



# Wireless Configuration Tool



## Operator's Instruction Manual

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# 1.0 Introduction

## 1.1 Description

The Wireless Configuration Tool is a custom tablet designed to configure, program and upgrade Detcon's 300 series and 320 series wireless transceivers. These Wireless Transceivers (WTs) enable wireless communication between controllers, sensors and alarm stations of any gas detection system. The Wireless Configuration Tool (WCT) is used to change the wireless channel on a collection of WTs in a 320 series gas detection system and to configure and program a 300 series wireless network. The WCT is also used to upgrade the firmware of WTs as new versions become available so that gas detection systems remain current and up to date while maintaining the same hardware.

The WCT is a lightweight and powerfully equipped device with a 10.1" touch panel widescreen LCD for display and user input. It interfaces with a USB wireless radio of the same type that is installed in the WTs so it can communicate with and configure them. It can be powered by 100-240VAC with the supplied AC adapter or operate off of the internal rechargeable battery for up to 8 hours on a single charge.



**Figure 1** Wireless Configuration Tool

The radios used for the WCT and the WTs are Radio Frequency Engines (RFE) based upon the IEEE 802.15.4 standard. For these radios to communicate with each other they must be set to the same RF Channel and Network ID. The radios can be set to one of 16 RF channels, 0–15 and corresponding Network IDs 0-15. The RF channel and Network ID are automatically set to the same value to avoid confusion. Consequently up to 16 separate wireless systems can be located in the same general area.

## 2.0 Power and I/O Connections

### 2.1 Powering the WCT

The WCT can be powered by 100-240VAC with the supplied AC adapter or operate off of the internal rechargeable battery for up to 8 hours on a single charge for maximum portability. The battery's charging technology provides a 4:1 work-to-charge ratio that ensures rapid charging for reduced downtime. It requires only a two hour charge time for a full charge. A visible battery charge gauge is also located on the front of the device to indicate the remaining charge level with the push of the button located next to the gauge.

To start using the WCT, power must first be applied using the power button located on its left side. This will initialize the configuration tool and bring up the main menu. To power off, select the *SHUTDOWN* button which brings up a final confirmation menu where *SHUTDOWN* or *REBOOT* can be selected. Select *SHUTDOWN* again to complete the power off procedure.

## 2.2 USB SNAP Stick

The SNAP Stick is a compact USB device which enables the WCT to communicate with the wireless transceivers. This device is about the size of a thumb drive and is designed to act as a bridge between a wireless network and the WCT via its built-in wireless radio. The SNAP Stick connects to the WCT's USB port located on its left side.



**Figure 2** USB SNAP Stick

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**NOTE:** The SNAP Stick is only needed for the WCT's *Discovery*, *Remote Display* and *Wireless Network* sections. For all other sections, the SNAP Stick is not required and may be removed if, for example, a USB DRIVE needs to be installed for file management (See section 3.11).

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## 3.0 Operation and Configuration

Upon power up, the WCT offers two configuration tool selections: “Wireless 300 Systems” or “Wireless 320 Systems”.



**Figure 3** Configuration Tool Selection Screen

### 3.1 Wireless 320 Systems

Wireless 320 systems use Detcon's 320 series transceivers which take Modbus communication between serial and analog devices to a wireless platform. These transceivers are available in different models such as the RXT-320, Wireless X40 controllers, and Sentinel CXT-320 Controllers and can communicate with each other so long as they reside on the same RF Channel and Network ID. As with normal Modbus™ operation, there can only be one transceiver Modbus™ master addressed at F0h. All other devices are considered as slave devices and each slave device must have a unique Modbus™ address which determines the transceiver's

function (Slave, Alarm Station, Repeater, etc.). The Modbus™ master transceiver is responsible for broadcasting requests and receiving slave device responses. Slave device transceivers receive these broadcasts and pass the Modbus™ information on to the slave devices attached via their local Modbus™ interface. When a response is generated by the slave device, it sends it back to its transceiver through the Modbus™ interface. The slave transceiver then broadcasts that information back to the master transceiver.

RXT-320 model transceivers provide for the following features/connectivity:

- **Wireless Radio:** IEEE 802.15.4, Mesh Topology, 16 RF channels, DSSS encoding, 2.4GHz
- **Modbus™ Interface:** Master or Slave connection for up to 32 Modbus™ devices on the network
- **4-20mA Inputs:** Two inputs available to connect two 4-20mA sensors/devices
- **Alarm Outputs:** 4 low current outputs capable of driving relays for audible/visual alarms
- **Battery Operation:** Low Power Sleep and battery life available from Detcon Smart Battery Pack
- **Addressable:** For Modbus™ addressing to determine its function (set through term board rotary switches for standard RXTs or built-in rotary switches for black box models)
- **Multiple Modes:** Operational mode based on address assignment (Master, Serial Slave, Analog Slave, Alarm Station, Repeater)

**Table 1** RXT-320 Addressing and Operational Modes

<b>Modbus Address (hex)</b>	<b>RXT-320 Function</b>
F0	Master
01-7F	Slave (Serial/Analog)
80-8F	Alarm Station
00	Repeater Mode

CXT-320 model transceivers provide for the following features/connectivity:

- **Wireless Radio:** IEEE 802.15.4, Mesh Topology, 16 RF channels, DSSS encoding, 2.4GHz
- **Integrated Sensor:** Compact design all-in-one transceiver and sensor package
- **Battery Operation:** Low Power Sleep and battery life available from Detcon Smart Battery Pack or voltage levels from Non-rechargeable Battery Pack
- **Addressable:** For Modbus™ slave addressing 01h-7Fh (set through magnetic switches)

The 320 mode of the WCT allows 320 series transceivers to be found on an RF channel selected by the user. The tool can then be used to move found transceivers to a different channel or to move transceivers from a different channel to the current selected channel. It also allows for 320 series transceivers to be upgraded should new firmware become available or to convert a 320 series transceiver into a 300 series transceiver. Additionally, the WCT has a link quality feature that determines the signal strength between any two WTs in the system and it has an RF analyzer feature that monitors wireless traffic activity from RF radios on all wireless channels (0-15) in order to determine an optimal channel to deploy a new wireless network.

To configure a collection of WTs to a particular network (RF Channel/Network ID) the user will generally perform the following tasks:

- Identify WTs to be set up on a single network using their serial numbers (MAC addresses).
- Identify an optimal channel to place all WTs.
- Move WTs to selected channel.
- Move any unwanted WTs to a different channel.

Upon completion, only the selected WTs should be in the new wireless network. If WTs have issues communicating on the new network due to interference, the procedure can be performed again and WTs can be placed on a different RF Channel/Network ID.

To identify the WTs as mentioned above, each Detcon transceiver has been engraved/labeled with a unique serial number (MAC address) located on the WTs enclosure. This serial number consists of 6 hex characters in the form of XX.XX.XX where the X can be characters 0-9, A-F. When the WCT searches for wireless radios on a given RF Channel, this unique number will appear on the screen as each one is found. In this way, the user can identify precisely which WTs are on a network.

## 3.2 Wireless 300 Systems

Wireless 300 systems use Detcon's 300 series transceivers which incorporate SmartWireless technology. From a hardware perspective, they are identical to 320 series transceivers, but it's in their function through the use of SmartWireless technology that they are completely different platforms and are not compatible with each other. In a 300 system, the WCT is used to build a configuration file of the complete system. This file is then wirelessly loaded onto each 300 transceiver so that each transceiver has a complete map of the system. This allows every 300 transceiver to operate independently in processing system wide alarm conditions. The 300 transceiver collects data from its attached device and processes the data for alarm conditions and stores it locally. It operates essentially like a controller for its own device. To gather the information from across the network, one of the 300 transceivers is automatically chosen to become the Master of all the other 300 transceivers in the network and will poll each 300 transceiver on the network. Upon each poll a different 300 transceiver is queried and will transmit its data stored locally to the rest of the 300 transceivers on the network. This continues until all transceivers are polled across the network. As part of the polling process the Master transceiver will also transmit its own data to the network at the appropriate time.

The Master transceiver can be any one of the 300 transceivers in the network and is "elected" based on the priority automatically assigned to it during the build of the configuration file. The device hierarchy priority assignments from highest to lowest are HMIs, Alarm Stations, Sensors and Repeaters. If a Master transceiver fails or goes offline, this will be detected by all the other transceivers in the system and a new Master with the next highest priority will be elected. The network polling will continue after the election is complete. If the failed original Master comes back online, another re-election will take place and the original Master will assume its role as master of the system. This makes a 300 system a fault-tolerant system and alleviates any single point of failure.

RXT-300 and CXT-300 transceivers provide several features allowing the customer to create a robust wireless gas detection and alarm system.

- Internal multi-channel controller – No external controller required to manage system
- Wireless Mesh Network – Multiple paths of communication between 300 transceivers
- Any 300 transceiver can become master of the wireless network – No single point of failure
- Each 300 transceiver processes local and network data and determines alarms independently
- Alarm Zones allows grouping of 300 devices to specific Alarm Stations
- Up to four serial sensors per transceiver (RXT-300 only)
- Up to two 4-20mA sensors per transceiver (RXT-300 only)
- Up to four fully configurable Alarm Outputs (RXT-300 only)
- Can add multiple HMI (Human Machine Interface) Panels for monitoring of network
- Low power design for extended operation on battery
- Wireless Network sleep available to further reduce power consumption
- Battery Life monitoring for SmartWireless™ Battery Pack
- Voltage monitoring for Non-rechargeable Battery Pack (CXT-300 only)

- Maximum of 32 300 series transceivers and/or 32 sensors per network

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**NOTE:** Although 300 series transceivers and 320 series transceivers have identical hardware with regards to their respective models, they are NOT compatible and do NOT communicate with each other. However, the WCT can be used to convert from one series to the other by loading the appropriate firmware which determines their functionality (See section ???).

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The 300 mode of the WCT allows 300 series transceivers to be “discovered” on an RF channel selected by the user. The tool can then be used to automatically create a configuration file of the discovered WTs which can then be loaded wirelessly onto each transceiver in the network. Configuration files can also be created manually by the user for WTs not equipped with the discovery firmware. It also allows for 300 series transceivers to be upgraded should new firmware become available or to convert a 300 series transceiver into a 320 series transceiver. Additionally, the WCT has a link quality feature that determines the signal strength between any two WTs in the system and it has an RF analyzer feature that monitors wireless traffic activity from RF radios on all wireless channels (0-15) in order to determine an optimal channel to deploy a new wireless network. A remote display function is also available that allows a view of a selected system which is useful in case the HMI goes offline or an HMI is not available.

To configure a collection of 300 series WTs to a particular network (RF Channel/Network ID) the user will generally perform the following tasks:

- Identify WTs to be set up on a single network using their serial numbers (MAC addresses).
- Identify an optimal channel to place all WTs.
- Move WTs to selected channel.
- Move any unwanted WTs to a different channel.
- Perform the Discovery function to automatically find WTs (WTs must be equipped with discovery firmware, otherwise a manual configuration is required)
- Create the configuration file to be loaded.
- Load configuration file to all WTs in network.
- Start network operation.

Upon completion, only the selected WTs should be in the new wireless network. If WTs have issues communicating on the new network due to interference, the procedure can be performed again and WTs can be placed on a different RF Channel/Network ID.

To identify the WTs as mentioned above, each Detcon transceiver has been engraved/labeled with a unique serial number (MAC address) located on the WTs enclosure. This serial number consists of 6 hex characters in the form of XX.XX.XX where the X can be characters 0-9, A-F. When the WCT searches for wireless radios on a given RF Channel, this unique number will appear on the screen as each one is found. In this way, the user can identify precisely which WTs are on a network.

### 3.3 Wireless Transceiver Models

Detcon offers a variety of wireless transceiver models to suit different needs for various applications.

<b><i>RXT-320 Transceiver</i></b>	RF Antenna, RF Channel/Network ID can only be set using WCT, Must have term board to set Modbus ID, Cannot be converted to 300 series
<b><i>RXT-320 Transceiver</i></b>	Whip Antenna, RF Channel/Network ID can only be set using WCT, Must have term board to set Modbus ID, Can be converted to 300 series

<b>RXT-320 Transceiver</b>	Whip Antenna w/Rotary switch for RF Channel selection, Must have term board to set Modbus ID, Can be converted to 300 series
<b>RXT-320 Transceiver</b>	Black Box w/ Rotary switches for RF Channel selection and Modbus ID, Can be converted to 300 series
<b>CXT-320 Transceiver (Old Bootloader BLDR)</b>	Whip antenna w/Magnetic switches for RF Channel selection and Modbus ID, Can NOT be converted to 300 series
<b>CXT-320 Transceiver (New Bootloader BL)</b>	Whip antenna w/Magnetic switches for RF Channel selection and Modbus ID, Can be converted to 300 series

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**NOTE:** Although 300 series transceivers and 320 series transceivers have identical hardware with regards to their respective models, they are NOT compatible and do NOT communicate with each other. However, certain 320 series transceivers can be converted to a 300 series transceivers by loading the appropriate firmware which determines their functionality (See section ???).

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**Table 2** Wireless Transceiver Models

Model	Description	Antenna Type	RF Channel Setting	Modbus ID Setting	Upgradeable	Conversion to 300 Series
RXT-320	RF100/No Rotary Switch	F	WCT	Term Board	No	No
RXT-320	RF200/No Rotary Switch	SMA (Whip)	WCT	Term Board	Yes: WCT/PICKit 3	Yes: WCT/PICKit 3
RXT-320	RF200 w/ Rotary Switch	SMA (Whip)	Rotary Switch/WCT	Term Board	Yes: WCT/PICKit 3	Yes: WCT/PICKit 3
RXT-320	RF200/Black Box w/Rotary Switiches	SMA (Whip)	Rotary Switch/WCT	Rotary Switches	Yes: WCT/PICKit 3	Yes: WCT/PICKit 3
CXT-320	RF200/Old Bootloader BLDR	SMA (Whip)	Magnetic Switches/WCT	Magnetic Switches	Yes: WCT	No
CXT-320	RF200/New Bootloader BL	SMA (Whip)	Magnetic Switches/WCT	Magnetic Switches	Yes: WCT	Yes: WCT

### 3.4 Operator Interface

The operator interface of the WCT is accomplished via its 10.1” touch panel LCD. Selections can be made simply by touching the menu buttons on the screen. To enter or change values, touch the corresponding fields to make them active at which time a virtual alphanumeric keypad or virtual QWERTY keyboard will appear depending on the field selected. Enter the desired data or values and select the *Enter* button to save the entry. Selecting the *Cancel* button at any time during the data entry modes will return the user to the previous screen without any changes having been made.

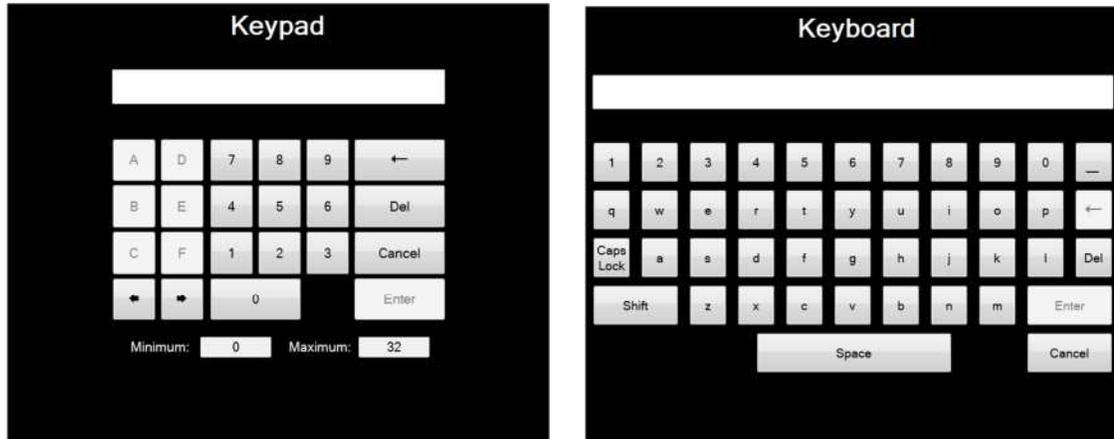


Figure 4 Alphanumeric Keypad and QWERTY Keyboard

### 3.5 WCT Main Screen

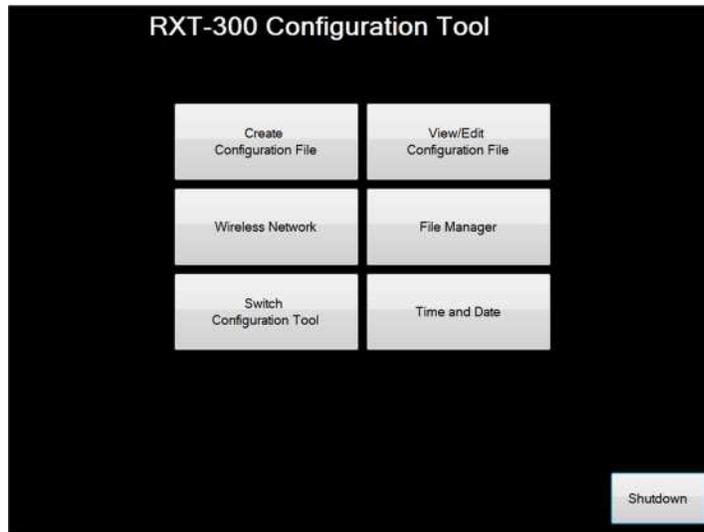
The WCT main screen offers eight menu selections for 300 wireless systems and four menu selections for 320 wireless systems as well as a *Shutdown* button for both. These menu selections will in turn bring up separate screens when selected.

The four menu selections for 320 systems are also found for 300 systems and are described as follows:

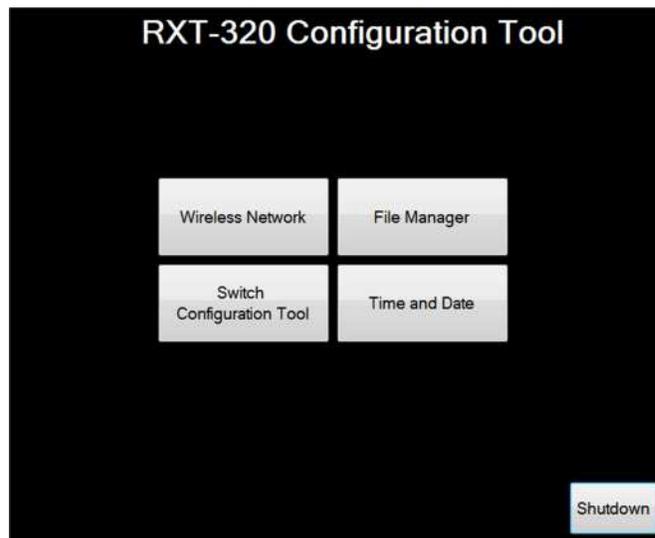
<b><i>Wireless Network</i></b>	Search, browse and move WTs in different wireless networks. Upgrade and convert WTs. Analyze RF traffic and verify signal strength between WTs.
<b><i>File Manager</i></b>	Used to move, copy or delete files.
<b><i>Switch Configuration Tool</i></b>	Allows user to choose WCT function between 300 or 320 system.
<b><i>Date and Time</i></b>	Sets the date & time.

There are an additional four menu selections exclusively for 300 systems and are described as follows:

<b><i>Discovery</i></b>	Used to automatically build, save and load a system configuration file.
<b><i>Create Configuration File</i></b>	Used to manually build and save a system configuration file.
<b><i>Remote Display</i></b>	Used as a virtual HMI to view selected 300 systems.
<b><i>View/Edit Configuration File</i></b>	Allows a system configuration file to be viewed, modified and saved.



**Figure 5** RXT-300 Main Configuration Tool Screen



**Figure 6** RXT-320 Main Configuration Tool Screen

### 3.6 Discovery (Wireless 300 Systems Only)

The Discovery function is a powerful feature that allows for 300 series transceivers to be automatically found (discovered) by the WCT and gathers all the information needed to create a configuration file without any user input. Only 300 WTs loaded with firmware that support the Discovery function are compatible. All other 300 WTs will need to be manually configured to the system.

When entering the Discovery menu, the following sub menu's are available:

<b><i>Discover</i></b>	Automatically finds 300 WTs with discovery firmware and gathers information of attached devices.
<b><i>Create</i></b>	Automatically creates configuration file discovered 300 WTs.
<b><i>View/Edit</i></b>	Allows user to view or modify the configuration file created by the WCT.
<b><i>Load</i></b>	Loads created configuration file to 300 WTs.
<b><i>Start Network</i></b>	Starts operation of the 300 system
<b><i>Exit</i></b>	Exits the Discovery section back to the main menu screen.

A 300 system can be configured and made operational using the Discovery feature by following the few simple steps below:

1. Power on all transceivers/devices that will be part of the 300 system. (Transceivers **MUST** have firmware installed that supports Discovery function)
2. Select Discover button and allow the WCT to automatically find devices. If all devices are not found, repeat the Discover function or power cycle the specific devices that are not found.
3. Once all the devices are found and displayed, select the Create button and allow the WCT to create the configuration file.
4. Select the View/Edit button to view the file and at that time make any changes needed.
5. Save the configuration file while in View mode and exit to Discovery section by selecting the Done button.
6. Select the Load button to load the configuration file to all devices. Any devices that did not load successfully must be selected individually and reloaded by selecting the Load button again.
7. Once all devices are loaded with the configuration file, select the Start Network button to start operation of the 300 system. Allow the 300 system a few minutes to settle and if any devices are still displayed as offline, power cycle the specific devices so that they are re-introduced into the system.

### **3.6.1 Discover Menu**

This menu function is only applicable to 300 transceivers with firmware that supports the discovery feature. By selecting this button, the WCT will automatically “find” (discover) such 300 WTs and will gather information with regards to the devices attached to them. These will be displayed as icons representing their corresponding devices with information that includes the transceiver’s MAC address, type of power used, device type and number of devices attached. For large systems, the discover function may need to be performed more than once. If a certain device can not be found using the discover button, power cycling the WT will also enable the WCT to find it.

### **3.6.2 Create Menu**

This menu function lets the WCT automatically create a configuration file from the WTs displayed after being discovered. At least two devices must be discovered for a configuration file to be created. An “Insufficient Discovery” message will appear if this requirement is not met.

### **3.6.3 View/Edit Menu**

This menu allows the user to view and modify the configuration file created by the WCT. Only the file created from the discovered WTs is available for modification. If the file is not saved during this phase, the configuration will be lost upon exiting the discovery section and a re-discovery will need to be performed to rebuild a new configuration file. Network update times, alarm levels, alarm properties and alarm zones are examples of system characteristics that can be modified when viewing the configuration file.

### **3.6.4 Load Menu**

Selecting the load button will automatically load the configuration file created by the WCT to all the displayed WTs. After the load is complete, a status message will appear indicating which WTs, if any, did not load successfully. Any WTs that did not load successfully need to be noted and selected individually by the user and re-loaded.

### **3.6.5 Start Network Menu**

Once all WTs in the system have been successfully loaded with the configuration file, selecting the Start Network button will reboot the WTs and put the system into operational mode. Allow the system a few minutes to settle while devices come on-line. If certain devices still show off-line, a power cycle of these individual devices will be necessary.

### 3.7 Create Configuration File (Wireless 300 Systems Only)

The *Create Configuration File* menu is available only for wireless 300 systems and used to manually create a configuration file for 300 series transceivers that do not have the discovery feature. Once created, this configuration can then be saved and loaded wirelessly to all 300 WTs specified in the configuration file.

Upon entering the Create Configuration File menu, a user friendly configuration wizard will be displayed in which the following questions need to be answered:

***What is the name of the wireless network?*** This field can be changed to any desired value and will be used to as the file name the system will be saved under. Default value is “WIRELESS NETWORK”.

***Which RF channel will the wireless network occupy?*** Enter a value from 0 to 15. Note that the Network ID will automatically be set to the same value as the RF channel selected. Default value is “4”.

***How often will the wireless network update?*** This field corresponds to the time in seconds that the network will sleep after polling all devices in the system. The higher the value, the longer the battery life will be extended but it also extends the time between sensor updates. A value of zero will result in constant updates. Default value is “10”.

The Auto Arrange window is used to allow the WCT to pre-arrange the wireless network so that the specified number of devices are automatically made available. The box must be checked by the user to activate this feature. The user then inputs the number of sensors, alarm stations and HMIs in the system. Other devices such as repeaters can later be added manually if needed. Not selecting the Auto Arrange feature will require the user to manually add all of the devices in the network.

Selecting the “Next” button lets the WCT configure and display a “tree” map of the system based on the values entered in the configuration wizard section. Icons representing the transceivers and devices are displayed with default names and values that the user must modify. The global system tree will be displayed on the left hand side of the WCT and the individual devices and transceivers will be displayed on the right hand side of the WCT and grouped in the following order: Sensors, HMIs, Alarm Stations, WTs, Zones and Repeaters. The user must then select each device and transceiver individually to fill in the correct information for each. This is done by double tapping the device/transceiver to be modified which will display a Task window allowing the user to Edit, Delete or Cancel the task.

The configuration settings include much of the same information needed when setting up a control system for a gas detection system. This would include both sensor settings and alarm settings. The sensor settings include parameters such as Modbus™ addresses, settings for alarm thresholds and whether these are ascending or descending. System settings would be for alarms, how they are associated with sensors and their properties such as Energized/De-Energized, Latching/Non Latching and Silence-able/ Non Silence-able.

These configuration settings are needed at different stages of building a configuration file using the WCT. Some parameters will default to values that can be used without change such as Modbus IDs. Others will have to be determined by the user and the specific application such as sensor types and alarm thresholds and, for each 300 transceiver, what devices are attached and how are they configured.

### 3.8 Remote Display (Wireless 300 Systems Only)

The Remote Display menu allows a selected 300 system to be displayed and monitored by the WCT. This is useful when an HMI is not immediately available or the HMI of a system happens to go off-line. To view a

network, simply select the Load Network button and then select the configuration file needed. The Network Remote View window will then be populated by the devices from the configuration file and the following information will be made available: Type, Serial #, Location/Name, Reading, Gas Type, Alarm, Status, Batt Life and LQ.

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**NOTE:** The SNAP Stick must be interfaced to the WCT for the Remote Display feature to function and will automatically move to the RF Channel/Network ID indicated by the configuration file selected.

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### 3.9 View/Edit Configuration File (Wireless 300 Systems Only)

The *View/Edit Configuration File* screen is available only for 300 systems and can be selected from the 300 system main screen. It is used for viewing and editing a configuration file that has been previously saved. To open a file, the user must first select the appropriate file from the available list and then select “Open”. Only one file may be selected at a time. The user will then be able to view and make any changes to the configuration just like the *Create Configuration File* screen (See section 3.6).

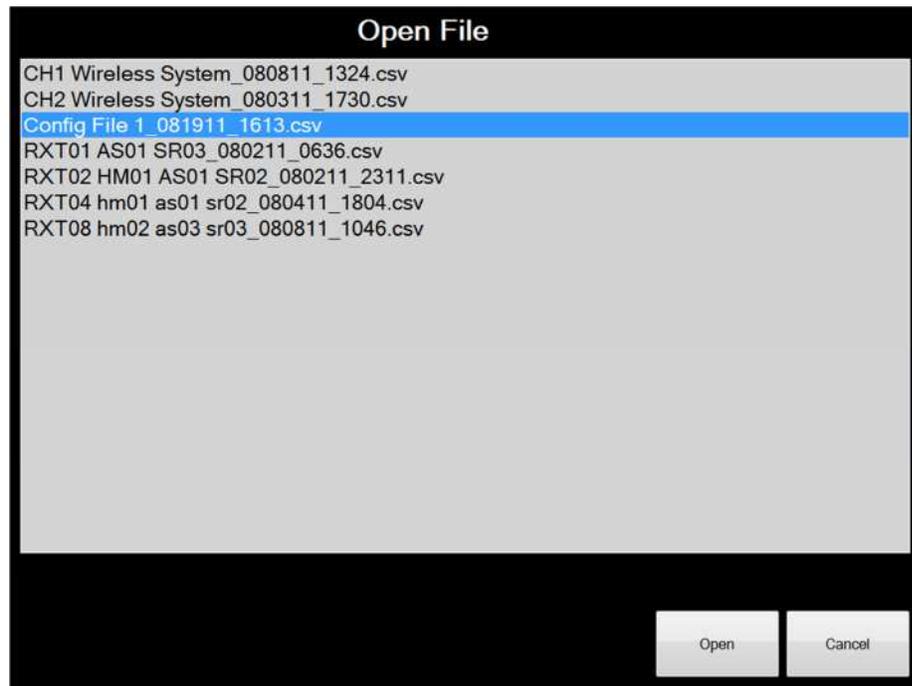


Figure 7 View/Edit Configuration File Screen

### 3.10 Wireless Network

The *Wireless Network* screen is selected from the main screen for both the 320 and 300 mode of the WCT. It has various functions such as finding and moving WTs to a specific RF channel, upgrading WTs, analyzing RF traffic for optimal placement, verifying signal strength between WTs, converting WTs to a different platform and loading configuration files for 300 systems only. There are two main sections on this screen (*Operations* and *WTs in My Network*) as well as other menu buttons which will be covered in this section. At the bottom of the screen there is a single status line in red of any ongoing operations as well as information regarding the SNAP Stick address and the current RF Channel/Network ID in which it resides.

When entering this screen, the WCT will connect to the USB SNAP Stick and locate itself on the RF Channel/Network ID of the SNAP Stick. The current RF Channel and Network ID of the WCT is shown in red on the bottom right of the screen as well as the MAC address of the SNAP Stick interfaced.

**NOTE:** WTs that are part of an operational system are in constant communication with the master transceiver. When searching for WTs on an operational network which has sleep enabled, the WCT will temporarily disable sleep for the current network it is searching. The network sleep function is restored once the WCT has completed searching the network.



Figure 8 RXT-300 Wireless Network Screen

### 3.10.1 Search My Network

The *Search My Network* button is used to search for WTs on the RF Channel/Network ID of the SNAP Stick which is indicated in red on the bottom right of the screen. Selecting these values will bring up a window that allows the user to change the RF channel and Network ID as needed. Entering a new value in either of these fields and selecting the Update button will cause the WCT radio to reboot and update to the new setting. WTs will only communicate with one another if they are set to the SAME Channel and Network ID.

- Channel** Sets RF Channel on WCT radio. (Range of values: 0 – 15)
- Network ID** Sets Network ID on WCT radio. (Range of values: 0 – 65534)

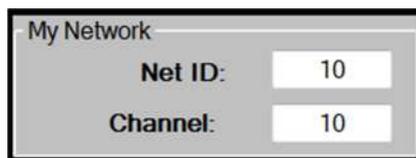


Figure 9 My Network Section

**NOTE:** It is recommended that the Network ID be set to the same value as the Channel to simplify settings.

### 3.10.1.1 WTs In My Network

The *WTs In My Network* section is populated with found transceivers when the *Search My Network* operation is performed. It will display the WTs Serial # (MAC Address), Device Type, Script (Image), RF Version and Sensor Version as each WT responds to the search request. These columns can be sorted ascending or descending by selecting the actual heading at the top of the list. *WT Count* gives the current number of transceivers that were found which is updated as new ones respond.

Network Address	Device Type	RFE Version	RFE Image Version	Firmware Version
00.83.49	RXT-300	2.4.9	1.7	1.20
00.85.3A	RXT-300	2.4.9	1.7	1.20
00.85.43	RXT-300	2.4.9	1.7	1.20
00.87.AA	RXT-300	2.4.9	1.7	1.20
00.90.6E	RXT-300	2.4.9	1.7	1.20
00.90.78	RXT-300	2.4.9	1.7	1.20
03.B6.59	RXT-300	2.4.9	1.7	1.20
03.C8.F7	RXT-300	2.4.9	1.7	1.20

**Figure 10** RXTs In My Network Section

**NOTE:** Operations such as *Search My Network* can be cancelled by selecting the *Cancel* button when it appears. The *Cancel* button will only appear if the operation can be cancelled. For example, if the user knows all the WTs have already been found and the process has not completed, the user can cancel the search operation to save time.

Once *Search My Network* is completed, WTs found are displayed and the user can now select specific WTs to perform operations on. The buttons at the bottom of the *WTs in My Network* section allow for selecting WTs to perform operations on.



**Figure 11** RXT Function Buttons

- Select All**                      Selects all WTs in the *WTs in My Network* section.
- Unselect All**                      Unselects all WTs in the *WTs in My Network* section.
- Clear**                                  Removes any WTs that are selected in the *WTs in My Network* section.

A scroll bar will appear on the right of the *WTs In My Network* section should there not be enough space for all the WTs to be displayed which allows the user to scroll up or down as needed. All WTs can be cleared from the list by performing a *Select All* and then performing a *Clear*. At any point in time, the list can be refreshed

again by performing a *Search My Network* again. The user can individually select one WT at a time. So for example, the user can reboot a single WT by selecting it in the list and then select the *Reboot* button.

### 3.10.2 Reboot

The Reboot button can be used to resolve issues when WTs are not operating properly such as WTs not coming online after the startup of a 300 system, or the WT ‘freezes’ and . The user can reboot a single WT or multiple WTs at a time by selecting them accordingly and pressing the *Reboot* button.

### 3.10.3 Upload Image

The Upload Image button is used to load software images (.spy files) to selected WTs. These images are obtained from Detcon as new versions become available and must be loaded onto the WCT with a USB drive through the File Manager feature. To load an image, simply select the WT or WTs desired and then select the Upload Image button which will display a list of available images. Select the image and then select the Upload button. A confirmation message will appear that informs the user if the selected image was uploaded successfully.

### 3.10.4 Operational Mode

There are four operational modes available for WTs of which two pertain exclusively to 300 series transceivers.

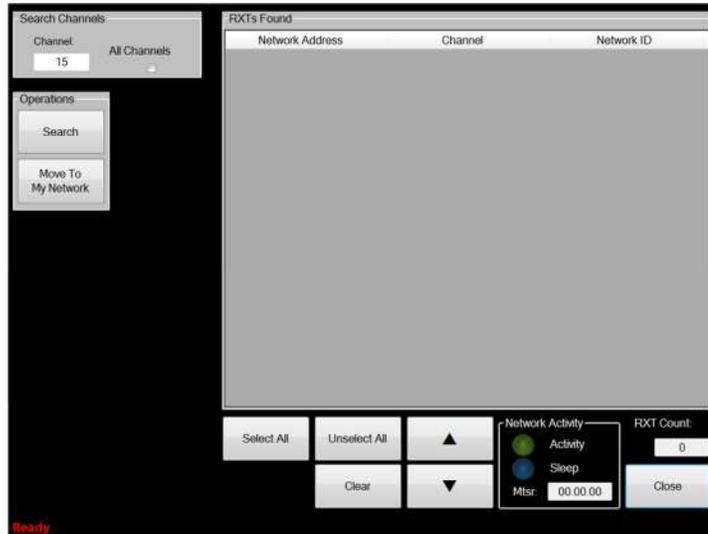
Normal	This operational mode allows the WT to function normally as designed and is applicable to both 300 and 320 series transceivers. WTs in this mode are displayed in black text in the WTs in My Network section.
Bootloader	Exclusively for CXT 300 and 320 series transceivers which allows them to be wirelessly upgraded and loaded with different firmware. WTs in this mode are displayed in blue text in the WTs in My Network section.
Config	Exclusively for 300 series transceivers which allows them to be programmed with a configuration file. WTs in this mode are displayed in red text in the WTs in My Network section.
Discovery	Exclusively for 300 series transceivers that support the Discovery function and allows the WCT find and gather their information for automatic creation of a configuration file. WTs in this mode are displayed in amber text in the WTs in My Network section.

### 3.10.5 Load Configuration (300 Systems Only)

The Load Configuration button is used to load a saved configuration file to 300 series transceivers. WTs must be put in Config mode in order to load a configuration file. The configuration files are created using the WCT and saved in its internal Config Files folder. To load a configuration file, simply select the WT or WTs desired (must be in Config mode) and then select the Load Configuration button which will display a list of available configuration files. Select the file and then select the Open button. A confirmation message will appear that informs the user if the selected file was loaded successfully.

### 3.10.6 Search Other

The *Search Other* operation opens a separate screen and is used for finding WTs on a selected RF channel. It allows the user to survey what RF Channels are being used by WTs and if desired, to select specific ones found and move them to *My Network* which is determined by the RF Channel/Network ID of the WCT SNAP Stick. There are three main sections on this screen: *Search Channels*, *Operations* and *WTs Found*. At the bottom of the screen there is a single status line of any ongoing operations.



**Figure 12** Search Other Networks Operational Button

### 3.10.6.1 Search Channels

The *Search Channels* section is used to select the channel to be searched when the *Search* operation is selected. There are 16 possible search channels available (0–15) and if the *All Channels* box is selected the WCT will perform the search on all 16 channels starting at channel 0. The WT’s Network ID will be ignored during the search but will be displayed when found, along with their Network Address and Channel in the *WTs Found* section. Each search performed will add any found WTs to the list, never remove them. So if a search is done on RF Channel 0 and RF Channel 1, the list will contain WTs for both channels.



**Figure 13** Search Channels Section

### 3.10.6.2 Operations

The *Operations* section has two operations available as defined below:

- Search** Searches for WTs determined by *Search Channels*. Results are listed in *WTs Found*.
- Move to My Network** Moves WTs that have been selected in *WTs Found* list to the RF Channel/Network ID of the WCT SNAP Stick.



**Figure 14** Operations Section

*Move to My Network* operation is used to move WTs that have been selected in the *WTs Found* list to the RF Channel/Network ID set in the SNAP Stick of the WCT.

### 3.10.6.3 WTs Found

The *WTs Found* section will list the WTs found by the *Search* operation. Many of the functions are similar to those related to the *WTs In My Network* list on the *Wireless Network* screen. The most important difference is the list of WTs will NOT be limited to just one wireless network. It can include WTs on any network depending on the searches performed by the user. The *WTs Found* list will be populated with WTs that respond and will show the Network Address, Channel and Network ID of each WT found.



**Figure 15** RXTs Found Section

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**NOTE:** When searching for WTs on an operational network, the WCT will temporarily disable sleep for the current network it is searching. The network sleep function is restored once the WCT has completed searching the network.

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The *Search* and *Move to My Network* are used for multiple purposes. The first is to determine what wireless networks have WTs on them. This allows the user to determine any open RF Channels that can be used for a new network or reconfiguring an existing network. Secondly the user can determine which system is using a particular wireless network (same RF Channel/Network ID). Finally the user can select specific WTs and move them to the currently selected network that was set in the SNAP Stick of the WCT.

### 3.10.7 Wireless Programmer (CXTs only)

The Wireless Programmer function is exclusively for CXT transceivers (300 and 320 series) and used to upgrade and load new firmware as it becomes available from Detcon. This function can also be used to convert CXTs from one series type to the other. Prior to entering this function, the user must select the CXTs to be programmed from the *WTs In My Network* list and they MUST be placed in bootloader mode. If the CXTs are not placed in bootloader mode, a warning message will appear advising such when attempting to enter the Wireless Programmer function.

Selecting the Wireless Programmer function opens a new section which lists the CXTs selected for programming. Each CXT will display its serial number, device type, firmware version, checksum and bootloader version. Any CXT which has “Unknown” information will not be recognized by the WCT and can not be upgraded.

The Firmware Info section is used to load selected firmware to the WCT which in turn can program the CXTs using the Program button. Select the Load button from the Firmware Info section to access the hex files to be loaded. Highlight the corresponding file and select the Open button to load. Allow the WCT to load

### 3.10.8 RF Analyzer

The RF Analyzer function is used to monitor wireless traffic activity from the RF radios on all wireless channels (0-15) in order to determine an optimal channel to deploy a new wireless network. A graphical representation of the traffic can be seen for each channel. When choosing new wireless networks, it is strongly suggested that a channel with little or no traffic be chosen to avoid RF interference from other existing networks residing on the same channel.

To enter this function, simply select the *RF Analyzer* button on the *Wireless Network* screen. A bar graph will appear showing channels 0 through 15 and their corresponding RF usage as a percentage of clear (free) and used space. Free space will be indicated by green and used space will be indicated by red.

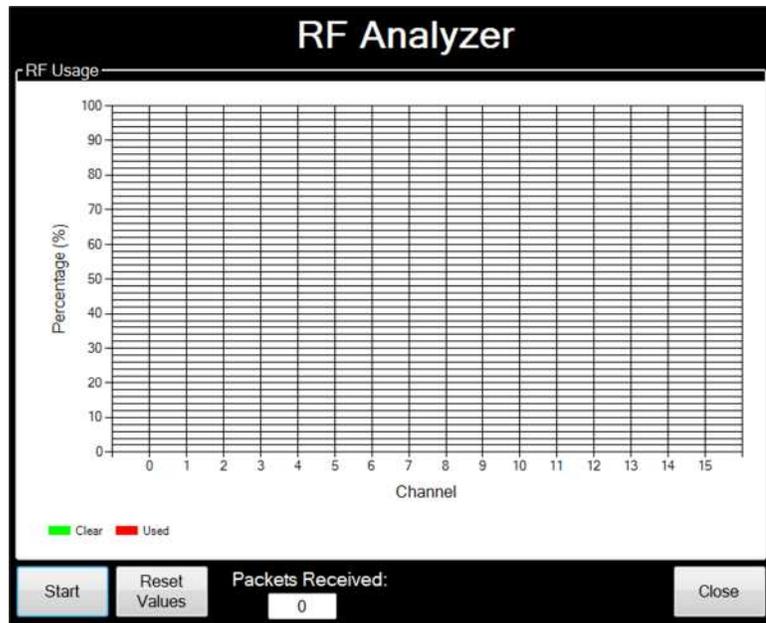


Figure 16 RF Analyzer

### 3.10.9 Network Activity

The Network Activity section gives a visual representation of the activity of the current network selected. A virtual LED is used to represent activity on the network. This section also indicates which 300 transceiver is designated as the master by displaying the transceiver’s serial number.



Figure 17 Network Activity Section

### 3.11 File Manager

The *File Manager* screen is selected from the main configuration tool screen and is used to move, copy or delete files between the WCT’s internal file storage and an external storage device such as a USB DRIVE. It supports Configuration files, Log files, WT software/firmware Images and Hex files. The firmware updates are obtained from the Detcon factory and used to update the WT’s software. The WCT Log Files are log files that log different activity when the WCT is in use.

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**NOTE:** The Configuration files are only applicable for 300 systems and not 320 systems.

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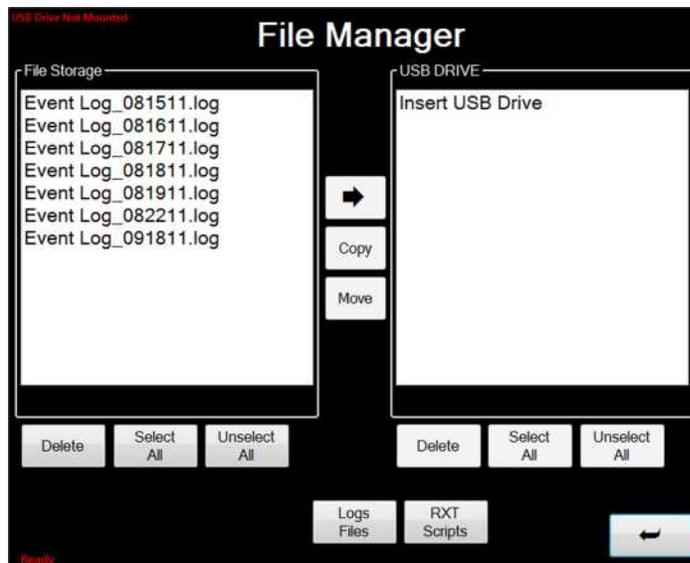


Figure 18 File Manager Screen

If the user desires to copy, move or delete files to a USB DRIVE, the USB DRIVE must be installed in the WCT’s USB port. The WCT will show the status of the USB DRIVE in red at the top left part of the screen. To use the USB DRIVE the WCT must show *USB Drive Mounted*. On the USB DRIVE, the configuration files are stored under the configuration subdirectory, WT Images are stored under the Images subdirectory and the Log Files are stored in the Logs subdirectory.

The different actions available on the File Manager are listed below.

<b><i>Left/Right Arrow</i></b>	Toggles left or right and is the direction that a copy or move action is performed.
<b><i>Copy</i></b>	Copies files selected to/from USB DRIVE.
<b><i>Move</i></b>	Moves files selected to/from USB DRIVE.
<b><i>Delete</i></b>	Deletes selected files in the list above button.
<b><i>Select All</i></b>	Selects all files in the list above button.
<b><i>Unselect All</i></b>	Deselects all files in the list above button.
<b><i>Config Files</i></b>	Lists all configuration files available for 300 systems.
<b><i>Logs Files</i></b>	Lists all WCT log files available for 300 and 320 systems.
<b><i>WT Images</i></b>	Lists all software updates available for 300 and 320 systems.
<b><i>Hex Files</i></b>	Lists all WT firmware updates available for 300 and 320 systems.
<b><i>(Return Arrow)</i></b>	Exits <i>File Manager</i> and returns to the main configuration tool screen.

### 3.12 Date and Time

The *Time and Date* screen is selected from the main configuration tool screen and is used to change the WCT date and time. It is mainly used for timestamps on logging only. Once the date and time has been entered, the user can exit using the return arrow at the bottom left of the screen.

To change the values, simply select the “+” or “-” button accordingly for the desired fields. Once the value is set, select the *Change Date* button to change the date or the *Change Time* button to change the time.

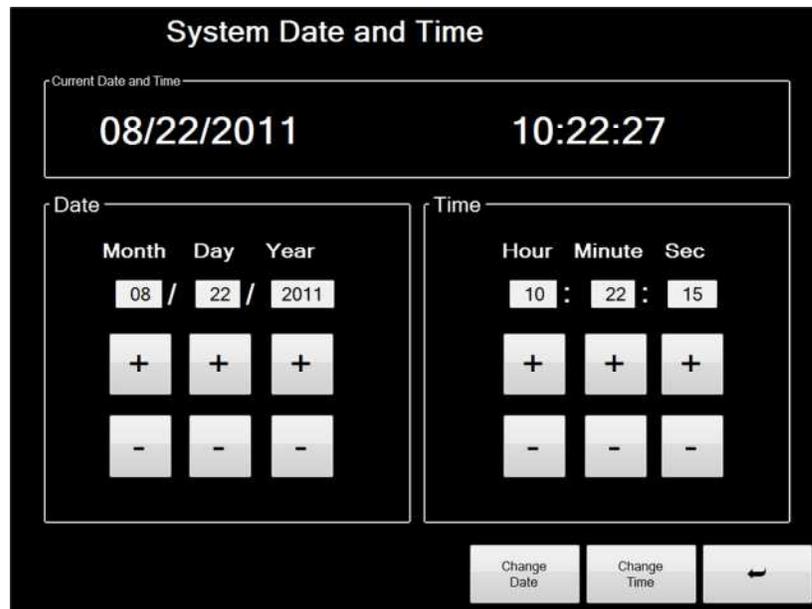


Figure 19 System Date and Time Screen

## 4.0 Warranty

Detcon, Inc., as the manufacturer, warrants under intended normal use each new Model RXT Wireless Configuration Tool to be free from defects in material and workmanship for a period of one year from the date of shipment to the original purchaser. Should the RXT WCT fail to perform in accordance with published

specifications within the warranty period, return the unit to Detcon, Inc. for necessary repairs or replacement. All warranties and service policies are FOB the Detcon facility located in The Woodlands, Texas.

## 5.0 Specifications

### System Specifications

Processor/Cache:	Intel Atom Z670 processor (1.5 Ghz)
Inputs:	Touch (Capacitive Multi-Touch) and Pen (Active Stylus)
I/O Ports:	1 USB 1 Video Out (micro-HDMI, Type D) 1 SD Card Power Jack Dock Connector
System Memory:	1GB or 2GB 800MHz DDR2
System Storage:	30GB Solid State Drive (SSD) SATA 2.0 at 3.0Gb/s
Warranty:	One year

### Electrical Specifications

Input Voltage:	100-240VAC~1.5A, 50-60Hz
Power Consumption:	Lithium-Ion Battery with 43WHr capacity (up to 8 hours) 65W, AC Adapter

### Mechanical Specifications

Display:	10.1" Wide (LED Backlit, 1366x768) Dual Bonded
Dimensions:	10.9" W x 7.06" H x .61" D
Operating Temperature Range:	+5°C to +43°C

### Wireless Specifications

Frequency:	ISM 2.4GHz
Range:	Indoor/No Line of Sight – 1,000ft Outdoor RF Line of Sight (with external antenna) – 3 Miles
Spread Spectrum:	Digital-Sequence Spread Spectrum (DSSS)
Modulation:	0-QPSK
Sensitivity:	-102dBm (1% PER)

## 5.1 Spare Parts

Part Number	Spare Parts
976-0003FF-000	RXT Wireless Configuration Tool w/USB SNAP Stick
995-0SS200-001	USB SNAP Stick

## 5.2 Revision Log

Revision	Date	Changes made	Approval
0.0	09/02/11	Initial Release.	LU
1.0	05/19/14	Updated, added note to reboot if tablet locks-up	LU