



# UQ2000L Series

## DIGITAL STORAGE OSCILLOSCOPE

50MHz / 100MHz (NEW 7 inch Large Screen)



### FEATURES

- 500MSa/s / 1GSa/s Sampling Rate
- 2 Channels
- 7 in LCD Color Display

### APPLICATIONS

- Industrial Power Design, Troubleshooting, Installation, and Maintenance.
- Electronics Design, Troubleshooting, Installation, and Maintenance
- Circuit Design & Debug
- Educational Lab & Training Institutions
- Repair & Service
- Production Test & Quality Inspection

### CHARACTERISTIC:

Model	Bandwidth	Real-time Sampling Rate	Display
UQ2052CL	50MHz	500MS/s	Color
UQ2052CEL	50MHz	1GS/s	Color
UQ2102CEL	100MHz	1GS/s	Color

Sampling	
Equivalent sampling	25 GS/s
Sampling	Sampling, peak detect, average
Average value	When all channels have made N samplings simultaneously, N is selectable from 2, 4, 8, 16, 32, 64, 128 to 256

Input	
Input coupling	DC, AC, GND
Input impedance	1MΩ±2% in parallel with 20±3pF
Probe attenuation factor	1X, 10X, 100X, 1000X
Maximum input voltage	400V (DC + AC Peak, 1MΩ input impedance)
Time delay between channels (Typical)	150ps

<b>Horizontal</b>	
Waveform interpolation	Sin (x) / x
Saving depth	25K for single channel; 12.5K for dual channels
Scanning range (s/div)	2ns/div-50s/div (UQ2102CEL, at 1-2-5 increment); 5ns/div-50s/div (UQ2052CL, at 1-2-5 increment).
Accuracy of sampling rate and delay time	±50ppm (any time interval ≥1ms)
Time interval (ΔT) Measurement accuracy (full bandwidth)	Single : ± (1 sampling time interval + 50ppm x reading + 0.6ns); > 16 average values : ± (1 sampling time interval + 100ppm x reading + 0.4ns)

<b>Vertical</b>	
A/D converter	8-bit resolution
Deflection factor range (VOLTS/DIV)	1 mV/div ~ 20V/div (at input BNC)
Position range	± 10 div
Analog bandwidth	100MHz (UQ2102CEL), 50MHz (UQ2052CL)
Single bandwidth	100MHz (UQ2102CEL), 50MHz (UQ2052CL)
Selectable analog bandwidth limit (Typical)	20MHz
Low frequency response (AC coupling, -3dB)	≤ 10 Hz at BNC
Rise time	≤3.5ns, ≤7ns at 100MHz and 50MHz bandwidths respectively
DC gain accuracy	When vertical sensitivity is 1mV/div~2mV/div : ±5% (sample or average acquisition mode); When vertical sensitivity is 5mV/div : ±4% (sample or average acquisition mode); When vertical sensitivity is 10mV/div~50V/div : ±3% (sample or average acquisition mode)
DC measurement accuracy (average acquisition mode)	When vertical position is zero and N ≥16 : ± (5% x reading + 0.1 div + 1mV) and 1mV/div~2mV/div is selected; ± (4% x reading + 0.1 div + 1mV) and 5mV/div is selected; ± (3% x reading + 0.1 div + 1mV) and 10mV/div~50V/div is selected; When vertical position is not zero and N ≥16 : ± [3% x (reading + vertical shift reading) + (1% x vertical shift reading)] + 0.2div). Set from 5mV/div to 200mV/div plus 2mV; Setup value > 200mV/div to 50V/div plus 50mV.
Voltage difference (ΔV) measurement accuracy (average acquisition mode)	Under identical setup and environmental conditions, the voltage difference (ΔV) between any two points of the waveform after the average of ≥16 waveforms acquired waveforms is taken : ± (3% x reading + 0.05 div)

<b>Trigger</b>	
<b>Trigger frequency counter</b>	
Reading pixel aspect ratio	6
Trigger sensitivity	$\leq 30V_{rms}$
Accuracy (Typical)	$\pm 51ppm$ (including all frequency reference errors and $\pm 1$ word)
Trigger sensitivity	Internal trigger : $\leq 1$ div; external trigger : $\leq 0.2V$
Trigger level range	$\pm 8$ div from the centre of the screen
Trigger level accuracy (Typical) applied on signals of $\geq 20ns$ rise or fall time	$\pm (0.3 \text{ div} \times V/\text{div})$ (within $\pm 4$ div from the centre of the screen)
Pretrigger capability	Normal mode/scanning mode, pretrigger/delayed trigger. Pretrigger depth is adjustable
Holdoff range	100ns – 1.5s
Set level to 50% (Typical)	Input signal frequency $\geq 50Hz$
<b>Edge Trigger</b>	
Edge type	Rise, fall, rise and fall
<b>Pulse Trigger</b>	
Trigger mode	(Greater than, less than or equal to) positive pulse; (Greater than, less than or equal to) negative pulse
Pulse width range	20ns – 10s
<b>Alternate Trigger</b>	
A Trigger	Edge, pulse
B Trigger	Edge, pulse

<b>Measurement</b>		
Cursor	Manual mode	Voltage difference ( $\Delta V$ ) between cursors; time difference ( $\Delta T$ ) between cursors; time difference ( $\Delta T$ ) countdown (Hz) ( $1/\Delta T$ )
	Automatic measurement mode	Cursor display is enabled during measurement
Automatic measurement	Peak-to-peak, amplitude, maximum, minimum, top, bottom, mean, average, root mean square, overshoot, preshoot, frequency, cycle, rising time, falling time, positive pulse, negative pulse, positive duty ratio, negative duty ratio, delay.	
Customized parameter measurement	3 types	
Math functions	+, -, $\times$ , $\div$	
Saving waveforms	Internal : 20 groups of waveforms and 20 setups USB : 200 groups of screens, 200 groups of waveforms	
FFT	Window	Hanning, Hamming, Blackman-Harris, Rectangular
	Sampling points	1024 points
Lissajous Figure	Phase difference	$\pm 3$ degrees

<b>Display</b>	
Display type	178mm diagonal line (7") LCD panel
Display resolution	800 horizontal x RGB x 480 vertical pixels (color)
Display Colour	Color
Waveform display zone	Lateral 12 div, 25 dot/div Longitudinal 8 div, 25 dot/div
Display contrast (Typical)	Adjustable
Backlight Intensity (Typical)	300 nit
Display Languages	Simplified Chinese, Traditional Chinese, English, Spanish, Portuguese, French

<b>Interface Functions</b>	
Standard setup	1 x USB OTG

<b>Power Source</b>	
Source Voltage	100 - 240VAC <sub>RMS</sub> , 45-440Hz, CAT II
Power Consumption	Less than 30VA
Fuse	F1.6AL 250V The UQ2000L series fuse is on the power board inside the unit

<b>Environmental</b>	
Temperature	Operating : 0°C~+40°C Non-operating : -20 °C~+60°C
Cooling Method	Natural cooling
Humidity	+10°C~+30°C : ≤ 95% ±5% RH; +30°C~+40°C : ≤ 75% ±5% RH;
Altitude	Operating : under 3,000m Non-operating : under 15,000m

<b>Mechanical Specifications</b>		
Dimension (reference only)	Width	306 mm
	Height	147mm
	Depth	122mm
Weight	Without packaging	2.2kg
	With packaging	3.3kg
IP Protection	IP2X	
Adjustment frequency	Recommended calibration frequency is 1 year	

## **Appendix : Accessories for UQ2000L Series Digital Storage Oscilloscopes**

### **Standard Accessories :**

- Two 1.5m, 1:1 (10:1) passive voltage probes. For details please read the probe manual. EN61010-031: 2002 standard.  
Rating is 150V CAT II when the switch is in the 1X position;  
Rating is 300V CAT II when the switch is in the 10X position.
- One international standard power cord.
- One User Manual.
- One Product Warranty Card.
- UQ2000L communication & control software.
- USB connection cable : UQ-D05.