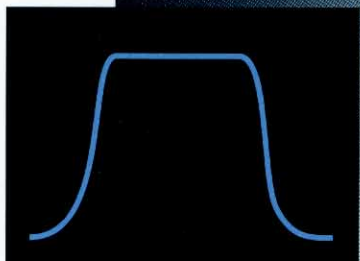


80350A
SERIES
PEAK
POWER
METERS

80350A



B/A^{P_K} 31.492 dB

DLY_A 38.5 nS

Giga-tronics

**80350A
SERIES
PEAK
POWER
SENSORS**

True Peak Power Measurement Just By Changing Sensors

The Giga-tronics 80350A Series Peak Power Sensors are the most affordable and accurate way to make peak power measurements.

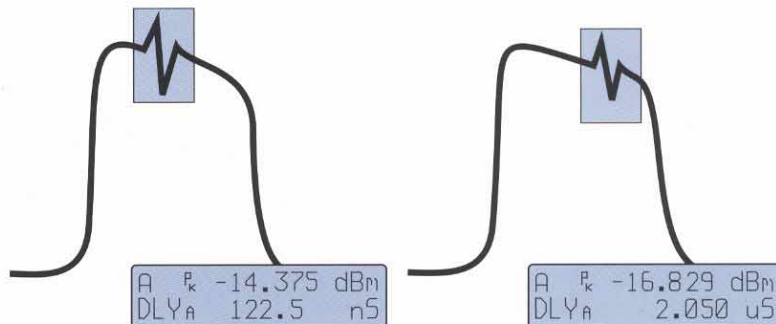
AFFORDABLE PEAK POWER MEASUREMENT

Just connect an 80350A Series Sensor to your Giga-tronics 8540 Series or 58542 VXIbus Universal Power Meter and you've got a full-performance peak power meter.

Forget about time-consuming, unreliable duty cycle corrections. With the 80350A Series Sensors you'll get NIST traceable, lab grade peak power measurement directly. And you'll get it for a lot less than you'd pay for a separate, dedicated peak power meter.

SEEING IS BELIEVING

Use the detector output of an 80350A Series Sensor to view the pulsed signal's amplitude profile on a scope, and see the exact power measurement point.



80350A Series Sensors add a marker onto a monitor output for viewing the exact measurement point on a pulse signal.

A built-in delay line lets you trigger a few nanoseconds ahead of the pulse for rising edge measurements. And a built-in time base gives you sample delay control up to 100 ms after the trigger point, with .05 ns resolution.

PEAK PERFORMANCE FROM A WHISPER TO A SHOUT

80350A Series Sensors trigger from -20 to $+20$ dBm internally, giving you the convenience of measuring low to high level radar transmissions without an external trigger.

BUILT-IN FREQUENCY RESPONSE CALIBRATION

Each 80350A Series Sensor contains an EEPROM programmed with the frequency cal factors measured at the factory or in your own cal lab.

When you key in the frequency at which power is being measured, your Giga-tronics power meter automatically applies the correct cal factor from the sensor EEPROM. Not only is this a much easier way to handle cal factors, but it also avoids the chance of errors from misreading a table or graph and entering incorrect information.

80350A Series Sensors are available in three frequency ranges — 45 MHz to 18, 26.5 or 40 GHz — for measuring peak power from as low as -27 to $+20$ dBm.



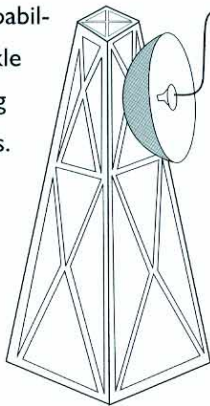
PRECISION ACCURACY

Accurate power level measurements using peak power meters depend upon precise and accurate amplitude calibration of the diode sensors. While most power meters use a fixed level calibrator, the 8540 Series and 58542 VXI Series Power Meters use a built-in swept power calibrator module.

The Giga-tronics patented calibration system automatically makes thousands of measurements and linearizes detector response characteristics in less than a minute. This calibration allows the 80350A balanced diode power sensors to achieve $\pm 3\%$ linearity, the best peak power accuracy available.

HIGH POWER MEASUREMENTS

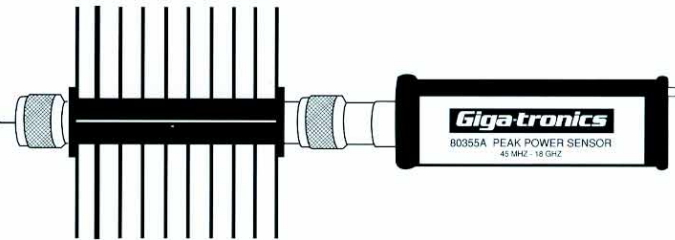
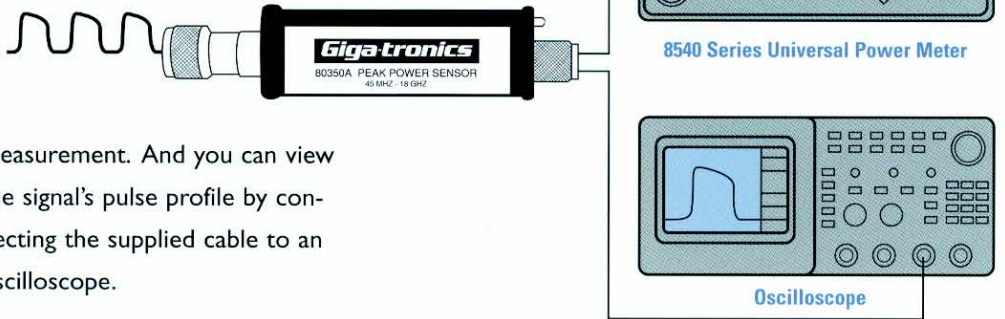
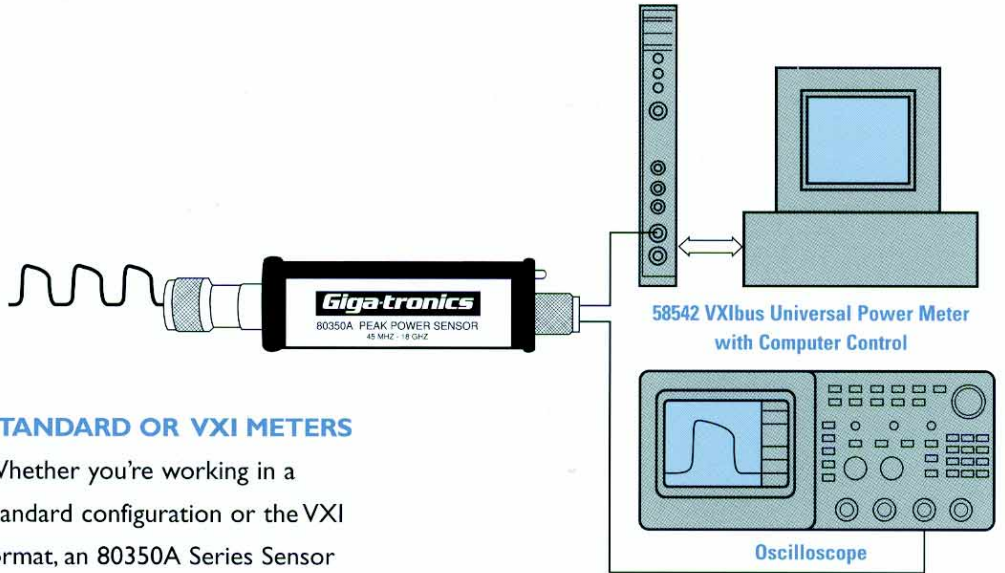
The 80350A Series High Power Sensors provide up to 200 Watts of peak handling capabilities, enough to tackle the most demanding pulse measurements.



STANDARD OR VXI METERS

Whether you're working in a standard configuration or the VXI format, an 80350A Series Sensor connected to a Giga-tronics 8540 Series or 58542 VXIbus Universal Power Meter gives you NIST traceable, lab grade peak power

measurement. And you can view the signal's pulse profile by connecting the supplied cable to an oscilloscope.



Peak Power Sensor Selection Guide								
	Frequency Range/ Power Range	Maximum Power	Power Linearity ⁴ (Frequency > 8 GHz)	RF Connector	Dimensions		Weight	VSWR
					Length	Diameter		
Standard Peak Power Sensors								
80350A	45 MHz to 18 GHz -20 to +20 dBm, Peak ¹⁰ -30 to +20 dBm, CW	+23 dBm (200 mW) CW or Peak	-30 to -20 dBm: ±0.00 dB -20 to +20 dBm: ±0.05 dB /10 dB	Type N(m) 50Ω	165 mm (6.5 in)	37 mm (1.25 in)	0.3 kg (0.7 lb)	1.12: 0.045 - 2 GHz 1.22: 2 - 12.4 GHz 1.37: 12.4 - 18 GHz
80353A	45 MHz to 26.5 GHz -20 to +20 dBm, Peak ¹⁰ -30 to +20 dBm, CW	+23 dBm (200 mW) CW or Peak	-30 to -20 dBm: ±0.00 dB -20 to +20 dBm: ±0.1 dB /10 dB	Type K(m) ¹ 50Ω	165 mm (6.5 in)	37 mm (1.25 in)	0.3 kg (0.7 lb)	1.50: 18 - 26.5 GHz 1.92: 26.5 - 40 GHz
80354A	45 MHz to 40 GHz -20 to +0.0 dBm, Peak ¹⁰ -30 to +0.0 dBm, CW	+23 dBm (200 mW) CW or Peak	-30 to -20 dBm: ±0.00 dB -20 to 0.0 dBm: ±0.2 dB /10 dB	Type K(m) ¹ 50Ω	165 mm (6.5 in)	37 mm (1.25 in)	0.3 kg (0.7 lb)	
5W Peak Power Sensor ^{2,5}								
80351A	45 MHz to 18 GHz 0 to +40 dBm, Peak -10 to +37 dBm, CW	CW: +37 dBm (5 W Average) Peak: +43 dBm	-10 to +0 dBm: ±0.00 dB +0 to +40 dBm: ±0.05 dB /10 dB	Type N(m) 50Ω	200 mm (7.9 in)	37 mm (1.25 in)	0.4 kg (1.0 lb)	1.15: 0.045 - 4 GHz 1.25: 4 - 12.4 GHz 1.35: 12.4 - 18 GHz
25W Peak Power Sensor ^{3,5}								
80352A	45 MHz to 18 GHz +10 to +50 dBm, Peak 0.0 to +44 dBm, CW	CW: +44 dBm (25 W Average) Peak: +53 dBm	0.0 to +10 dBm: ±0.00 dB +10 to +50 dBm: ±0.05 dB /10 dB	Type N(m) 50Ω	280 mm (11.0 in)	104 mm (4.1 in)	0.6 kg (1.25 lb)	1.20: 0.045 - 6 GHz 1.30: 6 - 12.4 GHz 1.40: 12.4 - 18 GHz
50W Peak Power Sensor ^{3,5}								
80355A	45 MHz to 18 GHz +10 to +50 dBm, Peak 0.0 to +47 dBm, CW	CW: +47 dBm (50 W Average) Peak: +53 dBm	0.0 to +10 dBm: ±0.00 dB +10 to +50 dBm: ±0.05 dB /10 dB	Type N(m) 50Ω	280 mm (11.0 in)	104 mm (4.1 in)	0.7 kg (1.5 lb)	1.25: 0.045 - 6 GHz 1.31: 6 - 12.4 GHz 1.45: 12.4 - 18 GHz

Sensor Calibration Factor Uncertainties				
Frequency (GHz)		Probable Uncertainties (%) ^{6,7}		
Lower	Upper	80350A	80353A	80352A ⁸
		80354A	80355A ⁸	80351A ⁸
0.1	1	1.04	1.64	4.92
>1	2	1.20	1.73	5.04
>2	4	1.33	1.93	7.09
>4	6	1.41	2.03	7.17
>6	8	1.52	2.08	7.25
>8	12.4	1.92	2.55	7.56
>12.4	18	2.11	2.83	12.37
>18	26.5	—	3.63	—
>26.5	40	—	6.05	—

¹The K connector is electrically and mechanically compatible with the APC-3.5 and SMA connectors. ²Power coefficient equals <0.01 dB/Watt (Avg.). ³Power coefficient equals <0.015 dB/Watt (Avg.). ⁴For frequencies above 8 GHz, add power linearity to system linearity. ⁵Peak operating range above CW maximum range is limited to <10% duty cycle. ⁶Includes uncertainty of reference standard and transfer uncertainty. Directly traceable to NIST. Measured at constant temperature after 24 hour warm up. ⁷Square root of sum of the individual uncertainties squared (RSS). ⁸Cal Factor numbers allow for 3% repeatability when re-connecting attenuator to sensor; and 3% for attenuator measurement uncertainty and mismatch of sensor/pad combination. Attenuator frequency response is added to the Sensor Cal Factors which are stored in the sensor's EEPROM. ⁹Depending on sensor used. ¹⁰-27 dBm typical for delay >1 μs.

80350A Peak Power Sensor Specifications

Frequency Range:

45 MHz to 40 GHz⁷

Peak Power Dynamic Range:

40 dB⁹

CW Power Dynamic Range:

50 dB⁹

Rise Time: (10% to 90%)

<100 ns Contact Giga-tronics for faster risetimes.

Fall Time: (90% to 10%)

<250 ns

System Linearity at 50 MHz:

±0.13 dB from -30 to +16 dBm, ±.13 dB +
(+0 dB, -0.05 dB/dB) from +16 to +20 dBm

Zero Accuracy:

Zero Set⁴: ≤±1.0 μW, Peak at >1 μs delay
≤±5.0 μW, Peak at <1 μs delay

≤±0.05 μW, CW

Zero Drift⁴: <±1.0 μW, Peak; <±0.05 μW,
CW, in 1 hour

Noise Uncertainty⁴:

<±1.0 μW, Peak; <±0.05 μW, CW, measured
over a 1 minute interval.

Sample Delay Timing:

Delay Range: -20 to >104 ms

Delay Resolution: 0.5 ns

Delay Jitter: ±2.0 ns

Settling Time:

<250 ns (to within 3%)

Trigger Level Set Range:

Internal: <-20 to +20 dBm for 80350A,
Resolution: 0.1 dB. Accuracy is level
and frequency dependent.

External: 0.0 V to >4.0 V

Resolution: 0.01 V.

Typically accurate to ±0.2 V.

Trigger Jitter: <±2.0 ns

Trigger Start Time Offset: *Settable to <±1 ns*

Control Inputs and Outputs:

Trigger Input: [SMB(m) connector] External
trigger input rated to 10 V. High Impedance.

Detector Out: [SMB(m) connector] Monitor
real time pulse waveform and sample point on an
oscilloscope with this voltage output (uncalibrated).

Sample Delay Out: [SMB(m) connector]
TTL High, between trigger and sample points. Connect
to scope's second channel or external trigger input.

Compatible Peak & CW Power Meters:

8541: Single Channel Power Meter

8542: Dual Channel Power Meter

58542: VXI Power Meter

Compatible Sensor Cables:

20954-001 5 feet

20954-002 10 feet

Consult the manufacturer regarding the use of cables
over 10 feet long.

Included Accessories:

3 SMB(f) to BNC(m) cables, 2 m (6 ft) long

Cable Harness Wrap, 1.2 m (4 ft) long.

Optional Accessories:

Option 02: 12 ft SMB to BNC cable

Option 03: SMB to SMA adapter

Typical performance, (shown in italics), is non-warranted.

Specifications subject to change without notice.

Giga-tronics

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