WAVTRACE™

PTM 1000 Operations and Maintenance Manual

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This Limited Warranty shall be governed by the laws of the state of Washington.

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Customer Support and Information

If you have specific questions concerning this document or other related information, call Wavtrace Technical Support Center (WAVTAC) at:

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You can also send E-mail to Wavtrace at the following address:

wavtac@wavtrace.com

For the latest information, consult our Website at:

http://www.wavtrace.com

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About This Guide

How to Use This Guide

The PTM 1000 Operations and Maintenance Manual describes how to prepare, install, test and configure the Hub and Remote portion and system-related aspects of the PTM 1000 system.

The PTM 1000 Operations and Maintenance Manual is a technical document written for the engineer or technician.

The PTM 1000 Operations and Maintenance Manual is just one component of an interlocking set of documents and reference information that Wavtrace uses to support its customers. Use this manual in conjunction with the Site Survey.

Writing Conventions

The PTM 1000 Operations and Maintenance Manual uses the following writing conventions:

- Screen labels: **Bold**, such as **configTable**
- Typed screen messages: `courier`, such as `alignremoteantenna`

Chapter 1 Safety and Certification

This Chapter describes the following:

- Safety and Note Definitions, page 2
- Electrostatic Discharge (ESD) Warnings, page 3
- Moisture-Sensitive Device (MSD) Warnings, page 4
- Electrical Safety Guidelines, page 5
- Lifting Guidelines, page 8
- Certification, page 9

Safety and Note Definitions

This manual uses the following:

Note	Qualifies or presents important points about the subject matter that is being presented.
Important 	Alerts the reader to critical information about the subject matter that is being presented.
Caution 	Alerts the reader to actions that should be followed to prevent damage to a device, or to meet a necessary requirement.
Warning 	Alerts the reader to the risk of severe personal injury.
ESD Warning 	Alerts the reader to an electrostatic discharge (ESD) concern.

Electrostatic Discharge (ESD) Warnings

What is ESD?

ESD can be generated and stored in a person's body through routine activity, forming a charge. If this static electric charge does not dissipate before the person handles electronic equipment, it can be discharged into equipment and cause damage to electrostatic-sensitive components. ESD damage can be catastrophic; more often it subtly degrades the performance of equipment over time.

The following symbol in Figure 1 indicates that the unit is sensitive to electrostatic discharge.

Figure 1 *Figure 1ESD Symbol*

Prevention

Observe the following precautions to prevent damage from ESD while handling electrostatic-static devices.

- When handling electrostatic-sensitive devices, use a standard wrist strap and grounding wire. Connect the grounding wire securely to the equipment chassis, frame or ground.
- When an electrostatic-sensitive device is not mounted, it must be stored in a sealed protective package approved for that purpose. The package should be clearly marked with an ESD warning and symbol.
- When working on an electrostatic device work bench, a grounded dissipative workmat must be used on all work surfaces and the technician must wear the grounded wrist strap.

Moisture-Sensitive Device (MSD) Warnings

Some units and/or assemblies are shipped in vacuum-sealed packages to protect moisture-sensitive devices (MSDs). An MSD is a component in which moisture can accumulate and cause damage when the component is not powered or is not in use. After an MSD unit or assembly is removed from its vacuum-sealed package, the MSD must be kept in a dry place not susceptible to moisture.

Electrical Safety Guidelines

Use the following electrical safety guidelines before installing the Hub or remote units. To avoid electrical shocks, burns or equipment damage, read and observe all warnings and cautions.

In Case of an Electrical Accident

If an electrical accident occurs:

- Do not become a victim yourself.
- Disconnect power to the system.
- Send another person to get medical aid if possible. Otherwise, assess the condition of the victim and then call for help.

Basic Electrical Safety Guidelines

Use these guidelines when working with any electrical equipment:

- Carefully examine your work area for possible hazards, such as moist floors, ungrounded power extension cables, and missing safety grounds.
- Keep the area clear and dust-free during and after installation.
- Keep tools and components away from walk areas.
- Always check the power. Never assume that power has been disconnected from a circuit.
- Do not work alone when potentially hazardous conditions exist.
- Do not perform any action that creates a potential hazard or makes the equipment unstable or unsafe.
- Never install equipment that appears damaged.

Electrical Safety Precautions During Installation

Use all safety precautions when working inside the Hub indoor unit (IDU) chassis.

Warning 
Hazardous energy exists within the Hub IDU. Use extreme caution when performing troubleshooting or disassembly. Always be careful to avoid electric shock or equipment damage.

Warning 
Do not wear items that could get caught in the chassis or module slots, such as a tie, jewelry (including rings and chains) or loose clothing.

Warning 
Metal components heat up when connected to power and ground, and can cause serious burns.

Warning 
Read the installation instructions before connecting the system to its power source.

Warning 
Before working on a chassis, unplug the power cord on AC units, or disconnect the power at the circuit breaker on DC units. Turn all power supplies off (O) and unplug all power cables before opening the chassis.

Warning 
Do not touch the power supply when the power cord is connected, as line voltages are present even when the power switch is off.

Warning 
If the power is on, do not touch any wires, bus bars or electric connections within the chassis with your hands or fingers. Do not insert metal objects, such as screwdrivers, into the backplane.

Warning 
Before beginning any procedures requiring access to the chassis interior, locate the emergency power-off switch for the room in which you are working.

Warning 
Disconnect all power and external cables before installing or removing a chassis.

Electrical Guidelines for Telephony or Network Support

Follow these guidelines when working with any equipment that is disconnected from a power source, but still connected to telephone or network wiring:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line is disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- Do not work alone if potentially hazardous conditions exist.
- Never assume that power is disconnected from a circuit; always check.

Lifting Guidelines

During installation, some lifting is required to set up the equipment. Before installing the hardware, be certain that your site is carefully located and prepared to accommodate power sources and network connections.

Note Once installed, the Hub and remote units are stationary. They are not intended to be moved frequently.

Follow these guidelines when lifting:

1. Disconnect all external cables before lifting or moving the chassis. Make sure the pathway is clear and free of equipment and tools.
2. Do not attempt to lift the chassis alone. Two people are required. Plan the move ahead of time, and make sure each person has an escape path in case of an emergency.
3. Each person is required to grasp the chassis under the lower edge and lift with both hands from the bottom. Ensure that your footing is solid, and balance the weight of the object between your feet evenly.
4. If you must bend down to lift the chassis, bend at the knees, not at the waist. This reduces the strain on your back.
5. To prevent injury when you lift, keep your back straight and lift with your legs, not your back. Lift the chassis slowly. Never move suddenly or twist your body as you lift.
6. Place the chassis into a rack. Each person is required to position the chassis by grasping the side with one hand and the bottom with the other.

Note We recommend that you lift the chassis with the power supply removed. Use both hands to handle the chassis power supply. Install the power supply on the rack before installing the Hub IDU.

Certification

Note This equipment does not presently meet FCC requirements. The following paragraphs will apply after receiving FCC approval.

This equipment has been tested and found to comply with the limits for a Class A 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 a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Warning

The user is cautioned that changes or modifications made to the equipment, that are not expressly approved by the party responsible for compliance, could void the user's authority to operate the equipment.

To ensure FCC compliance of this equipment, it is the user's responsibility to obtain and use only shielded and grounded interface cables.

Important

The equipment complies with ANSI/IEEE standard C951-1992 and those of the National Council on Radiation Protection and Measurement (NCRP). Evaluation of RF exposure is based on calculation of specific absorption rate (SAR) of the RF energy, on Maximum Permissible Exposure (MPE) of the RF field power density.

Note This equipment does not presently meet any safety requirements. The following safety information will apply after receiving safety approval.

Table 1: **Equipment Category: CAN/CSA-C22.2 No. 950 / UL 1950, Safety of Information Technology Equipment**

Hub IDU	Hub ODU	Remote IDU	Remote ODU
Restricted Access Location	N/A	Normal Operator Access	N/A
Pollution Degree 2	Pollution Degree 1	Pollution Degree 2	Pollution Degree 1
Class I Type Equipment	Class I Type Equipment	Class I Type Equipment	Class I Type Equipment
Fixed—Rack Mount	Fixed	Fixed—Rack Mount OR Movable—Stand Alone	Fixed
Pluggable Equipment Type A—Detachable	Permanently Connected	Pluggable Equipment Type A—Detachable	Permanently Connected
Class I Laser	N/A	N/A	N/A
No Direct Telecom Interface (e.g., through a PBX)	N/A	No Direct Telecom Interface (e.g., through a PBX)	N/A

Install the Hub indoor unit (IDU) in an area that is classified as a "restricted access location," defined as:

- Access allowed only by qualified service personnel; and
- Some means of security in place; and
- Controlled by the authority responsible for the location.