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Celebration

NEW



## MODELS WX2181/2B

### 2.3GS/s Single/Dual Channel Arbitrary Waveform Generators

- Single / Dual Channel 2.3GS/s, 14 Bit waveform generator, configurable as separate or synchronized channels
- Inter-channel control from -3ns to +3ns with 10ps resolution
- 1GHz sine and 500MHz square waves
- 16M waveform memory, 32M memory optional
- 3 selectable output paths:
  - 2Vp-p into 50Ω with 700MHz bandwidth, Differential DC output
  - 4Vp-p into 50Ω with 350MHz bandwidth, Differential DC output
  - -20 to +10 dBm into 50Ω with >1GHz bandwidth, RF AC output
- AM, FM, FSK, PSK, ASK, Amp. Hop, Freq. Hop, Sweep & Chirp
- Powerful pulse composer for analog, digital and mixed signals
- Smart trigger allows: trigger hold-off, detect  $\Leftrightarrow$  pulse width, as well as wait-for-waveform-end or abort waveform and restart
- Advanced sequencer for step, loop, nest and jumps scenarios
- Two differential markers per channel with programmable positions, width and levels
- Two instrument synchronization to form a four-channel system
- User friendly 4" color LCD display
- Remote control through LAN, USB and GPIB
- Store/recall capability on disk-on-key or 4GB internal memory
- LXI Class C compliant

The WX2181/2B, 2.3GS/s Single / Dual Channel Arbitrary Waveform Generator, offers unrivaled performance, even when compared to instruments designed to generate fewer types of signals or higher sampling rates. Its affordable footprint saves space and cost without compromising bandwidth and signal integrity.

#### Universal Waveform Source

Aside from its natural ability to generate arbitrary shapes with waveform granularity of 1 point, the WX2181/2B can also be used as a full-featured standard, modulation or pulse generator to solve various applications. Equipped with 2.3GS/s 14-bit clock and 16M points (32M optional) memory, the WX2181/2B can generate literally any waveform, short or long, at frequencies up to 1GHz with 8 digits of resolution, resulting in the highest precision signal creation and regeneration without compromising signal fidelity or system integrity.

#### Signal Integrity and Purity

One of the most important requirements in today's testing and measurement applications is high signal quality. With a typical SSB phase noise of <-115dBc at 100MHz, and <-95dBc at 1GHz, at 10 kHz carrier offset and with exceptionally good SFDR of <-70dBc at 1GHz carrier, Tabor's WX2181/2B unique platform delivers one of the best quality signals available on the market today, answering the ever-growing demand for clear and precise signals.

#### Common or Separate Clocks

Need a dual channel unit, a single channel unit... why choose? With the new WX2182B you can have it both ways. The WX2182B has two output channels, which can either operate independently, or synchronized to share the same sample clock source. As two separate channels, one has the advantage of having two separate instruments in one box, with each having the ability to be programmed to output different function

shapes, frequency, amplitude levels and/or to operate in different run modes. Alternatively, the advantage of having two synchronized channels with less than 10ps skew and skew control is very significant in applications that require an accurate and controlled phase between the two channels, which is ideal for many X-Y modes and I&Q output applications.

#### DC or AC Coupled Outputs

Have a requirement for different output paths in your lab? Great! The WX2181/2B offers two single or differential ended DC coupled and one single ended AC coupled output amplifiers: 2Vp-p into 50Ω with 700MHz bandwidth, for applications demanding optimized transitions and aberrations; 4Vp-p into 50Ω with 350MHz bandwidth, for applications demanding high voltage or -20 to +10dBm path for applications requiring bandwidth and flatness for frequencies as high as 1GHz.

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TABOR ELECTRONICS Inc.  
Since 1971

# MODELS WX2181/2B



## 2.3GS/s Single/Dual Channel Arbitrary Waveform Generators

### **Powerful Segmentation and Sequencing**

Solving almost every complex application, powerful segmentation and sequencing produces a nearly endless variety of complex waveforms. The waveform memory can be divided into multiple waveform segments and sequenced in user-selectable fashion to create complex waveforms that have repeatable segments, jump and nest, saving you precious memory space. The WX2181/2B also allows you to generate up to 1000 sequence scenarios and sequence between them to generate an even higher level of flexibility in waveform creation.

### **Dynamic Segment / Sequence Control**

Working in the real-time world and need fast waveform switching? The WX2181/2B has a rear panel control designed specifically for that. Having the dynamic control feature, in effect, can serve as replacement of the sequence table where the real-time application can decide when and for how long a waveform will be generated. For much more complex applications, this same input may serve as a dynamic switch for complete sequences, creating real-life scenarios for real-time applications.

### **Pulse / Pattern Creation**

Generating complex pulse trains has never been easier. The Pulse Composer is a powerful built-in tool that converts the WX2181/2B to a very sophisticated Pulse/Pattern Generator, allowing to create literally any complex pulse train / pattern, whether it's a single pulse, multi-level, linear-points, initialization or preamble pattern definition, arbitrary bit design, user-defined or even standard random patterns with programmable resolution, so it doesn't matter if your application is radar communications, nanotechnology or serial bus testing, the pulse/pattern composer is the right tool for your application. Moreover, all the WX2181/2B advanced trigger modes are applicable, hence one can choose to use the "step"

mode to advance every bit independently or the "once" mode to advance a complete data block in one trigger event, enabling even more applications, such as trigger, clock and data protocols.

### **Multi-Level and PAM(n) Signals**

The WX2181/2B's pulse composer enables up to 2Gbit/s data rate generation, utilizing either NRZ and RZ modes (minimum transition times) which is ideal especially for multi level and PAM(n) applications such as, LED (light-emitting diodes), CAN, QPHY, FlexRay or simulating and testing Ethernet environment, whether it's 100Mbit/s (100BASE-T), the later gigabit Ethernet (1000BASE-T) or even the latest 802.3an standard (10GBASE-T), which utilizes PAM-16.

### **Smart Trigger**

Until now, you've been forced to trigger on a specific event. Tabor's all-new SmarTrigger feature was designed to enhance the trigger capability and facilitate wider flexibility of a specific pulse event. It allows triggering on either a pulse having a larger pulse width than a programmed time value ( $<$ time), a pulse having a smaller pulse width than a programmed time value ( $>$ time), or even on a pulse having a pulse width between two limits ( $<$  $>$ time). In addition, the SmarTrigger has a hold-off function, in which the output is held idle after the first trigger and starts a waveform cycle only with the first valid trigger after a hold-off interval has lapsed, allowing you to solve endless "negotiation" scenarios.

### **Programmable Deferential Markers**

The WX2181/2B is equipped with two programmable deferential markers for each output channel. Differential simply means outstanding signal integrity for high frequencies, whereas the programmability allows you to set position, width, delay and amplitude for any required peripheral triggering need. While bench usage enables setting only one marker position, you can

set multiple markers and program different marker properties for each transition instance remotely, allowing various triggering profiles.

### **4-Channel Capability**

Need more than two channels to drive your application? With two WX2182B you can reach up to 4 synchronized channels system using a Master-Slave arrangement, allowing users to benefit from the same high quality performance even for multi-channel needs.

### **Easy to Use**

Large and user-friendly 4" backlit color LCD display facilitates browsing through menus, updating parameters and displaying detailed and critical information for your waveform output. Combined with numeric keypad, ten quick-link function & run mode buttons, cursor position control and a dial, the front panel controls simplify the often complex operation of an arbitrary waveform generator.

### **Multiple Environments to Write Your Code**

Model WX2181/2B comes with a complete set of drivers, allowing you to write your application in various environments such as: Labview, CVI, C++, VB, and MATLAB. You may also link the supplied dll to other Windows based API's or, use low-level SCPI commands (Standard Commands for Programmable Instruments) to program the instrument, regardless if your application is written for Windows, Linux or Macintosh operating systems.

### **ArbConnection**

The ArbConnection software provides you with full control of instrument functions, modes and features. ArbConnection is a powerful editorial tool that allows you to easily design any type of waveform. Whether it is the built in wave, pulse or serial data composers, or the built in equation editor with which you can create your own exotic functions, ArbConnection makes virtually any application possible.

# MODELS WX2181/2B



## 2.3GS/s Single/Dual Channel Arbitrary Waveform Generators

### Specification

#### CONFIGURATION

**Output Channels** 1/2, Synchronized/fully separated

#### STANDARD WAVEFORMS

**Type:** Sine, triangle, square, ramp, pulse, sin(x)/x, exponential rise, exponential decay, gaussian, noise and DC.

#### Frequency Range:

Sine 10kHz to 1GHz  
Square, Pulse 10kHz to 500MHz  
All others 10kHz to 250MHz

#### SINE

**Start Phase:** 0 to 360°

**Phase Resolution:** 0.1°

#### Harmonics Distortion (typ.):

	1Vpp <sub>DC</sub>	3Vpp <sup>HV</sup>	0dBm <sup>AC</sup>
5MHz to 100MHz	<-44dBc	<-40dBc	<-40dBc
200MHz to 375MHz	<-40dBc <sup>(1)</sup>	<-40dBc <sup>(1)</sup>	<-40dBc
375MHz to 500MHz	<-35dBc <sup>(1)</sup>	<-35dBc <sup>(1)</sup>	<-50dBc
500MHz to 700MHz	<-32dBc <sup>(1)</sup>	<-32dBc <sup>(1)</sup>	<-55dBc
700MHz to 1GHz	<-70dBc <sup>(1)</sup>	<-70dBc <sup>(1)</sup>	<-70dBc

<sup>(1)</sup> Measured with 1GHz lowpass filter

#### Non-Harmonics Distortion (typ.):

1MHz to 100MHz <-80dBc  
100MHz to 250MHz <-75dBc  
250MHz to 500MHz <-70dBc  
500MHz to 1GHz <-65dBc

#### SSB Phase Noise (10kHz offset):

1MHz Carrier <-120dBc/Hz  
10MHz Carrier <-118dBc/Hz  
100MHz Carrier <-115dBc/Hz  
250MHz Carrier <-108dBc/Hz  
500MHz Carrier <-100dBc/Hz  
1GHz Carrier <-95dBc/Hz

#### Flatness (AC Path):

Cross Range ±0.5dB

#### PULSE

**Pulse Mode:** Single or double, programmable  
**Polarity:** Normal, inverted or complement  
**Period:** 2ns to 1.6s  
**Resolution:** 500ps  
**Pulse Width:** 1ns to 1.6s  
**Rise/Fall Time:**

Fast  
DC Path 600ps (typical < 500ps)  
HV Path 1ns (typical < 900ps)  
Linear 1ns to 1.6s

**Delay:** 1ns to 1.6s

**Double Pulse Delay:** 1ns to 1.6s

#### Amplitude:

**Range**  
DC Path 50mVp-p to 2Vp-p into 50Ω  
HV Path 100mVp-p to 4Vp-p into 50Ω

#### Levels

Low Level -2V to +1.95V  
High Level -1.95V to +2V

#### NOTES:

- All pulse parameters, except rise and fall times, may be freely programmed within the selected pulse period provided that the ratio between the period and the smallest incremental unit does not exceed the ratio of 16,000,000 to 1.
- Rise and fall times, may be freely programmed provided that the ratio between the rise/fall time and the smallest incremental unit does not exceed the ratio of 1,000,000 to 1.
- The sum of all pulse parameters must not exceed the pulse period setting.

#### PULSE / PATTERN COMPOSER

**Modes:** Multi-level, linear-points, arbitrary bit design, PAM

#### MULTI-LEVEL

**Number of Levels:** 1 to 1000  
**Dwell Time:** 500ps to 10s  
**Amp. Resolution:** 4 digits  
**Time Resolution:** 500ps

#### LINEAR-POINTS

**Number of Points:** 1 to 1000  
**Memory:** 100k  
**Amp. Resolution:** 4 digits  
**Time Resolution:** 500ps

#### ARBITRARY BIT DESIGN

**Data Rate:** TBD  
**Pattern Memory:** 16Mbit  
**Resolution:** TBD  
**Pattern Source:** PRBS or user-defined  
**Trigger Mode:** Auto, step, once  
**Modulation:** TBD

#### PAM (PULSE AMPLITUDE MODULATION)

**Data Rate:** 10Mbit/s to 2Gbit/s  
**PAM Range:** 2 to 1000  
**Pattern Memory:** 16Mbit  
**Resolution:** 1 bit (TBD)

#### ARBITRARY WAVEFORMS

**Sample Rate:** 10MS/s to 2.3GS/s (2.5GS/s typ.)  
**Vertical Resolution:** 14 bits  
**Waveform Memory:** 16M points standard, 32M points optional  
**Min. Segment Size:** 384 points  
**Resolution:** 32 points (16 point with opt. 1)  
**No. of Segments:** 1 to 16k  
**Waveform Granularity:** 1 point  
**Dynamic control:** Software command or rear panel segment control port  
**Coherent or asynchronous**  
**Jump Timing:**

#### SEQUENCED WAVEFORMS

**Multi Sequence:** 1 to 1,000 unique scenarios  
**Sequencer Steps:** 1 to 16k steps.  
**Segment Duration:** 32ns, min.  
**Segment Loops:** 1 to 1M cycles, each segment  
**Sequence Loops:** 1 to 1M ("Once" mode only)  
**Step Advance Modes:** Continuous, once (x "N") and stepped

#### SEQUENCED SEQUENCES

**Sequence Scenarios:** 1 Scenario  
**Dynamic Control:** Software command or rear panel sequence control port  
**Table Length:** 1 to 1k steps  
**Advance Control:** Continuous, once and stepped  
**Sequence Loops:** 1 to 1,000,000 cycles

#### MODULATION

#### COMMON CHARACTERISTICS

**Carrier Waveform:** Sine  
**Carrier Frequency:** 10kHz to 1GHz  
**Modulation Source:** Internal

#### FM

**Modulation Shape:** Sine, square, triangle, ramp  
**Modulation Freq.:** (CW/6) > (M.F) > (30e<sup>-6</sup>xCW)  
**Deviation Range:** CW/2

#### FSK / FREQUENCY HOPPING

**Hop Table Size:** 2 to 10,000 (<CWx10.24e<sup>-3</sup>)  
**Hop Type:** Fast or Linear  
**Dwell Time Mode:** Fixed or programmable per step  
**Dwell Time:** 2ns to 10s  
**Dwell Time Res.:** 2ns

#### SWEEP / CHIRP

**Sweep Type:** Linear or log  
**Sweep Direction:** Up or down  
**Sweep Time:** (9High Freq.) > (S.T) > (50e<sup>3</sup>/High Freq.)  
**Modulation Shape:** Pulse  
**Pulse Repetition:**  
Range 100ns to 2s  
Resolution 3 digits  
Accuracy 100ppm

#### AM

**Modulation Shape:** Sine, square, triangle, ramp  
**Modulation Freq.:** (CW/9) > (M.F) > (CW/50e<sup>3</sup>)  
**Modulation Depth:** 0.1 to 100%

#### ASK / AMPLITUDE HOPPING

**Hop Table Size:** 2 to 10,000 (<CWx10.24e<sup>-3</sup>)  
Resolution Maximum amplitude/4096  
**Hop Type:** Fast or Linear  
**Dwell Time Mode:** Fixed or programmable per step  
**Dwell Time:** 2ns to 10s  
Resolution 2ns

# MODELS WX2181/2B



## 2.3GS/s Single/Dual Channel Arbitrary Waveform Generators

### Specification

#### (n)PSK and (n)QAM

**Modulation Type:** PSK, BPSK, QPSK, OQPSK, PI/4 DQPSK, 8PSK, 16PSK, 16QAM, 64QAM, 256QAM and User Defined

**Carrier Control:** On/Off

**Carrier Frequency:** 100kHz to 65MHz

**Symbol Rate Range:**

Carrier On 100kHz to 65MHz

Carrier Off 100kHz to 500MHz

**Symbol Accuracy:** 1ppm

**Table Size:** 2 to 10,000

**I-Q Parameters:**

Gain imbalance TBD

Offset imbalance TBD

Phase imbalance TBD

#### COMMON CHARACTERISTICS

##### FREQUENCY

**Resolution:** 8 digits

**Accuracy/Stability:** Same as reference

##### ACCURACY REFERENCE CLOCK

Internal 1 ppm from 19°C to 29°C;  
1ppm/°C below 19°C or  
above 29°C; 1 ppm/year  
aging rate

External Same as accuracy and  
stability of the external ref.

#### OUTPUTS

##### MAIN OUTPUTS

**Coupling:** DC-coupled, or AC-coupled

**Connectors:** Front panel SMAs

**Impedance:** 50Ω nominal, each output

**Protection:** Protected against temporary  
short to case ground

##### DC-COUPLED

**Type:** Single-ended or differential

**Resolution:** 4 digits

**Accuracy:** ±(3% +5 mV), offset = 0V

**Overshoot:** 5%, typical

##### DC PATH

**Rise/Fall Time:** <600ps (typical <500ps)

**Amplitude Range:**

Single-ended 50mVp-p to 2Vp-p\*

Differential 100mVp-p to 4Vp-p\*

##### HV PATH

**Rise/Fall Time:** 1ns (typical < 900ps)

**Amplitude Range:**

Single-ended 50mVp-p to 4Vp-p\*

Differential 100mVp-p to 8Vp-p\*

\* Double into high impedance

#### OFFSET

**Offset Range:** -1.5V to + 1.5V into 50Ω

**Offset Resolution:** 4 digits

**Offset Accuracy:** ±(5% +5mV)

#### RF, AC-COUPLED

**Type:** Single-ended

**Amplitude Range:** -20dBm to +10dBm into 50Ω,

**Resolution:** 4 digits

**Accuracy:** (3% +0.5dBm)

**Bandwidth:** 1GHz

#### MARKER OUTPUTS

**Number of Markers:** Two markers per channel

**Type:** Differential (+) and (-) outputs

**Connectors:** SMB

**Skew Between**

**Markers:** 100ps, typical

**Impedance:** 50Ω

**Amplitude Voltage:**

Window 0V to 1.25V, single-ended;

0V to 2.5V, differential

Low level 0V to 0.8V, single-ended;

0V to 1.6V, differential

High level 0.5V to 1.25V, single-ended;

0V to 2.5V, differential

10mV

**Resolution:**

**Accuracy:** 10% of setting

**Width control:** 4 SCLK to segment length;

2 SCLK with option 1

**Position control:**

Range 0 to segment length

Resolution 4 points (2 point with option 1)

**Initial delay:** 4ns±½ clock (Output to marker)

**Variable delay:**

Control Separate for each channel

Range 0 to 3ns

Resolution 10ps

Accuracy ±(10% of setting +20ps)

**Rise/Fall Time:** <1ns, typical

#### SYNC OUTPUT

**Connector:** Front panel SMA

**Source:** Channel 1 or channel 2

**Type:** Single ended

**Waveform Type:**

Pulse 32 points width;

16 points with option 1

WCOM Waveform complete

Impedance: 50Ω

**Amplitude:** 1V; doubles into high impedance

**Variable Position Control:**

Range 0 to segment length

Resolution 32 points (16 point with option 1)

**Rise/Fall Time** 2ns, typical

#### Variable Width control:

Range 32 points (16 points with  
option 1) to segment length

Resolution 32 points (16 point with option 1)

#### INPUTS

##### TRIGGER INPUT

**Connector:** Front panel SMA

**Input Impedance:** 10kΩ

**Polarity:** Positive, negative, or both

**Damage Level:** ±20Vdc

**Frequency Range:** 0 to 15MHz

**Trigger Level Control:**

Range -5V to 5V

Resolution 12 bit (2.5mV)

Accuracy ±(5% of setting + 2.5mV)

Sensitivity 0.2Vp-p

**Min. Pulse Width:** 10 ns

##### EVENT INPUT

**Connector:** Rear panel BNC

**Input Impedance:** 10kΩ

**Polarity:** Positive, negative or either

**Damage Level:** ±20Vdc

**Frequency Range:** 0 to 15MHz

**Trigger Level Control:**

Range -5V to 5V

Resolution 12 bit (2.5mV)

Accuracy ±(5% of setting + 2.5mV)

Sensitivity 0.2 Vp-p minimum

**Min. Pulse Width:** 10 ns

##### SEQUENCE/SEGMENT CONTROL INPUT

**Connectors:** Rear panel D-sub, 8 bit lines

**Input Impedance:** 10kΩ

**Input Level:** TTL

##### EXTERNAL REFERENCE INPUT

**Connector:** Rear panel BNC

**Input Frequency:** 10MHz to 100MHz

**Input Impedance:** 50Ω

**Voltage Swing:** -5dBm to 5dBm

**Damage Level:** 10dBm

##### EXTERNAL SAMPLE CLOCK INPUT

**Connector:** Rear panel SMA

**Input Impedance:** 50Ω

**Voltage Swing:** 0dBm to 10dBm

**Input Frequency:** 1GHz to 5GHz (Double the  
internal clock)

**Clock Divider:** 1/1, 1/2, 1/4, 1/256,  
separate for each channel

**Damage Level:** 15dBm

# MODELS WX2181/2B



## 2.3GS/s Single/Dual Channel Arbitrary Waveform Generators

### Specification

#### RUN MODES

<b>Continuous:</b>	A selected output function shape is output continuously.
<b>Self Armed:</b>	No start commands are required to generate waveforms.
<b>Armed:</b>	The output dwells on a DC level and waits for an enable command and then the output waveform is output continuously; An abort command turns off the waveform.
<b>Triggered:</b>	A trigger signal activates a single-shot or counted burst of output waveforms and then the instrument waits for the next trigger signal.
<b>Normal Mode</b>	The first trigger signal activates the output; consecutive triggers are ignored for the duration of the output waveform.
<b>Override Mode:</b>	The first trigger signal activates the output; consecutive triggers restart the output waveform regardless if the current waveform has been completed or not.
<b>Gated:</b>	A waveform is output when a gate signal is asserted. The waveform is repeated until the gate signal is de-asserted. Last period is always completed.
<b>Burst:</b>	Upon trigger, outputs a Dual or multiple pre-programmed number of waveform cycles from 1 through 1M.

#### TRIGGER CHARACTERISTICS

##### EXTERNAL

<b>Source:</b>	Channel 1, channel 2, or both
<b>Connector:</b>	SMA
<b>Input Impedance:</b>	10kΩ
<b>Polarity:</b>	Positive, negative, or both
<b>Damage Level:</b>	±20Vdc
<b>Frequency Range:</b>	0 to 15MHz
<b>Trigger Level Control:</b>	
Range	-5V to 5V
Resolution	12 bit (2.5mV)
Accuracy	±(5% of setting + 2.5mV)
Sensitivity	0.2Vp-p
<b>Pulse Width:</b>	10 ns, minimum
<b>System Delay:</b>	200 SCLK periods + 50ns
<b>Trigger Delay:</b>	Separate for each channel
Range	0 to 8,000,000 SCLK periods
Resolution	8 points (4 point with option 1)
Accuracy	Same as SCLK accuracy
<b>Smart Trigger:</b>	Detects a unique pulse width

<b>Conditioned Trigger:</b>	< pulse width, > pulse width or <>pulse width
Pulse Width Range	50ns to 2s
Resolution	2ns
Accuracy	±(5% of setting +20ns)
<b>Trigger Hold-off:</b>	Ignores triggers for a hold-off
Hold-off range	100ns to 2s
Resolution	2ns
Accuracy	±(5% of setting +20ns)
<b>Trigger jitter:</b>	8 SCLK periods; 4 SCLK periods with option 1

##### INTERNAL

<b>Source:</b>	Common or separate
<b>Modes:</b>	
Timer	Waveform start to waveform start
Delayed	Waveform stop to waveform start
<b>Timer:</b>	
Range	400ns to 2s
Resolution	3 digits
Accuracy	100ppm
<b>Delay</b>	
Range	152 to 8,000,000 SCLK periods
Resolution	Even numbers, divisible by 8 (4 with option 1)

##### MANUAL

<b>Source:</b>	Soft trigger command from the front panel or remote
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#### INTER-CHANNEL SKEW CONTROL

##### COURSE TUNING

<b>Initial skew:</b>	200ps
<b>Control:</b>	
Range	0 to waveform-length points
Resolution	8 points (4 point with option 1)
<b>Accuracy:</b>	Same as SCLK accuracy

##### FINE TUNING

<b>Initial skew:</b>	200ps
<b>Control:</b>	
Range	-3ns to +3ns
Resolution	10ps
<b>Accuracy:</b>	(10% of setting + 20ps)

#### TWO INSTRUMENTS SYNCHRONIZATION

<b>Initial Skew:</b>	20ns + 0 to 16 SCLK (8 SCLK with option 1)
<b>Offset Control:</b>	0 to Waveform length
<b>Offset Resolution:</b>	8 SCLK increments (4 SCLK with option 1)
<b>Skew Control:</b>	-5ns to 5ns
<b>Skew Resolution:</b>	10ps
<b>Clock Source:</b>	Master sample clock generator
<b>Trigger Source:</b>	Master trigger input

#### GENERAL

<b>Voltage Range:</b>	100VAC to 240VAC
<b>Frequency Range:</b>	50Hz to 60Hz
<b>Power Consumption:</b>	150VA
<b>Display Type:</b>	TFT LCD, back-lit
Size	4 "
Resolution	320 x 240 pixels
<b>Interfaces:</b>	
USB 2.0	
Host	1 x front, USB host, (A type);
Device	1 x rear, USB device, (B type)
LAN	1000/100/10 BASE-T
GPIB	IEEE 488.2 standard interface
Segment control	2 x D-sub, 9 pin
<b>Dimensions:</b>	
With Feet	315 x 102 x 395 mm (WxHxD)
Without Feet	315 x 88 x 395 mm (WxHxD)
<b>Weight:</b>	
Without Package	4.5kg
Shipping Weight	6kg
<b>Temperature:</b>	
Operating	0°C to 40°C
Storage	-40°C to 70°C
<b>Humidity:</b>	85% RH, non condensing
<b>Safety:</b>	CE Marked, IEC61010-1
<b>EMC:</b>	IEC 61326-1:2006
<b>Calibration:</b>	2 years
<b>Warranty (1):</b>	5 years standard

#### ORDERING INFORMATION

MODEL	DESCRIPTION
WW2181B	2.3GS/s Single Channel Arbitrary Waveform Generator
WW2182B	2.3GS/s Dual Channel Arbitrary Waveform Generator

#### OPTIONS

<b>Option 1 (2):</b>	32M Memory (per channel)
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(2) Improves timing characteristics as well

#### ACCESSORIES

<b>Sync Cable:</b>	Multi-instrument synchronization
<b>S-Rack Mount:</b>	19" Single Rack Mounting Kit
<b>Case Kit:</b>	Professional Carrying Bag

**Note:** Options and Accessories must be specified at the time of your purchase.

(1) Standard warranty in India is 1 year.