SPECIFICATION FOR PTCM1209P, 8.0 - 18.0 GHZ, MINIMUM 1.9 KW, 4 % DUTY MODULAR INSTRUMENTATION AMPLIFIER

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AMENDMENT RECORD

Issue Number	Date	Description
1	Sept 2016	Initial Issue
2	August 2017	Updated Prime Power spec. CN5514
3	January 2018	CN5613
4	March 2019	CN5977

Associated/Reference documents

Reference should also be made to the following documents:

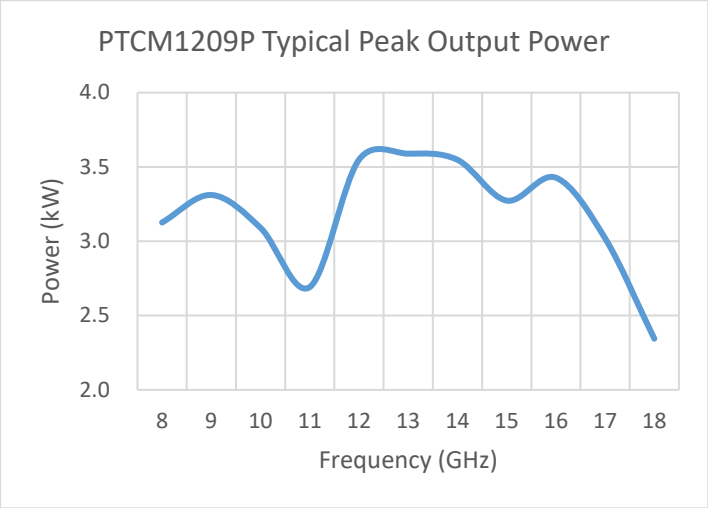
Document Number	Issue Number	Description

The PTCM1209P is a high power pulsed broadband Travelling Wave Tube (TWT) Amplifier with high efficiency, instantaneous bandwidth and high gain when compared with solid state amplifiers.

For high availability user applications including EMC / Radiated Immunity, Communications, EW, Radar, RF Component Testing and scientific applications.

Continuing with TMDs heritage in ultra-reliable amplifiers, we have now improved the capability of our amplifiers through built in self-test, advanced fault diagnostics, modular, plug and play field replaceable PCBs and Ethernet remote control and monitoring. This product now offers unparalleled availability to the end user.

Example PTCM: Can be supplied with or without LCD screen



A standard but customisable 6U chassis and "soft" re-configurable control system enables many options to be easily and quickly configured.

- Rugged, ultra-reliable design
- Advanced Self-Diagnostics
- Ethernet interface - Graphical User Interface to run on any PC or laptop with a standard browser
- Remote Management and diagnostics
- RF forward sample port available
- ISO9001 Accredited Quality Assurance

RF Specifications

	Min	Typ	Max	Unit
Frequency	8.0		18.0	GHz
Peak Output Power	1.9	2.5		kW Pulse
RF Input Amplitude		0	+5	dBm
Fwd Power Monitor		-50		dB
Load VSWR*		1.5:1	2:1	ratio
Reverse Power Protection		25%		Full Power
Spurious			-40	dBc
Harmonics		-8	-2	dBc
Pulse Rise/ Fall Time		50	100	ns
Pulse Propagation Delay		200	300	ns
Beam ON Noise		-14	2	dBm/MHz
Pulse Width	0.2		50	µs
PRF			100	kHz
Duty Cycle	0		4.0	%

* Note: Load VSWR is the trip level for damage protection. For full performance TMD recommends load VSWR less than or equal to 1.5 : 1

Mechanical

	Value
Width	19" Front panel
Height	6U Front panel height
Depth	800mm, excluding handles (provision for external EMC shield at rear)
Weight	47kg ±5%
RF Input Connector	Type: N Female, 50 ohm
RF Sample Port	Type: N Female, 50 ohm, nominally -50dB wrt. RF output
RF Output Connector	Type: WRD750
RF Modulation Input	Type: BNC Female, 5V TTL
Ethernet Input	RJ45
Mains Input	IEC C20 male

Electrical Specifications

	Single Phase	Three Phase
Input Voltage	240 V -20%/+10%	208 V_{LL} ± 10%*
Frequency	50/60 Hz	50/60 Hz
Operating Current	Typ: 6.5 A, Max: 8 A	Typ: 2.5 A, Max: 3.5 A
Power Consumption	Typ: 1.5 kW, Max 2.5 kW	Typ: 1.5 kW, Max 2.5 kW

* V_{LL} is defined as the voltage across two electrical phases

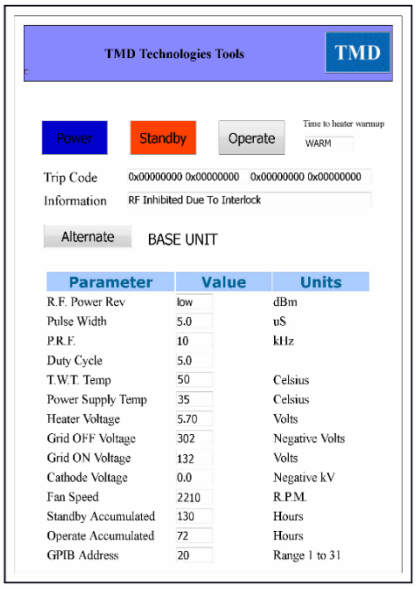
Environmental

Parameter	Value
Vibration	Military Standard 810G- Transport
Operating Temperature	0℃ to +40℃
Non-Operating Temperature Limit	-10℃ to +50℃
Humidity	80% maximum, non-condensing

Protection

The amplifier has advanced TWT and power supply protection,

- Heater, Grid and Cathode Power Supply continual monitoring
- VSWR Protection – unit will trip if reverse power exceeds 25% of max rated power
- TWT Current and Voltage Protection
- TWT Arc Protection
- TWT and PSU Over Temperature
- Standby and Operate Accumulated Hours
- Input Modulation Limit Check on Pulse Width, Pulse Repetition Frequency and Duty Cycle



Example: Integrated Web Sever

Remote Interface and/or Integral LCD Screen

The web page based interface shows every parameter on a single page with no need for annoying menus. All values are updated in real time.

Enhanced availability through Fault Diagnostics

1. Detailed trip reasons are displayed on the web page
2. TMD can connect to the unit over the internet (with the customers permission) to diagnose and support any fault in more detail
3. All power supplies are field replaceable items that slot in from the rear panel – new ones can be fitted in a matter of minutes
4. The amplifier will log operational hours and any tripped states with a date stamp throughout its life. This greatly aids diagnostics, for instance, TMD can assess (when allowed) whether a TWT is near end of life and arrange a replacement TWT so the amplifier is available when you need it.

Available Options

Option	Part Number Addition
5" LCD Screen	-S
Rear Panel RF	-R
RF Inhibit BNC	-IN
IEEE GPIB / RS-232 / RS-485 / Serial USB *	-GP / -R2 / -R4 / -US
Ethernet Web Interface Fiber-Optic **	-FO
Rack Slides (100% extension)	-RS
3-Phase 208 V_{LL}	-3P
Reflected Power Monitoring Port	-RP
External Accessories***	-E

*The unit comes with a RJ45 Ethernet port as standard or optional Fibre Optic. The other interfaces are available as well, if requested.
** up to 100 µs on selected models only
**The External Accessories can include Harmonic Filters or RF Adapters, which need to be requested and specified in the Configuration Summary

For Example: PTCM1000-S-IN-RS has a screen, RF inhibit and rack slides