Ruggedized and Weatherproof SDR Platforms

RN310

KEY FEATURES

- Ruggedized version of National Instruments (Ettus Research brand) N310 Series Software Defined Radio
- Conduction-cooled construction optionally designed to meet MIL 810 for shock/ vibration and MIL 461 for EMI
- IP67 weather-resistant sealed unit or MIL-grade design version optional
- Other similar National Instruments (NI) small form factor SDR versions are available upon request
- Customizable I/O options
- Anti-vandal pushbutton on/off switch
- Pole-mount and other mounting options available
- Contact Pixus for ruggedization options for other NI SDRs

The Pixus Technologies RN310 is a ruggedized version of National Instruments (Ettus Research brand) N310 Software Defined Radio. Working with NI, Pixus redesigned the commercial version of the product to create a hardened, sealed, conduction-cooled unit to meet IP67 specifications. There are options to further ruggedize the unit to MIL 810 for shock/vibration and MIL 461 for EMI.

The NI USRP N310 is one of the highest channel density devices in the SDR market, offering four RX and four TX channels in a half-wide RU form factor. The RF front end uses two AD9371 transceivers from Analog Devices. Each channel provides up to 100 MHz of instantaneous bandwidth and covers an extended frequency range from 10 MHz to 6 GHz.

Contact Pixus for ruggedization inquiries for other SDRs from NI. Visit www.ettusresearch.com for SDR specifications.

Pixus Technologies Inc. USA (916) 297-0020 Canada (519) 885-5775
Email: sales@pixustechnologies.com Website: www.pixustechnologies.com

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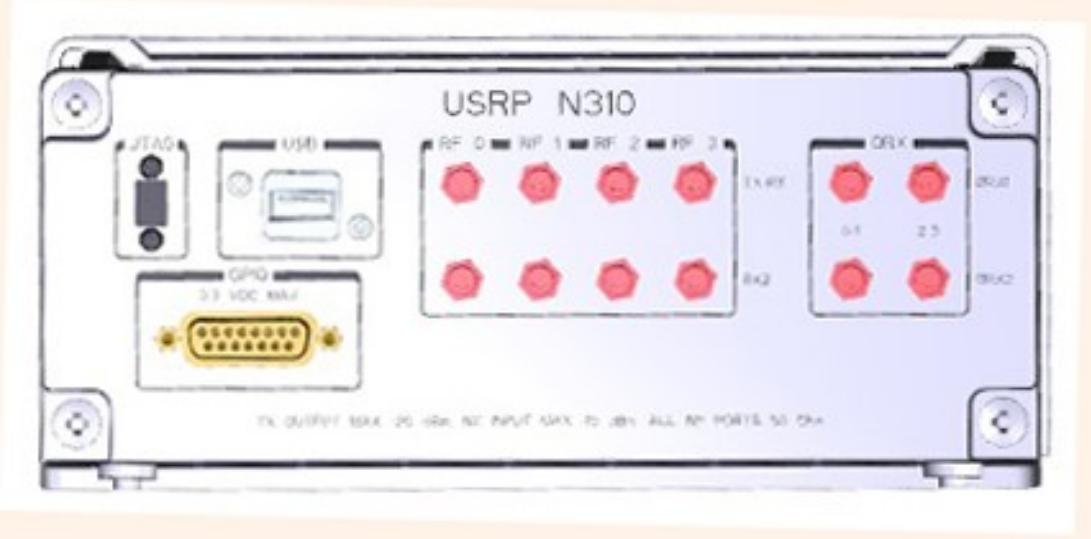
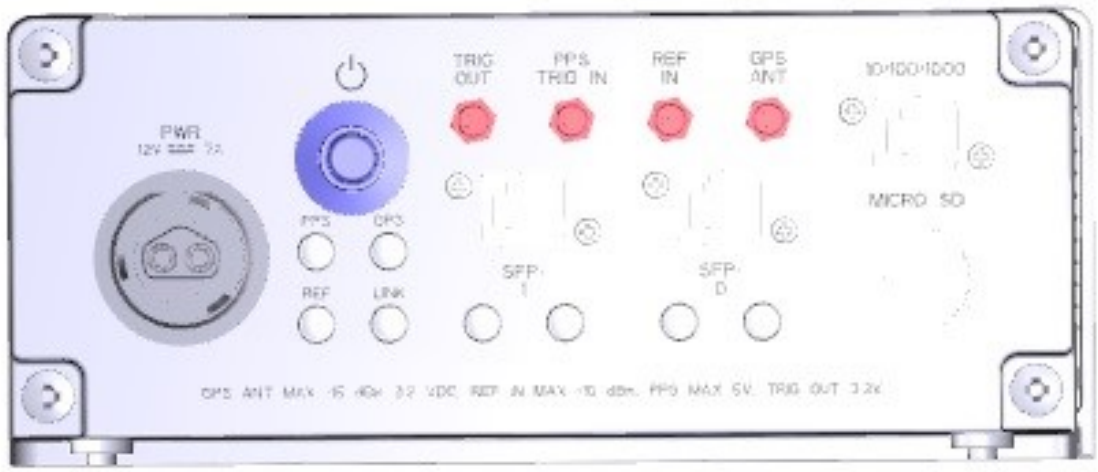
I/O Configurations & Power

Pixus offers a standard I/O configuration for the IP67 RN310 (see below) and other SDRs. The modular front and rear faceplates are also customizable. Consult Pixus to discuss your specific requirement. The RN310 comes with a loose connector that can be terminated by the user to the application's power source (via crimp or solder). For powering the unit in a lab/test environment, see P/N SPS0006 in the Accessories section. Please note that the MIL rugged version requires modification to the I/O details below. The unit standardly runs on 12V power. For versions that require an internal heater for low-temp applications, the power will utilize 24V.



Front I/O



Rear I/O

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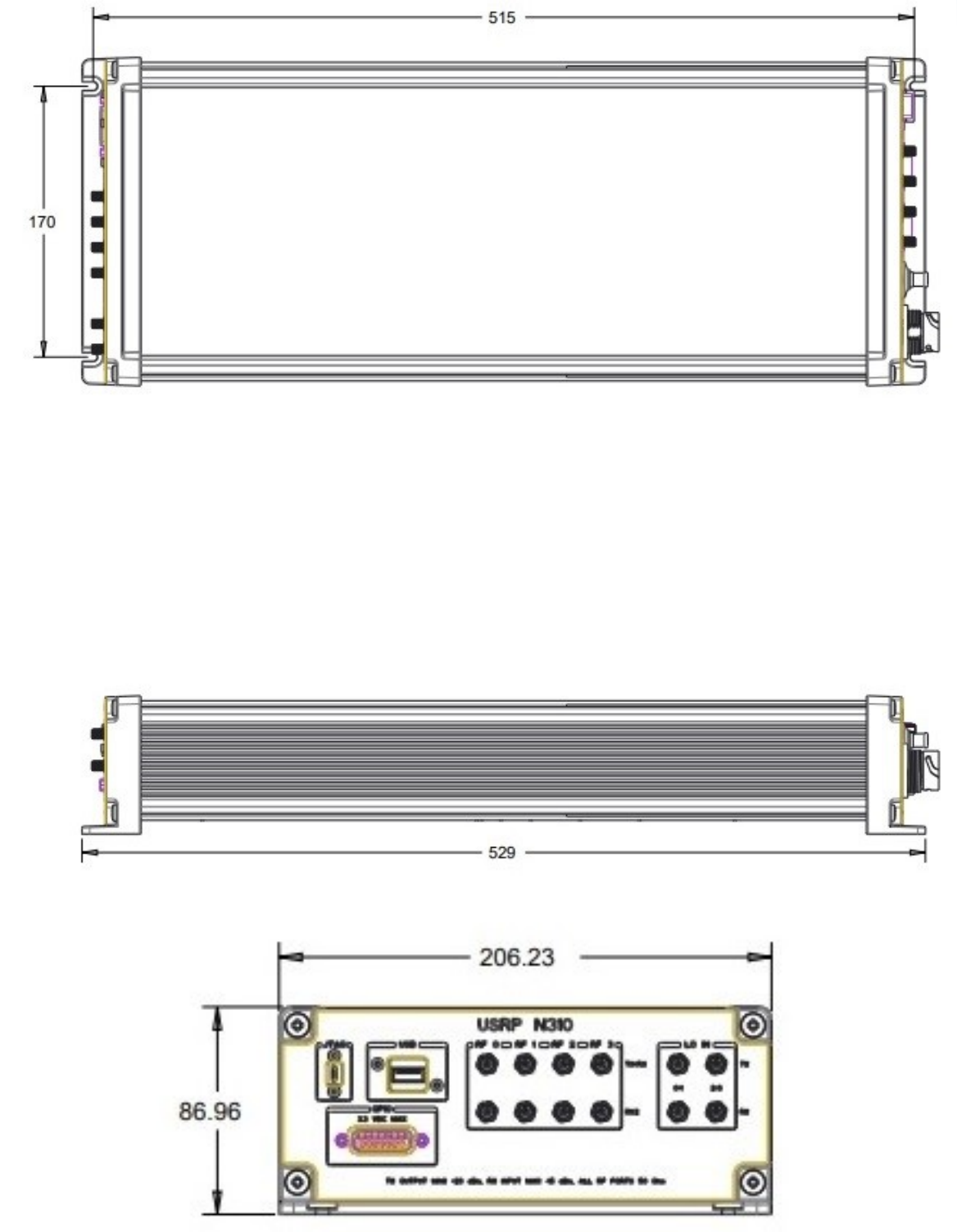
Drawings—IP67



The drawings above are for the IP67 version. The MIL-spec version is slightly larger (contact factory for details).

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Ruggedization Levels

The RN310 was initially designed to meet IP67 waterproof specifications in a rugged, conduction-cooled design. The unit standardly meets –10C to 50C temperature ranges with the powerful ZYNQ-7100 FPGA installed. There are options to extend the temp range to +71C with an external fan or with customization. Alternatively, if a lower-power FPGA is selected, the higher ambient temperature range can also be met.

To meet MIL specifications for shock/vibration, there are modifications required to utilize 38999 connectors and internal bracing. Pixus also offers a light-rugged solution providing –20C to +71C temperature range and transport grade shock/vibration levels in an air-cooled configuration.

The RN310 is a chassis platform for the end customer/integrator to incorporate their software, interface, and mounting options. As such, it is up to the integrator to provide end application testing to the applications' requirements. Pixus will guarantee that we will meet agreed upon ruggedization levels. Contact Pixus for more details or to discuss co-testing options.

	Air cooled	Conduction cooled	Shock/vibration	IP67	Environmental/EMI
Light-rugged	Temp: - 20C to 71C	N/A	Transport grade	N/A	Not sealed. Various EMI level options.
Rugged IP67, not MIL-grade	Custom only	40C to 60C, With heater/fan: -40 to 71C	~ 15G shock, above Transport grade	Yes	Fully sealed, MIL461 EMI
MIL Spec Rugged	Custom only	40C to 60C, With heater/fan: -40 to 71C	~ 20-25G shock, meet various MIL810 specs	IP66/ IP67 optional	Fully sealed, MIL461 EMI

Specification Notes

The weight of the MIL grade version is TBD.

Interface Connectors

Pixus provides the mating connectors to the external I/O interfaces except for the fiber connector. Contact Pixus to discuss what mating fiber connector options are available by 3rd parties.

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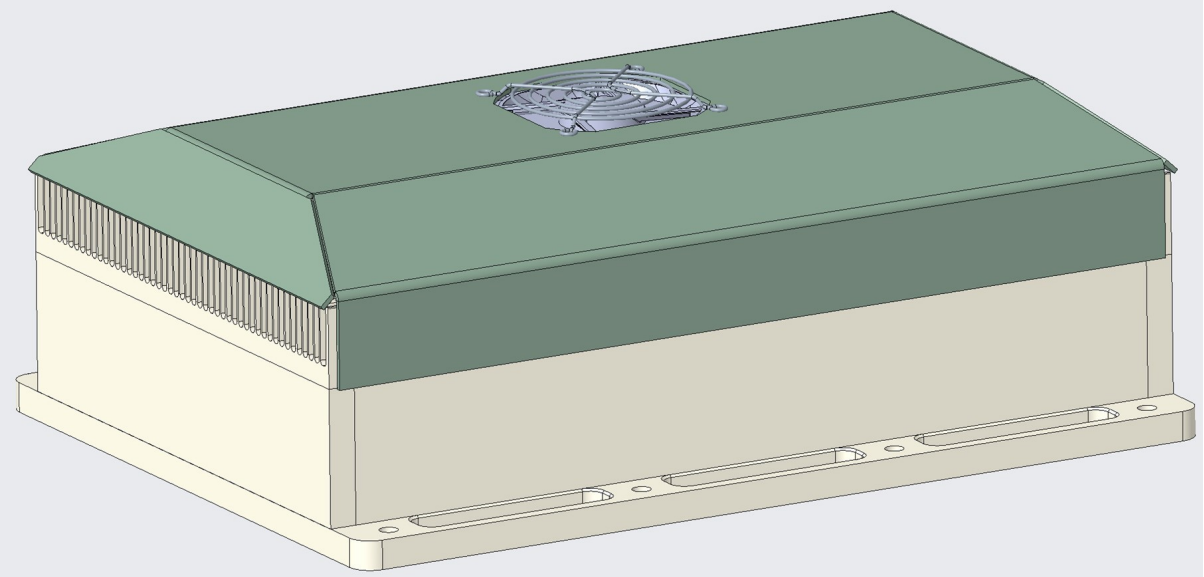
Heater and/or Fan Options for IP67 or MIL Rugged Versions

The Rugged series of Ettus/NI enclosures from Pixus are designed to run in environments from –10C to 50C without a fan or a heater. The optional MIL grade fan pulls airflow over the external fins of the conduction-cooled chassis. No airflow goes through the inside of the unit. The heater is an internal device running on either 28VDC power (18-36VDC converter) or 48VDC (36-72VDC converter) options. For the latter option, the recommended max input power is 60VDC. Whether an application requires a heater depends on the end application. Factors include whether the device will run from a cold start, the time intervals in the cold environment, altitudes, etc. The approximate time for the heater to bring the chassis from –40C to +10C is 30 minutes.

To ensure safe operation, the 28VDC and 48VDC versions have different power connector interfaces. Below is a model showing the fan interface.



The example shown above is the RX410 version

ORDERING OPTIONS

RN310-ABC-DEF-XX

A = Type

0 = Standard RN310 board
1 = Other
S = Supplied by customer (the RN310 board)

B = I/O Configuration

0 = Standard I/O as shown page 2
1 = Other

C = Ruggedization Level

0 = IP67 weather-resistant (standard)
1 = Semi-Rugged, air cooled w/filter
2 = Reserved
3 = MIL 810/410 Rugged, IP67
4 = Other

D = Light Indicator Setting

0 = Light indicators connected, lit
1 = Light indicators not connected, dark

E = Ethernet Type

C (or blank) = Copper
D = Other
F = Fiber (multi-mode, 300m)

F = Heater/Fan Installation

0 (or blank) = no heater or fan installed, 12V power
1 = Internal heater installed for low-temp apps, 24V power
2 = Heater and MIL grade fan for extreme temp apps, 24V power
3 = Other

2 digit customization code

Blank = standard, no customization

ACCESSORIES

Power Supply Kit P/N: SPS0006

The SPS0006 comes with a C13 IEC inlet for AC input and an RN310 compatible connector for the DC output. The part number for the air cooled version is SPS0009. https://www.ettus.com/all-products/12v-pwr/ The power that needs to be supplied to the unit without a heater or fan is 12VDC, max 16A. For a heater or fan, the voltage would be 28VDC as discussed on page 5. As each application is different, the customer will need to convert the power from their source to this interface.