

# Custom

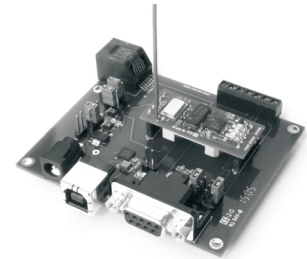


- **Base Station or Router Capability**
- **Compatible with RFM miniMESH™ Network Protocol**
- **3 V, Very Low Current Operation**
- **Ready-to-Use Assembly**

The CX2200 is a 916.5 MHz transceiver assembly designed for base station and router applications in wireless industrial sensor networks. The communications range of the CX2200 in an “open field” environment is typically 200 meters/hop. The CX2200 combines RFM’s very low-current ASH radio technology with low-power microcontroller technology to achieve long battery life. The CX2200 is compatible with RFM’s miniMESH™ network protocol, which provides add-on “plug-and-play” multicast mesh network routing. The CX2200 transceiver assembly is certified for operation under FCC 15.249 regulations.

## CX2200

## 916.50 MHz Transceiver Assembly



### Absolute Maximum Ratings

Rating	Value	Units
All Input/Output Pins	-0.3 to +4.0	V
Non-Operating Ambient Temperature Range	-50 to +100	°C

### Electrical Characteristics

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Operating Frequency	$f_o$		916.30		916.70	MHz
Modulation Type			OOK			
Encoded Data RF Transmission Rate				4.8		kb/s
Receive Mode:						
Average Input Current, 3 Vdc Supply	$I_R$			4		mA
OOK Input Signal for $10^{-3}$ BER				-98		dBm
Transmit Mode:						
Peak Input Current, 3 Vdc Supply	$I_{TP}$				13.5	mA
Peak Radiated Field Strength (FCC OP-1)	$P_O$			45,000		$\mu$ V/m
Serial Port Data Rate				19.2		kb/s
Power Supply Input Voltage Range	$V_{IN}$		3.1		14	Vdc
Operating Ambient Temperature Range	$T_A$		-40		+85	°C

# CX2200 Block Diagram

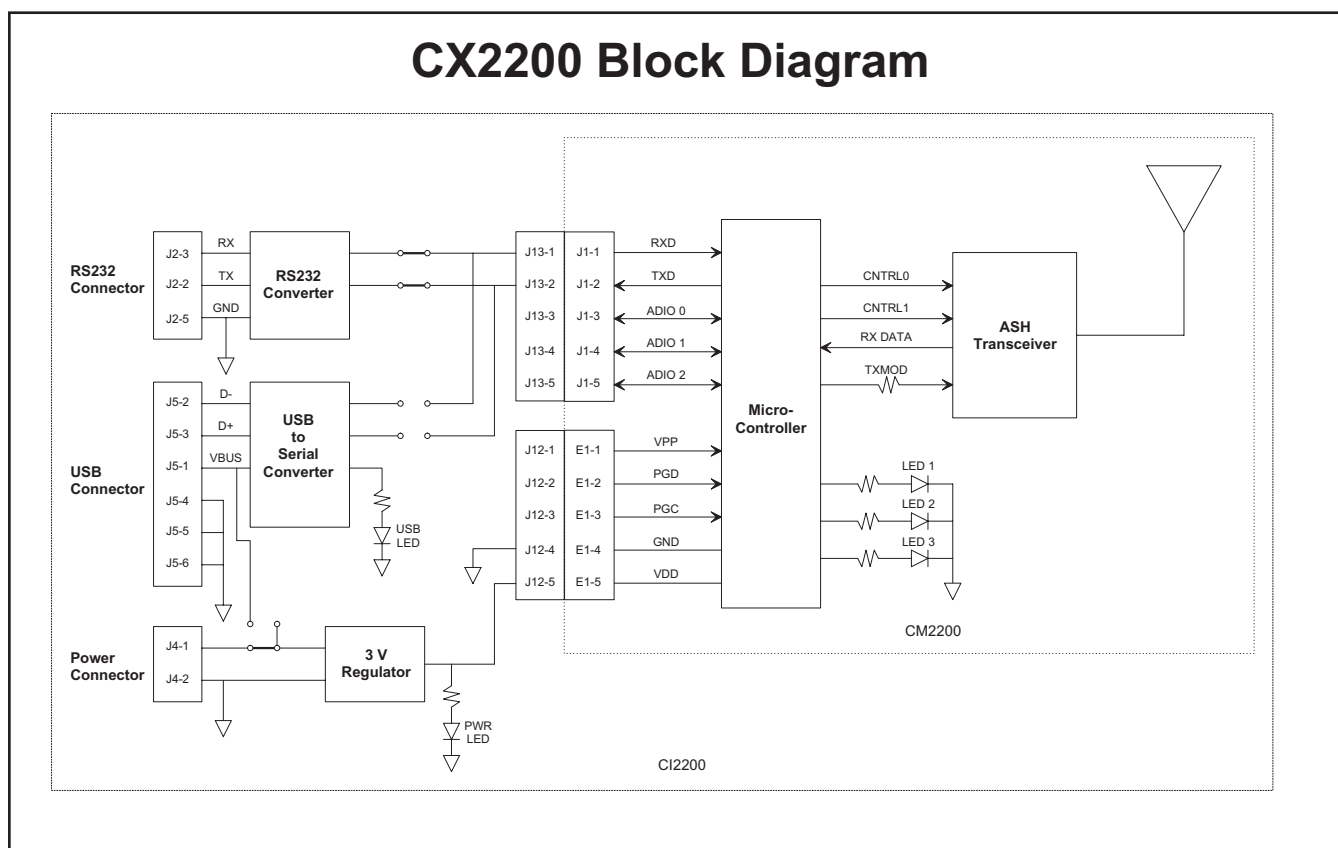


Figure 1

## Theory of Operation

The major components of the CX2200 transceiver assembly include the CM2200 transceiver module and the CI2200 interface module. The CM2200 includes a TR1000 ASH transceiver and a Microchip 16LF876A microcontroller. The TR1000 operates on a frequency of 916.5 MHz, at a nominal output power of 0.5 mW. The CM2200 includes an insulated wire antenna, which should be set straight and perpendicular to the CM2200 circuit board. The CM2200 also includes three LEDs that indicate the transceiver's operating modes.

The CI2200 provides a choice of RS232 or USB to interface to a host computer. USB drivers for various host computer operating systems can be obtained at [www.silabs.com](http://www.silabs.com) (CP2101). The CI2200 also provides regulated 3 Vdc for operating its circuitry and the CM2200 transceiver module. The positions of the set-up jumper blocks for RS232 operation are shown in Figure 2, and the positions of the set-up jumper blocks for USB operation are shown in Figure 3. RS232 operation requires external power, which is input on connector J4. The CX2200 is powered directly from the USB connector when using the USB interface. There are two LEDs on the CI2200 interface

module. LED D1 indicates that regulated 3 Vdc is present, and the LED D2 indicates an active USB connection.

The CX2200 is compatible with RFM's miniMESH™ network protocol, which provides add-on "plug-and-play" multicast mesh network routing to improve communication range and robustness.

## FCC Labels and Notices

*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.*

A clearly visible label is required on the outside of the user's (OEM) enclosure stating that this product contains a CX2200 transceiver assembly, FCC ID: TE6-CX2200.

**WARNING:** This device operates under Part 15 of the FCC rules. Any modification to this device, not expressly authorized by RF Monolithics, Inc., may void the user's authority to operate this device.

## Pin Descriptions

Pin	Name	Description
J2-2	TXD	This pin is the RS232 serial output. Data from this pin is transmitted at 19.2 kb/s, using 8 data bits, no parity, and one stop bit. This pin is inactive in the router mode.
J2-3	RXD	This pin is the RS232 serial input. Data to this pin must be sent at 19.2 kb/s, using 8 data bits, no parity, and one stop bit. This pin is inactive in the router mode.
J2-5	GND	This is the RS232 ground.
J5-1	VBUS	This pin is USB power.
J5-2	D-	This pin is USB D-.
J5-3	D+	This pin is USB D+.
J5-4	GND	This pin is USB ground.
J5-5	GND	This pin is USB ground.
J5-6	GND	This pin is USB ground.
J4-1	VIN	This pin is the power supply input. The minimum input voltage to this pin is 3.1 V, and the maximum input to this pin is 14.0 V.
J4-2	GND	This pin is power supply ground.

# CX2200 Transceiver Assembly - RS232 Set Up

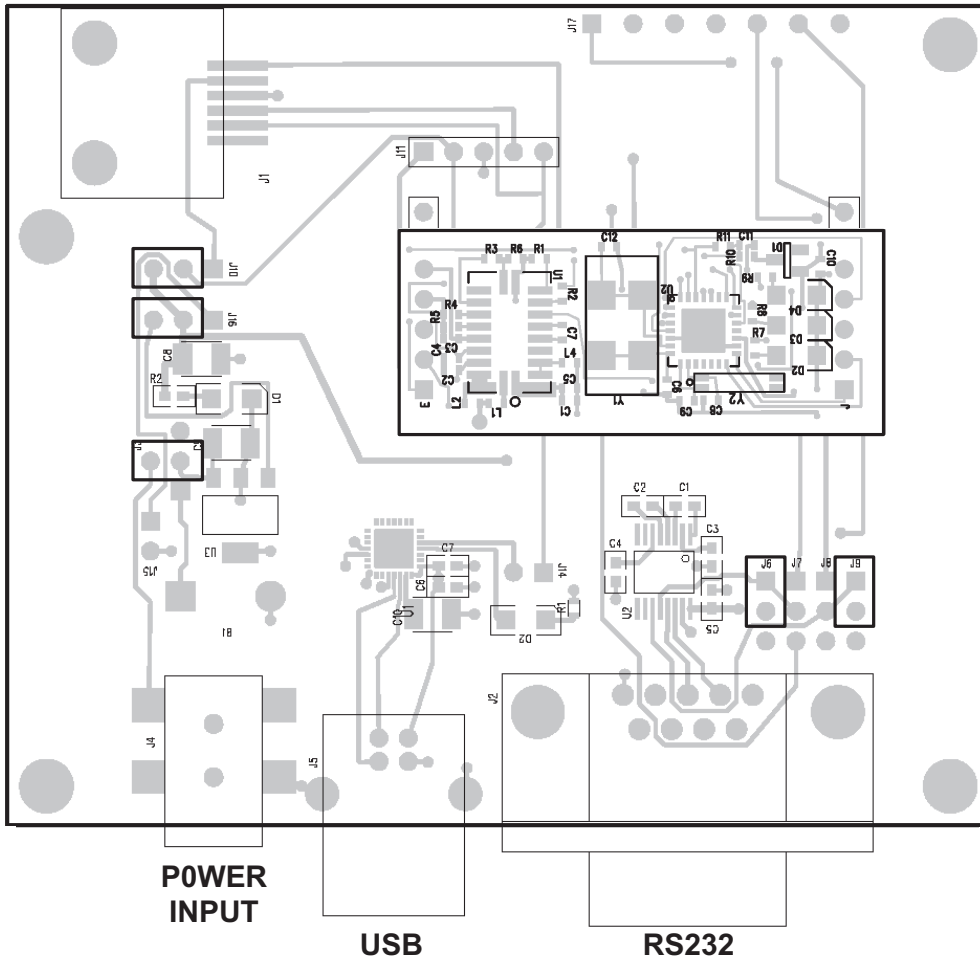


Figure 2

# CX2200 Transceiver Assembly - USB Set Up

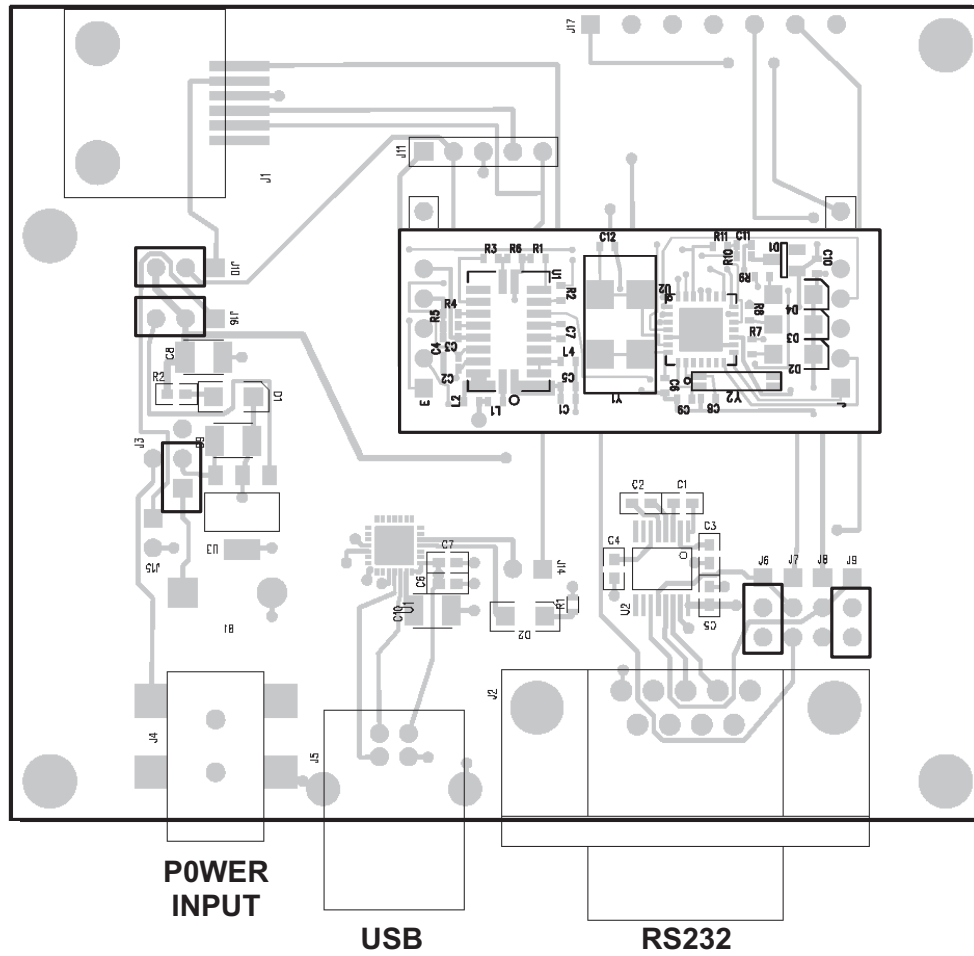


Figure 3

Note: Specifications subject to change without notice.

file: CX2200b.vp, 2005.10.18 rev