PROMEDIADORES:

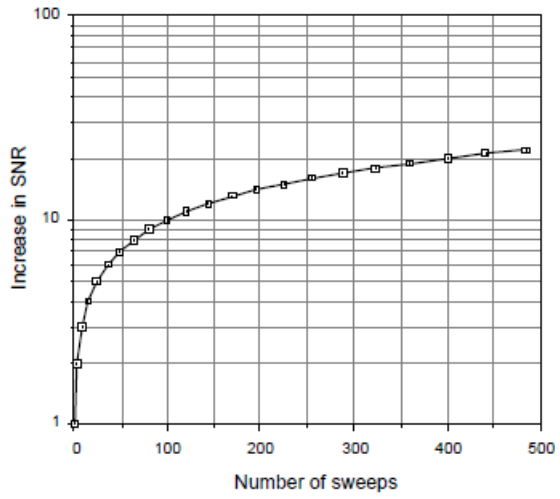
$$f(t) = S(t) + N(t)$$

$$f(iT) = S(iT) + N(iT)$$

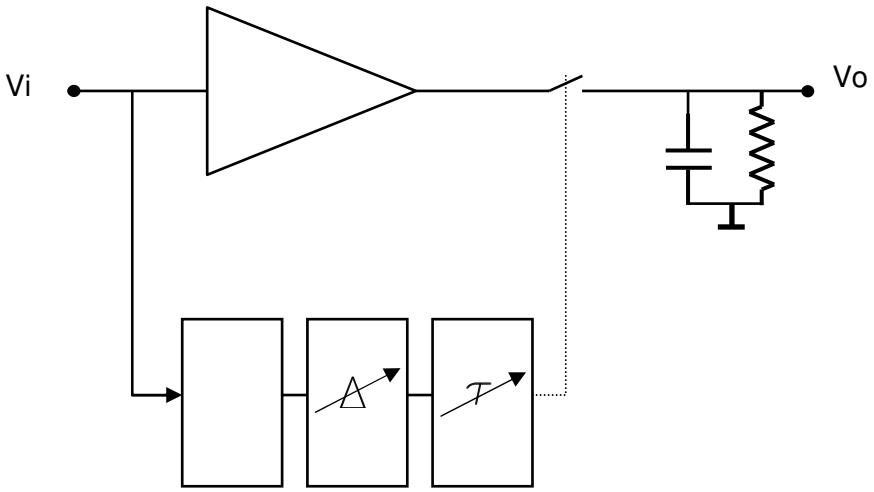
$$\sum_{k=1}^{m} f(iT) = \sum_{k=1}^{m} S(iT) + \sum_{k=1}^{m} N(iT) \qquad \text{for} \quad i = 1, 2, \ldots, n$$

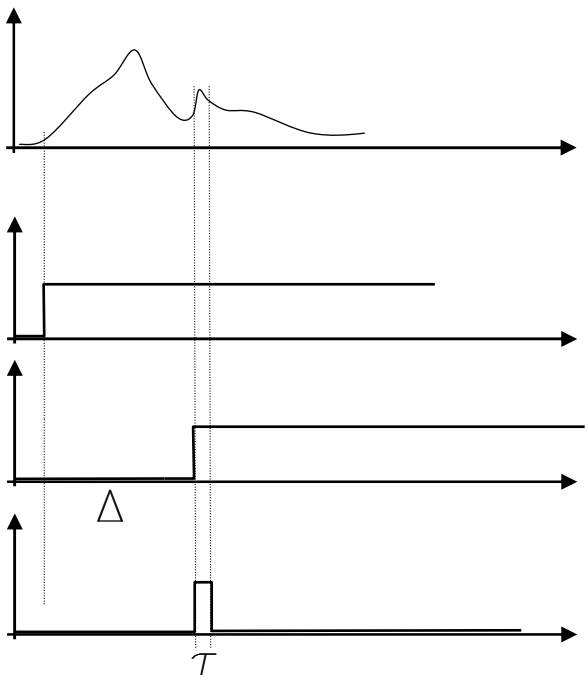
$$\sum_{k=1}^{m} S(iT) = mS(iT) \qquad \sum_{k=1}^{m} N(iT) = \sqrt{m\sigma_n^2} = \sqrt{m}\ \sigma_n$$

$$\mathrm{SNR}_m = \frac{mS(iT)}{\sqrt{m}\ \sigma_n} = \sqrt{m}\ \ \mathrm{SNR}$$

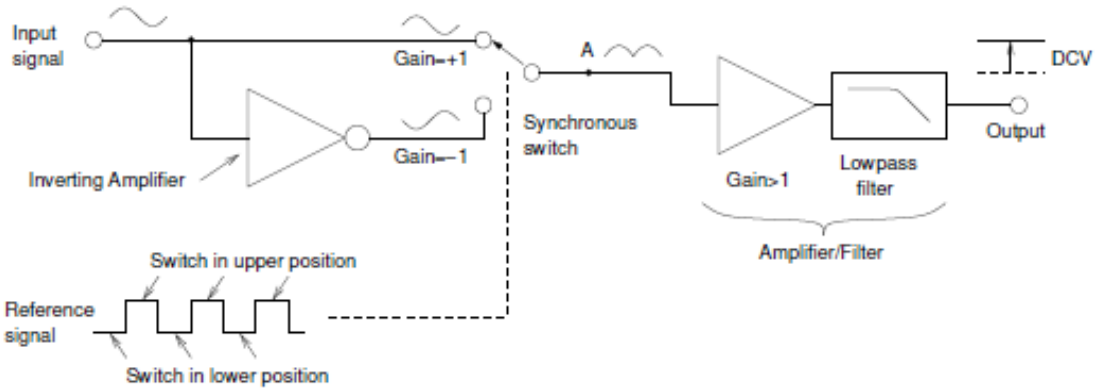


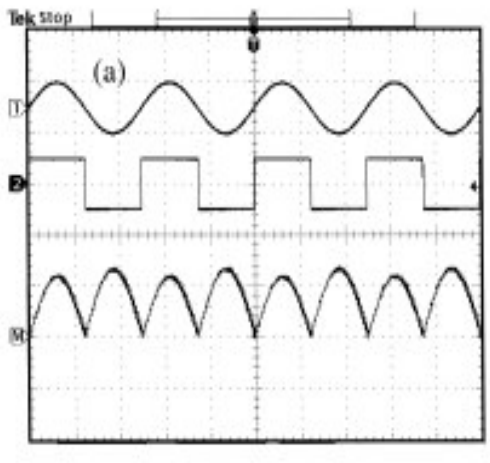
BOXCAR INTEGRATOR

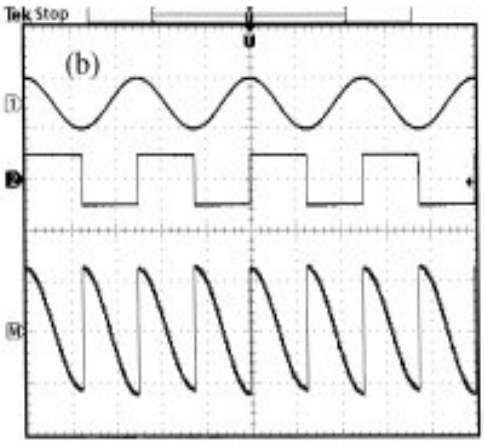




DETECCIÓN EN FASE





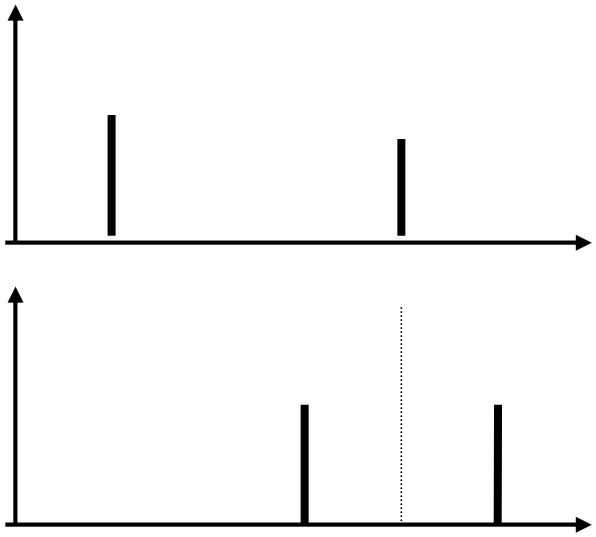


MODULACIÓN

$$s(t) = x(t).c(t)$$

$$x(t) = V_x \cos \omega_x t$$
$$c(t) = V_c \cos \omega_c t$$

$$s(t) = \frac{V_x.V_c}{2}[\cos(\omega_c + \omega_x)t + \cos(\omega_c - \omega_x)t] \text{ (portadora suprimida)}$$



Si:

$$x = X_0 + x(t) = V_0 + V_x \cos \omega_x t$$

$$s(t) = V_0 V_c \cos \omega_c t + \frac{V_x.V_c}{2}[\cos(\omega_c + \omega_x)t + \cos(\omega_c - \omega_x)t]$$

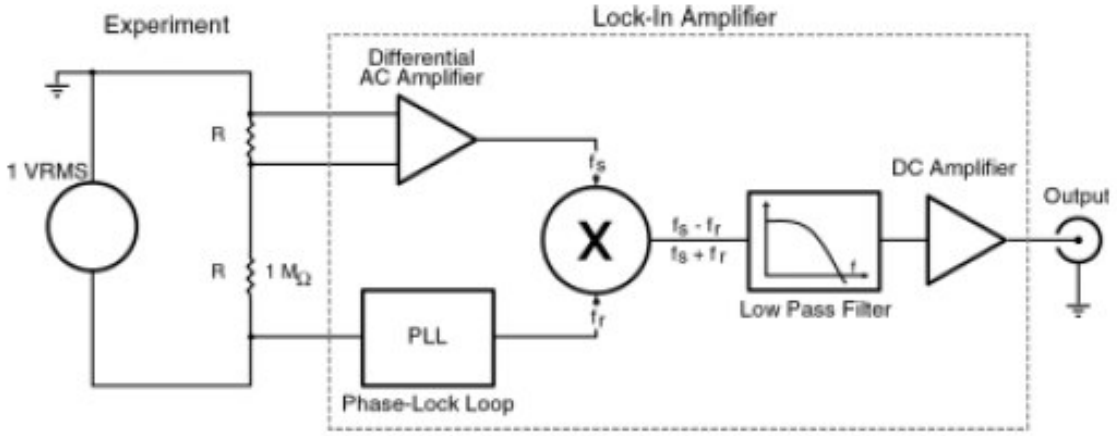
DEMODULACIÓN SINCRÓNICA

$$r(t) = V_r \cos[\omega_r t + \phi] \quad \omega_r = \omega_c$$

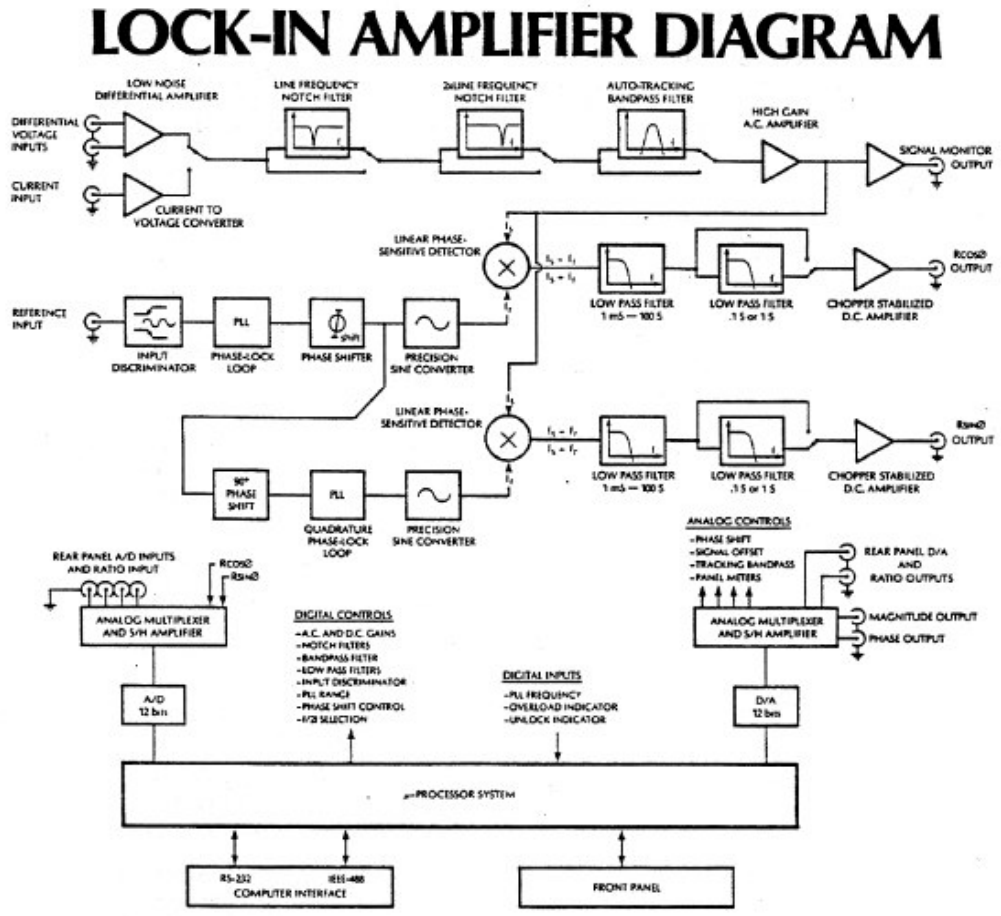
$$p(t) = x(t) \cdot c(t) \cdot r(t)$$

$$p(t) = x(t)\frac{V_r V_c}{2}\{\cos[(\omega_c + \omega_r)t + \phi] + \cos[(\omega_c - \omega_r)t - \phi]\} =$$
$$= V_x V_c V_r \{\cos[2(\omega_c + \omega_x)t + \phi] + \cos[2(\omega_c - \omega_x)t - \phi] + \cos \omega_x t \cdot \cos \phi\}$$

LOCK IN AMPLIFIER



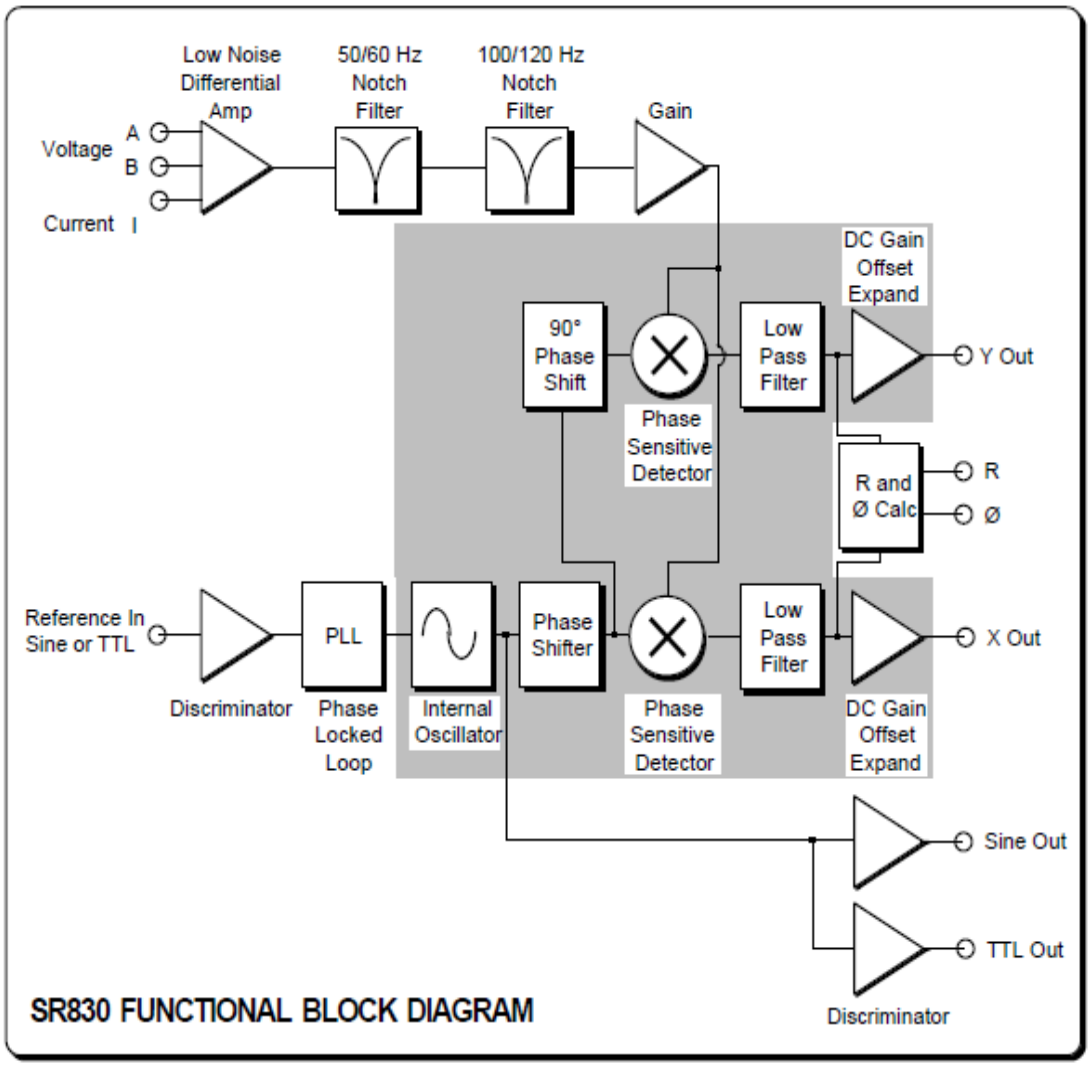
ANALÓGICO



DIGITAL

THE FUNCTIONAL SR830

The functional block diagram of the SR830 DSP Lock-In Amplifier is shown below. The functions in the gray area are handled by the digital signal processor (DSP). We'll discuss the DSP aspects of the SR830 as they come up in each functional block description.



SR830 FUNCTIONAL BLOCK DIAGRAM