�É Videolarm.

www.videolarm.com

PB24L24

Wireless Power-Boxes-Rugged

Installation and Operation Instructions for the following models:

PB24L24   A rugged outdoor wireless box, with a 220/110vac input and 24vac output
for camera, fuse protected. With a wireless 2.4GHz access point. Omni direc
tional antenna. Pole mounting clips included.

All Videolarm 2.4 GHz Wi-Fi Series CPE/ AP/ Routers

Before attempting to connect or operate this product,
please read these instructions completely.

TABLE OF CONTENTS

IMPORTANT SAFEGUARDS

1 Read Instructions - All the safety and operating instructions should be read before the unit is operated.

2 Retain Instructions - The safety and operating instructions should be retained for future reference.

3 Heed Warnings - All warnings on the unit and in the operating instructions should be adhered to.

4 Follow Instructions - All operating and user instructions should be followed.

5 Electrical Connections - Only a qualified electrician should make electrical connections.

6 Attachments - Do not use attachments not recommended by the product manufacturer as they may cause hazards.

7 Cable Runs - All cable runs must be within permissible distance

8 Mounting - This unit must be properly and securely mounted to a supporting structure capable of sustaining the weight of the unit.
Accordingly:

   a. The installation should be made by a qualified installer.

   b. The installation should be in compliance with local codes.

   c. Care should be exercised to select suitable hardware to install the unit, taking into account both the composition of the mounting surface and the weight of the unit.

Be sure to periodically examine the unit and the supporting structure to make sure that the integrity of the installation is intact. Failure to comply with the foregoing could result in the unit separating from the support structure and falling, with resultant damages or injury to anyone or anything struck by the falling unit.

UNPACKING

Unpack carefully. Electronic components can be damaged if improperly handled or dropped. If an item appears to have been damaged in shipment, replace it properly in its carton and notify the shipper.
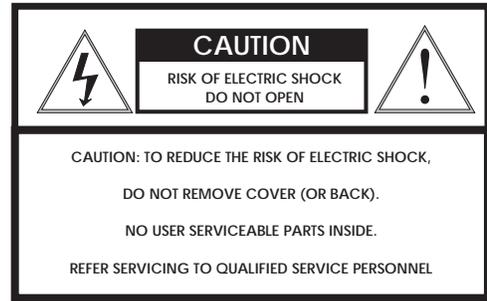
Be sure to save:

1 The shipping carton and packaging material. They are the safest material in which to make future shipments of the equipment.

2 These Installation and Operating Instructions.

SERVICE

If technical support or service is needed, contact us at the following number:

TECHNICAL SUPPORT
AVAILABLE 24 HOURS
1 - **800** - **554** -**1124**

SAFETY PRECAUTIONS

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,

DO NOT REMOVE COVER (OR BACK).

NO USER SERVICEABLE PARTS INSIDE.

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL

The lightning flash with an arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of non-insulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

Este símbolo se piensa para alertar al usuario a la presencia del "voltaje peligroso no-aislado" dentro del recinto de los productos que puede ser un riesgo de choque eléctrico.

Ce symbole est prévu pour alerter l'utilisateur à la presence "de la tension dangereuse" non-isolée dans la clôture de produits qui peut être un risque de choc électrique.

Dieses Symbol soll den Benutzer zum Vorhandensein der nicht-Isolier "Gefährdungsspannung" innerhalb der Produkteinschließung alarmieren die eine Gefahr des elektrischen Schlages sein kann.

Este símbolo é pretendido alertar o usuário à presença "di tensão perigosa non-isolada" dentro do cerco dos produtos que pode ser um risco de choque elétrico.

Questo simbolo è inteso per avvertire l'utente alla presenza "di tensione pericolosa" non-isolata all'interno della recinzione dei prodotti che può essere un rischio di scossa elettrica.

The exclamation point within an equilateral triangle is intended to alert the user to presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Este símbolo del punto del exclamation se piensa para alertar al usuario a la presencia de instrucciones importantes en la literatura que acompaña la aplicación.

Ce symbole de point d'exclamation est prévu pour alerter l'utilisateur à la presence des instructions importantes dans la littérature accompagnant l'appareil.

Dieses Ausruf Punktsymbol soll den Benutzer zum Vorhandensein de wichtigen Anweisungen in der Literatur alarmieren, die das Gerät begleitet.

Este símbolo do ponto do exclamation é pretendido alertar o usuário à presença de instruções importantes na literatura que acompanha o dispositivo.

Questo simbolo del punto del exclamaton è inteso per avvertire l'utente alla presenza delle istruzioni importanti nella letteratura che accompagna l'apparecchio.

USA PRIDE

LIMITED WARRANTY FOR VIDEOLARM INC. PRODUCTS

VIDEOLARM INC. warrants this Product to be free from defects in material or workmanship, as follows:

PRODUCT CATEGORY	PARTS	LABOR
All Enclosures and Electronics	Three (3) Years	Three (3) Years
Pan/Tilts	Three (3) Years **6 months if used in autoscan	Three (3) Years **6 months if used in autoscan
Poles/PoleEvators	Three (3) Years	Three (3) Years
Warrior/Q-View/I.R. Illuminators/SView	Five (5) Years	Five (5) Years
Controllers	Three (3) Years	Three (3) Years
Power Supplies	Three (3) Years	Three (3) Years
Accessory Brackets	Three (3) Years	Three (3) Years

During the labor warranty period, to repair the Product, Purchaser will either return the defective product, freight prepaid, or deliver it to Videolarm Inc. Decatur GA. The Product to be repaired is to be returned in either its original carton or a similar package affording an equal degree of protection with a RMA # (Return Materials Authorization number) displayed on the outer box or packing slip. To obtain a RMA# you must contact our Technical Support Team at 800.554.1124, extension 101. Videolarm will return the repaired Product freight prepaid to Purchaser. Videolarm is not obligated to provide Purchaser with a substitute unit during the warranty period or at any time. After the applicable warranty period, Purchaser must pay all labor and/or parts charges.

The limited warranty stated in these product instructions is subject to all of the following terms and conditions:

1. NOTIFICATION OF CLAIMS: WARRANTY SERVICE: If Purchaser believes that the Product is defective in material or workmanship, then written notice with an explanation of the claim shall be given promptly by Purchaser to Videolarm but all claims for warranty service must be made within the warranty period. If after investigation Videolarm determines that the reported problem was not covered by the warranty, Purchaser shall pay Videolarm for the cost of investigating the problem at its then prevailing per incident billable rate. No repair or replacement of any Product or part thereof shall extend the warranty period as to the entire Product. The specific warranty on the repaired part only shall be in effect for a period of ninety (90) days following the repair or replacement of that part or the remaining period of the Product parts warranty, whichever is greater.

2. EXCLUSIVE REMEDY: ACCEPTANCE: Purchaser's exclusive remedy and Videolarm's sole obligation is to supply (or pay for) all labor necessary to repair any Product found to be defective within the warranty period and to supply, at no extra charge, new or rebuilt replacements for defective parts.

3. EXCEPTIONS TO LIMITED WARRANTY: Videolarm shall have no liability or obligation to Purchaser with respect to any Product requiring service during the warranty period which is subjected to any of the following: abuse, improper use: negligence, accident, lightning damage or other acts of God (i.e., hurricanes, earthquakes), modification, failure of the end-user to follow the directions outlined in the product instructions, failure of the end-user to follow the maintenance procedures recommended by the International Security Industry Organization, written in product instructions, or recommended in the service manual for the Product. Furthermore, Videolarm shall have no liability where a schedule is specified for regular replacement or maintenance or cleaning of certain parts (based on usage) and the end-user has failed to follow such schedule; attempted repair by non-qualified personnel; operation of the Product outside of the published environmental and electrical parameters, or if such Product's original identification (trademark, serial number) markings have been defaced, altered, or removed. Videolarm excludes from warranty coverage Products sold AS IS and/or WITH ALL FAULTS and excludes used Products which have not been sold by Videolarm to the Purchaser. All software and accompanying documentation furnished with, or as part of the Product is furnished "AS IS" (i.e., without any warranty of any kind), except where expressly provided otherwise in any documentation or license agreement furnished with the Product.

4. PROOF OF PURCHASE: The Purchaser's dated bill of sale must be retained as evidence of the date of purchase and to establish warranty eligibility.

DISCLAIMER OF WARRANTY EXCEPT FOR THE FOREGOING WARRANTIES, VIDEOLARM HEREBY DISCLAIMS AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO ANY AND/OR ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND/OR ANY WARRANTY WITH REGARD TO ANY CLAIM OF INFRINGEMENT THAT MAY BE PROVIDED IN SECTION 2-312(3) OF THE UNIFORM COMMERCIAL CODE AND/OR IN ANY OTHER COMPARABLE STATE STATUTE. VIDEOLARM HEREBY DISCLAIMS ANY REPRESENTATIONS OR WARRANTY THAT THE PRODUCT IS COMPATIBLE WITH ANY COMBINATION OF NON-VIDEOLARM PRODUCTS OR NON-VIDEOLARM RECOMMENDED PRODUCTS PURCHASER CHOOSES TO CONNECT TO PRODUCT.

LIMITATION OF LIABILITY THE LIABILITY OF VIDEOLARM, IF ANY, AND PURCHASER'S SOLE AND EXCLUSIVE REMEDY FOR DAMAGES FOR ANY CLAIM OF ANY KIND WHATSOEVER, REGARDLESS OF THE LEGAL THEORY AND WHETHER ARISING IN TORT OR CONTRACT, SHALL NOT BE GREATER THAN THE ACTUAL PURCHASE PRICE OF

Communication Interference Statement

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

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

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

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

IMPORTANT NOTE:
Radiation Exposure Statement:
This equipment should be installed and operated with minimum distance 20cm between the radiator & your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This product must be installed by a licensed professional.

1 Introduction

The Videolarm Wi-Fi Series CPE/ AP/ Router is an affordable IEEE 802.11 b/g Wireless LAN Broadband Router solution; setting SOHO and enterprise standard for high performance, secure, manageable and reliable WLAN.

This document describes the steps required for the initial IP address assign and other WLAN router configuration. The description includes the implementation of the above steps.

1.2 Product Specifications

Product Name	WLAN Outdoor Broadband Router
Standard	802.11b/g (Wireless), 802.3 (10BaseT), 802.3u (100BaseT)
Data Transfer Rate	54Mbps (Wireless), 100Mbps (Ethernet)
Modulation Method	CCK (802.11b), OFDM (802.11g)
Frequency Band	2.4GHz- 2.497GJz ISM Band,DSSS
RF Output Power	CCK < 26 dBm, OFDM < 22dBm
Receiver Sensitivity	802.11b- 84 dBm, 802.11g- 72 dBm
Operation Range	**(depend on surroundings and model)**
Antenna	External Antenna
LED	Power, Active (WLAN), Act/Link (Ethernet)
Security	64 bit/ 128 bit WEP, WPA, WPA2, port filtering, IP filtering, MAC filtering, port forwarding and DMZ hosting
LAN interface	One 10/ 100 BaseT with RJ45 connector (WAN) (Up to 2) 10/ 100 BaseT with RJ45 connectors (LAN)
Power Consumption	12VDC Switching Power Adapter
Operating Temperature	-20 ~ 60°C ambient temperature
Storage Temperature	-30 ~ 70°C ambient temperature

Humidity	5 to 90 % maximum (non-condensing)
Dimension	Depends on Model

1.3 Product Features

- ➢ Complies with IEEE 802.11b/g standard for 2.4GHz Wireless LAN.
- ➢ Supports bridging, routing, WISP functions between wireless and wired Ethernet interfaces.
- ➢ Supports 64-bit and 128-bit WEP, WPA, WPA2 encryption/decryption function to protect the wireless data transmission.
- ➢ Supports IEEE 802.1x Authentication.
- ➢ Support Wi-Fi Protected Access Authentication with Radius and Pre-Shared Key mode.
- ➢ Supports Inter-Access Point Protocol (IAPP).
- ➢ Supports Wireless Distribution System (WDS).
- ➢ Supports IEEE 802.3x full duplex flow control on 10/100M Ethernet interface.
- ➢ Supports DHCP server to provide clients auto IP addresses assignment.
- ➢ Supports DHCP client for Ethernet WAN interface auto IP address assignment.
- ➢ Supports static and dynamic IP routing.
- ➢ Supports PPPoE on Ethernet WAN interface.
- ➢ Supports clone MAC address function.
- ➢ Supports firewall security with port filtering, IP filtering, MAC filtering, port forwarding, trigger port and DMZ hosting functions.
- ➢ Supports WEB based management and configuration.
- ➢ Supports PPTP Client on Ethernet WAN interface.
- ➢ Supports UPnP for automatic Internet access.
- ➢ Supports Dynamic DNS service.
- ➢ Supports NTP client service.
- ➢ Supports Log table and remote Log service.
- ➢ Support Setup Wizard mode.
- ➢ Supports IPSEC tunnel encryption(3DES/AES128) and authentication(MD5/SHA1)
- ➢ Supports WISP (Wireless ISP).
- ➢ Supports QOS
- ➢ Supports Bandwidth Control by IP or MAC
- ➢ Supports 10 Adjustable Power Outputs 16mW to 400mW (12dB to 26dB)

Update Firmware Feature
- ➢ **Traffic control using plain file (unlimited clients) - via SSH**

⚠ Electrical Specifications

PB24BB

🇬🇧 English

Input Power: 120 VAC/240VAC 1A/.5A Power Consumption: 1Amp (120 Watts) at 120 VAC Power Output: 84 VA at 24 VAC 52 Watts Heater/Blower 32 Watts Camera Power

An all pole main switch with a contact of at least 3mm in each pole shall be incorporated in the electrical installation of the building.

Tools Required: .150″ Flathead Screwdriver 7/16 Wrench or Socket 9/16 Wrench or Socket

🇪🇸 Español

Energía De Entrada: 120 Consumo De Energía de VAC/240VAC 1A/.5A: 1Amp (120 vatios) en 120 VAC de salida de energía: VA 84 en 24 VAC 52 vatios de Heater/Blower 32 vatios de energía de la cámara fotográfica

Todo el interruptor principal del poste con un contacto de por lo menos 3m m en cada poste será incorporado en la instalación eléctrica del edificio.

Herramientas Requeridas: destornillador de cabeza llana del 150"7/16 llave de la llave o del zócalo 9/16 o zócalo

🇫🇷 Français

Puissance D'entrée : 120 Puissance D'Énergie de VAC/240VAC 1A/.5A : 1Amp (120 watts) à 120 VCA de rendement de puissance : VA 84 à 24 VCA 52 watts de Heater/Blower 32 watts de puissance d'appareil-photo

Un tout le commutateur principal de poteau avec un contact au moins de 3mm dans chaque poteau sera incorporé dans l'installation électrique du bâtiment.

Outils Requis : tournevis à tête plate de 150"7/16 clé de clé ou de douille 9/16 ou douille

🇩🇪 Deutsch

Zugeführte Energie: 120 VAC/240VAC 1A/.5A Leistungsaufnahme: 1Amp (120 Watt) bei 120 VAC Abgabeleistung: VA 84 bei 24 VAC 52 Watt Heater/Blower 32 Watt Kamera-Energie

Ein aller Pfostenhauptschalter mit einem Kontakt von 3mm mindestens in jedem Pfosten wird in der elektrischen Installation des Gebäudes enthalten.

Werkzeuge Erforderten: 150"Flachkopfschraubenzieher 7/16 Schlüssel-oder Einfaßung 9/16 Schlüssel oder Einfaßung

🇵🇹 Portuguese

Poder De Entrada: 120 Consumo De Potência de VAC/240VAC 1A/.5A: 1Amp (120 watts) em 120 VAC de saída de poder: VA 84 em 24 VAC 52 watts de Heater/Blower 32 watts de poder da câmera

Todo o interruptor principal do pólo com um contato ao menos de 3mm em cada pólo será incorporado na instalação elétrica do edifício.

As Ferramentas Requereram: chave de fenda flathead do 150"7/16 de chave da chave ou do soquete 9/16 ou soquete

🇮🇹 Italiano

Alimentazione in ingresso Di Entrata: 120 Assorbimento di corrente Di energia di VAC/240VAC 1A/.5A: 1Amp (120 watt) a 120 VCA di uscita di alimentazione: VA 84 a 24 VCA 52 watt di Heater/Blower 32 watt di alimentazione della macchina fotografica

Tutto l'interruttore principale del palo con un contatto almeno di 3mm in ogni palo sarà compreso nell'installazione elettrica della costruzione.

Attrezzi Richiesti: cacciavite a testa piatta del 150"7/16 di chiave dallo zoccolo o dalla chiave 9/16 o zoccolo
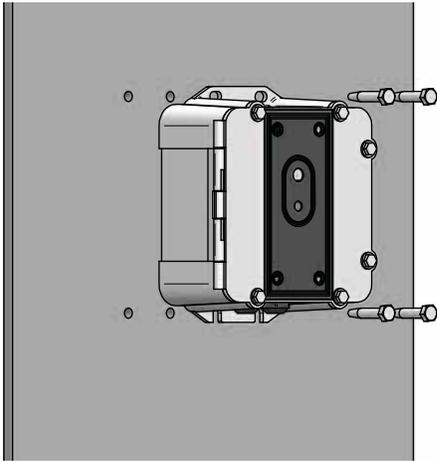
Contents of Box
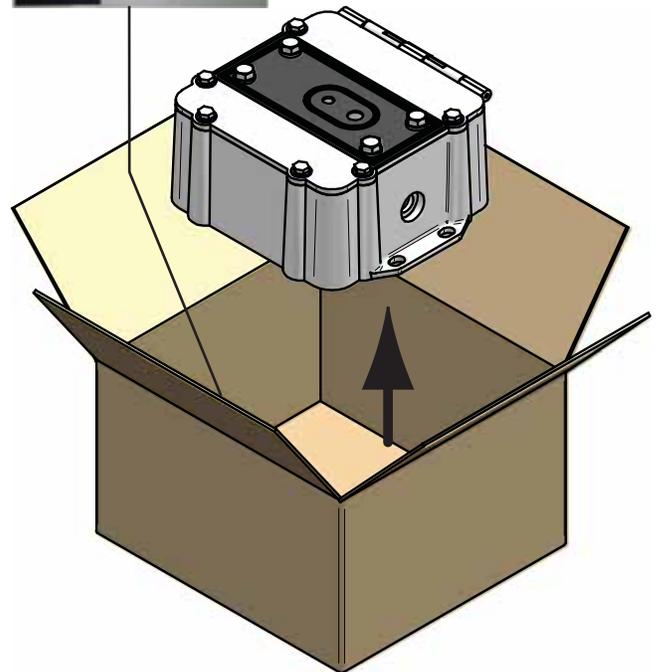
GENERAL INSTRUCTIONS (Mechanical):

Tools Required (minimum)

.150″ Flat head Screwdriver
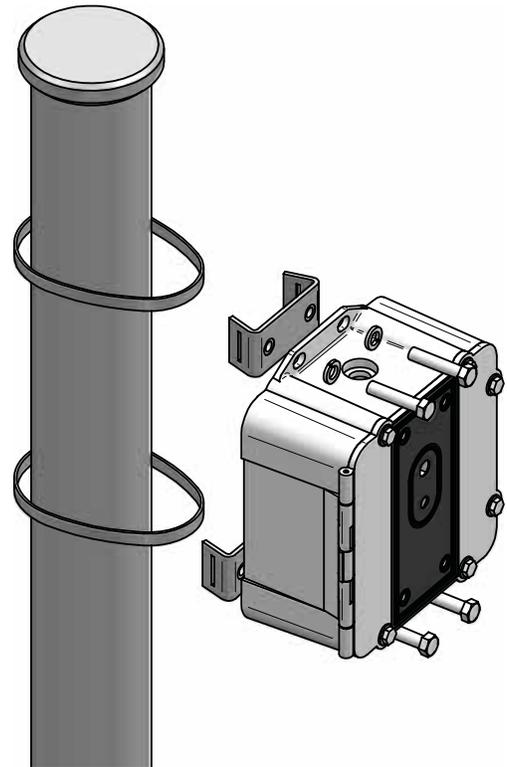7/16″ Wrench or Socket
9/16″ Wrench of Socket

1

Wall Mounting: Attach unit securely with (4) 5/16"- 3/8" or 8mm hardware (not supplied).

- A template is provided in the instructions with the 2 x 8 bolt pattern required for the mounting of this product.

- Each fastener should be able to withstand a minimum pull out force of 600 lbs. (272kg)

2

The power box may be pole mounted with the pole support clips.

3   Connecting Housing to the PB24L24

- Open packet assembly.

- Special 3/8″ bolts are provided and designed to mount either the WM20G or the WM10 (Standard Fusion Dome and Rugged Housing wall mount bracket) to the Power box

- Assemble wall mount bracket and housing as shown in the next block.

- Push the cable assembly connectors through either of the (2) holes provided.

4

Wall Mount Gasket

3/8″ Bolts

Washer

3/8″ Nut and Lockwashers
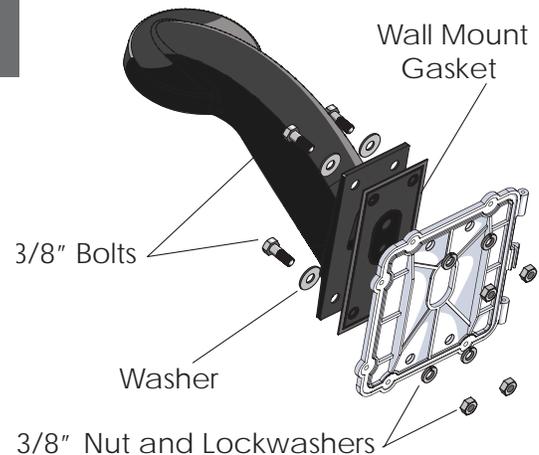
The wall mount bracket must be attached using the gasket as shown.

- **IMPROTANT!** Unit will not seal properly unless installed as shown above. Do not attempt to use power box without installing wall mount gasket.

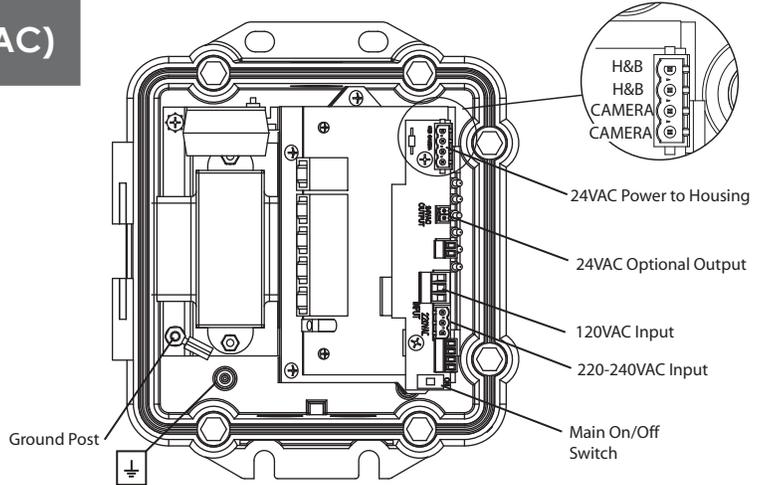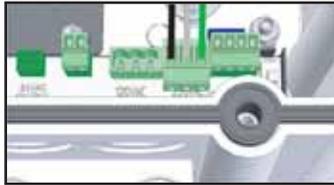- **NOTE:** Housing and complete Power Box are not shown in illustation for clarity only.
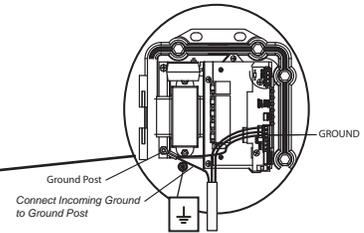
7

5   INPUT: (120VAC or 240VAC)

220-240VAC INPUT

110-120VAC INPUT

H&B
H&B
CAMERA
CAMERA

24VAC Power to Housing

24VAC Optional Output

120VAC Input

220-240VAC Input

Main On/Off Switch

Ground Post

⚠ **Line (L) and Neutral (N) wires should be connected as marked on the board and plugged into the corresponding voltage for the input single phase.**

- The Power Box provides 2 seperate output(s) at 24V.

- The Power Box is designed for either 120 or 240Vac input single phase.

- A single (3) position connector is provided with each unit.

- Connect incoming ground to ground post as shown above.

- Installation should be made by qualified personnel only, in accordance to local building codes. Input power connections should be made via conduit. *Use flex LTF fittings for output only.*

GROUND

Ground Post

Connect Incoming Ground to Ground Post

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6   OUTPUT: (24VAC)

Connect Housing Power

H&B
H&B
CAMERA
CAMERA

120VAC Input

220-240VAC Input

Ground Post

Ground

24Vac Power To Housing

Optional 24Vac Output

Main Switch
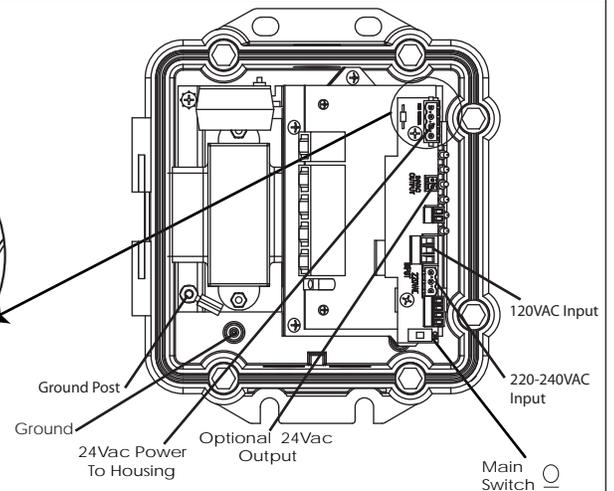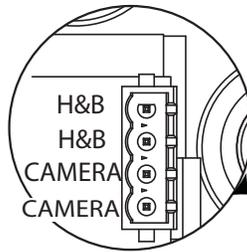
⚠ Internal re-settable fuses are supplied for the main 24VAC output lines. Do not connect heaters to camera output. The PB24 is not designed for 3 phase or 208V systems.

- Fuse protection is higher for accessory power.

- If a 3-phase is in place, use volt meter to select one phase, 120Vac LEG and connect to the 120Vac connection.

7

RIGHT

When installing wireless units. Make sure antennas are orientated correctly and pointing in the same direction.

- Al instalar unidades sin hilos. Cerciórese de que las antenas estén orientadas correctamente y señalando en la misma dirección.
- En installant les unités sans fil. Assurez-vous que des antennes sont orientées correctement et se dirigeant dans la même direction.
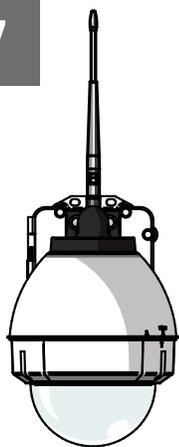- Wenn drahtlose Maßeinheiten angebracht werden. Stellen Sie sicher, daß Antennen richtig orientiert werden und zeigend in die gleiche Richtung.
- Ao instalar unidades wireless. Certifique-se que as antenas estão orientadas corretamente e apontando no mesmo sentido.
- Nell'installare le unità senza fili. Assicurisi che le antenne sono orientate correttamente ed indicando nello stesso senso.

8
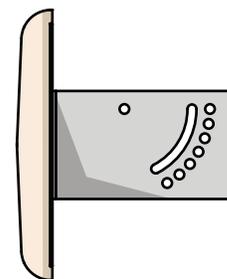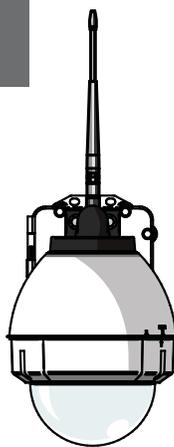
When using a directional antenna. Make sure the "V" is pointed in the up direction.

- Al usar una antena direccional. Cerciórese de que el "V" esté señalado en la dirección ascendente.
- À l'aide d'une antenne directionnelle. Assurez-vous que l'"V" est dirigé dans la direction haute.
- Wenn eine Richtantenne verwendet wird. Stellen Sie sicher, daß das "V" in die hohe Richtung gezeigt wird.
- Ao usar uma antena direcional. Certifique-se que o "V" está apontado no sentido ascendente.
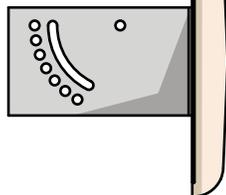- Nel per mezzo di un'antenna direzionale. Assicurisi che "la V" si indica nel senso alto.

9

When using a directional antenna. Make sure the "V" is pointed in the up direction.

- Al usar una antena direccional. Cerciórese de que el "V" esté señalado en la dirección ascendente.
- À l'aide d'une antenne directionnelle. Assurez-vous que l'"V" est dirigé dans la direction haute.
- Wenn eine Richtantenne verwendet wird. Stellen Sie sicher, daß das "V" in die hohe Richtung gezeigt wird.
- Ao usar uma antena direcional. Certifique-se que o "V" está apontado no sentido ascendente.
- Nel per mezzo di un'antenna direzionale. Assicurisi che "la V" si indica nel senso alto.

10
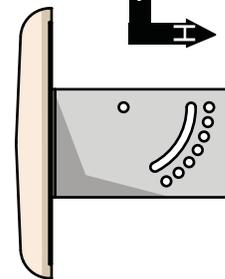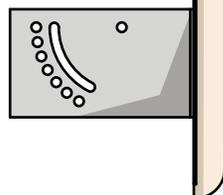
When using two directional antennas. Make sure the "V" is in the same direction on both antennas.

- Al usar dos antenas direccionales. Cerciórese de que el "V" esté en la misma dirección en ambas antenas.
- À l'aide de deux antennes directionnelles. Assurez-vous que le "V" est dans la même direction sur les deux antennes.
- Wenn zwei Richtantennen verwendet werden. Stellen Sie sicher, daß das "V" in der gleichen Richtung auf beide Antennen ist.
- Ao usar duas antenas direcionais. Certifique-se que o "V" está no mesmo sentido em ambas as antenas.
- Nel per mezzo di due antenne direzionali. Assicurisi che "la V" è nello stesso senso su entrambe le antenne.

11   Finishing the Installation:

- Once all wiring connections are completed; turn the power to the PB24L24 on and move the power switch to the on position to ON postion. Power LED on the connection pcb should turn on.

- Before closing the door on the PB24L24 check the main gasket around the lip of the power box and be sure it is positioned within the groove provided. Close unit and secure with (6) captive bolts provided. If needed (2) security screws are provided to lock and prevent tapering with internal components of the box. To install, remove (2) of the existing bolts and replace with (2) tamperproof security screws provided in the housing packet. Tighten with security wrench provided.

Conduit Fitting

This is the assembled unit with the housing and conduit.

Exploded View Replacement Parts PB24L24
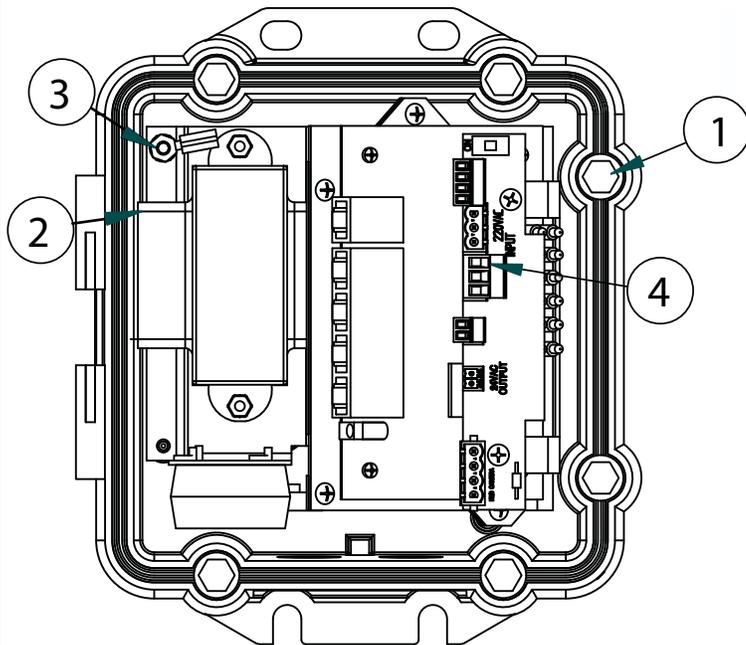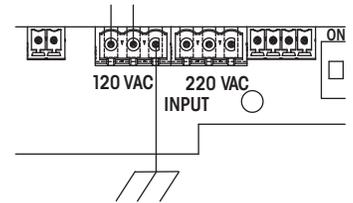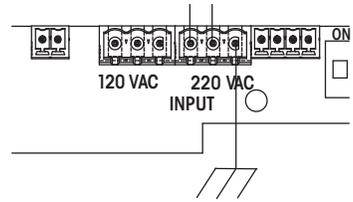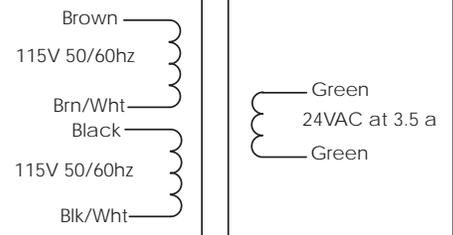
	Part Number	Description
1	40-HGPB-1000	PB24 Housing Assembly
2	RP40PBL24	2.4GHz Bracket Assembly w/Transformer and PCB
3	RPPB241000	Ground Stud and Terminal Connector
4	RP70WPPHIB	3-Position Incoming Power Plug

120VAC

120 VAC   220 VAC INPUT   ON

220/240VAC 50/60 Hz

120 VAC   220 VAC INPUT   ON

Transformer Wiring

Brown
115V 50/60hz
Brn/Wht
Black
115V 50/60hz
Blk/Wht

Green
24VAC at 3.5 a
Green

Power Connection

Exploded View Replacement Parts **PB24L24**

	Part Number	Description
1	RPVL2879	Wireless Bracket A
2	RP70TRANS11	96Va 220/110 to 24CE/VL Transformer
3	RPVL2885	Wireless Bracket B
4	RP40BR8186	2.4GHz Wireless Transmitter Card
5	RP76PCBPB01	Power Box Connecting PCB
6	RP70TRAN03	24 to 12vdc Power Supply
7	RP70WPPH08	3.81 2 Position Connector 1803578
8	RP70WPPH03	4 Position Connector 1803594
9	RP70CAPC02	12vdc Power Connector Female
10	RPRPTNC-7DB	7DB High Gain Duck Antenna
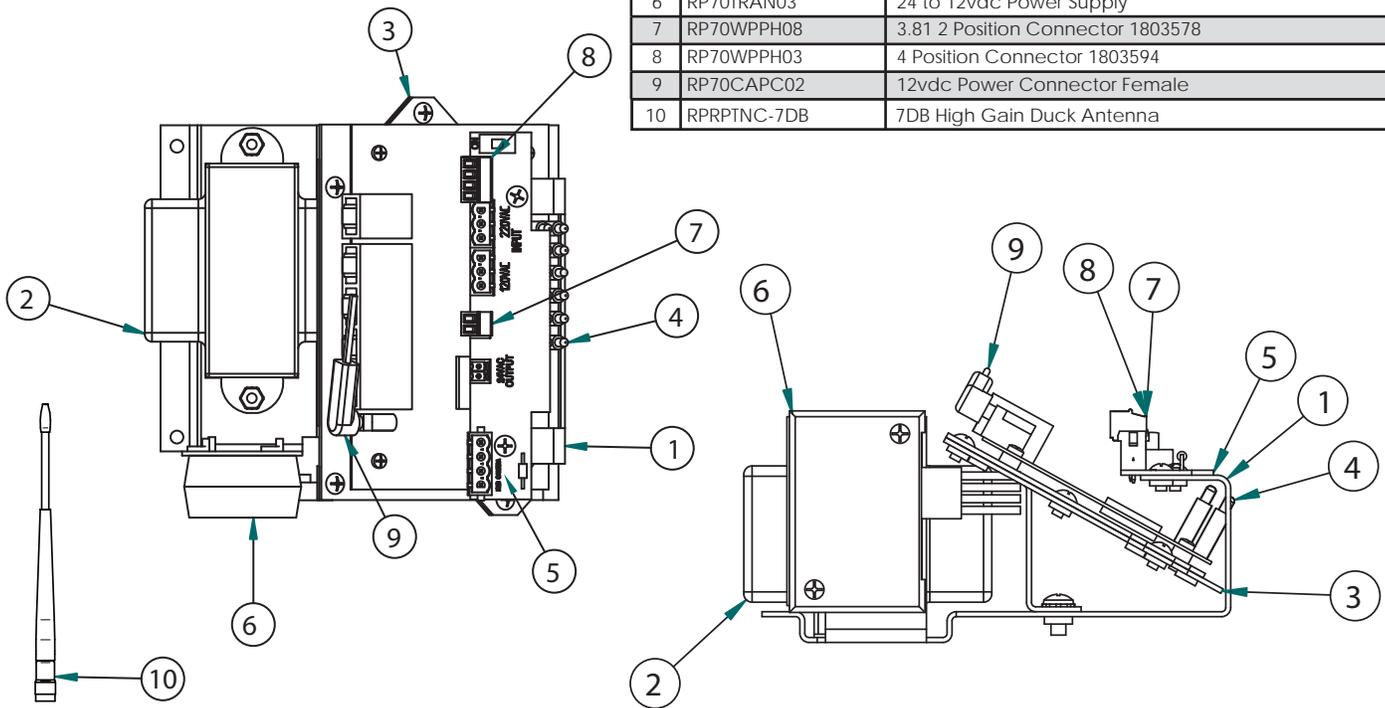
12 Software Configuration

There are web based management and configuration functions allowing you to have the jobs
done easily.

The WLAN Outdoor Broadband Router is delivered with the following factory default
parameters on the Ethernet LAN interfaces.

Default IP Address**:** *192.168.2.1*

Default IP subnet mask**:** *255.255.255.0*

WEB login User Name**:** *<empty>*

WEB login Password**:** *<empty>*

13 Prepare your PC to configure the WLAN Outdoor Broadband Router

For OS of Microsoft Windows 95/ 98/ Me:

1. Click the *Start* button and select *Settings*, then click *Control Panel*. The *Control
   Panel* window will appear.

   Note: Windows Me users may not see the Network control panel. If so, *select* **View
   all Control Panel options** on the left side of the window

14 For OS of Microsoft Windows 95/98/Me Continued:

2. Move mouse and double-click the right button on *Network* icon. The *Network* window will appear.
3. Check the installed list of *Network Components*. If TCP/IP is not installed, click the *Add* button to install it; otherwise go to step 6.
4. Select *Protocol* in the *Network Component Type* dialog box and click *Add* button.
5. Select *TCP/IP* in *Microsoft* of *Select Network Protocol* dialog box then click OK button to install the TCP/IP protocol, it may need the Microsoft Windows CD to complete the installation. Close and go back to *Network* dialog box after the TCP/IP installation.
6. Select *TCP/IP* and click the *properties* button on the *Network* dialog box.
7. Select *Specify an IP address* and type in values as following example.
    - ✓ IP Address: **192.168.2.1**, any IP address within 192.168.2.2 to 192.168.2.254 is good to connect the Wireless LAN Access Point.
    - ✓ IP Subnet Mask: **255.255.255.0**
8. Click OK and reboot your PC after completes the IP parameters setting.

---

15 **For OS of Microsoft Windows 2000, XP:**

1. Click the *Start* button and select *Settings*, then click *Control Panel*. The *Control Panel* window will appear.
2. Move mouse and double-click the right button on *Network and Dial-up Connections* icon. Move mouse and double-click the *Local Area Connection* icon. The *Local Area Connection* window will appear. Click *Properties* button in the *Local Area Connection* window.
3. Check the installed list of *Network Components*. If TCP/IP is not installed, click the *Add* button to install it; otherwise go to step 6.
4. Select *Protocol* in the *Network Component Type* dialog box and click *Add* button.
5. Select *TCP/IP* in *Microsoft* of *Select Network Protocol* dialog box then click OK button to install the TCP/IP protocol, it may need the Microsoft Windows CD to complete the installation. Close and go back to *Network* dialog box after the TCP/IP installation.
6. Select *TCP/IP* and click the *properties* button on the *Network* dialog box.
7. Select *Specify an IP address* and type in values as following example.
    - ✓ IP Address: **192.168.2.1**, any IP address within 192.168.2.2 to 192.168.2.254 is good to connect the Wireless LAN Access Point.
    - ✓ IP Subnet Mask: **255.255.255.0**
8. Click OK to completes the IP parameters setting.

16 **For OS of Microsoft Windows NT:**

1. Click the *Start* button and select *Settings*, then click *Control Panel*. The *Control Panel* window will appear.
2. Move mouse and double-click the right button on *Network* icon. The *Network* window will appear. Click *Protocol* tab from the *Network* window.
3. Check the installed list of *Network Protocol* window. If TCP/IP is not installed, click the *Add* button to install it; otherwise go to step 6.
4. Select *Protocol* in the *Network Component Type* dialog box and click *Add* button.
5. Select *TCP/IP* in *Microsoft* of *Select Network Protocol* dialog box then click OK button to install the TCP/IP protocol, it may need the Microsoft Windows CD to complete the installation. Close and go back to *Network* dialog box after the TCP/IP installation.
6. Select *TCP/IP* and click the *properties* button on the *Network* dialog box.
7. Select *Specify an IP address* and type in values as following example.
   - ✓ IP Address: **192.168.2.1**, any IP address within 192.168.2.2 to 192.168.2.254 is good to connect the Wireless LAN Access Point.
   - ✓ IP Subnet Mask: **255.255.255.0**
8. Click OK to complete the IP parameters setting.

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Connect to the WLAN Outdoor Broadband Router

Open a WEB browser, i.e. Microsoft Internet Explore, then enter 192.168.2.1 on the URL to connect the WLAN Outdoor Broadband Router.

18

Management and configuration on the WLAN Outdoor Broadband Router

3.3.1 Status

This page shows the current status and some basic settings of the device, includes system, wireless, Ethernet LAN and WAN configuration information.

Access Point Status

System This page shows the current status and some basic settings of the device.

AP Alias Name	
Uptime	0day: 0h: 0m: 33s
Firmware Version	v5.3-en
Wireless Configuration	
Mode	AP
Band	2.4 GHz (B+G)
SSID	RTL8186-GW
Channel Number	11
Encryption	Disabled
BSSID	
Associated Clients	0
TCP/ IP Configuration	
Attain IP Protocol	Fixed IP
IP Address	192. 168. 2. 1
Subnet Mask	255. 255. 255. 0
Default Gateway	0. 0. 0. 0
MAC Address	
WAN Configuration	
Attain IP Protocol	Getting IP from DHCP server...
IP Address	0. 0. 0. 0
Subnet Mask	0. 0. 0. 0
Default Gateway	0. 0. 0. 0
MAC Address	
Traffic Control	
Interface Control	Disabled
IP Control	Disabled
MAC Control	Disabled
Traffic Control Fire wall	Disabled
DHCP Settings	
DHCP Server	Disabled

Screen Snapshot - Status

Item	Description
System	
Uptime	It shows the duration since WLAN Outdoor Broadband Router is powered on.
Firmware Version	It shows the firmware version of WLAN Outdoor Broadband Router.
Wireless Configuration	
Mode	It shows wireless operation mode
Band	It shows current wireless operating frequency.
SSID	It shows the SSID of this WLAN Outdoor Broadband Router. The SSID is the unique name of WLAN Outdoor Broadband Router and shared among its service area, so all devices attempts to join the same wireless network can identify it.
Channel Number	It shows the wireless channel connected currently.
Encryption	It shows the status of encryption function.
BSSID	It shows the BSSID address of the WLAN Outdoor Broadband Router. BSSID is a six-byte address.
Associated Clients	It shows active clients.
TCP/ IP Configuration	
Attain IP Protocol	It shows Fixed IP or DHCP
IP Address	It shows the IP address of LAN interfaces of WLAN Outdoor Broadband Router.
Subnet Mask	It shows the IP subnet mask of LAN interfaces of WLAN Outdoor Broadband Router.
Default Gateway	It shows the default gateway setting for LAN interfaces outgoing data packets.
MAC Address	It shows the MAC address of LAN interfaces of WLAN Outdoor Broadband Router.
WAN Configuration	
Attain IP Protocol	It shows how the WLAN Outdoor Broadband Router gets the IP address. The IP address can be set manually to a fixed one or set dynamically by DHCP server of attain IP by PPPoE/ PPTP connection.
IP Address	It shows the IP address of WAN interface of WLAN Outdoor Broadband Router.
Subnet Mask	It shows the IP subnet mask of WAN interface of WLAN Outdoor Broadband Router.
Default Gateway	It shows the defaulf gateway setting for Wan interface outgoing data packets.
MAC Address	It shows the MAC address of WAN interface of WLAN Outdoor Broadband Router.
Traffic Control	
Interface Control	It shows to turn on or off the traffic control.
IP Control	It shows IP control is enabled or not.
MAC Control	It shows MAC Address control is enabled or not.
Traffic Control Firewall	It shows if Firewall control is enabled or not.
DHCP Settings	
DHCP Server	It shows DHCP Server is enabled or not.

Setup Wizard

The setup wizard will guide you to configure access points for the first time. Please follow the setup wizard step by step.

Welcome to Setup Wizard.

The Wizard will guide you through the following steps. Begin by clicking on Next.

1. Setup Operation Mode
2. Choose your Time Zone
3. Setup LAN Interface
4. Setup WAN Interface
5. Wireless LAN Setting
6. Wireless Security Setting

Next>>

Operation Mode

You can setup different modes to LAN and WLAN interface for NAT and bridging function.

◯ **Gateway:** In this mode, the device is supposed to connect to internet via ADSL/ Cable Modem. NAT is enabled and PCs in four LAN ports share the same IP to ISP through WAN port. The connection type can be setup in WAN page by using PPPOE, DHCP client, PPTP client or static IP.

⦿ **Bridge:** In this mode, all ethernet portsand wirless interface are bridged together and NAT function is disabled. All the WAN related function and firewall are not supported.

◯ **WISP Client:** In this mode, all ethernet ports are bridged together and the wireless client will connect to ISP access point. The NAT is enabled and PCs in ethernet ports shate the same IP to ISP through wireless LAN. You must set the wireless to client mode first and connect to the ISP AP in Site- Survey page. The connection type can be setup in WAN page by using PPPOE, DHCP client, PPTP client or static IP.

Cancel   << Back   Next>>

Time Zone Setting

You can maintain the system time by synchronizing with a public time server over the Internet.

Time Zone Select: (GMT- 07:00) Mountain Time (US & Canada) ▼

NTP server: 208.184.49.9- North America ▼

Cancel   << Back   Next>>

LAN Interface Setup

This page is used to configure the parameters for local area network which connects to the LAN port of your Access Point. Here you may change the setting for IP address, subnet mask, DHCP, etc..

IP Adress: 192.168.2.1

Subnet Mask: 255.255.255.0

Cancel   << Back   Next>>

WAN Interface Setup

This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by clicking the item value of WAN Access type.

WAN Access Type: DHCP Client ▼

Static IP
DHCP Client
PPPoE
PPTP

[Cancel]   [<< Back]   [Next>>]

Setup Wizard

This page is used to configure basic wireless parameters like Band, Mode, Network Type SSID, Channel Number, Enable Mac Clone (Single Ethernet Client).

Wireless Basic Settings

This page is used to configure the parameters for wireless LAN clients which may connect to yourAccess Point.

Band: 2.4 GHz (B+G) ▼

Mode: AP ▼

Network Type: Infrastrusture ▼

SSID: RTL8186-GW

Channel Network: 11 ▼

☐ **Enable Mac Clone (Single Ethernet Client)**

[Cancel]   [<< Back]   [Next>>]

Wireless Security Settings

This page allows you to setup wireless security. turn on WEP or WPA by using Encryption Keys could prevent any unauthorized access to your wireless network.

Encryption: None ▼

[Cancel]   [<< Back]   [Next>>]

Setup Wizard

This page is used to configure which mode wireless broadband router acts.

Operation Mode

You can setup different modes to LAN and WLAN interface for NAT and bridging function.

○ **Gateway:**   In this mode, the device is supposed to connect to internet via ADSL/ Cable Modem. NAT is enabled and PCs in four LAN ports share the same IP to ISP through WAN port. The connection type can be setup in WAN page by using PPPOE, DHCP client, PPTP client or static IP.

◉ **Bridge:**   In this mode, all ethernet portsand wirless interface are bridged together and NAT function is disabled. All the WAN related function and firewall are not supported.

○ **WISP Client:** In this mode, all ethernet ports are bridged together and the wireless client will connect to ISP access point. The NAT is enabled and PCs in ethernet ports shate the same IP to ISP through wireless LAN. You must set the wireless to client mode first and connect to the ISP AP in Site- Survey page. The connection type can be setup in WAN page by using PPPOE, DHCP client, PPTP client or static IP.

[Apply Change]   [Reset]

Scenario #1: Configuring a point to point wireless link between single or multiple remote wireless device(s) and one central wireless device.

Scenario #1 - *Configuring a point to point wireless link between one remote wireless device and one central wireless device.* A typical configuration would be connecting a pole mounted PB24L24 with a camera attached to a VLRL24 connected to a central network switch.

Step 1 – *Configure the central location wireless device as an access point.*

Power on the wireless device that will be used as the central access point. Leave all other wireless devices powered down.

Connect a computer to the four port switch on the wireless card via a standard network patch cable. Your computer will need to be configured with an IP address that falls within the 192.168.2.X network. For example, the PC's IP address would need to be 192.168.2.5 with a subnet mask of 255.255.255.0

Open a web browser to the default IP address of 192.168.2.1.

Click on Operation Mode on the Configuration menu on the left hand side of the window.

Make sure that the Operation Mode is set to Bridge. If it is not, click on the radio button beside the Bridge option and click Save at the bottom of the Window.

Next, click Wireless on the Configuration menu on the left hand side of the window. Then click on Basic Settings.

Check to make sure that the Mode is set to **AP**. If it is not, click on the selection list beside the Mode option and select AP. This will put the wireless device into access point mode.

Type in a SSID name of your choosing in the SSID field. The SSID name identifies the device on its wireless network. The SSID is the name that the wireless device will broadcast out to other wireless devices. This is the name that would be used to allow wireless cards to connect to the device from a Windows PC.

Select a Channel Number that the wireless device will use for broadcasting its signal. The default is 11 and is one of the most widely used channels. You may need to select a different channel to avoid interference with other wireless devices in the area. If so, click the selection list and select a new channel from 1 to 11. Make note of the channel number for future reference.

Click the Save button to save the configuration changes.

NOTE - You can determine if a channel change is necessary by using the Site Survey tool to check for other wireless networks in the area. Click on Site Survey under Wireless on the Configuration menu. Click the Refresh button, and a list will appear showing all wireless networks in the area that are broadcasting their SSIDs. Take a look at the Channel listing in order to get an idea of what types of wireless channels are being used in the area.

Step 2 – *Configure the IP address of the wireless device.*

Click on TCP/IP Settings under the Configuration menu on the left hand side of the window.

Click on the LAN Interface option under TCP/IP Settings. This screen will allow you to configure the IP address settings for the wireless device.

The IP address is currently set to 192.168.2.1. If this wireless device is being attached to an existing network, then this address will likely need to be changed. The card may need to configured with a set IP address that falls within the existing IP scheme on the network, or it may need to be set to acquire an address via DHCP. Check with the network's administrator for proper IP address information.

<u>Option 1</u> – Setting a static IP address on the card. (Note: It is recommended that the card be set to a static IP address unless the network administrator requires the use of DHCP on all network devices.)

Enter the IP address in the IP Address field. The default address is 192.168.2.1.

Enter the proper subnet mask for the IP address. This is generally 255.255.255.0

Enter the default gateway for the network. (This may not be necessary if the network does not already have an existing gateway.)

**** - Make sure that the DHCP setting is set to **Disabled** especially if there is already a DHCP server on the existing network, (The setting could be set to Server if the wireless device needs to act as a DHCP server for the wireless network. This option will be explained later in the section titled "Configuring an Access Point to act as a DHCP Server".)

Option 2 – Setting the wireless device to acquire an IP address via DHCP.

Some network administrators may require that the device is configured to accept IP addresses via an existing DHCP server on the network. In this case, the device will need to be set to DHCP client mode.

Click on the selection box next to DHCP and select **Client**. This will disable and "gray out" the other IP address settings on the page.

Click the Save button regardless of which option is chosen in order to save the TCP/IP configuration.

Step 3 – *Save the new configuration.*

Click on Apply Changes under the Configuration menu on the left hand side of the window.

Click the Apply Modifications button.

The settings will be saved to the card. At this point you will lose connection to the card if you changed the default IP address during the setup process. You will need to type in the new IP address in an internet browser window in order to get back to the devices' configuration page.

Step 4 – *Configure the remote wireless device as a wireless client.*

Power down the central wireless device that was just configured as an access point.

Connect a computer to the four port switch on the wireless card via a standard network patch cable. The computer should still have its IP address set to the address that was used when configuring the access point.

Open a web browser to the default IP address of 192.168.2.1.

Click on Operation Mode on the Configuration menu on the left hand side of the window.

Make sure that the Operation Mode is set to Bridge. If it is not, click on the radio button beside the Bridge option and click Save at the bottom of the Window.

Next, click on Wireless on the Configuration menu on the left hand side of the window. Then click on Basic Settings.

Click on the selection list beside the Mode option and select **Client**. This will put the wireless device into wireless client mode.

Type the SSID name in the SSID field that you assigned to the access point in the previous steps above.

Select the channel number in the Channel Number drop down box that you assigned to the access point in the previous steps above.

Click the Save button to save the changes to the wireless configuration.

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Step 5 - *Configure the IP address of the wireless device.*

Click on TCP/IP Settings under the Configuration menu on the left hand side of the window.

Click on the LAN Interface option under TCP/IP Settings. This screen will allow you to configure the IP address settings for the wireless device.
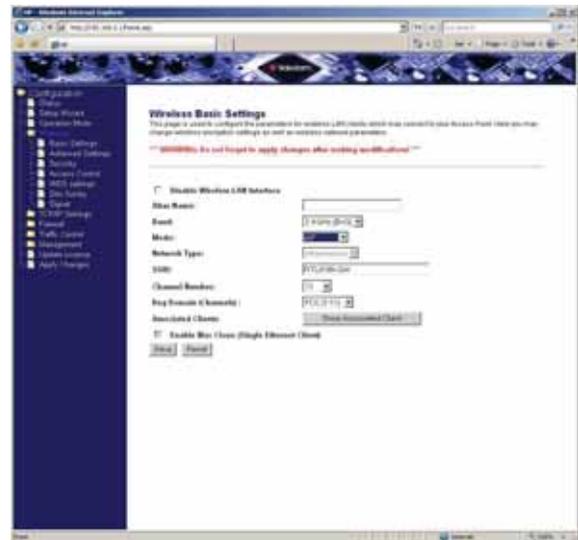
The IP address is currently set to 192.168.2.1.

<u>Option 1</u> – Setting a static IP address on the card. (Note: It is recommended that the card be set to a static IP address unless the network administrator requires the use of DHCP on all network devices.)

Enter the IP address in the IP Address field. This IP address should be within the same range as the access point, but it cannot have the exact same address as the access point. For example, if the access point has the IP address of 192.168.2.1 then the wireless client would need to be set to an address such as 192.168.2.2.

Enter the proper subnet mask for the IP address. This is generally 255.255.255.0.

Enter the default gateway for the network. (This may not be necessary if the network does not already have an existing gateway.)

**** - Make sure that the DHCP setting is set to **Disabled** especially if there is already a DHCP server on the existing network, (The setting could be set to Server if the wireless device needs to act as a DHCP server for the wireless network. This option will be explained later in the section titled "Configuring an Access Point to act as a DHCP Server".)

<u>Option 2</u> – Setting the wireless device to acquire an IP address via DHCP.

Some network administrators may require that the device is configured to accept IP addresses via an existing DHCP server on the network. In this case, the device will need to be set to DHCP client mode.

Click on the selection box next to DHCP and select **Client**. This will disable and "gray out" the other IP address settings on the page.

Click the Save button regardless of which options is chosen in order to save the TCP/IP configuration.

Step 6 - *Save the new configuration.*

Click on Apply Changes under the Configuration menu on the left hand side of the window.

Click the Apply Modifications button.

The settings will be saved to the card. At this point you will lose connection to the card if you changed the default IP address during the setup process. You will need to type in the new IP address in an internet browser window in order to get back to the devices' configuration page.

Step 7 – *Configuring the wireless client to connect to the access point.*

Power on the wireless access point device while leaving power turned on to the client that was just configured.

Reconfigure the IP address of the computer being used to configure the wireless devices if the IP addresses were changed from the default network of 192.168.2.X For example if the wireless access point and client had their IP addresses changed to 10.10.10.1 and 10.10.10.2, then the computer would need to have an address set to something like 10.10.10.5. Ignore this step if the devices were left in the default 192.168.2.X network.

Open a web browser to the IP address assigned to the wireless client.

Click on the Site Survey option under the Wireless heading in the Configuration menu.

Click the Refresh button to show all available networks within range of the wireless client.

Locate the SSID in the site survey list that the access point was set to in the earlier steps.

Click on the radio button on the right hand side of the screen that corresponds to the SSID of the access point that was configured earlier.

Click the Connect button. You will receive a message stating that the client successfully connected to the access point.

Step 8 - *Save the new configuration.*

Click on Apply Changes under the Configuration menu on the left hand side of the window.

Click the Apply Modifications button.

The new settings will be saved to the card. Now a wireless connection should be established between the wireless client and the access point. Video from an IP camera should be viewable from a PC that is connected to the access point's central network.

Special Note - The steps above can also be used to connect multiple remote devices (with cameras attached) to a central access point. Multiple remote clients are configured by repeating steps 4 through 7 for each client that needs to be connected to the central access point.

Keep in mind that there are limits to the number of cameras that a wireless network can support without losing video quality. These limits are mainly determined by the environment where the products are installed and their distance from one another. The type of camera being used also has an affect on the number of cameras that an access point can support. For example, an 8 megapixel camera is going to use more bandwidth than a 4 megapixel camera.
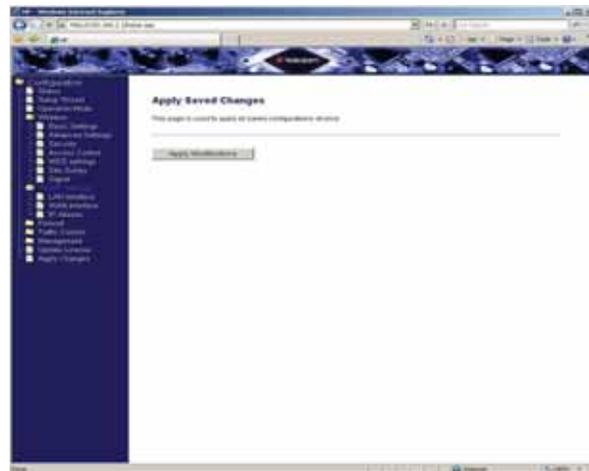
Scenario #2: Configuring multiple access points to communicate wirelessly via WDS.

Scenario #2 - *Configuring multiple access points to communicate wirelessly via WDS*. This scenario is used when each wireless device needs to connect to one another via a point to point link, and the wireless devices also need to act as access points for other wireless client devices.

For example two PB24L24 boxes would be configured to communicate to one another wirelessly sending a video stream to a central location. The devices would also be configured as an access point so that a police squad car could drive up to the PB24L24s, gain access to the network via a wireless connection, and view the video streams on a lap top inside the squad car.

Step 1 – *Configure the first wireless device as an access point with WDS enabled.*

Power on one wireless device making sure that all other devices are powered down.

Connect a computer to the four port switch on the wireless card via a standard network patch cable. Your computer will need to be configured with an IP address that falls within the 192.168.2.X network. For example, the PC's IP address would need to be 192.168.2.5 with a subnet mask of 255.255.255.0

Open a web browser to the default IP address of 192.168.2.1.

Click on Operation Mode on the Configuration menu on the left hand side of the window.

Make sure that the Operation Mode is set to Bridge. If it is not, click on the radio button beside the Bridge option and click Save at the bottom of the Window.

Next, click on Wireless on the Configuration menu on the left hand side of the window. Then click on Basic Settings.

Click on the selection box next to Mode and change the setting to **AP+WDS**. This will put the wireless device into access point mode and enable its WDS functions.

Type in a SSID name of your choosing in the SSID field. The SSID name identifies the device on its wireless network. The SSID is the name that the wireless device will broadcast out to other wireless devices. This is the name that would be used to allow wireless cards to connect to the device from a Windows PC.

Select a Channel Number that the wireless device will use for broadcasting its signal. The default is 11 and is one of the most widely used channels. You may need to select a different channel to avoid interference with other wireless devices in the area. If so, click the selection list and select a new channel from 1 to 11. Make note of the channel number for future reference.

You can use the Site Survey tool to check for other wireless networks in the area to determine if a channel change is necessary. Click on Site Survey under Wireless on the Configuration menu. Click the Refresh button, and a list will appear showing all wireless networks in the area that are broadcasting their SSIDs. Take a look at the Channel listing in order to get an idea of what types of wireless channels are being used in the area.

Click the Save button to save the configuration changes.

Step 2 – *Configure the IP address of the wireless device.*

Click on TCP/IP Settings under the Configuration menu on the left hand side of the window.

Click on the LAN Interface option under TCP/IP Settings. This screen will allow you to configure the IP address settings for the wireless device.

The IP address is currently set to 192.168.2.1. If this wireless device is being attached to an existing network, then this address will likely need to be changed. The card may need to configured with a set IP address that falls within the existing IP scheme on the network, or it may need to be set to acquire an address via DHCP. Check with the network's administrator for proper IP address information.

Option 1 – Setting a static IP address on the card. (Note: It is recommended that the card be set to a static IP address unless the network administrator requires the use of DHCP on all network devices.)

Enter the IP address in the IP Address field. The default address is 192.168.2.1.

Enter the proper subnet mask for the IP address. This is generally 255.255.255.0

Enter the default gateway for the network. (This may not be necessary if the network does not already have an existing gateway.)

Make sure that the DHCP setting is set to Disabled especially if there is already a DHCP server on the existing network, (The setting could be set to Server if the wireless device needs to act as a DHCP server for the wireless network. This option will be explained later in the section titled "Configuring an Access Point to act as a DHCP Server".)

Option 2 – Setting the wireless device to acquire an IP address via DHCP.

Some network administrators may require that the device is configured to accept IP addresses via an existing DHCP server on the network. In this case, the device will need to be set to DHCP client mode.

Click on the selection box next to DHCP and select Client. This will disable and "gray out" the other IP address settings on the page.

Click the Save button regardless of which option is chosen in order to save the TCP/IP configuration.

Step 3 – Save the new configuration.

Click on Apply Changes under the Configuration menu on the left hand side of the window.

Click the Apply Modifications button.

The settings will be saved to the card. At this point you will lose connection to the card if you changed the default IP address during the setup process. You will need to type in the new IP address in an internet browser window in order to get back to the devices' configuration page.

Step 4 – *Configure the second wireless device as an access point with WDS enabled.*

Power down the first wireless device that was just configured. Then turn power on to the second device that needs to be configured.

Connect a computer to the four port switch on the wireless card via a standard network patch cable. Your computer should still be configured with an IP address in the 192.168.2.X range.

Open a web browser to the default IP address of 192.168.2.1.

Click on Operation Mode on the Configuration menu on the left hand side of the window.

Make sure that the Operation Mode is set to Bridge. If it is not, click on the radio button beside the Bridge option and click Save at the bottom of the Window.

Next, click on Wireless on the Configuration menu on the left hand side of the window. Then click on Basic Settings.

Click on the selection box next to Mode and change the setting to AP+WDS. This will put the wireless device into access point mode and enable its WDS functions.

Type in the SSID name of your choosing in the SSID field. The SSID name can be the same as the one assigned on the first wireless device or a new SSID name could be entered.

Keeping the names the same is required if the objective is to allow clients to roam from one wireless box to the other without having to make changes to the clients' wireless settings. For example the police squad car could drive from one power box to the other and view signals from both boxes without having to change the wireless configuration settings on the lap top within the vehicle.

On the other hand some users prefer to use two different SSIDs as a means to differentiate one wireless device from the other. For example one power box could have the SSID of Videlarm Warehouse and another could have Videolarm Office. Using different SSIDs works well to make sure that a user is connected to the proper power box. However it does require that a client have multiple SSIDs programmed into its wireless settings and sometimes requires user intervention to switch from one power box to another.

The multiple SSID configuration is often used in situations where installers prefer leaving the wireless devices in AP mode so that boom trucks aren't necessary when configurations changes need to be made to power boxes mounted on poles many feet in the air.

Select the same Channel Number for this wireless device that was used during the configuration of the first wireless box. The channel numbers have to be the same on each box configured in order for WDS to work properly.

Click the Save button to save the configuration changes.

Step 5 - *Configure the IP address of the wireless device.*

Click on TCP/IP Settings under the Configuration menu on the left hand side of the window.

Click on the LAN Interface option under TCP/IP Settings. This screen will allow you to configure the IP address settings for the wireless device.

The IP address is currently set to 192.168.2.1.

<u>Option 1</u> – Setting a static IP address on the card. (Note: It is recommended that the card be set to a static IP address unless the network administrator requires the use of DHCP on all network devices.)

Enter the IP address in the IP Address field. This IP address should be within the same range as the access point, but it cannot have the exact same address as the access point. For example, if the access point has the IP address of 192.168.2.1 then the wireless client would need to be set to an address such as 192.168.2.2.

Enter the proper subnet mask for the IP address. This is generally 255.255.255.0.

Enter the default gateway for the network. (This may not be necessary if the network does not already have an existing gateway.)

Make sure that the DHCP setting is set to Disabled especially if there is already a DHCP server on the existing network, (The setting could be set to Server if the wireless device needs to act as a DHCP server for the wireless network. This option will be explained later in the section titled "Configuring an Access Point to act as a DHCP Server".)

<u>Option 2</u> – Setting the wireless device to acquire an IP address via DHCP.

Some network administrators may require that the device is configured to accept IP addresses via an existing DHCP server on the network. In this case, the device will need to be set to DHCP client mode.

Click on the selection box next to DHCP and select Client. This will disable and "gray out" the other IP address settings on the page

Click the Save button regardless of which options is chosen in order to save the TCP/IP configuration.

Step 6 – *Save the new configuration.*

Click on Apply Changes under the Configuration menu on the left hand side of the window.

Click the Apply Modifications button.

The settings will be saved to the card. At this point you will lose connection to the card if you changed the default IP address during the setup process. You will need to type in the new IP address in an internet browser window in order to get back to the devices' configuration page.

Step 7 – *Configuring WDS settings on one of the access points.*

Power on the first access point while leaving power turned on to the second access point.

Reconfigure the IP address of the computer being used to configure the wireless devices if the IP addresses were changed from the default network of 192.168.2.X For example if the wireless access point and client had their IP addresses changed to 10.10.10.1 and 10.10.10.2, then the computer would need to have an address set to something like 10.10.10.5. Ignore this step if the devices were left in the default 192.168.2.X network.

Open a web browser to the IP address of the access point currently connected to your computer via the network patch cable.

Locate the BSSID on the Access Point Status page. The BSSID is a MAC address that will have a format similar to 00:0a:52:01:60:f5. The BSSID is used to connect the access points via WDS. Write the BSSID down and make note of the access point to which it belongs.

Remove the patch cable from the current access point and connect it to the second access point.

Open a web browser to the IP address of the second access point.

Locate the BSSID on this access point, write down the BSSID, and make note of the access point to which it belongs.

Click on the Wireless option under the Configuration menu.

Click on WDS settings.

Click on the check box next to Enable WDS.

Enter the BSSID of the wireless device that is NOT currently connected to the computer. The BSSID has to be the address of the OPPOSITE end of the wireless connection. The address is entered into the MAC Address section under Add WDS AP. The address is entered into the box WITHOUT using the colons found in the BSSID. For example if the BSSID were 00:0a:52:01:60:f5 then the number would be entered as 000a520160f5 in the Add WDS AP field. Enter a comment next to the address in order to differentiate the address from other WDS devices that might be entered in the list.

Click the Save button. The address will appear below in the Current WDS AP List.

Step 8 - *Save the new configuration.*

Click on Apply Changes under the Configuration menu on the left hand side of the window.

Click the Apply Modifications button.

The new settings will be saved to the card. One end of the WDS connection has now been configured properly.

Step 9 – *Configuring WDS on the other access point.*

Remove the patch cable from the current access point and connect it to the other access point.

Open a web browser to the IP address of the access point currently connected to the computer.

Click on the Wireless option under the Configuration menu.

Click on WDS settings.

Click on the check box next to Enable WDS.

Enter the BSSID of the wireless device that is NOT currently connected to the computer. The BSSID has to be the address of the OPPOSITE end of the wireless connection. The address is entered into the MAC Address section under Add WDS AP. The address is entered into the box **WITHOUT** using the colons found in the BSSID. For example if the BSSID were 00:0a:52:01:60:f5 then the number would be entered as 000a520160f5 in the Add WDS AP field. Enter a comment next to the address in order to differentiate the address from other WDS devices that might be entered in the list.

Click the Save button. The address will appear below in the Current WDS AP List.

Step 10 - Save the new configuration.
Click on Apply Changes under the Configuration menu on the left hand side of the window.
Click the Apply Modifications button.
The new settings will be saved to the card. Both ends of the WDS connection have now been configured. A video stream will be able to be viewed over the wireless connection from one wireless device to the other.
Special Note – The configuration steps listed above can be used to connect more than two access points together using WDS. Steps 4 through 6 and Steps 9 through 10 would need to be completed for each additional access point that would be configured in this manner. Keep in mind that during step 7 the additional BSSIDs of other access points would also need to be noted.
Multiple BSSID connections also requires that multiple BSSIDs are entered under the WDS settings page. Each BSSID corresponding to a wireless device on the OPPOSITE end of a wireless connection must be entered into the Current WDS AP List.
For example a typical setup would have three wireless access points configured in WDS mode. Access point #1 has a BSSID of 00:0a:52:01:60:f5. Access point #2 has a BSSID of 00:0a:52:01:60:f6. Access point #3 has a BSSID of 00:0a:52:01:60:f7. The Current WDS AP List on access point #1 would have BSSID entries of 00:0a:52:01:60:f6 and 00:0a:52:01:60:f7. The Current WDS AP List on access point #2 would have BSSID entries of 00:0a:52:01:60:f5 and 00:0a:52:01:60:f7. The Current WDS AP List on access point #3 would have BSSID entries of 00:0a:52:01:60:f5 and 00:0a:52:01:60:f6.

WDS Configuration

Device #1
00:0a:52:01:60:f5

Current WDS AP List contains:
00:0a:52:01:60:f6
00:0a:52:01:60:f7

Device #2
00:0a:52:01:60:f6

Current WDS AP List contains:
00:0a:52:01:60:f5
00:0a:52:01:60:f7

Device #3
00:0a:52:01:60:f7

Current WDS AP List contains:
00:0a:52:01:60:f5
00:0a:52:01:60:f6

It is recommended that no more than 4 access points be connected to one another and configured as AP+WDS. Performance and connectivity issues tend to arise when more than 4 devices are connected in this method. If more devices are needed using a WDS configuration, then it is suggested that the other devices be configured in strict WDS mode as outlined in Scenario 3.

If it is absolutely necessary that all devices act as APs with WDS enabled, then careful attention needs to be paid to each device to make sure that it is only connected to the two or three nearest APs via the WDS entry screen. Otherwise there will be performance issues with the wireless devices.
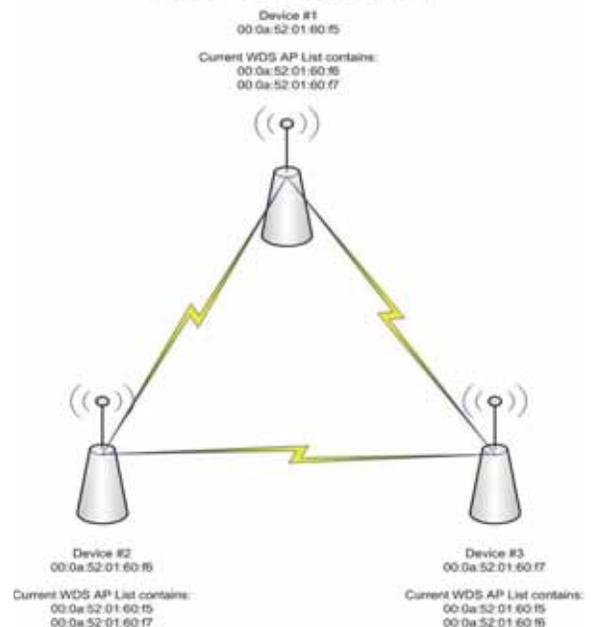
Scenario #3: Configuring a network using multiple access points and WDS.

Scenario #3 - *Configuring a "mesh" network using multiple access points and WDS.*

This scenario is used to create a network of wireless devices with multiple communication paths between each device. The multiple paths allows the network to stay online in the event that one wireless node goes down. The "mesh" configuration does NOT allow a device to act as an access point, and the device will NOT broadcast a SSID.

If an access point is needed for a certain applications, then a combination of Scenario #2 and Scenario #3 is necessary. In these instances one device can be configured as an access point with WDS enabled (Scenario #2), and the other devices can be configured as strict WDS devices (Scenario #3).

Step 1 – Configure the first wireless device as a wireless device with WDS enabled.

Power on one wireless device making sure that all other devices are powered down.

Connect a computer to the four port switch on the wireless card via a standard network patch cable. Your computer will need to be configured with an IP address that falls within the 192.168.2.X network. For example, the PC's IP address would need to be 192.168.2.5 with a subnet mask of 255.255.255.0

Open a web browser to the default IP address of 192.168.2.1.
Click on Operation Mode on the Configuration menu on the left hand side of the window.
Make sure that the Operation Mode is set to Bridge. If it is not, click on the radio button beside the Bridge option and click Save at the bottom of the Window.

Next, click on Wireless on the Configuration menu on the left hand side of the window. Then click on Basic Settings.

Click on the selection box next to Mode and change the setting to WDS. This will put the wireless device into WDS mode only.
It is not as necessary in this configuration to have an SSID entered into the SSID field. However it is not a bad idea to assign one anyway in order to differentiate the wireless devices. Type in a SSID name into the SSID field if you choose to do so. The SSID name identifies the device on its wireless network.

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Select a Channel Number that the wireless device will use for broadcasting its signal. The default is 11 and is one of the most widely used channels. You may need to select a different channel to avoid interference with other wireless devices in the area. If so, click the selection list and select a new channel from 1 to 11. Make note of the channel number for future reference.

Click the Save button to save the configuration changes.

You can use the Site Survey tool to check for other wireless networks in the area to determine if a channel change is necessary. Click on Site Survey under Wireless on the Configuration menu. Click the Refresh button, and a list will appear showing all wireless networks in the area that are broadcasting their SSIDs. Take a look at the Channel listing in order to get an idea of what types of wireless channels are being used in the area.

Step 2 – *Configure the IP address of the wireless device.*

Click on TCP/IP Settings under the Configuration menu on the left hand side of the window.

Click on the LAN Interface option under TCP/IP Settings. This screen will allow you to configure the IP address settings for the wireless device.

The IP address is currently set to 192.168.2.1. If this wireless device is being attached to an existing network, then this address will likely need to be changed. The card may need to configured with a set IP address that falls within the existing IP scheme on the network, or it may need to be set to acquire an address via DHCP. Check with the network's administrator for proper IP address information.
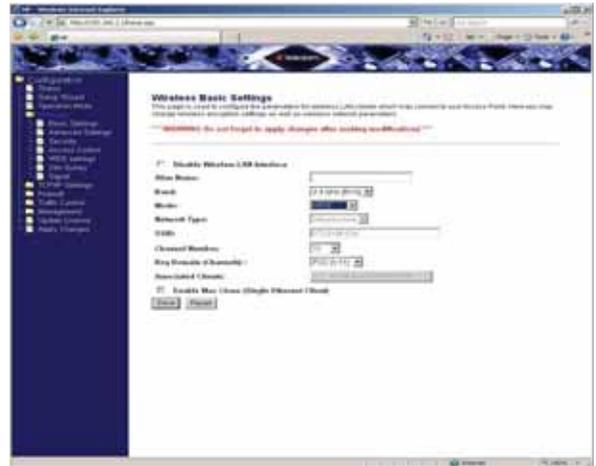
<u>Option 1</u> – Setting a static IP address on the card. (Note: It is recommended that the card be set to a static IP address unless the network administrator requires the use of DHCP on all network devices.)

Enter the IP address in the IP Address field. The default address is 192.168.2.1.

Enter the proper subnet mask for the IP address. This is generally 255.255.255.0

Enter the default gateway for the network. (This may not be necessary if the network does not already have an existing gateway.)

Make sure that the DHCP setting is set to Disabled especially if there is already a DHCP server on the existing network, (The setting could be set to Server if the wireless device needs to act as a DHCP server for the wireless network. This option will be explained later in the section titled "Configuring an Access Point to act as a DHCP Server".)

Option 2 – Setting the wireless device to acquire an IP address via DHCP.

Some network administrators may require that the device is configured to accept IP addresses via an existing DHCP server on the network. In this case, the device will need to be set to DHCP client mode.

Click on the selection box next to DHCP and select Client. This will disable and "gray out" the other IP address settings on the page.

Click the Save button regardless of which options is chosen in order to save the TCP/IP configuration.

Step 3 – *Save the new configuration.*

Click on Apply Changes under the Configuration menu on the left hand side of the window.

Click the Apply Modifications button.

The settings will be saved to the card. At this point you will lose connection to the card if you changed the default IP address during the setup process. You will need to type in the new IP address in an internet browser window in order to get back to the devices' configuration page.

Step 4 – *Configure the second wireless device as wireless device with WDS enabled.*

Power down the first wireless device that was just configured. Then turn power on to the second device that needs to be configured.

Connect a computer to the four port switch on the wireless card via a standard network patch cable. Your computer should still be configured with an IP address in the 192.168.2.X range.

Open a web browser to the default IP address of 192.168.2.1.

Click on Operation Mode on the Configuration menu on the left hand side of the window.

Make sure that the Operation Mode is set to Bridge. If it is not, click on the radio button beside the Bridge option and click Save at the bottom of the Window.

Next, click on Wireless on the Configuration menu on the left hand side of the window. Then click on Basic Settings.

Click on the selection box next to Mode and change the setting to WDS. This will put the wireless device into WDS mode only.

Type in the SSID name if you chose one earlier. The SSID name can be the same as the one assigned on the first wireless device or a new SSID name could be entered...

Some users prefer to use two different SSIDs as a means to differentiate one wireless device from the other. For example one power box could have the SSID of Videlarm Warehouse and another could have Videolarm Office.
Select the same Channel Number for this wireless device that was used during the configuration of the first wireless box. The channel numbers have to be the same on each box configured in order for WDS to work properly.

Click the Save button to save the configuration changes.

Step 5 - *Configure the IP address of the wireless device.*

Click on TCP/IP Settings under the Configuration menu on the left hand side of the window.

Click on the LAN Interface option under TCP/IP Settings. This screen will allow you to configure the IP address settings for the wireless device.

The IP address is currently set to 192.168.2.1.

<u>Option 1</u> – Setting a static IP address on the card. (Note: It is recommended that the card be set to a static IP address unless the network administrator requires the use of DHCP on all network devices.)

Enter the IP address in the IP Address field. This IP address should be within the same range as the access point, but it cannot have the exact same address as the access point. For example, if the access point has the IP address of 192.168.2.1 then the wireless client would need to be set to an address such as 192.168.2.2.

Enter the proper subnet mask for the IP address. This is generally 255.255.255.0.

Enter the default gateway for the network. (This may not be necessary if the network does not already have an existing gateway.)

Make sure that the DHCP setting is set to Disabled especially if there is already a DHCP server on the existing network, (The setting could be set to Server if the wireless device needs to act as a DHCP server for the wireless network. This option will be explained later in the section titled "Configuring an Access Point to act as a DHCP Server".)

<u>Option 2</u> – Setting the wireless device to acquire an IP address via DHCP.

Some network administrators may require that the device is configured to accept IP addresses via an existing DHCP server on the network. In this case, the device will need to be set to DHCP client mode.

Click on the selection box next to DHCP and select Client. This will disable and "gray out" the other IP address settings on the page

Click the Save button regardless of which options is chosen in order to save the TCP/IP configuration.

Step 6 – *Save the new configuration.*

Click on Apply Changes under the Configuration menu on the left hand side of the window.

Click the Apply Modifications button.

The settings will be saved to the card. At this point you will lose connection to the card if you changed the default IP address during the setup process. You will need to type in the new IP address in an internet browser window in order to get back to the devices' configuration page.

Step 7 – *Configuring WDS settings on one of the access points.*

Power on the first wireless device while leaving power turned on to the second device.

Reconfigure the IP address of the computer being used to configure the wireless devices if the IP addresses were changed from the default network of 192.168.2.X For example if the wireless access point and client had their IP addresses changed to 10.10.10.1 and 10.10.10.2, then the computer would need to have an address set to something like 10.10.10.5. Ignore this step if the devices were left in the default 192.168.2.X network.

Open a web browser to the IP address of the access point currently connected to your computer via the network patch cable.

Locate the BSSID on the Access Point Status page. The BSSID is a MAC address that will have a format similar to 00:0a:52:01:60:f5. The BSSID is used to connect the access points via WDS. Write the BSSID down and make note of the device to which it belongs.

Remove the patch cable from the current device and connect it to the second device.

Open a web browser to the IP address of the second access point.

Locate the BSSID on this wireless device, write down the BSSID, and make note of the device to which it belongs.

Click on the Wireless option under the Configuration menu.

Click on WDS settings.

Click on the check box next to Enable WDS.

Enter the BSSID of the wireless device that is NOT currently connected to the computer. The BSSID has to be the address of the opposite end of the wireless connection. The address is entered into the MAC Address section under Add WDS AP. The address is entered into the box WITHOUT using the colons found in the BSSID. For example if the BSSID were 00:0a:52:01:60:f5 then the number would be entered as 000a520160f5 in the Add WDS AP field. Enter a comment next to the address in order to differentiate the address from other WDS devices that might be entered in the list.

Click the Save button. The address will appear below in the Current WDS AP List.

Step 8 - *Save the new configuration.*

Click on Apply Changes under the Configuration menu on the left hand side of the window.

Click the Apply Modifications button.

The new settings will be saved to the card. One end of the WDS connection has now been configured properly.

Step 9 – *Configuring WDS on the other access point.*

Remove the patch cable from the current device and connect it to the other.

Open a web browser to the IP address of the device currently connected to the computer.

Click on the Wireless option under the Configuration menu.

Click on WDS settings.

Click on the check box next to Enable WDS.

Enter the BSSID of the wireless device that is NOT currently connected to the computer. The BSSID has to be the address of the OPPOSITE end of the wireless connection. The address is entered into the MAC Address section under Add WDS AP. The address is entered into the box WITHOUT using the colons found in the BSSID. For example if the BSSID were 00:0a:52:01:60:f5 then the number would be entered as 000a520160f5 in the Add WDS AP field. Enter a comment next to the address in order to differentiate the address from other WDS devices that might be entered in the list.

Click the Save button. The address will appear below in the Current WDS AP List.

Step 10 - *Save the new configuration.*

Click on Apply Changes under the Configuration menu on the left hand side of the window.

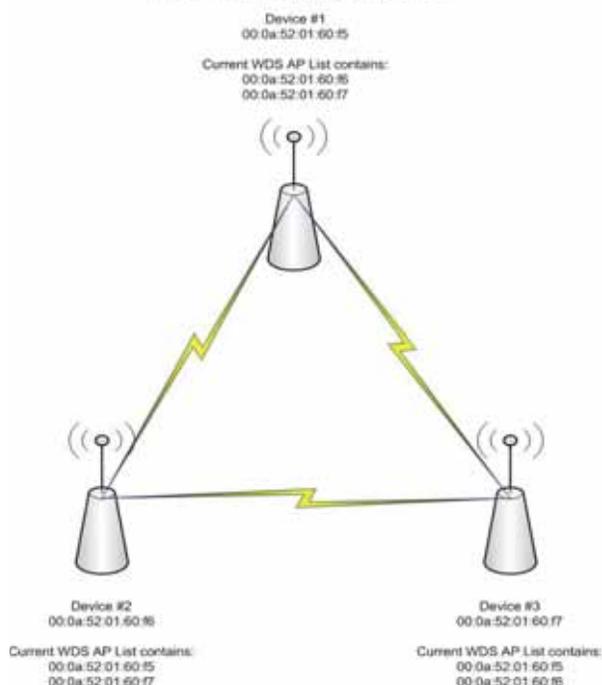Click the Apply Modifications button.

The new settings will be saved to the card. Both ends of the WDS connection have now been configured. A video stream will be able to be viewed over the wireless connection from one wireless device to the other.

Special Note – The configuration steps listed above can be used to connect more than two wireless devices together using WDS. Steps 4 through 6 and Steps 9 through 10 would need to be completed for each additional access point that would be configured in this manner. Keep in mind that during step 7 the additional BSSIDs of other access points would also need to be noted.

Multiple BSSID connections also requires that multiple BSSIDs are entered under the WDS settings page. Each BSSID corresponding to a wireless device on the OPPOSITE end of a wireless connection must be entered into the Current WDS AP List.

For example a typical setup would have three wireless devices configured in WDS mode. Device #1 has a BSSID of 00:0a:52:01:60:f5. Device #2 has a BSSID of 00:0a:52:01:60:f6. Device #3 has a BSSID of 00:0a:52:01:60:f7.

The Current WDS AP List on Device #1 would have BSSID entries of 00:0a:52:01:60:f6 and 00:0a:52:01:60:f7. The Current WDS AP List on Device #2 would have BSSID entries of 00:0a:52:01:60:f5 and 00:0a:52:01:60:f7. The Current WDS AP List on Device #3 would have BSSID entries of 00:0a:52:01:60:f5 and 00:0a:52:01:60:f6.

WDS Configuration

Device #1
00:0a:52:01:60:f5

Current WDS AP List contains:
00:0a:52:01:60:f6
00:0a:52:01:60:f7

Device #2
00:0a:52:01:60:f6

Current WDS AP List contains:
00:0a:52:01:60:f5
00:0a:52:01:60:f7

Device #3
00:0a:52:01:60:f7

Current WDS AP List contains:
00:0a:52:01:60:f5
00:0a:52:01:60:f6

Some installations may require that the access point act as a DHCP server that can give IP addresses to devices connecting to the wireless network. In these cases DHCP server mode needs to be enabled. (Note: In most cases it is recommended that DHCP server settings be disabled. DHCP Server mode should only be activated after consulting with the network administrator.)

Click on TCP/IP Settings on the Configuration menu.

Click on LAN Settings.

Click on the DHCP selection box and select the Server option.
Set the DHCP Client range to a range of IP addresses that will not conflict with any other IP addresses that will be set statically on the network. By default the range will be 192.168.2.2 -192.168.2.254. It is often a good idea to change this setting to include a smaller number of address. This helps to lessen the possibility of an IP address conflict with another device as well as minimizing the load on the wireless access point by limiting the possible number of DHCP connections.

If you changed the IP address from the default earlier in the setup, then you will need to change the DHCP Client range to match the same IP network as the wireless device. For example if the IP address of the card was changed to 10.10.10.1, then the corresponding client range would have to be something along the lines of 10.10.10.100 – 10.10.10.200.

There is also one other consideration to keep in mind. It is generally a good idea just to have one DHCP server on a network. If there is a need to have multiple DHCP servers on multiple access points, then steps must be taken to make sure that the DHCP server ranges do not overlap.

For example one access point with an IP address of 192.168.2.1 could have a DHCP range of 192.168.2.50 – 192.168.2.100. The second access point with an IP address of 192.168.2.2 could have a DHCP range of 192.168.2.101 – 192.168.2.150. This will ensure that each access point is able to give out addresses, but they would not give the same address to different clients connecting to the network.

Click the Save button to save the DHCP server changes that were just made.

Remember to apply modifications after making any changes by clicking on the Apply Changes option under the Configuration menu. Click the Apply Modifications button to save all changes.

In most cases it is a good idea to place security on the wireless connections created between the wireless devices. Placing security on the connections decreases the risk of unwanted users gaining access to the network. If a connection is not secured then any computer with a wireless card will be able to connect to the wireless network.

The wireless devices allow for multiple versions of WEP and WPA security to be set on the access points' SSID connections as well as WDS connections. The type of security needed is often determined by the network administrator of the network where the wireless devices will be attached.

46 Access Point Encryption Settings

The access point security settings can be found under the Wireless section of the Configuration menu. Click on Security under the Wireless section to access the various security options.

The Encryption mode is set to None by default. Click on the drop down box next to encryption to choose the encryption method that is needed. If WEP is selected, then it is necessary to click on the Configure WEP button to enter the proper encryption key. The Configure WEP setting allows you to select whether you want 64-bit or 128-bit encryption and what type of key format to use. The actual encryption key is entered in the Encryption Key 1: field.

If WPA is selected then all WPA settings are listed below the selection box. There you can select what type of Mode, Format, and Pre-Shared key will be used to encrypt the signal. There is also an area to choose a RADIUS server for authentication if one is available.

Set the proper encryption settings, then click the Save button to save the changes made.

You can clear any encryption keys that have been set in the past by clicking on the Reset button or selecting None as the encryption mode.

47 WDS Encryption Settings

The WDS encryption settings are found in the WDS Settings option under the Wireless menu.

Click on the Set Security button.

A window will open allowing you to set the proper encryption settings for the WDS connection. The WDS security settings have basically the same options as the access point security settings. WEP and WPA settings are both available with an area to enter the proper encryption key.

Click the Save button to save the changes once the encryption key is entered.

You can clear any encryption keys that have been set in the past by clicking on the Reset button or selecting None as the encryption mode

Remember to click the Apply Changes menu option and the Apply Modifications button to save the encryption settings.

Note:

It is necessary to set the security settings on ALL devices that will be connecting to the encrypted network. Each device has to have the security settings entered in exactly the same way on each wireless device whether the device is configured as an access point, wireless client, or WDS device.
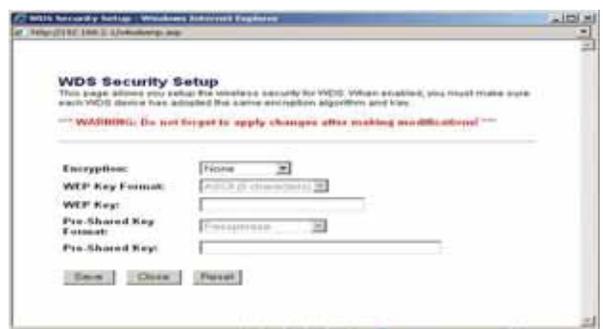
You can set the wireless card back to factory defaults by holding the reset switch down for approximately 13 seconds. The reset switch is the small brown circular switch located right next to the power connector on the side of the card that contains the ethernet ports.

All of the card's indicator lights will cut off for a brief moment then the main power indicator light will come back on. The reset will be complete when the indicator light above the power light begins blinking again.