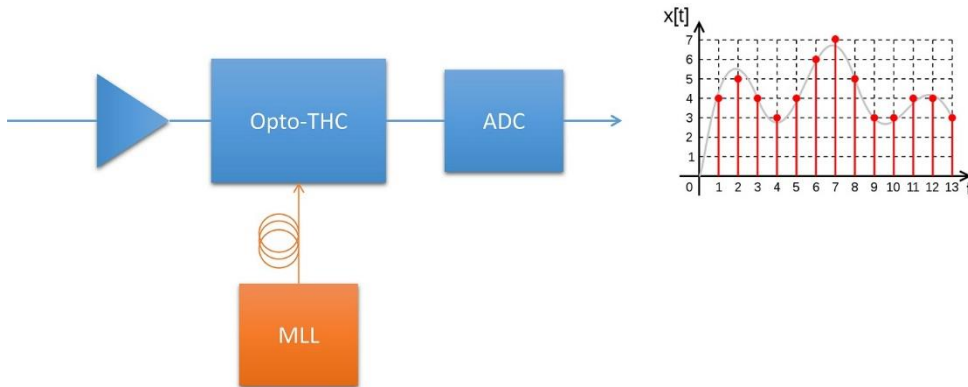


Opto-THC

Optoelectronic track-and-hold circuit

Invention

Sample-and-hold circuits or track-and-hold (TH) circuits, along with analog-to-digital converters (ADCs), are the link from the analog to the digital world. The TH is used to prepare the signal for the ADC so that the ADC can digitize the signal. Therefore the TH's electrical properties have a major impact on the accuracy of the ADC. Important parameters such as effective resolution, linearity, and bandwidth are typically limited by the TH.



One way to improve the TH's properties is through optical triggering. Mode-locked lasers provide very low pulse width, extremely low jitter periodic pulse sequences which are used in the present invention as the clock for the TH. Opto-THC uses the direct optical control of a switching element. The circuitry may be used for both differential and non-differential circuitry. Opto-THC allows reduced jitter of the sampling clock. Opto-THC allows also shorter switching time (aperture), lower aperture uncertainty due to the low jitter of the optical clock, excellent effective resolution due to the low clock jitter of the optical clock, high linearity sampling, high bandwidth and high immunity to common mode and common mode noise.

Commercial Opportunities

Opto-THC can be used in many areas of communication technology, sensor technology and control engineering. In particular, when the application places high demands on bandwidth and effective resolution, Opto-THC can exploit its advantages.

Current Status

A German patent application was filed, patent names outside of Germany are still possible. The procedure was verified simulatively and experimentally. On behalf of the Paderborn University, we offer interested companies the opportunity to license and develop the technology.

An invention of the Paderborn University.

Competitive Advantages

- Excellent jitter
- Excellent resolution
- High bandwidth
- High linearity
- High immunity to common-mode signals and noise

Technology Readiness Level

123456789

Technology validated in lab

Industries

- Electrical Engineering

Ref. No.

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