



Dual Channel, 20MHz Oscilloscope with True RMS Digital Multimeter



Portable Oscilloscope and Dual Input DMM

- Cursor Readout
- Pre-Post Triggering
- Decibel Measurement
- Trend Mode
- Real Time Sample Rate
- Bright LCD Backlight
- Continuous Autoset
- RS232 Option Available

Includes: Two test leads, two banana to BNC adapters, one DC-60MHz X1 X10 passive oscilloscope probe, power supply and user manual.

VERTICAL	
Bandwidth	20MHz with SP60B 10:1 Probe 10MHz with Shielded Test Leads
Sample Rate Real Time:	25 Megasamples per Second to 2MHz
Equivalent Time:	500 Megasamples per Second > 2MHz
Sensitivity	50mV to 200V/div 1,2,5 Sequence
Coupling	AC, DC, GND
Resolution	8 bits
Accuracy	± 3% + 0.05 range/div
HORIZONTAL	
Modes	Single, Normal, Auto
Samples per Division	25
Accuracy Real Time:	± 0.1% + 0.04 time/div
Equivalent Time:	± 0.5% + 0.08 time/div
TRIGGER	
Source	Internal
Modes	Free Run, Normal
Sensitivity Real Time:	2 divisions or more
Equivalent Time:	3 divisions or more
TREND MODE	
Plot Time	30 sec/div to 1 hour/div
Plot Data Type	Maximum/Minimum Selectable
Memory	2 Screens
TRUE RMS DMM	
DCV (CH1, CH2)	400mV, 4, 40, 400, 600V
Basic Accuracy:	± 0.5% + 5 digits
ACV (CH1, CH2)	400mV, 4, 40, 400, 600V
Basic Accuracy:	± 1% + 10 digits
Frequency (CH1, CH2)	1Hz - 20MHz
Basic Accuracy:	± 0.5% + 5 digits
Ohm (CH1 only)	400, 4k, 40k, 400k, 4M, 20M
Basic Accuracy:	± 0.5% + 5 digits
Continuity (CH1 only)	Sounds < 0.1kΩ, ± 2% + 5 digits

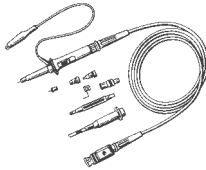
Description	Digi-Key Part No.	Price Each	TPI Part No.
Handheld Oscilloscope 460	290-1460-ND	895.95	460
Carry Case for 460	290-1905-ND	39.95	A905
Software and RS232 Cable for 460	290-1404-ND	69.95	A404

High-Performance Oscilloscope Probes IEC 1010 Category I or Category II Compliance

It is important that you select a probe with the same bandwidth or "frequency range" as the oscilloscope used for the job. For example, if you're using a 100 MHz oscilloscope, choose a probe with a minimum of 100MHz. To achieve optimum performance, choose a probe with more than twice the bandwidth of the oscilloscope.

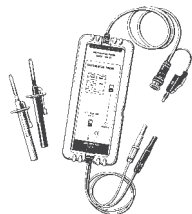
Category I This slim design comes equipped with interchangeable cables, probe tips and grooved heads. Compensation adjustment placed in the BNC eliminates noise and interference related pickup. Available in switchable and non-switchable versions.

Category II This versatile design offers three monolithic interchangeable probes in 60, 100, and 250MHz bandwidth.



Band-width	Attenu-ation	Cable Length Meters	Input Impedance R C	Max Input V DC + Peak AC Range	Rise Time	Compensation	Read-out	Digi-Key Part No.	Price Each	TPI Part No.
Switchable, IEC 1010 Compliant - Category II										
250MHz	x1	1.5	1 Meg 10 Meg	200pF 22pF	600V	1.5ns	10-60pF	NA	290-1057-ND	59.95 IP250
Switchable, IEC 1010 Compliant - Category I										
60MHz	x1	1.2	1 Meg 10 Meg	47pF 18pF	600V	5.8ns	10-35pF	NA	290-1003-ND	34.95 SP60B
100MHz	x1	1.2	1 Meg 10 Meg	47pF 16pF	600V	3.5ns	10-35pF	NA	290-1004-ND	39.95 SP100B
150MHz	x1	1.2	1 Meg 10 Meg	47pF 15pF	600V	2.3ns	10-35pF	NA	290-1005-ND	44.95 SP150B
200MHz	x1	1.2	1 Meg 10 Meg	47pF 15pF	600V	1.8ns	10-35pF	NA	290-1006-ND	49.95 SP200B
250MHz	x1	1.2	1 Meg 10 Meg	47pF 14pF	600V	1.4ns	10-35pF	NA	290-1007-ND	54.95 SP250B
300MHz	x1	1.2	1 Meg 10 Meg	47pF 12pF	600V	1.1ns	10-35pF	NA	290-1008-ND	59.95 SP300B
Non-Switchable, IEC 1010 Compliant - Category I										
15MHz	x1	1.2	1 Meg	47pF	600V	23ns	—	NA	290-1000-ND	29.95 1P20B
100MHz	x1	1.2	10 Meg	16pF	600V	3.5ns	10-35pF	NA	290-1001-ND	34.95 P100B
100MHz	x10	1.2	10 Meg	16pF	600V	3.5ns	10-35pF	Yes	290-1050-ND	39.95 P100BR
200MHz	x1	1.2	10 Meg	15pF	600V	1.8ns	10-35pF	NA	290-1002-ND	39.95 P200B
200MHz	x10	1.2	100 Meg	6.5pF	1200V	1.4ns	10-35pF	NA	290-1051-ND	44.95 P250
250MHz	x100	1.2	100 Meg	6.5pF	1200V	1.4ns	10-35pF	Yes	290-1052-ND	49.95 P250R
250MHz	x10	1.2	10 Meg	14pF	600V	1.4ns	10-35pF	NA	290-1053-ND	44.95 P250B
250MHz	x10	1.2	10 Meg	14pF	600V	1.4ns	10-35pF	Yes	290-1054-ND	49.95 P250BR

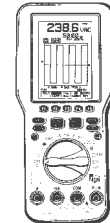
Differential Probe



This high-voltage differential probe allows conventional grounded oscilloscopes to be used for display and measurement of multiple floating signals with high common mode voltages. IEC 1010 approved for safety.

FUNCTION:	Offset (typical): <±5mV -14°F - 74°F (-10°C - 40°C)
Bandwidth: DC - 25MHz (-3dB)	Common Mode: ± 1,400VDC Inc. Pk AC, or 1,000V RMS
Accuracy: ±2%	Output Source Impedance: 1 @ 1kHz, 8 @ 1MHz
Risetime: 14ns	Operating Temperature: -14°F - 74°F (-10°C - 40°C)
Input Impedance: 4M/10pF each side to ground, 8M/5pF between inputs	Power Requirements: 4 AA cell or 6V main adapters: DC/600mA or DC/800mA
Input Voltage: ±140VDC Inc. Pk AC	Input Leads: 45cm double insulated PVC terminated in 44mm safety plugs
Maximum Differential: 20:1 or 100V RMS, ±1,400VDC Inc. Pk AC, 200:1 or 1,000V RMS	
Output Voltage: ±7 minimum 2K load	
Noise (typical): 1.5/2mV	
290-1076-ND	ADP25\$272.95

4,000 Count True RMS DMM with 1MHz Waveform Capabilities



Versatile 6 Instruments-in-1

Features:

- Autoranging 4,000 Count True RMS DMM
- 1MHz
- Trend Mode
- Component Test
- Logic Test
- Frequency Counter
- T-Base Button
- Continuous Autoset
- RS232 Option Available

Includes: Insulated test leads with alligator clips, power supply, NiCad battery and user manual.

OSCILLOSCOPE	
Bandwidth	1MHz
Sample Rate	20 Megasamples per Second Single Shot
Channels	Single
Glitch Capture	Yes
Trend Mode	Yes
Auto Set	Continuous
Waveform Memory	8 locations
Set-up Memory	8 locations
Viewing Area	160 x 240 pixels
Contrast	Adjustable
DMM	
True RMS	Yes
Basic DC Accuracy	0.3%
DCV / ACV	Up to 1,000 volts
DCA / ACA	Up to 10 amps
Ohms	Up to 40MΩ
Capacitance	Up to 400µF
Frequency	Up to 2MHz

Description	Digi-Key Part No.	Price Each	TPI Part No.
TPI 440 Hand-held Oscilloscope 440	290-1440-ND	299.95	TPI 440
Software for TPI 440	290-1075-ND	59.95	A402
Battery Charger for TPI 440	290-1441-ND	17.52	TPI A401
Carrying Case for TPI 440	290-1900-ND	19.95	TPI A900
Rubber Boot for TPI 440	290-1123-ND	19.95	A403

Digital Multimeters

TPI digital multimeters feature auto ranging, minimum/maximum record function, 4,000-count display, and protective rubber feet. **Includes:** Batteries, Test Leads, Protective Boot, and Instruction Manual with 3-year Limited Warranty

• The 183 offers a triple display with backlight, frequency and capacitance ranges, and RS-232 communication function.

• TPI 190 series digital multimeters feature 50,000-count triple display with analog bar graph and backlight, separate fuse and battery compartment, CAT IV rated test leads with screw on alligator clips, and protective rubber feet.



183

FUNCTION	100	126	153	183	192	194
Display Count	4,000	4,000	4,000	4,000	50,000	50,000
AC Volts	600	600	750	750	750	750
DC Volts	600	600	1,000	1,000	1,000	1,000
Basic DC Accuracy	0.5%	0.3%	0.3%	0.03%	0.05%	0.05%
AC/DC Amps	NA	400mA	10	10	10	10
True RMS	NA	NA	NA	Yes	Yes	Yes
Resistance	10MΩ	40MΩ	40MΩ	40MΩ	50MΩ	50MΩ
Capacitance	NA	NA	NA	10,000µF	100µF	20,000µF
Frequency	NA	NA	NA	200kHz	500kHz	500kHz
Analog Bar Graph	NA	NA	NA	Yes	Yes	Yes
Auto Range	Yes	Yes	Yes	Yes	Yes	Yes
Data Hold	NA	Yes	Yes	Yes	Yes	Yes
Min./Max. Record	NA	Yes	Yes	Yes	Yes	Yes
Sleep Mode	NA	NA	NA	Yes	Yes	Yes
Auto Power Off	Yes	Yes	Yes	NA	Yes	Yes
RS232 (cable and software)	NA	NA	NA	Optional A108	Optional A191	Optional A191
Dimensions - Inch (with boot)	7.4 x 3.4 x 1.3	6 x 3 x 2	7.75 x 3.75 x 2.25	7.75 x 3.75 x 2.25	8.0 x 4.5 x 2.0	8.0 x 4.5 x 2.0

Description	Digi-Key Part No.	Price Each	TPI Part No.
EZ 100, One Button Operation	290-1920-ND	49.95	100
Pocket Auto Range, Compact Size	290-1126-ND	59.95	126
4 Digit, Large Display	290-1153-ND	70.83	153
4 Digit, Triple Display	290-1183-ND	159.95	183
5 Digit, CAT III	290-1423-ND	219.95	192
5 Digit, CAT IV	290-1424-ND	269.95	194

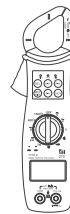
Digital Clamp-On Meter

Measure AC/DC volts, AC amps, DC microamps, resistance, continuity, temperature, capacitance, frequency and diodes.

Features:

- Non-contact voltage detection
- High voltage indication
- Ability to capture in-rush current with peak hold mode

290-1421-ND 270\$119.95



Fiber Optic Inspection Tool

Features: • Machined aluminum housing • Coated flexible 48" fiber optic cable for accessibility to tight areas with bends and curves • Hi-resolution 8,000 pixel image • Super bright LED flashlight light source • Compact aluminum carrying case with locking latches • Removable right angle mirror

Specifications: • .39 inch (1.0mm) shaft diameter • 48 inch (1,220mm) working length

810-ND\$472.11



Pocket Digital Contact Thermometers

Range: -58°F - 300°F or -50°C - 150°C **Resolution:** 0.1°F or 0.1°C **Accuracy:** ±2°F or ±1°C **Sampling Time:** 1.5 seconds **Battery:** 1.5v button **Features:** • Data hold for hard to reach areas • Auto power off

310: • Reversible LCD head • Turns for best viewing • Easy-to-read LCD • 4.9" stem

312: • Water resistant for use in wet environments • Quick response • Easy insertion into "Petes" plugs • 4.9" stem

315: • Rugged design • Water resistant • 3.1mm diameter stem for "Petes" plugs

290-1310-ND 310\$12.95

290-1312-ND 312\$15.95

290-1422-ND 315\$17.95

2212 (CN081)

All Prices are in US Dollars!

Toll-Free: 10800-1527031 (China Telecom - 中国电讯) — 10800-8527031 (CNCG - 中国网通)

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