# T-2000 Series High Power TWT Microwave Power Amplifiers 

$1.0-18 \mathrm{GHz} \cdot 2000$ watts, Minimum Rated Power

Instruments for Industry, T-2000 Series Amplifiers provide outstanding RF performance. Our "T-2000 Series" products are a mature design but incorporate the latest features with respect to control and monitoring. These amplifiers are "State of the Art"; have field proven reliability and unsurpassed performance as the best in the industry. These products are available in a wide range of frequency bands from $1 \mathrm{GHz}-18 \mathrm{GHz}$ at 2000 watts.

Operation safety and ease of use are paramount in IFI product designs. The IFI T-2000 Series include a full complement of RF and hardware protection systems including high VSWR, over-current and voltage protection as well as redundant thermal and airflow sensors to prevent the TWT from overheating. In addition, the T-2000 series includes a state-of-the-art interface that is sophisticated, comprehensive, but yet simple to use. Our amplifiers feature modular construction and this concept of modular design minimizes internally produced EMI signal leakage and provides easy access for field service and rapid turnaround at depot level repair facilities.

The backlit LCD screen shows forward/reverse power indication, system status and self-diagnostic information. All the amplifier operating parameters are simultaneously available in the amplifier front panel display as well as over the remote bus. Selection switches allow you to switch the amplifier to the desired mode of operation for local control if the unit is not being operated remotely.

For computer automation both an RS-232 and IEEE-488 interface are included. To meet individual application needs, the T-2000 Series amplifiers can be easily customized with harmonic filters or other options. With this capability and its reliable elegant design, the T-2000 series amplifiers are the perfect amplifier for your microwave needs. IFI offers different size packages and configurations to best suit your application. A product and design built to last!

## IFI RF Power Amplifier Features:

- Instantaneous Broadband Frequency range
- Modular Design Construction
- Rugged Construction \& High Reliability
- Backlit LCD Display
- Integrated Force Air Cooling
- Self-diagnostic circuitry
- IEEE-488 interface, RS232
- Solid State Power Supply


| Models \& General Specifications: |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Model <br> Number | Frequency <br> Range (GHz) | Rated Power <br> (watts minimum) | P1dB Power <br> (nominal) | Gain <br> (dB min) | Mains <br> (kVA) | Weight <br> (Pounds) | Size <br> (Inches) |
| T21-2000 | $1.0-2.0$ | 2000 | 1000 | 63 | 15.0 | 1200 | Rack Integrated |
| T251-2000 | $1.0-2.5$ | 2000 | 1000 | 63 | 15.0 | 120 | Rack Integrated |
| T42-2000 | $2.0-4.0$ | 2000 | 1000 | 63 | 15.0 | 1200 | Rack Integrated |
| T7525-2000* | $2.5-7.5$ | 2000 | 1000 | 63 | 18.0 | 1200 | Rack Integrated |
| T84-2000* | $4.0-8.0$ | 2000 | 1000 | 63 | 18.0 | 1200 | Rack Integrated |
| T186-2000 | $6.0-18.0$ | 2000 | 1000 | 63 | 18.0 | 1200 | Rack Integrated |
| T188-2000 | $7.5-18.0$ | 2000 | 1000 | 63 | 18.0 | 1200 | Rack Integrated |
| T128-2000 | $8.0-12.4$ | 2000 | 1000 | 63 | 18.0 | 1200 | Rack Integrated |
| T1812-2000 | $12.0-18.0$ | 2000 | 1000 | 63 | 18.0 | 1200 | Rack Integrated |

[^0]
## T-2000 Series High Power TWT Microwave Power Amplifiers

$1.0-18 \mathrm{GHz} \cdot 2000$ watts, Minimum Rated Power

Standard Features for IFI T-2000 Series TWT Amplifiers

| Standard <br> Features | VSWR Reflected Power Protection, the unit operates without damage or oscillation into any magnitude of phase or load impedance, Open \& Short Circuit Protection. |
| :---: | :---: |
|  | * Alternate Prime Power (specify at time of order) |
|  | GPIB IEEE 488 \& RS232 Remote Control |
|  | RF Sample Port on the Front Panel, 112R for rear panel |
|  | Internal Pre-amplification to obtain rated output power with an input level of 0 dBm or less. |
|  | RF Input/Output Connectors on the Front Panel, 118R for rear panel |
|  | Internal Systems Diagnostics \& Status Indicators |
|  | Filament/Beam Elapsed Time Metering in hours |
|  | RF Safety Interlock |
|  | Forward/Reflected Power Indication simultaneously on Front Panel display |

## Specifications:

| Frequency Range: | As Specified in Model Table |
| :--- | :--- |
| Rated Output Power: | As Specified in Model Table |
| Gain @ Rated Power: | As Specified in Model Table |
| Prime Power: | As Required for Customer (Some are listed below) |
| Input/output Impedance: | 50 ohms |
| RF Input/ Sample Connectors: | Type N Female, unless specified otherwise |
|  | Type 716 Female up to $4.0 \mathrm{GHz}, 4-8 \mathrm{GHz}$ is WRD350, 2.5-7.5GHz is WRD250, <br> $8-12 ~ G H z ~ i s ~ W R 90, ~ 12-18 ~ G H z ~ i s ~ W R 62, ~ 7.5-18 ~ G H z ~ i s ~ W R D 750, ~ 6.5-18 ~ G H z ~ i s ~ W R D 650 ~$ <br> Other waveguides available by request or specification (see Option 117) |
| RF Output Connector: | $2.0: 1$ |
| Input VSWR: | $2.5: 1$ |
| Output VSWR: | $0^{\circ}$ to $50^{\circ}$ C |
| Operating Temp: | $-40^{\circ}$ to $70^{\circ}$ C (50,000 feet max) |
| Non-operating Temp/Altitude: | $95 \%$ without condensation |
| Humidity: | 10,000 feet |
| Operating Altitude: | Air cooled, self-contained |
| Cooling System: | All types, AM, FM, Pulse |
| Modulation: | Rack Mount as specified in Model Table, or Cabinet Integrated as needed |
| Configuration: | $<-60$ dBc nominal |
| Spurious Outputs: |  |

## Standard Prime Powers:

$100,115,120$ VAC $\pm 10 \% 50 / 60 \mathrm{~Hz}$, single phase
$200,220,230,240 \mathrm{VAC} \pm 10 \% 50 / 60 \mathrm{~Hz}$, single phase
$100 / 200 \mathrm{VAC}, 115 / 208$ or $200 / 220 / 230 / 240 \mathrm{VAC} \pm 10 \% 50 / 60 \mathrm{~Hz}$, three phase Wye or Delta and/or 400 Hz power is available.
Special Prime Powers other then listed are subject to availability

## Some Available Options for IFI T-2000 Series TWT Amplifiers

| Option 103 G/D: | VSWR Reflected Power Protection "Graceful Degradation Feature" which will automatically reduce the input drive and fold <br> back the output power when the average reflected power exceeds a preset limit of 3.0:1. <br> The unit operates without damage or oscillation into any magnitude of phase or load impedance. |
| :--- | :--- |
| Option 110-1E: | GPIB IEEE-488 RS232 and Ethernet Remote Control |
| Option 110-2: | GPIB IEEE-488 and RS 422 Remote Control |
| Option 110-3 | GPIB IEEE-488 and RS 485 Remote Control |
| Option 118F or R: | Front Panel RF Connections 118R for Rear Panel RF Connections |
| Option 123F or R: | Reflected RF Sample Port -40, -50 or -60dB N or SMA, Front or Rear Panel |

## T-2000 Series High Power TWT Microwave Power Amplifiers

1.0 - $18 \mathrm{GHz} \cdot 2000$ watts, Minimum Rated Power

## Outline Configurations:



Upright Rack Outline


Note: 2000 watt amplifier systems may be larger rack integrated sizes than shown.


[^0]:    *Over the majority of the band

