

Wireless Sensors for Traffic Detection

AccuSense Control

What, exactly, is AccuSense Control?

The AccuSense Control is a next-generation controller card that supports multiple radios and enables additional communications and processing power. AccuSense Control is compatible with all AccuSense Mag Wireless Vehicle Detection System products, receives and processes data from the sensors. The AccuSense Control then relays the sensor detection data to a roadside traffic controller or remote server traffic management system.

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	<ul style="list-style-type: none"> Communicates with traffic controller via 2x22 pin edge connector to backplane (2) RS-422 full duplex to AccuSense radio(s) via RJ45 connector (2) USB 2.0 full speed RS-485 full duplex to EX cards via RJ45 connector 10/100 Base-T network access via RJ45 connector To/from configuration device (PC) via TCP/IP over 10/100Base-T Ethernet To/from central network management / data collection facilities via TCP/IP 10 /100 Base-T Ethernet Cellular data modem
IP connectivity	<ul style="list-style-type: none"> HTTP, PPP, PPTP, SSH, optional encryption over tunnel 10/100 Base-T via RJ45 connector GSM GPRS connectivity (optional) Dual-band 850/1900 MHz GSM (N. American version) Dual-band 900/1800 MHz GSM (int'l version) up to 85.6 kbps CDMA2000 1xRTT connectivity (optional) Dual-band 800/1900 MHz CDMA (per specific cellular service provider) Up to 153.6 kbps
Per-lane data processing	<ul style="list-style-type: none"> Counts (volume) Occupancy Average and median speeds Binned speeds and vehicle lengths over selectable time intervals
Per-vehicle data processing	<ul style="list-style-type: none"> Initial vehicle detect time Gap Speed Length
Memory processor	<ul style="list-style-type: none"> 400 MHz ARM9 processor Linux 2.6 operating system 1 GB Flash 64 MB RAM
Over-the-air protocol	Sensys Networks NanoPower (SNP) proprietary SNP 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	2400 to 2483.5 MHz (ISM unlicensed band)
Frequency channels	Up to 16
Channel bandwidth	Up to 2 MHz

Antenna type	Microstrip patch antenna (behind front face panel)
Antenna field of view	±60° (azimuth & elevation)
Nominal output power	0 dBm
Spurious emissions	<ul style="list-style-type: none"> 30 - 1000 MHz: < -36 dBm 1 - 12.75 GHz: < -30 dBm 1.8 - 1.9 GHz: < -44 dBm 5.15 - 5.3 GHz: < -47 dBm
Typical receive sensitivity	-101 dBm (PER ≤ 1%)
Saturation (max input level)	≥ 10 dBm

Power, Physical, & Environmental

Input voltage	<ul style="list-style-type: none"> 22-26 VDC (24VDC nominal) 9-15 VDC (12 VDC nominal)
Power consumption	Less than 700 mW (min w/out cell modem)
Dimensions	<ul style="list-style-type: none"> Single-slot: 7" x 4.5" x 1.1" (18cm x 11.4 cm x 3 cm) Double-slot: 7" x 4.5" x 2.3" (18 cm x 11.4 cm x 6 cm) (optional) ASENSE-RADIO: 4.7" x 3.5" x 2.4" (12 cm x 9 cm x 6 cm) Isolator: 6.5" x 3" x 1.3" (17 cm x 8 cm x 3 cm)
Weight	<ul style="list-style-type: none"> Single-slot: 7.9 oz (224 g) Double-slot: 10.5 oz (298 g) (optional) AccuSense Control-AccuSense Radio: 14.1 oz (400 g) Isolator: 5.6 oz (159 g)
Operating temp	Industrial -40°C to 80°C
AccuSense Radio enclosure rating	NEMA 4X

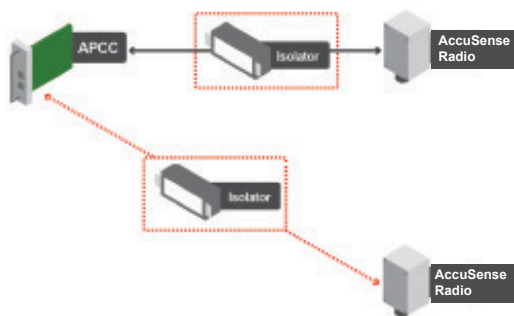
AccuSense Control Front Panel User Interface

Controls	<ul style="list-style-type: none"> MASTER RESET: reset board CHANNEL RESET: ignore events and clear pending events (all channels)
LEDs	<ul style="list-style-type: none"> CH1, CH2, CH3, CH4: on/vehicle present or no sensors detected; off/vehicle not present or channel disabled; blinking: vehicle detected LINK: on/operational; off/no link; blinking/active FAULT: on/an enabled channel has a fault
Switches	<ul style="list-style-type: none"> RX termination for AccuSense Radio ports Shelf and slot address



Isolator

An isolator isolates and routes power from the AccuSense Control to the AccuSense Radio and provides up to 2000 cable feet of communication for the AccuSense Control to and from the AccuSense Radio at RS422 capabilities.



The minimum AccuSense Control system consists of an AccuSense Control, one AccuSense Radio, and a isolator. The system can also consist of two AccuSense Radios with an isolator for each AccuSense Radio that offers electrical isolation up to 1500V, surge protection up to 1500V, and AC power cross protection.

Available Products

Products	Description	Detection Data Interfaces		
		10/100 Base T	GSM/GPRS	CDMA200 1xRTT
ASENSE-CTRL-M	AccuSense Control	▪		
ASENSE-CTRL-M-E	AccuSense Control with Enhanced Ethernet	▪		
ASENSE-CTRL-MP-E	AccuSense Control, Peripheral Support (I/O Board without modem)	▪		
ASENSE-CTRL-MP-EG	AccuSense Control Peripheral Support	▪	▪	
ASENSE-CTRL-MP-EV	AccuSense Control Peripheral Support	▪		▪
ASENSE-ISO	AccuSense Control Accessory Isolator			
ASENSE-RADIO	AccuSense Control Port Protocol (Digital Radio)			

Safety	2006/95/EC
EMC	<ul style="list-style-type: none"> 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 2004/108/EC

