



Instrumentation  
product Amplifiers  
summary



*...the power in microwaves!*

# Instrumentation Amplifiers (TWTAS)

## For Laboratory Applications (including EMC Testing, PIM Testing, Scientific and Medical)

Our instrumentation amplifiers are closely related to our rugged amplifiers.

They are based on the same switched mode power supply technology as the rugged amplifiers - with all the advantages of performance and reliability, but have been neatly re-packaged for less demanding physical environments into compact, lightweight and affordable rack-mountable units, typically at 4U or 3U high.

A set of standard amplifiers covers the range between 1-40 GHz in both pulsed and CW modes. In addition, special products can be designed to customers' specific requirements.

Over the past 15 years TMD has proved itself to be a world leader in TWTA design innovation, offering particularly unusual products for a variety of markets and applications, many of which have proven to be unobtainable elsewhere. We have particular strength in the area of high power pulsed TWTAs (up to 40 kW) for EMC HiRF testing.

For many years TMD has been providing amplifiers for scientific establishments such as CERN. Projects we have been involved with have included: Driver Amplifiers for Anti-matter Experimentation (CERN in collaboration with Riken Laboratory, Japan), Amplifiers for the CERN CLIC Test Facility CTF3 and Kicker Amplifiers for Oxford University.

The following table shows a selection of generic products in this range – but don't worry if you can't see exactly what you are looking for – bespoke solutions are available, although the impossible may take a little longer! Our Business Development Team is always eager to discuss the ways in which TMD can contribute to new technology areas.

For more details of TMD's products and capabilities, please go to [www.tmd.co.uk](http://www.tmd.co.uk), or request a copy of our capability brochure.

We also offer a comprehensive repairs service for our microwave products; contact us at [wecare@tmd.co.uk](mailto:wecare@tmd.co.uk) for an evaluation.

We provide after sales support wherever you are in the world.

**TMD is approved to the rigorous Quality Standard BS EN ISO9001:2008 – quality is at the heart of everything we do.**



## Standard Broadband Amplifiers

### CW 1 - 18.0 GHz (also CW/pulsed options available)

Type Number	Frequency Range (GHz)	Output Power (W Min)	Minimum Gain (dB)	Height	Length (mm)	Weight (kg)
<b>Lower Power</b>						
PTC6341	0.8 - 2.8	250	54	4U	700	30
PTC6342	2.0 - 4.0	250	54	4U	700	30
PTC6492	2.0 - 6.0	200	54	4U	700	30
PTC6343	2.5 - 8.0	250	54	4U	700	30
PTC6344	4.0 - 8.0	250	54	4U	700	30
PTC6581	6.5 - 18.0	200	53	4U	700	30
PTC6348	7.5 - 18.0	250	54	4U	700	30
PTC6322	6.0 - 18.0	300	55	4U	700	30
<b>Medium Power</b>						
PTC6440	0.8 - 2.5	500	57	4U	800	37
PTC6441	2.5 - 7.5	500	57	4U	700	35
PTC6522	6.0 - 18.0	550	57	8U	700	48
PTC6442	7.5 - 18.0	500	57	8U	700	48
<b>High Power</b>						
PTC7440	1.0 - 2.5	1000	60	8U	700	50
PTC7441	2.5 - 7.5	1000	60	8U	700	50
PTC7442	7.5 - 18.0	1000	60	12U	700	80

### Pulsed 1 - 18.0 GHz

Type Number	Frequency Range (GHz)	Output Power (W Min)	Minimum Gain (dB)	Duty Cycle (Max %)	Pulse Length (us)	Height	Length (mm)	Weight (kg)
<b>Lower Power</b>								
PTC7351	1.0 - 2.5	2000	63	6	0.2 - 100	4U	800	30
PTC6352	2.0 - 4.0	2000	63	6	0.2 - 100	4U	700	30
PTC6353	2.5 - 8.0	1700	60	6	0.2 - 100	4U	700	30
PTC6354	4.0 - 8.0	2000	63	6	0.2 - 100	4U	700	30
PTC6338	5.0 - 11.0	1900	70	5	0.2 - 100	4U	700	30
PTC6358	7.5 - 18.0	1500	62	6	0.2 - 100	4U	700	30
<b>Medium Power</b>								
PTC7351	1.0 - 2.5	2000	63	6	0.2 - 100	4U	800	30
PTC7353	2.0 - 8.0	2000	60	6	0.2 - 100	4U	700	30
PTC6658	8.0 - 18.0	2000	63	4	0.2 - 20	4U	700	30
PTC6356	8.0 - 12.4	2700	70	8	0.2 - 100	4U	700	30
<b>High Power</b>								
PTC6704	1.0 - 1.5	10000	60	1	0.2 - 50	4U	900	40
PTC7359	1.0 - 2.0	3800	63	4	0.1 - 50	4U	800	35
PTC7355	1.0 - 2.5	4200	66	6	0.2 - 20	12U	800	125
PTC7030	1.1 - 1.5	30000	65	1	0.2 - 20	8U	1200	100
PTC6706	1.5 - 2.0	7000	60	1	0.2 - 50	4U	900	40
PTC6409	1.9 - 2.7	6000	70	6	0.2 - 50	4U	700	30
PTC7352	2.0 - 4.0	5000	60	6	0.2 - 20	4U	800	35
PTC7357	2.0 - 4.0	10000	70	6	0.2 - 20	12U	800	100
PTC6303	2.9 - 4.0	9000	70	4	0.2 - 100	4U	700	30
PTC7354	4.0 - 8.0	4500	70	6	0.2 - 100	6U	700	40
PTC6326	8.0 - 12.0	4500	70	6	0.2 - 50	4U	700	30
PTC6357	8.0 - 11.0	6800	70	5	0.2 - 50	4U	700	30
PTC7716	8.7 - 10.5	6000	67	7	0.2 - 50	4U	700	30
PTC6447	10.5 - 12.5	9000	70	2	0.2 - 20	4U	700	30
PTC6382	12.4 - 18.0	3500	70	6	0.2 - 20	4U	700	35

## CW Millimetric (also CW/pulsed options)

Type Number	Frequency Range (GHz)	Output Power (W Min)	Minimum Gain (dB)	Height	Length (mm)	Weight (kg)
PTC6329	18.0 - 28.0	45	50	4U	700	27
PTC6479S	17.5 - 21.5	210	53	4U	700	30
PTC6479	18.0 - 23.0	210	53	4U	780	27
PTC6337	18.0 - 40.0	40	50	4U	700	27
PTC6333	26.5 - 40.0	40	50	4U	700	27
PTC7732	27.0 - 31.0	112	46	4U	780	30
PTC7732S	31.6 - 32.5	220	54	4U	700	27

All units are Integral Forced Air cooled except PTC7030 which is IFA plus internal liquid cooling.

## Special Amplifiers (in order of starting frequency)

Size: Almost all units are 19" wide S= standard 700mm long, 4U high (all measurements given in mm) \* Optional pulse modulation capacity: 0.2 - ∞ us pulse

Type Number	Frequency Range (GHz)	Output Power (W Min)	Minimum Gain (dB)	Duty Cycle (Max %)	Pulse Length (us)	Cooling	Size (see notes above)	Weight (kg)
PTC6331	0.8 - 2.8	200	53	100	-*	IFA	S	30
PTC6468	1.2 - 1.4	20,000	70	1	0.2 - 50	IFA plus Integral Liquid Cooling	1025 L 8U H	110
PTC6443	3.6 - 4.2	4000	64	0.5	0.2 - 20	IFA	S	35
PTC6310	5.4 - 5.9	10,000	70	5	0.2 - 20	IFA plus Integral Liquid Cooling	S	30
PTC6579	6.0 - 18.0	200	53	100	-*	IFA	S	30
PTC6581	6.5 - 18.0	180	53	100	-*	IFA	S	30
PTC6568	8.5 - 10.5	8000	70	5	0.2 - 100	IFA	S	30
PTC6445	9.0 - 10.5	8000	70	5	0.2 - 20	IFA	S	27
PTC6313	12.0 - 14.5	350	55	100	-*	IFA	S	30
PTC6553	15.0 - 17.0	3500	65	2	0.2 - 20	IFA	S	30
PTC6437	18.0 - 23.0	200	53	100	CW	IFA	S	30
PTC6315	20.2 - 21.2	350	56	100	CW	IFA	S	30
PTC6317	27.5 - 31.0	130	51	100	CW	IFA	S	30
PTC7728	27.5 - 30.0	100	50	100	CW	IFA	S	30
PTC7729	27.5 - 30.0	150	47	100	CW	IFA	S	30
PTC6429	34.5 - 35.5	100	40	35	CW	IFA	S	30
PTC7727	43.5 - 45.5	100	60	100	CW	IFA	S	27
<b>Dual Band</b>								
PTC6493	2.83 - 2.93 & 5.49 - 5.59	1000	70	4	0.2 - 20	IFA	600 L	30
<b>Solid State</b>								
PTS6801	2.975 - 3.025	300	46	1	0.5 - 20	IFA	478 W 425 L 134 H	11
PTS6434	1.025 - 1.035	1000	60	4	0.5 - 10	IFA	600	25

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