

Primex ClassicSync

OneVue 1 Watt Transceiver with External Antenna Install Guide



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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.

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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.

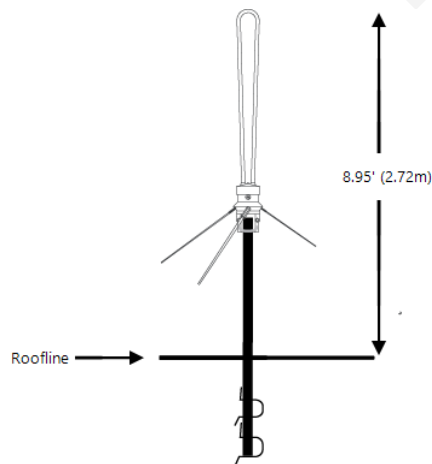
Changes or modifications to any part of the Primex System components not expressly approved by Primex could void the user's FCC/IC authority to operate the equipment.

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.

To comply with FCC OET65 and Industry Canada RF exposure requirements, the antenna is only to be used or installed in locations where the following antenna separation guidelines exist when the Transceiver is in operation. Distance above roofline is for direct line of sight only. Distance Above Roofline: 8.95 ft. (2.72 m).

Distance above roofline illustration



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.
- Do not use a metal ladder during installation of the external antenna.
- During antenna installation, be sure to wear shoes with rubber soles and heels and wear protective clothing with long sleeves and rubber gloves.
- Do not install the antenna on a wet or windy day when lightning or thunder is in the area or near power lines. Power lines, telephone lines, and guy wires look the same. As a precaution please assume any wire can electrocute you.

The installation, maintenance, or removal of an antenna requires qualified, experienced personnel. The installation instructions are written for such installation personnel.

Antenna systems should be inspected once a year by qualified personnel to verify proper installation, maintenance, and condition of equipment.

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

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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 an external antenna: transmits (broadcasts) its synchronized time to the system clocks and devices from the 39th to the 6th minute of the next hour and changes to a standby mode during the 7th to the 38th minute of the hour (standard broadcast schedule). 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

NOTE

Canadian Notice: 5 or 30 Watt Transceiver with an external antenna: The manufacturer rated output power of this equipment is for single carrier operation. For situations when multiple carrier signals are present, the rating would have to be reduced by 3.5 dB, especially where the output signal is re-radiated and can cause interference to adjacent band users. This power reduction is to be by means of input power or gain reduction and not by an attenuator at the output of the device.

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)

Specifications: Ground plane omnidirectional antenna

A Primex Transceiver's external antenna is a heavy duty, light weight ground plane antenna designed to be mounted outdoors.

- Designed for mounting to a 1.25 in. (3.17 cm) rigged galvanized conduit.
- Best operation is obtained when the ground plane rods are above all objects.

Parameter	Specification
Frequency Range	68–80 MHz
Gain	0 dBd
Impedance	50 ohms
VSWR	<1.5:1
Polarization	Vertical
Maximum Input Power	75 Watts (at 50° C)
H-plane Beamwidth	Omni
E-plane Beamwidth	78 degrees (half-power)
Connector	N-female
Weight	4.4 lb. (2 kg)
Dimensions	Radiating element: 29.4 in. H (74.7 cm). Ground radials: 41.5 in. W (105.41 cm)
Lighting Protection	Direct Ground
Wind Survival Rating*	120 mph (200 kph)
Compliance	FCC Part 90 Accepted. IC RSS-119 Accepted

NOTE

* Mechanical design is based on environmental conditions as stipulated in EIA-222-F (June 1996) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity.

Install OneVue Transceiver with External Antenna

Leveraging the precision of GPS satellite or Network Time Protocol (NTP) time, OneVue Transmitters wirelessly synchronize time for analog and digital clocks, timers and other Repeater Transmitters throughout a facility.

Before you begin

- Review the Installation Guidelines and identify the installation location of the Transceiver and system components.
- Inspect system components to verify packaging includes all supplied parts for each system component and verify no damage has occurred during shipping.
- Do not install or attempt to set the system wireless clocks or devices until the Transceiver and its components are installed and configured. Transceiver is powered, its time source is configured and time has been received, and is fully operational.

Required tools and equipment

To following tools and equipment below are required to install a Transceiver with an external antenna.

- Hammer drill
- Power drill
- 3/4 inch concrete drill bit, 18 in. (45.7 cm) long
- Penetrating mount only: 5/8 inch concrete drill bit, 18 inch (45.7 cm) long
- 1/2 inch wrench
- 3/4 feet deep well socket with ratchet
- 10 inch (25.4 cm) adjustable wrench
- Phillips screwdriver
- Flat head screwdriver
- Lineman's pliers
- Shears/scissors
- Silicone caulk; required to seal cabling/ground penetration
- Transceiver rack (recommended)
- Building ground near Transceiver
- Ground near transmitting antenna

Install location requirements

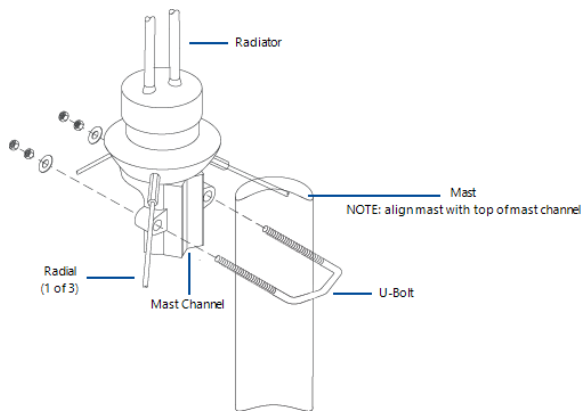
When planning the system installation of a Transceiver with an External Antenna, Primex recommends taking into consideration the below guidelines. Location is extremely important to ensure the best operation of your system.

- Transceiver should be located on the tallest building near center of area of coverage. 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 within 100 ft. (30.4 m) from the antenna. The maximum cable length allowed between the external antenna and Transceiver is 100 ft. (30.4 m). The system is attenuated to the 100 ft. (30.4 m) of coaxial cable; typically figure between 80 to 85 ft. of usable cable length.
- Transceiver must be located a minimum of 4 ft. (1.2 m) above the floor.
- Transceiver must be located within 3 ft. (0.9 m) from a 120 VAC electrical outlet. 10 AMP dedicated service recommended.
- Transceiver must be located in a controlled environment that is 32 to 122° F (0 to 50° C) and non-condensing humidity environment.
- External antenna must be located at a minimum of 15 ft. (4.5 m) clear from the radius of other antennas.

- External antenna must be located at least 10 ft. (3 m) from normal traffic area.
- External antenna mast must be located within 10 ft. (3 m) from earth ground.
- External antenna cannot be placed on or directly adjacent to walls or metal structures.
- External antenna cannot be located near television receiving antennas.
- External antenna cannot be mounted indoors or in enclosed areas.
- External antenna cannot be mounted to pre-existing antenna towers. If this is desired, contact Primex prior to installation.

Step 1: Assemble ground plane omnidirectional antenna

1. After removing the antenna from the shipping box, inspect all contents to ensure all parts are on hand and no damaged has occurred during shipping.
2. Screw the three radials into the base of the antenna.
3. Assemble the U-bolt on the base of the antenna. The Mast is to be aligned with the top of the mast channel.



Step 2: Assemble antenna mast

The Antenna Mast has two sections secured by a hex bolt during shipment. The two sections include a 5 ft. x 1.25 in. (1.52 m x 2.54 cm) rigid galvanized conduit and a 5 ft. x 1 in. (1.52 m x 3.17 cm) rigid galvanized conduit.

NOTE

1 Watt Transceiver with external antenna only: Non-penetrating mounting kit only includes the 5 ft. x 1.25 inch rigid galvanized conduit section.

1. Loosen and remove the hex bolt.
2. Remove the 5 ft. x 1 in. (1.52 m x 3.17 cm) rigid galvanized conduit section.
3. Insert the 5 ft. x 1 in. (1.52 m x 3.17 cm) rigid galvanized conduit section into the 5 ft. x 1.25 in. (1.52 m x 2.54 cm) rigid galvanized conduit section in reverse as shipped - to attain a combined antenna mast length of 9 ft. (2.74 m).
4. Align the sections fastening holes and secure sections together using the supplied hex bolt and nuts.

Step 3: Secure antenna to mast

1. Attach and fasten the antenna channel side base to the top of the 1 inch rigid galvanized conduit section.
2. Use a 1/2 inch wrench to tighten the nuts on both of the U-bolts, both evenly and securely. To ensure it's secure, tighten the second nut to the first nut.

Step 4: Route antenna LMR 400 coaxial cable

1. Drill a 1 in. (2.54 cm) hole through an exterior wall of the building that is in close proximity to the antenna installation location.
2. Roll out the LMR 400 cable to prevent kinks from developing during routing.
3. Route the LMR 400 cable female connector from the Transceiver installation area to the outside installation location of the antenna, leaving enough cable for two 1 ft. (0.30 m) diameter coils at the base of the antenna mast.
4. Form and secure two 1 ft. diameter (305 mm) loops in the LMR 400 cable at the base of the mast for lightning protection.
5. Connect the LMR 400 cable to the antenna.

Step 5: Mount antenna mast

There are three available mounting methods. Installation is dependent upon the mounting kit supplied with the system.

NOTE

Mounting the antenna mast may require two people.

Non-penetrating roof mount kit

The Non-Penetrating Antenna Kit is designed for mounting a ground plane omnidirectional antenna when mounting to the side of a structure is not practical. The overall footprint of the frame is 29 inches x 35 ½ inches (73.66 cm x 88.9 cm).

NOTE

Installation requires six 8 in. x 8 in. x 16 in. concrete blocks (not supplied).

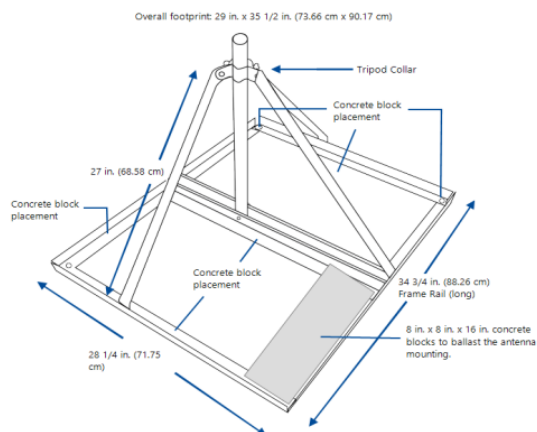
The kit is supplied with the following parts. If any of these items are missing, please contact Primex.

Description	Qty
Rigid galvanized conduit mast 5 ft. x 1.25 inches (1.52 m x 3.17 cm)	1
Tripod leg: 27 in. (2.54 cm) each in length	3
Frame rail (long): 34 ¾ in. (88.26 cm)	2

Description	Qty
Frame rail (short): 28 ¼ in. (71.75 cm)	4
Grounding Clamp	1
Long carriage bolt	1
Short carriage bolt	11
Flat washers	12
Lock nuts	12

Assemble non-penetrating antenna roof mount

1. Verify the kit contents.
2. Assemble the outer frame by laying the two long frame rails parallel to each - approximately 30 in. (76.2 cm) apart.
3. Insert a short carriage bolt from the bottom at each frame rail end, pointing skyward (4 total).
4. Connect the two long frames rails by placing the two short frame rails on top of the four protruding bolts to form a rectangle.
Make sure the square holes in the short tail "sides" are directly opposite each other.
5. Place a washer and nut on each of the four bolts and finger tighten.
6. Position the tripod within the four-sided frame.
7. Secure the three tripod legs to the inside of the frame by inserting three short bolts, from the inside and placing the washer and nut on the outside of the frame.
8. Drop the bottom of the mast (end with hole) through the top of the tripod collar.
9. Place the remaining two short rails parallel to each other, separated by the bottom of the mast.
10. Align the hole at the bottom of the mast, with the two square holes in the short frame rail sides.
11. Insert the long bolt and connect the frame rails to the mast.
12. From the underside of the frame, insert the four remaining short bolts upward and connect the inner short tails to the frame.
13. Tighten all nuts to secure.
14. Use six 8 in. x 8 in. x 16 in. concrete blocks to ballast the antenna mounting. Blocks are to be placed from rail to rail on each side of the mast; three blocks per side with a single block placed on each end and one in the middle.



Penetrating antenna kit

The penetrating antenna kit contains the materials required to mount the antenna to a wooden pole or masonry wall. A 5/8 in. (1.58 cm) diameter mounting hole is required and the maximum diameter of the pole or wall thickness is 14 in. (35.56 cm).

The kit is supplied with the following parts. If any items are missing, contact Primex.

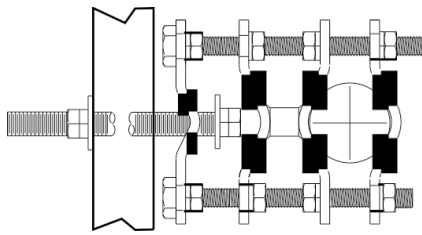
Description	Qty
Rigid galvanized conduit section: 5 ft. x 1.25 in.	1
Rigid galvanized conduit insert: 5 ft. x 1 in.	1
Antenna mounting clamp	2
Hex head bolt: 1/2 in.	2
Bolt washer: 1/2 in.	8
Lock washer: 1/2 in.	8
Hex nut: 1/2 in.	8

Mount antenna with penetrating antenna kit

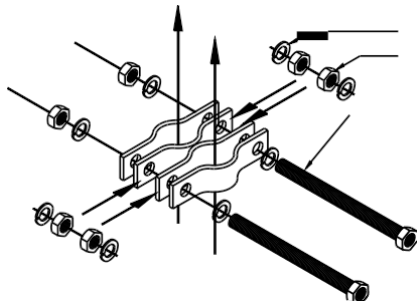
NOTE

The recommended diameter of the pole or the wall thickness should not exceed 14 in. (35.56 cm).

1. Verify the kit contents.
2. Assemble both clamps, as shown below, tightening the hex nuts to a torque of approximately 45 ft-lbs.



3. Remove the nut and washer from the 14 inch threaded rod.
4. Drill a 5/8 in. hole through the top of an exterior wall.
5. Insert the 14 in. threaded rod through the hole in the wall. If the thickness of the wall is greater than 10 in. a longer rod may be required. Different lengths of rod are available at hardware stores. If a longer threaded rod is needed, use a 5/8" -11 threads per inch rod.
6. Place the nut and metal plate over the rod.
7. Tighten the square nuts to an approximate torque of approximately 55 ft-lbs.
8. Drill a second 5/8 in. (1.59 cm) hole 2.5 ft. (0.76 m) directly below the first hole.
9. Ensure both clamps are vertically aligned, as shown below



10. Repeat Steps 4 through 6.
11. Connect the LMR 400 cable to the antenna. Be sure the connection is tight.
12. Insert the mast into the clamps.
13. Tighten both clamps evenly and securely.
14. Install Gelwrap splice enclosure over the connection between the LMR400 cable and antenna. Secure Gelwrap to mast using common electrical tape or cable ties.
15. Next, route the antenna cable.

Pole mount kit

The antenna pole mount kit is designed for the purpose of mounting the antenna to round or angled tower legs.

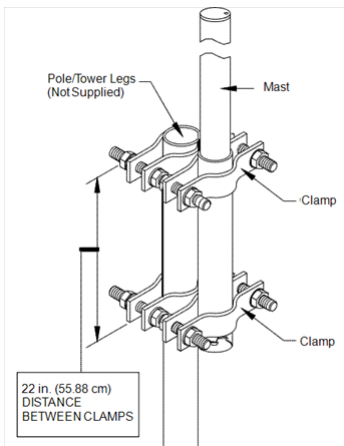
- The clamps can be used on round tower legs that measure from 1.25 in. to 3.25 in. (3.17 cm to 8.25 cm) OD or on angled tower legs that measure up to 3 in. (7.62 cm) on a side.
- The center section of each clamp is welded to provide mechanical stability and all parts are hot-depped galvanized steel.

The kit is supplied with the following parts. If any of these items are missing, please contact Primex.

Description	Qty
Rigid galvanized conduit section: 5 ft. x 1.25 in.	1
Rigid galvanized conduit section: 5 ft. x 1 in.	1
X style clamp	2
U-clamp	4
1/2 inch all thread bolt	4
1/2 inch lock washer	16
1/2 inch hex nut	16

Mount antenna using a pole mount antenna kit

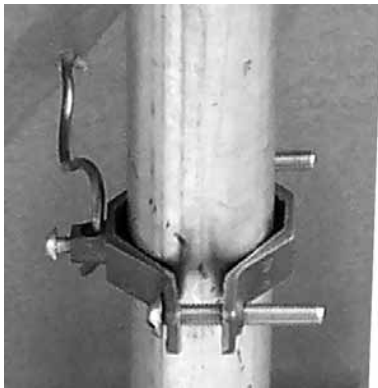
1. Verify the kit contents.
2. Assemble both clamps, tightening the hex nuts to an approximate torque of approximately 45 ft-lbs.
3. Tighten half of one clamp two feet below the top of the pole. Use a 3/4 inch wrench to do this and be sure to tighten the clamps both evenly and securely.
4. Using a 3/4 inch wrench, tighten half of the other clamp a few in. below the top of the pole. Be sure to tighten the clamps both evenly and securely.
5. Connect the LMR 400 cable to the antenna. Be sure the connection is tight.
6. Insert the mast into the clamps. The bottom of the mast should be a minimum of 2 inches below the bottom clamp.
7. Using a 3/4 inch wrench, tighten all nuts on both clamps.
8. Next, route the antenna cable.



Step 6: Ground antenna mast

The National Electrical Code (NEC) requires that every antenna installation be grounded. Also many areas have local antenna grounding codes. Be sure that you are familiar with local grounding and other antenna regulations and codes.

1. Secure the ground clamp (supplied) around the antenna mast.
2. Insert and tighten the #6 gauge wire (supplied) in the ground clamp.



NOTE

Cut the wire off at the necessary length. The remainder of the wire will be used to ground the Transceiver.

3. Connect the other end of the #6 gauge wire to a verified building/earth ground.

Step 7: 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.

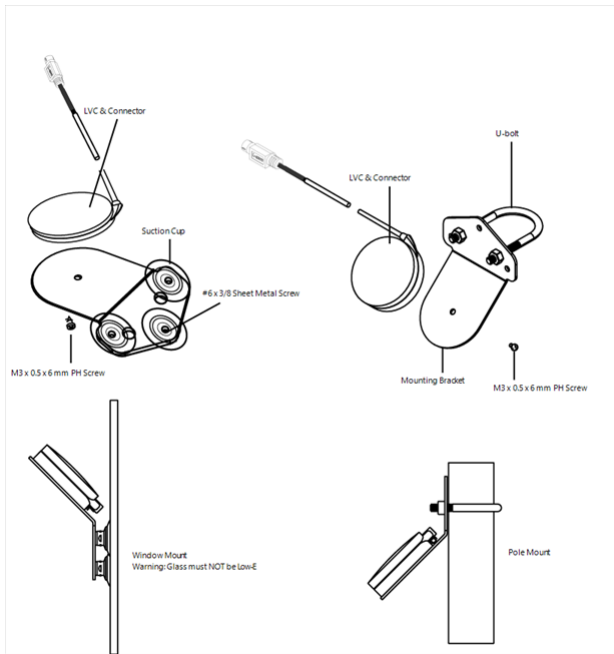
Transceiver with external antenna: Route through a 3/4 inch drilled hole into the building.

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 8: Weatherproof and secure antenna cabling

During this step, you will weatherproof and secure the cabling, verify all connections are secure, and caulk any exterior holes.

1. Weatherproof the antenna connection using GelWrap kit supplied.
2. Secure the GPS cable and LMR 400 cable to the building and mast.
3. Leave a drip loop where both cables enter the building to prevent water from entering the building.
4. Use UV resistant zip ties to secure the cables to the mast and building.

WARNING

Do not zip tie the GPS cable to the LMR 400 cable. These two cables must be 2 in. (5.08 cm) apart at all times, with the exception of the point where they enter into the building.

5. Verify all nuts and bolts in the mounting hardware are secure.
6. Caulk all exterior holes.
7. Secure and tie wrap all indoor cables.

Step 9: Ground Transceiver

1. Connect and tighten the terminal ground lug (supplied) on the Transceiver.
2. Insert and tighten #6 gauge wire (supplied) into the Transceiver terminal ground lug.
3. Connect other end of wire to a verified building/earth ground source.

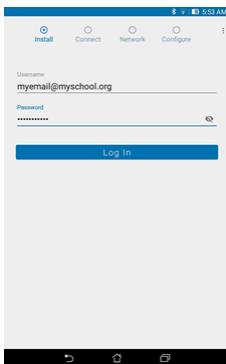
Step 10: Establish Transceiver connections and apply power



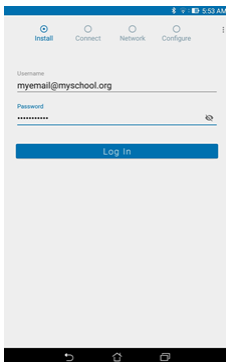
1. Connect the LMR 400 cable to the Transceiver "External Antenna" port, located on the rear of the Transceiver.
2. Connect time source. GPS: Plug the supplied GPS cable into the Transceiver "GPS IN" connection. NTP time: connect a network cable to the Ethernet port/Network LAN connection and configure the Transceiver to use NTP time.
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 11: Configure Transceiver settings

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

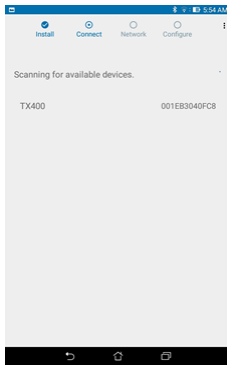


3. If Connect to OneVue selected, enter OneVue username and password.

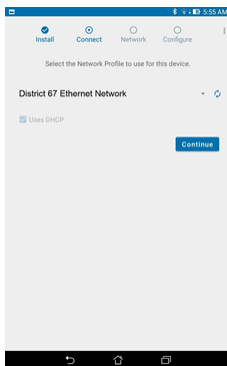


4. From the front of the Transceiver, press and release the Bluetooth pairing button. The Transceiver begins broadcasting its Bluetooth wireless signal.

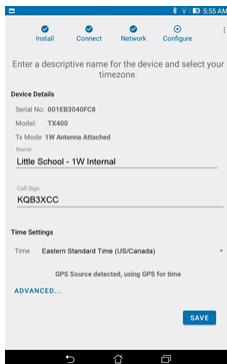
- When the Transceiver pairs with the app, the Transceiver model and MAC address is displayed. Select the Transceiver to be configured.



- 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.



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



- 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 an external antenna: By default, a Transceiver with an external antenna: transmits (broadcasts) its synchronized time to the system clocks and devices from the 39th to the 6th minute of the next hour and changes to a standby mode during the 7th to the 38th minute of the hour (standard broadcast schedule).

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

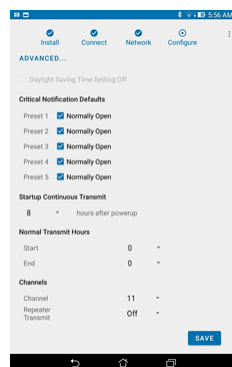
Channel (broadcast): Required to be set to the Channel number located on the FCC/IC Information Form.

Repeater Transmit: Off

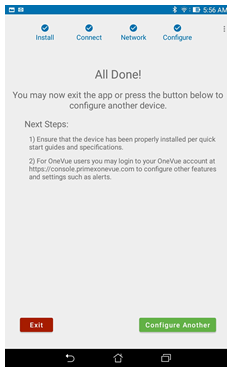
14. Channel section settings for a Repeater Transceiver only. Set the below two settings.

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 12: Verify Transceiver is operational

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.
Transmit	Green	<p>Main Transceiver: Solid green indicates transmitting (broadcasting).</p> <p>Repeater Transceiver: Solid green indicates transmitting (broadcasting) and flashing green indicates receiving signal from configured Repeater Transmit channel.</p>
Caution	Yellow	When illuminated, indicates in a warning/caution state, due to one or more of the status conditions below.
Error	Red	<p>When illuminated indicates in an alarm/error state, due to one or more of the status conditions below. When power is first applied,</p> <ul style="list-style-type: none"> • 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 inquiries.

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.