

# **TS2910**

## **GPS Wireless Clock Synchronizer**

User's Manual / Installation Guide

Version 1.21

**Visiplex Time Systems, Inc. 2008**

# **TS2910**

## **GPS Wireless Clock Synchronizer**

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### **Notice to User Regarding Radio Frequency Interference**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in residential areas is likely to cause harmful interference in which case the user will be required to correct the interference at their expense.

### **About This Manual**

This TS2910 User's Manual / Installation Guide describes how to install and setup the TS2910 for automated time setting. It also provides instructions for GPS receiver installation, transmitter antenna installation and introduction to clock synchronization.

It is imperative the manual is followed in the order it is presented to prevent damage to the equipment, as well as insuring proper system functionality.

The manual provides instructions for mounting preparation, determining system location and spacing in regard to antennas and other equipment. Information is also provided for verification of reception and transmission quality and troubleshooting of problems that may arise during installation or operation.

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# Product Information

## 1.1 Introduction



The Visiplex TimeSync series offers the latest and most innovative way to incorporate GPS synchronized time throughout your facility, providing you with the benefits of improved productivity and reduced maintenance costs.

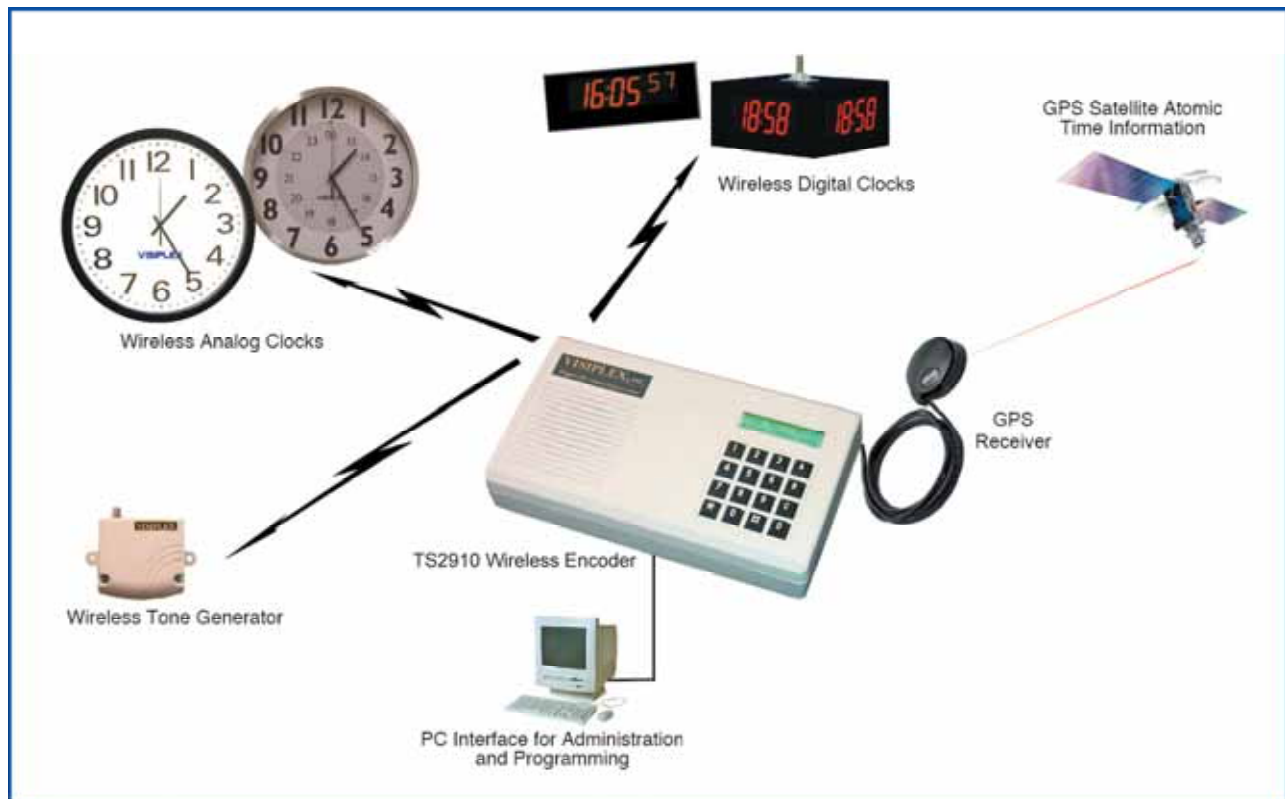
The TS2910 is a GPS time synchronizer for wireless analog clocks and wireless digital clocks. The TS2910 can also be used to synchronize radio controlled (atomic) clocks and older wired clocks, using a special wireless receiver.

Additional features of the TS2910 include wireless bell system control.

Using its GPS receiver, the TS2910 updates its internal clock every few minutes and sends a wireless data page every minute to provide time synchronization information to all system receivers.

The TS2910 is a powerful microprocessor-based desktop paging system. It consists of a fully featured encoder with a 2 line by 16-character LCD display and a numeric keypad mounted in an attractively styled wall or desk mount housing.

The TS2910 is compatible with the Visiplex series of digital transmitters ranging from 8 to 350 watts. An internal 8 watt transmitter can be installed at the factory and larger transmitters are available as separate items.



TimeSync - GPS Wireless Synchronized Time System

## 1.2 Standard Features

- Built-in serial GPS receiver interface
- Built-in accurate Real-Time clock
- Synchronize both analog and digital wireless clocks
- Generate time synchronization data transmissions every minute
- Capable of synchronizing its internal time from GPS or a PC
- User configurable Master Clock synchronization time
- GPS reception level indicator
- Numeric keypad and four Alpha menu keys
- Built-in memory backup
- RS232 serial connection for serial communication
- Equipped with a 2 line by 16 character LCD display
- Desk or wall mountable

## 1.3 Optional Features

- High power external digital transmitters (10 to 350 watt)

## 1.4 Package Contents

The following items are included with the TS2910:

- TS2910 GPS Wireless Clock Synchronizer
- Power adaptor
- GPS receiver
- "L" bracket
- Manual
- TS638 Magnetic Mount antenna (for systems ordered with internal transmitter only)

## 1.5 Key Navigation

The following keys also function in system menus as detailed below:

#	Select / Acknowledge / Enter
*	Return to previous menu / Escape
1	On / Next
0	Off / Previous

## 1.6 Display Indicators

GPS reception status (displayed between the hour and minutes segments) and daylight saving status (displayed to the left of the hour segment) indicators are displayed on the main menu:

.	No connection with GPS receiver
;	GPS receiver connected, no satellite reception detected
:	GPS receiver connected, satellite reception detected, date and time updated
*	Daylight saving time is active

## 1.7 Pre-Installation Test

It is recommended to test the TS2910 and the entire system prior to installation in order to verify proper operation and get familiar with the unit operation.

Follow these steps to perform a pre-installation test:

1. If your system is equipped with an internal transmitter, connect the BNC antenna cable to the **ANTENNA** jack at the back of the TS2910.  
If your system uses an external transmitter, connect the transmitter data cable between the TS101-XX transmitter and the **J2** port at the back of the TS2910. Connect the antenna to the external transmitter's **ANTENNA** BNC connector.
2. Connect the RJ-45 plug of the GPS receiver to the **GPS** input at the back of the TS2910.
3. Connect the provided power supply to the **DC** jack at the back of the TS2910 and turn the **POWER** switch to **ON** position. The main menu should appear with the **PAGE TO:** displayed on the top line.  
If you are using an external transmitter make sure it is powered on.
4. Press the **B** key for the **Administration Menu** and enter the default password (2910). The menu top line should display **SELECT OPTION:**
5. Press **2** followed by the **#** key for the internal clock **Time Setup**. Enter the UTC (Universal Coordinate Time) or GMT (Greenwich Mean Time) time in 24 hours (military) format. The display will change back to **Time Setup**.
6. Press **3** followed by the **#** key for the internal clock **Date Setup**. Enter the UTC (Universal Coordinate Time) or GMT (Greenwich Mean Time) date in MMDDYY format. The display will change back to **Date Setup**.
7. Press **4** followed by the **#** key for the **Clock Setup** menu.
8. The menu bottom line should display **TIME ZONE**. Use the **1** to **7** keys to select your local time zone. Press the **#** key.
9. The menu bottom line should display **DAYLIGHT SAVING**. Press **1** to select **ON** or **0** to select **OFF**. Press the **#** key.
10. The display will flash **DATA SAVED** and the unit will return to the **Administration Menu**. Press the **\*** key to return to the **Main Menu**.  
Within a few minutes, the TS2910 will start sending the time information page every minute. Set a clock to receive signal and make sure it receives and displays the correct time as displayed on the TS2910 display.

# Installation

## 2.1 Site Inspection and System Location

Consider the following requirements when planning system installation and choosing a location for the TS2910 and other system components:

1. The GPS Receiver should be installed where it is **exposed to the sky**, parallel to the horizon and unobstructed by trees, roof overhangs, power-lines, etc.  
If mounting the GPS antenna indoors (not recommended), mount it at the lower edge of a window, away from Low E glass and exposed to the sky.
2. Choose a location that is easily accessible in case you need to perform maintenance on the antenna. Locate a path for running the cable between the GPS receiver and the TS2910 such as a riser (if there is no existing path, create one).
3. The transmitting antenna should be located as close as possible to the center of the site and should not be surrounded by large metal objects that may block the RF signal and decrease the coverage range of the system.
4. The transmitting antenna may be mounted vertically upward or downward, **NEVER horizontally**.
5. Magnetic Mount antenna (such as TS638) should be attached to a large metal object (like an air duct, metal shelf or cabinet) to provide it with a proper grounding.
6. Base Station antenna (such as included with TS654 kit) should be secured to a well-grounded metal structure or to a pole on the roof. Locate a path for running the coax cable between the antenna and the transmitter such as a riser (if there is no existing path, create one).  
Place the external transmitter in a location that is as close to the roof as possible such as the penthouse. Keep the distance between the antenna and the transmitter as short as possible to minimize RF power loss.

## 2.2 GPS Antenna Installation

1. The GPS antenna can be mounted indoors or outdoors where it is fully exposed to the sky. It must be mounted parallel to the horizon to assure maximum exposure to the satellites that provide time information. **Outdoors installation is highly recommended for optimal reception.**  
If mounting the GPS antenna indoors (not recommended), mount it at the lower edge of a window, away from Low E glass and exposed to the sky.
2. If the GPS antenna is mounted outdoors, use the wall-mounting "L" bracket included with your system that allows mounting of the antenna on the side of a building or other structure. Use the magnetic base of the antenna to attach it to the bracket and secure it with the mounting screw.
3. If a GPS extension cable is used, make sure to secure the connection indoors or inside a weatherproof box. It is recommended to seal the connection area between the GPS antenna and the extension cable with silicon sealant to prevent weather related damages to the GPS data link.

## 2.3 Magnetic Mount Antenna (TS638) Installation

1. Secure the antenna to an adequate grounding surface, HVAC duct or metal "I" beam. The antenna may be mounted vertically upward or downward, **NEVER horizontally**.

2. Choose a mounting location that will provide an adequate grounding surface and free space for RF radiation. If the antenna is mounted too close to metal, a high VSWR may occur which in the long term may cause damage to the transmitter.
3. The optional wall-mount "L" bracket allows mounting the antenna on the side of a building or other structure, providing the roof's overhang is not excessive.

## 2.4 Base Station Outdoor Antenna Kit (TS654) Installation

1. To achieve maximum performance for your outdoor antenna choose a location that is unobstructed by trees, branches, power-lines, etc. Never mount the antenna where there is a signal-reflecting surface such as metal, power lines, mirrored glass, etc.
2. Choose a location that is easily accessible in case you need to perform maintenance on the antenna.
3. For optimal performance, make sure the antenna is installed at an elevation that will provide sufficient clearance to allow your antenna to radiate without interference.
4. It is recommended to mount the antenna where the path of the antenna cable is straight and as close as possible to the system transmitter. Do not coil up 100 feet of coaxial cable when only 20 feet of cable is required. Use a RG-8U coax cable that is specified as Low Loss to minimize power loss.
5. The antenna may be mounted vertically upward or downward, **NEVER horizontally**.
6. Install the grounding kit provided with the TS654 antenna kit.

## 2.5 TS2910 Encoder and External Transmitter Installation

The TS2910 system encoder can be installed on a wall or shelf. Install a UPS power backup to protect the system from power outages and surges. If you are using an external transmitter, place it next to the TS2910 and use the data cable provided to connect TS2910 and the external transmitter.

Once the GPS Receiver and transmitter antenna are placed properly, connect them to the TS2910 and the transmitter as follows:

1. The GPS Receiver's RJ-45 connector should be plugged into the **DATA** or **GPS** jack at the back of the TS2910.
2. If an external transmitter is used, connect the antenna to the **ANTENNA** terminal at the back of the external transmitter.  
Otherwise, connect the antenna to the **ANTENNA** terminal at the back of the TS2910.
3. Turn on the TS2910. Select the **GPS Status Screen** by pressing the **D** key.
4. The display will temporarily show **NO SIGNAL** or **0 level**. After few minutes, the GPS receiver will start getting valid time information and the GPS Signal Strength will appear on the **GPS Status Screen** with values of 1 to 12 (indicating the number of satellite data channels received with 12 being the optimal). Signal reception reading of 3 or higher is sufficient for a valid atomic time reception.
5. Press the \* key to return to the **Main Menu**.
6. The internal clock of the TS2910 will be set via the GPS receiver to the Atomic UTC time and the TS2910 will start transmitting the local time every minute.
7. No additional programming is needed for the system to be fully operational. See **Advanced System Information** section on page 9 for more detailed information about the TS2910.

## Advanced System Information

The main menu shown below appears after the TS2910 is turned on and is used for accessing the **Programming** and **Administration** menus.

**PAGE TO: 11:55**

### 3.1 Standby Mode Menu

Standby Mode allows the installation of two TS2910 systems while only one TS2910 is active and the other TS2910 is used as a backup unit (version 4.03 and later).

**NOTE:** Only one TS2910 should be active at any specific time. When powered on, the Stand By Mode is set to automatically OFF and the TS2910 will be activated. It is recommended that the TS2910 will be connected to a UPS device to avoid changes in the Standby Mode as a result of power outage.

From the **Main Menu** press the **A** key. Enter **2910** as password. The Standby Mode will be changed to on and the TS2910 will be deactivated. The following screen will be displayed:

**STANDBY MODE  
IS ON**

The display will return to the **Main Menu**. Repeat these steps to disable the Standby Mode and activate the TS2910.

### 3.2 Administration Menu

From the **Main Menu** press the **B** key. Enter **2910** as password. The prompt **Select Option** will appear on the top line.

The **Administration Menu** provides access to the following available sub-menus:

2. Time Setup
3. Date Setup
4. Clock Setup
5. Paging Test Mode
6. Alarm Input
7. Last Message
8. Reset Database
- A. MCS Sync Time Setup (Master Clock Synchronizer Time Setup)
- B. DL Saving Dates (Day Light Saving Dates)

To access a specific sub-menu, press the digit key representing it.

#### 3.2.1 Time Setup Menu

From the **Administration Menu**, select **2** followed by the **#** key. The following screen will be displayed:

**ENTER GMT TIME:**  
**12:00**

Enter the UTC (Universal Coordinate Time) or GMT (Greenwich Mean Time) time in 24 hours (military) format. The display will change back to **Time Setup**.

**DO NOT** enter the local time as the unit uses the universal atomic time as a reference and calculates the local time based on your **Time Zone**.

If the TS2910 is connected to a GPS receiver, it will revert back to the GPS time few minutes later overwriting the time changes made.

### 3.2.2 Date Setup Menu

From the **Administration Menu**, select **3** followed by the **#** key. The following screen will be displayed:

**ENTER NEW DATE:**  
**010106**

Enter the UTC (Universal Coordinate Time) or GMT (Greenwich Mean Time) date in MMDDYY format. The display will change back to **Date Setup**.

**DO NOT** enter the local date as the unit uses the universal atomic time as a reference and calculates the local time based on your **Time Zone**.

If the TS2910 is connected to a GPS receiver, it will revert back to the GPS time few minutes later overwriting the time changes made.

### 3.2.3 Clock Setup Menu

From the **Administration Menu**, select **4** followed by the **#** key. The following screen will be displayed:

**TIME ZONE:**  
**CENTRAL TIME**

Select the local time zone using the **1** to **7** keys:

- 1 – Eastern Time
- 2 – Central Time
- 3 – Mountain Time
- 4 – Pacific Time
- 5 – Alaska Time
- 6 – Hawaii Time
- 7 – Other Time (if not used for synchronizing time from PC, may require special factory settings)

Press **#** to confirm the displayed selection. The following screen will be displayed:

**DAYLIGHT SAVING:**  
**ON**

Select the correct daylight saving time setting. Use the **1** key to select **ON** or the **0** key to select **OFF**.

**MASTER SYNC:  
OFF**

Select the correct master clock synchronizer mode. Use the **1** key to select **ON** or the **0** key to select **OFF**.

After the last step is completed, the display will flash **DATA SAVED** and go back to the **Administration Menu**.

Press the **\*** key to return to the **Main Menu**.

### 3.2.4 Paging Test Mode Menu

From the **Administration Menu**, select **5** followed by the **#** key.

Use this option to send cover page to pager 100. This feature is useful when testing the transmitter coverage area.

Press **\*** to cancel and go back to the **Paging Test Mode** menu.

### 3.2.5 Alarm Inputs Menu

From the **Administration Menu**, select **6**.

**NOTE:** The alarm inputs are available in special configuration only. They are not accessible via the keypad and require the optional programming software.

If installed, the alarm inputs (J1) allow connection of remote analog contact closures and other special functions. Shorting pin 1 with any of pins 3-25 will trigger the alarm input and will send a pre-programmed message to the pre-assigned pager. For example, shorting pin 1 and 4 will trigger alarm input 3 and shorting pin 1 and 25 will trigger alarm input 24.

Alarm input 2 is reserved for special functions (see **Setting Time from External Source** section on page 13).

### 3.2.6 Message Menu

From the **Administration Menu**, select **7** followed by the **#** key.

Use this option to display the last message sent to a pager.

Press **\*** to cancel and go back to the **Last Message** menu.

### 3.2.7 Reset Database Menu

**NOTE:** This is an **IRREVERSIBLE** command - **DO NOT** select this option unless you are absolutely sure you want to clear all pagers and pre-programmed messages data.

You may want to transcribe this information to paper first or use the optional PC software to backup the data to a computer.

From the **Administration Menu**, select **8** followed by the **#** key.

**CLEAR ALL DATA..  
ARE YOU SURE???**

Press **#** to confirm the Database Reset. Press **\*** or any other key to cancel and go back to the **Reset Database** menu.

### 3.2.8 MCS Sync Time Menu

From the **Administration Menu**, select **A** followed by the **#** key. The following screen will be displayed:

**MCS SYNC TIME:**  
**06:00**

If you are using a master clock synchronizer, use this option set time when it is supposed to synchronize the master clock. Enter time in 24 hours (military) format. The display will change back to **MCS Sync Time** menu. Press the **\*** key to return to the **Main Menu**.

### 3.2.9 DL Saving Dates Menu

From the **Administration Menu**, select **B** followed by the **#** key. The following screen will be displayed:

**SELECT YEAR:**  
**040206 -- 102906**

Use the **1** key to navigate to the next year or the **0** key to navigate to the previous year. Press the **\*** key to return to the **Main Menu**.

### 3.3 Installation Mode Menu

Installation Mode forces the system to transmit the time information every minute even if there is no GPS receiver connected. This mode is helpful when the system is being installed or when conducting a site coverage test.

**NOTE:** Installation Mode must be disabled after the coverage test is completed to allow proper system operation.

From the **Main Menu** press the **C** key to enable and disable the Installation Mode. The following screen will be displayed:

**INSTALLATION**  
**MODE IS ON**

The display will return to the **Main Menu**. Press the **C** key again to disable the Installation Mode.

### 3.4 GPS Status Menu

The GPS Status menu provides reading of the number of GPS satellites used by the system. Any reading of 3 or more satellites is sufficient for proper operation.

**NOTE:** The system will not transmit when this menu is active. **DO NOT** leave the system in this menu. You must exit this menu to allow proper system operation. From the **Main Menu** press the **D** key. The following screen will be displayed:

## GPS STATUS:

Press the \* key to return to the **Main Menu**.

### 3.5 Setting Time from External Source

The TS2910 time can be set to a preprogrammed time by using the alarm inputs (J1). Shorting pin 1 and 2 will set the TS2910 time according to the time programmed as the MCS Time (Master Clock Synchronizer).

For example, if the MCS Sync Time is set to 10:00 and pin 1 and 2 are shorted, the TS2910 time will be changed to 10:00.

**NOTE:** Special system configuration may be required – please contact technical support. Use caution when utilizing this feature since it will change the TS2910 time and clocks time.

## Software

### 4.1 VisiDB

The optional VisiDB software allows you to program and backup the TS2910 database, create scheduled paging and set the TS2910 date and time according to the PC clock instead of a GPS receiver.

#### 4.1.1 Connections

Follow these steps to connect the TS2910:

1. Connect the provided serial cable to the **RS232** jack and the other end to one of the serial port on the PC. Make a note of the serial port used (COM1, COM2, etc.).
2. Install the programming software. Refer to **Software Installation** section for more information.

#### 4.1.2 Software Installation

**NOTE:** VisiDB software must be installed by the PC administrator or by a user with administrator privileges. VisiDB software is compatible with Windows ME, XP and 2000.

Locate the VisiDB software CD-ROM and insert it to the CD-ROM drive on the PC. If the installation program doesn't start automatically within 5 seconds, use Windows Explorer to browse to the CD-ROM drive and then run the **VisiDB\_Setup.exe** file.

Press **Next** on each step until the installation process is completed.

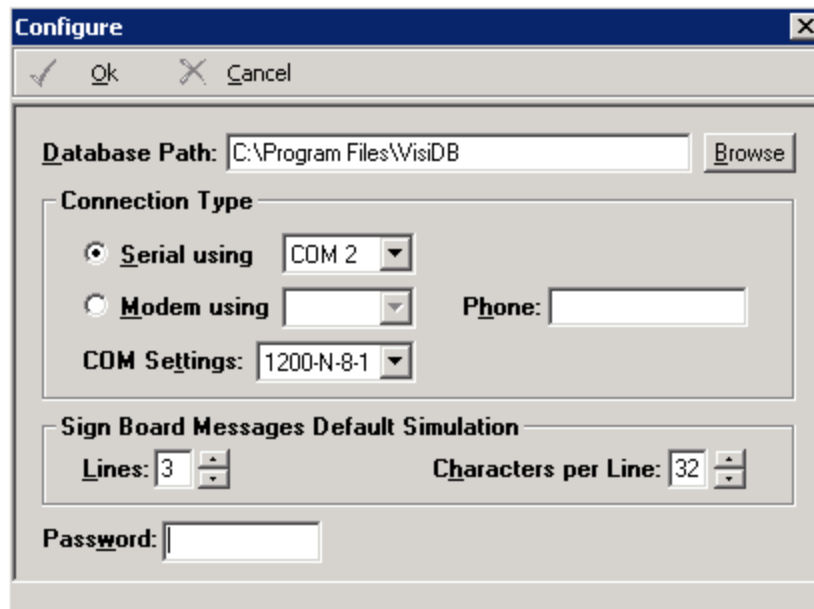
#### 4.1.3 Software Configuration

**NOTE:** VisiDB software must be used by a user with full access privileges to Windows **Program Files** folder. Depending on your operating systems and PC configuration, administrator privileges may be required in some cases while in other Standard or Power user privileges may be sufficient.

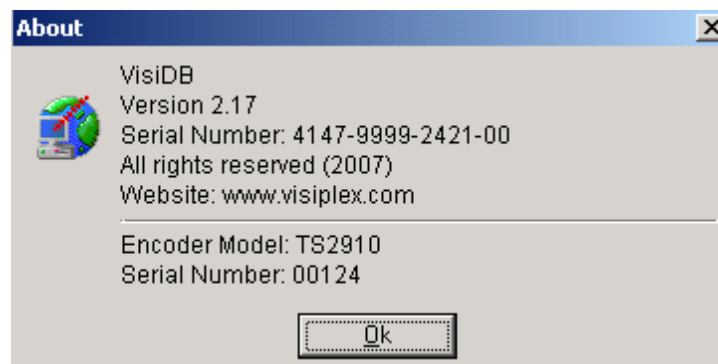
Follow these steps to configure VisiDB:

1. Make sure the TS2910 is powered on and connected to the serial port on the PC.

2. Press the Windows **Start** button. Select **Programs, VisiDB** program group and then select **VisiDB**.
3. The Serial Number dialog will be displayed. Enter the serial number shown on the CD-ROM and press **Ok**.
4. Press **Ok** on the next dialog box.
5. Go to **File, Admin Login** menu. Since the default password is blank, just press **Ok**.
6. Go to **Setup, Configure** menu.
7. Set the **Database Path** where all files will be stored (the default is "C:\Program Files\VisiDB").
8. Set the **Connection Type**: Select the PC serial port connected to the TS2910 (see **Connections** section). Set the **COM Settings** to **1200-N-8-1**. Press **Ok**.



9. To verify connection, go to **Help, About VisiDB** menu. The **Encoder Model** should show TS2910 and the **Serial Number** should show the last 5 digits of the TS2910 used. Press **Ok**. If this information is not displayed properly, verify all connections and go to step 6.



**NOTE:** To obtain further information and help for each screen, press F1 to display the online help.

#### 4.1.4 Setting Date and Time from PC

Setting the TS2910 date and time from a PC allows you to keep its internal clock accurate without using a GPS receiver. This action can be performed manually or automatically as long as the TS2910 is connected to the PC and VisiDB is running.

Follow these steps to set the date and time according to the date and time of the connected PC:

1. Make sure the TS2910 is powered on and connected to the serial port on the PC.
2. Go to **Setup, Time Synchronization**.
3. To set the date and time, select **Set Date & Time from PC Now**. This will synchronize the time of the TS2910 according to the date and time on the PC.
4. To set the date and time periodically, select **Set Time from PC Automatically**. This will synchronize the time of the TS2910 periodically according to the date and time on the PC.  
The TS2910 internal clock will be updated with this data and it will be used as the reference date and time sent to clocks and other receivers.  
The automatic update is performed every hour or every 24 hours, depending on the software version used.

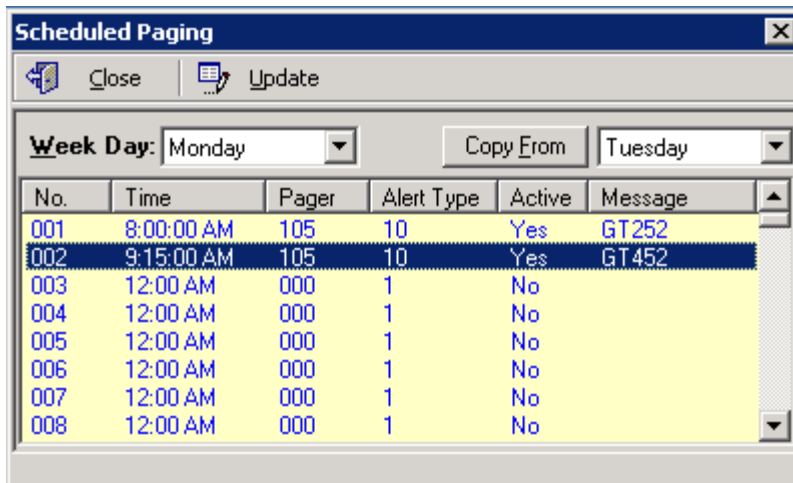
#### 4.1.5 Scheduled Paging

Scheduled paging allows you to send messages to pager based on a preprogrammed schedule. This feature can be used as long as the TS2910 is connected to the PC and VisiDB is running and the tones or messages are generated by the VisiDB software.

Follow these steps to set scheduled paging:

1. Make sure the TS2910 is powered on and connected to the serial port on the PC.
2. Go to **File, Admin Login** menu. Enter password and press **Ok** (default password is blank).
3. Go to **Setup, Scheduled Paging** menu.
4. The **Scheduled Paging** dialog box will be displayed and the schedule file edited by the user will be retrieved from the hard drive and displayed. Below are the fields and functions description:

<b>Close</b>	Close the Tone Schedule dialog box
<b>Update</b>	Display a dialog box that allows updating the specific highlighted event on the schedule list (see step 5)
<b>Week Day</b>	Display the scheduled events for the selected day of the week
<b>Copy From</b>	Copy the daily schedule on to the selected <b>Week Day</b>



5. If the **Update** command is selected, the **Scheduled Paging – Update** dialog box will be displayed. Below are the fields and functions description:

<b>Ok</b>	Update schedule file and with changes
<b>Cancel</b>	Ignore all changes and exit
<b>Time</b>	Time of day in which a tone should be generated
<b>Send to Pager</b>	Pager number of the receiver to be accessed
<b>Alert Type</b>	Type of message sent to the receiver. Use <b>10 – Freetext</b> and enter <b>Message Text</b> .
<b>Active</b>	Determine if event is active. Non active events are stored but not executed

## 4.2 TimeSync

The optional TimeSync software provides central control from a management PC of up to 16 synchronized devices (encoders such as the TS2910, tone generator such as the TS-ADA-021 and a receiver such as the TS-ADA-003) by using serial communication (RS232) between the PC and the device. This software provides the following functionality:

1. Write the PC time and date to the TS2910 or TS-ADA-021. This time will be used as the reference time for these devices.
2. Read the time from the TS2910 or TS-ADA-003 time and synchronize the PC date and time accordingly.

The serial communication can be established in one of the following methods:

1. Using a local RS232 (serial) port on the management PC (usually COM1 to COM4). The encoder or tone generator must be connected via serial cable to the PC (usually no more than 6' long).
2. Using a virtual RS232 port (such as TS-ADA-051, LAN to RS232 adaptor). This will allow the synchronized device to be located anywhere in the facility as long as it accessible via the LAN to which the PC is connected to.

Each TS-ADA-051 is assigned with an IP address and creates a virtual serial port on the PC. This virtual serial port can be used by the TimeSync software to write or read the time from the synchronized device.

Typical solution packages:

1. Synchronize encoder or tone generator according to PC time:  
 TS2910 or TS-ADA-021  
 TimeSync (TSPS-02) software

TS-ADA-051 (optional, required only if the encoder or receiver are not connected directly to the PC)

2. Synchronize PC time according to encoder or receiver time:  
TS2910 or TS-ADA-003  
TimeSync (TSPS-02) software  
TS-ADA-051 (optional, required only if the encoder or receiver are not connected directly to the PC)

#### 4.2.1 Connections

Follow these steps to establish communication between a device (receiver, tone generator or encoder) and the PC:

1. If you intend to retrieve or update the time of remote devices, install the LAN to RS232 adaptor on a designated PC that will be running the Time Sync software.

The installation of the LAN to RS232 adaptor is usually performed as follows:

Connect the LAN to RS232 adaptor to your network and to the power. Run the LAN to RS232 adaptor configuration software that will detect all adaptors on the network and display them. Assign a port (RS232/COM) number to each IP address that was detected as a LAN to RS232 adaptor.

For detailed information, please refer to the installation instructions provided with the LAN to RS232 adaptor.

2. Connect the provided serial cable to the **RS232** jack on the device and the other end to one of the serial ports on the PC. Make a note of the serial port used (COM1, COM2, etc.).  
If a LAN to RS232 adaptor is used, connect it's serial port to the synchronized device.
3. Install the programming software. Refer to **Software Installation** section for more information.

#### 4.2.2 Software Installation

**NOTE:** TimeSync software must be installed by the PC administrator or by a user with administrator privileges. TimeSync software is compatible with Windows ME, XP and 2000.

Locate the TimeSync software CD-ROM and insert it to the CD-ROM drive on the PC. If the installation program doesn't start automatically within 5 seconds, use Windows Explorer to browse to the CD-ROM drive and then run the **TimeSync\_Setup.exe** file.

Press **Next** on each step until the installation process is completed.

#### 4.2.3 Software Configuration

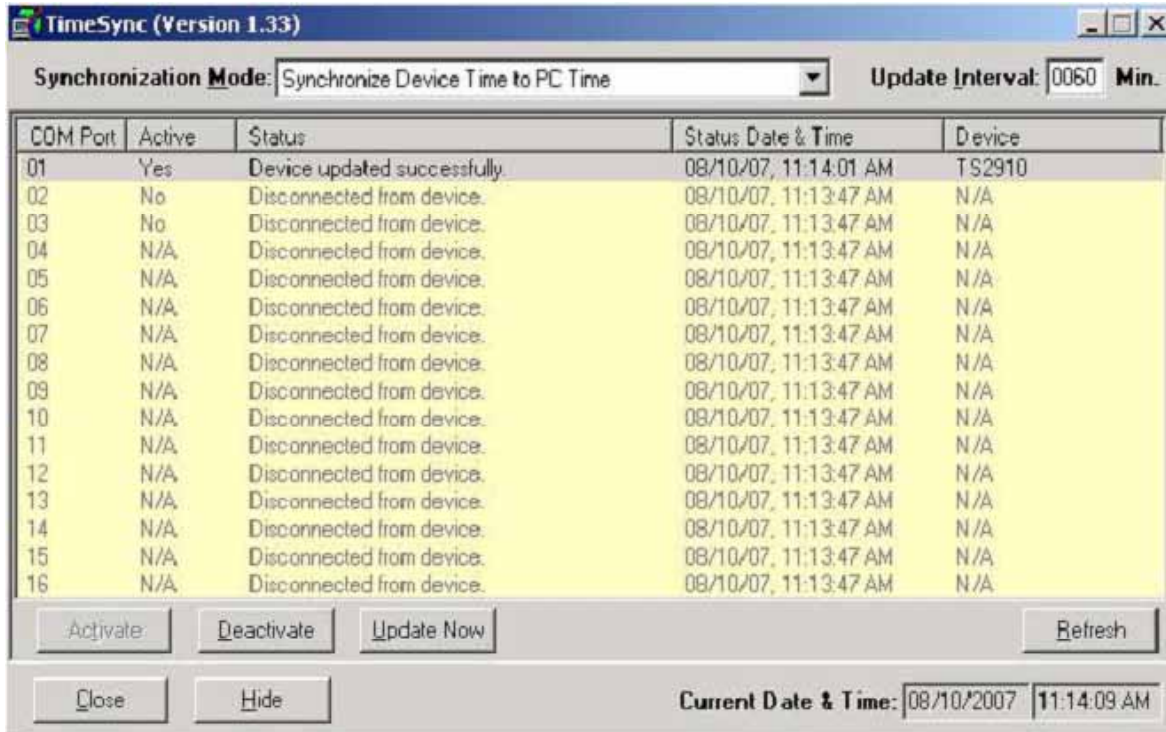
**NOTE:** TimeSync software must be used by a user with full access privileges to Windows **Program Files** folder. Depending on your operating systems and PC configuration, administrator privileges may be required in some cases while in other Standard or Power user privileges may be sufficient.

Follow these steps to configure TimeSync:

1. Make sure the device (receiver, tone generator or encoder) is powered on and connected to the serial port on the PC.
2. Press the Windows **Start** button. Select **Programs**, **TimeSync** program group and then select **TimeSync**.
3. Select the **Synchronization Mode:**  
To update the connected device (**TS2910** or **TS-ADA-021**) according to the PC date and time, select **Synchronize Device Time to PC Time**.

To update the PC according to the connected device (**TS2910** or **TS-ADA-003**) date and time, select **Synchronize PC Time to Device Time (Single COM Port)**.

4. Select the **COM Port** assigned to the device on the computer from the list.
5. Click **Activate** to activate the selected **COM Port** and connect to the device (encoder, tone generator or receiver).
6. TimeSync software will try to connect to the device and display the type of device detected.
7. Depending on the **Synchronization Mode** selected, TimeSync will read or write the time to or from the connected device automatically according to the selected **Update Interval** (default is 60 minutes, maximum is 9999 minutes).



Below are the fields and functions description:

<b>Synchronization Mode</b>	Determine if time is read from or send to the connected device
<b>Update Interval</b>	Time interval to update the devices time or PC time automatically (minimum is 60 minutes, maximum is 9999 minutes)
<b>Activate</b>	Activate the selected COM port and connect to the device (encoder, tone generator or receiver)
<b>Deactivate</b>	Deactivate the selected COM port and disconnect from the device (encoder, tone generator or receiver)
<b>Update Now</b>	Depending on the Synchronization Mode selected, TimeSync will read or write the time from or to the selected device. The device or PC time will be updated accordingly
<b>Refresh</b>	Disconnect from all devices, reload all COM ports and reconnect to all active devices
<b>Close</b>	Terminate the TimeSync program
<b>Hide</b>	Hide the TimeSync window and place to the system tray
<b>Current Date &amp; Time</b>	Displays the current date and time of the PC

<b>Device List</b>	<p>Information on the available devices and their status:</p> <p>COM Port - COM (RS232) port number</p> <p>Active - Indicates if the COM port is active (connected to a device)</p> <p>Status - Last connection status with the device</p> <p>Status Date &amp; Time - Date and time of the last connection status</p> <p>Device - The type of device detected</p>
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#### 4.2.4 Setting the PC Clock from Encoder or Receiver

Setting the PC clock according to the **TS2910** or **TS-ADA-003** date and time allows you to keep the PC internal clock accurate and therefore use it as a reference for network time (see Windows **Net Time** command). This action can be performed manually or automatically as long as the encoder is connected to the PC and TimeSync is running.

Follow these steps to set the date and time according to the date and time of the encoder (**TS2910**) or receiver (**TS-ADA-003**):

1. Make sure the encoder or receiver is powered on and connected to the serial port on the PC.
2. To set the PC date and time manually, press **Update Now**. This will synchronize the PC clock according to the date and time of the connected device. Note that in some cases this operation may require more than one retry due to other functions performed by the encoder.
3. The automatic update is performed periodically according to the **Update Interval** . The **Status Date & Time** field displays the last date and time when the PC clock was updated.

#### 4.2.5 Setting the Encoder or Tone Generator Clock from PC Clock

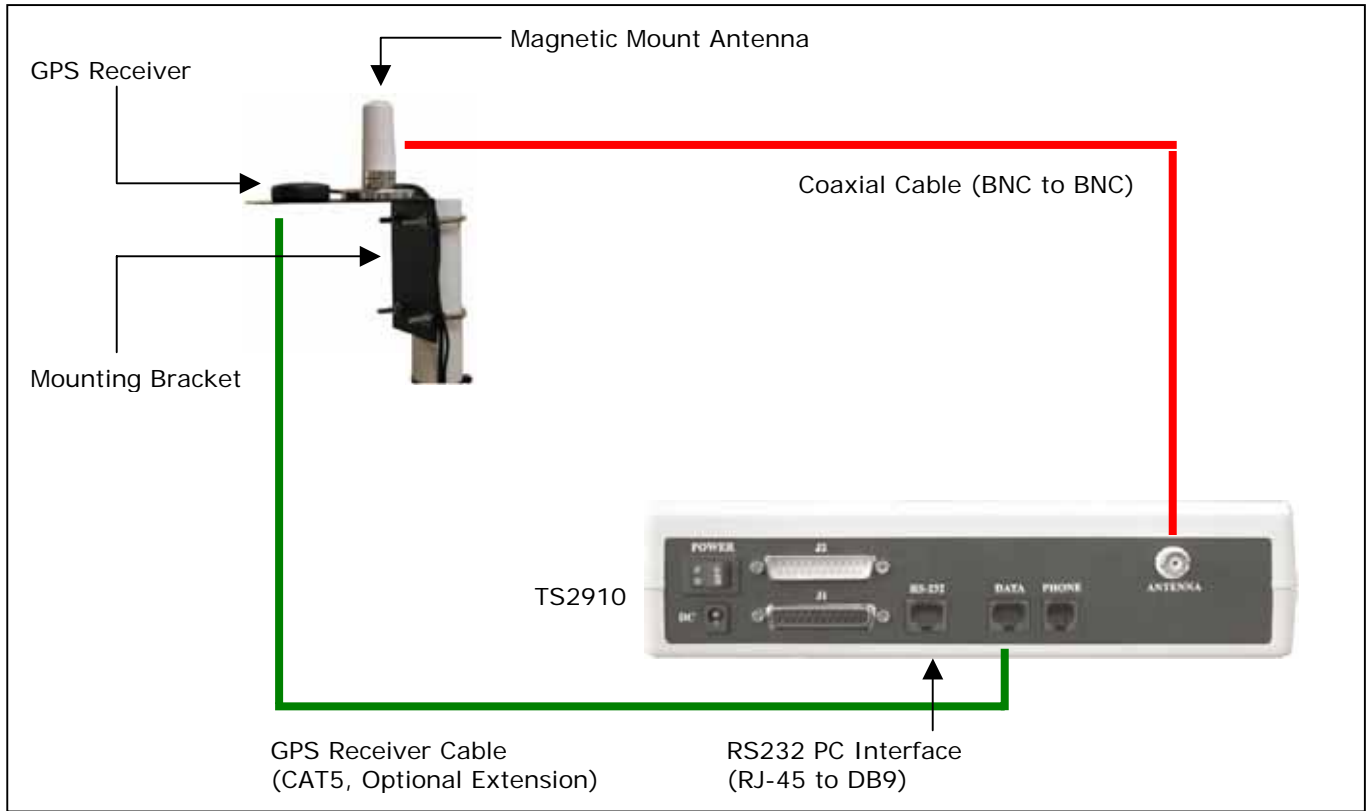
Setting the encoder (**TS2910**) or tone generator (**TS-ADA-021**) date and time from a PC allows you to keep its internal clock accurate. This action can be performed manually or automatically as long as the encoder or tone generator is connected to the PC and TimeSync is running.

Follow these steps to set the date and time of the encoder (**TS2910**) or tone generator (**TS-ADA-021**) according to the PC date and time:

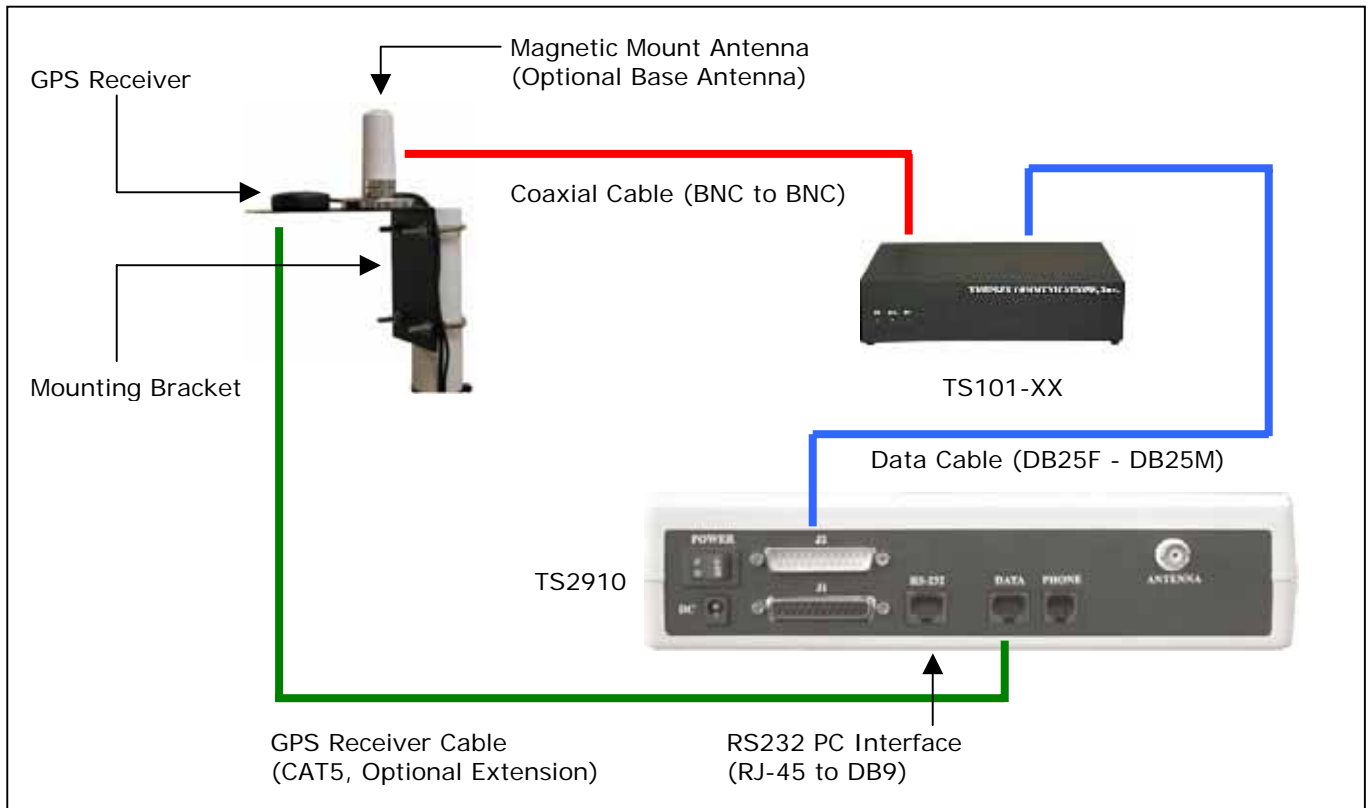
1. Make sure the encoder or tone generator is powered on and connected to the serial port on the PC.
2. To set the PC date and time manually, press **Update Now**. This will synchronize the encoder or tone generator clock according to the date and time of PC. Note that in some cases this operation may require more than one retry due to other functions performed by the encoder. The encoder or tone generator internal clock will be updated with this data and it will be used as the reference date and time sent to clocks and other receivers or used for the tone schedule.
3. The automatic update is performed periodically according to the **Update Interval** . The **Status Date & Time** field displays the last date and time when the connected device clock was updated.

# Appendices

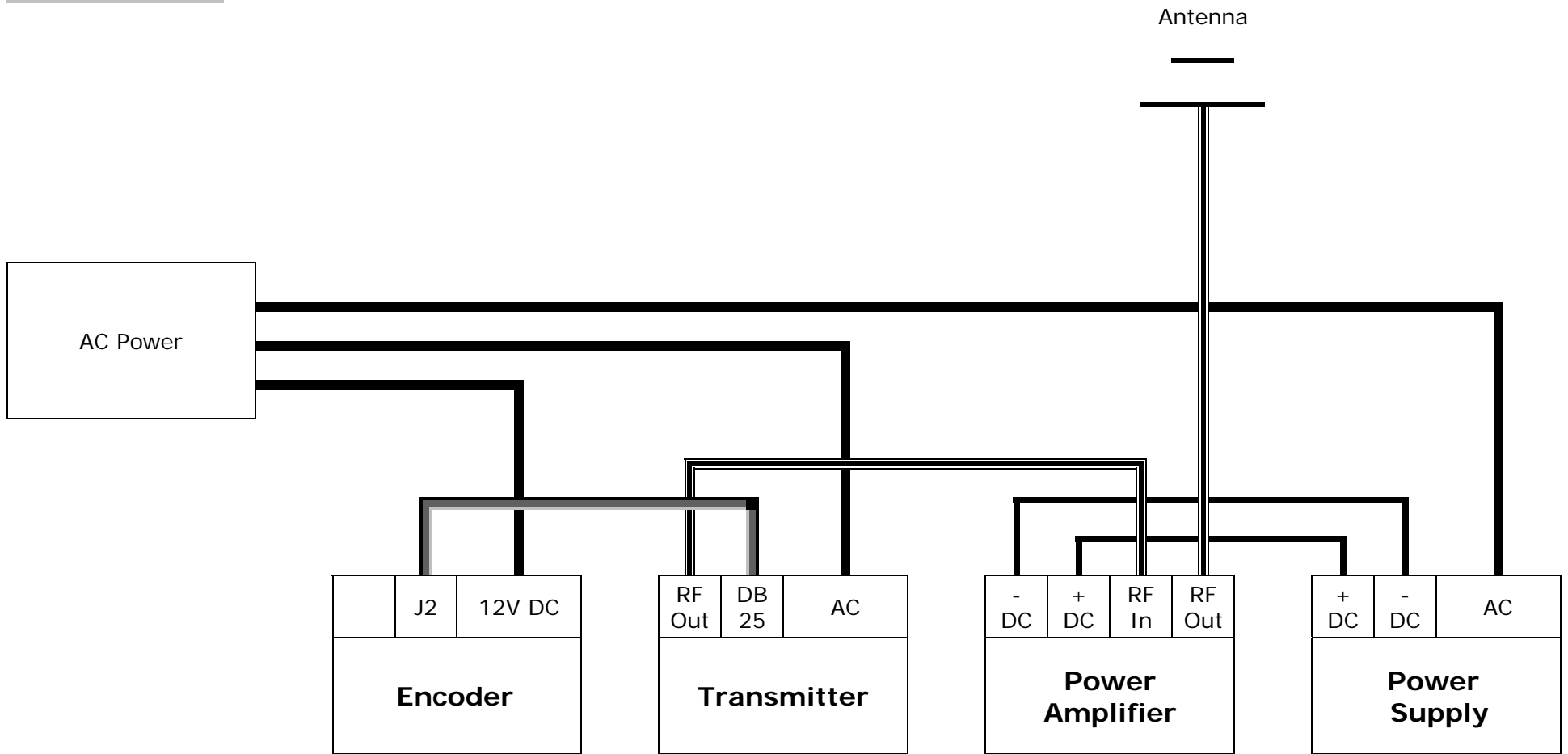
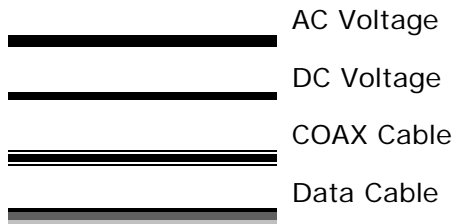
## 5.1 Appendix A – Installation Diagrams



**Low Power System Installation Diagram**



**Medium Power System Installation Diagram**



High Power System Installation Diagram

# General Information

## 6.1 Specifications

### Encoder

<b>Frequency Range</b>	VHF: 148-174 MHz, UHF: 403-433 MHz, 438-470 MHz
<b>Data Baud Rate</b>	512, 1200, 2400 BPS
<b>Paging Format</b>	POCSAG, Narrow or Wide Band
<b>Paging Type</b>	Wireless Tone, Numeric, Alphanumeric
<b>Channel Spacing</b>	12.5 kHz or 25 kHz
<b>Power</b>	AC Adaptor - Input: 100-240VAC, 50/60Hz Output: 12VDC, 3A
<b>Approvals</b>	UL/CSA listing for Power Supply
<b>Operating Temperature</b>	32° to 104° F / 0° to 40° C
<b>Storage Temperature</b>	14° to 140° F / -10° to 60° C
<b>Operating Humidity</b>	10%-65%
<b>Dimensions (W x H x D)</b>	9.5" x 2.5" x 5.5" / 241mm x 63mm x 140mm
<b>Weight</b>	2.10 lbs.
<b>Warranty</b>	1 Year, Parts and Labor

### Internal Transmitter

<b>RF Power Output</b>	TS-TX-8M: 8W
<b>Modulation</b>	Data and Tone: $\pm$ 3.5 kHz, Voice: $\pm$ 5.0 kHz
<b>Modulation</b>	Data and Tone: $\pm$ 3.5 kHz, Voice: $\pm$ 5.0 kHz
<b>Frequency Stability</b>	$\pm$ 0.0025%, -22° to 140° F / -30° to 60° C Reference Temperature: 77° F / 25° C
<b>FM Noise</b>	Minimum 40dB below $\pm$ 3.0 kHz deviation at 1000 Hz
<b>Spurious &amp; Harmonic</b>	75 dB
<b>FCC Registration</b>	AIERIT11-450

## 6.2 Warranty

Unless otherwise specified at the time of original purchase, all equipment is warranted as to quality and performance for one year from the date of original shipment from our factory.

This factory warranty covers all parts, software, and/or labor (as specified at time of purchase) at our factory, as well as return shipping to you, the customer, but does not apply to any batteries or other damage resulting from abuse of the equipment. Warranty coverage excludes free replacement of cosmetic items such as clips, logos, etc.

The warranty is void if:

1. There is evidence of abuse to the equipment (i.e., corrosion, unusual physical damage, signs of exposure to temperatures outside the range of specifications, etc.)
2. The equipment contains an unauthorized modification.
3. Identification numbers on the printed circuit boards or chassis have been altered or removed.
4. Evidence of the product having been exposed to or submerged in water.
5. Equipment is damaged through acts of God, including, but not limited to: flood, lightning, hurricane, tornado, sustained high winds, acts of war, natural disasters, etc.

Should you experience problems with any product, we would suggest consulting your system or clock maintenance guide to correct any routine problems such as replacing batteries, cleaning contacts, checking AC voltage, etc.

If the problem persists, please call our technical support department for additional assistance, remote diagnostics help, etc.

If your product must be returned for repair, our technical service department will provide you with a Returned Material Authorization (RMA) number and any other special instructions that will allow the repair to be handled as quickly as possible.

All non-warranty products require a purchase order number in addition to an RMA number for repair work to be started.

For more information, or to obtain technical assistance on any warranty or non-warranty product, please write, call, fax or email to:

**Visiplex Time Systems, Inc.**

**100 N Fairway Drive, Suite 118**

**Vernon Hills, IL 60061**

**Phone: (847) 918-0402 or (877) 918-8463**

**Fax: (847) 918-0518**

**E-mail: [support@visiplex.com](mailto:support@visiplex.com)**

**Website: [www.timesyncpro.com](http://www.timesyncpro.com)**

**Business Hours: Monday-Friday, 9:00 AM - 5:00 PM Central Time.**