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.)

DataLog hh.mm.ss 0.00.00

| File Select | Start Delay | Duration Time | Set Time | Run |

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

Data Logger Application

File name: Internal\DataLog
Start Delay: 00:00:00
Duration: 1000
(Readings)

Press Run to start

DataLog 1 000

| File Select | Start Delay | Duration Readings | Set Count | Run | View Results |

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

Duration Readings - set logging duration ('Readings')

Set Count - number of readings to log

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

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

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. *Agilent 53220A/53230A User's Guide*

2. *Agilent 53210A/53220/53230A Service Guide*

3. *Agilent 53220A/53230A Programmer's Reference*

4. *Agilent 53210A/53220/53230A Product Reference CD*

www.agilent.com/find/53220A or www.agilent.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

Agilent 53230A
Serial Number: US00000050
Firmware: 00.133-1028.432-1.18-3.27-95-104-35
Installed Options:
300 – Internal Lithium Ion Smart Battery
400 – GPIB Interface
IP Address: 169.254.2.30
GPIB Address: 3

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.

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**.

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

This page is password protected
Enter Password:
☐ Remember password for this session
OK   Cancel

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

1. Preparing for Use

Check the Web for the latest firmware

Connect the Power Cord.

Then plug in the instrument.

The Agilent 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)

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

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

Max input +27 dBm
(5 Vrms)

Battery Operation: 42V Max

Panels at a Glance
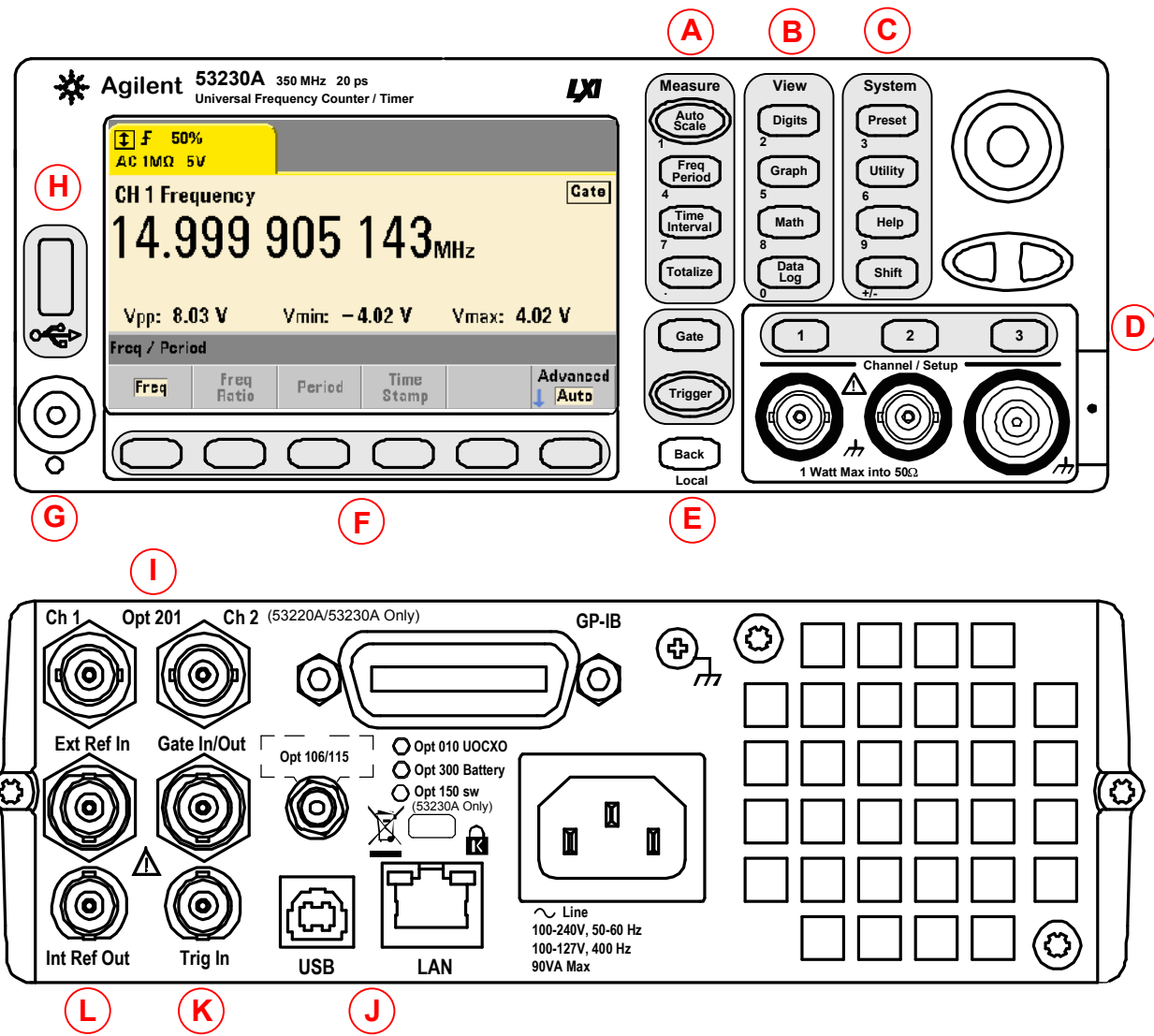
Front Panel Features

		User's Guide
A	Counter Measurements	(Chapter 3)
B	Display Control	(Chapter 6)
C	Instrument Wide	(Chapter 1)
D	Channel Configuration	(Chapter 4)
E	Triggering and Gating	(Chapter 5)
F	Soft Key Area	(all chapters)
G	On / Standby	(Chapter 1)
H	USB "Host" Port	(Chapter 7)

Rear Panel Features

		User's Guide
I	Parallel Rear Panel Inputs	(Chapter 4)
J	Remote Interface (USB, LAN)	(Chapter 2)
K	External Triggering and Gating	(Chapter 5)
L	Frequency Reference	(Chapter 3)

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

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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.

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

Help — 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.

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2. Setting the Measurement Function

Preset — 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.

Freq / Period Key

Freq	Freq Ratio	Period	Time Stamp		Advanced Auto

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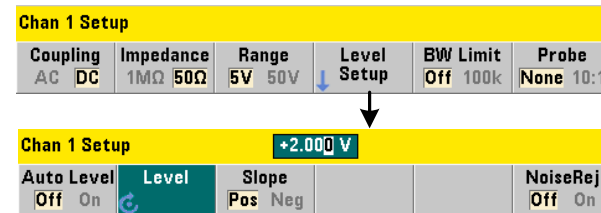
---

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

Chan 1 Setup +2.000 V

Auto Level Off On	Level	Slope Pos Neg		NoiseRej Off On

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

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4. Triggering and Gating

Trigger — 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)
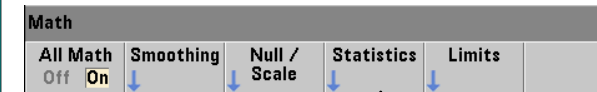- 1000 readings per trigger (use shifted numeric keys)

Trigger Setup 1 000

Source Manual	Rdgs/ Trigger	Trig Delay		

Gate — Use the 'Gate' key and gate softkeys to specify gate time, gate delay, and other gate parameters.
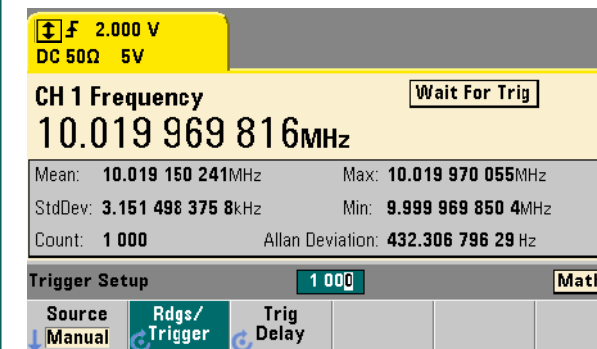
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5. Math, Graphics, Reading Storage

Math

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 Off On	Smoothing	Null / Scale	Statistics	Limits	

Math Math On

| Statistics Off On	Show P-P Allan			Reset Stats

Example: - compute statistics of 1,000 readings.

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

↕ Ƒ 2.000 V
DC 50Ω 5V

CH 1 Frequency Wait For Trig
10.019 969 816 MHz

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 1 000 Math On

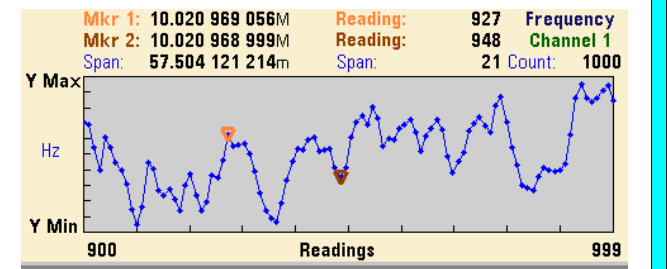| Source Manual	Rdgs/ Trigger	Trig Delay		

Graphics

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

Graph Math On

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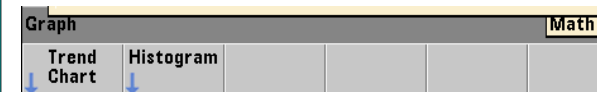
Trend Chart — Use the 'Trend Chart' softkey to view a chart of the readings taken, or currently being taken.

Graph Math On

Chart Off On	Options		Save Readings	Zoom & Markers	Clear Readings

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

Mkr 1: 10.020 969 056M	Reading: 927	Frequency
Mkr 2: 10.020 968 999M	Reading: 948	Channel 1
Span: 57.504 121 214m	Span: 21	Count: 1000

Y Max
Hz
Y Min
900   Readings   999

Graph 927 Math On

Marker1	Marker2	LockMrkrs Off On	Zoom	Pan	Show All

Reading Storage

Save Readings / **Export Readings** — 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: | Internal |
| File: | DATA_1 |

Action: Export	Browse	Path \ File		Export Readings