ETHERNET CONFIGURATION UTILITY

USER MANUAL

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Table of Contents

Introduction

Scope of Document

This document describes how to configure security and operational settings for Ethernet enabled devices.

Network knowledge is required to set-up Ethernet devices. Additionally, some settings such as router gateway addresses require you to liaise with the local network administrator. Whatever the situation, ensure that someone with network experience is available during configuration.

Document Conventions

The following conventions are used in this document:

Note – indicates additional information

Tip – indicates alternative methods to perform a task

Important – indicates important information

Warning – indicates potential danger to you or the product

Ethernet Configuration Utility

This Utility enables you to assign an IP Address to an Ethernet enabled device, and configure the device for Ethernet operation.

The Utility searches for and displays a list of Ethernet enabled devices on the **local subnet**. When an Ethernet device is identified by its unique MAC Address, assign a static IP Address to it. Then configure the device for network use.

Assign IP Address

Proceed as follows to open the Ethernet Device Configuration Utility:

1. In Windows, click **Start** > **Programs** > **IXP_NetConfig** > **Ethernet Device Configuration Utility**
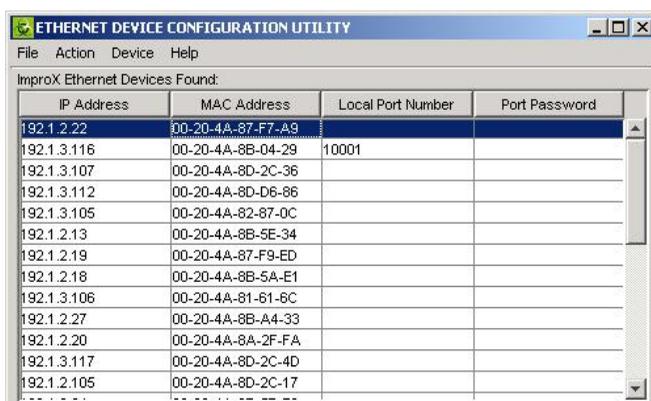
Figure 1: Ethernet Device Configuration Utility Window

2. On the **Action** menu, select **Search for Devices – Local Subnet Only**. Wait for a list of devices to be displayed

3. Identify a device by its MAC Address. Select the device by clicking it

IP Address	MAC Address	Local Port Number	Port Password
192.1.3.106	00-20-4A-81-61-6C		
192.1.2.17	00-20-4A-8B-A1-E2		
192.1.3.116	00-20-4A-8B-04-29		

Figure 2: Selected Device

4. On the menu, select **Action** > **Assign IP Address – Local Subnet Only**. The **Assign IP Address** dialog box is displayed
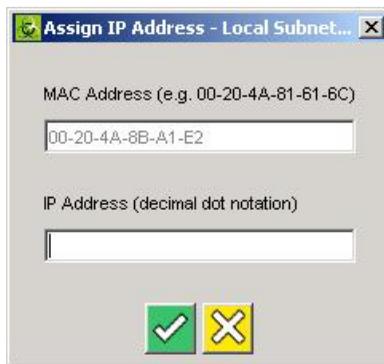
Figure 3: Assign IP Address

5. Enter a valid static IP Address in the **IP Address** text box
6. Click the ☑ button

*If a device is not detected in the search and you know its MAC Address, **select a blank row** on the table, then on the menu select **Action** > **Assign IP Address**. Manually enter the device's MAC Address and IP Address. Note that the device must be located on the local subnet.*

*Do not assign an IP address of **0.0.0.0** unless a DHCP server is present. If a DHCP server is present, assigning an IP address of **0.0.0.0** will result in the device receiving a dynamic IP Address.*

Configure the Device

!! *It is vital to configure the TCP/IP settings correctly for the device's intended network. If the* **IP Address, Default Gateway, Subnet Mask,** *or* **Host Bits** *settings are not exact, the device can lock-up.*

If this happens, physically remove the device from the bus and return it to your dealer for re-programming. Contact a competent Network Administrator or your regular support channel if you are unsure of the correct network settings.

When a device has an IP Address, you can configure its Ethernet settings as follows:

1. Select the device to configure from the table
2. On the menu, select **Device** > **Device Configuration**. The **Configurations Settings** dialog box is displayed:

Figure 4: Configuration Settings

Devices not destined for the local subnet can be temporarily installed on the local subnet for configuration purposes.

Configuration Settings

Entering the correct Configuration Settings requires networking knowledge. If you are not familiar with the settings, consult an experienced network administrator.

Socket Connections

A socket connection has two components: an **IP Address** and a **Port Number**. Ethernet devices must share a common socket connection to communicate with each other. For example, the *Local IP Address* on Unit A must be the same as the *Remote IP Address* on Unit B, and vice-versa. Similarly, the *Local Port* on Unit A must be the same as the *Remote Port* on Unit B, and vice-versa.

Proceed as follows to configure a device's network settings:

1. On the **Configuration Settings** window, enter the **Gateway IP Address** – obtain this from the network administrator
2. Click one of the following buttons to populate the fields with preset default values:

   - **Use UDP Broadcast Defaults**
   - **Use UDP Unicast Defaults**
   - **Use TCP Master Defaults**
   - **Use TCP Slave Defaults (121 Defaults)**
   - **Use TCP Slave Defaults (110 Defaults)**

*If you are using UDP Broadcast Defaults and you change the **Gateway IP Address** and **Subnet Host Bits** values, click the **Use UDP Broadcast Defaults** again, before clicking **Update Configuration**.*

*For UDP Broadcast Defaults, set the **Gateway IP Address** to **0.0.0.0**.*

*Refer to the **Using Defaults** section on page **11** for more information.*

3. Enter the **Subnet Mask** *or* the **Subnet Host Bits**. If you are not using TCP Slave Defaults, enter the **Remote Host IP Address**

*If the device is destined for a different subnet, refer to the **Move Devices to a Different LAN** section on page **10**.*

4. Click **Update Configuration** to save the changes to the device

*If you need to change a static IP Address, click the **Change Host IP** button. The **IP Address** field toggles to an editable field. Note that you cannot change a Dynamic IP Address as the DHCP server allocates it automatically.*

*Change the **Local Port Number** and **Remote Port Number** if required. We recommend that you only change the **Serial Baud Rate** if the device has explicit instructions to use a different value.*

*Specify a **Port Password** for additional security. However, ensure you keep a record of the password for future use.*

Save Settings to a File

Changes to a device's configuration can be saved to a file for later re-use. Saving settings to a file is essential if you plan to move devices to a different subnet, as a search will not automatically detect it in it's new location. After you have clicked **Update Configuration**, proceed as follows to save settings for the currently selected device:

1. On the menu, select **File** > **Save IP Address**
2. Browse to a suitable location and enter a **File Name**
3. Click **Open**. The settings are saved to a file

Import Settings from a File

If you move a device to a new location, you can import its previously configured settings from a file. To do so, proceed as follows:

1. Select a device in the table
2. On the menu, select **File** > **Import IP Address**
3. Browse to the saved file and click it
4. Click **Open**. The settings from the file are imported to the selected device

Move Devices to a Different LAN/WAN

Before moving a device across a WAN or to a different LAN, change it's **Host IP Address**, **Gateway IP Address** and **Subnet Host Bits** to suit its *new* network. Save the new settings to a file. To access the device in the future, import the file to obtain the saved IP address details.

> *If you change the Subnet Mask, the device will only function again after it has been moved to the new subnet.*

Using Defaults

Clicking one of the default buttons adds default values to the configurable fields. However, you are still required to enter values into other fields.

This section provides brief instructions for using the default values. For best results, we strongly advise consulting an experienced network administrator.

UDP Broadcast

Simple and quick to use. However, it only works on a LAN. When using this mode, set the Gateway IP Address to **0.0.0.0**. Broadcast is a one-to-many transmission.

UDP Unicast

Ideal for using on a WAN or when the local network is congested. Unicast is a one-to-one transmission.

TCP Master

Default setting for a TCP/IP setup. Recommended when connection between units needs to be guaranteed. Note that TCP/IP requires more resources than UDP.

TCP Slave – IXP121 System

Required setting for the IXP121 Controller. Only the **Subnet Host Bits** are required. However, if communication across a WAN is required, then enter a **Gateway Address** too. The Remote Host is ignored and a Port Password is optional. Set the **Baud Rate** to **38 400**.

TCP Slave – IXP110 System

Required setting for the IXP110 Controller. Do not use a Port Password. Set the **Baud Rate** to **115 200**.

Ethernet Security

The XPort security features on the 121 Ethernet Controller secures the Controller from unauthorized tampering via TCP/IP over the Internet. To setup the XPort security features you need to configure its Telnet settings.

Telnet Settings

Securing a unit's Telnet settings is required to prevent unauthorized access via Telnet or UDP to the dedicated ports. Only undertake Setup across a secure network.

*You must apply this level of security only **after** the Controller has been configured for TCP/IP. This is because enabling Telnet security prevents the **Ethernet Device Configuration Utility** from accessing the Controller.*

*If you need to change the Port Password, you need to temporarily disable the Telnet settings so that you can use the **Ethernet Device Configuration Utility** again.*

To configure UDP security, proceed as follows:

1. In Windows, click **Start** > **Run**. Enter **cmd** in the **Open** text box. The command prompt is displayed

Figure 5: Run Window

2. Enter **telnet** and the **IP Address** of the selected Controller, followed by a **space** and **9999**. For example, if the IP Address of the IXP121 Controller is 192.1.3.108, enter the following:
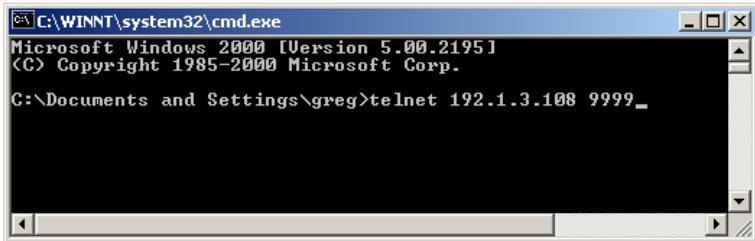
- **telnet 192.1.3.108 9999**

Figure 6: Command Prompt

3. Press **Enter**. The Controller's MAC Address is displayed. Press **Enter** again to enter Setup Mode
4. Enter **0** to select the **Server Configuration** option
5. Press **Enter** for each prompt until the prompt **Change Telnet Password** is displayed
6. Enter **Y**
7. Enter a **4-character Password** when requested

> *Make a note of this Password. It is required for future Telnet access.*

8. Enter **6** to the select **Security** option
9. Enter **Y** to disable all options except for the following:

- **Disable Telnet Setup <N>**—Enter **N**
- **Enable Enhanced Password <Y>**—Enter **Y** to use a 16 character Password instead of the default 4 character Password previously selected
- **Change the Password <Y>**—Enter **Y**
- **Enter Password**—Enter a new **Password**, a maximum of 16 characters long

> *Make a note of this Password. It is required for future Telnet access.*

10. Select **9** to save and exit Telnet

> *To view the settings without saving, select option **8**.*

The Telnet security feature prevents access to the Controller without a Password. Similarly, you cannot access the Controller via an Internet browser using the IP Address as the URL.

This is because Telnet security settings disable the XPort Web Server. Therefore, the Controller webpage is unavailable. However, you can access the Controller on a network via a TCP/IP connection through the built-in serial port with a valid port password. The IXP120 Software uses the serial port method.

Temporarily Disable Telnet Security to Enable UDP Access for the Ethernet Configuration Utility

1. In Windows, click **Start** > **Run**. Enter **cmd** in the **Open** text box. The command prompt is displayed
2. Enter **telnet** and the **IP Address** of the selected Controller, followed by a **space** and **9999**. For example, if the IP Address of the IXP121 Controller is 192.1.3.108, enter the following command:

- **telnet 192.1.3.108 9999**

3. Press **Enter** and wait for the password prompt
4. Enter the **Enhanced Password** previously assigned to the unit. The Setup menu is displayed
5. Enter **6** to select the **Security** option

6. Configure the following settings as indicated:

- **Disable SNMP <Y>**—Enter **Y**
- **Disable Telnet Setup <N>**—Enter **N**
- **Disable TFTP Firmware Update <Y>**—Enter **Y**
- **Disable Port 77FEh <Y>**—Enter **N**
- **Disable Web Server <Y>**—Enter **Y**
- **Disable ECHO ports <Y>**—Enter **Y**
- **Enable Enhanced Password <Y>**—Enter **Y**
- **Change the Password <N>**—Enter **N**
- **Disable Port 77F0H <Y>**—Enter **N**

7. Enter **9** to Save and exit Telnet

Troubleshooting

Problem: TCP/IP connection to the XPort serial port fails.

Solution: Ensure that the ECHO ports option is disabled.

Problem: Ethernet Configuration Utility / Search fails to find the unit.

Solution: Ensure that Port 77FEH and Port 77F0H are enabled.

Problem: **Device Timeout – Please try again** error message is displayed**.**

Solution: Ensure your Subnet Mask is correct.

Addendum

This section provides some basic definitions and examples of network terminology. It is intended as a guide only. To fully understand the Etherlink Software, we recommend formal training in networking.

Network IP Addresses

An IP Address is unique number used to identify a device on a network. The Address is written in a so-called *dot-decimal notation* and consists of four number (octets) separated by dots, for example: 125.255.255.1. Each octet can have decimal values up to 255 (8 bits).

The first octet of each IP Address represents the network number. The remaining numbers – represented by an x - refer to specific computers or hosts. The value of the first octet determines the type of network class as follows:

- Class A: **0**.x.x.x to **126**.x.x.x
- Class B: **128**.0.x.x to **191**.255.x.x
- Class C: **192**.0.0.x to **223**.255.255.x

Class A networks reserve only the first octet for network addresses. The remaining three octets are for different host addresses. This means that a Class A network can support up to 127 networks and up to 16 777 216 (8 bit x 8 bit x 8 bit) host computers.

Class B networks reserve the first and second octets for network addresses. Octets three and four are used for host addresses.

Class C networks reserve the first, second, and third octets for network addresses. Only the last octet is available for host addresses.

IP addresses that have a 127 value for the first octet are reserved for local host communication. A local host is the currently used computer.

Creating a Subnet

Creating a subnet on an IP network enables you to create several smaller networks from a single large network. Subnetting is used when several LANs are linked together via a router to form a WAN. You can create a subnet by defining a **Subnet Mask**.

Subnet Masks

A Subnet Mask filters out unwanted data from other subnets. All hosts on the same subnet or network segment must have the same Subnet Mask to communicate with each other. The following table shows the default Subnet Masks for each class of network. Note the location of the subnet octet for each network class.

Class	From IP	To IP	Subnet Mask	Host Bits
A	0.x.x.x	126.x.x.x	255.0.0.0	24
B	128.0.x.x	191.255.x.x	255.255.0.0	16
C	192.0.0.x	223.255.255.x	255.255.255.0	8
Class	**Subnet Mask Octet**			
A	255.**0**.0.0			
B	255.255.**0**.0			
C	255.255.255.**0**			

Table 1: Default Subnet Masks for Each Class of Network

The subnet mask octet can be any of the following values:
255, 254, 252, 248, 240, 224, 192, 128, or 0.

Subnet Examples

Host Address	Subnet Mask	Network Address
10.1.4.8	255.0.0.0	10.0.0.0
114.2.4.6	255.255.0.0	114.2.0.0
192.1.3.156	255.255.255.0	192.1.3.0

Table 2: Subnet Examples

Use a lookup table to obtain the corresponding Subnet Mask.

For further details refer to www.subnetonline.com.

USER NOTES

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This manual is applicable to the ImproX Ethernet Controller Utility.				
(The last two digits of the Impro stock code indicate the issue status of the product).				
IXP360-0-0-GB-04	Issue 05	Oct 2006	ImproX Ethernet Utility\English Manuals\LATEST ISSUE\XECUtil-usrm-en-05.doc