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Moku:Lab Application Note

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PDH Technique with Moku:Lab's Laser Lock Box
An FPGA-based all-in-one solution for laser frequency locking

In this application note, we cover the real-world story of how one of our customers replaced several sophisticated electronic devices with Moku:Lab and used the Pound-Drever-Hall (PDH) technique to lock an Innolight Prometheus laser to a cavity.



PDH Technique with Moku:Lab's Laser Lock Box

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PDH Technique with Moku:Lab's Laser Lock Box — An FPGA-based all-in-one Solution for Laser Frequency Locking

The Pound-Drever-Hall (PDH) technique was first introduced by R.V. Pound, Ronald Drever, and John L. Hall in 1983. It is a widely used method to match the emitting optical frequency of a laser to a Fabry-Perot cavity. PDH locking uses light reflected from the cavity to create an error signal that can be used to make small changes in either the length of the cavity or of the frequency of the laser so that they remain matched and transmission is maximized. The closer the length of the cavity is to a precise number of half wavelengths of the laser, the more of the laser's energy is transmitted. In this case study, we cover the real-world story of how one of our customers replaced several sophisticated electronic devices with Moku:Lab and used the PDH technique to lock an Innolight Prometheus laser to a cavity.

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