

# Wireless Sensors for Traffic Detection

## AccuSense Radio

---

### What, exactly, is AccuSense Radio?

The AccuSense Radio is a low powered radio that maintains two-way wireless links to an AccuSense installation's sensors and repeaters. The Accusense Radio establishes overall time synchronization, transmits configuration commands and message acknowledgements, and receives data from the sensors. The AccuSense Radio then relays the sensor detection data to the AccuSense Control over a CAT5 cable.

### Why do agencies use AccuSense?

As the complexities of traffic management increase, ITS strategies are valuing more and more the multi-tasking capabilities of intelligent detection sensors to not only accurately detect traffic at the stop bar to trigger a signal change, but to count, classify, track, and even provide advanced detection for traffic adaptive systems and dilemma zone safety applications. Today's multi-modal intersections and roadways require the multi-modal capabilities of leading-edge detection sensors to provide capabilities such as bicycle detection and differentiation.

### How does AccuSense benefit the driving public?

Econolite's vehicle detection solutions continue to play a critical role in helping ITS deliver on the promise of enhanced public safety, reduced congestion, shorter travel times, lowered environmental impacts, and increased cost savings for all roadway users.





### Functional Specifications

Interfaces	RS-422 full duplex to AccuSense Control via RJ45 connector
Over-the-air protocol	NanoPower protocol (TDMA)
Physical layer protocol	IEEE 802.15.4 PHY
Modulation	Direct Sequence Spread Spectrum Offset Quadrature Phase-Shift Keying (DSSS O-QPSK)
Transmit/receive bit rate	250 kbps
Frequency band	2405 to 2483.5 MHz (ISM unlicensed band)
Frequency channels	16
Channel bandwidth	2.8MHz (20 dB)
Antenna type	Ceramic patch antenna (65 dBi)
Antenna field of view	±60° (azimuth & elevation)
Nominal output power	+3 dBm
Spurious emissions	<ul style="list-style-type: none"> <li>30 - 1000 MHz: &lt; -36 dBm</li> <li>1 - 12.75 GHz: &lt; -30 dBm</li> <li>1.8 - 1.9 GHz: &lt; -44 dBm</li> <li>5.15 - 5.3 GHz: &lt; -47 dBm</li> </ul>
Typical receive sensitivity	-101 dBm (PER ≤ 1%)
Saturation (max input level)	≥ 10 dBm

### Compliance

EMC	<ul style="list-style-type: none"> <li>FCC: 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.</li> <li>2004/108/EC</li> <li>IC: This device complies with Industry Canada license-exempt RSS standard(s).</li> <li>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.</li> <li>IC : Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement</li> </ul>
Safety	2006/95/EC

### Power, Physical, & Environmental

Power consumption	Less than 150 mW
Input voltage	4.5 V up to 28 V
Dimensions	4.7" x 3.5" x 2.4" (12 cm x 9 cm x 6 cm)
Weight	14.1 oz (400 g)
Operating temp	Industrial -40°C to 85°C
Enclosure rating	NEMA 4X

