

September, 2009

1 Primex Wireless, Inc.
2 965 Wells Street
3 Lake Geneva, WI 53147
4 800-537-0464

5
6
7 www.primexwireless.com
8
9

10 Product Guide Specification

11
12 **Specifier Note: This product specification is written according to the Construction**
13 **Specifications Institute (CSI), *MasterFormat*[™], *SectionFormat*, and *PageFormat*,**
14 **contained in the *CSI Manual of Practice*.**

15
16 **The section must be carefully reviewed and edited by the**
17 **Architect/Engineer/Consultant to meet the requirements of the project and local**
18 **building code. Coordinate this section with other specification sections and the**
19 **drawings.**

20
21 **Delete all “Specifier Notes” when editing this section.**
22

23 DIVISION 16730

24 XR WIRELESS CLOCK SYSTEMS 1 Watt Transmitter External Antenna

25
26
27 **Specifier Note: This section covers the Primex Wireless XR Synchronized Clock**
28 **System. Consult Primex Wireless for assistance in editing this section for the**
29 **specific application.**
30

31 Part 1 General Requirements and Scope

32 Furnish and install a complete new XR wireless clock system using Primex Wireless
33 Inc. XR wireless system.

34 All bids shall be based on the equipment as specified herein. The specifying authority
35 must approve any alternate system.

36
37 (Reference Division 16730 Clock Systems)
38
39

40 **Specifier Note: Edit the following list as required for the project.**
41
42
43
44
45
46

1 **1.1 Section Includes**

- 2 Transmission Systems
- 3 GPS Receiver
- 4 Primary Transmitter
- 5 Satellite Transmitter
- 6 Clocks
- 7 Analog
- 8 Digital

9
10 **Specifier Note: Edit the following list as required for the project. List other sections**
11 **with work directly related to this section.**

12
13 **1.2 Related Sections**

- 14 Division 16 – Electrical (120 volt grounded outlet required for transmitter).
- 15 Division 16731 – Wireless Digital Display Clocks and Timers
- 16 Division 16735 – Wireless Tone Generator

17
18 **Specifier Note: List standards referenced in this section, complete with**
19 **designations and titles. This article does not require compliance with**
20 **standards, but is merely a list of those used.**

21 **1.3 References**

- 22 This Technical Specification and Associated Drawings
- 23 Primex Wireless XR Satellite Time System User Manual.
- 24 Primex Wireless Extended Range 1 W User Guide

25
26
27 **1.4 Definitions**

28
29 GPS: Global Positioning System, a worldwide system that employs 24 satellites in an
30 integrated network to determine geographic location anywhere in the world, and which
31 employs and transmits Universal Coordinated Time, the world's most accurate and
32 reliable time.

33
34 UTC: Universal Coordinated Time

35
36 NTP: Network Time Protocol, used for synchronizing the clocks on computer
37 networks and devices from either a public server or a separate server on a private local
38 area network.

39
40 **1.5 System Description**

41 XR wireless clock system transmitter shall broadcast either on a regular standard
42 schedule of continuous operation between 39 minutes past the hour up to 6 minutes
43 past the following hour, or on a programmable, more limited, custom schedule agreed
44 to with the end user. The transmitter will operate in standby mode while powered but
45 not scheduled to broadcast. The transmitted signal will be received by clocks

1 throughout the facility, which are capable of clock readouts in multiple time zones
2 where desired.

3
4 The system shall provide wireless time from a master time source. This time source
5 will either be the atomic clock on the GPS system or the clock from a defined NTP
6 server that the XR transmitter can access via the customer Ethernet. The master time
7 will be synchronized to UTC. Hard wiring will not be required to the clocks installed
8 for the system. Clocks shall automatically adjust for Daylight Saving Time in
9 locations where DST is observed.

10
11 Analog Clocks shall be synchronized to within 10 milliseconds 6 times per day, and
12 The system shall have an internal oscillator that maintains plus or minus one second
13 per day between synchronizations, so that clock accuracy shall not exceed plus or
14 minus 0.2 seconds.

15
16 The system shall include an internal clock reference so that failure to detect the master
17 time source shall not result in the clocks failing to indicate time. Additionally, XR
18 transmitters will have an internal battery backup of up to eight hours in the event of a
19 power failure so that settings and the correct master time will be instantly recalled
20 upon restoration of power.

21
22 The system shall incorporate a “fail-safe” design so that failure of any component shall
23 not cause failure of the system. Upon restoration of power or repair of failed
24 component, the system shall resume normal operation without the need to reset the
25 system or any component thereof.

26
27 Clock locations shall be as indicated, and clocks shall be fully portable, capable of
28 being relocated at any time.

29
30 The system must operate in accordance with a “Radio Station Authorization”, Form
31 FCC 601 – LM, granted by the Federal Communications Commission (FCC). This
32 license will be issued to and held by the end user

33
34 **1.6 Regulatory Requirements**

35
36 Equipment and components furnished shall be of manufacturer’s latest model.

37
38 The end user will hold a license, known as a “Radio Station Authorization” granted by
39 the FCC.

40
41 This license grants the end user protected use for wireless transmission at the
42 designated frequency.

43
44 This license will designate a unique “call sign” for each end user.

45
46 Transmitter and receiver shall comply with Part 90 of FCC rules as follows:

1
2 This device may not cause harmful interference, and

3
4 This device must accept interference received, including interference that may cause
5 undesired operation.

6
7 Transmitter frequency shall be governed by FCC Part 90.35.

8
9 Transmitter output power shall be governed by FCC Part 90 257 (b)

10
11 System shall be installed in compliance with local and state authorities having
12 jurisdiction.

13
14 **1.7 Submittals**

15
16 **Specifier Note: In accordance with FCC regulations, an application for**
17 **“Radio Station Authorization” must be filed prior to use of the**
18 **equipment. Normally, the manufacturer will have completed the filing**
19 **and obtaining the license. If not, the Owner will be required to file the**
20 **application with the FCC prior to use. Furnishing the license, or a copy**
21 **of the application, will confirm that FCC approval has been obtained.**

22
23 Product Data: Submit complete catalog data for each component, describing physical
24 characteristics and method of installation. Submit brochure showing available colors
25 and finishes of clocks.

26
27 Operating License: Submit evidence of application for FCC Radio Station
28 Authorization prior to installing equipment. Furnish the license or a copy of the
29 application for the license, to the Owner/End User prior to operating the equipment.
30 The original license must be delivered to the Owner/End User.

31
32 Samples: Submit one clock for approval. Approved sample shall be tagged and shall
33 be installed in the work at location directed.

34
35 Manufacturer's Instructions: Submit complete installation, set-up and maintenance
36 instructions.

37
38 Floor plans indicating the location of system transmitter(s), approved by manufacturer,
39 will be submitted to owner prior to installation.

40
41 **1.8 Substitutions**

42
43 Proposed substitutions, to be considered, shall be manufactured of equivalent materials
44 that meet or exceed specified requirements of this Section.

45
46 Proposed substitutions shall be identified not less than 10 days prior to bid date.

1
2 Other systems requiring wiring and/or conduit between master and clocks will not be
3 accepted.

4
5 Other systems using wireless technology in an unlicensed frequency range will not be
6 accepted.

7
8 Other systems using wireless technology where the license is held by any party other
9 than the end user will not be accepted.

10
11 **1.9 Quality Assurance**

12
13 Permits: Obtain operating license for the transmitter from the FCC.

14
15 Qualifications:

16
17 Manufacturer: Company specializing in manufacturing commercial time system
18 products with a minimum of 30 continuous years of documented experience including
19 4 years experience producing GPS wireless time systems.

20
21 Installer: Company with documented experience in the installation of commercial time
22 systems.

23
24 Prior to installation, a site survey must be performed to determine proper transmitter
25 placement.

26
27 **1.10 Delivery Storage and Handling**

28
29 Deliver all components to the site in the manufacturer's original packaging. Packaging
30 shall contain manufacturer's name and address, product identification number, and
31 other related information.

32
33 Store equipment in finished building, unopened containers until ready for installation.

34
35 **1.11 Project Site Conditions**

36 Clocks shall not be installed until painting and other finish work in each room is
37 complete.

38
39 Coordinate installation of system antenna for access to the roof to comply with safety
40 standards detailed in manufacturers instructions.

41
42 **Specifier Note: Delete following site condition if NTP will be the master time**
43 **source:**

44
45 GPS package: coordinate installation of GPS receiver for access to the roof or exterior
46 sidewall so that the bracket and related fasteners are watertight.

1
2 **1.12 System Startup**

3
4 At completion of installation and prior to final acceptance, turn on the equipment;
5 ensure that all equipment is operating properly, and that all clocks are functioning.
6

7 **1.13 Warranty**

8 Manufacturer will provide a warranty on GPS receiver, transmitter, and antenna. All
9 other components will have a 1 year warranty.
10

11
12 **Part 2 – Products**

13
14 **2.1 Manufacturer**

15
16 XR wireless clock system shall be manufactured by Primex Wireless, Inc., 965 Wells
17 Street, Lake Geneva WI 53147 (800) 537-0464 FAX (262) 248-0061
18 www.primexwireless.com.
19

20 **2.2 Sequence of Operation**

21
22 **Transmitter Operation**

23 When power is first applied to the transmitter, it checks for and displays the software
24 version. It then checks the position of the switches and stores their position in
25 memory. The transmitter looks for the master time source.
26

27 **Specifier Note: Select procedure appropriate to the master time source from**
28 **either of the following:**
29

30 **GPS Time Source**

31 With the XR transmitter in GPS mode, it powers a connected GPS engine mounted
32 with a clear view of the sky. Upon power, the GPS module seeks the GPS satellites in
33 orbit to determine position and UTC time. Once the transmitter acknowledges
34 receivable GPS data, it downloads time data and synchronizes its internal master clock
35 to GPS time. The transmitter then starts to transmit its internal time once every
36 second. The transmitter updates its internal clock every time it receives valid time
37 data from the GPS.
38

39 **NTP Time Source**

40 With the XR transmitter in NTP mode, it connects over the Ethernet to the IP address
41 of the NTP server. This IP address is programmed into the transmitter as part of its
42 configuration. Once the connection to the NTP server is acknowledged, it downloads
43 time data and synchronizes its internal master clock to NTP time. The transmitter then
44 starts to transmit its internal time once every second. The transmitter updates its
45 internal clock in this mode once per hour.
46

1 **Analog Clock Operation**

2 Apply power or insert batteries. Follow set up procedures detailed in manufacturer’s
3 instructions.

4
5 After initial setup, the clock will shut off the receiver. Six times each day, the
6 microprocessor will activate the receiver and starting with the stored channel, it will
7 again look for a valid time signal. If necessary, the clocks will resynchronize to the
8 correct time.

9
10 If the clock has not decoded a valid time signal for a pre-determined number of days, it
11 will go to a step mode. Non signal reception can be caused by low battery voltage. If
12 this occurs, replace the batteries.

13
14 **2.3 Equipment**

15 General: The clock system shall include a transmitter, a roof or window mounted
16 GPS receiver, indicating clocks, and all accessories for complete operation.

17
18 **Specifier Note: If NTP transmitter package is purchased, delete GPS**
19 **Receiver statement, otherwise, select extension cable length, if applicable.**

20
21 **GPS Receiver**

22 GPS roof mounted, with 16-foot cable (5m) attached
23 Primex Wireless extension cable available: 50ft (15.25m), 100 ft (30.5m), and 200 ft
24 (61m).

25
26 The GPS Receiver shall be a complete GPS receiver including antenna in a waterproof
27 case, designed for roof or outdoor mounting. Provide mounting bracket for attachment
28 to roof structure.

29
30 The GPS Receiver cable must be plenum rated where required by local code.

31
32 **Transmitter**

33
34 **Specifier Note: Select procedure appropriate to the master time source from**
35 **either of the following:**

36
37 Primex Wireless Model **XR01EN**, consisting of wireless transmitter with Ethernet port
38 for NTP time input. Unit shall obtain current NTP time from an Ethernet network.

39
40 Primex Wireless Model **XR01EM**, consisting of wireless transmitter with Ethernet
41 port for NTP time input and GPS receiver for GPS satellite time input. Unit shall
42 obtain current atomic time from either satellite via GPS or via NTP through the
43 Ethernet port.

44
45 Transmission:

XR Wireless Clock System 1 Watt Transmitter External Antenna
Division 16730

- 1 Frequency Ranges: 72.020 to 72.980 MHz, 74.610 to 74.790 MHz, 75.210 to 75.390
- 2 MHz, 75.440 to 75.600 MHz. Each range is reserved by the FCC for licensed fixed
- 3 mobile broadcasts.
- 4
- 5 Transmission Power: 1 watt (30dBm) maximum
- 6
- 7 Radio technology: narrowband FM
- 8
- 9 Number of channels: 74
- 10
- 11 Channel bandwidth: 20 kHz maximum
- 12
- 13 Transition mode: one-way communication
- 14
- 15 Data rate: 2 KBps
- 16
- 17 Operating range: 32 degree F to 158 degrees F (0 degrees C. to 70 degrees C).
- 18
- 19 Transmitter:
- 20
- 21 Transmitter output power: +26 to +30 dBm
- 22
- 23 Frequency deviation: +/- 4 kHz
- 24
- 25 Transmitter power requirements: 120 VAC 60 Hz
- 26
- 27 Internal power requirements: 5 VDC
- 28
- 29 Carrier frequency stability: +/- 20 ppm
- 30
- 31 Transmitter shall have 74 selectable channels to assure interference-free reception.
- 32
- 33 Transmitter shall have the following switches:
- 34 Time zone adjustment switches for all time zones in the world. Includes: Eastern,
- 35 Central, Mountain, Pacific, Alaska, and Hawaii.
- 36
- 37 DIP Switch to allow the following configuration: Daylight Saving Time bypass option,
- 38 12-hour or 24-hour display, GPS or NTP time source, Local or LAN configuration,
- 39 UTC+ or UTC-, 30 minute UTC offset option.
- 40
- 41 The DIP switches and channel switches are disabled during production by the
- 42 manufacturer as the broadcast channel number and time zone are to be predetermined
- 43 during the FCC licensing process based on end user location and existing wireless
- 44 services operating in the area. The end user will be required to contact Primex
- 45 Wireless if, for any reason, a different broadcast channel is required, since the request

XR Wireless Clock System 1 Watt Transmitter External Antenna
Division 16730

1 would require a modification of the license, requiring approval by the FCC, or if a
2 different time source is desired.

3
4 Transmitter housing shall be black metal case, 16-3/4 inches (424.4mm) by 12 inches
5 (304.8mm) by 1-7/8 inches (46.4mm) in size.

6
7 An external antenna is included with the transmitter model number.
8 The antenna connects to the transmitter via a 50-ohm 100ft. coaxial cable.

9
10 Transmitter housing shall incorporate a display, which shall include the following:

11
12 Time readout

13
14 AM and PM indicator if 12-hour time display is set

15
16 Day and date readout

17
18 Time zone indicator including Standard or Daylight Savings Time

19
20 On screen menu to verify diagnostics, errors, time updates, and switch settings,
21 toggled by sequence of push buttons next to display

22
23 Status LEDs: Green to determine broadcast mode, yellow which flashes in the event of
24 lack of time update after 48 hours, red which flashes to indicate connection or internal
25 transmitter problem. The green broadcast mode LED will be solid to indicate the
26 transmitter is broadcasting its signal, and dark to indicate the transmitter is in standby
27 mode and not broadcasting.

28
29 Internal clock:

30 Transmitter shall contain an internal clock such that failure to update time from source
31 will not disable the operation of the clocks.

32
33 Power supply (included)

34 Input: 120 volt AC 50/60 Hz, 0.4 amps.

35 Output: 9 volt DC, 2.0 amps.

36
37 Antenna: An external antenna is included with the transmitter model number.

38 The antenna connects to the transmitter via a 100 ft. (30.5m) 50-ohm coaxial cable,

39 Antenna: Dimensions: radiating element 29.4 inches (747mm)

40
41 Ground radials 41.5 inches (1063 mm)

42
43 Equivalent flat plate area: 0.68ft² (0.063m²)

44
45 Polarization: Vertical

46

XR Wireless Clock System 1 Watt Transmitter External Antenna
Division 16730

1 H-plane beamwidth: omni
2
3 E-plane beamwidth: 78 degrees (half power)
4
5 Max. Input power (75 watts@ 50 degrees)
6
7 Gain: 0 dBd
8 VSWR (max)<: 1.5
9
10 Frequency range: 68-78MHz (broadband)
11
12 Impedance: 50 ohms
13 Lightning Protection: Direct Ground
14 Connector N female
15
16 Pole or Wall Mountable
17 Mounting hardware supplied
18

Specifier Note: Select optional antenna mast configurations. See manufacturer's instructions for building mount or non – penetrating mast options

22
23 Optional Non penetrating antenna mast kit
24 Primex Wireless Model **ANT-NP1**
25 Installer must provide ballast material per manufacturer's instructions
26 Building -mount antenna mast kit. Primex Wireless Model
27 **ANT – P1**
28
29 Wind survival rating 120mph (200kph)
30 Additional Equipment
31

Specifier Note: Large buildings and multi-building projects may require satellite transmitters to provide proper coverage. Consult Primex Wireless for assistance in making this determination. If satellite transmitters are required, include the following two items in the project specification.

32
33
34
35
36
37
38 Wireless Receiver Switches: Switches shall receive time packets from the Primary
39 Transmitter and relay the synchronized time to the Satellite Transmitter connected to
40 it. The unit shall include the following:
41

42 Antenna mounted on top of the switch housing, 11-1/2 inches (292mm) long.
43 Power Supply:
44 Input 120 VAC 50/60 Hz, 0.4 amps
45 Output: 9 volt DC, 10.25 amps
46

XR Wireless Clock System 1 Watt Transmitter External Antenna
Division 16730

1 RS 232 data cable, 5 feet (1.5mm) long
2 Daylight Saving Time bypass switch

3
4 Dimensions: 4-1/4 inches (108mm) long, 5-3/4 inches (146mm) wide, 1-1/4 inches
5 (31.75mm) deep.

6
7 Weight: 12 ounces (.34kg)
8 Operating Range: 32 degrees F to 158 degrees F (0 to 70 degrees C)

9
10 Satellite Transmitters Primex Wireless Model **XR01R**: Satellite Transmitters shall
11 receive the signal from the Wireless Receiver Switches and transmit the signal to the
12 devices in its vicinity, which are out of the range from the Master Transmitter. The
13 unit shall include the following:

14
15 Antenna mounted on top of the housing, 46 inches (1168mm) long.

16
17 Wireless Receiver Switch.

18
19 Power Supply
20 Input: 120 VAC, 50/60 Hz, 0.4 amps
21 Output: 9 volt DC, 2.0 amps.

22
23 6 foot (1.83m) cord.

24
25 Transmission Power: 1 watt maximum

26
27 72 MHz frequency.

28
29 Traditional analog clocks (battery): Analog clocks shall be wall mounted. Clocks shall
30 have polycarbonate frame and polycarbonate lens. Face shall be white. Hour and
31 minute hands shall be black. 9 inch (228.6mm) diameter analog clock: Primex
32 Wireless Model **14280** 12-1/2 inch (317.5mm) diameter analog clock: Primex
33 Wireless Model **14155**

34 16 inch (406.4mm) diameter analog clock: Primex Wireless Model **14163**

35 24 inch (610mm) diameter analog clock: Primex Wireless Model **14346**

36
37 Additional colors, finishes, and dial faces are available from manufacturer.

38
39 Analog clocks shall be battery-operated, and shall have minimum 5-year battery life.

40
41 Analog clocks shall be capable of automatically adjusting for Daylight Saving Time.
42 An on-off switch located on the transmitter shall disable this function if desired.

43
44 Time shall be automatically updated from the transmitter 6 times per day.

45
46 Analog clocks shall remember the time during changing of batteries.

XR Wireless Clock System 1 Watt Transmitter External Antenna
Division 16730

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9 inch (228.6mm) and 12.5 inch (317.5mm) analog clocks shall have a tamper proof/theft resistant clock lock mounting slots.

Installer will furnish clock batteries in accordance with manufacturer's instructions (9 inch /228.6mm– 2 C cells, 12.5inch/317.5mm, 16 inch/406.4mm –2 D cells and 24 inch/610mm – 2 C cells)

Specifier Note: Select optional dial designs, colors, case options and hands from manufacturer's brochure

Analog clock receivers shall be as follows:

Receiver sensitivity: >-110 dBm

Receiver power: dual lithium battery pack, supplied by manufacturer.

Antenna type: internal

Antenna gain: -7 dBd

If the transmitter stops transmitting valid time signals due to power failure, the clocks will continue to function as accurate quartz clocks until a valid time signal is decoded. If signal transmission is not restored after 96 hours,

The second hand will “five -step” as a visual indicator that the signal has been lost. Should the clocks lose power and signal, the clocks will not function.

Specifier Note: Analog clock faces can be made with Owner's logo as an option. If desired, leave in the following, and arrange for Owner to provide hard copy or digital copy of logo in format required by Primex Wireless. Contact Primex Wireless for details

Analog clock faces shall bear Owner's logo as indicated.

Traditional analog clocks (AC): Analog clocks shall be wall mounted. Clocks shall have polycarbonate frame and polycarbonate lens. Face shall be white. Hour and minute hands shall be black.

12-1/2 inch (317.5mm) diameter analog clock, 24 VAC, Primex Wireless Model **14323** 12-1/2 inch C, 12-1/2 inch (317.5mm) diameter analog clock, 120 VAC, Primex Wireless Model **14306** Additional colors, finishes, and dial faces are available from manufacturer.

XR Wireless Clock System 1 Watt Transmitter External Antenna
Division 16730

1 Analog clocks shall be AC powered (24 VAC or 120 VAC). Clocks must have an 18
2 inch (457.2mm) cord with two-prong plug (120 VAC) or pigtail (24 VAC) to connect
3 to power source.

4
5 Analog clocks shall be capable of adjusting for Daylight Saving Time.

6
7 Time shall be automatically be updated from the transmitter 6 times per day.

8
9 If power is interrupted, the clock will stop until power resumes. Upon resumption of
10 power, the clock will self correct to the current time.

11
12 Clocks shall have a tamper proof/theft resistant clock lock mounting slots.

13
14 Analog clock receivers shall be as follows:

15
16 Receiver sensitivity: >-110 dBm

17
18 Receiver power: 24 VAC or 120 VAC (see model #)

19
20 Antenna type: internal

21
22 Antenna gain: -7 dBd

23
24 If transmitter stops transmitting valid time signals due to power failure, the clocks will
25 continue to function as accurate quartz clocks until a valid time signal is decoded. If
26 signal transmission is not restored after 96 hours, the second hand will “five step” as a
27 visual indicator that the signal has been lost. Should the clocks lose power and signal,
28 the clocks will not function.

29
30 **Specifier Note: Analog clock faces can be made with Owner's logo as an option. If**
31 **desired, leave in the following, and arrange for Owner to provide hard copy or**
32 **digital copy of logo in format required by Primex Wireless. Contact Primex**
33 **Wireless for details**

34
35 Analog clock faces shall bear Owner’s logo as indicated.

36
37 Digital Clocks: Primex Wireless Model **XRA1B203**, 4 inch (101.6mm), 6 digit - 7
38 segment LED display.

39
40 **Specifier Note: Base part number comes with red LED digits. Add letter “G” to**
41 **base number for green LED digits**

42
43 **Select optional digit style, colors, and case styles from manufacturer’s brochure.**

44
45
46 Digital clocks must be able to receive synchronized time signal

XR Wireless Clock System 1 Watt Transmitter External Antenna
Division 16730

- 1 From Primex Wireless master or satellite transmitter.
2
3 Digital clocks must have time and date option.
4
5 Digital clocks shall be capable of automatically adjusting for Daylight Saving Time
6
7 Power Supply: 120 VAC, 50-60 cycle.
8
9 Digital clocks must be viewable from 150 feet (45.7m).

Specifier Note: Where desired for protection of an clocks, specify the following optional equipment

14 Wire guards: Provide one for each clock as follows:

17 Analog clock wire guard Primex Wireless Model **14131**, 14 by 14 inch (355.6 by
18 355.6 mm) size, for nominal 12-1/2 inch (317.5 mm) diameter analog clocks.

20 Analog clock wire guard Primex Wireless Model **14123**, 18 by 18 inch (457.2 by
21 457.2mm) size, for 16 inch (406.4mm) diameter analog clocks. Digital clock wire
22 guard Primex Wireless Model 14388 for 2.5" (63.5mm) LED digital clocks
23

24 Digital clock wire guard Primex Wireless Model **14389** for 4" (101.6mm) LED digital
25 clocks.

27 Dual D Lithium Battery Pack Primex Wireless Model **14885** contains two sealed
28 parallel lithium primary batteries.

29 Cable Connection Sealant: Radio Shack Coaxial Cable Connector

31 Sealant 278-1645, or approved electrical grade silicone sealant.
32
33

Specifier Note: Where desired for mounting transmitter, specify the following equipment: One for each transmitter

38 Transmitter Rack.

39 Primex Wireless Model **14005**, 3" (76.2mm) x 16.5" (419mm)(x 18"(457mm), 18
40 gauge metal, epoxy covered
41

42 **Part 3 – Execution**

44 **3.1 Examination**

46 Verify that construction is complete in spaces to receive equipment and that rooms are

1 clean and dry.

2
3 Verify that 120 volt electrical outlet is located within 6 feet (1.83m) of location of
4 transmitter and the outlet is operational and properly grounded.

5
6
7 **3.2 Installation**

8
9 **Specifier Note – valid for transmitter with GPS input: The GPS unit can be mounted
10 on the roof, on a pole, or at a window. In each case, the GPS unit must have a clear
11 view of the sky. If the GPS unit is mounted on the roof, it must be located on a
12 suitable bracket, well above the level of standing or incidental water. If the GPS unit
13 is mounted at a window, it must be located away from low-E glass. If transmitter to
14 use NTP as source, delete following work instruction with this note.**

15
16 GPS Unit: Install on roof in location indicated, in clear view of the sky. Install unit in
17 location free from standing water, and above accumulations of leaves or debris. Seal
18 cable connection to GPS with cable connection sealant. Any added cable lengths must
19 be protected from outside elements.

20
21 Locate transmitter in a penthouse, electrical closet, or telecommunications room in a
22 central location in the building. Clearance around all sides of the transmitter to
23 comply with local building codes.

24
25 **Specifier Note: To assure optimum performance of the System, a site survey must
26 be performed by Primex Wireless or a Certified Primex Wireless installation
27 company. Contact Primex Wireless Technical Support at 1-800-404-8112.**

28
29
30 Transmitter is connected to external antenna via a 50 ohm coaxial cable. Typical
31 length – 100ft (30.5m) Cable routing should comply with ANSI EIA/TIA-569 and
32 local building codes. If the cable is routed through conduit, the conduit should be a
33 minimum of 2 inch (50.8mm) diameter.

34
35 Transmitter enclosure must be bonded to an earth ground per ANSI EIA/TIA 607,
36 NEC Article 250, and local building codes

37
38 **Specifier Note: Select procedure appropriate to the master time source from
39 either of the following:**

40
41 **If GPS Unit will be used as master time source**

42 Attach GPS receiver to transmitter using cable. Set GPS/LAN DIP switch to GPS.

43
44 **If NTP will be used as master time source**

45 Connect CAT5/CAT5e/CAT6 EIA/TIA standard Ethernet cable from transmitter LAN
46 port to available network drop. Set GPS/LAN DIP switch to NTP.

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Specifier Note: If NTP is the master time source, the network drop used to connect the XR transmitter must have connectivity to the NTP server, which can be verified by the customer IT manager. The default NTP address is time.nist.gov. If the network has a different NTP IP address, it may be programmed into the transmitter by the installer to allow connection to the proper network time. Contact Primex Wireless Technical Support at 1-800-404-8117.

Antenna
Antenna should be mounted to a mast on the roof of the building connecting to the transmitter via a 50-ohm coaxial cable. Consult manufacturer's instruction manual for specific clearances and mounting instructions. Antenna must be bonded to an earth ground per ANSI EIA/TIA 607, NEC Article 250, and local building codes.

Analog clocks (battery): Perform the following operations with each clock:

Install batteries.

Set clocks to correct time in accordance with manufacturer's instructions.

Observe analog clock until valid signals are received and analog clock adjusts itself to correct time.

Install the analog clock on the wall in the indicated location, plumb, level and tight against the wall. If using 12-1/2 inch (317.5mm) clock, attach using clock-lock hanging method and suitable fasteners as approved by clock manufacturer.

Analog clocks (AC): Perform the following operations with each clock:

Apply power (24 VAC or 120 VAC)

Observe clock until valid time signals are received and analog clock adjusts itself to correct time.

Install the analog clock on the wall in the indicated location, plumb, level, and tight against the wall. Attach using clock-lock hanging method and suitable fasteners as approved by clock manufacturer.

Specifier Note: Delete the following if wire guards are not required

Wire guards: Secure to wall, using approved theft-resistant fasteners.

3.3 Adjusting

Prior to final acceptance, inspect each clock, adjust as required, and replace parts which are found defective.

3.4 Cleaning

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Prior to final acceptance, clean exposed surfaces of clocks, using cleaning methods recommended by clock manufacturer. Remove temporary labels from clock faces. Do not remove labels from backs of clocks.

3.5 Demonstration

Provide training to Owner's representative on setting and adjusting clocks, replacing batteries and routine maintenance.

3.6 Protection

Protect finished installation until final acceptance of the project.

3.7 Testing

All devices must be tested at their operational location under normal operational conditions to assure reception of signal.

END OF SECTION