XYZ        | MIMS Type N 300mm long             |
| 3milliK CHAN 3 COM19 |               |             | <input type="button" value="Set"/> | EG XYZ        | 4 - 20mA Current Transmitter / RTD |
| 4 ABlock Setpoint    |               |             | <input type="button" value="Set"/> |               |                                    |
| 5 ABlock Proc Var    |               |             | <input type="button" value="Set"/> |               |                                    |
| 6 ABlock Chan 1      |               |             | <input type="button" value="Set"/> |               |                                    |
| 7 ABlock Chan 2      |               |             | <input type="button" value="Set"/> |               |                                    |
| 8 ABlock Chan 3      |               |             | <input type="button" value="Set"/> |               |                                    |

Test Comments 1:   
 Test Comments 2:   
 Test Comments 3:   
 Test Comments 4:   
 Test Comments 5:   
 Test Comments 6:

Test Memo
 

Simple Demonstration with a milliK - Reference RTD n Cahnnel 1, Type N TC Channel 2 and 4-20mA on Cahnnel 3

# (Standard Information goes in Reference Standard under °C Test Setup)

 Current Interface Data
  Last Data Logged
  Trend Graph
 °C Test Setup
  Units Under Test

Test Parameters
 Reference Standard
 Default Decimal Places

Reference Temperature Conversion
 

☒ None
 Serial Number

☐ Thermocouple
 

**Note: Calibration Coefficients - must be calculated using MICROVOLTS**

$$y = at + bt^2 + ct^3$$

Where: y = voltage correction  
t = temperature(°C)

Type 
 Output Units

☐ ITS-90
 

**Above Water TP**

Coeff A 
 Coeff B 
 Coeff C 
 Coeff D

**Below Water TP**

Coeff A 
 Coeff B

W AI

Rwtp

☐ Correct Standard Value - using regression polynomial curve-fit
 

Coeff A 
 Coeff B 
 Coeff C 
 Coeff D

**Regression curve-fit as follows:**

$$y = Ax^3 + Bx^2 + Cx + D$$

Where: x = unit under test value  
y = corrected value

OK

Cancel

# Start the Test

- Click 
- Choose where to save the data from the resulting dialogue

 Current Interface Data
  Last Data Logged
  Trend Graph
 °C Test Setup

Test Parameters
 Reference Standard
 Default Decimal Places

Number of Test Points

☐ Set Temperature Manually

Stability of Reference Temperature

Spread Tolerance  Offset Limit

Use last **10** readings for stability check

Readings Per Setpoint AFTER Stability

Record **3** readings after stability

Setpoint Parking Temperature °C

☒ Park when test is finished

Logging Interval

|               | Setpoint |
|---------------|----------|
| Temperature 1 | 25       |
| Temperature 2 | 50       |
| Temperature 3 | 75       |
| Temperature 4 | 100      |

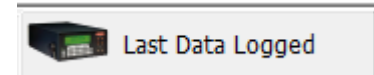
**Test Controls**






# Monitoring the Test

## Click Last Data Logged



- “Run Data” shows the status for all channels
- Here milliK CHAN 3 in mA vs the RTD Reference

Current Interface Data

Last Data Logged

Trend Graph

Test Setup

Units Under Test

Last Scan

Run Data

Data Files

|            | 3milliK CHAN 3 COM1 | Chan Mean | Reference | Ref Mean  | Setpoint  | Spread Tol | Offset Tol | Status        |
|------------|---------------------|-----------|-----------|-----------|-----------|------------|------------|---------------|
| Reading 1  | 15.947700           | 15.944950 | 74.533900 | 74.515100 | 75.000000 | TRUE       | TRUE       | pre-stability |
| Reading 2  | 15.947700           | 15.943460 | 74.532500 | 74.506250 | 75.000000 | TRUE       | TRUE       | pre-stability |
| Reading 3  | 15.947700           | 15.941360 | 74.531100 | 74.494060 | 75.000000 | TRUE       | TRUE       | pre-stability |
| Reading 4  | 15.947200           | 15.938470 | 74.528900 | 74.477340 | 75.000000 | TRUE       | TRUE       | pre-stability |
| Reading 5  | 15.946800           | 15.934510 | 74.525600 | 74.454540 | 75.000000 | TRUE       | TRUE       | pre-stability |
| Reading 6  | 15.946300           | 15.929100 | 74.521700 | 74.423640 | 75.000000 | TRUE       | TRUE       | pre-stability |
| Reading 7  | 15.944900           | 15.922060 | 74.514300 | 74.381730 | 75.000000 | FALSE      | TRUE       | unstable      |
| Reading 8  | 15.943000           | 15.912590 | 74.503100 | 74.325460 | 75.000000 | FALSE      | TRUE       | unstable      |
| Reading 9  | 15.940700           | 15.899860 | 74.489400 | 74.249960 | 75.000000 | FALSE      | TRUE       | unstable      |
| Reading 10 | 15.937500           | 15.882740 | 74.470500 | 74.148230 | 75.000000 | FALSE      | TRUE       | unstable      |
| Reading 11 | 15.932800           | 15.859690 | 74.445400 | 74.010750 | 75.000000 | FALSE      | TRUE       | unstable      |
| Reading 12 | 15.926700           | 15.828900 | 74.410600 | 73.826610 | 75.000000 | FALSE      | TRUE       | unstable      |
| Reading 13 | 15.918800           | 15.787520 | 74.363900 | 73.580230 | 75.000000 | FALSE      | TRUE       | unstable      |
| Reading 14 | 15.907600           | 15.732560 | 74.300900 | 73.249780 | 75.000000 | FALSE      | TRUE       | unstable      |
| Reading 15 | 15.892700           | 15.659830 | 74.216600 | 72.826860 | 75.000000 | FALSE      | TRUE       | unstable      |
| Reading 16 | 15.875900           | 15.564610 | 74.102600 | 72.269280 | 75.000000 | FALSE      | TRUE       | unstable      |
| Reading 17 | 15.850200           | 15.440560 | 73.951600 | 71.541850 | 75.000000 | FALSE      | TRUE       | unstable      |
| Reading 18 | 15.815700           | 15.282460 | 73.748100 | 70.605770 | 75.000000 | FALSE      | FALSE      | unstable      |
| Reading 19 | 15.769500           | 15.085450 | 73.472100 | 69.426190 | 75.000000 | FALSE      | FALSE      | unstable      |
| Reading 20 | 15.707000           | 14.846640 | 73.095700 | 67.979280 | 75.000000 | FALSE      | FALSE      | unstable      |

1milliK CHAN 1 COM19

2milliK CHAN 2 COM19

3milliK CHAN 3 COM19

4 ABlock Setpoint

5 ABlock Proc Var

6 ABlock Chan 1

7 ABlock Chan 2

8 ABlock Chan 3

Next Scan Due: 1:49:19 PM

Spread Error: 0.0188

Spread Tol: 0.1

Last Scan: 1:48:20 PM

Offset Error: 0.4849

Offset Tol: 4

Time Now: 1:48:38 PM

# End of the Test

- At the end of test the **Certificate Builder** is used to review the data and print certificates

