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Why GPS Clocks Are not Free

Or, why they cost more than handheld position receivers

Arbiter Systems, Inc. has been the leading supplier of GPS timing products to the utility industry now for more than a decade. While most customers are convinced of the value of our products, we do from time to time get questions about price, typically phrased, "Why if I can buy a Garmin or Trimble or whatever little hand-held GPS receiver for under \$200 do your clocks cost \$1500???"

The answer is that when you buy a substation-ready GPS clock, you are buying a lot more than a GPS receiver and display. For instance:

1. Arbiter GPS clocks include substation-hardened power and I/O connections.
2. Arbiter GPS clocks come in an EIA standard rack-mount package.
3. Arbiter GPS clocks have numerous standard and optional I/O functions, such as IRIG-B outputs and relay contacts.
4. Arbiter GPS clocks include marine-style GPS antennas and reliable, outdoor-rated antenna cables. You expect to, and can, install the clock and forget it.
5. Arbiter GPS clocks have proven reliability of over 4 million hours MTBF, perhaps a lot more – limited mostly by the difficulty of calculating a reliable MTBF number based on so few failures.

And last but not least, products bought by the electric utility industry for substation use are not produced in the same quantity that consumer goods are. If we produced millions of GPS clocks per year, we could design them to bring the costs down significantly – although probably never as cheap as a hand-held, battery-operated device that has no I/O other than its user interface.