

LynX-10 PLC
Bi-directional X-10 Interface
Quick Start Manual – version 1.20

Model: 105

Marrick Limited LynX-10™ PLC
Manual revision 1.20
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1.0 OVERVIEW OF X-10 TECHNOLOGY

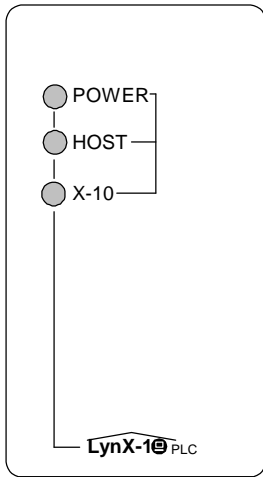
X-10 control is one of the most prolific and low cost means to automate a home or business, especially if running new wiring is prohibitive. British Sound Re-enforcement (or BSR) out of the UK introduced X-10 in the 1970's. The technology was later sold to X-10 USA where a second generation of product was introduced with improvements to operation and reliability. The system uses a coded 120KHz radio carrier super-imposed on the 60 Hz (50Hz in Europe) power line. A radio receiver in the modules picks up the signal and decodes the message. If the message address matches that of a device's house and unit code, the device applies the message. In later years, two-way modules and switches were introduced providing another level of reliability.

For interfacing a computer to the X-10 system, there were very few choices. X-10 USA sold an OEM module called the TW523, which is used in the majority of computer interfaces. Later they introduced the CM11A, which included a microcontroller to talk directly with a computer's serial port.

Over the years, Marrick Limited has designed better controllers for the TW523 such as the LynX-10, providing much improved reliability and performance. The LynX-10 PLC is the latest in this technology – now eliminating the TW523 module. The LynX-10 PLC is the next generation of X-10 interfaces that incorporate many features to improve reliability and performance. Some of these include improved protocols, hardware watchdogs, which guard against “lock up”, a phase locked loop (PLL) receiver, and a crystal controlled - digitally synthesized transmitter. All of these features provide industrial level control of X-10 systems and providing a stable X-10 interface for modern home automation software.

2.0 HOOKING UP THE LYNX-10 PLC TO A COMPUTER

2.1 The Serial Port



The LynX-10 PLC (shown at left) has two connections. The computer interface is an RS-232 serial port with a DB-9 female connector located on the bottom. Using the provided 1:1 cable, connect the LynX-10 PLC to a spare serial port (usually COM2) on your computer. This port cannot be in use by any other device and must be enabled (via the BIOS or jumpers). If you are not sure if the port is either assigned to another device or disabled, check with your computer manufacturer.

Now plug the LynX-10 PLC into an *unfiltered (non-surge protected)* outlet. The LynX-10 PLC has internal surge protection and does not require it externally. A surge protected power strip will attenuate the transmitted signal and limit the sensitivity of the receiver possibly causing problems with X-10 transmission and reception.

3.0 SETUP

3.1. Using the LynX-NET Device Setup Utility

The LynX-10 PLC is shipped with a utility to help you change certain settings of the LynX-10 PLC. This utility is now universal among all new Marrick Limited products. Please check the Marrick Limited web site (www.marrickltd.com) for the latest version. The new generation of intelligent home automation software such as Home Control Assistant from Advanced Quonset Technology (www.advancedquonsettech.com) may alter the settings of the LynX-10 PLC. If you wish to change any of these settings, you will need to use this software.

3.1.1 Installing the Setup Utility Software (Windows 95, 98, ME, 2000, XP)

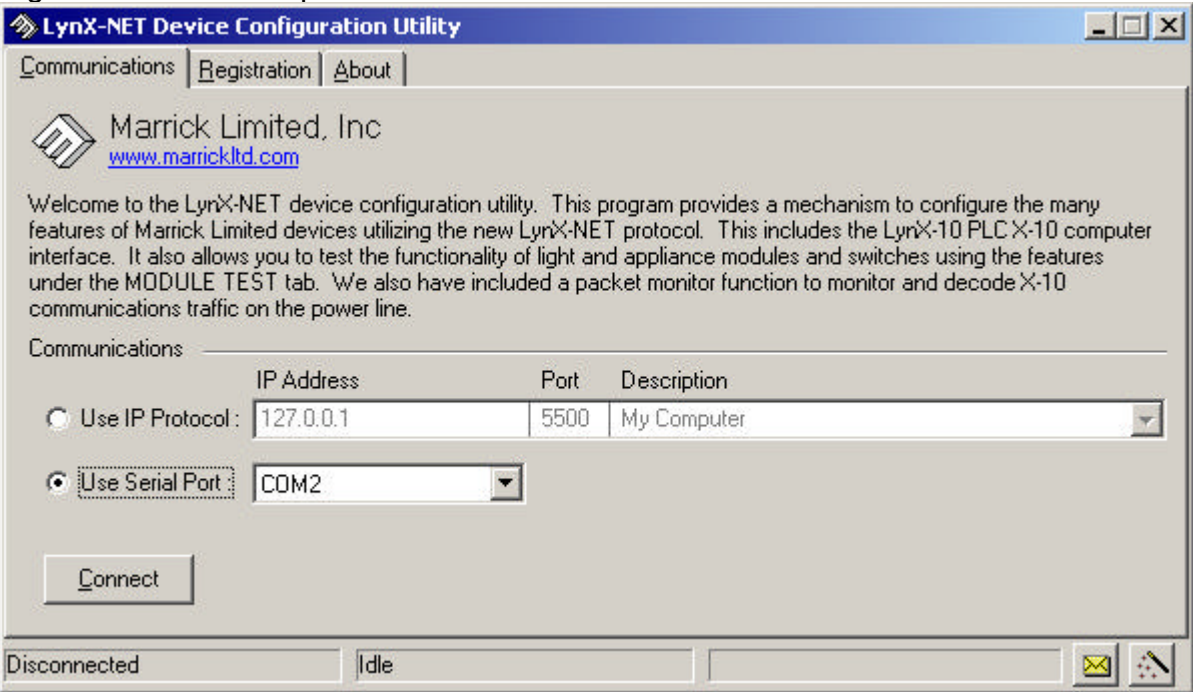
First, insert the provided floppy disk into your computer. Open a window to the floppy drive and double click on the SETUP.EXE file. This will launch the setup utility installation program. Follow the online directions and complete the installation. You are now ready to configure your LynX-10 PLC options.

3.1.2 Using the Setup Utility

Launch the LynX-NET Device Setup utility. If you have not registered your product you will see the REGISTRATION WIZARD which will walk you through the registration process. You can elect to do the on-line registration at a later date, but you will be reminded each time the software is run until it is completed. If your system is online, please register your product with Marrick Limited for future technical support. We do not sell or distribute your information outside of Marrick Limited. This information is to aid us in tracking issues and to inform you of upgrades. After registering, you will see the initial start screen as shown in

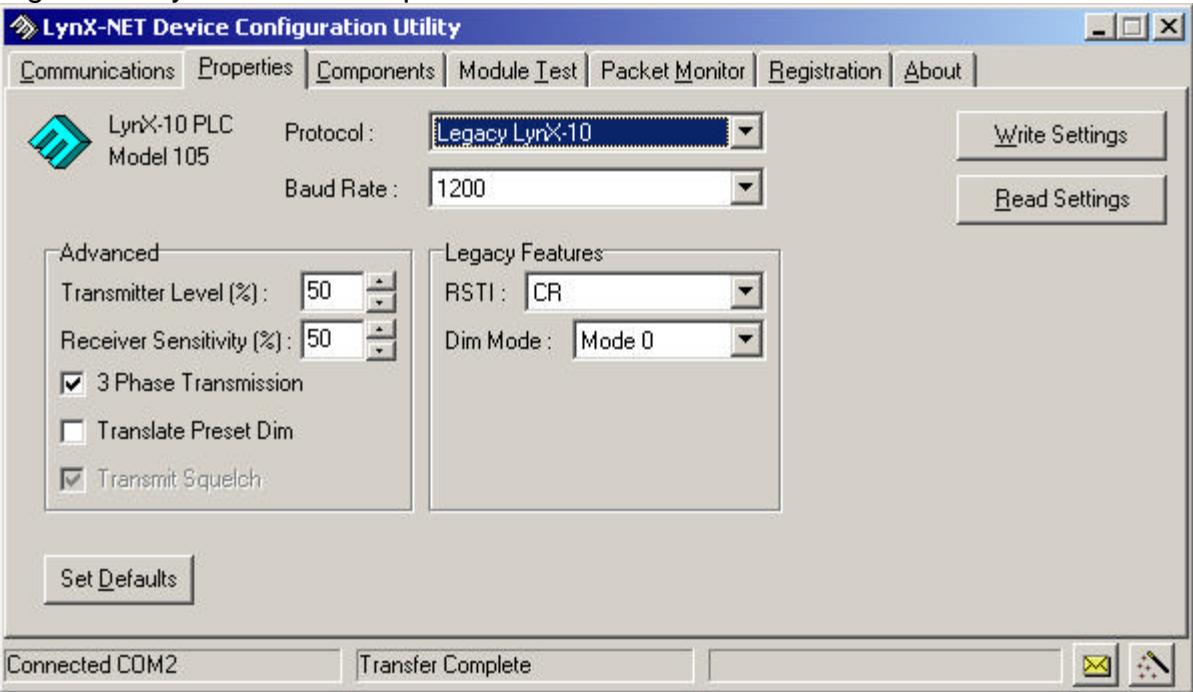
figure 1. The default tab is the Communications options. This tab includes such items as which serial communications port you are using or optionally an Internet IP address of a

Figure 1 – Initial setup screen



serial port server. Once the communications port is selected, click the “Connect” button on the – make sure the LynX-10 PLC is plugged into the port and that the port is functioning prior to this action. Additional tabs will appear as the software downloads the settings from the LynX-10 PLC. Figure 2 shows the PROPERTIES tab.

Figure 2 – LynX-10 PLC Properties Tab



3.1.3 LynX-10 PLC Options

The LynX-10 PLC has several user alterable options. They are shown below.

PROTOCOL – This option has two selections, **Legacy LynX-10** and **LynX-NET** protocol. When using older software designed for the original Marrick Limited LynX-10, select Legacy LynX-10. For more modern software, select LynX-NET protocol. *Note: Modern software will generally automatically select the correct protocol.*

BAUD RATE – This option will select the desired communications rate for the LynX-10 PLC. When using legacy or older software designed for the original LynX-10, select 1200 BPS. Otherwise, select the desired operating speed. *Note: Modern software will generally automatically select the correct baud rate.*

LEGACY FEATURES / RECEIVE STRING TERMINATOR INDICATOR (RSTI) – This is used only with the Legacy LynX-10 Protocol. This selects which string is returned to the software on completion of a command.

LEGACY FEATURES / DIM MODE – This is used only with the Legacy LynX-10 Protocol. Dim mode 0 is the default and will turn the light off and then back on before dimming. Dim mode 1 only sends multiple dims and bright commands. This option should default to DIM MODE 0.

ADVANCED FEATURES / TRANSMITTER LEVEL – This option allows the user to boost or cut the transmitter output level. This should normally be set to 50%, which is adequate for everything except the largest homes.

ADVANCED FEATURES / RECEIVER SENSITIVITY – This option allows the user to control the sensitivity of the receiver. This should normally be set to 50%, which is fine for most cases. In the event of a noisy line, or other error conditions caused by power line noise, the sensitivity can be reduced. With filtered lines, the sensitivity may be increased if certain distant units cannot be heard.

ADVANCED FEATURES / 3 PHASE TRANSMISSION – This option determines if the transmission occurs on only one phase (normal for 200-400 amp service) or three phase (commercial) power. The default is to transmit on all three phases.

ADVANCED FEATURES / TRANSLATE PRESET DIM – Newer software may use this option to change the method used for determining the legacy PRESET DIM commands. The default is off (unchecked).

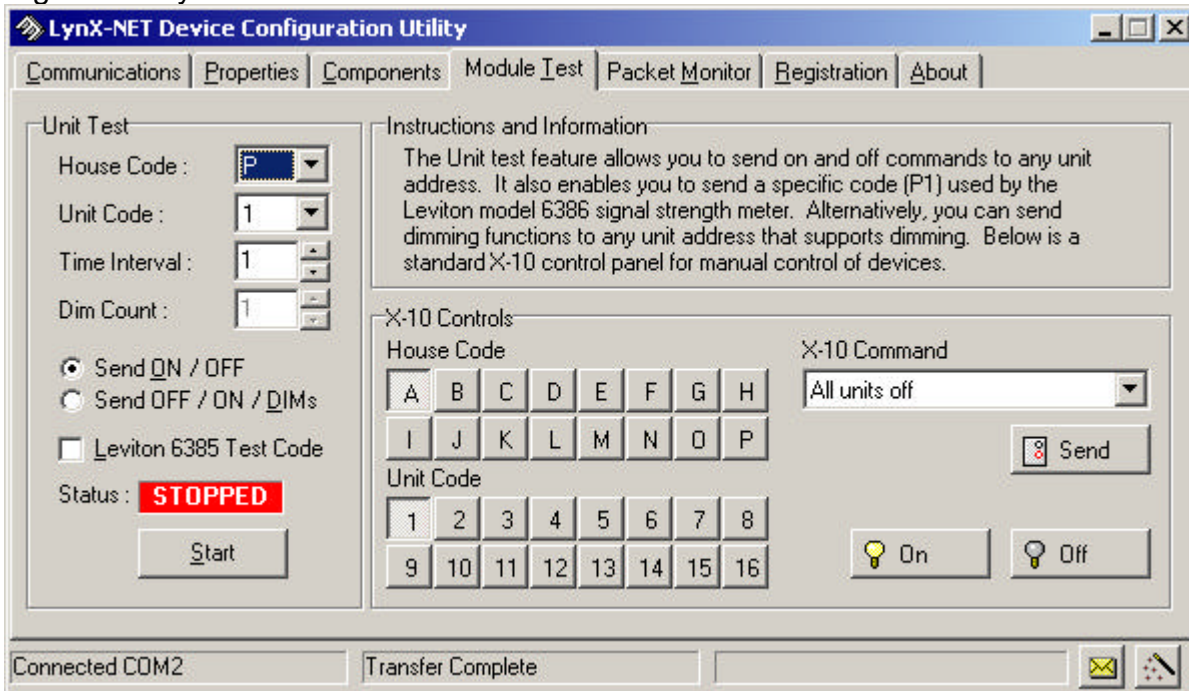
ADVANCED FEATURES / TRANSMIT SQUELCH – This is used during factory configuration and should be ON (checked). The user cannot configure this option, however, advanced software can. This option should be used with care since it can affect the performance of the LynX-10 PLC.

4.0 TESTING OPERATION

4.1 Transmission and Module Testing

The setup utility also provides additional testing for X-10 based devices. Figure 3 shows the Module Test tab. This tab provides controls for testing X-10 transmission as well as X-10 modules. Under the “Unit Test” section of the tab, you can select an X-10 address to test by

Figure 3 – LynX-NET Module Test Tab



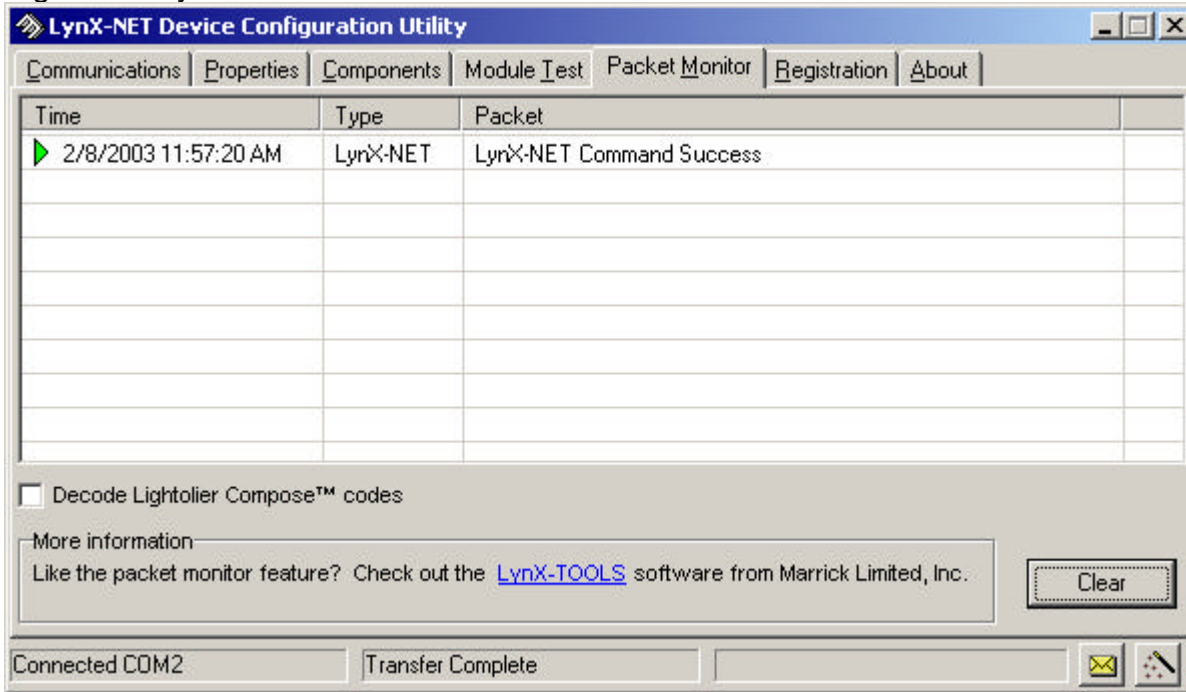
sending ON and OFF commands to that device. You can optionally add DIM commands as well to test light modules. The Leviton 6385 test code can be sent by checking the box next to that option – this will allow the tester to monitor signal strength throughout the X-10 installation and to verify transmission integrity. You can also send any X-10 command using the “X-10 Controls” section of the tab. Select a house code and optional unit code, select the command and click SEND.

4.2 Monitoring X-10 Communications

A packet monitoring function is built into the setup utility to allow the user to watch X-10 commands travel around the power lines. It additionally shows if there are any issues with the reception of commands at that location. Figure 4 shows the Packet Monitor tab. Use this function to watch for X-10 activity, error codes, and other transmissions within the X-10 network. If you are using the LynX-10 PLC in a Lightolier Compose? system, the monitor can optionally decode these commands. Compose commands are remapped over standard X-10 PRESET DIM commands. That is, Compose based systems interpret the PRESET DIM commands differently from the original intent defined in the X-10 standard. If the Compose meaning of these commands are desired, check the “Decode Lightolier Compose codes” check box. You can clear the current list of packets by clicking the “Clear” button on the

lower right. If these test features are of interest, Marrick Limited also produces a software package called LynX-VIEW that provides much higher diagnostic functionality than the setup utility. More information on this software can be found by clicking the LynX-TOOLS link at the bottom of the Packet Monitor tab or by visiting the Marrick Limited web site at www.marrickltd.com.

Figure 4 – LynX-10 PLC Packet Monitor Tab



5.0 Warrantee

Marrick limited will warrantee the LynX-10 PLC against defect for a period of 2 years from purchase. Registration must be completed within 30 days of purchase for the warrantee to be in affect. You can register your product electronically with the LynX-10 PLC Setup Utility or write Marrick Limited at the address shown on the front of this manual. Please include name, address, phone number, and serial number of your unit. The serial number can be located in the USER tab of the LynX-10 PLC Setup Utility after port initialization. If, within this warrantee period, a defect exists with the LynX-10 PLC, Marrick will, at its discretion, either repair or replace the unit at no charge.