Frequency Counters |

SR620 — Universal time interval and frequency counter



Traunstraße 21, A-2120 Wolkersdorf T:+43 2245 6725 F:+43 2245 559633

office@prager-elektronik.at www.prager-elektronik.at



- · 25 ps single-shot time resolution
- · 1.3 GHz frequency range
- · 11-digit frequency resolution (1 s)
- · 0.001° phase resolution
- · Statistical analysis & Allan variance
- · Graphical output to X-Y scopes
- · Hardcopy to printers and plotters
- · GPIB and RS-232 interfaces
- · Optional ovenized timebase

· SR620 ... \$5195 (U.S. list)

SR620 Time Interval & Frequency Counter

The SR620 Time Interval Counter performs virtually all of the time and frequency measurements required in a laboratory or ATE environment. The instrument's single-shot timing resolution and low jitter make it the counter of choice for almost any application.

SR620 Measurements

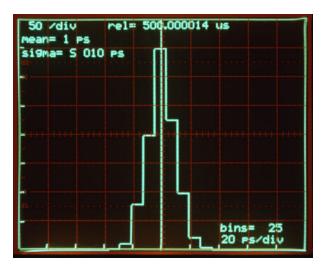
The SR620 measures time interval, frequency, pulse-width, rise and fall time, period, phase and events. Time intervals are measured with 25 ps rms resolution, making the SR620 one of the highest resolution counters available. Frequency is measured from 0.001 Hz to 1.3 GHz, and a choice of gates ranging from 1 period to 500 seconds is provided. The SR620 delivers up to 11 digits of frequency resolution in one second, making it suitable for measurement applications ranging from short-term phase locked loop jitter, to the long-term drift of atomic clocks. All measurement modes are supported by a wide variety of flexible arming and triggering options.

Histograms and Strip Charts

Unlike conventional counters that only have numeric displays, the SR620 provides live, graphical displays of measurement results. Graphical data is available in three formats: a histogram showing the distribution of values within a set of measurements, a strip chart of mean values from successive measurements, or a strip chart of jitter (standard deviation or Allan variance) values from successive measurements. Up to 250 strip-chart points or histogram bins can be displayed.



phone: (408)744-9040 www.thinkSRS.com



Histogram display

Both histograms and strip charts can be displayed on any oscilloscope with an X-axis input (see pictures), or can be plotted on an HP-GL compatible plotter or dot-matrix printer. Convenient cursors allow you to read the value of any data point in the histogram or strip chart. Autoscale and zoom features make it simple to display all, or any portion, of the graphs.

Complete Statistical Calculations

The SR620 can make measurements on a single-shot basis, or calculate the statistics of a set of measurements. Sample sizes from one to one million can be selected. The SR620 will automatically calculate the mean, standard deviation or Allan variance, minimum and maximum for each set of measurements.

Reference Output

A precision 50 % duty cycle square wave (1 kHz) is available at the front-panel REF output. The REF output can be used as a source of start or stop pulses for any of the SR620's measurement modes. For instance, the length of a cable connected between REF and the B input can be precisely determined by measuring the time delay between REF and B.

Built-In DVMs and Analog Outputs

Two rear-panel DVM inputs make measurements of DC voltages with 0.3 % accuracy (± 20 VDC range). These values may be read via the interfaces or displayed directly on the front panel.



SR620 rear panel

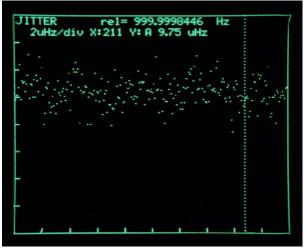
Two DAC outputs continuously provide voltages proportional to the mean and the jitter of the measurement sample. These 0 to 10 V outputs can drive strip-chart recorders, or they can be set to provide fixed or scanned output voltages.

Built-In Auto-Calibration

A sophisticated, built-in auto-calibration routine nulls insertion delays between start and stop channels, and compensates for the differential nonlinearites inherent in analog time-measurement circuitry. The auto-calibration routine takes about two minutes to perform, and should be run every 1000 hours of operation.

10 MHz Reference

The choice of timebase affects both the resolution and accuracy of measurements made with the SR620. SRS offers a standard timebase with an aging coefficient of 1×10^{-6} /year, or an optional ovenized-oscillator timebase with only 5×10^{-10} /day aging and about an order of magnitude better short-term stability than the standard timebase. A rear-panel input lets you connect any external 5 MHz or 10 MHz source as a timebase.



Allan variance plot

Computer Interfaces

Standard GPIB (IEEE-488.2) and RS-232 interfaces allow remote control of the SR620. All instrument functions and configuration menu settings are accessible via the interfaces. A fast binary dump mode outputs up to 1400 measurements per second to a computer. A parallel printer port allows direct printing from the instrument. Standard IEEE-488.2 communications are supported, and plotter outputs are provided in HP-GL format. For debugging, the last 256 characters transmitted over the interfaces can be viewed on the front panel.



SR620 Specifications

| Time Standard Option 01 Frequency 10.000 MHz 11.000 MHz | | | | | |
|---|---|--|-------------------------------------|------------|---|
| Frequency 10.000 MHz 10.000 MHz Type TCVXO Overlized VCXO Aging Type TCVXO Overlized VCXO Aging Type TCVXO Overlized VCXO Aging Type TVXO Overline Type TVXO Type TVXO Type TVXO Type TVXO Type TVXO TVXO Type TVXO | Timebase | | | | internal UHF prescalers. |
| Toylor | | Standard | Option 01 | | RATIO A/B range: 10^{-9} to 10^3 |
| Aging | Frequency | | | Error | |
| 1-25 sequence. Gates may be setterally triggered with no delay. | | | | | |
| Stability (0 to 50°C) ppm 0.001 ppm | | $1 \times 10^{-6}/\text{yr}$. | $5 \times 10^{-10} / \text{day}$ | Gates | |
| External timebase External timebase User may supply 5 MHz or 10 MHz timebase (1 V nominal) | | | | | |
| Extract timebase User may supply 5 MHz or 10 MHz timebase (1 V nominal) Time Interval, Width, Rise and Fall Times Range -1000 s to +1000 s in ±TIME mode -1 ns to +1000 s in ±100 ms to +1000 s in ±1000 for frequencies <1 MHz) Period Oto 1000 for frequencies <1 MHz) Period Oto 1000 s Range ((25 ps typ. [50 ps max.]) ² + ((100 ps by Interval) ²) / N) ² rms ((25 ps typ. [50 ps max.]) ² + ((100 ps by Interval) ²) / N) ² rms ((25 ps typ. [100 ps max.]) + Timebase Error × Interval + Time EXT (Ext arms Start) + Time EX | | * * | | | |
| External timebase User may supply 5 MHz or 10 MHz timebase (1 V nominal) Time Interval, Width, Rise and Fall Times Range | Settability | 0.01 ppm | 0.001 ppm | | |
| Time Interval, Width, Rise and Fall Times Range | E . 12 1 | Hear may supply 5 MHz or 10 MHz | | | |
| Time Interval, Width, Rise and Fall Times | External timebase | | | Dienloy | |
| Range | | tilliebase (1 v iloi | iiiiai) | Display | |
| Range | Time Interval, Width, Rise and Fall Times | | | | |
| Range | | | | | |
| Period Trigger rate 0 to 100 MHz | Range | $-1000 \mathrm{s}$ to $+1000 \mathrm{s}$ in $\pm \text{TIME}$ mode | | | 1 , |
| Display LSD | · · | -1 ns to $+1000$ s in all others modes | | Period | |
| Resolution | Trigger rate | | | | |
| Standard timebase $((25 \text{ ps typ.} [50 \text{ ps max.}])^2 + (0.2 \text{ pp b \times Interval})^2/N)^2 \text{ rms}$ Option 01 $((25 \text{ ps typ.} [50 \text{ ps max.}])^2 + (0.05 \text{ ppb x Interval})^2/N)^{12} \text{ rms}$ $(N^2 \text{ sample size})$ Error $(25 \text{ ps typ.} [10 \text{ ps max.}] + (0.05 \text{ ppb x Interval})^2/N)^{12} \text{ rms}$ $(N^2 \text{ sample size})$ Error $(25 \text{ ps typ.} [10 \text{ ps max.}] + (16 \text{ digit fixed point, LSD} = 19 \text{ same as frequency}$ Relative error $(25 \text{ ps typ.} [10 \text{ ps max.}] + (16 \text{ max.}] + (16 max.$ | Display LSD | 4 ps single sample, 1 ps with avg. | | Range | |
| Option 01 (((25 ps typ. [50 ps max.])*+ (0.05 ppb × Interval)*) / N)*2 rms, (N=sample size) Error *\(\frac{4}{500}\) by typ. [1 ns max.] + Timebase Error × Interval) + Tringetare Error × Relative error Relative error Relative error *\(\frac{4}{500}\) by pp. [100 ps max.] + Timebase Error × Interval) Arming modes *\(\frac{4}{11ME}\) EXT (Ext arms Start) +\(\frac{4}{11ME}\) EXT (Ext arms Start) +\(\frac{4}{11ME}\) EXT (Ext arms Start) +\(\frac{4}{11ME}\) EXT (Eading EXT edge arms Stop) *\(\frac{4}{11ME}\) EXT (Cading EXT edge arms Stop) *\(\frac{4}{11ME}\) EXT (Armed by BXT input edge) EXT arming may be internally delayed or scanned with respect to the EXT input in variable steps. The step size may be set in a 1-2-5 sequence from 1 µs to 10ms. The maximum delay is 50,000 steps. Display Display Display Display 16-digit fixed point with 1 ps LSD Sample rate N \(\frac{800}{800}\) us * measured time interval)* calculation time (N=sample size) The calculation time occurs only after N measurements are completed and varies from zero (N=1, no graphics, binary) to 5 ms (N=1, no graphics) to 10ms (display mean or standard dev.) to 60 ms (histogram). Frequency Range Display 16-digit fixed point with 1 ps LSD Same as frequency Display 17-display (1 fs with ×1000 for periods <1 s) Phase Phase | | | | | |
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| $ \begin{array}{c} (N=sample size) \\ < \pm (500 \mathrm{ps} \mathrm{typ}. [1 \mathrm{ns} \mathrm{max}.] + \\ Timebase \mathrm{Error} \times \mathrm{Interval} + \\ Tingebase \mathrm{Error} \times \mathrm{Interval} + \\ Tingebase \mathrm{Error} \times \mathrm{Interval} + \\ Timebase \mathrm{Error} \times \mathrm{Interval} + \\ \times \mathrm{Interval} \mathrm{Exter} \mathrm{Interval} + \\ Timebase \mathrm{Error} \times \mathrm{Interval} + \\ Timebase \mathrm{Error} \times \mathrm{Interval} + \\ \times \mathrm{Interval} \mathrm{Exter} Exte$ | Option 01 | $(((25 \text{ ps typ. } [50 \text{ ps max.}])^2 +$ | | | |
| Frequency Frequency Figure Figure Figur | | $(0.05 \text{ppb} \times \text{Interv})$ | $(al)^{2}$ / N) ^{1/2} rms, | Display | |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | F | | | | (1 is with \times 1000 for periods $<$ 1 s) |
| Trigger Error) \pm (50 ps typ. [100 ps max.] + Timebase Error × Interval) Definition Phase = 360 × (T _b - T _a) / Period A Arming modes +TIME (Stop is armed by Start) Range -180 to +180 degrees, 0 to 100 MHz Arming modes +TIME EXT (Ext arms Start) Resolution (25 ps × Freq. × 360 + 0.001)° HTIME EXT HOFF (Leading EXT edge arms Stop) dege arms Stop) 0.01 seconds (1 period min.) for period measurement and 1 sample for time interval measurement. Edge arms Stop) Error Period may also be measured using externally triggered internal gates as in frequency mode. **TIME CMPL (Armed by Start/Stop pair), ±TIME EXT (armed by EXT input edge) Error *±(1 ns × Freq. × 360 + 0.001)° EXT arming may be internally delayed or scanned with respect to the EXT input in variable steps. The step size may be set in a 1-2-5 sequence from 1 µs to 10 ms. The maximum delay is 50,000 steps. Range 10 ¹² , RATIO A/B range: 10 ⁻⁹ to 10 ³ Display 16-digit fixed point with 1 ps LSD N× (800 µs + measured time interval) + calculation time (N = sample size) Display 12 digits Display N × (800 µs + measured time interval measurement. Bandwidth Threshold 300 MHz (1.2 ns rise time) Bandwidth Threshold Accuracy 15 mV + 0.5 % of setting see graph next page Sensitivity see graph next page <tr< td=""><td colspan="3"></td><td>Dhasa</td><td></td></tr<> | | | | Dhasa | |
| Relative error | | | Interval+ | Phase | |
| Timebase Error × Interval) Arming modes Timebase Error × Interval) +TIME (Stop is armed by Start) +TIME EXT (Ext arms Start) +TIME EXT (Ext arms Start) +TIME EXT HOFF (Leading EXT edge arms Start, trailing EXT edge arms Stop) ±TIME (Armed by Start/Stop pair), ±TIME CMPL (Armed by Stop/Start pair) ±TIME EXT (Armed by EXT input edge) EXT arming may be internally delayed or scanned with respect to the EXT input in variable steps. The step size may be set in a 1-2-5 sequence from 1 μs to 10 ms. The maximum delay is 50,000 steps. Display Display Display N × (800 μs + measured time interval) + calculation time (N = sample size) The calculation time occurs only after N measurements are completed and varies from zero (N = 1, no graphics) to 10 ms (display mean or standard dev.) to 60 ms (histogram). Frequency Range -180 to +180 degrees, 0 to 100 MHz (25 ps × Freq. × 360 + 0.001)° Gate 0.01 secronds (1pe riod min.) for period measurement and 1 sample for time interval peace text and 1 sample for time interval peace text and 1 sample for time interval peace text and 1 sample externally triggered internal gates as in frequency mode. Counts Range 10¹², RATIO A/B range: 10⁻⁰ to 10³ to 300 MHz digits Accuracy Sample rate 10¹², RATIO A/B range: 10⁻⁰ to 10³ to 300 MHz Accuracy Sample rate 10¹², RATIO A/B range: 10⁻⁰ to 10³ to 300 MHz digits Accuracy Sample rate 10¹², RATIO A/B range: 10⁻⁰ to 10³ to 300 MHz digits Accuracy Sample rate 10¹², RATIO A/B range: 10⁻⁰ to 10³ Accuracy Sample rate 10¹², RATIO A/B range: 10⁻⁰ to 10³ Accuracy Sample rate 10¹², RATIO A/B range: 10⁻⁰ to 10³ Accuracy Sample rate 10¹², RATIO A/B range: 10⁻⁰ to 10³ Accuracy Sample rate 10¹², RATIO A/B range: 10⁻⁰ to 10³ Ac | Dalatirea amman | | | Definition | Phase = 260 × (T T) / Pariod A |
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| delayed or scanned with respect to the EXT input in variable steps. The step size may be set in a 1-2-5 gequence from 1 μ s to 10 ms. The maximum delay is 50,000 steps. Display 16-digit fixed point with 1 ps LSD Sample rate N × (800 μ s + measured time interval) + calculation time (N=sample size) The calculation time occurs only after N measurements are completed and varies from zero (N=1, no graphics) to 10 ms (display mean or standard dev.) to 60 ms (histogram). Frequency Range 10 ¹² , RATIO A/B range: 10^{-9} to 10^{3} to 10^{3} dates Same as frequency 12 digits Inputs Inputs Range 10 ¹² , RATIO A/B range: 10^{-9} to 10^{3} to 10^{3} dates Same as frequency 12 digits Same as frequency Inputs Inputs Sample 10^{12} , RATIO A/B range: 10^{-9} to 10^{3} dates Same as frequency 12 digits Inputs Inputs Sample 10^{12} , RATIO A/B range: 10^{-9} to 10^{3} dates Same as frequency 12 digits Inputs Sample 10^{12} , RATIO A/B range: 10^{-9} to 10^{3} dates Same as frequency 12 digits Inputs Sample 10^{12} , RATIO A/B range: 10^{-9} to 10^{3} dates Same as frequency 12 digits Inputs Sample 10^{12} , RATIO A/B range: 10^{-9} to 10^{10} digits Inputs Same as frequency 12 digits Inputs Sample 10^{12} , RATIO A/B range: 10^{-9} to 10^{10} digits Inputs Sample 10^{12} , RATIO A/B range: 10^{10} dates 10^{10} digits Inputs Sample $10^$ | | | | Counts | |
| the EXT input in variable steps. The step size may be set in a 1-2-5 sequence from 1 μ s to 10 ms. The maximum delay is 50,000 steps. Display 16-digit fixed point with 1 ps LSD Sample rate N×(800 μ s+ measured time interval)+ calculation time (N=sample size) The calculation time occurs only after N measurements are completed and varies from zero (N=1, no graphics, binary) to 5 ms (N=1, no graphics) to 10 ms (display mean or standard dev.) to 60 ms (histogram). Frequency Inputs Count rate O to 300 MHz Gates Same as frequency 12 digits Inputs Bandwidth 300 MHz (1.2 ns rise time) -5.00 to +5.00 VDC (10 mV resolution) Accuracy 15 mV + 0.5% of setting see graph next page Sensitivity see graph next page Threshold set between peak input excursions. (f>10 Hz, duty cycle >10 ⁻⁶) Slope Rising or falling edge (1 M Ω + 30 pF) or 50 Ω 50 Ω termination has SWR < 2.5:1 from 0 to 1.3 GHz | | | | _ | |
| $\begin{array}{c} \text{step size may be set in a } 1\text{-}2\text{-}5 \\ \text{sequence from 1} \mu \text{s to } 10 \text{ms. The} \\ \text{maximum delay is } 50,000 \text{steps.} \\ \text{Display} \\ \text{Sample rate} \\ \begin{array}{c} 16\text{-digit fixed point with 1 ps LSD} \\ \text{N} \times (800 \mu \text{s} + \text{measured time} \\ \text{interval}) + \text{calculation time} \\ \text{(N = sample size)} \\ \text{The calculation time occurs only} \\ \text{after N measurements are completed} \\ \text{and varies from zero (N = 1, no} \\ \text{graphics, binary) to } 5 \text{ms (N = 1, no} \\ \text{graphics) to } 10 \text{ms (display mean or standard dev.) to } 60 \text{ms (histogram)}. \\ \end{array} \begin{array}{c} \text{Slope} \\ \text{Range} \\ \end{array} \begin{array}{c} \text{Range} \\ \end{array} \begin{array}{c} \text{Sonother in a 1-2-5} \\ \text{Sonother in a 1-2-5} \\ \text{Display} \\ \text{Display} \\ \text{Display} \\ \text{Display} \\ \text{Display} \\ \text{Display} \\ \text{12 digits} \\ \text{13 00 MHz (1.2 ns rise time)} \\ \text{-5.00 to +5.00 VDC} \\ \text{(10 mV resolution)} \\ \text{(10 mV resolution)} \\ \text{Son Sesting} \\ \text{Sensitivity} \\ \text{see graph next page} \\ \text{Sensitivity} \\ \text{see graph next page} \\ \text{Threshold set between peak input excursions.} \\ \text{(f > 10 Hz, duty cycle > 10^{-6})} \\ \text{Slope} \\ \text{Rising or falling edge} \\ \text{Impedance} \\ \text{Impedance} \\ \text{10 M} \Omega + 30 \text{pF}) \text{ or } 50 \Omega \\ \text{50} \Omega \text{ termination has SWR} < 2.5:1 \\ \text{from 0 to 1.3 GHz} \\ \end{array}$ | | | | _ | , . |
| Display12 digitsDisplay16-digit fixed point with 1 ps LSD N×(800 μs+measured time interval)+calculation time (N=sample size)InputsThe calculation time occurs only after N measurements are completed and varies from zero (N=1, no graphics, binary) to 5 ms (N=1, no graphics) to 10 ms (display mean or standard dev.) to 60 ms (histogram).Bandwidth Threshold Sensitivity Accuracy Sensitivity Sensitivity Sensitivity Slope Impedance300 MHz (1.2 ns rise time) (10 mV resolution) 15 mV+0.5 % of setting see graph next page excursions. (f>10 Hz, duty cycle >10^6) Slope ImpedanceFrequencySlope ImpedanceRising or falling edge (1 MΩ+30 pF) or 50 Ω 50 Ω termination has SWR < 2.5:1 from 0 to 1.3 GHz | | | | | |
| Display16-digit fixed point with 1 ps LSD N×(800 μs+ measured time interval)+ calculation time (N=sample size)Bandwidth Threshold $300 \text{MHz} (1.2 \text{ns} \text{rise} \text{time})$ $-5.00 \text{to} +5.00 \text{VDC}$ $(10 \text{mV} \text{resolution})$ after N measurements are completed and varies from zero (N=1, no graphics, binary) to 5 ms (N=1, no graphics) to 10 ms (display mean or standard dev.) to 60 ms (histogram).Accuracy Sensitivity Auto level $15 \text{mV} + 0.5 \% \text{of} \text{setting}$ see graph next page Threshold set between peak input excursions. $(f > 10 \text{Hz} \text{duty cycle} > 10^{-6})$ FrequencySlope ImpedanceRising or falling edge $(1 \text{M}\Omega + 30 \text{pF}) \text{or} 50 \Omega$ $50 \Omega \text{termination has SWR} < 2.5:1$ Range $0.001 \text{Hz} \text{to} 300 \text{MHz} \text{via comparator}$ Inputs | | | | | |
| Display 16 -digit fixed point with 1 ps LSD $N \times (800 \mu s + measured time)$ interval) + calculation time $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample size)$ Threshold set between peak input excursions. $(N = sample$ | | | | Dispiay | 12 digits |
| Sample rate $N \times (800 \mu s + measured time interval) + calculation time (N=sample size) Threshold (N=sample size) The calculation time occurs only after N measurements are completed and varies from zero (N=1, no graphics, binary) to 5 ms (N=1, no graphics) to 10 ms (display mean or standard dev.) to 60 ms (histogram). Frequency Bandwidth 300 MHz (1.2 ns rise time) -5.00 to +5.00 VDC (10 mV resolution) Accuracy 15 mV + 0.5 \% of setting see graph next page Threshold set between peak input excursions. (f > 10 Hz, duty cycle > 10^{-6}) Slope Rising or falling edge (1 M\Omega + 30 pF) or 50 \Omega So \Omega termination has SWR < 2.5:1 from 0 to 1.3 GHz$ | Dienlov | | | Innuts | |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | 1 2 | | | iliputs | |
| $ \begin{array}{cccccccccccccccccccccccccccccccccccc$ | Sample rate | | | Bandwidth | 300 MHz (1.2 ns rise time) |
| The calculation time occurs only after N measurements are completed and varies from zero (N=1, no graphics, binary) to 5 ms (N=1, no graphics) to 10 ms (display mean or standard dev.) to 60 ms (histogram). Frequency Range $ \begin{array}{c} $ | | | | | |
| after N measurements are completed and varies from zero (N=1, no graphics, binary) to 5 ms (N=1, no graphics) to 10 ms (display mean or standard dev.) to 60 ms (histogram). Frequency | | | | | |
| and varies from zero (N=1, no graphics, binary) to 5 ms (N=1, no graphics) to 10 ms (display mean or standard dev.) to 60 ms (histogram). Slope Impedance Impedance Impedance Impedance Sensitivity See graph next page Threshold set between peak input excursions. ($f > 10 \text{Hz}$, duty cycle $> 10^{-6}$) Slope Rising or falling edge ($1 \text{M}\Omega + 30 \text{pF}$) or 50Ω 50 Ω termination has SWR $< 2.5:1$ from 0 to 1.3 GHz | | | | Accuracy | |
| graphics) to 10 ms (display mean or standard dev.) to 60 ms (histogram). Slope Rising or falling edge Impedance $(1 \text{ M}\Omega + 30 \text{ pF}) \text{ or } 50 \Omega$ Range 0.001 Hz to 300 MHz via comparator from 0 to 1.3 GHz | | | | | see graph next page |
| Frequency $ \begin{array}{c} \text{Standard dev.) to 60 ms (histogram)}. \\ \text{Range} \\ \text{Standard dev.) to 60 ms (histogram)}. \\ \text{Slope} \\ \text{Impedance} \\ \text{Impedance} \\ \text{Slope} \\ \text{Impedance} \\ \text{Impedance} \\ \text{Standard dev.) to 60 ms (histogram)}. \\ \text{Slope} \\ \text{Impedance} \\ \text{Impedance} \\ \text{Standard dev.) to 60 ms (histogram)}. \\ \text{Slope} \\ \text{Impedance} \\ \text{Impedance} \\ \text{Standard dev.) to 60 ms (histogram)}. \\ \text{Standard dev.) to 60 ms (histogram)}. \\ \text{Slope} \\ \text{Impedance} \\ \text{Impedance} \\ \text{Standard dev.) to 60 ms (histogram)}. \\ \text{Standard dev.} \text{To 60 ms (histogram)}. \\ $ | | | | Auto level | |
| Frequency Slope Rising or falling edge Impedance $(1 \text{M}\Omega + 30 \text{pF})$ or 50Ω Slope $(1 \text{M}\Omega + 30 \text{pF})$ or 50Ω termination has SWR < 2.5:1 from 0 to 1.3 GHz | | | | | |
| FrequencyImpedance $(1 \text{ M}\Omega + 30 \text{ pF})$ or 50Ω So Ω termination has SWR < 2.5:1 | | standard dev.) to | 60 ms (histogram). | | |
| Range 0.001 Hz to 300 MHz via comparator 50 Ω termination has SWR < 2.5:1 from 0 to 1.3 GHz | _ | | | | |
| Range 0.001 Hz to 300 MHz via comparator from 0 to 1.3 GHz | Frequency | | | Impedance | |
| | D | 0.00111. (2003 | /IIi | | |
| inpute /III//Hz to 1.41+Hz vio Loubling // or III | Kange | | | Counling | AC or DC |

Coupling



inputs. 40 MHz to 1.3 GHz via

phone: (408)744-9040 www.thinkSRS.com

AC or DC

(Ext is always DC coupled)

Input noise $350 \,\mu Vrms$ (typ.) Prescaler see graph

Protection 100 V, 50Ω terminator is released if

input exceeds ±5 Vp

REF Output

Frequency 1.00 kHz (accuracy same as timebase)

Rise/fall time

Amplitude TTL: 0 to 4 V (2 V into 50Ω) ECL: -1.8 to -0.8 V into $50\,\Omega$

DVM Inputs

Full scale ± 1.999 VDC or ± 19.99 VDC Sample & hold with successive Type

approximation converter

Impedance $1 M\Omega$

0.3% of full scale Accuracy Speed Approximately 5 ms

D/A Outputs

Full scale $\pm 10.00\,VDC$ Resolution $5 \,\mathrm{mV}$ Impedance $< 1 \Omega$

Default Voltage proportional to mean

and deviation

Accuracy 0.3% of full scale

Graphics

Two rear-panel outputs to drive x-y Scope

analog oscilloscope

Displays Histograms and strip charts of mean

and jitter

X-axis −5 V to +5 V for 10 division deflection Y-axis -4 V to +4 V for 8 division deflection

250 (H) × 200 (V) pixels Resolution Centronics port for dot-matrix Hardcopy printers. RS-232, IEEE-488.2 for

HP-GL compatible plotters.

Interfaces

GPIB

RS-232 300 baud to 19.2 kbaud. All instrument

functions may be controlled. IEEE-488.2 interface. All instrument

functions may be controlled. Speed Approximately 150 ASCII

formatted responses per second, 1400 binary responses per second.

General

Operating 0°C to 50°C

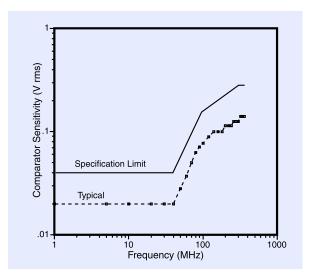
70 W, 100/120/220/240 VAC, Power

50/60 Hz

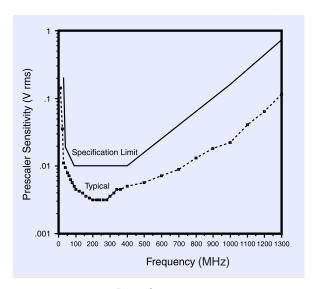
11 lbs., $14" \times 3.5" \times 14"$ (WHD) Weight, dimensions

Warranty One year parts and labor on defects

in materials and workmanship



Input sensitivity



Prescaler sensitivity

Ordering Information

SR620 Time interval & frequency counter \$5195 Option 01 2 ppb OCXO timebase \$950 O620RM Rack mount kit \$100



phone: (408)744-9040 www.thinkSRS.com