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REGISTRATION NUMBER :   QUESTION N° : Q2.6

The Process Bus PTP time synchronization system is basically composed by GPS, Switch and MUs, being the GPS the source of reference clock for all other devices, as shown in Figure 1.
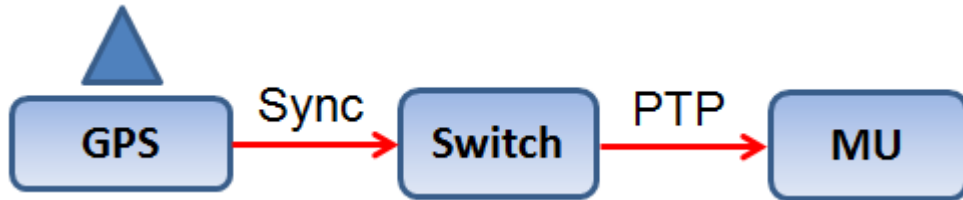

Figure 1 - Process Bus PTP Time Sync System

For commissioning and testing of time, GPS plays a fundamental role allowing the verification of synchronism of each system part. As GPS is the most accurate device in the synchronization system, only another GPS can be used as a reference to verify its accuracy. This test can be done comparing the 1PPS outputs by oscillography and analyzing the time shift. Figure 2 demonstrates this test scheme.
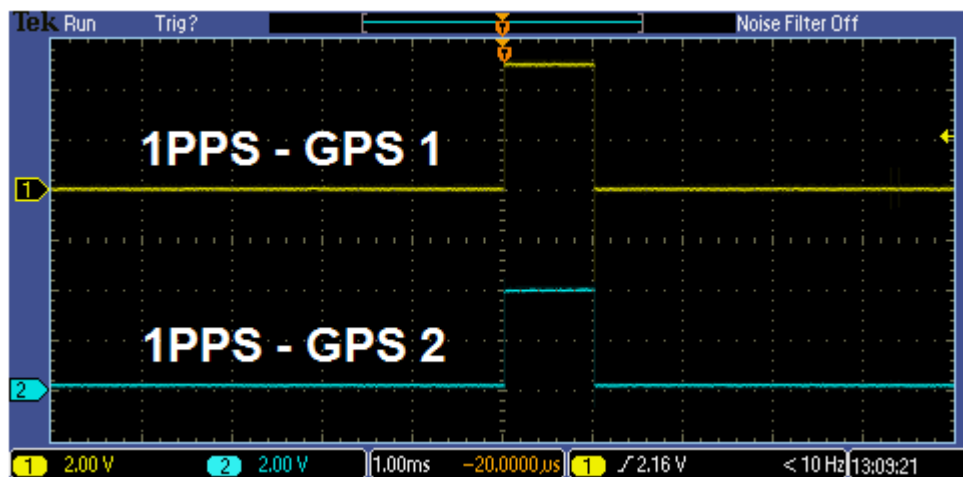

Figure 2 - GPS Synchronism Check

The Switch can be tested using the GPS as the reference clock by connecting the GPS IRIG-B output on the TTL input of the Switch and setting it to use the IRIG-B input as time source. Then, using the Switch and GPS 1PPS outputs, an oscillography can be done in order to compare the clocks. Figure 3 demonstrates this test scheme.
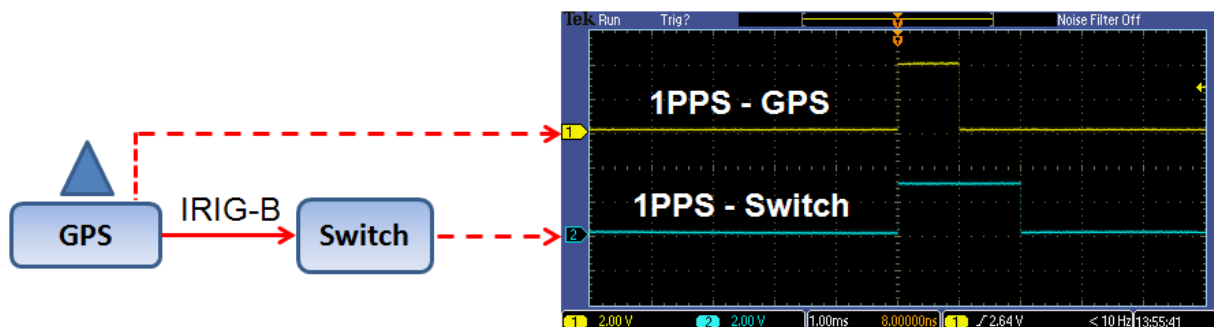

Figure 3 - Switch Synchronism Check

The MUs can be tested using a GPS to synchronize them and the test set, analog V and I signals will be injected and the Sampled Values will be received by the test set. An oscillography will be made in order to compare the phases and guarantee the MUs are synchronized analyzing if the same phase are aligned. Figure 4 demonstrates this test scheme.
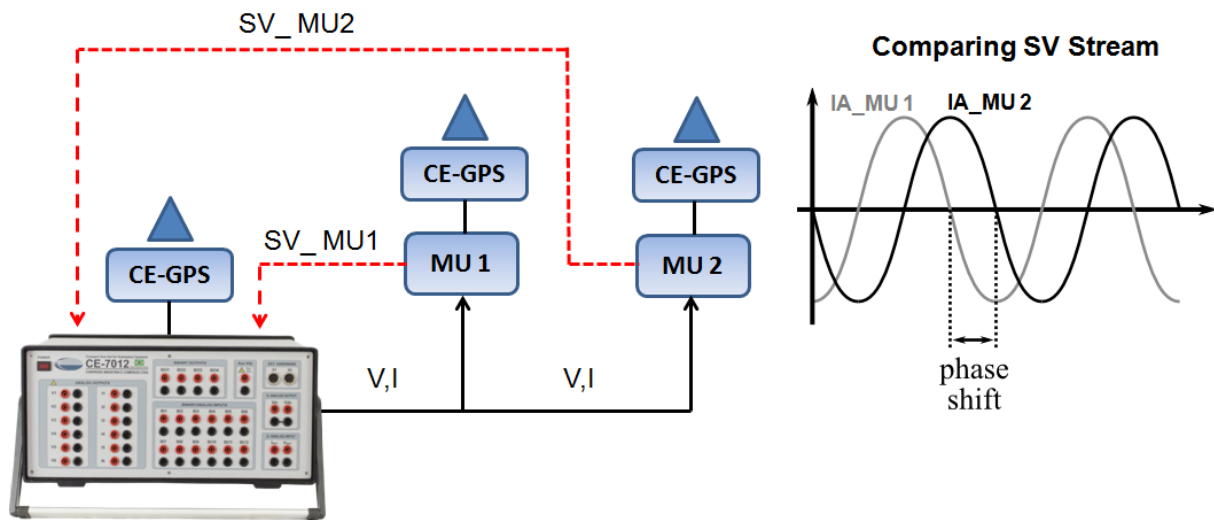

Figure 4 - MUs Synchronism Check