ALock. Phase Locking Electronics Unit

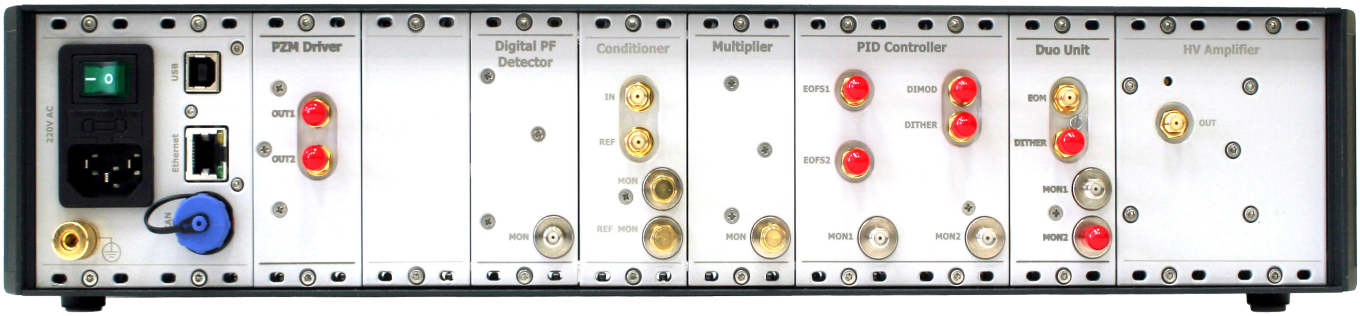
- Input frequency signal up to 2.8 GHz
- PID bandwidth up to 2 MHz
- Up to 50 W high-voltage amplifier for PZT
- PZT modulation bandwidth up to 200 kHz
- Auto-lock/relock functions
- Optical beat detector unit (optional)
- Industrial interfaces (optional)

ALock 19" electronics unit

Product overview

The ALock series is a multipurpose re-configurable PLL-based platform that is suitable for various phase locking applications in the optical and radio frequency domains (up to 2.8 GHz).

- Modular architecture ensures configuration flexibility of the phase locking system
- Implementation of all-analogue locking module provides precision tuning with exceptional ratio of tuning bandwidth vs. dynamic range
- Digital control enables automatic phase locking procedure and preset storage functions for fast and easy switching between different configurations of the system
- Two independent control signal conditioning channels ensure locking restoration after significant phase fluctuations by quickly switching to a reserve channel with a large permitted phase angle deviation
- Input modules accept a wide range of input frequencies and amplitude levels
- Broad choice of locking driver modules enables various adjustment techniques, from precise digital temperature control to fast modulation via electro-optic modulators
- The implemented high-voltage driver is compatible with high-capacitance piezo actuators having broad modulation bandwidth of up to 200 kHz



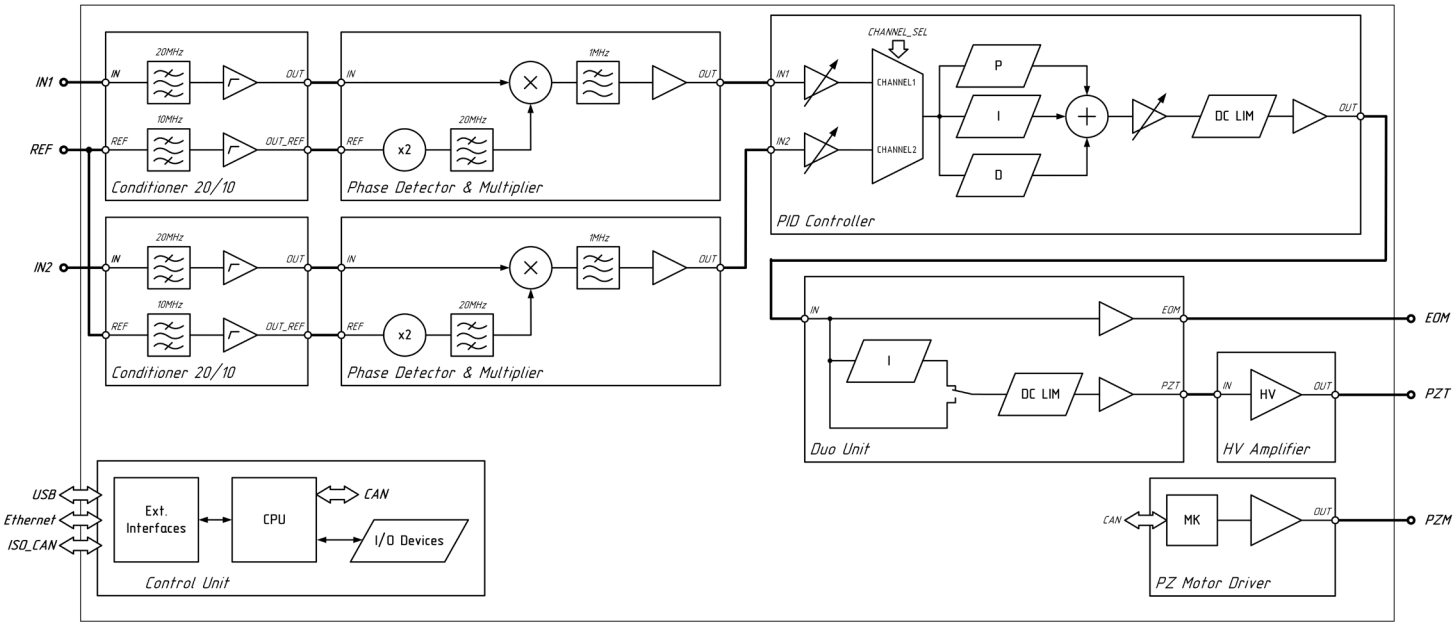
ALock in a sample configuration, front and rear panels (exact layout depends on customer-required configuration)

AVESTA
LASERS AND OPTICAL SYSTEMS

Avesta Ltd., 11 Fizicheskaya Street
Troitsk, 108840, Moscow, Russia
Tel.: +7 (495) 967-94-73
Fax: +7 (495) 646-04-95

fs@avesta.ru
www.avesta.ru

Input options	• Bandpass filter with AGC for input signal conditioning • Analogue phase detector with input range of -π/2 .. π/2, 0…600 MHz • High-frequency phase frequency detector: -8π .. 8π, 0…2.8 GHz • Digital phase frequency detector: -90π .. 90π, 0…300 MHz • Frequency multiplier
PID controller	• 2 independently configurable PID channels with up to 2 MHz feedback bandwidth • Adjustable preamplifier: 0.001-1000 • **P**-channel: amplification 1-1000 • **I**-channel: amplification 1-1000, 8 integral time constants • **D**-channel: amplification 1-1000, 4 derivative time constants • Phase lock detector
Output options	• High-voltage amplifier for PZT actuator: >150 V, 50 W, up to 200 kHz modulation BW • Buffer amplifier for operation of laser diodes and EOM • Piezoelectric motor driver for linear translation stages • Step motor driver for linear translation stages • Temperature controller for long-term layout temperature correction: 12 V, 10 A
Dimensions	19" rack, 2U height, depth 320 mm
Utility requirements and power consumption	100-240 V, 50/60 Hz, single-phase; <100 W OEM power supply on demand
Control and monitoring	Stand-alone LCD screen with a control wheel Available remote-control interfaces: USB/RS485/Ethernet/CAN (exact interface combination depends on final configuration and customer's requirements)



ALock signal flow chart

Applications:

- Stabilization of optical frequency comb generators
- Synchronization of optical sources to an RF clock
- Stabilization of laser output frequency via Pound-Drever-Hall (PDH) technique
- Carrier-envelope phase stabilization (CEP-stabilization)
- Fiber-link stabilization
- ASOPS (asynchronous optical sampling) pump-probe techniques, THz-ASOPS

AVESTA
LASERS AND OPTICAL SYSTEMS

Fizicheskaya Street 11, Troitsk, 108840, Moscow, Russia
Tel.: +7 (495) 967-94-73

fs@avesta.ru
www.avesta.ru