

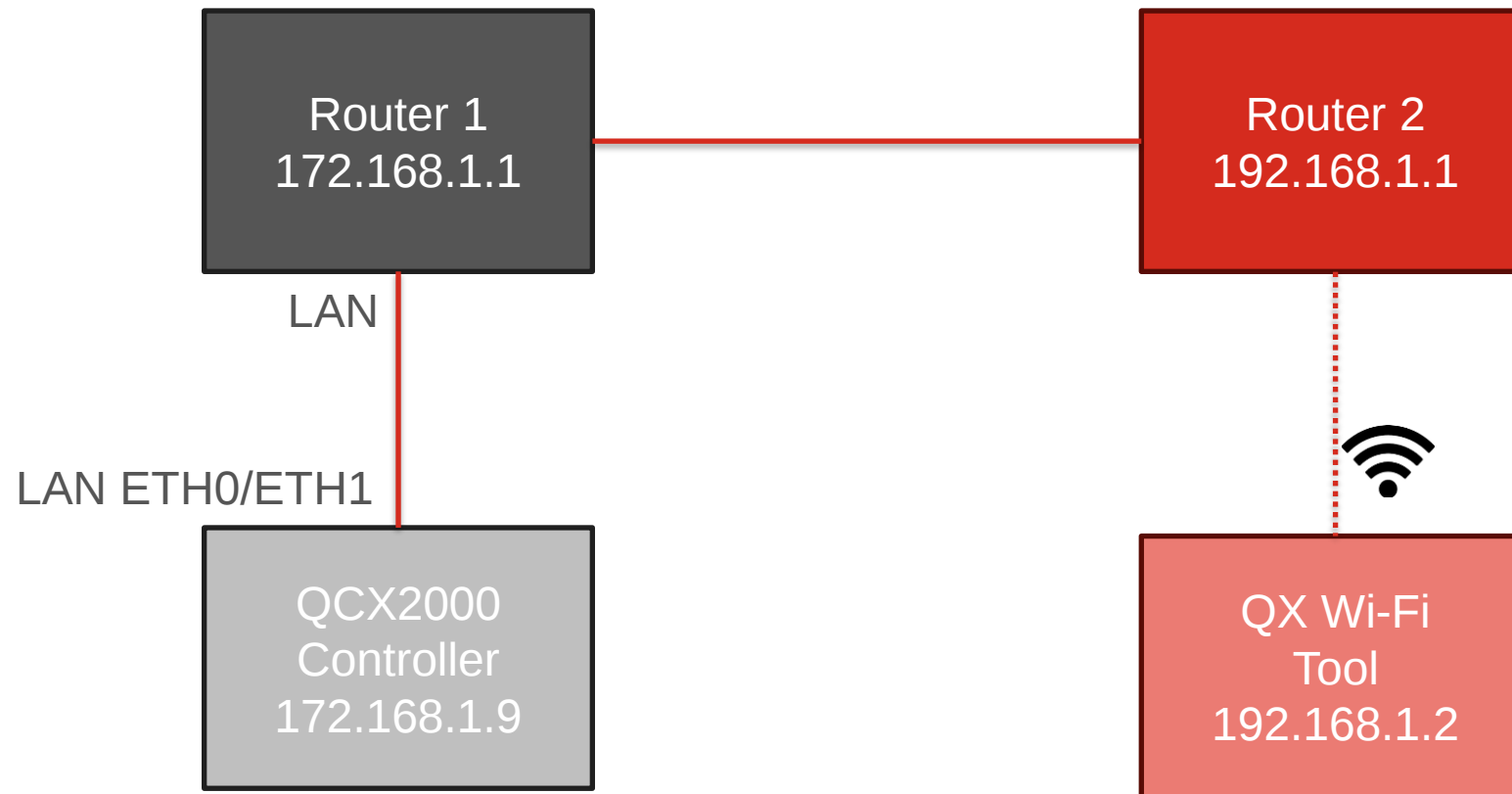


Controller IP Pairing Process

Date 07 Feb 2025

What is Controller IP Pairing?

- Controller IP Pairing is recommended to use when users want to connect QX WiFi tools and INSIGHTqcx controller over access points, which are configured in different subnets*
- An example of different subnet-based setup is given below for reference :



*** Controller IP Pairing can also be used when tools and controllers are in the same subnet.**

Firmware and Software Required

Below is the list of the minimum required firmware information for Tools, INSIGHT Connect App and Controller

INSIGHT CONNECT APP MINIMUM VERSION

#	Description	Version
1	Mobile Application - Android	6.1.0
2	Mobile Application – iOS	3.8.1
3	Desktop Application – Windows	2.1.0

TOOL FIRMWARE MINIMUM VERSION

#	Description	Version
1	Display	130.0.1.2
2	MCE	3.6.1.53
3	WiFi	3.0.3.2

CONTROLLER MINIMUM VERSION

#	Description	Version
1	INSIGHTqcx*	Any latest globally released controller version (applicable for both with Internal IO and without Internal IO based controllers)

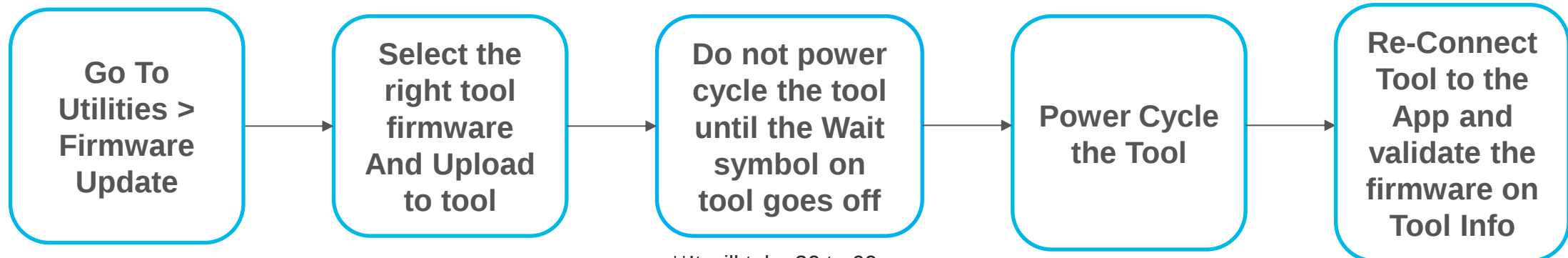
*** Controller IP Pairing is independent of controller version**

Step 1 – Check and Upgrade Tool Firmware

- Check the tool firmware versions in the Dashboard > Tool Info on the INSIGHT Connect App.
- The tool firmware shall be below at minimum :
 - The Display version - 130.0.1.2
 - MCE version - 3.6.1.53
 - WiFi Version - 3.0.3.2
- If the firmware versions don't match, update the tool firmware by following below steps in INSIGHT Connect App
- Here is the [Link to download firmware](#)

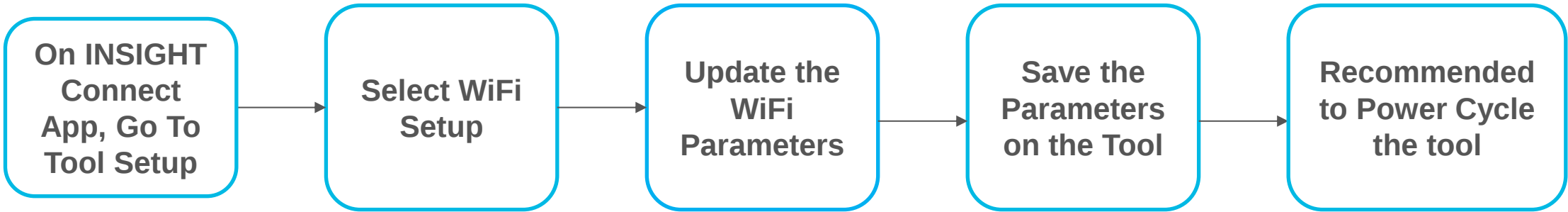
Tool Info	
MODEL NUMBER	QAT24J24500
Serial Number	SH24J24508
Maximum Torque	8 Nm
Free Speed	1169 RPM
ETS Capable	Yes
Mode	Standard
Display Firmware	130.0.1.2
Motor Firmware	3.6.1.53
Radio Version	0.0.0.2
TR Calibration	17
ASC Calibration	1.1695906
Wi-Fi Version	3.0.3.2

Tool Info : Tool Firmware Versions



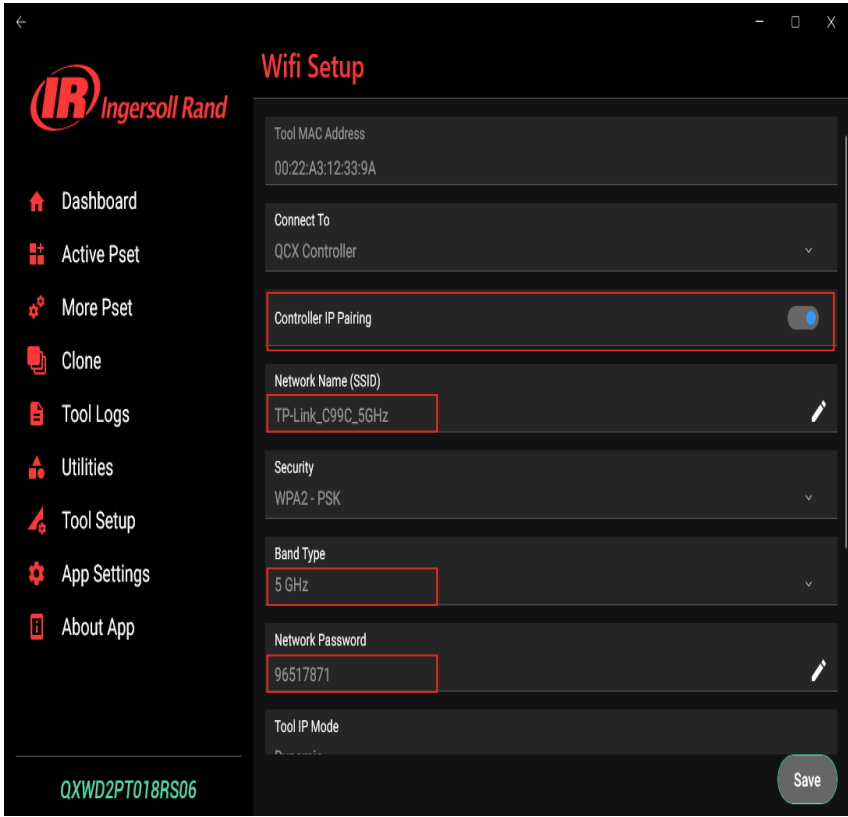
**It will take 30 to 60 seconds for firmware to download on tool after 100% mark on the App

Step 2 – Update the WiFi settings



- WiFi Settings Parameters are given below and next slide

Sr. No.	Parameter	Details
1	Tool MAC Address	Default tool MAC address will be shown (non-editable field) (If the MAC ID is shown as 00, power cycle the tool or update the firmware again)
2	Connect To	Select QCX Controller
3	Controller IP Pairing	Enable / Disable (The option shall be enabled if both QX tools and INSIGHTqcx controller are configured in different subnets)
4	Network Name (SSID)	Set the network name for access point to which tool will be connected Up to 32 characters are allowed for Network Name
5	Security	Select one of the below options for network security - Open - WPA – PSK / EAP - WPA 2 – PSK / EAP - PEAP



Step 2 – Update the WiFi settings

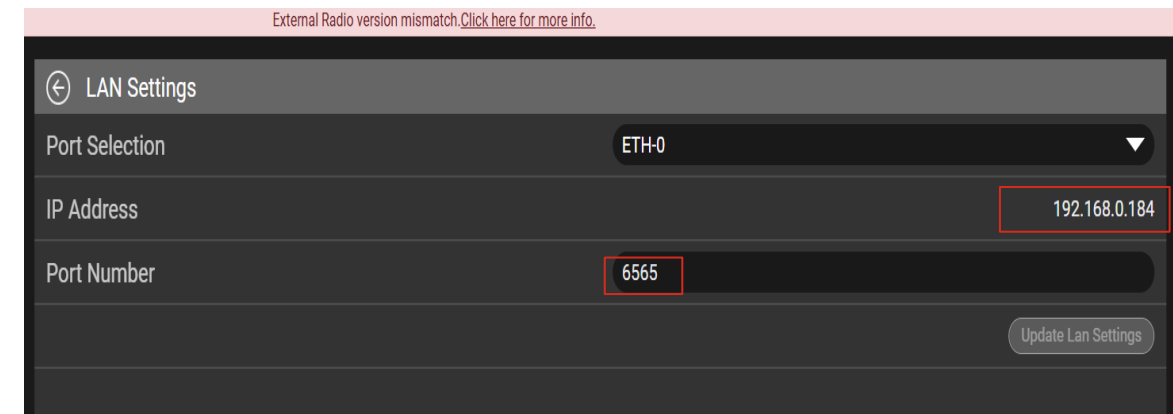
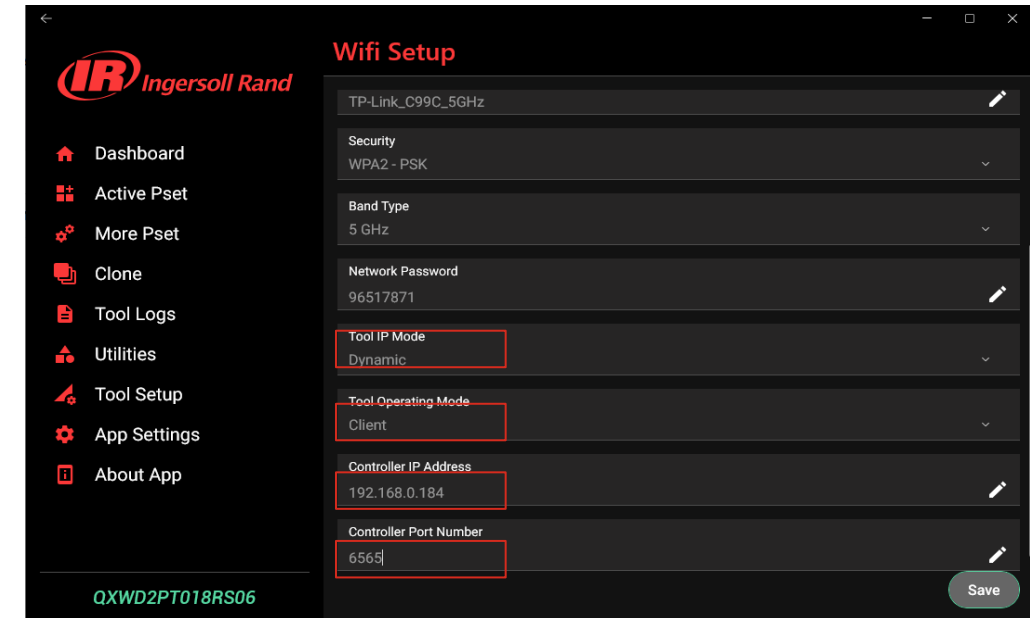
- WiFi Settings Parameters (continued) :

Sr. No.	Parameter	Details
6	Band Type	Select one of the below options for band 2.4 Ghz OR 5 Ghz OR Dual Band (2.4 Ghz + 5 Ghz) QX WiFi tools support below channels : 2.4 Ghz : 1 to 11 5 Ghz : 36,40,44,48, 52,56,60,64,100, 104, 108, 112,116, 120,124,128,132,136,140,144 It is recommended to select one of the above channels on network to enable tool connectivity over WiFi
7	Network Password	Network password will be prompted depending on the Network Security selected 63 characters are allowed for router password - Only for PEAP security - 32 characters are allowed for password
8	Tool IP Mode	Below are the options for IP Mode - Dynamic : IP is assigned dynamically - Static : User must assign Device IP, Gateway IP and Netmask IP manually

Step 2 – Update the WiFi settings

- WiFi Settings Parameters (continued) :

Sr. No.	Parameter	Details
9	Tool Operating Mode	For Controller IP based pairing tool shall be in Client Mode.
10	Controller IP Address	Specify the INSIGHTqcx controller IP address Controller IP address can be found on INSIGHTqcx controller in Wireless Tools > LAN Settings
11	Controller Port Number	Specify the INSIGHTqcx controller port number Port Number can be found on INSIGHTqcx controller in Wireless Tools > LAN Settings
12	Device IP Address	When Tool IP mode is setup as Static, Device IP address field will be enabled. Specify the Tool IP address here
13	Gateway IP Address	When Tool IP mode is setup as Static, Gateway IP address field will be enabled. Specify the Gateway IP address of the network where the tool is going to connect
14	Netmask IP Address	When Tool IP mode is setup as Static, Gateway IP address field will be enabled. Specify the Netmask IP address of the network where the tool is going to connect



*** Port Selection can be ETH0 or ETH1**

Step 3 – Pairing

- After configuring WiFi parameters; upon power cycle the tool will attempt to connect to Access Point.
- Once access point connection is successful, the IP with connection status will be shown on Tool Display
- Once the tool is connected to WiFi Access Point, initiate Pairing from INSIGHTqcx Controller end **FIRST**
- Then initiate the Pairing from Tool End on WiFi mode



*Tool Connected to Access Point
Successfully*

It is important that user initiates pairing from controller end first and then on Tool end for Controller IP pairing functionality to work.

Potential Challenges and Solutions

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Potential Challenges while Firmware Upgrade

Challenges :

- There are cases where firmware does not get updated because of multiple issues (MCE goes to sleep, early power cycle, Display does not communicate with WiFi chip);
- For example, if the MCE goes to sleep mode or there is an MCE memory issue; tool will show error 6-01 on the tool display
- Also, there will be mismatch in firmware version on tool info and at times MAC ID will be shown 00:00:00:00:00:00.

Solution:

In such cases it is recommended to

- Power cycle tool until the right firmware versions and MAC ID are reflected (generally takes 2-3 power cycle)
- OR
- Update the firmware again on the tool



Example of Error on MCE memory

Potential Challenges of Tool Connectivity

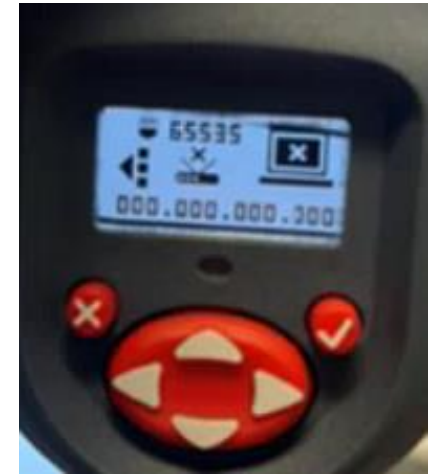
Challenges :

- The tool display may not show the Access Point IP or even after reflecting IP the connection status is shown fail (cross above router icon) ; as shown in images.
- This might happen because
 - a. WiFi setup parameters are incorrect (generally password string is incorrect, or Gateway IP and Netmask IP are swapped by mistake)
 - b. The 5Ghz network “channel” is not supported by tool

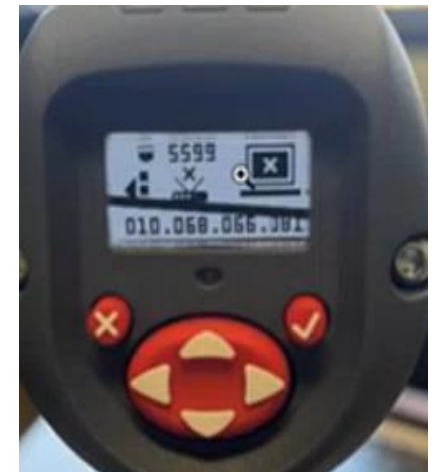
Solution:

Below are the solutions recommended to solve the problem:

- Recheck the WiFi settings
- Check the Channels supported by customer’s access point. May need help from plant IT
- Check if there are firewall restrictions where IT may need to add the device’s MAC-ID to the approved list of devices



Not connected to access point



Connected to access point but not recognized on network