

key. The Ratio indicator in the display is on to indicate a ratio measurement. Pressing this key until the AUX IN leds and the Ratio indicator are off returns the measurement to non-ratio mode.

## [Output]

This key selects the CH1 OUTPUT source. The Channel 1 Output can provide an analog output proportional to the Display or X. The output proportional to X has a bandwidth of 100 kHz (the output is updated at 256 kHz). This output is the traditional X output of a lock-in. Output proportional to the display (even if the display is simply X) has a bandwidth of 200 Hz (updated at 512 Hz).

Remember, The X output has 100 kHz of bandwidth. The Display output should only be used if the time constant is sufficiently long such that there are no high frequency outputs.

## CH1 Offset and Expand

The X and R outputs may be offset and expanded separately. **Choose either X or R with the [Display] key to adjust the X or R offset and expand.**

X and R analog outputs are determined by

$$\text{Output} = (\text{signal/sensitivity} - \text{offset}) \times \text{Expand} \times 10 \text{ V}$$

The output is normally 10 V for a full scale signal. The offset subtracts a percentage of full scale from the output. Expand multiplies the remainder by a factor from 1, 10 or 100.

Output offsets ARE reflected in displays which depend upon X or R.

X and Y offsets do NOT affect the calculation of R and  $\theta$ .

Output expands do NOT increase the displayed values of X or R. Expand increases the display resolution.

If the display is showing a quantity which is affected by an offset or a non-unity expand, then the Offset and Expand indicators are turned on below the display.

See the SR830 Basics section for a complete discussion of scaling, offsets and expands.

## [Offset On/Off]

Pressing this key turns the X or R offset (as selected by the [Display] key) on or off. The Offset indicator below the display turns on when the displayed quantity is offset. This key allows the offset to be turned on and off without adjusting the actual offset percentage.

## [Modify]

This key displays the X or R offset percentage (as selected by the [Display] key) in the Reference Display. Use the knob to adjust the offset. The Channel 1 display reflects the offset as it is adjusted while the Reference display shows the actual offset percentage. The offset ranges from -105.00% to 105.00% of full scale. **The offset percentage does not change with sensitivity - it is an output function.** To return the Reference Display to its original display, press the desired reference