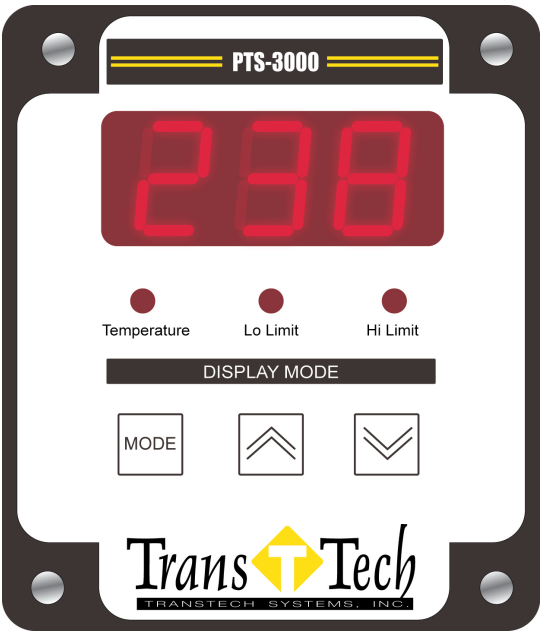
TransTech Systems, Inc.



PTS 3000 User's Guide

Contents

Introduction

The PTS-3000 is a surface temperature sensing/display/alarm system for use on Hot Mix Asphalt (HMA) rolling machines.

The PTS-3000 provides a continuous display of mat temperature and can alert the operator when the temperature exceeds the user-settable high or low limits.

With the PTS-3000, roller operators will always know when compaction conditions are optimal, and when they're not. Sudden drops in pavement surface temperature due to wind speed will be instantly detected so that pavement 'crusting' can be avoided. The user-settable high and low limits will alert roller operators when minimum rolling temperatures are being approached and when mat temperature is approaching "tender zone" conditions.

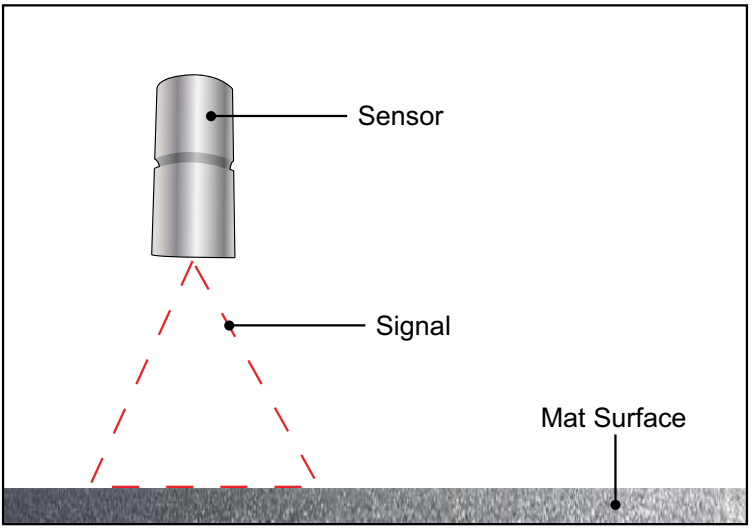
The PTS-3000 is available in two versions; the PTS-3000 is used for permanent installation on a roller, the PTS-3000P is a portable system that can be temporarily installed on a roller and removed at the completion of the paving job.

Theory of Operation

The PTS-3000 uses an infrared sensor to measure the mat temperature by detecting the amount of infrared energy emitted from the mat.

While the sensor lens is relatively small, it focuses infrared energy from a wider area so the sensor sees approximately a 4" diameter circle when it is mounted at a height of 20.

Like an optical lens, the infrared lens will not operate properly when it is dirty. The PTS-3000 reduces dirt deposits on the lens by using a continuous stream of air which blows across the sensor lens. However, over time the lens may still become dirty and should be periodically cleaned in order to maintain accurate readings (see "Maintenance" section).



Sensor Illustration

Components (Permanent)

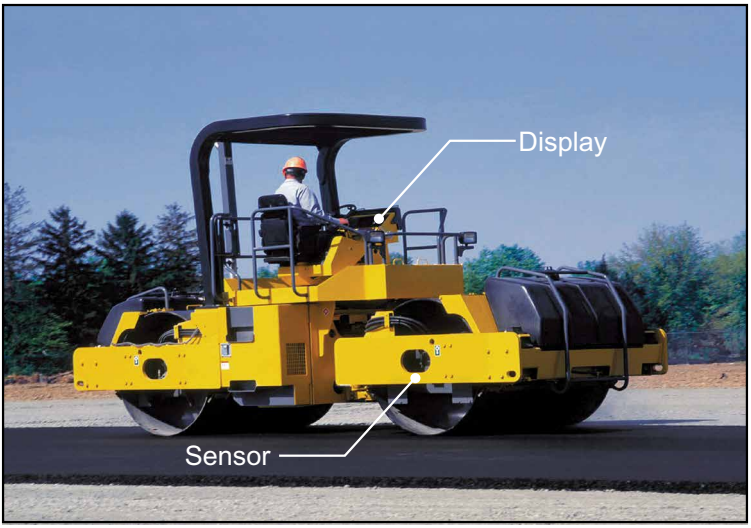
The PTS-3000 (for permanent installation) includes the following components:

- **Sensor Unit (7500-0129)**
- **Permanent Sensor Mounting Bracket (2800-0186, 7000-0138)**
- **Display Unit (7500-0112-12V or 7500-0112-24V)**
- **Permanent Display Unit Mounting Bracket (7000-0221)**
- **Interconnecting Cable Kit**

The following picture shows the general location of each of the major components. Pictures of each of the components can found in the "Parts List" section of this document.

The Sensor Unit is mounted underneath the roller and generates a voltage output proportional to the temperature of the mat. The voltage output of the Sensor Unit is connected to the Display Unit which displays the mat temperature. The Display Unit is mounted near the operator for convenient viewing.

The Sensor Unit, and 7500-0112-12V Display Unit all operate using a 12V supply. On rollers with 24V power systems, a 7500-0112-24V Display is used. The 7500-0112-24V is connected to the 24V power source but converts the 24V to 12V and connects the 12V to the Sensor Unit via the Interconnecting Cables.



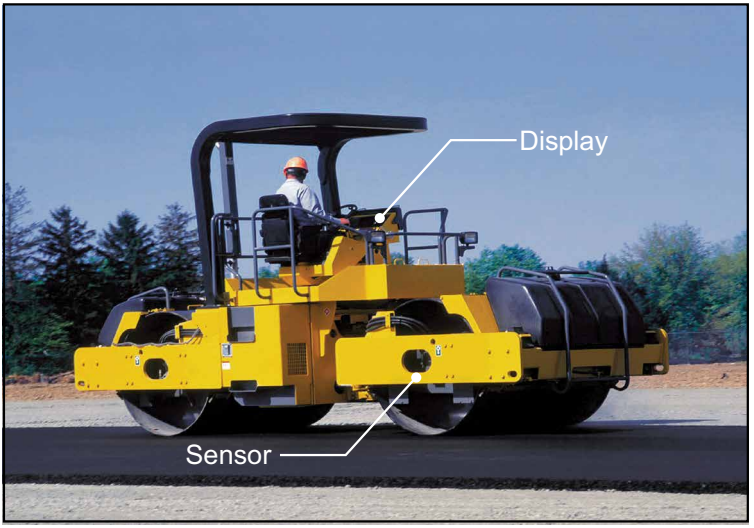
Location of PTS-3000 Components

Components (Portable)

The PTS-3000P (for portable installation) includes the following components:

- **Portable Case (1400-0020)**
- **Sensor Unit (7500-0129)**
- **Portable Sensor Mounting Bracket (2800-0186, 7000-0138, 2500-0008)**
- **Display Unit (7500-0112-12V or 7500-0112-24V)**
- **Portable Display Unit Mounting Bracket (2500-008)**
- **Power Receptacles (2) (2100-0104)**
- **Interconnecting Cable Kit**

The following picture shows the general location of each of the major components. Pictures of each of the components can found in the "Parts List" section of this document.



Location of PTS-3000 Components

Components (Portable)

The Sensor Unit is magnetically mounted underneath the roller and generates a voltage output proportional to the temperature of the mat. The voltage output of the Sensor Unit is connected to the Display Unit which displays the mat temperature. The Display Unit is magnetically mounted near the operator for convenient viewing. Two Power Receptacles are included to be permanently mounted on the rollers to enable the PTS-3000P to be quickly installed and removed from the roller.

The Sensor Unit, and 7500-0112-12V Display Unit all operate using a 12V supply. On rollers with 24V power systems, a 7500-0112-24V Display is used. The 7500-0112-24V is connected to the 24V power source but converts the 24V to 12V and connects the 12V to the Sensor Unit via the Interconnecting Cables.

Installation (Permanent)

To install the PTS-3000, you must

- **Install the Display Unit**
- **Install the Sensor Unit**

The following describes each of the steps.

Installing the Display Unit

Mount the display bracket to the operators control panel.

1. Confirm that the PTS-3000 is the correct version for your roller voltage. Rollers with 12V power systems must use the 7500-0112-12V Display while rollers with 24V power systems must use the 7500-0112-24V Display.

2. Carefully drill and tap to the control panel to attach the bracket. Before proceeding, check to ensure that no interference exists with any other roller components.

3. Attach the display to the mounting bracket.

4. Confirm that the ignition is turned OFF.

5. Connect the display to the ignition-activated 12 (or 24) volt supply using the power wire attached to the display.

6. Connect the display to the sensor using the supplied cables.

7. Confirm operation of the temperature sensor with the ignition in the “on” position.

Installing the Sensor Unit

1. Attach the sensor mounting bracket to the bottom of the roller centered under the engine compartment (or other convenient location between the two drums), approximately 24” (600mm) above the pavement surface.

2. Carefully drill and tap to the bottom of the roller to attach the bracket. Before proceeding, check to ensure that no interference exists with any other roller components.

3. After attaching the mounting bracket, mount the sensor to the bracket using the U-bolt.

4. Route the Display/Sensor cable from the sensor to the location where the display will be mounted. When routing the wire ensure that is does not interfere with the operation of the roller.

Installation (Portable)

The PTS-3000P uses magnetically mounted components and a portable case so the unit can be moved between rollers as needed. To install the PTS-3000P, you must

- **Permanently install a power receptacle**
- **Temporarily install the sensor unit**
- **Temporarily install the display unit**
- **Find a location for the portable case**
- **Make the electrical interconnections using the supplied cables**

The following describes each of the steps.

Installing a Power Receptacle

Your PTS-3000P includes two power receptacles which can be installed on your rollers to provide a quick, safe means for powering your PTS. Additional receptacles can be purchased from the factory (2100-0104). The receptacle should be installed by performing the following steps:

1. Find a location for the receptacle. The receptacle should be installed in a panel with a minimum 2” diameter area and at least 3” clearance behind the panel. Although the receptacle is water-resistant, it is best to locate the Receptacle in an area that is protected from rain.

2. Drill or cut a 1-1/8” diameter hole in the panel. If using optional front mounting plate, drill two holes 1 15/16 “ apart for mounting plate. Use 3/32” bit if using the included self-tapping screws to mount the plate.

Installing a Power Receptacle

3. Remove mounting hardware from inside of receptacle.

4. Install receptacle in panel using either the rear locking ring or optional front mounting plate.

5. Crimp a quick-connect terminal (included inside receptacle) to the black and red wires on one end of the gray power cable.

6. Connect black wire to '-' terminal on rear of receptacle.

7. Connect red wire to '+' terminal on rear of receptacle.

8. Verify that ignition is turned off and route cable to a suitable power connection point. Power should be connected to a point that is:

- **Turned on and off with the ignition.**
- **Fused with a minimum 2A fuse.**

Note 1: While the supplied power cable includes an internal 2A fuse, the receptacle should also be fused to prevent a hazardous condition if a different piece of equipment is plugged into the power receptacle.

Note 2: You should verify that the PTS-3000P is the correct version for your roller voltage. Rollers with 12V power systems must use the 7500-0112-12V Display while rollers with 24V power systems must use the and 7500-0112-24V Display.

9. Turn on ignition and use a volt meter to verify that the receptacle is powered with 12 (or 24) volts (positive voltage on center pin, negative voltage on inside of receptacle cylinder).

Temporarily Installing the Display Unit

The Display Unit includes a large magnet for simple mounting on a metal surface. The ideal location would be:

- **Easily viewable by the operator**
- **Protected from rain**

Temporarily Installing the Sensor Unit

The sensor unit is attached to a bracket which includes a large magnet for simple mounting on a metal surface. The best location for the sensor unit is at the bottom of the roller centered under the engine compartment, approximately 24" (600mm) above the pavement surface.

The location should also allow for easy routing of the sensor cable to the display unit. If the sensor location is on a part of the roller that will move relative to the display, be sure to leave enough slack in the wire to allow for this movement. Before installing, check that the sensor lens is clean. If the lens is dirty, clean it as described in the Maintenance section.

Locating the Portable Case

Your PTS-3000P Sensor Unit and Display Unit are stored in a portable case. The portable case should be placed in a location that is:

- **protected from rain**

Making the Connections

After all components are in place, the following connections should be made:

- **Control cable from sensor unit to display unit.**
- **Power cable from display unit to power receptacle.**

Each of the cables has a unique connector to make it simple to properly connect the cables. Be careful to take up any slack in cables in order to prevent a tripping hazard.

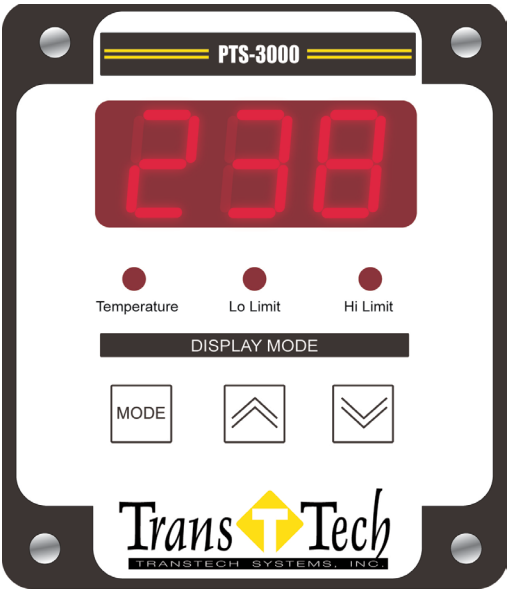
Notes

- When making the connections, plugging into the power receptacle should be the last connection made.
- When disconnecting the cables, the power cable should be disconnected from the power receptacle first.
- The power connector on the control cable includes a standard 2A, ¼" x 1¼" fuse. The fuse can be replaced by unscrewing the knurled silver collar on the front of the connector.

Operation

The 7500-0112 Display Unit front panel is shown in the following figure. The Display Unit includes:

- 3 digit readout for displaying temperature and limits
- Status lights which show the current operating mode (Temperature, Lo Limit,or Hi Limit)
- 3 buttons to change operating mode and high and low temperature limits



Using the Display unit, you may perform any of the following functions:

- **Display Temperature**
- **Display/Change Low Limit**
- **Display/Change High Limit**
- **Display/Change Fahrenheit/Celsius Mode**
- **Display/Change Display Brightness Level**

You may change to a different function or mode by pressing the “Mode” button. The current operating mode is indicated by the status lights. The operating modes are described below.

Displaying the Temperature

The normal operating mode of the PTS-3000 is to continuously measure and display the surface temperature and to compare this temperature to the user-defined high and low limits. When operating in this mode the “Temperature” status light will be on. When in Temperature mode, the behavior of the PTS-3000 will vary depending on the current temperature and limits as follows:

- **Temperature in Normal Range**
  If the temperature is higher than the low limit and lower than the high limit, the PTS-3000 will simply display the current temperature and update the reading approximately every two seconds.
- **Temperature Above High Limit**
  If the measured temperature is higher than the high limit, the PTS-3000 will display the word ‘HI’ for approximately ½ second and then display the current temperature for approximately 1 second.
- **Temperature Below Low Limit**
  If the measured temperature is lower than the low limit, the PTS-3000 will display the word ‘LO’ for approximately ½ second and then display the current temperature for approximately 1 second.

Displaying and Changing the Low Limit

You can display the current value of the low limit by pressing the “Mode” button until the light next to the “Lo Limit” label is lit. The limit will be displayed in either degrees C or degrees F, depending on the current temperature units setting (see “Changing Between Celsius and Fahrenheit”). When you change the temperature units, the low and high limits will be converted to the new temperature units.

When the “Lo Limit” light is on you can increase the low limit by pressing the Up Arrow or decrease the limit by pressing the Down Arrow. If you hold either arrow button down for more than one second, the limit will increase (or decrease) faster. You can not set the limit above 350°F or 175°C (pressing the Up Arrow will have no effect). Similarly, you can not set the limit below 50°F or 10°C (pressing the Down Arrow will have no effect).

Displaying and Changing the High Limit

You can display the current value of the high limit by pressing the “Mode” button until the light next to the “Hi Limit” label is lit. The limit will be displayed in either degrees C or degrees F, depending on the current

temperature units setting (see “Changing Between Celsius and Fahrenheit”). When you change the temperature units, the high and low limits will be converted to the new temperature units.

When the “Hi Limit” light is on you can increase the limit by pressing the Up Arrow or decrease the limit by pressing the Down Arrow. If you hold either arrow button down for more than one second, the limit will increase (or decrease) faster. You can not set the limit above 350°F or 175°C (pressing the Up Arrow will have no effect). Similarly, you can not set the limit below 50°F or 10°C (pressing the Down Arrow will have no effect).

Changing Between Celsius and Fahrenheit

You can display the current temperature units (°F or °C) by pressing the “Mode” button until all three mode indicator lights turn off. The PTS-3051/52 will indicate the current units by displaying either “°F” or ”°C”.

When all three mode indicator lights are off, you can change the temperature units by pressing either the Up Arrow or Up Arrow. If the temperature units are changed the PTS-3000 will convert the low and high limits to the new units.

Changing the Display Brightness Level

The PTS-3051/52 has 5 different brightness levels so you can choose a brightness suitable for the current operating environment (sunlight, darkness, etc.). To change the brightness level, press the “Mode” button until all three mode indicator lights turn on. The PTS-3051/52 will display the current brightness level (1-5, where a higher number indicates a brighter display). You can change the brightness level by pressing either the Up Arrow or Up Arrow.

Maintenance

The PTS-3000 normal maintenance schedule is shown in the following table: The following gives instructions for each maintenance item.

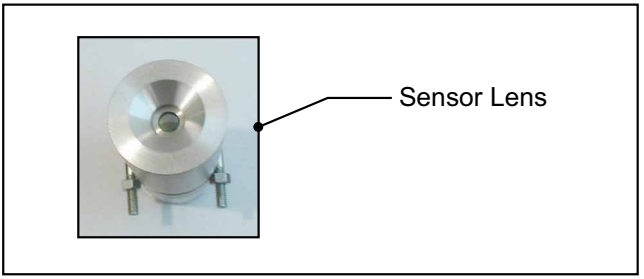
PTS-3000 Maintenance Items

Item	Schedule
Check Sensor Lens	Check every 40 hours of operation, clean as needed
Replace Air Filter	Check every 3 months of operation, replace as needed

Cleaning the Sensor Lens

While the air purge system prevents most dust from depositing on the sensor lens, dust deposit may eventually build up on the sensor lens, causing the system to display an inaccurate temperature reading. The sensor lens is shown in the following figure.

The sensor lens should be wiped clean in a cotton swab moistened with isopropyl alcohol. If the lens is exceptionally dirty, the process should be repeated a second time to remove any residue left from the first cleaning.

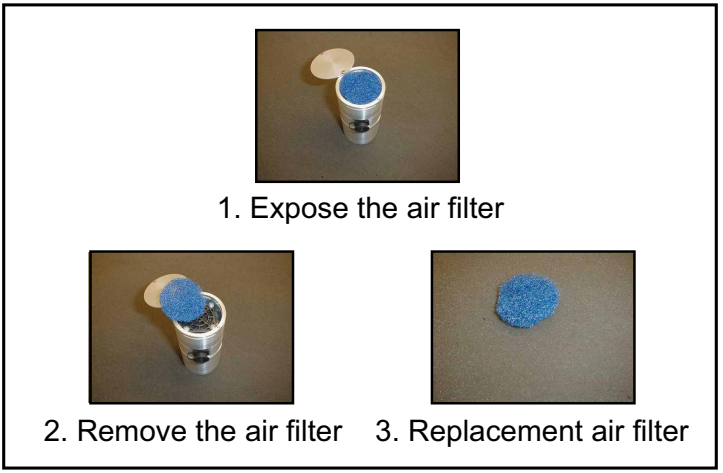


Replacing the Sensor Air Filter

The air purge system prevents most dust from depositing on the sensor lens, to help keep dust deposits from building up it is necessary to change the air filter located within the senor housing. The air filter should be changed every three months or sooner if conditions warrant.

- **First disconnect the interconnect cable from sensor housing.**
- **Remove the u-bolt from the bracket allowing for removal of the senor housing from the mounting bracket.**
- **Remove the one screw from the top of the sensor loosen the second screw and swing the metal cover out of the way.**

- **With the metal cover removed access the filter and remove it.**
- **Replace the filter with a new one and reattach the metal cover.**
- **Reinsert the u-bolt into the mounting bracket and tighten the nuts.**
- **Reattach the interconnect cable to the senor housing.**
- **Test the system.**



Troubleshooting

If you are having a problem with your PTS-3000, you can check the following list to look for a possible solution. Please contact the factory if the suggested remedy does not solve the problem or if your problem is not found in this list.

Temperature reading appears to be incorrect

Dirt on the face of the sensor can cause the unit to display an incorrect temperature (the displayed temperature will usually be too low). Clean the sensor face as described in the “Maintenance” section.

Display is on but does not change

A surge in the battery power can disrupt the operation of the PTS-3000 microprocessor and cause it to “lock up”. Turning the power off for 2-3 seconds and turning it on again should reset the PTS-3000 and cause it to operate normally.

Display is off

A dark display is usually caused by an improper connection of power to the display unit.

Check that you are using the correct power supply (12V or 24V). The PTS-3000 display is available for two different roller voltages; the 7500-0112-12V Display Unit is used on rollers with 12 volt power systems, the 7500-0112-24V Display Unit is used on rollers with 24 volt power systems.

Check that the battery voltage is properly connected to the display. For PTS-3000P (portable) systems, remove and inspect the fuse by unscrewing the knurled silver collar on the front of the power connector. If fuse has blown, check all wiring and install new fuse (2A).

If power is properly connected to the Display Unit, the problem could be that the internal fuse needs replacing. Consult the factory for assistance with internal fuse replacement.

No airflow from sensor

The PTS-3000 sensor housing uses an air purge system to force a small stream of air across the sensor face to help it remain clean. The air purge is not essential to operation so air purge problems can be investigated during normal maintenance times and do not require interruption of the use of the PTS-3000.

Magnetically-mounted display "walks" **(portable only)**

Continuous vibration can cause the magnetic base of the portable display to move or "walk" down along the mounting surface. This can be minimized by cleaning the mounting surface and the surface of the chrome ring around the magnet. If the problem persists, you may also use a file or sandpaper to roughen or remove the surface of the chrome ring around the magnet. Be aware that this could result in scratching the mounting surface on the roller when mounting or removing the display.

Display shows ooo

The 7500-0112 displays "ooo" when it has a problem reading the configuration information from its memory. Turn off the power and turn it on again and the display should return to normal. If the problem persists, press the "Mode" button to load the default configuration information. The display will operate but you should the high and low limit settings. You should also report this condition to the factory.

Parts List

Order parts online at
www.transtechsys.com/opencart

or Call
1-800-724-6306

7500-0129 **Sensor Unit**	
7000-0138 **Fixed Mounting** **Bracket for PTS-3000**	
2800-0186 **7000-0138** **2500-0008 (2)** **Portable Mounting** **Bracket for PTS-3000**	
7000-0128 **Fixed Mounting** **Bracket for PTS-3000**	
2500-0008 **Portable Mounting** **Bracket for PTS-3000**	

Parts List

1400-0020 Portable Case for Portable Unit	
2600-0009 Air Filter	
7500-0112 (12V) 7500-0112 (24V) Display Unit	
7500-0176 Cable Kit for PTS-3000/Portable Unit	
7500-0253 Cable Kit for PTS-3000/Fixed Unit	
2100-0104 Power Receptacle for PTS-3000P	

Limited Warranty

All products sold by the Company are warranted by the Company against defects in workmanship or materials under normal use for one (1) year after date of purchase by the end user. Any product which is determined by the Company to be defective in material or workmanship and returned to the Company's office or authorized service location, as the Company designates, shipping costs prepaid, will be repaired or replaced at the Company's option. No warranty or affirmation of fact, expressed or implied, other than set forth in the limited warranty as stated here is made or authorized by the Company.

Any liability for consequential and incidental damages is expressly disclaimed. The Company's liability in all events is limited to and shall not exceed the purchase price paid by the end user or the Company's suggested retail price, whichever is less.

The company will make a good faith effort for prompt correction or other adjustments with respect to any product, which proves to be defective within the warranty period. Before returning a product, the end user customer or the Distributor must contact the Company and provide the name of the product, serial number, date of purchase and describing nature of defect and obtain an RMA. Title and risk of loss passes to the end user on delivery to the common carrier. If the product was damaged in transit, the end user must file a claim with the common carrier.

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