WBT900-IP

User's Manual

900 MHz Wireless BACnet IP Radio

Thank you for your purchase of the WBT900-IP, Wireless Ethernet Transceiver. With appropriate placement and antenna selection, the WBT900-IP can expand any Ethernet network providing access to previously unreachable locations.

Detailed setup instructions are included in this manual. Should you have any technical questions, please contact your distributor for support or email support@aic-wireless.com.

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101 N. Washington Street
Sylvester, Georgia 31791

(229) 776-2510
1-877-424-2953
FAX: (229) 776-2512

OPERATIONAL SUMMARY

The WBT900-IP Transceiver allows the user to create a long-range, wireless Ethernet network with up to 16 Client units per access Server.

Configuring a wireless link with the WBT900-IP requires the establishment of five elements:

1. Each radio must know whether it is to be a Server or Client.
2. The Server must know how many Clients are expecting communication with it.
3. The Server and any given Client must agree on which radio frequency channel they are using. This can be set manually or allowed to change automatically.
4. The Client must be assigned a unique subscriber ID to specify which time division slot it will use when communicating with the Server.
5. The Server and any given Client must share a common 128-bit encryption key and Network ID.

The Server automatically scans for the best of the 12 available radio frequency channels, encrypts Ethernet data received from the network, and transmits it wirelessly to the correct Client. The Server is constantly monitoring the radio link and can automatically change the channel if performance is degraded due to interference. If two Server units are very close to one another, they may interfere if operating on adjacent frequency channels. Place them at least 20 feet apart or manually select non-adjacent channels for their operation. Also, the Client should be placed at least 10 feet from the Server to avoid overloading the WBT900-IP receiver.

Any 10/100 BaseT Ethernet client device (ECD) can be connected to an WBT900-IP Client. Each Client encrypts Ethernet traffic received from the attached ECD and transmits the data wirelessly to its Server.

Each Client can be plugged directly into an ECD without adding drivers or loading software. Essentially, once the Server/Client pair is configured and running it behaves like a continuous Ethernet cable.

WBT900-IP SETUP

DIP SWITCH SETTINGS

Switch 1 Down (Away from label) Server Radio Setting
Switch 1 Up (Towards label) Client Radio Setting
Switch 2 (Factory Use Only) LEAVE IN UP POSITION

Direct Patch Cable Pairing

Follow these instructions to establish a Server (Access Point) / Client (Subscriber) relationship between the WBT900-IP transceivers using the Direct Patch Cable method.

1. Place Dip Switch 1 in the down position (away from the top label) to designate the WBT900-IP as a Server/Access Point.
2. Ensure both Dip Switch 1 and 2 are in the up position (towards the top label) for each Client/Subscriber unit.
   **Note: Each Server/Access Point can be addressed to only 16 Client/Subscriber units.*
3. Connect a standard patch cable via the RJ45 port between the designated Server/Access Point and the Client/Subscriber unit to be paired.
4. Power on the Client/Subscriber unit **then**, power on the Server/Access Point unit within 5 seconds. The Channel and Link Quality LEDs will sequence and stop on the revision number. Wait 5 seconds.

At this point the Server/Access Point is exchanging internal addressing information with the Client/Subscriber unit.

5. Cycle power on each unit and remove the patch cable.
6. With antennas connected and a minimum of 3 feet distance between transceivers, the Client/Subscriber should link up with the Server/Access Point, indicated by a locked channel and fixed link quality on the LEDs.
7. Repeat as necessary with additional Client/Subscriber units.

Web Browser Pairing

Follow these instructions to establish a Server (Access Point) / Client (Subscriber) relationship between the WBT900-IP transceivers using the Web Browser method. Note: the internal IP Address of each WBT900-IP by default is 192.168.17.17.

1. Set the laptop/PC used to configure the WBT900-IP to a static IP Address such as 192.168.17.19.
2. Connect a standard patch cable between the laptop/PC and the WBT900-IP.
3. Ensure that the desired Dip Switch setting is selected. *Refer to Dip Switch Settings.*
4. Apply power to the WBT900-IP.
5. Open the laptop/PC web browser and enter the IP Address of the unit: 192.168.17.17
6. The AIC Wireless splash screen will appear. Enter the password "password" where prompted.
7. The Statistics and Device Information will populate with the information in the transceiver.
8. Scroll to the bottom and select the "Advanced Admin" button.

9. Under the Device Settings tab in Advanced Admin the device can be configured. Note: if the device is manually configured via dip switches as a Server/Access Point or Client/Subscriber do not change via the web browser. This will populate based on the dip switch setting.
10. Enter the Client/Subscriber ID number where prompted. Note: Each client must have a unique ID, not to exceed 16 per Server Access Point. If the device is a Server/Access Point the number of subscribers on this unit's network needs to be entered. Example: the Number 8 will be entered if the Server/Access Point is addressed to 8 Client/Subscriber units.
11. If desired, a user specific Network Name (32-bit HEX) and Encryption Key (128-bit HEX) can be applied following the listed example.
12. After all changes have been made select "Apply".
13. After Applying the changes select the "Reset Device" button. This will cycle power on the device and ensure all changes were accepted.

Embedded Spectrum Analyzer

Follow these instructions to utilize the embedded Spectrum Analyzer. This can be a valuable tool to evaluate the RF environment of the installation site. Note: the internal IP Address of each WBT900-IP by default is 192.168.17.17.

1. Set the laptop/PC used to configure the WBT900-IP to a static IP Address such as 192.168.17.19.
2. Connect a standard patch cable between the laptop/PC and the WBT900-IP.
3. Apply power to the WBT900-IP.

4. Connect the desired Omni-Directional or Directional antenna to the WBT900-IP.
5. Open the laptop/PC web browser and enter the IP Address of the unit: 192.168.17.17
6. The AIC Wireless splash screen will appear. Enter the password "password" where prompted.
7. Scroll to the bottom of the page and select "Fast Spectrum Scan".
8. Change the Automatic Scan Interval to the desired refresh rate.
9. Select "Scan Now" to begin analyzing the RF environment within range of the WBT900-IP.
10. Move the antenna, if directional to scan a wider area.
11. Logout of the unit when finished and cycle power.

INSTALLATION INSTRUCTIONS

1. Connect Ethernet bus to WBT900-IP via the RJ45 Port.
2. Connect 12-24 VAC/DC power as labeled.**
3. Digital LED sequence should begin, "AIC", "Eth", "revision number".
4. WBT900-IP will begin searching for paired unit(s). *Note: For radios configured as a server, the LED channel numbers will descend from 12 to 0, and reverse for client radios.*
5. Verify the RF network communication with the Channel, Link Quality "LQ", RFTX, RFRX, Link, and Power LEDs.
6.

****WARNING: If using AC power option, a 24 VAC isolation transformer must be used! Ensure neither of the two secondaries are bonded.**

900 MHz CHANNEL TABLE

1	903.12500 MHz
2	905.20833 MHz
3	907.29167 MHz
4	909.37500 MHz
5	911.45833 MHz
6	913.54167 MHz
7	915.62500 MHz
8	917.70833 MHz
9	919.79167 MHz
10	921.87500 MHz
11	923.95833 MHz
12	926.04167 MHz

LIMITED WARRANTY

This product is warranted to the original purchaser for normal use for a period of 360 days from the date of purchase. If a defect covered under this warranty occurs, AIC Wireless will repair or replace the defective part, at its option, at no cost. This warranty does not cover defects resulting from misuse, lightning or modification of the product. Appropriate actions should be taken by the installer to ensure surge protection is present.

Compliance Statement (Part 15.19)
This device complies with Part 15 of the FCC Rules.
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.

Warning (Part 15.21)
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

RF Exposure (OET Bulletin 65)
To comply with FCC RF exposure requirements for mobile transmitting devices, this transmitter should only be used or installed at locations where there is at least 20cm separation distance between the antenna and all persons.

Information to the User - Part 15.105 (b)
This equipment has been tested and found 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 reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more 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.