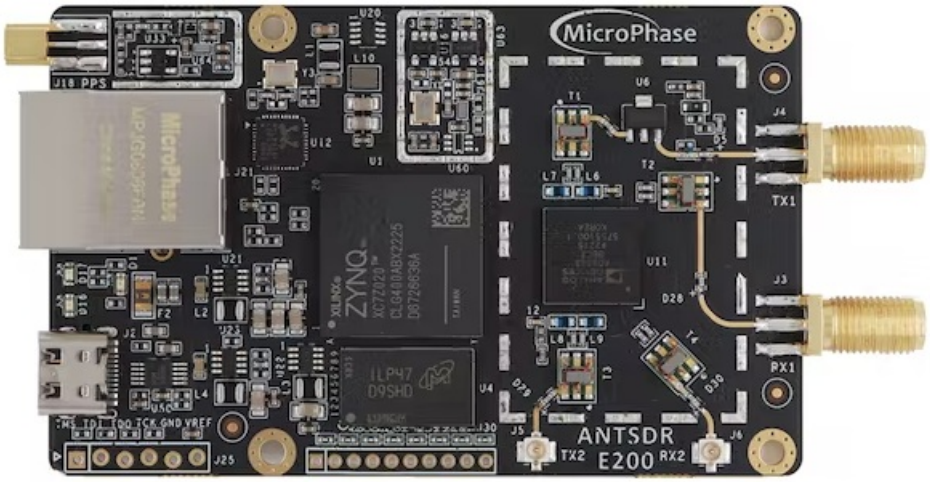
# BROY engineering BR-RC1190-Mod Multi-Channel RF Transceiver Module User Guide



Contents



## BROY engineering BR-RC1190-Mod Multi-Channel RF Transceiver Module



## Functional Description

### Overview
The BR-RC1190-Mod is a multi-channel RF transceiver module designed for GFSK operation in the 902-928MHz frequency band. It uses the Embedded RC232 protocol and features a two-wire UART interface. The module is shielded and is certified as a modular transmitter in the following countries: US (FCC), Canada (IC/ISED RSS).

### Applications
The module is suitable for a wide range of applications, including:

- Wireless sensor networks
- Meter reading
- Security systems
- Point of sales terminals
- Bar code scanners
- Telemetry stations
- Fleet management

### Radio Performance

- Band support 902-928Mhz, 50 channels
- Output power -20dBm, -10dBm, -5dBm
- Data rate 1.2kbit/s, 4.8kbit/s, 19.0kbit/s, 32.768kbit/s, 76.8kbit/s, 100kbit/s
- Duty cycle*
- Maximum 30%
- Bytes in RF packet** 1.2kbit/s max 4 bytes 4.8kbit/s max 18 bytes 19kbit/s max 71 bytes 32.768kbit/s max 122 bytes 76.8kbit/s max 288 bytes 100kbit/s max 375 bytes
- Duty cycle is a function of the number of bytes in the RF packet and the data rate
  Maximum number of bytes in RF packet to comply with 30% duty cycle limit

### Power Modes
The module can be set to sleep mode to reduce the power consumption. Sleep mode can be enabled by driving CONFIG low and sending a “Z” command. The module is woken up when CONFIG is driven high.

## Interfaces

### Power Supplies
Power is supplied through the VCC pin by applying 5V +-10%.

### Module Reset
The module can be reset by driving the RESET pin low.

### RF Antenna Interface
The BR-RC1190-Mod has been certified to be used with an external antenna (Linx p/n: ANT-916-CW-HD). The antenna connects to the module through an RF connector.

### Data Interfaces
The module features a 5V UART interface through the RXD and TXD pins. The UART interface can be used to

configure the module.

## Pin Definition

### Pinout

| Pin | Name | Description |
|---|---|---|
| 1 | VCC | Power pin, connect to 5V. |
| 2 | RXD | UART interface (5V logic). |
| 3 | TXD | UART interface (5V logic). |
| 4 | RESET | Module reset (5V logic). |
| 5 | CONFIG | Config pin (5V logic). |
| 6-10, 15-22 | NC | Pins not connected on the module. |
| 11-14, 23, 24 | GND | Connect to ground. |

## Electrical Specifications

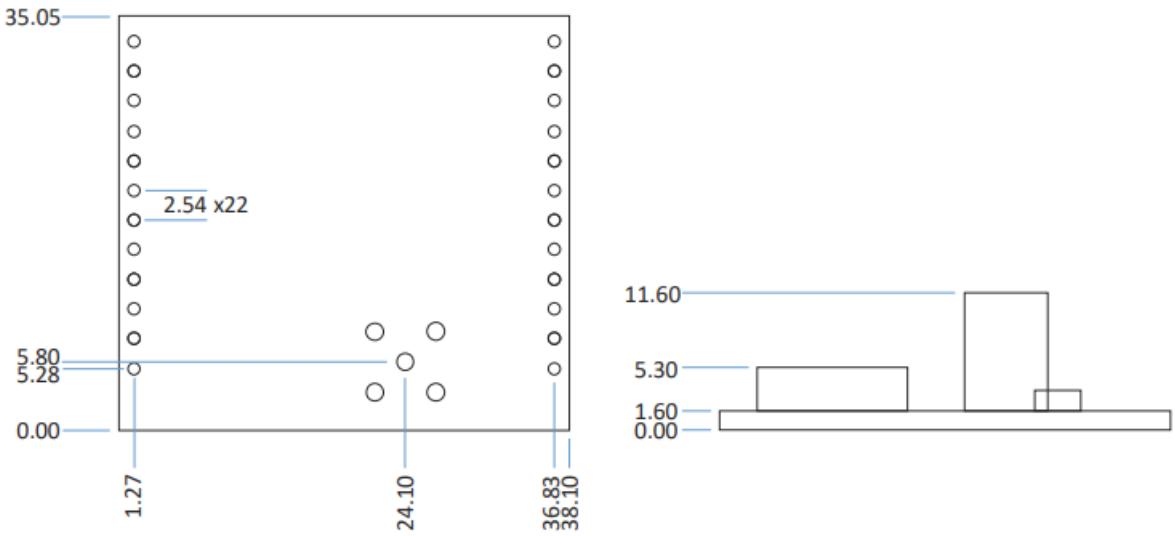
### Absolute Maximum Ratings

| Pin | Description | Min | Max | Unit |
|---|---|---|---|---|
| VCC | Module supply voltag e | -0.3 | 6.0 | V |
| RXD, TXD | UART interface | -0.5 | 6.5 | V |
| RESET, CON FIG | Reset, config control pins | -0.5 | 6.5 | V |

### Recommended Operating Conditions

| Parameter | Min | Typ | Max | Unit |
|---|---|---|---|---|
| VCC | 4.5 | 5.0 | 5.5 | V |
| VIH (RXD, TXD, RESET, CONFIG) | VCC x 0.65 | – | VCC | V |
| VIL (RXD, TXD, RESET, CONFIG) | 0 | – | VCC x 0.35 | V |

**Mechanical Specifications**
**(top view)**




## Qualifications and Approvals

### Country Approvals

The BR-RC1190-Mod is certified for use in the following countries. This device complies with Part 15 of the FCC Rules and with ISED license-exempt RSS standards.

- USA (FCC)
- Canada (ISED)

### FCC Compliance

The module is intended for OEM integrations only. The end-product will be professionally installed in a manner such that only the authorized antenna can be used.

### FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and

2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the Federal Communication Commission (FCC) rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment causes harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by doing one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**NOTE:** THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

**FCC RF Exposure Warning**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, the antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

#### ISED Compliance

**ISED Regulatory Statements**

This device complies with ISED Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
CAN ICES-3 (B)/NMB-3(B)

**RF Exposure Warning**

This equipment complies with ISED RSS-102 radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

**End-Product User Manual Instructions**

**NOTE:** THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.
**NOTE:** The BR-RC1190-Mod has been tested and approved with Linx antenna p/n: ANT-916-CW-HD. The end-product must be used with the same antenna.
**NOTE:** The end-product must not use a transmission duty cycle greater than 30%.
The BR-RC1190-Mod can be placed into several test modes to facilitate EMC testing of the end-product. For more information on the available test modes and procedures to place the device in test modes, please refer to the following documents:

- Radiocrafts TM/RC232 Configuration and Communication Tool (CCT) User Manual.
- Radiocrafts RC232 User Manual
- RC11xx-RC232 Datasheet (RC1190-RC232)

The following test modes are available:

- Test Mode 0 – List Configuration Memory
- Test Mode 1 – TX Carrier
- Test Mode 2 – TX modulated signal, PN9 sequence
- Test Mode 3 – RX mode, TX off
- Test Mode 4 – IDLE, Radio off

**End-Product Labeling Requirements**
The manufacturer of the end-product must have the following labeling in their manual:
**Contains FCC ID:** 2A8AC-BRRC1190MOD
**Contains IC:** 28892-BRRC1190MOD
**End-Product Compliance**
The modular transmitter is only FCC authorized for the specific rule parts listed on the grant. The end-product manufacturer is responsible for compliance to any other FCC rules that apply to the end-product not covered by the modular transmitter grant of certification.
This radio transmitter [enter the device's ISED certification number] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed in the Approved Antennas section, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

## Approved Antenna

| | |
|---|---|
| Manufacturer | Linx |
| Center Frequency | 916MHz |
| Wavelength | ¼-wave |
| VSWR | ≤2.0 typical at center |
| Peak Gain | -0.3dBi |
| Impedance | 50ohms |
| Size | Ø12.3mm x 65mm |
| Type | Omni-directional |
| Connector | RP-SMA |

92 Advance Rd. Toronto, ON. M8Z 2T7 Canada
**Tel:** 416 231 5535 www.broy.com

## Documents / Resources

| | |
|---|---|
| | BROY engineering BR-RC1190-Mod Multi-Channel RF Transceiver Module [pdf] User Guide<br>BRRC1190MOD, 2A8AC-BRRC1190MOD, 2A8ACBRRC1190MOD, BR-RC1190-Mod Multi-Channel RF Transceiver Module, BR-RC1190-Mod, Multi-Channel RF Transceiver Module, RF Transceiver Module, Transceiver Module, Module |