

fast.

Lightning fast laser locking module for super-narrow lines



FALC pro

For convenient PDH locking and phase locking

- Enables high coherence and ultra-small linewidth < 1 Hz
- Broad bandwidth noise suppression by 6 parameter PI^3D^2 regulation
- Fast feedback loop with < 10 ns delay
- User friendly remote control

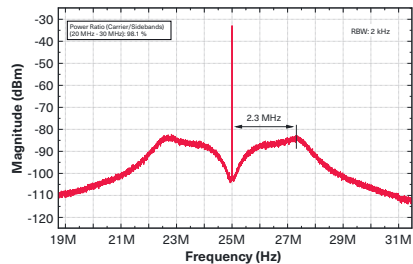
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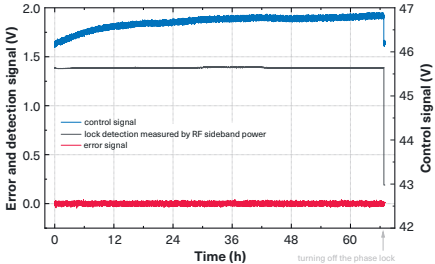
www.toptica.com/falcpro

FALC pro

| Specifications | |
|--|--|
| Fast circuit branch | |
| PID regulator | Three integrator stages, two differential stages: PI^3D^2 |
| Bandwidth | Up to 50 MHz (-3 dB) |
| Signal delay | < 10 ns |
| Flexibility | > 100,000 different transfer functions |
| Slow circuit branch | |
| Regulator | Single integrator stage, independent of fast branch |
| Configuration for side-of-fringe locks and error signals generated by demodulation | |
| Layout | Two high-speed low noise inputs, connected to a differential amplifier |
| Input noise density | < 3.0 nV/ $\sqrt{\text{Hz}}$ |
| Configuration for phase locks and Pound–Drever–Hall technique (PDH) | |
| Layout | Two RF inputs connected to an integrated low-noise mixer |
| Frequency range | 5 MHz .. 200 MHz |
| General | |
| Operation | Using the interface of the DLC pro, complete remote control |
| Size | 54.2 x 105 x 200 mm3 (H x W x D) without mounting brackets |



Power spectrum of beat signal of two DLC DL pro @780 nm phase-locked by FALC pro



Stability of phase lock with FALC pro: two DLC DL pro lasers @780 nm