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## MODEL PH2000 SERIES OF POWER HEADS

The PH2000 Series of Power Heads is designed for use with the Model PM2002 Power Meter. The most critical element of any power meter is the power head. The head is responsible for converting the incident RF or microwave power to an equivalent voltage which can be processed by the power meter. The head must also present to the incident power an impedance which is closely matched to the transmission system to avoid mismatch errors. Finally, the head must introduce the smallest drift and noise possible so as not to disturb the measurement.

Amplifier Research offers a family of diode or thermocouple, 50 or 75 ohm power heads with excellent specifications. All are supplied with carefully measured calibration factors that are NIST-traceable. Each Power Head is supplied with a data adapter and a 5 foot Power Head Cable.

Model	Model Dynamic Range		Overload Rating	Max. SWR	Max. SWR		Drift and Noise Lowest Range		
Impedance RF Connector	Frequency Range	Model PM2002	Peak Power CW Power	Frequency	SWR	Drift (typical) 1 Hr Note 3	Noise RMS	(typical) 2σ	
			DUAL DIODE H	IEADS		_			
PH2000	10 kHz to 8GHz	-60 to +20 dBm	1 W for 1 µS	10 kHz to 2 GHz	1.12	150 pW	65 pW	130 pW	
$50\Omega$			300 mW	2 GHz to 4 GHz	1.20				
N(M)				4 GHz to 8 GHz	1.40				
PH2001	100 kHz to 12.4 GHz	-60 to +20 dBm	1 W for 1 µS	100 kHz to 2 GHz	1.12	150 pW	65 pW	130 pW	
$50\Omega$			300 mW	2 GHz to 4 GHz	1.20				
N(M)				4 GHz to 11 GHz	1.40				
<b>B110</b> 00 <b>0</b>		10 10 10		11 GHz to 12.4 GHz	1.60	4.50		100 111	
PH2002	100 kHz to 1 GHz	-60 to $+20$ dBm	1 W for 1 µS	100 kHz to 1 GHz	1.18	150 pW	65 pW	130 pW	
$75\Omega$			300 mW						
N(M)									
PH2004	100 kHz to 18 GHz	-60 to +20 dBm	1 W for 1 µS	100 kHz to 4 GHz	1.30	150 pW	65 pW	130 pW	
50Ω			300 mW	4 GHz to 10 GHz	1.50				
N(M)				10 GHz to 18 GHz	1.70	400 444		10	
PH2005	500 kHz to 18 GHz	-70 to $+20$ dBm	1 W for 1 µS	500 kHz to 2 GHz	1.15	100 pW	30 pW	60 pW	
50Ω			300 mW	2 GHz to 6 GHz	1.20				
N(M)		10 00 10		6 GHz to 18 GHz	1.40	400 444		10	
PH2006	500 kHz to 18 GHz	-60 to $+30$ dBm	10 W for 1µS	500 kHz to 2 GHz	1.15	100 pW	30 pW	60 pW	
50 <u>0</u>			3 W	2 GHZ to 6 GHZ	1.20				
N(M)	100111 + 10.011	50 (		6 GHz to 18 GHz	1.40	1.5 337	65 M	1.2 . 11/	
PH2007	100 KHZ to 18 GHZ	-50 to $+30$ dBm	$10 \text{ W for } 1\mu\text{S}$	100 KHZ to 1 GHZ	1.07	1.5 nw	.65 n w	1.3 nw	
50 <u>0</u>			2 W	1 GHZ to 2 GHZ	1.10				
N(M)				A GHZ to 12 A GHZ	1.12				
				4 GHZ to 12.4 GHZ	1.10				
PH2008	100 kHz to 18 GHz	$-40$ to $\pm 33$ dBm	10 W for 1uS	100 kHz to 1 GHz	1.20	15 nW	65 nW	13 nW	
500	100 MHZ 10 10 OHZ	40 to 155 dBill	2 W	1 GHz to 2 GHz	1.07	15 11 1	0.5 11 11	15 11 11	
N(M)			2 11	2 GHz to 4 GHz	1.12				
				4 GHz to 12.4 GHz	1.18				
				12.4 GHz to 18 GHz	1.28				
PH2009	10 MHz to 26.5 GHz	-70 to +20 dBm	1 W for 1 uS	10 MHz to 2 GHz	1.15	100 pW	30 pW	60 pW	
50Ω			300 mW	2 GHz to 4 GHz	1.20		· ·	-	
K(M)				4 GHz to 18 GHz	1.45				
				18 GHz to 26.5 GHz	1.50				
PH2010	30 MHz to 40 GHz	-70 to +20 dBm	1 W for 1 µS	30 MHz to 4 GHz	1.25	100 pW	30 pW	60 pW	
$50\Omega$			300 mW	4 GHz to 38 GHz	1.65				
K(M)				38 GHz to 40 GHz	2.00				
PH2011	100 kHz to 18 GHz	-20 to +37 dBm	100 W for	100 kHz to 4 GHz	1.15	150 nW	65 nW	130 nW	
50Ω			1µS	4 GHz to 12 GHz	1.25				
N(M)			7W	12 GHz to 18 GHz	1.40				

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		,	THERMOCOUPLE	E HEADS				
PH2030	10 MHz to 18 GHz	-20 to +20 dBm	15 W	10 MHz to 30 MHz	1.25	200 nW	100 nW	200 nW
50Ω			300 mW	30 MHz to 16 GHz	1.18			
N(M)			Note 1	16 GHz to 18 GHz	1.28			
PH2031	100 kHz to 4.2 GHz	-20 to +20 dBm	15 W	100 kHz to 300 kHz	1.70	200 nW	100 nW	200 nW
50Ω			300 mW	100 kHz to 2 GHz	1.35			
N(M)			Note 1	2 GHz to 4.2 GHz	1.60			
PH2032	30 MHz to 26.5 GHz	-20 to +20 dBm	15 W	30 MHz to 2 GHz	1.35	200 nW	100 nW	200 nW
50Ω			300 mW	2 GHz to 18 GHz	1.40			
K(M)			Note 1	18 GHz to 26.5 GHz	1.60			
PH2033	10 MHz to 18 GHz	0 to +37 dBm	150 W	10 MHz to 2 GHz	1.10	20 µW	10 µW	20 µW
50Ω			10 W	2 GHz to 12.4 GHz	1.18			
N(M)			Note 2	12.4 GHz to 18 GHz	1.28			
PH2034	100 kHz to 4.2 GHz	0 to +37 dBm	150 W	100 kHz to 2 GHz	1.10	20 µW	10 µW	20 µW
50Ω			10 W	2 GHz to 4.2 GHz	1.18			
N(M)			Note 2					
PH2035	10 MHz to 18 GHz	0 to +44 dBm	150 W	10 MHz to 2 GHz	1.10	50 μW	25 μW	50 µW
50Ω			50 W	2 GHz to 12.4 GHz	1.18			
N(M)			Note 2	12.4 GHz to 18 GHz	1.28			
PH2036	100 kHz to 4.2 GHz	0 to +44 dBm	150 W	100 kHz to 2 GHz	1.10	50 µW	25 µW	50 µW
50Ω			50 W	2 GHz to 4.2 GHz	1.18			
N(M)			Note 2					

Notes for Power Heads:

1. Thermocouple Pulse Characteristics at 25°C: Maximum pulse energy = 30 w-µsec. (per pulse).

2. Thermocouple Pulse Characteristics at 25°C: Maximum pulse energy = 300 w-µsec. (per pulse).

3. After 2-hour warmup: High frequency power linearity uncertainty: (worst case) PH2000, PH2001, PH2002, PH2003 and PH2004 (0.005 x f) dB per dB above +4dBm; (above +14dBm for the PH2007 and above +24 dBm for the PH2008), where f is in GHz.

4. Power Linearity Uncertainty at 50MHz:

<10dBm: 1% for PH2000, PH2001, PH2002, PH2003, PH2004, PH2007, PH2008, PH2030, PH2009, PH2010 and PH2005 Heads.

10 to 20dBm: 1% for PH2007 and PH 2008 Heads: 3% for PH2000, PH2001, PH2002, PH2003 and PH 2004 Heads.

20 to 33dBm: 3% for PH2007 and PH2008 Heads.

10 to 17dBm: 3% for PH2009, PH2010 and PH2005 Heads.

17 to 20dBm: 6% for pH2009, PH2010 and PH2005 Heads.

- 30 to 37dBm: 3% for PH2011 Head.
- 5. Teperature Influence:

a. 0 to 25°C: 0.02 dB/°C; 25 to 55°C: 0.01 dB/°C for PH2001, PH2002, PH2003, PH2004, PH2007, PH2008 and PH2005 Heads.

b. 0 to 55 °C: 0.03 dB/°C for PH2009, PH2010 and PH2011 Heads.

c. 0 to 55°C: 0.01 dB/°C for PH2030, PH2031, PH2032, PH2033, PH2034, PH2035 and PH2036 Heads.

## MODEL PH2000/PM2002 ACCESSORIES

Part No.	
66239	5ft. Power Head Cable
66240	10ft. Power Head Cable
66241	20ft. Power Head Cable
66242	50ft. Power Head Cable
66243	100ft. Power Head Cable
41303	Power Head Cable Interconnection Adapter (F/F)
FT3000	Bulkhead Feedthrough Connector (F/F)
RM2000	Rackmounting Kit
1010296-101	Data Adapter, for Power Head