

The SDRplay RSPdx is a complete redesign of the popular RSP2 and RSP2pro multi-antenna receiver. It's a wideband full-featured 14-bit SDR which covers the entire RF spectrum from 1kHz to 2GHz. Combined with the power of readily available SDR receiver software (including 'SDRuno' supplied by SDRplay) you can monitor up to 10MHz spectrum at a time. The RSPdx provides three software selectable antenna inputs, and an external clock input. All it needs is a computer and an antenna to provide excellent communications receiver functionality. A documented API allows developers to create new demodulators or applications around the platform.



### KEY BENEFITS & FEATURES

- Covers all frequencies from 1kHz through VLF, LF, MW, HF, VHF, UHF and L-band to 2GHz, with no gaps
- Receive, monitor and record up to 10MHz of spectrum at a time
- Performance below 2MHz substantially enhanced – improved dynamic range and selectivity
- Software selectable choice of 3 antenna ports
- Enhanced ability to cope with extremely strong signals
- External clock input for synchronisation purposes, or connection to GPS reference clock for extra frequency accuracy
- Excellent dynamic range for challenging reception conditions
- Free use of windows-based SDRuno software which provides an ever-increasing feature-set
- Strong and growing software support network
- Calibrated S meter/ RF power and SNR measurement with SDRuno (including datalogging to .CSV file capability)
- Documented API provided to allow demodulator or application development on multiple platforms

### APPLICATIONS

#### Amateur

Shortwave radio listening  
 Broadcast DXing (AM/FM/TV )  
 Panadaptor  
 Aircraft (ADS-B and ATC)  
 Slow Scan TV  
 Multi-amateur band monitoring  
 WSPR & digital modes  
 Weather fax (HF and satellite)  
 Satellite monitoring  
 Geostationary environmental satellites  
 Trunked radio  
 Utility and emergency service monitoring  
 Fast and effective antenna comparison

#### Industrial

Spectrum Analyser  
 Surveillance  
 Wireless microphone monitoring  
 RF surveying  
 IoT receiver chain  
 Signal logging  
 RFI/EMC detection  
 Broadcast integrity monitoring  
 Spectrum monitoring  
 Power measurement

#### Educational/Scientific

Teaching  
 Receiver design  
 Radio astronomy  
 Passive radar  
 Ionosonde  
 Spectrum analyser  
 Receiver for IoT sensor projects  
 Antenna research

*Please note: This product launched in November 2019 and initially only Windows-based SDRuno software and APIs for other platforms (e.g. Linux, MAC, Android and Raspberry Pi) were released by SDRplay. Other 3<sup>rd</sup> Party software (e.g. Spectrum Analyser, SDR-Console etc) which works with other RSPs may not yet be compatible with the RSPdx. Please check specific 3<sup>rd</sup> Party application for compatibility.*

### RSP COMPARISON TABLE

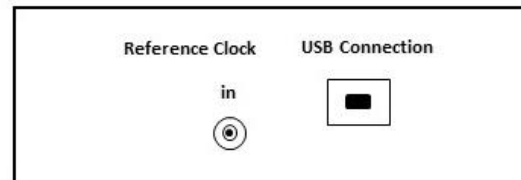
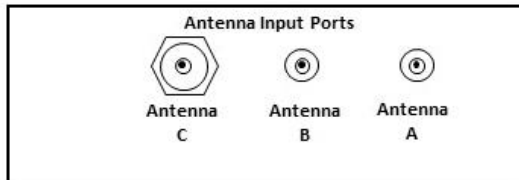
#### Key specifications and highlights

	RSP1A	RSPdx	RSPduo
Continuous coverage from 1kHz to 2GHz	✓	✓	✓
Up to 10MHz visible bandwidth	✓	✓	✓
14-bit ADC silicon technology plus multiple high-performance input filters	✓	✓	✓
Software selectable AM/FM & DAB broadcast band notch filters	✓	✓	✓
4.7V Bias-T for powering external remote antenna amplifier	✓	✓	✓
Powers over the USB cable with a simple type B socket	✓	✓	✓
50Ω SMA antenna input(s) for 1kHz to 2GHz operation (software)	1	2	2
Additional software selectable Hi-Z input for up to 30MHz operation			✓
Additional software selectable 50Ω BNC input for up to 200MHz operation		✓	
Additional LF/VLF filter for below 500kHz		✓	
24MHz Reference clock input (+ output on RSPduo)		✓	✓
Dual tuners enabling reception on 2 totally independent 2MHz ranges			✓
Dual tuners enabling diversity reception using SDRuno			✓
Robust and strong plastic case (with internal RF shielding layer)	✓		
Rugged black painted steel case		✓	✓
Overall performance below 2MHz for MW and LF	Good	Best	Good
Multiple simultaneous applications	Good	Good	Best
Performance in challenging fading conditions (*using diversity tuning )	Good	Good	Best*

### SDRuno FEATURES

- High Dynamic Range mode (“HDR”) for RSPdx use below 2MHz
- Highly integrated native Windows support for the SDRplay family
- Multiple ‘virtual receivers’ for simultaneous reception and demodulation of different types of signals within the same receiver bandwidth
- An integrated frequency scanner (for frequency ranges and stored memory panel lists)
- A selectivity filter with an ultimate rejection greater than 140dB.
- A unique distortion-free double stage AGC with fully adjustable parameters
- AFC for FM signals
- Multiple notch filters with BW adjustable to 1Hz + Notch Lock feature
- A unique synchronous AM mode with selectable/adjustable sidebands, dedicated PLL input filter, & selectable PLL time constants
- SNR (stereo noise reduction), featuring a proprietary noise reduction algorithm for stereo broadcast
- Powerful wideband noise filter for addressing common sources of RFI (e.g. power supplies, internet over DSL etc.)
- Calibration for receiver frequency errors
- RDS support optimised for low signal environment
- Active Noise cancelling
- CAT and Omnirig control
- Calibrated RF Power Meter with > 100dB of usable range
- Calibrated S-Meter supporting IARU S-Meter Standard
- The ability to save power (dBm) and SNR (dB) measurements over time, to a CSV file for future analysis
- IQ output accessible for 3rd party applications

### CONNECTIONS



### SPECIFICATIONS

<p><b>General</b></p> <ul style="list-style-type: none"> <li>• Weight 315g</li> <li>• Size: 113mm x 94mm x 35mm</li> <li>• Low current consumption: <ul style="list-style-type: none"> <li>• 190mA @ &gt;60MHz (excl Bias T)</li> <li>• 120mA @ &lt;60MHz (excl Bias T)</li> </ul> </li> </ul> <p><b>Connectivity</b></p> <ul style="list-style-type: none"> <li>• USB 2.0 (high speed) type B socket</li> </ul> <p><b>Frequency Range</b></p> <ul style="list-style-type: none"> <li>• Continuous coverage 1kHz – 2GHz</li> </ul> <p><b>Antenna A Port Characteristics</b></p> <ul style="list-style-type: none"> <li>• 1kHz – 2GHz operation</li> <li>• 50Ω input impedance</li> <li>• SMA female connector</li> </ul> <p><b>Antenna B Port Characteristics</b></p> <ul style="list-style-type: none"> <li>• 1kHz – 2GHz operation</li> <li>• 50Ω input impedance</li> <li>• SMA female connector</li> <li>• Selectable 4.7V DC out (see Bias T)</li> </ul> <p><b>Antenna C Port Characteristics</b></p> <ul style="list-style-type: none"> <li>• 1kHz – 200MHz operation</li> <li>• 50Ω input impedance</li> <li>• BNC female connector</li> </ul> <p><b>Reference Clock Input</b></p> <ul style="list-style-type: none"> <li>• MCX female connector</li> </ul> <p><b>Bias T (Antenna B Port only)</b></p> <ul style="list-style-type: none"> <li>• Software selectable 4.7V @ 100mA</li> </ul>	<p><b>IF Modes</b></p> <ul style="list-style-type: none"> <li>• Zero IF, All IF bandwidths</li> <li>• Low IF, IF bandwidths ≤ 1.536MHz</li> </ul> <p><b>IF Bandwidths (3dB)</b></p> <ul style="list-style-type: none"> <li>• 200kHz</li> <li>• 300kHz</li> <li>• 600kHz</li> <li>• 1.536MHz</li> <li>• 5.0MHz</li> <li>• 6.0MHz</li> <li>• 7.0MHz</li> <li>• 8.0MHz</li> </ul> <p><b>ADC Characteristics</b></p> <ul style="list-style-type: none"> <li>• Sample frequency 2 – 10.66MSPS</li> <li>• 14-bit native ADC (2 – 6.048MSPS)</li> <li>• 12-bit (6.048- 8.064 MSPS)</li> <li>• 10-bit (8.064- 9.216MSPS)</li> <li>• 8-bit (&gt; 9.216 MSPS )</li> </ul> <p><b>Maximum recommended input power</b></p> <ul style="list-style-type: none"> <li>• 0dBm continuous</li> <li>• 10dBm for short periods</li> </ul> <p><b>Reference</b></p> <ul style="list-style-type: none"> <li>• High temp stability 0.5PPM TCXO</li> <li>• In-field trimmable to 0.01ppm.</li> </ul> <p><b>External Reference Clock</b></p> <ul style="list-style-type: none"> <li>• When an external 24MHz clock is applied, auto-detect will switch to the external reference. Ideally the external clock source should be connected to the RSPdx before power up</li> </ul>	<p><b>Typical Noise Figures</b></p> <ul style="list-style-type: none"> <li>• 20dB @ 2MHz</li> <li>• 17dB @ 12MHz</li> <li>• 15dB @ 25MHz</li> <li>• 15dB @ 40MHz</li> <li>• 2.6dB @ 100MHz</li> <li>• 2.1dB @ 200MHz</li> <li>• 6.0dB @ 340MHz</li> <li>• 3.1dB @ 660MHz</li> <li>• 4.4dB @ 1500MHz</li> <li>• 5.0dB @ 1800MHz</li> </ul> <p><b>Notch Filters</b></p> <ul style="list-style-type: none"> <li>• FM Notch Filter: <ul style="list-style-type: none"> <li>&gt;30dB 77 – 115MHz</li> <li>&gt;50dB 85 – 107MHz</li> <li>&gt;4dB 144 – 148MHz</li> </ul> </li> <li>• MW Notch Filter: <ul style="list-style-type: none"> <li>&gt;15dB 400 – 1650kHz</li> <li>&gt;30dB 500 – 1530kHz</li> <li>&gt;40dB 540 – 1490kHz</li> </ul> </li> <li>• DAB Notch Filter: <ul style="list-style-type: none"> <li>&gt;20dB 155 – 235MHz</li> <li>&gt;30dB 160 – 230MHz</li> </ul> </li> </ul> <p>Note: The notch filters above are software selectable and remove specific broadcast bands.</p>	<p><b>Front End Filtering</b></p> <p><b>Low Pass</b></p> <ul style="list-style-type: none"> <li>• 500kHz</li> <li>• 2MHz</li> </ul> <p><b>Band Pass</b></p> <ul style="list-style-type: none"> <li>• 2-12MHz</li> <li>• 12-30MHz</li> <li>• 30-60MHz</li> <li>• 60-120MHz</li> <li>• 120-250MHz</li> <li>• 250-300MHz</li> <li>• 300-380MHz</li> <li>• 380-420MHz</li> <li>• 420-1000MHz</li> </ul> <p><b>High Pass</b></p> <ul style="list-style-type: none"> <li>• 1000MHz</li> </ul>
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