



WAVECOM INSTRUMENTS PTY LTD[©]

Fully Integrated TEST n PRINT UNIT *User Manual*

TnP-500[®] - 10Amp Model

TnP-500X[®] - 20Amp Model

Australian Designed & Manufactured to comply with testing requirements of
AS/NZS 3760:2010 Standards.



*Note: If required TnP Firmware can be updated by Wavecom
only to comply with potential Changes in Testing Standards*

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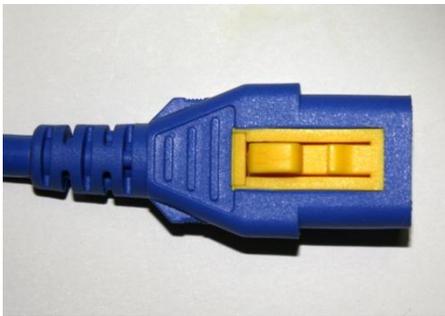
Important Information

Contents

Integrated Test N Print System User Manual/Quick Start Guide WCM Keyboard Wavecom Scanner Wavecom TT-040-50 WinPATS Software (Full Version - Asset Management) Self Contained in Heavy Duty Case	IEC Test Lead (500mm Orange) USB A to USB B Interface Cable Serial Scanner Cable 2 x Rolls /500 Labels - 2 x Resin Ribbons Earth Lead with Alligator Clip (1800mm black) Locking IEC Power Cable (1800mm Blue) Manufacturer's 1 st Calibration Certificate (Valid for 12 months from date of purchase)
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Important: Please Register your WinPATS Software and Test n Print Unit with the provided documentation or online via our website www.wavecom.com.au

Precautions



Unique Locking Power Cable:

Please make sure **yellow lever is pressed** prior to removal of the locking power supply cable - 10A & 20A Models. Failure to do so, combined with excessive force may damage the rear panel.

This revolutionary locking, removable cable is intended **not to dislodge** during test procedures.

Note: 10A ver. plug illustrated. 20A ver. is similar.

Manufacturer Recommendations

Calibration: The AS/NZS3760:2010 Standard recommends a routine calibration / verification of this unit to ensure the accuracy of readings on a 12 monthly basis, or as prescribed under any additional local Regulatory requirements.

Note: Only Wavecom Instruments or its Authorised Service Agents are permitted to repair and Calibrate this Instrument. Failure to perform unauthorised service or repair may void all warranties and Calibration Status.

Safety Warning



This 4th Generation TnP series of products have been designed to meet stringent safety requirements, however no device can completely protect persons from the consequences of incorrect use.

The testing of Electrical appliances requires that extra care and caution is taken at all times to ensure personal safety.

The Manufacturer also advises that appliance testing should be conducted by a **Competent** and suitably trained person, as referred to under the current Standard AS3760:2010, as well as any additional legislation or rulings in different states.

If in doubt, the manufacturer suggests the user contact their responsible Authority.

For maximum safety, always ensure that the following advice is followed:

- The equipment being tested is in good condition / visual check.
- All user instructions are followed.
- Double check power supply connections. (note LED status)
- Always use specified fuses and protection devices.
- Do not use leads that require repair or are damaged.
- If you are unsure, call a licensed Engineer/Electrician.

* See P.6 AS/NZ 3760:2010 def.

Fully Integrated Test n Print Unit 10A ver. shown

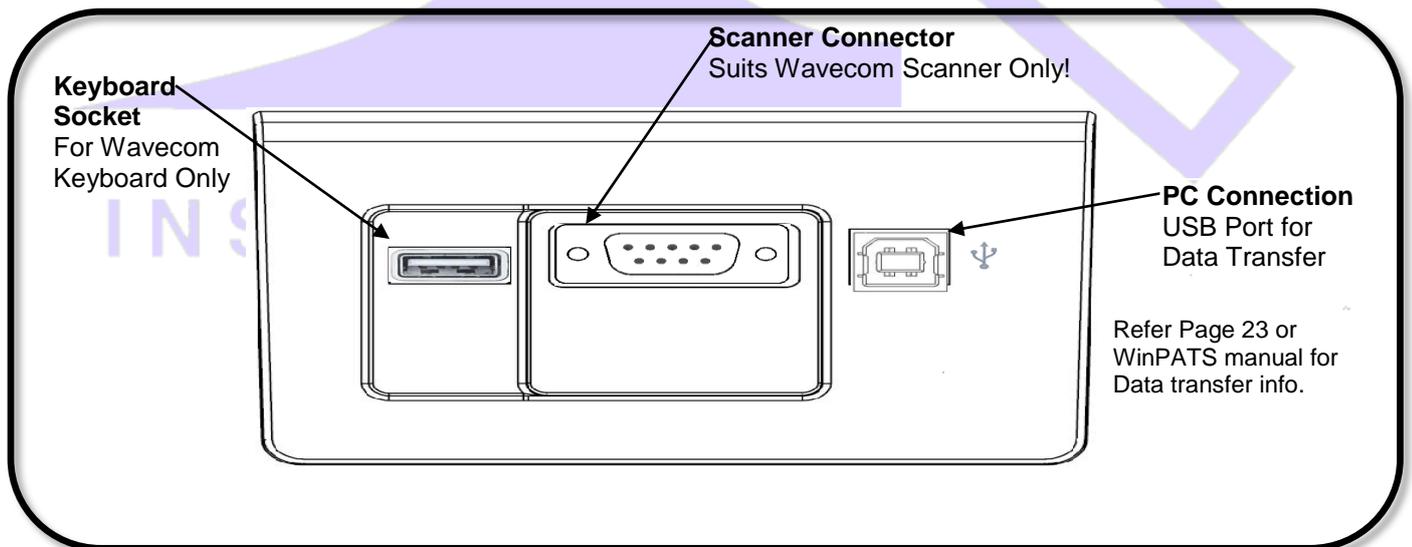
Instrument description

1. Power On/Off Switch
2. Unit Inlet Power Socket
3. IEC Test Socket Appliances Test
4. Function Key F1
5. Function Key F2
6. Function Key F3
7. LCD / Results Display Screen
8. Enter return Key / Menu select
9. Supply Status/Working-Fail Led Indicators
10. Keyboard & Extra Labels Holder
11. Barcode Scanner
12. Wavecom Printer



Test n Print Interface Panel

Located under Keyboard



Warning: Do not plug any other leads or devices into the L/H USB or R232 sockets!
These are proprietary connectors, specifically wired for TnP-500 & X models only.

Competent Person

To ensure that all electrical equipment or devices are inspected, tested and tagged correctly, regulations require that a 'competent person' such as a Licensed Electrician be employed to perform the required tests.

Please refer to the above definition as described in the current **AS/NZ-3760:2010 Standard** and in addition, to any other local legislation or jurisdictions as may be relevant in your State.

EXAMPLE:

A person competent to undertake Inspection and Testing of electrical equipment must have:

- Knowledge and practical experience of electricity and its hazards.
- A clear understanding of precautions to avoid danger.
- The ability to recognise at all times whether or not it is safe for work to continue.
- The ability to carry out visual examinations of electrical equipment.
- The ability to distinguish between electrical equipment that is double insulated and equipment that is earthed as well as being able to identify the appropriate test for each type.
- The competency to safely carry out the Earthing Continuity, Insulation Resistance or Leakage Test and RCD tests on electrical equipment.
- The knowledge of how to use the relevant testing instruments, interpret and record the results for compliance with the Standard/Workplace requirements.
- The knowledge to be able to correctly recommend the frequency of testing required.

Due to the potential hazards of electrical testing, due care must be taken at all times.

Disclaimer

Limited Warranty

The Manufacturer warrants its products against defects in materials and workmanship for a period of 12 months from the date of purchase. During the warranty period, the manufacturer will repair (or at its option replace at no charge) the product that proves to be defective. This warranty does not apply if the product has been damaged by accident, abuse, misuse or mis-application or as a result of service or modification by anyone other than manufacturer of the TnP.

The TnP product range of devices or its manufacturer IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, INCLUDING DAMAGE TO PROPERTY AND TO THE EXTENT PERMITTED BY LAW, and DAMAGES FOR PERSONAL INJURY. The Distributors of this product cannot assume liability or responsibility for any loss or damage resulting from the use of this device.

The TnP manufacturer reserves the right to discontinue models, change specification, price or design, at any time without notice or obligation.

Technical Information

Class 1 (Earthed Appliance) Construction

(Single basic insulated and protectively earth equipment)

This type of product design provides two safety barriers between all live conductors at dangerous voltages and the equipment user.

The provision of basic insulation between exposed metal parts and live parts is the first barrier to provide basic protection against electric shock.

The second safety barrier is by the connection of exposed (accessible) conductive (metal) parts to the protective earthing conductor (earth wire) in the fixed wiring of the device/Installation.

The protective earthing terminal of the equipment must be marked with the word "earth" or the symbol "E" or the symbol for Earth Terminal or Protective.

To perform this test a continuous earth loop must be made between the exposed conductive material (metal) and the TnP appliance tester. This is done by means of connecting the earth lead with the crocodile clip/probe attached to a GOOD earth point (paint & coatings will not provide effective connections) and the DUT (Device Under Test) plugged into the TnP appliance testers' DUT socket. The Maximum allowable limit is less than 1.0 (ohm).

Refer Page 8 on how to extend time to get a true earth connection (**Unique Earth Bond Test Feature**)

Class 2 (Double Insulated) Construction

(Double insulated equipment)

This method of construction employs two safety barriers comprising two layers of insulation between dangerous voltages and the user of the equipment.

The first layer of insulation is formed around the live conductor and is termed 'the Functional Insulation'.

The second layer of insulation is termed 'the Supplementary Insulation'. In Class II equipment, protection against electric shock does not rely on basic insulation only, but has additional supplementary insulation such as double insulation or reinforced insulation provided, there being no reliance on precautions in the fixed wiring of installation.

Class II equipment is marked with the words "DOUBLE INSULATION" or the symbol



For double insulated under Safety Symbols:

Note 1 – Double Insulation is insulation comprising both basic and supplementary insulation.

Note 2 – Reinforced Insulation is a single insulation system with a degree of protection against electric shock, which is equivalent to double insulation.

Testing of Electrical Equipment

Many testing personnel have some reservations in testing sensitive, electronic equipment using a 500V DC insulation test. There is a perceived fear of causing internal damage from over voltage. With the introduction on the TnP Range of appliance testers, these concerns are alleviated.

The TnP Range of electrical portable appliance testers is safe to test electronic equipment as the tests are carried from Active-Neutral (shorted by a relay inside the tester) to Earth. No dangerous voltages pass through in this mode to the internal components of the DUT (Device Under Test). If these tests are done using an Insulation Tester only and the user tests Active to Neutral, this would be a cause of potential damage, **this is why the TnP product range is far safer to use.**

Some changes may be required in certain configurations where fitted surge protection devices (**MOV's**) in the DUT may cause a failed test result. Applying 500V in these situations can cause the surge protection devices to trip, therefore conducting the applied voltage to earth, thus showing a failure of insulation. In these instances the test voltage should be changed to 250V then retest. If DUT still fails, check with the DUT Operators Manual or an electrician. *[for details see - 'Double Insulation Test' 250/500VDC to change test voltage].*

Under these circumstances, it would be difficult for any damage to occur to either the surge protection device or the DUT, as there is insufficient current generated by the TnP test unit.

Leakage Test:

If there are any doubts with insulation testing of the equipment, the standard (AS/NZ3760 since 2001) allows for an alternative test method. A Leakage Test can be performed instead. (The TnP – Series are designed to perform these tests).

NOTE: 10Amps MAXIMUM Resistive Load only (Standard TnP Series units).

A Leakage Test applies power to the Device Under Test (DUT) and measures the imbalance of leakage current from the DUT between the active and neutral conductors. The leakage is tested to the limits specified in the standard and a Pass/Fail result as well as a digital reading is provided to ensure that the user gains as much information as necessary.

Earth Continuity Test, commonly called EARTH BOND TEST:

Note: Part of normal (Class 1 test) procedure

Use supplied IEC-Croc clip lead or optional accessory 'WCM-Probekit'.

The TnP.500 unit conducts earth continuity tests at Approx. 200mA. Continuity tests at higher currents are not required or recommended on certain equipment as this may cause severe damage or premature failure to the Device under test (see AS/NZS 3760:2010).

Unique Earth Bond Test Feature

Note: Test time with the new TnP-500 series can now be user controlled. This function enables testing personnel to extend the **Earth Bond** test time by 30 second increments!

This is achieved by momentarily pushing the ENTER  button once, during the test.

The TnP-500 will then add 30 seconds to the test time for ENTER button press.

This feature has been incorporated to provide extra time to achieve an adequate physical connection, or confirm any possible *INTERMITTENT* issues. There may be situations where the condition of equipment, coatings applied, or suspect wiring breaks may alter the earth connection path of the device under test.

Benefit to test personnel is to save time by not having to continually repeat tests in a less than perfect situation.

3 Phase Testing: *Optional equipment required

3 Phase appliances can be tested by the TnP series appliance testers. As the insulation tests are from Phase to Earth, only a 500V insulation test is required. This test may be carried out by using the *optional* adaptor 'WCM-3PH-MADP' *[See 'Optional Accessories' for details.]*

Note: The TnP500 series will not perform a 3 Phase Leakage test.

Contact Wavecom Instruments Pty Ltd for information on appropriate testers.

To Change Test Voltage

To change the test voltages select the "change ins" from the options menu. Please refer to the **special functions** section of this manual.

Please Note: The TnP - Series will automatically default to 500VDC when restarted.

Integrated Tests

Supply Mains Test

The Supply Mains Test checks the polarity and connectivity of the mains supply by LED's. This test is also a part of all the testing functions of this unit.

	<p>If the N-E (red) light is on and you need to conduct load/leakage tests DO NOT CONTINUE. If you are carrying out standard Insulation and Earth Bond tests, it is generally safe to continue. This light will glow if a voltage difference lies between the neutral and the earth, or if no earth is connected to the TnP- Series supply. (If working with a generator or inverter, this is most likely to occur and you may need to consult an electrician before proceeding).</p>
	<p>If both the A-E & A-N (green) lights are on but not the N-E (red), mains supply test is ok, continue to test.</p>
	<p>If both of the N-E (red) & A-E (green) lights are on, consult an Electrician, as there is a fault with the Mains Supply.</p>

NCNT Test

(No Connection No Test)

The TnP – Series appliance testers ensure that the appliance is plugged in and switched on. This test is also a part of all of the testing functions of this unit.

This test function ensures that the appliance is plugged into the TnP appliance tester and that it is switched on. If the device is not plugged in and the TnP appliance tester detects that no device is present, plug in to continue the test or confirm 'QUIT' to return to the main menu.

If for some reason the NCNT circuit does not detect the device but it is actually plugged in and turned on, the operator will need to override the NCNT function.

To do this Over Ride **Press F3 (Done with User Discretion)**

With an emphasis in the **Standard AS/NZ3760:2010** for carrying out the live testing the TnP - Series appliance testers will indicate for you to check if the device is plugged in and switched on. If the device is not plugged in and/or recognised, it may require a live test therefore making it necessary for the operator to carry out a full functional Leakage Test (Available on all models of TnP – Series).

This function is to ensure that correct testing procedures are carried out in accordance with the Standard AS/NZ3760:2010.

***Optional**

Note: When using 3-Phase adaptors the **NCNT** function will need to be over ridden by pressing the 'OK' key prior to the TnP appliance tester performing the assigned test. Some single Phase appliances controlled by contactors will also require manual over ride. In some instances holding the 'ON' button will enable the NCNT function to work normally.

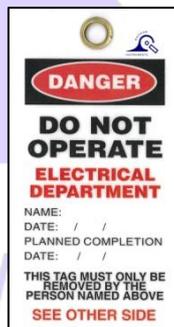
Visual Inspection (First Test)

VISUAL INSPECTION IS TO OCCUR BEFORE ANY OTHER TEST IS CARRIED OUT BEFORE USING ANY OF THE RANGE OF TnP APPLIANCE TESTERS

- There is no damage or component defects to the accessories, plugs, outlet sockets or connectors (physical).
- There are no cracks &/or abrasions.
- There are no exposed inner cores or conductors (flexible) and the supply cords are not twisted or distorted.
- Any Fuse / Over load protection components (if fitted) are checked.
- All labels, markings and warning indicators (of the maximum load to be connected to the device) are legible and intact.
- The insulation is not damaged in any way i.e. melted, cuts or abrasions. There are no iron filings in the insulation. There is no insulation tape on the lead.
- Any flexible cords and/or leads are effectively anchored (glands and grommets intact).
- All covers or guards are in place and secure as intended by the supplier/manufacturer.
- All safety devices and systems are in good working order. (i.e. overload latches & buttons).
- No dust &/or dirt obstructs any exhausts or ventilation outlets.
- All controls are working properly and are secure and aligned.

Important: If result is a FAIL!!

If any Equipment **FAILS ANY** of the above, it should be deemed to have **FAILED** the Visual Test, and therefore no other tests need be performed. If this is the case the Equipment should be tagged with a **DANGER TAG** and removed from service. It is recommended by the manufacturer and distributor of this product that it **SHOULD NOT BE RETURNED TO SERVICE.** To do so would be considered unsafe.



The Wavecom series of appliance testers have been designed & manufactured to exceed and comply with the AS/NZ:3760 standard, and to aid the end user with simple everyday electrical symbols that they can identify with which will allow them to start the testing regime quickly and efficiently, without any complexity as illustrated below.

Fully Integrated Test n Print Unit TnP-500 & TnP-500X

Introduction to Memory functions

The TnP units have Memory. There is inbuilt flash memory and a real time clock. This gives the ability to store up to 5,000 records, which can include items from 16 different sites and 6 different users. This will help to increase the efficiency and pace of testing. The TnP units (with memory) have two operating modes:

- TnP tester mode only, no devices attached
- Test and Tag mode, all devices connected & on, allowing testing, scanning, retrieval & printing

The TnP mode is determined if a keyboard is connected. If there is no keypad detected then the TnP will load the main menu screen and function as a standard unit. If the keypad is present then the new barcode screen will be loaded.

Powering on the Tester

When the tester is powered on the scanner will beep a few times indicating the scanner is also powered. If no beep is heard check the PS2 connections from the tester.

Initially the printer's status light will be orange but after about 5-10 seconds it will change to green. The tester will not print unless the printer light is solid green. A flashing red status light can indicate a media or general printer fault.

[Note 1:](#) If the TnP stays locked on the logo screen please check the connectivity of keyboard & scanner cables. The TnP unit will not work with scanner only connected. The TnP system requires either Keyboard only, or both Keyboard & Scanner to be connected.

[Note 2:](#) If no devices are connected to the interface, the unit will function as a normal TnP tester.

Adding New Equipment

The following must be done before testing:

- Create a site or use an existing site.
- Create a user name to under the users list.
- If auto generate number is used the initial number must be set correctly.
- If you are adding equipment to an existing site please make sure that the correct site is displayed. If the wrong site is displayed the equipment will be assigned to the wrong site.

When the testers memory has been erased it will look like the following screen.

Screen	Instruction
<pre><F1 SELECT SITE Search Barcode 0000005 4992</pre>	When the initial screen in memory mode operation is displayed. A site and user must be entered before testing can be done. When using the TnP for the first time, < F1 Select Site will be flashing in the top region of the screen.

Adding a Site

Screen	Instruction
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<pre><F1 SELECT SITE New Barcode 0000000 5000</pre>	<p>From the initial screen, press F1. Don't hold the F key, this will select a different function.</p>
<pre>SITES 1 - 3 WAVECOM</pre>	<p>The TnP can hold up to 16 sites. To scroll through the sites, press enter. 3 sites will be shown on each screen. Each site corresponds to an "F" key, for example Site 1 = F1. To edit a site, hold the corresponding "F" key for 2 seconds. If the Site has a * symbol next to the name then the site name cannot be altered. This site was uploaded from WinPATS and needs to remain the same.</p>
<pre>Edit Site 1 WAVECOM</pre>	<p>Using the keypad, enter the name of the site. The Keypad operates in 3 modes- Alpha, Numeric and Predictive. When an editable screen is entered, there will be an ALP, NUM or PRE in the top right hand corner of the screen. If you are using a full size half size keyboard then the 3 modes don't apply. Leave the text on ALP mode. Once the details have been typed in press enter to return.</p> <p><i>Note:</i> Predictive mode will only work if a dictionary has been uploaded from WinPATS . Once a site has been entered, press enter.</p>
<pre>SITES 1 - 3 WAVECOM</pre>	<p>Once a site has been entered, the 'F' buttons are used to select the site. For example to select site 1, F1 would be pressed.</p>
<pre>WAVECOM New Barcode 0000000 5000</pre>	<p>Once a site has been selected, the TnP will return to the initial screen and the site that was selected will be shown in the top left hand corner of the screen.</p>

Adding a User

Screen	Instruction
<pre>WAVECOM New Barcode 0000000 5000</pre>	<p>From the initial screen, press F2. Don't hold the F key, this will select a different function.</p>
<pre>USERS 1 - 3</pre>	<p>The TnP can hold up to 6 users. To scroll through the users, press enter. 3 sites will be shown on each screen. Each site corresponds to an "F" key, for example User 1 = F1. To edit a user, hold the corresponding "F" key for 2 seconds.</p>
<pre>Edit User 1 GEORGE</pre>	<p>Entering a user is the same process as entering a site, please refer to the Adding a Site steps above, <i>Note:</i> The user name will not appear on the initial screen once selected.</p>
<pre>USERS 1 - 3 GEORGE</pre>	<p>Once a user has been entered, the 'F' buttons are used to select the user. For example to select user 1, F1 would be pressed.</p>

Auto Generate Barcode Function

If required the auto generate barcode number can be set before testing. The auto generate is always displayed in the bottom left hand corner of the new barcode screen.

Screen	Instruction
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<pre> WAVECOM New Barcode 0000000 5000 </pre>	<p>The TnP incorporates an auto generate barcode function which allows barcodes to be generated sequentially after a barcode has been specified, for example: the specified barcode is 1000 so the next barcode to be generated will be 1001, 1002, 1003 etc. This can be accessed by holding F3 for 2 seconds on the Barcode Entry screen.</p>
<pre> BARCODE LENGTH: Up 7 DIGITS Down ESC SET </pre>	<p>Once the auto generate menu has been accessed, the user can specify how many digits they want in the barcode. The auto generate function allows a minimum of 2 and a maximum of 7 digits in the barcode to be generated. To increase the number of digits in the barcode, press F1. To decrease the number of digits in the barcode, press F2. To proceed, press enter, or to return to the Barcode Entry screen, press F3.</p>
<pre> SET BARCODE: 1000 ESC SET </pre>	<p>If enter was pressed, the user can now set the barcode that will begin the sequence. Key in a barcode and press enter to continue, or F3 to return the Barcode Entry screen.</p>
<pre> USE LEADING ZEROS Enable Disable </pre>	<p>If enter was pressed, the user can specify whether or not to use leading zeros in the auto generated barcode. For example: If the user selected 7 digits in the barcode and entered 1000 as the barcode, the barcode will be 0001000 if leading zeros are enabled. To enable leading zeros press F3. To disable, press enter. The current barcode that will be generated is displayed in the bottom left hand corner of the Barcode Entry screen.</p>
<pre> WAVECOM New Barcode 0001000 5000 </pre>	<p>The current barcode that will be generated is displayed in the bottom left hand corner of the Barcode Entry screen.</p>

Entering Items

Screen	Instruction
<pre> WAVECOM New Barcode 0000004 4993 </pre>	<p>Type in the new barcode or press F3 quickly to choose the auto generate number. Once a barcode has been specified, items can be entered. If the screen displays "search barcode" press enter to switch to new barcode. There must be no numbers entered in to switch between the two modes.</p>
<pre> WAVECOM New Barcode 0000004 4993 </pre>	<p>A selection of details can be entered for an item. Details include; location, description, make, model, serial number, asset number, frequency of test and notes. Each heading relates to an 'F'; e.g. Loc = F1, Desc = F2 and Make = F3. Only 3 items are displayed at one time. To scroll through the various details, press enter key. By continually pressing enter you can loop back to the first 3 items. Please make sure location, description are filled out and check to see that the frequency is correct. Once the details are entered hold the enter key for 2 seconds to move on to the visual check screen.</p>
<pre> Location OFFICE </pre>	<p>Entering an items details is the same process as entering sites and users, please refer to the Adding a Site/User steps above. Ensure that test frequency for the item is set in accordance with the AS/NZ 3760 Standard</p>

<p>VISUAL CHECK 24/04/2015 17:42 OTHER STATUS FAIL PASS</p>	<p>After the item has been visually inspected, there is 1 of 3 options that can be selected; Out of Service (F2), Fail (F3) and Pass (enter). If Out of Service or Fail is selected the result will be saved and the TnP will revert back to the barcode entry screen. If you have a zebra printer a tag will be printed. If the test is a visual check only then press (enter hold). See below for details.</p>
<p>Main Menu A ↓ Class 1 Test ☐ Class 2 Test ⬆ Lead Test</p>	<p>If the item passes a visual inspection and pass is selected, testing can begin. Select the correct test based on the appliance type.</p>
<p>EARTH BOND TEST Pass < 1.0 Ohms 0.0 Ohms Pass 1s</p>	<p>Once test has been completed the results are displayed.</p>
<p>WHAT NEXT? RE-TEST CONT</p>	<p>To test the item multiple times press (F3). This will take you back to the main menu A screen. From here you can choose a test class. You would use this for example if testing power boards. To complete the test press enter. This will take you back to the new barcode screen. If you have a zebra printer a barcode will be printed once (enter) is pressed.</p>
<p>Visual Check Only Option</p>	
<p>VISUAL CHECK 24/04/2015 17:53 OTHER STATUS FAIL PASS</p>	<p>Items can be passed with a visual check only (no testing required). You must be at the visual check screen shown on the left. To do a visual check only press and hold (enter) for 2 seconds.</p>
<p>VISUAL CHECK ONLY? SAVE AND EXIT YES NO</p>	<p>Pressing (enter) will take you back to the visual check screen. Pressing (F3) will complete the test. Print out a tag if you have a zebra printer. Then go back to the new barcode screen.</p>

Retesting Equipment

The following must be done before retesting:

- A site must exist in the tester with records. A site is usually uploaded from WinPATS.
- The correct site must be displayed on the first line of the new / search barcode screen. If the incorrect site is displayed no equipment will be reported when scanned. To change see the add sites section.

The correct user must be selected from the users list. A user is important because it give a reference to the test results in WinPATS. It is also the user that is displayed on the tag. If there is no users create a users as described in the add equipment section or upload the users list from WinPATS.

Screen	Instruction
<p>WAVECOM Search Barcode 0000002 4995</p>	<p>Type in or scan the barcode number to be searched and press enter. If the screen displays new barcode press enter to switch over. The screen can only be switched if there is no entry.</p>
<p>Loc Desc Make OFFICE LEAD</p>	<p>The existing record details will be shown. Any changes made here will be updated once the site is downloaded in WinPATS. If nothing needs changing hold the enter key to proceed to the next screen.</p>

<pre> VISUAL CHECK 24/04/2015 17:42 OTHER STATUS FAIL PASS </pre>	<p>After all item details have been entered, hold the enter key for 2 seconds to proceed to the Visual Check screen. After the item has been visually inspected, there is 1 of 3 options that can be selected; Out of Service (F2), Fail (F3) and Pass (enter). If Out of Services or Fail is selected the result will be saved and the TnP will revert back to the barcode entry screen. If you have a zebra printer a tag will be printed. If the test is a visual check only then press (enter hold). See add equipment for details.</p>
<pre> Main Menu A ├─ Class 1 Test └─ Class 2 Test ├─ Lead Test </pre>	<p>If the item passes a visual inspection and pass is selected, testing can begin.</p>
<pre> EARTH BOND TEST Pass < 1.0 Ohms 0.0 Ohms Pass 1s INSULATION TEST 500VDC 1 MOhms 3s </pre>	<p>Once test has completed the results are displayed.</p>
<pre> WHAT NEXT? RE-TEST CONT </pre>	<p>To test the item multiple times press (F3) this will take you back to the main menu A screen. From here you can choose a test class. You would use this for example if testing power boards. To complete the test press (enter). This will take you back to the search barcode screen. If you have a zebra printer a barcode will be printed once (enter) is pressed.</p>

To download records using WinPATS software, please refer to the Downloading Records section of the WinPATS manual

Deleting Equipment

If for some reason a record needs to be deleted it can be removed from the search barcode screen. This feature removes the whole record and not just the test results. If a record is deleted and replaced it might create a new record when downloaded in WinPATS. This is because the record details didn't match the original ones. Multiple items cannot be deleted at the same time.

<pre> WAVECOM Search Barcode 0000002 4995 </pre>	<p>From the search barcode screen press and hold the enter key. Then press the F1 key. The feature cannot be selected when new barcode is displayed.</p>
<pre> WAVECOM Search Barcode 0000002 4995 </pre>	<p>The search barcode will change to S/Record Del. Scan or type the barcode that needs to be deleted. If the record does not exist or is in the wrong site a message will be displayed saying nothing was found.</p>
<pre> Delete Record? 0000000 Hold F3 to Del. DELETE QUIT </pre>	<p>When a match is found a last warning message will be displayed. To delete the record hold the F3 key for 2 seconds. To cancel press enter.</p>

Reprint Tag without testing

If for some reason a record needs to be deleted it can be removed from the search barcode screen. This feature removes the whole record and not just the test results. If a record is deleted and replaced it might create a new record when downloaded in WinPATS. This is because the record details didn't match the original ones. Multiple items cannot be deleted at the same time.

<pre> WAVECOM Search Barcode 0000002 4995 </pre>	<p>From the search barcode screen press and hold the enter key. Then press the F1 key. The feature cannot be selected when new barcode is displayed.</p>
<pre> Freq Notes Tests 1 Years 1 Tests </pre>	<p>The search barcode will change to S/Record Del. Scan or type the barcode that needs to be deleted. If the record does not exist or is in the wrong site a message will be displayed saying nothing was found.</p>
<pre> Review Tests Re-print Label 24/04/2015 PASS </pre>	<p>When a match is found a last warning message will be displayed. To delete the record hold the F3 key for 2 seconds. To cancel press enter.</p>

TnP Options Menu

Introduction

Here you can adjust the way the TnP behaves under certain tests and other functions. Some TnP options may not be available to some TnP versions.

To access the TnP options menu:

- From either the Enter barcode screen (memory unit) or the main menu 'A' screen hold down the enter button,  and then press the F2 key 

You should now be in the TnP options screen. The screen displays 1 option at a time.

- You can select this option by pressing the enter button. 
- To select the next item press the F2 button. 
- Pressing the F3 button  escapes out of the TnP options menu.

The TnP Memory model options list.

- Change Insulation Voltage
- Leakage Test Time
- Audio Option
- Data Results Screen Display Hold Time
- Label Options
- Barcode Options

Change Insulation Voltage - All TnP models

Some DUT contain MOV's (metal oxide varistor) or commonly known as spike protection devices. These limit the mains voltage to about 280VAC. If you attempt to perform a 500VDC insulation test on one of these devices you will get a failed result. To fix this problem select the 250V option.

- Press the  key to select the 250V option.
- Press the  key to select 500V option.

You can also set the unit back to 500V by switching the mains power off and on again. The default insulation voltage is 500V.

Leakage Test Time

The **leakage test time is USER adjustable**. You may need to adjust timing in this feature if the DUT has a long power up time or requires special power on procedure. Default time for **Leakage Test** is 20 seconds. From this menu you can change the test time from 5 seconds to 28800 seconds. Adjusting to any less than 5 seconds will put the test time to infinite.

- Press the  key to increase the test time.
- Press the  key to decrease the time.
- Press the  key to set the new leakage / power test time.
- Press the  key to escape out of the menu. No changes saved.

Audio Option - All TnP models

Enabling the audio option will make the TnP use a sound to indicate a pass or a fail at the end of a test. If the TnP unit has never been altered then the audio beep is disabled.

- Press the  key to disable.
- Press the  key to enable.

Result Hold time option - all TnP models

Note Carefully: This setting will change the default display times and will remain until user re-sets to another preferred value.

The feature enables the user to change the displayed time of the **Test Result** from approx. 1 – 90 seconds.

To enable *Result Hold* time option, from Main menu A, hold ENTER key and press **F2** key. Release ENTER key. Further pressing **F2** key four times cycles you to the *Result Hold* setting screen. Pressing ENTER key (OK) will display the settings page. Select your preferred timing by pressing **F2** or **F3** buttons (Increase or Decrease) as observed on the LCD screen.

Once the required result is shown on the LCD screen, press the ENTER key to lock new *Result Hold* time. The TnP-500 will return to Main menu A.

Please note: as a further convenience, if *Result Hold* time during **normal testing** needs to be reduced, simply press the ENTER key to rapidly move to the next test sequence. Alternative, is to re-set the *Result Hold* setting again, as above.

Label Options - Only on Selected Memory Models

Changing the label options changes the way the printer behaves or how the tag is printed. When selecting this option you will be prompted with 3 different options. Enable / Disable, Choosing a label set and modify the due date.

Enable / Disable

Selecting this option will **enable** or **disable** the tag information being sent to the zebra printer. The printer can also be disabled by switching the printer off from the power switch located on the side of the printer. Once the printer is switched back on it will not print out the records that were created while the printer was switched off.

- Press the  key to disable.
- Press the  key to enable.

Choose Label Set:

If you have more than one logo in the printer's memory (multiple company logos) this function will allow you to select the various logos. If you have one logo stored in the printer then you only need to choose Label 1. If you choose anything else a blank tag will be created. If you have multiple logos then the next one to choose would be label1 and so on. If you are unsure which one to choose select the Label 0.

- Read the onscreen message and then press the  key.
- Press the  key to increase the label number.
- Press the  key to decrease the label number.
- Press the  key to select the displayed label number.

Customise Next Test Due Dates

Enabling this feature will allow **customise next test due** dates when testing equipment. When this feature is disabled (default setting) the **next test due** date is determined by the test date plus the frequency of test. When enabled a custom date can be set after visual test in TnP models.

- Press the  key to enable.
- Press the  key to disable.

Stop Labels Spooling On Power On

If the printer is spooling tags on power on then it has reverted back to the factory default settings. To stop this choose the F3 key when prompted. The printer must be switched on and have a solid green light. If not, the printer won't receive the command.

- Press the  key to enable.
- Press the  key to disable.

Barcode Options - Only on Selected Models

Barcode options refers to modifying the auto generate barcode function. The **barcode options** can be selected in two ways. Either holding F3 down when on the new barcode screen or by the TnP options menu. Both have the same menu options expect when entering **barcode options** VIA TnP options. These menu options are:

- Set the number of digit for barcodes.
- Set the auto generate barcode number
- Use leading zeros for the auto generate number.
- Search all sites on barcode search (only available from TnP options menu).

Search All Sites

Allows the TnP to **search all sites** listed in the site names section for the given barcode. If this option has not been altered then by default **search all site** is disabled. When disabled the TnP can only search for barcodes that are in the site selected (Indicated by the site name in new barcode / search barcode screen).

Search all sites is useful disabled and enabled. For example, you may have many items with the same barcode number in different sites. Disabling this feature allow you isolate a particular barcode with ease. If you have a barcode but you are unsure which site it is in then you should enable **search all sites**.

Be careful when **search all sites** is enabled. If a barcode is found in another site the site name will change when you return the new barcode screen.

Other Features**Barcode Printing Function - Only on Selected Memory Models**

This utility will print out barcode labels from what is typed on the screen. The idea is to save time by storing these barcodes in a book or collection. From here you can quickly scan a barcode without having to retype the text back into the TnP unit. To access this feature:

- Hold the  key from the new barcode / search barcode screen.

You will be required to select your printer model. The Wavecom printer has a different print orientation to the Wavecom model. Selecting the wrong printer model will make the tag print incorrectly.

- Press the  key if you have a Wavecom or plus model printer.
- Press the  key if you have a Wavecom model printer.

Type the text you want for your barcode. If you go past the end of the screen the text will wrap. A maximum of 32 characters can be entered.

- Press the  key to print the barcode.
- Press the  key to return back to the new barcode screen.

SPECIFICATIONS TnP® Series

Mains Supply Test

- ▶ Checks Polarity and continuity of mains supply by LED indicators (A-N, A-E, and N-E). (Flashing red LED indicates test fail)

CLASS 1 Earthed Appliance

- ▶ Appliance Check: Ensures appliance is plugged in and turned on.
- ▶ Earth Bond Test: 200mA test current. Pass level Less than 1.0 Ω. Measurement: 0.01Ω to 10 Ω.
- ▶ Insulation Test: 500VDC / 250VDC. Pass level Greater than 1M Ω. Measurement: 0.1Ω to 10MΩ. *See also Leakage Test

CLASS 2 Double Insulated Appliance

- ▶ Appliance Check: Ensures appliance is plugged in and turned on.
- ▶ Earth Bond Test: 200mA test current. Pass level Less than 1.0Ω. Measurement: 0.1Ω to 10Ω.
- ▶ Insulation Test: 500VDC / 250VDC. Pass level greater than 1MΩ. Measurement: 0.1Ω to 10MΩ. *See also Leakage Test

Extension Leads

- ▶ Earth Bond Test: 200mA test current. Pass level Less than 1Ω. Measurement: 0.01Ω to 10.0Ωs
- ▶ Insulation Test: 500VDC / 250VDC . Pass level Greater than 1MΩ. Measurement: 0.1Ω to 10.0MΩ.
- ▶ Continuity/Polarity Test: 250VAC check continuity and polarity of leads. Displays Pass/Fail.

Leakage Test *

- ▶ Leakage Current: 0 to 30.0mA at 200 to 265V
- ▶ Earth Leakage Test: 240VAC Mains. Pass level 1, 2.5, 5.0 mA leakage test levels with up to 10Amp load operation.

*TnP-500X model is capable of up to **20 Amp load**

Note 1: Pass level for CLASS 1 is 5 mA

Pass level for CLASS 2 is 1 mA

Note 2: Leakage test may be performed if for any reason a standard CLASS 1 or CLASS 2 is not possible.

RCD Test

- ▶ Trip Current: 2 to 500mA in **1mA steps. User selectable.**
- ▶ Trip Time: 0 to 3,000ms at .001sec resolution.
- ▶ Current Ramp Trip Test: 0 to 500mA in **1mA increments.**

Power Measurement

- ▶ Leakage Current: 0 to 30.0mA at 200 to 265V
- ▶ Load Current: 0.0 to 10Amp (20Amp for TnP-500X)
- ▶ Voltage: 200 to 265VAC
- ▶ Power Factor: 0.00 to 1.00
- ▶ Apparent Power: 0 to 2400VA
- ▶ Power 0 to 2400W

Meter Mode®

Green flashing LED denotes MM is engaged

- ▶ Load Current: 0.0 to 10Amp
- ▶ Voltage: 200 to 265VAC
- ▶ Apparent Power: 0 to 2400VA
- ▶ Power: 0 to 2400W

TnP-500 (X)[®] Series extra features

Meter Mode [®] - (Independent of all other Tests)

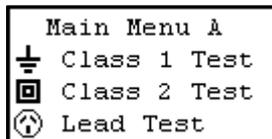
Meter Mode Screen



How to Activate Meter Mode

- Hold **F3** from main screen display for 2 seconds

Main Menu A

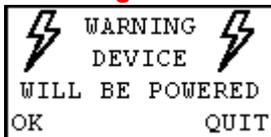


Volts Screen

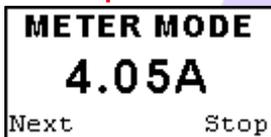


- Screen will change to show volts by default when socket is (not powered)
- Plug appliance into testers , test socket , Press F3 to go into power mode and will show
- **(Warning device will be powered)**
- Press F3 again to continue and **(power the device)**. If you continue the A-N LED on the tester will flash green  and device will power up. Otherwise press enter to exit.

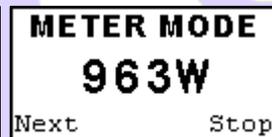
Warning Screen



Amps Screen



Watts Screen



Volts/Amps Screen



- Press the enter key to stop the power mode and return to volts.
- Pressing F3 key will start power mode again.
- **TnT stays in Meter Mode** regardless of power on/off until you exit
- Pressing **Return key** will **exit** meter mode and return the main menu.
- If the TnP-500 is reset in meter mode it will return to meter mode when powered up again.

Meter Mode Uses

Meter Mode is a new and versatile function of the new Gen 4 tester that will allow you to display **Electrical Parameters** from a Power outlet source or from the appliance under test.

Typical Applications

Example.: Measuring the Power of a bar heater, or electric power drill check the ratings and compare them to that on the compliance plate etc. Quick test of Power outlet Voltages in rooms or locations split from multiple circuits.

Meter Mode Features – (Four Discrete Options)

Electrical parameters are displayed as Volts, Amps, Watts, and Volt / Amps

These electrical parameters will be displayed on the Testers main screen display. Select from the 4 Test available in Meter Mode.

Meter Mode Measures and displays volts in AC, Current in Amps, Power Measurement in Watts and VA in Volt/AMPS

Explanation of Electrical Parameters

Volts

- A volt is the unit used to measure the energy available in the electrical current of a circuit. Voltage controls the available electrical power (wattage).

Amperes

An amp is the unit used to measure electrical current as it flows past a specified point.

Watts

- A watt is the unit used to measure the amount of actual flowing electrical energy.

Volt-Amps

- A volt-amp is the unit used to measure the apparent electrical power used by computing equipment. Mathematically, it is expressed as volts times amps (V*A).

***Meter Mode ® is a unique function of all TnP-500 + Gen 4 Models.**

Uses of Volt-Amp Measurement

- Because it represents the amount of energy computing systems may draw from a power grid, the VA is used to determine the kind of wiring and circuit breakers required to support the computing equipment in question.

Watts and VA (Detailed Explanation)

The power drawn by equipment is expressed in Watts or Volt-Amps (VA). The power in Watts is the real power drawn by the equipment. Volt-Amps are called the "apparent power" and are the product of the voltage applied to the equipment times the current drawn by the equipment. Both Watt and VA ratings have a use and purpose. The Watt rating determines the actual power purchased from the utility company and the heat loading generated by the equipment

Safety Precautions

Make sure you have a clear and safe area when powering any equipment, remove any drills bits etc before testing any equipment. Always read equipment compliance plates.

Disclaimer

Meter Mode is to be used for quick simple indicative electrical parameter measurements. Providing reasonably accurate readings without the need to carry any other instruments. It is not intended to replace specific, more accurate individual test equipment, nor is its purpose to replace prescribed testing requirements. It in doubt please consult a qualified electrician when unsure or perform proper test procedures.

WinPATS Professional Asset Management Software

A Full Version of **WinPATS** Software is included with models **TnP-500** (10A) & **TnP-500X** (20A).

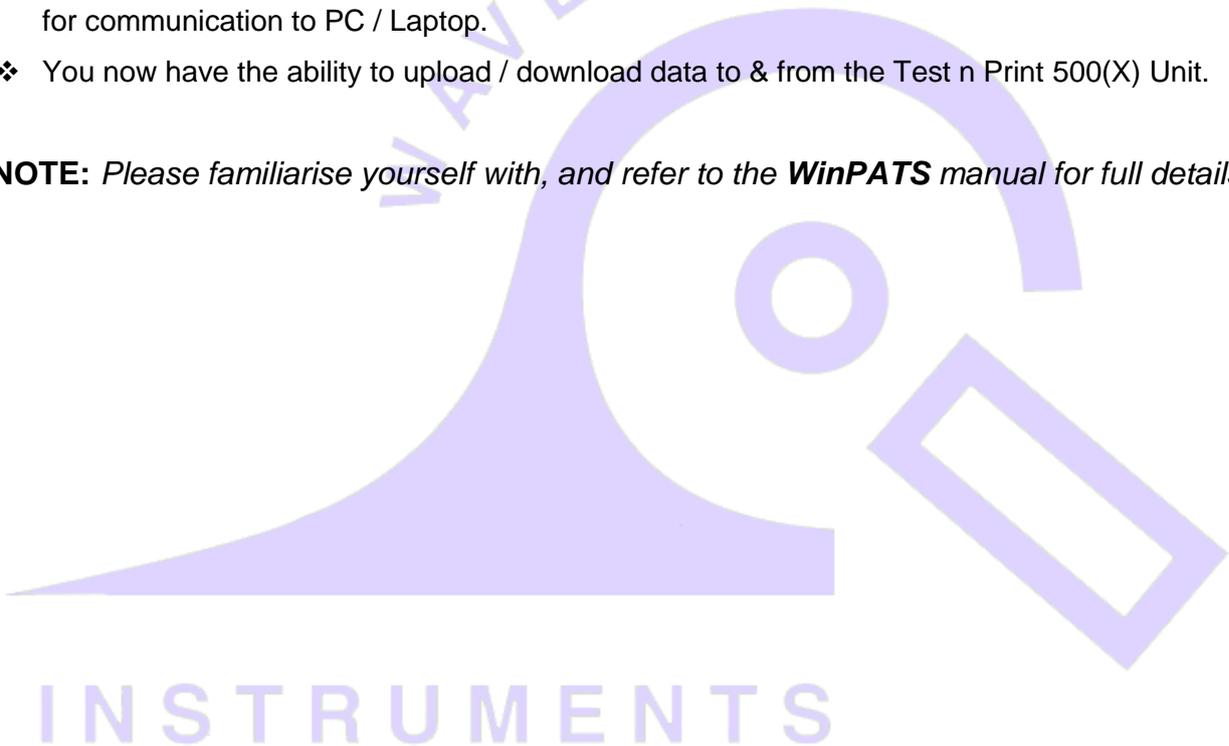
WinPATS must be installed on a Laptop or PC from the Autorun menu on the CD provided. The USB-USB Driver supplied on the CD **must also be installed!**

*Brief Installation steps.

*Firstly make sure you have registered **WinPATS** and have the correct REGISTRATION KEY*

- ❖ Install WinPATS
- ❖ Install USB-USB Driver
- ❖ Locate Interface panel under Keyboard, USB PC socket R/H side 
- ❖ Connect from USB Port on TnP-500(X) to Laptop or PC – USB
- ❖ Check Device Manual for Comms Port Setting. See full WinPATS Manual for full details.
- ❖ Go to file option in WinPATS set Comm Port to same as the Silabs Driver Comm Port setting for communication to PC / Laptop.
- ❖ You now have the ability to upload / download data to & from the Test n Print 500(X) Unit.

***NOTE:** *Please familiarise yourself with, and refer to the **WinPATS** manual for full details.*



Disclaimer – E&OE

All specifications may be subject to be change by Wavecom Pty. Ltd. without prior notice.

Updated Specifications & Model changes may be found on the Wavecom website:- www.wavecom.com.au

At the time of developing this manual, all care and consideration for accuracy has been implemented. Wavecom accepts no responsibility for any errors or omissions in this document.

This is partly based on the fact that Electronics & Electrical testing and specifications worldwide are constantly changing and that Local, State and National Regulatory Authorities may also have differing or additional requirements.

It is strongly recommended the Purchaser check Local Regulatory Standards that may be applicable in your region.

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Product: sales@wavecom.com.au

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Optional Accessories

500mm Earth Strap	Part No: TnT-ES 500
3-Phase Adaptor 20A & 32A 5pin + 5pin	Part No: WCM-3PH-MADP
HBC Fuse	Part No: WCM-HBC10AM205
Isolation Transformer for RCD testing	Part No: WCM-ISOT 11
Probe Kit	Part No: WCM-Probe
Wavecom Printer Labels	Part No: WCM-TAG - (Colour)
Wavecom Printer Ribbons	Part No: WCM-RIBBON
WinPATS Extended Support (12 months)	Part No: WCM-WinPATS Support
IEC 20amp-10amp Current Limited Adapter Cable	Part No: WCM-IEC2010 Suitable for TP500X Model Only



WAVECOM TT040-50 Thermal Transfer BARCODE Printer

Please Note: there is a master POWER SWITCH at the rear r/h side of the printer. This should be left ON under all normal operation conditions.

Full instructions on the operation of the BARCODE printer can be found in the Owner's Manual located on the Main Software and Drivers CD supplied with the TnP-500 series unit.

Insert the disc into any PC, then from the Auto Run Menu select the tab for the Printer Manual. On this disc is information and operating instructions for the BARCODE printer, including steps with images on how to change the printer Media, Ribbon and general maintenance tips.

The user may either read this manual directly from the CD, or print a hard-copy for reference.



Wavecom Tags & Ribbons

Wavecom are a wholly owned and operated company who manufacture top grade Electrical Test Equipment in Adelaide Australia. To support our test and print units we offer to you our range of electrical test tags that are made of the highest grade polypropylene and polyester label materials. These materials are robust and resistant to tearing and will cope with harsh Australian environments. It is recommended in extreme external conditions you use UV resistant tags

The test tags/labels we offer come in the full range of colours, each tag comes with a clear white area where a barcode can be printed into ensuring easy and accurate scanning, this results in the user being able to conduct fast scanning without issues.

All of the Wavecom tags are suitable for printing using every brand of thermal transfer printers available from around the world. The adhesive used on our tags is most aggressive and comes highly recommended for use in the electrical test and tag industry, there should be no butterflying once applied.

Order Information:

Standard Tag Part no: **WCM-TAG-W (R,BI,G,O,Y, Br)**

UV Tag Part no: **WCM-UV-TAG-W (R,BI,G,O,Y, Br)**

Colour: (W) White, (R) Red, (BL) Blue, (G) Green, (O) Orange, (Y) Yellow (BR) Burgundy



STANDARD TAGS
Per roll 500

UV TAGS
Per roll 400

In support of the Wavecom Tags we offer two grades of ribbons which we have resourced that are very well suited for "On the spot printing" of Electrical Testing tags. Our standard ribbon (WCM-Ribbon) is recommended for locations where the printed tag is not exposed to harsh outdoor environment such as Factory, Office etc... Our UV Ribbon (WCM-UV-Ribbon) is recommended for harsher environments like Mines or where the equipment is being tested is exposed to the elements etc... To ensure the durability of print on your tag it is essential that the right ribbon is used on the appropriate label material.

Order information:
STANDARD RIBBON
UV-RIBBON

Part no: WCM-RIBBON
Part no: WCM-UV-RIBBON



RIBBONS



UV RIBBONS



In locations where a tag is exposed harsh chemicals or extreme heavy abrasive environments a printed tag may need additional added protection to protect the integrity of the print. Wavecom have available clear film overlays which can be applied over the top of an existing tag. These clear laminate overlays are made of strong durable synthetic materials and come with an adhesive backing that ensures that when the overlay is stuck done it stays stuck. The added benefit to users of the Wavecom tag printing units is they can print the test tag as normal. Before the tag is removed from the backing paper, or still attached to the printer, the clear laminate is placed over the printed tag. The combination of tag and overlay is then removed from the backing paper and applied to the appliance as per normal.

Order information:
Clear Laminated Labels

Part no: WCM-TAG-ALL-Clear-LAM

Clear Laminated Labels
Per roll 1000

VISIT OUR WEBSITE: www.wavecom.com.au

Fully Integrated

TEST n PRINT UNIT

TnP-500[®]
TnP-500X[®]



www.wavecom.com.au

V010613

Note: If required TnP firmware can be updated by Wavecom only to comply with potential Changes in Testing Standards
