

TEGAM INC.**1830A
RF Power Meter for Metrology**

Quick Start Guide
PN# 1830A-904-01
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REV. B

What you will need to effectively utilize this guide:

1. Model 1830A
 - The Model 1830A is the bedrock for this quick start guide and will be used for every example.
2. Power Sensor
 - Either a TEGAM thermistor mount or an Agilent 478A can be used for the examples in this quick start guide.
3. Power Sensor cables
 - This is the connection between the Model 1830A and the power sensor.
 - CA-6-48 for 478A connection
 - CA-7-48 for TEGAM connection
4. LXI Cable (optional)
 - When demonstrating LXI capabilities a standard Ethernet cable can be used.
5. RF adapter (optional)
 - Depending on the RF source being measured an adapter may be required. A BNC to N adapter is provided.

Standard assumptions for using this guide:

1. Selecting a suitable RF signal generator for the examples in this guide:
 - Frequency Range dependant on sensor
 - Almost any CW RF power source can be used for the examples and demonstrations mentioned in this guide. It should be known that a 50 MHz reference output of an Agilent power meter was the RF source used when verifying this guide.

2. **UNDER NO CIRCUMSTANCES APPLY MORE THEN 30 mW TO THE MOUNT**
 - This caution pertains to Weinschel type coaxial thermistor bolometers designed to balance at RF off with approximately 30mW as well as Agilent temperature compensated thermistor mounts such as the 478A. DC substitution bolometry requires removal of DC to indicate applied power, so application of more RF than there is DC applied originally will inevitably result in an incorrect reading or even overheated thermistor. Refer to the manual of whichever sensor is being used for specific power limits.

3. Allow for necessary warm up time for each piece of equipment.
 - Although it is always nice to allow for proper warm up time, for the purpose of the examples in this guide it is not necessary.
 - Note that things such as zero level may not stabilize and they may drift a substantial amount during the duration of the demonstrations.

RF Power Measurement with an Agilent 478A:

1. Connections:

- Plug in all test and measurement equipment.
- Connect TEGAM cable (P/N CA-6-48) to the Model 1830A and 478A Power Sensor.



Figure 1 - CA-6-48

- Allow necessary warm up time for each piece of equipment.

2. The first screen is "Unit in Standby".

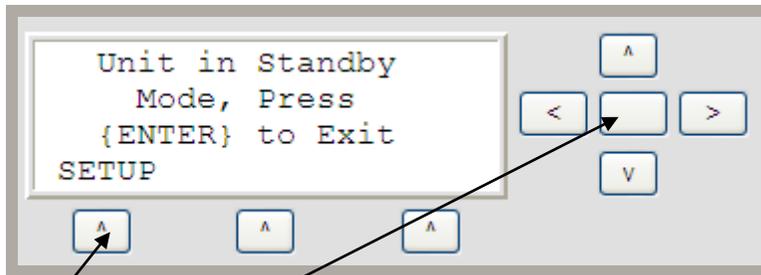


Figure 2 - Standby

3. In Standby there are two options:

- The **SETUP** soft-key
- The **ENTER** soft-key

4. For this section of the Quick Start Guide we are making a measurement with the 478A so we will need to put the 1830A in a state to use a 478A sensor.

5. Press the **SETUP** soft-key.

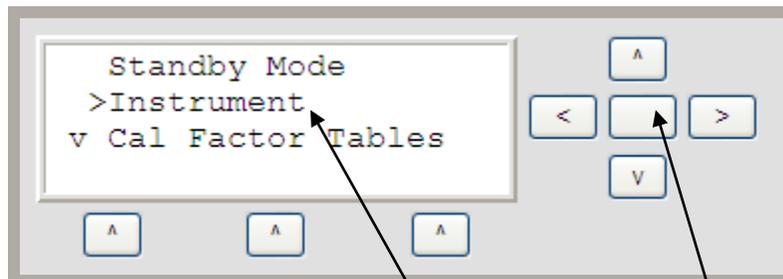


Figure 3 - SETUP Menu Options

6. Using the **up and down** soft-key select **Instrument** by pressing the **Enter** soft-key

7. Under the **Instrument** menu select **Comp Mode** by pressing the **Enter** soft-key.

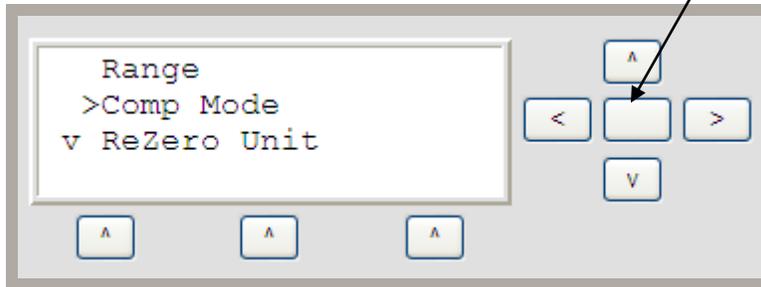


Figure 4 - Instrument Menu Options

8. Using the **up and down** soft-key select **432 Compatible** by pressing the **Enter** soft-key.

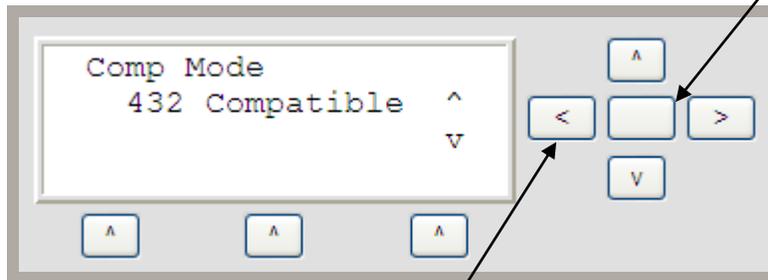


Figure 5 - Select 432 Compatible

9. Once **432 Compatible** is selected use the **Back** soft-key to get back to the **Standby** screen (Refer to Figure 2).

10. Press **Enter** soft-key, the screen should now look like Figure 6. Notice **432Comp** in upper right hand corner.

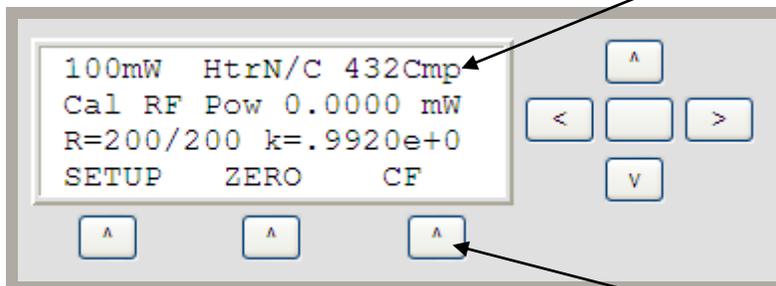


Figure 6 - Main 432Comp Mode Measure Screen

11. At this point we are able to enter a calibration factor "k" if desired by selecting the **CF** soft-key.

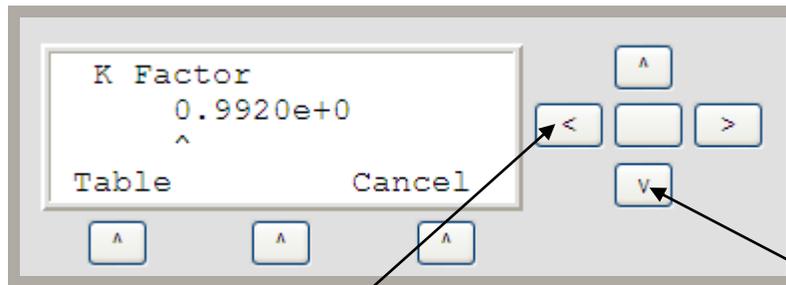


Figure 7 - K Factor

12. To change the K factor use **forward and back** soft-key to select "digit location" and **up and down** soft key to change "digit value".

13. Zero unit prior to measurement (this may take several seconds).

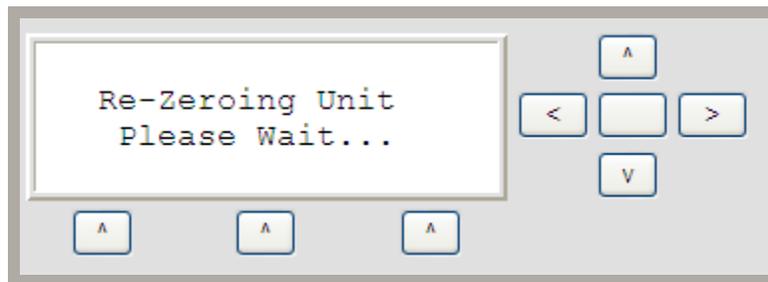


Figure 8 - Zero Unit

14. Connect or turn ON RF source and make your measurement.

RF Power Measurement with a Tegam Thermistor Mount:

1. Connections:

- Plug in all test and measurement equipment.
- Connect TEGAM cable (P/N CA-7-48) to the Model 1830A and TEGAM Thermistor Mount lug connections.
- Connect TEGAM cable (P/N CA-11-48 or P/N CA-10-48) to the Model 1830A and TEGAM Thermistor Mount heater connection.



Figure 9 - CA-7-48



Figure 10 - CA-10-48

- Allow necessary warm up time for each piece of equipment.

2. The first screen is "Unit in Standby".

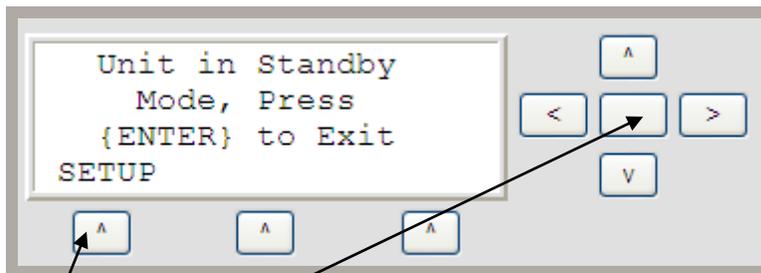


Figure 11 - Standby

3. In Standby there are two options:

- The **SETUP** soft-key
- The **ENTER** soft-key

4. For this section of the Quick Start Guide we are making a measurement with a TEGAM Thermistor Mount so we will need to put the 1830A in a state to use a TEGAM sensor.

5. Press the **SETUP** soft-key.

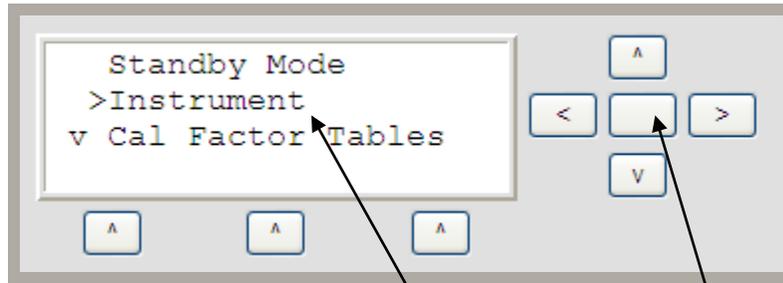


Figure 12 - SETUP Menu Options

6. Using the **up and down** soft-key select **Instrument** by pressing the **Enter** soft-key.
7. Under the **Instrument** menu select **Comp Mode** by pressing the **Enter** soft-key

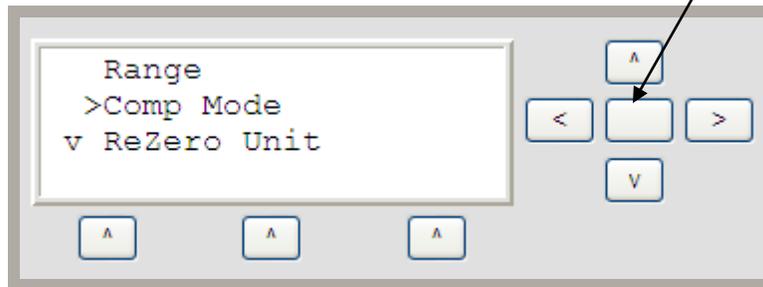


Figure 13 - Instrument Menu Options

8. Using the **up and down** soft-key select **No Compensation** by pressing the **Enter** soft-key

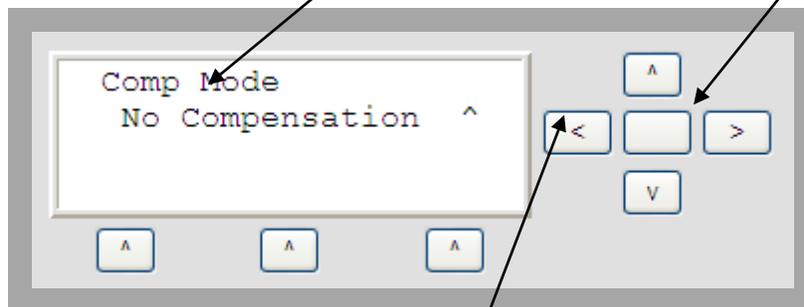


Figure 14 - Select No Compensation

9. Once **No Compensation** is selected use the **Back** soft-key to get back to the **Standby** screen (Refer to Figure 10).

NOTE: Factory Default Setting is for No Compensation

10. Press **Enter** soft-key, the screen should now look like Figure 6. Notice **NoComp** in upper right hand corner.

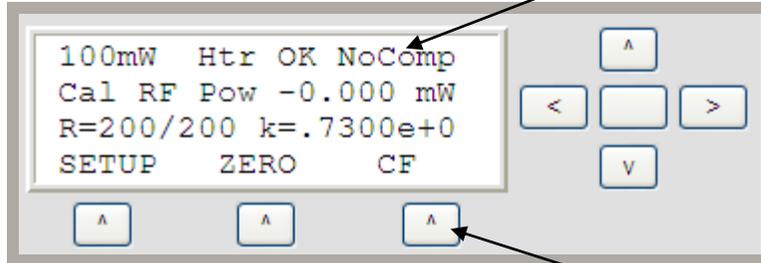


Figure 15 - Main NoComp Mode Measure Screen

11. At this point we are able to enter a calibration factor "k" if desired by selecting the **CF** soft-key.

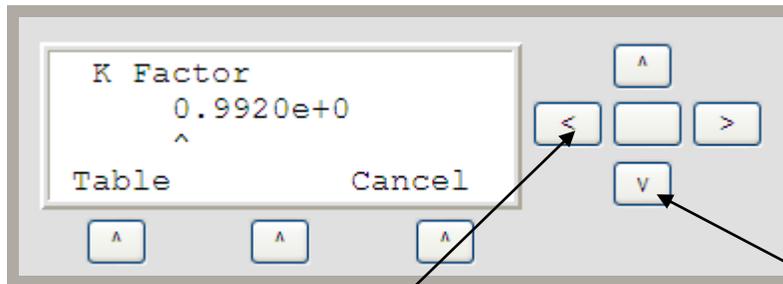


Figure 16 - K Factor

12. To change the K factor use **forward and back** soft-key to select "digit location" and **up and down** soft key to change "digit value".

13. Zero unit prior to measurement (this may take several seconds).

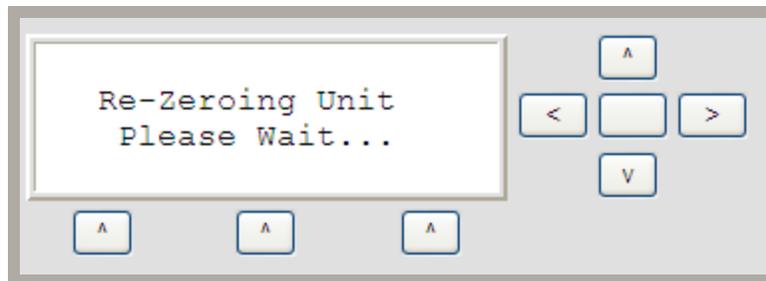


Figure 17 - Zero Unit

14. Connect or turn ON RF source and make your measurement.

LXI Configuration:

NOTE: Please consult your network administrator before adding 1830A to your DHCP network or changing your static network configuration

1. The 1830A default configuration is DHCP mode. This will allow the user to plug LXI cable (standard Ethernet cable) into a DHCP network and automatically attain an IP address. This section of the quick start guide is for customers that need to set a static IP address.
2. Connections:
 - Plug in 1830A.
 - Allow necessary warm up time for each piece of equipment.

Configuring the 1830A: (configure 1830A first then the PC):

3. The first screen is "Unit in Standby".

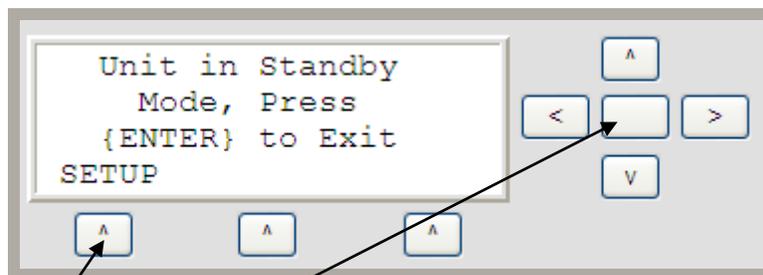


Figure 18 - Standby

4. In Standby there are two options:
 - The **SETUP** soft-key
 - The **ENTER** soft -key
5. For this section of the Quick Start Guide we are setting up the LXI configuration.
6. Press the **SETUP** soft-key.

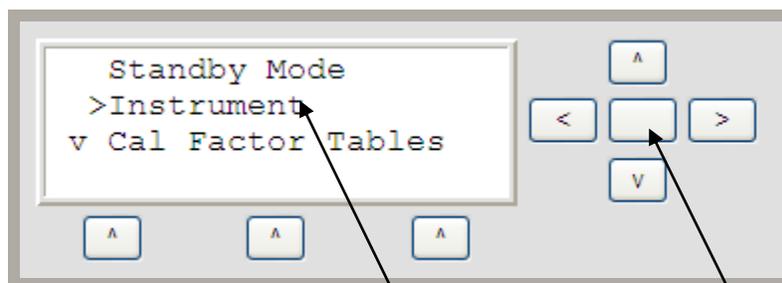


Figure 19 - SETUP Menu Options

7. Using the **up and down** soft-key select **Instrument** by pressing the **Enter** soft-key.

8. Under the **Instrument** menu select **IP Information** by pressing the **Enter** soft-key.

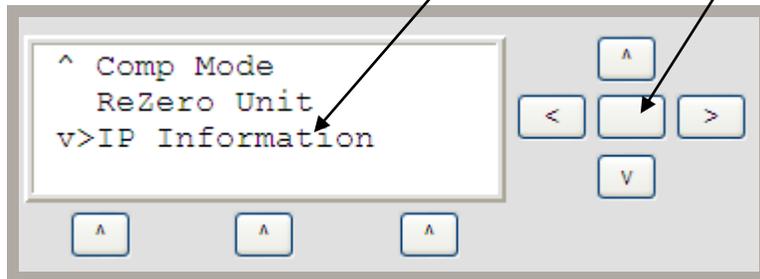


Figure 20 - Instrument Menu Options

9. There are six configurations that need to be made in a specific order. These selections can be found in the **IP Information** menu by scrolling up and down with the **up and down** soft-keys and using the **Enter** soft-key to change selected parameters.

- DHCP Enabled = False
- Auto IP Enabled = False
- Static IP Enabled = True
- IP address = 169.254.16.100
- Subnet Mask = 255.255.0.0
- Gateway = 169.254.0.0

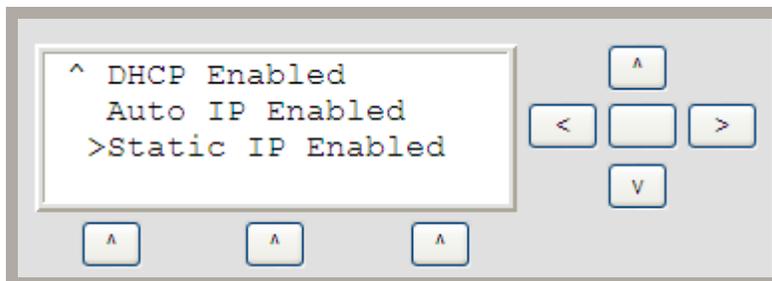


Figure 21 - IP Information Menu

Configuring the PC:

10. Once the IP Information is configured, the PC must be configured.
11. Open the properties page for TCP/IP and set the properties as shown in Figure 21.

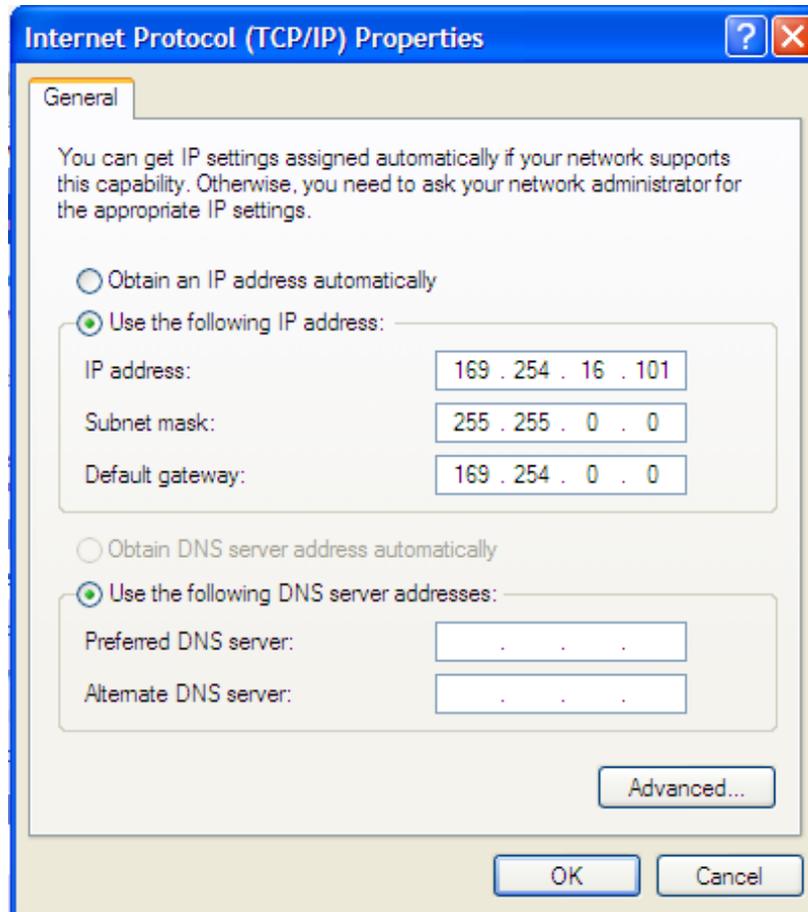


Figure 22 - TCP/IP Properties

12. Once configured, open a web browser and type http://169.254.16.100 and press enter on the keyboard. A screen similar to Figure 22 should appear. You are now connected to the 1830A via LXI.

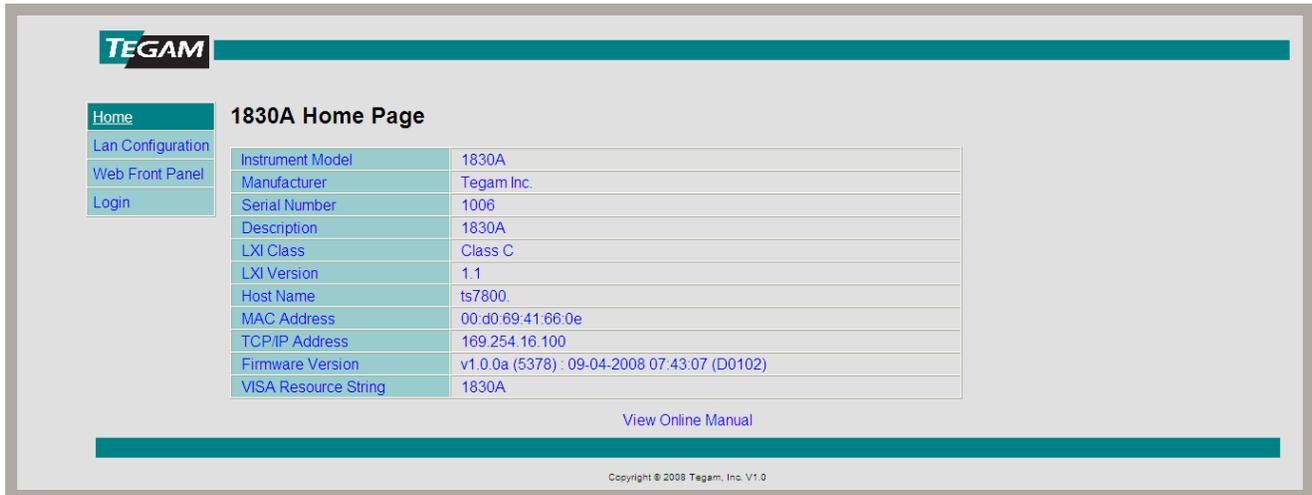


Figure 23 - 1830A LXI Home Page

Sensor Calibration File Upload:

1. The 1830A allows users to upload sensor calibration data for multiple sensors at one time through the LXI webpage.

NOTE: A file size of 5000 rows in excel was tested for this document. Tins will allow for 25 sensors with 200 data points each. More sensors can be added but each line adds processing time and load time.

2. Connections:
 - Plug in 1830A.
 - Allow necessary warm up time for each piece of equipment.
3. Create a "sensors" file:
 - File must be in .csv format.
 - Sensor #Serial Number can be any alpha-numeric format.
 - All frequencies must be greater than 1. (100KHz not .1MHz)
 - All cal factors must be in decimal format and less than 2.00.

	A	B	C	D	E
1	# 1830A Sensor Configuration Data				
2	# Serial Number	Frequency	Units	K Factor	
3	F1130A-2779	100	KHZ	0.9991	
4	F1130A-2779	200	KHZ	0.9952	
5	F1130A-2779	300	KHZ	0.9949	
6	F1130A-2779	455	KHZ	0.9963	
7	F1130A-2779	500	KHZ	0.9967	
8	F1130A-2779	1	MHZ	0.9968	
9	F1130A-2779	1.25	MHZ	0.9968	
10	F1130A-2779	3	MHZ	0.996	
11	F1130A-2779	5	MHZ	0.9971	
12	F1130A-2779	10	MHZ	0.9942	
13	F1130A-2779	20	MHZ	0.9941	
14	F1130A-2779	30	MHZ	0.9943	
15	F1130A-2779	40	MHZ	0.994	

Figure 24 - Sample Sensor Data File (sensors.csv)

4. Upload sensors.csv via the LXI webpage
 - Open the LXI webpage with a web browser.

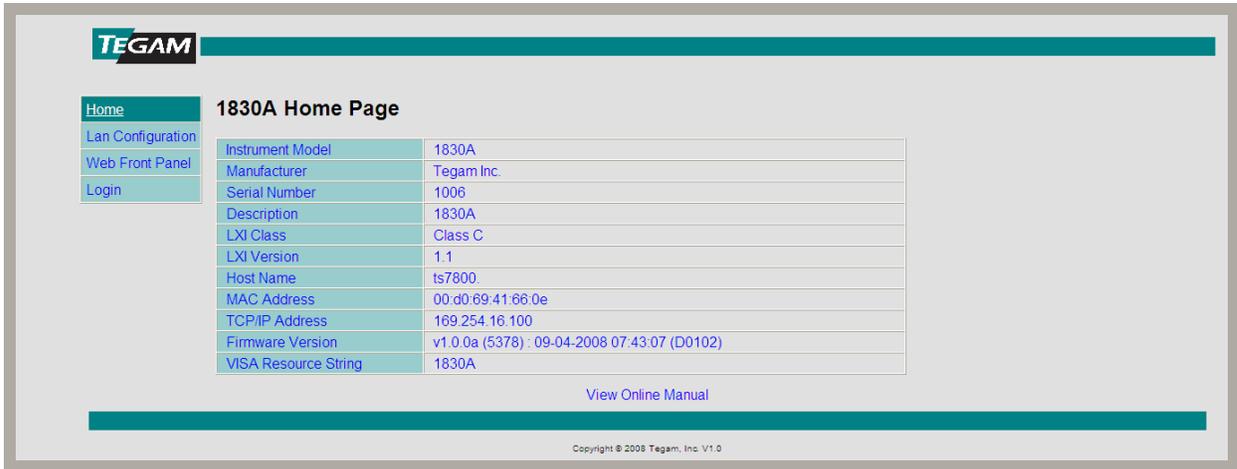


Figure 25 - LXI Home Page

- Login to the LXI webpage. (Password is admin)
- Navigate to Sensor Data page.
- Browse to the file created and upload file. (This may take several seconds depending on file size)

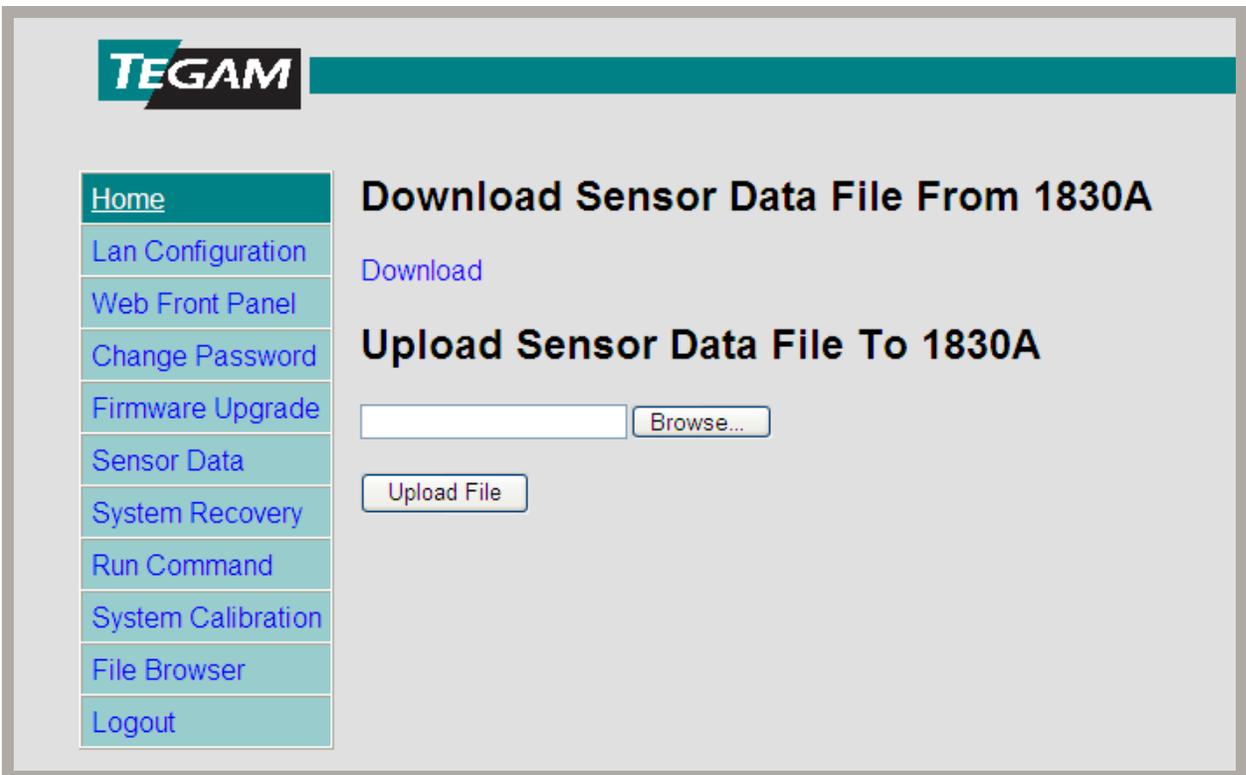


Figure 26 - Upload Sensor Data File

5. Sensor calibration tables now appear on 1830A.

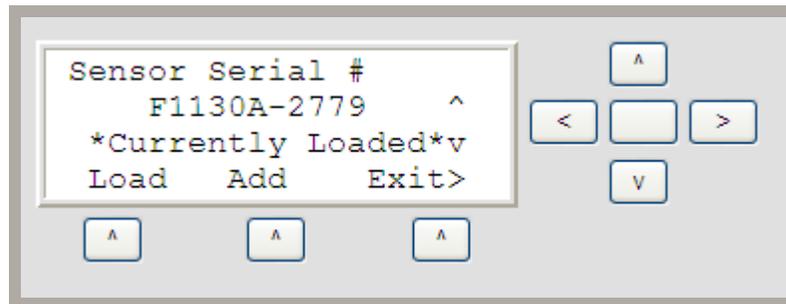


Figure 27 - Loaded Sensor Data

Summary:

The TEGAM Model 1830A is a very flexible as well as a powerful RF power meter. LXI compliments an easy to use front panel interface to make calibration a simple process. For a more in-depth discussion on the topics of the Quick Start Guide, please refer to the Model 1830A User Manual or contact TEGAM directly.