INSTALLER USER MANUAL

X1-N-24

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1. FCC and Other Disclosures

1.1 Copyright Notice

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1.2 FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For product available in the USA/Canada market, only channel 1~11 can be operated and selection of other channels is not possible.

This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

When this device is going to be operated in 5.15~5.25GHz frequency range, it is restricted in indoor environment only.

1.3 FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

1.4 Professional Installation

This module is intended for OEM integrators and a professional installation. The OEM integrator or installer is still responsible for the FCC compliance requirement of the end product, which integrates this module.

20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the FCC radiation exposure limits set forth for a population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

1.5   Safety Warnings

This unit must be installed by a trained professional installer only. Read the following safety warnings before commencing an installation.

General Safety Warning

Always be aware of electrical power lines! You can be killed if any antennas come near electrical power lines. Carefully read and follow all instructions in this manual.

Electrical Power Warning

This unit must be installed by a trained professional installer only. Read the installation instructions before you connect the wireless network device to its power source.

Lightning Activity Warning

Do not connect or disconnect cables during periods of lightning activity. For each antenna it is recommended that surge protective devices are installed and that the surge protective devices are properly earthed.

Grounding Warning

An external grounding wire must be installed for correct operation of this equipment. The ground connection must be completed before connecting power to the chassis and a simple continuity check between the enclosure and the ground termination point can confirm this.

Power Cord

A power cord is not provided with this equipment.

Installation

This product should be installed by a qualified professional.

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2. X1-N-24 Overview

2.1 Introduction

The Acurix Networks X1-N-24 intelligent wireless node delivers seamless point-to-point backhaul connectivity at up to 300 Mbps with links using 20, or 40 MHz channels.

The X1-N-24 features an integrated 24 dBi dual-polarized panel antenna together with a peak power of up to 250mW (24dBm) utilizing superior sensitivity to provide better than average transmission.

The high sensitivity of the integrated radio enables low latency, carrier-class point-to-point connectivity in the 5 GHz band.

The X1-N-24 comprises a high performance motherboard with a feature rich Linux OS. It can therefore be easily customized for specific requirements.

Each X1-N-24 contains a single embedded 802.11n radio as well as an Ethernet port for local network connectivity.

The X1-N-24 is ideal for wireless backhaul for CCTV / video surveillance, government, private networks, education and enterprise backhaul.

2.2 Real-time, remote management and control

The easy-to-use, web-based network management platform provides an operator with remote, real-time, web-based management and control of the X1-N-24 intelligent wireless node.

This enables the operator to undertake real-time diagnostics and monitor network events such as channel use, coverage level, bandwidth and data use.

The Acurix Networks NMS empowers the operator with accurate, real-time, knowledge to give accurate, relevant and efficient support when the need arises.

Use of encryption on all network management information that is delivered between the X1-N-24 node and the operator's network ensures network integrity during software upgrades, security patch installation, and general network management.

The X1-N-24 also provides a range of network service packages including DHCP, DNS, NTP, web servers, firewall rules, intrusion detection, and routing policy rule-sets.

2.3 Common Applications

- CCTV / video surveillance wireless backhaul
- Education
- Enterprise backhaul and connectivity between locations
- Private networks (municipal, state or local government, WAN)
- Network operator or service provider backhaul
- Backhaul to remote locations

3.   Equipment

3.1   Shipped Equipment List

The following is normally shipped:

- 1 x X1-N-24 node
- 1 x External power supply (48v output)
- 1 x passive PoE injector
- 1 X Quick Install Instructions
- 1 x CD software

4. Hardware Installation

4.1 Ethernet Connections

The X1-N-24 has one Ethernet 10/100BaseT interface. Its supports Auto-MDIX, automatically sensing and adjusting to work with whatever type of Ethernet device is at the other end of the Cat5 cable.

The Ethernet interfaces automatically adapts to match the polarity of Ethernet signals on the cable by swapping the receive and transmit pairs when connecting to Ethernet devices other than switch/hub ports – without the need for crossover cables.

Both full-duplex and half-duplex mode of operation are supported.

4.2 Power Connection

Power to the X1-N-24 is provided via passive PoE at the Ethernet port.

The voltage from the external supplies must be within the PoE range +36V to +60V, (+48V nominal) at the input to X1-N-24.

The PoE input is electrically isolated from other circuitry by 1500V$_{RMS}$ isolation. This is important in outdoor and remotely mounted applications to control ground loops, to minimize noise, and to assist with managing surges.

4.3 Earth Connections

The use of shielded RJ45 jacks along with a metal housing helps reduce the effects of EMI interference. Additional features include a ground lug and terminal provided directly on the lightning protector housing allowing for superior grounding.

For maximum protection from lightning on long cable runs, two units can be used, one at each end of the cable. A PoE injector, similar to that shown below, is supplied as a standard item with each X1-N-24.
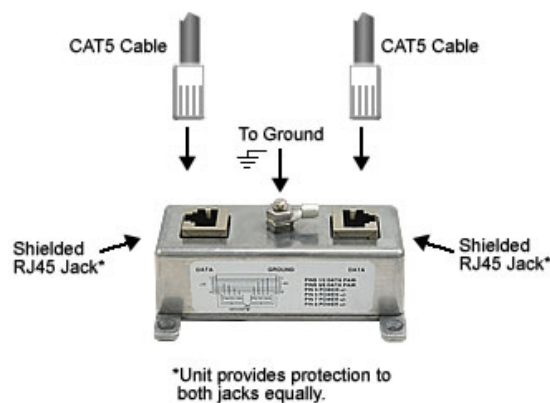
5.   Software Configuration

5.1   Overview

The X1-N-24 will be delivered in configuration mode so that installers may make a web based connection to the unit for correct operation within their environment.

The installation process below should be followed to commence configuration of the unit.
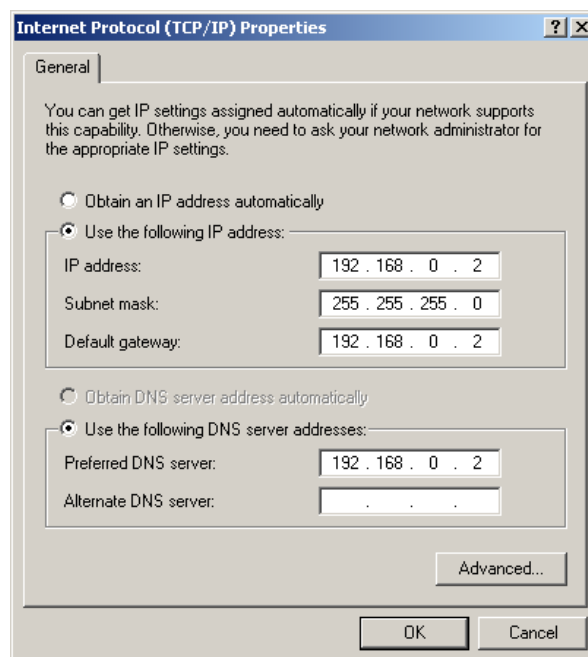
5.2   Connecting a PC

1.   Plug an Ethernet cable into the X1-N-24 Ethernet port and then into the network port of the PC (a normal or cross over cable can be used).

2.   Go to the Network Configuration.
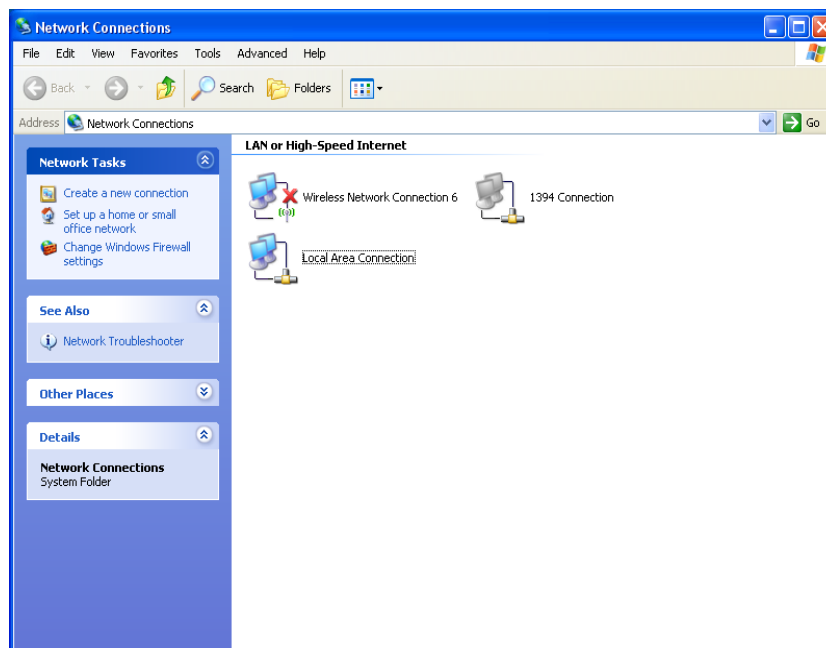
3.   Select Properties on the Local Area Connection and then the Properties on the TCP/IP option.
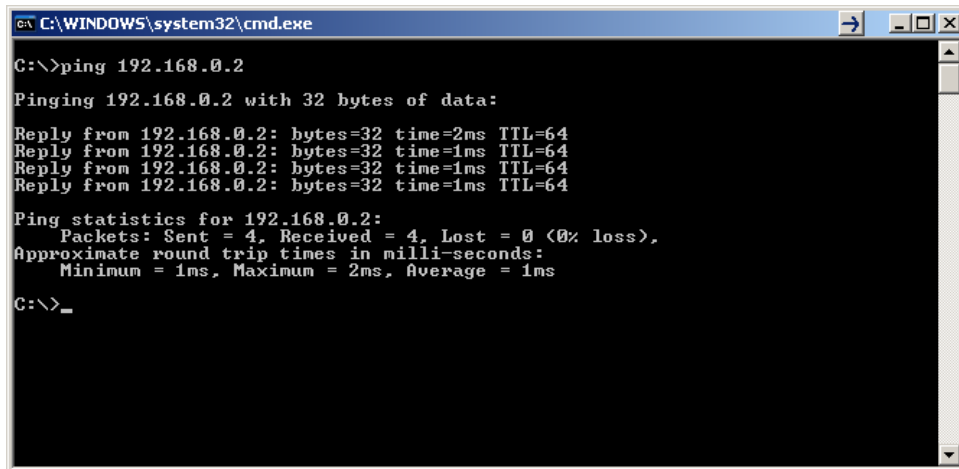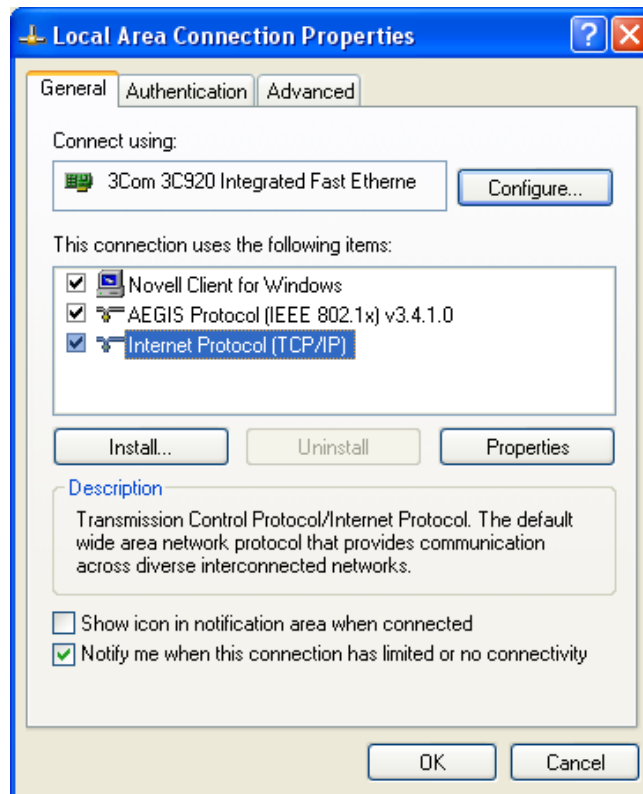
4.   Set the IP address to 192.168.0.2 as shown below.

5.   Select OK.

6. Go to the Command Processor and check that that you can ping the notebook at the address 192.168.0.2.

```
C:\WINDOWS\system32\cmd.exe

C:\>ping 192.168.0.2

Pinging 192.168.0.2 with 32 bytes of data:

Reply from 192.168.0.2: bytes=32 time=2ms TTL=64
Reply from 192.168.0.2: bytes=32 time=1ms TTL=64
Reply from 192.168.0.2: bytes=32 time=1ms TTL=64
Reply from 192.168.0.2: bytes=32 time=1ms TTL=64

Ping statistics for 192.168.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\>_
```
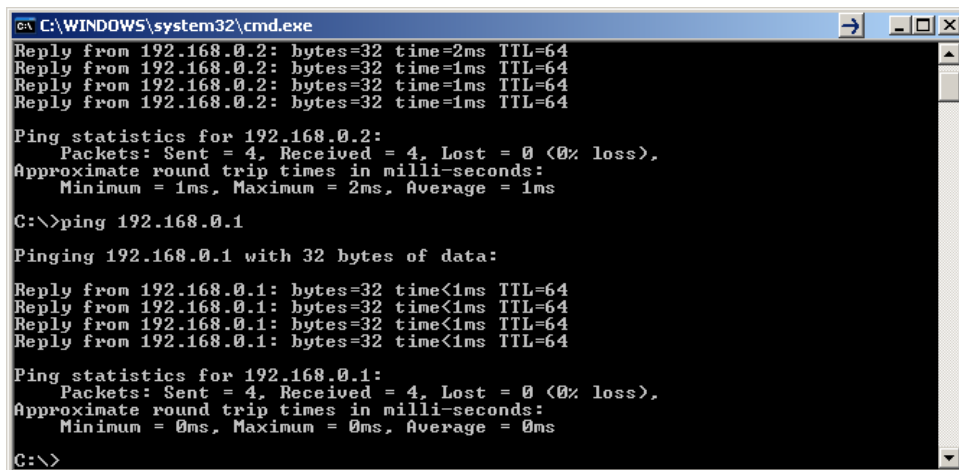
7. Then verify that you can ping the X1-N-24 at its default address 192.168.0.1.

```
C:\WINDOWS\system32\cmd.exe

Reply from 192.168.0.2: bytes=32 time=2ms TTL=64
Reply from 192.168.0.2: bytes=32 time=1ms TTL=64
Reply from 192.168.0.2: bytes=32 time=1ms TTL=64
Reply from 192.168.0.2: bytes=32 time=1ms TTL=64

Ping statistics for 192.168.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\>ping 192.168.0.1

Pinging 192.168.0.1 with 32 bytes of data:

Reply from 192.168.0.1: bytes=32 time<1ms TTL=64
Reply from 192.168.0.1: bytes=32 time<1ms TTL=64
Reply from 192.168.0.1: bytes=32 time<1ms TTL=64
Reply from 192.168.0.1: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

8. Communications and connecting via a notebook has been completed.

5.3   Software Installation

The X1-N-24 web interface utilises flash for displaying the interface. A browser based flash player must be installed prior to connecting to the unit.

A suitable flash player can be downloaded from Adobe located at:

http://get.adobe.com/flashplayer/

5.4   Accessing Node

The following provides details in accessing the node:

✗ Through browser (ie. Internet Explorer or Mozilla, etc) connect to the nodes default address http://192.168.0.1

✗ Note: Please ensure that any virus protection software on your workstation, including Windows XP Firewall is disabled. Also ensure that any internal proxy servers have been disabled through the Tools menu options of IE.

✗ The login prompt will appear:
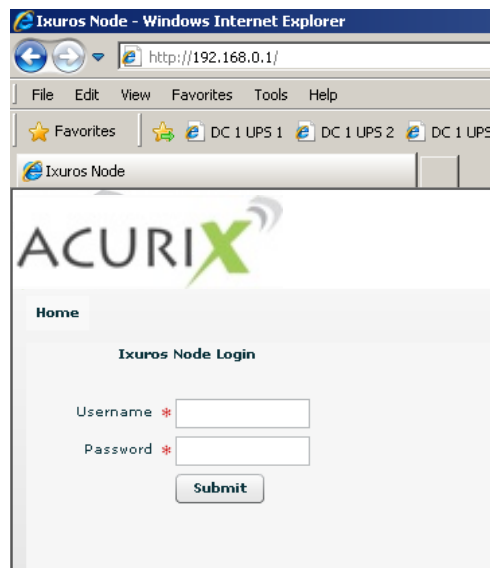
✗ The username is: admin

✗ The password is: admin