

14000 Series Transmitter - Internal Antenna Quick Install Guide

GPS Managed Time Overview - 14000 Series Transmitter

Architecture

The Primex GPS Managed Time solution consists of a single 14000 Series Transmitter, GPS Receiver, 14000 Series Repeater (Satellite) Transmitter (optional), and system clocks, bells and other devices in a single building, to a campus wide deployment.

Time Synchronization

Once a 14000 Series Transmitter has received its time from a GPS Receiver it sets its internal clock. It then transmits time information or schedules via a wireless radio signal to the wireless clocks, bells, and other devices in the system. As a result, the system devices are precisely synchronized to each other and all time, schedules, and events are kept current.

Time Source: Transmitter time is synchronized from a GPS Receiver and then broadcasts that time and event schedules to the system clocks and other devices.

Broadcast (Transmit) Schedule Transmitter with Internal Antenna: broadcasts its synchronized time continuously to the system clocks and devices.

Broadcast (Transmit) Schedule Transmitter with External Antenna: 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). During initial power-up, the Transmitter broadcasts for 8 consecutive hours. After the 8 hour power-up period, the Transmitter reverts to its timed broadcast schedule.

System components

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

GPS Receiver: the Global Positioning System (GPS) Receiver has a sensitive antenna that receives the Coordinated Universal Time (UTC) from the GPS satellite transmission. The GPS Receiver then sends the time to the Transmitter. The GPS Receiver is required to have an unobstructed "view of the sky" to receive the signal.

GPS/Transmitter Extension Cable (optional): a specially designed low-resistance data cable can be used to extend the distance between the GPS Receiver and the Transmitter. The GPS Receiver continuously sends the precise time through the cable to the Transmitter.

Repeater (Satellite) Transmitter (optional): optional unit used to supplement and extend signal coverage.

14000 Series Transmitter Specifications

Parameter	Specification
Operating Frequency Range	72MHz
Channels	16 channels available (pre-programmed prior to shipping)
Dimensions	16.0" L x 12.0" W x 1.9" D (40.6 cm x 30.5 cm x 4.8 cm)
Maximum Transmission	1 Watt (at Transmitter)
Radio Technology	Narrowband FM
Weight	9 lbs
Settings	Time Zone, LAN/Local, 30 min offset, serial/USB/Ethernet connectivity
Daylight Saving Time	Bypass switch
LCD Display	Time, date, and signal verification
Power Supply	Input: 120 VAC, 50/60 Hz, 0.4 Amp Output: 9 VDC, 2.0 Amp 6 ft (1.82 m) cord
Operating Range	32° to 158° F (0° to 70° C), non-condensing environment

Install 14000 Series Transmitter - Internal Antenna

Installation and Configuration Overview

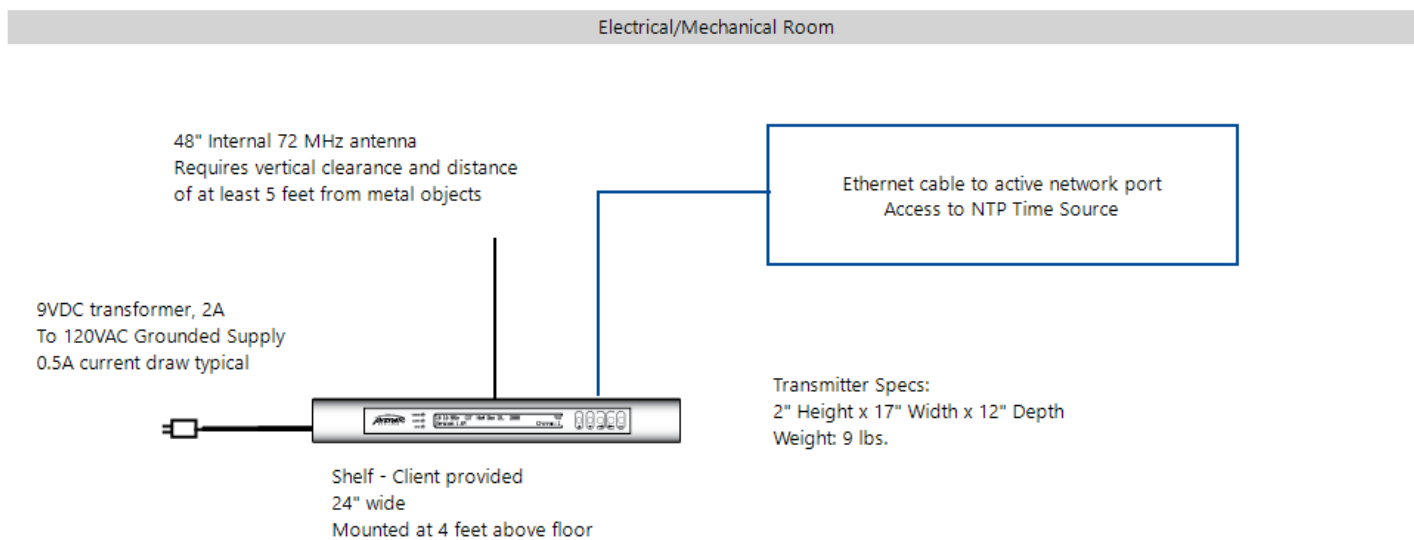
- Review the Installation Guidelines and identify the installation location of the Transmitter and system components.
 - Inspect system components to verify packaging includes all supplied parts for each system component and verify no damage has occurred during shipping.
 - Do not install or attempt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

Listed below is a summary of the order the Transmitter and its components are to be installed and configured.

1. Install GPS Receiver.
 2. Configure Switch Settings
 3. Establish Connections
 4. Verify System is Operational
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Typical System Setup - Transmitter with Internal Antenna



GPS Receiver Installation 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 Transmitter cannot exceed 200 feet (60.96 m).
- If the GPS cable is located outdoors, the use of a GelWrap splice enclosure is strongly recommended.

Tools and Equipment Required

To complete installation, the following tools and equipment are required.

Transmitter equipment

- 1 Watt Transmitter Rack 18 GA metal, epoxy coated (optional)
- Surge protector and battery backup system (recommended)

GPS Receiver installation required 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 GPS Receiver

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

Specifications

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 Transmitter via the NMEA 0183 standard protocol.
- Optional GPS extension cable. A specially designed low-resistance cable to extend the distance between GPS Receiver and Transmitter. 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 inches W x .75 inches H (6.35 cm x 1.91 cm)
Mounting Bracket	3.5 inches W x 1.4 inches H x 4.5 inches 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)

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How to mount a 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.

Internal antenna Transmitter: route through a 5/8 inch drilled hole into the building.

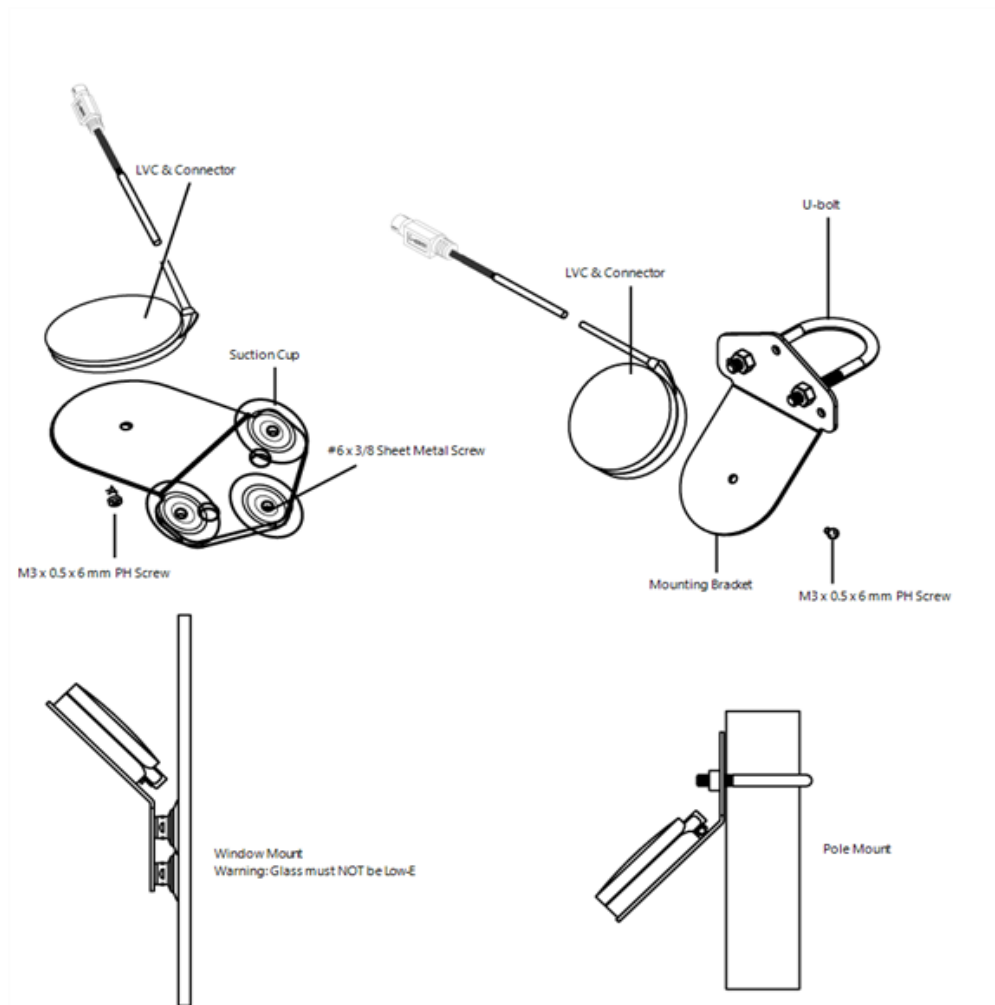
3. Assemble and mount the GPS Receiver unit to either the inside of a window (not Low-E glass) or to an outside pole or rooftop. The mounting location is required to have a clear view of the sky.

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 Transmitter GPS connection.
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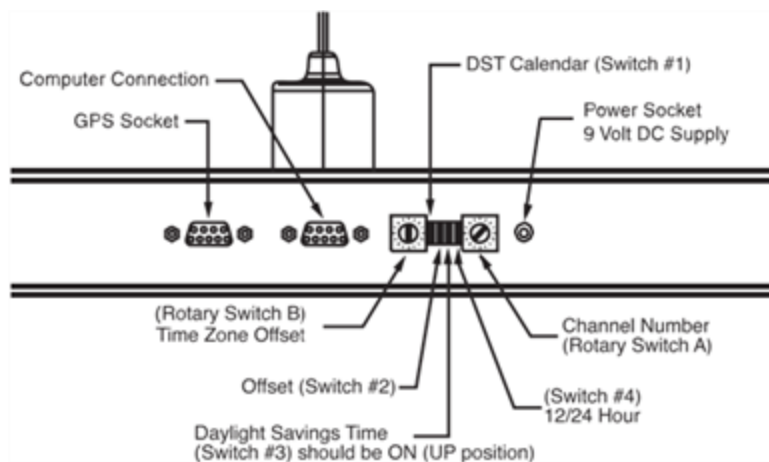
GPS Receiver installation components and illustration



Configure Switch Settings

The switch preferences are located on the back side of the 14000 Series Transmitter. The switches set the Time Zone, channel number, 12- or 24-hour display, and the observance of Daylight Saving Time. The Transmitter continually checks the position of the switches.

14000 Transmitter - connections and switch settings



Switch

Rotary Switch A (channel selection)

WARNING

Do NOT adjust the channel switch. It is only to be set to the frequency specified on the FCC/IC application.

Factory preset to the FM frequency on which the Transmitter will broadcast.

There are 16 available channels. The chart below explains which switch positions correspond to which channel numbers.

Switch No.	Channel No.	Switch No.	Channel No.
0	16	8	8
1	1	9	9
2	2	A	10
3	3	B	11
4	4	C	12
5	5	D	13
6	6	E	14
7	7	F	15

Switch

Rotary Switch B

Sets the Time Zone. Use a small slotted screwdriver to adjust the rotary switch.

"4" for Atlantic Time Zone

"5" for Eastern Time Zone

"6" for Central Time Zone

"7" for Mountain Time Zone

"8" for Pacific Time Zone

"9" for Alaska Time Zone

"A" for Hawaii Time Zone

Switch #1

Sets the Daylight Saving Time Calendar.

Up to automatically change to the new Daylight Saving Time calendar in 2007.

Down to abide by the old schedule in 2007.

Switch #2

Sets the direction of UTC offset.

Up for U.S. and Canada

Down for Europe

Switch #3

Sets the automatic Daylight Saving Time adjustment.

Up for automatic Daylight Saving Time changes

Down to bypass Daylight Saving Time adjustments

Switch

Switch #4

Sets the clock display on the Transmitter.

Up for 12-hour display

Down for 24-hour display

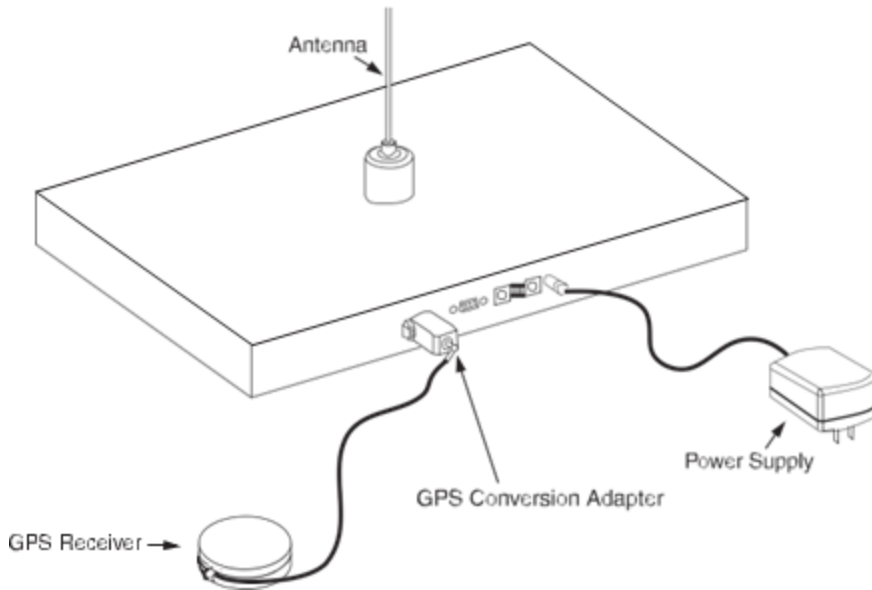
Establish Connections

1. Carefully screw the Transmitter antenna onto the Transmitter. Turn the antenna clockwise, being careful to avoid cross-threading the antenna. The antenna must be snug and flat against the case.

NOTE

Do not over-tighten the antenna. Hand-tighten only.

2. Plug the included DB9/RJ45 GPS conversion adapter into the GPS socket located in the back of the Transmitter.



3. Plug the GPS cable into the GPS conversion adapter.
4. Plug the supplied 9 Volt 2.0 Amp DC power supply (transformer) into the Transmitter.
5. Plug the power supply (transformer) into a 120 VAC outlet.

Verify System is Operational

The final step is to verify the 14000 Series Transmitter is operating and functional.

1. Verify a GPS signal has been received.
2. Verify the Time and Date are correct.
3. Verify the Channel Number is set correctly.

Support

To obtain additional technical documentation for Primex products, visit the Support area on our website at www.primexinc.com

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.

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