ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *Tektronix VX4281* at our website: ***Click HERE***

RF Power Meter Module

VX4281



Features

Measures RF levels from 1 nW (-60 dBm) to 20 mW (+13 dBm), depending upon the sensor used
Sensors available include coaxial models from 0.1 MHz to 40 GHz
Capable of obtaining simultaneous measurements from up to four power sensors
Remotely locatable 50 MHz reference source VX1813
VXI*plug&play* WIN Framework

Software Driver

The VX4281 RF Power Meter Module can, depending upon the sensor chosen, measure RF levels from 1 nW (-60 dBm) to 20 mW (+13 dBm). A variety of low noise, low VSWR balanced diode coaxial sensors are available, operating in the 0.1 MHz to 40 GHz range. Higher power and lower VSWR models may be special ordered.

The VX4281 supports an exceptionally wide dynamic range of 70 dB with a single sensor. At the same time, it provides 200 pW total instrument accuracy and 120 pW per hour typical instrument drift rate at -60 dBm (1 nW).

The VX4281 accepts simultaneous measurements from up to four power sensors, allowing automatic tests to be conducted without the errors and uncertainties associated with switching schemes. It has the capability of making a number of calculations in addition to the basic ratio and difference measurements provided by dual channel power meters. Among these are:

- The measurement may be returned as dBm or dB, or watts or % ratio.
- A ratio measurement between any two channels.
- A difference measurement between any two channels.

- Measurements relative to the first measurement obtained.
- Trigger immediate, trigger with delay, or free run operation.
- Autorange, a selected range, or range hold.
- Automatic filtering, a manual filter, or a filter hold.
- Monitor power limit values.
- Calculate offset.
- Clear and read the status byte, and enable and disable a set of service request masks.

The flexibility gained by having up to four heads on a single instrument makes the VX4281 invaluable for a wide range of applications, including:

- Transmitter, signal generator and oscillator measurements
- VSWR and return-loss measurements with directional couplers and slotted lines
- Gain and insertion loss measurements
- RF attenuation measurements
- Antenna measurements.

The VX4281 includes a programmable averaging filter with 10 different settings to provide automatic control of the speed vs. accuracy trade-off that is inherent in power measurements. It also has an auto filter mode that filters an input on a continuous basis, but has the capability to reset the filter automatically when a substantial change in input signal occurs.

Calibration data for 20 sensors at seven different power ranges and at up to 20 frequencies may be stored in non-volatile memory on the VX4281. The calibration data for any of the 20 sensors may be assigned to any of the four channels, allowing more flexible use of power sources and channels.

A significant improvement in the logistics of Power Meter calibration is provided by a remotely locatable 50 MHz reference source and external relay driver outputs. The reference source can be mounted with the Power Meter sensors at the Unit Under Test (UUT) source, together with a user-selected microwave transfer switch. The transfer switch can then be controlled by the Power Meter relay driver outputs, and used to switch either the reference source or the signal to be measured into the power sensor(s) for automatic calibration and zeroing of individual Power Meter channels.

At any time the user chooses, the current VX4281 operational settings may be saved for future use through a LEARN mode. Using this mode, complete set-up information can be read, stored in non-volatile memory in one of the 20 storage register sets, and restored at any time.

BITE

BITE" (Built-In-Test Equipment) is provided on the VX4281 by front panel LEDs which indicate operational status, plus programmable interrupts; a programmable service request mask, including upper, lower, and window limit checking; and error reporting by either error number or a fully described ASCII error message.

Specifications

Specifications are subject to change without notice. Check with your local Tektronix representative for current specifications.

Frequency Range:

- 0.1 MHz to 40 GHz depending on sensor.

Power Range:

- Over 70 dB dynamic range with diode detector sensors.
- Over 40 dB dynamic range with true RMS sensors.
- Absolute ranges are shown in the VX18xxA Power Sensor Tables.

Ranging:

- Full Autoranging or programmable ranging.

Accuracy (including the sensor):

- Basic Uncertainty + Sensor Drift + 1.00 mW Reference Drift + Temperature Uncertainty + Power Linearity + Calibration Factor Uncertainty
- For maximum uncertainty: Add the factors.
- For probable uncertainty: Take the square root of the sum of the squares of the factors.

Instrument Accuracy:

- Single Channel: ±0.022 dB (±0.5%).
- Dual Channel: ±0.44 dB (±1%).

Free-run Measurement Rate:

- >20 readings per second for any combination of modes.
- >40 readings per second in linear mode for multiple modes that do not read the same channel twice in succession For example, (A minus B) + (C minus D).

Zeroing:

- Automatic, under program control.

Zero Set:

- <=1.0% of full scale on most sensitive range.
- <=0.2% of full scale on other ranges.

Settling Time (0-99% settled reading)

- (AUTO filter, range HOLD, 10 dB decreasing power step):

```
Range 1:       < 2.0 s
Ranges 2 3:    < 0.5 s
Range 4:       < 0.4 s
Ranges 5-7:    < 0.2 s
```

- (MANUAL Filter, Range HOLD, 10 dB decreasing power step):

Filter No.	Response Time (s)
0	0.2
1	0.4
2	0.7
3	1.3
4	2.5
5	5.0
6	10.0
7	20.0
8	40.0
9	70.0

Temperature Uncertainty:

- 21 to 25 degrees C:
  - 0 dB for instrument and sensor.
- 18 to 30 degrees C:
  - 0 dB for instrument and ±0.1 dB for all sensors.
- 10 to 40 degrees C:
  - ±0.2 dB for instrument and ±0.2 dB for all sensors.

Power Reference Source (50 MHz oscillator with type N female connector and detachable cable):

- Power Output: 1.00 mW factory set to ±0.03 dB, traceable to NIST.
- Accuracy: ±0.05 dB worst case for one year, 0 to 55 degrees C.

Calibration Factors:

- +1.25 dB to -1.25 dB range in 0.01 dB steps.
- Downloaded through VXI system interface.
- Stored calibration factors are interpolated linearly and applied automatically when frequency is entered through the system interface. 20 calibration points for up to 20 sensors can be stored in non-volatile memory and recalled by sensor number.

Waveform Response:

- Detector Type Sensors:
  - True RMS power over the lowest 40 dB of the sensor's dynamic range.
  - Average power of CW signals in the upper 30 dB of the sensor's range.
- True RMS Type Sensors: True RMS power.

VXIbus Specifications:

- Device Type: VXI message based instrument, Rev. 1.4.
- Protocol: Word Serial.

Front Panel Signal Connectors:

- 4 Power Sensor inputs (7-pin screw-lock DIN circular connectors).
- 4 Open Collector, 1 A, +40 V relay drive outputs with four +24 V, 0.25 A relay power sources.
- 4 Switched +15 V Outputs for powering four Reference Oscillators (one Relay Drive and one Oscillator Drive output in each of four modular 4-pin telephone type connectors).

Integration Information

Module Size

Single-wide, C-size.

Weight

3.0 lbs. Approximate.

Cooling Requirements

(Assumes 10 degrees C max. temperature rise across module under max. loading conditions.)

Airflow: 0.64 liters/sec.

Backpressure: 0.02 mm Water.

Power Requirements

(All current is specified in Amps. Ipm is the peak module current, and Idm is the peak-to-peak dynamic current, as defined in the VXIbus Specification.)

+5V		+24V		-24V	
Ipm	Idm	Ipm	Idm	Ipm	Idm
1.5	3.1	0.1	0.25	0.05	0.31

Recommended Cables and Connectors

VX1681A Power Sensor Cable (5 meter).
VX1682 Transfer Switch Cable (7 meter).
VX1683 Calibrator/Transfer Switch Cable Extension (7 meter).

Ordering Information

VX4281 RF Power Meter Module

- Opt 01 Adds two sensor ports (for a total of four)
- VX1681A Power Sensor Cable (5 meter)
- VX1682 Transfer Switch Cable (7 meter)
- VX1683 Calibrator/Transfer Switch Cable Extension (7 meter)
- VX1811A Power Sensor 100 kHz to 18 GHz (includes VX1681A cable)
- VX1812A Power Sensor 100 kHz to 26.5 GHz (includes VX1681A cable)
- VX1813 Remote Calibrator for VX4281
- VX1814A True RMS Power Sensor 100 kHz to 18 GHz (includes VX1681A cable)
- VX1815A Power Sensor 100 kHz to 40 GHz

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP