Autoscope® Vision
EVO RADAR™
AccuSense®

AccuSense® Mag

Wireless Sensors for Traffic Detection

Overview

Econolite's AccuSense Mag wireless vehicle detection system uses wireless magneto-resistive sensors to detect presence and movement of vehicles. Leveraging next-generation radio frequency (RF) chipsets and circuitry, the AccuSense Mag transmits detection data in realtime. The state-of-the-art magneto-resistive sensing devices in each wireless sensor measures the x-, y-, and z-axis components of the Earth's magnetic field at a 128 Hz sampling rate. As vehicles come within range, changes in the x, y, or z axes of the measured magnetic field become apparent. When no vehicles are present, sensors continually measure the background magnetic field to estimate a reference. Each sensor automatically self-calibrates to the local environment, and to any long-term variations of the local magnetic field, by allowing this reference value to change over time.

Benefits to Transportation Agencies & the Traveling Public

AccuSense Mag sensors can be installed in less than 10 minutes flush with the roadway surface, or below the top of the roadway surface with no wires or trenching. They can also be installed virtually anywhere to provide presence detection, including bicycles, or multiple Mags can be used to measure vehicle speeds to provide vehicle classification data.AccuSense Mag sensors provide enhanced levels of vehicle detection capabilities and data necessary for state-of-the-art traffic management and ITS programs. As a result, AccuSense Mags help the latest ITS programs deliver on the promise for safer intersections and highways for all roadway users.

Types of AccuSense Mags

ASENSE-MAG2-F

- ***Flush-mount wireless sensor for in-pavement installation***
- ***For all freeway, arterial, and signal control applications***

ASENSE-MAG2-T

- ***Flush-mount wireless sensor for in-pavement installation***
- ***For signal control applications only***

ASENSE-MAG2-GR-F

- ***For up to 4.25" (10.8 cm) depth in-pavement installation***
- ***For all freeway, arterial, and signal control applications***

ASENSE-MAG2-GR-T

- ***For up to 4.25" (10.8 cm) depth in-pavement installation***
- ***For signal control applications only***

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Functional Specifications

Detection technique	3-axis magnetic field sensing
Sampling rate	128 Hz
Programmable vehicle detection parameters (mode B only)	· Z-axis detect threshold (mG) · Z-axis undetect threshold (mG) · X-axis undetect threshold (mG) · Onset filter (ms) · Holdover (ms) · Auto-recalibration timeout (secs)
Over-the-air protocol	Sensys Networks NanoPower (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	2405 to 2480 MHz (ISM unlicensed band)
Frequency channels	16
Channel bandwidth	2 MHz
Antenna type	Microstrip patch antenna (mounted below top surface of sensor)
Antenna field of view	±60° (azimuth & elevation)
Nominal output power	+3 dBm
Spurious emissions	· 30 - 1000 MHz: < -36 dBm · 1 - 12.75 GHz: < -30 dBm · 1.8 - 1.9 GHz: < -44 dBm · 5.15 - 5.3 GHz: < -47dBm
Typical receive sensitivity	-101 dBm (PER = 1%)
Saturation (max input level)	≥ 10 dBm

Power, Physical, & Environment

Power supply	· Non-replaceable primary Li-SOCl2 3.6v battery pack · 8.5 Ah (nominal capacity)
Dimensions	2.9" x 2.9" x 2.2" (7.4 cm x 7.4 cm x 5.6 cm)
Weight	· 0.47 lbs/0.213 kg (without shell) · 0.53 lbs/0.238 kg (with shell)
Environmental	· Designed for in-pavement mounting · NEMA Type 6P enclosure · IP68 ingress protection
Operating temp	-40°F to 176°F/-40°C to +85°C

Learn more about additional Sensor products

Sensor Modes

Mode	Application	Description
B (event)	Count stations; advance detection	· Sends timestamped ON and OFF detection events using configurable detection parameters · Not supported by ASENSE-MAG2-T
E (idle)	Status reporting	Disables magnetometer and sends sensor hardware and software version information
STOPBAR-# (presence detection)	Stop bar detection; ramp management	Sends timestamped ON and OFF detection events using pre-configured detection parameters
▪ 16 different stop bar detection modes can be selected ▪ Recommended stop bar detection modes for specific applications:		
	STOPBAR-0	Bicycles/scooters
	STOPBAR-2	Motorcycles
	STOPBAR-5	Passenger vehicles (normal recalibration)
	STOPBAR-7	Passenger vehicles (fast recalibration)
	STOPBAR-14	Light rail

Compliance

Safety	2006/95/EC
EMC	▪ 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. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment ▪ CE0678 ▪ 2004/108/EC

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