Products
- Single Mode Diode Lasers
  - iBeam smart
  - iBeam smart PT
- Single Frequency Lasers
  - iBeam smart WS
  - TopMode
  - Holo-Litho 405
  - TopWave 266
  - XTRA II
  - UV / RGB solutions
- Tunable Diode Lasers
  - ECDL / DFB Lasers
    - CTL
    - DL pro
    - DFB pro
    - MDL pro
  - Frequency-Converted Lasers
    - SHG pro
    - DL-SHG pro
    - TA-SHG pro
    - TA-FHG pro
    - TOPO
- Amplified Lasers
  - TA pro
  - BoosTA pro
  - BoosTA
- Laser Driving Electronics
  - DLC pro
  - SYS DC 110: Analog Control
- Laser Locking Electronics
  - DigiLock 110: Digital Locking
  - FALC 110 & mFALC 110: Fast PID
  - PDH/DLC pro: Pound-Drever-Hall
  - PDD 110/F: Pound-Drever-Hall
  - PID 110: PID Controller
  - DLC pro Lock
- ps/fs Fiber Lasers
- FemtoFiber smart
  - FemtoFiber smart 780
  - FemtoFYb 1030-400
  - FemtoFYb 1030-800
  - PicoFYb 1030
  - PicoFYb 1064
  - FemtoFErb 1560
  - FemtoFErb 1560 FD6.5
  - FemtoFErb 1950
- FemtoFiber pro
  - FemtoFiber pro TVIS
  - FemtoFiber pro NIR
  - FemtoFiber pro TNIR
  - FemtoFiber pro SCIR
  - FemtoFiber pro UCP
  - FemtoFiber pro SCYb
  - FemtoFiber pro IR
  - FemtoFiber pro IRS-II
- FemtoFiber ultra
  - FemtoFiber ultra 780
  - FemtoFiber ultra 920
  - FemtoFiber ultra 1050
  - FemtoFiber ultra 1560
- FemtoFiber vario
  - FemtoFiber vario 1030
- FemtoFiber dichro
  - FemtoFiber dichro midIR
- FemtoFiber customized
  - FemtoFiber CARS
  - FemtoFiber FluoLife
  - FemtoFiber Terahertz Freeze
  - FemtoFiber OPO
  - FemtoFiber Terahertz Pump-Probe
  - FemtoFiber Quantum Microscopy
- Terahertz Systems
  - Frequency-Domain
    - TeraScan
    - TeraBeam
    - Tuning Range Extension
    - Phase Modulation Extension
    - GaAs and InGaAs Photomixers
  - Time-Domain
    - TeraFlash pro
    - Imaging Extension
    - TeraFlash smart
    - TeraSpeed
    - Photoconductive Switches
- **Accessories**
  - Optomechanics
  - Schottky Receivers

  - **Frequency Combs**
    - DFC CORE / DFC CORE+
    - DFC Wavelength Extensions
    - DFC BC / DFC MD
    - Complete DFC Systems
    - Locking Electronics
    - DFC SDL

  - **Multi-Laser Engines**
    - iChrome CLE
    - iChrome MLE

  - **Customized Solutions**
    - SodiumStar
    - 633 nm High Power
    - 213 nm 10 mW cw
    - 193 nm sub-mW

  - **Wavemeters & Laser Diodes**
    - Optical Isolators
      - Single-Stage TOPTICA Isolators
      - Dual-Stage TOPTICA Isolators
      - Additional Isolators
    - Wavelength Meters
    - Photonicals
      - FiberDock
      - FiberOut
      - Optical Fibers
      - FPI 100 - Fabry-Perot Interferometer
      - Compact Saturation Spectroscopy
    - Laser Diodes
      - Fabry-Perot
      - AR-coated
      - DFB/DBR
      - Tapered Amplifiers
    - ToptiCalc

- **Applications**
  - Biophotonics & Microscopy
    - High-Content Analysis
  - Industrial Manufacturing
    - Raman Spectroscopy
    - Holography
    - Computer-To-Plate
  - Fundamental Quantum Technology
    - Atom Laser Cooling & Trapping
    - Ion Laser Cooling & Trapping
    - Degenerate Quant. Gases (BEC, DFG)
- Optical Pumping & EIT
- Rydberg Excitation
- Quantum Dots & Microcavities
  - Optical Microscopy
    - Confocal Microscopy
    - Raman Microscopy
    - Multiphoton Microscopy
    - SHG Microscopy
    - THG Microscopy
    - Nearfield Chemical Imaging
  - Terahertz Sensing
    - Plastic Inspection
    - Paint and Coating Layers
    - Industrial Quality Control
    - Material Research
    - Gas Sensing
    - Hydration Monitoring
    - Ultrafast Dynamics
    - Security
  - Applied Quantum Technology
    - Sensing & Metrology
    - Communication
    - Spectroscopy
    - Direct Frequency Comb Spectroscopy
    - Microwave Generation
  - Ultrafast Studies
    - Pump-probe Spectroscopy
    - fs/ps Material Processing
    - 2-Photon Polymerization
    - Time-Resolved Microscopy
    - FLIM
    - OCT
    - Mid-IR Generation
  - Semicon / Metrology
    - Scatterometry
    - Inspection
    - Ellipsometry
    - Microlithography
    - Lithography Optics Inspection
  - Astronomy & Geology
    - Laser Guide Star
    - LIDAR Seeding
    - Distance Metrology
- Technology
  - Technical Tutorials
    - Tunable Diode Lasers
    - Tapered Amplifiers
- Frequency Conversion
- Femtosecond Fiber
- Terahertz
  - Terahertz Properties
  - Terahertz Sources
  - cw Terahertz
  - Pulsed Terahertz
- Frequency Combs
  - TOPTICA Proprietary
    - smart Series
    - pro Series / Technology
    - ultra Series
    - CERO
    - CHARM
    - COOL
    - FINE
    - SKILL
  - TOPTICA Python Laser SDK
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- Products
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- Accessories

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**Technical Tutorials**
- Tunable Diode Lasers
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- Terahertz
- Frequency Combs

**TOPTICA Proprietary**
- smart Series
- pro Series / Technology
- ultra Series
- CERO
- CHARM
- COOL
- FINE
- SKILL
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    - DigiLock 110: Digital Locking
PID 110

Versatile PID Regulator

- Ideally suited for side-of-fringe laser stabilization
- P, I, D parameters individually adjustable
- Variable total gain
- High Voltage output e.g. for driving piezos
- Automatic ReLock feature

The PID 110 is a proportional-integral-differential regulator for frequency stabilization of tunable diode lasers (DL pro, DFB pro). It accomplishes side-of-fringe locking to the slope of an atomic line or a cavity transmission peak. The module works both for HV (piezo actuators) and LV (laser current) control tasks. Users can adjust all relevant parameters, including P, I and D contributions, set point and regulator output range.

Request a quotation Download the product brochure
Specification

- Side-of-fringe stabilization
- Regulator output -5 .. +150 V, max 30 mA
- External modulation input -5 V .. +5 V
- LV small-signal bandwidth up to 1.5 MHz
- Gain * bandwidth product 3 MHz (for gains ≥ 2)
- HV small-signal bandwidth > 10 kHz (current limited to 30 mA)

Accessible Parameters

- P, I, D - contribution of the control loop individually adjustable by precision trimmers
- Adjustable regulator set point for side-of-fringe stabilization
- Lock status display with 3 LEDs (search, unlock, reset)
- Ramp/Modulation ON/OFF switch and regulation ON/OFF switch
- Inversion of the control output with switch POS/NEG
- On request a relock-mechanism can be activated (automatic search for the next stabilization mode) when stabilizing on external resonators, FPI´s etc., indicated by red relock-LED
- External modulation input or internal synchronization with scan control SC 110 possible
- Controller ON/OFF switch
- HF-tight cassette, width 12 TE (60 mm)
Input / Outputs

- SubD9 connector for actual signal in, controller output voltage
- BNC connectors for external modulation input
- BNC connector for buffered monitor signal, modulation, HV/100, controller output, error signal, signal in, set point
- BNC connector for regulator output: -5...150 V, max 30 mA

Show less specs

- **Additional Information**
  - Block diagram of PID 110
- **Applications**
  - Metrology
  - Cavity ring down spectroscopy
  - Resonant enhancement for frequency doubling
- **Downloads**
  - Product Brochure Laboratory Electronics
  - Product Brochure Scientific Lasers
- **Literature**
  - Application Note: Diode Laser Locking and Linewidth Narrowing
  - Application Note: Trapping and Quantum Computing
- **Related Products**
  - DigiLock 110: Versatile digital module for computerized locking tasks
  - FALC 110: High bandwidth multi-channel PID for linewidth narrowing
  - ECDL/DFB diode lasers, high power diode lasers and frequency converted diode lasers can conveniently be locked with PDH/DLC pro or PDD 110
  - FPI 100: Fabry-Perot interferometer and detector unit
  - Wavelength meters

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