

# IVI.NET driver history for R&S® Power Sensors Driver Documentation

**Products:**

- | R&S®NRPxxS/SN – Diode Power Sensors
- | R&S®NRPxxT/TN – Thermal Power Sensors
- | R&S®NRPxxA/AN – Average Power Sensors



- | R&S®NRPM - OTA Sensors



- | R&S®NRP2



- | R&S NRX (compatibility mode)



- | R&S®NRQ6



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

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# 1 Supported Instruments

In the following table, the supported R&S instruments and firmware versions are listed:

<b>Which instruments are supported?</b>		
<b>Current revision of instrument driver supports these instruments and firmware versions:</b>		
<b>Instrument</b>	<b>Supported Firmware</b>	<b>Remarks</b>
NRPxxX/XN	2.30.0	
NRPM	17.06.28.04	
NRP2 base unit	7.13	
NRQ6	2.00	
NRX	2.20	Compatibility support

## 2 IVI.NET driver history

IVI.NET Instrument Driver		
Driver history		
Revision	Date	Note
2.30.0	09/2021	<ul style="list-style-type: none"> <li>* Support for R&amp;S NRPXXS/SN FW 2.30</li> <li>* New core 3.2.0</li> <li>* New properties/methods: <ul style="list-style-type: none"> <li>- RsPwrMeter.Channel.Trigger.SenderEnabled</li> <li>- RsPwrMeter.Channel.Trigger.SenderPort</li> <li>- RsPwrMeter.Channel.Corrections.IGamma.Magnitude</li> <li>- RsPwrMeter.Channel.Corrections.IGamma.Phase</li> <li>- RsPwrMeter.Channel.Corrections.IGamma.ExpandedUncertainty</li> <li>- RsPwrMeter.Measurement.Channel.FetchResult()</li> <li>- RsPwrMeter.UtilityFunctions.SaveCommands()</li> <li>- RsPwrMeter.UtilityFunctions.Restart</li> <li>- RsPwrMeter.UtilityFunctions.ResultUpdateTime</li> <li>- RsPwrMeter.UtilityFunctions.StatusUpdateTime</li> </ul> </li> <li>* Modified properties/methods: <ul style="list-style-type: none"> <li>- RsPwrMeter.ReferenceOscillator.Source - Range table updated</li> </ul> </li> <li>* Modified Range Tables: <ul style="list-style-type: none"> <li>- ROSCSource - RSPWRMETER_ATTR_REFERENCE_OSCILLATOR_SOURCE</li> </ul> </li> <li style="padding-left: 40px;">New items: External</li> </ul>
1.9.0	05/2021	<ul style="list-style-type: none"> <li>* New core 3.0.0</li> <li>* New: <ul style="list-style-type: none"> <li>- RsPwrMeter.UtilityFunctions.HasOptionInstalled()</li> <li>- RsPwrMeter.UtilityFunctions.InstrumentOptions()</li> <li>- RsPwrMeter.UtilityFunctions.QueryOPC()</li> </ul> </li> <li>* Removed: <ul style="list-style-type: none"> <li>- RsPwrMeter.System.SystemEmulation</li> <li>- RsPwrMeter.Channel.ContAv.SamplingRate</li> <li>- RsPwrMeter.UtilityFunctions.QueryOPC</li> </ul> </li> </ul>
1.8.1	02/2021	<ul style="list-style-type: none"> <li>* New core 2.12.1</li> <li>* Fixed setting of initial VISA Timeout which previously led to VISA timeout error in the driver constructor.</li> </ul>
1.8.0	01/2021	<ul style="list-style-type: none"> <li>* New core 2.12.0 – there is only one universal driver assembly compiled for AnyCPU. You can use it for 32-bit, 64-bit, or AnyCPU builds.</li> </ul>
1.7.0.0	05/2019	<ul style="list-style-type: none"> <li>* Update only relevant for users of the NRX base unit with the newest firmware 2.20</li> </ul>

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		<ul style="list-style-type: none"> <li>- Breaking change for NRX:</li> <li>- Some units before the firmware 2.20 were fixed in WATT. Now they depend on setting of the units. Default units after *RST are dBm.</li> <li>Affected attributes and functions:</li> <li>- RsPwrMeter.Channel.Trigger.Level - trigger level for a single channel</li> <li>- RsPwrMeter.Trigger.Level - trigger level for all channels</li> <li>- RsPwrMeter.Measurement.Block.Limits.Lower.Power, RsPwrMeter.Measurement.Block.Limits.Upper.Power</li> <li>- RsPwrMeter.System.IO.Out1.AnalogOutput.Upper.Power, RsPwrMeter.System.IO.Out1.AnalogOutput.Lower.Power</li> </ul>
1.6.1.0	03/2019	<ul style="list-style-type: none"> <li>* New properties/methods:</li> <li>- RsPwrMeter.Measurement.FetchIqData()</li> <li>* Modified properties/methods:</li> <li>- RsPwrMeter.Channel.AdaptingToTestSignal.ResolutionBandwidth - Short command was modified</li> <li>- RsPwrMeter.Channel.AdaptingToTestSignal.CurrentResolutionBandwidth - Short command was modified</li> <li>- RsPwrMeter.Channel.Mixer.LocalOscillator.OutputEnabled - Short command was modified</li> <li>- RsPwrMeter.Channel.Mixer.LocalOscillator.Frequency - Short command was modified</li> <li>- RsPwrMeter.Channel.Mixer.IntermediateFrequencySideband.AutoEnabled - Short command was modified</li> <li>- RsPwrMeter.Channel.Mixer.IntermediateFrequencySideband.Selected - Short command was modified</li> <li>- RsPwrMeter.Channel.Mixer.IntermediateFrequencySideband.Frequency - Short command was modified</li> <li>- RsPwrMeter.ReferenceOscillator.Source - Short command was modified</li> <li>- RsPwrMeter.ReferenceOscillator.ReferenceIOOutputEnabled - Short command was modified</li> <li>- RsPwrMeter.ReferenceOscillator.SampleClockOutputEnabled - Short command was modified</li> </ul>
1.6.0.0	12/2018	<ul style="list-style-type: none"> <li>- Added compatibility support for NRX Base Unit</li> <li>- Added sub-system RsPwrMeter.System</li> <li>* New properties/methods:</li> <li>- RsPwrMeter.UtilityFunctions.GetInstrumentOptions</li> <li>- RsPwrMeter.UtilityFunctions.GetBaseUnitSensorsPresence</li> <li>- RsPwrMeter.UtilityFunctions.QueryWithOPCSync</li> <li>- RsPwrMeter.UtilityFunctions.QueryBinaryBlockToStream</li> <li>- RsPwrMeter.UtilityFunctions.WriteBinaryBlockFromStream</li> <li>- RsPwrMeter.UtilityFunctions.QueryBinaryDataBlockToStreamWithOPCSync</li> <li>- RsPwrMeter.UtilityFunctions.WriteCommandWithOPCSync</li> <li>* Breaking changes:</li> <li>- Removed RsPwrMeter.UtilityFunctions.WriteToInstrumen, replacement is RsPwrMeter.System.WriteString</li> <li>- Removed RsPwrMeter.UtilityFunctions.ReadInstrumentData, replacement is RsPwrMeter.System.ReadString</li> </ul>

IVI.NET Instrument Driver		
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		<ul style="list-style-type: none"> <li>- Removed RsPwrMeter.UtilityFunctions.ErrorMessage, error message strings are now returned in exception messages</li> <li>- Interface System moved from RsPwrMeter.GeneralInstrumentSettings to RsPwrMeter</li> </ul>
1.5.2.0	08/2018	<ul style="list-style-type: none"> <li>- Fixed sporadic issue with USB interface when measurements took too long to complete</li> <li>- OPC timeout changed from 10 seconds to 30 seconds</li> <li>- Fixed incorrect endianness of data transfer</li> </ul>
1.5.0	03/2018	<ul style="list-style-type: none"> <li>* Added support for NRQ6 power sensor</li> <li>* New properties/methods: <ul style="list-style-type: none"> <li>- RsPwrMeter.Channel.Averaging.Domain</li> <li>- RsPwrMeter.Channel.Trigger.Jitter.Method</li> <li>- RsPwrMeter.Channel.Trigger.Jitter.CurrentValue</li> <li>- RsPwrMeter.Channel.Trigger.Jitter.TriggerOffset</li> <li>- RsPwrMeter.Channel.Corrections.NoiseCorrection.Enabled</li> <li>- RsPwrMeter.Channel.Trace.TraceTimeAuto</li> <li>- RsPwrMeter.Channel.Trace.NumberOfSamples</li> <li>- RsPwrMeter.Channel.Trace.SampleRateForTrace</li> <li>- RsPwrMeter.Channel.ACLR.ApertureTime</li> <li>- RsPwrMeter.Channel.ACLR.Spacing</li> <li>- RsPwrMeter.Channel.VoltIq.SampleRate</li> <li>- RsPwrMeter.Channel.VoltIq.SampleCount</li> <li>- RsPwrMeter.Channel.AdaptingToTestSignal.AutosetFrequency</li> <li>- RsPwrMeter.Channel.AdaptingToTestSignal.Autoset()</li> <li>- RsPwrMeter.Channel.AdaptingToTestSignal.ResolutionBandwidth</li> <li>- RsPwrMeter.Channel.AdaptingToTestSignal.CurrentResolutionBandwidth</li> <li>- RsPwrMeter.Channel.AdaptingToTestSignal.FilterType</li> <li>- RsPwrMeter.Channel.AdaptingToTestSignal.AutosetFilterType</li> <li>- RsPwrMeter.Channel.AdaptingToTestSignal.BandwidthType</li> <li>- RsPwrMeter.Channel.AdaptingToTestSignal.InputAttenuation</li> <li>- RsPwrMeter.Channel.AdaptingToTestSignal.InputAttenuationAuto</li> <li>- RsPwrMeter.Channel.AdaptingToTestSignal.AutosetInputAttenuation</li> <li>- RsPwrMeter.Channel.Mixer.LocalOscillator.OutputEnabled</li> <li>- RsPwrMeter.Channel.Mixer.LocalOscillator.Frequency</li> <li>- RsPwrMeter.Channel.Mixer.IntermediateFrequencySideband.AutoEnabled</li> <li>- RsPwrMeter.Channel.Mixer.IntermediateFrequencySideband.Selected</li> <li>- RsPwrMeter.Channel.Mixer.IntermediateFrequencySideband.Frequency</li> <li>- RsPwrMeter.Channel.Mixer.FrequencyTracking.Enabled</li> <li>- RsPwrMeter.Channel.Mixer.FrequencyTracking.CurrentState</li> <li>- RsPwrMeter.Channel.Mixer.FrequencyTracking.CurrentFrequency</li> <li>- RsPwrMeter.ReferenceOscillator.Source</li> <li>- RsPwrMeter.ReferenceOscillator.REFFrequency</li> <li>- RsPwrMeter.ReferenceOscillator.USBFrequency</li> </ul> </li> </ul>

IVI.NET Instrument Driver		
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		<ul style="list-style-type: none"> <li>- RsPwrMeter.ReferenceOscillator.CLKFrequency</li> <li>- RsPwrMeter.ReferenceOscillator.ReferenceIOOutputEnabled</li> <li>- RsPwrMeter.ReferenceOscillator.SampleClockOutputEnabled</li> <li>- RsPwrMeter.UtilityFunctions.DeviceFootprint()</li> <li>- RsPwrMeter.UtilityFunctions.SystemTestLevels</li> <li>- RsPwrMeter.UtilityFunctions.SystemSensorName</li> <li>* Modified properties/methods:               <ul style="list-style-type: none"> <li>- RsPwrMeter.Channel.Mode - Added ACLR and IQVoltageTrace modes for NRQ</li> <li>- RsPwrMeter.ReferenceOscillator.REFFrequency - Changed name and constant to be same as in newest operating manual and web interface</li> </ul> </li> <li>* Modified Range Tables:               <ul style="list-style-type: none"> <li>- MeasurementMode - RSPWRMETER_ATTR_CHANNEL_MODE</li> </ul> </li> <li style="padding-left: 40px;">New items: ACLR, IQVoltageTrace</li> </ul>
1.4.0	07/2017	<ul style="list-style-type: none"> <li>* IVI.NET shared components 1.4.0 used</li> <li>* Added support for NRPM OTA power sensors</li> <li>* Added support for channel 0. If zero is used, the channel in SCPI command is not specified</li> <li>* New properties/methods:               <ul style="list-style-type: none"> <li>- RsPwrMeter.Channel.Trigger.SynchronizePort</li> <li>- RsPwrMeter.Channel.Trigger.AutoTriggerDelay</li> <li>- RsPwrMeter.Measurement.FetchAllChannels()</li> <li>- RsPwrMeter.Measurement.FetchAllChannelsBuffered()</li> <li>- RsPwrMeter.GeneralInstrumentSettings.MeasurementPath.Present</li> <li>- RsPwrMeter.GeneralInstrumentSettings.MeasurementPath.Enabled</li> <li>- RsPwrMeter.UtilityFunctions.StaticErrorQueryAll()</li> </ul> </li> <li>* Modified Repeated Capabilities:               <ul style="list-style-type: none"> <li>- Channel - Identifiers ("CH0,CH1,CH2,CH3,CH4", "CH1,CH2,CH3,CH4")</li> <li>- Channel - Command Values ("1,2,3,4", "1,2,3,4")</li> </ul> </li> </ul>
1.3.4	05/2017	<ul style="list-style-type: none"> <li>* Fixed culture invariant parsing in Fetch() methods</li> </ul>
1.3.3	03/2017	<ul style="list-style-type: none"> <li>* Breaking change: method RsPwrMeter.RsPwrMeterChannel.Zero() now has no arguments and performs complete range zeroing</li> <li>* Class implementation of measurement range modified</li> <li>* Zeroing is OPC synchronized</li> </ul>
1.3.2	02/2017	<ul style="list-style-type: none"> <li>* Class implementation modified to support various configurations of base unit and sensors</li> </ul>
1.3.1	02/2017	<ul style="list-style-type: none"> <li>* Modified IviPwrMeterMeasurement.ReadChannel - now does not configure channel, only selects current channel</li> </ul>
1.3.0	11/2016	<ul style="list-style-type: none"> <li>* Added support for NRP6A, NRP6AN, NRP18A, NRP18AN, NRP18T, NRP18TN, NRP40T, NRP40TN, NRP50T, NRP50TN, NRP33SN-V, NRP67T, NRP67TN, NRP110T, NRP110TN</li> <li>* IVINET.Internal.VisaException replaced with Ivi.Driver.IOException,</li> <li>* IVINET.Internal.ErrorException replaced with Ivi.Driver.InstrumentStatusException</li> <li>* using the namespace IVINET.Internal is no longer needed</li> <li>* Installer compliant with IVI 3-17:</li> </ul>

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		<ul style="list-style-type: none"> <li>- side-by-side installation - more driver versions can be installed at the same time, older versions must be uninstalled manually</li> <li>- installation paths changed</li> <li>64-bit driver installation path: "c:\Program Files\IVI Foundation\IVI\Microsoft.NET\Framework64\v4.0.30319\RohdeSchwarz.RsPwrMeter 1.3.0.0"</li> <li>32-bit driver installation path: "c:\Program Files (x86)\IVI Foundation\IVI\Microsoft.NET\Framework32\v4.0.30319\RohdeSchwarz.RsPwrMeter 1.3.0.0"</li> </ul>
1.2.0	03/2016	<ul style="list-style-type: none"> <li>* Modified range tables:               <ul style="list-style-type: none"> <li>- MeasurementMode - help updated</li> <li>- TriggerSource - help updated, added new value External2</li> </ul> </li> </ul>
1.1.0	03/2016	<ul style="list-style-type: none"> <li>* Added UtilityFunctions class. Some methods and properties from GeneralInstrumentSettings have been moved here</li> <li>* Fixed instrument identification</li> <li>* Fixed zeroing on standalone sensor</li> <li>* Fixed test mode on standalone sensor</li> <li>* Added support for NRP8S, NRP8SN, NRP33S, NRP33SN, NRP40S, NRP40SN, NRP50S, NRP50SN</li> </ul>
1.0.3	12/2015	<ul style="list-style-type: none"> <li>* Exception handling changed from R&amp;S specific exceptions to IVI standard exception according to IVI 3.2 document. IVI.NET.Internal exceptions are replaced by Ivi.Driver exceptions. Using the namespace IVI.NET.Internal is not needed anymore</li> <li>* Bug fixed in RsRwrMeter.RsPwrMeterMeasurementChannel.TraceData</li> <li>* New:               <ul style="list-style-type: none"> <li>- RsRwrMeter.RsPwrMeterMeasurementChannel.TraceDataWithAuxiliary</li> </ul> </li> </ul>
1.0.2	08/2015	<ul style="list-style-type: none"> <li>* Removed RsPwrMeter.Channel.Trace.Realtime</li> </ul>
1.0.1	07/2015	<ul style="list-style-type: none"> <li>* Added RsPwrMeter.Channel.ContAv.FastUnchoppedEnabled</li> </ul>
1.0.0	12/2014	<ul style="list-style-type: none"> <li>* Initial Release</li> </ul>



### **About Rohde & Schwarz**

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



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