

INPUT OVLD

The OVLD led in this section indicates an INPUT overload. This occurs for voltage inputs greater than 1.4Vpk (unless removed by AC coupling) or current inputs greater than 10 μ A DC or 1.4 μ A AC (1M Ω gain) or 100 nA DC or 14 nA AC (100M Ω gain). Reduce the input signal level.

[Couple]

This key selects the input coupling. The signal input can be either AC or DC coupled. The current input is coupled after the current to voltage conversion. The current input itself is always DC coupled (1 k Ω to virtual ground).

The AC coupling high pass filter passes signals above 160 mHz and attenuates signals at lower frequencies. AC coupling should be used at frequencies above 160 mHz whenever possible. At lower frequencies, DC coupling is required. AC coupling results in gain and phase errors at low frequencies.

Remember, the Reference Input is AC coupled when a sine reference is used. This also results in phase errors at low frequencies.

[Ground]

This key chooses the shield grounding configuration. The shields of the input connectors (A and B) are not connected directly to the lock-in chassis ground. In Float mode, the shields are connected by 10 k Ω to the chassis ground. In Ground mode, the shields are connected by 10 Ω to ground. Typically, the shields should be grounded if the signal source is floating and floating if the signal source is grounded. **Do not exceed 1 V on the shields.**

[Notch]

This key selects no line notch filters, the line frequency or twice line frequency notch, or both filters. The line notch filters are pre-tuned to the line frequency (50 or 60 Hz) and twice the line frequency (100 or 120 Hz).

These filters have an attenuation depth of at least 30 dB. These filters have a finite range of attenuation, generally 10 Hz or so. If the reference frequency is 70 Hz, do not use the 60 Hz notch filter! The signal will be attenuated and the phase shifted. See the SR830 Basics section for a discussion of when these filters improve a measurement.