

# NetLink Configuration Utility

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## NetLink Configuration Utility

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Help version 5.004

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### Overview

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The NetLink device is a gateway from Ethernet to S7 MPI, in bus connector format. The NetLink Configuration Utility application provides:

- Identification of NetLink devices on the local network
- Temporary IP address download
- Ethernet parameter (including permanent IP address) and bus parameter download
- Firmware download

### Navigation

The following **Device** menu items are available in the NetLink Configuration Utility.

| Operation                 | Description   | Link                                     |
|---------------------------|---|--|
| <b>Refresh List</b>       | Scan local network for NetLink devices  | <a href="#">Refresh List</a>             |
| <b>Set Temporary IP</b>   | Set temporary IP address for subsequent downloads of Parameter Settings and Firmware. | <a href="#">Set Temporary IP Address</a> |
| <b>Parameter Settings</b> | Download NetLink Parameter Settings (i.e. Permanent IP Address, MPI Baud Rate)        | <a href="#">Parameter Settings</a>       |
| <b>Firmware</b>           | Update NetLink firmware   | <a href="#">Firmware</a>                 |

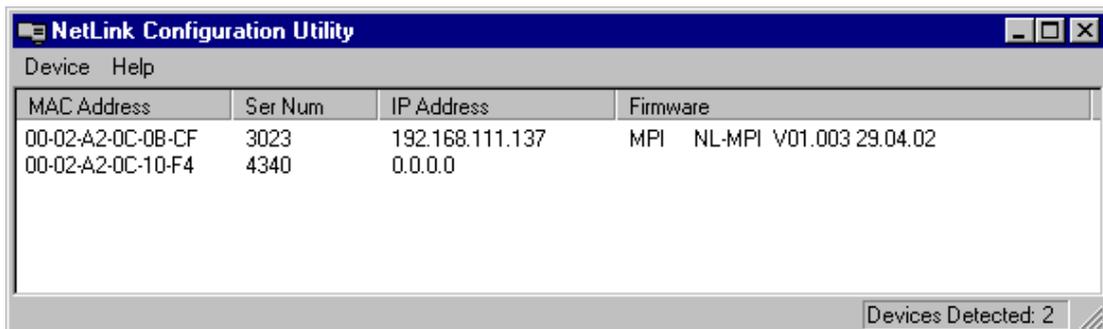
## Getting Started

### Quick Start Tutorial

This tutorial assumes an standard third-party NetLink device with factory default settings. It also assumes the NetLink is loaded with the latest firmware. *To upgrade firmware, see [Firmware](#).*

This tutorial provides instructions for scanning the network for NetLink devices, setting a temporary IP address, and downloading parameter settings to the device (including a permanent IP address).

1. Select **Device | Refresh List**. This cause a scans of the local network for NetLink devices.

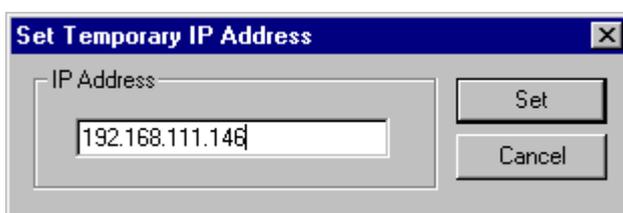


2. In the main window, review the list of NetLink devices detected. The view contains four columns: MAC Address (hardware address), Serial Number (factory assigned), IP Address (configurable), Firmware string containing device type, firmware revision, and firmware date. (configurable) (see [Refresh List for details](#)).
3. Select **Device | Set Temporary IP**. Standard NetLink uses 0.0.0.0 for a default IP address. Before parameter settings, including a permanent IP address, can be downloaded to the NetLink, a temporary IP address must be assigned.

● **Note:** There is a three-minute window for setting a temporary IP address after power on. If it is not set in that time, NetLink responds with error code -1.

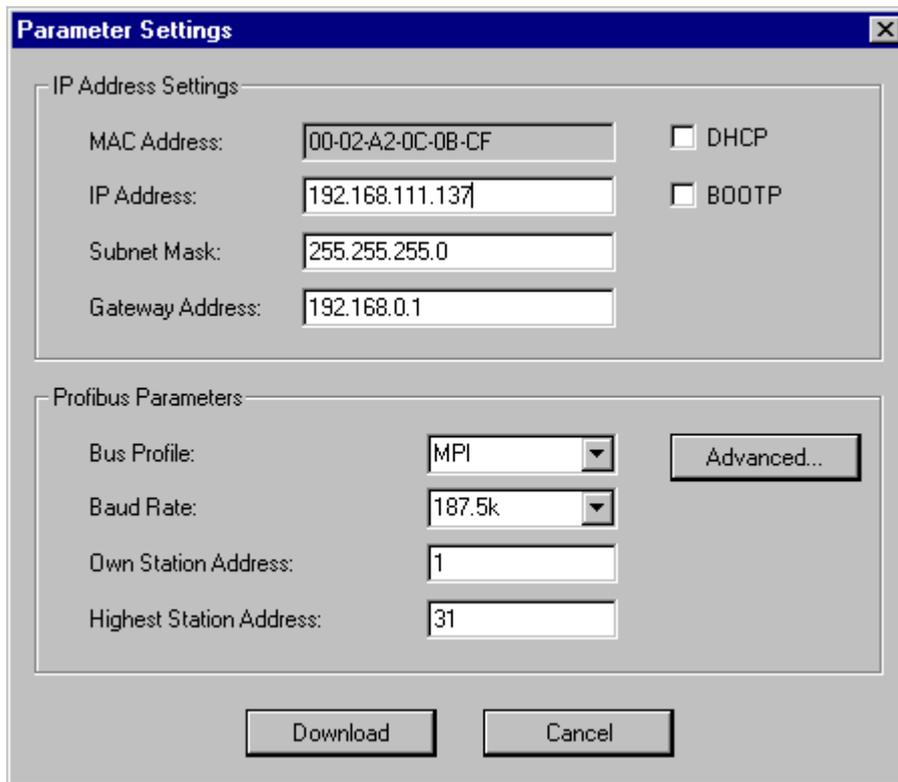
4. In the next dialog, enter a temporary IP address and click **Set**.

● **Tip:** Use the same IP address that will be permanently saved later for the temporary IP address (see [Set Temporary IP Address](#)).



5. Select **Device | Parameter Settings** to define how communications take place from the PC to the NetLink and from the NetLink to the PLC.
6. In the [Parameter Settings](#) dialog, enter the permanent IP Address, subnet mask, and gateway (if applicable; if not, leave the field empty). If the Profibus Parameters need to be altered, click [Advanced....](#)

- Click **Download** to start the transfer.

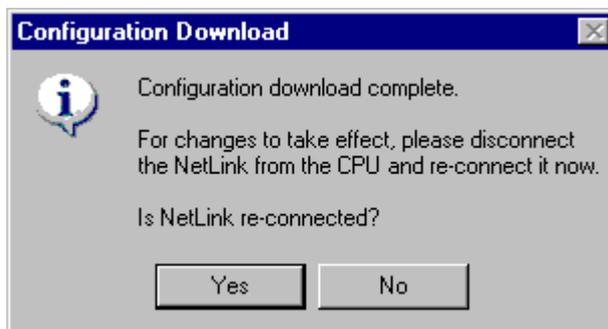


The **Parameter Settings** dialog box is shown with the following fields and options:

- IP Address Settings:**
  - MAC Address: 00-02-A2-0C-0B-CF
  - IP Address: 192.168.111.137
  - Subnet Mask: 255.255.255.0
  - Gateway Address: 192.168.0.1
  - DHCP
  - BOOTP
- Profibus Parameters:**
  - Bus Profile: MPI (dropdown menu)
  - Baud Rate: 187.5k (dropdown menu)
  - Own Station Address: 1
  - Highest Station Address: 31
  - Advanced... button

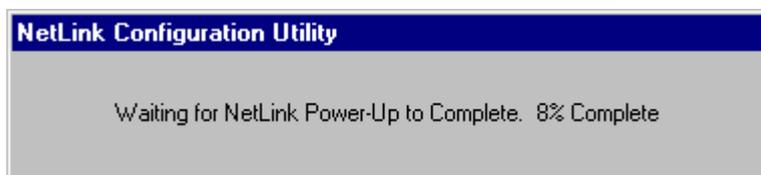
Buttons: **Download**, **Cancel**

- When the download process completes, a dialog appears prompting to disconnect and reconnect the NetLink from the PLC. Click **Yes** when the NetLink is reconnected.



The **Configuration Download** dialog box displays the following information:

- Information icon (i)
- Configuration download complete.
- For changes to take effect, please disconnect the NetLink from the CPU and re-connect it now.
- Is NetLink re-connected?
- Buttons: **Yes**, **No**



**NetLink Configuration Utility**

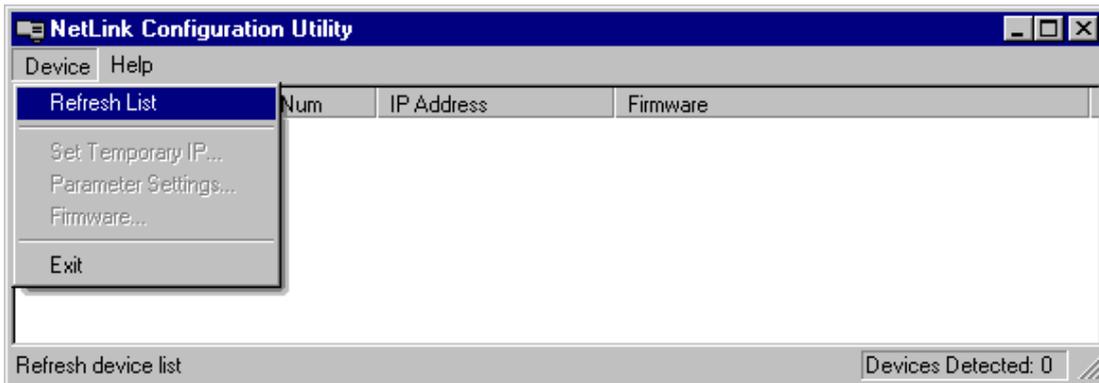
Waiting for NetLink Power-Up to Complete. 8% Complete

- The parameter settings have successfully downloaded to the NetLink

• See Also [Parameter Settings](#)

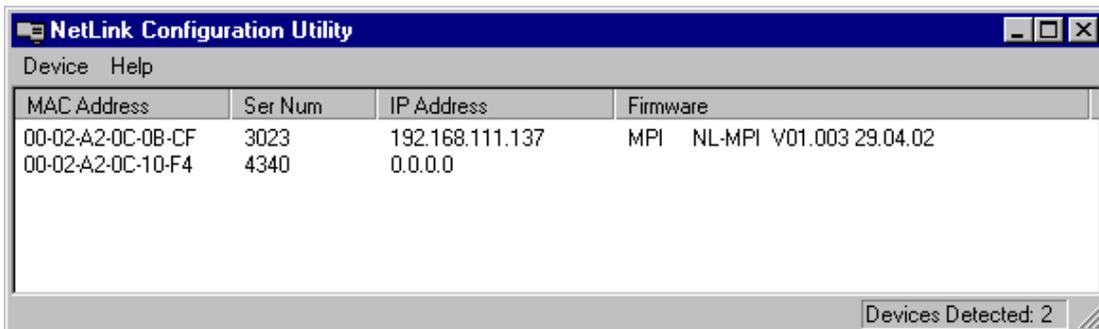
## Refresh List

To scan for NetLink devices on the local network, select **Device | Refresh List**.



The main window displays a list of all NetLink devices detected. The view contains four columns:

- MAC Address (hardware address)
- Serial Number (factory assigned)
- IP Address (configurable)
- Firmware string containing device type, firmware revision, and firmware date. (configurable)



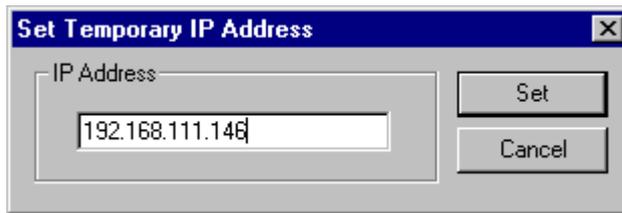
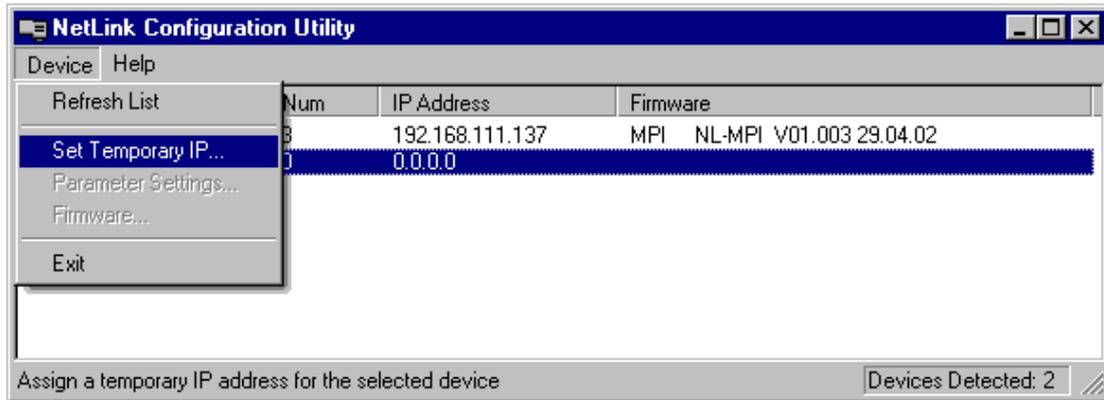
If a known NetLink is not in the list, disconnect and reconnect this NetLink, wait about 10 seconds and then perform another Refresh List.

To begin any Configuration or Firmware operation with the device, an IP Address must be assigned to that device.

## Set Temporary IP Address

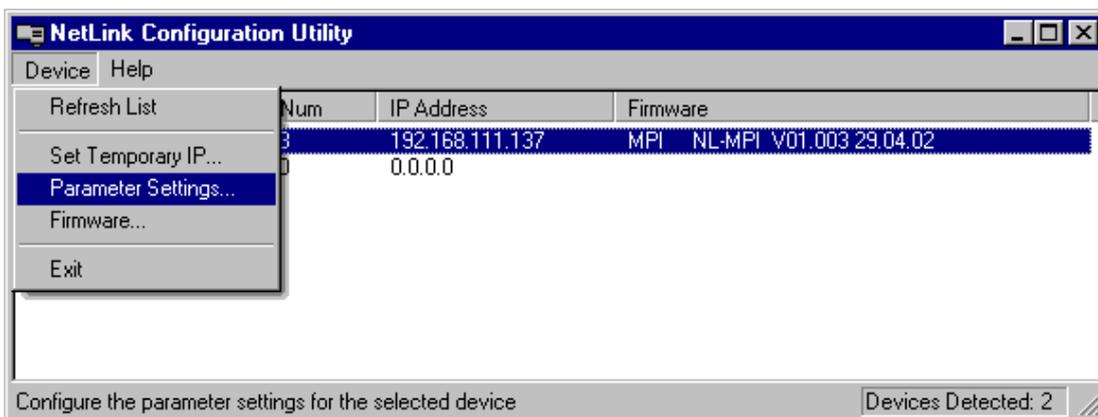
To set a temporary IP Address:

1. Disconnect and reconnect the NetLink from the PLC.
  - **Note:** There is a three-minute window for setting a temporary IP address after power on. If it is not set, the NetLink responds with error code -1.
2. Select the NetLink from the list.
3. From the menu, select **Device | Set Temporary IP....**



4. Enter a valid IP address and click **Set**. The temporary IP address is downloaded to RAM.
  - **Note:** If the NetLink is disconnected, the temporary IP address is lost.
5. Once a temporary IP address is assigned, [Firmware](#) and [Parameter Settings](#) can be downloaded to the NetLink.

## Parameter Settings



Select a link below:

### [Parameter Descriptions](#)

Description of each parameter

### [Advanced Profibus Parameter Descriptions](#)

Description of each advanced Profibus parameter

### [Parameter Download](#)

Description of the download process for parameter settings

## Parameter Descriptions

**Important:** With the exception of MAC address and IP address, the default parameter values do not necessarily indicate current device settings. Settings are write-only and are not read from the device.

**Parameter Settings**

IP Address Settings

MAC Address: 00-02-A2-0C-0B-CF  DHCP

IP Address: 192.168.111.137  BOOTP

Subnet Mask: 255.255.255.0

Gateway Address: 192.168.0.1

Profibus Parameters

Bus Profile: MPI

Baud Rate: 187.5k

Own Station Address: 1

Highest Station Address: 31

### IP Address Settings

There are three ways the NetLink can be assigned IP parameters:

- DHCP (dynamic) - the device gets IP parameters from a DHCP server.
- BOOTP (dynamic) - the device gets IP parameters from a BOOTP server.
- Static - the device used IP parameters: IP address, subnet mask, and gateway address. If a parameter does not apply, leave the field empty.

If more than one method is chosen, the NetLink tries each one, in the order listed above, until one succeeds.

### Profibus Parameters

#### Bus Profile

The bus profile presets the parameter values to best match the given bus. For example, MPI defaults at 187.5K baud whereas Profibus defaults at 1.5M baud. Changing the bus profile affects the following parameters:

- Baud Rate
- Slot Time
- Minimum Station Delay
- Maximum Station Delay
- Quiet Time

- Setup Time
- Target Rotation Time
- GAP Factor
- Max Retry

### Baud Rate

Baud rates available are:

9600  
19.2K  
93.75K  
187.5K  
500K  
1.5M  
3M  
6M  
12M

### Own Station Address

Station address for the NetLink

Value Range: 0 ... 125

Default: 1

### Highest Station Address

Station address of the highest active station

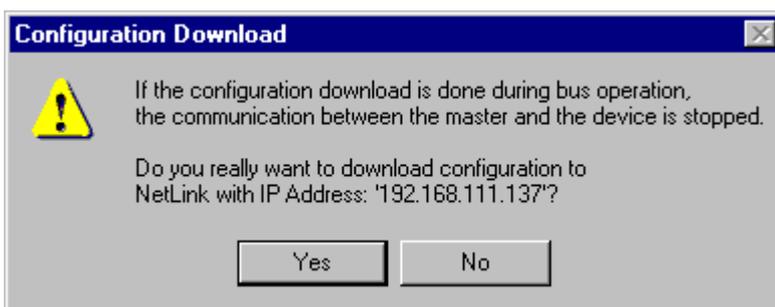
Value range: 2 ... 126

Default: 31

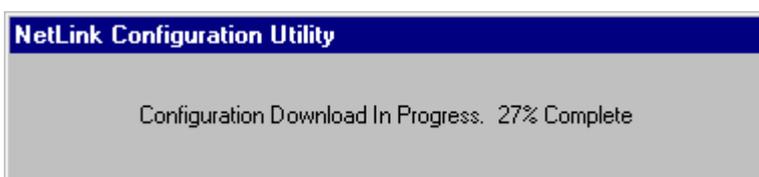
• See Also: [Advanced Profibus Parameter Descriptions](#)

## Parameter Download

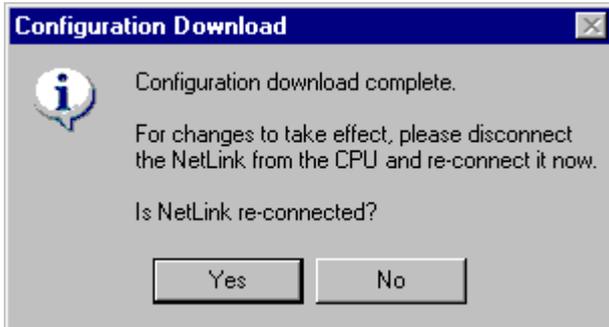
When the **Download** button is selected in the Parameter Settings dialog, a warning is displayed.



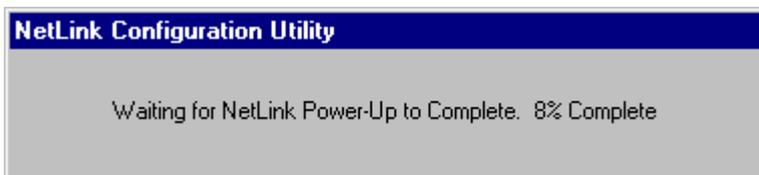
Click **Yes** to perform the download or **No** to cancel. Once the download is in process, a progress percentage is displayed.



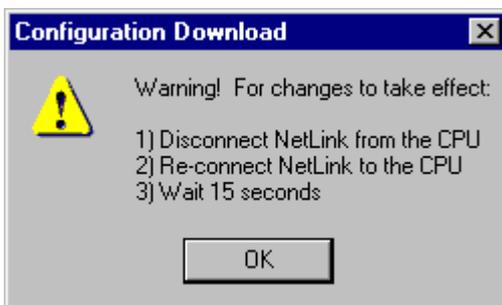
When the download process completes, a dialog appears prompting to disconnect and reconnect the NetLink from the PLC.



It is necessary to reconnect the device for this new configuration to be used. Click **Yes** when the NetLink is reconnected. The NetLink Configuration Utility pauses to allow the NetLink to complete its power-up sequence.



If the **No** button is selected, a warning will be displayed. It is necessary to reconnect the device for this new configuration to be used. Otherwise the previous configuration remains active.



## Advanced Profibus Parameter Descriptions

**Important:** The default parameter values do not necessarily indicate current Device Settings. Settings are write-only and are not read from the device.

| Calculated Timing     |            |
|-----------------------|------------|
| Bit Time (tBit):      | 5.33333 us |
| TID1:                 | 60 tBit    |
| TID2:                 | 400 tBit   |
| Target Rotation Time: | 53.3333 ms |

| Configure Timing                             |            |
|--|------------|
| Slot Time (TSL):                             | 415 tBit   |
| Min. Station Delay of Responders (min TSDR): | 60 tBit    |
| Max. Station Delay of Responders (max TSDR): | 400 tBit   |
| Quiet Time (TQUI):                           | 1 tBit     |
| Setup Time (TSET):                           | 1 tBit     |
| Target Rotation Time (TTR):                  | 10000 tBit |
| GAP Actualization Factor (G):                | 20         |
| Max. Retry Limit:                            | 2          |

## Calculated Timing

### Bit Time

The time it takes to transmit 1 bit.

Bit Time = 1/Baud Rate.

### TID1 and TID2

The time the sender must wait, after receiving the last character of a telegram, before it can send the next telegram.

TID1 (tBit) starts after sender receives an acknowledgment / response.

TID2 (tBit) starts after the sender has sent an unacknowledged telegram.

### Target Rotation Time (ms)

Nominal token cycling time in milliseconds.

## Configure Timing

### Slot Time

Time Sender waits for acknowledgment / response before retrying.

Value Range: 37 ... 16383

Default: 415 (MPI), 300 (PROFIBUS)

### Minimum Station Delay of Responders

Minimum time period that must elapse before the responder may send an acknowledgment/response.

Value Range: 1 ... 65535

Default: 60 (MPI), 11 (PROFIBUS)

### Maximum Station Delay of Responders

Maximum time period that must elapse before the sender may send next telegram.

Value Range: 1 ... 65535

Default: 400 (MPI), 150 (PROFIBUS)

### Quiet Time

Time delay for modulators/repeaters to switch from sending to receiving.

Value Range: 0 ... 127

Default: 1 (MPI), 0 (PROFIBUS)

### Setup Time

Time sender must wait between receiving an acknowledgment / response and sending next telegram.

Value Range: 1 ... 255

Default: 1 (MPI), 1 (PROFIBUS)

### Target Rotation Time

Pre-set nominal token cycling time.

Value Range: 1 ... 16777215

Default: 10000 (MPI), 2021 (PROFIBUS)

### GAP Actualization Factor

Number of token cycles before additional stations can be accepted into the token ring.

Value Range: 1 ... 100

Default: 20 (MPI), 10 (PROFIBUS)

### Maximum Retry Limit

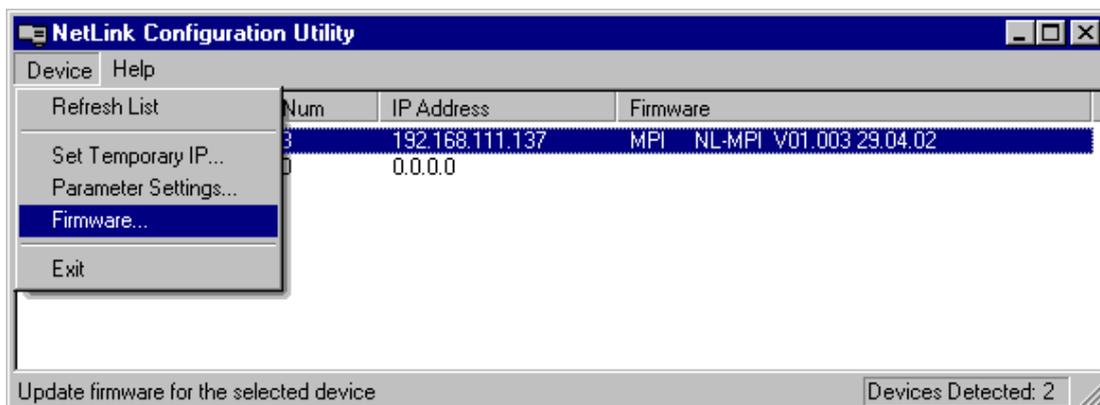
Maximum number of attempts a sender will re-send a telegram.

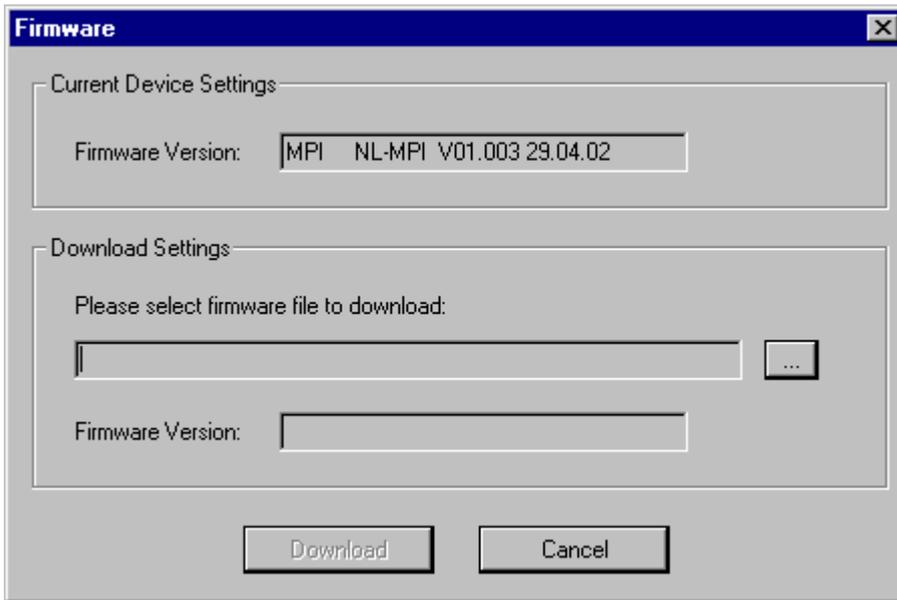
Value Range: 1 ... 15

Default: 2 (MPI), 1 (PROFIBUS)

## Firmware

To update NetLink firmware, select **Device | Firmware**.





### Current Device Settings

#### Firmware Version

NetLink's current firmware revision. Firmware string syntax is <Type> <Version> <Date>. For NetLink devices, the <Type> is always NL-MPI. The NetLink Configuration only supports devices of <Type> NL-MPI.

### Download Settings

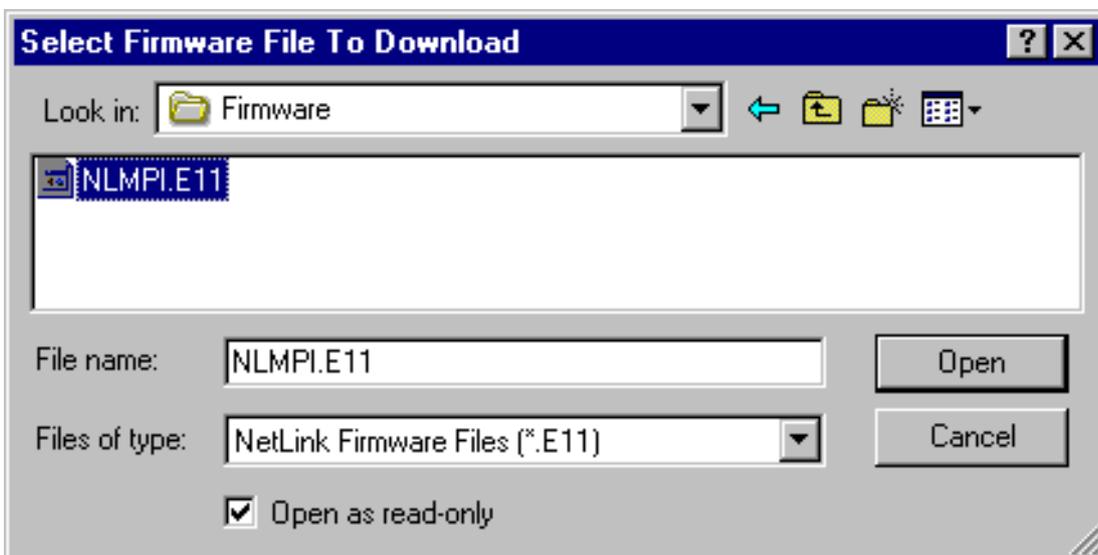
#### Selected Firmware

The name of the firmware file to download. File is selected via the browse (...) button.

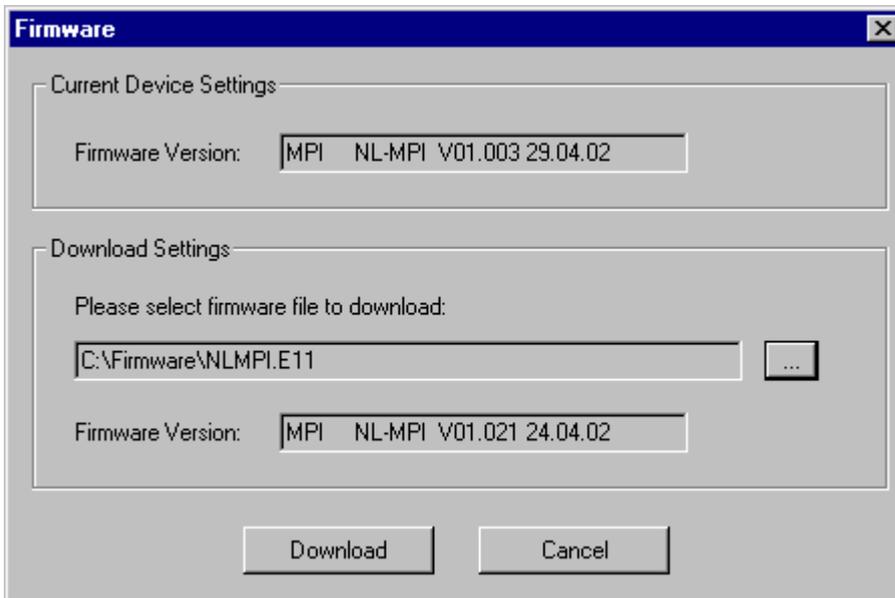
#### Firmware Version

Firmware revision of the selected firmware file to download. The firmware string follows the same syntax as the current firmware version.

Click the  button to locate available firmware files. The following dialog appears.



NetLink firmware files have a file extension of ".E11." Once a file is selected, click the **Open** button to accept the selection.

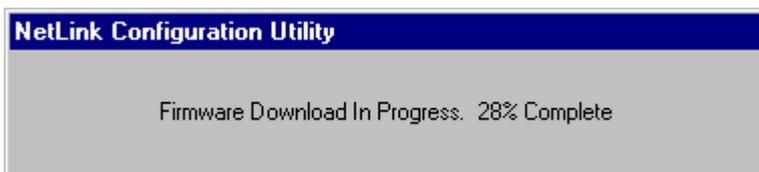


With a firmware file selected, a comparison can be drawn between the current firmware version and the selected firmware version.

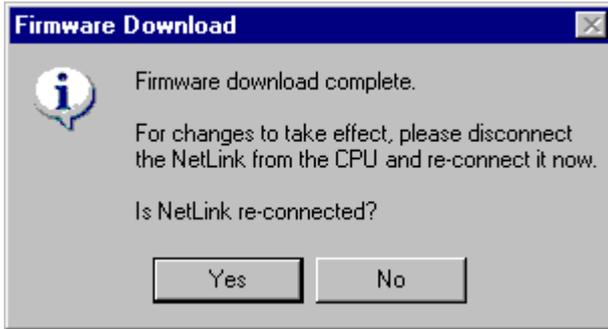
Click the **Download** button to download the selected firmware.



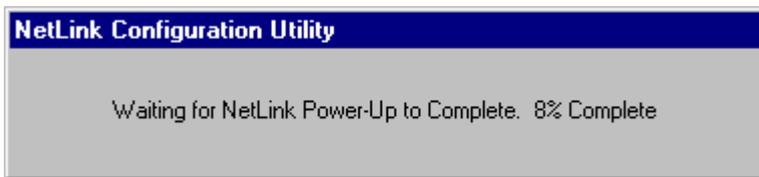
Click **Yes** to perform the download or **No** to cancel. During the download process, a progress percentage displayed.



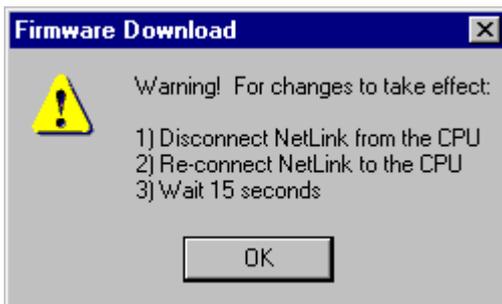
When the download process completes, a dialog appears prompting to disconnect and reconnect the NetLink from the PLC.



It is necessary to reconnect the device for the new firmware to be used. Click **Yes** when the NetLink is reconnected. The NetLink Configuration Utility pauses to allow the NetLink to complete its power-up sequence.



If the **No** button is selected, a warning is displayed. It is necessary to reconnect the device for the new firmware to be used. Otherwise, the previous firmware remains active.



## Troubleshooting

### NetLink is detected in the list, but cannot download configuration parameters or firmware.

If the IP address displayed in the list is 0.0.0.0, [set a temporary IP Address](#).

If the IP address displayed in the list is NOT 0.0.0.0, verify that the IP address is valid for the local network. An IP address may have been downloaded (i.e. "Parameter Download" on page 9) that does not meet the local network's subnet mask.

#### See Also:

[Set a Temporary IP Address](#)

[Set a Permanent IP Address](#)

[Download the Parameter Settings](#)

## Error Codes

The following table describes possible error codes presented by the NetLink Configuration Utility.

| Error Code | Source         | Description                         |
|------------|----------------|-------------------------------------|
| -10        | Remote Station | Dual port RAM not accessible        |
| -11        | Remote Station | Not ready                           |
| -12        | Remote Station | Not running                         |
| -13        | Remote Station | Watchdog test failed                |
| -14        | Remote Station | Signals wrong OS version            |
| -15        | Remote Station | Error in Dual Port flags            |
| -16        | Remote Station | Send mailbox is full                |
| -17        | Remote Station | PutMessage timeout                  |
| -18        | Remote Station | GetMessage timeout                  |
| -19        | Remote Station | No message available                |
| -20        | Remote Station | Reset command timeout               |
| -21        | Remote Station | COM-flag not set                    |
| -22        | Remote Station | IO data exchange failed             |
| -23        | Remote Station | IO data exchange timeout            |
| -24        | Remote Station | IO data mode unknown                |
| -25        | Remote Station | Function call failed                |
| -26        | Remote Station | DPM size differs from configuration |
| -27        | Remote Station | State mode unknown                  |
| -28        | Remote Station | Output port already in use          |
| -100       | Host           | File not opened                     |
| -101       | Host           | File size zero                      |
| -102       | Host           | Not enough memory to load file      |
| -103       | Host           | File read failed                    |
| -104       | Host           | File type invalid                   |
| -105       | Host           | File name invalid                   |

If a the device reports an error during configuration or firmware download, a value of 1000 is added to the error number.

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