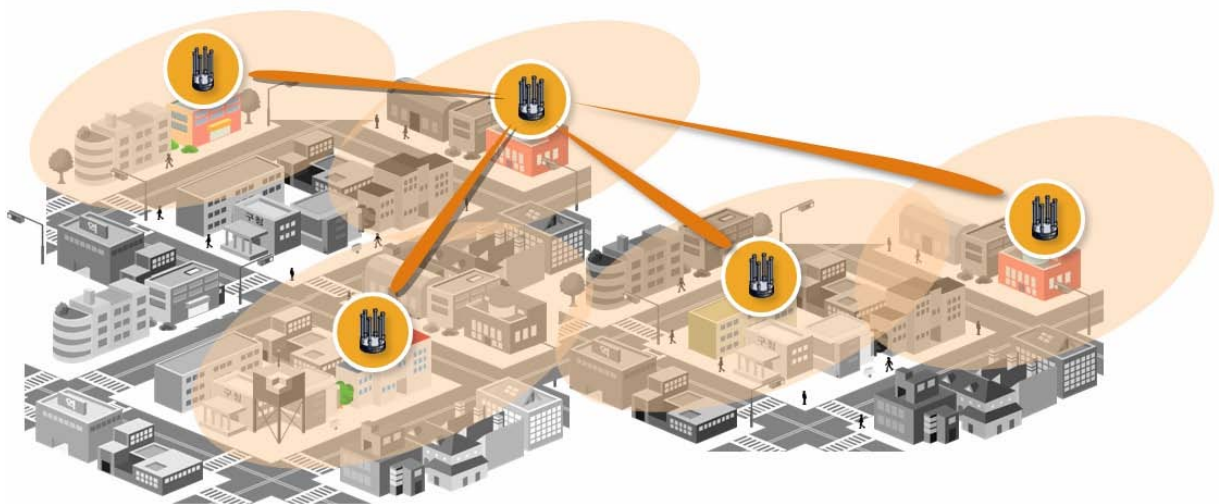# Netronics

NetPoint Pro Family

Broadband Wireless Networking Solutions
NetPoint Pro 3x2.4 (G2 and G2M)

Hardware Installation

2nd Generation

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Information to User

Any changes or modifications of equipment not expressly approved by the manufacturer could void the user's authority to operate the equipment and the warranty for such equipment.

READ THIS FIRST!

Important Safety Instructions

Read and save these instructions. Heed all warnings. Follow all instructions.

Do not defeat the safety purpose of the grounding. Only use attachments/accessories specified by the manufacturer.

Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way. For example, if the power-supply cord or plug is damaged, liquid has been spilled on the apparatus, objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, it does not operate normally, or has been dropped.

There is a risk of personal injury or death if the NPP-6X2.4 antennas come near electric power lines. Carefully read and follow all instructions in this manual. By nature of the installation, you may be exposed to hazardous environments and high voltage. Use caution when installing the outdoor system.

This apparatus must be connected to earth ground.

Do not open the unit. There is a risk of electric shock inside.

You are cautioned that any change or modification not expressly approved in this manual could void your authority to operate this equipment.

There are no user-serviceable parts inside. All service must be performed by qualified personnel.

The RJ45 connectors of your Netronics NPP-6X2.4 may source DC power On pins 4,5 and 7,8. The IEEE 802.3 standards allow for pins 4,5 and 7,8 to be used for Power Over Ethernet. Some products may be incompatible with the Netronics Power Over Ethernet capability. If such problems occur, make sure that the unit is configured with the Power Over Ethernet capability set to Off (default setting). If problems persist, use Ethernet cables that have no connections to the unused pins 4,5 and 7,8.

The Netronics NPP-6X2.4 and NPP-3X2.4 can be installed in wet, outdoor locations. Make sure closure caps are installed and all cable connections are securely fastened and waterproofed.

The Netronics NPP-6X2.4 can only be used with approved antennas.

Table of Contents

Chapter 1

Introduction

Welcome to NetPoint Pro!

Netronic's NetPoint Pro 3x2.4 device is a key enabler for the metro broadband wireless solution. NetPoint Pro's cellular Wi-Fi architecture offers a novel topology for metro Wi-Fi networks, which relies on the strengths of innovative xRF architecture. This architecture provides the coverage, capacity, and scalability required to deliver next-generation services and overcome the limitations of existing metro Wi-Fi solutions.

The NetPoint Pro's cellular Wi-Fi architecture is a highly scalable Micro/Pico topology which provides unprecedented flexibility to service providers deploying Metro Wi-Fi networks.

Key Product Features

- Robust IP67 rated weather-proof extended Wi-Fi solution
- Separate access & backhaul radios delivering unmatched bandwidth
- xRF™ smart antenna engine for unmatched (120°) coverage and capacity enhancements
- Optional advanced automatic mesh
- Designed for streetlight, wall, or pole deployment
- Client/WDS based CPE connection
- Support for all standard security scheme

Organization of this Document

The *Netronics NetPoint Pro* Installation Guide for the Wireless LAN Pico Base Station offers information and instructions for quickly installing and configuring the NetPoint Pro 3x2.4. The instructions and information are presented in one volume as follows:

Introduction	Contains introductory information about the NetPoint Pro 3x2.4.
NetPoint Pro 3x2.4	Presents a general description and overview of the NetPoint Pro 3x2.4 including content and safety procedures.
Installation Process	Describes the installation process for the NetPoint Pro 3x2.4.
Appendix A	Lists the acronyms that appear in the manual.
Appendix B	Details the wiring specifications.

Chapter 2

NetPoint Pro 3x2.4

The NetPoint Pro 3x2.4 complements the NetPoint Pro 6x2.4. It is a sector single-radio weather-proof base station intended for street-level light-pole/utility pole Wi-Fi applications.

The NetPoint Pro 3x2.4 is equipped with one xRF™-powered beamforming 802.11b/g radio for high-performance access and coverage. Some NetPoint Pro 3x2.4 models also include an additional 802.11a radio for high-performance, self-assembling, self-healing mesh backhaul.

NetPoint Pro 3x2.4 Package Components

The NetPoint Pro 3x2.4 package items are listed in Table 1:

DESCRIPTION	QTY
Wall/Poll Mount Kit Assembly (new)	1
Connectors Kit for NetPoint Pro 3x2.4 Package	1
NetPoint Pro 3x2.4 unit	1
Optional Antenna Kit 802.11a 5Ghz 10dBi Omni Mesh Antenna P/N: NPP-ANT-5810 (5.8Ghz) or P/N: NPP-ANT-5410 (5.4Ghz)	1
Optional Power Injector with power cable	1

Table 1: NetPoint Pro 3x2.4 Package Contents

Deployments of gateway devices connected by wire to an indoor switch/router would include installation of a lightning protector. A lightning protector is not supplied as part of the standard package. It can be ordered from Netronics as an accessory.

Specific installation may require different Power/Ethernet connections. See Cable Connections for more details.

NetPoint Pro 3x2.4 Safety Information

RF Exposure

The NetPoint Pro 3x2.4, an outdoor access point, is compliant with the requirements set forth in CFR 47 section 1.1307, addressing RF Exposure from radio frequency devices as defined in OET Bulletin 65. The outdoor access point antennas should be installed to provide a separation distance of at least 3 feet (1 meter) from humans.

> **Note:** The antenna(s) used for this transmitter must be fixed-mounted on indoor or outdoor permanent structures with a separation distance of at least 40 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

NetPoint Pro 3x2.4 Lightning Protector

A lightning protector is required when the NetPoint Pro 3x2.4 unit is installed in an outdoor location and the Ethernet cable connects to an indoor network device.

The purpose of the lightning protection is to protect people and equipment located indoors from lightning that might strike the NetPoint Pro 3x2.4 or its outdoor cables. Therefore, the lightning protector device should be installed indoors, as close as possible to the point where the cables enter the building.

The lightning protector can also be installed outdoors, as long as the cables that go from the lightning protector to the indoors are well protected from lightning between the box and the building entrance.

Verify that you have shared grounding. Netronics offers a lightning protector that can be ordered separately.

Installation Codes

This device must be installed according to the latest version of the country national electrical codes. For North America, equipment must be installed in accordance to the applicable requirements in the US National Electrical Code and the Canadian Electrical Code.

Information de sécurité pour NetPoint Pro 3x2.4

Exposition aux fréquences RF

Le point d'accès extérieur NetPoint Pro 3x2.4 est compatible avec la norme CFR 47 section 1.1307 concernant l'exposition aux appareils émetteurs de fréquences radio RF définis par le Bulletin 65 de l'OET. Les antennes doivent être installées à une distance minimum d'un mètre de personnes humaines.

Paratonnerre pour NetPoint Pro 3x2.4

Un paratonnerre est nécessaire lorsque le point d'accès NetPoint Pro 3x2.4 est installe à l'extérieur et lié à un network intérieur par un câble Ethernet.

La fonction du paratonnerre est de protéger les personnes et équipement situés en intérieur des éclairs qui pourraient frapper le NetPoint Pro 3x2.4 ou son câble extérieur. Par conséquent, le paratonnerre doit être installé en intérieur le plus près possible du point où le câble de liaison pénètre le bâtiment.

Le paratonnerre peut aussi être installé en extérieur à la condition que les câbles a l'intérieur du bâtiment soient protégés des éclairs entre le point d'accès et l'entrée du bâtiment

Vérifier que la prise de terre est partagée. Netronics met a disposition à la vente un paratonnerre.

Chapter 3

Installation

Installation Process

Installing the WLAN Pico Base Station involves the following steps:

1. Performing a Site Survey
2. Assembling and Mounting
3. Mounting the NetPoint Pro 3x2.4 unit
4. Connecting the cables
5. Powering up the unit and configuring the software
6. Performing a Post-installation Testing Procedure to verify connectivity and operation

Site Survey

Most wireless LANs include many access points installed in various locations in an overlapping radio-cell pattern. It is important to carefully identify each access point's position and the assignment of its radio channels. Therefore, a site survey becomes an essential first step before physically deploying the NetPoint Pro 3x2.4.

Installation of the access points requires a backhaul to interface the corporate network or Internet. This backhaul connection can be a mesh configuration, an Ethernet-wired connection, or a third-party solution. When using any method other than a wired connection, keep in mind the NetPoint Pro 3x2.4 has to have a good reception on its BH side so it will not limit the access-channel performance.

Conclude the site survey with a detailed plan of the urban broadband wireless system deployment. The system deployment plan should include NetPoint Pro 3x2.4 mounting points and the routes for the power and backhaul cables.

> **Note:**   Since the mounting structure itself is a potential source of interference, the cell
> should be mounted with at least 4 feet of clearance between the antennas and the
> mounting structure.

Assembling and Mounting

The universal mount is used to attach and secure the NetPoint Pro 3x2.4 to a wall, a streetlight arm, or a variety of poles.

The NetPoint Pro 3x2.4 mounting consists of the following stages and should be performed in the following order:

1. Connect the NetPoint Pro 3x2.4 unit to the brackets using the 'L' adaptor.
2. Secure the mounting brackets to a streetlight arm, wall, or pole.
3. Assemble the NetPoint Pro 3x2.4 unit to the bracket.
4. Ground the NetPoint Pro 3x2.4 unit.
5. Adjust the NetPoint Pro 3x2.4 unit.
6. For pole mounting, install the security cable.

Table 2 lists the universal mount parts:

Item No.	Description	Qty	Picture
A	Wall/Pole Bracket	1	
B	Clamping Bracket	1	
C	NetPoint Pro 3x2.4 'L' Adapter Wall/Pole Mount	1	
D	NetPoint Pro 3x2.4 'T' Adapter Wall/Pole Mount	1	
E	Hex Bolt M8x70	2	
F	Hex Bolt M8x40	1	
G	Hex Bolt M8x25	1	
H	Flat Washer M8	3	

Item No.	Description	Qty	Picture
I	Spring Washer M8	4	
J	Nut M8	1	

Table 2: Mounting Kit Part List

Hardware and Connectors Installation Tools

The following tools are required to mount the NetPoint Pro 3x2.4 on a pole.

Description	Picture
Combination Wrench (7 mm)	7 mm
Combination Wrench (13 mm)	13 mm

Table 2: Mounting Tools and Equipment

> **Note:** All hardware and tools used for assembling and mounting the NetPoint Pro 3x2.4 are Metric.

Mounting Adapters

When mounting to a pole, the required mounting adapter is based on the position of the pole. Installation to a horizontal pole requires using the 'L' adapter. Installation to a vertical pole requires using the 'T' adapter.

To assemble the 'L' adaptor [C] to the NetPoint Pro 3x2.4 unit:

- Attach the 'L' adapter to the NetPoint Pro 3x2.4 using an M8 x25 hex bolt [G], a spring washer [I], and a flat washer [H], as illustrated in Figure 1.
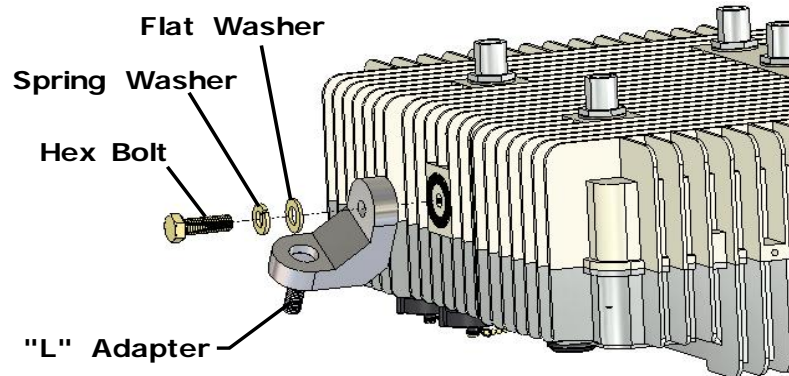

Figure 1: Mount 'L' Assembly

To assemble the 'T' adaptor [D] to the NetPoint Pro 3x2.4 unit:

- Attach the 'T' adapter to the NetPoint Pro 3x2.4 using an M8x25 hex bolt [G], a spring washer [I], and a flat washer [H], as illustrated in Figure 2.
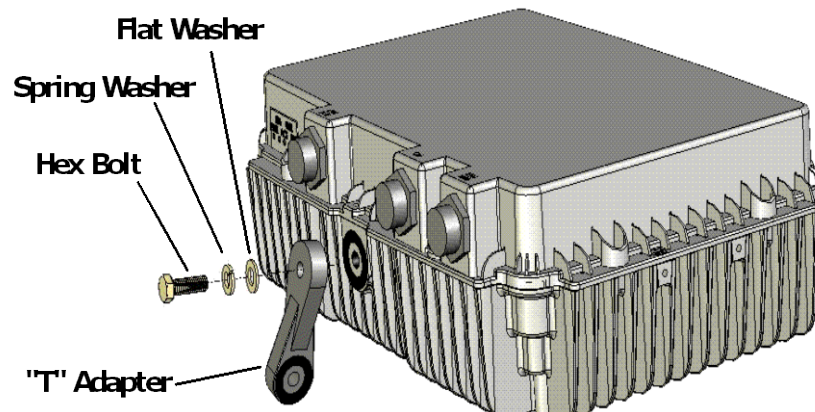

Figure 2: Mount 'T' Assembly

Mounting Brackets

➢ **To secure the mounting brackets:**

1. Select an optimal mounting location on the pole. Select the highest mounting location with minimal obstacles to the antennas for optimal performance.

> **NOTE:**   When mounting the NetPoint Pro 3x2.4, the pole or wall mounting must support a minimum of 61.6 lbs (28 kg). In addition, the pole or wall mounting must support the wind loads from the NetPoint Pro 3x2.4. For example, the wind load at a wind velocity of 100 mph (160 km/h) is 24.2 lbs (11 kg) and the wind load at a wind velocity of 165 mph (264 km/h) is 66.1 lbs (30 kg).

> *Noter:*   *Lorsque vous montez la NetPoint Pro 3x2.4, le poteau ou le montage mural doit supporter d'un minimum de 61.6 lbs (28 kg). En outre, le montage sur le poteau ou sur le mur doit appuyer les surcharges dues au vent de la NetPoint Pro 3x2.4 (par exemple, 24.2 lbs (11 kg) pour la vitesse du vent de 100 mph (160 km/h), 66.1 lbs (30 kg) pour l'énergie éolienne Vitesse de 165 mph (264 km/h)).*

2. Installation of the mounting brackets to a streetlight arm or a pole differs according to the width of the pole, as illustrated in Figure 3.
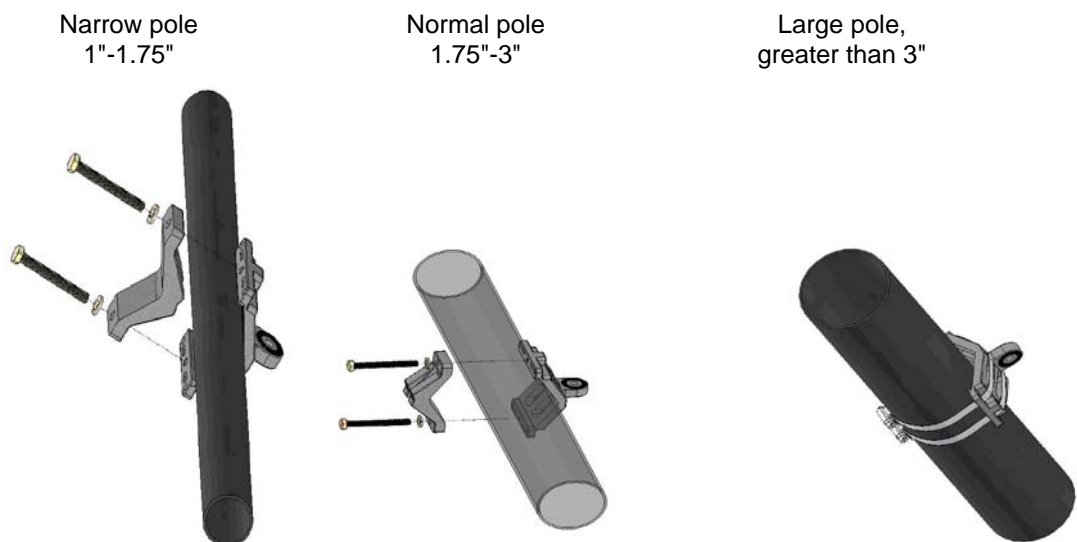
Narrow pole 1"-1.75"	Normal pole 1.75"-3"	Large pole, greater than 3"

Figure 3: Pole Bracket Assembly

3. For narrow poles (1"–1.75" diameter):

   a) Place the two brackets, [A] and [B], around the pole at the approximate height where you wish to place the unit. When placing the clamping bracket [B], the small notch side should be in contact with the pole.

   b) Use two M8x70 hex bolts [E] and spring washers, insert them through both brackets and tighten them around the pole so that the two brackets are securely fastened.

4. For normal poles (1.75"–3" diameter):

   a) Place the two brackets, [A] and [B], around the pole at the approximate height where you wish to place the unit. When placing the clamping bracket [B], the large notch side should be in contact with the pole.

   b) Use two M8x70 hex bolts [E] and spring washers [I], insert them through both brackets and tighten them around the pole so that the two brackets are securely fastened.

5. For poles larger than 3" in diameter:

   a) The wall/poll bracket [A] and two 9/16" (14mm) wide stainless steel hose clamps (not supplied with mounting kit) are used. The hose clamps must be the appropriate size to fit around the pole and bracket.

   b) Open the each hose clamp by rotating the screw on the clamp counterclockwise. There may be additional resistance just before the clamp is completely open. This is normal and you should continue rotating the screws until the clamps are open.

   c) Insert the band of each clamp through both slots and over the bracket [A].

   d) Place the bracket [A] and hose clamps around the pole at the approximate height where you wish to place the unit.

   e) Close each clamp by reinserting the band under the screw and rotate the screw clockwise.

   f) Position the bracket in the appropriate location and tighten the clamps around the pole so that the bracket is securely fastened.

6. For wall mounting:

   a) Fasten the wall/poll bracket [A] to the wall using four 3/16" (5mm) bolts, as shown in Figure 3. Use the appropriate bolts and fasteners, which is dependent on the material of the wall. Wall-mounting bolts and fasteners are not supplied with the mounting kit.

   b) Place the wall/poll bracket [A] at the appropriate location where you wish to place the unit. Using the four holes at the corners of the bracket, mark the location where the fasteners need to be installed.

   c) Install the four fasteners in the wall.

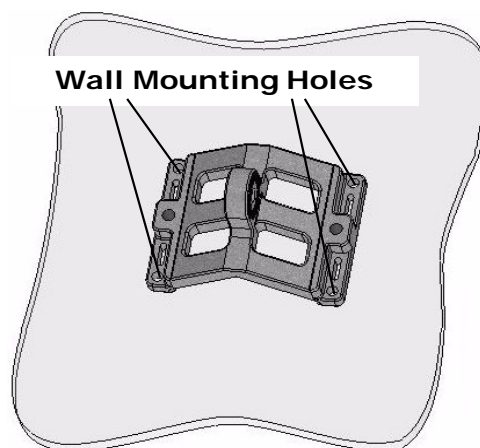   d) Insert the four bolts through the bracket and securely fasten the bracket to the wall.

Figure 4: Bracket Wall Mounting

Mounting the NetPoint Pro 3x2.4

When mounting to a pole, the required mounting adapter is based on the position of the pole. Installation to a horizontal pole requires using the 'L' adapter. Installation to a vertical pole requires using the 'T' adapter.

➢ To mount the NetPoint Pro 3x2.4 unit to a horizontal pole:

1. After assembling the brackets, mount the NetPoint Pro 3x2.4 unit on to the bracket as shown in Figure 5. Use a flat washer [H], a spring washer [I] and a nut [J].
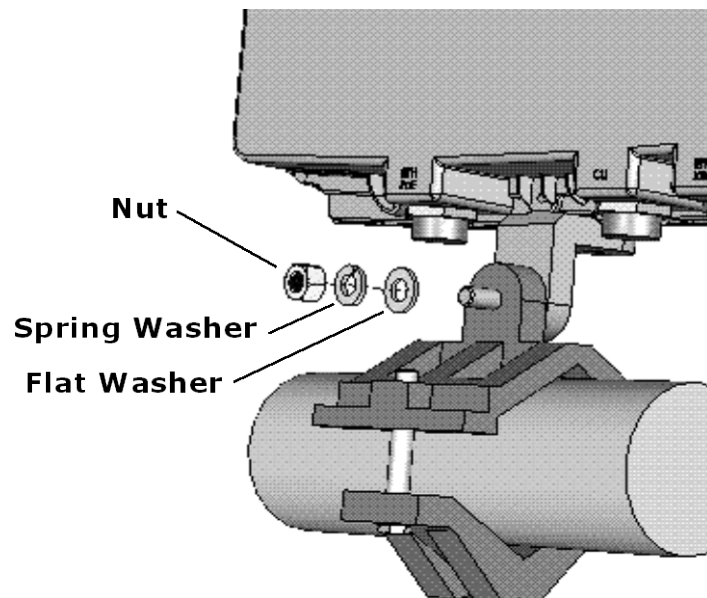

Figure 3: NetPoint Pro 3x2.4 Unit Horizontal Pole Mounting

2. Once the NetPoint Pro 3x2.4 unit is mounted, release the bolts slightly and adjust the NetPoint Pro 3x2.4 unit to enhance the coverage and bypass interference. When the unit is adjusted, firmly close all bolts, applying 120 inch-lbs of torque.

➢   To mount the NetPoint Pro 3x2.4 unit to a vertical pole:

1.   After assembling the brackets, mount the NetPoint Pro 3x2.4 unit on to the bracket as shown in Figure 5. Use a bolt [F], flat washer [H], spring washer [I] and nut [J].
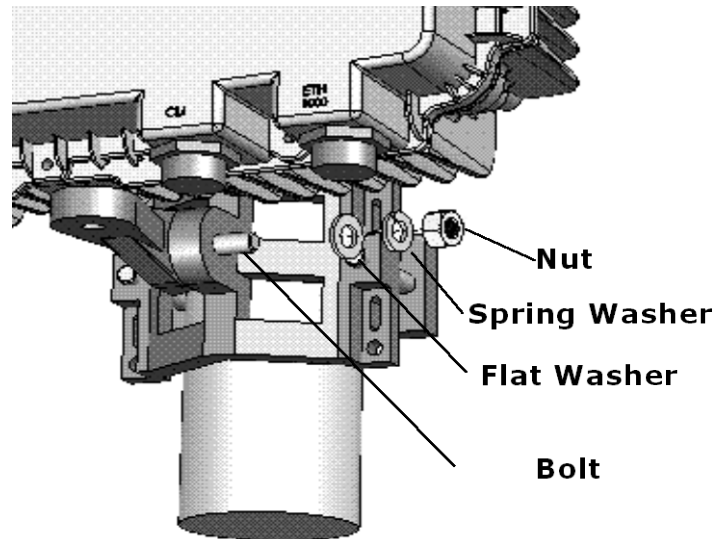

Figure 4: NetPoint Pro 3x2.4 Unit Vertical Pole Mounting

2.   Once the NetPoint Pro 3x2.4 unit is mounted, release the bolts slightly and adjust the NetPoint Pro 3x2.4 unit to enhance the coverage and bypass interference. When the unit is adjusted, firmly close all bolts, applying 120 inch-lbs of torque.

Installing the Safety Cable

Once the NetPoint Pro 3x2.4 unit is mounted, install the safety cable.

1.   Wrap the safety cable around the pole and insert the mounting plate through the cable loop.

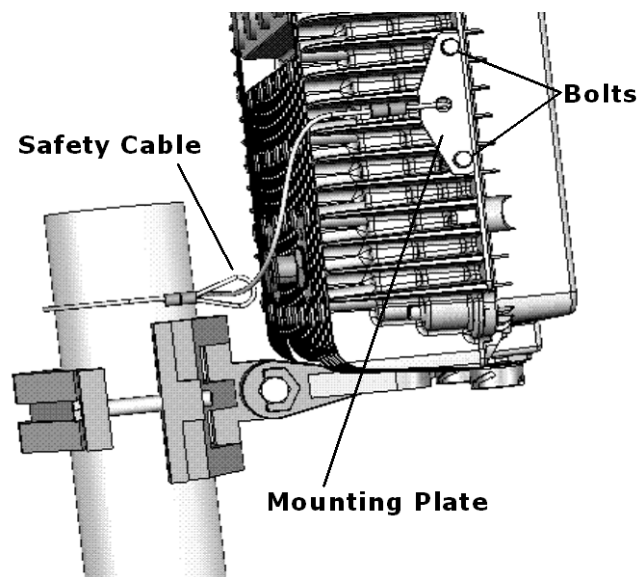2.   Attach the mounting plate to the NetPoint Pro 3x2.4 unit using the M4 captive bolts, as shown in Figure 4.

Figure 5: Safety Cable Installation

Assembling and Mounting the Optional Mesh Antenna

The mounting bracket is used to attach and secure the mesh antenna to a variety of poles. The antenna mounting consists of the following stages and should be performed in the following order:

1. Connect the antenna wire to the bracket.

2. Secure the mounting brackets to a pole.

3. Assemble the antenna to the bracket.

4. Attach the antenna wire to the NetPoint Pro 3x2.4 unit.

Table 2 lists the parts included in the optional mesh antenna kit:

Item No.	Description	Qty	Picture
A	Antenna	1	
B	Mounting Bracket	1	
C	Stainless Steel Hose Clamp 9/16" (14mm) width	2	
D	Antenna Wire	1	

Table 3: Mesh Antenna Kit Part List

Installation Tools

The following tools are required to mount the mesh antenna on a pole.

Description	Picture
Combination Wrench (18 mm)	18 mm

Table 4: Antenna Mounting Tools

1. Select an optimal mounting location on the pole. Select the highest mounting location with minimal obstacles to the antennas for optimal performance.

2. Attach the antenna wire [D] to the mounting bracket [B], as illustrated in Figure 8.

   a) Remove the nut and lock washer from the antenna connector.

   b) Insert the connector through the hole in the bracket.

   c) Reassemble the lock washer and nut to the connector.

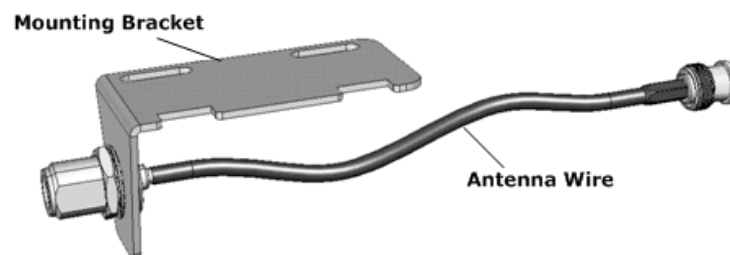   d) Tighten the nut to 45 inch-lbs of torque.

Figure 6: Mounting Bracket Assembly

3. Attach the bracket to the pole. For poles 3" diameter or less use the supplied hose clamps [C]. For larger poles use appropriate hose clamps (not supplied with mounting kit). See Figure 9.

   a) Open each hose clamp [C] by rotating the screw on the clamp counterclockwise. There may be additional resistance just before the clamp is completely open. This is normal and you should continue rotating the screws until the clamps are open.

   b) Insert the band of each clamp through both slots and over the bracket [B].

   c) Place the bracket [B] and hose clamps [C] around the pole at the approximate height where you wish to place the unit.

   d) Close each clamp by reinserting the band under the screw and rotate the screw clockwise.

e) Position the bracket in the appropriate location and tighten the clamps around the pole so that the bracket is securely fastened.
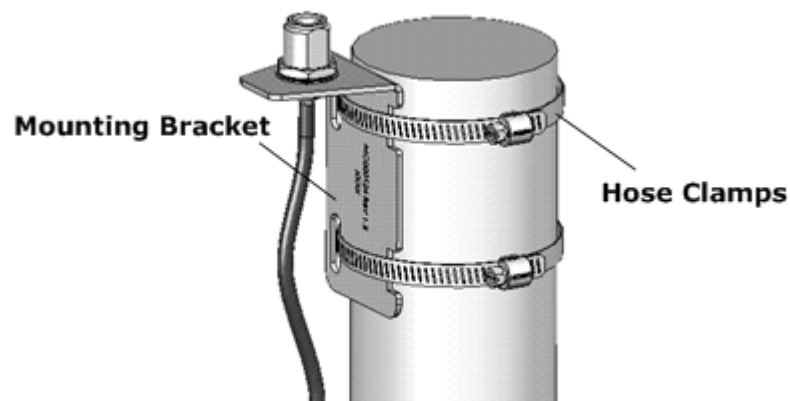

Figure 7: Mounting Bracket to Pole

4. Attach the meshing antenna to the connector by screwing the antenna into place by hand. Rotate the antenna at its metallic base. The antenna should rotate easily. Tighten the antenna by hand only. Do not apply excessive force by using any tool, as this may damage the antenna and connector.
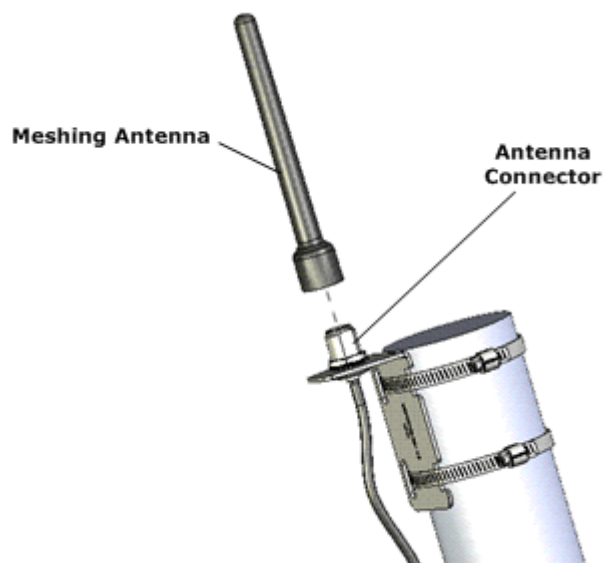

Figure 8: Mounting Bracket to Pole

5. Attach the other connector on the antenna wire [D] to terminal B2 on the NetPoint Pro 3x2.4 unit. Tighten the connector by hand. Do not apply excessive force by using any tool, as this may damage the unit.
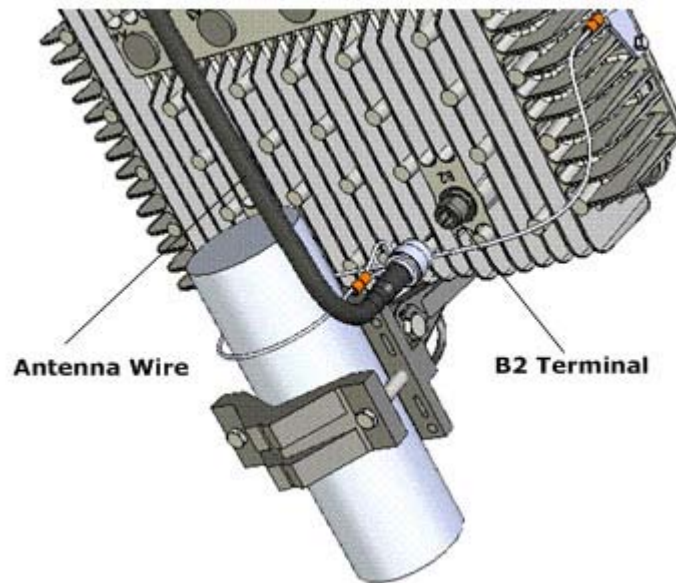
Figure 9: Antenna Wire

Cable Connections

When the NetPoint Pro 3x2.4 is properly adjusted, the connecters are located at the bottom of the unit.

Cable requirements are often unique to the location and deployment topology of each installation. As a result of this limitation, the Ethernet and grounding cables are not included in the installation kit.

The following cables are required to install the NetPoint Pro 3x2.4 unit and should be connected in the following order:

- **Grounding Cable –** Provides the necessary electrical safety functions.
- **Power over Ethernet (PoE) Cable –** Supplies 48 VDC power to the NetPoint Pro 3x2.4 unit and an Ethernet connection to a wired network.
- **RS-232/RJ45 Console Cable –** Provides a connection from the NetPoint Pro 3x2.4 unit to a console (laptop computer) for configuration. This is only required when the NetPoint Pro 3x2.4 unit is not pre-configured. This cable is not provided with the NetPoint Pro 3x2.4 unit. It is recommended that the NetPoint Pro 3x2.4 is pre-configured prior to installation.

Table 6 lists the NetPoint Pro 3x2.4 Connectors Kit parts:

Item No.	Description	Qty	Picture
A	Solderless Ring Terminal	1	
B	Ground Screw	1	
C	Lock Washer	2	
D	Sealed RJ45 connector	2	

Table 5: Connectors Kit Part List

Cable Installation Tools

The following special tools are required to install and connect cables related to the NetPoint Pro 3x2.4.
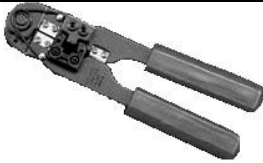
Description	Picture
#2 Phillips Screwdriver	
RJ45 Crimp Tool	HT-210A

Table 6: Cable Installation Tools and Equipment

Grounding Cable

Connect a grounding wire to the grounding screw at the side of the NetPoint Pro 3x2.4 unit, near the grounding icon. A 10 AWG grounding cable is required to ground the NetPoint Pro 3x2.4 unit.
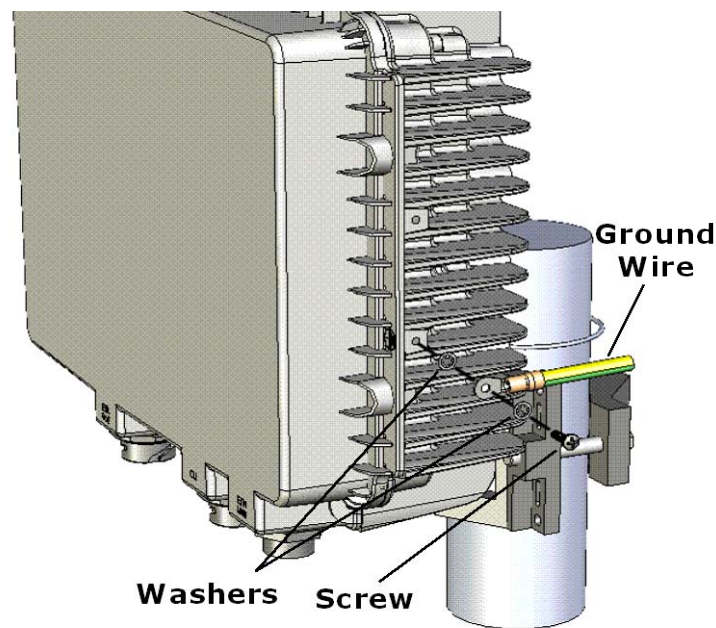
Figure 10: Grounding Connection

➢ **To ground the NetPoint Pro 3x2.4 unit:**

1. Crimp the solderless ring terminal [A] contained in the NetPoint Pro 3x2.4 Connectors Kit to the grounding cable.

2. Attach the solderless ring terminal [A] to the side of the NetPoint Pro 3x2.4 unit using the grounding screw [B] and lock washers [C].

3. Connect the other end of the grounding cable to a proper ground.

Note: Connect the 10 AWG grounding cable before connecting any other cables. When removing the NetPoint Pro 3x2.4, the grounding cable should be the last cable removed.

Noter: *Connecter la prise de terre 10 AWG avant de connecter tout autre câble. Pendant la désinstallation du NetPoint Pro 3x2.4, la prise de terre doit être le dernier câble retiré.*

Power over Ethernet (PoE) Connection

The Power over Ethernet (PoE) connection supplies the NetPoint Pro 3x2.4 unit with power and includes an Ethernet connection. This connection is used for wired backhaul connection or an interface to a third party wireless BH solution. Use outdoor rated CAT5 shielded cables or better. The outer diameter of the Ethernet cable must be 4.8 – 7 mm.

When using CAT5 shielded 24 AWG cables, the cable can be up to 60 meters. When using CAT5 shielded 22 AWG cables, the cable can be up to 100 meters.

The following diagram illustrates how the PoE cable should be assembled prior to connecting it to the NetPoint Pro 3x2.4 unit:

Figure 11: Ethernet Cable Connector

The pinouts for the PoE connector are as follows:
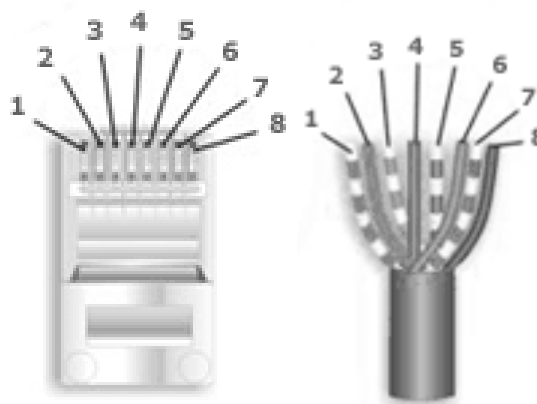
Figure 12: Ethernet Cable Connector

Pin #	Signal
1	Data
2	Data
3	Data
4	+48V
5	+48V
6	Data
7	-48V
8	-48V

Table 7: PoE Ethernet Connector Pinout

Note: Connect the grounding cable before connecting any other cables. When removing the NetPoint Pro 3x2.4, the grounding cable should be the last cable removed.

Noter: *Connecter la prise de terre 10 AWG avant de connecter tout autre câble. Pendant la désinstallation du NetPoint Pro 3x2.4, la prise de terre doit être le dernier câble retiré.*

The PoE wiring method requires a power injector. The following diagram illustrates the wiring from the power injector to the NetPoint Pro 3x2.4 unit.
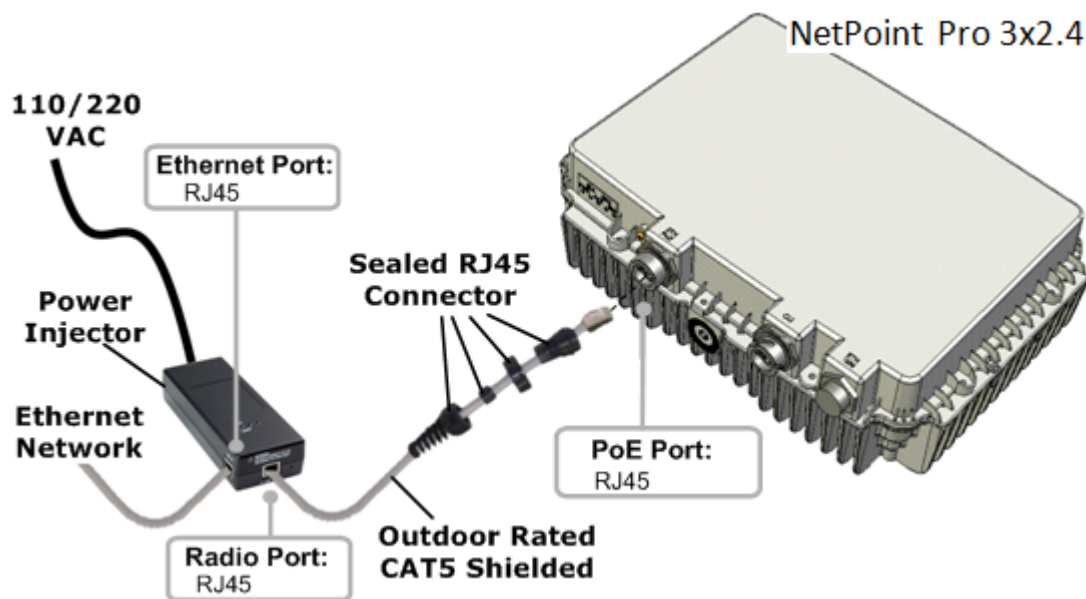
Figure 13: PoE Wiring Connections

➢ To wire the PoE connection:

1. Build the PoE cable as described above.

2. Using the PoE cable, connect the RJ45 connector to the PoE port on the NetPoint Pro 3x2.4. Then assemble and tighten the sealed RJ45 connector to the NetPoint Pro 3x2.4 unit.

3. Connect the other end of the PoE cable to the Radio port on the power injector.

4. Connect the Ethernet cable from the Ethernet network to the Ethernet port on the power injector.

5. Connect the AC power to the power injector.

Computer Connection

Figure 16 illustrates the Ethernet cable connections used to connect the NetPoint Pro 3x2.4 to a notebook computer. This connection is typically used for the initial configuration. For more information regarding the configuration, see the *NetPoint Pro Configuration Guide*. For more information regarding the RS232 on RJ45 cable, see *Appendix B: Wiring Specifications.*
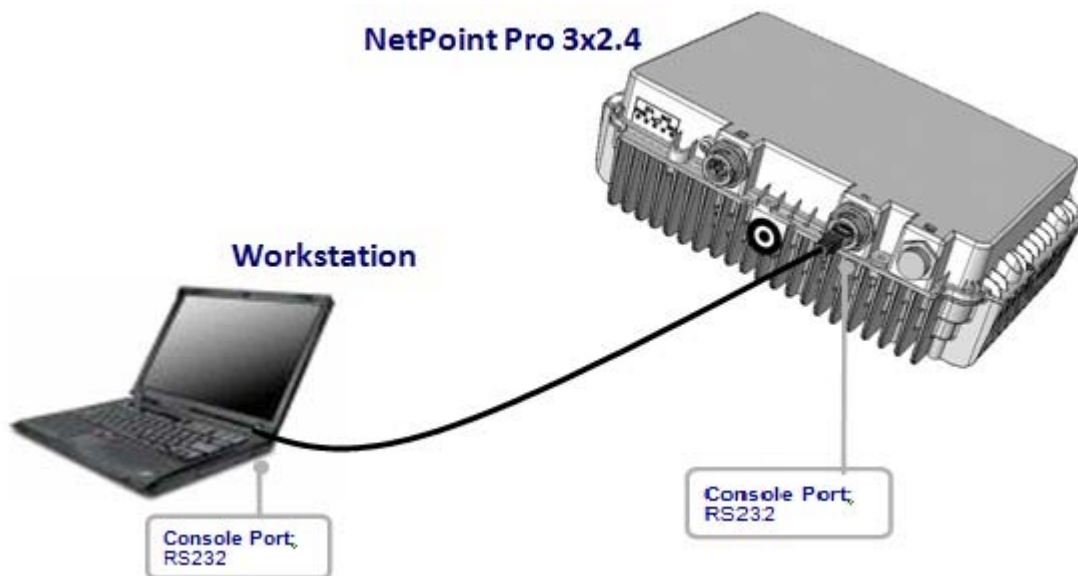

Figure 14: Connect and Access the NetPoint Pro 3x2.4

Note: New laptops may not include an RS-232 serial port. If a serial port is not available, you may use a USB to serial converter.

Power Up and Software Configuration

The NetPoint Pro 3x2.4 unit is normally mounted on a streetlight (pole or wall) where it is inconvenient to configure. Therefore, it is recommended that wireless communication be established to the unit prior to installation, so that the unit can later be configured and monitored from the ground. To verify communications when installing the NetPoint Pro 3x2.4 unit, the Mesh-Gateways must be installed and powered up first.

The LEDs on the NetPoint Pro 3x2.4 unit indicate the status of communications between the NetPoint Pro 3x2.4 unit and the network. See Table 7 for more information on the LED indicators.

The ACT LED on the Mesh-Gateway should be checked to verify that wired communications have been established. The BH LED on the Mesh-Gateway should be checked to verify that wireless communications have been established.

When powering up a Mesh-Node, the BH LED should be lit to verify that the NetPoint Pro 3x2.4 unit's wireless communication is connected. NetPoint Pro 3x2.4 boot time is about 2.5 minutes. The BH LED indicator will light up after the boot is completed.

LED	Function
PWR	**Green** – There is power to the unit. **Unlit** – There is no power to the unit.
STAT	**Green** – The operational status of the NetPoint Pro 3x2.4 unit is normal. **Red –** The NetPoint Pro 3x2.4 unit is in a failure state. **Unlit** – There is no power to the unit.
ACT	**Green** – When the LED is on, there is a communication connection. When the LED is flashing, traffic is flowing though the NetPoint Pro 3x2.4 unit. **Unlit** – There is no communication connection.
BH	**Green** – On a Mesh-Gateway, the mesh functionality is activated. On a Mesh-Node, the NetPoint Pro 3x2.4 is connected to the mesh. **Unlit** – On a Mesh-Gateway, the mesh functionality is not activated or no Ethernet link is available. On a Mesh-Node, the NetPoint Pro 3x2.4 is not configured or failed to connect to the mesh.

Table 9: NetPoint Pro 3x2.4 LED Indicators

Appendix A

List of Acronyms

Acronym	Explanation
802.11	A family of specifications related to wireless networking, including: 802.11a, 802.11b, and 802.11g.
AP	Access Point. The hub of a wireless network. Wireless clients connect to the access point, and traffic between two clients must travel through the access point. Access points are often abbreviated to AP
BSSID	Broadcast Service Set Identifier
CPE	Customer Premises Equipment
DHCP	Dynamic Host Configuration Protocol. A protocol which enables a server to automatically assign an IP address to clients so that the clients do not have to configure the IP addresses manually.
EAP	Extensible Authentication Protocol. A standard form of generic messaging used in 802.1X.
ESSID	EGOed Service Set Identifier
PMK	Pairwise Master Key
SSID	Service Set Identifier, a set of characters that give a unique name to a WLAN.
TKIP	Temporal Key Integrity Protocol
VLAN	Virtual Local Access Network
WDS	Wireless Distribution System
WEP	Wired Equivalent Privacy. An encryption system created to prevent eavesdropping on wireless

network traffic.

WMG	Wireless Media Gateway of the Netronics solution.
WNC	Wireless Network Controller of the Netronics solution.
WPA	Wi-Fi Protected Access. A modern encryption system created to prevent eavesdropping on wireless network traffic. It is considered more secure than WEP.
WPA-EAP	WPA-Extensible Authentication Protocol
WPA-PSK	WPA-Pre-Shared Key

Appendix B

Wiring Specifications

Console Port (DTE)	RJ-45-to-RJ-45 Straight Cable		RJ-45 to DB-9 Terminal Adapter	Console Device
Signal	RJ-45 Pin	RJ-45 Pin	DB-9 Pin	Signal
No connection	1	1	8	CTS
No connection	2	2	6	DSR
No connection	3	3	5	GND
GND	4	4	5	GND
RxD	5	5	3	TxD
TxD	6	6	2	RxD
No connection	7	7	4	DTR
No connection	8	8	7	RTS

Table 10: Console Port Signalling and Cabling with a DB-9 Adapter for the NetPoint Pro 3x2.4 Unit