HIGH PERFORMANCE TIME TO DIGITAL CONVERTER

This technology is a high performance time to digital converter ASIC chip for use in applications requiring precise time-tagging of electronic signals, e.g. for electron and photon detection in medical imaging, laser ranging, life science or material research. This so-called HPTDC ASIC allows precise time-tagging of up to 32 input channels relative to an external clock reference of 40MHz. Based on an integrated clock multiplying Phase Locked Loop (PLL), a 32-channel Delay Locked Loop (DLL) with integrated RC-delay lines provides time interpolation down to 25ps.

At CERN this technology is widely used in high resolution mode in time-of-flight particle detectors in LHC experiments (ALICE TOF) and in low resolution for drift based muon detectors (CMS DT) and a multitude of other experiments at CERN (NA48) and outside CERN (STAR, BES, OKU, KABES, HADES).

FEATURES

- Time solution programmable from 25ps to 800ps.
- Between 8 and 32 channels per chip available.
- Low data volume through event triggered data processing (no continuous data sampling).

APPLICATIONS

- Signal processing in instrumentation for biology, medical imaging, laser ranging, life sciences and material research.

PLANNED DEVELOPMENTS

- Produced in 0.25μm CMOS technology. 32 input channels. Programmable time resolution between 25ps to 800ps.