

## 6. Data Logging

**Data Log** Use the 'Data Log' key to log readings over time or based on reading count.

Readings are saved and displayed within a trend chart as they are logged. (The application can be stopped before the duration ends.)



Example: - log 1,000 readings  
- use default path and file name

**File Select** - specify location of data log file (default = Internal\DataLog)

**Duration Readings** - set logging duration ('Readings')

**Set Count** - number of readings to log

**Run** - starts data logging (select 'Yes' to overwrite existing file)



**View Results** - displays the trend chart when logging is complete.

## 7. Utility Functions

**Utility** Utility functions are counter operations and settings common to multiple types of counter measurements. Below is a summary of what the utility menus provide.

**Store / Recall** - store and recall user-defined states, set specific power-on states, restore factory default settings

**I/O Config** - enable/edit LAN, USB, and GPIB interface settings

**Cal / AutoCal** - perform a calibration or auto-calibration, read temperature within instrument

**Instr Setup** - self-test, time base, measurement time out, auto-level, phase measurement format

**System Setup** - display control, date/time settings, folder and data/state file operations, browser control (internal and external memory)

**Battery Option** - battery option 300 enable and charge level (if installed)

### For Further Information

1. Keysight 53220A/53230A User's Guide
2. Keysight 53210A/53220/53230A Service Guide
3. Keysight 53220A/53230A Programmer's Reference
4. Keysight 53210A/53220/53230A Product Reference CD  
www.Keysight.com/find/53220A or www.Keysight.com/find/53230A

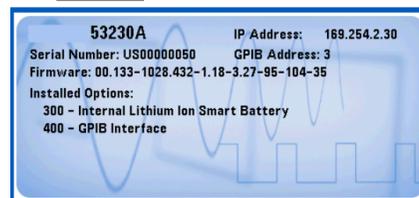
## Using the 53220A/53230A Web User Interface

The Web User Interface (UI) is a built-in instrument utility that provides SCPI programming control of the instrument through its LAN interface. The Web UI uses a Java™-enabled PC Web browser and requires no external instrument drivers.

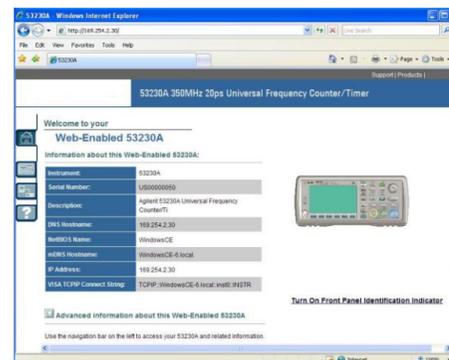
- 1 Connect a standard LAN cable directly between the counter and the PC, or between the counter and a network switch. Open the Web browser.
- 2 Obtain the IP address from the counter's 'About' window using the following keys:

**Help** - open the Help topic window

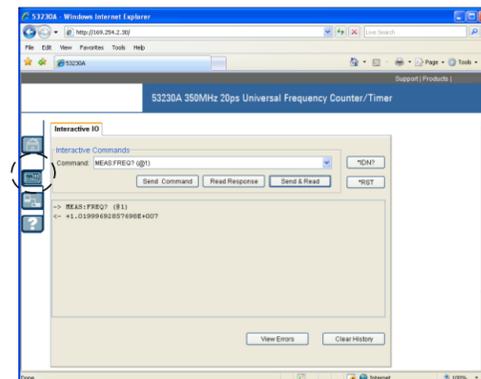
**About** - press the About softkey



- 3 Enter the IP address in the browser's address window. This opens the Web UI home page.



- 4 Open the Interactive IO window by clicking on the 'Remote Control' menu icon.



If prompted, click on 'Enter Password' to view the password protected page. When shipped from Keysight, there is no password protection.



Enter commands from the counter's SCPI command set using the 'Command' window. Query commands which include '?' return data and can be sent using **Send & Read**. Commands which do not return data are sent using **Send Command**.

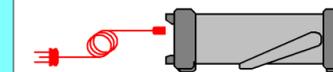
# Keysight 53220A/53230A 350 MHz Universal Frequency Counter/Timer Quick Start Tutorial

**Product Reference CD-ROM.** All product documentation, software, and examples are included on the *Keysight 53210A/53220A/53230A Product Reference CD-ROM*.

## 1. Preparing for Use

**Connect the Power Cord.**

Then plug in the instrument.



**Check the Web for the latest firmware**

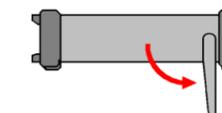
The Keysight 53220A/53230A counter automatically senses standard power line voltages and frequencies. There are no switches to set or fuses to change.

**Adjust the Carry Handle**

Grasp the handle by the sides and *pull outward*:



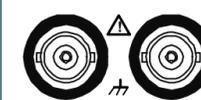
Adjust the handle to the desired position:



To remove, see instructions on underside of handle.

**Input Terminals**

Channels 1-2  
BNC (f)



7.5 Vpk into 50W  
50V Max (AC/DC)  
Damage Level: 350 Vpk

Channel 3  
Opt. 106/115  
N-Type (f)

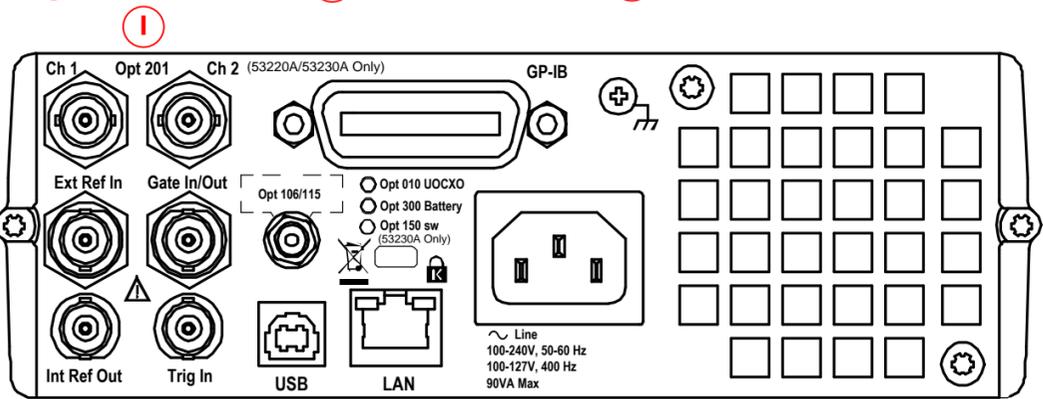
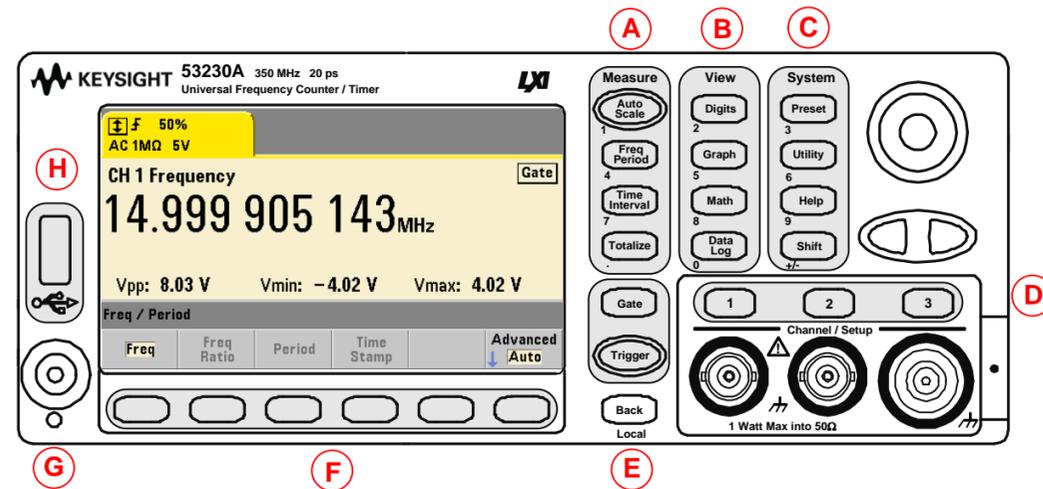


Max input +27 dBm  
(5 Vrms)

Battery Operation: 42V Max



## Panels at a Glance



### Front Panel Features

- A Counter Measurements
- B Display Control
- C Instrument Wide
- D Channel Configuration
- E Triggering and Gating
- F Soft Key Area
- G On / Standby
- H USB "Host" Port

User's Guide  
(Chapter 3)  
(Chapter 6)  
(Chapter 1)  
(Chapter 4)  
(Chapter 5)  
(all chapters)  
(Chapter 1)  
(Chapter 7)

### Rear Panel Features

- I Parallel Rear Panel Inputs
- J Remote Interface (USB, LAN)
- K External Triggering and Gating
- L Frequency Reference

User's Guide  
(Chapter 4)  
(Chapter 2)  
(Chapter 5)  
(Chapter 3)

Front and rear panels shown with product Option 106/115 (Channel 3) and Option 400 (GPIB).

## 1. Power-On, Local Control, Built-In Help, Alphanumeric Entry



Turns the counter on and off (standby). A self-test and auto-cal occurs during the power-on sequence and the counter is set to its preset settings.



Transfers instrument control from the remote interface (LAN, USB, GPIB) to the front panel. Also displays the previous softkey menu.



Displays help topics which can be selected using the rotary knob. Press and hold any function key or softkey to display help for that key or feature.



Use the rotary knob and arrows to cycle through and enter alphanumeric characters and to navigate through files and folders when browsing the file system.

## 2. Setting the Measurement Function



Place the counter in a known state before selecting the measurement.

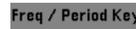


Select a measurement function by pressing the corresponding key within the 'Measure' column. Select a specific measurement using the softkeys below the display.



Use Auto Scale (signals > 100 Hz) to automatically detect the input signal and set the range and trigger threshold.

Internal triggering automatically starts the measurements.



Use the rotary knob and arrows to cycle through and enter alphanumeric characters and to navigate through files and folders when browsing the file system.

## 3. Channel Selection

Use the channel number keys to select the active input channel and display the channel configuration softkeys:



Example (Ch.1): - DC coupling  
- 50Ω impedance  
- 2.0V trigger threshold

Chan 1 Setup					
Coupling	Impedance	Range	Level Setup	BW Limit	Probe
AC	DC	1MΩ 50Ω	5V 50V	Off 100k	None 10:1

Chan 1 Setup			
Auto Level	Level	Slope	NoiseRej
Off	On	Pos	Off
Off	On	Neg	On



Tip: numeric values can also be entered using the "shifted" numeric keys.

## 4. Triggering and Gating



Use the 'Trigger' key to select the trigger configuration softkeys (source, readings per trigger, delay), or to issue a manual trigger.

Example: - trigger source 'Manual' ('Trigger' key)  
  
- 1000 readings per trigger (use shifted numeric keys)

Trigger Setup		
Source	Rdgs/Trig	Trig Delay
Manual	1 000	



Use the 'Gate' key and gate softkeys to specify gate time, gate delay, and other gate parameters.

## 5. Math, Graphics, Reading Storage

### Math



Use the 'Math' key to view the math functions available through the softkeys. 'All Math' plus the selected function must be On.

Math				
All Math	Smoothing	Null / Scale	Statistics	Limits
Off	On			

Math			
Statistics	Show		Reset Stats
Off	On	P-P Allan	

Example: - compute statistics of 1,000 readings.



Press the 'Trigger' key to send a single trigger and start the measurements (Steps 2-4).

CH 1 Frequency		Wait For Trig
Mean: 10.019 150 241MHz	Max: 10.019 970 055MHz	
StdDev: 3.151 498 375 8kHz	Min: 9.999 969 850 4MHz	
Count: 1 000	Allan Deviation: 432.306 796 29 Hz	

Trigger Setup		
Source	Rdgs/Trig	Trig Delay
Manual	1 000	

### Graphics



Use the 'Graph' and related softkeys to select a trend chart or enable a histogram for graphical representations of the measurements.

Graph	
Trend Chart	Histogram
Off	On



Use the 'Trend Chart' softkey to view a chart of the readings taken, or currently being taken.

Graph				
Chart	Options	Save Readings	Zoom & Markers	Clear Readings
Off	On			

Example: - trend chart of 1,000 readings  
- view last 100 readings  
- open Zoom & Markers menu



Graph				
Marker1	Marker2	LockMrkrs	Zoom	Pan
Off	On	Off	On	On

### Reading Storage



Use the 'Save Readings' and 'Export Readings' softkeys within the trend chart or histogram menus to save data internally or to an external USB device.



Use the front panel knob and arrows to create file names and browse through the file system.

Action: Export data		
Path:	File:	
Internal	DATA_1	

Action: Export		
Export	Browse	Export Readings