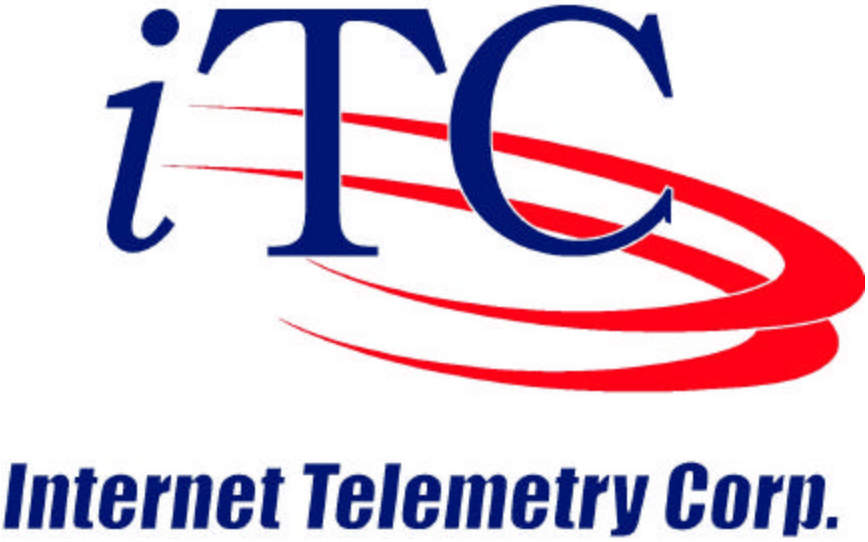

Internet Telemetry Corp.

Telemetry Internet Appliance Module (TIM 200ä)

Product Manual

Product Manual

Revision 1.0

Telemetry Internet Appliance Module

Notice

Read this manual before working with any Telemetry Internet Appliance Module (TIM). For personal and system safety and for optimum product performance be certain you throughly understand the contents before installing, operating or maintaining a TIM.

Within the continental United States, Internet Telemetry Corp. can be contacted toll-free for for technical or product assistance via the Internet Telemetry Corp. Customer Solutions Hotline number:

(918) 641-0100 (8:00 AM to 5:00 PM CST)

Trademark

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www.itelemetry.net

Table of Contents

Section 1

Introduction

Using This Manual

Manual Overview

This manual is organized into sections. Before proceeding, it is recommended, the user(s) read and understand each section.

It is assumed, safe installation and wiring practices are performed by qualified personnel.

It is important, Section 1.3 - Safety Information, be read and understood. Section 1.3 provides important information that will potentially prevent serious injury to installation personnel.

The Manual is has the following sections:

Section 1 - Using the Manual, Product Descriptions, Safety Information, and General Information

Section 1 - Provides information on how to use the TIM Product Manual, Product Descriptions, Safety Information as it relates to the manual, and General Information concerning returns and warraty information.

Section 2 – System Overview, Product Specifications, Unpacking and Inspection

Section 2 - Provides information regarding the TIM as a component in a communications network and product specifications.

Section - 3 Site Survey and Configuration

Section 3 - Provides important information regarding site survey(s), physical orientation, and configuring the TIM for customer specific needs.

Section 4 - Installation

Section 4 - Provides information regarding installation procedures.

Section - 5 Troubleshooting

Section 5 – Provides information on troubleshooting the TIM.

Introduction

Section 1.2 decribes the various models of the TIM.

Product Description

The TIM is a versatile wireless data collection and transmission module. It is one component of the Williams Telemetry fixed-wireless-data-collection system. The TIM accepts and accumulates dry contact closures from meters and other devices and provides uni-directional transmission of wireless data packets using a proprietary protocol to a local WinGate Internet Gateway or concentrator.

The TIM has three distinct models. Each model is a variation of the base unit to allow for specific customer needs. The TIM models are as follows:

TIM 200ä

The TIM 200 is considered to be the base unit. It consists of an internal 3.6 volt lithium battery, circuit board, antenna, and switch connectors. All components are assembled and placed in an ultra-sonic welded weatherproof enclosure.

A TIM 200 is typically installed on Williams 'manufactured Universal Mounting Brackets or gas meter index dial covers specifically designed for certain meter manufacturers. It is also designed for non-metering applications such as energy control devices, vending machines, copy machines, etc.

TIM 150ä

The TIM 150 is the base unit without a weatherproof enclosure. The TIM 150 is intended to be incorporated into an end device and act as a communication module for that device. Because the TIM 150 is unprotected from the elements, it must be installed within the integral enclosure of a meter or other end device.

TIM 100ä

The TIM 100 consists of a circuit board only and is intended to be incorporated into an end device. Because the TIM 100 does not have its own power supply, it must be wired to a power source through one of the pins on the external connector.

Updates of this manual can be found on the Internet Telemetry Corp. Website.

www.itelemetry.net

Safety Information

Introduction

Section 1.3 presents safety information that should be understood before operating the TIM.

Manual Contents

The installation and operating procedures and associated wiring diagrams within this manual, should be thoroughly read and understood before attempting installation of the TIM.

Vendor Instructions

THIS EQUIPMENT COMPLIES WITH PART 15 OF THE FCC RULES. ANY CHANGES OR MODIFICATIONS NOT APPROVED BY THE MANUFACTURER COULD VOID THE USER S AUTHORITY TO OPERATE EQUIPMENT.

Assembly, Installation and operating instructions provided with subassembly component(s) should be read and fully understood.

It is assumed, qualified personnel shall perform installation of the TIM.

User provided electrical wiring should meet all electrical codes for the area of installation. If no safety codes are applicable for the area of installation, the user should refer to the 1996 National Electrical Code (NEC) for information.

Text Safety Information

Within this manual are **NOTE, CAUTION!** and **WARNING!** safety references the user should strictly follow. This information is intended to alert the user of possible conditions that could occur if the information is not adhered to.

NOTE

A NOTE references important items of information or procedures that do not involve safety of personnel or equipment.

CAUTION!

A CAUTION! REFERENCES IMPORTANT PROCEDURES OR PRACTICE INFORMATION. WHEN NOT STRICTLY OBSERVED, DAMAGE TO EQUIPMENT COULD RESULT.

WARNING!

A WARNING! REFERENCES IMPORTANT PROCEDURES OR PRACTICE INFORMATION. WHEN NOT STRICTLY OBSERVED, INJURY TO PERSONNEL OR LOSS OF LIFE COULD RESULT.

General Information

Introduction

Section 1.4 presents information on reporting damage and return and warranty policies.

Shipping

The TIM is shipped individually packaged. Specific components may be directly shipped from the manufacturer.

Reporting Damage

If any damage is evident, notify the shipping carrier. Keep damaged component(s) and packing materials to show as evidence to carrier. Also notify the Internet Telemetry Corp. Assistance Hotline at the following telephone number:

(918) 641-0100

Product Returns

All returned equipment must be issued a Return Material Authorization Number (RMA) prior to return shipment. To obtain an RMA number call Internet Telemetry Corp. Customer Solution Center Hotline for assistance at the following telephone number:

(918) 641-0100

An invoice copy and clearly labeled RMA number must accompany all return shipments. All defective items must be returned complete, as if they were new and in working condition. Failure to do so may invalidate both the RMA and the warranty. All item accessories must be included for refunds. All unauthorized and unmarked returns will not be honored.

Warranty

All warranty issues are outlined within the Purchase Agreement between Seller and Buyer.

Section 1.5

Unpacking and Inspection

Introduction

Section 1.5 provides unpacking and inspection information. The TIM and internally installed components are shipped as a complete assembly. When unpacking, exercise caution not to damage the internal component(s).

Packing List

Accompanying the TIM is a Packing List. When the TIM is unpacked and packaging material removed make sure all parts are present as listed on the packing list. Any shortage(s) should be reported to Williams Telemetry.

Unpacking and Inspection

- Inspect outer shipping container for evidence of damage, indentations etc.
- Inspect the TIM, as it is unpacked, for physical damage that would impair its installation and operation.
- Examine external surface for evidence of scratches or other forms of damage.
- Examine Optional Mounting Brackets for physical damage preventing it from being installed to a mounting surface.

Reporting Damage

If severe damage is evident, see Section 1.4, General Information, for reporting damages and return and warranty policies.

Section 2

System Overview

Introduction

Section 2.1 presents a system overview of the TIM and how it is integrated into a communications network.

System Overview

The Telemetry Internet Appliance Module (TIM) is a data-collection-wireless-transmission module. It is one component of the Williams Telemetry fixed-wireless-data-collection system.

A TIM accepts and accumulates dry contact closures (data) from meters and other end devices installed on the customer's premise. The TIM is designed to count from 0 to 65,535 for a totral of 65,536 counts before it rolls over. (2^{16} = 65,536) The zero will never be counted again. Which leaves a count of 65,535 counts per rollover.

It then transmits the data to a local WinGate Internet Gateway.

After receiving data from a TIM, the WinGate, serving as the central link in the data gathering system, presents the data to a database server on a regular schedule in the form of *data packets* using secured national public wirelines and wireless networks.

Once the database has received the data, it stores each customer's data separately and acts as a warehouse. Large scale secured web servers enable customers to access their data via e-mail, computer-to-computer links, or the Internet.

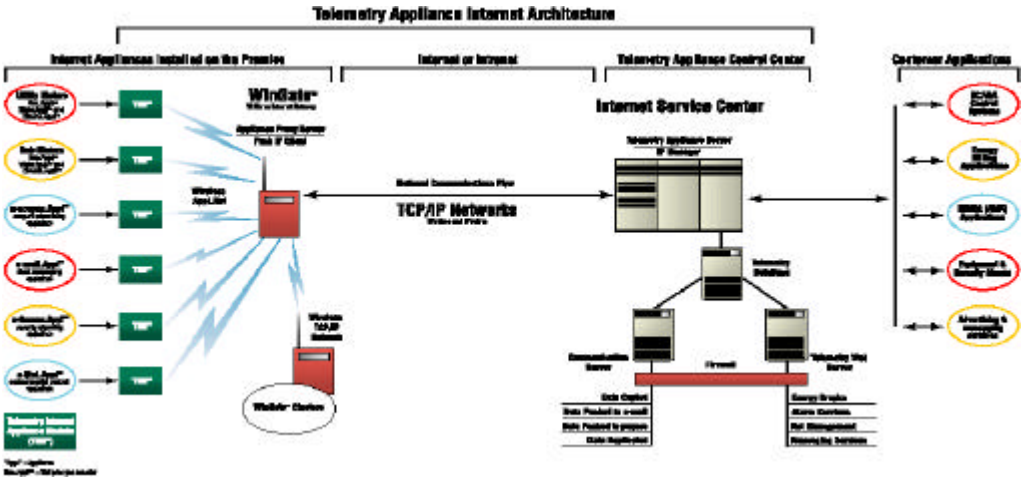

Figure 2.1-1 – System Architecture

Product Specification

Introduction

Section 2.2 presents the TIM specifications.

Figure 2.2-1 TIM 200

Specifications

Transmitter: Uni-directional (outbound only).

Pulse Input: Frequency: DC contact closure to 10 KHz. Pulses can be configured to count on the upstroke or downstroke of each pulse. The maximum pulse rate is 1 pulse per second

Pulse Output: Transmitted digital packet contains TCP/IP address, pulse count, and status byte.

Radio Frequncy: 902 to 928 MHz.

Modulation Type: Frequency hopping spead spectrum.

Data Rate: 16.1 Kbps.

Radio Propagation: 1-2 miles clear line of site 600 to 2000 under expected applications.

Operating Temperature: -20^{o} C degrees to 80^{o} C.

Power Requirements: Minimum voltage is 2.0 volts. Maximum voltage is 3.6 volts. **Battery Life Estimates:** 10 years with transmit intervals greater than two minutes at ambient temperature.

Field Configurations: Initial meter value and data transmission intervals, pulse debounce, and pulse-type (rising or falling). Hand held configuration fixture.

Mechanical

Dimensions – TIM 200

Weight - Approximately 8 oz.
Height - 1.25 inches (3.25 cm)
Width - 4.75 inches (4.75 cm)
Depth - 3.4 inches (8.5 cm)

Dimensions – TIM 150

Weight - Approximately 8 oz.
Height - 15/16 inches (2.38 cm)
Width - 3.5 inches (8.89 cm)
Depth - 3.0 inches (7.62 cm)

Dimensions – TIM 100

Weight - Approximately 0.5 oz.
Height - 1/16 inch (0.1 cm)
Width - 3.5 inches (8.89 cm)
Depth - 3.0 inches (7.62 cm)

Certification Rating

Not rated for hazardous installations.

Section 3

Site Survey and Configuration

Site Survey

Introduction

Section 3.1 describes various characteristics that have to be maintained for optimum performance of any TIM model. Section 3.1 also provides helpful information on installing the TIM at a site where it will accurately be received from the WinGate. This section should be reviewed prior to the installation of the TIM.

Local Electrical Codes

Local and National Electrical Codes (NEC) for the area of installation, should be followed for the installation of TIM.

Protective Structure

Protective Structure: If the TIM is mounted within/under a protective structure (under a canopy or in a closet) or is below ground level (in basement or ditch), make sure LAN communications can be transmitted and received.

Physical Orientation

The TIM has a horizontally polarized antenna built into its PCB**.** The installation site must allow the TIM to be mounted in a horizontal plane.

NOTE

- **If the optional mounting bracket or meter specific index dial cover is utilized, make sure the installed TIM remains in/on a *horizontal plane.***
- **If the TIM is integrated into a field device, make sure the installed TIM remains in/on a *horizontal plane (Y Axis).***

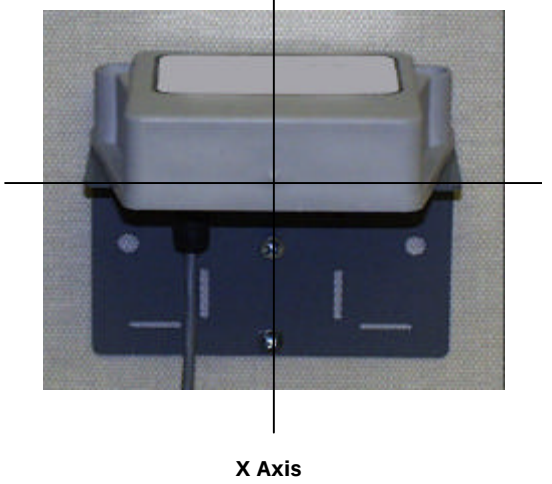

Figure 3.2-1 Horizontal Plane

Surveying Installation Sites with a TIM Technicians Kit

Williams Telemetry offers a TIM Technicians Kit consisting of a TIM/Programmer Tester (TPT), a Pulser and a TIM 200. (See Figure 3.3-2) The kit helps to ensure the Local Area Network (LAN) has acceptable communication. (In this case, LAN is considered communication between the TIM and its parent WinGate 2000)

Both the TPT and the Pulser come with product manuals, which explain the system and the functionality of each device. The procedures give a minimal of information. Therefore, the operator/technician should refer to the appropriate product manuals.

TIM Programmer/ Tester

Pulser

TIM 200

Figure 3.3-2 TIM Technicians Kit

Procedures

Step	Procedure
1.	Connect the test TIM 200 to the Pulser by lining up the pins and mounting slot on the male end of the Pulser with the holes and mounting slot on the female end on the TIM. (See Figure 3.1-3)

2.	Turn on the variable-pulse-frequency dial on the Pulser and look for the LED light to flash. When the flashing light is on, it indicates the Pulser is supplying a contact closure signal to the TIM 200.
2.	Place TIM and Pulser at the spot where the TIM will be installed. Leave the Pulser on!
3.	Turn on TPT. You should be able to see the TIM ID number on the TPT display. (If you do not see an ID number the TIM battery could be low or depleted).
4.	Hold the TPT in the location where the WinGate unit is to be installed. For example, if the installation site is on a wall, place the TPT at the exact spot of installation.
5.	The TPT should register the TIM and identify it on the display. If there is no registration, the WinGate unit will not communicate with the TIM at that particular location and another location should be selected.

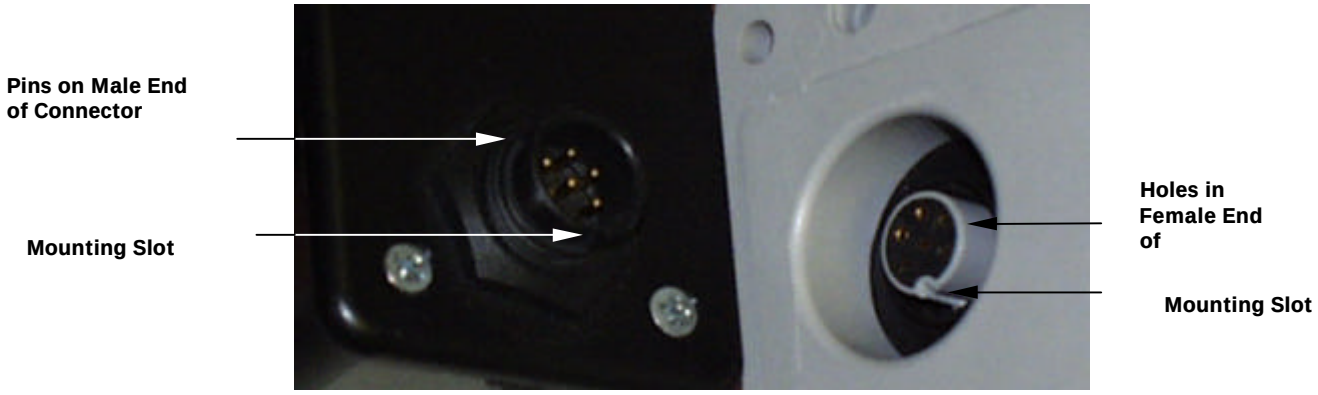

Figure 3.1-3 Pins, Holes and Mounting Slot

Configuration

Introduction

Section 3.2 presents infor mation on configuring the TIM.

Configuring the TIM

TO BE FINISHED WHEN THE TPT IS RECEIVED

Section 4

Installation

Installation

Introduction

Section 4.1 presents information for physically installing the TIM mounting bracket.

Methods for Installing the TIM and TIM Mounting Bracket

Generally, the TIM is commonly installed in two ways. The TIM may be incorporated within an end device or mounted with a TIM Universal Mounting Bracket or a meter specific index dial cover.

Williams Telemetry offers several TIM meter specific index dial covers and universal brackets with instructions on installing the TIM to type specific meters. See Figure 4.1-1 TIM Universal Mounting Bracket. The mounting brackets may be installed on a flat, smooth surface, rigid pole, or any other type of vertical foundation.

NOTE **All TIM models must be installed in a horizontal plane. For example, if the TIM is integrated within an end device, it must be installed in the integral enclosure in a horizontal plane.**

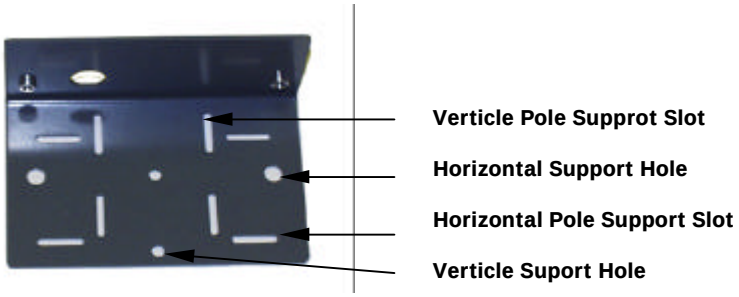

Figure 4.1-1 TIM Universal Mounting Bracket

To install the TIM Bracket the following tools are required:

- Phillips Head Screwdriver
- Flat Head Screwdriver
- Torx 25 Screwdriver
- Power Drill

Installing the TIM Mounting Bracket

The following general procedures for installing the TIM brackets are intended to be a guide. Actual installation sites may require steps not listed.

Wall Mounting Procedure

The following procedures describe the installation of the TIM Universal Mounting Bracket to a wall or other flat surface.

NOTE

- **A TIM Mounting Bracket must be installed in a manner so the TIM device (when mounted to a bracket) is consistent with a horizontal plane.**
- **Do not paint the TIM! Certain types of paint will block the transmission of data.**

Step	Procedure
1.	**If the wall building materials can support the weight of the TIM and its Universal Mounting Bracket,** (bricks, concrete, cinder block, etc.) drill holes at marked locations and insert the proper size wall anchor(s) and attach the bracket with the proper size screws. **If the wall is of questionable strength, such as sheetrock or paneling,** locate a wall stud and secure the Universal Mounting Bracket with proper size screws.
2.	See Section 4.2 for information on how to install the TIM to the TIM Universal Mounting Bracket.

Figure 4.1-2 TIM and TIM Universal Mounting Bracket Installed on a Wall

Pole Mounting Procedure

The following procedures describe the installation of the Universal TIM Mounting Bracket to a pole.

NOTE

- **A TIM Mounting Bracket must be installed in a manner in which the TIM (when mounted) is consistent with a horizontal plane.**
- **Do not paint the TIM! Certain types of paint will block the transmission of data.**

Step	Procedure
1.	Determine the position, on the pole, where the TIM Universal Mounting Bracket is to be installed.
2.	**If the bracket is mounted on a horizontal pole,** thread band clamps through horizontal pole mounting slots (see Figure 4.1-1) and around pole. **If the bracket is mounted on a vertical pole,** thread band clamps through vertical pole mounting slots (see Figure4.1-1) and around pole.
3.	Tighten the band clamps.
4.	See Section 4.2 for information on how to install the TIM to the TIM Universal Mounting Bracket.

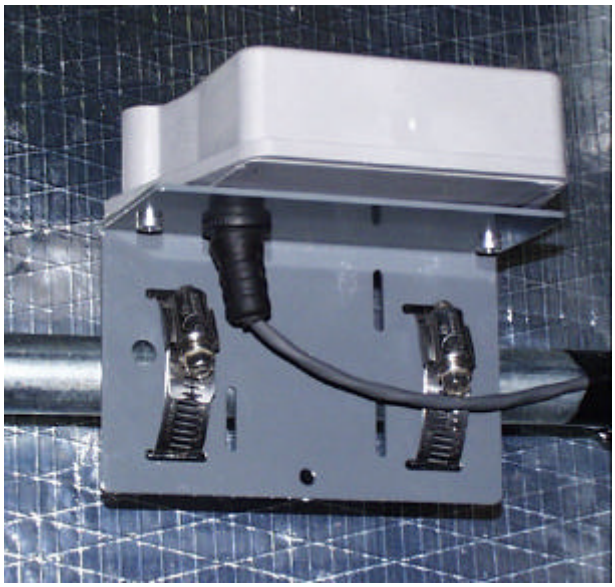

Figure 4.1-3 TIM and TIM Universal Mounting Bracket installed to a Horizontal Pole.

Installing the TIM to the Universal Mounting Bracket

Introduction

Section 4.2 presents information on how to install the TIM to the Universal Mounting Bracket.

Installing the TIM to the Universal Mounting Bracket

Step	Procedure
1.	Line up the pins and mounting slot on the male end of the connector (installed on the bracket) with the holes and mounting slot on the female end (installed on the TIM). Place the TIM on top of the bracket and gently apply pressure. Make sure a tight connection is made. See Figure 4.2-1.
2.	Insert the two 10-24 X 1 TORX head mounting bolts into thr TIM mounting holes and tighten.

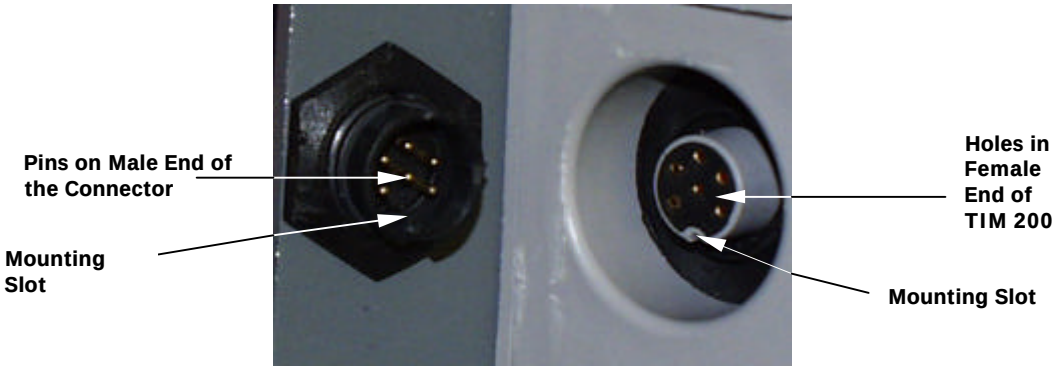

Figure 4.2-1 – Pins, Holes, and Mounting Slot of Connector

Section 5

Troubleshooting

Introduction

Section 5.1 presents information on troubleshooting the TIM.

Problem	***Corrective Action***
TIM unit is not transmitting.	• Make sure battery is not low or the voltage is not less than 3.6 volts. Test with TPT. • Make sure switch connections on the TIM and mounting bracket/cable are tight.
TIM pulse cannot be received.	• Make sure battery is not dead or the voltage is not less than 3.6 volts. Test with TPT. • Make sure switch connections on the TIM and mounting bracket are tight. • Make sure TIM is mounted in a *Horizontal Plane*. • If the TIM is mounted near/within a protective structure, make sure the building materials do not hinder the TIM transmission. • Make sure the TIM has not been painted. Certain types of paint can block the TIM signal. • Make sure the TIM has been configured properly.