

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](http://www.primexwireless.com)  
8  
9

## 10 Product Guide Specification

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

14  
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 27 53 13

### 24 CommandPoint<sup>™</sup> – XR WIRELESS CLOCK SYSTEMS

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 27 53 13 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 CommandPoint 72XR series transmitters
- 5 CommandPoint 72XR series antenna
- 6 Satellite Transmitter
- 7 Clocks
- 8 Analog
- 9 Digital

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

14 **1.2 Related Sections**

- 15 Division 26 00 00 – Electrical (120 volt grounded outlet required for transmitter).
- 16 Division 27 51 16 – Wireless Tone Generator
- 17 Division 27 42 10 - Digital Clocks and Timers

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.**

23 **1.3 References**

- 24 This Technical Specification and Associated Drawings
- 25 Primex Wireless CommandPoint 72XR System User Guide
- 26 National Electric Code, Article 250, “Grounding”
- 27 ANSI/EIA/TIA – 569, “Communications Pathways and Spaces”
- 28 ANSI/EIA/TIA – 607, “Communications Grounding and Bonding”
- 29 ANSI/EIA/TIA – 568-A, “Commercial Building Telecommunications Wiring
- 30 Standard”

33 **1.4 Definitions**

34  
35 GPS: Global Positioning System, a worldwide system that employs 24 satellites in an  
36 integrated network to determine geographic location anywhere in the world, and which  
37 employs and transmits Universal Coordinated Time, the world’s most accurate and  
38 reliable time.

39  
40 UTC: Universal Coordinated Time

41  
42 NTP: Network Time Protocol, used for synchronizing the clocks on computer  
43 networks and devices from either a public server or a separate server on a private local  
44 area network.

1  
2 **1.5 System Description**

3 XR wireless clock system transmitter shall broadcast either on a regular standard  
4 schedule of continuous operation between 39 minutes past the hour up to 6 minutes  
5 past the following hour, or on a programmable, more limited, custom schedule agreed  
6 to with the end user. The transmitter will operate in standby mode while powered but  
7 not scheduled to broadcast. The transmitted signal will be received by clocks  
8 throughout the facility, which are capable of clock readouts in multiple time zones  
9 where desired.

10  
11 The system shall provide wireless time from a master time source. This time source  
12 will either be the atomic clock on the GPS system or the clock from a defined NTP  
13 server that the XR transmitter can access via the customer Ethernet. The master time  
14 will be synchronized to UTC. Hard wiring will not be required to the clocks installed  
15 for the system. Clocks shall automatically adjust for Daylight Saving Time in  
16 locations where DST is observed.

17  
18 Analog Clocks shall be synchronized to within 10 milliseconds 6 times per day, and  
19 The system shall have an internal oscillator that maintains plus or minus one second  
20 per day between synchronizations, so that clock accuracy shall not exceed plus or  
21 minus 0.2 seconds.

22  
23 The system shall include an internal clock reference so that failure to detect the master  
24 time source shall not result in the clocks failing to indicate time. Additionally, XR  
25 transmitters will have an internal battery backup of up to eight hours in the event of a  
26 power failure so that settings and the correct master time will be instantly recalled  
27 upon restoration of power.

28  
29 The system shall incorporate a “fail-safe” design so that failure of any component shall  
30 not cause failure of the system. Upon restoration of power or repair of failed  
31 component, the system shall resume normal operation without the need to reset the  
32 system or any component thereof.

33  
34 Clock locations shall be as indicated, and clocks shall be fully portable, capable of  
35 being relocated at any time.

36  
37 The system must operate in accordance with a “Radio Station Authorization”, Form  
38 FCC 601 – LM, granted by the Federal Communications Commission (FCC). This  
39 license will be issued to and held by the end user

40  
41 **1.6 Regulatory Requirements**

42  
43 Equipment and components furnished shall be of manufacturer’s latest model.

44  
45 The end user will hold a license, known as a “Radio Station Authorization” granted by  
46 the FCC.

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46

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

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

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

This device may not cause harmful interference, and

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

Transmitter frequency shall be governed by FCC Part 90.35.

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

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

**1.7 Submittals**

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

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

Extended Warranty: Submit copy of optional 4 year extended warranty. Purchased from manufacturer.

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

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

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

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46

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

**1.8 Substitutions**

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

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

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

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

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

**1.9 Quality Assurance**

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

Qualifications:

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

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

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

**1.10 Delivery Storage and Handling**

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

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

**1.11 Project Site Conditions**

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

1 complete.

2

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

5

6

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

7

8

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

11

## 12 **1.12 System Startup**

13

14 At completion of installation and prior to final acceptance, a system set up procedure  
15 must be followed. This set up procedure must be performed by Primex Wireless or a  
16 Certified Primex Wireless installer.

17

18 Per Manufacturer Instructions:

19

20 Validate FCC call sign on transmitter display matches call sign assigned by FCC as  
21 indicated by a red sticker located in transmitter chassis.

22

23 Perform power level test as detailed in manufacturer's instructions.

24

25 Calculate Voltage Standing Wave Ratio (VSWR). Verify VSWR is less than 1.5:1

26

27 Reboot system and verify call sign and channel number

28

29 Complete FCC compliance form.

30

31

## 32 **1.13 Warranty**

33

34 Manufacturer will provide a warranty on GPS receiver, transmitter, and antenna. All  
35 other components will have a 1 year warranty. Manufacturer will provide an optional 4  
36 year extended warranty – **model 14993**

37

38

## 39 **Part 2 – Products**

40

### 41 **2.1 Manufacturer**

42

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

46

### 47 **2.2 Sequence of Operation**

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46

**Transmitter Operation**

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

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

**GPS Time Source**

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

**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.**

1           **GPS Receiver**

2           GPS roof mounted, with 16-foot cable (5m) attached

3           Primex Wireless extension cable available: 50ft (15.25m), 100 ft (30.5m), and 200 ft  
4           (61m).

5  
6           The GPS Receiver shall be a complete GPS receiver including antenna in a waterproof  
7           case, designed for roof or outdoor mounting. Provide mounting bracket for attachment  
8           to roof structure.

9  
10          The GPS Receiver cable must be plenum rated where required by local code.

11  
12          **Transmitter**

13  
14          **Specifier Note: Select procedure appropriate to the master time source from  
15          either of the following:**

16  
17          Primex Wireless Model **XR-EN series**, consisting of wireless transmitter with  
18          Ethernet port for NTP time input. Unit shall obtain current NTP time from an Ethernet  
19          network. Enclosure includes transmitter, amplifier, and lightning arrestor. An  
20          external antenna is included with model number.

21  
22          Primex Wireless Model **XR-EM series**, consisting of wireless transmitter with  
23          Ethernet port for NTP time input and GPS receiver for GPS satellite time input. Unit  
24          shall obtain current atomic time from either satellite via GPS or via NTP through the  
25          Ethernet port. Enclosure includes transmitter, amplifier, and lightning arrestor. An  
26          external antenna is included with model number.

27  
28          Transmission:

29  
30          Frequency Ranges: 72.020 to 72.980 MHz, 74.610 to 74.790 MHz, 75.210 to 75.390  
31          MHz, 75.440 to 75.600 MHz. Each range is reserved by the FCC for licensed fixed  
32          mobile broadcasts.

33  
34          Transmission Power at external antenna:

35          XR05EN/XR05EM – 5 watts (37 dBm) ERP

36          XR30EN/XR30EM – 30 watts (45 dBm) ERP

37  
38          Radio technology: narrowband FM

39  
40          Number of channels: 74

41  
42          Channel bandwidth: 20 kHz maximum

43  
44          Transition mode: one-way communication

45  
46          Data rate: 2 KBps

XR Wireless Clock System – CommandPoint Transmitter  
Division 27 53 13

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46

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

Transmitter:

**Exciter** output power: +26 to +30 dBm

Frequency deviation: +/- 4 kHz

Transmitter power requirements: 120 VAC 60 Hz

Internal power requirements: 5 VDC

Carrier frequency stability: +/- 20 ppm

Amplifier:

Output Bandwidth (max): 20MHz

Gain Flatness: +/- 1 db at 72 - 76 MHz

Fixed output

72XR5 – 5W output (37dBm) ERP

72XR30 – 30W output (45 dBm) ERP

Harmonics (-dBc): See FCC Part 90 requirements

Spurious: -60 dBc

VSWR (max): 1:3

Impedance: 50 ohm

Connector to antenna: N-female

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

Transmitter shall have the following switches:

Time zone adjustment switches for all time zones in the world. Includes: Eastern, Central, Mountain, Pacific, Alaska, and Hawaii.

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

The DIP switches and channel switches are disabled during production by the manufacturer as the broadcast channel number and time zone are to be predetermined during the FCC licensing process based on end user location and existing wireless services operating in the area. The end user will be required to contact Primex

1 Wireless if, for any reason, a different broadcast channel is required, since the request  
2 would require a modification of the license, requiring approval by the FCC, or if a  
3 different time source is desired.

4  
5 Transmitter housing shall be black metal case, 16-3/4 inches (424.4mm) by 12 inches  
6 (304.8mm) by 1-7/8 inches (46.4mm) in size.

7  
8 Transmitter housing shall incorporate a display, which shall include the following:

9  
10 Time readout

11  
12 AM and PM indicator if 12-hour time display is set

13  
14 Day and date readout

15  
16 Time zone indicator including Standard or Daylight Savings Time

17  
18 On screen menu to verify diagnostics, errors, time updates, and switch settings,  
19 toggled by sequence of push buttons next to display

20  
21 Status LEDs: Green to determine time broadcast, yellow which flashes in the event of  
22 lack of time update after 48 hours, red which flashes to indicate connection or internal  
23 transmitter problem. The green broadcast mode LED will be solid to indicate the  
24 transmitter is broadcasting its signal, and dark to indicate the transmitter is in standby  
25 mode and not broadcasting.

26  
27 Internal clock:

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

30  
31 Power supply requirements:

32 120 VAC, 50/60Hz

33 72XR5: <5amps

34 72XR30: <10amps

35  
36 Antenna: An external antenna is included with the transmitter model number.  
37 The antenna connects to the transmitter via a 100 ft. (30.5m) 50-ohm coaxial cable.  
38 The antenna must be installed by Primex Wireless or a Certified Primex Wireless  
39 installer.

40  
41 Antenna: Dimensions: radiating element 29.4 inches (747mm)

42  
43 Ground radials 41.5 inches (1063 mm)

44  
45 Equivalent flat plate area: 0.68ft<sup>2</sup> (0.063m<sup>2</sup>)

46

XR Wireless Clock System – CommandPoint Transmitter  
Division 27 53 13

- 1 Polarization: Vertical
- 2
- 3 H-plane beamwidth: omni
- 4
- 5 E-plane beamwidth: 78 degrees (half power)
- 6
- 7 Max. Input power (75 watts@ 50 degrees)
- 8
- 9 Gain: 0 dBd
- 10 VSWR (max)<: 1.5
- 11
- 12 Frequency range: 68-78MHz (broadband)
- 13
- 14 Impedance: 50 ohms
- 15 Lightning Protection: Direct Ground
- 16 Connector N female
- 17
- 18 Pole or Wall Mountable
- 19 Mounting hardware supplied
- 20

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

- 24
- 25 Optional Non penetrating antenna mast kit
- 26 Primex Wireless Model **ANT-NP1**
- 27 Installer must provide ballast material per manufacturer's instructions
- 28 Building -mount antenna mast kit. Primex Wireless Model
- 29 **ANT – P1**
- 30
- 31 Wind survival rating 120mph (200kph)
- 32 Additional Equipment
- 33
- 34

**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.**

- 39
- 40 Wireless Receiver Switches: Switches shall receive time packets from the Primary
- 41 Transmitter and relay the synchronized time to the Satellite Transmitter connected to
- 42 it. The unit shall include the following:
- 43
- 44 Antenna mounted on top of the switch housing, 11-1/2 inches (292mm) long.
- 45 Power Supply:
- 46 Input 120 VAC 50/60 Hz, 0.4 amps

XR Wireless Clock System – CommandPoint Transmitter

Division 27 53 13

- 1           Output: 9 volt DC, 10.25 amps  
2  
3           RS 232 data cable, 5 feet (1.5mm) long  
4           Daylight Saving Time bypass switch  
5  
6           Dimensions: 4-1/4 inches (108mm) long, 5-3/4 inches (146mm) wide, 1-1/4 inches  
7           (31.75mm) deep.  
8  
9           Weight: 12 ounces (.34kg)  
10          Operating Range: 32 degrees F to 158 degrees F (0 to 70 degrees C)  
11  
12          Satellite Transmitters Primex Wireless Model **XR01R**: Satellite Transmitters shall  
13          receive the signal from the Wireless Receiver Switches and transmit the signal to the  
14          devices in its vicinity, which are out of the range from the Master Transmitter. The  
15          unit shall include the following:  
16  
17          Antenna mounted on top of the housing, 46 inches (1168mm) long.  
18  
19          Wireless Receiver Switch.  
20  
21          Power Supply  
22          Input: 120 VAC, 50/60 Hz, 0.4 amps  
23          Output: 9 volt DC, 2.0 amps.  
24  
25          6 foot (1.83m) cord.  
26  
27          Transmission Power: 1 watt maximum  
28  
29          72 MHz frequency.  
30  
31          Traditional analog clocks (battery): Analog clocks shall be wall mounted. Clocks shall  
32          have polycarbonate frame and polycarbonate lens. Face shall be white. Hour and  
33          minute hands shall be black. 9 inch (228.6mm) diameter analog clock: Primex  
34          Wireless Model **14280** 12-1/2 inch (317.5mm) diameter analog clock: Primex  
35          Wireless Model **14155**  
36          16 inch (406.4mm) diameter analog clock: Primex Wireless Model **14163**  
37          24 inch (610mm) diameter analog clock: Primex Wireless Model **14346**  
38  
39          Additional colors, finishes, and dial faces are available from manufacturer.  
40  
41          Analog clocks shall be battery-operated, and shall have minimum 5-year battery life.  
42  
43          Analog clocks shall be capable of automatically adjusting for Daylight Saving Time.  
44          An on-off switch located on the transmitter shall disable this function if desired.  
45  
46          Time shall be automatically updated from the transmitter 6 times per day.

1  
2 Analog clocks shall remember the time during changing of batteries.

3  
4 9 inch (228.6mm) and 12.5 inch (317.5mm) analog clocks shall have a tamper  
5 proof/theft resistant clock lock mounting slots.

6  
7 Installer will furnish clock batteries in accordance with manufacturer's instructions (9  
8 inch /228.6mm– 2 C cells, 12.5inch/317.5mm, 16 inch/406.4mm –2 D cells and 24  
9 inch/610mm – 2 C cells)

10  
11 **Specifier Note: Select optional dial designs, colors, case options and hands from**  
12 **manufacturer's brochure**

13  
14 Analog clock receivers shall be as follows:

15  
16 Receiver sensitivity: >-110 dBm

17  
18 Receiver power: dual lithium battery pack, supplied by manufacturer.

19  
20 Antenna type: internal

21  
22 Antenna gain: -7 dBd

23  
24 If the transmitter stops transmitting valid time signals due to power failure, the clocks  
25 will continue to function as accurate quartz clocks until a valid time signal is decoded.  
26 If signal transmission is not restored after 96 hours,

27  
28 The second hand will “five -step” as a visual indicator that the signal has been lost.  
29 Should the clocks lose power and signal, the clocks will not function.

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

35  
36 Analog clock faces shall bear Owner's logo as indicated.

37  
38 Traditional analog clocks (AC): 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.

41  
42 12-1/2 inch (317.5mm) diameter analog clock, 24 VAC,  
43 Primex Wireless Model **14323** 12-1/2 inch C, 12-1/2 inch (317.5mm) diameter analog  
44 clock, 120 VAC, Primex Wireless Model **14306** Additional colors, finishes, and dial  
45 faces are available from manufacturer.  
46

XR Wireless Clock System – CommandPoint Transmitter

Division 27 53 13

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

- 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).

10 **Specifier Note: Where desired for protection of an clocks, specify the**  
11 **following optional equipment**  
12

13  
14 Wire guards: Provide one for each clock as follows:  
15

16  
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.  
19

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.  
26

27 Dual D Lithium Battery Pack Primex Wireless Model **14885** contains two sealed  
28 parallel lithium primary batteries.  
29

30 Cable Connection Sealant: Radio Shack Coaxial Cable Connector  
31

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

34 **Specifier Note: Where desired for mounting transmitter, specify the following**  
35 **equipment: One for each transmitter**  
36

37  
38 Transmitter Rack.  
39

40 Primex Wireless Model **14005**, 3” (76.2mm) x 16.5” (419mm)( x 18”(457mm), 18  
41 gauge metal, epoxy covered  
42

### 43 **Part 3 – Execution**

#### 44 **3.1 Examination**

45  
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  
42 **If GPS Unit will be used as master time source**

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

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

1 Connect CAT5/CAT5e/CAT6 EIA/TIA standard Ethernet cable from transmitter LAN  
2 port to available network drop. Set GPS/LAN DIP switch to NTP.  
3

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

10  
11 Antenna

12  
13 Antenna should be mounted to a mast on the roof of the building connecting to the  
14 transmitter via a 50 ohm coaxial cable.

15 Consult manufacturer's instruction manual for specific clearances and mounting  
16 instructions.

17  
18 Antenna must be bonded to an earth ground per ANSI EIA/TIA 607,  
19 NEC Article 250 and local building codes.

20  
21 Antenna must be installed by Primex Wireless or a Certified Primex Wireless  
22 installation company.

23  
24 Analog clocks (battery): Perform the following operations with each clock:

25  
26 Install batteries.

27  
28 Set clocks to correct time in accordance with manufacturer's instructions.

29  
30 Observe analog clock until valid signals are received and analog clock adjusts itself to  
31 correct time.

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

35  
36 Analog clocks (AC): Perform the following operations with each clock:

37  
38 Apply power (24 VAC or 120 VAC)

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

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

45 **Specifier Note: Delete the following if wire guards are not required**  
46

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38

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**

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 Precautions**

Primex Wireless must be notified if other high power (>30W) are operating on same roof. A cavity filter may be required.

An antenna warning sign must be posted to the door or hatch leading to the roof in accordance with FCC rules on emissions.

**3.8 Testing**

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

**END OF SECTION**