

SAFETY, ENVIRONMENTAL, AND REGULATORY INFORMATION


Ettus USRP X410


USRP Software Defined Radio Device

Read this document before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards. Visit ni.com/manuals for more information about your product, including specifications, pinouts, and instructions for connecting, installing, and configuring your system.


Icons


Refer to the following descriptions if one of these icons is marked on your product or used in this guide.


 **Notice** Take precautions to avoid data loss, loss of signal integrity, degradation of performance, or damage to the product.


 **Caution** Take precautions to avoid injury. Consult the product documentation for cautionary statements when you see this icon printed on the product. Cautionary statements are localized into French for compliance with Canadian requirements.


Safety Guidelines


 **Caution** Observe all instructions and cautions in the user documentation. Using the product in a manner not specified can damage the product and compromise the built-in safety protection.

 **Attention** Suivez toutes les instructions et respectez toutes les mises en garde de la documentation d'utilisation. L'utilisation du produit de toute autre façon que celle spécifiée risque de l'endommager et de compromettre la protection de sécurité intégrée.

 **Caution** The product is designed for non-hazardous, live signals. You must ensure that all signals connected to the product are isolated from hazardous, live circuits and no unsafe voltages are present at the inputs. Voltages that exceed the specifications could result in damage to the product or electric shock.

 **Attention** Le produit est conçu pour les signaux en direct non dangereux. Vous devez vous assurer que tous les signaux connectés au produit sont isolés des circuits dangereux sous tension et qu'aucune tension dangereuse n'est présente aux entrées. Des tensions supérieures à celles mentionnées dans les spécifications peuvent endommager le produit ou provoquer un choc électrique.


 **Caution** If the product has been in use, it may exceed safe handling temperatures and cause burns. Allow the product to cool before handling.

 **Attention** Si le produit a été utilisé, il peut avoir atteint des températures trop élevées pour être manipulé en toute sécurité, ce qui peut provoquer des brûlures. Laissez le produit refroidir avant de le manipuler.

Safety Compliance Standards

This product is designed to meet the requirements of the following electrical equipment safety standards for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 61010-1, CSA C22.2 No. 61010-1

 **Note** For safety certifications, refer to the product label or the [Product Certifications and Declarations](#) section.

EMC and Radio Equipment Guidelines

This product was designed to support an efficient use of the radio spectrum to avoid harmful interference. This product contains a radio module that was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC) as stated in the product specifications. These requirements and limits are designed to provide reasonable protection against harmful interference when the product is operated in its intended operational electromagnetic environment.

This product is intended for use in commercial and light-industrial locations. However, harmful interference may occur in some installations, when the product is connected to a peripheral device or test object, or if the product is used in residential areas. To minimize interference with radio and television reception and prevent unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Furthermore, any changes or modifications to the product not expressly approved by NI could void your authority to operate it under your local regulatory rules.



EMC Notices

Refer to the following notices for cables, accessories, and prevention measures necessary to ensure the specified EMC performance.

- !** **Notice** For EMC declarations and certifications, and additional information, refer to the [Product Certifications and Declarations](#) section.
- !** **Notice** Changes or modifications to the product not expressly approved by NI could void your authority to operate the product under your local regulatory rules.
- !** **Notice** The performance of this product can be disrupted if subjected to Electrostatic Discharge (ESD) during operation. To prevent damage, industry-standard ESD prevention measures must be employed during installation, maintenance, and operation.
- !** **Notice** Operate this product only with shielded cables and accessories.
- !** **Notice** The length of all I/O cables must be no longer than 3 m (10 ft), except for cables connected to the GPS port or the Ethernet port.
- !** **Notice** Do not connect the power input to a DC mains supply or to any supply requiring a connecting cable longer than 3 m (10 ft). A DC mains supply is a local DC electricity supply network in the infrastructure of a site or building.
- !** **Notice** This product is not approved or licensed for transmission over the air using an antenna. As a result, operating this product with an antenna may violate local laws. Ensure that you are in compliance with all local laws before operating this product with an antenna.
- !** **Notice** The CONSOLE/JTAG port is intended only for use in device configuration, application deployment, debug, and maintenance.

Radio Equipment Compatibility Standards

This product meets the requirements of the following Radio Equipment standards:

- ETSI EN 301 489-1: Common Technical Requirements for Radio Equipment
- ETSI EN 301 489-19: Specific conditions for Receive Only Mobile Earth Stations (ROMES) operating in the 1.5 GHz band providing data communications and GNSS receivers operating in the RNSS band (ROGNSS) providing positioning, navigation, and timing data
- ETSI EN 303 413: Satellite Earth Stations and Systems (SES); Global Navigation Satellite System (GNSS) receivers

This product is for use in accordance with the following parameters:

Antenna	3.3 V active antenna
Software	UHD and NI-USRP
Frequency band(s)	L1, C/A 1.574 GHz

Environmental Guidelines

- !** **Notice** Failure to follow the mounting instructions in the product documentation can cause temperature derating.
- !** **Notice** This product is intended for use in indoor applications only.
- !** **Notice** All cabling should be strain-relieved near input connectors. Take care not to directionally bias cable connectors within input connectors when applying strain relief.

Environmental Characteristics

Temperature	
Operating	0 °C to 55 °C
Storage	-40 °C to 71 °C
Humidity	
Operating	10% to 90%, noncondensing
Storage	5% to 95%, noncondensing
Pollution Degree	2
Maximum altitude	2000 m
Shock and Vibration	
Operating vibration	5 Hz to 500 Hz, 0.3 g RMS
Non-operating vibration	5 Hz to 500 Hz, 2.4 g RMS
Operating shock	30 g, half-sine, 11 ms pulse
Non-operating shock	50 g, half-sine, 11 ms pulse


Ventilation Clearance and Cooling

This product is designed to operate on a bench or in an instrument rack. Fan vents are located at the back of the product. Standard airflow provision of the product is set up as front to back cooling with option to change the airflow direction in the interest for directing back to front cooling using a fan cartridge accessory.

Adequate clearance is required at the front and back of the product and surrounding equipment, inclusive of indiscriminate heat generating devices, and any potential air flow blockages must be maintained to ensure proper cooling.

Minimum cooling clearances


51 mm (2 in) at the front and back

 **Note** Benchtop and rack mount applications may require additional cooling clearances for optimal airflow and to reduce any unexpected hot air recirculation in either direction of the air inlet fans.


Environmental Standards


This product meets the requirements of the following environmental standards for electrical equipment.


- IEC 60068-2-1 Cold
- IEC 60068-2-2 Dry heat
- IEC 60068-2-78 Damp heat (steady state)
- IEC 60068-2-64 Random operating vibration
- IEC 60068-2-27 Operating shock

 **Note** To verify marine approval certification for a product, refer to the product label or visit ni.com/certification and search for the certificate.

Power Requirements

 **Caution** The product must be powered with an AC adapter offered by NI or an approved Limited Energy, LPS, or Class 2 supply that meets the power requirements for the product and has appropriate safety certification marks for country of use.

 **Attention** Le produit doit être alimenté par un adaptateur secteur proposé par NI ou une source d'alimentation de classe 2, à énergie et puissance limitées (LPS), qui répond aux exigences d'alimentation du produit et possède les marques de certification de sécurité appropriées pour le pays d'utilisation.

 **Note** Do not position product so that it is difficult to disconnect power.

Power rating

Voltage rating	12 V
Frequency rating	DC
Current/power rating	16 A

Recommended power supply (V_{sup})

Voltage rating	12 V
Current/power rating	24 A

External power supply

NI part number	723704-01
Voltage rating	12 V
Current/power rating	24 A

Physical Characteristics

Dimensions

Enclosure	26.7 cm x 22.2 cm x 4.4 cm (10.5 in. x 8.7 in. x 1.7 in.)
Enclosure and connectors	28.5 cm x 22.2 cm x 4.4 cm (11.2 in. x 8.7 in. x 1.7 in.)

Weight	2.5 kg (5.5 lb)
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Export Compliance

This product is subject to control under the U.S. Export Administration Regulations (15 CFR Part 730 et. seq.) administered by the U.S. Department of Commerce's Bureau of Industry and Security (BIS) (www.bis.doc.gov) and other applicable U.S. export control laws and sanctions regulations. This product may also be subject to additional license requirements of other countries' regulations.


Additionally, this product may also require export licensing before being returned to NI. The issuance of a Return Material Authorization (RMA) by NI does not constitute export authorization. The user must comply with all applicable export laws prior to exporting or re-exporting this product. See ni.com/legal/export-compliance for more information and to request relevant import classification codes (e.g. HTS), export classification codes (e.g. ECCN), and other import/export data.

Environmental Management

NI is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial to the environment and to NI customers.

For additional environmental information, refer to the *Commitment to the Environment* web page at ni.com/environment. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

Waste Electrical and Electronic Equipment (WEEE)

 **EU Customers** At the end of the product life cycle, all NI products must be disposed of according to local laws and regulations. For more information about how to recycle NI products in your region, visit ni.com/environment/weee.

电子信息产品污染控制管理办法（中国 RoHS）



NI 符合中国电子信息产品中限制使用某些有害物质指令 (RoHS)。关于 NI 中国 RoHS 合规性信息，请登录 ni.com/environment/rohs_china。(For information about China RoHS compliance, go to ni.com/environment/rohs_china.)

Product Certifications and Declarations

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for NI products, visit ni.com/product-certifications, search by model number, and click the appropriate link.

NI Services

Visit ni.com/support to find support resources including documentation, downloads, and troubleshooting and application development self-help such as tutorials and examples.

Visit ni.com/services to learn about NI service offerings such as calibration options, repair, and replacement.

Visit ni.com/register to register your NI product. Product registration facilitates technical support and ensures that you receive important information updates from NI.

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