



Card Code	Part No 37----	Input Current	In ∅ Output	
			Min.	Max.
HX--	1049	Min.	4.82	
		Nom.	7.5	
		Max.	10.38	

### Current Mode, -N Line Indicator

The HX-- card consists of three indicator circuits. Each circuit requires a -N line input to turn on the indicator lamp connected to the out-of-phase output. Each circuit also provides an in-phase N line output capable of driving two N type logic blocks. The signal levels associated with the indicator output are special purpose levels of -2v to -9v.

#### Circuit Description

In the state shown, rx1 is reverse-biased and input current to the indicator is zero. Divider current through the 820 ohm, 2.4K coupling network establishes output C at a +N level of +1.6v. Current flow out of this network through the 30K resistor to +6v sets the base level of T3

at +0.9v and T3 is reverse-biased. The 5ma current flow from -12v through the lamp and the 1.8K resistor to ground is not enough to light the lamp. This current flow sets output A at a -9v level.

When the input to rx1 rises, rx1 is forward-biased and 7.5ma flows from -12v, through rx1 into the indicator where it divides into two components of current. One component flows into the coupling network which establishes output C at a -N level of -1.2v; the other flows through the 620 ohm and 30K resistor to +6v which drives the base of T3 below ground. T3 is forward-biased and the 13.5ma which flows from -12v through the lamp, 150 ohm resistor, and T3 to ground is enough to light the lamp. The voltage drop across the 150 ohm resistor and T3 is 2v so output A is at a -2v level.