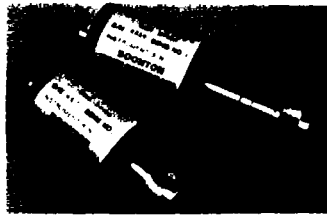


# BOONTON

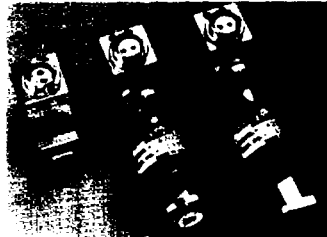
## POWER METERS

### Power Sensors

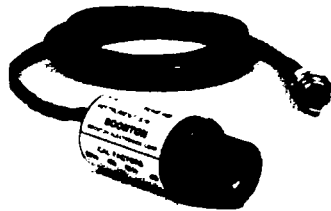
Models 42, 4200, 4210, and 4300 Series



Diode Sensors

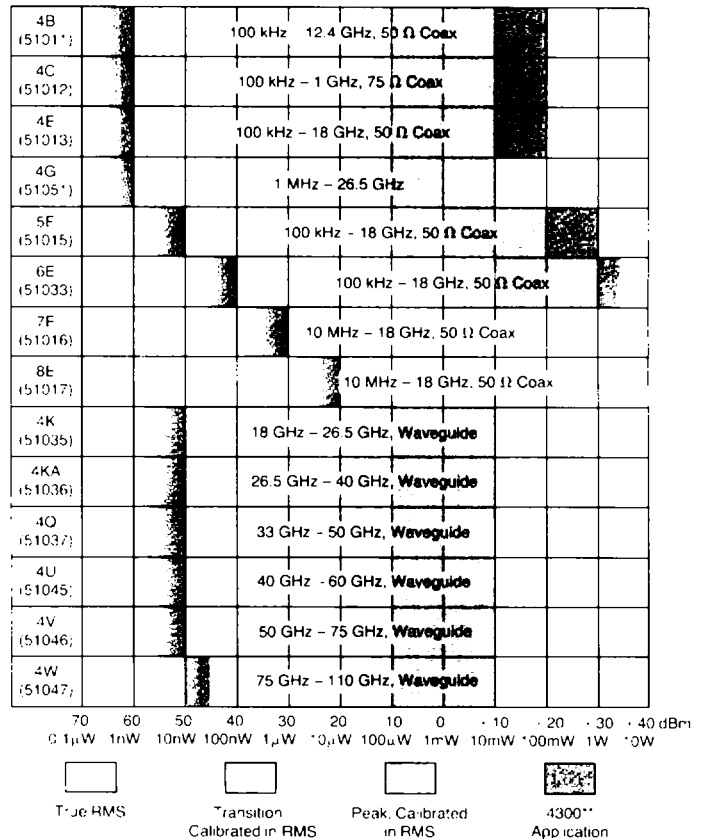


Waveguide Sensors



Thermocouple Sensors

### Sensor Characteristics



### Sensor Calibration Factor Uncertainty

Sensor	Frequency GHz																				
	.03-.05*	<2	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19-26.5	
4B (51911)																					
Max. %	0	1.3	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.5	4.5								
RSS %	0	1.3	1.7	1.7	1.7	1.8	1.9	2.0	2.1	2.5	2.5	2.4	3.0								
4C (51012)																					
Max. %	0	1.3																			
RSS %	0	1.3																			
4E (51013)																					
Max. %	0	1.3	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
RSS %	0	1.3	1.8	1.8	1.8	1.9	2.0	2.0	2.2	2.6	2.5	2.7	3.0	3.4	3.1	3.2	3.3	3.1	3.4		
4G (51051)																					
Max. %	0	1.3	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
RSS %	0	1.3	1.7	1.7	1.7	1.7	1.8	1.9	2.0	2.4	2.3	2.2	2.6	3.0	2.8	2.8	2.9	2.8	3.1	3.4	
5E (51015)																					
Max. %	0	1.3	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
RSS %	0	1.3	1.7	1.7	1.7	1.7	1.8	1.9	2.0	2.4	2.3	2.2	2.8	3.0	2.8	2.8	2.9	2.8	3.1		
6E (51033)																					
Max. %	0	1.3	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
RSS %	0	1.3	1.7	1.7	1.7	1.7	1.8	1.9	2.0	2.4	2.3	2.2	2.8	3.0	2.8	2.8	2.9	2.8	3.1		
7E (51016)																					
Max. %	0	1.3	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
RSS %	0	1.3	1.8	1.8	1.8	1.8	1.9	2.0	2.1	2.5	2.4	2.6	2.9	3.3	3.1	3.1	3.2	3.0	3.4		
8E (51017)																					
Max. %	0	1.3	3.0	3.0	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
RSS %	0	1.3	1.8	1.8	1.8	1.8	1.9	2.0	2.1	2.5	2.4	2.6	2.9	3.3	3.1	3.1	3.2	3.0	3.4		

\*Reference Frequency = 30 or 50 MHz. Note: CAL Factors are supplied at every 1 GHz

### Wave Guide Sensor Calibration Factor Uncertainty

Sensor	Ref. GHz	At Ref. Freq.	Over Sensor BW	Sensor	Ref. GHz	At Ref. Freq.	Over Sensor BW	Sensor	Ref. GHz	At Ref. Freq.	Over Sensor BW
4K (51035)	22	6	6	4Q (51037)	40	10	13	4V (51046)	60	12	13
Max. %		5	5	Max. %		6	7	Max. %		6	9
RSS %				RSS %				RSS %			
4KA (51036)	33	6	10	4U (51045)	40	10	13	4W (51047)	94	12	13
Max. %		5	7	Max. %		6	8	Max. %		9	11
RSS %				RSS %				RSS %			

Note: For waveguide sensors, the reference calibration is at 20 dBm. For levels other than 20 dBm there is an additional uncertainty of .01 dB 1 dB relative to 20 dBm.

## POWER METERS

### Power Sensors

Models 42, 4200, 4210, and 4300 Series (Continued)

#### Specifications

Model (Impedance) (RF Connector)	For use with model				Freq Range	PWR range (Watts) (dBm)	Overload Rating (Watts) (dBm)	Max. SWR	
	4 2	4 2	4 0	4 1				Frequency	SWR
<b>DIODE SENSORS</b>									
4B (51011) 50Ω N(M)	X	X	X	X	100 kHz to 12.4 GHz	1 nW to 10 mW -80 to +10 dBm 0.1 nW to 100 mW** -70 to +20 dBm	300 mW +25 dBm	100 kHz to 2 GHz 2 GHz to 4 GHz 4 GHz to 11 GHz 11 GHz to 12.4 GHz	1.12 1.2 1.4 1.6
4C (51012) 75Ω N(M)	X	X	X	X	100 kHz to 1 GHz	1 nW to 10 mW -80 to +10 dBm 0.1 nW to 100 mW** -70 to +20 dBm	300 mW +25 dBm	100 kHz to 1 GHz	1.18
4E (51013) 50Ω N(M)	X	X	X	X	100 kHz to 18 GHz	1 nW to 10 mW -80 to +10 dBm 0.1 nW to 100 mW** -70 to +20 dBm	300 mW +25 dBm	100 kHz to 4 GHz 4 GHz to 10 GHz 10 GHz to 18 GHz	1.3 1.5 1.7
4G (51051) 50Ω N(M)		X		X	1 MHz to 26.5 GHz	1 nW to 10 mW -80 to +10 dBm 0.1 nW to 10 mW** -80 to +10 dBm	300 mW +25 dBm	1 MHz to 12.4 GHz 12.8 GHz to 18 GHz 18 GHz to 26.5 GHz	1.28 1.37 1.92
5E (51015) 50Ω N(M)	X	X	X	X	100 kHz to 18 GHz	10 nW to 100 mW -50 to +20 dBm 1.0 nW to 1 W** -80 to +30 dBm	2 W +33 dBm	100 kHz to 1 GHz 1 GHz to 2 GHz 2 GHz to 4 GHz 4 GHz to 12.4 GHz 12.4 GHz to 18 GHz	1.07 1.10 1.12 1.18 1.28
6E (51033) 50Ω N(M)	X	X	X	X	100 kHz to 18 GHz	100 nW to 1 W -40 to +30 dBm 10 nW to 2 W** -50 to +33 dBm	2 W +33 dBm	100 kHz to 1 GHz 1 GHz to 2 GHz 2 GHz to 4 GHz 4 GHz to 12.4 GHz 12.4 GHz to 18 GHz	1.07 1.10 1.12 1.18 1.28
<b>THERMOCOUPLE SENSORS</b>									
7E (51016) 50Ω N(M)		X	X	X	10 MHz to 18 GHz	1 μW to 10 mW -30 to +10 dBm 100 nW to 10 mW** -40 to +10 dBm	30 mW +15 dBm*	10 MHz to 15 MHz 15 MHz to 10 GHz 10 GHz to 18 GHz	1.5 1.35 1.6
Thermocouple Pulse Characteristics at 25°C: Maximum pulse energy = 50 W-μsec. Maximum pulse power = 1 W. Maximum pulse duration at maximum pulse power = 5 μsec.									
8E (51017) 50Ω N(M)		X	X	X	10 MHz to 18 GHz	10 μW to 100 mW -20 to +20 dBm 1.0 μW to 100 mW** -30 to +20 dBm	200 mW +23 dBm*	10 MHz to 15 MHz 15 MHz to 10 GHz 10 GHz to 18 GHz	1.5 1.35 1.6
Thermocouple Pulse Characteristics at 25°C: Maximum pulse energy = 30 W-μsec. Maximum pulse power = 15 W. Maximum pulse duration at maximum pulse power = 2 μsec.									
<b>WAVEGUIDE SENSORS</b>									
4K (51035) WR-42 UG-595/U		X		X	18 GHz to 26.5 GHz	10 nW to 10 mW -50 to +10 dBm 1.0 nW to 10 mW** -60 to +10 dBm	100 mW +20 dBm	18 GHz to 26.5 GHz	1.3
4KA (51038) WR-28 UG-599/U		X		X	26.5 GHz to 40 GHz	10 nW to 10 mW -50 to +10 dBm 1.0 nW to 10 mW** -60 to +10 dBm	100 mW +20 dBm	26.5 GHz to 40 GHz	1.3
4Q (51037) WR-22 UG-383/U		X		X	33 GHz to 50 GHz	10 nW to 10 mW -50 to +10 dBm 1.0 nW to 10 mW** -60 to +10 dBm	100 mW +20 dBm	33 GHz to 50 GHz	1.3
4U (51045) WR-19 UG-383/U		X		X	40 GHz to 60 GHz	10 nW to 10 mW -50 to +10 dBm 1.0 nW to 10 mW** -60 to +10 dBm	100 mW +20 dBm	40 GHz to 60 GHz	1.3
4V (51046) WR-15 UG-385/U		X		X	50 GHz to 75 GHz	10 nW to 10 mW -50 to +10 dBm 1.0 nW to 10 mW** -60 to +10 dBm	100 mW +20 dBm	50 GHz to 75 GHz	1.3
4W (51047) WR-10 UG-387/U		X		X	75 GHz to 110 GHz	31.8 nW to 10 mW -45 to +10 dBm 3.2 nW to 10 mW** -55 to +10 dBm	100 mW +20 dBm	75 GHz to 110 GHz	1.3
*Will withstand short periods of overload, extended overload operation may result in permanent change in characteristics or burnout. **4300 Power Range. See 4300 Data Sheet for low end noise limitations. NOTE: 4B and 4E, add 0.05 dB/mW above 4 GHz. For 5E add 0.005 dB/mW and 6E add 0.0005 dB/mW to the measurement uncertainty.									