

MARS 1 Hz Timing Pulse Specification

The MARS Out-of-Band System (OBS) [WHOI] uses network steering modules that do not introduce timing jitter into the serial signals that pass through them. They only have gate and propagation delays which are constant and can be compensated for. The OBS communication channel is therefore capable of distributing precision timing over the network.

By using this channel to measure the total propagation delay from a shore GPS referenced clock to an individual node, in addition to sending the time mark periodically, local clocks at each node can keep time slaved to the GPS reference and appropriately offset, each with its particular delay value, so they are truly synoptic.

- The timecode is provided as a 5v CMOS level signal. It must be buffered by additional hardware if it needs to be sent any distance. (See below)
- The timecode repeats every 10 seconds and marks the zero second with a 20 ms pulse. The time mark is on the falling edge.
- The signal is the output of a digital phase lock loop and jitter about the exact time by $\pm 1\mu\text{sec}$.

