LabVIEW driver history for the R&S® Vector Network Analyzers

Products:
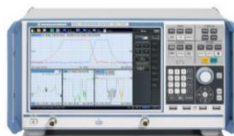
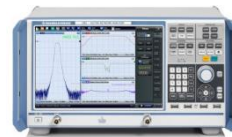| R&S®ZNA

| R&S®ZNB

| R&S®ZNC

| R&S®ZND

| R&S®ZNBT

ROHDE & SCHWARZ

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Table of Contents

1 Supported Instruments

In the following table, the supported Rohde &Schwarz instruments and firmware versions are listed:

Which instruments are supported?		
Instrument	Supported Firmware	Remarks
ZNA	2.71	
ZNB	3.45	
ZNC	2.94	
ZND	3.45	
ZNBT	3.45	

2 Installation of the LabVIEW driver

Before you start the installer, please close your LabVIEW application.

2.1 Installation on a Windows machine

The driver is distributed as a WinZip self-extracting executable file. Installer supported operation systems: WinXP, Win7, Win8, Win10.

Preconditions:
- LabVIEW 2016 or newer installed
- Any VISA installed – R&S VISA 5.12.3 or newer / NI VISA 18.0 or newer

When you start the driver WinZip installer, the following steps are being performed:

1. Unpacking of the driver's **instr.lib** and **user.lib** directories content as well as the **Installer.vi** into a temporary folder: **C:\temp\rsvna-lv-3.46.0**
   The driver is compiled in LabVIEW 2015 64-bit. From there you can copy to another location or run the **Installer.vi** manually later. The content of the temporary folder is not deleted after the installation is finished. Starting the same installation again will overwrite the data in this temporary folder.

2. After unpacking, the **Installer.vi** is automatically started in the last opened version of LabVIEW.
   In case you have more than one version of LabVIEW installed on your machine, make sure that the last opened LabVIEW version is the one in which you want to use the driver. If that is not the case, cancel the installation at this point, open and close your desired LabVIEW version and run the installer again. You can have the driver installed parallel for more LabVIEW versions by repeating the installation process for each desired version.

3. On the installer options page you have a choice to uncheck the **Mass-compiling** option (not recommended, because of the driver's performance penalty as well as VIs opening times) and you can change the location of the **instr.lib** part of the driver. **user.lib** part must be placed in the default location, otherwise the Express VI configuration will not function.
   On this page, you also see the actual LabVIEW version.
   Hitting **Next** button will first delete the old driver (if it existed), copy the new driver and mass-compile it.

4. The LabVIEW is closed and after starting it again, the driver is ready for use.

2.2 Installation on a non-Windows machine

In case you would like to install the driver on a non-Windows machine, use a Windows machine to start the driver's WinZip self-extracting executable file. **This machine does not need to have LabVIEW installed.**

After the **Step 1** from the previous chapter is finished, copy the content of the temporary folder to your target machine and start the **Installer.vi** manually.
From that point onwards, the installation process is the same as described in the previous chapter Steps 2, 3, and 4.

3 LabVIEW driver history

rsvna Instrument Driver		
Driver history for LabVIEW		
Revision	Date	Note
3.46.0	01/2023	Update for ZNA FW 2.71 New: Select Noise Density.vi Select Spectrum Reference.vi Select Harmonic Measurement THD.vi Select Two Tone Group Delay Measurement.vi Configure Time Gate Linking.vi Configure Power ALC Clamp.vi Configure Sweep Only Active Channel On.vi Configure Sweep Minimum Wait Time.vi Configure Sweep Fixed Wait Time.vi Configure Sweep Manual Wait Time Enabled.vi Configure Sweep Minimum Wait Time Initialization Channel.vi Configure Sweep Maximum Wait Time Port.vi Configure Sweep Minimum Wait Time Port.vi Configure Sweep Segment Wait Time Fixed.vi Configure Sweep Segment Wait Time Fixed Maximum.vi Configure Sweep Segment Wait Time Fixed Minimum.vi Configure Sweep Timing Info Box Enabled.vi Configure Sweep Generation Mode.vi Calibration Delay Mixer.vi Configure Calibration Internal Combiner Enabled.vi Calibration Converter Offset.vi Configure Calibration Validation Average Enabled.vi Configure Calibration Validation Format.vi Calibration Validation Preset.vi Query Calibration Validation Result.vi Calibration Validation Imaginary.vi Calibration Validation Real.vi Configure METAS Uncertainly Band.vi Configure Noise Figure Calibration Virtual Image Rejection.vi Configure Noise Figure Calibration Segment Virtual Image Rejection.vi Configure Noise Figure Calibration Segment Virtual Image Control Enabled.vi Configure Noise Figure Quickset External Attenuator Receiver.vi Configure Noise Figure Quickset External Attenuator Source.vi Configure Noise Figure Quickset Trace Noise.vi Configure Noise Figure Quickset DUT Expected Noise Figure.vi Configure Noise Figure Quickset DUT Expected Gain.vi Configure Noise Figure Quickset DUT Power.vi Noise Figure Quickset Execute.vi Source Leveling Clear All.vi Source Leveling Clear.vi Source Leveling Remove.vi Configure Source Leveling Load.vi Configure Source Leveling Store.vi Configure Source Leveling Number of Points.vi Configure Source Leveling Start Frequency.vi Configure Source Leveling Stop Frequency.vi Configure Source Leveling Start Power.vi Configure Source Leveling Stop Power.vi Configure Source Leveling ALC Step Size.vi Configure Source Leveling Power Step Size.vi

rsvna Instrument Driver		
Driver history for LabVIEW		
Revision	Date	Note
		Query Source Leveling State.vi
		Source Leveling Start Cal Sweep.vi
		Configure Source Leveling Port Enabled.vi
		Configure Premeasurement Enabled.vi
		Configure Premeasurement Mode.vi
		Configure Premeasurement Port Enabled.vi
		Configure Premeasurement Convergence Factor.vi
		Configure Premeasurement Detector.vi
		Configure Premeasurement Max Precal Sweeps.vi
		Configure Premeasurement Tolerance.vi
		Configure Premeasurement Receiver.vi
		Configure Source Power Thru Meas.vi
		Query Trigger Status Ready.vi
		Trigger Ready Timeout.vi
		Configure Pulse ALC Measurement Delay.vi
		Configure Gain Compression Skip.vi
		Configure Gain Compression Skip Offset.vi
		Configure Spectrum Detector Zero Padding.vi
		Configure TDR Eye Transfer Rate Units.vi
		Configure Independent Generator Enabled.vi
		Configure Independent Generator Frequency.vi
		Configure Independent Generator Power.vi
		Configure Independent Generator RF Off.vi
		Configure Independent Generator Port Enabled.vi
		Configure Independent Generator Port Frequency.vi
		Configure Independent Generator Port Power.vi
		Configure Independent Generator Port RF Off.vi
		Configure Independent Generator Port Step Attenuator.vi
		Configure Format Identify.vi
		Generic Device Calibration Mixer.vi
		Configure Converter Port RF Slope.vi
		Updated:
		Configure Sweep Time Mode.vi - 'Sweep Time Mode' data type changed from ViBoolean to ViInt32
		Select Calibration Type.vi - Updated 'Parameters' ring values
		Select Calibration Type Extended.vi - Updated 'Parameters' ring values
		Load Calibration Data From Cal Group File.vi - Updated 'Standard' ring values
		Calibration Auto Type.vi - Updated 'Cal Type' ring values
		Calibration Auto Type Simplified.vi - Updated 'Cal Type' ring values
		Configure Calibration Auto Assignment Type.vi - Updated 'Cal Type' ring values
		Configure Connector.vi - Updated 'Calibration Connector' ring values
		Insert New Segment.vi - not sending the last parameter for ZNA
		Redefine Segment.vi - not sending the last parameter for ZNA
3.45.0	11/2022	Update for ZNB FW 3.45
		New Core 7.4.0
		New:
		Deembed Assistant (Class)
		Coupon (Class)
		DUT (Class)
		Configure Trace LO Supression.vi
		Configure Limit Check Points.vi
		Configure Marker Reference Excursion.vi
		Marker Reference Maximum.vi
		Marker Reference Minimum.vi
		Configure Marker Reference Threshold.vi

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Driver history for LabVIEW		
Revision	Date	Note
		Marker Search Reference.vi
		Configure Marker Target Value Reference.vi
		Configure Marker Target Format Reference.vi
		Marker Target Format Reference Search Left.vi
		Marker Target Format Reference Search Next.vi
		Marker Target Format Reference Search Right.vi
		Marker Target Format Reference Search Immediate.vi
		Configure Marker Tracking Reference.vi
		Configure Marker Search Range Reference.vi
		Configure Sweep Range To Marker Reference.vi
		Marker Center Sweep Range To Marker Reference.vi
		Configure Marker Search Range Show Limit Lines Reference.vi
		Calibration ICS Repeat.vi
		Configure Calibration ICS Temperature Compensation.vi
		Configure Calibration ICS Unknown Through.vi
		Join Calibrations.vi
		Fixture Modeling ISD Coupon Invalidates File Path.vi
		Fixture Modeling ISD DUT Invalidates File Path.vi
		Fixture Modeling ISD Reset To Default.vi
		Configure Fixture Modeling ISD Use Impedance Correction.vi
		Configure Fixture Modeling Directory.vi
		Fixture Modeling Clear Default Directory.vi
		Fixture Modeling SFD Coupon Invalidates File Path.vi
		Fixture Modeling SFD DUT Invalidates File Path.vi
		Configure Fixture Modeling SFD Use Impedance Correction.vi
		Fixture Modeling SFD Reset To Default.vi
		Fixture Modeling EZD DUT Invalidates File Path.vi
		Configure Fixture Modeling EZD Port Order.vi
		Configure Fixture Modeling EZD Reset To Default.vi
		Fixture Modeling Deembed Assistant Reset.vi
		Fixture Modeling Deembed Assistant Run.vi
		Configure Fixture Modeling Deembed Assistant Use Same Coupon.vi
		Configure Fixture Modeling Deembed Assistant IMP Correct.vi
		Configure Fixture Modeling Deembed Assistant Tool.vi
		Configure Fixture Modeling Deembed Assistant Right Model.vi
		Configure Fixture Modeling Deembed Assistant Left Model.vi
		Fixture Modeling Deembed Assistant Coupon Left Clear.vi
		Fixture Modeling Deembed Assistant Coupon Right Clear.vi
		Configure Fixture Modeling Assistant Coupon Left File.vi
		Configure Fixture Modeling Assistant Coupon Right File.vi
		Configure Fixture Modeling Assistant Coupon Left Measure.vi
		Configure Fixture Modeling Assistant Coupon Right Measure.vi
		Configure Fixture Modeling Assistant Coupon Left Port.vi
		Configure Fixture Modeling Assistant Coupon Right Port.vi
		Configure Fixture Modeling Assistant Coupon Left Type.vi
		Configure Fixture Modeling Assistant Coupon Right Type.vi
		Fixture Modeling Deembed Assistant DUT Measure.vi
		Configure Fixture Modeling Deembed Assistant DUT Port.vi
		Configure Fixture Modeling Deembed Assistant DUT Type.vi
		Configure Delta-L Directory.vi
		Delta-L Directory Default.vi
		Display Split All.vi
		Display Overlay All.vi
		Save Color Scheme HCOPY.vi
		Recall Color Scheme HCOPY.vi

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Driver history for LabVIEW		
Revision	Date	Note
		Configure Display X Axis Grid Labels.vi Query OPC Check Selftest.vi Query Level OPC Check Port.vi HUMS Add Event.vi HUMS Update Custom Event.vi HUMS Utilization Creates Custom.vi Query HUMS Utilization All.vi HUMS Utilization Delete Custom All.vi HUMS Utilization Delete Custom.vi Query HUMS Utilization History Detailed.vi Configure Generic Devices Characterization.vi Query Generic Device Configured Devices.vi Updated: Configure Power Meter Test Setup.vi - added parameter 'DeEmbedding Position' Power Meter Insert Coefficient.vi - added parameter 'DeEmbedding Position' Power Meter Delete Coefficient.vi - added parameter 'DeEmbedding Position' Power Meter Trace To List.vi - added parameter 'DeEmbedding Position' Query Power Meter Number Of Points.vi - added parameter 'DeEmbedding Position' Query Power Meter Point Values.vi - added parameter 'DeEmbedding Position' Configure Color Scheme.vi - added 'User Defined Colours' to 'Color Scheme' parameter
3.35.1	03/2022	Updated: Insert New Segment.vi
3.35.0	12/2021	Update for ZNA FW 2.30 New: Noise Figure (Class) Spectrum (Class) Gain Compression (Class) Harmonic Measurement (Class) Linearity Deviation (Class) Power ALC (Class) Advanced (Class) Noise Figure (Class) Mixer Phase (Class) Direct Generator Receiver Access (Class) Rear LO Out (Class) Lost Trigger (Class) Mixer Delay Measurements (Class) Pulse Measurement (Class) Source Coherence (Class) Gain Compression (Class) Spectrum (Class) Generic Device (Class) Frequency Converter (Class) Leveling Dataset (Class) Select More S-Parameters With Detector.vi Configure Wave Quantities Phase Normalization Enabled.vi Select Noise Level.vi Select Main Tone.vi Marker Spectrum Equals Marker.vi Select External DLL.vi Configure Preamplifier Enabled.vi Configure Preamplifier Gain.vi Configure Channel Dynamic Bw at Low Frequencies.vi Configure Channel Analog IF Filter.vi Configure Sweep Wait Time per Point.vi

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Driver history for LabVIEW		
Revision	Date	Note
		Configure Sweep Mode Controlled Timing.vi
		Configure Sweep Time Mode.vi
		Configure Sweep Fast Power Sweep.vi
		Configure Sweep Reverse.vi
		Configure Sweep Timer Mode.vi
		Configure Calibration Automatic Vector Mixer.vi
		Configure Calibration Noise Data Receiving Port.vi
		Configure Calibration Same Sweep Setup.vi
		Configure Calibration Sweep Setup.vi
		Configure Calibration Reference Receiver Attenuation.vi
		Configure Calibration IMD Method.vi
		Configure Calibration Fast Multiport Correction.vi
		Configure Calibration Interpolation Method.vi
		Start Harmonic Receiver Calibration.vi
		Start Harmonic Source Calibration.vi
		Configure Source Power Calibration.vi
		Configure Electronic Source Attenuation.vi
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		Configure Fast Source Power Calibration Enabled.vi
		Configure Track LO.vi
		Query Track LO Frequency Difference.vi
		Configure LO Usage.vi
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		Configure Port Config Use Primed Waves.vi
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		Configure Port Config Waves Frequency Offset.vi
		Configure Port Config Receiver Frequency Conversion.vi
		Configure Intermodulation Combiner.vi
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		Configure Trigger External Input.vi
		Configure AUX Trigger Out Delay.vi
		Configure AUX Trigger Out Signal Type.vi
		Configure Trigger Logic.vi
		Configure Delta-L Sweep Control Dynamic Bandwidth.vi
		Configure Reference Oscillator SMA Input Frequency.vi
		Configure Reference Oscillator SMA Output Frequency.vi
		Configure User Defined Led Color.vi
		Configure RF Off Behavior.vi
		Configure System Preset Mode.vi
		Configure Port Power Limit Enabled.vi
		Configure External Generator Limit.vi
		Updated:
		Select More Ratios With Detector.vi - Added Primed Wave Quantities
		Select More Wave Quantities With Detector.vi - Added Primed Wave Quantities
		Select Calibration Type.vi - Parameters control updated
		Select Calibration Type Extended.vi - Parameters control updated
		Start Calibration.vi - Parameters control updated
		Load Calibration Data From Cal Group File.vi - Standard control updated
		Calibration Auto Type.vi - Parameters control updated
		Calibration Auto Type Simplified.vi - Parameters control updated
		Configure Calibration Auto Assignment Type.vi - Calibration Type control updated
		Configure Multiple Trigger Source.vi - API changed - added Trigger Event (ZNA only) parameter
		Configure Reference.vi - Reference control updated
3.30.0	08/2021	Update for ZNB FW 3.30
		New core 7.4.0

rsvna Instrument Driver		
Driver history for LabVIEW		
Revision	Date	Note
		New: External DLL (Class) Validation (Class) METAS (Class) EaZy De-embedding (Class) Advanced (Class) Delta-L (Class) Pipelining (Class) HUMS (Class) Service Date (Class) Configure File Decimal Places.vi Configure Limit Line TTL Pass Default.vi Configure Marker Format.vi Configure Marker Default Format.vi External DLL List.vi External DLL Task List.vi Configure External DLL.vi Query External DLL Configuration.vi Add External DLL.vi Remove External DLL.vi Sweep Optimize Channel Switching Auto.vi Sweep Optimize Channel Switching Manual.vi Configure Calibration Detector Type.vi Configure Source Power Calibration Power Deembedding.vi Run Calibration Validation.vi Configure Calibration Validation Standard.vi Configure Calibration Validation Characterization.vi Configure Calibration Validation Magnitude Deviation.vi Configure Calibration Validation Phase Deviation.vi Configure METAS Calibration Active.vi Query METAS Cable Catalog.vi Configure METAS Cable To Ports.vi METAS Cable Reconnection.vi METAS Clear Cable Reconnection History.vi METAS Cable Movement.vi METAS Clear Cable Movement History.vi Configure Driving Mode.vi Configure Driving Mode Alternated Blocks.vi Configure AGC Global Method.vi Configure One Way Loss Second Frequency.vi Configure Virtual Network Wave De-Embed Enabled.vi Configure Fixture Modeling EZD Port Active.vi Fixture Modeling EZD Start Coupon Measurement.vi Fixture Modeling EZD Load Touchstone File.vi Configure Fixture Modeling EZD DUT Port Active.vi Fixture Modeling EZD Measure DUT.vi Configure Fixture Modeling EZD Load DUT File.vi Fixture Modeling Run EZD Simulator.vi Configure Fixture Modeling EZD Apply To Port Enabled.vi Configure Fixture Modeling EZD Generate Sides.vi Configure Fixture Modeling EZD DC Extrapolation Enabled.vi Configure Fixture Modeling EZD Impedance Correction.vi Configure Delta-L Characterization.vi Configure Delta-L Port Order.vi Configure Delta-L Frequencies Use Default Enabled.vi

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Driver history for LabVIEW		
Revision	Date	Note
		Query Delta-L Frequency List Count.vi
		Query Delta-L Frequency List.vi
		Delta-L Add User Frequency.vi
		Delta-L Delete User Frequency.vi
		Delta-L Delete All User Frequencies.vi
		Configure Delta-L Sweep Control.vi
		Query Delta-L Sweep Control Configuration.vi
		Configure Delta-L Sweep Range.vi
		Configure Delta-L Use Recommended Trace Configuration Enabled.vi
		Configure Delta-L Show TDR Impededances Enabled.vi
		Delta-L Load Measurement File.vi
		Configure Delta-L Port Enabled.vi
		Configure Delta-L Line Length.vi
		Delta-L Measure Line.vi
		Delta-L Run.vi
		Delta-L Clear All 1L Measurements.vi
		Delta-L Clear 1L Measurement File.vi
		Configure Pipelining State.vi
		Query Pipelining Channel Results.vi
		Configure External Generator State.vi
		Configure Permanent Signal Generator State.vi
		Configure HUMS Enabled.vi
		HUMS Export History To File.vi
		HUMS Delete History.vi
		HUMS Delete Device History.vi
		HUMS Delete Utilization History.vi
		HUMS Query Data From Instrument.vi
		HUMS Save Data From Instrument To File.vi
		Configure HUMS SNMP Community Strings.vi
		Configure HUMS SNMP System Info.vi
		Query HUMS SNMP System Info.vi
		HUMS SNMP Define User Profile.vi
		Query HUMS SNMP User List.vi
		HUMS SNMP Delete User.vi
		HUMS SNMP Delete All Users.vi
		HUMS Tag Define Key Value Pair.vi
		Query HUMS Tag Key Value Pair.vi
		Query HUMS All Device Tags.vi
		HUMS Tag Delete.vi
		HUMS Tag Delete All.vi
		HUMS Utilization Tracking Enable.vi
		Query HUMS Device Status Summary.vi
		Query Service Calibration Last Date.vi
		Query Service Calibration Due Date.vi
		Query Service Calibration Due State.vi
		Query Service Calibration Interval.vi
		Query Service Last Service Date.vi
		Query Service Due State.vi
		Error Count.vi
		Updated:
		Configure Print Page Setup.vi - Diagram areas updated
		Configure Print Color Scheme.vi - Color schemes updated
		Configure File Symmetric Params.vi - Help updated
		Configure Marker Reference Format.vi - Rng values
		Configure Bandwidth.vi - Selectivity values updated

rsvna Instrument Driver		
Driver history for LabVIEW		
Revision	Date	Note
		Configure Sweep Type.vi - Help updated
		Load Calibration Data From Cal Group File.vi - Attr, Rng, stds
		Configure Source Power Calibration Power Meter.vi - Attr deleted
		Configure Sweep Sequencer RFFE Command.vi - Seq repcap removed from segmented
		Configure Sweep Sequencer GPIO Voltage.vi - Seq repcap removed from segmented
		Configure Sweep Sequencer Delay Time.vi - Seq repcap removed from segmented
		Configure Split Type.vi - Range table values updated
		Configure Split Grid.vi - Attribute added
		Configure TDR Stimulus Rise Time.vi - Definition help, default updated
		Deleted:
		Configure Trace Probe Tip Impedance.vi
		Query Trace Probe Tip Impedance.vi
3.11.0	08/2020	New core 6.70.x
		New:
		Infinite Averaging (Class)
		Distance To Fault (Class)
		Display (Class)
		Test (Class)
		By Port Group (Class)
		Fixture Modeling (Class)
		Harmonic (Class)
		Info Window (Class)
		Menu Key (Class)
		TDR (Class)
		Data Memory (Class)
		Repeated Capability (Class)
		File List of Favorite Recall Set.vi
		Configure Print Color Scheme.vi
		File Store Distance to Fault Cable Types.vi
		File Load Distance to Fault Cable Types.vi
		File Added Comment.vi
		Configure File Symmetric Params.vi
		Define Sweep and Measurement.vi
		Define Sweep and Measurement With Arguments.vi
		Query Sweep and Measurement Definition.vi
		Configure Trace Display Label.vi
		Configure Trace Probe Tip Impedance.vi
		Trace User Defined Math Formatted.vi
		Configure Trace Math Formatted State.vi
		Configure Trace Math Formatted VI.vi
		Configure Time Domain VSWR Enabled.vi
		Configure Trace Statistical Reference.vi
		Configure Trace Statistical Manual Reference Level.vi
		Configure Trace Statistical Manual Reference Phase.vi
		Configure Trace Statistical Reference Marker.vi
		Configure Trace Statistical Reference Range.vi
		Configure Trace Statistical Compression Phase.vi
		Trace Data Extrapolation.vi
		Configure Limit Line Segment Formula.vi
		Configure Limit Line Segment Interpolation.vi
		Query Limit Line Fail Data.vi
		Configure Marker Reference Format.vi
		Configure Marker Threshold.vi
		Configure Marker Coupled Markers.vi
		Configure Marker Coupling Type.vi

rsvna Instrument Driver		
Driver history for LabVIEW		
Revision	Date	Note
		Configure Marker Excursion.vi
		Configure Marker Multiple Peak Excursion.vi
		Configure Marker Multiple Peak Threshold.vi
		Configure Sweep Segment Port Level.vi
		Select Calibration Type Simple.vi
		Configure Multicalibration Type.vi
		Configure Calibration Auto Minimum Connect.vi
		Configure Calibration Auto Common Port.vi
		Calibration Terminate System Error Correction.vi
		Calibration Clean.vi
		Configure Calibration Wave Correction Enabled.vi
		Configure Calibration Calculate After Deembed.vi
		Configure Calibration Standard.vi
		Configure Source Power Flatness Calibration State.vi
		Configure Source Power Flatness Calibration Method.vi
		Configure Source Power Calibration Generator Minimum Settling Delay.vi
		Configure Source Power Sweep End Mode.vi
		Configure Source Power Sweep End Settling Delay.vi
		Configure Reference Receiver Enabled.vi
		Configure GPIO Range.vi
		Query GPIO Shunt.vi
		GPIO Start All Measurements.vi
		Configure GPIO Measurement Time.vi
		Query GPIO Sum.vi
		GPIO Current Measurement.vi
		GPIO Current Measurement All.vi
		GPIO Voltage Measurement.vi
		GPIO Voltage Measurement All.vi
		Configure Parallel Measurement Port Groups Port Order.vi
		Configure Parallel Measurement Port Groups With Frequency Offset Enabled.vi
		Query Parallel Measurement Port Groups State Indication Warning.vi
		Configure Frequency Conversion Mixer.vi
		Configure AGC All A And B Waves.vi
		Configure AGC Segment All A And B Waves.vi
		Load Single Ended Port Circuit Model Data Inverted.vi
		Configure Virtual Network Ground Loop Per Port Group.vi
		Configure Start In Preset.vi
		Configure Set All Traces to 0.vi
		Configure User Port Optional Columns.vi
		Configure Display Title.vi
		Configure Display Number of Trace Colours.vi
		Query System SCPI Commands.vi
		Query Implemented SCPI Commands.vi
		System Help Syntax.vi
		Configure GPIB Supresses.vi
		Configure Hostname.vi
		Display Correction Wizard Dialog.vi
		Query External Switch Matrices.vi
		Query Switch Matrix Serial Number.vi
		Modified:
		Configure Trace Format.vi - Trace formats updated
		Add Limit Line Segment.vi - Bug fixed, segment parameter now reserved
		Configure Circle Limit Check.vi - Ripple Check is now Circle Check
		Configure Marker Properties.vi - Fixed Marker values, help updated
		Marker Search.vi - Search types updated

rsvna Instrument Driver		
Driver history for LabVIEW		
Revision	Date	Note
		Configure Average Mode.vi - Modes, help updated
		Configure Sweep Meas Delay.vi - Delay range updated
		Configure Sweep Type.vi - Sweep Types updated
		Insert New Segment.vi - Breaking: Parameters added
		Redefine Segment.vi - Breaking: Parameters added
		Configure Connector.vi - Connectors updated, ring value names and help corrected
		Read Calibration Data.vi - Error Terms, helps updated
		Write Calibration Data.vi - Error Terms, helps updated
		Read Calibration Data Port.vi - Error Terms, helps updated
		Write Calibration Data Port.vi - Error Terms, helps updated
		Read Switch Matrix Calibration Data.vi - Error Terms updated
		Write Switch Matrix Calibration Data.vi - Error Terms updated
		Read Switch Matrix Calibration Data Port.vi - Error Terms updated
		Write Switch Matrix Calibration Data Port.vi - Error Terms updated
		Query Calibration Data Parameters Specific.vi - Types updated
		Query Calibration Data Parameters Port Specific.vi - Types updated
		Delete Calibration Kit.vi - Help updated
		Configure Calibration Standard With Label.vi - Breaking: Many changes
		Delete Calibration Kit With Label.vi - Help updated
		Query Source Power Calibration Data Parameters.vi - Setting types, help updated
		Power Meter Save Power Loss List.vi - Breaking: Channel parameter added
		Power Meter Load Power Loss List.vi - Breaking: Channel parameter added
		Configure Frequency Conversion Measurement Mode.vi - Modes updated; bug fixed
		Configure AGC Mode.vi - Range table, default updated, parameter reserved
		Configure AUX Trigger Out.vi - Per Point parameter (bool) now Interval (int)
		Configure Virtual Network Single Ended Port.vi - Ring value errors fixed
		Configure Virtual Network Balanced Data.vi - Interchange values updated
		Configure Virtual Network Differential Match Data.vi - Helps
		Diagram Area Catalog.vi - Window is now Reserved
		Configure Color Scheme.vi - Schemes updated
		Configure Calibration Auto Averaging.vi - Avaraging now Averaging
		Set Status Register.vi - Ring values now constants
		Get Status Register.vi - Ring values now constants
		Configure Switch Matrix State.vi - Bug fixed, correctly resets Matrix repcap
2.50.1	07/2019	Fixed OPC-synchronization bug
2.50.0	01/2019	Added compatibility support for R&S ZNA Network Analyzer Modified: Added prefix '_' to all private VI names
2.42.0	01/2018	Modified: Changed "Block Data" array parameter to content of a "Touchstone File": Configure Virtual Network Balanced Data.vi Configure Virtual Network Differential Match Data.vi Configure Virtual Network Single Ended Data.vi Fixed conversion of data array to Single Float in: Write Calibration Data Port.vi Write Calibration Data.vi Write Memory Trace Data Extended.vi Write Switch Matrix Calibration Data Port.vi Write Switch Matrix Calibration Data.vi Fixed bug when sending SCPI commands with parameters in apostrophes e.g. in attribute RSVNA_ATTR_CHANNEL_NAME
2.41.0	11/2017	Modified: Initialize.vi, Initialize with Options.vi, Close.vi and Utility VIs have new VI icons changed all *.mnu palette file names from 'dir.mnu' to '.mnu' fixed data binary transfer in _**Write Trace Data.vi** for non-VX-11 interfaces.

rsvna Instrument Driver		
Driver history for LabVIEW		
Revision	Date	Note
		added rsvna_queryDataUnknownLengthString_ReadCallback: RSVNA_ATTR_FILE_RECALL_SET_CATALOG RSVNA_ATTR_TRACE_CHANNEL_CATALOG RSVNA_ATTR_TRACE_CHANNEL_CATALOG_BALANCED_PORTS RSVNA_ATTR_TRACE_CATALOG RSVNA_ATTR_TRACE_NAME_CATALOG RSVNA_ATTR_TRACE_RESPONSE_S_DATA_CATALOG RSVNA_ATTR_CALIBRATION_CONNECTOR_TYPE_CATALOG RSVNA_ATTR_CHANNEL_CATALOG RSVNA_ATTR_DISPLAY_DIAGRAM_AREA_CATALOG RSVNA_ATTR_DISPLAY_TRACE_DIAGRAM_AREA_CATALOG
2.40.0	04/2017	Exchanged Driver Core 6.7.0 that supports Simulation mode and Logging Changed Icons strip and Palette Icons Cleaned up all the Front Panels and Block Diagrams Fixed Option checking bug Analyzer port number extended from 8 to 24 New VIs: Trace Export Data Ports Variable.vi Write Command with OPC sync.vi Query with OPC sync.vi Breaking changes: Configure Calibration Standard.vi - deleted, replacement is Configure Calibration Standard Extended.vi
2.30.1	12/2016	Increased port count from 8 to 24
2.30.0	11/2016	New instrument driver core with full Simulation support and no dynamicaly called VIs. Added more rigorous check for Repeated Capabilities New VIs: Clear Status.vi ID Query Response.vi Process All Previous Commands.vi Query OPC.vi Set Fast Sweep Mode.vi Breaking changes: Add Calibration Kit Auto.vi - added Timeout to API Calibration Auto Simplified.vi - added Timeout to API Calibration Auto Type Simplified.vi - added Timeout to API Calibration Auto Type.vi - added Timeout to API Calibration Auto.vi - added Timeout to API Configure Calibration Kit Auto.vi - added Timeout to API Modified VIs: Select Ratios.vi - SCPI command parameters corrected for Ratios 2 (b2/a2 Src Port 2) and 3 (b1/a2 Src Port 2) Recall Set Manager.vi - when loading Recall Set, dynamic repeated capabilities are synchronized with instrument's state
2.22.0	09/2016	New driver automatic installer All VISA resource name inputs are mandatory Improved error handling Changed allowed number of ports from 4 to 24 Changed Path Controls in Read To File From Instrument.vi and Write From File To Instrument.vi from Path to String
2.21.0	10/2015	New VIs: Select Power Sensor Measurement.vi Configure Frequency Min Max.vi Configure Display Update.vi

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Driver history for LabVIEW		
Revision	Date	Note
		Display Update Once.vi
		Write Instrument Data.vi
		Configure Marker State.vi
		Modified VIs:
		Select Ratios.vi - SCPI command parameter array corrected
		Line 3 (MM) Standard SCPI command parameter (value 9) corrected in these VI:
		Query Calibration Unit Characterization Data.vi
		Configure Calibration Standard.vi
		Configure Calibration Standard Ext.vi
		Load Calibration Kit.vi
		Configure Calibration Standard With Label.vi
		Load Calibration Kit With Label.vi
		Read Calibration Kit With Label S-Parameter Data.vi
2.20.2	01/2015	New:
		Express VI 3.0.1 with the support for QuickDrop SCPI command searcher
		Modified VIs:
		Activate Power Calibrations.vi - added Channel control to front panel
		Connector Types Catalog.vi - removed repeated capability from attribute
		Configure Source Power Calibration Slope.vi - fixed wrong attribute used
		Print.vi - bug fixed
		Configure User Defined Preset Calibration.vi - bug fixed
2.20.1	12/2014	Added support for ZND instrument
		Attribute Express VI version 2.50
2.20.0	07.2014	Support for firmware version 2.20
		Attribute Express VI version 1.10
		New VIs:
		Configure Logical Port Reference Impedance Default.vi
		Delete Memory Trace All.vi
		Delete Memory Trace All Channel.vi
		Configure Calibration Standard Exttended.vi
		Configure Calibration Delay Mode.vi
		Load Calibration Kit With Label.vi
		Read Calibration Kit With Label S-Parameter Data.vi
		Configure RFFE Settings.vi
		Configure RFFE Command.vi
		Configure GPIO.vi
		Query Sweep Sequencer Count.vi
		Delete All Sweep Sequencer Items.vi
		Configure Sweep Sequencer RFFE Command .vi
		Configure Sweep Sequencer GPIO Voltage.vi
		Configure Sweep Sequencer Delay Time.vi
		Define Parallel Measurement Port Group.vi
		Configure Parallel Measurement Port Group Name.vi
		Configure Parallel Measurement Number Of Ports.vi
		Configure Parallel Measurement DUT Port .vi
		Configure Offset Compensation.vi
		Define Virtual Network Port Set.vi
		Import Fixture Compensation.vi
		Export Fixture Compensation.vi
		Configure Remote Encoding.vi
		Query Program Return Value.vi
		Modified VIs:
		Removed range checking of attribute RSVNA_ATTR_STIMULUS_INTERNAL_SOURCE_POWER

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Driver history for LabVIEW		
Revision	Date	Note
		Trace Export Data Ports.vi - changed API Configure Calibration Standard With Label.vi Configure Virtual NetworkSingleEndedPort.vi Configure Virtual Network Single Ended Circuit Model.vi Configure Virtual Network Balanced Port.vi Configure Virtual Network Balanced Circuit Model.vi Configure Virtual Network Port Pair.vi Configure Virtual Network Port Pair Circuit Model.vi Configure Virtual Network Ground Loop.vi Configure Virtual Network Ground Loop Circuit Model.vi
1.93.0	10/2013	Support for firmware version 1.93 New VIs: Trace Import Data Auto Distribute.vi Query Calibration Data Parameters Specific.vi Query Calibration Data Parameters Port Specific.vi Query Source Power Calibration Data Parameters Switching Matrix.vi Define Virtual Network Port Pair.vi Delete Virtual Network Port Pair.vi Configure Virtual Network Port Pair State.vi Configure Virtual Network Port Pair.vi Configure Virtual Network Port Pair Circuit Model.vi Load Port Pair Circuit Model Data.vi Configure Virtual Network Ground Loop State.vi Configure Virtual Network Ground Loop.vi Configure Virtual Network Ground Loop Circuit Model.vi Load Ground Loop Circuit Model Data.vi Configure Virtual Network Differential Match State.vi Configure Virtual Network Differential Match.vi Configure Virtual Network Differential Match Data.vi Configure Virtual Network Differential Match Circuit Model.vi Load Differential Match Circuit Model Data.vi Configure Remote Preset.vi Modified VIs: Query Source Power Calibration Data Parameters.vi
1.90.0	08/2013	Support for firmware version 1.90 New VIs: Select Balanced Ports S-Parameters.vi Trace List Balanced Ports.vi Select Calibration Type Extended.vi Load Calibration Kit By Gender From File.vi Load Calibration Kit By Gender From Pool.vi Query Calibration Kit Data.vi Query Calibration Kit Info.vi Configure Virtual Network Balanced Data.vi Configure Virtual Network Single Ended Data.vi Query Switch Matrix Relay Count.vi Configure User Defined Physical Port.vi Delete User Defined Physical Ports.vi RSVNA_ATTR_INIT_WAIT_STATE RSVNA_ATTR_LOGICAL_PORT_ALINGMENT Modified VIs: Select Calibration Type.vi Configure Virtual Network Single Ended Port.vi Configure Sweep Number Of Points.vi - range fixed
1.80.0	03/2013	Support for firmware version 1.80

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Revision	Date	Note
		New VIs: Add Calibration Kit Auto.vi Generate Default Calibration Auto Assignment With Detection.vi Configure Marker Target Format.vi Configure User Defined Preset Calibration.vi Query All Calibration Auto Assignment Count.vi Save AGC Learning Results.vi Start AGC Learning Sweep.vi Configure Calibration Auto Averaging.vi Modified VIs: Generate Default Calibration Auto Assignment.vi RSVNA_ATTR_CALIBRATION_CONNECTOR - bug fixed (affected VI Configure Connector.vi) Configure Virtual Network Single Ended Port.vi Configure Virtual Network Single Ended Circuit Model.vi Create Trace S-Parameters Group.vi
1.70.0	12/2012	Support for firmware version 1.70 Switch Matrix Support Calibration Auto Assignment support Logical Ports Port Groups New VIs: Create Trace S-Parameters Group.vi Configure Time Gate Offset Activation.vi Clear Limit Check Results.vi Clear Ripple Limit Global Check Result.vi Clear Circle Limit Check Result.vi Query Sweep Segment Number.vi Query Calibration Ports State.vi Configure Port Connector Types.vi Query Calibration Data Parameters Count.vi Configure External Power S Parameter Correction.vi Configure Calibration Kit Auto.vi Query Source Power Calibration Data Parameters.vi Query Source Power Calibration Data Parameters Count.vi Configure Receiver Power Attenuation.vi Configure Receiver Frequency Conversion.vi Configure Mixer Input Signal.vi Configure Calibration Manager State.vi Configure UI Data Flow Direction.vi Configure UI Output Ports State.vi Configure UI Digital Signal.vi Modified VIs: Define Balanced Port.vi - calls into new VI Define Logical Port.vi Delete Balanced Port.vi - calls into new VI Delete Logical Port.vi Delete All Balanced Ports.vi - calls into new VI Delete All Logical Ports.vi Select Calibration Type.vi - added new calibration types Configure Mixer Power.vi
1.61.0	05/2012	Support for ZNB, ZNC firmware version 1.61 New VIs: Show Circle Limits.vi Configure Circle Limit Check.vi Configure Circle Limit Line.vi

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Revision	Date	Note
		Query Circle Limit Check Result.vi Configure Zoom Overview.vi Configure Layout Simplified.vi Configure Layout.vi Join Layouts.vi Configure Calibration Standard With Labels.vi Configure Calibration Kit With Label.vi Configure Calibration Kit User Connector Type With Label.vi Calibration Kit Catalog With Label.vi Calibration Standards Catalog With Label.vi Configure Calibration Kit Label With Label.vi Delete Calibration Kit With Label.vi Export Kit With Label.vi Query Available Calibration Data Catalog.vi Query Available Calibration Data Catalog Port.vi Configure Sweep Meas Delay Insertion Point.vi Configure Intermodulation Cal Source Port.vi Temporary Disable Option.vi New Attributes Only: RSVNA_ATTR_CIRCLE_FAIL_BEEP RSVNA_ATTR_DISPLAY_TRACE_INFO_STATE RSVNA_ATTR_ADJUST_TIME_GATE Modified VIs: Configure AGC.vi Configure AGC Segment.vi
1.50.0	04/2012	Support for ZNB, ZNC firmware version 1.50 Support for firmware version 1.50 New subsystems: Mixer (option K4) Intermodulation Measurements (option K14) Fixture Compensation ENA support (AUX Trigger and Universal Interface) Automatic Gain Control Modified VIs: Start Calibration.vi - added Power Meter Configure Marker Bandfilter Search Mode.vi - added None search mode New VIs: Query Frequency Range.vi Configure Average Mode.vi Activate Power Calibrations.vi System Version.vi set Check Status.vi Configure Split Type.vi Configure Split Grid.vi
1.40.0	01/2012	Support for ZNB, ZNC firmware version 1.40 Modifications: New subsystems: Power Added Efficiency Source Power Calibration Reciever Power Calibration Power Meter Transmission Coefficients Port Config

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Revision	Date	Note
		External Devices Modified functions Configure DC Range.vi - parameters changed Configure Acquisition.vi - attributeATTR_SWEEP_MODE_CONTINUOUS_ALL_CHANNEL added Select Calibration Type.vi - bug fixed Calibration Auto Type.vi - Parameters - Full N-port for SMARTerCal added Calibration Auto Type Simplified.vi - Parameters - Full N-port for SMARTerCal added Query Calibration Connection.vi - Channel ignored Configure Connector.vi - BNC added Save Calibration Kit.vi - repaired, delete changed to save New functions: Trace Delete All.vi Trace Delete All Channels.vi Trace Response Data All S-Data.vi Trace Response S-Data Catalog.vi Trace Response Single Sweep Data First Last.vi Configure Power Start Stop.vi Configure Sweep Stimulus Axis.vi Configure Sweep Segment X-Axis.vi Calibration Auto Power.vi Configure Calibration External Power Meter.vi Query Calibration Unit Characterizations Standards.vi Read Calibration Data Port.vi Write Calibration Data Port.vi Query Calibration Stimulus Frequencies Port.vi Query Calibration Data Parameters Port.vi Configure Calibration Kit Password.vi Save Calibration Kit.vi Configure Touchscreen Lock.vi Configure User Key Function.vi New Attribute only: RSVNA_ATTR_LOAD_MATCH_CORRECTION_STATE RSVNA_ATTR_CALIBRATION_ALL_CHANNELS_STATE RSVNA_ATTR_DISPLAY_TRACE_COLOR_FOR_LIMIT_LINES RSVNA_ATTR_DISPLAY_COLORIZE_FAILED_SEGMENTS RSVNA_ATTR_DISPLAY_SHOW_FAILED_SYMBOLS RSVNA_ATTR_CALIBRATION_AUTOMATIC_POWER_REDUCTION RSVNA_ATTR_STATISTICAL_COMPRESSION_POINT_RESULT_STATE RSVNA_ATTR_DISPLAY_FREQUENCY_INFO_STATE RSVNA_ATTR_DISPLAY_CHANNEL_INFO_STATE RSVNA_ATTR_DISPLAY_ALL_MARKERS_SAME_COLOR RSVNA_ATTR_DISPLAY_TRACE_COLORS_PER_DIAGRAM RSVNA_ATTR_DISPLAY_FONT_SIZE RSVNA_ATTR_NUMBER_OF_TEST_PORTS RSVNA_ATTR_SOURCE_POWER_CALIBRATION_OTHER_SOURCES RSVNA_ATTR_CALIBRATION_AUTOMATIC_MEMORY_STATE RSVNA_ATTR_DISPLAY_HARDKEY_PANEL_STATE RSVNA_ATTR_DISPLAY_MENU_BAR_STATE RSVNA_ATTR_DISPLAY_STATUS_BAR_STATE RSVNA_ATTR_DISPLAY_SOFTTOOL_PANEL_STATE RSVNA_ATTR_DISPLAY_TITLE_BAR_STATE RSVNA_ATTR_DISPLAY_TOOLBAR_STATE RSVNA_ATTR_REPEAT_PREVIOUS_CALIBRATION_CURRENT
1.20.0	07/2011	Support for ZNB, ZNC firmware version 1.20
1.0.0	06/2011	Initial release