SENSORS Online

MAY 2003

APP SNAPS

Application snapshots that show how handy a sensor can be.

Taking the Show on the Road with Satellite Transmission

Every winter here it comes, breaking news from the local TV station: “The storm is building to blizzard conditions, and the Highway Department advises everyone to stay off the roads. Now to our weather van for a live report.” And sure enough, those intrepid reporters are tootling down the highways with a remote broadcast from inside the storm we’re supposed to stay out of.

Satellite communications technology, originally the province of the military, is part of everyone’s life now. The type of antenna system that makes this possible is determined by the specific application. For fixed Earth stations, once all the right components (dish, antenna feed, mounting hardware, amplifier, and electronics) are in hand the rest is fairly straightforward. The antenna is pointed at the appropriate satellite and locked into place. For mobile apps such as satellite news gathering, alignment is trickier. And errors on the order of fractions of a degree can cause signal degradation, loss, or failure to acquire.

One essential tool for preventing these glitches is the antenna positioner/controller, an electronic device that uses various sensors to discern, and then automatically adjust the antenna to, the proper azimuth and elevation. The result is known as the pointing solution, and is calculated using current latitudinal and longitudinal information and the longitude of the desired satellite. The antenna’s azimuth is typically measured with a flux gate compass, and the angle of elevation with an inclinometer.

One inclinometer helping bring you the news is the Spectron Systems Spectrotilt, a single-axis, electrolytic tilt sensor that measures all of 1 in. high and <2 in. in dia. A glass/ceramic hybrid, the sensor has a ±70° range, bipolar I/O, and full ESD and EMI protection (a really good idea for news vans likely to be caught in violent thunderstorms). Moreover, the viscosity of the fluid inside the sensing element can be altered to decrease susceptibility to high-vibration environments (like hitting a frost heave). Onboard linearity and temperature correction ensure four-season accuracy.

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