CA-02

Whirlpool®

TECHNICAL EDUCATION

CONNECTED SMART APPLIANCES

THIRD GENERATION

SmartGrid™ technology

JOB AID W10785366A

FORWARD

This Whirlpool Job Aid, “Connected Smart Appliances - Third Generation” (P/N W10785366A), provides the In-Home Service Professional with information on operation, connectivity, and service of the “Connected Smart Appliance.” For specific information on the model being serviced, refer to the “Use and Care Guide,” “Installation Instructions,” or “Tech Sheet” provided with the appliance.

The Wiring Diagrams used in this Job Aid are typical and should be used for training purposes only. Always use the Wiring Diagram supplied with the product when servicing the appliance.

GOALS AND OBJECTIVES

The goal of this Job Aid is to provide information that will enable the In-Home Service Professional to properly diagnose malfunctions and repair the “Connected Smart Appliance.”

The objectives of this Job Aid are to:

- Understand and follow proper safety precautions
- Understand the connectivity process
- Successfully troubleshoot and diagnose malfunctions
- Successfully perform necessary repairs
- Successfully return the appliance to its proper operational status

WHIRLPOOL CORPORATION assumes no responsibility for any repairs made on our products by anyone other than authorized In-Home Service Professionals.

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Section 1: General Information

This section provides safety and general information for "Connected Smart Appliances - Gen III."

- Safety First
- Glossary of Terms, Abbreviations, and Acronyms
- Connected Appliance Technology Overview
- What is Smart Grid?
- What is a Connected Appliance?
- Whirlpool Smart Device Network
- Smart Grid Event
- How the Connected Appliance Talks to the Internet?
- Typical "3G" Connected Appliance Block Diagram
- Connected Appliance "Gen III" Specifications
- Notes

Safety First

Your safety and the safety of others are very important.

We have provided many important safety messages in this manual and on your appliance. Always read and obey all safety messages.

This is the safety alert symbol.

This symbol alerts you to potential hazards that can kill or hurt you and others.

All safety messages will follow the safety alert symbol and either the word “DANGER” or “WARNING.” These words mean:

DANGER — **You can be killed or seriously injured if you don't immediately follow instructions.**

WARNING — **You can be killed or seriously injured if you don't follow instructions.**

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.

Glossary of Terms, Abbreviations, and Acronyms

TERM	DEFINITION
ACU	Appliance Control Unit: The electronic control that manages the appliance's loads and in some cases the user interface. *See also CCU.*
CCU	Central Control Unit: The electronic control that manages the appliance's loads and in some cases the user interface. *See also ACU.*
CLAIMING	Adding/registering the appliance with the user account.
HAN	Home Area Network: In-premise communication system.
HMI	Human Machine Interface - the electronic control that manges the appliance's user interface.
MAC ADDRESS	Media Access Control Address - a unique identifier assigned to network interfaces.
SMART APPLIANCE	A home appliance, which is connected to a network, so as to remotely monitor, manage, and maintain the appliance.
PROVISIONING	Connecting the WiFi enabled appliance to the consumer's home network.
SAID	Security Association IDentifier - provides secure communication between your account/IHD and appliance.
WIN	The Whirlpool proprietary protocols designed for controlling appliances used by the WiFi modules plugged in to smart appliances.
WiFi or WLAN	Wireless Local Area Network
WISE	Whirlpool Integrated Service Environment: a back office system that provides an environment for consumers, service providers, utilities, government, appliance manufacturers, to participate in the Smart Grid and provide value-added services to consumers.
WPA2	Wireless Protected Access II - security protocol developed by the Wi-Fi Alliance to secure wireless computer networks.
WPS	Wireless Protected Setup: A computing standard that attempts to allow easy establishment of a secure wireless home network.
WSDN	Whirlpool Smart Device Network: Consists of a Home Area Network, Energy and Utility Domain, and an Internet Domain.

Connected Appliance Technology Overview

What Is Smart Grid?

SmartGrid.gov defines Smart Grid as a developing network of new technologies, equipment, and controls working together to respond immediately to our 21st century demand for electricty.

The basic concept of Smart Grid is to add monitoring, analysis, control, and communication capabilities to the national electrical delivery system to maximize the throughput of the system while reducing the energy consumption. The Smart Grid will allow utilities to move electricity around the system efficiency and economically. It will also allow the homeowner and business to use electricity economically. For example, you may want to keep your house set at 75° F (24° C) in the summer time when prices are low, but you may be willing to increase your thermostat to 78° F (25.5° C) if prices are high. Similarly, you may want to dry your clothes for 5 cents per kilowatt-hour at 9:00 in the evening instead of 15 cents per kilowatt-hour at 2:00 in the afternoon. You will have the choice and flexibility to manage your electrical use while minimizing your costs.

What is a Connected Appliance?

Connected appliances will be capable of delivering targeted energy efficiency, through substantial curtailment of energy consumption at the precise and varying times when the efficiency and environmental benefits are greatest and most needed. Additionally, Whirlpool Connected Appliances have the ability to communicate with the consumer via smartphone, tablet or laptop using wireless (WiFi) technology, allowing the consumer to control and manage them. For example, the refrigerator will let you know when it's time to change the water filter, or the washer will tell you how many minutes are remaining until it's finished.

The Whirlpool Smart Device Network

The Whirlpool Smart Device Network (WSDN) consists of a Home Area Network (HAN), Internet, and Energy & Utility Domain. The WiFi Module is part of the Home Area Network whose main function is to provide connectivity for the Smart Appliances to the Internet. See Figure 1.

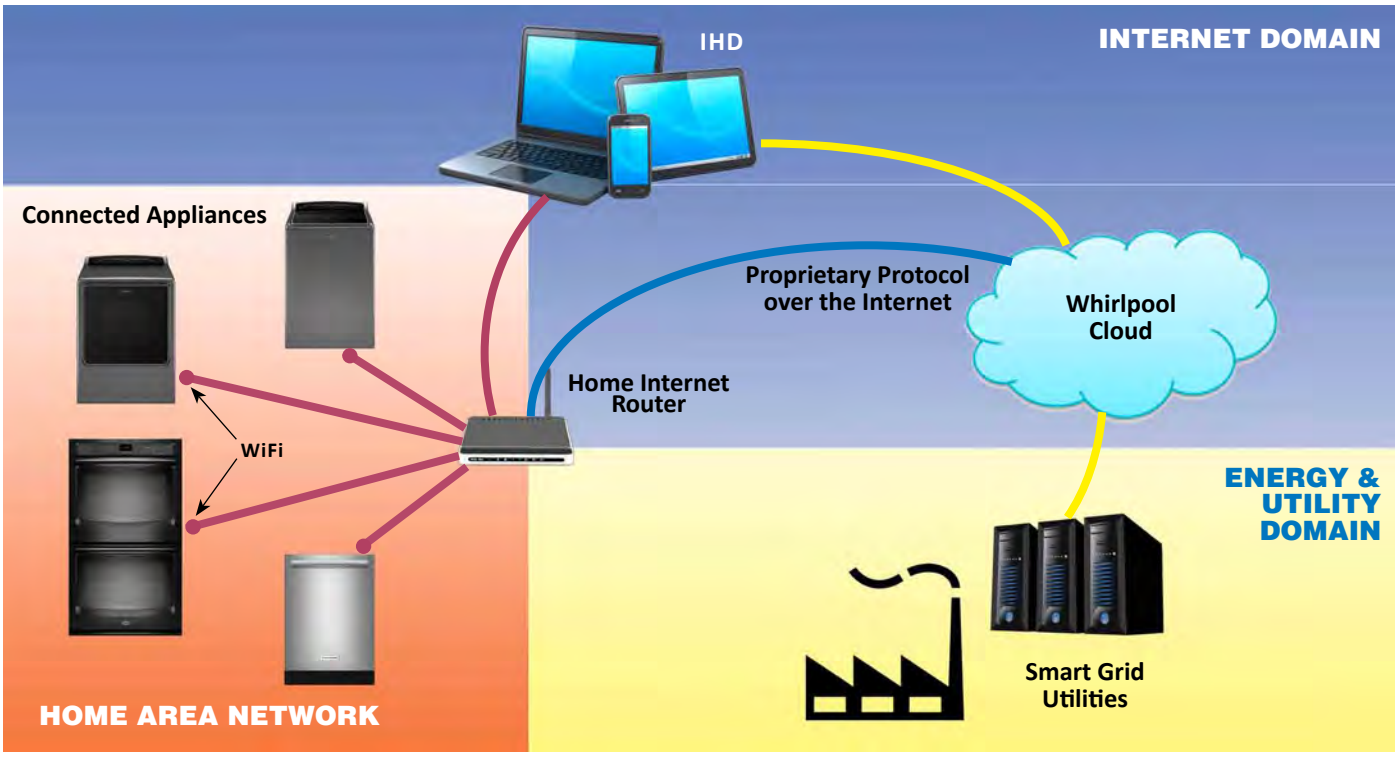


Figure 1 - Whirlpool Smart Device Network

Smart Grid Event

A Smart Grid event occurs when the utility company is under high energy use on the electric grid.

Connected Smart Appliances can adjust or delay certain functions to reduce energy use during these events.

Smart Delay:

When a Smart Delay is active and a consumer starts a cycle, the appliance will go into delay for the expected duration of the event. If the consumer momentarily presses the CONNECT button to override the Smart Delay function, the appliance will start and operate with the cycle & options selected by the consumer.

If the Smart Grid event occurs while the appliance is running a cycle, the appliance will minimize energy, if possible based on the state of the cycle; otherwise, the appliance will continue to operate in the cycle selected by the consumer.

NOTE: If, during a Smart Grid event, a dishwasher or clothes washer will function normally (no Smart Delay) if it is programed to run a cycle that uses "Sanitize" temperatures.

How does the Connected Appliance talk to the Internet?

A WiFi Processor Module (WPM) is built into the Connected Smart Appliance. After connecting, the Smart Appliance becomes part of the Home Area Network and then has a pathway to the Internet in which to connect to the Whirlpool Cloud Network.

All communication pathways are enabled via the WiFi Processor Module in the appliance. The WiFi Module communicates to the appliance internally via WIDE/WIN and to Internet via WiFi over TCP/IP.

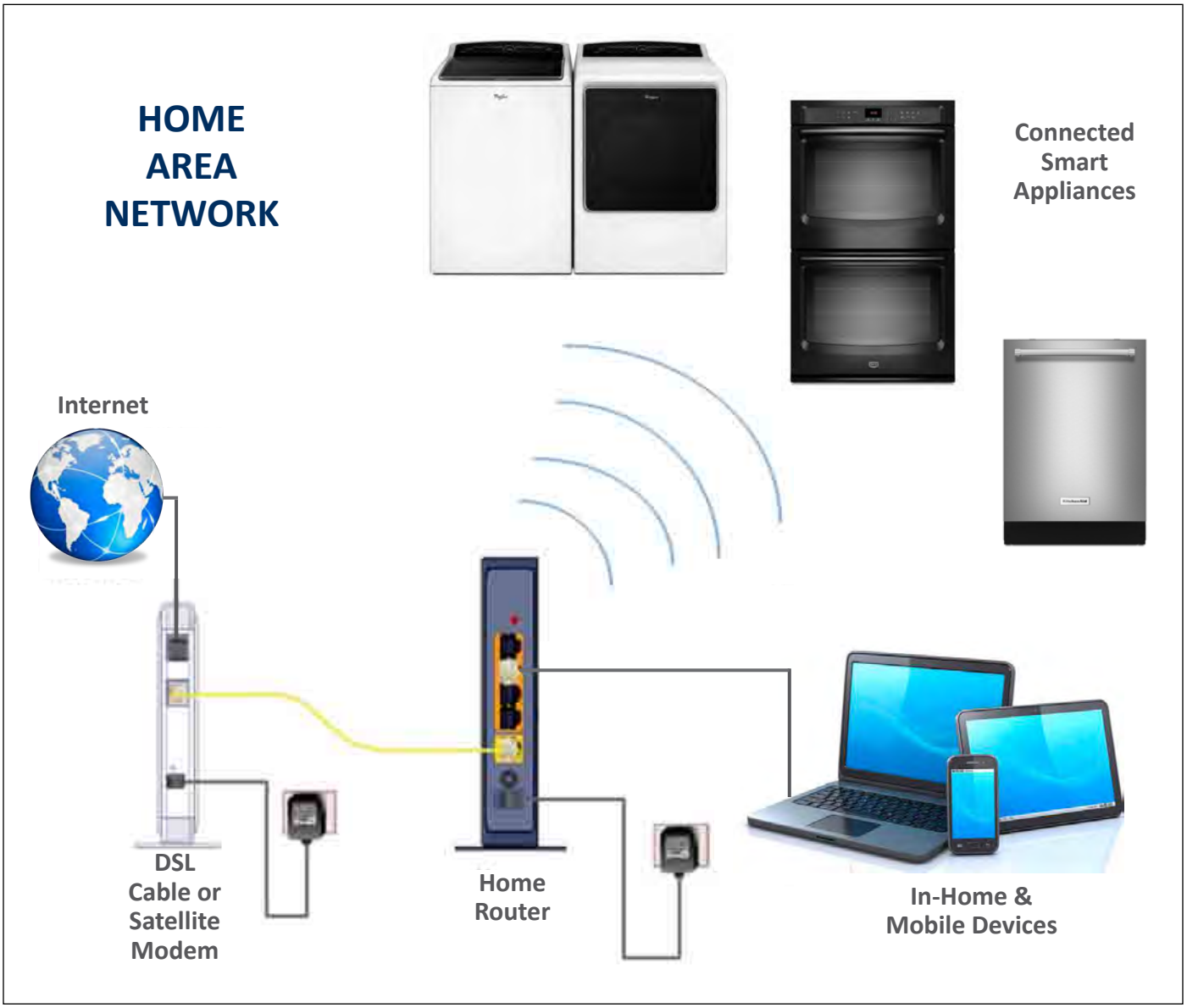


Figure 2 - Home Area Network (HAN) System Overview

Typical "Gen III" Connected Appliance Block Diagram

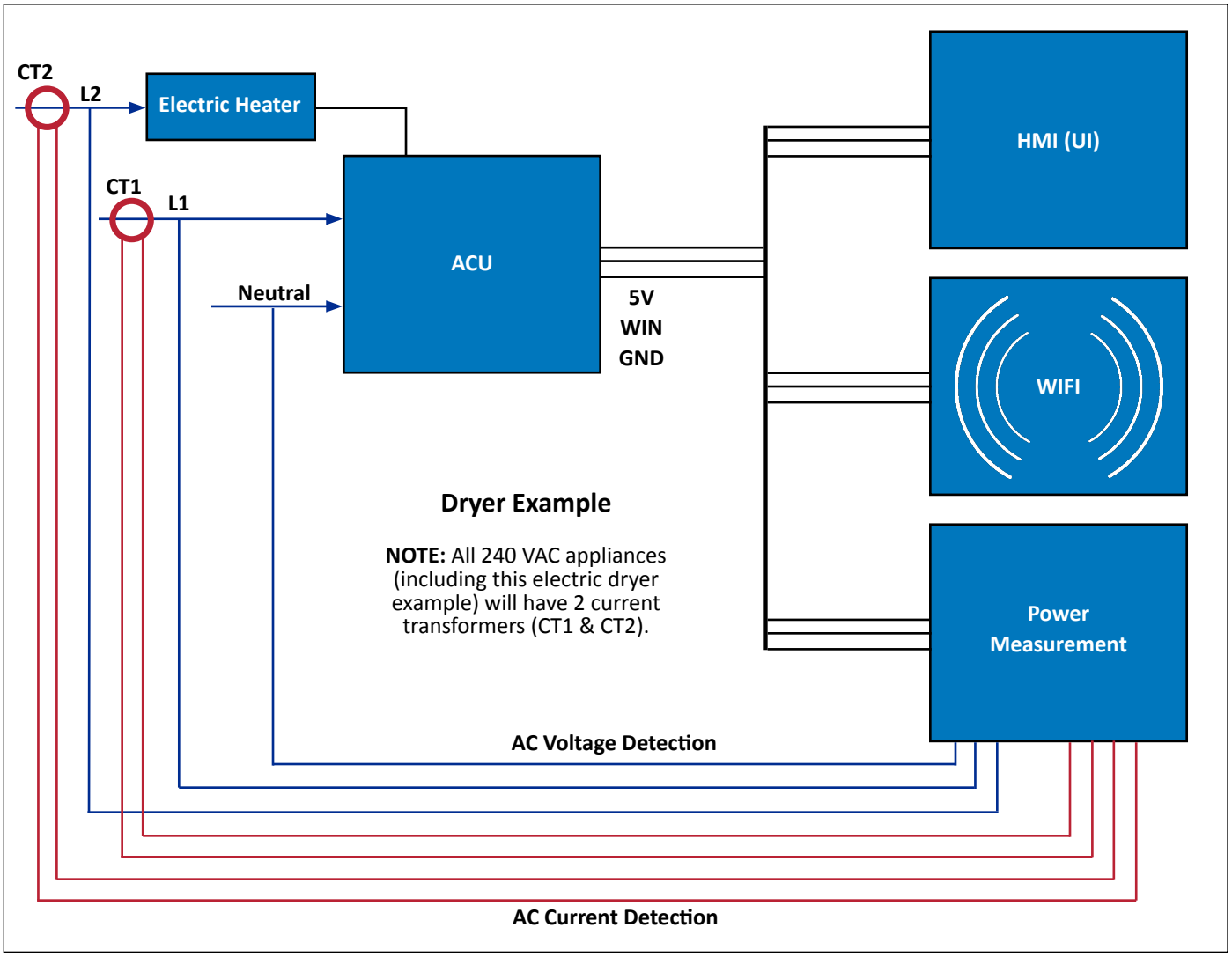


Figure 3 - Connected Appliance Block Diagram Example

Connected Appliance Block Diagram (Figure 3)

In most "Third Generation" Connected Appliances, the WiFi Module, Power Measurement (PM) Board & Current Transformers (if exists) are essentially the same. The components that are appliance specific are the HMI (Human Machine Interface (UI) and Appliance Control Unit (ACU).

The **WiFi Module** is a common cross-category design that provides the interface between the Smart Appliance and the Internet via the Home Area Network (HAN). It communicates to the appliance internally via WIDE/WIN and to the Internet via WiFi over TCP/IP.

The **Power Measurement (PM) Board** performs actual power measurement by calculating both real power (kW) as well as real power/time (kW h). This is achieved by measuring AC Voltage, which is delivered to the PM board from the Line Voltage coming into the appliance; and AC Current, which is delivered to the PM board from the Current Transformer(s). An algorithm in the software uses the voltage and current readings to determine actual power use for the appliance.

Appliances running on 120 VAC will have a single **Current Transformer** (CT1) measuring power use on L1. Appliances running on 240 VAC will have 2 Current Transformers (CT1 & CT2) for both L1 & L2.

Connected Appliance "Gen III" Specifications

WiFi SPECIFICATIONS	
Power Source:	120 VAC @ 60 Hz (Nominal) 95-132 VAC (Acceptable Range)
Frequency:	58-62 Hz
DC Volts:*	5.0 VDC (± 5%)
Temperature:	Operation: Min: 0° C, Max: 85° C Storage: Min: -40° C, Max: 120° C
Relative Humidity:	Operation: 0 to 95% Relative Humidity, non-condensing. Storage: 0 to 95% Relative Humidity, non-condensing.
Antenna	Internal and/or External Antennas: Bands: 2.400 - 2.478 GHz External Antennas: RF Port 1 - Front Antenna, RF Port 2 - Rear Antenna
WiFi Interface	802.11 b/g/n 1x1 compliant
POWER MANAGEMENT SPECIFICATIONS	
Voltage Source Detection:	120 VAC @ 60 Hz (Nominal) 95-132 VAC (Acceptable Range) 220 VAC -240 VAC (Nominal) 195-265 VAC (Acceptable Range)
Current Source Detection	Current Transformers CT1 & CT2 (if appliance uses L2) 135 ohms ± 5%
Frequency:	50 Hz ±1%, 60 Hz ±1%
DC Volts:	5.0 VDC (± 5%)
Temperature:	Operation: Min: 0° C, Max: 65° C Storage: Min: -35° C, Max: 70° C
Relative Humidity:	Operation: 0 to 95% Relative Humidity, non-condensing. Storage: 0 to 95% Relative Humidity, non-condensing.
Stand-by Power	50mW

* Voltage can be higher than 5 VDC depending on the system and the WiFi module. Consult appliance tech sheet for verification.

Notes

Section 2: Connectivity

IMPORTANT:

The In-Home Service Professional is only responsible for diagnosing and repairing the Connected Appliance and all parts and software within that appliance. The In-Home Service Professional must **NOT** attempt to service or repair the customer's Home Area Network; including but not limited to the customer's wireless router, access point, modem, computers, tablets, or any other mobile devices.

All questions concerning connecting the appliance to the customer's Home Area Network, the Whirlpool App, and the Customer's Account should be directed to the Whirlpool Help Line at:

1 (866) 333-4591

This section provides wireless configurations, account setup, and connectivity requirements and procedures that the consumer must perform when connecting their "Connected Smart Appliances - Gen III."

NOTE: The information contained in this section is provided solely for the purpose of understanding how the connectivity process works. (See "IMPORTANT" statement in left column.)

- Wireless Configurations
- System Requirements
- Download the App
- Create an Account
- Connect to WiFi
  - Disconnecting Method
  - Whirlpool App Setup Method
  - WPS Method (non-app)
  - Manual Setup Method (non-app)
- Register Your Appliance
- Troubleshooting Connectivity
- Notes

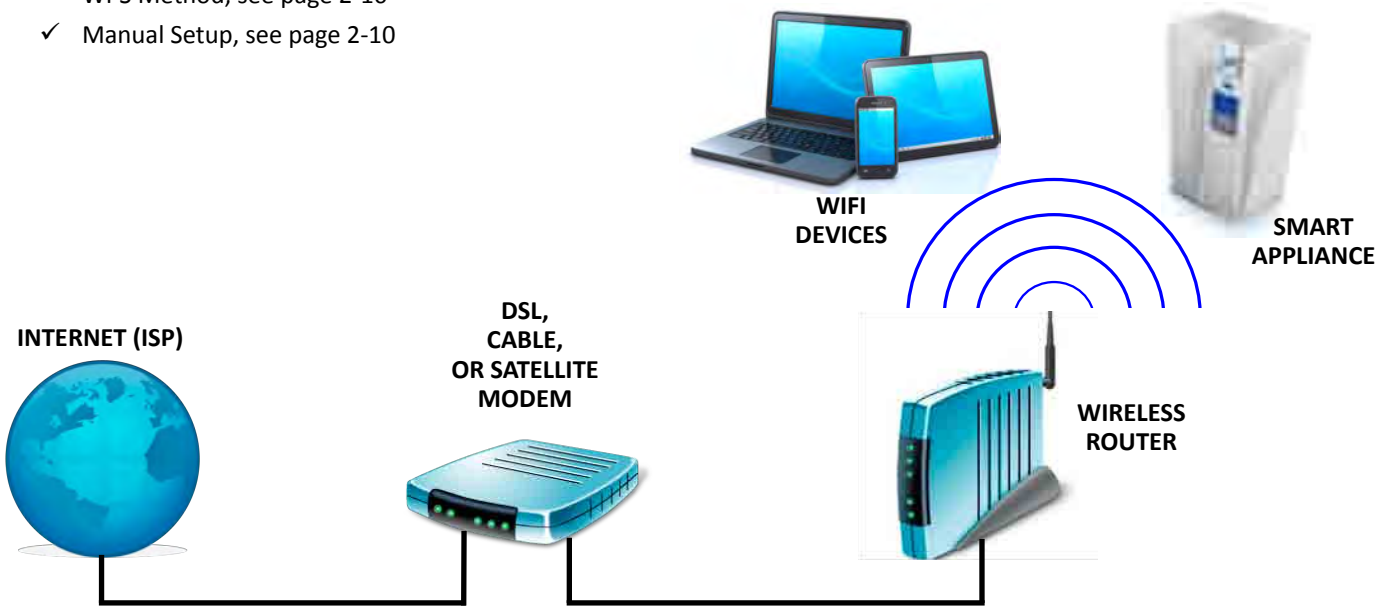
Wireless Configurations

Configuration 1 (Traditional)

ISP → Modem → Wireless Router → WiFi Devices & Smart Appliance(s)

Suggested Consumer Connecting Methods:

- ✓ Whirlpool™ App, see page 2-8
- ✓ WPS Method, see page 2-10
- ✓ Manual Setup, see page 2-10

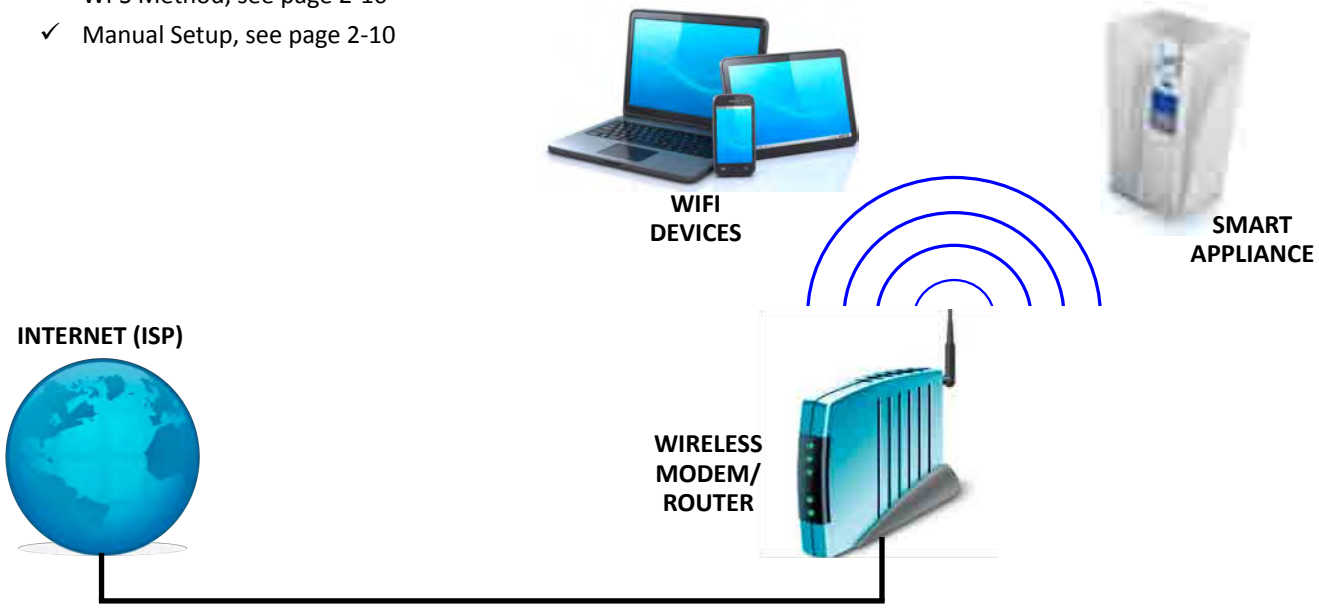


Configuration 2 (Modem/Router Combo)

ISP → Wireless Modem/Router → WiFi Devices & Smart Appliance(s)

Suggested Consumer Connecting Methods:

- ✓ Whirlpool™ App, see page 2-8
- ✓ WPS Method, see page 2-10
- ✓ Manual Setup, see page 2-10



Wireless Configurations

Configuration 3 (Apple)

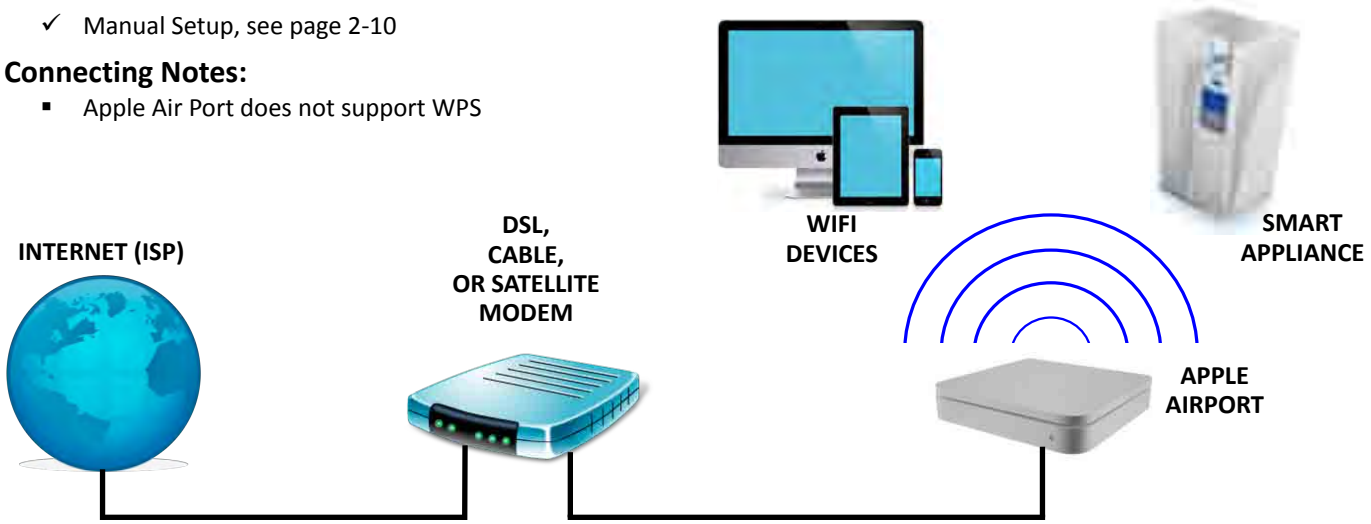
ISP → Modem → Apple Air Port → WiFi Devices & Smart Appliance(s)

Suggested Consumer Connecting Methods:

- ✓ Whirlpool™ App, see page 2-8
- ✓ Manual Setup, see page 2-10

Connecting Notes:

- Apple Air Port does not support WPS



Configuration 4 (Extender)

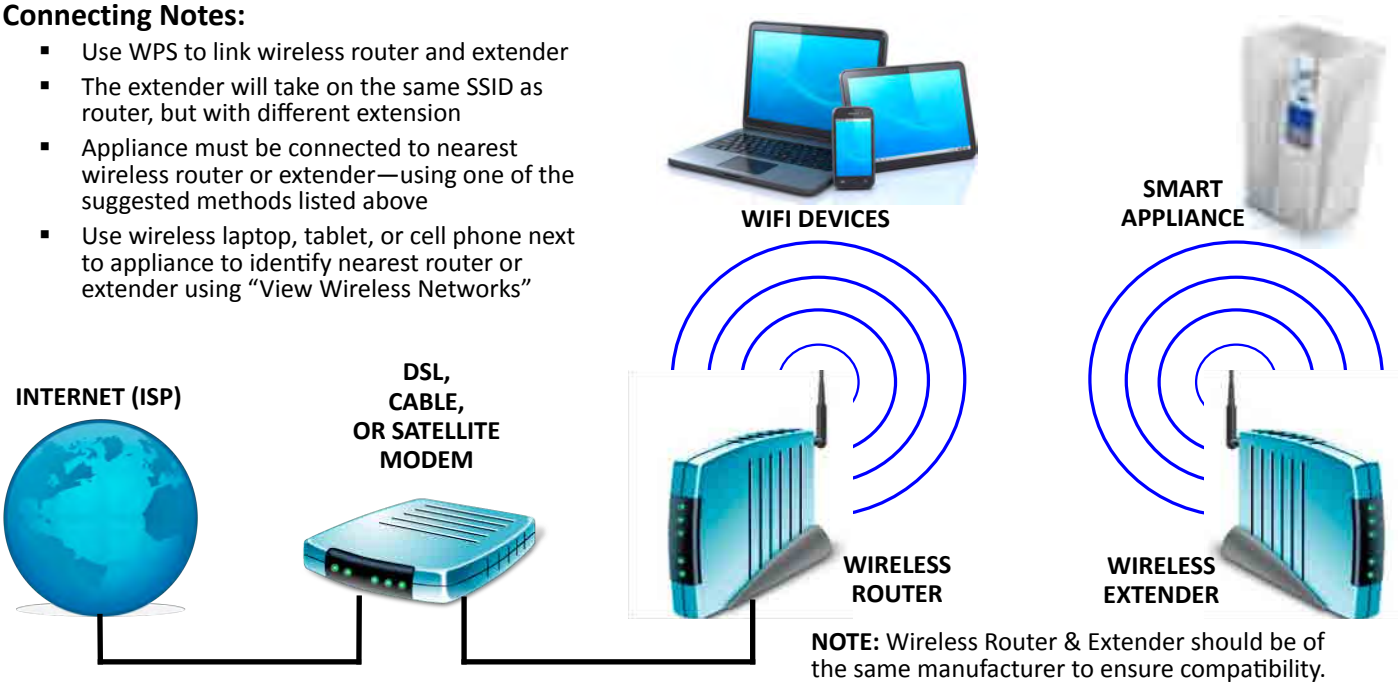
ISP → Modem → Wireless Router → Wireless Extender → WiFi Devices & Smart Appliance(s)

Suggested Consumer Connecting Methods:

- ✓ Whirlpool™ App, see page 2-8
- ✓ WPS Method, see page 2-10
- ✓ Manual Setup, see page 2-10

Connecting Notes:

- Use WPS to link wireless router and extender
- The extender will take on the same SSID as router, but with different extension
- Appliance must be connected to nearest wireless router or extender—using one of the suggested methods listed above
- Use wireless laptop, tablet, or cell phone next to appliance to identify nearest router or extender using "View Wireless Networks"



NOTE: Wireless Router & Extender should be of the same manufacturer to ensure compatibility.

Download the App

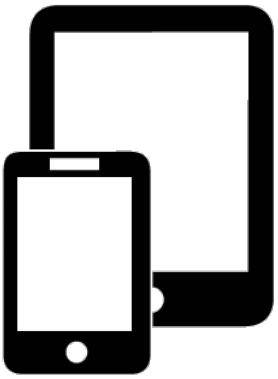
System Requirements

NOTE: At the time of publication, the following list of mobile devices, smartphones, and tablets are required to create an online account. Additional platforms and software versions may be added at a later date without prior notification.

Minimum System Requirements

A tablet (iPad or Android), or phone (iPhone or Android) connected to the home wireless network and the Internet.

- iPhone Requirements
  - iOS version 7.0 or later
  - iPhone 3GS or newer
- iPad Requirements
  - iOS version 7.0 or later
  - iPad 1 or newer
- iPod Requirements
  - iOS version 7.0 or later
  - iPod touch 3rd generation or newer
- Android Phone Requirements
  - Android version 4.0.3 or later
- Android Tablet Requirements
  - Android version 4.0.3 or later



Setup User Account

Setup Summary:

- ✓ Download The App
- ✓ Create An Account
- ✓ Connect To WiFi
- ✓ Register Your Appliance

Download The App:

The first step to get appliances connected is to download the app. The app will be the consumer's guide and will walk them through all of the steps listed here. The consumer can download the app by visiting either iTunes or Google Play by tapping on the buttons shown in Figure 1.

From your mobile device, smartphone, or tablet, go to www.whirlpool.com/connect.

- If you have an Apple iPhone, iPad, or iPod, select the link "Download on the Apple App Store."
- If you have an Android phone or tablet, select the link "Get it on Google play."

NOTE: Refer to "Minimum System Requirements" for software versions and hardware requirements.

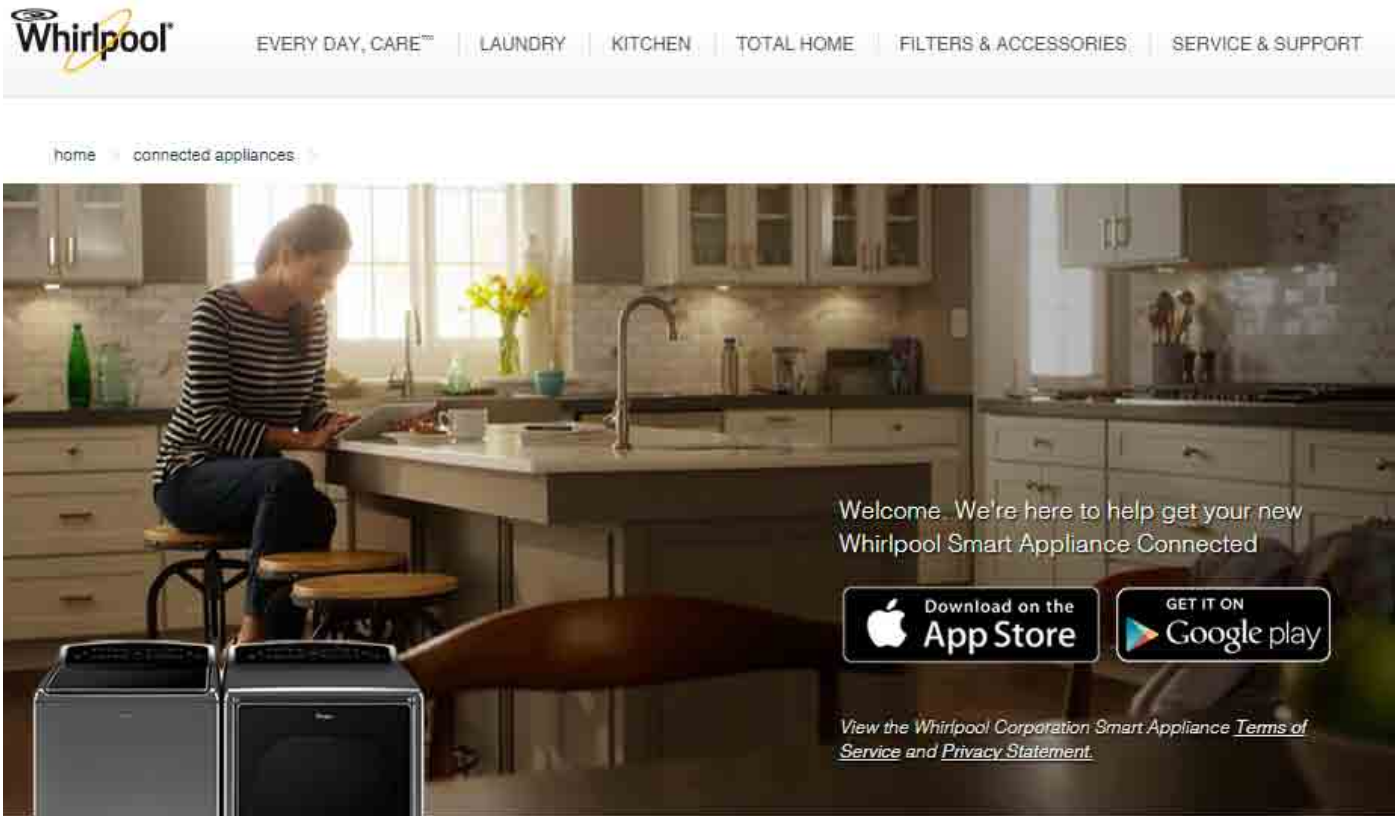


Figure 1 - "www.whirlpool.com/connect"

Create an Account

Create An Account:

If the consumer hasn't done so already, they will need to create an account. This is so we can associate their appliances to them and give them the ability to view and control the appliances remotely. This also allows us to send the consumer notifications for important appliance events like when a cycle ends.

NOTE: The following instructions and screen illustrations were based on the Whirlpool app at the time of publication. App features and functionality are subject to change and may differ slightly from those illustrated in these instructions.

After the app has been downloaded and installed, tap the Whirlpool app icon to run the app. The consumer must perform the following steps to set up a user account. The app will make sure to get the necessary personal and home information, as well as information about their energy company.

1. Select "Sign Up" to begin account setup. See Figure 2.

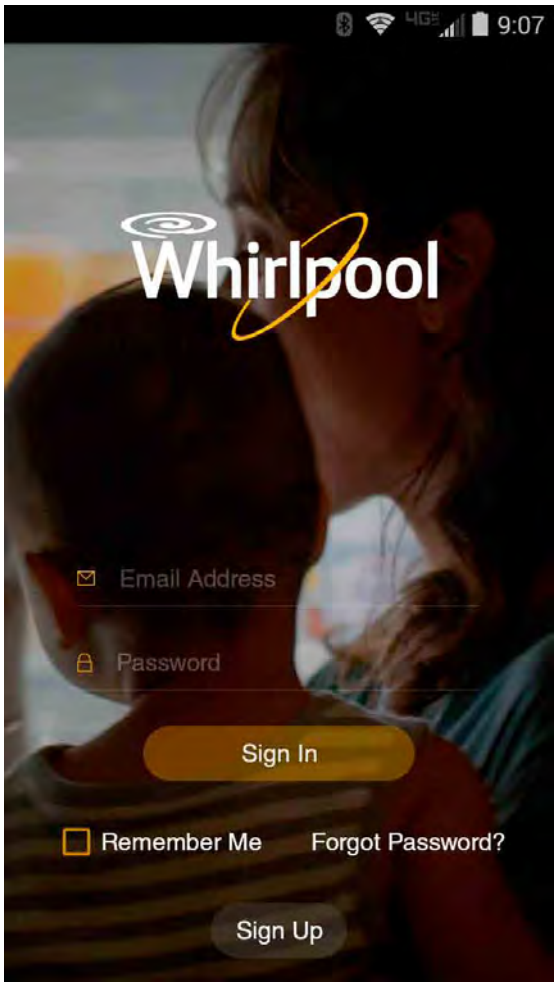


Figure 2

2. **Create Account (1):** The consumer must fill out the requested information: Name, Email, and Password to create and access their account. Click the check box to agree to the "Terms and Conditions and Privacy Policy." Select "Next" when finished. See Figure 3.

   NOTE: Click on the "?" to view documents.

Figure 3

continued . . .

Create an Account

3. **Create Home (2):** Organize the Smart Appliances by location and associate each one with a home. The consumer can give their location a name, fill-in the address information and their Mobile Phone Number, and then select "Next." See Figure 4.

Figure 4

4. **Confirmation:** To protect the consumer's security, an email will be sent to the consumer to confirm and activate the user account. The email message will include a link that will activate the account. See Figure 5.

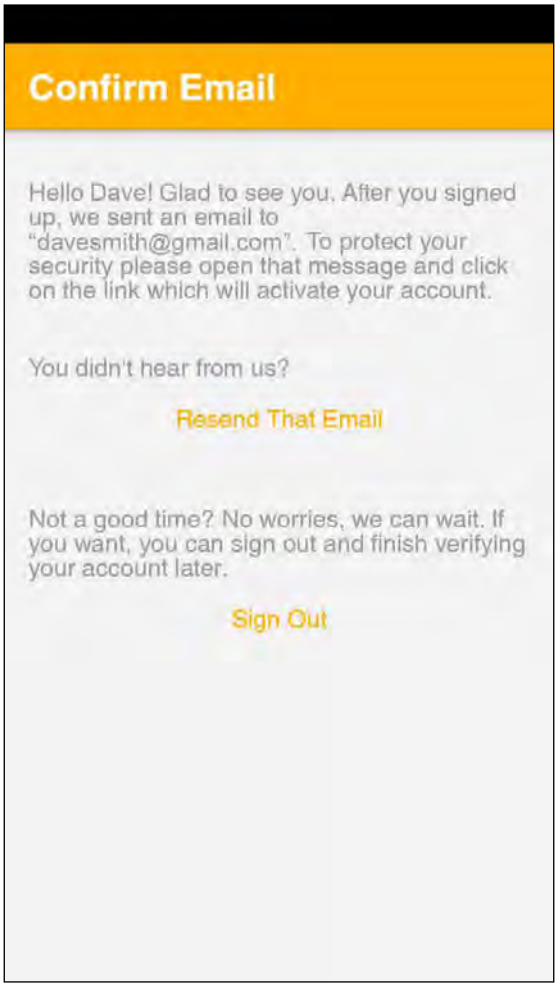


Figure 5

Create an Account

5. **Add Appliance:** After the account has been created, the home screen will alert the user that there are no appliances registered to the account. Click on the "**+**" to add the first appliance (see Figure 6). After the first appliance has been added to the account, the user must access the "Settings Menu" to add additional appliances. See Figure 8.

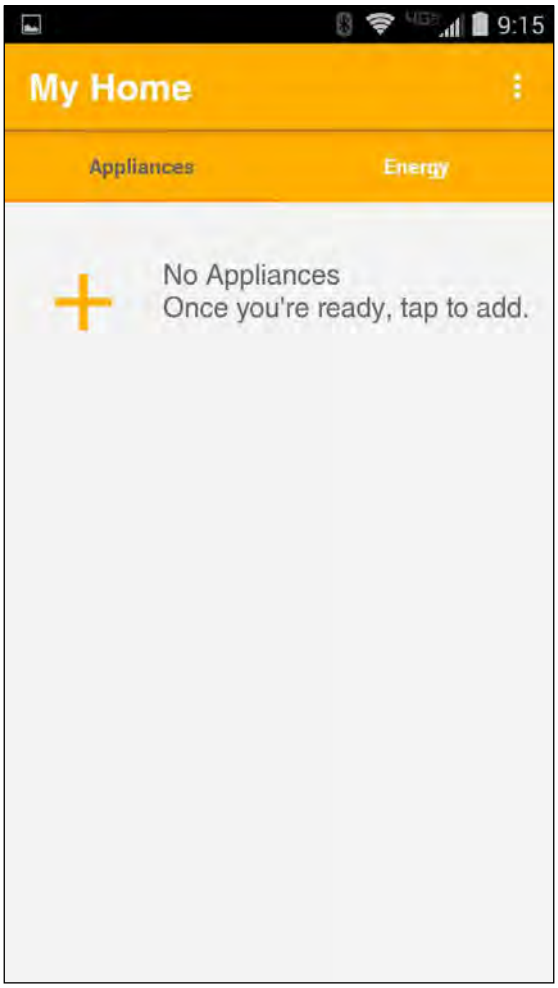


Figure 6

6. **Settings:** Account Settings can be accessed by clicking on the Settings Menu (circled in Figure 7).

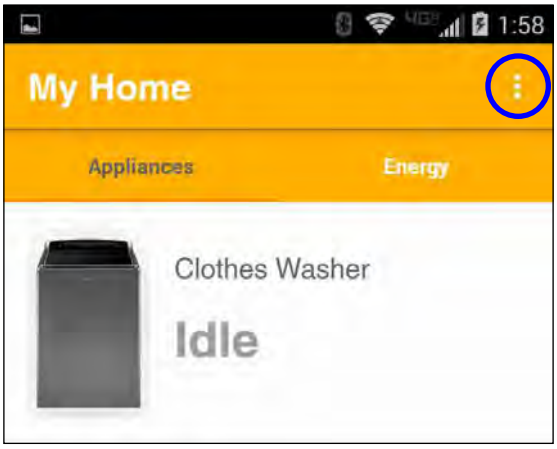


Figure 7

7. **Settings:** The Settings Menu (Figure 8) includes access to the following functions:
   - Account Settings - allows the user to edit the account information
   - Add Appliance - guided help to add new appliance to user account.
   - Works with Nest - connects the Whirlpool and Nest accounts.
   - About - provides information on the Whirlpool app, Terms and Conditions, and Privacy Policy.
   - Sign Out - Signs you out of the user account. Requires you to manually sign back in to the account.

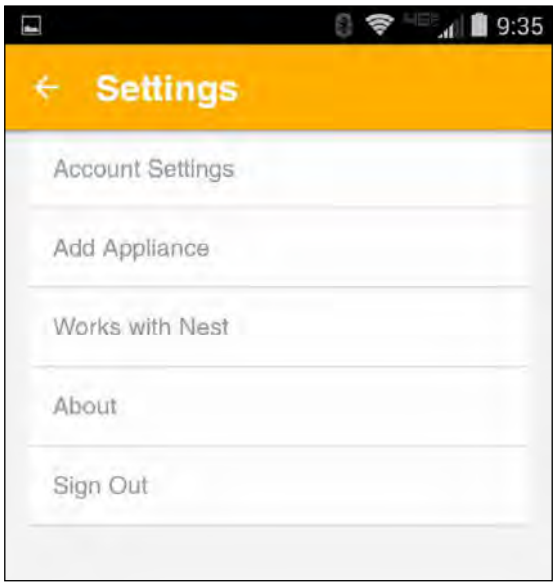


Figure 8

Connect to WiFi

Connecting Methods

There are currently three possible methods for connecting an appliance with the consumer's Home Area Network (HAN) wireless router. In order of priority, these are:

- ✓ **Whirlpool App Setup Method (Preferred)** - the app will walk the consumer through the process of connecting their appliance to the wireless network in their home. If preferred, the consumer may also view the manual connection steps.
- ✓ **WiFi Protected Setup (WPS) Method** - the user simply pushes a button, either an actual or virtual one, on both the Wireless Router and the Smart Appliance. Support of this mode is mandatory for the router and optional for connecting devices. **NOTE:** Router must support WiFi Protected Setup (WPS) and WPA-2 security.
- ✓ **Manual Setup Method**: SSID/Passphrase Method – the user enters the SSID and Passphrase of the Router into the Smart Appliance.

Before you begin:

MAKE SURE

- Verify the Connected Smart Appliance is properly installed and connected to power.
- Verify wireless router is turned on and connected to the Internet.

Determine which connection setup methods to use:

- The Whirlpool app will walk the consumer through the process of connecting their appliance to the wireless network in their home. The app supports both the WPS and manual methods and is the easiest method to connect the appliance to the HAN.
- Many wireless routers support a standard for fast and easy connection to wireless devices. Officially known as WiFi Protected Setup (WPS). It features a connection button and indicator light. If the customer's router is like this and supports the WPS standard, follow the "WPS Setup" procedure.

  NOTE: To verify if router is WPS, check the product labeling or manual.
- If customer's wireless router does not support WPS, follow the "Manual Setup" instructions.

Disconnecting Method

To disconnect an appliance from the Home Area Network's wireless router/access point, press the "Connect" button continuously for greater than 15 seconds or until you hear the appliance play a tune 4 times. The effect is the same as if the appliance has never been connected.

NOTE: To temporarily turn off the WiFi connection, press the CONNECT button continuously for over 7 seconds, but for less than 15 seconds. Pressing the "Connect" button again will reconnect appliance to wireless router/access point.

Whirlpool App Setup Method

SETUP REQUIREMENTS:

- Whirlpool app downloaded to WiFi enabled mobile device, smartphone, or tablet connected to the home wireless network and to the Internet.
- Whirlpool app WPS method:
  - A home wireless router capable of WiFi Protected Setup (WPS).
  - A home wireless router capable of WPA-2 security (not WEP).
- Whirlpool app Appliance WiFi/Manual method:
  - The "Smart Appliance ID" (SAID), which is printed on a sticker inside the door of your appliance or on the edge of the door.
  - The Smart Appliance's MAC Address, printed on the same sticker.
  - The customer's home wireless network SSID (router name) and router password.

SETUP PROCEDURE (performed by customer):

NOTE: The following instructions and screen illustrations were based on the Whirlpool app at the time of publication. App features and functionality are subject to change and may differ slightly from those illustrated in these instructions.

A: SETUP APPLIANCE

1. After setting up the User Account, select "Add Appliance."
2. On the "Setup Appliance" screen, select either:
   - ➢ "Let's Go" (continue to step 3).
   - ➢ "Appliance is already connected to WiFi." **(Go to section "E: REGISTER APPLIANCE.")**
3. On the "Select Appliance" screen, select the type of appliance that is being connected, and then on the following screen, select the model number.
4. Find the "Smart Appliance ID" (SAID) label on the appliance (usually under the lid or behind the door-near the model/serial number label). Enter or Scan the appliance SAID number. **IMPORTANT:** THIS NUMBER IS CASE SENSITIVE.
   - ➢ Select "Next" to continue.
5. Continue to the desired connection method **(B-WPS, C-APPLIANCE WIFI, or D-MANUAL METHOD)**.

B: CONNECT VIA "WPS"

1. On the "Connect To WiFi" screen, you are asked if your router is WPS compatible. **NOTE:** WPS (Wireless Protected Setup) is a feature some access points have that allow you to setup WiFi devices with a press of a button.
   - ➢ "Yes, I have WPS" (continue to step 2).
   - ➢ "No/Don't Know. Try Something Else?" **(Go to section "C: CONNECT VIA APPLIANCE WIFI.")**
2. Connect via WPS
   a. Press the WPS button on the WiFi router. An indicator light on the router should begin blinking.

Connect to WiFi

b. Within 2 minutes, press POWER, then the CONNECT button on the appliance. The WiFi icon on the control panel (UI) will begin blinking. This means that the appliance is looking for the router.

c. The lights may turn off briefly, but once paired, both will stop blinking and the WiFi icon on the appliance will remain lit. **NOTE:** This can take up to 2 minutes.

➢ Select "Light is Solid, Next" to continue.

3. On the "Register Appliance" screen, press the Finish button to associate the appliance to the account. **NOTE:** Adding the appliance to the account will also complete the product registration process for that appliance.
4. Go to section **"F: APPLIANCE PREFERENCES"** and set your appliance's notification preferences.

C: CONNECT VIA "APPLIANCE WIFI"

1. This method allows the user to use the appliance as a WiFi network, then directing the appliance to the home area network.

➢ Select "Let's Go" (continue to step 2).

2. On the following screen, the user is prompted to select the appliance WiFi (SSID). Select the appliance from the list. It will be identified with the characters of the MAC ADDRESS but with different punctuation (ex. WP_88_e7_12_01_88_6e). The Password is the SAID number.

NOTE: If appliance is not on list, make sure appliance is "disconnected." If still not on list, power cycle appliance. (Refer to "Disconnecting Method on page 2-8.)

➢ Select "Next" to continue.

3. A screen may momentarily indicate that it is attempting to connect to the appliance.
4. On the "Connection Confirm" screen, you are asked if you can see the connect light on the appliance? **NOTE:** The connect light may go out briefly, but it will come back on and then remain on.

➢ "Yes" (continue to step 5).

➢ "No" **(Go to section "D: CONNECT VIA MANUAL METHOD.")**

5. On the "Register Appliance" screen, press the "Finish" button to associate the appliance to the account. **NOTE:** Adding the appliance to the account will also complete the product registration process for that appliance.
6. Go to section **"F: APPLIANCE PREFERENCES"** and set your appliance's notification preferences.

D: CONNECT VIA "MANUAL METHOD"

1. This method allows the user to use the appliance as a WiFI network, then directing the appliance to the home area network.

➢ Select "Let's Go" (continue to step 2).

2. **Open WiFi Settings** - The user is prompted to open the WiFi settings on their mobile device. Select the appliance from the list. It will be a network named similarly to (WP_88_e7_12_01_...). (The number will match the MAC ID on the SAID label). **NOTE**: If appliance is not on list, refresh the network screen. If still not on list, power cycle the appliance.
3. **Connect to the network (the appliance)** - When prompted for the network password, type in the appliance's SAID number.
4. **Open the web browser...**

a. Type "192.168.10.1" in the address bar (URL window) in the browser and press "Enter" to view the WiFi web page.

b. Look for the home area network wireless router. If the router is not listed, click on the drop-down box and select from the list or enter it manually.

c. If required, enter the password/passphrase for the home wireless network, and then press enter (–>).

5. **Verify appliance is connected -** Look for a solid WiFi icon on the console (UI). **NOTE:** The connect light may go out briefly, but it will come back on and then remain on when the appliance is connected.

➢ Select "Next" to continue.

6. On the "Register Appliance" screen, press the Finish button to associate the appliance to the account. **NOTE:** Adding the appliance to the account will also complete the product registration process for that appliance.
7. Go to section **"F: APPLIANCE PREFERENCES"** and set your appliance's notification preferences.

E: REGISTER APPLIANCE

1. Find the SAID label on the appliance (usually under the lid or behind the door-near the model/serial number label). Enter or Scan the appliance SAID number. **IMPORTANT:** THIS NUMBER IS CASE SENSITIVE.

➢ Select "Next" to continue.

2. On the "Register Appliance" screen, press the Finish button to associate the appliance to the account. **NOTE:** Adding the appliance to the account will also complete the product registration process for that appliance.
3. Go to section **"F: APPLIANCE PREFERENCES"** and set your appliance's notification preferences.

F: APPLIANCE PREFERENCES

1. On the "Appliance Preferences" screen, type in the name of your appliance (ex. My Washer, Clothes Dryer, etc.).
2. Set your appliance's "Push Notification Preferences". **NOTE:** Each appliance type has its own unique set of preferences and push notifications.

➢ Select "Save" to store your Appliance Preferences.

NOTE: At any time you may select your appliance and change your preferences and push notifications.

Connect to WiFi

WPS Method (non-app)

SETUP REQUIREMENTS:

- A home wireless router capable of WiFi Protected Setup (WPS).
- A home wireless router capable of WPA-2 security (not WEP).
- The router should be on and have a live Internet connection.

SETUP PROCEDURE (performed by customer):

Ensure the Smart Appliance and Wireless Router are properly installed and powered on; an Internet connection is required.

NOTE: Only one Smart Appliance can be linked at a time. Repeat steps for each smart appliance.

IMPORTANT: Complete the next 2 steps within 2 minutes!

1. On the wireless router, press the WPS (WiFi Protected Setup) button. An indicator light on the router will begin blinking. See figure 9 (WPS button location may vary).

   NOTE: On some routers the consumer may have to login to the router "Admin" screen to enable the WPS button. (The consumer may need to consult the user manual that came with the router for more information.)

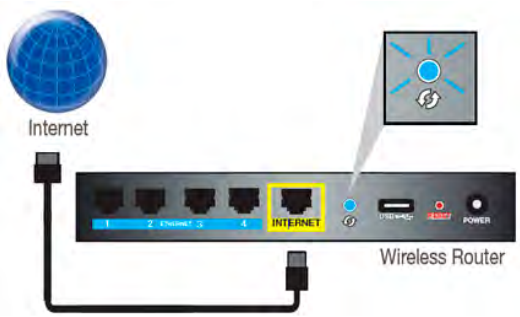


Figure 9 - Press WPS Button on Router

2. Within 2 minutes of step 1, press or touch the POWER button on the smart appliance, then press or touch the CONNECT button.

   The WiFi status indicator icon will blink slowly while the appliance connects to the router. This can take up to 2 minutes. When appliance is connected to the router, the WiFi status indictor light will come on and remain lit.

   NOTE: If the appliance Smart Grid function is turned off, or the router loses Internet connection, the WiFi status indicator icon will turn off.

3. If there are other Smart Appliances, repeat steps 1 and 2 for each. Otherwise skip ahead to "REGISTER YOUR APPLIANCE" on page 2-12.

IF THE APPLIANCE DOES NOT CONNECT:

If the appliance and router fail to connect after 2 minutes, the WiFi status indicator light will blink rapidly for 2 seconds and then turn off. If this happens, refer to "Troubleshooting Connectivity" at the end of this section.

Manual Setup Method (non-app)

SETUP REQUIREMENTS:

- A WiFi enabled device (laptop, tablet, or smartphone) connected to the home wireless network and to the Internet.
- The "Smart Appliance ID" (SAID), which is printed on a sticker inside the door of your appliance or on the edge of the door.
- The Smart Appliance's MAC Address, printed on the same sticker.
- The customer's home wireless network SSID (router name) and router password/passphrase.

SETUP PROCEDURE (performed by customer):

Check to ensure the Smart Appliance and Wireless Router are properly installed and powered on; an Internet connection is required. **NOTE:** Only one Smart Appliance can be linked at a time.

1. On the (laptop, tablet, or smartphone), have the consumer access their "Wireless Network Connection" screen, and view the list of available wireless networks (see figure 10). **NOTE:** The wireless network window may vary depending on program or OS.

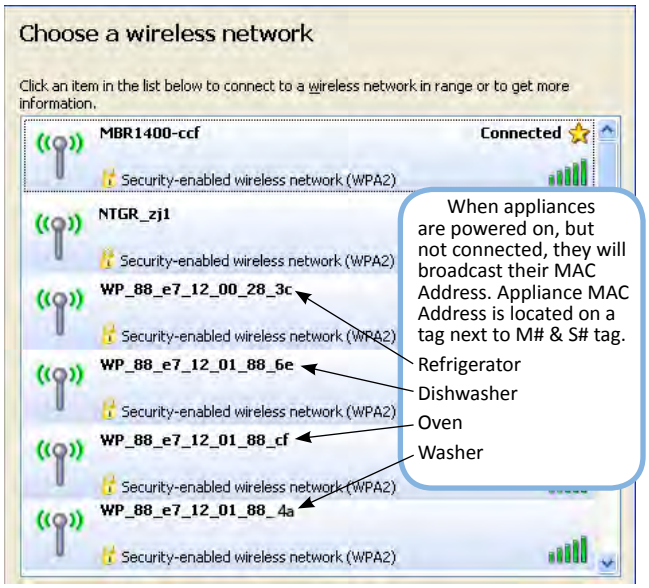


Figure 10 - Available Wireless Networks (example)

continued . . .

Connect to WiFi

2. Select the appliance from the list. It will be identified with the characters of the MAC ADDRESS but with different punctuation (ex. WP_88_e7_12_01_88_6e). Select the appliance, then click "Connect". If the appliance is not listed, you may need to refresh the list of available wireless networks (see Figure 11).

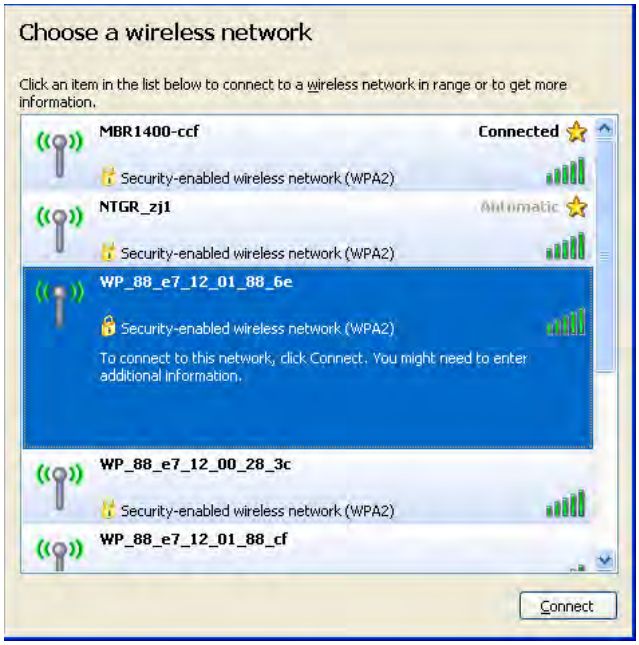


Figure 11 - Select Appliance

3. In the "Network key" field (see figure 12), enter the **SAID** number, which is found next to the Serial/Model # tag. **IMPORTANT:** THIS KEY IS CASE SENSITIVE. Confirm the key, then select the "Connect" or "Next" button to connect to the network.

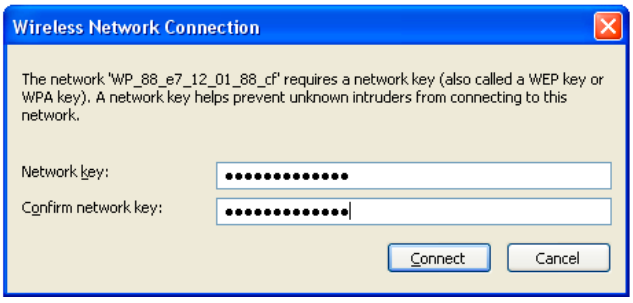


Figure 12 - Enter SAID Number

4. The (laptop, tablet, or smartphone) will then connect to the Smart Appliance. **NOTE:** A popup screen may momentarily indicate that it is attempting to acquire the network address (see Figure 13).

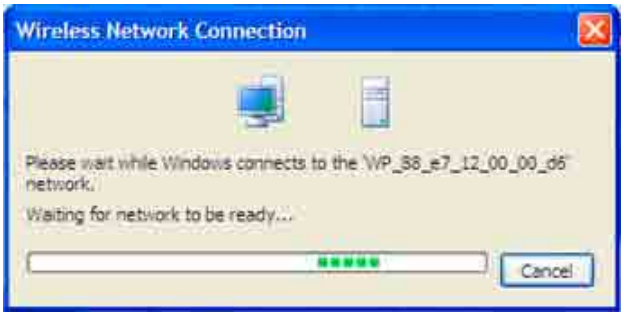


Figure 13 - Acquiring Network

5. The "Wireless Network Connection" screen should now show the Smart Appliance as "Connected." See Figure 14.

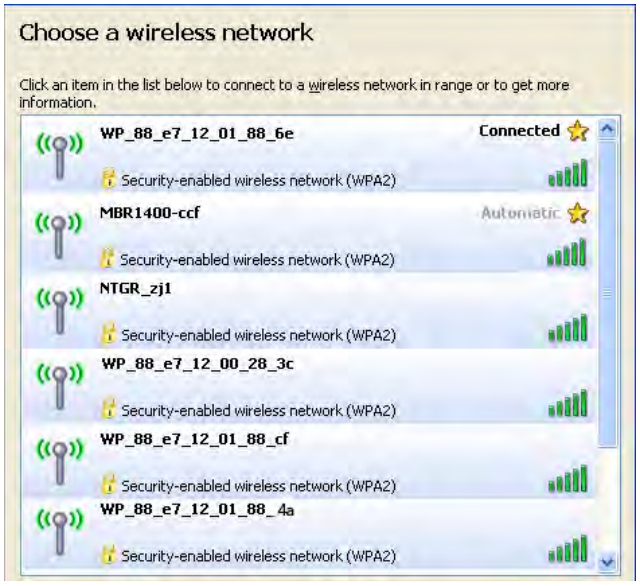


Figure 14 - Smart Appliance Connected

continued . . .

Register Your Appliance

6. Open a Web browser. Refer to Figure 15 when performing the following 4 steps.
   A. Type “192.168.10.1” in the address bar (URL window) and press “Enter” to view the “Smart” setup web page.
   B. In the drop down list of available wireless networks, select the name of customer’s home wireless network. If the home wireless network is hidden, manually enter its name and security protocol.
   C. If required, enter the password/passphrase for the home wireless network, and then Submit/Enter (–>).

Figure 15 - WiFi Web Page

7. A new web page will be displayed saying “Connecting to Network...” While connecting, the customer’s wireless network will be temporarily disabled. If the connection is unsuccessful, it will appear again in their computer’s list of wireless networks in a couple minutes so the customer can try again.
8. After successful connection, access wireless settings and re-open the list of available wireless networks. The customer should check that the computer is once again connected to the home wireless network. If it is not, select the home wireless network and Connect.
   NOTE: It may be necessary to “refresh” the list.
9. If there are other Smart Appliances, repeat steps 1 through 6 for each.

Register Your Appliance:

Once the appliance is connected, it needs to be associated with the user account. The consumer must perform the following steps to find the appliance’s unique “SAID (Security Association Identifier) Number” so that it can be registered with the account.

A: SETUP APPLIANCE

1. After setting up the User Account, select “Add Appliance.”
2. On the “Setup Appliance” screen, select “Appliance is already connected to WiFi.”
3. Find the SAID label on the appliance (usually under the lid or behind the door-near the model/serial number label). Enter or Scan the appliance SAID number. **IMPORTANT:** THIS NUMBER IS CASE SENSITIVE.
   ➢ Select “Next” to continue.
4. On the “Register Appliance” screen, press the Finish button to associate the appliance to the account. **NOTE:** Adding the appliance to the account will also complete the product registration process for that appliance.
5. Go to section **“F: APPLIANCE PREFERENCES”** on page 2-9 to set your appliance’s notification preferences.

Notes:

- Once the consumer connects the appliance to their home WiFi network, it will remain linked even if the power goes out, the appliance is moved, or if it is put in storage for a while.
- If the consumer replaces their wireless router (or gets a different Smart Appliance), they will need to repeat the connectivity setup process.

Troubleshooting Connectivity

Connection Status	Control Panel Indicator Lights
Appliance is not connected	• WiFi icon is OFF • Smart Grid icons are OFF
Appliance is attempting to connect to home WiFi router	• WiFi icon is blinking slowly
Appliance is connected to home WiFi router, but Whirlpool™ app or Smart Grid functions do not work	• WiFi icon is ON • Blue Smart Grid icon is blinking slowly
Appliance is connected to home WiFi router, and the Whirlpool™ app works	• WiFi icon is ON • Smart Grid icon is either ON or OFF — it is not blinking

If you experience	Possible Causes	Solution
Appliance is not connected to home WiFi router (WiFi icon is OFF)	The appliance may be in standby mode.	Touch the POWER button on the appliance and observe indicators. All indicator lights are off when in standby mode.
	The appliance has never been connected to the home WiFi router.	See “Connectivity Setup” section.
	The appliance has been connected to the home WiFi router, but appliance WiFi is OFF.	Press “Connect”. The WiFi icon should blink while connecting (this may take up to 2 minutes).
	Lost connection to home WiFi router.	Verify the router on and working with other computers or devices in the home that have access to the Internet.
	Weak signal strength or signal interference between the appliance and router.	Is it possible to place the wireless router closer to the appliance? It may be necessary for the consumer to install a WiFi range extender.
WiFi icon does not light at all after pressing the Connect button	Something may be wrong with the appliance.	Unplug or disconnect appliance power for 60 seconds. Return power and repeat the WiFi connect process.
		Verify that the appliance operates correctly except for not being able to connect.
Appliance is connected to home WiFi router, but Whirlpool™ app or Smart Grid functions do not work	Smart Grid features on the appliance may be OFF.	Check that Smart Grid feature is on—verify that blue or amber Smart Grid indicator is on continuously.
		Touch “Connect” to turn Smart Grid feature on.
	Connection to the Whirlpool™ app and Smart Grid service may be unavailable.	Check if the blue Smart Grid indicator is blinking.
	User account has not been properly set up, or the appliance has not been registered in an account.	See “Connectivity Setup” section or the Whirlpool™ app directly for account setup and appliance registration instructions.
		Appliance must be registered with user account in the app?
		Have the customer verify correct e-mail address, mobile number, and notification preferences.
Appliance is not connected AND appliance is not broadcasting a “Hotspot” ID	The appliance WiFi module radio may not be initialized to transmit.	Reset WiFi module by removing power from appliance for 60 seconds. Return power and have the customer repeat the WiFi connect process.

Notes

Section 3: Parts & Assemblies

This section provides the parts and assemblies that are relevant to the “Connected Smart Appliances - Gen III.”

- WiFi Processor Module
- WiFi Module Antennas
- Power Management (PM) Board
- Current Transformers (CT)
- Human Machine Interface (HMI)
- Appliance Control Unit (ACU)
- Connected Smart Appliance Components

For Service Technician Use Only

WiFi Processor Module

A WiFi processor module is installed in each Smart Appliance enabling it to connect to an wireless router, wireless extender, laptops, tablets, smartphones, and to the Internet.

The WiFi Processor Module combines WiFi Radio and MCU on a single board and is embedded inside the appliance to provide the WiFi physical interface.

The WiFi module has five main functions:

1. Control the WiFi Radio Module Circuit.
2. Interface to the WIDE/WIN bus.
3. Interface higher data rate data through UART.
4. Contain the Whirlpool standard set of WiFi protocols.
5. Provide a common set of Whirlpool communications applications.

WiFi Processor Module Power Requirements

The WiFi Processor Module will have an isolated input supply of 5 VDC +/- 10%.

WiFi Processor Module Interface

The transceiver must be 802.11 b/g/n compliant.

WiFi Processor Status LED

The WiFi Processor Module has a green and amber LED to indicate WiFi Module status.

NOTE: Refer to Section 4: “Diagnostics & Troubleshooting” for troubleshooting the WiFi Status LED.

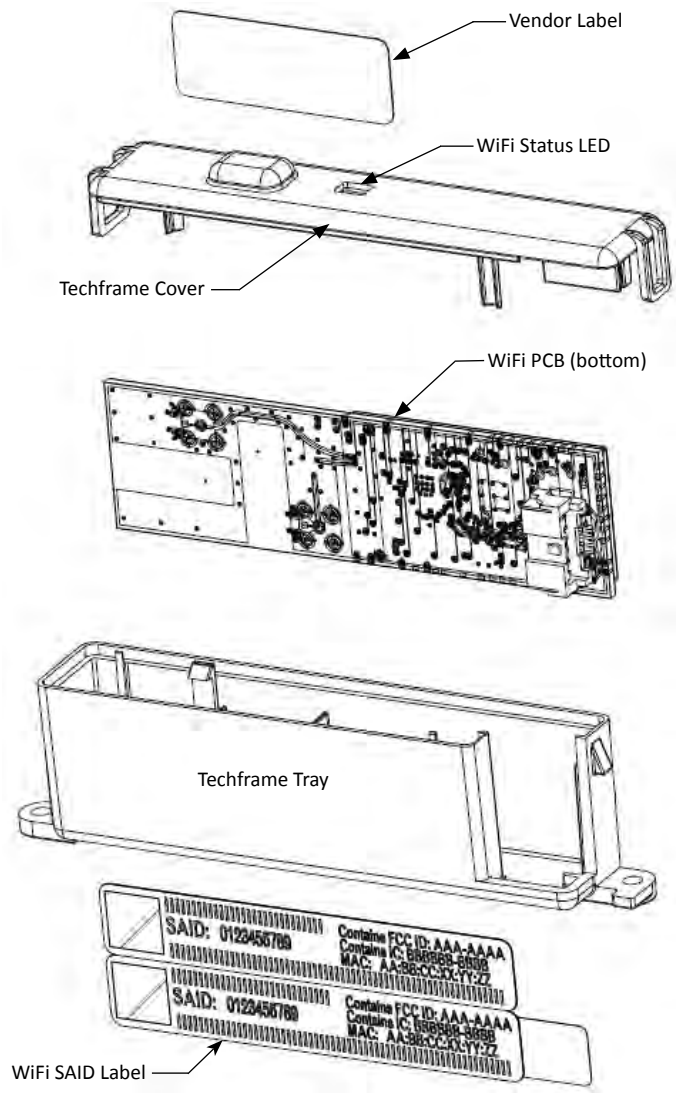


Figure 1 - WiFi Module Assembly

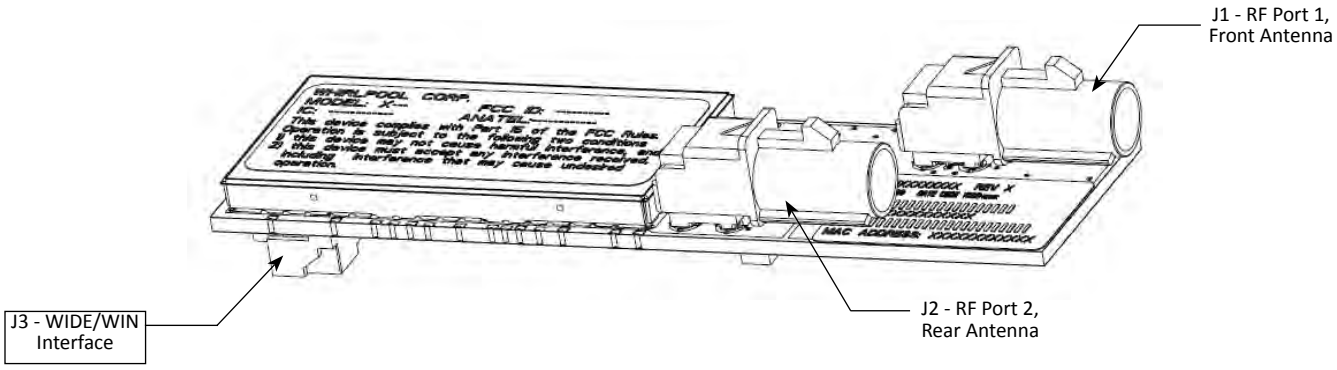


Figure 2 - WiFi Board (Top)

For Service Technician Use Only

WiFi Module Antennas

The WiFi Module has both internal and external antenna capabilities. Antenna requirements depend on the appliance and the materials used in the appliance. For example, the WiFi Module in the washer and dryer do not require external antennas because it is located in the (plastic) console on top of the appliance

However, certain Connected Appliances use one or two external antennas. Locations of the antennas are based on the appliance to ensure unimpeded wireless communication to the front and back of the appliance. The WiFi module has the ability to select the best antenna based on signal to noise ratio and performs this optimization during the connectivity process and after linking to a access point; no antenna should be dominant.

The Front Antenna enters the WiFi Module at connector J1
The Rear Antenna enters the WiFi Module at connector J2
(See Figure 2 on preceding page.)

Typical antenna assembly shown in figure 3

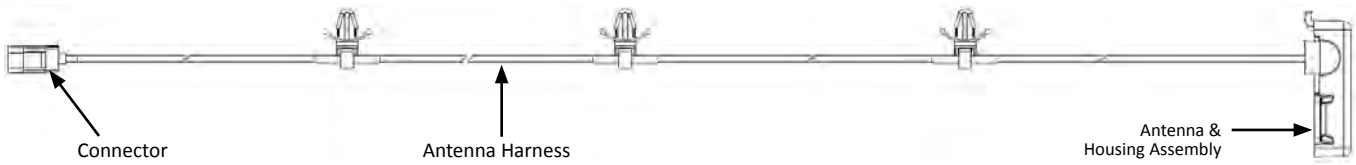


Figure 3 - Typical Antenna Assembly

For Service Technician Use Only

Power Management (PM) Board

The Power Management Board performs actual power measurement; calculating both real power (kW) as well as real power/time (kW h).

An algorithm in the machine uses the voltage and current readings to determine power use for the consumer.

Ohms Law: P=E x I (Power = Voltage x Current)

Voltage is detected and measured at connector J1, pins 1-3 for L1, Neutral, and L2 (if exist).

Current is measured using current transformer(s). Current Transformer 1 (CT1) will monitor L1 and Current Transformer 2 (CT 2) will monitor L2 (electric dryers, ranges, double ovens). The output of the Current Transformer(s) is connected to the Power Management Board at connector J4, pins 1 & 2 (CT1) and if L2 exists, pins 3 & 4 (CT2).

Typical Power Management Board shown in figure 4.

PM Connectors and Pin-outs

Connector Number	Pin	Function
J1 Voltage Measurement	1	L1
	2	Neutral
	3	L2 (if exists)
J2 WIDE/WIN	1	5 VDC
	2	Data
	3	GND
J3 WIDE/WIN	1	5 VDC
	2	Data
	3	GND
J4 Current Measurement	1	CT1 +
	2	CT1 –
	3	CT2 +
	4	CT2 –

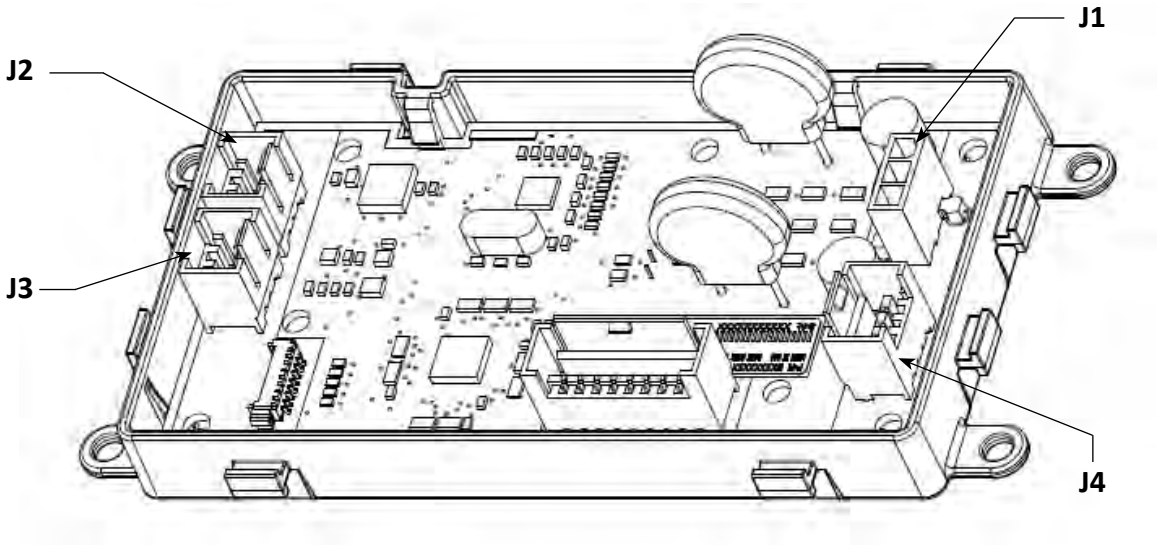


Figure 4 - Power Management Board

For Service Technician Use Only

Current Transformer (CT)

Real power is measured using current transformer(s).

- The current transformers act like an amp probe that measure current usage so that actual power can be calculated.
- Appliances using L2 have two current transformers, CT1 and CT2 (L1 and L2 respectively).
- Current Transformers are integrated into the appliance wiring harness on all models.

The output of the Current Transformer(s) is connected to the Power Management Board at connector J4, pins 1 & 2 (CT1) and if L2 exists, pins 3 & 4 (CT2).

Typical Current Transformer assembly shown in figure 5.

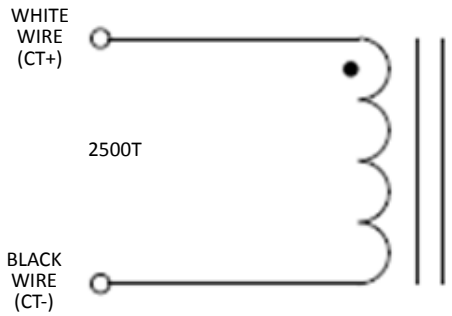


Figure 6 - Current Transformer Schematic

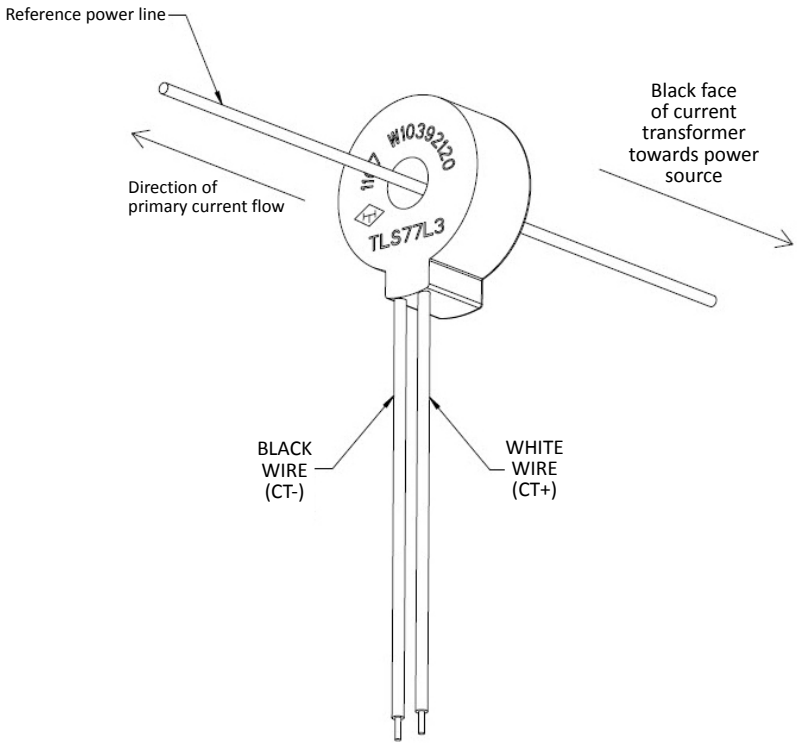


Figure 5 - Current Transformer

For Service Technician Use Only

Human Machine Interface (HMI)

The HMI is the electronic control that manages the appliance's cycle selection, options, settings. Also, known as the User Interface or UI.

- Varies across product categories and models
- Connect button provides initial connection to access point
- Connect button provides Override feature
- Smart Delay LED indicates status of energy demand
- Smart Grid Status LEDs indicate Off-peak energy demand or Peak energy demand.
  - Blue = Off-peak pricing
  - Amber = Peak pricing

Appliance Control Unit (ACU)

The ACU is the electronic control that manages the appliance's loads and in some cases the Human Machine Interface (HMI). Also, known as Control Board, Main Control, CCU, Central Control Unit, Cycle Control Unit, etc.

- Varies across product categories and models

Connected Smart Appliance Components

(Washer Example)

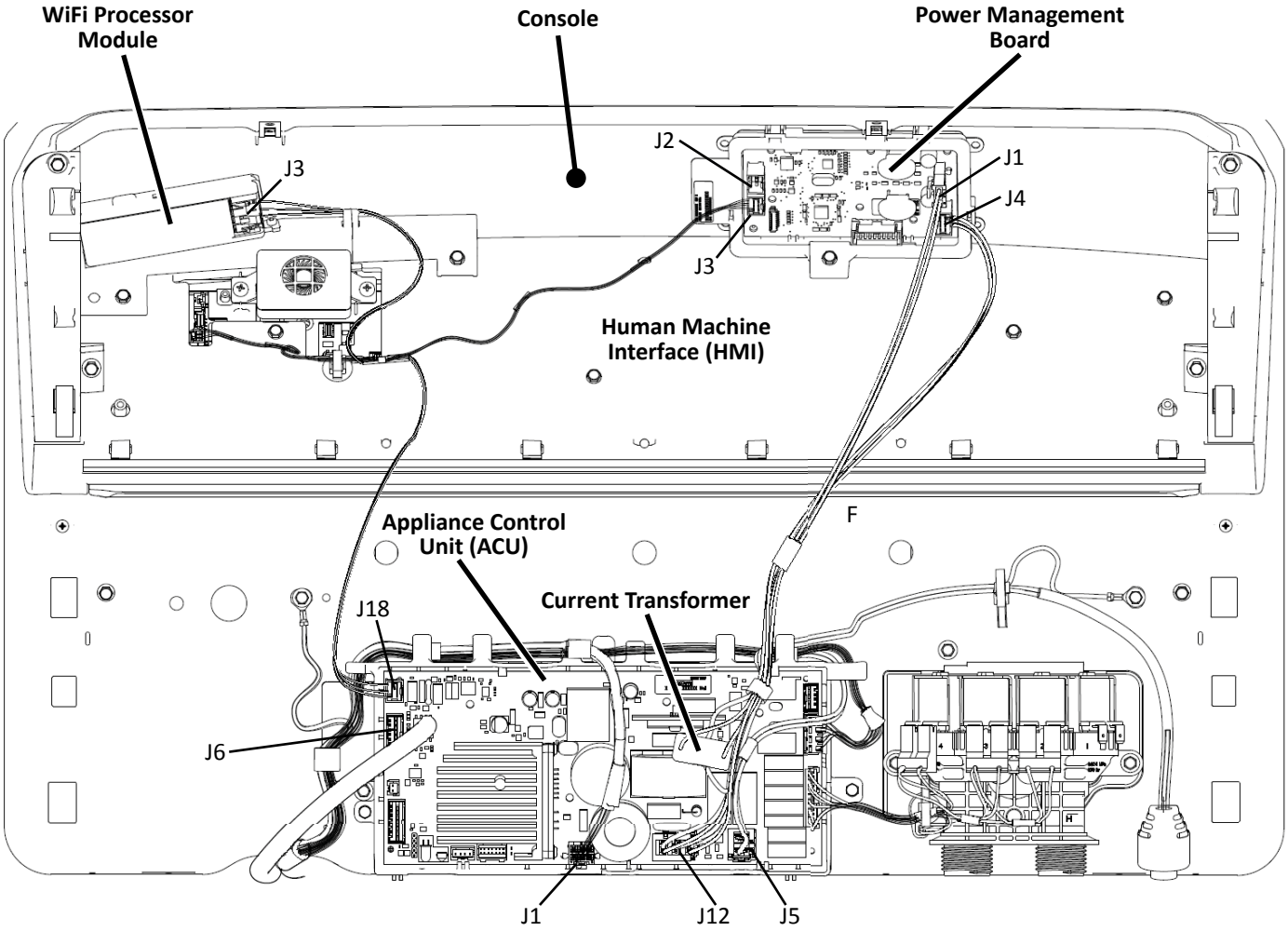


Figure 7 - Example of Connected Appliance Components

Section 4: Diagnostics & Troubleshooting

This section provides diagnostic, and troubleshooting information for "Connected Smart Appliances - Gen III."

- Troubleshooting Guide
- Control Panel/Connectivity Status
- Buttons & Indicators
- Troubleshooting
- Board Replacement Procedures
- Troubleshooting the WiFi Module
- WiFi Module Status LED
- WiFi Processor Board
- Troubleshooting the Power Measurement Module
- Power Management Board
- Notes

IMPORTANT:

The In-Home Service Professional is only responsible for diagnosing and repairing the Connected Appliance and all parts and software within that appliance. The In-Home Service Professional must NOT attempt to service or repair the customer's Home Area Network; including but not limited to the customer's wireless router, access point, modem, computers, tablets, or any other mobile devices.

All questions concerning connecting the appliance to the customer's Home Area Network, the Whirlpool App, and the Customer's Account should be directed to the Whirlpool Help Line at:

1 (866) 333-4591

Troubleshooting Guide

Troubleshooting Guide

CONSOLE LIGHTS, LEDS, INDICATORS	
Complaint / Issue	**Cause / Check**
WiFi Indicator is ON	The appliance has been connected to the home router or access point.
WiFi indicator is blinking slowly.	The appliance is in connection mode. The indicator light will blink slowly for up to two minutes while the appliance attempts to establish a connection with the wireless router. Once a connection is established, the WiFi indicator light will stay on.
WiFi indicator blinks rapidly for a couple seconds and turns OFF.	The appliance was unable to establish a connection with the wireless router. Refer to section **"Unable to Connect Appliance to Wireless Router"** on page 4-3.
WiFi indicator is OFF.	1. The appliance has not been connected to the home router or access point. 2. When the appliance goes into Standby Mode, the lights will be off. Press the POWER Button. 3. Smart Grid feature is temporarily disabled. The Smart Grid function can be turned off for the current cycle by pressing the CONNECT button briefly (WiFi icon will also be off). Press CONNECT button again to reactivate Smart Grid features. 4. The WiFi has been turned off. This occurs when the CONNECT button is pressed and held for more than 7 seconds, but less than 15 seconds. To turn the WiFi back on, press the CONNECT button once and the appliance will reconnect to the router. 5. The Appliance has been disconnected. This occurs when the CONNECT button is pressed and held for more than 15-20 seconds. The appliance must be re-connected to the wireless router or access point.
The Blue and Amber Smart Grid indicators are OFF.	1. The appliance has not been connected to the home router or access point. 2. When the appliance goes into Standby Mode, the lights will be off. Press the POWER Button. 3. Smart Grid feature is temporarily disabled. The Smart Grid function can be turned off for the current cycle by pressing the CONNECT button briefly (WiFi icon will also be off). Press CONNECT button again to reactivate Smart Grid features. 4. The WiFi has been turned off. This occurs when the CONNECT button is pressed and held for more than 7 seconds, but less than 15 seconds. To turn the WiFi back on, press the CONNECT button once and the appliance will reconnect to the router. 5. The Appliance has been disconnected. This occurs when the CONNECT button is pressed and held for more than 15-20 seconds. The appliance must be re-connected to the wireless router or access point.
The Blue Smart Grid indicator is ON.	1. The Smart Grid feature is on and the power grid is normal (Off Peak Energy). 2. The Smart Grid feature is on and the power grid is at Peak Energy Demand and has been over-ridden.
The Amber Smart Grid indicator is ON.	The Smart Grid feature is on and the power grid is at Peak Energy Demand. Appliance operation will be altered or delayed from starting to save energy. Press the CONNECT button to override the Smart Grid event.
The Blue Smart Grid Indicator is Blinking.	The appliance is connected to the home wireless router, but connection to the Whirlpool "cloud" has not been established or has been disrupted. Is the consumer connected to the Internet—can the consumer access the Internet on their home computer, laptop, or tablet (Google.com)?

Troubleshooting Guide (continued)

Troubleshooting Guide (continued)

The Smart Delay indicator is ON.	1. The Smart Grid feature is on and the power grid is at Peak Energy Demand. Appliance operation will be altered or delayed from starting to save energy. Press the CONNECT button to override the Smart Grid event. 2. Smart Delay has been activated within the Whirlpool App (Delay Start).
The Smart Delay indicator is blinking momentarily.	Pressing the START button and trying to start a cycle during a Smart Grid event (Peak Energy Demand) will cause the Smart Delay indicator to blink momentarily.
UNABLE TO CONNECT APPLIANCE TO WIRELESS ROUTER	
Complaint / Issue	**Cause / Check**
Not able to connect Smart Appliance. Not able to "Add Appliance" from Whirlpool App.	The consumer has downloaded and installed Whirlpool™ app and successfully setup their account, but is unable to "Add Appliance" from the Settings Menu. 1. Recycle power to the appliance. Unplug the appliance or disconnect power. Wait 60 seconds, then return power to the appliance. Repeat the connectivity process. 2. Is this the first connected appliance or does the consumer have others? If this is the first appliance, review connectivity instructions in **"Section 2 – Connectivity"**. 3. Is the consumer connected to the Internet after installing wireless router—can they access the Internet on their home computer, laptop, or tablet (ex. Google.com)? If no, the problem is with the consumer's home network. If yes, try to connect the appliance again. 4. Does the consumer have a wireless router—can they use WiFi devices in their home to access the Internet (ex. Google.com on laptop, tablet or smartphone)? 5. Have the consumer verify their wireless router and modem are ON. 6. Does the consumer have the correct wireless router? If using the WPS method, the wireless router must support the WPS-2 standard. 7. If using the WPS method, did the consumer push the WPS button of wireless router first, and then the appliance within two minutes? Is WPS enabled on the router? 8. The router must support WPA-2 security. Does the consumer have the wireless router security enabled? When the consumer setup their router, did they pick a security code - if not, refer them to their router's user instructions and have them setup their security code. **IMPORTANT:** Changing the security code could disable all Internet connections. 9. Is appliance out of range of wireless router? Check the following: - Does the customer have a laptop, tablet, or other mobile device - can they use this for range testing? - Can the consumer take their laptop, tablet, or other mobile device to where the appliance is - to see that it can still communicate at this range from their router. - Can the laptop, tablet, or other mobile device still talk to the Internet (google.com)? Try a new website to test for connectivity (not a recent page that may have been cached on their browser). - Go to the "Wireless Network Status" and check how many bars are present. - If laptop, tablet, or other mobile device cannot communicate at this range, can it communicate moving closer to the router? - Can the consumer move the wireless router closer to the appliance by lengthening the wire between the router and the Cable, Satellite, or DSL modem box?

Troubleshooting Guide (continued)

Troubleshooting Guide (continued)

Not able to connect Smart Appliance. Not able to “Add Appliance” from Whirlpool App. (continued)	- If a WiFi extender is needed, the consumer should position it halfway between the Smart Appliance and the wireless router. Refer to “Section 2 - Connectivity.” 10. Test the WiFi Module. Perform the troubleshooting procedures on page **4-14** to verify WiFi Module operation.
ENERGY ADVISOR NO LONGER WORKING	
Complaint / Issue	**Cause / Check**
Primary Energy Advisor features not working.	1. Energy Advisor is not enabled in the User Account. 2. The utility company has not been specified in the User Account or Energy Advisor is disabled.
Not receiving alerts or able to participate in Energy Advisor.	1. Smart Grid feature is off. The Smart Grid function can be turned off for the current cycle by pressing the CONNECT button briefly (WiFi icon will also be off). Press CONNECT button again to reactivate Smart Grid features. 2. The appliance is not receiving a signal from the wireless router. Press the CONNECT button; if an error tone sounds, the router may not be on or connected to the Internet. 3. User Account must be setup and appliance must be registered under “Add Appliance” on the customer’s User Account > Settings. 4. The consumer must have the correct e-mail and mobile number saved on their User Account and that their notifications are set to ON.
Not seeing power usage on Energy Report	Start a cycle on the Smart Appliance. From the User Account Home Screen, have the user select the "Energy" tab. Under "Energy Report," select the appliance that is running a cycle. Is the appliance showing a live power reading? If not, check the following: Test the Power Measurement Board and CTs. Perform the troubleshooting procedures on page **4-16** to verify operation.
USER ACCOUNT / WHIRLPOOL APP	
Complaint/Cause	**Check**
How to get connected once Smart Appliances are installed.	For full Smart Grid functionality, the appliance must be connected to the home wireless network through a wireless router (sold separately) and the customer must have an active Internet connection. Refer to **“Section 2 – Connectivity”** for more information on how to get connected. Once the user has completed the setup process for the appliance(s), the Smart Grid function will default to ON (the Smart Grid indicator will be ON continuously as long as it is communicating with the wireless router and the Whirlpool "cloud").
Consumer does not know where to go to setup their account.	The consumer must be able to connect to the Internet and go to www.whirlpool.com/connect and follow the instructions to download and install the Whirlpool™ app.
User Account application is not loading.	A tablet (iPad or Android), or smartphone (iPhone or Android) connected to the home wireless network and the Internet is required.
Forgot password.	Click on “Forgot Password” and follow instructions to retrieve your password.
Out-dated version of Whirlpool™ app	Is the appliance running the latest version of the Whirlpool™ app?

Troubleshooting Guide (continued)

Troubleshooting Guide (continued)

FAULT CODES ARE NOT AVAILABLE ON WHIRLPOOL APP	
Complaint / Issue	**Cause / Check**
Fault codes are not available on Whirlpool app	1. The consumer must have the correct e-mail and mobile number saved on their User Account and that their notifications are set to ON. 2. Smart Grid feature is temporarily disabled. The Smart Grid function can be turned off for the current cycle by pressing the CONNECT button briefly (WiFi icon will also be off). Press CONNECT button again to reactivate Smart Grid features. 3. The WiFi has been turned off. This occurs when the CONNECT button is pressed and held for more than 7 seconds, but less than 15 seconds. To turn the WiFi back on, press the CONNECT button once and the appliance will reconnect to the router. 4. The Appliance has been disconnected. This occurs when the CONNECT button is pressed and held for more than 15-20 seconds. The appliance must be re-connected to the wireless router or access point. 5. The appliance is not receiving a signal from the wireless router. Press the CONNECT button; if an error tone sounds, the router may not be on or connected to the Internet.
Out-dated version of Whirlpool™ app	Is the appliance running the latest version of the Whirlpool™ app?

REMOTE APP NO LONGER DISPLAYS ODOMETER, CYCLE, ACCESSORY, OR STATUS NOTIFICATIONS	
Complaint / Issue	**Cause / Check**
Remote apps no longer display information from their Smart Appliance.	1. The consumer must have the correct e-mail and mobile number saved on their User Account and that their notifications are set to ON. 2. Smart Grid feature is temporarily disabled. The Smart Grid function can be turned off for the current cycle by pressing the CONNECT button briefly (WiFi icon will also be off). Press CONNECT button again to reactivate Smart Grid features. 3. The WiFi has been turned off. This occurs when the CONNECT button is pressed and held for more than 7 seconds, but less than 15 seconds. To turn the WiFi back on, press the CONNECT button once and the appliance will reconnect to the router. 4. The Appliance has been disconnected. This occurs when the CONNECT button is pressed and held for more than 15-20 seconds. The appliance must be re-connected to the wireless router or access point. 5. The appliance is not receiving a signal from the wireless router. Press the CONNECT button; if an error tone sounds, the router may not be on or connected to the Internet.
Out-dated version of Whirlpool™ app	Is the appliance running the latest version of the Whirlpool™ app?

Troubleshooting Guide (continued)

Troubleshooting Guide (continued)

UNABLE TO REMOTELY CONFIGURE CYCLE OR FEATURES OF THE SMART APPLIANCE	
Complaint / Issue	**Cause / Check**
Not able to remote access their Smart Appliances.	1. The consumer must have the correct e-mail and mobile number saved on their User Account and that their notifications are set to ON. 2. Smart Grid feature is temporarily disabled. The Smart Grid function can be turned off for the current cycle by pressing the CONNECT button briefly (WiFi icon will also be off). Press CONNECT button again to reactivate Smart Grid features. 3. The WiFi has been turned off. This occurs when the CONNECT button is pressed and held for more than 7 seconds, but less than 15 seconds. To turn the WiFi back on, press the CONNECT button once and the appliance will reconnect to the router. 4. The Appliance has been disconnected. This occurs when the CONNECT button is pressed and held for more than 15-20 seconds. The appliance must be re-connected to the wireless router or access point. 5. The appliance is not receiving a signal from the wireless router. Press the CONNECT button; if an error tone sounds, the router may not be on or connected to the Internet.
Out-dated version of Whirlpool™ app	Is the appliance running the latest version of the Whirlpool™ app?

NO EMAIL / TEXT NOTIFICATION	
Complaint / Issue	**Cause / Check**
Unable to use Smart features or receive email or text notifications.	1. The consumer must have the correct e-mail and mobile number saved on their User Account and that their notifications are set to ON. 2. Smart Grid feature is temporarily disabled. The Smart Grid function can be turned off for the current cycle by pressing the CONNECT button briefly (WiFi icon will also be off). Press CONNECT button again to reactivate Smart Grid features. 3. The WiFi has been turned off. This occurs when the CONNECT button is pressed and held for more than 7 seconds, but less than 15 seconds. To turn the WiFi back on, press the CONNECT button once and the appliance will reconnect to the router. 4. The Appliance has been disconnected. This occurs when the CONNECT button is pressed and held for more than 15-20 seconds. The appliance must be re-connected to the wireless router or access point. 5. The appliance is not receiving a signal from the wireless router. Press the CONNECT button; if an error tone sounds, the router may not be on or connected to the Internet.
Out-dated version of Whirlpool™ app	Is the appliance running the latest version of the Whirlpool™ app?

Control Panel/Connectivity Status

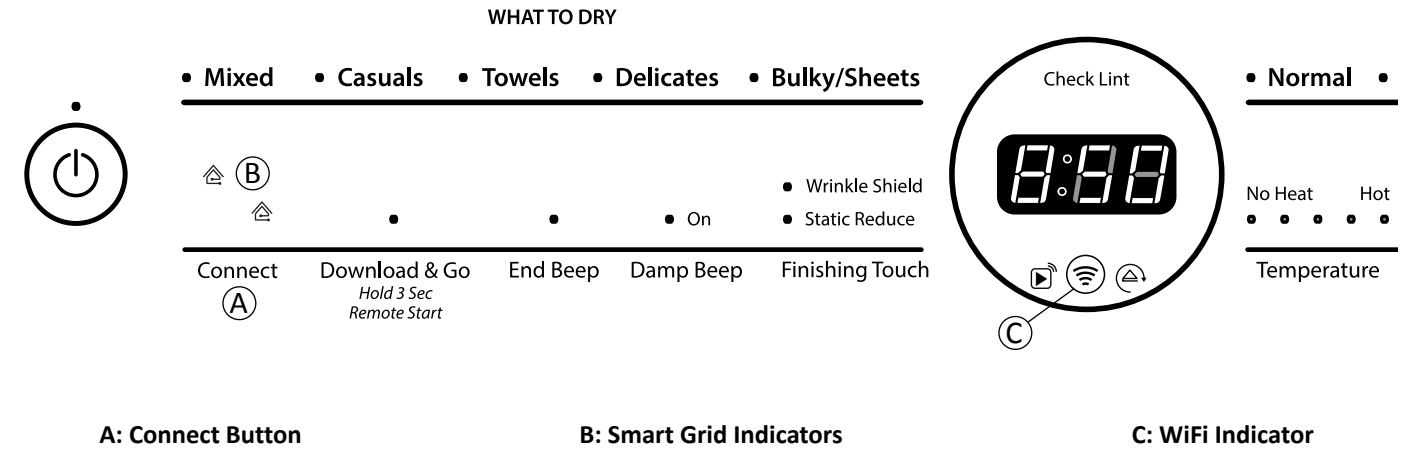


Figure 1 - Connection Status (dryer example)

Checking Connection Status

If the appliance is operating properly, the connection status can be determined from the indicator lights on the control panel.

Connection Status	Control Panel Indicator Lights
Appliance is connected to home router and Whirlpool Integrated Service Environment (WISE).	• WiFi indicator is ON • (Smart Grid icon is either ON or OFF - it is not blinking)
Appliance is connected to Home Router, but is not connected to WISE.	• WiFi indicator is ON • Blue Smart Grid icon is blinking (1 Hz)
Appliance is attempting to connect to home router	• WiFi indicator is blinking (1 Hz)
Appliance is not connected	• WiFi indicator is OFF • Smart Grid indicators are both OFF

See the “Control Panel Indicator Lights for Connected Appliance” table for a summary explanation of connectivity indicator light behaviors.

Buttons & Indicators

1. Connectivity Buttons and Indicators

Connect Button

Touch CONNECT during the initial connection of the appliance to your home WiFi network. The WiFi status indicator will be lit when the appliance is connected to the network. See Section 2: “Connectivity” for details. If the appliance is in a Smart Delay, touch CONNECT to override the delay and begin a cycle immediately.

Download & Go Option (not available on all products)

Set a Specialty Cycle or My Cycle in the Whirlpool™ app and download it to the appliance. The light above Download & Go™ will illuminate, indicating that the cycle has been received. Touch DOWNLOAD & GO to select the cycle for use, and touch and hold START/PAUSE to begin the cycle. The appliance will keep the downloaded Specialty Cycle/ My Cycle in memory, ready to use again, until a new cycle is downloaded from the app. See “Using Your Appliance — Smart Operation” in the Use and Care Guide for details.

REMOTE START

Touch and hold DOWNLOAD & GO for about 3 seconds to set the appliance for Remote Start. The Remote Start status indicator will begin blinking, as well as the indicator above the Start/ Pause button. When ready, touch and hold the START/PAUSE button. The indicator above Start/Pause will go out, and the Remote Start indicator will be solidly lit. When the appliance is remotely started from the Whirlpool™ app, the light above Start/ Pause will come on, while the Remote Start indicator remains lit.

NOTE: Any interaction with the appliance once a Remote Start has been set (for example, opening the door to add an additional item, or touching a button) will cause the Remote Start to cancel and the Remote Start status indicator will go out. Follow the steps again to put the appliance back into Remote Start mode.

2. Connectivity Status Indicators

Remote Start ( )

Indicates Remote Start status:

BLINKING - standby

ON - activated

WiFi ( )

Indicates WiFi connection status to the home router. (See “Checking Connection Status” below.)

Smart Delay ( )

Indicates a Smart Grid event (peak energy demand). Cycle is delayed unless over-ridden.

3. Smart Grid Status Indicators ( )

Blue

The BLUE indicator will be lit during times of OFF-PEAK energy demand. Dry cycles will begin without delay upon touch and hold of the START/PAUSE button.

Amber

The AMBER indicator will be lit during times of PEAK energy demand. The appliance will go into Smart Delay mode upon touch and hold of the START/PAUSE button, and the Smart Delay indicator will illuminate. When energy demand returns to OFF-PEAK levels, the AMBER indicator and Smart Delay indicator will go out, the BLUE indicator will illuminate, and the dry cycle will begin.

If connection to the Whirlpool™ app is unavailable, the Smart Grid status indicators will be OFF. Touching CONNECT will cause the AMBER indicator light to blink for 2 seconds and then stay OFF.

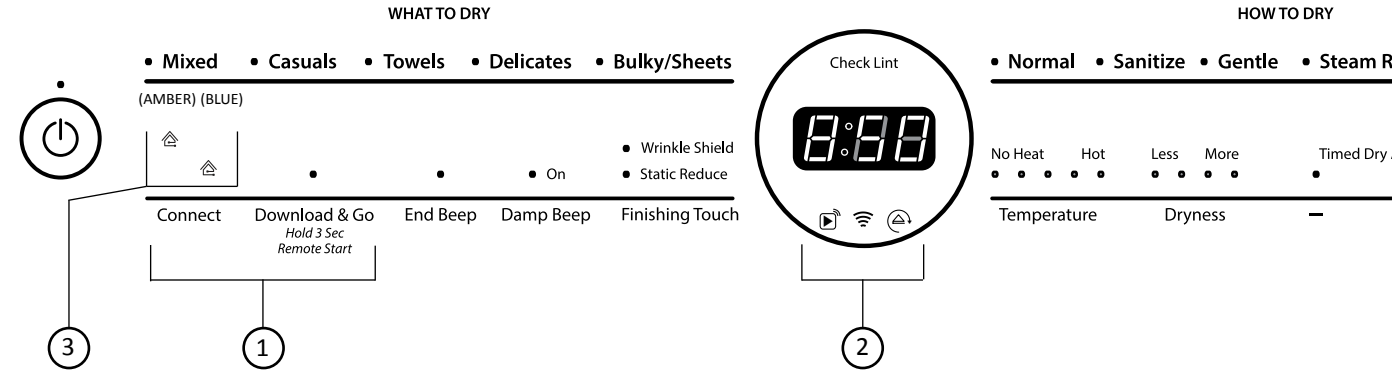


Figure 2 - Buttons & Indicators

Buttons & Indicators

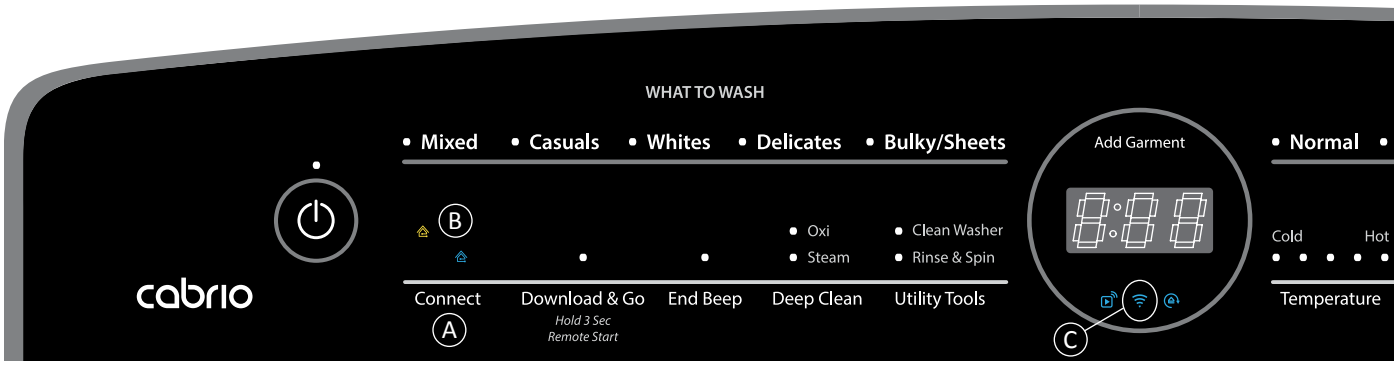
Control Panel Indicator Lights for Connected Appliance

Refer to Figure 2 on previous page for location of lights/icons

LED Icon	LED Status:	Indicates That:
WiFi Connect	Off	• Connection not made to home router or access point (AP). This will occur when appliance is not connected and not commanded to be connected, as well as when WiFi has been turned off. or • Appliance is in standby mode.
WiFi Connect	On	• Connection made to home router or access point (AP).
WiFi Connect	Blinking (1 Hz)	• Connecting to home router or access point (AP).
Blue Smart Grid & Amber Smart Grid	Off	• Smart Grid feature is off or • WiFi is turned off or not connected (“WiFi icon” will also be off) or • Connecting to home router if “WiFi icon” is blinking. or • Appliance is in standby mode.
Blue Smart Grid	On	• Smart Grid feature is on and power grid is normal (OFF-PEAK energy demand). or • Smart Grid feature is on and power grid event is at PEAK energy demand (mode 1 or mode 2) and has been overridden.
Amber Smart Grid	On	• Smart Grid feature is on and power grid event is active PEAK energy demand (mode 1 or mode 2). Appliance operation will be altered or delayed from starting to save energy for the power grid event duration.
Blue Smart Grid	Blinking (1 Hz)	• Connection to home router or access point (AP) has been made, but connection to backend Whirlpool Integrated Service Environment (WISE) has not been made or has been disrupted.
Smart Delay	Off	• Delay Start not on.
Smart Delay	On	• Smart Delay has been turned on by a mobile APP. Countdown to start of cycle is also displayed. The Remote Start icon will also be on. or • Smart Grid (mode 1 or mode 2) event has occurred. Countdown to the end of the Smart Grid event is also displayed. The amber Smart Grid icon will also be on.
Smart Delay	Momentary Blinking	• Pressing START button and trying to start a cycle when Smart Grid (mode 1 or mode 2) event is occurring will cause Smart Delay icon to blink momentarily, then remain on.
Remote Start	Off	• Remote control functionality is off.
Remote Start	On	• Remote control functionality is on.
All	Off	• When SW firmware is being updated remotely, the appliance will not be operational. This includes no LEDs lit or response from button commands.

Troubleshooting

Troubleshooting Connection Status



A: Connect Button | B: Smart Grid Indicators | C: WiFi Indicator

Figure 3 - Example Smart User Interface

If Appliance Is Not Connected (WiFi Icon is OFF)

1. Press POWER button to ensure the appliance is not in standby mode. All indicator lights are off when in standby, so make sure they are on by pressing the POWER button. If WiFi icon is still off, go to step 2.
2. Potential reasons for not being connected:
   - ➢ Appliance has never been connected to the home router. (Refer to Section 2: "Connectivity" in this job aid.)
   - ➢ The WiFi connection has been turned off. This is done by pressing the CONNECT button continuously for over 7 seconds, but for less than 15 seconds. (See section "Turning WiFi Back On" below.)
   - ➢ The appliance has been disconnected. This is done by pressing the CONNECT button continuously for greater than 15 seconds. The effect is the same as if the appliance has never been connected.
   - ➢ Signal strength problem (location of router relative to appliance or excessive interference noise).
     NOTE: Use the WiFi Settings on your mobile device to check signal strength of router. If signal strength is very low, the customer has 3 choices: move router closer to appliance; move appliance closer to router; or add a wireless extender.
   - ➢ Problem with the router.
   - ➢ Problem with the appliance.

Turning WiFi Back On

(Refer to Figure 3 above.)

If the appliance has already been connected and the WiFi icon (C) and Smart Grid indicators (B) are off, WiFi might have been turned off (holding the CONNECT button between 7 and 15 seconds will disable the appliance's WiFi connectivity). To turn the WiFi back on, press the POWER button to turn on the appliance, then press the CONNECT button (A). The WiFi icon (C) on the appliance control panel will blink once every second while the appliance reconnects to the router. This can take up to 2 minutes. If the connection is successful, the WiFi icon (C) will come on and remain lit. If the appliance and the router fail to connect after 2 minutes elapses, the WiFi icon (C) will blink rapidly (at 3 Hz) and then turn off.

If Appliance is Connected to Home Router (WiFi Icon Is On), but Mobile App or Smart Grid Functions Do Not Work

1. Determine if the appliance is connected to the Whirlpool Integrated Service Environment (WISE). This is the external network connection that is made via the Internet. This connection has to be made in order for the Mobile App and Smart Grid functions to work.
   - ➢ Is either Smart Grid icon on continuously? If yes, the appliance is connected to WISE.
   - ➢ If they are off, press the CONNECT button to turn the Smart Grid feature on.
   - ➢ If the blue Smart Grid icon is blinking, the appliance is not connected to the WISE network. The appliance is behaving properly.
   - ➢ Has the consumer's mobile app ever worked? If not, the product registration and claiming steps have not been completed properly. Refer to Section 2: "Connectivity" of this job aid.
   - ➢ Can the consumer access the Internet on their home computer(s)?
     - If no, have the consumer contact their Internet service provider.
     - If yes, have the consumer go through the registration and claiming process again, as described in Section 2: "Connectivity."

Troubleshooting Failure of Appliance to Connect to Router

1. Unplug the appliance or disconnect power. Wait 60 seconds, then return power to the appliance. Repeat the connectivity process. If unsuccessful, go to step 2.
2. During the connectivity process, does the WiFi Module LED blink? (Refer to WiFi Module Diagnostics on page 4-15 & 16..
   - ➢ If yes, the problem resides with the home network.
   - ➢ If no, the problem resides with the appliance. (Refer to "Troubleshooting the Smart Appliance–Not Able to Make Connection to Home Router.")

Troubleshooting

Troubleshooting Connection to Router or Access Point

Troubleshooting the Smart Appliance – Not Able to Make Connection to Home Router

1. If the WiFi icon does not light at all after pressing the CONNECT button, verify that the appliance has power. Be sure the appliance has been turned ON by pressing the POWER button before pressing the CONNECT button to initiate connection.
   - ➢ If, after pressing the CONNECT button, the WiFi icon does not light up or starts to blink, go to step 2.
   - ➢ If it does come on or starts to blink, the appliance is operating properly and the problem is with the home network.
2. Unplug the appliance or disconnect power. Wait 60 seconds, then return power to the appliance. Repeat the connection process. If unsuccessful, go to step 3.
3. Does the appliance operate correctly except for not being able to connect? The connected appliance is designed so that it will be completely functional when not connected. If there are other problems with the appliance, fix those first before going to step 4.
4. Test that WiFi Module and User Interface (UI) are able to communicate. Upon power up, all the control boards send their software version numbers to the UI via the internal communication bus (WIDE/WIN). Checking the Software Version numbers via the Service Diagnostic Mode is a way to check if this communication is occurring. The following instructions will determine if the UI and WiFi module are communicating:
   - ➢ Enter Service Diagnostic Mode (refer to tech sheet).
   - ➢ Enter the Software Version Display (refer to tech sheet).
     - If the UI displays a software version number for all of the software versions, the UI is communicating with all of the control modules.
     - The WiFi module software version number uses “n” label. If “n--” appears (two dashes instead of a number), the UI and WiFi module are not communicating.

       If all of the software version codes are “--”, the issue is with the UI or wire harness connection to the UI. If this occurs, error code F6E2 should also appear.

       If only the WiFi module is showing the “--” software version, the issue is either the harness or the WiFi module.
5. Inspect the WiFi module and wiring: (see Figure 4)
   - ➢ Unplug appliance or disconnect power.
   - ➢ Remove console or control to expose the WiFi module and wiring.

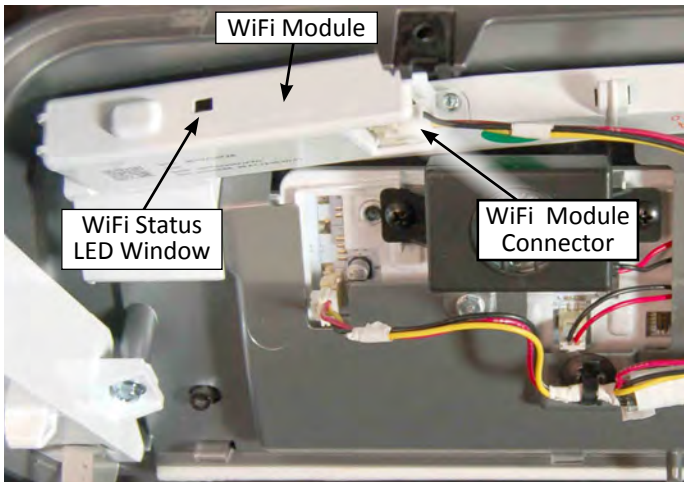


Figure 4

   - ➢ Verify that the connector is inserted all the way into the WiFi module.
   - ➢ Plug in appliance or reconnect power and allow a minute for the appliance to initialize.
   - ➢ Is the WiFi module status LED on or flashing?
     - If the light is green, the WiFi module has made connection to the home network or is trying to connect (see “Status Light for WiFi Module” table, page 4-15). This means the WiFi module is working properly.
     - If the light is off or blinking an amber color, press the CONNECT button to start the connectivity process.

       If the status LED is still off, check the wiring again before replacing the WiFi module. Follow “Replacement Procedure – WiFi Module,” page 4-13.
     - If WiFi module is working, green LED on or flashing, but WiFi Connect icon on console does not come on, inspect wiring before replacing the UI. Follow “Replacement Procedure – HMI (User Interface),” page 4-13. **IMPORTANT:** Do not replace both the WiFi Module and HMI (User Interface) at the same time if not necessary. Otherwise, the consumer will be required to contact Whirlpool, as directed in the WiFi Module Service Instructions (included with WiFi Module Service part).

Troubleshooting

Troubleshooting Home Network Connectivity

Troubleshooting Home Network Connectivity – Not Able to Connect to Home Router

IMPORTANT: The In-Home Service Professional is only responsible for diagnosing and repairing the Connected Appliance and all parts and software within that appliance. The In-Home Service Professional must NOT attempt to service or repair the customer's Home Area Network; including but not limited to the customer's wireless router, access point, modem, computers, tablets, or any other mobile devices.

All questions concerning connecting the appliance to the customer's Home Area Network, the Whirlpool App, and the Customer's Account should be directed to the Whirlpool Help Line at: **1 (866) 333-4591**

NOTE: To use Smart Appliance features on a Smart Appliance, the consumer must have a working Internet connection. If not, the appliance will still function normally without Internet access, but will be unable to utilize any Smart features.

NOTE: The following information is provided solely for the purpose of understanding how the Home Area Network operates.

1. Does the consumer have a wireless router? The connected appliance only works with wireless (802.11b/g/n) routers.
2. Does the consumer have Internet connection? Can they use other WiFi devices in their home to access the Internet through their wireless router?
   - ➢ If no, refer the consumer to their internet service provider.
   - ➢ If yes, continue to step 3.
3. Is the wireless router and modem are ON.
   - ➢ If the equipment is OFF, notify the consumer to turn ON the equipment in the following order: turn on the modem and wait 2 minutes, then turn on the router and wait 2 minutes.
   - ➢ If the equipment is ON, continue to step 4.
4. Does the consumer have the correct wireless router? If using the WPS method, the wireless router must support the WPS-2 standard. Is WPS enabled on the router?
   - ➢ If the consumer's home wireless router is not equipped with a WPS button, instruct the consumer to check the user manual of their router to confirm if it is WPS capable and that WPS is enabled. If not, alternate setup instructions are at www.whirlpool.com/connect.
5. If using the WPS method, did the consumer push the WPS button of the wireless router first; followed by POWER then CONNECT button on the appliance within 2 minutes?
6. Does the consumer have the wireless router WPA-2 security enabled? When the consumer set up their router, did they choose a security code? If not, refer them to their router's user instructions and have them set up their security code. **NOTE:** Whirlpool connected appliances only support WPA-2 security.

   IMPORTANT: Changing the security code on the home wireless router WILL disable all WiFi enabled devices on the Home Area Network.
7. Can the consumer take their laptop, tablet, or other mobile device to where the appliance is to determine that it can still communicate at this range from their router?
   - ➢ Can the laptop, tablet, or other mobile device still talk to the Internet? Go to a new website to test for connectivity (not a recent page that may have been cached on their browser).
   - ➢ If laptop, tablet, or other mobile device cannot communicate at this range, can it communicate moving closer to the router?
     - Is it possible to move the wireless router closer to the appliance by lengthening the wire between the router and the cable, satellite, or DSL modem?
     - Is it possible to move the appliance closer to the wireless router?
     - If a WiFi extender is needed, it should be positioned halfway between the Smart Appliance and the wireless router. **NOTE:** The WiFi extender should be of the same manufacturer as the router to ensure compatibility.
8. Recycle Power: In short, recycling power to the modem, router, extender (if exists), and computer will solve Internet connection issues 90% of the time—especially if they previously worked. To properly recycle power, 1) Power down the computer (completely off—not standby or hibernate); 2) Turn off the router and if it exists, the extender; and 3) Turn off the modem.

   NOTE: It is best to disconnect the power cable from the modem and router to ensure the power has been removed.

   IMPORTANT: Always restart the network in this order: 1) Turn on modem; wait 2 minutes. 2) Turn on router; wait 2 minutes. 3) If using a WiFi extender, turn on and wait 2 minutes. 4) Turn on computer.
9. No Power or Lights on Modem or Router
   - ➢ Check that modem and/or router is securely plugged into outlet. Is outlet controlled by light switch?
   - ➢ Check if modem and/or router is plugged into power strip. Verify that power strip is plugged in and switched ON.
   - ➢ Try a different electrical outlet.
   - ➢ If the user is still not seeing any lights, have the customer contact the modem or router manufacturer's help desk.
10. Interference from outside the home may be causing the problem. Wait several minutes and retry. If possible, place the wireless router closer to the appliance or install a WiFi range extender.
11. If the customer is unable to connect the appliance to the their Home Area Network, have them call the Whirlpool Help Line at: **1 (866) 333-4591**

Board Replacement Procedures

Replacement Procedure - WiFi Module

The replacement WiFi Module will have a new Smart Appliance ID (SAID) and MAC. A new label will be included for the technician to place on the appliance over the existing label. It will be necessary for the customer to reconnect the appliance to the home wireless router. Detailed instructions will also be included with the replacement part.

Re-connection Process

1. Power up the appliance.
2. Customer must reconnect the appliance to their home wireless router using the Whirlpool™ app or WPS method.
3. If not already done, the customer must re-register the appliance to their account by entering the new Smart Appliance ID (SAID) number.
4. A new appliance will appear in the user's account that will look just like the original appliance; same model number and serial number.
   - Customer will have to create notification settings for the new appliance.
   - Customer will have to create energy profile for the new appliance (when profile is at appliance level).
   - Time series data, such as energy consumption per cycle, will be lost.
   - Data that persists in the appliance, such as odometer, will be updated in the new appliance data model as it changes.
   - The 'in-service' date will be captured when the new appliance (SAID) is claimed.
5. The user account will show a duplicate appliance. One will show "IDLE" and the other will show "OFF LINE." The customer can delete the "OFF-LINE" appliance if they no longer want to view its historical information.

Replacement Procedure - HMI (User Interface)

The replacement HMI (User Interface) will not have Model Number & Serial Number, but will have category type.

Re-connection Process

1. Power up the appliance.
2. The WiFi Module will re-register with WISE (Whirlpool Integrated Service Environment).
3. WISE will detect that the Model and Serial number are blank and will not over-write the existing Model number and Serial number, it will assume it is the same appliance.
4. When the user logs into their account, the original appliance will appear.
5. Since the HMI is new, the information in the data model will not be in synch with the appliance.
   - As the appliance is used, the data model will be updated and synchronized with the appliance.
   - Some data will be lost, such as odometer, since the new appliance UI does not have historical information.
   - The 'in-service' date is not changed.

Replacement Procedure - WiFi Module "and" User Interface (HMI)

The replacement WiFi Module will have a new Smart Appliance ID (SAID) and MAC. A new label will be included for the technician to place on the appliance over the existing label. It will be necessary for the customer to reconnect the appliance to the home wireless router. Detailed instructions will also be included with the replacement part.

The replacement HMI (User Interface) will not have Model Number and Serial Number, but will have category type.

IMPORTANT: If it is essential to replace *both* the HMI and WiFi module at the same time, it will be necessary for the customer to contact Whirlpool as directed in the WiFi Module Service Instructions (included with WiFi Module Service part) in order to register (claim) the appliance in the user account.

Re-connection Process

1. Power up the appliance.
2. Customer must reconnect the appliance to their home wireless router using the Whirlpool™ app or WPS method.
3. Customer will need to contact Whirlpool (per the instructions left by the technician) and provide Help Line support with appliance model and serial numbers, Smart Appliance ID (SAID) and MAC numbers.
4. After the Help Line updates the databases, the new appliance will be available in the user's account.
   - Customer may have to recycle power to the appliance (unplug machine for 60 seconds) to register appliance in user account.
   - Customer will have to create notification setting for the new appliance.
   - Customer will have to create energy profile for the new appliance (when profile is at appliance level).
   - All appliance data will be lost.
   - The 'in-service' date will be captured when the new appliance (SAID) is claimed.
5. The user account will show a duplicate appliance. One will show "IDLE" and the other will show "OFF LINE." The customer can delete the "OFF-LINE" appliance if they no longer want to view its historical information.

Wireless Router is Replaced (replaced by consumer)

New Wireless Router should have WPS technology and WPA-2 security enabled. The customer may need to access the router software to turn on these features.

Re-connection Process (performed by customer)

1. Disconnect (de-provision) each Smart Appliance by pressing the "Connect" button on the console continuously for greater than 15 seconds or until you hear the appliance play a tune 4 times.
2. Customer must reconnect each appliance to the new Wireless Router using the Whirlpool™ app or WPS method outlined in Section 2: "Connectivity".
3. WiFi Module of each appliance re-registers with WISE (Whirlpool Integrated Service Environment).
4. Appliance will appear in user's account as normal.

Diagnostics

⚠ DANGER

Electrical Shock Hazard

Only authorized technicians should perform diagnostic voltage measurements.

After performing voltage measurements, disconnect power before servicing.

Failure to follow these instructions can result in death or electrical shock.

⚠ WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

Voltage Measurement Safety Information

When performing live voltage measurements, you must do the following:

- Verify the controls are in the off position so that the appliance does not start when energized.
- Allow enough space to perform the voltage measurements without obstructions.
- Keep other people a safe distance away from the appliance to prevent potential injury.
- Always use the proper testing equipment.
- After voltage measurements, always disconnect power before servicing.

Troubleshooting the WiFi Module

Troubleshooting WiFi Module

Perform this procedure if the appliance is not connecting to the home area network.

1. **Check Connectivity**—Ask the customer to perform the steps to connect the appliance to the wireless router of their Home Area Network (HAN).
2. After the connectivity process, does the appliance connect to the wireless router? (WiFi icon is on steady.)
   - ➢ If yes, the WiFi Module is good.
   - ➢ No, proceed to step 3.
3. Unplug appliance or disconnect power.
4. Access the WiFi Module. **NOTE:** Location may vary depending on product.
5. **Check Connections**—Confirm that all connections to the WiFi Module are securely installed, including WIDE/WIN, and if applicable, the Front & Rear Antennas. Refer to Figures 6 and 7 (page 4-16) to reference connections.
6. **Check DC Voltage**—Set a voltmeter to DC and connect the red lead to J4-1 and the black lead to J4-6.
7. Plug in appliance or reconnect power. Verify that 5 VDC* is present across connector J4, pins 1 and 6.
   - ➢ If 5 VDC*is present, proceed to step 8.
   - ➢ If 5 VDC* is not present, check the continuity of the harness between the WiFi Module and Control. If harness checks good, verify 5 VDC* at the Control board. Repair or replace as needed.

   ***NOTE:** Voltage can be higher depending on system and WiFi module. Check appliance tech sheet.
8. **Check WiFi Status LED**—Locate the WiFi Status LED window as shown in Figure 5. Repeat the WiFi connectivity process as stated in Step 1. During the connectivity process, does the WiFi Status LED blink fast?

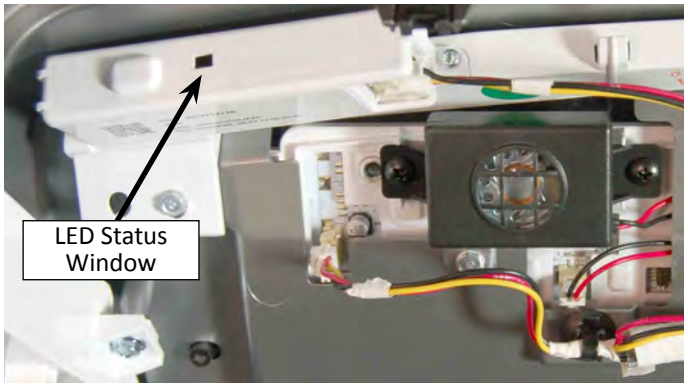


Figure 5 - WiFi Status LED Window

- ➢ If yes, the WiFi processor module is good. (Refer to LED chart on following page.)
- ➢ If no, replace the WiFi module. **IMPORTANT:** See "Board Replacement Procedures" on page 4-13 for instructions on replacing the WiFi Module.

Diagnostics

WiFi Module Status LED Chart

LED Status:	Indicates That:
Green & Amber - Off	• WiFi module is not connected. This is the state of the LED after disconnecting or if connectivity has not been initiated. or • WiFi feature has been turned off. or • Deep-sleep mode, wake on wide/pin mode. or • WiFi module is un-powered or has malfunctioned.
Green – On Continuously	• WiFi module is connected to home router/access point and WISE – appliance connectivity features are fully functional.
Green - Fast Blinking (10 Hz; 50 ms on, 50 ms off)	• WiFi module is trying to connect to home router/access point. This can occur during initial connectivity or any time that connection is lost to the router/access point.
Green – Slow Blinking (0.5 Hz; 1 s on, 1 s off)	• WiFi module is connected to home router/access point, but connection to WISE has not been made or has been disrupted.
Green - ON, Amber- Fast Blinking (5 Hz; 100 ms on, 100 ms off)	• Remote firmware update is occurring. Appliance will not be operational during this activity.
Amber – Extra Slow Blinking (0.1 Hz; 100 ms on, 4 s off)	• WiFi module is in low power mode.
Green - Current State of Connection Amber – Slow Blinking (50 ms on, 80 ms off)	• WiFi module is in low power mode (connected-standby).

Diagnostics

WiFi Processor Board

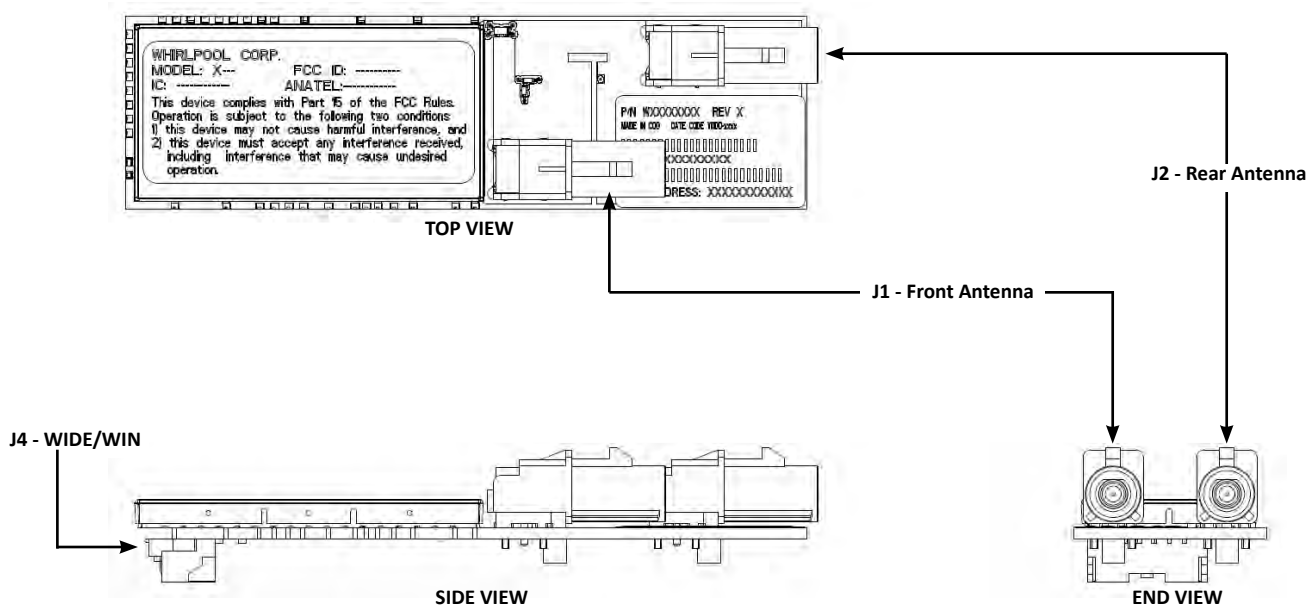


Figure 6 - WiFi Processor Board Layout

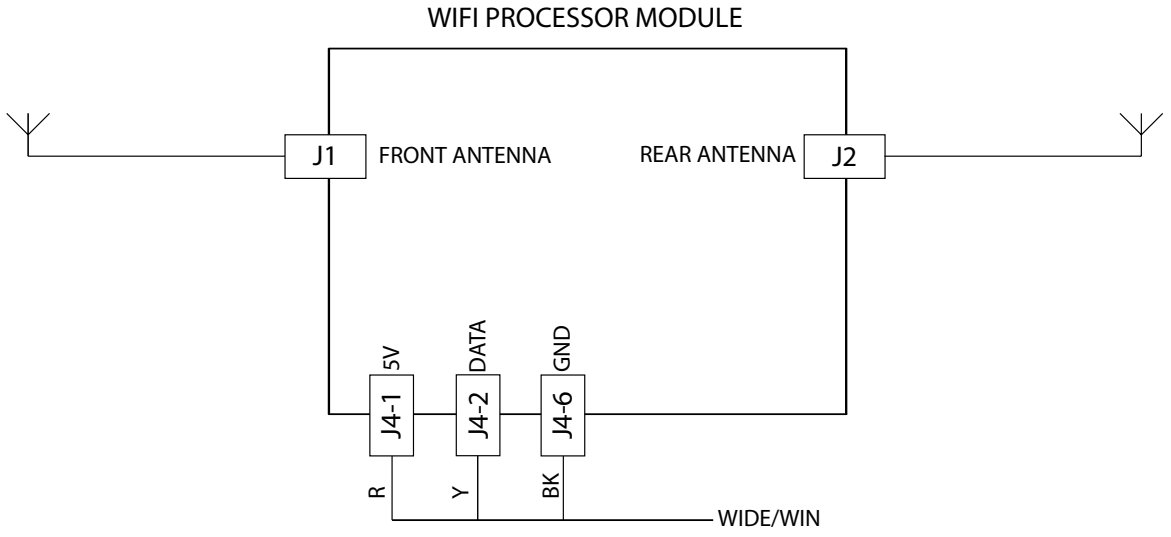


Figure 7 - WiFi Strip Circuit

Diagnostics

Troubleshooting the Power Management Board

⚠ DANGER

Electrical Shock Hazard

Only authorized technicians should perform diagnostic voltage measurements.

After performing voltage measurements, disconnect power before servicing.

Failure to follow these instructions can result in death or electrical shock.

Troubleshooting Power Management (PM) Board

Perform this procedure if when using the Whirlpool™ app, the customer is unable to see live power measurements from the appliance during operation.

1. Unplug appliance or disconnect power before servicing.
2. Access the Power Management (PM) board.
   NOTE: Location may vary depending on product.
3. **Check Connections**—Confirm that all connections to the Power Management board are securely installed, including WIDE/WIN, Current Transformer(s), and AC Sense (L1, L2 (if exist), and N). Refer to Figures 9 and 10 on the following page to reference connections.
4. **Check Current Transformer (CT1)**—Remove connector J4 from the Power Measurement board. With an ohmmeter, verify resistance of the current transformer across the J4 pins 1 & 2. Resistance should be 135 ohms ±5%.
   - ➢ If values are correct, proceed to step 5 if appliance uses L2; if not, reconnect J4 and proceed to step 6.
   - ➢ If values are open or out of range, replace Current Transformer CT1 or internal harness depending on appliance.

NOTE: Perform the following step if the appliance uses L2.

5. **Check Current Transformer (CT2)**—If not already, remove connector J4 from the Power Measurement board. With an ohmmeter, verify resistance of the current transformer across the J4 pins 3 & 4. Resistance should be 135 ohms ±5%.
   - ➢ If values are correct, reconnect J4 and proceed to step 6.
   - ➢ If values are open or out of range, replace Current Transformer CT2 or internal harness depending on appliance.
6. **Check DC Voltage**—Set a voltmeter to DC and connect the red lead to J2-1 and the black lead to J2-3. Some appliances may use J2 for WIDE/WIN or J3 (both connectors are interchangeable).
7. Plug in appliance or reconnect power. Verify that 5 VDC is present across pins 1 and 3 of either J2 or J3.
   - ➢ If 5 VDC is present, proceed to step 8.
   - ➢ If 5 VDC is not present, check the continuity of the harness between the PM board and Control. If harness checks good, verify 5 VDC at the Control board. Repair or replace as needed.
8. **Check AC Sense Voltage**—Unplug appliance or disconnect power. Set voltmeter to AC and connect the black lead to J1-2 (Neutral) and the red lead to J1-1 (L1).
9. Plug in appliance or reconnect power. Verify that 120 VAC is present across pins J1-1 and J1-2.
   - ➢ If 120 VAC is present, proceed to step 10 if appliance uses L2; if not, proceed to step 12.
   - ➢ If 120 VAC is not present, check the continuity of the harness between the PM board and terminal block or plug.

NOTE: Perform the following 2 steps if the appliance uses L2.

10. Unplug appliance or disconnect power. Set voltmeter to AC and connect the black lead to J1-2 (Neutral) and the red lead to J1-3 (L2).
11. Plug in appliance or reconnect power. Verify that 120 VAC is present across pins J1-1 and J1-3.
    - ➢ If 120 VAC is present, proceed to step 12.
    - ➢ If 120 VAC is not present, check the continuity of the harness between the PM board and terminal block or plug.
12. If the none of the preceding steps resolved the issue, replace the Power Management board and retest using the consumer app during appliance operation.
13. Unplug appliance or disconnect power.
14. Reassemble all parts and panels.

Current Transformer (CT)

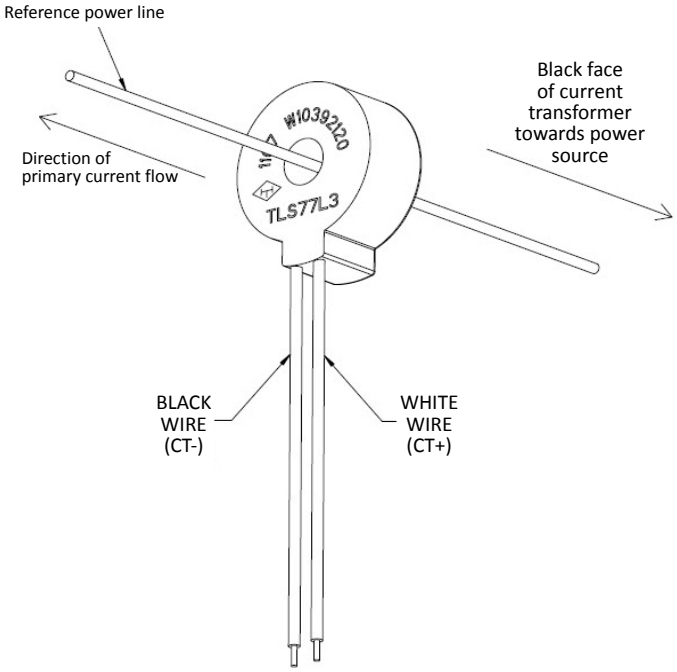


Figure 8 - Current Transformer

Diagnostics

Power Management Board

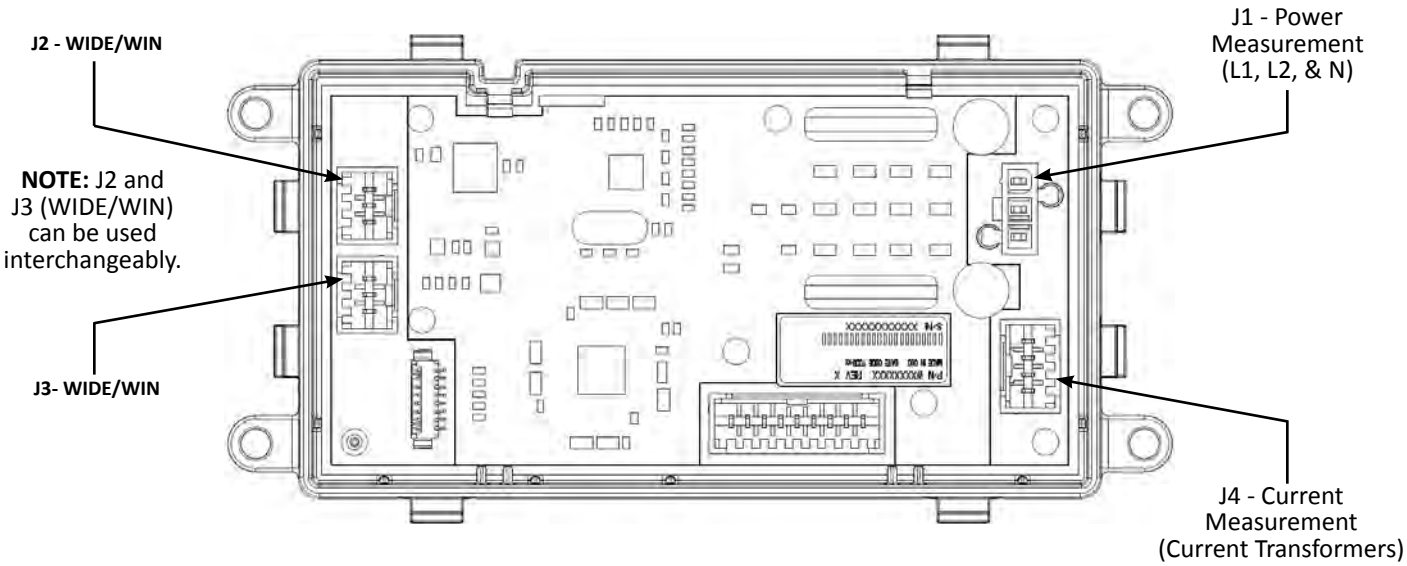


Figure 9- Power Management Board Layout

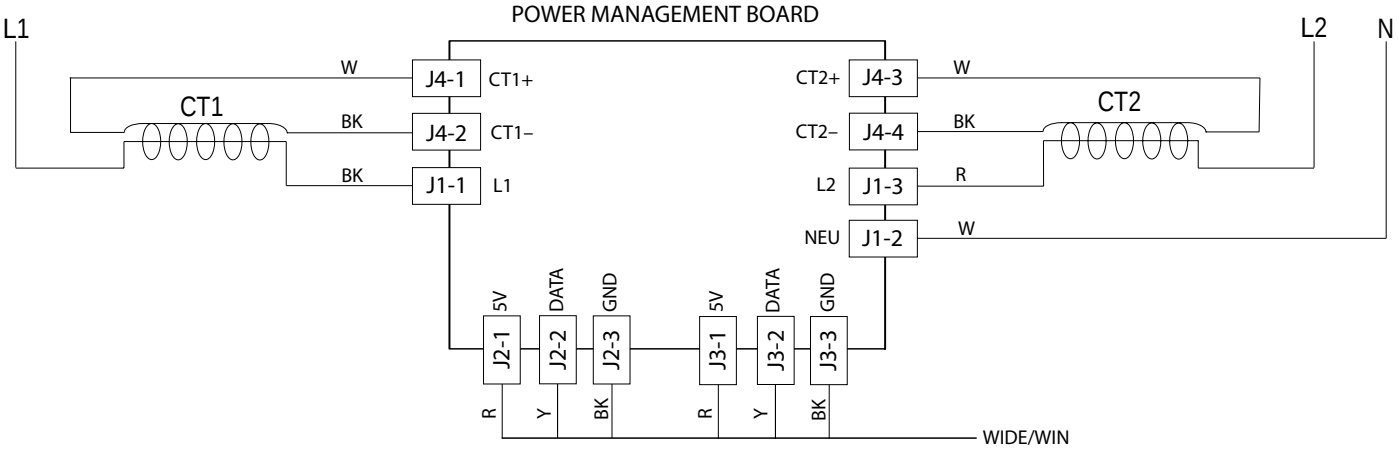


Figure 10 - Power Management Strip Circuit

Section 5: Smart Washer

This section provides product specific information, features, component locations, and wiring diagram for the Smart Washer “Connected Appliance.”

- Model Number
- Location of SAID, Model, & Serial Number Labels
- Smart Washer Component Locations
- WiFi Processor Module
- WiFi Status LED
- Power Management Board
- Smart Washer User Interface (HMI)
- Current Transformer
- Smart Washer Component Tests
- Smart Washer Wiring Diagram
- Smart Washer Features
- Notes

SAID, Model and Serial Numbers

Model Number

Smart Washer Model Number	WTW8700E*

** Represents color & engineering revision*

The Smart Washer SAID, Model, and Serial Numbers are located under the lid as shown in Figure 1.

The only difference between the original model and the Smart Appliance model are the Smart Appliance components; HMI (Human Machine Interface, WiFi Board, Power Management Board, and Current Transformer.

If the Smart Washer is hooked up without Internet service, it will function similar to a non-Smart Appliance clothes washer.

Location of SAID, Model, and Serial Number Labels for Smart Washer

Figure 1 - Location of SAID, Model, and Serial Number Labels

Smart Washer Component Locations

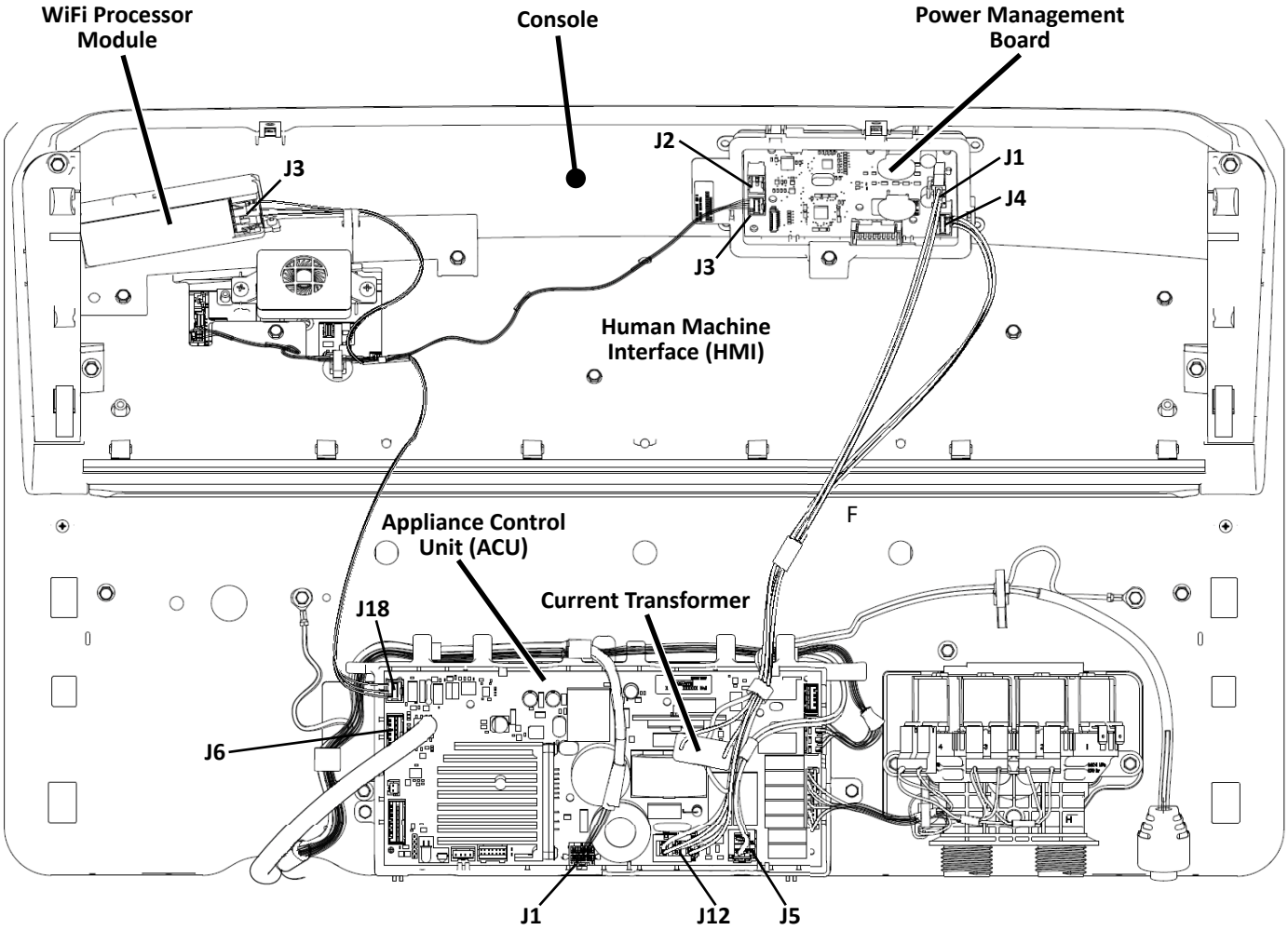


Figure 2 - Smart Washer Parts Location

Smart Washer Components

WiFi Processor Module

The WiFi Module is a common cross-category design that provides the interface between the Smart Appliance and the Internet via the Home Area Network (HAN). In the Smart Washer, the WiFi Module is located under the console to the left of the User Interface (HMI) as viewed from the front (see Figure 3).

Power Management Board

The Power Management Board is a common cross-category design that performs actual power measurement; calculating both real power (kW) as well as real power/time (kW h). In the Smart Washer, the Power Management Board is located under the console behind the User Interface (HMI) as viewed from the front (see Figure 3).

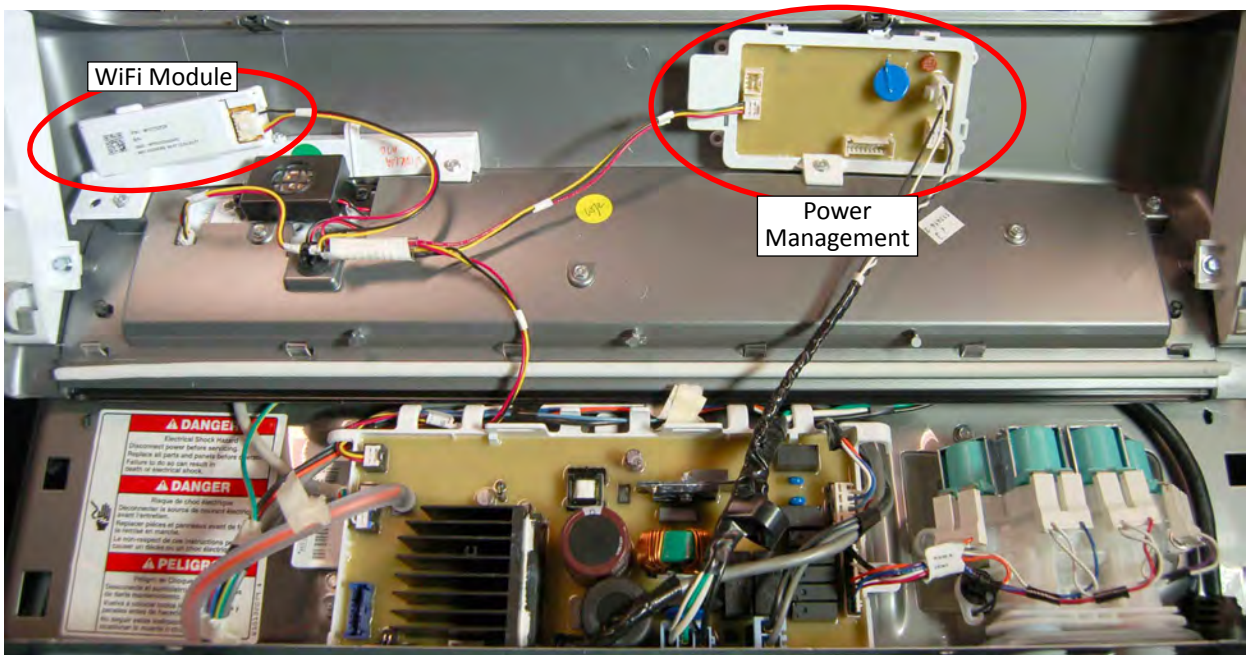


Figure 3 - WiFi & Current Transformer Location

WiFi Status LED

The WiFi Processor Module board has a green and amber LED to indicate WiFi status. The window is located on the side of the WiFi Module techframe as shown in Figure 4.

NOTE: Refer to the Diagnostic Section for troubleshooting the WiFi Status LEDs.

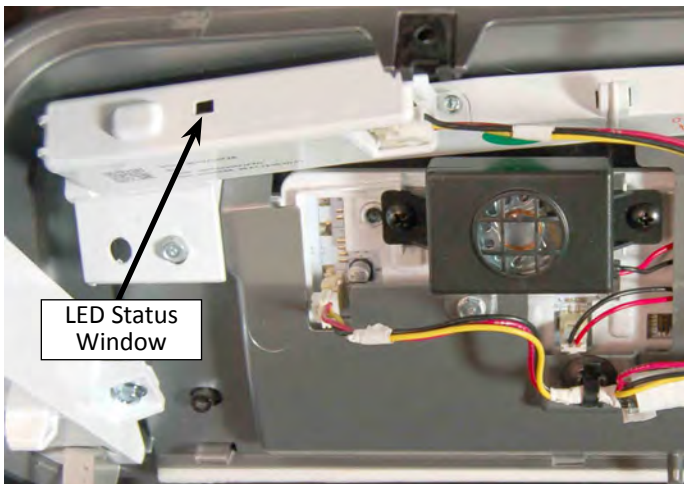


Figure 4 - WiFi Status LED Window

Smart Washer Components (continued)

Smart Washer User Interface (aka HMI)

The CONNECT button (A) is used during the initial connection of the Smart Washer to the home area network (HAN). The Smart Grid Indicators (B) indicate the grid energy demand. The blue indicator will be lit during times of OFF-PEAK energy and the amber indicator will be lit during times of PEAK energy demand. The Connectivity Status Indicators (C) provide status of Remote Start, WiFi, and Smart Delay. The WiFi indicator will be lit when washer is connected to home area network.

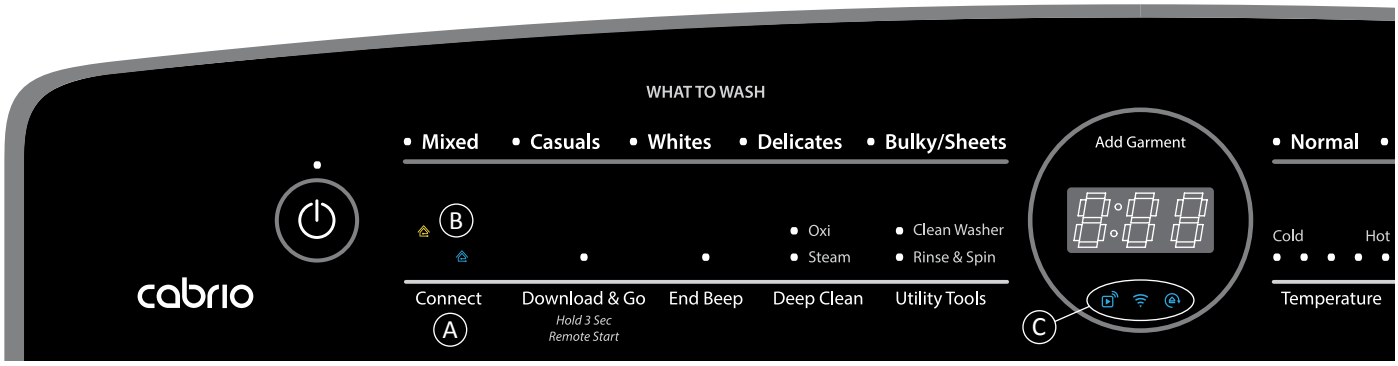


Figure 5 - Smart Washer User Interface

A. Connect Button
- Connect appliance to HAN
- Override Smart Delay

B. Smart Grid Status Indicators
- Amber LED = Peak Energy Demand
- Blue LED = Off Peak Energy Demand

C. Connectivity Indicators
- Remote Start
- WiFi
- Smart Delay

NOTE: For complete details, see “Connectivity Buttons and Indicators in Section 4: “Diagnostics and Troubleshooting.”

Current Transformer

The Current Transformer is a common cross-category design that acts like an amp probe to measure entire machine current so that actual power can be calculated. In the Smart Washer, the current transformer is clamped around the L1 input to the Appliance Control Unit (ACU). See Figure 6 below.

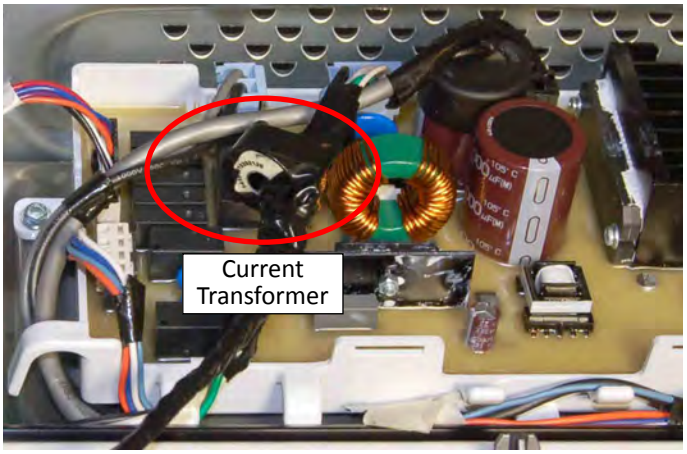


Figure 6 - Current Transformer Location

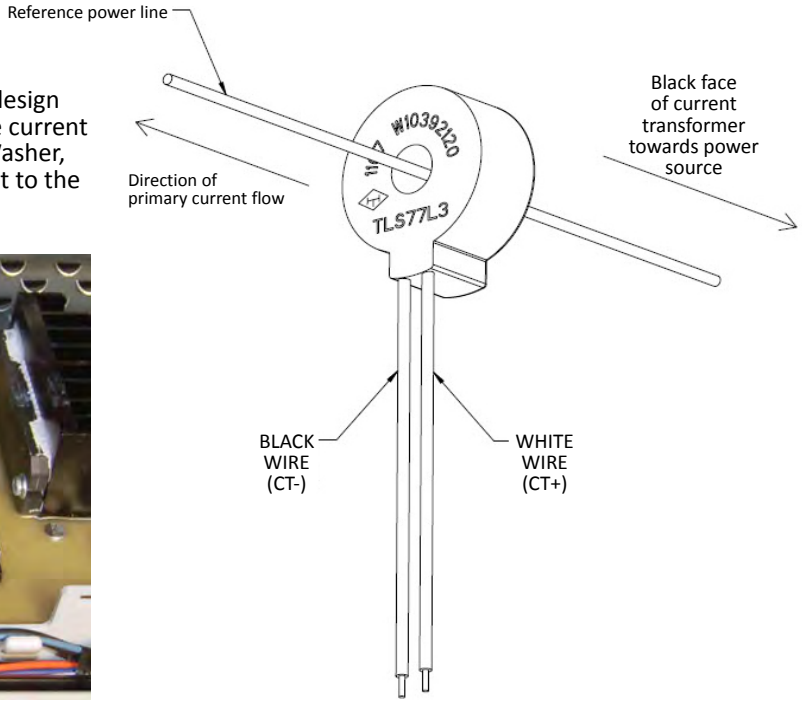


Figure 7 - Current Transformer

Smart Washer Component Tests

Smart Washer Component Tests

Perform the following test procedure to verify software for the WiFi and Power Management boards. If any of the components do not generate a software revision number, check all connections to and from the components. If connections test good, replace the affected component.

ACTIVATING SERVICE DIAGNOSTIC MODE

1. Be sure the washer is in standby mode (plugged in with all indicators off).
2. Select any three (3) buttons (except POWER) and follow the steps below, using the same buttons (remember the buttons and the order that the buttons were pressed):

Within 8 seconds,

- Press and Release the **1st** selected button,
- Press and Release the **2nd** selected button,
- Press and Release the **3rd** selected button;
- Repeat this 3 button sequence **2 more times**.

3. If this test mode has been entered successfully, all indicators on the console will be illuminated for 5 seconds with "*888*" showing in the three-digit display and a tone will sound. If there are no saved fault codes, all indicators on the console will momentarily turn off, and then only the seven segment display will come back on and display "*888*". Upon entry to Service Diagnostic mode, all cycles and options reset to factory default.

NOTE: The Service Diagnostic mode will time out after 5–10 minutes of user inactivity, or shut down if AC power is removed from the washer.

EXITING SERVICE DIAGNOSTIC MODE

Use either of the two methods below to exit diagnostic mode.

- Press and hold the **1st** button used to activate the Service Diagnostic mode for 5 seconds.
- Press the **POWER** button once or twice, depending on diagnostic procedure.

SOFTWARE VERSION DISPLAY

NOTE: The Software Version Display mode will time out after 5–10 minutes of user inactivity and return to standby mode.

Entry Procedure

To enter Software Version Display, press and **hold** the **2nd** button used to activate the Service Diagnostic mode for 5 seconds. Upon entry, all LEDs on the console will turn off, then the display will automatically cycle through the following information:

- UI software revision code (U major revision number, U minor revision number, U test revision number)
- UI cycle GEE software revision code (y major revision number, y minor revision number, y test revision number)
- UI HW GEE file software revision code (H major revision number, H minor revision number, H test revision number)
- UI touch control software revision code (t major revision number, t minor revision number, t test revision number)
- UI touch EEPROM revision code (o major revision number, o minor revision number, o test revision number)
- UI audio software revision code (A major revision number, A minor revision number, A test revision number)
- ACU software revision code (C major revision number, C minor revision number, C test revision number)
- ACU GEE file revision code (h major revision number, h minor revision number, h test revision number)
- Cycle design revision code (d major revision number, d minor revision number, d test revision number)
- **WiFi software file revision code (n major revision number, n minor revision number, n test revision number)**
- **Power measurement module (PMM) software file revision code (p major revision number, p minor revision number, p test revision number)**

Exit Procedure

Pressing the **POWER** button will exit Software Version Display and return washer to standby mode.

Smart Washer Wiring Diagram

Smart Washer Components are circled or shaded.

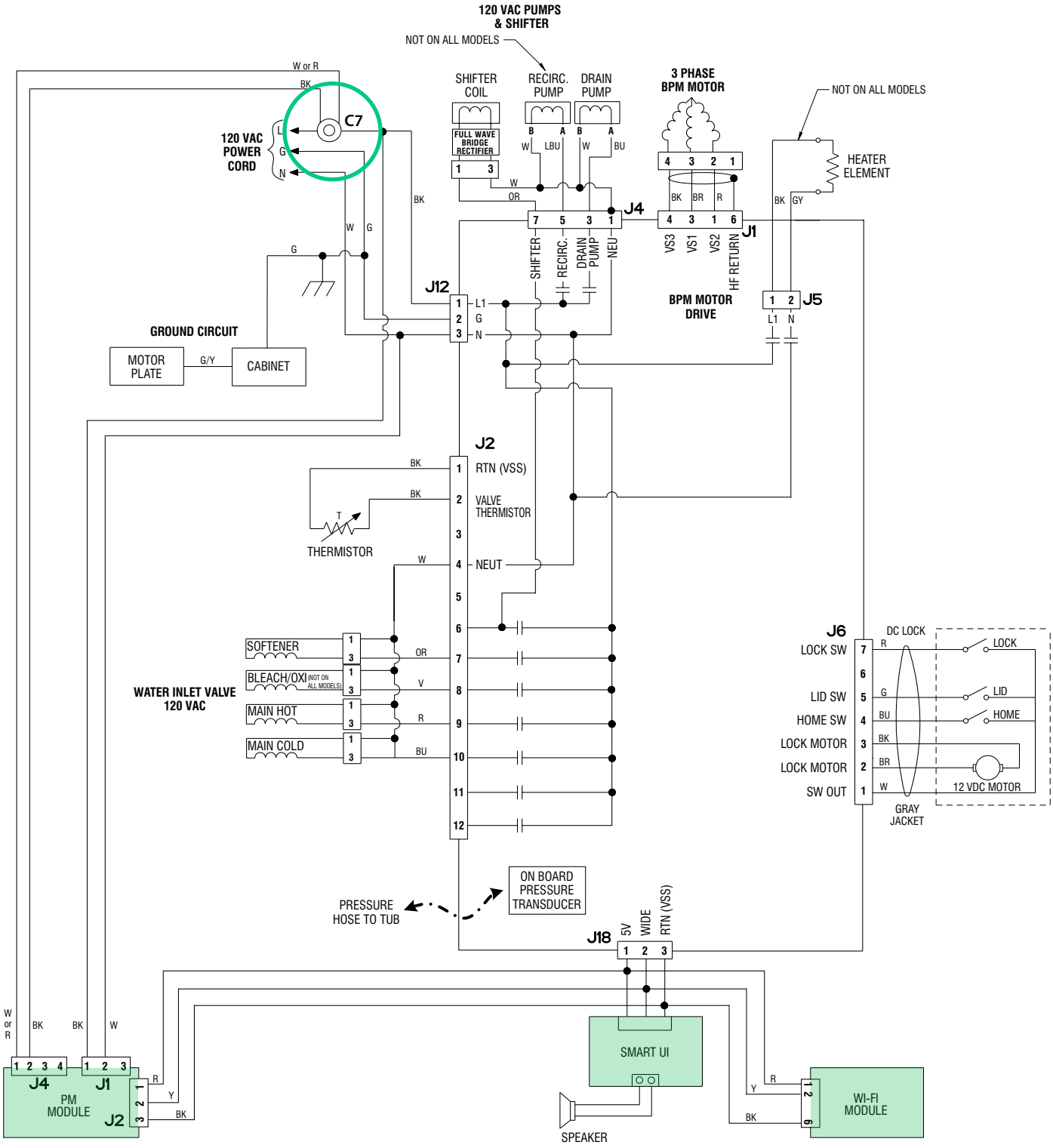
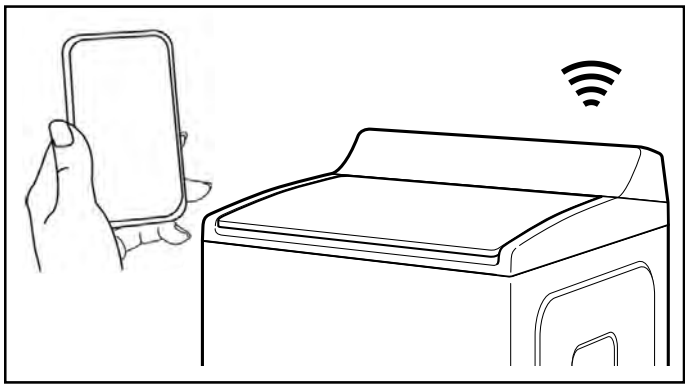


Figure 8 - Smart Washer Wiring Diagram

Smart Washer Features

Connectivity Features

WiFi connectivity allows the Smart Washer to connect to the Internet and interact with the Whirlpool™ app from the consumer's smartphone or mobile device. This connection opens up several Smart options to the consumer: options intended to save them valuable time and energy.



Smart Features

Smart Features allows the consumer to remotely monitor, manage, and maintain their washer. The following is a summary of these additional features that are available for the washer.

Remote Start & Pause

What it does: Allows the consumer to send remote control of their washer to their smartphone or mobile device via the Whirlpool™ app.

What it does for the consumer: The Whirlpool™ app allows the consumer to manage when to start the wash cycle and when their laundry gets done.

Cycle Progress

What it does: Gives the consumer an up-to-the-minute look at their wash cycle progress and remaining cycle time from anywhere.

What it does for the consumer: Relieves the consumer of having to visit the laundry room to check on the status of their wash cycle.

Clothes Clean Notification (Opt-In)

What it does: The consumer's washer will send them a push notification when its current cycle is complete.

What it does for the consumer: Alerts the consumer precisely when the wash is done, so they can get the next load started and move on to other things. If the consumer can't unload the washer right away, or are away from home when a cycle finishes, they can remotely activate Load Fresh cycles to help their clothes stay fresh until they're able to get to them.

Specialty Cycles & My Cycle

What it does: Allows the consumer to browse additional wash cycles available in the Whirlpool™ app and download a cycle to the washer with the Download & Go™ option. The consumer can also create and save their own customized cycles.

What it does for the consumer: Takes the guesswork out of selecting the optimal washer settings for garments and household items that require specialized care.

Quiet Mode

What it does: Lets the consumer turn off the tones and beeps coming from their washer.

What it does for the consumer: Allows the consumer to do laundry without disturbing anyone else in the household.

Issue Alerts (Opt-In)

What it does: Sends the consumer a push notification if something has gone wrong.

What it does for the consumer: Gives the consumer a heads-up, and provides guidance to fix simple issues through videos and step-by-step instructions. If the issue is more complex, the consumer can e-mail or call the service center directly from the Whirlpool™ app.

Smart About Energy

Your Smart Washer can monitor and respond to changing energy demand levels on the power grid.

Smart Delay (Opt-In)

What it does: When energy demand is high, it gives the consumer the option to delay starting a wash cycle until demand levels are lower.

What it does for the consumer: The consumer can feel good about giving a little back to the environment. Some consumers may even see a lower energy bill. If the consumer needs to begin a wash cycle immediately, they can override a Smart Delay. The washer will return to energy monitoring on the next cycle.

Notes

Section 6: Smart Dryer

This section provides product specific information, features, component locations, and wiring diagrams for the Smart Dryer "Connected Appliance."

- Model Number
- Location of SAID, Model, & Serial Number Labels
- Smart Dryer Component Locations
- WiFi Processor Module
- WiFi Status LED
- Power Management Board
- Smart Dryer User Interface (HMI)
- Current Transformer(s)
- Smart Dryer Component Tests
- Smart Dryer Wiring Diagram (Gas)
- Smart Dryer Wiring Diagram (Electric)
- Smart Dryer Features

SAID, Model and Serial Numbers

Model Number

Smart Dryer Model Number	WED/GD8700E*

** Represents color & engineering revision*

The Smart Dryer SAID, Model, and Serial Numbers are located behind the door as shown in Figure 1.

The only difference between the original model and the Smart Appliance model are the Smart Appliance components; HMI (Human Machine Interface, WiFi Board, Power Management Board, and Current Transformer.

If the Smart Dryer is hooked up without Internet service, it will function similar to a non-Smart Appliance clothes dryer.

Location of SAID, Model, and Serial Number Labels for Smart Dryer

Figure 1 - Location of SAID, Model, and Serial Number Labels

Smart Dryer Component Locations

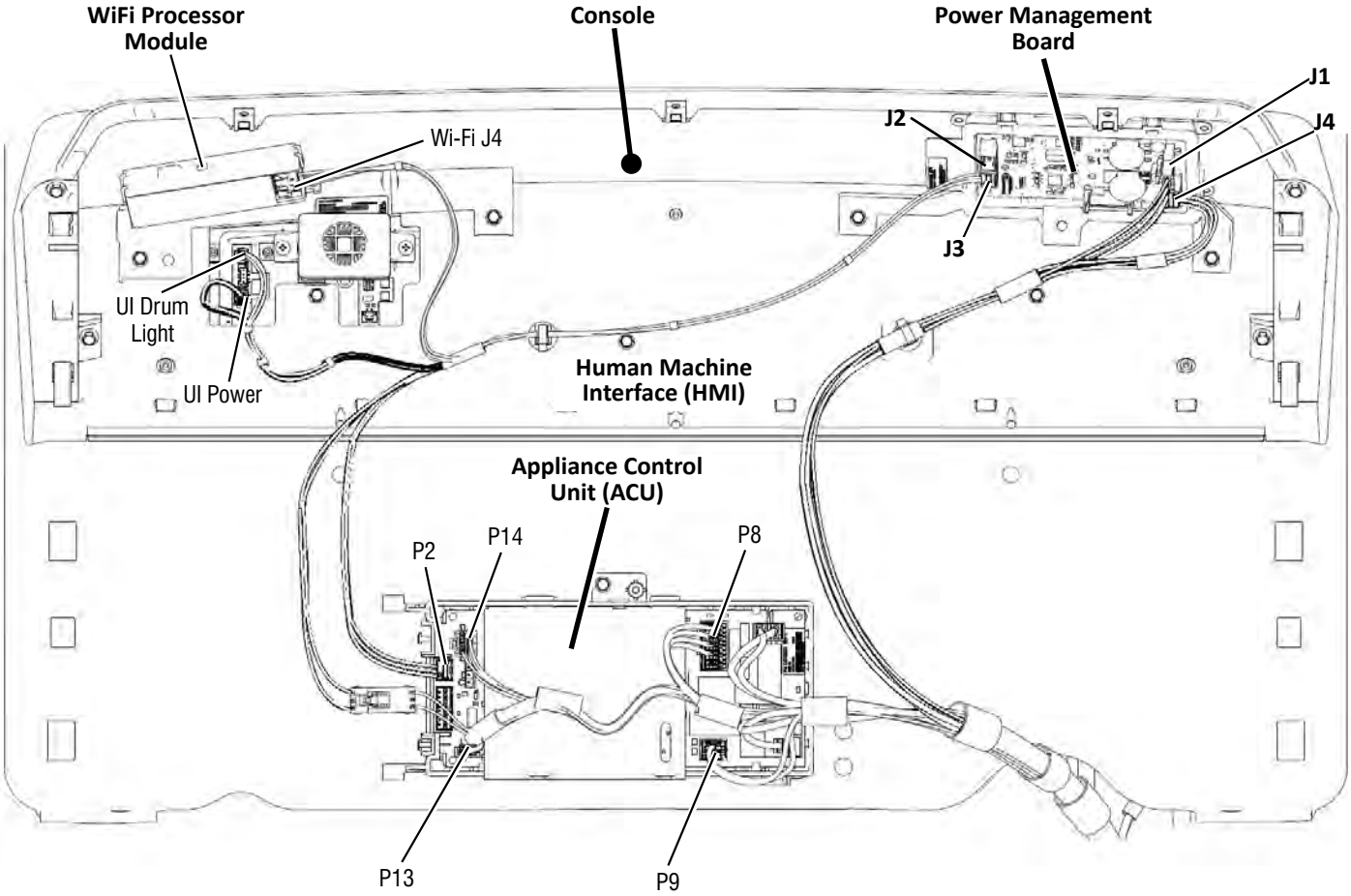


Figure 2 - Smart Dryer Parts Location

Smart Dryer Components

WiFi Processor Module

The WiFi Module is a common cross-category design that provides the interface between the Smart Appliance and the Internet via the Home Area Network (HAN). In the Smart Dryer, the WiFi Module is located under the console to the left of the User Interface (HMI) as viewed from the front (see Figure 3).

Power Management Board

The Power Management Board is a common cross-category design that performs actual power measurement; calculating both real power (kW) as well as real power/time (kW h). In the Smart Dryer, the Power Management Board is located under the console behind the User Interface (HMI) as viewed from the front (see Figure 3).

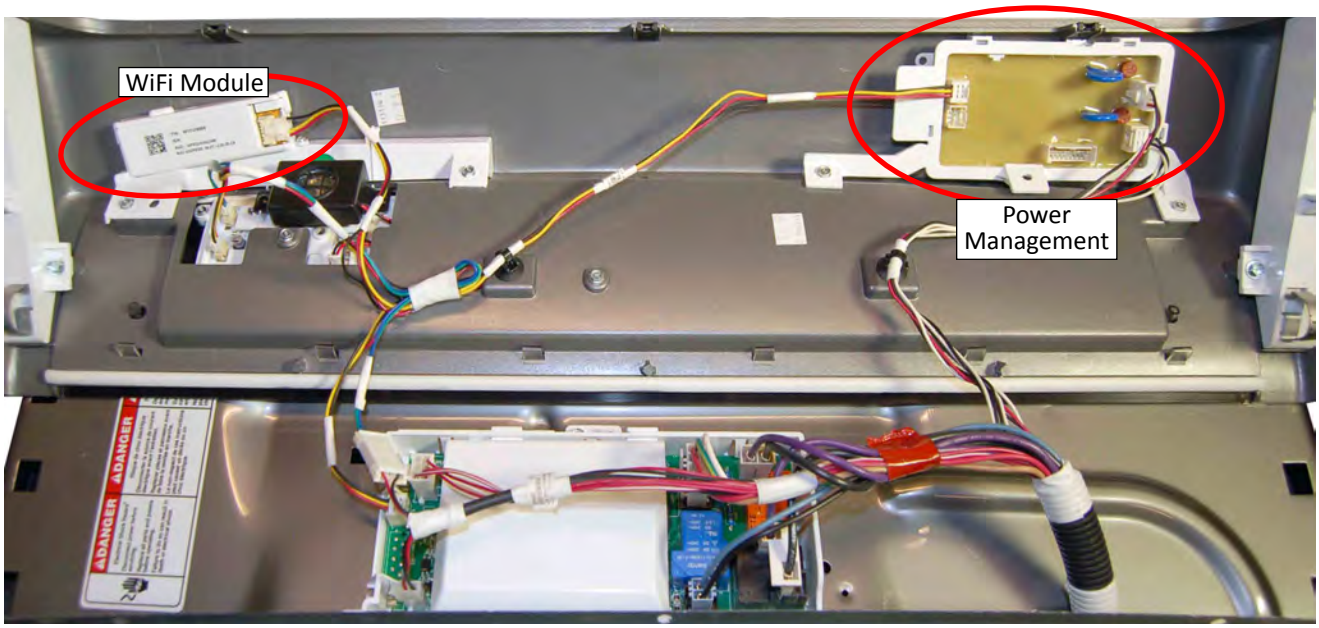


Figure 3 - WiFi & Current Transformer Location

WiFi Status LED

The WiFi Processor Module board has a green and amber LED to indicate WiFi status. The window is located on the side of the WiFi Module techframe as shown in Figure 4.

NOTE: Refer to the Diagnostic Section for troubleshooting the WiFi Status LEDs.

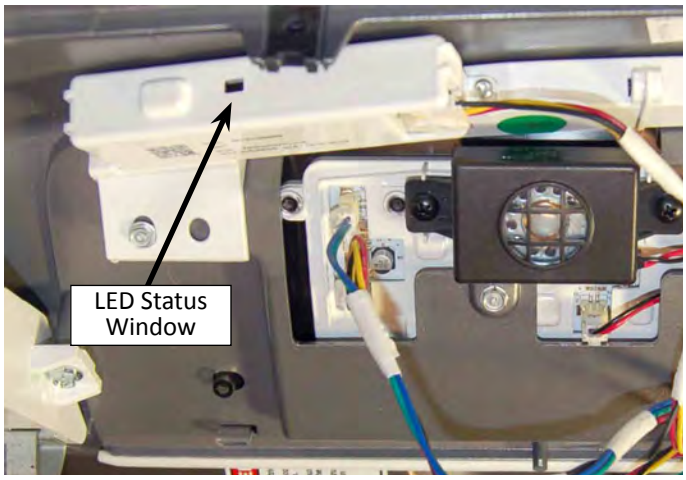


Figure 4 - WiFi Status LED Window

Smart Dryer Components (continued)

Smart Dryer User Interface (aka HMI)

The CONNECT button (A) is used during the initial connection of the Smart Dryer to the home area network (HAN). The Smart Grid Indicators (B) indicate the grid energy demand. The Blue indicator will be lit during times of OFF-PEAK energy and the amber indicator will be lit during times of PEAK energy demand. The Connectivity Status Indicators (C) provide status of Remote Start, WiFi, and Smart Delay. The WiFi indicator will be lit when dryer is connected to home area network (HAN).

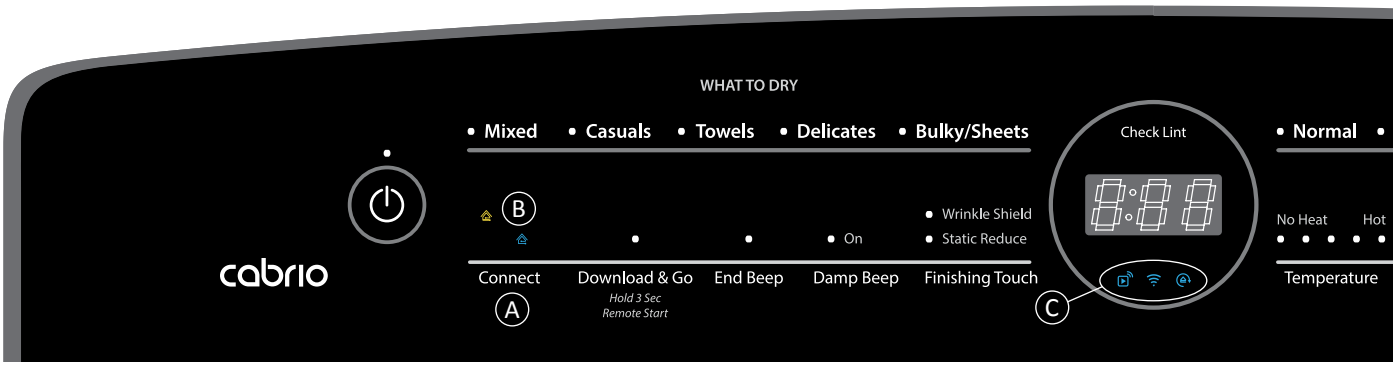


Figure 5 - Smart Dryer User Interface

A. Connect Button
- Connect appliance to HAN
- Override Smart Delay

B. Smart Grid Status Indicators
- Amber LED = Peak Energy Demand
- Blue LED = Off Peak Energy Demand

C. Connectivity Indicators
- Remote Start
- WiFi
- Smart Delay

NOTE: For complete details, see “Connectivity Buttons and Indicators in Section 4: “Diagnostics and Troubleshooting.”

Current Transformer(s)

The Current Transformer is a common cross-category design that acts like an amp probe to measure entire machine current so that actual power can be calculated. In the Smart Dryer, the one (gas dryer) or two (electric dryer) current transformer(s) are located behind the rear panel next to the AC terminal block.

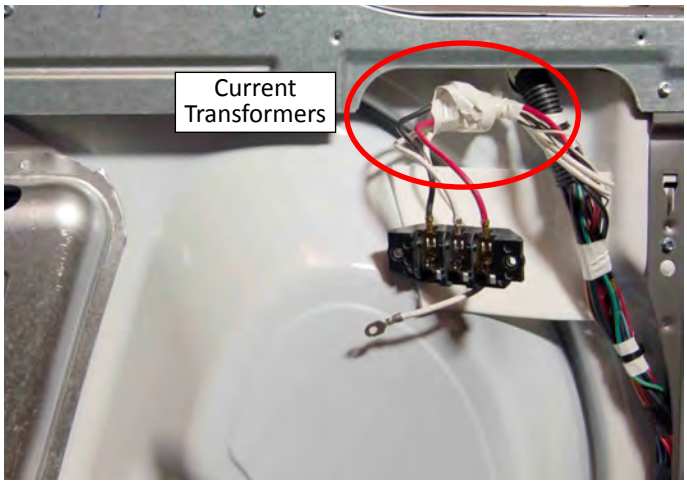


Figure 6 - Current Transformer Location

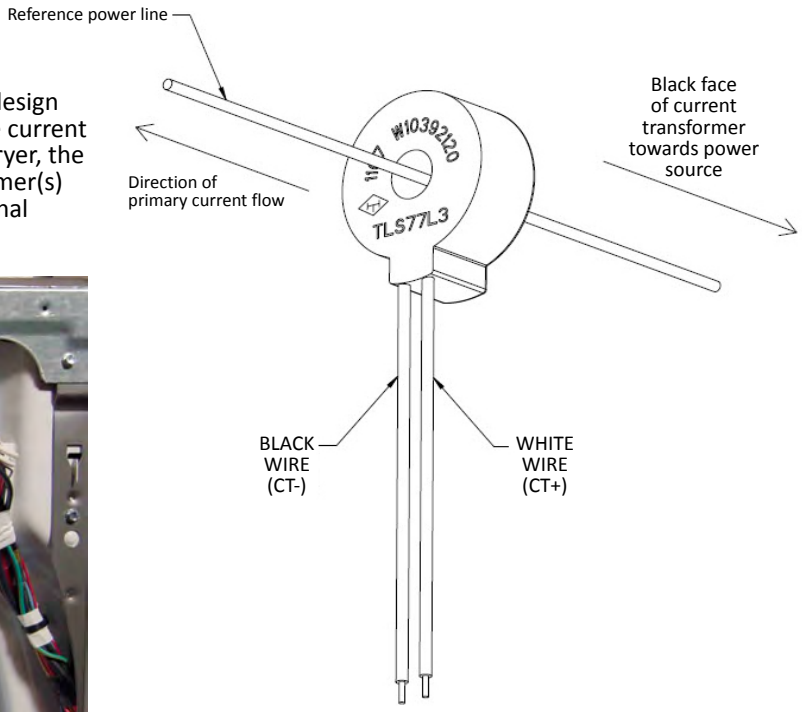


Figure 7 - Current Transformer

Smart Dryer Component Tests

Smart Dryer Component Tests

Perform the following test procedure to verify software for the WiFi and Power Management boards. If any of the components do not generate a software revision number, check all connections to and from the components. If connections test good, replace the affected component.

ACTIVATING SERVICE DIAGNOSTIC MODE

1. Be sure the dryer is in standby mode (plugged in with all indicators off).
2. Select any three (3) buttons (except POWER) and follow the steps below, using the same buttons (remember the buttons and the order that the buttons were pressed):

Within 8 seconds,

- Press and Release the **1st** selected button,
- Press and Release the **2nd** selected button,
- Press and Release the **3rd** selected button;
- Repeat this 3 button sequence **2 more times**.

3. If this test mode has been entered successfully, all indicators on the console will be illuminated for 5 seconds with "*888*" showing in the three-digit display and a tone will sound. If there are no saved fault codes, all indicators on the console will momentarily turn off, and then only the seven segment display will come back on and display "*888*".

NOTE: The Service Diagnostic mode will time out after 10 minutes of user inactivity, or shut down if AC power is removed from the dryer.

EXITING SERVICE DIAGNOSTIC MODE

Use either of the two methods below to exit diagnostic mode.

- Press and hold the **1st** button used to activate the Service Diagnostic mode for 5 seconds.
- Press the **POWER** button once or twice, depending on diagnostic procedure.

SOFTWARE VERSION DISPLAY

NOTE: The Software Version Display mode will time out after 10 minutes of user inactivity and return to standby mode.

Entry Procedure

To enter Software Version Display, press and **hold** the **2nd** button used to activate the Service Diagnostic mode for 5 seconds. Upon entry, the display will automatically cycle through the following information:

- UI software revision code (U: major revision number, U: minor revision number, U: test revision number)
- UI cycle GEE revision code (y: major revision number, y: minor revision number, y: test revision number)
- UI HW GEE revision code (H: major revision number, H: minor revision number, H: test revision number)
- UI touch control software revision code (t: major revision number, t: minor revision number, t: test revision number)
- UI touch parameters revision code (o: major revision number, o: minor revision number, o: test revision number)
- UI audio software revision code (A: major revision number, A: minor revision number, A: test revision number)
- ACU software revision code (C: major revision number, C: minor revision number, C: test revision number)
- ACU GEE revision code (h: major revision number, h: minor revision number, h: test revision number)
- **WI-FI software file revision code (n: major revision number, n: minor revision number, n: test revision number)**
- ACU cycle designer revision code (d: major revision number, d: minor revision number, d: test revision number)
- **Power Measurement Module (PMM) software file revision code (p: major revision number, p: minor revision number, p: test revision number)**

Exit Procedure

Pressing the POWER button will exit Software Version Display and return dryer to standby mode.

Smart Dryer Wiring Diagram (Gas)

Smart Dryer Components are circled or shaded.

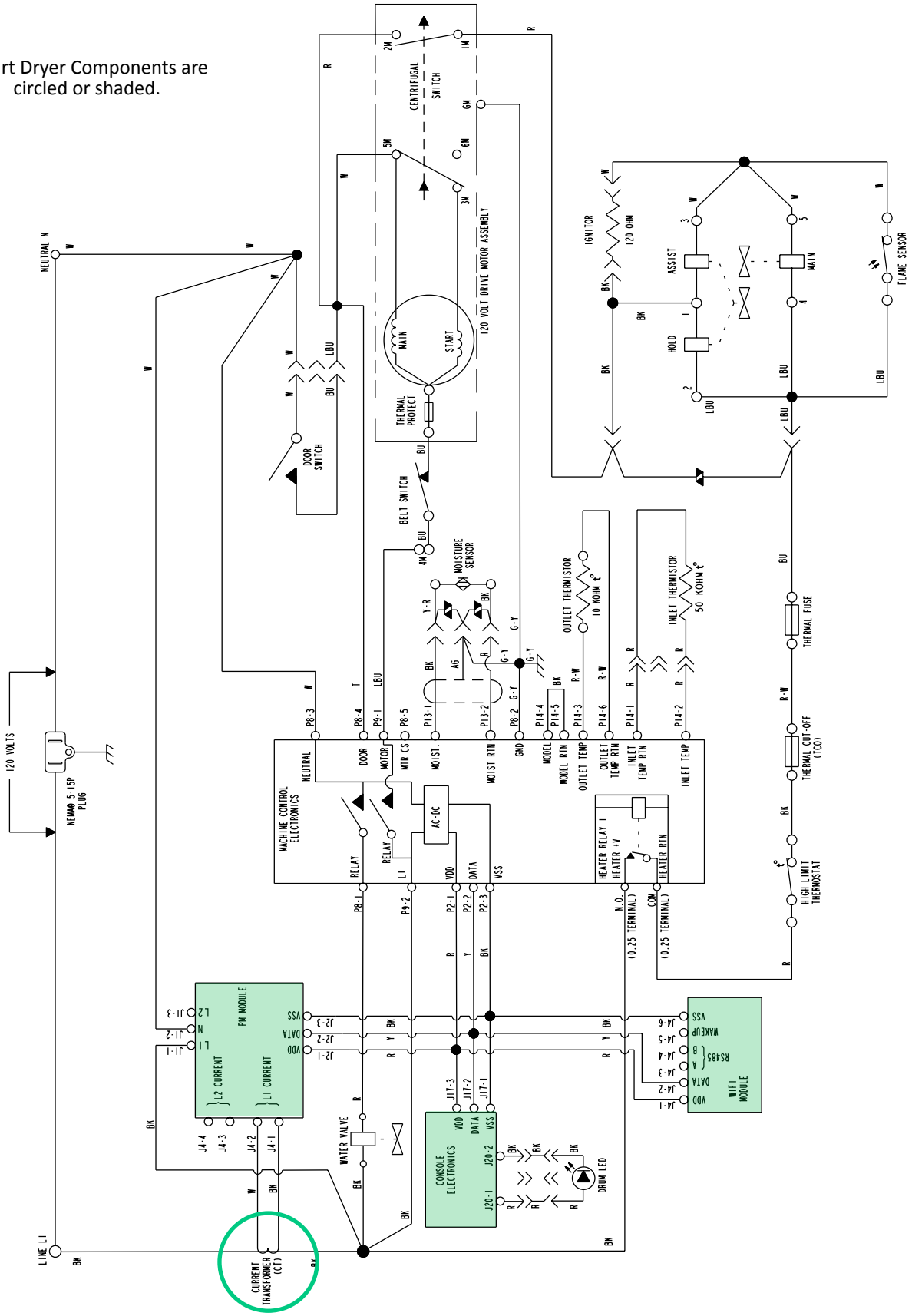
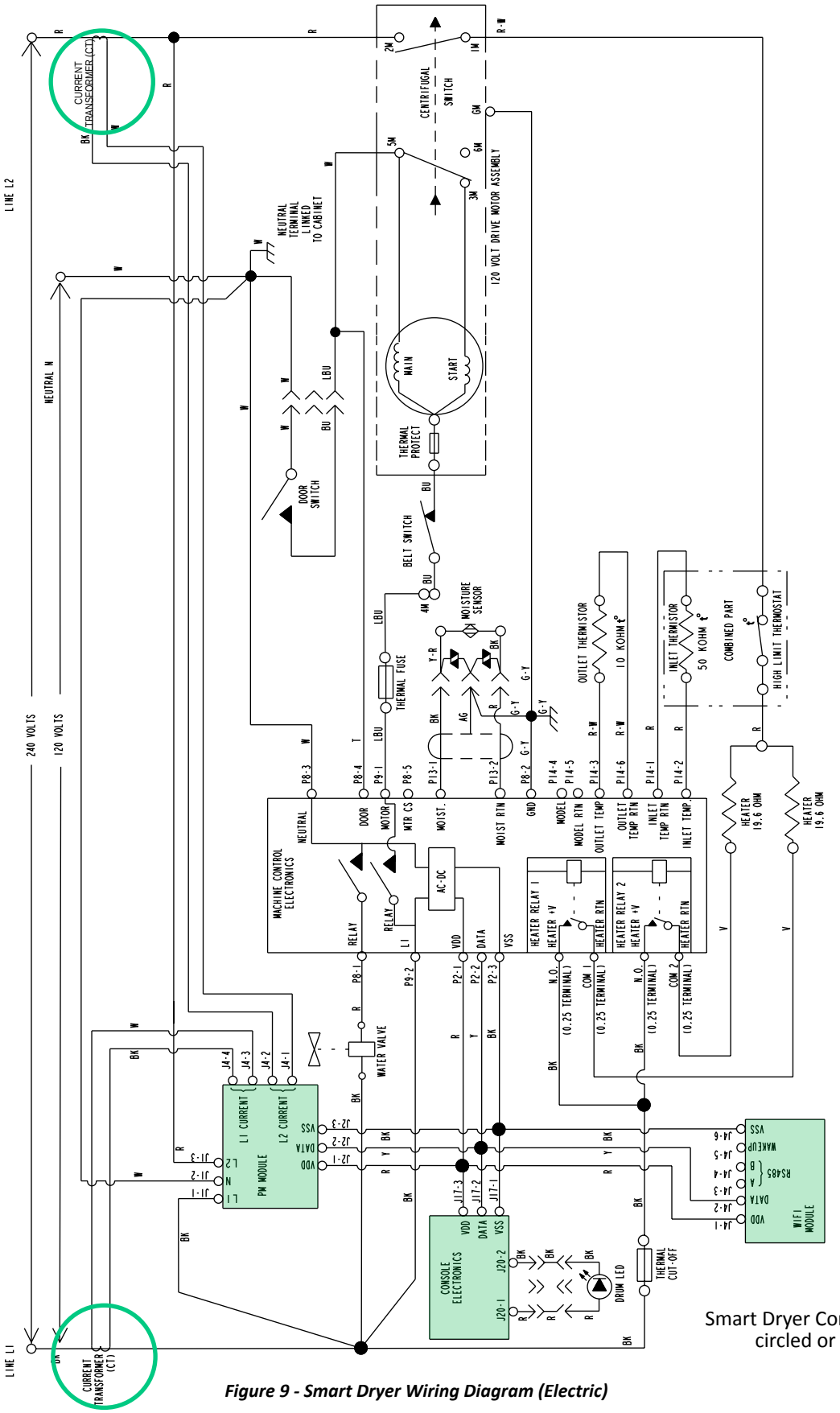


Figure 8 - Smart Dryer Wiring Diagram (Gas)

Smart Dryer Wiring Diagram (Electric)



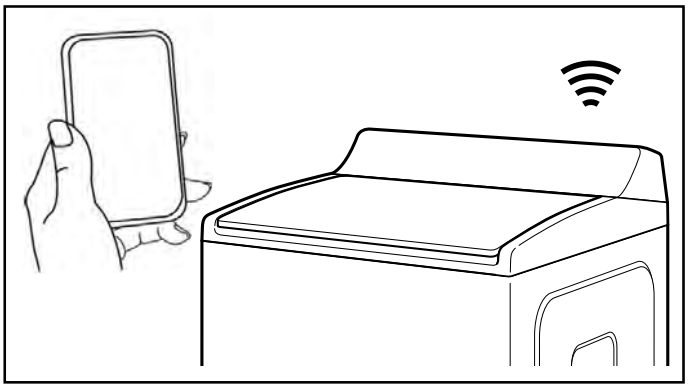
Smart Dryer Components are circled or shaded.

Figure 9 - Smart Dryer Wiring Diagram (Electric)

Smart Dryer Features

Connectivity Features

WiFi connectivity allows the Smart Dryer to connect to the Internet and interact with the Whirlpool™ app from the consumer's smartphone or mobile device. This connection opens up several Smart options to the consumer: options intended to save them valuable time and energy.



Smart Features

Smart Features allows the consumer to remotely monitor, manage, and maintain their dryer. The following is a summary of these additional features that are available for the washer.

Remote Start & Pause

What it does: Allows the consumer to send remote control of their dryer to their smartphone or mobile device via the Whirlpool™ app.

What it does for the consumer: Lets the consumer manage when to start their dryer cycle and when the laundry gets done. Have freshly dried laundry when they're ready for it – not just when they're home to wait.

Cycle Progress

What it does: Gives the consumer an up-to-the-minute look at their dryer cycle progress and remaining cycle time from anywhere.

What it does for the consumer: Relieves the consumer of having to visit the laundry room to check on the status of their dryer cycle.

Clothes Clean Notification (Opt-In)

What it does: The consumer's dryer will send them a push notification when its current cycle is complete.

What it does for the consumer: Alerts the consumer precisely when the dryer is done, so they can get the next load started and move on to other things. If the consumer can't unload the dryer right away, or are away from home when a cycle finishes, they can remotely activate Wrinkle Shield™ cycles to help their clothes stay fresh until they're able to get to them.

Specialty Cycles & My Cycle

What it does: Allows the consumer to browse additional dryer cycles available in the Whirlpool™ app and download a cycle to the dryer with the Download & Go™ option. The consumer can also create and save their own customized cycles.

What it does for the consumer: Takes the guesswork out of selecting the optimal dryer settings for garments and household items that require specialized care.

Quiet Mode

What it does: Lets the consumer turn off the tones and beeps coming from their dryer.

What it does for the consumer: Allows the consumer to do laundry without disturbing anyone else in the household.

Issue Alerts (Opt-In)

What it does: Sends the consumer a push notification if something has gone wrong.

What it does for the consumer: Gives the consumer a heads-up, and provides guidance to fix simple issues through videos and step-by-step instructions. If the issue is more complex, the consumer can e-mail or call the service center directly from the Whirlpool™ app.

Smart About Energy

Your Smart Washer can monitor and respond to changing energy demand levels on the power grid.

Smart Delay (Opt-In)

What it does: When energy demand is high, it gives the consumer the option to delay starting a dryer cycle until demand levels are lower.

What it does for the consumer: The consumer can feel good about giving a little back to the environment. Some consumers may even see a lower energy bill. If the consumer needs to begin a dryer cycle immediately, they can override a Smart Delay. The dryer will return to energy monitoring on the next cycle.

Section 7: Clean-connect Dishwasher

This section provides product specific information, features, component locations, and a wiring diagram for the Clean-connect Dishwasher “Connected Appliance.”

- Model Number
- Location of Model, & Serial Number Labels
- Clean-connect Dishwasher Component Locations
- WiFi Processor Module
- WiFi Status LED
- Clean-connect Dishwasher User Interface (HMI)
- Clean-connect Dishwasher Component Tests
- Clean-connect Dishwasher Wiring Diagram
- Clean-connect Dishwasher Features
- Notes

Model and Serial Numbers

Model Number

Clean-connect Dishwasher Model Number	WDT995SAFM*

** Represents color & engineering revision*

The Clean-connect Dishwasher Model and Serial Numbers are located on the inside edge of the tub as shown in Figure 1. The SAID and MAC address are located on the WiFi enclosure located on the back of the dishwasher as shown in Figure 3 (next page).

The only difference between the original model and the Smart Appliance model are the HMI (Human Machine Interface) and WiFi Board.

If the Clean-connect Dishwasher is hooked up without Internet service, it will function similar to a non-Smart Appliance dishwasher.

Location of Model and Serial Number for Clean-connect Diswasher

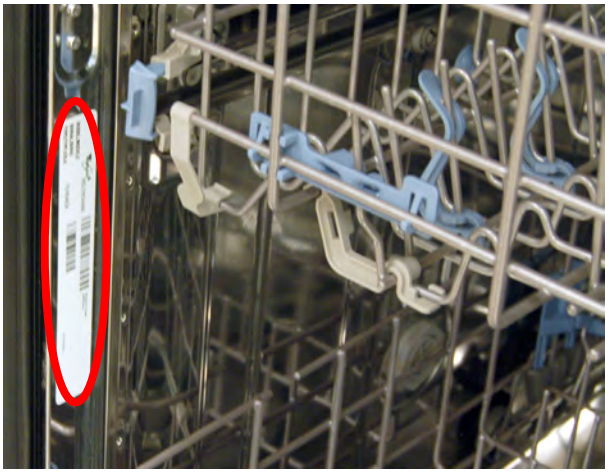
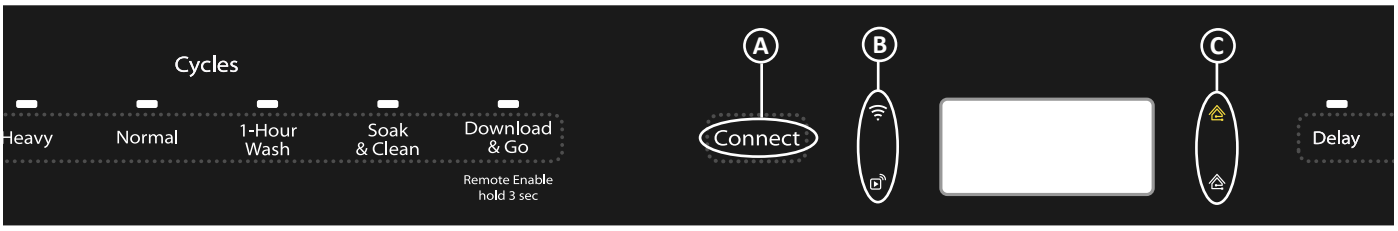


Figure 1 - Location of Model and Serial Number Labels

Clean-connect Dishwasher Components

Clean-connect Dishwasher User Interface (aka HMI)

The CONNECT button (A) is used during the initial connection of the Clean-connect Dishwasher to the home area network (HAN). The Connectivity Status Indicators (B) provide status of Remote Start, WiFi, and Smart Delay. The WiFi indicator will be lit when dishwasher is connected to home area network. The Electronic Rates Indicators (C) indicate the grid energy demand. The blue indicator will be lit during times of **NORMAL ELECTRICITY RATES** and the amber indicator will be lit during times of **PEAK ELECTRICITY RATES**.



A. Connect Button
- Connect appliance to HAN
- Override Smart Delay

B. Connectivity Indicators
- WiFi
- Remote Start

C. Electricity Rates Indicators
- Peak Electricity Rates
- Normal Electricity Rates

Figure 2 - Clean-connect Dishwasher User Interface

NOTE: For complete details, see “Connectivity Buttons and Indicators” in “Section 4: Diagnostics and Troubleshooting.”

Clean-connect Dishwasher Components (continued)

WiFi Processor Module

The WiFi Module is a common cross-category design that provides the interface between the Smart Appliance and the Internet via the Home Area Network (HAN). In the Clean-connect Dishwasher, the WiFi Module is located at the rear, bottom of the wash unit (see Figure 3).

WiFi Status LED

The WiFi Processor Module board has a green and amber LED to indicate WiFi status. There is no window for the LED, but still visible through the plastic enclosure.

NOTE: Refer to the Diagnostic Section for troubleshooting the WiFi Status LEDs.

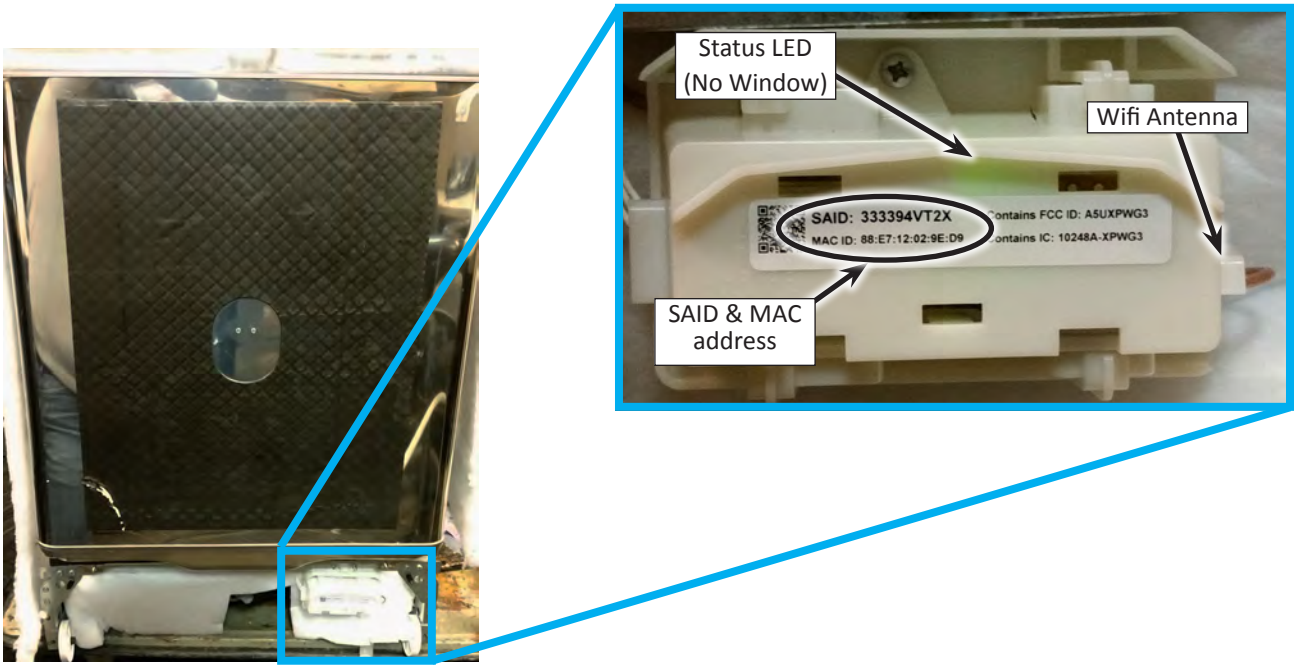


Figure 3 - WiFi Module Location

WiFi Antenna

There is one Wifi antenna on the radio module itself, which provides coverage to the back hemisphere surrounding the dishwasher. There is a second, external antenna (Figure 3), which extends underneath the tub and continues through to the front door. The antenna terminates near the bottom of the UI (Figure 4), which provides coverage to the front hemisphere surrounding the dishwasher.

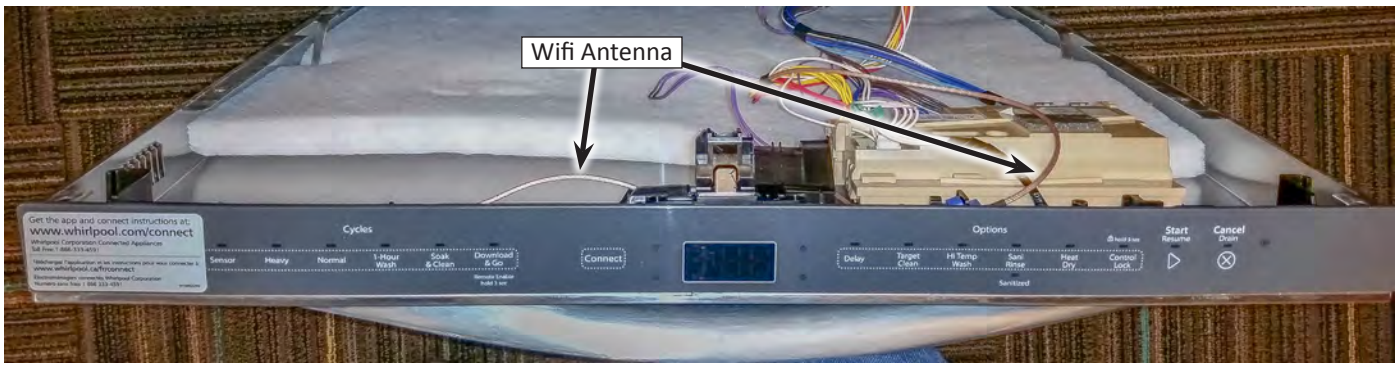


Figure 4 - WiFi Antenna Location

Clean-connect Dishwasher Diagnostics & Wiring Diagram

Clean-connect Dishwasher Component Tests

SERVICE DIAGNOSTIC CYCLE NOTES

1. To invoke the Service Diagnostics cycle, perform the following while in Standby:

- Press any 3 keys in the sequence 1-2-3-1-2-3-1-2-3 with no more than 1 second between key presses.
- The Service Diagnostics cycle will start when the door is closed.
- To rapid advance 1 interval at a time, press START/ RESUME. Rapid advance may skip sensor checks as some checks require 2 complete intervals.

NOTE: The Service Diagnostic cycle will pause when the door is opened and resume automatically upon door closure. No Start/Resume key press is required to resume.

- Invoking Service Diagnostics cycle clears all status and last
- run information from memory and restores defaults. It also
- forces the next cycle to be a Sensor Calibration cycle. Calibration cycle may add additional rinses prior to the final rinse to ensure clear water and then calibrates the OWI during the fill at the beginning of the final rinse.
- Drain and wash motors will pulsate on and off.
- Last Ran cycles and options returned to default.
- Last Ran Delay returns to the default delay setting.
- Operating state returns to Standby upon completing
- or terminating the Service Diagnostics cycle.

2. Press Hi Temp or Cycles key in this interval to clear customer error history.

3. Thermistor (temperature sensor) checks:

- Turn Clean LED on if thermistor is in its normal temperature range of 32°F–167°F (0°C–75°C).
- Turn Sanitized LED on if Fill temperature is above 156°F (69°C).

4. OWI (Optical Soil Sensor) Checks:

- Check OWI sensor for the presence of water during 5 sec pause in interval 16 and turn on Clean LED in interval 14 if water detected.
- Check OWI sensor for presence of bulk soil during interval 12 and turn on Clean LED in interval 11 if bulk soil is detected.

5. Diverter will be on continuously in intervals 14 and 13. In all other intervals, diverter will be on only until it reaches the intended position for that interval.

NOTE: Although the WiFi module will send an error to the ACU during a fault, there is no “check” in diagnostics mode that will display it’s status.

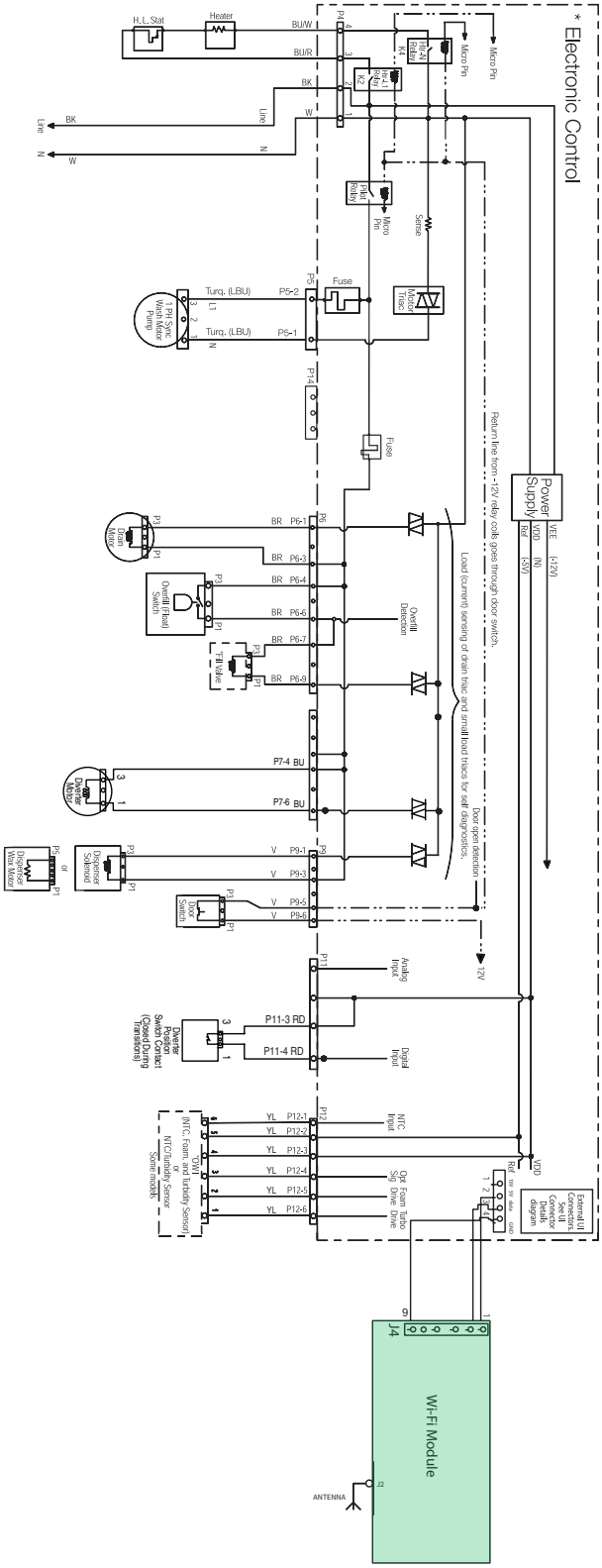
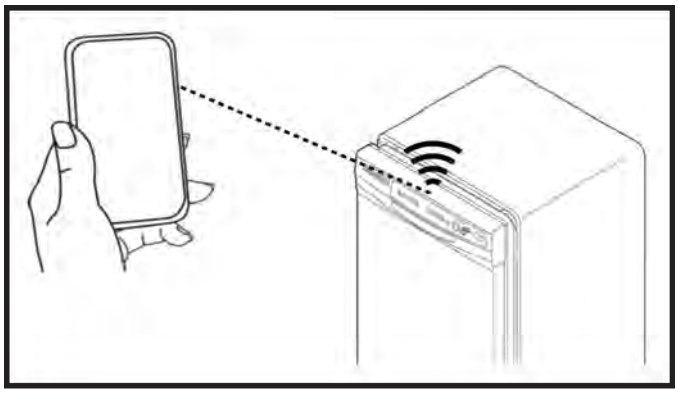


Figure 5 - Clean-connect Dishwasher Wiring Diagram

Clean-connect Dishwasher Features

Connectivity Features

WiFi connectivity allows the Clean-connect Dishwasher to connect to the Internet and interact with the Whirlpool™ app from the consumer's smartphone or mobile device. This connection opens up several Smart options to the consumer: options intended to save them valuable time and energy.



Smart Features

Smart Features allows the consumer to remotely monitor, manage, and maintain their dishwasher. The following is a summary of these additional features that are available for the dishwasher.

Remote Enable

What it does: Allows the consumer to send remote control of their dishwasher to their smartphone or mobile device via the Whirlpool™ app.

What it does for the consumer: The Whirlpool™ app allows the consumer to manage when to start the dishwasher cycle. This allows them to have clean dishes when they are ready for them.

Cycle Progress

What it does: Gives the consumer an up-to-the-minute look at their dishwasher cycle progress.

What it does for the consumer: Relieves the consumer of having to visit the kitchen to check on the status of their dishwasher cycle.

Clean Notification (Opt-In)

What it does: The consumer's dishwasher will send them a push notification when its current cycle is complete.

What it does for the consumer: Alerts the consumer precisely when the wash is done, so they can get the next load started and move on to other things.

Specialty Cycles & My Cycle

What it does: Allows the consumer to browse additional dishwasher cycles available in the Whirlpool™ app and download a cycle to the dishwasher with the Download & Go™ option. The consumer can also create and save their own customized cycles.

What it does for the consumer: Takes the guesswork out of selecting the optimal dishwasher settings for items that require specialized care.

Quiet Mode

What it does: Lets the consumer turn off the tones and beeps coming from their dishwasher.

What it does for the consumer: Allows the consumer to do dishes without disturbing anyone else in the household.

Issue Alerts (Opt-In)

What it does: Sends the consumer a push notification if something has gone wrong.

What it does for the consumer: Gives the consumer a heads-up, and provides guidance to fix simple issues through videos and step-by-step instructions. If the issue is more complex, the consumer can e-mail or call the service center directly from the Whirlpool™ app.

Kosher Consumer Friendly Mode (App only)

What it does: During this mode the controls and lights will not operate and the interior lights will be off.

What it does for you: Automatically sets up the dishwasher for observance of the Sabbath.

Smart About Energy

Your Clean-connect Dishwasher can monitor and respond to changing energy demand levels on the power grid.

Smart Delay (Opt-In when available through local utility company)

What it does: When energy demand is high, it delays starting a wash cycle until demand levels are lower. The consumer can opt-out permanently or override a current Smart Delay.

What it does for the consumer: The consumer can feel good about giving a little back to the environment by reducing power demands on the local electrical grid during peak times. Some consumers may even see a lower energy bill. If the consumer needs to begin a wash cycle immediately, they can override a Smart Delay. The dishwasher will return to energy monitoring on the next cycle.

Notes

Section 8: Smart Refrigerator

This section provides product specific information, features, component locations, and wiring diagrams for the Smart Refigerator “Connected Appliance.”

- Model Number
- Location of SAID, Model, & Serial Number Labels
- Smart Refigerator Component Locations
- WiFi Processor Module
- WiFi Status LED
- The Orion Board connections
- Smart Refigerator User Interface (HMI)
- Smart Refigerator Component Tests
- Smart RefigeratorWiring Diagram
- Smart Refigerator Features

SAID, Model and Serial Numbers

Model Number:

Smart Refrigerator Model Number	WRF995FIF*

The Smart Appliance ID (SAID) from your refrigerator which can be found on a sticker on top of the control housing located on top of the refrigerator.

The only difference between the original model and the Smart Appliance model are the Smart Appliance components; HMI (Human Machine Interface and WiFi Board. If the Smart Refrigerator is hooked up without Internet service, it will function similar to a non-Smart Appliance Refrigerator.

Figure 1 - Location of SAID, Model, and Serial Number Labels

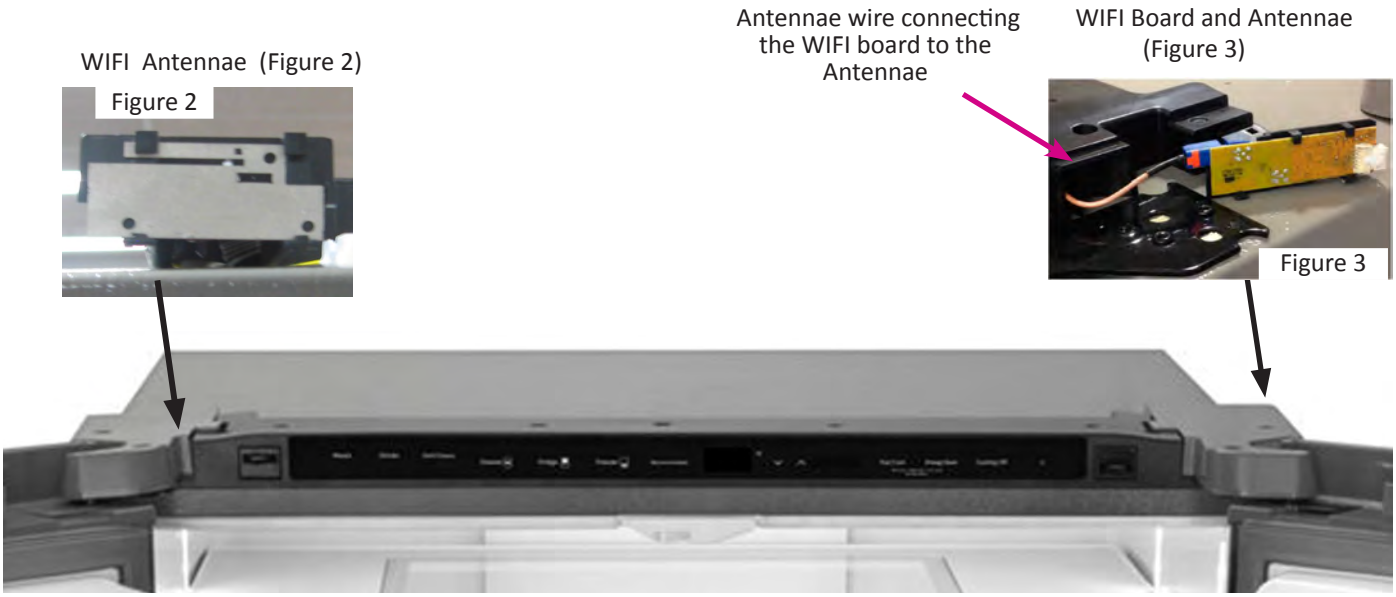
Smart Refrigerator Component Locations

WIFI Board and Antennae removal

1. Remove the right refrigerator door Hinge Cover.
2. Depress the blue tab and disconnect the antennae coupler.
3. Remove the wiring connector from the other end of the board.
4. Depress the two black plastic tabs holding the board at the bottom, and remove.

WIFI BOARD

The WIFI Board is located under the right refrigerator doorhinge cover (FIGURE 3). It receives 12.7 VDC power from theOrion Board.



Smart Refrigerator Component Locations

Smart Refrigeration Components

ORION HIGH VOLTAGE BOARD

The Orion Board (Figure 4) is attached to the left rail in the rear machine compartment. The board receives 115 VAC power and uses it to power loads and distribute power to other control boards.

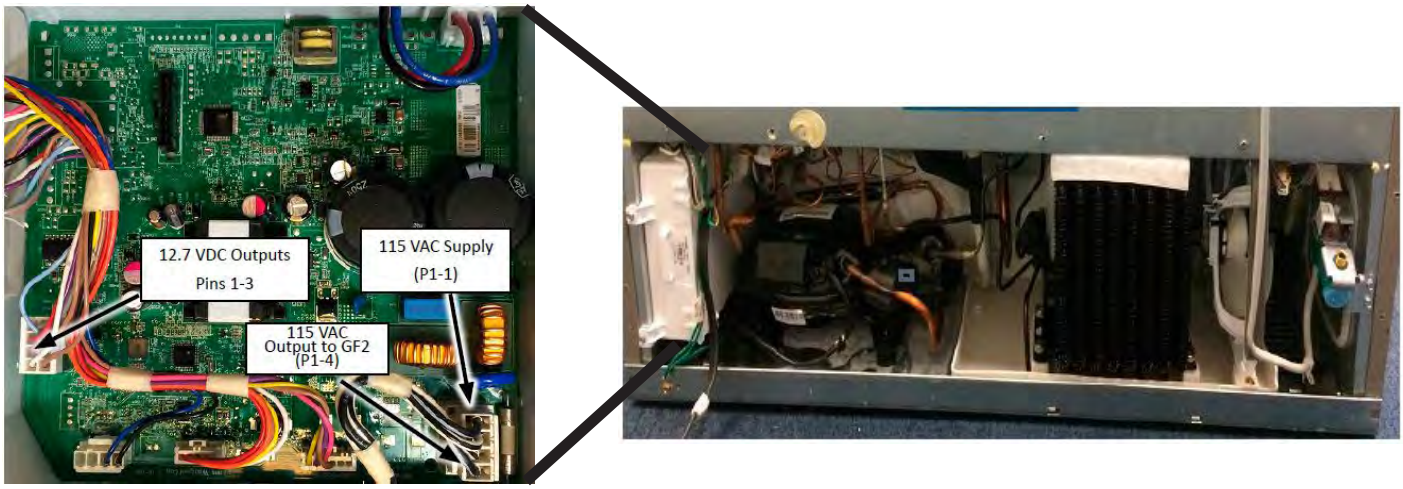
12.7 VDC Distribution

The Orion Board distributes the 12.7 VDC power to:

WIFI Board (Select Models)

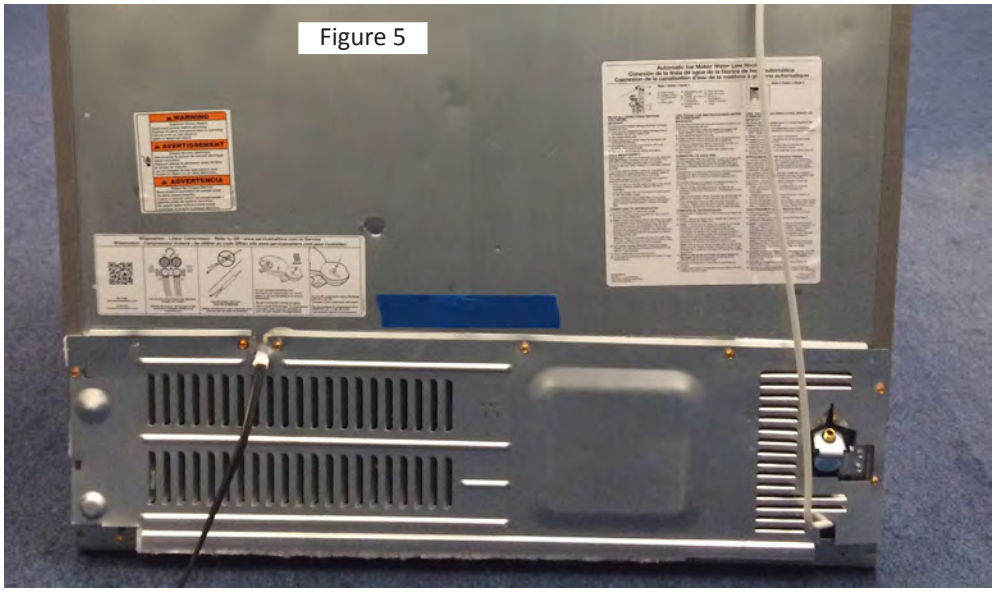
- From - Orion Board, P16-1
- To – WIFI Board, J3-1

Figure 4



Smart Refrigerator Component Locations

To access the rear machine compartment remove the 9 1/4” hex head screws.
Figure 5



Smart Refrigerator Component Locations

Smart Refrigerator Component Tests

Figure 6

- Press and hold the Recommended button. While holding the Recommended button, press and hold the Drawer button simultaneously and hold both buttons for 5 seconds. (Figure 6)
- No countdown will display. When Service Mode is accessed, a chime will play.
- NOTE: Recommended indicator will not light up in the main screen and may be difficult to locate.

House LED

House symbol becomes an amber color only

if the user has "opt-in" or set up the Energy

Service mode requirement	Button on Main UI
Enter Service Key Combination	"—" and "—" temperature buttons pressed for 3 seconds
Enter Key for Navigation	"Icemaker2" button
Increment Key for Navigation	"∧" Up button
Decrement Key for Navigation	" V " Down button
Back Key for Navigation	"Fast Cool" button

Use arrow keys to move between service test modes. Enter test mode by selecting Icemaker2 button.

Once in the Diagnostics mode push and hold the ∧ Up arrow to advance to the first Wi-Fi Service Test.

Service Test - 106 Wi-Fi Link Connection Self Test

- While the test is in progress, the display will show: "00" – Link Testin Progress.
- Following the completion of the Link Test, the display will transition to the following code designation: "01" – Not able to link with AP or WISE.
- "02" – Not able to link with WISE. "03" – Connected to AP and WISE.

Service Test - 108 WI-FI Antenna 1 Signal Strength

- Display the measured value as a percentage of possible range. The possible range to the technician is 0% to 100%.

Service Test - 109 WI-FI Antenna 2 Signal Strength

- Display the measured value as a percentage of possible range. The possible range to the technician is 0% to 100%.

Service Test - 110 Display Current Smart Grid Mode

- Display "0" for Smart Grid Mode not active, "1" for delay ice making Smart Grid Mode active, "2" for delay ice making and cooling Smart Grid Mode active.

Service Test - 111 Smart Grid Mode 1 Counter

- Displays the number of times the unit has entered Smart Grid Mode
  1. Allowable range is from 0 to 999 instances.

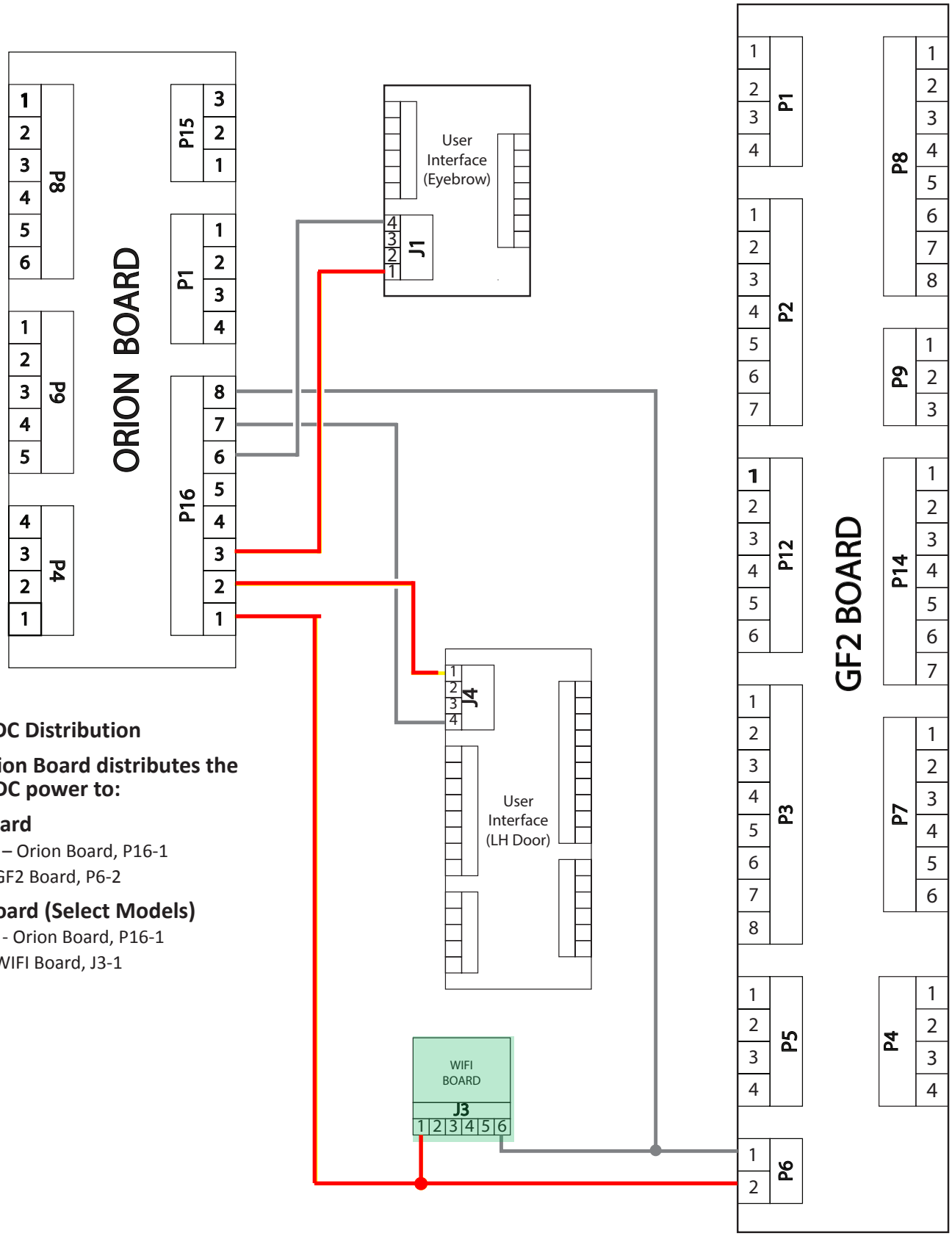
Service Test - 112 Smart Grid Mode 2 Counter

- Displays the number of times the unit has entered Smart Grid Mode
  2. Allowable range is from 0 to 999 instances.

To Exit Service Diagnostics Mode:

- Set to 0, you will exit the test mode.
- If in a service test mode, back out using Fast Cool button. Next press and hold the Recommend button. While holding the Recommended button press, and hold the Drawer button, hold both buttons for 5 seconds.

Smart Refirgerator Wiring Diagram



12.7 VDC Distribution

The Orion Board distributes the 12.7 VDC power to:

GF2 Board

- From – Orion Board, P16-1
- To – GF2 Board, P6-2

WIFI Board (Select Models)

- From - Orion Board, P16-1
- To – WIFI Board, J3-1

Figure 8 - Smart Refrigerator Wiring Diagram

Smart Refirgerator Features

Connectivity Features

WiFi connectivity allows the Smart Dryer to connect to the Internet and interact with the Whirlpool™ app from the consumer's smartphone or mobile device. This connection opens up several Smart options to the consumer: options intended to save them valuable time and energy.

Smart Features

Smart Features help make your everyday a little more efficient by letting you remotely monitor, manage, and maintain your refrigerator.

Remote Temperature Control

What it does: Allows you to control the temperature of your refrigerator remotely from your mobile device via the Whirlpool® App.

Whirlpool® App.

What it does for you: Lets you control temperatures in your refrigerator, freezer, and temp-controlled pantry remotely—notjust when you are standing in front of it.

Water & Air Filter Status

What it does: Gives you a look at the life remaining for your airand water filters before replacement is needed. What it does for you: Helps you be more efficient in planning for ordering and replacing filters.

Door Open Alert

What it does: Sends you a notification when one of the doors of the refrigerator has been left open. What it does for you: Alerts you to Door Ajar status so you can close the door(s) or call home to ask someone else to close the door before an over-temp situation arises.

Power Outage

What it does: Sends you a notification when power to your refrigerator goes out, returns, or highest temperature is reached in the refrigerator and freezer compartments. What it does for you: Alerts you to power status and duration of outage to provide input regarding disposition of refrigerator/freezer contents.

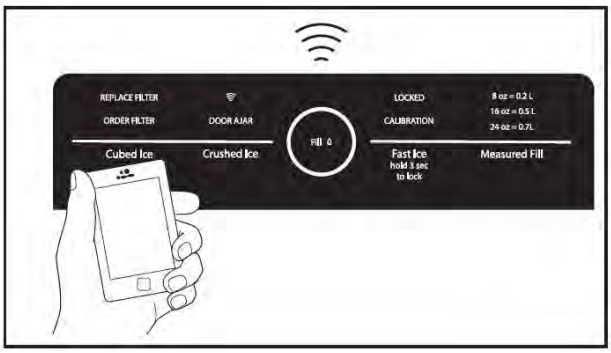
Fast Ice/Fast Cool Control

What it does: Allows you to control your refrigerator remotely from your mobile device via the Whirlpool® App.

What it does for you: Lets you turn on/off Fast Ice and Fast Cool options remotely to increase ice production or make temperatures colder in refrigerator and freezer in anticipation of loading in newly purchased grocery items.

GET STARTED

Go to www.whirlpool.com/connect and follow the instructions to get connected. Check the Whirlpool® App frequently for additional information and features.Requires Wi-Fi and account creation. Whirlpool® App features and functionality subject to change. Subject to Terms of Service available at: www.whirlpool.com/connect. Data rates may apply.



Enable Wi-Fi

Touch and hold CRUSHED ICE and CUBED ICE together for 3 seconds to enable Wi-Fi.

House LED

House symbol becomes an amber color only if the user has "opt-in" or set up the Energy Advisor.

PRODUCT SPECIFICATIONS & WARRANTY INFORMATION SOURCES

IN THE UNITED STATES:

FOR PRODUCT SPECIFICATIONS AND WARRANTY INFORMATION CALL:

PHONE: 1-800-253-1301

FOR TECHNICAL ASSISTANCE WHILE AT THE CUSTOMER'S HOME CALL:

THE TECHNICAL ASSISTANCE LINE: 1-800-832-7174

FOR CONNECTED ASSISTANCE WHILE AT THE CUSTOMER'S HOME CALL:

THE CONNECTED APPLIANCE HELP LINE: 1-866-333-4591

HAVE YOUR STORE NUMBER READY TO IDENTIFY YOU AS AN AUTHORIZED IN-HOME SERVICE PROFESSIONAL

FOR LITERATURE ORDERS (CUSTOMER EXPERIENCE CENTER):

PHONE: 1-800-851-4605

FOR TECHNICAL INFORMATION AND SERVICE POINTERS:

www.servicematters.com

DOWNLOAD WHILRPOOL™ APP & REGISTER APPLIANCES:

www.whirlpool.com/connect

IN CANADA:

FOR PRODUCT SPECIFICATIONS AND WARRANTY INFORMATION CALL

PHONE: 1-866-930-3712

FOR TECHNICAL ASSISTANCE WHILE AT THE CUSTOMER'S HOME CALL:

THE TECHNICAL ASSISTANCE LINE: 1-800-488-4791

HAVE YOUR STORE NUMBER READY TO IDENTIFY YOU AS AN AUTHORIZED IN-HOME SERVICE PROFESSIONAL

Connected Smart Appliances
Third Generation

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