

HPO-9008 Wi-Fi Network Kit

Installation and Application Guide





Contents

Introduction	1
Sample Installations	2
TP-Link Routers in Client Mode with an IP Router	2
TP-Link Routers in Client Mode with KMC Commander	3
TP-Link Router in Access Point Mode	4
Preparation	5
Mounting	6
Connecting	8
Mode Switch and Physical Connections	8
Configuration Pages	9
Controller and BACnet Router Configuration	15
Troubleshooting	15
Wi-Fi Signal Is Not Strong Enough	15
Communication Lost with TP-Link Router	15
Connected BACnet Devices Are Not Discoverable	16
Other Issues	16
HPO-9008 Kit Specifications	17
TP-Link Router	17
XEE-9008 Power Supply	17
Handling Precautions	18
Important Notices	18
Support	18

Introduction

To create wireless network connections for KMC controllers, KMC supplies the **HPO-9008 Ethernet to Wi-Fi Network Adapter Kit**. The HPO-9008 kit includes:

- **TP-Link TL-WR902AC Wi-Fi router** (see its web page for firmware updates and complete information)
- XEE-9008 power supply (24-VAC to 5-VDC)
- Plastic enclosure (for mounting on a panel's conduit knockout hole)
- Cables (Ethernet and USB)

The TP-Link router connects to the controllers or BACnet router through an Ethernet cable. The controllers can be BACnet over IP controllers or other controllers connected through a BACnet router. See **Sample Installations** on page 2 and **Preparation on page 5**.



TP-Link Routers in Client Mode with KMC Commander





BAC-5051E BACnet Router and MS/TP Network Controllers (Wireless, One-to-Many)

Preparation

From the building's IT department, get fixed IP addresses and subnet mask information for use in the installation of routers and controllers.

NOTE: A gateway address cannot be specified in the TP-Link router. When the router is used in AP mode, connected controllers may be able to use the router's IP address as their gateway.

The TP-Link wireless router does **not** have a BACnet MS/TP connection. Also, it and standard IP routers do **not** pass BACnet over Ethernet information. Use one or more of the following BACnet communication solutions:

- Use devices configured for BACnet over IP.
- For **BACnet over Ethernet** devices, use a multiport BACnet router between the devices and the TP-Link wireless router.
- For BACnet over MS/TP devices, use a BAC-5051E BACnet router between the MS/TP network and the TP-Link wireless router.

For more information on routers, controllers, and KMC Commander, see:

- KMC Commander IoT Platform
- BAC-5051E BACnet Router (MS/TP and IP)
- BAC-5050 Multiport BACnet Router
- KMC Conquest BAC-5900 Series General Purpose Controllers
- KMC Conquest BAC-9300 Series Unitary Controllers
- KMC Conquest BAC-9000 Series VAV Controllers
- KMC SimplyVAV VAV Controllers

For controller and BACnet router configuration information, see **Controller** and **BACnet Router Configuration on page 15**.

Mounting

- **NOTE:** The TP-Link router must be mounted where adequate Wi-Fi signal strength will be available (e.g., do not mount it inside a metal enclosure). Use a Wi-Fi repeater/extender for areas with inadequate coverage. Another TP-Link TL-WR902AC can be used for this purpose in range extender mode. See the manufacturer's instructions for setting up range extender mode.
- **NOTE:** These mounting instructions assume that relevant controllers are mounted inside a metal controller enclosure (such as the **HCO-1034**, **HCO-1035**, or **HCO-1036**). The XEE-9008 power supply is mounted **inside** that metal enclosure. The TP-Link router and its plastic enclosure are mounted on the **outside** of the metal enclosure using the attached conduit connector.



- 1. Loosen the four screws on the supplied plastic enclosure and remove the cover.
- 2. Mount the enclosure on a controller panel knockout near the KMC BACnet controller (or BAC-5051E router).
- 3. Mount the Snap Track for the XEE-9008 power supply inside the metal controller panel using (not supplied) screws.



- **NOTE:** If a separate enclosure (not included) is required for the XEE-9008 power supply inside the controller panel, mount it inside a suitable enclosure.
- 4. Thread the **supplied** Ethernet and USB cables through the knockout in the enclosure.
- **NOTE:** The supplied USB cable (with molded ferrite beads to reduce EMI) **must** be used between the power supply and the router to meet FCC requirements.
- Keep the TP-Link Wi-Fi Info Card containing the SSIDs and Wireless Password for use later in configuration. (See Configuration Pages on page 9.)
- 6. Place the TP-Link router in the enclosure.



NOTE: The router may rest on the bottom of its plastic enclosure, or it may be secured with the supplied hook-and-loop strips.

NOTE: Leave the router unsecured and the cover of the enclosure off until everything is configured and working properly. (After all other setup is completed, secure the router with the strips if desired, put the enclosure's cover in place, and tighten the screws.)

Connecting

Mode Switch and Physical Connections

- **NOTE:** See the Hardware Information and Frequently Asked Questions sections of the included manufacturer's quick start guide for general information about the router.
- 1. Check that the Mode Switch is in the AP/Rng Ext/Client position.
- 2. Connect the Ethernet cable between the TP-Link router and the desired device (e.g., Conquest "E" controller or BACnet router). See Sample Installations on page 2.



A CAUTION

On a KMC Conquest Ethernet model controller, do NOT accidentally connect a cable to the Room Sensor port from an Ethernet port on a switch, router, or another daisy-chained Conquest controller! The voltage from the Room Sensor port (that powers STE-9xxx NetSensors) WILL DAMAGE the connected Ethernet port! If the Ethernet port is damaged, the wireless connection may still work, but communication with connected devices will be lost.

- NOTE: Room Sensor ports were black before 2016 and yellow after.
- **NOTE:** KMC Conquest BAC-5901CE and BAC-9xxxCE model controllers have **dual** Ethernet ports for daisy-chaining. The Room Sensor port is **next** to the Ethernet ports in the BAC-90xxE VAV controllers. It is on the **opposite** side on BAC-93xxE and BAC-59xxE controllers.

3. Connect the XEE-9008 power supply to the TP-Link router with the **included** USB cable.

NOTE: Be sure the USB plugs are pushed all the way into their connectors.

- Connect 24 VAC to the black removable terminal block on the XEE-9008 power supply.
- **NOTE:** A minute after the router has powered up, the green **Power** and **Wireless** LED should be (solid) ON. (See the manufacturer's instructions for more information and other LED indications.)

Configuration Pages

Connecting to the Router

1. View Wi-Fi connections on your phone or laptop and click on your router's network name.



- **NOTE:** Your router's default SSID (network name) and password are printed on a label on the back of the router.
- 2. Enter the network's eight-digit **password** (network security key) and click **OK** (or **Next** and **Join**).
- **NOTE:** This establishes a connection between the TP-Link router (as an access point) and the laptop or phone as a client.
- **NOTE:** If you have trouble connecting the router, check that the phone or laptop IP settings are in DHCP mode. (See the Help for your operating system.)

3. Open a browser and log into http://tplinkwifi.net/ or http://192.168.0.1/.

TL-WR902AC	× +	
← → C ▲ Not secure	192.168.0.1	
Ptp-link	AC750 Wi-Fi Tra LRouter Model No. TL-WR902AC	
		Admin
		P
		Log In
		Log m

- 4. Enter **admin** as both the username and password.
- 5. Click the **Log In** button.
- 6. Click the Quick Setup link in the menu on the left.

	AC750 Wi-Fi Travel Router Model No. TL-WR902AC				
Status					
Quick Setup					
Operation Mode	Quick Setup - Start				
Network					
Wireless 2.4GHz	But the Quick Setup to manually configure your internet connection and wireless settings				
Wireless 5GHz	To continue, please click the Next button.				
Guest Network	To exit, please click the Exit button.				
DHCP					
USB Settings					
System Tools	Exit Next				
Logout					

- 7. Click the **Next** button to start the Quick Setup.
- **NOTE:** If problems occur during configuration (e.g., losing all communication with the router), the router can be reset to the **default configuration** using the Reset button. With the router powered on, use a pin to press and hold the **Reset** button (about 5 seconds) until all the LEDs turn off, and then release the button. After the router has fully rebooted (about 1 minute), connect to it starting at Step 1 of **Configuration Pages on page 9**.
- 8. Continue with one of the following two sections:
 - Configuring the Router as a CLIENT on page 11
 - Configuring the Router as an ACCESS POINT on page 13.

Configuring the Router as a CLIENT

1. Select Client.

	AC750 Wi-Fi Travel Router Model No. TL-WR902AC
Status	
Quick Setup	
Operation Mode	Quick Setup - Operation Mode
Network	
Wireless 2.4GHz	Choose Operation Mode:
Wireless 5GHz	Access Point
Guest Network	Range Extender
DHCP	Client
USB Settings	Act as a "Wireless Adapter" to connect your wired devices(e.g.Blu-ray player,smart TV) to exist Wi-Fi
System Tools	
Logout	Back Next

- 2. Click the Next button.
- 3. Find the desired Access Point and click Connect.

	/ N	AC750 Nodel No	Wi-Fi Travel Ro . TL-WR902AC	uter				
Status								
Quick Setup								
Operation Mode	A	P List						
Network								
Wireless 2.4GHz		The sc	anned APs are as follow	/S				
Wireless 5GHz		AP nur	mbers: 28 Ref	resh				
Guest Network	ID	Band	BSSID	SSID	Signal strength	Channel	Encry	Connect
DHCP	1	2.4GHz	00:23:A7:E2:E9:6C	CommanderBX-HZ6QB02	91	6	WPA2-PSK/AES	Connect
USB Settings	2	2.4GHz	60:F1:89:13:BA:C5	CommanderBX-CQ22B02	72	6	WPA2-PSK/AES	Connect
System Tools	3	2.4GHz	A0:63:91:C8:3E:CB	KMC Rapid	69	8	WPA2-PSK/AES	Connect
Logout	4	2.4GHz	06:8D:DB:68:A3:EA		67	11	WPA2-PSK/AES	Connect
	5	2.4GHz	02:8D:DB:68:A3:EA		67	11	WPA2-PSK/AES	Connect
	0	2.4011-	04-00-00-40-54		07	44	MEADIAFO	0

4. Enter the Access Point's Password.

NOTE: Be sure that password and encryption method match exactly.

Ptp-link	AC750 Wi-Fi Travel Router Model No. TL-WR902AC
Status	
Quick Setup	
Operation Mode	Quick Setup - Wireless
Network	
Wireless 2.4GHz	
Wireless 5GHz	SSID(to be bridged): CommanderBX-CQ22B02
Guest Network	MAC Address(to be bridged): 60:F1:89:13:BA:C5 e.g. 00:1D:0F:11:22:33
DHCP	Scan
USB Settings	Key Type: WPA2-PSK V
System Tools	Encryption: AES V
Logout	Password:
	Back Next

- 5. Click the **Next** button.
- 6. Change LAN Type drop-down box selection to Static IP.

7. Enter the new **IP address** and **Subnet Mask** (supplied by the IT department) of the TP-Link router.

	AC750 Wi-Fi Travel Router Model No. TL-WR902AC
Status	
Quick Setup	
Operation Mode	Quick Setup - Network Setting
Network	
Wireless 2.4GHz	LAN Type: Static IP V
Wireless 5GHz	Note: The IP parameters cannot be configured if you have chosen Smart
Guest Network	IP(DHCP)
DHCP	(In this situation the device will help you configure the IP parameters
USB Settings	automatically as you need).
System Tools	IP Address: 10.40.2.199
Logout	Subnet Mask: 255.255.0.0
	We recommend you configure this AP to the same IP subnet and subnet mask, but different IP addression aron your root AP/Router.
	DHCP Server: O Enable O Disable
	Back Next

- 8. Next to DHCP Server, click **Disable**.
- 9. Click the Next button.
- 10. Review the settings for accuracy.

P TL-WR902AC	× +	
$\leftarrow \rightarrow \mathbf{C}$ A Not secure	192.168.0.1	
	AC750 Wi-Fi Travel Router Model No. TL-WR902AC	
Status Quick Setup Operation Mode	Congratulations! The settings is finish, please click finish button to make it work. For detailed settings, please click other menus if necessary. Changing work mode should be reboot!	
Wireless 2.4GHz Wireless 5GHz Guest Network	Confirm the configuration you have set. If anything wrong please go Back to reset. It's recommented to take a note of these settings that you'll need later for reference. Wirreless 2.4GHz	
DHCP USB Settings System Tools Logout	Operation Mode: Client Enable: Disabled Wireless Channet: 4 Wireless Network Name(SSID): TP-Link_2805	
	Wireless 5GHz Operation Mode: Client	
	Enabled Wireless Channet: 44 Wireless Network Name(SSID): TP-Link_2B05_5G Wireless Security Mode: WPA2-PSK Wireless Password: KMC@ccess???	
	LAN Settings Default Access: http://tplinks/ifi.net LAN Type: Static IP IP Address: 10.20.2.202	
	Back Finish	

11. Scroll down and click the **Finish** button.

- 12. After rebooting, log in to the TP-Link router at its new address to verify correct operation.
- 13. Access the connected network devices.

Configuring the Router as an ACCESS POINT

1. Leave Access Point selected.

	AC750 Wi-Fi Travel Router Model No. TL-WR902AC
Status	
Quick Setup	
Operation Mode	Quick Setup - Operation Mode
Network	
Wireless 2.4GHz	Choose Operation Mode:
Wireless 5GHz	Access Point
Guest Network	Set up Wi-Fi on an existing wired network
DHCP	Client
USB Settings	Cheft
System Tools	
Logout	Back Next

- 2. Click the Next button.
- 3. Change the SSID Wireless Network Name and Password (for 2.4G and/or 5G) as desired.

	AC750 Wi-Fi Travel Router Model No. TL-WR902AC
Status	
Quick Setup	
Operation Mode	Quick Setup - Wireless 2.4G
Network	
Wireless 2.4GHz	Wireless Network Name: TP-Link 178B (Also called SSID)
Wireless 5GHz	
Guest Network	Security:
DHCP	Wireless Deseword
USB Settings	(Enter ASCII characters between 8 and 63 or Heyadecimal characters
System Tools	between 8 and 64.)
Logout	Disable Wireless Security
	More Advanced Wireless Settings Back Next

- 4. Click the **Next** button.
- 5. Change LAN Type drop-down box selection to Static IP.
- 6. Enter the new **IP address** and **Subnet Mask** (supplied by the IT department) of the TP-Link router.

Ptp-link	AC750 Wi-Fi Travel Router Model No. TL-WR902AC
Status	
Quick Setup	
Operation Mode	Quick Setup - Network Setting
Network	
Wireless 2.4GHz	LAN Type: Static IP
Wireless 5GHz	Note: The IP parameters cannot be configured if you have chosen Smart
Guest Network	IP(DHCP)
DHCP	(In this situation the device will help you configure the IP parameters
USB Settings	automatically as you need).
System Tools	IP Address: 10.40.2.124
Logout	Subnet Mask: 255.255.0
	We recommend you configure this AP with the same IP subnet and subnet mask, but different IP address from your root AP/Router.
	DHCP Server.
	Back Next

- 7. Click the **Next** button.
- 8. Review the settings for accuracy.

TL-WR902AC	× +	
← → C ♀ 192.168.0.1		
Ptp-link	AC750 Wi-Fi Travel Router Model No. TL-WR902AC	
Status	Quick Setup - Review Setting	
Quick Setup		
Operation Mode	Congratulations! The settings is finish	, please click finish button to make it work.For detailed
Network	settings, please click other menus if n	ecessary.
Wireless 2.4GHz		
Wireless 5GHz	Confirm the configuration you have set. If an	ything wrong,please go Back to reset.
Guest Network	It's recommented to take a note of these set	ings that you'll need later for reference.
DHCP	Wireless 2.4GHz	
USB Settings		
System Tools	Operation Mode:	Access Point
Logout	Wireless Network Name/SSID):	Auto
	Wireless Security Mode	WPA2-PSK
	Wireless Password:	89783122
	Wireless 5GHz	
	Operation Mode:	Access Point
	Wireless Channel:	Auto
	Wireless Network Name(SSID):	TP-Link_178B_5G
	Wireless Security Mode:	WPA2-PSK
	Wireless Password:	89783122
	LAN Settings	
	Default Access:	http://tplinkwifi.net
	LAN Type:	Static IP
	IP Address:	10.40.2.124
		Back Finish

- 9. Scroll down and click the **Finish** button.
- 10. After rebooting, log in to the TP-Link router at its new address to verify correct operation.
- 11. Access the connected network devices.

Controller and BACnet Router Configuration

To configure KMC Conquest Ethernet-enabled "E" model controllers for the correct **IP** addresses for the wireless network, use the **built-in web configuration pages** (see the **Conquest Ethernet Controller Configuration Web Pages Application Guide**) or the **KMC Connect Lite** app. See the relevant documents.



Troubleshooting

Wi-Fi Signal Is Not Strong Enough

Mount the HPO-9008 in a way that ensures adequate Wi-Fi signal strength (e.g., not inside a metal enclosure or behind large metal objects).

For areas with inadequate coverage, use a Wi-Fi repeater/extender. Another TP-Link TL-WR902AC router can be used for this purpose in range extender mode. See the manufacturer's instructions for setting up range extender mode.

Communication Lost with TP-Link Router

Check that the TP-Link router is powered (indicator lights are on). If not, check the XEE-9008 power supply, transformer, and wiring.

Cycle the power to the TP-Link router and wait at least a minute.

If all communication with the powered TP-Link router is still lost, reset the router to the **default configuration**. With the router powered on, use a pin to press and hold the **Reset** button (about 5 seconds) until all the LEDs turn off, and then release the button. After the router has fully rebooted (about 1 minute), connect to it again starting at Step 1 of **Configuration Pages on page 9**.

Connected BACnet Devices Are Not Discoverable

If web configuration pages for the controllers (or BAC-5051E) and the TP-Link router can be viewed on the network, but the controllers cannot be found in a BACnet discovery (e.g., in KMC Connect or TotalControl):

- Check that the IP addresses, subnet mask, and gateway in all the devices are compatible with the desired network and each other.
- Check that the TP-Link router and the computer are both connected properly to the same network.
- · Check the configuration and connections.
- · Check that any firewall has the necessary open ports.
- If the router's Ethernet port is accidentally connected to a Conquest controller's Room Sensor port (that powers STE-9xxx NetSensors), the Ethernet port will be damaged. The wireless connection may still work, but communication with connected devices will be lost. See Mode Switch and Physical Connections on page 8.
- Check that the Cimetrics BACstac driver is properly set for wireless operation as needed. See the Configuring the Cimetrics BACstac Driver appendix in the KMC Connect or TotalControl software manuals.



Other Issues

For router firmware updates and complete information about the TP-Link TL-WR902AC Wi-Fi Travel Router, see **TP-Link's web site**.

HPO-9008 Kit Specifications

TP-Link Router

See manufacturer's information from TP-Link.

XEE-9008 Power Supply

Power, Input from Transformer (Terminal Block)

Supply voltage	24 VAC (50/60 Hz); -15%, +20%; Class 2 only
Required power	40 VA
Wire size	12-24 AWG, copper, in a removable screw terminal block

Power, Output to Router (USB Type-A 2.0 Port/Receptacle)

Output voltage	5 VDC
Output current	1.5 A, max.
Wiring	USB cable (supplied USB cable in kit, with molded-in ferrite beads, must be used to meet FCC regulations)

Mounting

Mounting

Snap Track

Environmental Limits

Operating	32 to 120° F (0 to 49° C)
Shipping	-40 to 160° F (-40 to 71° C)
Humidity	0 to 95% relative humidity
	(non-condensing)

Regulatory Approvals

FCC FCC Class A, Part 15, Subpart B and complies with Canadian ICES-003 Class A*

*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.

Handling Precautions

For digital devices, take reasonable precautions to prevent electrostatic discharges to the devices when installing, servicing, or operating them. Discharge accumulated static electricity by touching one's hand to a securely grounded object before working with each device.



Important Notices

KMC Controls[®] and NetSensor[®] are all registered trademarks of KMC Controls. KMC Conquest[™], KMC Connect[™], KMC Converge[™], and TotalControl[™] are all trademarks of KMC Controls. All other products or name brands mentioned are trademarks of their respective companies or organizations.

All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form by any means without the written permission of KMC Controls, Inc.

The material in this document is for information purposes only. **The contents and the product it describes are subject to change without notice.** KMC Controls, Inc. makes no representations or warranties with respect to this document. In no event shall KMC Controls, Inc. be liable for any damages, direct or incidental, arising out of or related to the use of this document.

Specifications and design are subject to change without notice.

Support

Additional KMC product information and resources are available on the web at www.kmccontrols.com. Log-in to see all available files.

