# IVI.NET driver history for the R&S® EMI Test Receivers

# Driver Documentation

**Products:**

| R&S®ESW

| R&S®ESR

| R&S®ESRP

Driver history for IVI.NET - C#, C++, Visual Basic .NET, etc.

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ROHDE&SCHWARZ

# Table of Contents

# 1  Supported Instruments

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

| Which instruments are supported? | | |
|---|---|---|
| **Current revision of instrument driver supports these instruments and firmware versions:** | | |
| **Instrument** | **Supported Firmware** | **Remarks** |
| ESW | 1.00 | New instrument added |
| ESR | 2.26 | |
| ESRP | 2.26 | |

# 2  Getting Started

For detailed description on how to use this driver in Visual Studio C# please refer to the Application Note 1MA268 - How to use Rohde & Schwarz IVI.NET instrument drivers

# 3  IVI.NET driver history

| RsEmi Instrument Driver | | |
|---|---|---|
| **Driver history for C#, C/C++, Visual Basic .NET, etc.** | | |
| Revision | Date | Note |
| 1.1.1 | 07/2016 | * Driver Core improvements<br><br>* Installer compliant with IVI 3-17<br><br>* New properties/methods:<br><br>- RsEmi.UtilityFunctions.IDNQueryResponse<br><br>- RsEmi.UtilityFunctions.ReadBinaryBlockToStream()<br><br>* Modified properties/methods:<br><br>- RsEmi.TestReceiverMeasurement.Configuration.Amplitude.RFInput.RFInput - instrument model restrictions removed |
| 1.1.0 | 12/2015 | * ESW 1.00 support<br><br>* FSWT 1.20 support<br><br>* Breaking change: exception handling changed from R&S specific exceptions to IVI standard exceptions from Ivi.Driver according to IVI 3.2 document. Using the namespace IVINET.Internal is not needed anymore.<br><br>* New properties/methods:<br><br>- RsEmi.SpectrumAnalyzer.Frequency.StartMinMax<br><br>- RsEmi.SpectrumAnalyzer.Frequency.StartGetMin<br><br>- RsEmi.SpectrumAnalyzer.Frequency.StartGetMax<br><br>- RsEmi.SpectrumAnalyzer.Frequency.StopMinMax<br><br>- RsEmi.SpectrumAnalyzer.Frequency.StopGetMin<br><br>- RsEmi.SpectrumAnalyzer.Frequency.StopGetMax<br><br>- RsEmi.SpectrumAnalyzer.Marker.SignalTrack.BandwidthMinMax<br><br>- RsEmi.SpectrumAnalyzer.Marker.SignalTrack.BandwidthGetMin<br><br>- RsEmi.SpectrumAnalyzer.Marker.SignalTrack.BandwidthGetMax<br><br>- RsEmi.SpectrumAnalyzer.SweepCoupling.ResolutionBandwidthRatioMinMax<br><br>- RsEmi.SpectrumAnalyzer.SweepCoupling.ResolutionBandwidthRatioGetMin<br><br>- RsEmi.SpectrumAnalyzer.SweepCoupling.ResolutionBandwidthRatioGetMax<br><br>- RsEmi.SpectrumAnalyzer.Trigger.IFPower.Coupling<br><br>- RsEmi.SpectrumAnalyzer.Amplitude.AttenuationMinMax<br><br>- RsEmi.SpectrumAnalyzer.Amplitude.AttenuationUpDown<br><br>- RsEmi.SpectrumAnalyzer.Amplitude.AttenuationGetMin<br><br>- RsEmi.SpectrumAnalyzer.Amplitude.AttenuationGetMax<br><br>- RsEmi.SpectrumAnalyzer.Amplitude.AttenuationIFAuto<br><br>- RsEmi.SpectrumAnalyzer.Amplitude.AttenuationIF<br><br>- RsEmi.SpectrumAnalyzer.Amplitude.AttenuationLimiter<br><br>- RsEmi.SpectrumAnalyzer.Amplitude.InputPreselectorFilterSplitEnabled<br><br>- RsEmi.SpectrumAnalyzer.Amplitude.LNAPreamplifierAuto<br><br>- RsEmi.SpectrumAnalyzer.Amplitude.LNAPreamplifierEnabled<br><br>- RsEmi.SpectrumAnalyzer.Amplitude.DirectPath<br><br>- RsEmi.SpectrumAnalyzer.Amplitude.NotchFilter.InputPreselectorNotchFilterEnabled |

| RsEmi Instrument Driver | | |
|---|---|---|
| **Driver history for C#, C/C++, Visual Basic .NET, etc.** | | |
| Revision | Date | Note |
| | | - RsEmi.SpectrumAnalyzer.Display.MarkerInfo |
| | | - RsEmi.SpectrumAnalyzer.Display.DisplayConductances |
| | | - RsEmi.SpectrumAnalyzer.Display.Subwindow.Size |
| | | - RsEmi.SpectrumAnalyzer.Measurement.Power.Set |
| | | - RsEmi.SpectrumAnalyzer.Measurement.SE.Details |
| | | - RsEmi.SpectrumAnalyzer.Measurement.SE.Range.LNAPreamplifier |
| | | - RsEmi.SpectrumAnalyzer.Measurement.SEM.SweepList.LNAPreamplifierEnabled |
| | | - RsEmi.RealtimeSpectrumAnalyzer.IQAnalyzerMode |
| | | - RsEmi.RealtimeSpectrumAnalyzer.Configuration.ResolutionBandwidthRatioMinMax |
| | | - RsEmi.RealtimeSpectrumAnalyzer.Configuration.ResolutionBandwidthRatioGetMin |
| | | - RsEmi.RealtimeSpectrumAnalyzer.Configuration.ResolutionBandwidthRatioGetMax |
| | | - RsEmi.RealtimeSpectrumAnalyzer.Configuration.FrameSelectMinMax |
| | | - RsEmi.RealtimeSpectrumAnalyzer.Configuration.FrameSelectGetMin |
| | | - RsEmi.RealtimeSpectrumAnalyzer.Configuration.FrameSelectGetMax |
| | | - RsEmi.RealtimeSpectrumAnalyzer.Configuration.DisplayControl.Layout.AddWindow() |
| | | - RsEmi.RealtimeSpectrumAnalyzer.Configuration.DisplayControl.Layout.RemoveWindow() |
| | | - RsEmi.RealtimeSpectrumAnalyzer.Configuration.DisplayControl.Layout.RemoveLayoutWindow |
| | | - RsEmi.RealtimeSpectrumAnalyzer.Configuration.DisplayControl.Layout.ReplaceWindow() |
| | | - RsEmi.RealtimeSpectrumAnalyzer.Configuration.DisplayControl.Layout.WindowList |
| | | - RsEmi.RealtimeSpectrumAnalyzer.Configuration.DisplayControl.Layout.QueryWindowIndex() |
| | | - RsEmi.RealtimeSpectrumAnalyzer.Configuration.DisplayControl.Layout.ConfigureSplitterPosition() |
| | | - RsEmi.RealtimeSpectrumAnalyzer.Configuration.DisplayControl.Layout.WindowIndex.WindowName |
| | | - RsEmi.RealtimeSpectrumAnalyzer.Configuration.Trigger.FrequencyMask.DeleteSelected |
| | | - RsEmi.RealtimeSpectrumAnalyzer.Configuration.Trigger.FrequencyMask.ConfigureShapeLower() |
| | | - RsEmi.RealtimeSpectrumAnalyzer.Configuration.Trigger.FrequencyMask.ConfigureShapeUpper() |
| | | - RsEmi.TestReceiverMeasurement.Configuration.Frequency.SignalTrack.BandwidthMinMax |
| | | - RsEmi.TestReceiverMeasurement.Configuration.Frequency.SignalTrack.BandwidthGetMin |
| | | - RsEmi.TestReceiverMeasurement.Configuration.Frequency.SignalTrack.BandwidthGetMax |
| | | - RsEmi.TestReceiverMeasurement.Configuration.Selection.IFSpanCoupled |
| | | - RsEmi.TestReceiverMeasurement.Configuration.Selection.IFAnalysisResolutionBandwidth |
| | | - RsEmi.TestReceiverMeasurement.Configuration.FrequencyScan.Range.MeasurementTimeMinMax |
| | | - RsEmi.TestReceiverMeasurement.Configuration.FrequencyScan.Range.MeasurementTimeGetMin |
| | | - RsEmi.TestReceiverMeasurement.Configuration.FrequencyScan.Range.MeasurementTimeGetMax |
| | | - RsEmi.TestReceiverMeasurement.Configuration.FrequencyScan.Range.IFAttenuation |
| | | - RsEmi.TestReceiverMeasurement.Configuration.FrequencyScan.Range.IFAutoRangingEnabled |
| | | - RsEmi.TestReceiverMeasurement.Configuration.FrequencyScan.Range.LNAPreamplifier |
| | | - RsEmi.TestReceiverMeasurement.Configuration.FrequencyScan.Range.LNAPreamplifierAuto |
| | | - RsEmi.TestReceiverMeasurement.Configuration.Display.Layout.AddWindow() |
| | | - RsEmi.TestReceiverMeasurement.Configuration.Display.Layout.RemoveWindow() |
| | | - RsEmi.TestReceiverMeasurement.Configuration.Display.Layout.RemoveLayoutWindow |
| | | - RsEmi.TestReceiverMeasurement.Configuration.Display.Layout.ReplaceWindow() |

| RsEmi Instrument Driver | | |
|---|---|---|
| **Driver history for C#, C/C++, Visual Basic .NET, etc.** | | |
| Revision | Date | Note |
| | | - RsEmi.TestReceiverMeasurement.Configuration.Display.Layout.WindowList |
| | | - RsEmi.TestReceiverMeasurement.Configuration.Display.Layout.QueryWindowIndex() |
| | | - RsEmi.TestReceiverMeasurement.Configuration.Display.Layout.ConfigureSplitterPosition() |
| | | - RsEmi.TestReceiverMeasurement.Configuration.Display.Layout.WindowIndex.WindowName |
| | | - RsEmi.TestReceiverMeasurement.Configuration.Spectrogram.Layout |
| | | - RsEmi.TestReceiverMeasurement.Measurement.Final.Automatic |
| | | - RsEmi.TestReceiverMeasurement.Measurement.LowLevel.FetchReceiverTraceData() |
| | | - RsEmi.TestReceiverMeasurement.Measurement.LowLevel.FetchReceiverFinalMeasurement() |
| | | - RsEmi.TestReceiverMeasurement.Measurement.LowLevel.FetchReceiverPeakList() |
| | | - RsEmi.TestReceiverMeasurement.Measurement.LowLevel.FetchReceiverPeakResults() |
| | | - RsEmi.TestReceiverMeasurement.Measurement.LowLevel.FetchReceiverScanMeasurement() |
| | | - RsEmi.TestReceiverMeasurement.Measurement.LowLevel.FetchReceiverScanMeasurementStatus() |
| | | - RsEmi.TestReceiverMeasurement.Measurement.LowLevel.FetchReceiverDetector() |
| | | - RsEmi.TrackingGenerator.Enabled |
| | | - RsEmi.TrackingGenerator.MeasurementType |
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| | | - RsEmi.CommonConfiguration.Transducer.RFSwitch.SwitchName |
| | | - RsEmi.CommonConfiguration.Transducer.RFSwitch.Input |
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| | | - RsEmi.CommonConfiguration.Transducer.RFSwitch.Delete() |
| | | - RsEmi.CommonConfiguration.Transducer.RFSwitch.Load |
| | | - RsEmi.CommonConfiguration.Transducer.RFSwitch.Load() |
| | | - RsEmi.CommonConfiguration.Transducer.RFSwitch.OPC |
| | | - RsEmi.CommonConfiguration.Transducer.RFSwitch.SCPI |

| RsEmi Instrument Driver | | |
|---|---|---|
| **Driver history for C#, C/C++, Visual Basic .NET, etc.** | | |
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| | | - RsEmi.CommonConfiguration.Transducer.RFSwitch.Select |
| | | - RsEmi.CommonConfiguration.Transducer.RFSwitch.Store |
| | | - RsEmi.CommonConfiguration.Transducer.RFSwitch.Store() |
| | | - RsEmi.CommonConfiguration.Transducer.RFSwitch.Delay |
| | | - RsEmi.CommonConfiguration.Transducer.RFSwitch.Range.Command |
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| | | - RsEmi.UtilityFunctions.ClearStatus |
| | | - RsEmi.UtilityFunctions.OptionChecking |
| | | - RsEmi.UtilityFunctions.ErrorQueryAll() |
| | | |
| | | * Deleted properties/methods: |
| | | - RsEmi.UtilityFunctions.ErrorQuery() |
| | | |
| | | * Modified properties/methods: |
| | | - RsEmi.SpectrumAnalyzer.Measurement.Power.PowerUserDefinedStandard - Access was modified. Now write only. |
| | | - RsEmi.SpectrumAnalyzer.Measurement.Power.ACLR.UserStandard - Access was modified. Now write only. |
| | | - RsEmi.TestReceiverMeasurement.Configuration.Marker.Amplitude - Changed to read/write. |
| | | - RsEmi.CommonConfiguration.HardCopy.Destination.Print - Short command was modified. |
| | | - RsEmi.CommonConfiguration.HardCopy.Destination.PrintNext - Short command was modified. |
| | | - RsEmi.UtilityFunctions.AddStreamLogger() - Added new method |

| RsEmi Instrument Driver | | |
|---|---|---|
| **Driver history for C#, C/C++, Visual Basic .NET, etc.** | | |
| Revision | Date | Note |
| | | * Modified Range Tables:<br><br>- rsemi_rngFrequencyMode.RSEMI_VAL_FREQUENCY_MODE_FIX - RSEMI_ATTR_FREQUENCY_MODE Command changed ("CW", "FIX")<br><br>- rsemi_rngFrequencyScanMeasurementTime - RSEMI_ATTR_FREQUENCY_SCAN_MEASUREMENT_TIME Range changed to <0.001;100.0><br><br>- rsemi_rngPrescanningLISNVNetworkType - RSEMI_ATTR_PRESCANNING_LISN_V_NETWORK_TYPE New items: RSEMI_VAL_PRESCAN_NETWORK_TYPE_ENV432<br><br>- rsemi_rngBargraphMeasurementTime - RSEMI_ATTR_BARGRAPH_MEASUREMENT_TIME Range changed to <100.0e-06;100.0><br><br>- rsemi_rngAnalogDemodulationState - RSEMI_ATTR_ANALOG_DEMODULATION_STATE New items: RSEMI_VAL_ANALOG_DEMODULATION_IF, RSEMI_VAL_ANALOG_DEMODULATION_VIDEO<br><br>- rsemi_rngPersisColorUpper - RSEMI_ATTR_PSPEM_COLOR_UPPER Range changed to <0.011;100><br><br>- rsemi_rngPersisColorLower - RSEMI_ATTR_PSPEM_COLOR_LOWER Range changed to <0;65.61><br><br>- rsemi_rngLinLog - RSEMI_ATTR_SIGNAL_OUTPUT_MODE, RSEMI_ATTR_SIGNAL_OUTPUT_GAIN_MODE, RSEMI_ATTR_HORIZONTAL_SCALE, RSEMI_ATTR_TRACE_MATH_MODE, RSEMI_LIMIT_CONTROL_SPACING, RSEMI_LIMIT_LOWER_SPACING, RSEMI_LIMIT_UPPER_SPACING, RSEMI_ATTR_TRAN_SCALING, RSEMI_ATTR_TFAC_SCALING New items: RSEMI_VAL_AUTOGAIN<br><br>- rsemi_rngMeasPowerSelect - RSEMI_ATTR_MEAS_POW_SELECT New items: RSEMI_VAL_MEAS_POW_AOBW, RSEMI_VAL_MEAS_POW_TPOW<br><br>- rsemi_rngExtGateSource.RSEMI_VAL_EGAT_SOUR_EXT3 - RSEMI_ATTR_EXTERNAL_GATE_SIGNAL_SOURCE Command changed ("EXT3", "Ext3")<br><br>- rsemi_rngExtGateSource - RSEMI_ATTR_EXTERNAL_GATE_SIGNAL_SOURCE New items: RSEMI_VAL_EGAT_SOUR_EXT4<br><br>- rsemi_rngTriggerSource - RSEMI_ATTR_TRIGGER_SOURCE New items: RSEMI_VAL_TRG_EXT4<br><br>- rsemi_rngBandPowerMode - RSEMI_ATTR_MARKER_BAND_POWER_MODE, RSEMI_ATTR_DELTA_MARKER_BAND_POWER_MODE New items: RSEMI_VAL_BPOWER_RPOW<br><br>- rsemi_rngresultdispay - RSEMI_ATTR_RESULT_DISPLAY New items: RSEMI_VAL_BARGRAPH, RSEMI_VAL_IF_ANALYSIS, RSEMI_VAL_NONE<br><br>- rsemi_rngMeasStatProbability.RSEMI_VAL_SSTAT_PROB_0_01 - Changed discrete value from 0 to 3<br><br>- rsemi_rngMeasStatProbability.RSEMI_VAL_SSTAT_PROB_0_1 - Changed discrete value from 1 to 0<br><br>- rsemi_rngMeasStatProbability.RSEMI_VAL_SSTAT_PROB_1 - Changed discrete value from 2 to 1<br><br>- rsemi_rngMeasStatProbability.RSEMI_VAL_SSTAT_PROB_10 - Changed discrete value from 3 to 2 |
| 1.0.0.0 | 02/2015 | Initial release |

**About Rohde & Schwarz**
The Rohde & Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, radiomonitoring and radiolocation. Founded more than 80 years ago, this independent company has an extensive sales and service network and is present in more than 70 countries.
The electronics group is among the world market leaders in its established business fields.  The company is headquartered in Munich, Germany. It also has regional headquarters in Singapore and Columbia, Maryland, USA, to manage its operations in these regions.

**Environmental commitment**
- Energy-efficient products
- Continuous improvement in environmental sustainability
- ISO 14001-certified environmental management system

Certified Quality System
ISO 9001

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