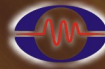


# U6200A SPECIFICATION LIST



**PICOTEST**<sup>®</sup>

# U6200A

## Marvelous 6GHz Counter Plus 400MHz Universal Solutions

### WITH GREAT FEATURES

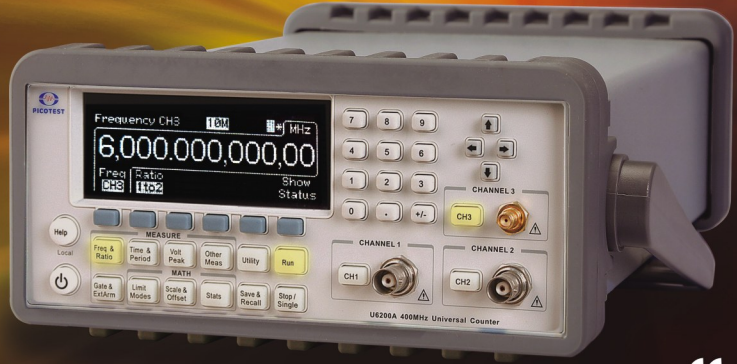
- CHANNEL 3 PROVIDES 375MHz – 6GHz FREQUENCY RANGE.
- CHANNEL 1 & 2 PROVIDE 1mHz ~ 400 MHz FREQUENCY RANGE.
- 12 DIGITS RESOLUTION WITH 1S GATE TIME.
- 40 PS TIME DOMAIN FUNCTION RESOLUTION.
- TIME DOMAIN FUNCTION (RISE/FALL TIME, PULSE WIDTH, TIME INTERVAL), PEAK VOLTAGE, PHASE.
- TIMEBASE REFERENCE TEMPERATURE STABILITY < 1 PPM.
- MULTI-PARAMETER DISPLAY OF RESULTS.
- EASY-TO-USE KEYS WITH LIGHT.
- OPERATION INSTRUCTIONS ON BUTTONS.
- CONNECTION VIA USB, ETHERNET 10M/100M & GPB & GPIB.
- SUPPORT IEEE488.2/USB/TMC.
- SUPPORT WEBSITE.
- SUPPORT A HIGH STABILITY OVEN (OPTIONAL).
- PROVIDE FREE PC SOFTWARE.

Channel 1 & 2 Input Specifications	
DC Coupled	1 mHz to 400 MHz
AC Coupled	200 KHz to 400 MHz (50 D)
FM Tolerance	30 Hz to 400 MHz (1 MD)
Voltage Range and Sensitivity	
1 mHz to 225 MHz	20 mVrms to ±5 V ac + dc (Medium & High)
	25 mVrms to ±5 V ac + dc (Low)
	(75 mVrms with optional rear connectors)
225 MHz to 400 MHz	30 mVrms to ±5 V ac + dc
	(75 mVrms with optional rear connectors)
Channel 1 & 2 Input Characteristics	
Impedance (ATT X 1, 1 MD Capacitance)	1 MO or 50 Ω
ATT X 10, 1 MD Capacitance)	24 pF
Coupling	AC or DC
Low-Pass Filter	100 KHz (or disabled)
	>20 dB to 1 MHz
Input Sensitivity	Selectable between Low, Medium (default), or High
	Medium is approximately 1.35 x High Sensitivity, low is approximately 1.7 x High Sensitivity.
Voltage Range and Sensitivity (Single-Shot Pulse)	
1.5ns to 10ns Pulse Width	80 mVpp to 10 Vpp
	(150 mVpp with optional rear connectors)
>10 ns Pulse Width	50 mVpp to 10 Vpp
	(150 mVpp with optional rear connectors)
Trigger Level (ATT x 1)	
Range	±5 125 V
Accuracy	±15 mV ± 1% of trigger level)
Resolution	2.5mV
Trigger Slope	Positive or Negative
Auto Trigger Level	0 to 100% in 1% steps
Frequency	Peak Voltage fast mode = 10 KHz
	Peak Voltage slow mode = 100 KHz
	Amplitude = 100 mVpp (No amplitude modulation)
Damage Level	
DC-400 KHz, 1 MD	12 Vrms
0 to 3.9 KHz, 50 D	350 V dc ± ac pk
3.5 KHz to 100 KHz, 1 MD	350 V dc ± ac pk linearly derated to 12 Vrms
100 KHz to 400 KHz, 1 MD	12 Vrms
Attenuator	
Voltage Range	x10
Trigger Range	x10
Channel 3 Input Specifications	
Frequency Range	375 MHz to 6 GHz
Channel 3 Input Characteristics	
Impedance	50 Ω
Coupling	AC
VSWR	2 ± 0.1
Power Range and Sensitivity (Sinusoid)	
375 MHz to 500 MHz	-16 dBm to +15 dBm
500 MHz to 1 GHz	-20 dBm to +15 dBm
1 GHz to 2 GHz	-23 dBm to +15 dBm
2 GHz to 4 GHz	-25 dBm to +15 dBm
4 GHz to 5 GHz	-21 dBm to +15 dBm
5 GHz to 5.5 GHz	-20 dBm to +15 dBm
5.5 GHz to 6 GHz	-17 dBm to +15 dBm
Damage Level	
>25 dBm, DC to 12 V	
External Arm Input Specifications	
Signal Input Range	LVTTL and TTL compatible
	Timing Restrictions
Pulse Width	>50 ns
Transition Time	<250 ns
Start-to-Stop Time	>50 ns
Damage Level	12 Vrms
External Arm Input Characteristics	
Impedance	1KΩ
Input Capacitance	17 pF
Start Slope	Positive or Negative
Stop Slope	Positive or Negative
Notes	1. External Arm is available for all measurements except Peak Voltage. 2. External Arm is referred to External Gate for some measurements.
Internal Time Base Stability	
Standard (0° to 50°C)	High Stability Oven (UB200-0pt01)
Temperature Stability (referenced to 25°C)	± 1 x 10 <sup>-6</sup> ± 5 x 10 <sup>-9</sup>
Aging Rate	Per Day ± 8 x 10 <sup>-8</sup>
	Per Month ± 8 x 10 <sup>-8</sup>
	Per Year ± 2 x 10 <sup>-6</sup> ± 8 x 10 <sup>-8</sup>
Run-on stability vs. time (30 min.)	± 2.0 x 10 <sup>-8</sup> (referenced to 24 hours)
Calibration	Electronic

External Time Base Input Characteristics	
Voltage Range	1 mHz to 400 MHz
Damage Level	200 mVrms to 10 Vrms
Threshold	0V
Impedance	1 KΩ
Input Capacitance	25 pF
Input Frequency	10 MHz
Internal vs. External Time Base Selection	Manual: Select Internal or External Automatic: Internal used when External not present (default)
Time Base Output Specifications	
Output Frequency	10 MHz
Voltage	570 mVpp (0 dBm), typical
Impedance	50 Ω (typical), AC coupled
Measurement Specifications	
Frequency Period Channel 1 and 2	1 mHz to 400 MHz (2.5 ns to 1000 s)
Trigger	Default setting is Auto Trigger at 50 %
*Auto* Gate Time	0.1 sec
STD CH 3	375 MHz to 6 GHz (0.166 ns to 2.6 ns)
Frequency Ratio	CH 1/ CH 2, CH 1/ CH 3, CH 2/ CH 1, CH 3/ CH 1 (Measurement is specified over full signal range of each input)
Results Range	10E-10 to 10E+11
*Auto* Gate Time	0.1 sec
Time Interval	Measurement is specified over the full signal ranges of Channels 1 and 2. The width of the pulse must be greater than 1 ns. Frequency range to 300 MHz.
Trigger	Default setting is Auto Trigger at 50 %
Results Range	-0.5 ns to 10E+5 s
Resolution	40 ps
RMS Resolution	100 ps
Pulse Width Time	
Measurement is specified over the full signal range of Channel 1. The width of the pulse must be greater than 1 ns. Frequency range to 300 MHz.	
Pulse Selection	Positive or Negative
Trigger	Default setting is Auto Trigger at 50 %
Results Range	1.5 ns to 10E+6 s
Resolution	40 ps
RMS Resolution	100 ps
Rise/Fall Time	
Measurement is specified over the full signal range of Channel 1. The width of the pulse must be greater than 1 ns. Frequency range to 300 MHz.	
Edge Selection	Positive or Negative
Trigger	Default setting is Auto Trigger at 10 % and 90 %
Results Range	2 ns to 10E+5 s
Resolution	40 ps
RMS Resolution	100 ps
Phase	
Measurement is specified over the full signal range of each input. The width of the pulse must be greater than 1 ns. Frequency range to 300 MHz.	
Results Range	-180° to +360°
Resolution	40 ps
RMS Resolution	100 ps
Duty Cycle	
Measurement is specified over the full signal range of Channel 1. The width of the pulse must be greater than 1 ns. Frequency range to 300 MHz.	
Trigger	Default setting is Auto Trigger at 50 %
Results Range	0 to 1
Resolution	40 ps
RMS Resolution	100 ps
Totalize	
Measurement is specified over the full signal range of Channel 1. The width of the pulse must be greater than 1 ns. Frequency range to 400 MHz.	
Pulse Selection	Positive or Negative
Trigger	Default setting is Trigger at 0 V
Results Range	0 to 10E+15
Resolution	1 count
Peak Voltage	
Results Range	-0.1 V to ± 5.1 V
Resolution	2.5 mV
DC Signals	15 mV ± 2 % of V peak-to-peak amplitude greater than 200 mV
DC Signals (ATTx10)	150 mV ± 2 % of V peak-to-peak amplitude greater than 1 V
100 KHz – 10 KHz	15 mV ± 2 % of V
10 KHz – 5 MHz	15 mV ± 2 % of V
5 MHz – 60 MHz	15 mV ± 2 % of V
60 MHz – 300 MHz	15 mV ± 2 % of V

General Specifications		
Item	Limitation & Deviation	219 x 85 x 350 mm (max)
Power Supply Voltage	100 V / 240 V ± 10 % 50 Hz ± 10 %	300 g
Power Requirements	100 V / 120 V ± 10 % 40 Hz ± 10 %	Safety
Operating Humidity	90 % Maximum	EMC
Operating Environment	Maximum relative humidity 85% for temperature to 31°C decreasing linearly to 50% relative humidity at 40°C	EN 61326-1 EN 61010-1 EN 61010-2-1
Storage Temperature	-40 to 70°C	Warranty
Operating Altitude	Up to 2000 m	1 Year
		1. 10000-hour mean time between failures (MTBF) based on MIL-HDBK-217F
		2. 10000-hour mean time between failures (MTBF) based on MIL-HDBK-217F
		3. 10000-hour mean time between failures (MTBF) based on MIL-HDBK-217F

Area Agency Information:





# PICOTEST®

# U6200A

## Resolution: 12 Digits & Frequency : 6 GHz

The Picotest U6200A universal counter, whose production procedures conform to ISO 9001, has frequency resolution of 12 digits per second (Figure-1), 40 ps time interval resolution and a complete set of test and analysis features. The standard U6200A's CH3 comes with the range from 375 MHz to 6GHz and the standard CH 1 & 2 from 1 mHz to 400 MHz.



Figure-1

## Great Features for Universal Purposes

The Picotest U6200A also provides great features including Frequency & Ratio (11 Digits/Sec.), Time interval, Period (2.5 ns to 1000s), Duty Cycle, Pulse Width, Rise/Fall Time, Peak Voltage (100 Hz ~300 MHz), Phase, Totalize, Temperature Stability (< 1 PPM), Aging Rate (< 2 PPM per year), timebase reference channel (Figure-2) and complete Front-End Isolation. Moreover, it offers 20 memories (Figure-3) for storing frequently-used operations.



Figure-2

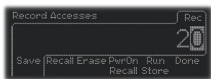


Figure-3

## Full Math Functions & Easy Operation Panel

The Picotest U6200A offers built-in statistics and math functions. Users can do general, simultaneous measurements, count in mean, min/max, delta and standard deviation (Figure-4). On the other hands, the scale & offset button can be easily used for compensation purpose according to users' applications. In addition, to reach these measurements, user can easily use the numeric buttons to define settings. Moreover, the U6200 also provides users the visible light buttons as functions are actuated (Figure-5).

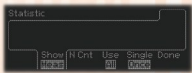


Figure-4



Figure-5

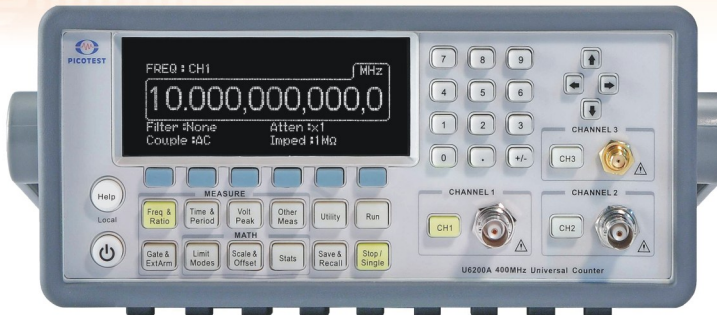


Figure-6



Figure-7



Figure-8

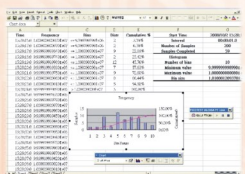


Figure-9

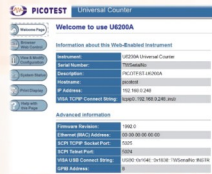


Figure-10

## Fast Measurement & Special Application

The U6200A supports real-time digital signal processing technology, which is applied to analyze data as simultaneously getting new readings and speeding measurement. The "Limit Modes" is worth to be mentioned, i.e. users can set margin according to their specific measurements. Via Go-On or Stop and USB Output settings (Figure-6), the U6200A will keep or stop measuring as a limit is exceeded, and generate an output signal to trigger external devices.



## Efficient After-Service

By the incredible calibration design and detailed user's manual, calibration service (Figure-7) is not the exclusive business for specific labs or calibration centers any more. And with 1-year warranty, Picotest provides full service including calibration and repair. Users can leave messages on Picotest website <http://www.picotest.com.tw/contact.asp> (Figure-8) or via the address [sales@picotest.com.tw](mailto:sales@picotest.com.tw) for more technical assistance.



Figure-7



Figure-8

## Free Software & Familiar SCPI Commands

Via a USB or an optional GPIB interface, users can get data logs (Figure-9) by Microsoft Excel®. Furthermore, U6200A supports a webserver function, so users can easily control it via a LAN interface (Figure-10) by inputting an Ethernet address (Default: 192.168.0.247) on web browsers. In addition, by the SCPI commands compatible to Agilent 53132A, the Picotest U6200A can provide familiar syntax string for users' applications. For more command information, please refer to the Section 5.4 of the U6200A User's Manual.