should now oscillate at about 0.2 Hz (the accuracy is determined by the crystals of the generator and the lock-in).

4. Press [Channel 1 Display] to select R.

The default Channel 1 display is X. Change the display to show R. R is phase independent so it shows a steady value (close to 0.500 V).

5. Press [Channel 2 Display] to select θ.

The default Channel 2 display is Y. Change the display to show θ. The phase between the reference and the signal changes by 360° approximately every 5 sec (0.2 Hz difference frequency).

The bar graph in this case is scaled to ±180°. The bar graph should be a linear phase ramp at 0.2 Hz.

6. Press [Freq]

Show the internal oscillator frequency.

Use the knob to adjust the frequency slowly to try to stop the rotation of the phase.

As the internal reference frequency gets closer to the signal frequency, the phase rotation gets slower and slower. If the frequencies are EXACTLY equal, then the phase is constant.

7. Use a BNC cable to connect the TTL SYNC output from the generator to the Reference Input of the lock-in.

By using the signal generator as the external reference, the lock-in will phase lock its internal oscillator to the signal frequency and the phase will be a constant.

Press [Source] to turn the INTERNAL led off.

Select external reference mode. The lock-in will phase lock to the signal at the Reference Input.

Press [Trig] to select POS EDGE.

With a TTL reference signal, the slope needs to be set to either rising or falling edge.

The phase is now constant. The actual phase depends upon the phase difference between the function output and the sync output from the generator.

The external reference frequency (as measured by the lock-in) is displayed on the Reference display. The UNLOCK indicator should be OFF (successfully locked to the external reference).

The displays may be stored in the internal data buffers at a programmable sampling rate. This allows storage of 16000 points of both displays.