

## Miniature Telemetry Transmitter

Telemetry or "remote measurement" is a highly automated communications process by which measurements are made and other data collected at remote, inaccessible or dangerous places, and then relayed by a telemetry transmitter to receiving stations for display, monitoring, and recording. The original telemetry systems were termed "supervisory" because they were used to monitor electric power distribution. Communication channels form a major part of any telemetry system, as it involves measurement of the transmission of data over various mediums.

Telemetry transmitter is the instrument used for recording the readings of an instrument and transmitting them by radio or wireless frequencies. Technically, when relaying data, it is necessary for the transmitter to identify the data item corresponding to each segment of the bit stream. This is done by inserting a synchronization bit string into the telemetry stream on a regular basis, usually at the beginning or end of each repeating cycle. This generally corresponds to the beginning or end of a minor or major frame of telemetry data.

Aerospace telemetry initiated in the 1930s with the radiosonde, a instrument that automatically measured atmospheric temperature, pressure and humidity by means of a small, expendable telemetry transmitter from a balloon high in space, and relayed the data back to Earth using radio signals. These days, telemetry is used in testing of moving vehicles such as cars, aircrafts, missiles and satellites. National Aeronautics and Space Administration (NASA), European Space Agency (ESA) and other international space agencies use telemetry transmitters for data collection and transmission from orbiting spacecrafts and satellites.

Wireless networking without the encumbrance and restriction of wires connecting the transmitter and receiver has catapulted the potential applications of telemetry. Major applications of telemetry includes automatic monitoring of large, complex systems such as satellites, chemical plants, oilrigs, electric power plants, gathering meteorological data, remote meter reading, logistics management, tracking endangered land and marine species, real time physiological monitoring of patients, and monitoring manned and unmanned space flights.

Winston Churchill once said, "The price of greatness is responsibility." In the same manner, this great technology should be used responsibly. For instance, for many environmental monitoring duties, such as stream gauging or automatic weather stations, the measurement values are unlikely to change significantly for many hours at a time. In such cases, it would be grossly uneconomical in terms of both electrical power and use of spectrum space to run the telemetry transmitter continuously. On the other hand, constant monitoring by medical uses of telemetry is often necessary in order to detect problems as soon as they arise.

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### About the Author

Keith Londrie II is a well known author. See the site at <http://www.telemetry-info.info/> for a wealth of information. You may also want to visit keith's own web site at <http://keithlondrie.com/>