WA04700XX

Multicast Video Distribution System
MVDS BR-1

Setup Guide

silex technology

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1. Introduction

BR-1 is wireless bridge, which intended to be used with MVDS Transmitter X-1T. This product gives installation flexibility and better wireless stability for MVDS digital signage system.

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2. Basic principle

BR-1 works as wireless front-end unit of MVDS. BR-1 is connected to the MVDS Transmitter with CAT5 100BASE-TX cable. Because a 100Base-TX cable can go up to 100m of length, the BR-1 can be placed very close to where the transmitter antenna has to be mounted. BR-1 is connected to the transmitter antenna with 10ft of coax cable.

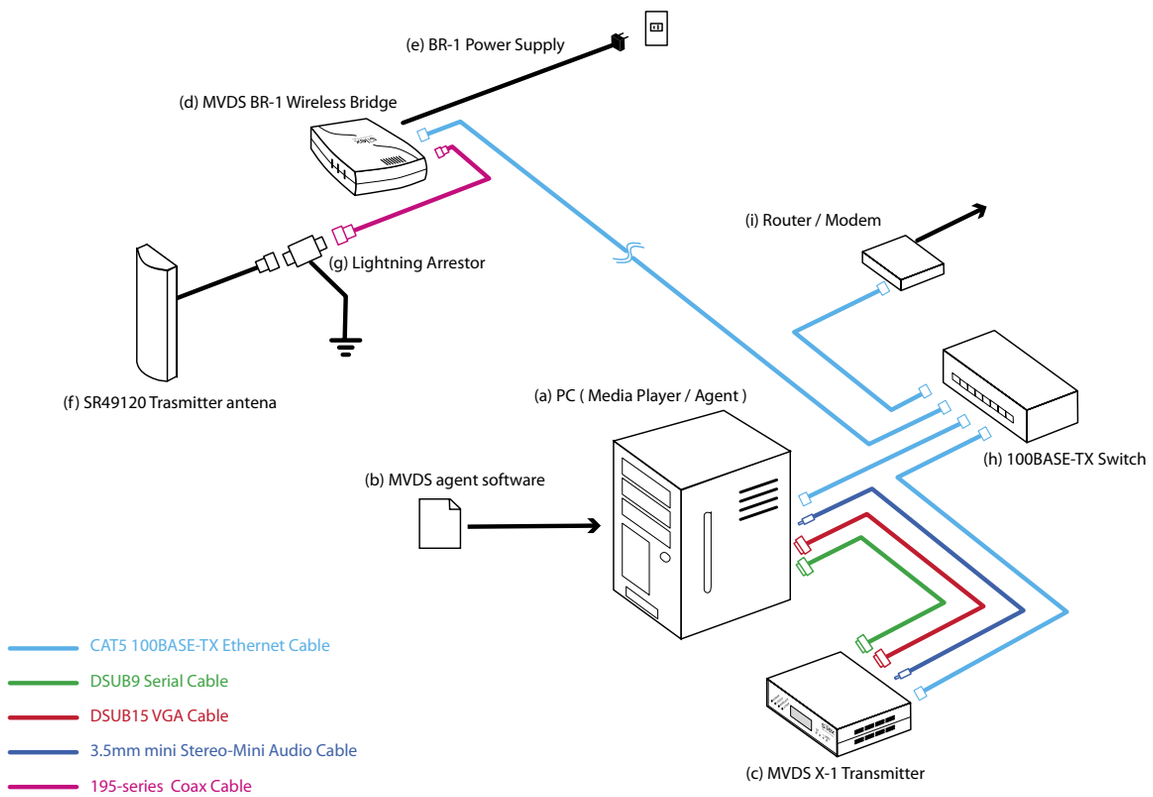


Figure 2-1 Typical installation diagram

TIP

- **Never extend the antenna coax cable with BR-1.** The primary purpose of BR-1 is to shorten the antenna coax cable. Every single foot of 195-series coax will lose 0.3dB / 5.8GHz, so a 10ft of 195-series coax will lose 3dB - which means 50% of the signal.

3. Installation procedure

3-1. Location selection

It is very important to choose right location to mount the transmitter antenna and BR-1 for stable wireless connectivity.

- Transmitter antenna should be mounted where able to have good line-of-sight to most of pump stations (receiver antennas).
- The height of transmitter antenna should be nearly the same height, or slightly higher than receiver antennas.
- The transmitter antenna and BR-1 should be within reach the length of 10ft (3.0m) coax antenna cable. Extending the antenna cable is highly undesirable.
- BR-1 must have AC power and Ethernet connection all the way to the MVDS transmitter.

3-2. Antenna installation kit

You need proper antenna installation kit with BR-1. Table 3-2-1 shows necessary part list for a BR-1 installation. The antenna distance and Ethernet cable length are dependent on the installation site, as well as other necessary cables. Pre-installation site investigation is highly recommended in order to trouble-free proper installation.

Table 3-2-1 Antenna installation kit part number with BR-1

Description	Part Number (SKU)	Quantity
MVDS Bridge	BR-1	1
Antenna kit	AKT-11S-BR1 (Standard range) AKT-17D-BR1 (Special long range)	1 of them, depends on antenna distance
Lightning Arrestor	AL6-NMNFB	1
Ethernet Cable	For straight (Hub) connection: CAT5-15(15m/50ft), CAT5-30(30m/100ft) or CAT5-100(100m/300ft) For crossover (direct) connection: CAT5C-15(15m/50ft), CAT5C-30(30m/100ft) or CAT5C-100(100m/300ft)	1 of them, depends on wiring distance
Other cables	AC power extension code Grounding wire 100BASE-TX Ethernet Switch Shorter Ethernet Cables	As it needed on the site

3-3. Antenna cable connection

Figure 3-3-1 shows how to connect the antenna cable. Note that the lightning arrestor must be securely grounded in order to avoid ESD problem.

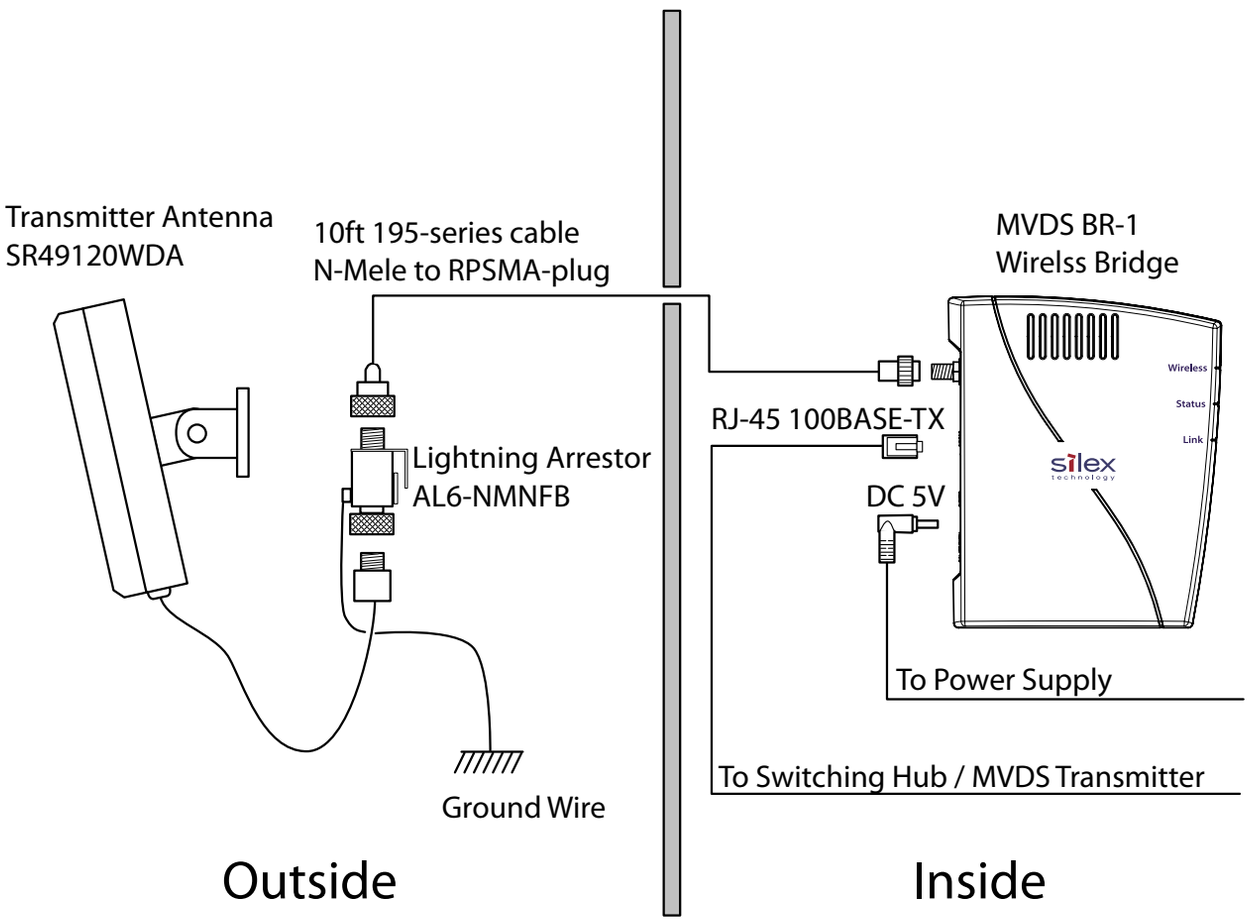


Figure 3-3-1 Antenna cable connection

TIP

- **When used with BR-1, you should not connect MVDS transmitter antenna. The MVDS wireless function of the transmitter should be set to DISABLE.**

3-4. Ethernet connection

There are two types of Ethernet connection; Direct connection or Hub/Switch connection. It depends on the customer requirement which connection type should be used; Hub/Switch connection must be used when the customer needs network-based management capability. If the customer does not need network-based management capability, direct connection might be cheaper and simpler.

Direct connection

Direct connection is to connect a MVDS Transmitter to a BR-1 with single crossover Ethernet cable.

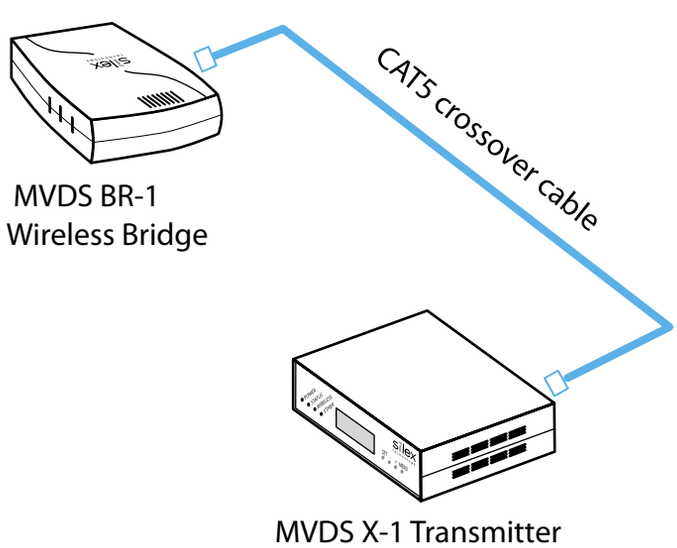


Figure 3-4-1 Direct connection

Hub/switch connection

With this type of connection, the MVDS Transmitter and BR-1 is connected through a network switch with straight Ethernet cable. A PC loaded with MVDS Agent software and an Internet Router likely be connected to the same switch also.

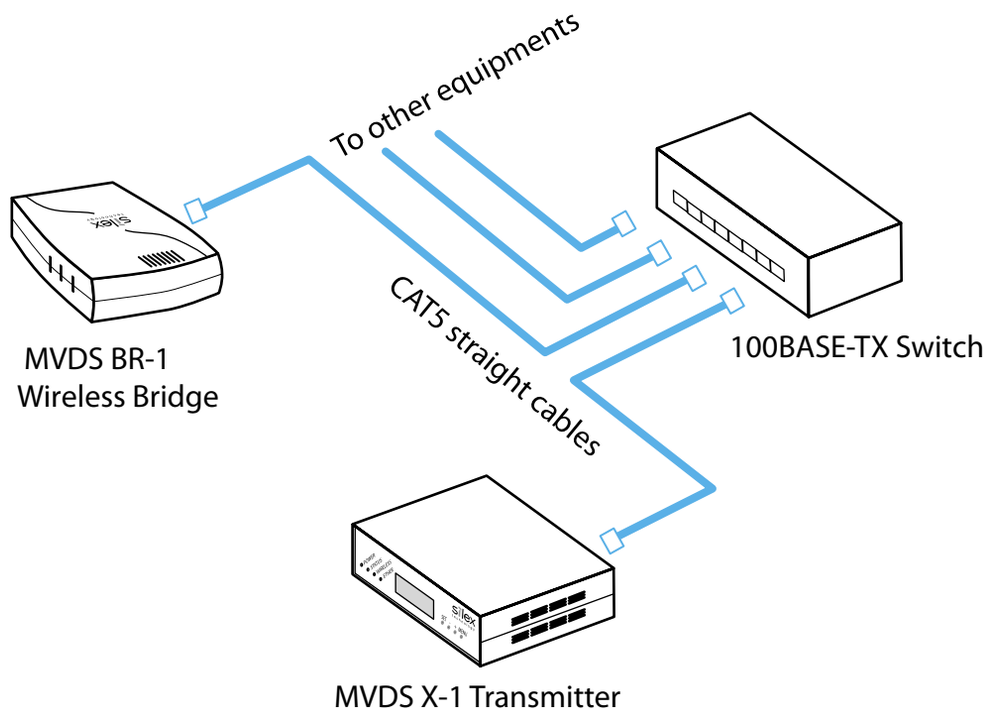


Figure 3-4-2 Hub/switch connection

It is recommended to put MVDS system to independent network rather than mix them with existing network infrastructure, because of network performance impact. A MVDS system will send out huge amount (20Mbps) of multicast packet continuously, so it may slow down the main network.

3-5. Power supply connection

BR-1 power supply is 100-240VAC input and 5VDC output. It does not have any means of ON/OFF switch; once plugged in, it stays ON. Note that MVDS power supply is not compatible with BR-1 (it is 15VDC) and it have physically different plug.

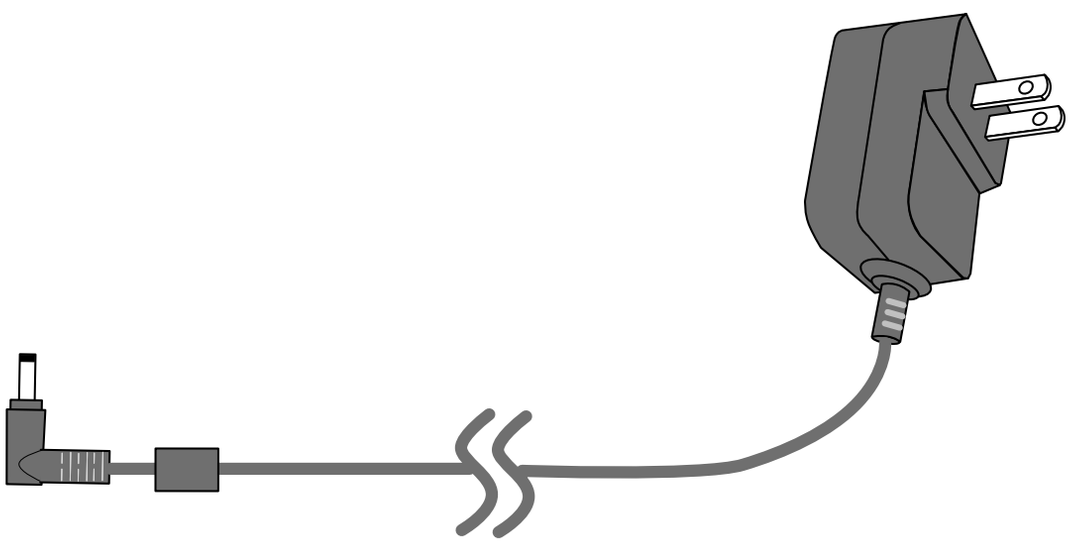
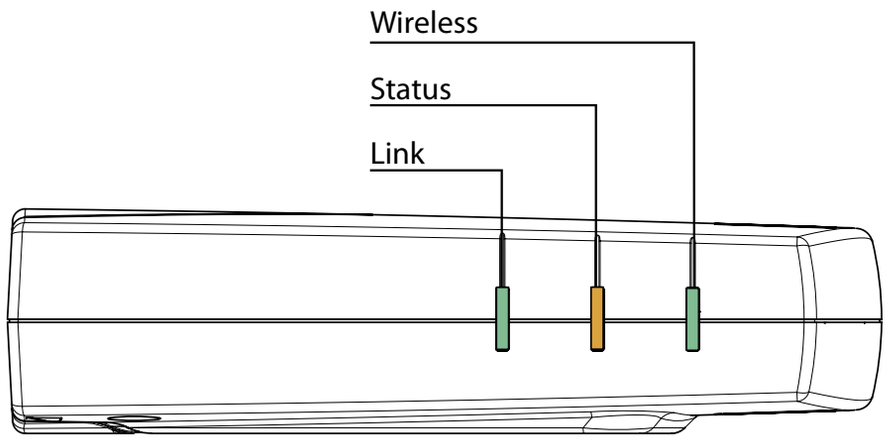


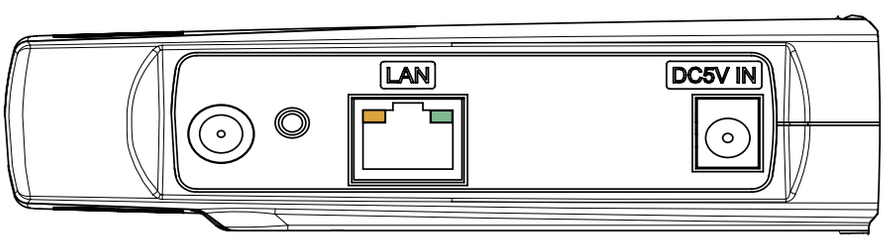
Figure 3-5-1 Power supply for BR-1

4. Troubleshooting

BR-1 has three LEDs on front panel as shown as Table 4-1. The front panel LEDs gives first clue for troubleshooting.



Front View



Rear View

Figure 4-1 Status LEDs

Table 4-1 LED on BR-1

Front Panel	GREEN (Wireless)	ORANGE (Status)	GREEN (Link)
Back Panel	GREEN	ORANGE	

4-1. All LEDs are OFF

BR-1 does not have the power.

- Check if power supply is connected to active AC outlet.
- Check if power cable is firmly connected.

4-2. Link LED is OFF

Ethernet connection is not right.

- Check if Ethernet cable is firmly connected.
- Check if the Green LED on the backside of BR-1 is ON. If it is OFF, it is likely that either cable is broken, unplugged or the hub does not have power.
- Check if the equipment at the other side of the cable (either to MVDS Transmitter or to Hub/Switch) has power and turns ON.

If possible, bring the BR-1 close to the MVDS Transmitter and connect them with much shorter Ethernet cable. If Link LED lights, it is highly likely the problem with Ethernet cable (wrong type of cable, wire breaks, faulty connectors, etc). If that is the case, it is recommended to replace the Ethernet cable.

4-3. Wireless LED is OFF

Wireless connection is not right.

- Check if antenna coax is firmly connected.
- Check if receivers are up and running.
- Check if there is no troubles with antenna installation. (Refer to installation guide)
- Check if SSID, Channel and WEP key settings of BR-1 is right.

4-4. Orange LED is blinking

The BR-1 detects fatal error by itself. It is recommend to replace the unit.

5. Configuration

BR-1 is supposed to be pre-configured at the factory, according to customer requirement. It is not recommended to change the configuration of BR-1 without enough knowledge. This section is provided for reference purpose.

5-1. IP address

Before to configure any other items, IP address have to be configured to BR-1. IP address can be configured by;

- Fixed IP address
- From DHCP server
- Automatic IP address

Fixed IP address is recommended for standalone configuration. It is not usually used with network-based management. Usually a private class IP address such as 10.x.y.z is assigned, while w y and z are uniquely assigned number by the network administrator or the factory.

DHCP is commonly used for managed network. This is the factory-default mode for BR-1. IP address is automatically managed and assigned by a DHCP server. Usually, the Internet Router has DHCP server function inside.

Automatic IP address is a kind of last-ditching solution. When BR-1 is configured for DHCP but failed to get an IP address, it will fall back to 169.254.x.y address, while x and y are randomly assigned numbers.

MVDS Manager or AdminManager is used to configure IP address. Once IP address is configured, you can open the WEB page and proceed to configure other parameters.

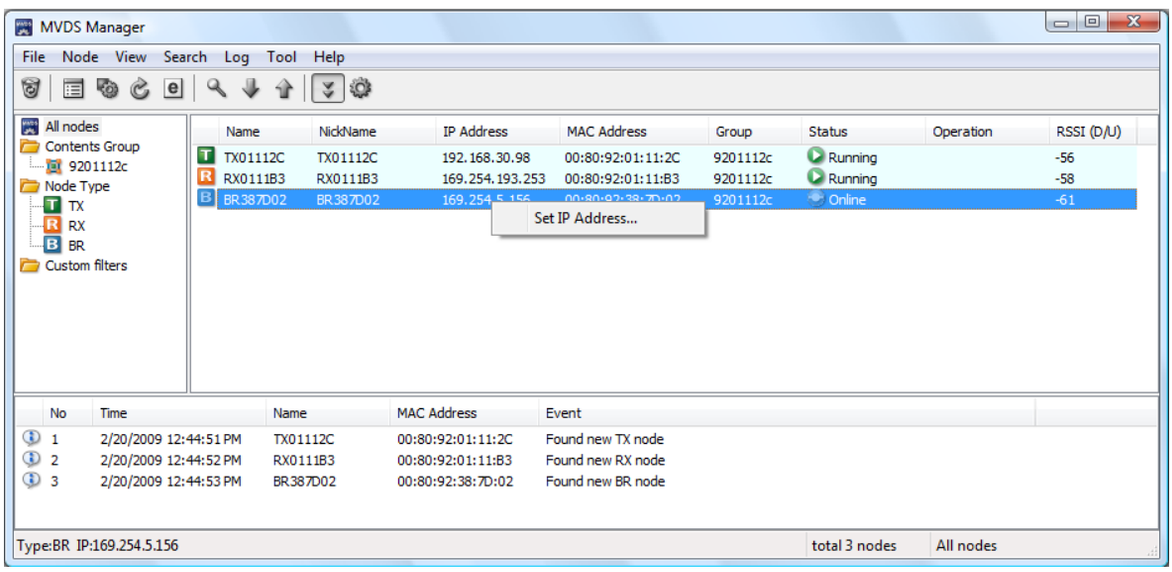


Figure 5-1-1 MVDS Manager

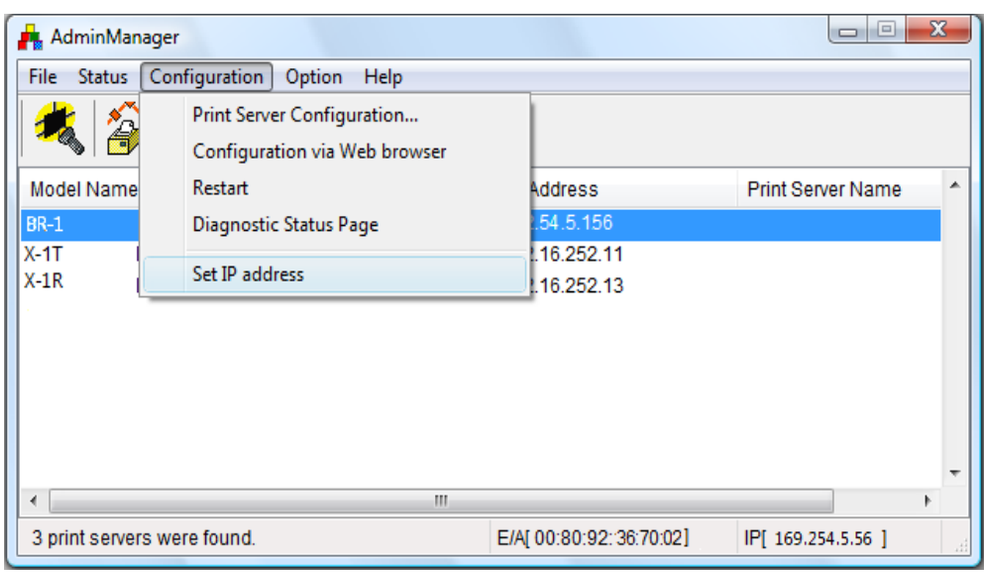


Figure 5-1-2 AdminManager

5-2. SSID

Factory default SSID is "mvds". It is recommended to reconfigure unique SSIDs for each installation sites, in order to avoid mixup possibility between other MVDS installations nearby. It is also recommended from security standpoint.

5-3. Channel Auto Search

Channel Auto Search is OFF as factory default. When turned ON, the BR-1 will look for and use "open" channel on start up. This feature may help channel conflict problem with other WiFi system around.

5-4. Channel

Channel 1 is factory default. Because MVDS system is designed for 802.11a 5.8GHz channels, it should be configured either one of 149, 153, 157, 161 or 165 (for outdoor use in US/Canada). In order to determine which channel should be used, it is recommended to do the site investigation and look for "open" channel.

5-5. Data rate

The factory-default 36Mbps is recommended for most cases of video application.

5-6. SSID Broadcast

SSID Broadcast is ON as factory default. It is easier to be ON for initial setup and troubleshooting, however from security standpoint, it is recommended to turn it OFF once system is set and running.

5-7. WEP

WEP is OFF as factory default. It is highly recommended to be ON from security standpoint. Note that the MVDS receivers also must be configured for WEP with same key information.

5-8. Key index

Factory default is 1 and should not be changed.

5-9. Key size

64 or 128 can be configured. Factory default is 64 because of backward compatibility, however 128 is recommended for better security.

5-10. WEP Key 1 to 4

Only WEP key 1 has to be configured for WEP, while Key 2 to 4 are optional. The key can be configured as raw-text (passphrase) or hexadecimal string. Passphrase can be 5 or 13 characters, depending on the key size. Hexadecimal string can be 10 or 26 characters, depending on the key size.