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Wireless Time, Bell, Voice and Data System Product Guide Specification (09-01-2015)

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

Part 1 - General

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

1.1 Sections Includes

- A. Transmission System
 - 1. Primary Encoder.
 - 2. Primary Internal or External Transmitter.
- B. Wireless Devices
 - 1. Wirelessly Synchronized Analog Clock.
 - 2. Wirelessly Synchronized Digital Clock.
 - 3. Wirelessly Synchronized Bell Controller.
 - 4. Wirelessly Controlled Public Address Speaker.
 - 5. Wirelessly Controlled Alphanumeric LED Message Board.
 - 6. Wirelessly Controlled Intercom Station.

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

1.2 Related Sections

- A. Division 16 - Electrical 120V 60Hz grounded outlet required for encoder.
- B. Division 16 - Electrical 120V 60Hz grounded outlet required for external transmitter.
- C. Division 16 – Electrical 120V 60Hz grounded outlet for each AC powered clock, bell controller, alphanumeric LED message board and Public Address amplifier.

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

1.3 References

- A. This Technical Specification and Associated Drawings.
- B. National Fire Protection Agency (NFPA) 70, National Electric Code 2002.
- C. Visiplex, Inc. TotalSync Synchronized Wireless Time System User Manuals.

1.4 Definitions

- A. Atomic time: The most accurate and reliable time as can be obtained from sources such as Internet time server, PC network time protocol (NTP), GPS receiver or WWVB.
- B. WWVB: NIST time signal radio station (Fort Collins, Colorado) that continuously broadcasts nationwide atomic time information at 60 KHz.

1.5 System Description

- A. Synchronized wireless time, voice and data system shall be able to synchronize all clocks & bells, provide Public Address voice announcements capabilities and control alphanumeric LED message boards to display time and text messages.
- B. The system shall synchronize all clocks to the system's time. The system shall provide atomic time to all its components. The system shall not require any hard wiring (except of AC power) for all its components.
- C. The system shall include an internal high precision real time clock reference in order to keep the accurate time without any external time corrections for a long period of time.
- D. Clocks shall automatically adjust for Daylight Savings Time and shall be capable of multiple time zones readouts where needed.
- E. Analog clocks may be battery operated for complete portability or AC powered for years of maintenance free operation.
- F. Digital LED clocks shall be AC powered for years of maintenance free operation.
- G. The system shall incorporate a "fail-proof" design so that a temporary power interruption shall not cause a complete system failure. Upon restoration of power, the system shall resume normal operation without the need to reset the system or any of its components.
- H. The system shall provide a PC interface to enable system remote programming and maintenance.
- I. The system shall be capable of text messaging to a specific or group of Alphanumeric LED Message Board units. Messages can be initiated from a PC or over the phone.
- J. The system shall be capable of providing a built-in programmable bell/tone weekly or calendar schedule to activate bells and other tone signaling.
- K. The main system shall provide a voice gateway to access wirelessly controlled PA speakers individually or as a group. Real-time voice messages can be initiated via the system microphone or the telephone line interface. The messages may be initiated automatically or manually by the user.
- L. The system shall be capable of providing a two-way voice communications gateway, to initiate intercom voice communications with multiple wireless intercom stations.
- M. The system shall be capable of providing an internal phone interface to initiate voice and data messaging and control event schedule selection.

1.6 Regulatory Requirements

- A. Equipment and components furnished shall be of manufacturer's latest model.
- B. Encoder, transmitter and receivers shall comply with Part 90 of FCC rules, as follows:
 - 1. This device may not cause harmful interference.
 - 2. This device must accept interference received, including interference that may cause undesired operation.
 - 3. Transmitter frequency shall be governed by FCC Part 90.35.
 - 4. Transmitter output power shall be governed by FCC Parts 90 and 74.
- C. 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 license must be filed prior to use of the equipment. Normally, the manufacturer will complete the filing and obtain the license on the behalf of the Owner. Otherwise, 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.

- A. 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, PA controllers and speakers, and LED message boards.
- B. Operating License: Submit evidence of application for operating license prior to installing equipment. Furnish the license, or if the license has not been received, a copy of the application for the license, to the Owner prior to operating the equipment. When license is received, deliver original license to Owner.
- C. Samples: Submit one clock for approval. Approved sample shall be tagged and shall be installed at the location directed.
- D. Manufacturer's Instructions: Submit complete installation, set-up and maintenance instructions.

1.7 Substitutions

- A. Proposed substitutions shall be manufactured of equivalent materials that meet or exceed specified requirements of this section.
- B. Proposed substitutions shall be identified not less than 10 days prior to bid date.
- C. Systems requiring wiring and/or conduit between the system controller and the remote devices (such as clocks, PA controllers and speakers LED message boards or sirens) or the remote devices controller will not be acceptable.

1.8 Quality Assurance

- A. Permits: Obtain operating license for the transmitter from the FCC (service may be provided by Visiplex).
- B. Qualifications:
 - 1. Manufacturer: Company specializing in manufacturing commercial wireless systems with a documented experience of minimum of 10 years.
 - 2. Installer: Company with documented experience in installation of commercial wireless systems.

1.9 Delivery Storage and Handling

- A. 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.
- B. Store equipment in a finished building, in unopened containers until ready for installation.

1.10 Project Site Conditions

- A. Clocks, LED message boards and PA amplifiers and speakers shall not be installed until painting and other finish work in each room is completed.
- B. Coordinate installation of the external antenna (if used) for access to the roof or exterior side-wall so that the bracket and related fasteners are watertight.

Part 2 – Products

Specifier Note: Select from the following product list all products and options that fits your system design. Consult Visiplex for additional information regarding product features and options.

2.1 Manufacturer

- A. The Synchronized wireless time, voice and data system and its components shall be manufactured by:

Visiplex, Inc.
Buffalo Grove, IL 60089
Tel: 877-918-7243
Website: www.visiplex.com

2.2 System Operation and Startup Sequence

The system encoder is a powerful multitasking device equipped with internal high precision clock and capable of sending accurate time information to synchronize the system's wireless clocks, synchronize bell controllers, activate system bell events, initiate live or pre-recorded voice messaging to wireless PA speakers and send text messages to alphanumeric LED message boards. Voice and data messaging can be generated from an interfaced computer, over the phone using the system telephone interface, using the hand held microphone or the encoder's keypad.

- A. Encoder Operation:

When power is applied to the encoder, it shall display the software version. The encoder starts to transmit its internal atomic time once every minute (during Installation Mode) or during the designated daily time period (usually 10PM to 4AM).

The encoder updates its internal clock (if needed) from a GPS device or PC clock connected to it (based on NTP or Internet time server).

Programming the encoder built-in schedule is performed using the available PC software. The encoder monitors and executes the tone, voice or bell activation schedule.

- B. Analog Clock Operation:

- For battery powered clocks, insert batteries into the clock. For AC powered clocks, connect the DC adaptor to the AC power source and the DC plug to the clock DC jack.
- The clock will go through the hand alignment process for few minutes and will stop at 12:00. Push the Control button at the back of the clock.
- After few seconds, the clock receiver will search for valid time transmission. The monitoring LED at the back of the clock will flash during that period of time. After a valid time data is received the monitoring LED will stop flashing, and the clock will adjust to the correct time. The clock will search for valid time signals for one or six per each day, and will resynchronize to the correct time.

- C. Digital Clock Operation:

- Connect the AC power cord (supplied with each digital clock) to the AC power source. There is no need for any adjustment.
- After few seconds, the clock receiver will search for valid time transmission. The monitoring LED at the front of the clock will turn on when a valid time signal is received. After a valid time data is received, the clock will adjust to the correct time. The clock will constantly receive a valid time signal and resynchronize to the correct time if needed.

- D. Wireless Alphanumeric LED Message Board Operation:

- Connect the DC adaptor (supplied with each LED message board) to the AC power source.
- After few seconds, the alphanumeric LED message board will scroll an activity status line on the LED message board to indicate that all internal parts are working properly. After few more seconds the LED message board will be cleared until it receives new information to be displayed transmitted from the main encoder. If the LED message board is set to display the time, the internal receiver will search for valid time data transmission and resynchronize to the correct time if needed.

E. Wireless Public Address Speaker Operation:

- Connect the DC adaptor (supplied with each wireless controller) to AC power source.
- After few seconds of initial setup, the wireless controller LED will start flashing to indicate that all the internal circuitry is fully functioning.
- Connect a speaker to the wireless controller speaker output port using the supplied cable. The speaker is now ready to receive voice and data information from the main encoder.

F. Wireless Bell Controller Operation:

- Connect the DC adaptor (supplied with each controller) to the AC power source. There is no need for any additional adjustment.
- After a second of initial setup, the LED lights on the back of the unit will flash to indicate that all internal parts are working properly, and the internal receiver will start looking for valid bell/tone event transmissions. When a valid event is received from the main encoder, the controller will close its internal relay contacts and generate the selected tone through its audio output.

2.3 Equipment - Main System, Wireless Clocks, Wireless Controllers, Audio/Visual Devices

Specifier Note: Select the encoder with features as needed. Select suitable transmitter to provide full coverage facility wide. In general, use an internal transmitter for single building and an external more powerful transmitter for larger facilities.

A. General:

The basic clock system shall include an encoder, a built-in internal or external transmitter and analog or digital clocks. An expanded system may also include wireless alphanumeric LED message boards, wireless PA speakers, bell controllers and all accessories and options as needed for a complete operation.

B. Encoder:

The wireless encoder shall be from the following Visiplex models:

VS4500, Wireless Paging Controller (Datasheet)	Quantity: <input style="width: 50px;" type="text"/>
VS4810, Desktop Wireless Paging Encoder (Datasheet)	Quantity: <input style="width: 50px;" type="text"/>

The wireless encoder may utilize the following options from the following Visiplex models:

VS3003, Telephone Line Interface Option	Quantity: <input style="width: 50px;" type="text"/>
VS3005, Hand-Held Microphone for Live Voice Messaging Option	Quantity: <input style="width: 50px;" type="text"/>
VS3008, Free Text Messaging Software Option	Quantity: <input style="width: 50px;" type="text"/>
VS3009, Additional Serial Port Option	Quantity: <input style="width: 50px;" type="text"/>
VS3014, Handset Microphone for Live Voice Messaging Option	Quantity: <input style="width: 50px;" type="text"/>

The wireless encoder shall incorporate a display and a keypad or keyboard to provide the following features:

1. Time zone selection via the keypad or keyboard and display for all time zones in the world. Includes all US time zones: Eastern, Central, Mountain, Pacific, Alaska and Hawaii.
2. Automatic Daylight Saving Time adjustment can be enabled or disabled from keypad.
3. Password protected Administrator Menu to set the date, local time zone, wireless PA amplifiers and speakers (if used), and other system parameters as needed.
4. The encoder internal clock shall be synchronized to a PC time using provided utility software or to GPS time.
5. Database programming and administration using its keypad and LCD display.
6. RS-232 serial interface for text messaging and administration.
7. High-precision internal clock.
8. The encoder shall be capable of providing a Telephone interface for remote voice access and system control.
9. The encoder shall be capable of providing a hand held microphone for remote voice access to PA speakers.
10. The encoder internal clock shall be capable of synchronizing to a GPS receiver.
11. The encoder shall be capable of providing a programmable weekly event schedule.

C. Transmitter:

The wireless transmitter shall be from the following Visiplex models:

VS101-25, External Paging transmitter, 25 Watt (Datasheet)	Quantity:	<input type="text"/>
VS101-40, External Paging transmitter, 40 Watt (Datasheet)	Quantity:	<input type="text"/>
VS101-100, External Paging transmitter, 100 Watt (Datasheet)	Quantity:	<input type="text"/>
VS101-350, External Paging transmitter, 250/300 Watt (VHF/UHF) (Datasheet)	Quantity:	<input type="text"/>
VTX-6, Internal Paging transmitter, 6 Watt	Quantity:	<input type="text"/>

The transmitter parameters shall be:

1. Frequency Range: 148-174 MHz or 401–470 MHz.
2. Transmission Range: Up to 15 miles radius (transmitter and antenna depended).
3. Radio technology: Narrowband FM, 12.5KHz bandwidth.
4. Transmission format: POCSAG, digital one-way communication.
5. Digital Data rate: 512 or 1200 BPS.
6. Operating range: 0-70 degrees Celsius.

D. Antenna:

The antenna shall be from the following Visiplex models:

VS638, Indoor/Outdoor Magnetic Mount Antenna (Datasheet)	Quantity:	<input type="text"/>
VS654, Outdoor Antenna Kit (Datasheet)	Quantity:	<input type="text"/>
VS655, Outdoor Antenna Kit, High Power (Datasheet)	Quantity:	<input type="text"/>

The antenna polarization shall be vertical.

E. Power Supply:

The power supply shall be included with encoder.

F. Surge Protector/Battery Backup:

The surge protector / battery backup shall be from the following Visiplex models:

VS56450, 450 Watt Uninterrupted Power Supply	Quantity:	<input type="text"/>
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The surge protector / battery backup parameters shall be:

1. Input: 120-volt AC 60 Hz +/- 1 Hz.
2. Output: 120-volt AC, 750VA, 450-watts
3. Surge Energy Rating: 1800 joules

G. Analog Clocks:

The analog clocks shall be from the following Visiplex models:

TS4142, Wireless Synchronized Clock, 12.5" Dial, Plastic, Black (Datasheet)	Quantity:	<input type="text"/>
TS4144, Wireless Synchronized Clock, 12.5" Dial, Plastic, Silver (Datasheet)	Quantity:	<input type="text"/>

The analog clocks may use the following options and accessories:

TS-OPT-004, Customized Analog Clock Face Option	Quantity:	<input type="text"/>
TS-ACC-021, Wire Guard for Analog Clock (up to 14" clocks)	Quantity:	<input type="text"/>
TS-ACC-023, Wire Guard for Analog Clock (up to 16" clocks)	Quantity:	<input type="text"/>

The analog clocks shall support the following features and parameters:

1. Analog clocks with no user mechanical adjustments, and fully automatic adjustment in 5 minutes after a power resumes.
2. Time shall be automatically updated from the transmitter once a day at 2AM or six times a day (user selectable).
3. Use two "C" batteries or AC power adaptor.
4. The clock shall have an ultra sensitive VHF or UHF receiver (better than -110dBm) and integrated internal antenna.
5. The clock will keep operating using its internal clock in case of signal reception loss due to malfunction of the system encoder or transmitter.

Specifier Note: Analog clock dial faces can be customized with Owner's logo as an option. If desired, arrange for Owner to provide digital copy of logo in format as required by Visiplex. Consult Visiplex for details.

6. Analog clock dial faces shall bear Visiplex or Owner's logo as indicated.

Specifier Note: Where protection of analog clocks is required, specify the following optional equipment.

7. Analog clocks shall be compatible with metal wire guards.

H. Digital Clocks:

The digital clocks shall be from the following Visiplex models:

TS5241, Wireless Synchronized Clock, Four 2.5" Digits, Red LED (Datasheet)	Quantity: <input style="width: 50px;" type="text"/>
TS5261, Wireless Synchronized Clock, Six 2.5" Digits, Red LED (Datasheet)	Quantity: <input style="width: 50px;" type="text"/>
TS5441, Wireless Synchronized Clock, Four 4" Digits, Red LED (Datasheet)	Quantity: <input style="width: 50px;" type="text"/>
TS5461, Wireless Synchronized Clock, Six 4" Digits, Red LED (Datasheet)	Quantity: <input style="width: 50px;" type="text"/>

The digital clocks shall support the following features and parameters:

1. Digital clocks shall be able to receive synchronized time signal from the VS4500 TotalSync encoder.
2. Power source: 100-240 VAC, 50-60 Hz.
3. Digital clocks shall be viewable from 150 feet.

I. Wirelessly Controlled PA Speakers:

Visiplex model VNS2210 or VNS2200 Wireless Controller.

VNS2210, Indoor Wireless Controller (Datasheet)	Quantity: <input style="width: 50px;" type="text"/>
VNS2200, Indoor/Outdoor Wireless Controller (Datasheet)	Quantity: <input style="width: 50px;" type="text"/>

The wireless controller shall be connected to 4-16 Ohm In-Wall, Wall-Mount or Horn speakers from the following Visiplex models:

VNS2081, In-Wall PA Speaker (Datasheet)	Quantity: <input style="width: 50px;" type="text"/>
VNS2082, PA Speaker (Datasheet)	Quantity: <input style="width: 50px;" type="text"/>
VNS2083, PA Speaker (Datasheet)	Quantity: <input style="width: 50px;" type="text"/>
VNS2084, PA Horn Speaker (Datasheet)	Quantity: <input style="width: 50px;" type="text"/>
VNS2085, PA Horn Speaker (Datasheet)	Quantity: <input style="width: 50px;" type="text"/>

The wireless controller may utilize the following options from the following Visiplex models:

VNS2252, Backup Battery Option (Datasheet)	Quantity:	<input type="text"/>
VNS2254, Low Power Transmitter Option for Wireless Supervision	Quantity:	<input type="text"/>
VNS2255, External Antenna Option for Wireless Devices (Datasheet)	Quantity:	<input type="text"/>
VNS2256, Solar Panel Charger with Internal Battery Option (Datasheet)	Quantity:	<input type="text"/>
VNS2259, PoE Power Supply / Charger with Internal Battery Option	Quantity:	<input type="text"/>
VNS2264, Ambient Noise Level Control Option	Quantity:	<input type="text"/>
VNS2265, Secondary Receiver for FM Radio Reception Option	Quantity:	<input type="text"/>
VNS2281, Secondary Speaker Output Option	Quantity:	<input type="text"/>
VNS2284, Line Level Audio Output with Dry Contact Closure Option	Quantity:	<input type="text"/>
VNS2285, Dry Contact Closure	Quantity:	<input type="text"/>
VNS2286, Two-Way Radio Interface Option	Quantity:	<input type="text"/>

The wirelessly controlled PA speaker shall support the following features and parameters:

1. Wireless PA controller shall be able to receive voice messages, alert tone activation, programming commands and be controlled from the VS4500 encoder..
2. Power source: 100-240 VAC, 50-60 Hz.
3. The PA controller and speaker shall have four levels of volume control selectable and controlled by the system encoder.

J. Wirelessly Controlled Alphanumeric LED Message Boards:

The wireless alphanumeric LED message board shall be from the following Visiplex models:

VS1501, LED Message Board, One Line, 8 Characters, Red (Datasheet)	Quantity:	<input type="text"/>
VS1502, LED Message Board, One Line, 16 Characters, Red (Datasheet)	Quantity:	<input type="text"/>
VS1503, LED Message Board, Two Lines, 15 Characters, Red (Datasheet)	Quantity:	<input type="text"/>
VS1504, LED Message Board, Two Line, 15 Characters, Tri-Color (Datasheet)	Quantity:	<input type="text"/>

The wirelessly controlled alphanumeric LED message board shall support the following features and parameters:

1. Wireless Alphanumeric LED Message Board shall be able to receive time and data information from the VS4500 encoder.
2. Power source: 100-240 VAC, 50-60 Hz.
3. Alphanumeric LED message board shall be viewable from 100 feet or more.

K. Wireless Bell Controller:

The wireless bell controller shall be from the following Visiplex models:

TS-ADA-029, Synchronized Bell Controller / Tone Generator (Datasheet)	Quantity:	<input type="text"/>
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The wireless bell controller shall support the following features and parameters:

1. Wireless bell controller shall be able to receive wireless event information from the VS4500 encoder, activate an internal dry contact relay and generate a tone according received event parameters.
2. Power source: 100-240 VAC, 50-60 Hz.

Part 3 – Installation

3.1 Site examination:

- A. Verify that construction is complete at installation locations and that rooms are clean and dry.
- B. Verify that 120-volt electrical outlet is located within 6 feet of location of transmitter and the outlet is operational and properly grounded.
- C. Verify that all 120-volt electrical outlets for the powered clocks, alphanumeric LED message boards, and PA amplifiers and speakers are located at the exact installation point and that the outlet is operational and properly grounded.

3.2 System Installation: Refer to the manufacturer installation manuals as supplied with the system and other components. Install the main system and each one of the system components.

3.3 Inspection: Prior to final acceptance, inspect each system component for proper function and replace parts that are found to be defective.

3.4 Cleaning: Prior to final acceptance, clean exposed surfaces of all system components, using cleaning methods recommended by the manufacturer. Remove temporary protective film from clock faces and display lenses.

3.5 Delivery: Provide training to Owner's representative on system setting and operation as demonstrated in the manufacturer system user manual.