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Product Guide Specification

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

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

Delete all “Specifier Notes” when editing this section.

DIVISION 16730

XR WIRELESS CLOCK SYSTEMS 1 Watt Transmitter External Antenna

Specifier Note: This section covers the Primex Wireless XR Synchronized Clock System. Consult Primex Wireless for assistance in editing this section for the specific application.

Part 1 General Requirements and Scope

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

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

(Reference Division 16730 Clock Systems)

Specifier Note: Edit the following list as required for the project.

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
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 “Technical Acceptance Certificate”
31 issued under the authority of Industry Canada and the Ministry of Industry. This
32 license will be granted 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 “Non Complex Fixed Station” Radio
39 License granted by Industry Canada and the Ministry of Industry

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

43
44 IC-2365: Application for “License to Install and Operate a Radio Station in Canada”
45 must be completed and signed by end user prior to license issuance. The end user will
46 grant permission for Primex Wireless to apply for the license on their behalf. Primex

1 Wireless will provide all documents and technical information to Industry Canada for
2 approval.

3
4 This license will designate a unique “call sign” for each end user.

5
6 Transmitter and receiver shall comply with RSS 119 of Issue 6 of Industry Canada
7 specifications as follows:

8
9 This device may not cause harmful interference, and

10
11 This device must accept interference received, including interference that may cause
12 undesired operation.

13
14 Transmitter frequency shall be governed by IC: RSS119 Issue 6.

15
16 Transmitter output power shall be governed by IC: RSS119 Issue 6

17
18 System shall be installed in compliance with local and state authorities having
19 jurisdiction.

20 21 **1.7 Submittals**

22
23 **Specifier Note: In accordance with Industry Canada regulations, an**
24 **application for “Technical Acceptance Certificate” must be filed prior**
25 **to use of the equipment. Normally, the manufacturer will have**
26 **completed the filing and obtaining the license. If not, the Owner will be**
27 **required to file the application with the Industry Canada prior to use.**
28 **Furnishing the license, or a copy of the application, will confirm that**
29 **Industry Canada approval has been obtained.**

30
31 Product Data: Submit complete catalog data for each component, describing physical
32 characteristics and method of installation. Submit brochure showing available colors
33 and finishes of clocks.

34
35 Submit IC Technical Acceptance Certificate prior to installing equipment. Furnish the
36 license or a copy of the application for the license, to the Owner/End User prior to
37 operating the equipment. The original license must be delivered to the Owner/End
38 User.

39
40 Samples: Submit one clock for approval. Approved sample shall be tagged and shall
41 be installed in the work at location directed.

42
43 Manufacturer's Instructions: Submit complete installation, set-up and maintenance
44 instructions.

45

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

3

4 **1.8 Substitutions**

5

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

8

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

10

11 Other systems requiring wiring and/or conduit between master and clocks will not be
12 accepted.

13

14 Other systems using wireless technology in an unlicensed frequency range will not be
15 accepted.

16

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

19

20 **1.9 Quality Assurance**

21

22 Permits: Obtain operating license for the transmitter from the Industry Canada.

23

24 Qualifications:

25

26 Manufacturer: Company specializing in manufacturing commercial time system
27 products with a minimum of 30 continuous years of documented experience including
28 4 years experience producing GPS wireless time systems.

29

30 Installer: Company with documented experience in the installation of commercial time
31 systems.

32

33 Prior to installation, a site survey must be performed to determine proper transmitter
34 placement.

35

36 **1.10 Delivery Storage and Handling**

37

38 Deliver all components to the site in the manufacturer's original packaging. Packaging
39 shall contain manufacturer's name and address, product identification number, and
40 other related information.

41

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

43

44 **1.11 Project Site Conditions**

45

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

1
2 Coordinate installation of system antenna for access to the roof to comply with safety
3 standards detailed in manufacturers instructions.
4

5 **Specifier Note: Delete following site condition if NTP will be the master time**
6 **source:**
7

8 GPS package: coordinate installation of GPS receiver for access to the roof or exterior
9 sidewall so that the bracket and related fasteners are watertight.
10

11 **1.12 System Startup**

12
13 At completion of installation and prior to final acceptance, turn on the equipment;
14 ensure that all equipment is operating properly, and that all clocks are functioning.
15

16 **1.13 Warranty**

17 Manufacturer will provide a warranty on GPS receiver, transmitter, and antenna. All
18 other components will have a 1 year warranty.
19
20

21 **Part 2 – Products**

22
23 **2.1 Manufacturer**
24

25 XR wireless clock system shall be manufactured by Primex Wireless, Inc., 1310
26 Kerrisdale Blvd., Unit 4, Newmarket, Ontario L3Y 8V6, 800-330-1459
27 www.primexwireless.ca.
28

29 **2.2 Sequence of Operation**
30

31 **Transmitter Operation**

32 When power is first applied to the transmitter, it checks for and displays the software
33 version. It then checks the position of the switches and stores their position in
34 memory. The transmitter looks for the master time source.
35

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

39 **GPS Time Source**

40 With the XR transmitter in GPS mode, it powers a connected GPS engine mounted
41 with a clear view of the sky. Upon power, the GPS module seeks the GPS satellites in
42 orbit to determine position and UTC time. Once the transmitter acknowledges
43 receivable GPS data, it downloads time data and synchronizes its internal master clock
44 to GPS time. The transmitter then starts to transmit its internal time once every
45 second. The transmitter updates its internal clock every time it receives valid time
46 data from the GPS.

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NTP Time Source

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

Analog Clock Operation

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

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

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

2.3 Equipment

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

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

GPS Receiver

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

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

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

Transmitter

Specifier Note: Select procedure appropriate to the master time source from either of the following:

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

3
4 Primex Wireless Model **XR01EM**, consisting of wireless transmitter with Ethernet
5 port for NTP time input and GPS receiver for GPS satellite time input. Unit shall
6 obtain current atomic time from either satellite via GPS or via NTP through the
7 Ethernet port.

8
9 Transmission:

10
11 Frequency Ranges: 72.020 to 72.980 MHz, 74.610 to 74.790 MHz, 75.210 to 75.390
12 MHz, 75.440 to 75.600 MHz.

13
14 Transmission Power: 1 watt (30dBm) maximum

15
16 Radio technology: narrowband FM

17
18 Number of channels: 74

19
20 Channel bandwidth: 20 kHz maximum

21
22 Transition mode: one-way communication

23
24 Data rate: 2 KBps

25
26 Operating range: 32 degree F to 158 degrees F (0 degrees C. to 70 degrees C).

27
28 Transmitter:

29
30 Transmitter output power: +26 to +30 dBm

31
32 Frequency deviation: +/- 4 kHz

33
34 Transmitter power requirements: 120 VAC 60 Hz

35
36 Internal power requirements: 5 VDC

37
38 Carrier frequency stability: +/- 20 ppm

39
40 Transmitter shall have 74 selectable channels to assure interference-free reception.

41
42 Transmitter shall have the following switches:

43 Time zone adjustment switches for all time zones in the world. Includes all Canadian
44 time zones: Atlantic, Newfoundland, Eastern, Central, Mountain, and Pacific

45

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1 DIP Switch to allow the following configuration: Daylight Saving Time bypass option,
2 12-hour or 24-hour display, GPS or NTP time source, Local or LAN configuration,
3 UTC+ or UTC-, 30 minute UTC offset option (for Newfoundland).
4

5 The DIP switches and channel switches are disabled during production by the
6 manufacturer as the broadcast channel number and time zone are to be predetermined
7 during the Industry Canada licensing process based on end user location and existing
8 wireless services operating in the area. The end user will be required to contact
9 Primex Wireless if, for any reason, a different broadcast channel is required, since the
10 request would require a modification of the license, requiring approval by Industry
11 Canada, or if a different time source is desired.
12

13 Transmitter housing shall be black metal case, 16-3/4 inches (424.4mm) by 12 inches
14 (304.8mm) by 1-7/8 inches (46.4mm) in size.
15

16 An external antenna is included with the transmitter model number.
17 The antenna connects to the transmitter via a 50-ohm 100ft. coaxial cable.
18

19 Transmitter housing shall incorporate a display, which shall include the following:
20

21 Time readout
22

23 AM and PM indicator if 12-hour time display is set
24

25 Day and date readout
26

27 Time zone indicator including Standard or Daylight Savings Time
28

29 On screen menu to verify diagnostics, errors, time updates, and switch settings,
30 toggled by sequence of push buttons next to display
31

32 Status LEDs: Green to determine broadcast mode, yellow which flashes in the event of
33 lack of time update after 48 hours, red which flashes to indicate connection or internal
34 transmitter problem. The green broadcast mode LED will be solid to indicate the
35 transmitter is broadcasting its signal, and dark to indicate the transmitter is in standby
36 mode and not broadcasting.
37

38 Internal clock:

39 Transmitter shall contain an internal clock such that failure to update time from source
40 will not disable the operation of the clocks.
41

42 Power supply (included)

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

44 Output: 9 volt DC, 2.0 amps.
45

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

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- 1 The antenna connects to the transmitter via a 100 ft. (30.5m) 50-ohm coaxial cable,
- 2 Antenna: Dimensions: radiating element 29.4 inches (747mm)
- 3
- 4 Ground radials 41.5 inches (1063 mm)
- 5
- 6 Equivalent flat plate area: 0.68ft² (0.063m²)
- 7
- 8 Polarization: Vertical
- 9
- 10 H-plane beamwidth: omni
- 11
- 12 E-plane beamwidth: 78 degrees (half power)
- 13
- 14 Max. Input power (75 watts@ 50 degrees)
- 15
- 16 Gain: 0 dBd
- 17 VSWR (max)<: 1.5
- 18
- 19 Frequency range: 68-78MHz (broadband)
- 20
- 21 Impedance: 50 ohms
- 22 Lightning Protection: Direct Ground
- 23 Connector N female
- 24
- 25 Pole or Wall Mountable
- 26 Mounting hardware supplied
- 27

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

- 31
- 32 Optional Non penetrating antenna mast kit
- 33 Primex Wireless Model **ANT-NP1**
- 34 Installer must provide ballast material per manufacturer's instructions
- 35 Building -mount antenna mast kit. Primex Wireless Model
- 36 **ANT – P1**
- 37
- 38 Wind survival rating 120mph (200kph)
- 39 Additional Equipment
- 40
- 41

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.

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1 Wireless Receiver Switches: Switches shall receive time packets from the Primary
2 Transmitter and relay the synchronized time to the Satellite Transmitter connected to
3 it. The unit shall include the following:
4

5 Antenna mounted on top of the switch housing, 11-1/2 inches (292mm) long.

6 Power Supply:

7 Input 120 VAC 50/60 Hz, 0.4 amps

8 Output: 9 volt DC, 10.25 amps
9

10 RS 232 data cable, 5 feet (1.5mm) long

11 Daylight Saving Time bypass switch
12

13 Dimensions: 4-1/4 inches (108mm) long, 5-3/4 inches (146mm) wide, 1-1/4 inches
14 (31.75mm) deep.
15

16 Weight: 12 ounces (.34kg)

17 Operating Range: 32 degrees F to 158 degrees F (0 to 70 degrees C)
18

19 Satellite Transmitters Primex Wireless Model **XR01R**: Satellite Transmitters shall
20 receive the signal from the Wireless Receiver Switches and transmit the signal to the
21 devices in its vicinity, which are out of the range from the Master Transmitter. The
22 unit shall include the following:
23

24 Antenna mounted on top of the housing, 46 inches (1168mm) long.
25

26 Wireless Receiver Switch.
27

28 Power Supply

29 Input: 120 VAC, 50/60 Hz, 0.4 amps

30 Output: 9 volt DC, 2.0 amps.
31

32 6 foot (1.83m) cord.
33

34 Transmission Power: 1 watt maximum
35

36 72 MHz frequency.
37

38 Traditional analog clocks (battery): Analog clocks shall be wall mounted. Clocks shall
39 have polycarbonate frame and polycarbonate lens. Face shall be white. Hour and
40 minute hands shall be black. 9 inch (228.6mm) diameter analog clock: Primex
41 Wireless Model **14280** 12-1/2 inch (317.5mm) diameter analog clock: Primex
42 Wireless Model **14155**

43 16 inch (406.4mm) diameter analog clock: Primex Wireless Model **14163**
44

45 Additional colors, finishes, and dial faces are available from manufacturer.
46

XR Wireless Clock System 1 Watt Transmitter External Antenna
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1 Analog clocks shall be battery-operated, and shall have minimum 5-year battery life.

2
3 Analog clocks shall be capable of automatically adjusting for Daylight Saving Time.
4 An on-off switch located on the transmitter shall disable this function if desired.

5
6 Time shall be automatically updated from the transmitter 6 times per day.

7
8 Analog clocks shall remember the time during changing of batteries.

9
10 9 inch (228.6mm) and 12.5 inch (317.5mm) analog clocks shall have a tamper
11 proof/theft resistant clock lock mounting slots.

12
13 Installer will furnish clock batteries in accordance with manufacturer's instructions (9
14 inch /228.6mm– 2 C cells, 12.5inch/317.5mm, 16 inch/406.4mm –2 D cells and 24
15 inch/610mm – 2 C cells)

16
17 **Specifier Note: Select optional dial designs, colors, case options and hands from**
18 **manufacturer's brochure**

19
20 Analog clock receivers shall be as follows:

21
22 Receiver sensitivity: >-110 dBm

23
24 Receiver power: dual lithium battery pack, supplied by manufacturer.

25
26 Antenna type: internal

27
28 Antenna gain: -7 dBd

29
30 If the transmitter stops transmitting valid time signals due to power failure, the clocks
31 will continue to function as accurate quartz clocks until a valid time signal is decoded.
32 If signal transmission is not restored after 96 hours,

33
34 The second hand will “five -step” as a visual indicator that the signal has been lost.
35 Should the clocks lose power and signal, the clocks will not function.

36
37 **Specifier Note: Analog clock faces can be made with Owner's logo as an option. If**
38 **desired, leave in the following, and arrange for Owner to provide hard copy or**
39 **digital copy of logo in format required by Primex Wireless. Contact Primex**
40 **Wireless for details**

41
42 Analog clock faces shall bear Owner's logo as indicated.

43
44 Traditional analog clocks (AC): Analog clocks shall be wall mounted. Clocks shall
45 have polycarbonate frame and polycarbonate lens. Face shall be white. Hour and
46 minute hands shall be black.

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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.

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

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

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

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

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

Analog clock receivers shall be as follows:

Receiver sensitivity: >-110 dBm

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

Antenna type: internal

Antenna gain: -7 dBd

If 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.

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

Specifier Note: Base part number comes with red LED digits. Add letter “G” to base number for green LED digits
Select optional digit style, colors, and case styles from manufacturer’s brochure.

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Digital clocks must be able to receive synchronized time signal
From Primex Wireless master or satellite transmitter.

Digital clocks must have time and date option.

Digital clocks shall be capable of automatically adjusting for Daylight Saving Time

Power Supply: 120 VAC, 50-60 cycle.

Digital clocks must be viewable from 150 feet (45.7m).

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

Wire guards: Provide one for each clock as follows:

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

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

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

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

Cable Connection Sealant: Radio Shack Coaxial Cable Connector

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

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

Transmitter Rack.

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

1
2 **Part 3 – Execution**

3
4 **3.1 Examination**

5
6 Verify that construction is complete in spaces to receive equipment and that rooms are
7 clean and dry.

8
9 Verify that 120 volt electrical outlet is located within 6 feet (1.83m) of location of
10 transmitter and the outlet is operational and properly grounded.

11
12
13 **3.2 Installation**

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

21
22 GPS Unit: Install on roof in location indicated, in clear view of the sky. Install unit in
23 location free from standing water, and above accumulations of leaves or debris. Seal
24 cable connection to GPS with cable connection sealant. Any added cable lengths must
25 be protected from outside elements.

26
27 Locate transmitter in a penthouse, electrical closet, or telecommunications room in a
28 central location in the building. Clearance around all sides of the transmitter to
29 comply with local building codes.

30
31 **Specifier Note: To assure optimum performance of the System, a site survey must**
32 **be performed by Primex Wireless or a Certified Primex Wireless installation**
33 **company. Contact Primex Wireless Technical Support at 1-800-404-8112.**

34
35
36 Transmitter is connected to external antenna via a 50 ohm coaxial cable. Typical
37 length – 100ft (30.5m) Cable routing should comply with ANSI EIA/TIA-569 and
38 local building codes. If the cable is routed through conduit, the conduit should be a
39 minimum of 2 inch (50.8mm) diameter.

40
41 Transmitter enclosure must be bonded to an earth ground per ANSI EIA/TIA 607,
42 NEC Article 250, and local building codes

43
44 **Specifier Note: Select procedure appropriate to the master time source from**
45 **either of the following:**

1 **If GPS Unit will be used as master time source**

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

4 **If NTP will be used as master time source**

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

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

15 Antenna

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

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

23 Install batteries.

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

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

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

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

35 Apply power (24 VAC or 120 VAC)

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

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

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

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

1 **3.3 Adjusting**

2

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

5

6 **3.4 Cleaning**

7

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

11

12 **3.5 Demonstration**

13

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

16

17 **3.6 Protection**

18

19 Protect finished installation until final acceptance of the project.

20

21 **3.7 Testing**

22

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

25

26 **END OF SECTION**