



Tilt Sensor provides accurate elevation angle measurement in Satellite Antenna Systems

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Satellite communication technology touches all our lives on a daily basis. Originally conceived and developed for military use, it is now used in more far reaching applications than ever imagined. From telecommunications, to oil field exploration, to field medical diagnostics, there is barely an industry which does not utilize it in some large or small way.

The systems used to broadcast and receive signals from and to satellites are both complex and impressive. Depending upon the application, the exact type of antenna system needed, can vary widely. For fixed earth station applications, the type and size of reflector (or 'dish'), antenna feed, mounting hardware, amplifier, and numerous accompanying electronic components must all be carefully selected. Upon initial system installation, the antenna is pointed at the appropriate satellite, and locked in place. However, for mobile applications such as Satellite News Gathering (Vans) and Flyaway systems, the dynamic of accurately aligning the



antenna with the appropriate satellite each and every time becomes critical. To accomplish this task reliably, companies have developed what are known as antenna positioner/controllers.

These are electronic devices, which use various sensors to measure, then automatically adjust the antenna to the proper azimuth (deviation from true north) and elevation (slope angle) positions required. This is known as the 'pointing solution', and is calculated using current latitude and longitude positional information, and the longitude of the satellite you wish to acquire.

The need to precisely position a satellite antenna is paramount. Errors in the order of fractions of a degree can cause signal degradation, loss, or failure to acquire. To accurately measure the azimuth and elevation position of the antenna, two sensors must be employed. The azimuth position of the antenna is typically measured using a flux gate (electronic) compass. The elevation angle is normally measured using an electronic inclinometer. Also known as a *Tilt Sensor*, these sensors give an electronic output

proportional to the angle of tilt, and are ideal for interfacing to an antenna positioner/controller.

Spectron Systems Technology proudly serves this market with the SPECTROTILT™ *Electronic Inclinometer*. The SPECTROTILT™ is a compact, robust, high accuracy *Tilt Sensor*, specifically designed to maximize both performance and economy.



Utilizing a proprietary, hermetically sealed sensing element design, combined with custom/integral signal conditioning electronics, the SPECTROTILT™ rivals both the performance of higher priced tilt sensors, and the cost of less capable solutions. Housed in a rugged aluminum enclosure, and featuring full ESD and EMI protection, the entire assembly is encased with an epoxy based potting compound for superior environmental protection. Under 2" in diameter, and just 1" high, it is perfect for space restrictive applications.

The SPECTROTILT™ is available in a variety of input/output configurations for maximum interface flexibility. The RS232 version also features on-board linearity and temperature correction, thereby improving accuracy even further.

Spectron Systems Technology produces a wide variety of single and dual axis electronic inclinometers, to satisfy numerous applications. Custom designs are also available. Please consult factory for details.



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