

DESCRIPTION

Telemakus LLC expands its range of USB controlled RF products.

Many common RF control functions are available in low cost, USB controlled packages. Functions include Detectors, Sources, Modulators, Frequency Doublers, Switches, Attenuators and Amplifiers. With Telemakus devices, drivers and interface software are easily installed from internal flash memory. Any XP, Vista or W7 based PC can be used as the host and with the addition of a USB hub, multiple devices can be controlled to build up a complex system of RF functions.

Extensive calibration data is held in the device for correction against frequency, dynamic range and temperature. Custom calibration tables can be downloaded to the device if more accuracy is required over narrow ranges.

Customer specific functions and frequency ranges are available for most models. Contact Telemakus LLC for details.

Software and driver updates available at www.telemakus.com
Email support@telemakus.com

Available Functions

- ◇ True RMS Detectors
- ◇ Step Attenuators
- ◇ Vector Modulators
- ◇ Synthesized Sources
- ◇ Switches
- ◇ Amplifiers
- ◇ Frequency Doublers
- ◇ Phase Shifters
- ◇ Pulse Modulators

TELEMAKUS LLC

My Test Instruments

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BENEFITS

Common Control Protocol

Small size (3.4" x 0.875")

Ease of Use

Low Cost

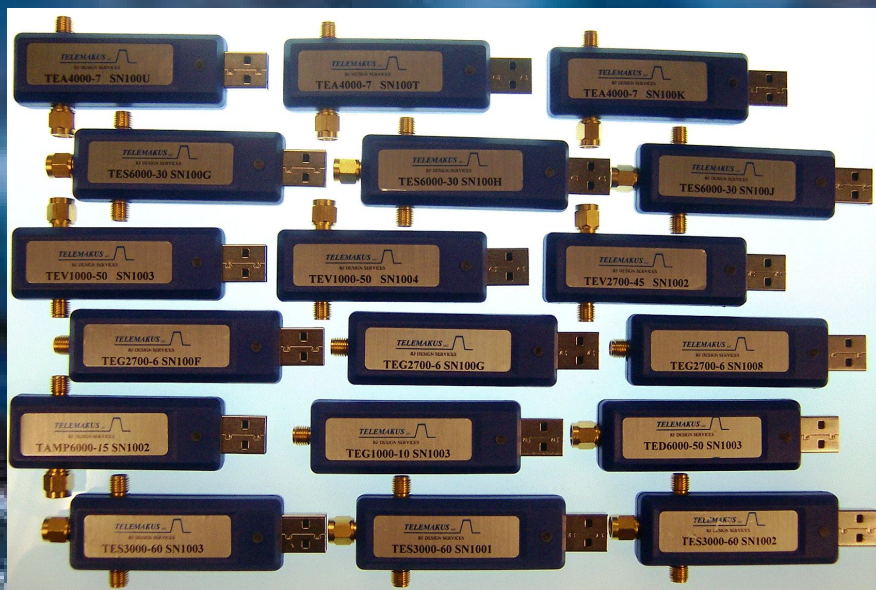
FEATURES

Wide Frequency Range 30MHz to 26.5GHz

Multiple RF Control functions available

Windows Drivers stored on product for easy install on any XP, Vista or W7 PC

Application Library



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RF Switches

The TES3000-60 has 60dB of isolation at 1GHz and is fully terminated at all ports. A "Both Ports" isolated state is also available. The complementary TES6000-30 has 30dB of isolation and is unterminated, providing 30nS switching speed. It has a built in pulse modulator function with crystal controlled pulse width and a resolution of 125nS. The TES7000-50 offers high isolation and also has a built in pulse modulator.



Synthesized Sources

Standard products cover 140-250MHz, 700-1000MHz, 1.8-2.7GHz, 2.7-3.5GHz and 0.2-4GHz with 1KHz resolution and -105dBc phase noise at 100KHz offset. These products can be used in CW or swept modes. They are locked to an internal 10MHz crystal oscillator with a 2.5PPM stability over the full temperature range. Higher frequency products include a 9.2-10GHz version along with a millimeter wave source, the TEG26500-5, a 24-26.5GHz synthesized source.



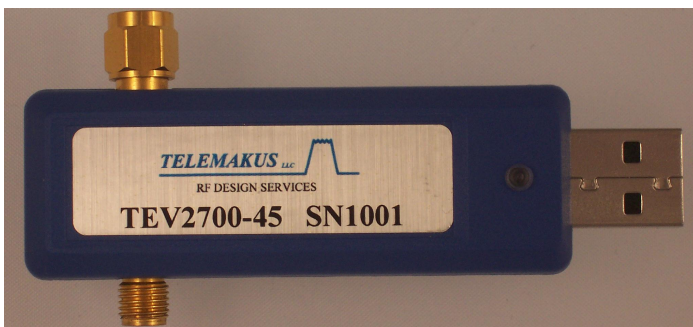
Digital Step Attenuators

The TEA4000-7 has 31.75dB dynamic range in 0.25dB steps and operates over the range 100MHz to 4GHz. The TEA8000-6 has 31.5dB dynamic range in 0.5dB steps over the range 2.2-8GHz. Both versions have an integrated ramp function. Available APIs allow ATE systems to perform power control functions. The TEA13000-12 analog attenuator provides 16bit control resolution with 30dB dynamic range over 0.1-13GHz.



Vector Modulators

Two products cover the ranges 700-1000MHz and 1.8-2.7GHz. They each have 360 degrees of phase control and 45dB amplitude control. Applications include cancellation loops and phase array antenna control. These vector modulators are factory calibrated but can also be calibrated by the user for greater accuracy at specific frequencies.



Microwave Power Sensors

The TED6000-50 and TED8000-40 will measure RF power from 50MHz to 6GHz and 8GHz respectively, with 0.5dB accuracy over a 50dB and 40dB dynamic range. The GUI allows averaging, offset power and relative power measurements. The available API allows ATE systems to measure power from multiple sensors creating a very low cost way to monitor multiple points in a system. Narrow band units available at 9.2-10.2GHz and 14-14.5GHz.



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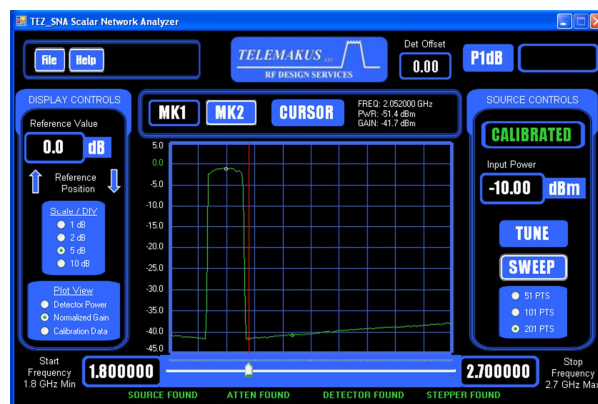
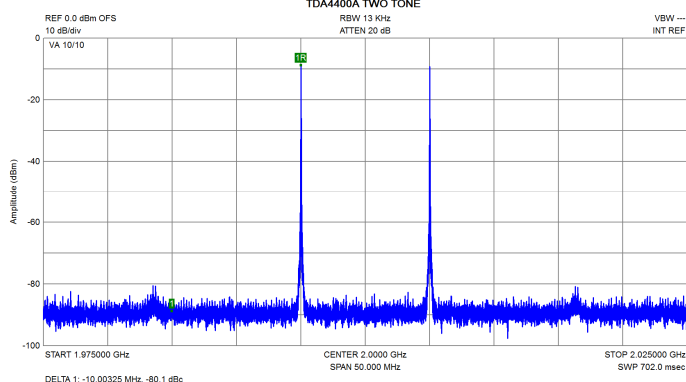
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Application Library June 2012

Scalar Analyzer TEZ-SNA

By combining a TEG4000-1 source, 2 TEA4000-7 attenuators and a TED6000-50 sensor it is possible to create a very powerful scalar analyzer capable of making gain and power measurements from 0.2-4.0GHz (only limited by range of source). The example here shows a filter's performance measured on the system. Amplifier P1dB can also be measured at the cursor position on every sweep. A wideband version of this software is available using a TEX8000-15 multiplier to extend the range to 8GHz



2-Tone Analyzer

By combining two sources it is possible to create a 2-tone test signal used for measuring IP3 and intermodulation products. The example shows 75dBc IM3 levels at 0dBm/tone output. More units can be combined to create multi-tone measurements at a very affordable cost.

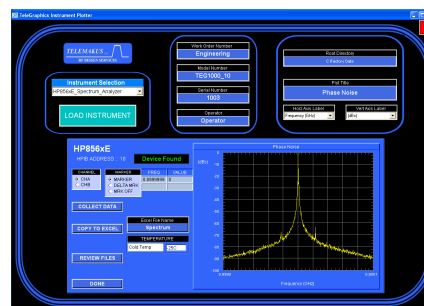
Both frequency and power can be set for each tone independently, allowing swept measurements of frequency, tone spacing and power. The TDA4400A (see picture) integrates the two sources with a spectrum analyzer and Software to create an Intermodulation Distortion Analyzer.

Pulse Power Analyzer

The TES6000-30 and TES7000-50 have integrated pulse modulators. The pulse is crystal locked and has a 0.125uS resolution. The PC user interface allows control of both the pulse width and repetition rate. Amplifier pulse performance can be measured with a high degree of accuracy. Utilizing port 2 of the switch provides RF power isolation from the source thereby minimizing the risk of damage to the DUT when the modulation is turned off. Port 1 should be terminated but could be used to observe the inverse of the pulsed waveform. An option of an additional logic level output is available. This output will allow external circuits to be synchronized or time gated relative to the RF pulse. This control pulse can also be windowed around the RF pulse for advanced triggering functions.

Telegraphics Software

Telemakus is introducing an Instrument Plotter software package. This software allows the recording of test data directly to Excel® from a wide range of test equipment. Customers currently relying on hard copy storage of data can now store it electronically, thereby simplifying the creation of test reports and reducing the burden of paper filing.



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USB PRODUCTS June 2012

True RMS Detectors

Model	Frequency	Frequency Band	Dynamic Range	Accuracy
TED6000-50	50-6000MHz	L,S,C	-45 - +10dBm	+/- 0.5dB
TED8000-40	50-8000MHz	L,S,C	-40- +15dBm	+/- 0.5dB
TED14500-45	14000-14500MHz	Ku	-50 - 0dBm	+/- 0.5dB
TED10200-45	9300-10200MHz	X	-50 -0dBm	+/- 0.5dB

Phase Shifters

Model	Input Frequency	Phase Range	Insertion Loss	Max Power
TEP8000-15	4-8GHz	360 degrees Min	-5dB max	+20dBm

Vector Modulators

Model	Frequency	Phase Range	Gain Range	Resolution
TEV1000-50	700-1000MHz	360 deg	-45 to -10dB	12bit
TEV2700-45	1800-2700MHz	360 deg	-45 to -10dB	12bit

Synthesized Signal Generator

Model	Frequency	Output Power	Phase Noise @100KHz	Spurious
TEG250-15	140-250MHz	15dBm	-125dBc/Hz	-80dBc
TEG1000-10	700-1000MHz	10dBm	-105dBc/Hz	-80dBc
TEG2700-6	1800-2700MHz	6dBm	-105dBc/Hz	-80dBc
TEG3500-8	2700-3500MHz	8dBm	-100dBc/Hz	-80dBc
TEG4000-1	200-4000MHz	1dBm	-95dBc/Hz	-80dBc
TEG10200-1	9300-10200MHz	15dBm	-95dBc/Hz	-80dBc
TEG26500-5	24000-26500MHz	5dBm	-85dBc/Hz	-75dBc

Amplifier/Doublers

Model	Input Frequency	Output Frequency	Pin	Pout
TEX8000-15	200-4000MHz	200-8000MHz	0dBm +/-3dB	+15dBm Typ

Attenuators

Model	Frequency	Minimum Loss	Attenuation Range	Step Size
TEA8000-6	2400-8000MHz	-5dB	-31.5 to 0dB	0.5dB
TEA4000-7	50-4000MHz	-2.7dB	-31.75 to 0dB	0.25dB
TEA13000-12	0.1-13GHz	-3dB	-30 to 0dB	16bit/Analog

Switches

Model	Frequency	Loss	Isolation	IP3
TES3000-60	100-3000MHz	-1dB	-60dB@1GHz	50dBm
TES6000-30	50-6000MHz	-1dB	-30dB @6GHz	48dBm
TES7000-50	50-7000MHz	-2dB	-50dB @1GHz	55dBm

Amplifiers

Model	Frequency	Gain	Flatness	PI dB
TAMP6000-15	30-6000MHz	15dB @3GHz	+/- 2dB	17dBm