

# Keysight Technologies

## Speed your time to innovation with next-generation bench instruments

Keysight's new generation of Truevolt DMMs incorporate an analog to digital converter that enables a patented metrology-grade architecture, giving users unrivalled DMM measurement performance.

What does Truevolt mean to the user?

1. Less than 30% of injected current than alternatives, to ensure you measure real-world signals and not instrument error.
2. Measure noisy signals with high crest factors up to 10:1 without additional error terms. This is achieved through Keysight's digital direct sampling to make AC rms measurements, as opposed to analog RMS converters used in other DMMs in its class.

3. All Truevolt measurements tested and guaranteed compliance to industry leading ISO/IEC17025 standards.

Each of the new instruments offers better value and greater insight into your measurements than the legacy products. The legacy products will be discontinued on December 1, 2016 and their last order date will be November 30, 2016. Keysight is committed to providing world-class customer support and will continue to support these products for the standard period of 5 years.

For more information, please visit [www.keysight.com/find/nextgenproducts](http://www.keysight.com/find/nextgenproducts)

### Digital multimeters

#### 34401/10/11A advance to the next-generation Truevolt Series DMMs



Legacy DMMs (last order date 2016-11-30)	Next-generation Truevolt DMMs
34401A	34461A Truevolt Series
34410A/34411A	34465A Truevolt Series

Keysight's Truevolt DMMs offer a full range of measurement capabilities and price points with higher levels of accuracy, speed, and resolution.

Feature improvements	34401A	→	34461A Truevolt Series	34410A & 34411A	→	34465/70A Truevolt Series
Resolution (digits)	6½		6½	6½		6½ & 7½
DCV accuracy	40 ppm		35 ppm	30 ppm		30 ppm & 16 ppm
Reading rate maximum	1,000/s		1,000/s	10,000/s; 50,000/s		5,000/s; 50,000 opt
Reading memory	512 readings		10,000 readings	50,000 readings, 1 million readings		50,000 readings, 2 million readings optional
DC current	100 µA to 3 A		100 µA to 10 A	100 µA to 3 A		1 µA to 10 A
Capacitance, temperature	N/A		Standard	Standard		Standard, also thermocouples
Display	1-line, VFD		2-line, color LCD	2-line, VFD		2-line, color LCD
I/O	GPIB, RS232		USB, LAN, OPT GPIB	USB, LAN, GPIB		USB, LAN, OPT GPIB

For more information, please visit [www.keysight.com/find/nextgenDMMs](http://www.keysight.com/find/nextgenDMMs)



Unlocking Measurement Insights

## Function/waveform generators

Keysight's 33600A and 33500B Series waveform generators with exclusive Trueform signal generation technology offer more capability, fidelity and flexibility than previous generation Direct Digital Synthesis (DDS) generators.

Here are some examples of what Trueform means to the user:

- Waveforms that NEVER skip a point and are always anti-aliased
- 1 GSa/s sampling rate and up to 120 MHz bandwidth
- Arb with sequencing and up to 64 MSa memory
- As low as 1 ps jitter, up to 200x better than DDS generators
- Up to 5x lower harmonic distortion than DDS
- Compatible with Keysight BenchVue software

33220A/50A → advance to the next-generation 33500B, 33600A Trueform Series



Legacy function generators (last order date 2016-11-30)		Next-generation Trueform waveform generators	
33220A		33500B Trueform Series	
33250A		33600A Trueform Series	

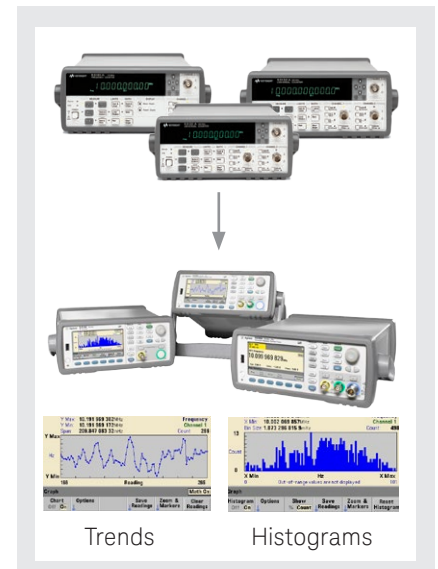
Feature improvements	33220A	→	33500B Trueform Series	33250A	→	33600A Trueform Series
Frequency bandwidth	20 MHz sine, 5 MHz pulse		20 or 30 MHz, sine & pulse	80 MHz, sine, 50 MHz pulse		80 MHz sine & pulse or 120 MHz sine (100 MHz pulse)
Resolution & sample rate	14 bit, 50 MSa/s		16 bit, 250 MSa/s	12 bit, 200 MSa/s		14 bit, 660 MSa/s or 1 GSa/s
Output amplitude range	10 mVpp to 10 Vpp		1 mVpp to 10 Vpp	10 mVpp to 10 Vpp		1 mVpp to 10 Vpp
Arb type	Direct digital synthesis		Trueform arb with sequencing	Direct digital synthesis (DDS)		Trueform arb with sequencing
Arb memory	64 k standard		1 M standard, 16 M optional	64 k standard		4 M standard, 64 M optional
Digital pattern	No serial pattern		Serial pattern (PRBS)	No serial pattern		Serial pattern (PRBS)
Number of channels	1-channel		1- or 2-channel, 2-channel coupling	1-channel		1- or 2-channel, 2-channel coupling

For more information, please visit [www.keysight.com/find/nextgenFGs](http://www.keysight.com/find/nextgenFGs)

## Universal counters/timers

53181/31/32A → advance to the next-generation 53210/20/30A Series

Feature improvements	53181A, 53131A, 53132A	→	53210A, 53220A, 53230A
Frequency bandwidth	225 MHz, 1.5 (53181A only), 3, 5, 12, 4 GHz		360 MHz, 6, 15 GHz
Frequency resolution	10 digits/s (53181A, 53131A) 12 digits (53132A)		10 digits/s (53210A) 12 digits (53220A, 53230A)
Time interval resolution (single-shot resolution)	500 ps (53131A) 50 ps (53132A)		100 ps (53220A) 20 ps (53230A)
Memory	None		1 M reading internal memory USB flash
Speed	Transactional: 200 readings/s Readings to memory: N/A Timestamp: N/A		Transactional: 300 to 400 readings/s Readings to memory: N/A – Frequency: up to 75,000 readings/s – Time interval: up to 90,000 readings/s Timestamp: up to 1 M readings/s
Timebase	XO (standard in all models) 3 OCXO options		TCXO (standard in all models) 1 OCXO optional
Interfaces	GPIB, RS232 (print only)		LXI-C/LAN, USB, GPIB
Display and analysis	Vacuum florescent display Math and limit operations		Color graphical display Full integrated math, limits, statistics, graphs



For more information, please visit [www.keysight.com/find/nextgencounters](http://www.keysight.com/find/nextgencounters)