

Universal Locking Electronics ULC-AL

Customer configurable with 2 MHz bandwidth

IMRA America offers a user-friendly 5 channel PID lockbox, combined with a GPS disciplined, tunable RF synthesizer. Integrated phase detectors, selectable pre-scalers, and RF bandpass filters allow for plug and play solutions of even the most demanding locking applications.

Features

- 3 selectable bandpass filter frequencies (frequencies can be factory set)
- 5 selectable pre-scalers from 1 - 16
- Configurable for f_{beat} and f_{ceo} locking, f_{rep} and f_{ceo} locking, f_{rep} -only locking
- GPS reference input
- Internal RF synthesizer from 10 - 70 MHz (for f_{ceo} and f_{beat} locking) and from 0.95 - 1.1 GHz (for f_{rep} locking), disciplined to GPS
- Support for up to three cascaded PID filters (two cascaded PID filters in channel 1) for utilization of actuators with different bandwidths
- Configurable for phase locking with RF signal or error signal input
- Remote operation via ethernet
- Auto phase locking of both f_{beat} and f_{ceo} at selectable RF signal
- Autolock of either f_{beat} , f_{ceo} or both via single push-button on GUI

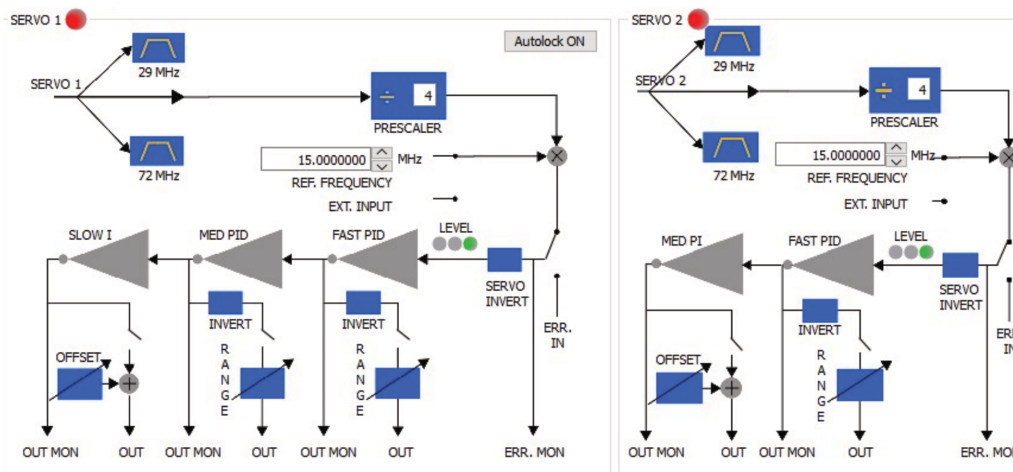
Compatible with General Metrology Applications

- Frequency comb locking
- Locking to optical and microwave references
- Pound-Drever Hall locking
- Coherent control
- Coherent dual comb operation



ULC-AL Specifications	
Capability	configurable for manual or automated phase locking of (f_{beat} and f_{ceo}) or (f_{rep} and f_{ceo})
Number of Channels	5 (2 independent)
Channel Bandwidth	Up to 2 MHz
GPS Reference Signal	Via SMA connector at 10 MHz
RF Signals in Range, Up to Two	10 MHz – 70 MHz, 0 dBm; optionally 0.95 – 1.1 GHz
Autolock Configuration Options	Use of RF reference frequency or external error signal
Autolock Reference Frequency	Selectable via ULC – internal or external RF reference
Autolock to Frequency in Range	(10 – 70 MHz) * prescaler (prescaler settings selectable at 1, 2, 4, 8, 16)
Minimum SNR Requirement for Autolock	> 30 dB
Required Input RF Signal Power for Autolock	- 5 dBm to +5 dBm
Error Signal Input for Autolock in Range	± 3 V
Size	19", 2U rack-mountable, 18" long
Power Consumption	<50 W

*Autolock requires manual pre-setting of PID parameters on ULC, if an IMRA comb is purchased along with the ULC-AL, the appropriate PID parameters will be factory set.



Graphic representation of configuration options as seen on a computer interface

Configuration options (as used for combs)

- 4 different configurations selectable via PC
- Repetition rate locking via f_{beat} with optical reference or via locking of harmonic of f_{rep} to RF reference near 1 GHz
- Choose tunable internal or external RF references
- Internal RF references optionally disciplined to GPS
- Frequency or phase lock of f_{ceo} at selectable frequency



Front panel of ULC-AL with E-comb 250R



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