

XYR5000 Wireless Instrumentation

Tech Note: Factors Affecting Battery Life

Issued: March, 2004

BATTERY LIFE:

The Honeywell Wireless Field Instrument products solely rely on battery power to provide their source of power. They use a 'C' Size 3.6 V Lithium battery to provide the EMF to drive the internal electronics and wireless communication. This provides the advantage of not requiring DC or AC power be run to the device as is common with some "wireless" devices. With the Honeywell Wireless Instruments, there are no field wires to be run at all. This leaves the question for how long, and under what sets of operating conditions will the battery provide sufficient power to the field device to safely operate.

There are three factors affecting the battery life of the Honeywell Wireless field devices. These factors, listed in order of importance are:

- 1) The radio transmission update period
- 2) The radio transmission baud rate
- 3) The sensor sample rate

Under most circumstances, with an average radio transmission update rate of once every 10 seconds, a battery life of 5 plus+ years can be expected. To determine exactly the battery life you could expect in your application, the attached graphs can be used to provide data on the useful life of the battery.

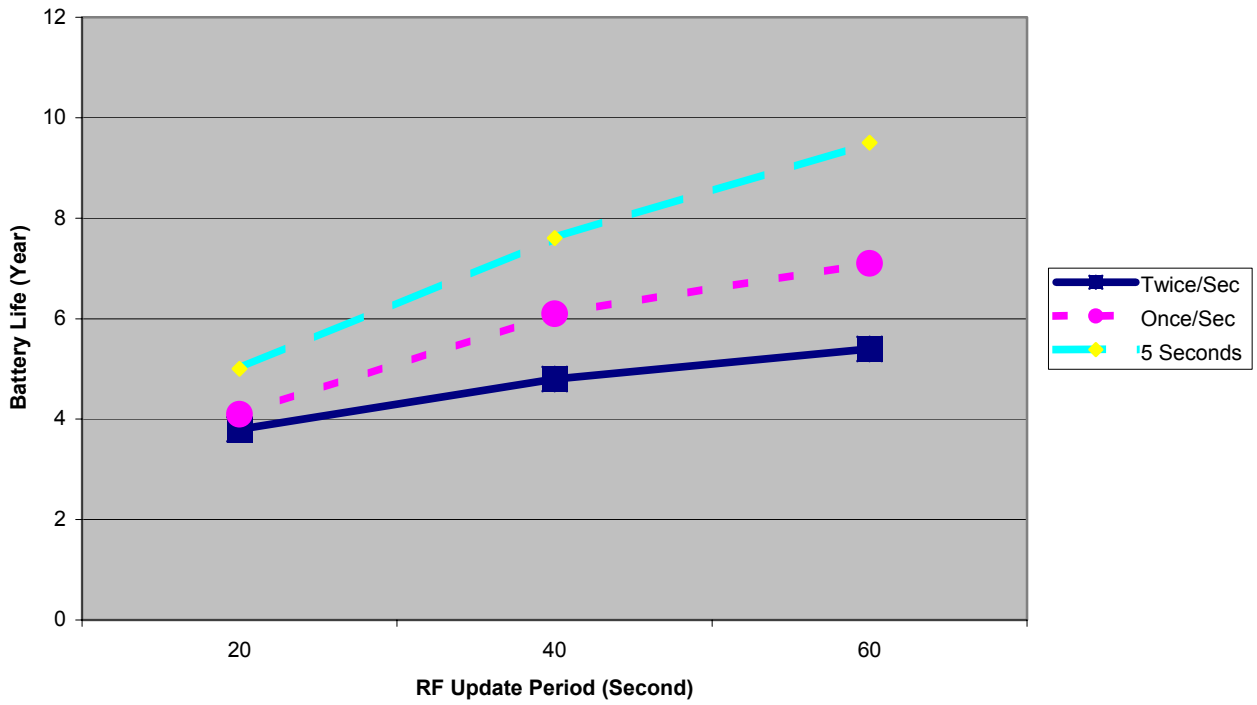
These following graphs show the expected battery life under various combinations of radio transmission rate, radio transmission baud rate and sensor sample rate. There are three graphs, one for each radio transmission baud rate. The lines on each graph reflect various selections for sensor sample rate.

The X-axis for each graph shows the radio transmission update period and the Y-axis shows the corresponding battery life. Please note that each field device gives various options for radio transmission update rate under normal and abnormal conditions. It is possible to have the field unit update more slowly during normal conditions and more rapidly under abnormal conditions.

The shelf life of the Lithium battery installed in the XYR5000 Wireless devices is approximately 5 to 8 years, so it is not likely that the battery will outlast its shelf life during operation. The battery output voltage is continuously monitored and communicated to the base-radio with each radio transmission update. This battery monitoring makes it very easy to assess the continuing health of the battery. A "Low Battery" alarm message is displayed on the transmitter device whenever the battery voltage drops below 2.7 V. The "Low Battery" status bit is also communicated to the base radio to be used by a Host system for reporting or alarming of this condition. This provides ample time to replace the battery in the field.

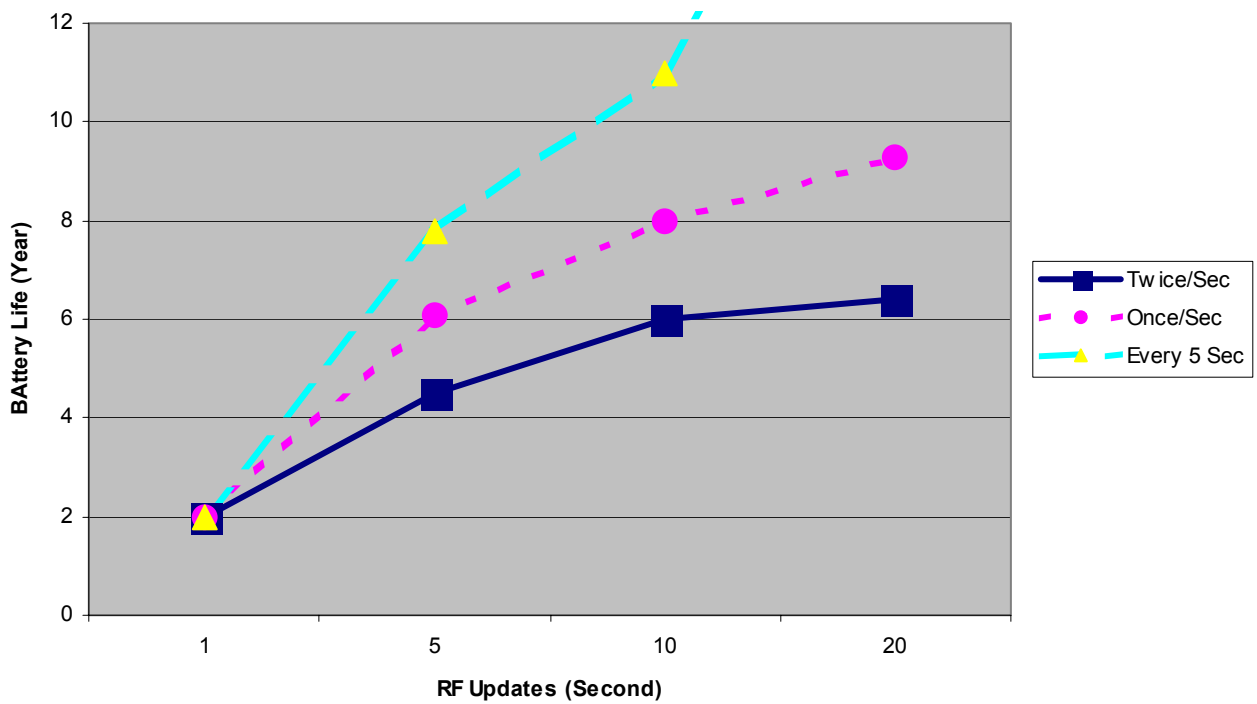
Battery Life Calculator (4.8 kBaud) - (various sensor sample rates)

Battery Life Calculator (4.8 kBaud Rate)



Battery Life Calculator (76.8 kBaud) -(various sensor sample rates)

Battery Life Calculator (76,800 FAST)



Battery Life Calculator (19.2 kBaud) -(various sensor sample rates)