



**Instructions / Datasheet – ver 4.1, revised September 2013**

**PLEASE READ ALL INSTRUCTIONS PRIOR TO USE**

These instructions include important safety information

The Proxi-Mate Pro wireless control unit is designed to be used with any of the range of Proxi-Mate sensors manufactured after January 2011. These sensors include the Solid State bed and chair sensors, commonly used for monitoring residents in aged care facilities, neurologically compromised patients in acute care, and people affected by dementia and other conditions, in their own home.

Unlike other patient monitoring systems, the Proxi-Mate Pro allows the user to address up to 8 different unique pager 'cap-codes', set their own alert message and change a number of operating parameters such as the loudness and type of local alarm to sound when activated, and the standby time prior to an alarm being raised.

The Proxi-Mate Pro has a back lit, 16 character, 2 line LCD screen. This, together with 4 buttons, marked 'menu / esc', 'up', 'down' and 'enter' give access to all the available functions.



*Fig 1 – the proxi-mate pro front panel, all functions can be accessed from here.*

The primary purpose of the unit is to monitor the connected Proxi-Mate sensor and to alert the appropriate staff, by means of a radio pager, when the sensor detects activity. The unit will send the selected message to each pager address in its memory in turn until all addresses have been accessed. Depending on the user settings, the unit will also activate a local audible alarm. The unit will continue to send messages to the selected pagers at the intervals set in the menu until the alarm is reset.

### **Understanding Cap-codes**

The Proxi-Mate pager system relies on each pager having a unique identity number – this is called a Cap-Code or sometimes a RIC (Receiver Identity Code) – The Pagers used by the Proxi-Mate system have their respective cap-codes printed on a label on the back. In addition, removing and reinserting the pager battery will show a startup screen with 'Proxi-Mate nnnnn' where nnnnn will be the Cap-Code of that particular pager. Every pager has a different number so that multiple systems in the same facility do not interfere with each other. However, in some cases pagers and transmitter units may become separated or mixed up. In that case, the user will need to change the Cap-Code stored in the transmitter unit so it 'talks to' the desired pager.

Transmitters have 8 memory 'slots' – a user may wish the unit to 'talk to' only 1 pager and would therefore enter that pagers Cap-Code into slot 1 and ignore the rest. In some cases, the user may wish the message to be transmitted to multiple pagers. Given that each pager has a number of its own, the transmitter must transmit the message first to the pager with its Cap-Code in slot 1, then to the pager with its Cap-Code in slot 2 and so on.

In most cases the user will only need to enter 1,2 or perhaps 3 Cap-Codes in the transmitter, but the extra capacity is there in case it is needed in the future. Note also that the pager Cap-Codes are all **ODD** numbers, this is for operational reasons and allows the pager to respond differently to different types of message. For example, the pager will respond to an alarm situation with a series of beeps lasting 8 to 10 seconds, while only responding to status update messages with a single brief 'beep'. The transmitter unit will not allow entry of **EVEN** numbered cap-codes.

In this way, it is possible to have a number of transmitter units transmit their particular message to any one pager. Just as it is to have any transmitter unit send their message to a series of different pagers.

For example, in a Neurology ward, a particular nurse may be caring for 2 or 3 patients, each of whom have a Proxi-Mate unit monitoring them. Rather than carry 3 different pagers, the nurse need only carry 1, as long

as each Proxi-Mate unit has the Cap-Code of that pager programmed into its memory.

Assuming the user has the correct pass-code they can add / change / delete any of the Cap-Codes in the unit at any time, as many times as they wish.

### Understanding the messaging system

While in small facilities it may be perfectly fine to transmit a simple 'alarm' message, in larger facilities this can easily lead to confusion. For instance, in the example given above, the nurse carries 1 pager, but if the message displayed on that pager is the same for each of the 3 patients how are they to know which patient to respond to?

This problem is easily addressed by using the 'Change Message' option in the system menu. While the unit is delivered with a standard 'Alarm – sensor 1' message this can easily be changed by using the 4 button interface. This is achieved in much the same way as it is on arcade game 'high score' sheets. Each letter position is presented in turn, the user uses the '**up**' and '**down**' buttons to cycle between the letters and presses '**enter**' when the appropriate letter is displayed. Spaces are shown as '\_' and to end before the 16<sup>th</sup> character '.' (full stop) is selected. This message is then stored in the system memory and will remain until it is subsequently changed. Again, the user must be in possession of the pass-code before the message can be changed.

So, to recap. The system can be set up to transmit any message (of 16 characters or less) to any 1 or more (up to 8) pagers. The cap-Codes and message can be very quickly and conveniently changed by anyone in possession of the appropriate pass-code.

### The main screen

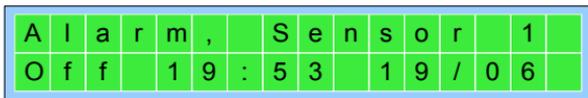
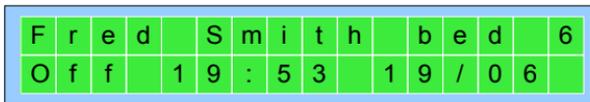


Fig 2 – the 'default' screen, in the off state, showing the time and date

The LCD screen has 16 characters and 2 lines. The screen displays all the relevant information and will change according to the function selected.

In this example, the default message 'Alarm, Sensor 1' is the message that will be sent to the pager if the alarm is activated. This can be changed by the user to something more meaningful, such as the patients name and bed number.



*Fig 3 – an example of a more meaningful message – 7 minutes to 8pm on 19<sup>th</sup> June*

The current status 'Off' or 'On' is displayed together with the system date and time. Note that the year is also held in memory but is left off the main screen for clarity.

The colon in the display will flash at 1 second intervals and the time and date will change in the manner of any digital clock.

### **Understanding the nature of radio**

The Proxi-Mate system uses radio waves to send the required message to the pager. The nature of radio means that these signals have a limited range. Given that the transmitter has no way of knowing whether the pager is within range or not, it is possible that messages can be sent but not received. When an alarm is raised the transmitter continues to send the alarm message at the rate set in the menu. This means that when the pager is bought within range it will activate in the normal way. However, status update signals are sent only once. If the pager is not in range at that time the message will be lost. This will not affect the ability of the unit to receive alarms but could lead to some user confusion. Please take the time to become fully familiar with the system before use.

## Connecting the system up

The Proxi-Mate transmitter unit is of little use without the appropriate sensor connected. For simplicity let us assume that the resident of concern may rise from a bed or chair and is at risk of a fall or wandering if not quickly assisted. In this case it is likely that a Proxi-Mate bed or chair mat sensor (*part numbers Prx-05 & Prx-06 respectively*) will be needed. This 'solid state' sensor is a thin, flexible device that can electronically detect the presence or absence of an individual sitting or lying on top of it.

Assuming the system is to be used on a bed, the Proxi-Mate Pro would normally be attached to the wall adjacent to the head of the bed. This would best be accomplished by using the 'H' bracket supplied with the unit or the wire basket available from your supplier (available February 2013).

The Proxi-Mate Pro is held onto the mounting bracket with 2 strong magnets. This means that a number of brackets can be fitted in a facility, with one Proxi-Mate unit clipped on to whichever location is required at the time. In addition, should a patient / resident get tangled up in the connecting wires, the unit will easily come off the wall – helping to prevent injury and reducing the risk of damage to both the wall and the unit itself.

Connect the sensor to the 'D' socket, located on the bottom of the unit using **ONLY** the cable supplied. While the cable looks the same as an 'ordinary' computer serial cable, it is not wired up in the same way. Using the incorrect cable is unlikely to do any damage, but will stop the unit from functioning correctly.

Plug the supplied power supply into a wall socket and connect the power plug into the appropriate socket on the bottom of the unit. **NOTE:** It is imperative that only the correct power supply be used with any Proxi-Mate unit. Use of any other plug pack could cause serious damage and any such damage will not be covered under warranty. It is safe and desirable to leave the unit plugged in and turned on at all times.

If the internal batteries are completely flat, the unit will take some minutes before it can operate – The unit will display a message to this effect on the screen. If the internal batteries are low, the LCD screen will show a small 'charging' icon on the bottom right hand corner. This icon will remain while the batteries are charging. Once the batteries are charged this icon will disappear. Note, even if the power supply is left connected, this icon may appear and disappear from time to time. The charging function is fully automatic and may be switched on to 'top up' the batteries from time to time.

Note: during charging it is perfectly normal for the unit to become quite warm. This is not a malfunction!  
When the batteries are fully charged, the unit will return to a normal temperature.

If the power supply is not left connected, the batteries will slowly run flat. In this case a small 'low battery' icon will appear. Once this icon appears the unit should still function normally for a short time, but should be recharged as soon as possible. Note, the system will send a '**battery low**' message to the pager, this message will be repeated every few minutes until the plug pack / charger is connected. Do not confuse this with the 'low battery' icon for the pager battery. If the batteries run low while the unit is actively monitoring a patient, a 'low battery' alarm will be raised. In this case please connect the charger to continue use.

Should it be necessary, a bell press 'pendant' can be plugged into the larger of the 2 sockets on the bottom of the unit. This functions in the same way as any other nurse call system, in that pressing it at any time will send an 'assistance required' message to the pager (as described earlier). The pendant (*part number Prx-19*) is available from your supplier. Caution – do not connect any other nurse call pendant, as damage could occur.

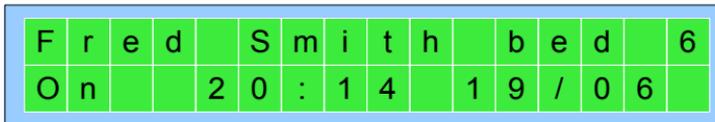
With the transmitter unit clipped into its wall bracket, ensure all cables are tidy and out of the way of the patient / resident. It is important to ensure that the cables do not present a falls risk to the person of concern (or anyone else). Make sure the cables will not be damaged by movement of the bed, or changes in the raising / lowering mechanism. Also, try to keep the cables away from where cleaners or other staff may disturb them. Most important of all is to ensure that the resident is not able to pull on, or otherwise interfere with the cables. This can best be achieved by running the cable connecting the sensor under the mattress or beneath the chair squab.

Once the system is properly configured, only the '**on / off**' button is used for control.

To make best use of the pass-code feature the facility concerned needs to decide on the appropriate policy. Giving everyone access to the menu system gives the most flexibility, but risks inexperienced personnel making changes that are not appropriate. Whereas limiting access to only the DON on day shift, increases security but limits flexibility. It is recommended that all staff that are likely to use the system attend an appropriate 'in service'. It may be that only selected staff from this group have access to the pass-code. Note: the pass-code can be changed to any 3 digit number (000-255) - obviously, this can only be changed once in the menu system.

Once the patient / resident is settled on the sensor (see the sensor instructions for advice on positioning etc),

press the **'On / Off'** button. If the system is set up to transmit status changes, the display will show 'Please Wait.....' for a few moments. During this time a notification is sent to all pagers with their Cap-Code in memory'. The display will show 'Alarm, Sensor 1' (or whatever message the system is programmed with), on



the bottom line the display will change to 'On xx:xx dd/mm'

*Fig 4 – display showing the message that will be sent, the system status (on) and the current time and date*

During the transition from 'off' to 'on', the system will record the date and time in the log. This will be stored for future reference.

In some cases the system will take a few seconds to 'acquire' the sensor, in this case, the display will briefly show 'Finding Sensor' if there is no sensor connected, or the sensor is not found for some other reason, the system will 'time out' and send an error message to the pager. This too will be recorded in the log. The Proxi-Mate Pro allows the user to select a 'delay' timer. This allows the sensor to detect the absence of a patient / resident for the duration of the timer before activating the alarm. This is to allow the person normal movement such as rolling over. This delay can be set to 0 for instant notification (which may lead to unwanted alarms) or anything up to 10 minutes (less likely to have unwanted alarms, but a 10 minute delay before the alarm is raised). The purpose of this delay is to fine tune the sensitivity of the system. In some cases it may be appropriate for a patient to be absent from the bed for some minutes – visiting the toilet for example, However, if the patient does not return to bed within the delay time set, then the alarm will be raised in the



*Fig 5 – display shown when the delay timer is active. The timer will count down to 00:00 then alarm*

Once the delay timer has expired the system will enter its 'alarm' state. In this state, the message will be sent to each pager cap-code in turn. The Screen will show a flashing 'ALARM' display and will emit an audible tone (unless set not to). The date and time of the alarm will be recorded in the log.



*FIG 6 – The alarm screen, note that the word ALARM will flash on and off once per second*

Depending on the parameters set in the menu, the alarm signal will be repeated at the selected intervals. Each time the alarm is repeated a new set of signals will be sent to the appropriate pagers. The repeat alarm is not recorded in the log as to do so would quickly consume the available memory and cause all previous events to 'drop off' of the bottom of the log.

In order to reset the system, the user need only press the '**On / Off**' button. The system will send the status update to the pager (if selected) and return to the 'Off state'. This is recorded in the event log for future reference.

If required, the system can be programmed to send an 'Off reminder' message to the pager(s) xx minutes after the alarm was cancelled. This may be useful if staff forget to 're arm' the system when they leave the room. Again, this is recorded in the event log.

### **Menu Options**

Most options are accessed via the '**menu / esc**' button. Pressing this button will open the pass-code screen. Select the current pass-code using the '**up**' and '**down**' buttons then press '**enter**' to access the menu. If an incorrect pass-code is entered then an error message is displayed. 3 consecutive error's will cause the unit to transmit a 'Tamper' message to each pager in memory and to record the event in the log.

The menu options have been laid out in a logical format, based on the likely frequency that changes need to be made.

## Cap-codes

As described, there are 8 'slots' in memory. Each slot can contain 1 cap-code. Each Cap-Code must be an 'odd' number that relates to a particular pager. Once an appropriate pager has been located, the Cap-Code can be found either on the pager label or by briefly removing then reinserting the pager battery. The current list of cap-codes is displayed one after the next by pressing the 'enter' button. After each capcode an option is offered. The available options depend on the contents of that particular slot. A new capcode can only be entered into an empty slot. An empty slot (00000) can not be deleted. Using the '**up**' and '**down**' buttons select the option required. '**Add**' to enter a new capcode in that slot, '**Del**' to delete an existing capcode and '**Ack**' to acknowledge the contents of that slot and move on to the next.

Note that it is not possible to 'edit' a Cap-Code. To change an existing entry it should first be deleted then a new Cap-Code entered in its place.

It pays to ensure that the most important Cap-Code is entered as close to slot 1 as possible. This is because the system must transmit the message to each pager in turn, if there are 7 redundant Cap-Codes entered prior to the important one, then the signal may take several seconds to get to the pager. Please delete all unwanted Cap-Codes as soon as possible in order to avoid confusion and unwanted pages. It does not matter if the required Cap-Code is in slot 8, if the previous 7 slots are empty the system will skip to slot 8 first.

### To add a new Cap-Code

Select '**Add**' from the Cap-Code options, enter the Cap-Code using the '**enter**' button to move from each digit, left to right. The '**up**' & '**down**' button to select a digit between 0 and 9. Once the correct digit is displayed, press the '**enter**' button to move on to the next digit. If a 0,2,4,6 or 8 is displayed in the last digit location and '**enter**' is pressed, an error message will be displayed. Only ODD numbers are allowed for Cap-Codes.

If no more Cap-Codes are required, press '**menu / esc**' to return to the main menu.

## Messages

The next screen shows the current message. Press '**menu / esc**' at any time to exit the menu or '**enter**' to move on. If '**enter**' is pressed the next option asks 'Confirm 'change message, No', use the '**up**' or '**down**' button to change the 'No' to 'Yes' then press '**enter**' again.

Now the existing message will be displayed on the top line and an 'A' in the first position of the 2<sup>nd</sup> line. Use the 'up' and 'down' buttons to cycle through all of the upper and lower case alphabet and digits from 0 to 9. When the appropriate character is displayed press '**enter**' to move on to the next location. Notice that there are 2 special characters displayed in the list. These are '\_' and '.' (full stop) The underline character inserts a space and the full stop character ends the message. The newly entered message will remain in memory until it is changed at some future point. The change in message event is recorded in the log.

The cap-code and message options are likely to be the options changed most frequently. This is why they are offered first. The menu can be exited at any time between options by pressing the '**menu / esc**' button. In the Cap-Code and message screen, pressing '**menu / esc**' will only exit to the next option, not the full menu. Pressing it again will always exit completely. In any menu, failing to make an entry within the timeout period will automatically timeout the option and return to the main screen, discarding any changes to that particular option.

Remaining options are divided into 3 broad sections. Section 1 is 'Alarm Types', Section 2 is 'Delay and Repeat times' and section 3 is 'System Options'. Each of these sections is likely to be used less frequently than the section before. Once the section of concern is dealt with then pressing '**menu / esc**' will save changes made and exit the menu without having to complete any further options. This structured approach to setting up is very intuitive and, with a little practice, appropriate changes can be made quickly with little risk of unintended consequences.

### Section 1 - Alarm Sounds

Apart from sending messages to a remote pager, the system has the capacity to emit a 'local' audible alarm. There are 2 types of audible alarm, 'chirp' and 'loud'. The 'chirp' is a brief beep once per second and the 'loud' is a 1 second beep with a 1 second space.

Audible alarms can be selected for 'standby' (the time between the sensor detecting activity and the alarm being activated) and the 'alarm' state (once the alarm has been raised) 'chirp', 'loud' and 'off' (no sound) can be selected for each of these states.

Note that if the unit is set to silent or chirp for the main alarm a brief warning will be shown on the screen when first turned on and a message to that effect will be sent to the pager. In this mode a small 'x' will be displayed in the upper right hand side of the display.

Each menu option is presented in turn along with the currently selected option. Press '**up**' or '**down**' to change the setting, '**menu / esc**' to escape completely or '**enter**' to move on to the next option.

## **Section 2 – Delay and repeat.**

The user has a number of options for setting delay and repeat times. The 'delay' is the time between the sensor detecting activity and the alarm being raised. This can be anything between 00:00 (mm:ss) and 10:00 (mm:ss). As above, use the 4 buttons to change the delay time and / or to move on to the next option. The default option is 3 seconds.

### **Alarm Repeat (00:00)**

Once an alarm message has been sent to a pager, the system will remain in it's alarm state until reset. The Alarm repeat time is the frequency at which reminder messages are sent to the pagers. I.e. Alarm Repeat is set at 2 minutes. The system will continue to send the message to the pagers every 2 minutes until reset. Only the first of these repeat messages is logged in the event recorder in order to preserve memory. However, it is easy to determine total response time from the log as both the alarm time and reset time are recorded and the display will show the duration of the alarm.

### **Off reminder (00:00)**

Once the alarm has been dealt with and the system reset (or the unit is turned off after first being turned on), the system has the capacity to send a 'system off' reminder to the pagers after the selected time has expired. I.e. Off reminder time set to 5 minutes. The system is activated by a patient rising from a bed / chair. The carer responds appropriately, first by dealing with the patient and then by turning off the alarm. The carer resettles the resident and, after exchanging pleasantries, leaves the room. The carer has forgotten to turn the alarm back on. 5 minutes after resetting the system, the carers pager emits a short beep with a status update saying that 'Fred Smith bed 6 – Status off'. This reminder is only sent once and setting an 'Off Reminder' time of 00:00 disables this feature.

### **Set Time (yes / no)**

Selecting 'yes' opens the time change menu. Follow the prompts using the '**up**', '**down**' and '**enter**' buttons in the usual way to change each selection. Press '**menu / esc**' at any time to exit. Note that the system uses the 24 hr clock.

### **View Log (yes / no)**

Selecting 'yes' will open the event log. An information screen is shown first advising the use of the '**up**' and '**down**' buttons to navigate between entries. The most recent entry is shown first. Pressing '**down**' will step back to the previous entry, pressing it again for the entry prior to that and so on. Pressing '**up**' will go the other way and show the next most recent entry. Once the list is exhausted a message will advise 'end of record'. Each entry is shown with its corresponding date and time stamp and a short text entry to explain what the entry is. Using the '**up**' and '**down**' buttons allows the user to browse the list in either direction. Using the 'data logger' accessory (prx-xx, available after March 2013\*\*) allows the log to be downloaded to a USB Thumb Drive for use in an Excel (or similar) spreadsheet for further analysis. Note: the download log contains a record of the previous 4000 events – downloading this amount of data could take a few minutes.

Once downloaded the user will be offered the option to delete the log. This will require an additional passcode. Note: the option to delete the log is only offered AFTER the log has been uploaded. The Log Passcode can be changed in the main menu in the same way as the menu passcode in order to prevent unauthorised access.

### **Soft Menu**

Staff can be granted access to a number of menu options without the need to enter a passcode. This is known as 'soft' menu access. The 'soft' menu is accessed by pressing the '**Down**' button. There are 3 levels of access available (set in the main menu).

**Level 1:** Change the Delay and Alarm sounds.

**Level 2:** Change the Delay, Alarm sounds and the Alarm message.

**Level 3:** Change the Delay, Alarm sounds, the Alarm message and the delay time.

## Specifications

**Size:** 115 x 95 x 40mm (Not including antenna)

**Weight** TBD

**Electrical:** 12v DC 1000 ma maximum (Plug Pack / Charger) Batteries 700maH NiMH. \* Anticipated battery life depends on circumstances of use. In standby the theoretical battery life is in excess of 20 days. Practical battery life is likely to be around 5-6 days. If left in 'Alarm' mode battery life will be less than 1 day.

RF: Tx 151.300MHz (Aust), 173.275MHz (NZ) 100mW EIRP LIPD. Note. Antenna, SMA helical, 151MHz centre frequency.

\* anticipated range is dependant on environmental interference and other factors outside of the manufacturers control. The Line of sight range is in excess of 400 meters but expected performance 'in building' is likely to be substantially less. (in the order of 50-100 meters).

\*\* Under development.

**NOTE:** This device is intended to be used as an AID only, it is not designed to replace adequate supervision. Given the nature of radio wave propagation no guarantee can be made that this device will deliver the stated range. Do not use this device if such limitations are likely to lead to serious risk of harm to the individual concerned. Please note that this device can not 'in itself' reduce or prevent the risk of falls or wandering, it remains the responsibility of the organisation to ensure that appropriate policies and practice are observed at all times.

## Troubleshooting Guide

### Problem / Cause / Solution

Nothing shown on screen	Flat battery	Connect Charger – wait 2 minutes
	Unit in 'off' mode	Press 'ENTER' button
	Contrast Set Too low	Adjust contrast (remove back, locate adjuster – turn with small screwdriver)
	System 'lock up'	use a paper clip to press the RESET button located on the side.
Shows 'Finding Sensor' then sends a message "no sensor found"	No sensor connected	Connect sensor
	Incorrect sensor	Uses proxi-mate AVR B Type
	Faulty Cable Incorrect Cable (Cross over)	Try fresh cable Replace cable with 'straight through (mouse extension)
Battery goes flat too quickly (less than 24 hrs)	Unit left in 'alarm' mode Batteries not fully charged	Press 'Enter' to reset Charge until the 'charging' icon disappears
	Batteries nearing the end of useful life	Replace batteries with AAA NiMH 700mah (Available from your supplier)
Appears to work but pager not Pager responding	Cap-Code not correctly entered in memory	Locate pager Cap-Code on Pager (remove and refit battery) CCnnnnn will show code. Open Proxi-Mate menu and check that this code is correct in any one of the 8 memory slots.
	Pager battery flat	Replace battery
	Pager out of range	Test with pager less than 100 meters distance  Antenna not fitted or faulty Replace / tighten antenna
Unit takes a long time to send message to the pager	'Delay' time set too long	'Check the delay time in menu
	Pager Cap-Code is too far down the list	Program required Cap-Code in memory slot 1

### **Warranty:**

**PCT Remote Sensing Pty Ltd** (PCT) offer a 2 year "Limited Liability" warranty on all products it manufactures. PCT will, at its sole discretion, either repair or replace products that prove to be defective in materials or workmanship.

### **Return of Goods**

Faulty products must be returned, in the original or other appropriate packaging, to PCT (or the original supplier) together with a clear description of the problem. **The customer is responsible for the cost of removal and return of the product.**

3<sup>rd</sup> Party products supplied by, but not manufactured by PCT are covered by the original manufactures warranty.

### **\*Limitation**

- 1) This warranty extends only to the original purchaser and is not transferable to any subsequent party.
- 2) Warranty claims will not be considered where any of the following exists:
  - a) Damage or failure resulting from improper installation, use or misuse.
  - b) Unauthorised repair, tampering, improper connection or operation outside of the electrical or environmental specifications of the product concerned.
- 3) The warranty does not cover acts of god, which include fire, any water / liquid damage whatsoever, whether caused by slow ingress or flood. Adverse weather including electrical storms, high winds, physical impact and/or damage.
- 4) The warranty does not include any subsequent damage to property or equipment. Direct, indirect, consequential or incidental loss (including financial loss, loss of business profit, or opportunity, business interruption) arising out of use / misuse of the product.
- 5) Under no circumstances will the liability of PCT exceed the original purchase price of the product – regardless of the form of the claim (to the extent permitted under law)
- 6) No other warranty is expressed or implied. PCT specifically disclaims any implied warranties of merchantability and fitness for a particular purpose.

This warranty is in addition to any statutory warranty that may exist where the product was purchased.