

If the harmonic number is set to N, then the internal reference frequency is limited to 102 kHz/N.

If an external reference is used and the reference frequency exceeds 102 kHz/N, then N is reset to 1. The SR830 will always track the external reference.

Pressing this key displays the harmonic number in the Reference display. The harmonic number may be adjusted using the knob. Harmonics up to 19999 times the reference can be detected as long as the harmonic frequency does not exceed 102 kHz. An attempt to increase the harmonic frequency above 102 kHz will display the message 'hAr ovEr' indicating harmonic number over range.

[Source]

This key selects the reference mode. The normal mode is External reference (no indicator). The Internal mode is indicated by the INTERNAL led.

When the reference source is External, the SR830 will phase lock to the external reference provided at the Reference Input BNC. The SR830 will lock to frequencies between 0.001 Hz and 102.0 kHz. Use the [Freq] key to display the external frequency.

When the reference source is Internal, the SR830's synthesized internal reference is used as the reference. The Reference Input BNC is ignored in this case. In this mode, the Sine Out or TTL Sync Out provides the excitation for the measurement. Use the [Freq] key to display and adjust the frequency.

[Trig]

This key selects the external reference input trigger mode.

When either POS EDGE or NEG EDGE is selected, the SR830 locks to the selected edge of a TTL square wave or pulse train. For reliable operation, the TTL signal should exceed 3.5 V when high and be less than 0.5 V when low. The input is directed past the analog discriminator and is DC coupled into a TTL input gate. This input mode should be used whenever possible since it is less noise prone than the sine wave discriminator.

For very low frequencies (<1 Hz), a TTL reference MUST be used.

SINE input mode locks the SR830 to the rising zero crossings of an analog signal at the Reference Input BNC. This signal should be a clean sine wave at least 200 mVpk in amplitude. In this input mode, the Reference Input is AC coupled (above 1 Hz) with an input impedance of 1 MΩ.

Sine reference mode can not be used at frequencies far below 1 Hz. At very low frequencies, the TTL input modes must be used.

UNLOCK

The UNLOCK indicator turns on if the SR830 can not lock to the external reference.