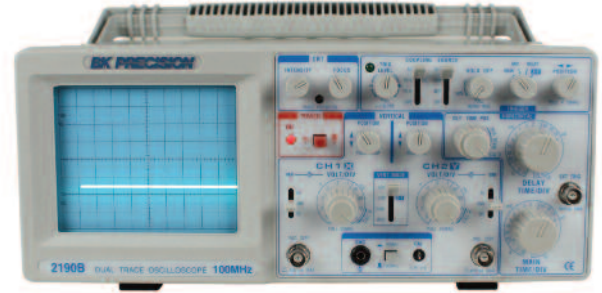


# Data sheet

## 100 MHz Analog Oscilloscope Model 2190B

- Dual time base oscilloscope (2 channel)
- 5 mV/division sensitivity
- Sweeps to 5 ns/division
- 23 calibrated ranges, main time base
- Signal delay line
- 12 kV accelerating voltage
- Channel 2 output



### Specifications

model

2190B

#### VERTICAL AMPLIFIERS (CH 1 and CH 2)

Sensitivity	5 mV/div to 5 V/div. 1 mV/div to 1V/div (at X5 MAG)
Attenuator	10 calibrated steps in 1-2-5 sequence. Vernier control provides fully adjustable sensitivity between steps, adjustment range 1/1 to 1/3
Accuracy	± 3% (± 5% at X5 MAG)
Input Impedance	1 MΩ + 2%
Input Capacitance	25 pF ± 10 pF
Frequency Response	DC: DC to 100 MHz (-3 dB)
X5 MAG	DC to 25 MHz (-3 dB)
AC	10 Hz to 100 MHz (-3 dB)
Rise Time	3.5 ns (Overshoot ≤ 5%)
Signal Delay Time	Variable
Square Wave Characteristics	Overshoot less than 5%, 10 mV/div range
	Other ranges within 5% additional
Maximum Input Voltage	400 V (DC + AC peak)

#### VERTICAL AMPLIFIERS

Operating Modes	CH 1, CH 2, Dual, Add
Delay Time Between Channels	Within 1 ns between CH 1 and CH 2
Crosstalk	30:1 at 100 kHz

#### SWEEP SYSTEM

Operating Modes	
A	A sweep
B	Delayed B sweep
B TRIGGERED	B sweep triggered after delay
A Time Base	
Sweep Mode	Main, Mix, Delay, XY
Sweep Time:	5 s to 20 ns/div., 23 steps in 1-2-5 sequence with variable control
Accuracy	± 3%
Hold Off Time	Continuously variable. Adjustment range from normal to 5 times normal
B Time Base	
Delay Method	Continuous delay. Triggered delay
Sweep Time	20 ns. to 0.5 s/div., 23 steps in 1-2-5 sequence
Accuracy	± 3%
Delay Time	Start point: 0.5 div to + 0.3 div. End point: 10 div + 1 div
Delay Jitter	Within 1/10,000 of full scale sweep time

#### TRIGGERING

A Trigger	
Source	CH 1, CH 2, LINE, EXT, ALT
Sensitivity	30 Hz to 110 MHz 1.5 div (internal), ≥ 0.5 p-p (external)
TV-V	20 Hz - 30 kHz 1.0 div (internal), ≥ 0.5 p-p (external)
TV-H	3 kHz - 100 kHz 1.0 div (internal), ≥ 0.5 p-p (external)
Slope	+ or -
B Trigger	The A trigger is also the B trigger

#### EXTERNAL TRIGGER

Maximum Input Voltage	300 V (DC + AC peak)
-----------------------	----------------------

#### HORIZONTAL AMPLIFIER

X-Y Mode	X Axis = CH 1. Y Axis = CH 2
Sensitivity	5 mV/div to 5 V/div, CH 1 and CH 2
Accuracy	± 3% calibrated position, ± 6% using x10 MAG
Frequency Response	DC to 2 MHz (-3 dB)

#### CH2 (Y) OUTPUT

Output Voltage	Approx. 100 mV/div open circuit Approx. 50 mV/div into 50 Ω
Freq. Response	20 Hz to 100 MHz, -3 db
Output Impedance	approx. 50 Ω

#### CRT

Type	Rectangular with integral graticule
Display Area	8 x 10 div (1 div = 1 cm)
Accelerating Voltage	12 kV
Phosphor	P31
Scale Illumination	None
Trace Rotation	Electrical, front panel adjustable

#### Other Specifications

Z Axis (Intensity Modulation)	Sensitivity: 3 V or greater, TTL level. Intensity increasing with more positive levels
Input Impedance	50 kΩ
Usable Freq. Range	DC to 5 MHz
Maximum Input Voltage	30 V (DC + AC peak)
CAL/Probe Compensation	
Waveform	Positive going squarewave
Output Voltage	2 V p-p ± 3%
Frequency	Approx. 1 kHz
Power Requirements	100/120/220/240/ VAC ± 10%, 50/60 Hz, approximately 55 W
Dimensions (HxWxD)	12.76 x 15.68 x 5.2" (324 x 398 x 132 mm)
Weight	18.7 lbs (8.5 kg)

#### ENVIRONMENT

Within Specified Accuracy	50° to 95°F (10° to 35°C), 10-80% RH
Full Operation	32° to 122°F (0° to +50°C), 10-80% RH
Storage	-22° to 158°F (-30° to +70°C), 10-90% RH

#### Three Year Warranty

#### Accessories

Supplied: Instruction Manual, Two PR 37A x1/x10/Ref. Probes or equivalent, AC Power Cord, Spare Fuse

Optional: PR 32A Demodulator Probe, PR 37AG x1/x10/REF. Probe, PR 100A x100 Probe, PR-55 High Voltage x1000 Probe, LC 210A Carrying Case