Primex ClassicSync

OneVue 1 Watt Transceiver with Internal Antenna Install Guide

Legal Notice

Printed in the USA.

Primex, Inc.

Primex is a leading provider of synchronized time and environmental monitoring solutions. Our solutions automate and maintain facility compliance, increase efficiencies, enhance safety and reduce risk for organizations in the healthcare, education, manufacturing and government vertical markets.

Worldwide Headquarters

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Regulatory Compliance

Federal Communications Commission (FCC) / Industry Canada (IC)

Primex OneVue Transceiver TX400

License Requirements

- Operation of the Transceiver requires a FCC/IC operating license, which must be obtained prior to operation.
- FCC licenses must be renewed every 10 years and the IC licenses must be renewed annually.
- As a service, Primex will file the license application if the end-user desires it. An end-user that does not want Primex to file for the original site license will be required to complete a waiver form, file the required application, and receive a valid license from the FCC/IC prior to use. If you have any questions or need any assistance, please contact Primex Technical Support.
- Primex requires a copy of the licenses in order to complete the factory presets.

Product Compliance

- This device complies with Part 90 and Part 15 of the FCC rules and RSS-119 of Industry Canada.
- Operation of this device is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference, including interference that may cause undesired operation.

Radio Frequency (RF) Exposure

To comply with FCC/IC RF exposure requirements for mobile transmitting devices, the Transceiver is only to be used or installed in locations where there are at least 35 cm separation distance between the antenna of the Transceiver and all persons.

Radio Standards Specification (RSS)

This device complies with Industry Canada licence-exempt RSSs.

Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage,et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

The device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS-102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

Le dispositif rencontre l'exemption des limites courantes d'évaluation de routine dans la section 2.5 de RSS 102 et la conformité à l'exposition de RSS-102 RF. Les utilisateurs peuvent obtenir l'information canadienne sur l'exposition à la RF et la conformité avec celle-ci.

This equipment should be installed and operated with a minimum distance of 35 centimeters between the radiator and your body.

Cet équipement devrait être installé et utilisé avec une distance minimum de 35 centimètres entre le radiateur et votre corps.

Important Safety Instructions

READ ALL INSTRUCTIONS BEFORE INSTALLATION, OPERATION, OR MAINTENANCE OF PRODUCT.

Safety Instructions

Some of the following information may not apply to your particular product model; however, as with any electronic product, precautions should be observed during installation, operation, and maintenance.

- Never operate the Transceiver without the antenna being properly connected to the Transceiver. Operating the Transceiver without an antenna can lead to permanent damage of the Transceiver and poses a safety risk.
- Do not touch any of the antennas while broadcasting.
- Standard acceptance procedures must be followed prior to operating this equipment in the proximity of life support systems.
- Do not operate the Transceiver outdoors, in wet areas where there is standing water, or in areas where there is condensation or the risk of condensation. Use in any of these environments will damage the Transceiver and void the warranty.
- Do not open the Transceiver to alter the internal elements in any way. This will void the warranty and could lead to unsafe conditions, malfunction, and violations of FCC/IC regulations.

Primex disclaims any liability or responsibility for the results of improper or unsafe installation practices.

Contents

Overview of the Primex ClassicSync Solution

Learn how the solution works and how the system devices provide synchronized time.

Architecture

The Primex ClassicSync solution provides synchronized time using our 72-73 MHz unique broadcast frequency to transmit a wireless signal to all system devices. The frequency allows the system wireless signal to broadcast through common building materials and across longer distances with less potential for signal interference. The solution can be configured with either a GPS or NTP time source. The system consists of a single Transceiver with an internal or external antenna, a GPS Receiver (optional), Repeater Transceiver (optional), and the system clocks and other devices in a single building, to a campus wide deployment.

Time synchronization

Once a Transceiver has received its time, from either a GPS Receiver or NTP time source or another Transceiver, it sets its internal clock. It then transmits time information over the 72-73 MHz wireless radio frequency signal to the secondary system devices. As a result, the system devices are precisely synchronized to each other and all time and events are kept current.

Time Source: Transceiver receives time from a GPS Receiver or a NTP server and then broadcasts received time and event schedules to clocks and other system devices. The Global Positioning System (GPS) Receiver draws time information from the U.S. Government Satellites. The GPS Receiver then sends the time to the Transceiver.

Frequency and channel: Transceiver operates on channels with 20kHz bandwidths and 72-73 MHz frequency and is preset to one of the channels licensed by the FCC/IC to minimize interference on these frequencies and channels.

By factory default, a Transceiver with internal antenna: transmits (broadcasts) its synchronized time continuously to the system clocks and devices. A Repeater Transceiver receives time from its configured receiving channel and then broadcasts received time to system devices. Transceiver also has a power-on transmit schedule that sets the duration of time the Transceiver transmits (broadcasts) a signal when first powered on (factory default 8 hours).

Analog Clock signal search frequency: six pre-scheduled times a day at 10:01, 2:01 and 6:01 a.m. and p.m. lock time (not the actual time of the day), a clock's receiver turns on to search for a Transceiver signal to receive a time update, starting with the previously stored channel number.

Digital Clock/Timer signal search frequency: every 10 minutes on the 5's (5, 15, 25, 35, 45, 55 minutes) of the hour, a clock's receiver turns on to search for a Transceiver signal to receive a time update.

Transceiver power-up sequence

1. When power is first applied, it searches for a time source. It first searches for GPS and then NTP.
2. If a time source is not found, it uses its onboard real time clock (RTC) and continues to search for its time source.
3. If a time source is not found, the Transceiver is set to a warning state with a time sync failure status, its front panel Caution LED status indicator is illuminated, and transmits its state to OneVue at its scheduled check-in time (default every 5 minutes).
4. If it fails to get time from either source consecutively for 30 minutes (default), it enters an alarm state, its front panel Error LED status indicator is illuminated, and transmits its state to OneVue at its scheduled check-in.

5. If the RTC clock is off significantly, the Transceiver it enters a critical error state, its front panel LED Error status indicator is illuminated, and transmits its state to OneVue at its scheduled check-in. Only occurs after the first 30 minutes of operation if the RTC continues to be significantly off.

Transceiver power failure

During a power failure, the Transceiver continues to track time with the last valid time signal that it received. Once the power had been restored, the Transceiver begins to broadcast (even without a valid time signal) to the down-stream components. Once the Transceiver has been powered on for a few hours, it's capable of keeping track of time off its internal backup power for up to eight hours.

- The system has a fail-safe design. If the failure of a system component or power loss to a component occurs, all down-stream components continue normal operations using their own internal time base.
- If after a specified period of time communication has not been restored, a visual indicator on its front panel is illuminated and its state is sent to OneVue during its next scheduled check-in. It remains in this state until communication is restored.

> NOTE
>
> In the event power to a Transceiver is shut off and turned back on (power cycled) the Transceiver will broadcast continuously based on its Power-on Transmit schedule (default 8 hours). Power cycling the Transceiver can be used to set/reset system devices. It's not recommended to power-cycle a Transceiver when in an error state, as indicated when its front panel Error LED indicator is illuminated.

Specifications

Primex OneVue Transmitters use a 72-73 MHz broadcast frequency to transmit a wireless radio frequency to seamlessly synchronize every clock and independently to display the exact same time. Leveraging the precision of GPS satellite or Network Time Protocol (NTP) time, the Transmitters wirelessly synchronize time with Primex 72-73 MHz analog and digital clocks, timers and other receivers throughout a facility.

Specifications: OneVue 1 Watt Transceiver

Parameter	Specification
Operating Frequency Range	72-73 MHz
Channels	49 channels available
Channel Bandwidth	20KHz
Dimensions	17 in. L x 12 in. W x 1.7 in. D (43.2 cm x 30.5 cm 4.32 cm)
Maximum Transmission	1 Watt (at Transceiver)
Radio Technology	Narrowband FM
Weight	9 lb.
Power Supply	Input: 120 VAC, 50/60 Hz, 0.6 Amp Output: 9 VDC, 2.78 Amp 3 ft. (0.9 m) cord
Bluetooth Technology	Bluetooth® low energy (v5) wireless technology. To allow pairing with OneVue Device Configurator app for configuration and setting management.
User-defined settings (OneVue Device Configurator app)	Time Zone, Daylight Saving Time with bypass option, up to three NTP time sources, Power-on Transmit Schedule, Normal Transmit Schedule, Firmware, Transmit Channel, and Repeater Channel.

Parameter	Specification
User-defined settings (OneVue Sync software)	Legacy Clock Time Zone, Alarm Delay, Firmware, Unresponsive Timeout, and Check-in Interval.
Front Panel	Four LED status indicators (Power, Transmit, Caution, Error) and Bluetooth labeled push-button to pair Transceiver with the Primex OneVue Device Configurator (ODC) app.
Rear Panel	Network LAN port (RJ-45 Ethernet, 100/10 Mbps, 802.3 Ethernet), GPS In port (MiniDIN 7-Pin), External Antenna connector (coaxial, n-male), Baseboard Monitor port (MiniDIN 9-Pin, for use with 5 or 30 Watt Transceiver only), dry contact closure relay panel (for use with specified Primex products), and pin port to allow end-user connection initiation (check-in) to the Primex OneVue cloud-based software.
Top Panel	Internal Antenna connection.
Operating Range	32° to 122° F (0° to 50° C), non-condensing environment

Specifications: GPS Receiver

A GPS Receiver draws time information from the U.S. Government Satellites, providing the system with Coordinated Universal Time (UTC).

- Mounted to rooftop, pole, or window (not a Low-E glass window).
- GPS Receiver sends UTC time to the Transceiver via the NMEA 0183 standard protocol.
- Optional GPS extension cable. A specially designed low-resistance cable to extend the distance between GPS Receiver and Transceiver. The maximum total length of the cable cannot exceed 200 ft. (60.96 m).

Parameter	Specification
Cable	10 ft. (3.05 m) cable 50, 100 and 200 ft. (15.24 m, 30.48 m and 60.69 m) extensions available. The maximum total length of the cable cannot exceed 200 ft. (60.96 m).
Dimensions	2.5 in. W x .75 in. H (6.35 cm x 1.91 cm)
Mounting Bracket	3.5 in. W x 1.4 in. H x 4.5 in. D (8.89 cm x 3.56 cm x 11.43 cm) Included for rooftop or window installation.
Weight	0.75 lb. (.34 kg)
Operating Range	-32° to 158° F (-30° to 70° C)

Install 1 Watt Transceiver with Internal Antenna

This topic provides the requirements and procedures to install a Transceiver with an internal antenna.

Configuration requirements

OneVue Transmitters are required to be configured for operation with the Primex OneVue Device Configurator (ODC) app. A Transceiver can be configured for use with the Primex OneVue Sync solution or as a standalone Transceiver.

- ODC app: Download the OneVue Device Configurator from the Google Play Store for Android devices and the Apple Store for iOS devices.
- OneVue Sync (required for remote monitoring and support services): Connected to an Ethernet network with internet access and OneVue network requirements met.
- NTP time source: Connected to Ethernet network. Allows up to three NTP Server IP addresses. Port UDP 123 is required to be open for use with external Network Time Protocol (NTP) Servers. Use of internal NTP Servers is also supported.
- FCC/IC Information Form: Primex submits the Transceiver FCC/IC license application on behalf of system owner. Configuring Transceiver with anything other than the channels designated on the FCC/IC Information Form is a violation of FCC/IC regulations and subject to fines and penalties. The system owner is the sole proprietor of the FCC/IC license and Primex or an authorized Primex installer are acting as agents. Changes to a Transceiver's configured Call Sign or Channel or other FCC regulated settings are the sole responsibility of the system owner and should only be done in accordance with FCC regulations.

Tools and equipment required

The following tools and equipment are required to complete installation.

Transceiver equipment

- 1 Watt Transceiver Rack 18 GA metal, epoxy coated (optional)
- UPS surge protector (recommended)

GPS Receiver required install tools and equipment

- Standard or hammer drill
- 5/8 inch concrete drill bit, 18 inches (45.7 cm) long
- Silicone caulk for GPS cable penetration
- Phillips screwdriver
- Flat head screwdriver

Install location guidelines

When planning a system installation, Primex recommends taking into consideration the below guidelines. Location is extremely important to ensure the best operation of your system.

- In a multi-story building, locate Transceiver on the top floor; significantly improves coverage to the lower floors due to the “umbrella” pattern of transmission.
- Transceiver must be located a minimum of 4 ft. (1.2 m) above the floor.
- Transceiver must be located within 3 ft. (0.59 m) from a 120 VAC electrical outlet. 10 AMP dedicated service recommended.
- Transceiver 48 in. (1.2 m) internal antenna requires vertical clearance and distance of a minimum 5 ft. (1.5 m) from large, solid objects, such as lockers or filing cabinets, and cannot be not touching any surfaces.
- Transceiver must be located in an area that allows for enclosure and antenna clearance. Enclosure dimension is 2" height x 17" width x 12” depth (5.08 cm x 43.18 cm x 30.48 cm) and antenna height is 48 in. (1.2 m).

- Transceiver must be located in a controlled environment that is 32° to 122° F (0° to 50° C) and non-condensing humidity environment.

Step 1: Install GPS Receiver

A GPS Receiver is required when a Transceiver is set to use GPS as its time source.

GPS Receiver kit components

Part	Quantity
Mounting bracket	1
GPS 18 LVC and connector	1
M3 x 0.5 x 6 mm pan head screws	2
#6 x 3/8 sheet metal screw	3
Suction cups	3
U-bolt with nuts for mounting on 1 in. (2.54 cm) pole	1

GPS Receiver install location guidelines

Determine a suitable location for the GPS Receiver unit. Location is extremely important to ensure the best operation of the system.

- GPS Receiver must be mounted where it has a "clear view of the sky" to receive a GPS signal 24 hours a day.
- Typical mounting locations of the GPS Receiver unit include the inside of a window (not a Low-E glass window), to an exterior pole, or on a rooftop.
- GPS Receiver unit should be kept away from large metal objects.
- GPS Receiver unit and cable must be mounted above any potential standing water, snow depth, leaves or other obstructions and is protected from the weather.
- Maximum total distance of the GPS cable to the Transceiver cannot exceed 200 ft. (60.96 m).
- If the GPS cable is located outdoors, the use of a GelWrap splice enclosure is strongly recommended.

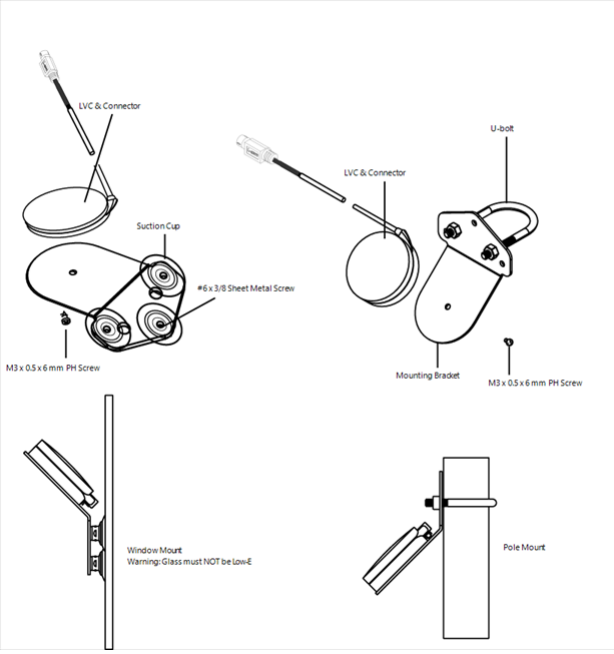
Mount GPS Receiver

1. Verify the kit contents and the installation location meets the installation guidelines.
2. From the outside of the building, route the GPS cable.

   Transceiver with internal antenna: Route through a 5/8 inch drilled hole into the building.
3. Assemble and mount the GPS Receiver unit to either the inside of a window (not Low-E glass) or to an outside pole or rooftop.

   The mounting location is required to have a clear view of the sky.

> NOTE
>
> Be sure to follow local building code requirements when attaching the GPS unit to the inside of a window. Clean the windowpane before using the suction cups for attachment.



4. Route GPS cable and connect to Transceiver GPS connection.

Step 2: Establish Transceiver connections and apply power

Internal antenna connection is located on its top panel and its back panel connections include power, GPS, and Ethernet.

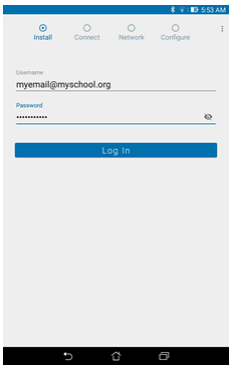
1. Attach internal antenna: From the top case of the Transceiver, screw the antenna clockwise, being careful to avoid cross-threading the antenna. The antenna must be snug and flat against the case.
2. Connect time source.

   GPS: plug the supplied GPS cable into the GPS IN connection.

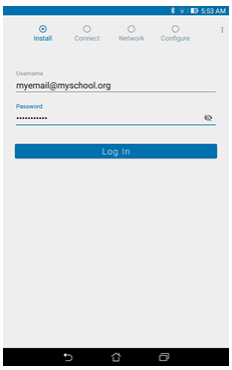
   NTP: connect a network cable into the RJ-45 Ethernet port and active network port.
3. Dry contact closure switch panel: For use with Primex Info Boards.
4. Connect and apply power: Connect the supplied power supply to the Transceiver power input and AC outlet.

Step 3: Configure Transceiver settings with OneVue Device Configurator (ODC) app

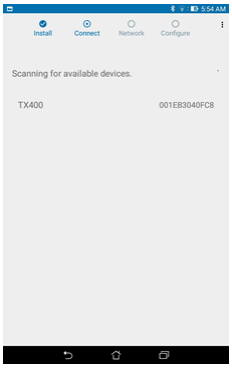
1. Open the ODC app.
2. Select an option: Connect to OneVue or Standalone Configuration.



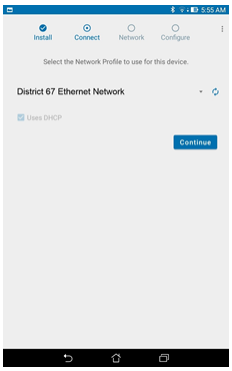
3. If Connect to OneVue selected, enter OneVue username and password.



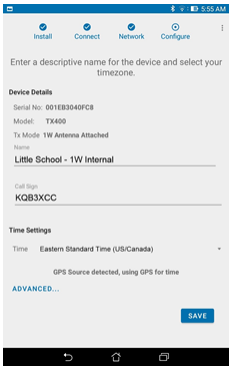
4. From the front of the Transceiver, press and release the Bluetooth pairing button. The Transceiver begins broadcasting its Bluetooth wireless signal.
5. When the Transceiver pairs with the app, the Transceiver model and MAC address is displayed. Select the Transceiver to be configured.



6. For OneVue connection only: Select an existing Network or enter a new Network. For a new network, defaults to DHCP. For a non-DHCP network, de-select DHCP and enter the IP address, Subnet Mask, Gateway, DNS 1, and DNS 2.



7. Select Continue.
8. Enter Name of the Transceiver. The name commonly identifies its install location and type of Transceiver (main or repeater).



9. Verify Call Sign.

   Call Sign displayed: Verify the Call Sign is the same as the supplied FCC/IC Information Form. If not correct, update.

   Call Sign not displayed: Enter the Call Sign located on the supplied FCC/IC Information Form. A Transceiver will not transmit (broadcast) without a valid Call Sign.

10. Select a Time Zone (main Transceiver only). The time source detected is displayed (GPS or NTP). This setting does not apply to a Repeater Transceiver, which receives the main Transceiver time zone and synchronized time over its configured Channel (receive) number.
11. Power-on Transmit Schedule: Sets the duration of time the Transceiver transmits (broadcasts) a signal when first powered on. Default to 8 hours. When power-on time period ends, the Transceiver reverts to its Normal Transmit Schedule.
12. Normal Transmit Schedule: Sets the frequency the Transceiver transmits (broadcasts). List below are the default settings and recommended by Primex.

    Transceiver with internal antenna: By default, a Transceiver with internal antenna: transmits (broadcasts) its synchronized time continuously to the system clocks and devices. Default setting 0 to 0.

13. Channel section settings for the Main Transceiver only. Set the below settings.

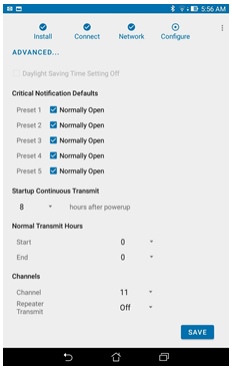
    Channel (broadcast): Required to be set to the Channel number located on the FCC/IC Information Form.

Repeater Transmit: Off

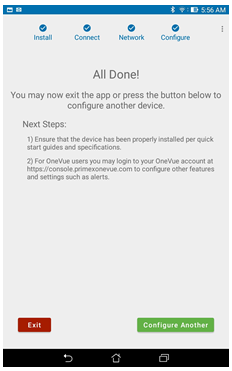
14. Channel section settings for a Repeater Transceiver only. Set the below two settings.

    Channel (receive): Required to be set to the Channel number of the Main Transceiver. If multiple Repeater Transmitters onsite, set to the Channel number of a Repeater Transceiver in closest proximity with highest signal strength.

    Repeater Transmit (broadcast): Required to be set to the Channel number located on the FCC/IC Information Form.



15. Select Save.



16. Select Exit or if you have multiple Transmitters, select Configure Another.

Step 4: Verify Transceiver operation

The final step is to verify the Transceiver is operating and is not in a warning or error state. During initial power on, it may enter a warning or error state until establishes connection to its time source and receives time.

1. From its front panel LED status panel, verify is current operating state.

LED Indicator	LED Color	Operating State/Status
Power	Green	Illuminated when powered.

LED Indicator	LED Color	Operating State/Status
Transmit	Green	Main Transceiver: Solid green indicates transmitting (broadcasting). Repeater Transceiver: Solid green indicates transmitting (broadcasting) and flashing green indicates receiving signal from configured Repeater Transmit channel.
Caution	Yellow	When illuminated, indicates in a warning/caution state, due to one or more of the status conditions below.
Error	Red	When illuminated indicates in an alarm/error state, due to one or more of the status conditions below. When power is first applied, • Bad Output Power: Not transmitting at the appropriate power level. • PLL Diagnostics: Cannot lock onto a channel; rendering it unable to broadcast time or schedules. • VSWR Errors: Problem with either the High Power Antenna (may need repositioning) or the antenna cabling. • No GPS in 48 Hours: Has not connected to a time source for more than 48 hours. • No 1PPS in 48 Hours: Time has not been synchronized by 1PPS (1 Pulse Per Second) for more than 48 hours. • GPS Cable Break: Line break, water ingress, or cable length in excess of 200 ft.

2. If the Transceiver is connected to OneVue, verify its check-in to OneVue and in a Normal state.

Technical Support

You may require technical support when you have questions about product features, system configuration, or troubleshooting. Support services are delivered in accordance with your organization's support agreement, end user licenses agreements, and warranties, either with a Primex Certified Sales and Service Partner or directly with Primex.

Support through Primex Certified Sales and Service Partners

Ensuring our customers experience excellent service is of utmost importance to Primex. Our network of Certified Sales and Service Partners offer technical support services for Primex products.

If you have purchased Primex products or have a service agreement with a Primex Partner, they are your primary contact for all Technical Support inquires.

When contacting Primex Technical Support

Make sure you have satisfied the system requirements listed in your product documentation. Also, you should be at the computer or device on which the problem occurred, in case it's necessary to replicate the problem.

When you contact Primex Technical Support, please have the following information available:

- Customer ID/Account Name
- Problem description/error messages
- Device hardware information
- Troubleshooting performed before contacting Primex

Primex Technical Support

Hours: 8:00 a.m. to 5:00 p.m CST | Monday through Friday

Phone: 1-262-729-4860

Email: techservices@primexinc.com | Web: www.primexinc.com/support

Five Year Limited Warranty

Primex, Inc. warrants this product to be free from defects in materials and workmanship for a standard of five (5) years from the date of purchase*. All product accessories, including external antennas and kit components, wireless tone generator, wireless data receiver, and UPS backup, are warranted for a period of one (1) year against material or manufacturing defects from the date of purchase. Primex, Inc. will at its sole option, repair or replace any components that fail in normal use. Such repairs or replacements will be made at no charge to the customer for replacement parts. The customer will be responsible for any transportation costs.

This warranty does not cover: (1) Physical damage to this product; (2) Product failure or damage caused by improper installation, lack of periodic maintenance, improper or abnormal use, misuse, neglect or accident (3) Damage caused by another device or software used with this product (including, but not limited to, damage resulting from use of non-Primex brand or approved parts, consumables or accessory items); (4) Problems arising from anything other than defects in materials or workmanship; and (5) Consumables or other items requiring periodic maintenance or replacement with ordinary wear and tear, including, but not limited to, product batteries and cables. This warranty is VOID if this product has been altered or modified in any way (including, but not limited to, attempted warranty repair other than by Primex or an authorized service partner).

The warranties and remedies contained herein are exclusive and in lieu of all other warranties express or implied or statutory, including any liability arising under any warranty or merchantability or fitness for a particular purpose, implied, statutory or otherwise. In no event shall Primex, Inc. be liable for any incidental, special, indirect or consequential damages, whether resulting from the use, misuse or inability to use this product or from defects in the product. Some states do not allow this exclusion or limitation of incidental or consequential damages so the above limitations or exclusion may not apply to you.

To obtain warranty service: If after following the instructions in the product guide, you are certain the product is defective, contact Primex Technical Support to assist with troubleshooting the issue. If the issue cannot successfully be resolved and the product is under warranty, a RMA (Return Material Authorization) will be generated. The RMA form will be provided via email with detailed instructions for the return. All merchandise returned must be shipped to Primex, Inc. Attn: Returns Dept., N3211 County Road H, Lake Geneva, WI 53147.

Primex, Inc. retains the exclusive right to repair or replace the unit at its sole discretion. Such shall be your sole exclusive remedy for any breach of warranty.

* applies to products sold on or after June 1, 2018.