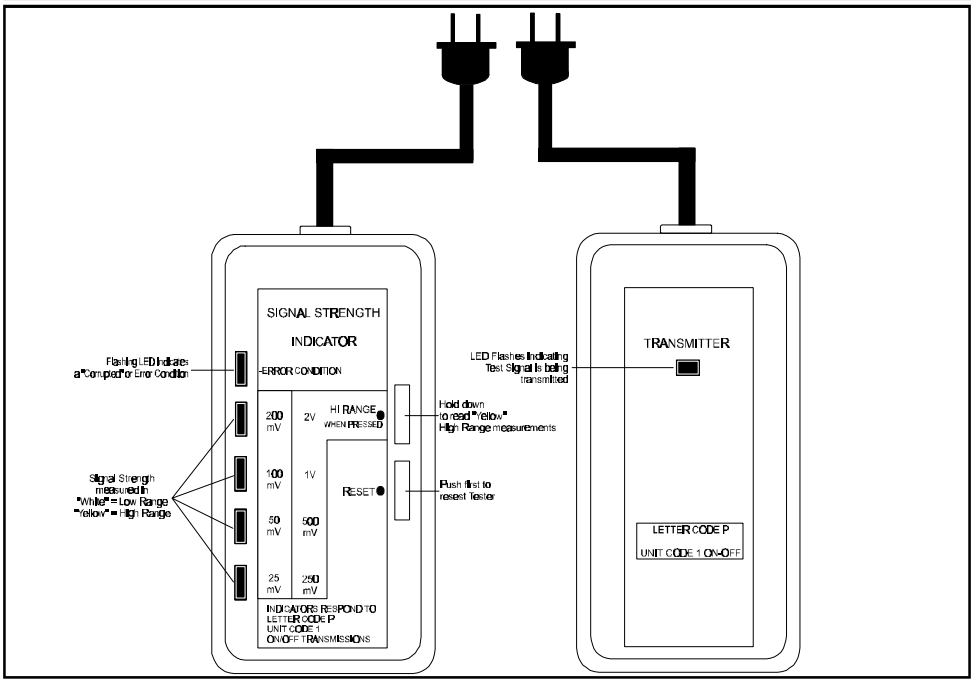
Signal Strength Indicator/Test Transmitter XPTR/XPTT



CAUTION! You will be working with line voltages to test signal strength: **USE CARE!**

Note: For test purposes, you may want to change the address of any installed power line carrier devices that may be set up with the address "P1" (to prevent cycling caused by the XPTT).

1) At the proposed or installed transmitter location:
   a) Plug the XPTT power cord into a 120VAC outlet, or
   b) Using test probes, alligator clips or a 120VAC receptacle pigtail connect the XPTT power cord to 120VAC.
2) Once plugged in, the XPTT will transmit ON/OFF codes continuously on the P1 address. The flashing LED indicates command signals are being transmitted.
3) Test the signal strength:
   a) Plug in the XPTR and push the reset button
      The Low Range Signal Strength is read from the white words.
      The High Range Signal Strength is read from the yellow words, while pressing and holding the High Range Button.

Note: The minimum signal strength required for powerline carrier module operation is 100mv.

4) If the ERROR LED flashes, there is excessive noise or false/incorrect electronis signals on the transmission line. The source of this noise or signal should be identified or corrected to prevent interference with powerline operation.

See other side for detailed troubleshooting operation.

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Electrical devices such as TV, VCR, stereo, low voltage power supplies, computers, monitors and power strips with surge protection all **have a tendency to "dump" electrical noise on the power lines** as broad band frequencies. Many new electronic devices available to the public use circuitry to "clean" their power supplies before supplying the power to it's circuits. When this is done, the waste power or **noise is dumped out of it's plug and directly on the power lines of the structure.** Because line carrier products use the power lines as a communications path they are susceptible to interference that can not be noticed or detected without the proper test equipment.

When noise is placed on the power lines it can attenuate, corrupt and/or block the signals being transmitted or received over the entire house. Typically noise will cause intermittent operation of the receivers. An example would be if you can turn on a light from a transmitter but cannot turn it off from the transmitter or you can turn off a receiver but cannot turn it on. **You may have a transmitter and a receiver seemingly only a few feet apart and not be able to get signal through because of power line noise** being broadcast by a device all the way on the other side of the house or in the same room. **The offending device does not even have to be turned on, because a TV or computer still has their power supplies on the power line when they are turned off.**

Noise on the power line is solvable. The proper way to trouble shoot for noise is to use an XPTT Test Transmitter and an XPTR Signal Strength Indicator. The XPTT is plugged in at the transmission point where it will transmit a constant line carrier "P1" on/off command. Taking the XPTR you go from outlet to outlet in the home and take a signal strength reading.

The XPTT transmits a 2V signal and the XPTR can detect from 2V down to 25MV. **The lowest possible signal that can make a module respond properly is 100MV. As you go around the structure and you see a fluctuation in the signal you may have detected a noise-producing device.** While leaving the XPTR plugged in you can systematically unplug a device (TV, VCR, computer or low voltage lighting power supply) and see if you detect any change in the signal amplitude. You may have to shut off a breaker if the device is hard wired without a plug. If no change is seen go on to the next device. **When you see a signal increase upon unplugging a device, then you have detected an offending device.** Now all that you have to do is purchase an XPPF plug in filter. **The XPPF is plugged into the wall were the offending device was plugged in and then plug the device into the XPPF.** The X10 signal will now pass freely through the electrical system without the noise, blocked by the XPPF, passing onto the power line. **If the offending device was a hard-wired device then a XPF wired in filter can be installed between the switch and the offending device.**

Sometimes low signal strength is directly related to Phase Shift of the two 120V lines that are present in all single-phase systems supplying 240V for appliances. You may have an outlet only a few feet from another but have one of the outlets on one side of the breaker panel and another on the other side of the breaker panel. **The X10 signal has to travel through one side of the breaker panel, out of the meter and back to the pole transformer on the street, then back around the windings of the transformer to your meter and to the other side of your breaker panel just to reach the rest of your structure.**

To allow the X10 signal to travel freely to both phases an **XPCP Passive Phase Coupler** should be installed in the breaker panel across a 240V breaker and to the neutral bar allowing the two phases to become one communications bus. In larger homes with long runs of electrical cable an **XPCR Coupling Repeater** should be installed that will receive the signals from either phase amplifying them and repeating throughout the home.