

SquareGEN pro



**Professional Signal Generation and Monitoring Options
for RIFEforLIFE Research Equipment**

PRELIMINARY INFORMATION



Integrated Component Options

SquareGENpro is the latest and most versatile of the frequency generation research products. We highly recommend the utilization and incorporation of the SquareGENpro options in your next research project.



External SquareGENpro



Internal SquareGENpro options

Begin Program



Displays **Splash Screen** (briefly)

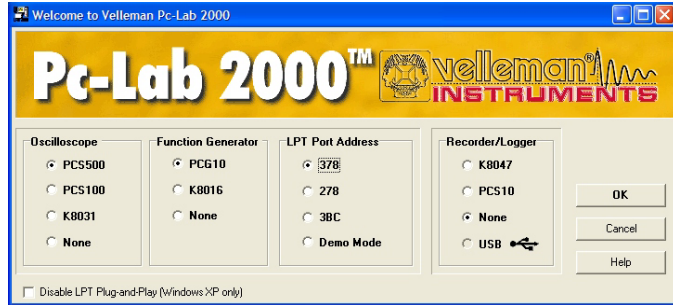


SquareGENpro Control Panel

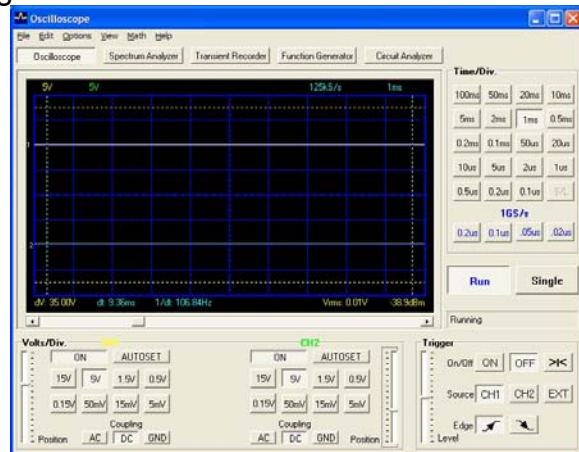


Integrated Component Options

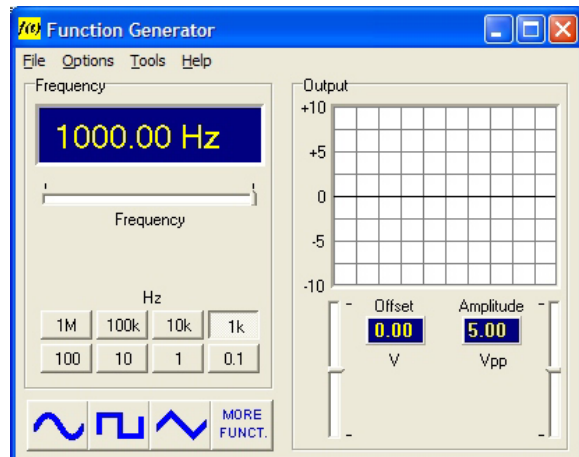
Instrument Initialization and Configuration (once set rarely needs to be changed)



Depending on which options are installed, the program will next default and bring up and auto-calibrate the **Oscilloscope** or, if not installed, will bring up the function generator. If oscilloscope is installed, the “**Function Generator**” button will bring up the Function Generator program module.



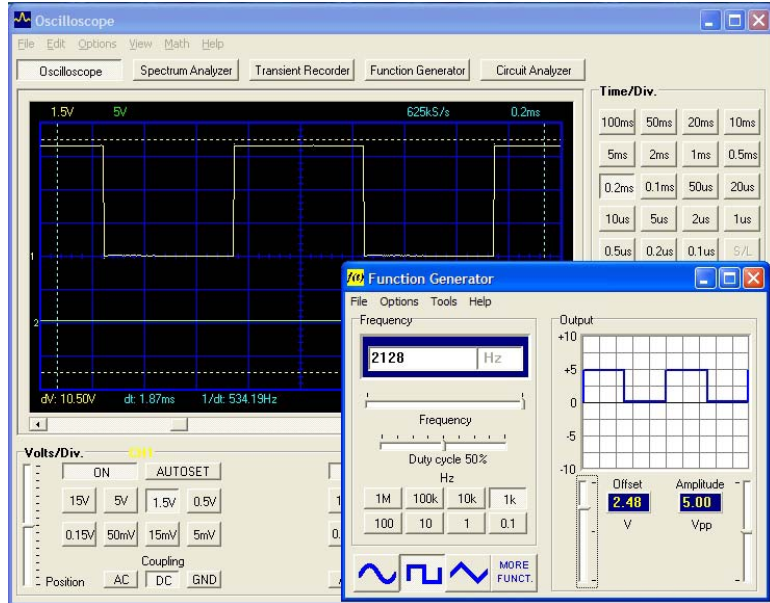
Users without the optional oscilloscope module will be automatically be delivered to the **Function Generator** program module.



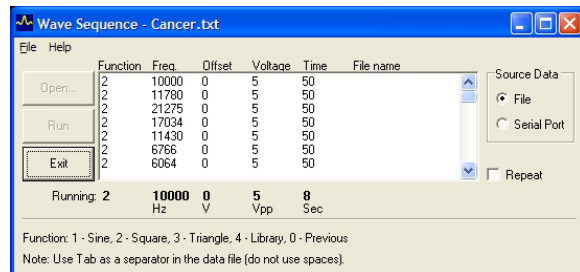
Direct frequency input may be entered via the slide bar, or manual digital entry into the frequency box. Selecting the waveform icon, (usually square), begins

Integrated Component Options

output. Amplitude (voltage) and offset should be set for your particular type of research application.

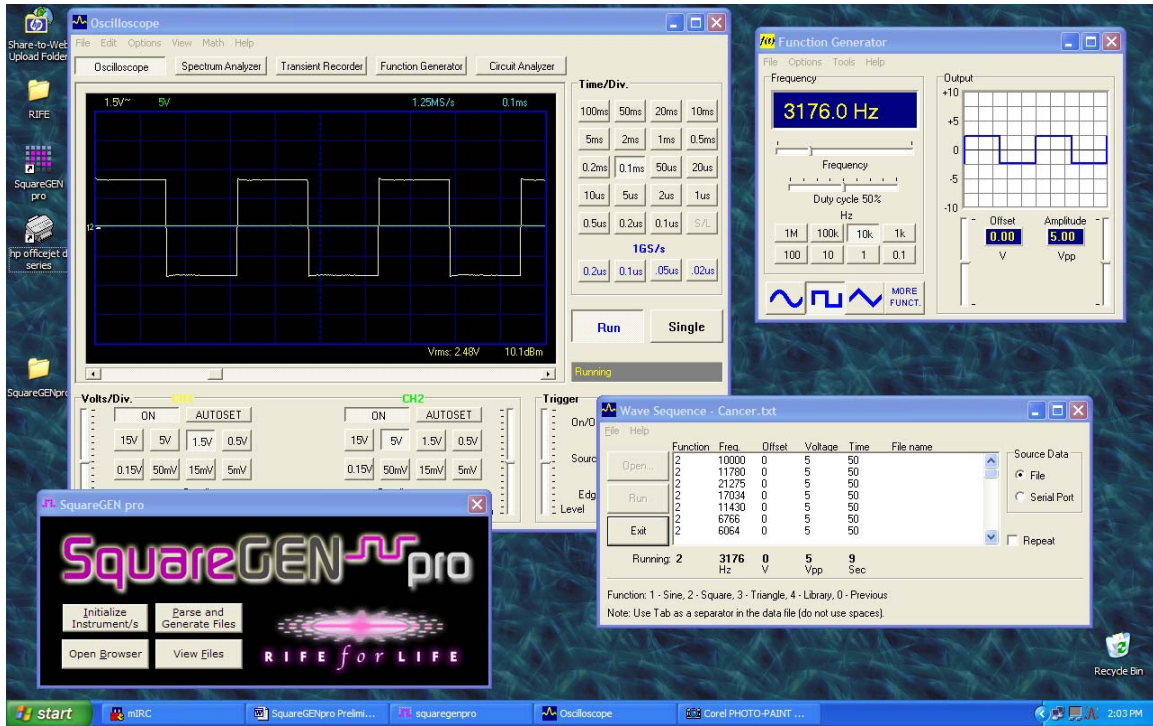


More likely ... most practical experimentation and research will done via the **Wave Sequencer** module located in the “Tools” menu of the Function Generator screen.

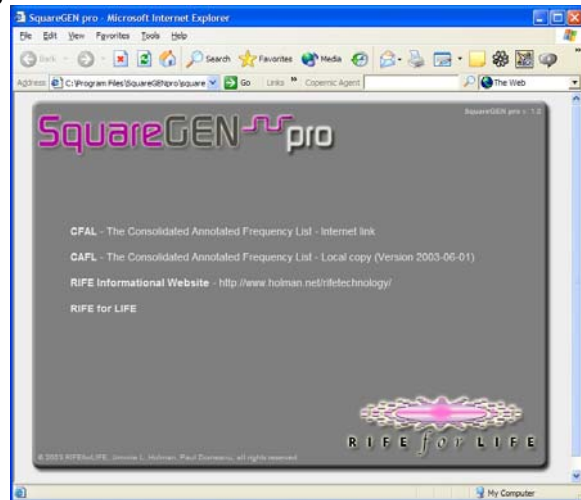


Shown above is a pre-made script prepared processed from the well-known **CAFL list**. This Wave Sequencer automatically inserts data, when running, into the previous Function Generator module. A typical operation and monitoring screen is shown below.

Integrated Component Options

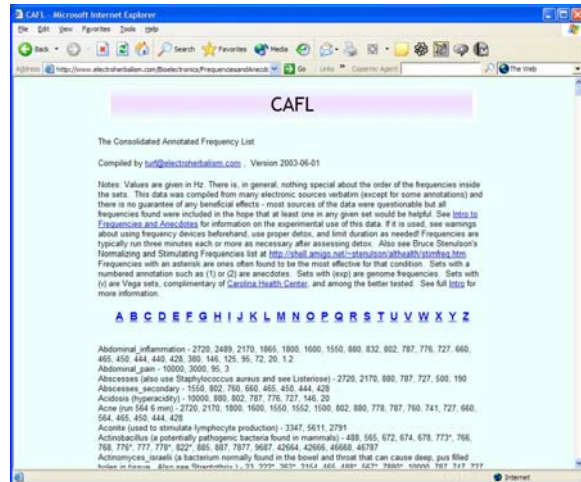


As mentioned above, Wave Sequencing libraries can be easily built from CAFL and other similarly formatted lists using the **SquareGENpro Parser/Generator** module. By selecting “Open Browser”, your default web browser should open with something similar to the default page shown below.

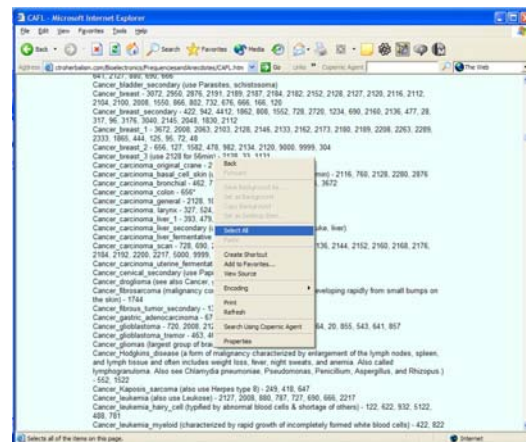
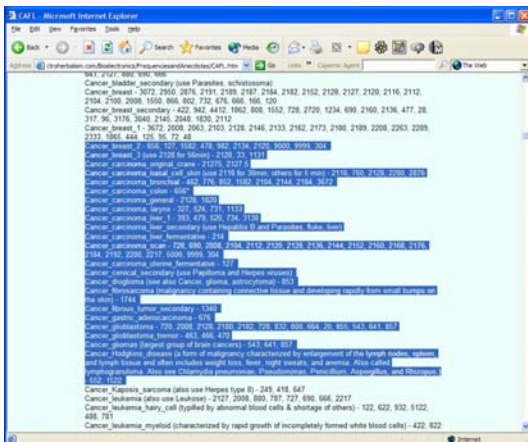


If online, you may browse to the current online version of Brian McInturff's excellent List by selecting the appropriate link. If not online, select the dated recent version of this list in local mode. As you would expect ...

Integrated Component Options



Scroll over or otherwise highlight the area of your particular interest as shown. Alternatively, you may “right-click” on the screen and “Select All” to select info from the entire list. **Copy** to transfer highlighted content to clipboard. Don’t worry about arbitrary text and html graphics, SquareGENpro understands how to deal with it!



This has appropriately loaded the content into your computer’s clipboard for insertion into the program. You may close the above screen if you desire or hold it open for making other select scripts.

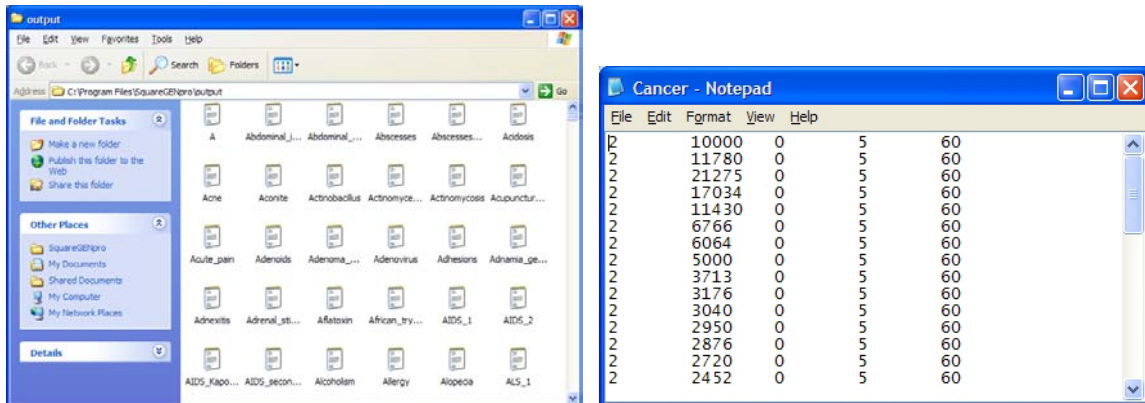
By selecting the “**Parse and Generate Files**” button from the SquareGENpro Control Panel, an expanded panel is revealed. Be sure to modify your preferred default settings in appropriate boxes. (These can be easily changed or edited to better fine tune your frequency scripts for your particular research.)

Integrated Component Options



When the **“Paste Text and Generate Files”** has been selected, the contents of the clipboard is inserted into the **“Input”** area and immediately processed to generate files. Don't be overly concerned about processing large files, ... the entire CAFL list can be processed in a matter of only seconds.

Selecting **“View Files”** brings up an appropriately named set of individual



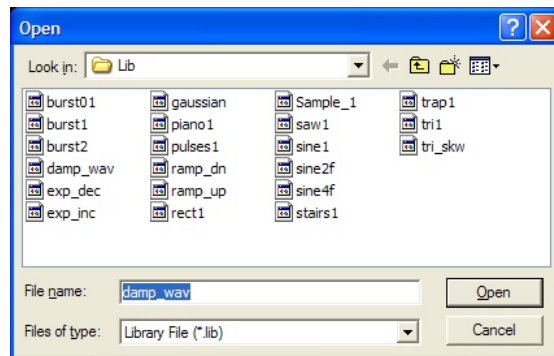
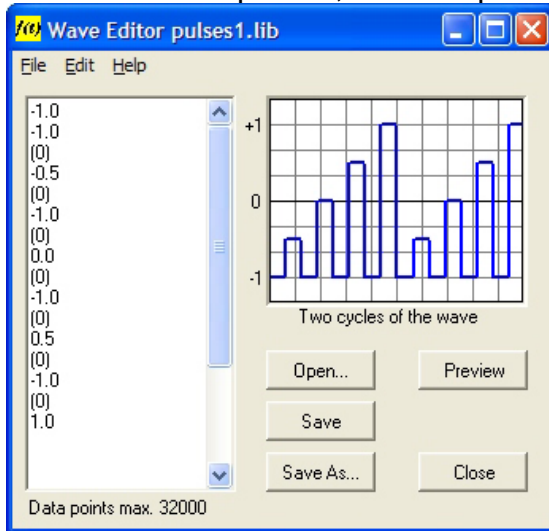
Files may be viewed, edited, sorted, moved as researcher desires using standard Windows operating procedures.

Integrated Component Options

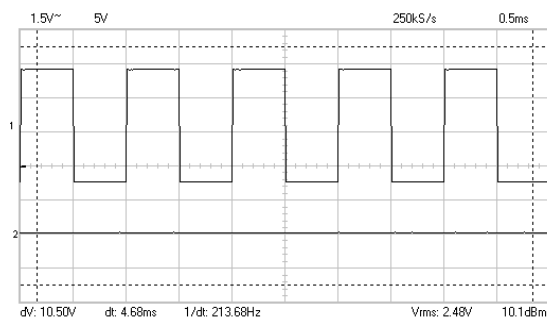
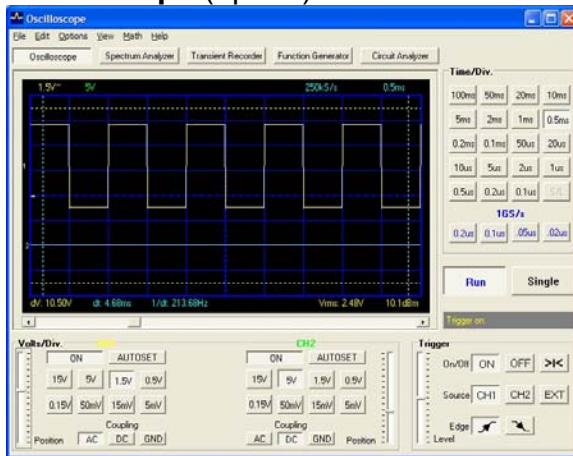
ADVANCED FEATURES

Waveform Editing

Elaborate and unlimited waveform structures may be created with the included waveform editor and included waveform library. Current Library contains Pulses, Bursts, Sweeps, Damp Wave and more. (Additional user shared waveforms will be made available via the website.) Complex user defined waveforms may be described with up to 32,000 data points.



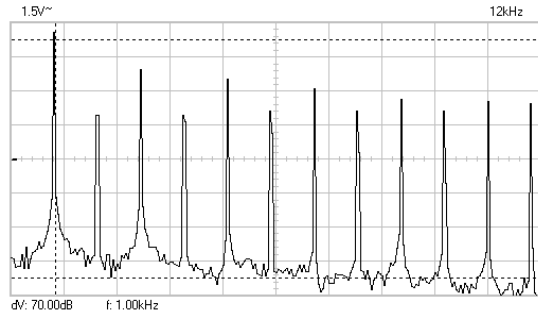
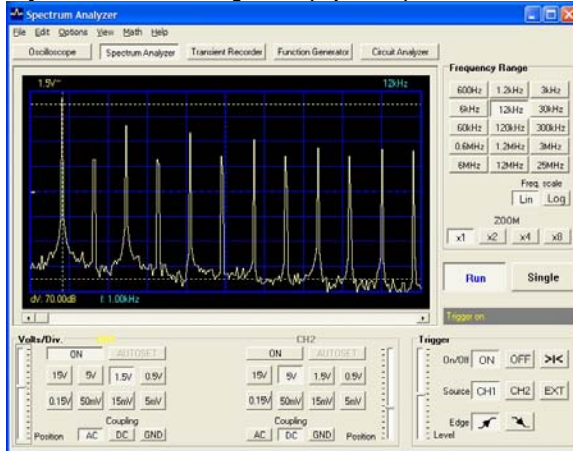
Oscilloscope (option)



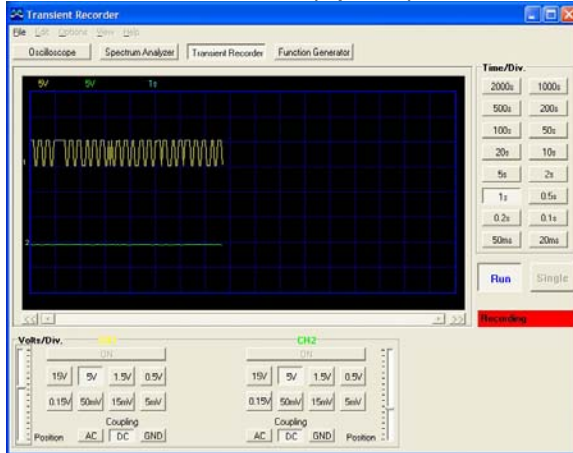
Note: Most modules will output and record data appropriate for inclusion in personal documents and records

Integrated Component Options

Spectrum Analyzer (option)

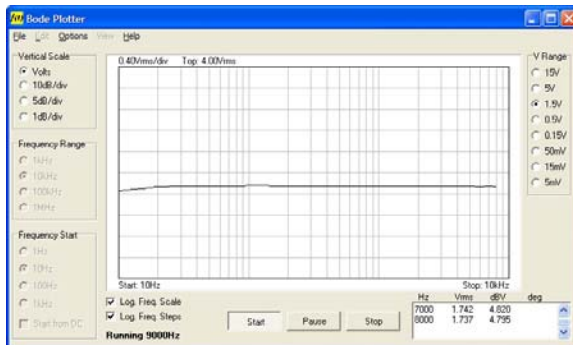


Transient Recorder (option)



Bode Plot (Circuit Analyzer)

Operates **ONLY** if both *Function Generator* and *Oscilloscope* hardware options are installed.



SEE SPECIFICATION SHEETS for information regarding the available 4 Channel Recorder/Logger

SquareGEN^{pro}



Full Featured Programmable, Computer Controlled Synthesized Arbitrary Waveform Function Generator

The SquareGEN pro internal Function Generator option provides the ultimate control in laboratory grade signal generation and versatility. All standard features as well as many available in only very high-end devices. All functions are available through the supplied Windows program. Operation is similar to that of a normal function generator except that all functions can be performed with the mouse. Connection is through the computer's parallel port. Waveform editing, sequencing, and integration with user-defined list is accomplished with individual intuitive program modules.



Features

- frequency range: from 0.01Hz to 1MHz
- crystal-based stability
- optically isolated from the PC
- low sine wave distortion
- TTL-level synchronization output
- stores up to 32K of waveform points
- standard waveforms: sine, square and triangle
- predefined library waveforms included: noise, sweep, ...
- includes Windows™ integrated software for the function generator and PC oscilloscopes option
- you can create your own waveforms with the integrated signal wave editor
- can be chained with optional PC oscilloscopes to the same PC printer port (LPT1, 2 or 3)
- extended bode plot possibility, used with SquareGEN pro PC scope
- function generator screen with signal preview

Integrated Component Options

Specifications

- comes with adapter: no (this is typically built in to equipment and may utilize/share the existing power supply. Stand alone units sold in US will include a proper supply. Other countries may easily obtain locally a supply appropriate for their local ... see specs below).
- power supply: standard 12V DC adapter, 800mA
- direct digital wave synthesis (DDS), 32K wave table
- distance control via RS232
- frequency setting resolution: 0.01%
- amplitude range: 100mVpp to 10Vpp @ 600ohm load
- amplitude resolution: 0.4% of full scale
- offset: from 0 to -5V or +5V max. (resolution 0.4% of full scale)
- vertical resolution: 8 bits (0.4% of full scale)
- maximum sample rate: 32MHz
- typical sine wave distortion (THD): < 0.08%
- output impedance: 50ohm
- dimensions: 235 x 165 x 47mm (9.3" x 6.5" x 1.9")
- includes:
 - PC parallel cable
 - practical manual
 - CD with SquareGEN pro and lab software

SquareGEN^{pro}



Computer Controlled Oscilloscope and Frequency Analyzer

The SquareGEN pro Oscilloscope internal option is a digital storage oscilloscope that uses your computer and its monitor to display waveforms. All standard oscilloscope functions are available through the supplied Windows programs. Its operation is identical to that of a normal oscilloscope apart from the fact that all operations can be performed with the mouse. Connection is through the computer's parallel port and the scope is completely optically isolated from the computer port. The oscilloscope and transient recorder have two completely separated channels with a sampling frequency up to 1GHz. Any waveform displayed on the screen can be stored for later use in documents or for the comparison of waveforms.



Features

- Oscilloscope:
 - timebase: 20ns to 100ms per division
 - trigger source: CH1, CH2, EXT or free run
 - trigger edge: rising or falling
 - trigger level: adjustable in whole screen
 - step interpolation: linear or smoothed
 - markers for: voltage and frequency
 - input sensitivity: 5mV to 15V / division with auto setup-function
 - pre-trigger function
 - true RMS readout (only AC component)
 - recording length: 4096 samples / channel
 - sampling frequency:
 - real-time: 1.25kHz to 50MHz
 - repetitive: 1GHz
- Spectrum Analyser:
 - frequency range: 0...1.2kHz to 25MHz
 - linear or logarithmic time scale

Integrated Component Options

- operating principle: FFT (Fast Fourier Transform)
- FFT resolution: 2048 lines
- FFT input channel: CH1 or CH2
- zoom function
- markers for amplitude and frequency
- Transient Recorder:
 - time scale: 20ms/div to 2000s/div
 - max. recording time: 9.4hours/screen
 - automatic data storage
 - automatic recording for more than 1 year
 - max. number of samples: 100/s
 - min. number of samples: 1 sample / 20s
 - markers for time and amplitude
 - zoom function
 - recording and display of screens
 - data format: ASCII

Specifications

- General Information:
 - inputs: 2 channels, 1 external trigger input
 - input impedance: 1Mohm // 30pF
 - frequency response: 0Hz to 50MHz (\pm 3dB)
 - max. input voltage: 100V (AC + DC)
 - input coupling: DC, AC and GND
 - optically ISOLATED from computer
 - supply voltage: 9-10Vdc / 1000mA (user supplied, except US)
- Minimum System Requirements:
 - IBM compatible PC
 - Windows 95, 98, ME (Win2000 or NT possible)
 - SVGA display card (min. 800x600)
 - mouse
 - free printer port LPT1, LPT2 or LPT3
 - CD-ROM player
- Includes:
 - PCS500 unit
 - 2 test leads
 - PC parallel cable
 - practical manual
 - CD with software

SquareGEN^{pro}



Computer Monitored 4-channel Recorder / Logger

Features

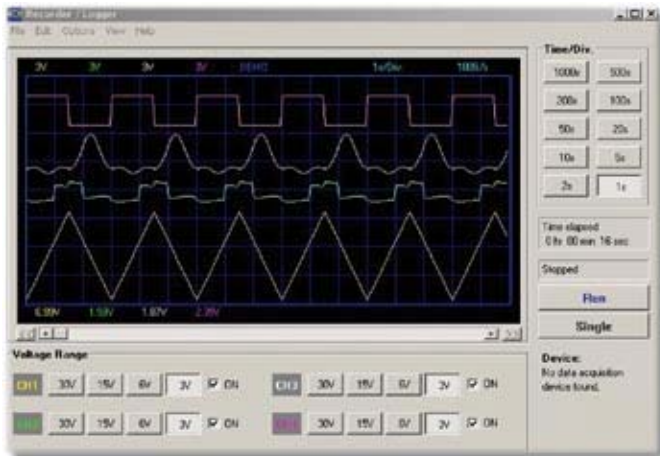
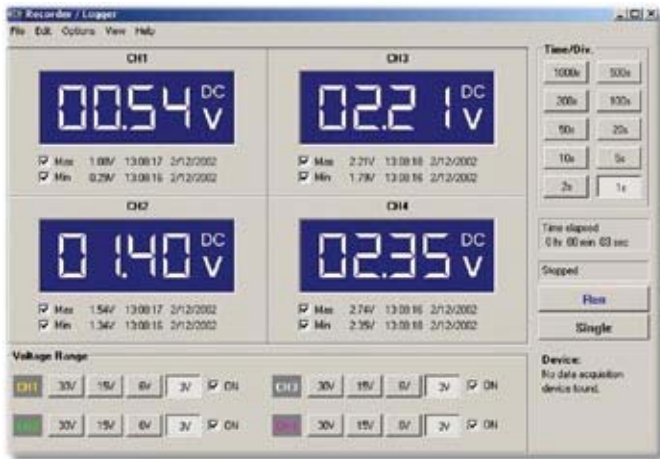
- record DC signals or slow-moving signals over very long periods
- the measurements are automatically stored on your hard disk for further processing
- thanks to the USB connection no power supply is necessary and installation is easy and straightforward
- signals are instantly displayed on the PC screen using an analogue or DVM display
- USB cable included
- SquareGEN Pro and lab software included

Specifications

- Hardware:
 - USB connected and powered
 - four DC-coupled input channels
 - input resistance: 1Mohm
 - maximum samples per second: 100
 - four input ranges: 3V / 6V / 15V and 30V
 - sensitivity: 10mV
 - accuracy: $\pm 3\%$ of full scale
 - maximum input: 30Vdc
 - power and recording/diagnostic LED
- Software:
 - analogue trace or DVM readout
 - 4 channels record simultaneously
 - minimum / maximum sample hold function for DVM
 - from 1 sec to 1000 sec per division
 - storage and recall of screens (full color) or data
 - automatic recording option for long recordings
 - on screen markers for time and voltage
 - DLL included for your own developments
- System Requirements:
 - PC, running Win98SE or higher (does not work on WinNT or Win95)
 - free USB port
 - mouse

Integrated Component Options

- CD-ROM player



Integrated Component Options

IMPORTANT NOTE:

SquareGEN pro options are best integrated within the system at time of original purchase. In some situations, these components may be added later or in planned stages. Appropriate equipment modifications are made depending on desired and intended use.

Oscilloscope/Spectrum Analyze/Transient Recorder module need not be installed for Function Generator features. (The oscilloscope module may be added at a later date but may require special manufacturer modifications & installation in many cases)

The available 4-Channel Recorder/Logger option is a USB device and may be useful for those interested in monitoring and recording input supplied by external sensors. It may be easily added by the user at any time. SquareGEN Pro does not currently use or integrate this in any applied manner, however we are very interested in working closely with those researchers experimenting in the area of tangible recorded feedback and sensing.

SquareGENSM pro &  VellemanSM INSTRUMENTS

