

XTB-IIR Firmware Version 1.20

Version 1.20 will operate in all versions of the XTB-II PCB that accept a 14-pin chip, including the XTB-III PCB. It determines the PCB configuration immediately after powering up. If the LED glows brightly after being powered up, and the XTB-IIR does not respond to any commands, the configuration was not successful. Verify that the PIC is plugged in properly. The notch at the end between pins 1 and 14 should face the center of the PCB.

The LED will glow dimly when the internal clock is locked to the 50Hz/60Hz AC powerline frequency. This may be virtually instantaneous or it could take a few seconds, depending on how close the internal clock is trimmed. While running on a generator, the LED being dark except for indicating X10 traffic means the AC frequency is too far off to achieve lock.

It is no longer possible to disable the AGC. Mode option 6 now just switches the return signal amplifier to the low gain mode to reduce noise interference to controllers connected to the X10 Boost input. The low gain mode will also reduce sensitivity to incoming commands, so it is best not to choose that option unless it is necessary. The AGC will automatically switch to the low gain mode in the presence of very high powerline noise.

Previous versions of the XTB-IIR code allowed the AGC sample point to be either before or after the X10 transmission window. The default was before the zero crossing, which should have a noise profile similar to that inside the X10 window. This version adds individual control of both pre and post X10 window samples. In combined X10/Insteon systems, disabling the pre X10 window will eliminate the brief drop in sensitivity following an Insteon command. This version also includes a third sample point inside the X10 reception window itself. That is always enabled so the AGC will still function if both the pre and post X10 windows are disabled. Mode options 3 and 4 enable the pre and post AGC samples when they are set to "1".

Because there have been several installations where the customer questioned the sensitivity of the XTB-IIR, this version adds the ability to display the current detection threshold as a pre-set dim command. The mode command sequence for that is:

P9 – P8 – P2 – P2 – P_DIM.

The XTB-IIR will respond with a pre-set dim command that varies from 1-31. The XTBM will display that as a percentage, and some logging routines will also display the value. A value of 1 means there is very little noise, and the sensitivity decreases as the number becomes higher. For very strong noise sources, the return signal amplifier will switch to the low-gain mode. This occurs above a pre-set dim value of 24. The resolution below 24 is 30mV per step, and above 24 about .62V per step. For numbers above 24 you have to subtract 24 to calculate the detection threshold. For example, 25 = .62V, 26 = 1.25V.

As in prior versions, this version supports 3-phase transmissions at a slightly lower signal level. However, it is no longer necessary for the source to transmit all three phases when the 3-phase transmission mode is enabled. This makes it possible for transmitters that output just the zero-crossing signal burst, such as the XTB-232, to control 3-phase systems.

This version can display existing mode settings on the LED. Just entering the command: P9 – P8 – P2 – PX will either blank or brighten the LED for the first 2 seconds of the ON/OFF mode command reception window. As before, the LED will flash 5 times if the ON/OFF command is not received by the end of that 4-second command window.

In some cases it may be desirable not to repeat a given housecode, and that ability has been added. The mask configuration is held in locked non-volatile memory to make it difficult to disable a housecode by accident. Disabling a housecode requires first unlocking the memory, and then sending the command to either disable or enable that particular housecode. All numbers sent in the command sequence should be on the mode command housecode (default is P), and the ALL_ON or ALL_OFF must be sent on the housecode that is to be changed. For example, the complete sequence to disable housecode M is as follows:

P9 – P8 – P2 – P2 – P_OFF (to unlock the memory)

P9 – P8 – P2 – P2 – M_ALL_OFF (to disable the M housecode)

The M_ALL_ON command would re-enable the M housecode. It is possible to disable or enable multiple housecodes when the memory is unlocked with additional disable or enable sequences. The memory is locked again on receiving any command (ON, OFF, Bright, Dim, etc.) without the preceding 9 – 8 – 2 – 2 sequence. Note that if you are sending these commands from a controller that can send all 16 commands, the ALL_OFF is "All Units Off", and the ALL_ON is "All Lights On".

When a housecode is disabled, any commands received on that housecode will cause the LED to flash twice. Note that only the repeat is disabled. Commands received through either the digital port or the X10 Boost input are still transmitted even though that housecode may be disabled. This function is intended to prevent interference from external commands when two X10 homes share the same utility transformer.