

Application Note

1PPS Setup and operation

#5406

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Firmware version 5.46, and greater, is designed to transfer a GPS 1PPS signal on a multipoint master radio to all multipoint slaves within a network. A 1 PPS signal on the DTR pin of the master will provide a 1 PPS pulse on the CD line of any listening slave if the following parameters are met:

Master

1. The **1 PPS Enable/Delay** parameter in the **MULTIPOINT PARAMETER** menu must be set to **0**. This enables the master to send out the 1 PPS pulse to any listening slaves.
2. The master must have a 1 PPS pulse on the DTR pin. Without it, the master will not function.

Slaves

1. In the MULTIPOINT PARAMETER menu the 1 PPS Enable/Delay must be enabled. This is used to calibrate the slave 1 PPS signal from the master 1 PPS signal and is usually factory set. If needed calibrate by triggering an oscilloscope on the 1 PPS pulse on the DTR pin of the master (1 PPS from GPS) and looking at the CD line of the slave. If the slave differs from the master then adjust the value in the 1 PPS Enable/Delay parameter. The difference in time between each incremental integer value is 542.534nS. Changing the value higher decreases the slave time delay and changing the value lower increases the slave time delay.

The CD line on a TTL level slave radio will output a pulse that goes high for about 2 mS in synch with the 1PPS pulse on the master radio. When the slave is calibrated, it will produce a one PPS pulse that is within $\pm 10\mu\text{S}$ of the master regardless of the distance and (or) number of repeaters in between.

