

B5021 Ethernet Base Supplemental User Guide V3.0

Overview

This is a supplemental user guide for the B5021 Ethernet Base and covers the differences between the B5011 and the B5021. Refer to the B5011 manual for information about the B5021 not related to its Ethernet connectivity.

The B5021 can operate in one of two different modes depending on which firmware is loaded. The operational mode can be changed by simply changing the firmware. The hardware is the same for both modes.

The first mode of operation is Virtual COM Port (VCP) mode. In VCP mode, a driver is loaded on the Host computer which generates a VCP and allows the Host software to communicate with this VCP in the exact same way as a physical COM port. When the B5021V is connected on the same Ethernet network as the Host computer the VCP will be active and the Host program can communicate with the B5021V over Ethernet instead of serial. Serial and USB port communication (except for firmware updates) is not supported on the B5021V.

The second mode of operation is Ethernet Relay (ER) mode. In ER mode, the B5021 operates exactly like the B5011 except the RS-422 relay port is replaced with an Ethernet relay port. This allows the B5021R Base to communicate with B5021R relays over the Ethernet connection. The B5021R Base is connected to the Host computer either by RS-232 serial or USB just like the B5011 and requires no changes to the host software. The B5021R Relay can be connected to the same Ethernet network as the B5021R Base or it can be located remotely on a different Ethernet network. Up to 16 B5021R Relays can be connected to a single B5021R Base.

The Ethernet port supports Power-over-Ethernet (PoE) standard 802.3af which allows you to run a single CAT-5 cable to the B5021 for more flexible installation options. An optional 802.3af compliant power injector is required to supply power over the CAT-5 cable to the B5021. The power injector will combine the power and data lines into a single CAT-5 cable. The B5021 will separate the power and data automatically. If you plan to power the B5021 using an 802.3af compatible power injector you must set JP11 on the B5021 to the VPOE setting. JP11 is located near the DC jack in the upper right hand corner of the PCB. If you are using the supplied 5V power supply then no change is required.

The Ethernet port on the B5021 supports 10/100 Mbps operation.

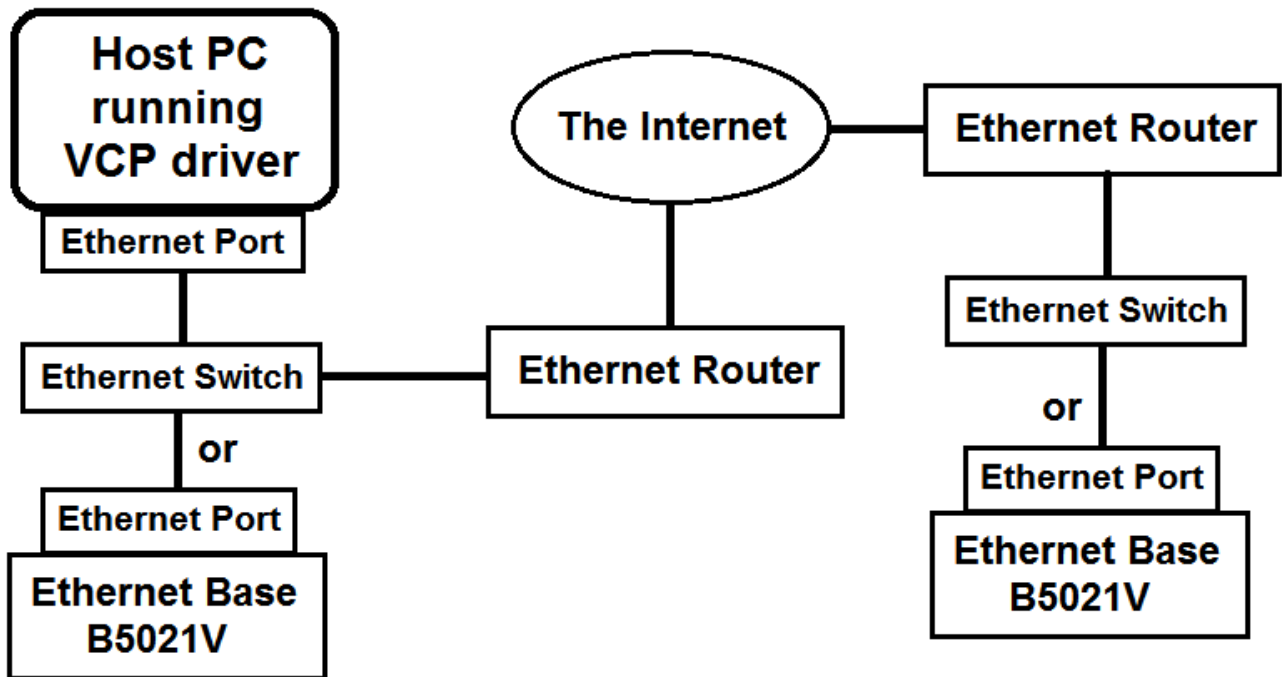
If you wish to reset the Ethernet settings to factory default values, set jumper JP4 to the “D” position then apply power. Wait for the LED to blink 3X then remove power and set JP4 back to the “N” position. This feature is supported in versions B5UE11, B5U305A and later firmware.

Installation

There are 3 different options for installing the B5021. A diagram of each installation option is shown below along with detailed setup instructions for each option.

Keep in mind that the RF Terminal will need to be configured to talk to relays if option #2 or #3 listed below is used by setting "Relay Existence"=YES under "RF Configuration". The default is NO.

Option #1: Virtual COM Port (VCP)

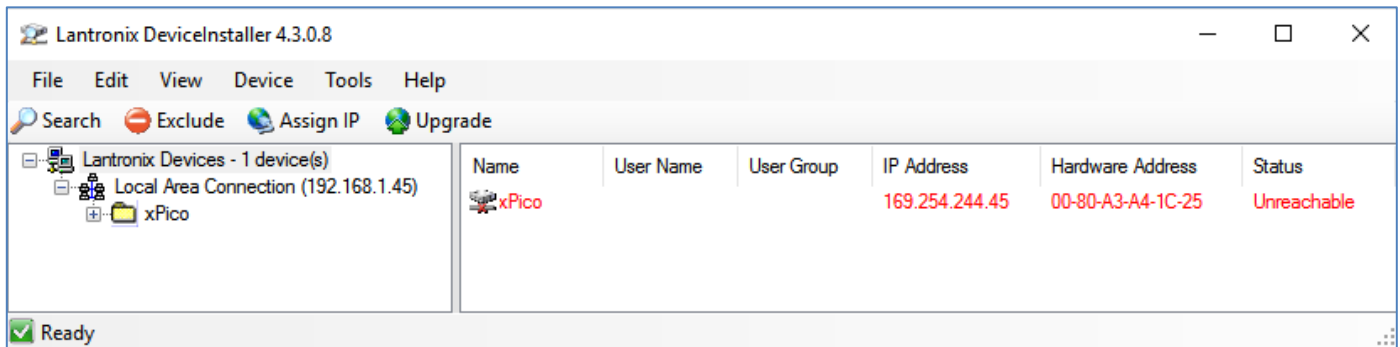


This option allows a B5021 running Virtual COM Port firmware (B5021V) to be connected via Ethernet to the Host PC running a VCP driver. The VCP driver will create a virtual COM port on the Host PC. The application software running on the Host PC communicates with the virtual COM port in exactly the same way as the B5011 does via serial or USB and requires no changes to the Host program to communicate with the B5021V. The B5021V must be located on the same Ethernet network as the Host computer. No Relays are supported by the B5021V. Also, the B5021V does not support Host communication by serial or USB to the Host computer. Only firmware updates are allowed by serial or USB on the B5021V.

The B5021V can be connected on the same LAN as the Host PC or located remotely as shown in the drawing above.

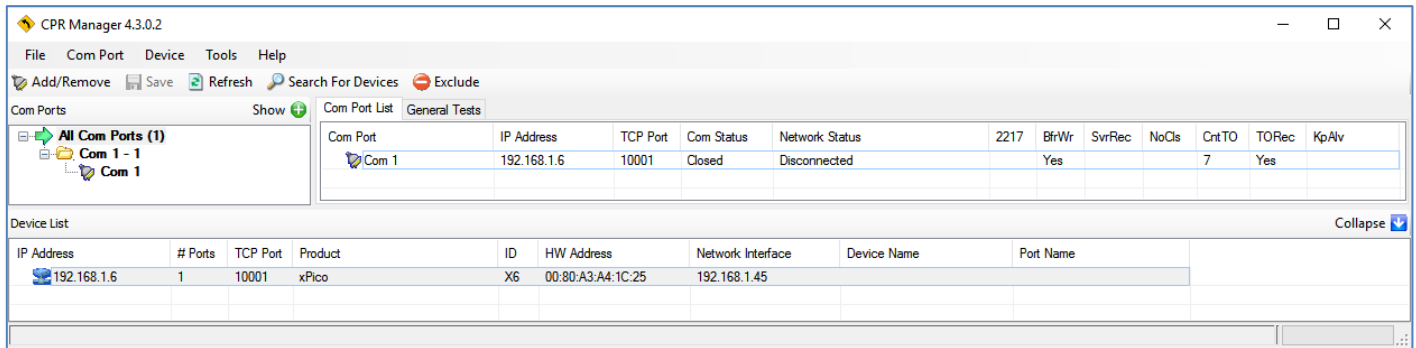
Option #1A: B5021V Installation Procedure (Local Network Only):

1. Power up the B5021V then connect a CAT5 cable between the RELAY/NET port of the B5021V and a hub or switch that is on the same network as the computer to be used to configure the B5021V for the first time. The green LED on the B5021V Ethernet jack should turn on to indicate that the Ethernet port is alive. The yellow LED will blink to show Ethernet activity.
2. The next step is to configure the B5021V's Ethernet port for either DHCP or static IP address operation. The default setting is DHCP. You can skip to step 5 if you wish to use DHCP to set the IP address of the B5021V. Using a static IP address is recommended.
3. The "DeviceInstaller" program is used to configure the Ethernet port on the B5021V and is included on the B5021 CD or can be downloaded from the Worth Data website. After installation the DeviceInstaller program will be located in the Lantronix folder of the Start Menu. Next run DeviceInstaller and you should see "xPico" automatically appear in the right hand window with its IP address and MAC address. If not, verify that the B5021V is powered up and connected to the same network as the host computer running DeviceInstaller.



4. Single click on "xPico" in the right window then "Assign IP" from the top menu bar. If more than one xPico device is listed, look for the one that starts with 169.254.xxx.xxx. The "Assign IP Address" window should open. Select "Assign a specific IP address" if you want to use a fixed IP address for the B5021V. The next screen will prompt you for the static IP address you wish to use, the subnet mask and gateway of your network. Once the IP address is configured you can close the "DeviceInstaller" program.
5. A com port redirector (CPR) program is used to map a virtual com port to the B5021V. This will allow you to use any existing B5011 program with the B5021V by simply setting the com port of the host application to match the virtual com port set by the "CPR Manager" program. The CPR Manager program should be installed on the computer that is running the host program. Once installed, the host program will be able to communicate with the B5021V anywhere on the local or remote network. The CPR Manager program is included






on the B5021 CD or can be downloaded from the Worth Data website. After installation the CPR Manager program will be located in the Lantronix folder of the Start Menu.



6. After running DeviceInstaller to configure the IP address of the B5021V, run CPR Manager to configure the virtual COM port to be assigned to the B5021V. Click “Search for Devices” to find the attached B5021V which should then be listed at the bottom pane under “Device List”. Next click “Add/Remove” to select the virtual COM port to assign to the B5021V. Put a “check” in the box for the desired COM port then click “OK” to close the window. The selected COM port should now be listed in red in the left “Com Ports” pane and also in the “Com Port List” pane.
7. Click on the new COM port in the left pane. The “Settings” pane should open on the right. The text will be in red since the settings have not yet been saved. If the “Service” & “Host” table is empty, click on the IP Address of the B5021V in the Device List in the bottom pane to add the B5021V’s IP Address to this COM port. Lastly click “Save” from the top menu bar to save the settings. The text should turn from red to black and a virtual COM port should be created with these settings. You can verify the creation of the virtual COM port by checking the Ports listed in Device Manager. The B5021V port will be listed as a “Lantronix CPR Port”.
8. Since CPR Manager loads a VCP driver you will not need to run CPR Manager again unless you wish to change or remove the virtual COM ports on this computer.
9. If you wish to remove the virtual COM port from this computer click “Add/Remove” then uncheck the virtual COM port assigned to the B5021V. Click “OK” to close the window then “Save” to remove the port from this computer.
10. It is possible to connect more than one B5021V on the same network. Simply repeat the above procedure for each B5021V. Note that each B5021V will have a unique COM port and no relay functionality is supported. Each B5021V on the same network must be set to a different frequency using the rotary dial (SW1) on the B5021V to avoid conflicts with RF traffic. This allows overlapping coverage among 2 or more distinct host programs such as shipping and inventory.

Option #1B: B5021V Installation Procedure (B5021V on Remote Network):

1. The B5021V will first need to be configured to have a static IP address. By default, the B5021V is configured with DHCP enabled to make it easy to find the B5021V on your network. Plug in the B5021V and connect it to the local network. Run DeviceInstaller (provided by Worth Data) on a computer that is on the same network as the B5021V. Double click on the xPico in the box to the right. Then click on the “Web Configuration” tab and then the “Home” icon. A security window should open asking for User Name and Password. By default they are both blank so click “OK” to continue. Click on the “Network” tab under the “Home” icon. Select “Use the following IP configuration” and enter the values for IP Address, Subnet Mask and Default Gateway that match the network where the B5021V will be installed. Click “OK” after entering the value. If you want to change the password of the web configuration page then select the “Server” tab and enter the password followed by “OK”. Then click “Apply Settings” to save the changes into the B5021V.
2. Once the B5021V has been configured it can be installed at the remote site. The router at the remote site will also need to be configured to allow the B5021V to communicate over the Internet. The router on the LAN where the B5021V is installed will need to be configured to port forward the IP port of the B5021V and the UDP ports used to communicate between the VCP driver and the B5021V. You will also need to know the IP address of the network where the B5021V is installed as viewed from the Internet. You can find this by searching for “myIPaddress” on a browser connected to the same network as the B5021V. Once you have all this information you can open the web admin page on your router (usually located on the bottom of the router) and look for the WAN settings and Port Forwarding. Here’s an example of what the ASUS router setup page looks like:

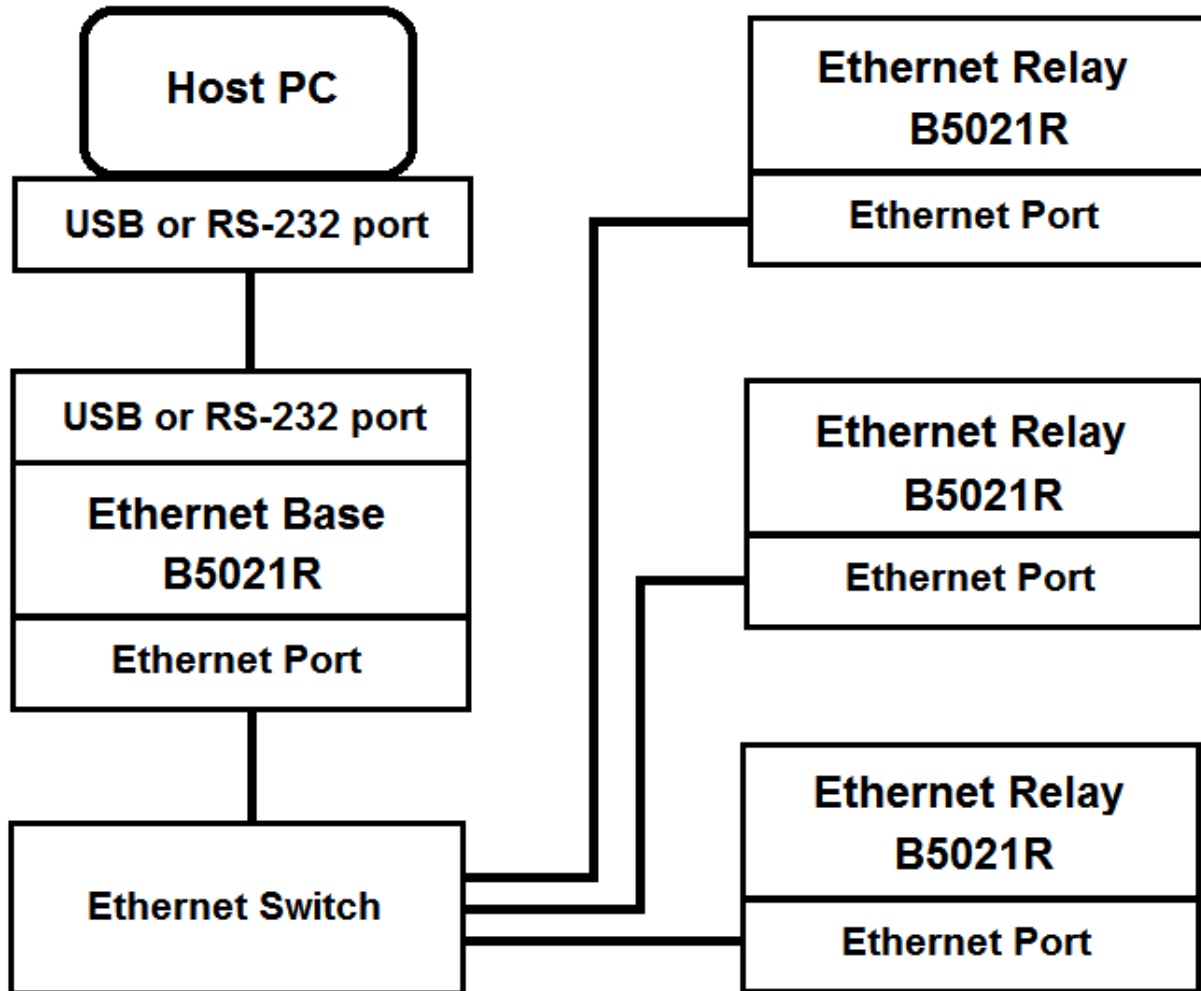
Port Forwarding List (Max Limit : 32)					
Service Name	Port Range	Local IP	Local Port	Protocol	Add / Delete
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	TCP ▾	
Worth Data B5021V	10001	192.168.1.130	10001	TCP	
CPR Manager	30718	192.168.1.130	30718	UDP	
CPR Manager	43282	192.168.1.130	43282	UDP	
CPR Manager	43283	192.168.1.130	43283	UDP	

Apply

In the above example, the B5021V has a static IP address of 192.168.1.130. Yours will probably be different. The other values will be the same. This completes the installation of the B5021V at the remote location.

3. On the computer running the host program that will communicate with the B5021V run the CPR Manager program (provided by Worth Data). Click on "Add/Remove" and select a COM port to use. This will be the COM port that the host program will communicate with. It is a virtual COM port since it will re-direct all communication over the Internet to the remote B5021V. Click on the "Com X" (X is the COM port #) on the tree in the "Com Ports" box to the left. The right box should change to show the settings for Com X. For Service #1 under "Host" enter the value of the IP Address of the B5021V as seen from the Internet. This was the IP Address that was returned by entering "myIPaddress into a search engine at the remote site. Also enter 10001 for the TCP Port. Click "Save" in the upper left corner. This will install the COM Port Redirector Virtual COM Port driver onto this computer. You should now be able to launch Hardware Utilities and talk to the remote B5021V.

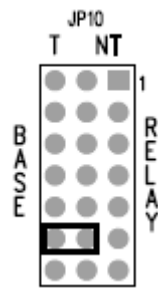
Option #2: Ethernet Relay (Local Network Only)



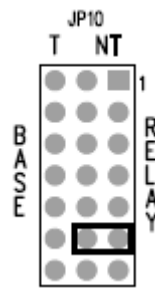
This option allows the B5021R Ethernet Base to manage up to 16 remote B5021R Ethernet Relays connected on a single network. The B5021R runs the exact same firmware as the B5011. JP13 (factory set) selects the mode for the relay (RS-422 or Ethernet) thus operation is transparent to the host application. The Ethernet Relay performs exactly like the B5011 and is compatible with B5011 host applications. Up to 16 B5021R Ethernet Relays can be connected to a single B5021R Base. Each Ethernet Relay must be set to a unique ID to differentiate it from other Ethernet Relays that communicate with the same Base. Use Hardware Utilities to set the Relay ID. See the B5011 manual for further details. The RF channel(s) for the Ethernet Base and Ethernet Relay(s) can be the same or different. A jumper is used to select the desired mode of operation between either B5021R Ethernet Base or B5021R Ethernet Relay; otherwise they are exactly the same hardware and firmware.

Option #2: B5021R Installation Procedure:

1. The B5021R connects to the Host PC exactly the same as the B5011. Refer to the B5011 manual if you have questions regarding connecting the B5021R to the Host PC.
2. If no Ethernet Relays are installed then you can stop here. No configuration of the B5021R Ethernet Base is required for single base operation without relays. The steps below outline the setups required when B5021R Ethernet Relays are added to the network.
3. If you need to add one or more B5021R Ethernet Relay(s) to your network then you will need to do some setup on both the B5021R Base and the B5021R Relay. The first step is to set the jumpers on the B5021R Relay for proper operation. As shipped, the jumper on JP10 is installed to the left for B5021R Ethernet Base mode. This jumper must be moved to the right for B5021R Ethernet Relays. Only change this jumper on the Relays.



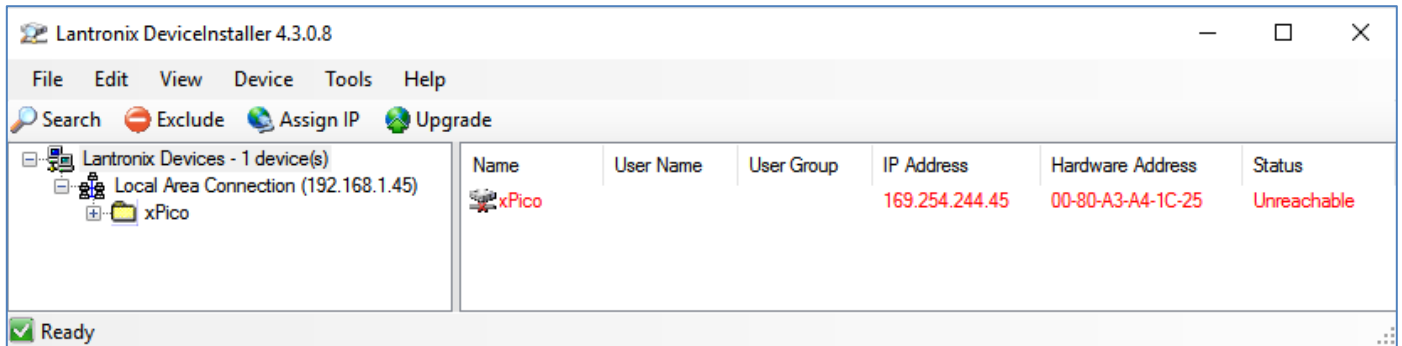
B5021R Base



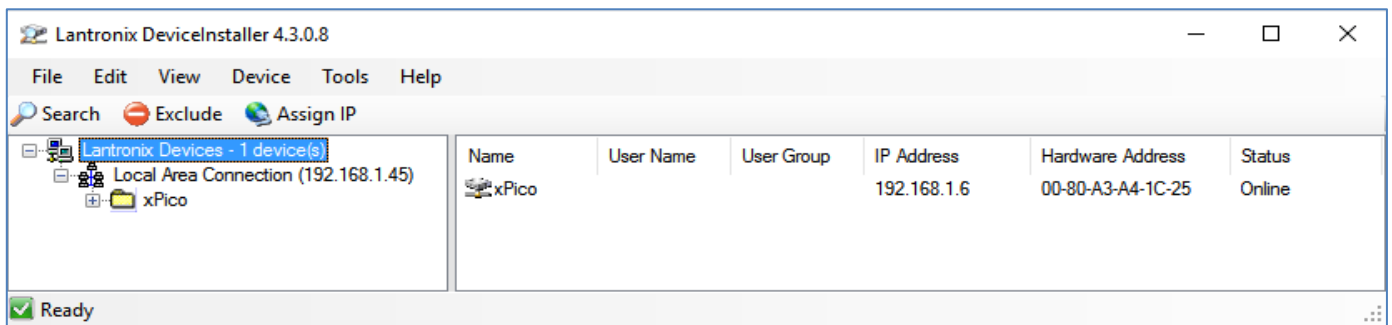
B5021R Relay

- You can verify that the jumper is properly set by watching the LED on the B5021R blink when power is applied. The LED on the Base will blink green and the LED on the relay will blink orange.
4. The B5021R Base and B5021R Relay(s) must all be set to static IP addresses. DHCP mode operation is not allowed. There are two things to consider when choosing a static IP address for the B5021R. First, the static IP address must not overlap with the DHCP address range. Second, the static address must be unique on the local network and not overlap any other device with a static IP address. Also, the Base and Relay(s) must all be set to different static IP addresses. Consult with your network admin if you don't have this information.
 5. To configure the IP address of your B5021R, plug in an Ethernet cable into the RELAY/NET port on the B5021R and plug the other end into a switch on the local network. Plug in the power to the B5021R if you are not using VPoE. The green and yellow LEDs on the B5021R's Ethernet port should become active.
 6. The "DeviceInstaller" program is used to configure the Ethernet port on the B5021R and is included on the B5021 CD or can be downloaded from the Worth Data website. After installation the DeviceInstaller program will be located in the Lantronix folder of the Start

Menu. Next run DeviceInstaller and you should see “xPico” automatically appear in the right hand window with its IP address and MAC address. If not, verify that the B5021R is powered up and connected to the same network as the host computer running DeviceInstaller.



- The above image shows what DeviceInstaller will look like if you do not have a DHCP server running. The xPico will default to an IP address in the 169.254.xxx.xxx range. Single click on “xPico” in the right window then “Assign IP” from the top menu bar. The “Assign IP Address” window should open. Select “Assign a specific IP address”. The next screen will prompt you for the static IP address you wish to use, the subnet mask and gateway of your network. This information is available from your IT department. Once the IP address is configured you can close the “DeviceInstaller” program. Make note of the IP addresses that you assign to the Base and Relay as you will need them later.



- The above image shows what DeviceInstaller will look like if you have a DHCP server running. The xPico will be assigned to an IP address within the DHCP server range. Single click on “xPico” in the right window then “Assign IP” from the top menu bar. If more than one xPico is listed look for one that has not been assigned to a static IP address. All B5021Rs that are powered up and connected to the network will be listed. Make note of the IP addresses that you assign to the Base and Relay as you will need them later.
- Plug in each Base and Relay(s) and repeat the above procedure until the Base and all Relay(s) are configured with static IP address. If you unplug one unit and plug in another

click on “Search” to scan for the new unit. You may want to put a tag on each Base and Relay and write its IP address on it to make it easier to do the next step. Once you have the Base and all Relays set to static IP addresses and a list of all the IP addresses you can proceed to the next step.

10. First, set up the B5021R Base. Plug in the Base to the network, power it up then open a browser and enter the IP address of the Base into the browser. A dialog box should open asking for a Username and Password. The default is blank for both so just click on “Log In” to proceed. The Home Page should now display. Click on “Network” on the left and the Network Setup page should appear similar to the image below:

Network Settings

Network Mode:

IP Configuration

Obtain IP address automatically

Auto Configuration Methods

BOOTP: Enable Disable

DHCP: Enable Disable

AutoIP: Enable Disable

DHCP Host Name:

Use the following IP configuration:

IP Address:

Subnet Mask:

Default Gateway:

DNS Server:

Ethernet Configuration

Auto Negotiate

Speed: 100 Mbps 10 Mbps

Duplex: Full Half

11. In this example the IP address of the Base is set to 192.168.1.129. Yours will probably be different but you will need to know the IP address of the Base to set up the Relays. The Gateway and DNS Server are not used for Option #2 networks since all Relays are located on the same LAN. If you change any settings click on “OK” before leaving the page to save the changes.

12. Next click on “Serial Settings” for Channel 1. You should see a page that looks like this:

Serial Settings

Channel 1

Disable Serial Port

Port Settings

Protocol: Flow Control:

Baud Rate: Data Bits: Parity: Stop Bits:

Pack Control

Enable Packing

Idle Gap Time:

Match 2 Byte Sequence: Yes No

Send Frame Immediate: Yes No

Match Bytes: Send Trailing Bytes: None One Two
(Hex)

Flush Mode

Flush Input Buffer

With Active Connect: Yes No

With Passive Connect: Yes No

At Time of Disconnect: Yes No

Flush Output Buffer

With Active Connect: Yes No

With Passive Connect: Yes No

At Time of Disconnect: Yes No

13. Under “Port Settings” change the “Baud Rate” to 115200

14. Under “Pack Control” check the box to Enable Packing.

15. Click on “OK” to save the settings then “Apply Settings” in the box to the left to apply all saved settings.

16. Next click on “Connection” for Channel 1.
17. For “Protocol” select “UDP” from the drop down list.
18. Set “Datagram Type” to “01” in the drop down list.
19. The local and remote ports should be set to “10001” and the “Use Broadcast” box should be checked. See below:

Connection Settings	
Channel 1	
Connect Protocol	Protocol: <input type="text" value="UDP"/>
Datagram Mode:	Datagram Type: <input type="text" value="01"/> Accept Incoming: <input type="text" value="Yes"/>
Endpoint Configuration:	Local Port: <input type="text" value="10001"/> Remote Port: <input type="text" value="10001"/>
	Remote Host: <input type="text" value="0.0.0.0"/> <input checked="" type="checkbox"/> Use Broadcast

20. You are now done configuring the B5021R Base. Click on “Apply Settings” to save all changes. The Ethernet controller will restart and the changes will take effect shortly.
21. You are now done configuring the B5021R Base. You can skip step 22 if you don’t want to change the password for the Base.

22. You can change the password for the Web Admin pages if you wish by going to the “Server” page as shown below. This is optional. After changing the password press “OK” and “Apply Settings” again.

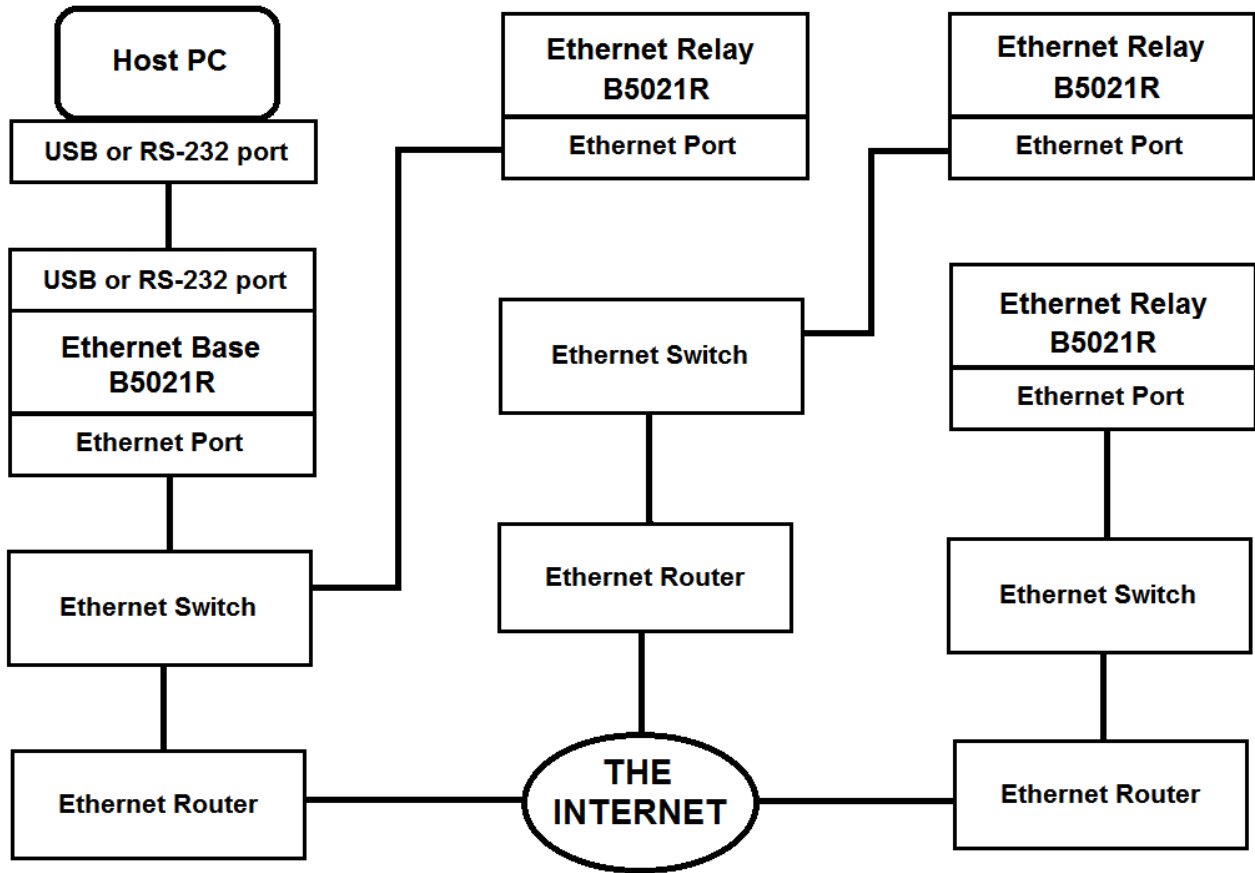
Server Settings	
Network	Server Configuration Enhanced Password: <input type="radio"/> Enable <input checked="" type="radio"/> Disable Telnet/Web Manager Password: <input type="text"/> Retype Password: <input type="text"/> Advanced ARP Cache Timeout (secs): <input type="text" value="600"/> TCP Keepalive (secs): <input type="text" value="45"/> Monitor Mode @ Bootup: <input checked="" type="radio"/> Enable <input type="radio"/> Disable CPU Performance Mode: <input type="radio"/> Low <input checked="" type="radio"/> Regular <input type="radio"/> High HTTP Server Port: <input type="text" value="80"/> Config Server Port: <input type="text" value="30718"/> MTU Size: <input type="text" value="1400"/> TCP Re-transmission timeout (ms): <input type="text" value="500"/> <input type="button" value="OK"/>
Server	
Serial Tunnel	
Hostlist	
Channel 1	
Serial Settings	
Connection	
Channel 2	
Serial Settings	
Connection	
Configurable Pins	
Apply Settings	
Apply Defaults	

23. Disconnect the B5021R Base and connect a B5021R Relay. Enter the IP address of the Relay into the browser. Click “Log In” to go to the home page.
24. Click on “Network” and verify that the Network settings match the Base except for the IP address.
25. Click on “Serial Settings” for Channel 1 and set the Baud Rate to 115200 and check the box to Enable Packing. Click “OK” to save the changes.
26. Click on “Connection” for Channel 1 to set up the connection to the host Base.
27. In the drop down box labeled “Protocol”, select “UDP”.
28. Set “Datagram Type” to “01”.
29. The “Local Port” and “Remote Port” should be set to “10001”.
30. Enter the IP address of the B5021R Base in the box labeled “Remote Host”.
31. Here’s an example of the Connection Settings for a B5021R Relay talking to a B5021R Base with the Base having an IP address of 192.168.1.60.

Connection Settings	
<ul style="list-style-type: none"> Network Server Serial Tunnel Hostlist Channel 1 <ul style="list-style-type: none"> Serial Settings <li style="background-color: #4b4b9b; color: white;">Connection Channel 2 <ul style="list-style-type: none"> Serial Settings Connection Configurable Pins Apply Settings 	<p>Channel 1</p> <p>Connect Protocol</p> <p>Protocol: <input type="text" value="UDP"/></p> <p>Datagram Mode:</p> <p>Datagram Type: <input type="text" value="01"/> Accept Incoming: <input type="text" value="Yes"/></p> <p>Endpoint Configuration:</p> <p>Local Port: <input type="text" value="10001"/> Remote Port: <input type="text" value="10001"/></p> <p>Remote Host: <input type="text" value="192.168.1.160"/> <input type="checkbox"/> Use Broadcast</p>

32. Click “OK” then “Apply Settings” to update the B5021R Relay with the new settings. The Ethernet controller will restart and the new settings will take effect.
33. You can enable the password on the Relay if you wish. See step 22 above. This is optional.
34. Repeat the settings for each B5021R Relay. The settings will be the same for all Relays except for the IP address of the Relay itself.
35. This completes the setup of the Base and Relay(s) for all relays located on the same LAN (Option #2).

Option #3: Ethernet Relay (Local Network & Remote Networks over Internet)



This option allows the B5021R Ethernet Base to manage up to 16 remote B5021R Ethernet Relays connected on both the local network or on remote networks connected over the Internet. The B5021R runs the exact same firmware as the B5011. JP13 (factory set) selects the mode for the relay (RS-422 or Ethernet) thus operation is transparent to the host application. The Ethernet Relay performs exactly like the B5011 and is compatible with B5011 host applications. Up to 16 B5021R Ethernet Relays can be connected to a single B5021R Base. Each Ethernet Relay must be set to a unique ID to differentiate it from other Ethernet Relays that communicate with the same Base. Use Hardware Utilities to set the Relay ID. See the B5011 manual for further details. The RF channel(s) for the Ethernet Base and Ethernet Relay(s) can be the same or different. A jumper is used to select the desired mode of operation between either B5021R Ethernet Base or B5021R Ethernet Relay; otherwise they are exactly the same hardware and firmware.

Option #3: B5021R Installation Procedure:

1. The setup for the B5021R Base that is used for Option #3 is the same as Option #2 above except for one setting so you can use those instructions to set up the Base. For option #2 the setting of the Gateway was not important but now that the Base will need to communicate with Relays that are on remote networks the Gateway will need to be set.
2. The setup for the B5021R Relay(s) that are located on the same LAN as the B5021R Base use the same setup as Option #2 above so you can use those instructions to set up any Relays that do not talk over the Internet to the Base.
3. Next, to set up the remote Relay(s) you will need to know the IP address of the network where the B5021R Base is located as seen from the Internet. There are a few ways to find this. One way is to open a browser on a computer on the same LAN as the B5021R Base is located and enter "My IP Address" into a search engine like Google. It should return your Public IP Address. This is the IP address of your LAN as seen from the Internet. The second way is to look at the "WAN IP Address" on the settings of your Internet router. Make note of this as you will need it later.
4. Set the Base/Relay jumper to the Relay position on the Relay(s) as specified in step #3 in Option #2 above. All Relays must have the jumper set to the Relay position.
5. Use DeviceInstaller to set the remote B5021R Relay(s) to a static IP address that is appropriate for the network(s) that they will be located on. Detailed instructions are provided in steps #4-9 in Option #2 above. This can be a little tricky if the remote networks use a different IP address range from the network being used to set up the Relay. Consult with you network admin for details. The "remote" Relay will need to be on the same LAN as the computer used to run DeviceInstaller for it to see and configure the "remote" Relay.
6. Now that the IP address for each remote Relay has been set you can launch a browser and configure the remainder of the settings. Enter the IP address of the remote Relay into your browser. Note that by "remote" I'm referring to the ultimate location of the Relay. The "remote" Relay will need to be on same LAN as the computer running the browser. You can set up the remote Relay on either the local or remote network but be aware of potential IP address conflicts if setting up a remote Relay on a different network than it will be used.
7. After entering the IP address of the "remote" Relay into the browser you will be asked for a password. The default is blank so just click on "Log In" to proceed.
8. B5021R Relay(s) that are located on remote networks will need to have the Gateway set on the "Network" page (see step #10 in Option #2 above).
9. Next click on "Serial Settings" and set the Baud Rate to 115200 and Enable Packing as shown in step #12 in Option #2 above.
10. Then click on "Connection" in the menu on the left. Follow the instructions in steps #19-21 in Option #2 above. If you have more than one B5021R Relay located on a remote network

then you will need to change the port address of each remote Relay located on the same remote LAN. You can use 10001 for the first remote Relay, 10002 for the second remote Relay, etc. It's a good idea to jot this down and even put a tag on the Relay to make it easy to identify which is which and complete the setup steps below.

11. In the field for "Remote Host" enter the Public IP Address that you obtained in step #3 above. Click "Ok" to save the settings.
12. You can optionally enable a password for the Web Setup of the "remote" Relay by following step #15 in Option #2 above.
13. Repeat the above procedure for each "remote" Relay. Once all the "remote" Relays have been set up they are ready to be deployed on the remote networks (If they aren't already).

14. Lastly, the Internet routers on the networks with the B5021R Base and all remote B5021R Relay(s) will need to be configured to allow the Relay(s) to them to communicate with each other. Most routers have built-in web based configuration pages. Often the IP address of the setup page is located on the bottom of the router or is in the router's documentation. Enter this IP address into a browser and look for "WAN Settings" and "Port Forwarding". An example of a router setup page is shown below:

The screenshot displays the ASUS RT-N12D1 router's web interface. The top navigation bar includes 'Logout', 'Reboot', and 'English' options. The main content area is titled 'WAN - Virtual Server / Port Forwarding'. It features a 'Basic Config' section with the following settings:

- Enable Port Forwarding: Yes No
- Famous Server List:
- Famous Game List:

Below this is the 'Port Forwarding List (Max Limit : 32)' table:

Service Name	Port Range	Local IP	Local Port	Protocol	Add / Delete
				TCP	<input type="button" value="+"/>
RF Base	10001	192.168.1.129	10001	TCP	<input type="button" value="-"/>

An 'Apply' button is located below the table. The footer of the page includes 'Help & Support', 'Manual', 'Utility', 'FAQ', and a search bar. The copyright notice at the bottom reads '2015 ASUSTeK Computer Inc. All rights reserved.'

15. The router Port Forwarding List will need to be updated with the port number and IP address of the B5021Rs connected to the same network. For example, on the router connected to the same LAN as the B5021R Base, enter the port number and IP Address of the B5021R Base. In the above example the B5021R Base is using IP address 192.168.1.129 and port number 10001. The same port number should be entered for both the WAN

(Internet) side and LAN (local) side. If local B5021R Relay(s) are used on the same LAN as the B5021R Base, they do not need to be listed in the port forwarding list.

16. On the router connected to the same network as a remote Relay(s) the Port Forwarding list should contain one entry for each router on that LAN. Enter the WAN and LAN port numbers (usually the same) and the IP Address for each remote B5021R Relay on the same LAN as the router.
17. Repeat step 16 for each router that has a remote Relay attached to its LAN.
18. That completes the setup of the Ethernet Base and Relay(s). Remember to configure the Terminal(s) that will be connecting to the Relay(s) by setting RELAY EXISTENCE to YES.