

**SignalVu-PC  
Vector Signal Analysis Software  
Programmer Manual**

[www.tektronix.com](http://www.tektronix.com)



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**Tektronix**

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# Table of Contents

Overview ..... 1

    Setting Up Remote Communications..... 1

Measurement Display Support ..... 3

Remote Command Support..... 6

Error Messages and Codes..... 8

    Device Errors..... 8



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# Overview

This document provides supplementary information about the remote commands for the SignalVu-PC Vector Signal Analysis Software. The SignalVu-PC software enables you to use your PC to analyze RF signal behavior with the same software used on the RSA6100B/RSA5001A Series Real-Time Analyzers. The remote command details are described in the following manuals that can be downloaded from [www.tektronix.com/manuals](http://www.tektronix.com/manuals).

- *RSA6100B Series Real-Time Spectrum Analyzers, RSA5100A Series Real-Time Signal Analyzers Programmer Manual*  
(Tektronix part number 077-0523-XX)

The SignalVu-PC software supports the use of the RSA6100B/RSA5001A Series commands with some limitations. For example, commands that control output functions are not supported and commands that control acquisition are not supported. The details are given in the following sections, *Measurement Display Support* and *Remote Command Support*. The error messages and codes are listed in the last section, *Error Messages and Codes*.

## Setting Up Remote Communications

To use the SignalVu-PC programmatic interface you must install TekVisa on your PC. TekVISA is a Tektronix VISA solution provided for customers. It is a collection of software and documentation for remote control of instruments regardless of instrument brand and physical connection. It includes a VISA driver, VISA libraries, documentation, USB Device Driver, VXI-11 server, and connection management/debug software.

Before installing TekVisa, you must edit the Windows Registry. The registry changes inform the TekVisa installer that you want to install the necessary components.

Perform these operations only if you are familiar with editing the Windows Registry. You should make a backup of the Windows Registry before you make any changes. You must be an administrator to make these changes.

## Enabling the Programming Interface

To enable the programming interface for SignalVu-PC:

1. Install SignalVu-PC.
2. Run the appropriate reg file (these files are included with SignalVu-PC).
  - a. TekVISA Preinstall Windows XP.reg
  - b. TekVISA Preinstall Windows 7 32-bit
  - c. TekVISA Preinstall Windows 7 64-bit
3. Open Regedit by clicking **Start** and then in the **Run** box (Windows XP) or **Search Programs and Files** box (Windows 7), type `regedit` and press **Enter**. This brings up the registry editor.
4. Use Regedit to make the following changes:
 

For Windows 7 (32-bit):

  - Right click and add **Full** permission for user **Everyone** to the registry key `HKEY_LOCAL_MACHINE\SOFTWARE\Tektronix`.

For Windows 7 (64-bit):

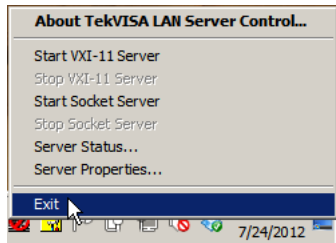
  - Right click and add **Full** permission for user **Everyone** to the registry key `HKEY_LOCAL_MACHINE\SOFTWARE\wow6432Node\Tektronix`.
5. Install TekVisa (you can download version 3.3.4.6 from Tek.com).
6. Reboot the PC.
7. Right click the *TekVisa LAN Server Control* icon in the System Tray and select **Start VXI-11 Server** to enable Ethernet control.

## Managing the VXI-11 Server

The above procedure installs the VXI-11 server on the target PC, which also creates a shortcut in the Startup folder.



Whenever SignalVu-PC is not running, a process called **Vxi11ServerControl.exe** will continuously attempt to connect with SignalVu-PC. This will be fixed in a future release of TekVISA. To prevent this from happening, exit the VXI-11 Server when SignalVu-PC is not running. Right-click on the tray icon and select **Exit**.



# Measurement Display Support

The RSA6100B/RSA5100A Series analyzers have various measurement displays, which are categorized into four groups. The following table lists all measurement displays available on the RSA6100B/RSA5100A Series analyzers. The columns at right show whether or not a display is supported by the SignalVu-PC software. Some SignalVu-PC measurement displays require installed options (which are noted in the left column).

## Measurement display support

Display group	Measurement display	Supported	Not supported	
General signal viewing	Amplitude vs Time	X		
	DPX	X		
		(DPXogram and Split only)		
	Frequency vs Time	X		
	Phase vs Time	X		
	RF I&Q vs Time	X		
	Spectrogram	X		
	Spectrum	X		
	Time overview	X		
Analog Modulation	Amplitude modulation	X		
	Frequency modulation	X		
	Phase modulation	X		
Phase Noise and Jitter Measurement	Phase Noise Display		X	
Settling Time Measurements (requires SignalVu-PC Option SVT)	Freq Settling	X		
	Phase Settling	X		

**Measurement display support, (cont.)**

<b>Display group</b>	<b>Measurement display</b>	<b>Supported</b>	<b>Not supported</b>
General purpose digital modulation (requires SignalVu-PC Option SVM)	Constellation	X	
	Demod I&Q versus Time	X	
	EVM vs Time	X	
	Eye Diagram	X	
	Freq Dev vs Time	X	
	Mag Error vs Time	X	
	Phase Error vs Time	X	
	Signal quality	X	
	Symbol table	X	
	Trellis	X	
	User defined filters	X	
RF measurements	CCDF	X	
	Channel power and ACPR	X	
	Freq Settling (requires SignalVu-PC Option SVT)	X	
	MCPR	X	
	Occupied Bandwidth	X	
	Phase Settling (requires SignalVu-PC Option SVT)	X	
	SEM		X
	Spurious		X
OFDM measurements (requires SignalVu-PC Option SVO)	OFDM Channel Response	X	
	OFDM Constellation	X	
	OFDM EVM	X	
	OFDM Mag Error	X	
	OFDM Phase Error	X	
	OFDM Power	X	
	OFDM Summary	X	
	OFDM Symbol Table	X	
Pulsed RF (requires SignalVu-PC Option SVP)	Pulse statistics	X	
	Pulse table	X	
	Pulse trace	X	
Audio Analysis (requires SignalVu-PC Option SVA)	Audio Spectrum	X	
	Audio Summary	X	



**Measurement display support, (cont.)**

<b>Display group</b>	<b>Measurement display</b>	<b>Supported</b>	<b>Not supported</b>
DPX® Display	DPX® Density Trigger		X
	DPX® spectrum display		X

## Remote Command Support

The SignalVu-PC software supports the use of the RSA6100B/RSA5100A Series signal analyzer remote commands with some limitations. The following table summarizes the RSA6100B/RSA5100A Series commands supported and not supported by the SignalVu-PC software for each command group. For details on the RSA6100B/RSA5100A Series remote commands, refer to the *RSA6100B Series Real-Time Signal Analyzers, RSA5100A Series Real-Time Signal Analyzers Programmer Manual*.

### Command support summary

Command group	Function	Commands supported	Commands not supported
IEEE common	Conforms to the IEEE Std 488.2.	All except in the right box.	*CAL *TRG
ABORt	Resets the trigger system and stops measurements.	ABORt (Aborts acquisitions and measurements.)	-
CALCulate	Controls the markers and the search operations.	All	CALCulate:DPSA:
CALibration	Calibrates the instrument.	None	All
DISPlay	Controls the presentation of text, graph, and trace.	All	DISPlay:DPSA: DISPlay:CCDF:
FETCH	Retrieves the measurements from the last acquired data.	None	All
INITiate	Controls the initiation of data acquisition.	All	-
INPut	Controls the characteristics of the signal input.	None	All
MMEMory	Provides mass storage capabilities for the instrument. Setup and TIQ files (:MMEMory:xxx:IQ and :MMEMory:xx:STATE) contain complete setup information.	All except in the right box. (See <i>Note</i> following this table.)	MMEMory:CALibration:LOAD:CORRection :EXternal:EDIT<x> MMEMory:CALibration:STORe:CORRection :EXternal:EDIT<x> MMEMory:DPSA:
OUTPut	Controls the characteristics of the signal output.	-	All
READ	Obtains the measurement results by acquiring fresh data.	None	All

## Command support summary, (cont.)

Command group	Function	Commands supported	Commands not supported
SENSe	Sets up detailed conditions for each measurement.	All except in the right box. (See <i>Note</i> following this table.)	[SENSe]:ACQuisition:FFRame:ACTual? [SENSe]:ACQuisition:FFRame:Limit [SENSe]:ACQuisition:FFRame:STATe [SENSe]:ANALysis:ADVanced:DITHer [SENSe]:ROSCillator:SOURce [SENSe]:DPSA:
STATus	Controls the status and event registers.	-	All
SYSTem	Sets or queries system parameters for operation.	SYSTem:PRESet SYSTem:ERRor – All	SYSTem:COMMunicate:GPIB[:SELF]:ADDRess SYSTem:HW:VERSion
TRACe	Controls trace activation and math operations.	All except in the right box.	TRACe:DPSA
TRIGger	Controls triggering.	None	All
UNIT	Specifies fundamental units for measurement.	-	UNIT:POWer (Use the [SENSe]:POWer:UNITs command.)

- Note** ■ The :MMEMory:LOAD:IQ command accepts the file extensions other than .tiq as well. In the RSA6100B/RSA5100A Series spectrum analyzers, this command ignores the file extension passed in (if any), and assumes that it is .tiq. In the SignalVu-PC software, the file extension can be .tiq, .wfm, .iqt, or .mat, and so is not ignored. If no file extension is included, it is assumed to be .tiq.

## Error Messages and Codes

This section lists the device error messages and codes that are unique to the SignalVu-PC software.

Event codes and messages can be obtained by using the queries `SYSTEM:ERROR?` and `SYSTEM:ERROR:ALL?` These are returned in the following format:

```
<event_code>,"<event_message>"
```

### Device Errors

These error codes are unique to the SignalVu-PC software. They are classified into three groups: global, measurement, and source conditions, as shown in the following tables.

#### Device errors, global condition

Error code	Error message
2900	Setup error
2901	Disabled: data is from swept acquisition
2902	Disabled: swept settings; Acquire data while display is selected
2903	Acquisition bandwidth too small for current setup
2904	Can't get acquisition data record
2905	Can't open the requested display
2906	Analysis failure
2907	Trigger position not supported
2908	Analysis length too small for current setup
2909	No math trace: unmatched trace lengths
2910	Analysis time was adjusted
2911	Not enough samples for current setup
2912	Can't replay. Data is from swept acquisition.
2913	Can't replay. Live data needed for swept settings.
2914	Recall error: setup not completely restored
2915	Recall failure: problem with file or file contents
2916	Save failure: file not saved
2917	Unexpected software error. Please cycle power and try again.
2918	Export failure: file not saved
2919	Export failure: unable to open results file for export. File not saved.
2920	Search condition for this result is already defined.
2921	Search condition for this result was not found.
2924	Load failed: <filename>

**Device errors, global condition, (cont.)**

<b>Error code</b>	<b>Error message</b>
2925	Store error: file not saved.
2926	No Math trace: unmatched trace X range
2927	Not enough memory for measurement
2928	Incomplete analysis
2929	Not enough samples for current setup
2930	Mask creation error: <reason message>

**Device errors, measurement condition**

<b>Error code</b>	<b>Error message</b>
2940	TDBW actual (TDBW: Time Domain Bandwidth)
2941	Average transmit not available in volts units
2942	RBW increased to
2943	RBW limited by acquisition bandwidth to
2944	RBW conflict. Increase span or analysis length
2945	Analysis stopped: ambiguous pulse shape
2946	Setup error: Phase measurement location.
2947	No pulses found
2948	No FFT (not all pulses have results)
2949	No burst detected
2951	Audio disabled: configuration problem
2952	Audio Demod disabled: swept acquisition
2953	Audio Demod disabled: trigger in use
2954	Audio disabled: IF band outside Acq BW
2955	Calibration error. See Windows Event Viewer for error detail.
<b>OBW errors</b>	
2956	Analysis failure: $AcqBW < MeasBW + (5 \times RBW)$
2957	Analysis failure: AcqBW must be 10 kHz or more
2958	$x \text{ dB BW} > \text{Meas BW}$
<b>Pulse errors</b>	
2959	AcqBW too low for current Chirp BW setting
2963	Not enough memory for measurement

**Device errors, measurement condition, (cont.)**

<b>Error code</b>	<b>Error message</b>
<b>Other measurements</b>	
2964	BW actual (limited by Acq BW)
2965	CISPR not available in FastFrame. Uncheck FastFrame in the Acquire panel.
2966	Analysis length must be in auto.
2967	Carrier not found
2969	CISPR accuracy limited by acq memory. Adjust RBW or freq range.
2970	CISPR: Acq BW too small for RBW. Try increasing span or freq range.
2971	Insufficient data for CISPR. Acquire while display is selected.
2972	VBW increased - Analysis Length too short
2973	VBW does not use full Analysis Length.

**Device errors, source condition**

<b>Error code</b>	<b>Error message</b>
2980	Freq/AcqBW exceed digitizer nyquist rate
2981	Insufficient time samples for current setup
2982	The decimation rate needed for downconversion to IQ is too high, and not supported
2983	Acq BW contains negative frequencies
2984	Please enable "Scope Settings> Other acquisition/horizontal settings"
2985	Scope Horizontal Position must be from 1 to 99%
2986	Digital IF downconverter out of virtual memory
2987	Downconversion failure
2997	IQ Calibration error. Please run calibration again. If the problem persists, contact your Tektronix Service Center.