

## THE BASIC LOCK-IN

This measurement is designed to use the internal oscillator to explore some of the basic lock-in functions. You will need BNC cables.

Specifically, you will measure the amplitude of the Sine Out at various frequencies, sensitivities, time constants and phase shifts.

1. Disconnect all cables from the lock-in. Turn the power on while holding down the [Setup] key. Wait until the power-on tests are completed.
2. Connect the Sine Out on the front panel to the A input using a BNC cable.
3. Press [Auto Phase]
4. Press [Phase]
5. Press the [+90°] key.

When the power is turned on with the [Setup] key pressed, the lock-in returns to its standard default settings. See the Standard Settings list in the Operation section for a complete listing of the settings.

The Channel 1 display shows X and Channel 2 shows Y.

The lock-in defaults to the internal oscillator reference set at 1.000 kHz. The reference mode is indicated by the INTERNAL led. In this mode, the lock-in generates a synchronous sine output at the internal reference frequency.

The input impedance of the lock-in is 10 M $\Omega$ . The Sine Out has an output impedance of 50 $\Omega$ . Since the Sine Output amplitude is specified into a high impedance load, the output impedance does not affect the amplitude.

The sine amplitude is 1.000 V<sub>rms</sub> and the sensitivity is 1 V(rms). Since the phase shift of the sine output is very close to zero, Channel 1 (X) should read close to 1.000 V and Channel 2 (Y) should read close to 0.000 V.

Automatically adjust the reference phase shift to eliminate any residual phase error. This should set the value of Y to zero.

Display the reference phase shift in the Reference display. The phase shift should be close to zero.

This adds 90° to the reference phase shift. The value of X drops to zero and Y becomes minus the magnitude (-1.000 V).