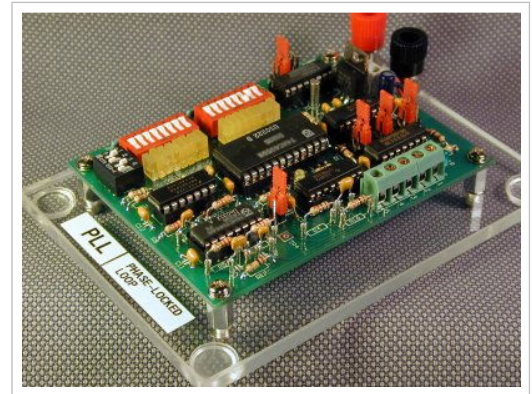


The Concept

The PLL module is designed to function as a versatile platform that can be used to teach many aspects and applications of the basic PLL circuit. The module has an on-board reference oscillator, a pre-scaler, phase comparators, a VCO, a divide-by-n counter, and a LP output filter. The complete circuit is fundamentally very similar to the ones used in all present-day frequency synthesized receivers and transmitters with digital tuners. Actual short-wave broadcast frequencies between the 120m – 11m bands can all be synthesized with the PLL circuit. With an external signal generator, PLL operation can be observed and analyzed in the entire 1 MHz - 20 MHz band.



Features

- ❖ 5.120 MHz oscillator with 5.0 KHz prescaler with provision for other frequency configurations
- ❖ External signal input for PLL experiments
- ❖ Choice of two phase comparators (X-OR and J-K flip-flop edge detector)
- ❖ Carrier detect output with capacitor filtering
- ❖ VCO with excellent frequency linearity
- ❖ VCO operation between ~20 Hz - 25 MHz
- ❖ Demodulator output for detailed analysis of the circuit behaviour
- ❖ Full control of center frequency and PLL lock, capture, and other loop response properties
- ❖ Fully configurable divide-by-n counter for frequency synthesis applications
- ❖ Excellent starting point for conducting frequency-hopping and direct-sequencing spread-spectrum experiments
- ❖ Double-sided PCB with I/O terminals
- ❖ Socketed DIP IC's for ease of maintenance and repairs
- ❖ Reverse-polarity protection on power connections

Challenge Module

The PLL circuit is also available as a "**Challenge Module**" where critical passive components are not soldered to the board but mounted on single-pin sockets. Instructors can specify new performance parameters for the circuit and lead the students to follow the design procedure to calculate new values for these components. The high-quality machined contact sockets are soldered on the PCB to facilitate insertion and removal of components while assuring long service life with good electrical contacts.

Challenge Labs offer the following advantages:

1. Reusable hardware investment with high educational value
2. Full engagement by the students
3. Assuring that individuals or teams do their own work with the specific parameters supplied
4. Accommodation for different circuit configurations and student projects.

Ordering Information

PLL Assembled & Tested Lab Module PLL-LM-010
 PLL Asm. & Tested Lab Challenge Module PLL-CM-010

Notes

The 16 digital inputs required by the PLL lab module when it is used as a Frequency Synthesizer are provided by the on-board DIP switches. In this mode, a frequency counter capable of measuring up to 30 MHz signals would be a good accompaniment.