

History and release notes for the Rohde & Schwarz Spectrum Analyzers FS300 and FS315

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FS300/FS315 driver history		
Revision	Date	Note
2.5.1	09/2008	Modifications: Windows Vista support added in installer
2.5	02/2007	Modifications: - New functions for FS300 Spectrum Analyzer module: - Get Max RBW (rssifs_getMaxRBW) - Get Max Span (rssifs_getMaxSpan) - Get Max Sweep Points (rssifs_getMaxSweepPoints)
2.4.1	08/2006	Modifications: - Fixed problem with more than 1021 sweep points for FS300
2.4	03/2006	Modifications: - Custom build of distribution packages (in debug mode)
2.3	01/2006	Modifications: - Customization of FS300 source code
2.2.1	01/2006	Modifications: - Trace data evaluation fixed when Trace mode is set to RSSIFS_TRACE_MODE_AVERAGE (running averaging is used for single and also for continuous sweeps) - Fixed reset of trace cache when rssifs_confTraceMode is called (see function description) - New function Get Reference Oscillator Source (rssifs_getReferenceOsc
2.2	01/2006	Modifications: - workaround in functions rssi_fs300_waitForDeviceState and rssi_fs300_readLastCompleteSweepPixels to avoid unexpected timeout error - included additional support files for SiControl Library (Lite)
2.1	11/2005	Modifications: - Listed functions are implemented also for FS300 family members - rssifs_confSignalTrack - rssifs_getSignalTrack - rssifs_confDeltaMarkState - rssifs_confDeltaMarkPosition - rssifs_confMarkerSearchNdBDDown - rssifs_getDeltaMarkerState - rssifs_getDeltaMarkPosition - rssifs_getMarkerSearchNdBDDown - rssifs_confTraceUnit - rssifs_getTraceUnit - rssifs_configureRBWVBWCoupling - rssifs_getRBWVBWCoupling - rssifs_confTransducerFactor - rssifs_confTransducerFactorValues - rssifs_getTransducerFactor - rssifs_getTransducerFactorValues - rssifs_confChannelPowerMeasurement - rssifs_confOccupiedBandwidthMeasurement - rssifs_confTimeDomainPowerMeasurement - rssifs_confLimitLines - rssifs_getChannelPowerMeasurement - rssifs_getOccupiedBandwidthMeasurement - rssifs_getTimeDomainPowerMeasurement - rssifs_getLimitLines - rssifs_readDeltaMarkerValue - rssifs_readNdBDDownMarkerValue - rssifs_readChannelPower

FS300/FS315 driver history

Revision	Date	Note
		<ul style="list-style-type: none"> - rssifs_readOccupiedBandwidth - rssifs_readTimeDomainPower - Fixed result of rssi_fsxxx_readDeltaMarkerValue function, current unit are now applied
2.0	05/2005	<p>Modifications:</p> <ul style="list-style-type: none"> - Added support for new Spectrum Analyzer family members FS315 - Instrument driver is divided to the three modules: - Main module rssifs (exported functions) - FS300 Spectrum Analyzer module rssi_fs300 (former rssifs) - FS315 Spectrum Analyzer module rssi_fsxxx - New functions for FS315 Spectrum Analyzer module: <ul style="list-style-type: none"> - Configure Trace Detector (rssifs_confTraceDetector) - Get Trace Detector (rssifs_getTraceDetector) - Configure Demodulator (rssifs_confDemodulator) - Configure Demodulator Volume (rssifs_confDemodulatorVolume) - Configure Demodulator Appearance (rssifs_confDemodulatorAppearance) - Get Demodulator State (rssifs_getDemodulatorState) - Get Demodulator Type (rssifs_getDemodulatorType) - Get Demodulator Volume (rssifs_getDemodulatorVolume) - Get Demodulator Time (rssifs_getDemodulatorTime) - Get Demodulator Display (rssifs_getDemodulatorDisplay) - Configure Tracking Generator (rssifs_confTrackingGenerator) - Configure Tracking Generator Level (rssifs_confTrackingGeneratorLevel) - Configure Tracking Generator Frequency (rssifs_confTrackingGeneratorFrequency) - Get Tracking Generator State (rssifs_getTrackingGeneratorState) - Get Tracking Generator Level (rssifs_getTrackingGeneratorLevel) - Get Tracking Generator Frequency (rssifs_getTrackingGeneratorFrequency) - Configure Signal Track (rssifs_confSignalTrack) - Get Signal Track (rssifs_getSignalTrack) - Configure Delta Marker State (rssifs_confDeltaMarkState) - Configure Delta Marker Position (rssifs_confDeltaMarkPosition) - Marker Search N dB Down (rssifs_confMarkerSearchNdBDown) - Get Delta Marker State (rssifs_getDeltaMarkState) - Get Delta Marker Position (rssifs_getDeltaMarkPosition) - Get Marker Search N dB Down (rssifs_getMarkerSearchNdBDown) - Configure Trace Unit (rssifs_confTraceUnit) - Get Trace Unit (rssifs_getTraceUnit) - Configure RBW vs VBW Coupling (rssifs_configureRBWVBWCoupling) - Get RBW vs VBW Coupling (rssifs_getRBWVBWCoupling) - Configure Transducer Factor (rssifs_confTransducerFactor) - Configure Transducer Factor Values (rssifs_confTransducerFactorValues) - Get Transducer Factor (rssifs_getTransducerFactor) - Get Transducer Factor Values (rssifs_getTransducerFactorValues) - Configure Channel Power Measurement (rssifs_confChannelPowerMeasurement) - Configure Occupied Bandwidth Measurement (rssifs_confOccupiedBandwidthMeasurement) - Configure Time Domain Power Measurement (rssifs_confTimeDomainPowerMeasurement) - Configure Limit Lines (rssifs_confLimitLines) - Get Channel Power Measurement (rssifs_getChannelPowerMeasurement)

FS300/FS315 driver history

Revision	Date	Note
		<ul style="list-style-type: none"> - Get Occupied Bandwidth Measurement (rssifs_getOccupiedBandwidthMeasurement) - Get Time Domain Power Measurement (rssifs_getTimeDomainPowerMeasurement) - Get Limit Lines (rssifs_getLimitLines) - Read Delta Marker Value (rssifs_readDeltaMarkerValue) - Read N dB Down Marker Value (rssifs_readNdBDnMarkerValue) - Read Noise Marker Value (rssifs_readNoiseMarkerValue) - Read Channel Power (rssifs_readChannelPower) - Read Occupied Bandwidth (rssifs_readOccupiedBandwidth) - Read Time Domain Power (rssifs_readTimeDomainPower)
1.9	10/2004	<p>Modifications:</p> <ul style="list-style-type: none"> - Set Time Out (rssifs_setTimeOut) range checking fixed - New functions: <ul style="list-style-type: none"> Configure RF Input High Sensitivity (rssifs_confRFInHighSensitivity) Configure RBW vs Span Coupling (rssifs_configureRBWSpanCoupling) Get RBW vs Span Coupling Mode (rssifs_getRBWSpanCouplingMode) Get Device State (rssifs_getDeviceState) - Marker searching fixed (allow searching from current marker position).
1.8	08/2004	<p>Modifications:</p> <ul style="list-style-type: none"> - Implemented Self-Test routine - Documentation improvements
1.7	07/2004	<p>Modifications:</p> <ul style="list-style-type: none"> - Removed functions (Gated Sweep Mode is not currently supported): <ul style="list-style-type: none"> rssifs_confGatedSweep rssifs_getGatedSweepMode rssifs_getGateTime - Implemented complete sweep pixels functionality (Firmware >= 2.21) <p>New Commands:</p> <ul style="list-style-type: none"> 0x3100 - Flush pixel buffer: Takes effect only in Idle state: Makes the pixel buffer empty 0x3200 - Send complete sweep: Sends Data class 0x5011 with last completely measured sweep <p>New Register:</p> <ul style="list-style-type: none"> 0x2100 - Indicates full sweep data ready <p>New Upload Data Class:</p> <ul style="list-style-type: none"> 0x5011 - Last Complete Sweep Pixels <p>New Event:</p> <ul style="list-style-type: none"> 0x6060 - Full Sweep Data Not Ready. Full sweep data were not measured completely or buffer is empty. Should occurs after command 0x3200 <ul style="list-style-type: none"> - Updated functions: <ul style="list-style-type: none"> rssifs_reset rssifs_errorCheckState rssifs_readTraceData rssifs_readCompleteSweepData rssifs_readMarkerValue rssifs_confRefLevel rssifs_getReferenceLevel rsifs_confTrg rsifs_getTriggerLevel rssifs_actMarkSearch - New functions: <ul style="list-style-type: none"> rssifs_confRefLevelOffset rssifs_getReferenceLevelOffset rssifs_confMarkPeakExcursion

FS300/FS315 driver history

Revision	Date	Note
		<ul style="list-style-type: none"> rssifs_getMarkerPeakExcursion rssifs_confMarkSearchMode rssifs_getMarkSearchMode
1.6	04/2004	<p>Modifications:</p> <ul style="list-style-type: none"> - Implemented trace data caching to allow advanced data manipulation. - Implemented mechanism to keep trace cache data up-to-date. - Implemented possibility to select type of the evaluation of trace as a whole. Trace can be overwritten in each measurement (CLEAR/WRITE mode), averaged over several measurements (AVERAGE mode) and maximum or minimum value can be determined from several measurements (MAX HOLD or MIN HOLD). - Implemented marker search functionality (2 independent markers) over trace cache data. Marker value and marker position are interfaced. - Transfer of measurement results is optimized for speed. <p>- New functions:</p> <ul style="list-style-type: none"> Marker Search (rssifs_actMarkSearch) Configure Trace Mode (rssifs_confTraceMode) Get Trace Mode (rssifs_getTraceMode) <p>- Updated functions:</p> <ul style="list-style-type: none"> Read Spectrum (rssifs_appReadSpectrum) Configure Start Stop Frequency (rssifs_confStartStopFrq) Configure Span Center Frequency (rssifs_confSpanCenterFrq) Configure Frequency Offset (rssifs_confFreqOffset) Configure Marker State (rssifs_confMarkState) Configure Marker Position (rssifs_confMarkPosition) Configure Marker Frequency Counter (rssifs_confMarkFreqCnt) Get Marker Position (rssifs_getMarkerPosition) Configure Sweep (rssifs_confSweep) Configure Sweep Points (rssifs_confSweepPoints) Get Sweep Count (rssifs_getSweepCount) Send Trigger (rssifs_actSendTrg) Send Trigger and Wait for OPC (rssifs_actSendTrgWopc) Abort (rssifs_actAbort) Read Marker Counter Value (rssifs_readMarkerCounterValue) Read Marker Value (rssifs_readMarkerValue) Read Trace Data (rssifs_readTraceData) Read Complete Sweep Data (rssifs_readCompleteSweepData) Configure Reference Oscillator Source (rssifs_confReferenceOsc) Calibration (rssifs_actCalibration) <ul style="list-style-type: none"> - Code maintenance & improvements - Constants with prefix RSSISM_ are replaced by RSSIFS_ - Occurrence of device specific error 0xC01B suppressed
1.5	03/2004	<p>Modifications:</p> <ul style="list-style-type: none"> - device identification and logical names management added - hot plug & unplug support added
1.4.1 Beta	12/2003	<p>Modifications:</p> <ul style="list-style-type: none"> - Driver rebuild (performance issues)
1.4 Beta	11/2003	<p>Modifications:</p> <ul style="list-style-type: none"> - Wait for transition from RSSIFS_INIT to other state during instrument driver initialization. - Improved functionality of rssifs_readCompleteSweepData. - rssifs_waitForDeviceState waits with 1 ms precision. - Marker(s) management is redesigned. Two markers are available. - Performance improvements, reliability testing. - Pre-enforcement warnig enumeration.

FS300/FS315 driver history

Revision	Date	Note
		<ul style="list-style-type: none"> - New functions: rssifs_setTimeOut rssifs_getTimeOut rssifs_getMarkerFreqCounterState rssifs_getMarkerFreqCounterResolution
1.3 Beta	11/2003	Modifications: <ul style="list-style-type: none"> - New functions: rssifs_readCompleteSweepData - gets completed sweep trace data rssifs_warningCheckState - suppression of warning messages rssifs_configureBandwidth - RBW vs. VBW (auto) settings - Modified functions: rssifs_confResBW - functionality improvements rssifs_confVideoBW - functionality improvements
1.2 Beta	10/2003	Modifications: <ul style="list-style-type: none"> - Function prototypes from SiControl library are changed (added prefix Si). Single SiControl.dll library is distributed instead of formerly used patched DLLs (usbdrv_w2.dll, usbdrv_w.dll). - Source code is optimized for SiControl library "Rev 3.0, 10/2003". - To get marker level new function rssifs_readMarkerValue is implemented.
1.1	09/2003	Modifications: <ul style="list-style-type: none"> - Distribution files usbio.inf and usbio.sys are renamed to rssi.sys and rssi.inf - VISA library is not needed (vpptype.h is replaced by rssiype.h) - SiScan.exe utility returns instrument descriptors of connected devices (distributed with source files)
1.04	09/2003	Modifications: <ul style="list-style-type: none"> - distribution files are up-to-dated (usbio.inf, USB support DLLs) - status checking is improved - Precision / value rounding / range checking improved
1.03	09/2003	Modifications: <ul style="list-style-type: none"> - function Configure Sweep Points (rssifs_confSweepPoints) hardcoded "KILL" command and new description
1.0.1	09/2003	Modifications: <ul style="list-style-type: none"> - source code bug fixing and verification - range checking improvements - performance improvements

Installation of the instrument driver

The VXIPnP instrument driver also installs the Windows (XP, 2000) USB drivers and the tool SiScan. Please install the FS300/FS315 driver before connecting the instrument.

Instrument address descriptor

The syntax for the instrument descriptor is:
USB::<<vendor Id>::<<product Id>::<<serial number>

where <vendor Id> is 0xaad for Rohde&Schwarz
<product Id> is 0x6 for FS300
<product Id> is 0x28 for FS315

<serial number> of the FS300/FS315 consists of 6 digits. For example 100174.

Example: "USB::0xaad::0x6::100174::INSTR"

Getting Started

Instrument identification and logical names

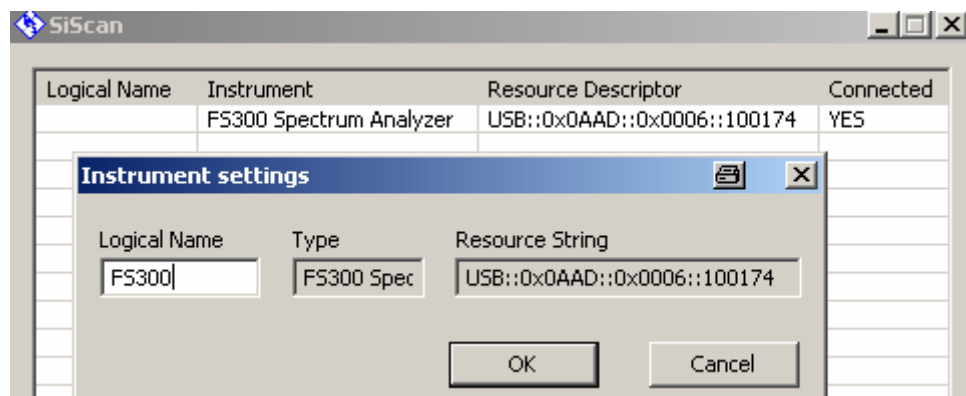
For finding the instrument address on the USB bus easily, use the SiScan application, which is installed with the VXIPnP driver and found in the menu

start > Programs > Rohde & Schwarz > Series300

SiScan provides a table showing the addresses of all connected Smart instruments.

The driver supports also logical names. You can pass the logical name instead of the instrument descriptor. For example: "FS300" instead of " USB::0xaad::0x6::100174::INSTR ".

Logical names can be configured with the SiScan application.



LabWindows/CVI

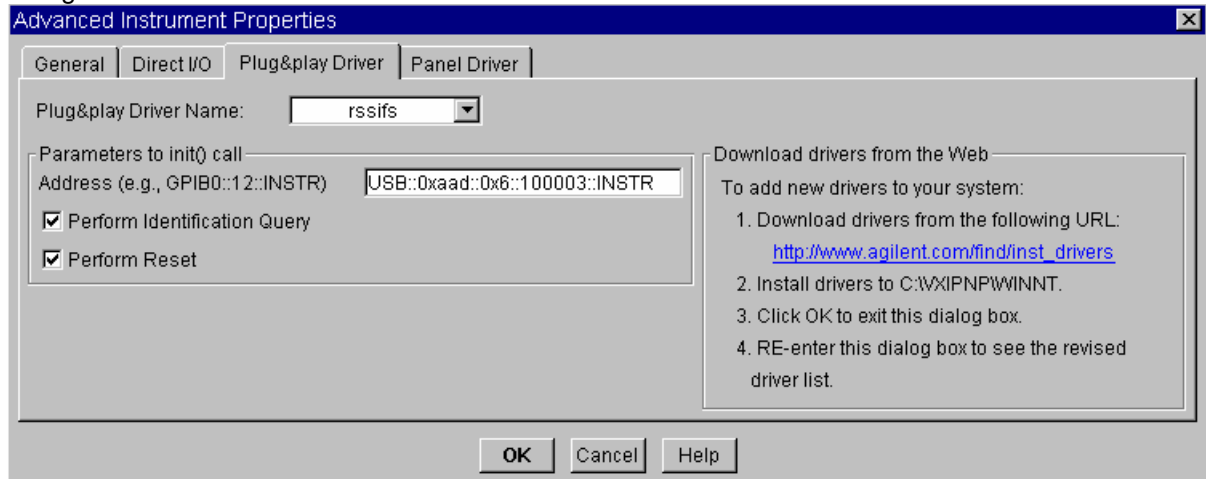
To use the LabWindows/CVI driver it is necessary to install the VXIPnP instrument driver first.

VEE

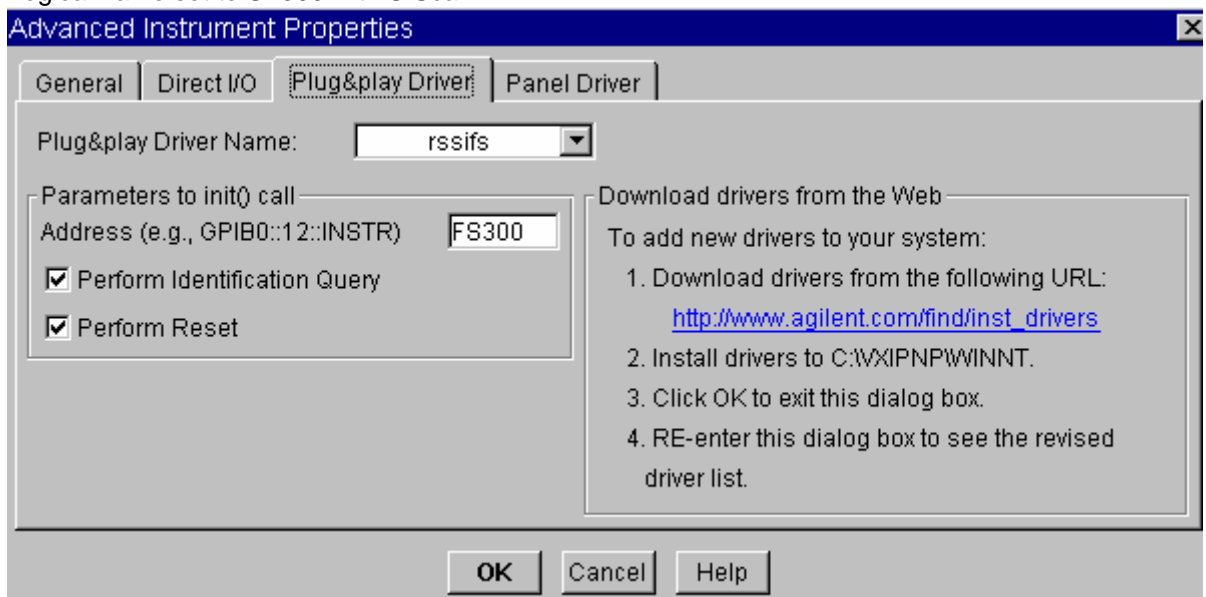
Set **Plug&Play Driver Name** to **rssifs** and **Address** or the **Logical Name** in the menu
IO > Instrument Manager > Advanced > Plug&Play Driver.

Examples:

Using Instrument address:



Logical name set to SF300 with SIScan:



LabWindows/CVI

CVI Version

Use National Instruments LabWindows/CVI 5.5 or later.

Additional Help

The LabWindows/CVI instrument driver consists of a ZIP archive containing the driver sources. In addition, the instrument driver documentation is also included in compressed HTML format (Windows CHM help file) and stored together with the driver sources.

VXIplug&play Instrument Driver for VEE, C++, C#, Visual Basic, Visual Basic .NET etc.

VEE Version

Use VEE 6 or later.

C#

A wrapper is necessary to enable a direct access to the driver DLL.
The rssifs.cs wrapper for C# is automatically installed in the ~\VXIpnP\WinNt\include directory.

Visual Basic .NET

A wrapper is necessary to enable a direct access to the driver DLL.
The rssifs.vb wrapper for .NET is automatically installed in the ~\VXIpnP\WinNt\include directory.

Additional Help

In addition, the instrument driver documentation is also included in compressed HTML format (Windows CHM help file) and stored together with the driver sources in the ~\VXIpnP\WinNT\rssifs directory.

Additional Information

For more information regarding the VXIpnP instrument drivers, please read the readme.txt file that comes with each driver.

Linux

Drivers for Linux are available - Please contact Rohde & Schwarz Customer Support Center

R&S Smart Instruments™ Family300 Basic Programming Guide

The instrument drivers allow you to access instruments from various programming environments under Microsoft Windows XP/2000. The "Smart Instruments™ Programming Guide" deals with programming the Smart Instruments™ Family300 based on these drivers from different programming languages (C/C++, Visual Basic, LabVIEW, LabWindows/CVI).

Download the R&S Smart Instruments™ Family300 Basic Programming Guide:

<http://www.rohde-schwarz.com/appnote/1MA73.html>