Wavecom

TnP Prime

Portable Appliance Test and Print Kit

User Manual

+ Certificate of Warranty and Product Support Information

Wavecom Certificate of Warranty

Your Wavecom Appliance Tester comes with a conditional 36 month warranty.

Your warranty applies for 12 months from the date of purchase.

This can be extended an additional 12 months if your Wavecom Appliance Tester is calibrated within 12 months of the date of purchase.

This can be extended a further 12 months if you calibrate your Wavecom Appliance Tester a second time within 24 months of the date of purchase.

The Manufacturer (Wavecom Pty. Ltd.) 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 the Manufacturer of this tester.

The TnT & 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, damages for personal injury. The distributors of this product cannot assume liability or responsibility for any loss of damage resulting from the use of this device.

The Manufacturer reserves the right to discontinue models, change specifications, price or designs at any time without notice or obligation.

Wavecom Instruments Pty. Ltd.
257 Grange Road, Findon,
South Australia, Australia 5023
service@wavecom.com.au
(+61) 08 8243 3500
(+64) 0800 164 888

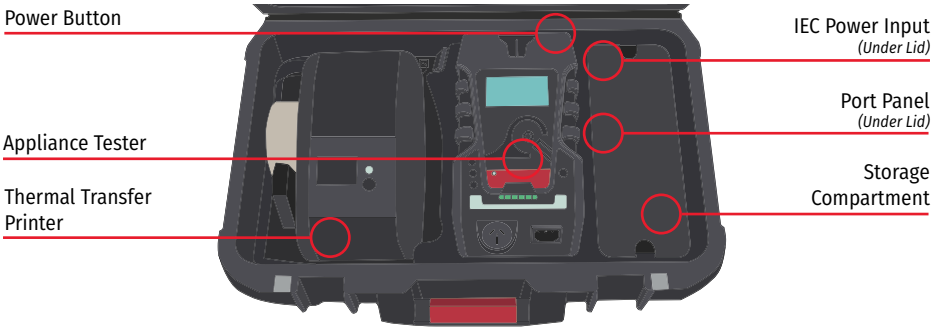
Important Information

Contents

- TnP Prime Integrated Appliance Tester
- 8 inch 4G-Ready Android tablet with mount accessories
- Tablet Charging Cable
- Advanced Bluetooth Laser Barcode Scanner
- Wavecom Thermal Transfer Printer
- WinPATS voucher (valued at $30+GST) for App Purchase through Google Playstore
- Shockproof Industrial Case (IP67 Rated)
- 1 Roll (500) of White Thermal Transfer Tags
- 1 Roll of Printing Ribbon
- IEC Test Lead (500mm Orange)
- USB A to USB B Interface Cable
- Earth Lead with Alligator Clips (1800mm Black)
- IEC Power Cable
- Black 16A Adaptor with 10A IEC Lead *(20A Units)*
- 12 Month Calibration Certificate
- 36 Month Conditional Warranty
- User Manual & Quickstart Guide

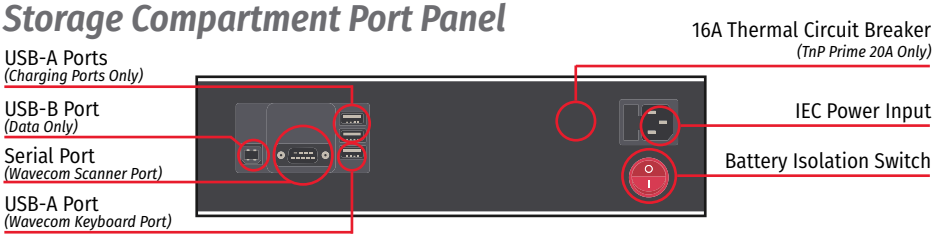
TnP Prime Diagrams

Case



Rear Panel of Tester

Storage Compartment Port Panel



Tester Head Unit

Precautions & Safety Information

The TnP Prime has been designed to meet stringent safety requirements, however no device can completely protect you 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 Person* who is suitably trained (see AS/NZS 3760:2022 for the definition of *Competent Person*), 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 and passes a visual check.
- All instructions are read, understood and followed.
- The power supply connections are always checked - if the N-E (middle) LED Indicator flashes red, do not proceed before consulting the manual.
- 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.

Warnings

Operating Environment: Charging – 0° to ~45°C; Discharging -20°to ~ 60°C.

Please ensure the unit is stored in compliance with the operating environment requirements and in a safe and secure location.

When sending the TnP Prime for calibration, please turn off the battery isolation switch which is located in the storage compartment of the tester.

Using the Lithium Ion Battery

Important: You must switch the Battery Isolation Switch (located inside the storage compartment) to ON (I) when using or charging your TnP Prime.

Switching the Isolation Switch to OFF (0) isolates the battery completely, preventing the battery from being charged and from powering the tester. The Isolation Switch must be switched off when transporting your TnP Prime.

Using the TnP Prime on Mains Power & Charging The Battery

To use the TnP Prime on mains power, simply plug in the supplied power cable and connect it to a mains power outlet. Your TnP Prime will automatically connect to mains power and begin charging the battery.

While the TnP Prime is charging and not in use, the display can be turned off by pressing and holding the ENTER button until you hear a beep and the LCD screen turns off. You will then see charging information displayed on the screen. Once the battery is fully charged and it is still connected to mains, battery symbol will convert to plug symbol. The TnP Prime should not be left unattended while charging.

Using the TnP Prime on Battery Power

The internal lithium-ion battery can power the TnP Prime for around 3000 sets of tests, and it takes around seven hours to fully charge.

When the TnP Prime is not connected to mains, **simply press and hold the power button at the rear of the tester until you hear a beep and the LCD screen turns on. Use the same button to turn off the unit when in battery mode.**

Earth Leakage, RCD Trip Time, RCD Ramp Current, Power Tests, Meter Mode and the Mains Supply tests all require a mains power source and are not available on battery power.

Transporting Lithium Ion Battery Products

For the purpose of air transport, lithium ion batteries may be considered **dangerous goods** under the International Air Transport Authority (IATA) regulations. It is the responsibility of the shipper to ensure that the product being shipped and the packaging used comply with all regulations, noting that **extensive penalties can be imposed by the relevant authorities for any breach.**

The IATA and other laws and regulations covering the transport of goods are very comprehensive, and Wavecom makes no warranty that these regulations will permit particular shipments of its products by air freight. Should you require further information on the relevant regulations and requirements, please contact your dangerous goods adviser and/or review the IATA website:

www.iata.org/publications/dgr/Pages/index.aspx

This section is not intended to constitute legal advice, and you should obtain your own professional advice. Please contact Wavecom Pty Ltd for more information.

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 below definition as described in the current AS/NZS 3760:2022 Standard and in addition, to any other local legislation or jurisdictions as may be relevant in your State.

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.

Replacing Fuses

From time to time an appliance may cause an internal fuse within your TnP Prime to break. When this occurs you will need to replace the fuse. If you prefer you can return your tester to Wavecom and we can replace the fuse for you, or if you wish you may replace the fuse. Contact us if you require information or guidance when replacing a fuse in your TnP Prime.

Important Calibration Information

Your Wavecom Appliance Tester should be calibrated every 12 months. A correctly calibrated tester is essential for ensuring testing accuracy and precision is maintained, and for complying with the AS/NZS 3760:2022 standards.

To book your tester in for calibration, go to:

www.wavecom.com.au/calibrations

Then, send your tester to your nearest calibration service centre:

For Western Australian customers:

Wavecom WA Calibrations
Unit 2/17 Casino Street,
Welshpool, WA 6016

For all other customers:

Wavecom Calibrations
257 Grange Road,
Findon, SA 5023

Product Support

At Wavecom we take great pride in our customer service and support. We provide assistance, troubleshooting and support over the phone, via Skype or Facetime, via email or in person to help you get the most from your Wavecom TnP Prime. To be eligible for our support services, register your Wavecom product.

You can register via the WinPATS App (this is done automatically during the setup process), or via our website: **www.wavecom.com.au**

Using the Tablet

The TnP Prime comes with an Android tablet to be used with the WinPATS App to control your tester, save your test results and generate reports. In the next section you will find a short introduction to using the TnP Prime with your tablet, and more detailed, step by step guides are available on our website - www.wavecom.com.au

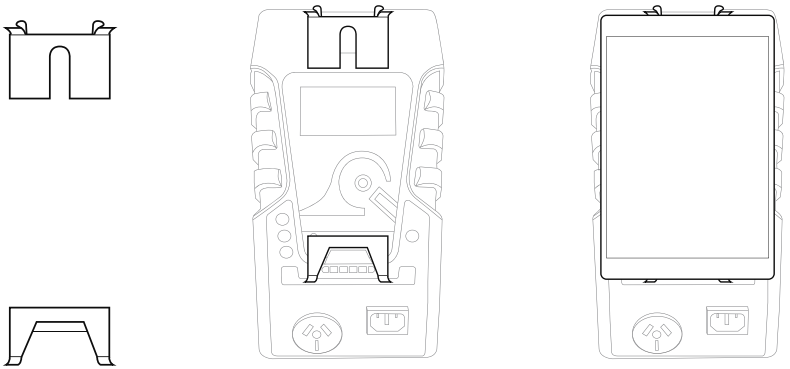
The tablet provided is intended for use with WinPATS only. We recommend that you do not install other apps on this tablet, to ensure the stable operation of the WinPATS App.

Before using your tablet with WinPATS, you must set it up as per the manufacturers instructions, and connect it to the internet (via 4G or wifi). We also recommend that the tablet is fully charged before the first use.

Your tablet warranty is covered by the manufacturer of the tablet. While Wavecom are happy to provide support to help you use your tablet for WinPATS, any issues that arise from the tablet (and not the WinPATS App) will need to be resolved with the manufacturer.

With your TnP Prime you will have two tablet docking accessories. These are to be attached to your tablet so you can secure your tablet to your TnP Prime.

To attach the docking accessories, we recommend docking them to the TnP Prime as shown below.



Then, peel off the backing plastic to expose the adhesive and place your tablet onto the docking accessories. Take care to ensure that your tablet's camera and charging port are not blocked by the docking accessories.

Operating your TnP Prime

Powering on the Tester

To use your TnP Prime, ensure the red isolation switch (located in the storage compartment) is switched ON. We recommend that the TnP Prime is fully charged before the first use.

Your TnP Prime will be powered on automatically when you connect it to mains power. To power on your TnP Prime in battery mode, press and hold the rear power button or the Enter button on the head unit of the tester until the unit beeps and the LCD screen turns on.

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 (see 'Wavecom Thermal Transfer Printer' for more information).

Setting Up Your WinPATS Account

We recommend setting up WinPATS before you need to use it on site so you can familiarise yourself with the features of the app.

Your tablet will already have WinPATS installed, though you may need to download and install an update.

Scan to view our Tutorial Video on this topic

To set up WinPATS, you will need:

- Your TnP Prime, your tablet, and an internet connection
- The coupon code located on the rear of this manual
  Alternatively, you can pay for another WinPATS license if you have already used your coupon code.
- Your organisation's ABN
- An email address you can access to set up your Company Account. This will be the email for your entire organisation, and you will need it for setting up new accounts, changing Cloud Support plans, and other important actions.
  If you already have a WinPATS Company Account for your organisation, you will simply need access to that email inbox (or contact with someone in your organisation with access).
- A separate email address you can access to set up your User Account. This will be used for your individual profile.

Connecting via Bluetooth

To control your TnP Prime via Bluetooth, you will need to perform a short setup procedure. Ensure you have both your tablet with WinPATS installed, and your TnP Prime in front of you.

Go to the Bluetooth settings in your Tablet's settings menu

Ensure that Bluetooth is enabled, then select your TnP Prime from the list of available devices (ensure you select the correct tester by referring to the serial number. Your TnP Prime's serial number is located on the side of your tester, and on the rear cover of this booklet).

You may now be prompted to pair your two devices using a PIN code. If so, your TnP Prime will display a code on the screen. Enter this code into WinPATS and tap OK. You will be asked to confirm the connection - tap Confirm after checking the details are correct.

Note: If you have any issues with the PIN code, you can disable this function from the TnP Prime settings menu. See the Settings section on page 36.

Setting Up Your Company Account

To begin setting up WinPATS, open WinPATS Pro and create up a 4 digit pin code for the app. This will help keep your data secure.

You now need to set up or log in to your Company Account. This is the account for your entire organisation. If your organisation already has a Company Account, log in now. Otherwise, create a new Company Account now.

You will receive an email with a One Time Password (OTP) from noreply@wavecom.com.au. Enter the OTP, then click 'Verify OTP'.

You will then receive another email from noreply.winpats@wavecom.com.au with your Company ID and a temporary Company Password. Keep this email, as you will need these details to log in.

Redeeming Your WinPATS License

Now you can pay for your WinPATS License - you should have a coupon code on the rear of this booklet which provides you with one free license for the WinPATS App.

Your coupon code is linked to your tester, and you will need to have your TnP Prime connected to your Android tablet via Bluetooth to authenticate your coupon code.

Enter your coupon code and tap APPLY. You should see the Total Amount number drop to zero. Tap PAY to proceed.

Once you have entered your code or paid, you can now Log In and set up your password. Enter the Company ID and temporary Password which was emailed to you, which will enable you to log in for the first time. You will now be prompted to set up a new password.

User Account

You can now set up your User Account - this is your individual profile. If you are the first or the only Test and Tag technician at your organisation, you should set yourself as an 'ADMIN' user, which will allow you to use the full features of WinPATS. Technician users have reduced access to features - this is designed for organisations with multiple technicians and/or multiple sites.

Once your details are complete, tap ADD to create your account. Confirm your details are correct, then tap CONFIRM to finish registering your user account.

When you start WinPATS for the first time you'll be required to perform a data sync. This creates a new cloud database for you, or connects your WinPATS App to your company's existing database. Depending on the number of items in your cloud database this process may take up to 5 minutes, but syncing with a new database usually only takes a few seconds.

Connecting Your TnP Prime to WinPATS

If your TnP Prime is not already connected and recognised by WinPATS, you can go to the Test menu in the WinPATS App (at the top of the screen) to establish this connection.

You should be prompted to connect a Wavecom Appliance Tester as soon as you open the Test Menu for the first time. Tap 'BLUETOOTH' to begin the Bluetooth setup process.

WinPATS will scan for any available TnT or TnP testers and display them in a list - select your tester from the list by tapping it. If you see multiple TnT or TnP products in the list, use the serial number of your TnP Prime to identify your tester.

You will now be asked to register your TnP Prime - this allows you to receive product support, service and calibration reminders from Wavecom. Once complete, tap Register. You're now ready to start testing with WinPATS.

Using Your TnP Prime with WinPATS

Adding a User

Note: You will have already created a WinPATS User during the setup process. Follow this process to add another user, or to edit the details of your users. This feature requires Admin access, Technician level users will need to enter the Company Password to access this feature.

Important: To avoid duplication of data a User must only be logged in and active on one tablet at a time.

To add a new User to WinPATS, open the Side Menu, then tap the User Profile Picture at the top of the menu. If required, enter the Company Password. You can now view the Users at your company using the dropdown menu, then edit, suspend (lock the user but keep the profile) or delete the user.

To add a new User, tap the '+' symbol next to the dropdown menu. Fill out the form, and assign Admin permissions (if required), then tap 'Add' when complete. You can now select this user from the dropdown menu.

When changing users, select your user from the menu, then tap 'Confirm'.

Adding a Customer

Note: You can also add a new customer during the 'Adding an Item' process if needed.

To add a new Customer to WinPATS, open the Side Menu, then tap 'Database+', then tap 'Customers'. You can view your existing customers in the list, and add a Site, edit their details and delete the customer by tapping a customer in the list.

Tap 'Add Customer' to open the new Customer form. Fill out the form - please note, a valid ABN is required to add a new customer. When complete, tap 'Add Customer'. You will now be able to assign sites and items to this customer.

Adding a Site

Note: You can also add a new site during the 'Adding an Item' process if needed.

To add a new Site to WinPATS, open the Side Menu, then tap 'Database+', then tap 'Sites'. You can view your existing sites (and filter by Customer) in the list, and edit or delete your sites by tapping a site in the list.

Tap 'Add Site' to open the new Site form. Fill out the form, and tap 'Add Site' when complete. You will now be able to assign locations (places within a site) and items to this customer.

Entering a New Item

To add a new item to WinPATS, open the Side Menu, then tap 'Database+', then tap 'Add Equipment'. Enter in the Device Under Test's information, and set the Current Status, Test Frequency and Test Sequence. This allows WinPATS to tell your TnP Prime which test to run when you test this item.

When you have added all the information to your item, tap 'Add Equipment'. You can now test this item immediately by tapping 'Start Test', or later by searching for it in your database.

Testing Items

Once you have added a new item into your database (or located an existing item in your database either by searching your database or scanning a WinPATS generated barcode), you can proceed to test the item.

Set up the item to be tested by plugging it into the TnP Prime (along with any accessories as required) then tap 'Start Test'. Conduct the Visual Test, and if the item passes, the test will proceed. The relevant test sequence will be conducted in stages, and the results displayed on screen. Your results will be saved to your WinPATS database, and you can now print your tag (or save it to the Print Queue to print later).

You can then continue with your testing by adding or searching for another item.

Printing Tags

The WinPATS App can print tags to your TnP Prime printer via Bluetooth. You can print tags at the end of a test as part of the testing process, or save tags to print later from the Print Menu.

To print a tag during the test process, carry out the test as described above. Once the test is complete, tap 'Save Result'. You will see the 'Save Result' button change to 'Print Tag'. To print a tag now, tap this button.

To save a tag to print later, tap the arrow at the bottom of the screen (in the centre). This will open a sub menu, including the option 'Print Later'. Tap this to save the tag to print later from the Print Menu.

Standard Tag *Mini Tag*

To access to Print Menu, tap the 'Print' icon at the top of the Home Screen. You will see a list of tags that have been saved to print later. To print a tag from the list, tap on it. You will see a number of options appear: Print Tag, Print Mini and Delete. To print a standard tag, tap 'Print Tag'. To print a small form 'Mini' tag, tap 'Print Mini'. To delete the item from the print menu, tap 'Delete'. You can also adjust print settings and more by tapping the '⊕ More'.

Editing Items

Items in your database can be edited from the Inventory screen. To open the Inventory screen, open the Side Menu, tap 'Database+' then 'Inventory'. Double tap (or press and hold) an item in the Inventory list to open the Item Information screen.

You can then tap 'Update Details' to change any of the details of the items. You can then edit any of the fields, and tap 'Update Item' when complete.

Deleting Items

Items in your database can be deleted from the Inventory screen. To open the Inventory screen, open the Side Menu, tap 'Database+' then 'Inventory'. Double tap (or press and hold) an item in the Inventory list to open the Item Information screen. Tap 'Update Details', then scroll to the bottom of the 'Update Details' screen and tap the Trash icon to delete that item.

Setting up the Barcode Scanner

To use the supplied Bluetooth 1662 BT scanner you will need your tablet and Bluetooth scanner in front of you. Your Bluetooth scanner comes with a quick start guide which may be useful for troubleshooting, but you can set up your scanner using the following instructions. We recommend that you ensure the scanner is fully charged before using it on site.

First, ensure the battery is in installed in your barcode scanner. The LED on your scanner should begin flashing blue, indicating it is ready to be paired to your tablet. Now, open the Bluetooth Settings menu of your tablet and turn Bluetooth on (if it is not already on). Tap 'Pair New Device' to begin scanning for Bluetooth devices.

Your scanner should appear in the list - you can identify your scanner by the first 4 numbers "*1662*" followed by the serial number (e.g *1662CFJ000123*). The serial number of your scanner is located on the label of your scanner box. Tap your scanner in the list to pair it with your tablet. If you see a prompt to enter a PIN code, simply tap 'Pair' without entering anything - the PIN setting is disabled by default on the scanner and is not required.

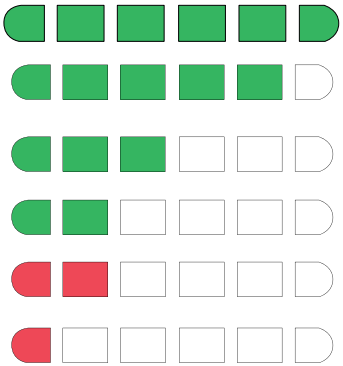
Your scanner should now be paired with your TnP Prime. To test your scanner, open the WinPATS App and return to the Home screen. Scan one of the barcodes on the outside of the scanner box, and you should see the barcode appear in the 'Search Barcode' field on screen.

Important: After pairing the barcode scanner, you may find that the on screen keyboard of your tablet no longer appears when you tap a text field. To fix this, tap any text field (such as the 'Search Barcode' field on the WinPATS home screen). You will see a keyboard icon appear in the bottom right corner of your screen. Tap this icon, then turn 'Show Virtual Keyboard' on. Your tablet will remember this setting and will display the keyboard from now on.

If you encounter any issues consult the quick start guide included with the scanner, or contact us for support.

LED Indicators

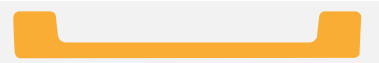
Battery LEDs



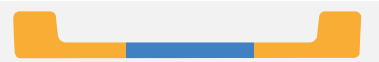
Status LEDs

TnP Prime is running on battery power, no Bluetooth connection

TnP Prime is running on battery power, active Bluetooth connection



TnP Prime is running on mains power, and is charging, no Bluetooth connection



TnP Prime is running on mains power, and is charging, active Bluetooth connection

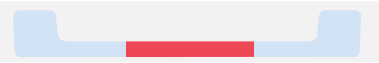
TnP Prime is fully charged, active Bluetooth connection

When an appliance fails a test, the Indicator LEDs will turn red while the test results are on screen

When an appliance passes a test, the Indicator LEDs will turn green while the test results are on screen

If there is a fault with the mains power connection, you may see one (or more) of the Status LEDs turn red. This may indicate a serious issue with the mains power supply - consult a qualified professional before proceeding. This won't apply when using battery power.

Standard Mains Supply Test result with no issues.



N-E Fault - If the N-E light in on, DO NOT PROCEED. The N-E LED will turn red if there is a voltage difference between the neutral and earth, or if no earth is connected. If you are working from a generator or inverter this is likely to occur and you may need to consult a qualified electrician before proceeding.

If the N-E LED is red, and A-N is green, consult a qualified Electrician. This indicates a fault with the Mains Supply. DO NOT PROCEED with any testing on this Mains Supply.

You may also see more than one, or all of these turn red. For more information, see Mains Supply Test (Page 33)

TnP Prime Testing Menu – Main Menu A

Class I Test - Earthed Appliances

You Will Need:

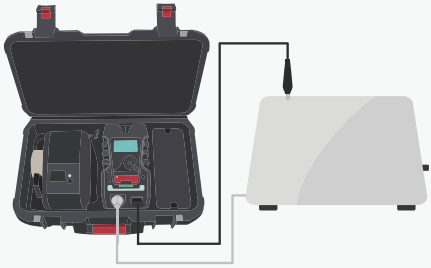
- Device Under Test
- IEC Earth Clamp Cable
- Metal Mesh Braid or Cloak
  (if not possible to connect IEC Earth Clamp to exposed metal on Device Under Test)

Test Sequence:

- Earth Bond Test (@ 200mA):
  Pass level less than 1Ω
- Insulation Test (@ 250V or 500V)
  Pass level greater than 1MΩ
- Mains Supply Test
  (If connected to Mains Power)
- NCNT Check

Scan to view our Tutorial Video on this topic

Test Procedure



1. Complete a Visual Inspection.
2. Plug device into appliance test socket.
3. Plug the IEC Earth Clamp Cable into the IEC Test socket.
4. Connect the IEC Earth Clamp to any exposed metal on the device. If this is not possible, you can wrap a metal mesh braid or cloak around the Device Under Test, and attach the IEC Earth Clamp to that in order to establish an earth connection
5. If you are using WinPATS Pro, add the item to your database, select the 'Class I Test' sequence, then tap 'Start Test'.
   Otherwise, navigate to Main Menu A, then Press the F1 key to begin the test
6. The test will be conducted
7. Once complete, you can save your results and print your tag

If the result was a **PASS** - Tag with PASS tag showing "next test due" date and return the device to service.

If the result was a **FAIL** - Tag with a DANGER tag and remove the device from service.

Further Information

Note: Ensure that the device is isolated from any ground loop.

If the Device Under Test is labelled with "Surge Protection Fitted" or if it contains MOV's (Metal Oxide Varistors), conduct a 250V Insulation Test. You can select between 250V and 500V when adding your item to your WinPATS database. If you are operating your TnP Prime without WinPATS, refer to the Settings section to change the Insulation Test voltage. If unsure refer to AS/NZS 3760:2022. Always read the compliance plates before testing, especially on surge protected powerboards.

Class II Test - Double Insulated Appliances

You Will Need:

- Device Under Test
- IEC Earth Clamp Cable
- Metal Mesh Braid or Cloak

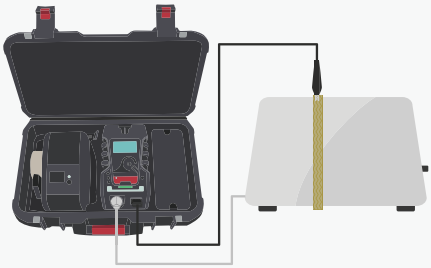
Test Sequence:

- Insulation Test (@ 250V or 500V)
  Pass level greater than 1MΩ
- Mains Supply Test
  (If connected to Mains Power)
- NCNT Check

Scan to view our Tutorial Video on this topic

Test Procedure

1. Complete a Visual Inspection, and inspect the compliance plate to ensure the appliance is a Class II appliance. Look for the double insulated symbol:
2. Plug the Device Under Test into appliance test socket.
3. Plug the IEC Earth Clamp Cable into the IEC Test socket.
4. Wrap a metal mesh braid or cloak around the Device Under Test
5. Attach the IEC Earth Clamp to the braid or cloak



6. If you are using WinPATS Pro, add the item to your database, select the 'Class II Test' sequence, then tap 'Start Test'.
   Otherwise, navigate to Main Menu A, then Press the F2 key to begin the test
7. The test will be conducted
8. Once complete, you can save your results and print your tag

If the result was a **PASS** - Tag with PASS tag showing "next test due" date and return the device to service.

If the result was a **FAIL** - Tag with a DANGER tag and remove the device from service.

Further Information

If the Device Under Test is labelled with "Surge Protection Fitted" or if it contains MOV's (Metal Oxide Varistors), conduct a 250V Insulation Test. You can select between 250V and 500V when adding your item to your WinPATS database. If you are operating your TnP Prime without WinPATS, refer to the Settings section to change the Insulation Test voltage. If unsure refer to AS/NZS 3760:2022. Always read the compliance plates before testing, especially on surge protected powerboards.

Lead Test - Extension Leads & Power Boards

You Will Need:

- Device Under Test
- Orange IEC-550 Cable

Test Sequence:

- Earth Bond Test (@ 200mA)
  Pass level less than 1Ω
- Insulation Test (@ 250V or 500V)
  Pass level greater than 1MΩ
- Continuity and Polarity Test (240VAC @ 2mA)
  Checks continuity & polarity of leads
- Mains Supply Test
  (If connected to Mains Power)
- NCNT Check

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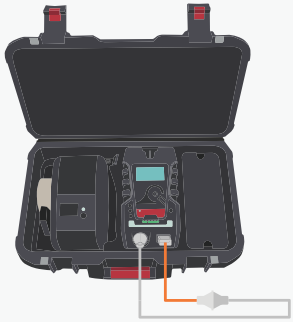
Test Procedure



1. Complete a Visual Inspection
2. Plug the Orange IEC-550 Lead Cable into the IEC socket
3. Plug the male end of the Device Under Test into the appliance test socket
4. Plug the IEC-550 Lead into the socket of the Device Under Test
5. If you are using WinPATS Pro, add the item to your database, select the 'Ext. Lead Test' sequence, then tap 'Start Test'.
   Otherwise, navigate to Main Menu A, then Press the F3 key to begin the test
6. Once complete, you can save your results and print your tag

If the result was a **PASS** - Tag with PASS tag showing "next test due" date and return the device to service.

If the result was a **FAIL** - Tag with a DANGER tag and remove the device from service.

Further Information

Extension leads should always be uncoiled before using or testing.

Please ensure that the IEC Adaptor & the IEC socket are inserted firmly or it may result in a continuity/polarity fail.

Each socket of a multi-adapter, power board, or other device with multiple sockets should be tested individually in order to PASS the device.

TnP Prime Testing Menu – Main Menu B

Use the Enter button to switch between Menu A and Menu B.

All tests on Menu B require a Mains Power source. TnP Prime 20A testers must be connected to Mains via the provided Power Adaptor when testing.

Power Test - Any Appliance

You Will Need:

- Device Under Test
- A Mains Power Source
  (The TnP Prime 20A must be connected to Mains via the provided 20A Power Adaptor when testing)

Test Sequence:

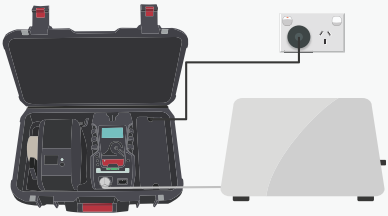
- Power Test
- Mains Supply Test
- NCNT Check

Test Procedure

CAUTION

This test will power on the Device Under Test. Take due care to ensure the Device is safely located before proceeding.

1. Complete a Visual Inspection
2. Connect your TnP Prime to a mains power source.
3. Plug the Device Under Test into the Appliance Test Socket
4. If you are using WinPATS Pro, add the item to your database, select the 'Power Test' sequence, then tap 'Start Test'. Otherwise, navigate to Main Menu B and press F1 to start the power test



5. A warning message will appear on screen. If the appliance is safely located and secured press F3 to proceed. The unit will power on
6. Read and record results appropriately.
7. Once the appliance has powered down and the test is complete, unplug the unit.

Note: Because the power test is not specified in the AS/NZS 3760:2022 standard, there is no pass/fail value built in to the tester. It is up to the user to determine if the item is a pass or a fail based on the compliance/name plate.

Further Information

The Power Test feature is for single phase appliances only. The Power Test allows the user to power an appliance to observe real time measurerments. A Power Test can measure: Volts AC, Current, Volt Amp, Power Factor, and Watts. These readings can be compared to the stated values on the Device Under Test's compliance plate to check compliance.

Earth Leakage Test - Class I

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You Will Need:

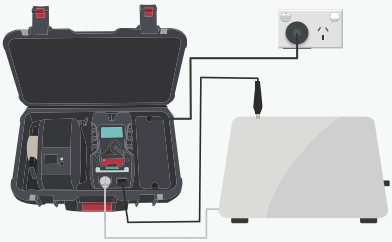
- A Mains Power Source
  (The TnP Prime 20A must be connected to Mains via the provided 20A Power Adaptor when testing)
- Device Under Test
- IEC Earth Clamp Cable
- Metal Mesh Braid or Cloak
  (if not possible to connect IEC Earth Clamp to exposed metal on Device Under Test)

Test Sequence:

- Earth Bond Test (@ 200mA):
  Pass level less than 1Ω
- Insulation Test (@ 250V or 500V)
  Pass level greater than 1MΩ
- Earth Leakage Test
  0 to 30.0mA at 200-265V. 240VAC Mains.
  Pass level 5.0 mA
- Mains Supply Test
- NCNT Check

Test Procedure

CAUTION
This test will power on the Device Under Test. Take due care to ensure the Device is safely located before proceeding.



1. Complete a Visual Inspection
2. Connect your TnP Prime to a mains power source.
3. Plug the IEC Earth Clamp Cable into the IEC Test socket.
4. Plug the Device Under Test into the Appliance Test Socket of the TnP Prime
5. Connect the IEC Earth Clamp to any exposed metal on the device. If this is not possible, you can wrap a metal mesh braid or cloak around the Device Under Test, and attach the IEC Earth Clamp to that instead.
6. If you are using WinPATS Pro, add the item to your database, select the 'Class I Leakage' sequence, then tap 'Start Test'
   Otherwise, navigate to Main Menu B, then press F2 to enter the Leakage Test Menu, then press F1 to select Class I Leakage Test
7. The TnP Prime will conduct the first part of the test without powering the appliance
8. A warning will be displayed on screen - ensure the appliance is safely located, then proceed with the leakage test
9. Your results will appear on the screen - you can now print the tag and unplug the appliance

If the result was a **PASS** - Tag with PASS tag showing "next test due" date and return the device to service.

If the result was a **FAIL** - Tag with a DANGER tag and remove the device from service.

Earth Leakage Test - Class II

You Will Need:

- A Mains Power Source
  (The TnP Prime 20A must be connected to Mains via the provided 20A Power Adaptor when testing)
- Device Under Test
- IEC Earth Clamp Cable
- Metal Mesh Braid or Cloak

Test Sequence:

- Insulation Test (@ 250V or 500V)
  Pass level greater than 1MΩ
- Earth Leakage Test
  0 to 30.0mA at 200-265V. 240VAC Mains.
  Pass level 1.0 mA
- Mains Supply Test
- NCNT Check

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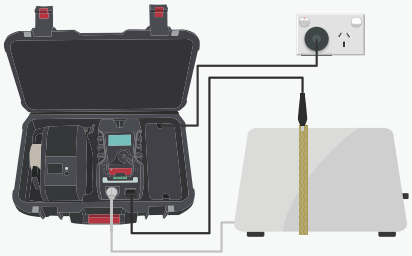
Test Procedure

CAUTION
This test will power on the Device Under Test. Take due care to ensure the Device is safely located before proceeding.



1. Complete a Visual Inspection
2. Connect your TnP Prime to a mains power source.
3. Plug the IEC Earth Clamp Cable into the IEC Test socket.
4. Plug the Device Under Test into the Appliance Test Socket of the TnP Prime
5. Wrap a metal mesh braid or cloak around the Device Under Test, and attach the IEC Earth Clamp to that in order to establish an earth connection
6. If you are using WinPATS Pro, add the item to your database, select the 'Class II Leakage Test' sequence, then tap 'Start Test'
   Otherwise, navigate to Main Menu B, then press F2 to enter the Leakage Test Menu, then press F1 to select Class II Leakage Test
7. The TnP Prime will conduct the first part of the test sequence without powering the appliance
8. A warning will be displayed on screen - ensure the appliance is safely located, then proceed with the leakage test
9. Your results will appear on the screen - you can now print the tag and unplug the appliance

If the result was a **PASS** - Tag with PASS tag showing "next test due" date and return the device to service.

If the result was a **FAIL** - Tag with a DANGER tag and remove the device from service.

Earth Leakage Test - RCD

You Will Need:

- A Mains Power Source
  (The TnP Prime 20A must be connected to Mains via the provided 20A Power Adaptor when testing)
- Device Under Test
- IEC Earth Clamp Cable
- Metal Mesh Braid or Cloak

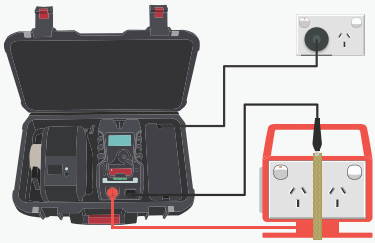
Test Sequence:

- Earth Bond Test (@ 200mA):
  Pass level less than 1Ω
- Earth Leakage Test
  0 to 30.0mA at 200-265V. 240VAC Mains.
  Pass level 1.0 mA
- Mains Supply Test
- NCNT Check

Scan to view our Tutorial Video on this topic

Test Procedure

CAUTION
This test will power on the Device Under Test. Take due care to ensure the Device is safely located before proceeding.



1. Complete a Visual Inspection.
2. Connect your TnP Prime to a mains power source.
3. Plug the IEC Earth Clamp Cable into the IEC Test socket.
4. Plug the male end of the Device Under Test into the appliance test socket.
5. Wrap a metal mesh braid or cloak around the Device Under Test, and attach the IEC Earth Clamp to that in order to establish an earth connection
6. If you are using WinPATS Pro, add the item to your database, select the 'RCD Leakage' sequence, then tap 'Start Test'.
   Otherwise, navigate to Main Menu B, then press F2 to enter the Leakage Test Menu, then press F3 to select RCD Leakage Test.
7. The TnP Prime will conduct the first part of the test without powering the appliance
8. A warning will be displayed on screen - ensure the appliance is safely located, then proceed with the leakage test
9. Your results will appear on the screen - you can now print the tag and unplug the appliance

If the result was a **PASS** - Tag with PASS tag showing "next test due" date and return the device to service.

If the result was a **FAIL** - Tag with a DANGER tag and remove the device from service.

Further Information

The Leakage Test is an alternate method to perform insulation resistance tests. There are three types of Leakage test available on the TnP Prime - take care to ensure you use the correct test for your appliance.

This test determines errors of leakage not otherwise detected in a normal insulation test. If there are any doubts with insulation testing of the equipment, the Standard (AS/NZS 3760:2022) allows for a leakage test to be carried out instead. The Leakage Test applies power to the Device Under Test and measures any imbalance or leakage current. The leakage is tested to the limits of the class types specified in the Standard AS/NZS 3760:2022.

The limit of imbalance measured on the TnP Prime will read well in excess of the limits set in mA. However, should the supply circuit be protected by an RCD this device will trip anywhere between 10 to 30mA and trip the mains supply switch OFF. The Leakage Test allows the user to operate the appliance in normal operation conditions and measure its Operating Leakage current. The displayed parameter is mA. The mA Display Range 0.0 to 22.0 mA.

A predefined value for individual class types is programmed into your TnP Prime. These limits are set according to the AS/NZS 3760:2022. Should these values change in future it can be simply altered in firmware. The run time period can be adjusted (by 5 second increments). The value can be changed by selecting the leakage test time in the Settings menu, or via WinPATS. The factory default setting is 20seconds, which is generally long enough to obtain an accurate reading for most appliances.

RCD Leakage Test

Please note that the RCD Leakage Test is not an alternative to an RCD Trip Time or Ramp Current Test. The RCD Leakage Test measures only the earth bond and earth leakage of a Residual Current Device, and should not trip an RCD that is functioning correctly.

RCD Tests - Portable & Fixed Residual Current Devices

Types of RCD

There are two types of RCD - Type 1 and Type 2:

Type 1 RCDs have a trip time of < 40mS and a trip current of < 10mA. These types of RCDs are mainly used on sites containing medical equipment. These types of RCDs must be compliant with AS/NZS 3551.

Type 2 RCDs have a trip time of < 300mS and a trip current of < 30mA. These types of RCDs are generally more commonplace. All Wavecom Appliance Testers are set to test Type 2 RCDs by default.

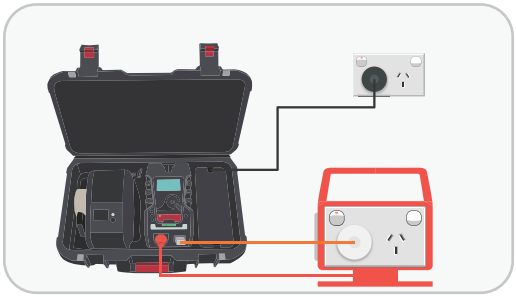
Adjusting Test Parameters For RCD Type:

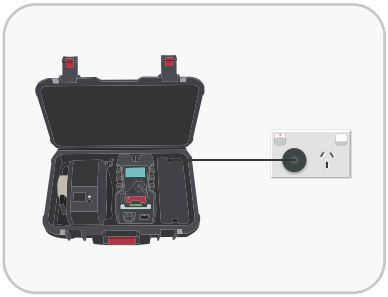
If you are using WinPATS, you can simply select the appropriate test for your RCD type (RCD Trip Time 10mA for Type 1, RCD Trip Time 30mA for Type 2). You will be able to set Portable RCD (pRCD) to on or off. If you are testing a Portable RCD with a physical switch turn pRCD on, otherwise turn pRCD off.

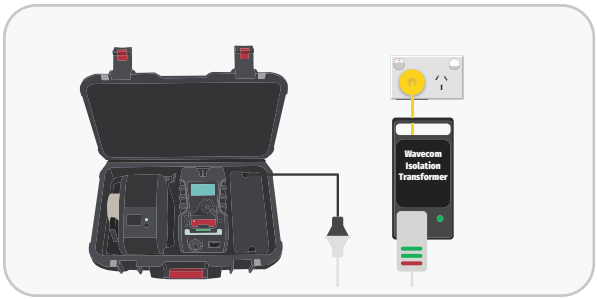
If you are conducting testing directly from your TnP Prime, you can adjust the RCD testing options from the RCD Testing Menu. After setting your RCD type, you will be promoted to enable or disable (pRCD) testing. If you are testing a Portable RCD with a physical switch turn pRCD on, otherwise turn PRCD off.

RCD Testing Setup

When testing RCDs, different kinds of RCDs will require different test setups. Consult the diagrams below to determine which setup is required for your situation.







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RCD Trip Time Test

You Will Need:

- A Mains Power Source
  (The TnP Prime 20A must be connected to Mains via the provided 20A Power Adaptor when testing.)
- Device Under Test
- IEC-550 Orange Cable
  For portable RCDs with a physical switch
- Wavecom Isolation Transformer
  For portable RCDs without a physical switch

Test Sequence:

- Trip Current
  Injects fixed trip current (User selectable from 2-500mA in 1mA increments)
  Measures Trip Time (0 to 3,000ms at 1ms resolution)
- Mains Supply Test
- NCNT Check

Scan to view our Tutorial Video on this topic

Test Procedure

1. Complete a Visual Inspection
2. Connect your TnP Prime to a mains power source.
3. Set up your test according the the variety of RCD you are testing (see page 24)
4. If you are using WinPATS Pro, add the item to your database, select the 'RCD Trip Time' sequence, then tap 'Start Test'.
   Otherwise, navigate to Main Menu B, and press F3 to enter the RCD Menu, then press F1 to select Time Test. Press F3 to enter the Time Test options menu, to ensure your TnP Prime has the correct settings for the type of RCD. Once your TnP Prime is set up correctly, select either the 0° (Positive) or the 180° (Negative) Phase to test. Both phases should be tested, and after the first test, you can select 'Retest' to test the other phase.
5. When ready, begin the test - the RCD will trip, and the time will be recorded in milliseconds.
6. If the mains power source RCD tripped (either during a switchboard RCD test or a Portable RCD with no physical switch test) your TnP Prime will switch to battery power (if charged), but will need to be Mains Powered again to conduct further RCD tests.
7. You can now retest the other phase of the RCD, or simply print your tag and record your results.

If the result was a **PASS** - Tag with PASS tag showing "next test due" date and return the device to service.

If the result was a **FAIL** - Tag with a DANGER tag and remove the device from service.

Further Information on next page.

RCD Trip Time Test (continued)

Further Information

This test is designed to trip RCD devices at a fixed current and to determine the trip time of the RCD device. During an RCD Trip Time test, the TnP Prime injects a true fault current value using a real-time compensation calculation of the actual voltage at the time of test, delivering a true and accurate trip current. The TnP Prime will measure the time the RCD takes to trip in milliseconds, and display it on the screen. This function is factory set to 30mA for fast testing, but the user can set the current to 0.5x, 1.0x or 5.0x using the RCD Multiplier.

Nominal Current	RCD Multiplier	Actual Current	Expected Result *(Type 2 RCD)*
30ma	0.5x	15ma	RCD does not trip
30ma	1.0x	30ma	RCD trips
30ma	5.0x	150ma	RCD fast trips

The 1x multiplier is also effective on any set test current of the RCD tester from 5mA to 500mA output.

RCD Test Options:

To adjust the Trip Time test options, navigate to Main Menu B, press F3 to enter the RCD Test Menu, then press F1 to select Trip Time Test, then press F3 . This allows the user to set the trip current level, 5mA to 500mA. The RCD type can also be select here depending whether the unit is a Type I or Type II RCD. From the options menu, press F2 to change the current level and F3 to change the RCD type.

Adjusting the current level:

The TnP Prime displays and maintains the last set trip current value. If the user wishes to change the value of the trip current the following steps enable the changes. Press F2 from the options menu to display test current.

F1 - Raises the trip current in 1mA increments to 500mA. Hold the button and the value will scroll faster the longer it is pressed. Once 500mA limit is reached the value will then loop over and start again from 0mA

F2 - Decreases the trip current in 5mA increments. Hold the button and the value will scroll faster the longer it is pressed. Once 0mA limit is reached the value will then loop over and start again from 500mA.

Enter - Sets the selected current for the next trip time test. The TnP Prime will then return to the current trip time test screen.

RCD Ramp Current Test

You Will Need:

- A Mains Power Source
  (The TnP Prime 20A must be connected to Mains via the provided 20A Power Adaptor when testing.)
- Device Under Test
- IEC-550 Orange Cable
  For portable RCDs with a physical switch
- Wavecom Isolation Transformer
  For portable RCDs without a physical switch

Test Sequence:

- Trip Current
  Injects incrementing trip current (0-500mA in 1mA increments)
- Mains Supply Test
- NCNT Check

Scan to view our Tutorial Video on this topic

Test Procedure

1. Complete a Visual Inspection
2. Connect your TnP Prime to a mains power source.
3. Set up your test according the the variety of RCD you are testing (see page 24)
4. If you are using WinPATS Pro, add the item to your database, select the 'RCD Ramp Test' sequence, then tap 'Start Test'.
   Otherwise, navigate to Main Menu B, and press F3 to enter the RCD Menu, then press F2 to select Ramp Test. Press F2 to select your RCD Type (Type 1 or Type 2) and set Portable RCD Testing on or off. You can then press F3 to begin the test.
5. The TnP Prime will increase the current to the RCD until it trips, displaying the current on screen.
6. If the mains power source RCD tripped (either during a switchboard RCD test or a Portable RCD with no physical switch test) your TnP Prime will switch to battery power (if charged), but will need to be Mains Powered again to conduct further RCD tests.
7. You can now print your tag and record your results.

If the result was a **PASS** - Tag with PASS tag showing "next test due" date and return the device to service.

If the result was a **FAIL** - Tag with a DANGER tag and remove the device from service.

Further Information

This test is designed to trip RCD devices using a ramping up current value, to determine the trip current of the RCD device. This useful test allows the user to determine circuit leakage load/pre-loading of RCD circuit. This can assist in determining nuisance tripping issues (RCD is too sensitive) or determining RCD performance if suspected faulty or inconsistent in performance.

The TnP Prime has a nominal leakage current of 2mA, which should be added to the result of test. For example if your RCD tripped at 22mA, add 2mA to get a result of 24mA trip current.

Meter Mode®

Meter Mode measures electrical parameters such as Volts, Amps, Watts, and Volt/Amps. These electrical parameters will be displayed on screen.

How to use Meter Mode

1. Conduct a visual inspection, and inspect the compliance plate to determine the expected results
2. Plug in the appliance to the appliance test socket on your TnP Prime.
3. Ensure the appliance is safely located and secured, as it will be powered during this test.
4. Press and Hold F3 to enter Meter Mode
5. When ready, press F3 to begin Meter Mode, then press F3 to power the appliance.
6. Press F3 to scroll through the options (Volts, Amps, Watts, & Volt/Amps)
7. To end Meter Mode, simply press Enter, then to leave Meter Mode and return to the Menu, press Enter again. Your TnP Prime will remain in Meter Mode when powered off unless your exit Meter Mode.

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 (aka Amps)
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 multiplied by amps (V*A). Because it represents the amount of energy computing systems may draw from a power grid, Volt-Amp measurements are used to determine the kind of wiring and circuit breakers required to support the computing equipment in question.

Watts
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.

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.

TnP Prime Specifications

Refer also to the compliance plate on your TnP Prime.

Mains Supply Test	Checks Polarity and continuity of mains supply by LED indicators when connected to Mains Power Supply.
Class I ***Earthed Appliances*** *See also: Leakage Test*	NCNT 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.
Class II ***Double Insulated Appliances*** *See also: Leakage Test*	NCNT Check: Ensures appliance is plugged in and turned on. Insulation Test: 500VDC / 250VDC. Pass level greater than 1MΩ. Measurement: 0.1Ω to 10MΩ.
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 10 Amp load operation (20 Amp load for TnP Prime 20A) **Note 1: Pass level for Class I is 5 mA; pass level for Class II is 1 mA** **Note 2: Leakage test may be performed if for any reason a standard Class I or Class II Test cannot be performed.**
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 10 amps (20 amps for TnP Prime 20A) 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 10 amps (20 amps for TnP Prime 20A) Voltage: 200 to 265VAC Apparent Power: 0 to 2400VA Power: 0 to 2400W
AC Input	110V-240V 50/60Hz
Battery	6800 mAH, 14.4V, 97.92WH; Charge Time Approximately 7 Hours.
Bluetooth	Bluetooth Low Energy technology with inbuilt antenna.

Technical Information

Visual Inspection

A visual inspection must be undertaken before proceeding to any further AS/NZS 3760 test.

The visual inspection is carried out to ensure there are no physical faults with the appliance before testing. The following list is an example of potential physical faults, but it is not exhaustive and the relevant standards must be consulted to ensure a proper Visual Inspection is undertaken.

- 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 or other overload 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 & systems (overload latches & buttons etc.) are in good working order.
- No dust &/or dirt obstructs any exhausts or ventilation outlets.
- All controls are working properly and are secure and aligned.

If The Device Under Test Fails The Visual Inspection:

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.

Class I (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 a Class I appliance test, a continuous earth loop must be made between the

exposed conductive material (metal) and the TnP Prime appliance tester. This is done by means of connecting the earth lead with the crocodile clip/probe attached to an earth point (metal covered by paint or other coatings will not provide effective connections) and the appliance plugged into the TnP Prime appliance testers' test socket. The Maximum allowable limit is less than 1.0Ω.

Earth Continuity Test - Commonly called Earth Bond Test

The TnP Prime conducts earth continuity tests at approximately 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 3760:2022).

Unique Earth Bond Test Feature

The Earth Bond test duration can be extended by the user by pushing the ENTER button during the test. This will extent the test time by 30 seconds for each 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. This may save time by prolonging tests instead of conducting multiple iterations of the same test.

Class II (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. Double Insulated equipment generally comprises of both *Functional* and *Supplementary* insulation.

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

The second layer of insulation is the Supplementary Insulation. In Class II equipment, protection against electric shock does not rely on basic insulation only, but has additional 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:

Note – 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, due to the concern of over-voltage causing internal damage.

The TnP Prime can safely test electronic equipment as the tests are carried from Active-Neutral (shorted by a relay inside the tester) to Earth. In this mode no dangerous voltages pass through to the internal components of the Device Under Test ('DUT').

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 this 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 the DUT should be retested. If the DUT still fails, check with the DUT Operators' Manual or an electrician.

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 Prime.

Leakage Test

If there are any doubts with insulation testing of the Device Under Test, AS/NZS 3760:2022 allows for an Earth Leakage Test be performed instead or in addition to a standard Class I or Class II test.

The TnP Prime has a maximum resistive load of 10 amps. The TnP Prime 20A has a maximum resistive load of 20 amps.

The TnP Prime 20A uses a 16A thermal circuit breaker. Any Leakage (or Power) test up to 16A can be conducted indefinitely. Leakage and Power tests from 16A to 20A load can typically be conducted for 30 to 60 minutes before the thermal circuit breaker cuts out. If the circuit breaker cuts out, allow the circuit breaker to cool for *at least* 5 minutes before resetting.

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.

3 Phase Testing

Note: 3 Phase Testing requires a three phase adaptor, sold separately. The TnP Prime cannot perform a 3 Phase Leakage test.

3 Phase appliances can be tested by the TnP Prime 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 a Wavecom 3 phase adapter.

Integrated Tests

Mains Supply Test

Note: The Mains Supply Test only applies when connected to Mains Power - if you are using your TnP Prime in battery mode, you can disregard this information.

The Mains Supply Test checks the polarity and connectivity of the mains power supply to your TnP Prime. This test is conducted passively whenever connected to a Mains Supply, and actively during each test sequence.

If there is a fault with the mains power connection, you may see one (or more) of the Status LEDs turn red. This may indicate a serious issue with the mains power supply - consult a qualified professional before proceeding. This won't apply when using battery power.

Standard Mains Supply Test result with no issues.

N-E Fault - If the N-E light in on, DO NOT PROCEED. The N-E LED will turn red if there is a voltage difference between the neutral and earth, or if there is no earth connected. If you are working from a generator or inverter this is likely to occur - consult a qualified electrician before proceeding.

If the N-E LED is red, and A-N is green, there is a fault with the Mains Supply. Consult a qualified electrician.

No Connection No Test (NCNT Check)

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

If for some reason the NCNT check does not detect the device but it is actually plugged in and turned on, the operator can to override the NCNT function. This is done at the user's discretion.

This function ensures that correct testing procedures are carried out in accordance with AS/NZS 3760:2022. If the Device Under Test is not plugged in or recognised, it may require a live test therefore making it necessary for the operator to carry out an Earth Leakage Test.

Note: When using 3-Phase adaptors the NCNT function will need to be overridden. Some single-Phase appliances controlled by contactors will also require manual over ride. In some instances, holding the 'ON' button of the Device Under Test will enable the NCNT function to work normally.

Settings

You can adjust almost all of your TnP Prime's settings directly from WinPATS, which we recommend as it offers a easier user interface. In particular, you can change the insulation test voltage and leakage test time directly as part of the testing process.

Accessing the Settings of your TnP Prime

To access the Settings Menu of your TnP Prime, navigate to Main Menu A, then hold Enter and press F2. You can then scroll through the options by pressing F2, select a setting using Enter, or leave the Settings menu by pressing F3. In general, we recommend leaving these settings at their default values, or adjusting them using WinPATS.

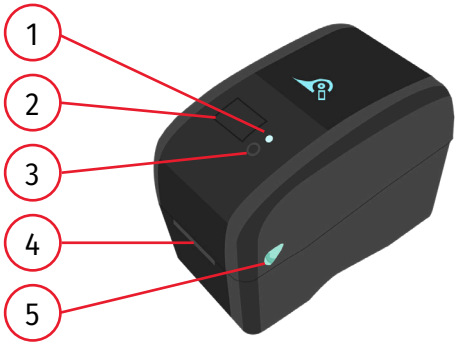
Settings Explanations

Setting Name	Purpose	Possible Values
Change Ins Vol	Adjust the voltage level used in the insulation test.	250V DC *or* 500V DC
Leak. Test Time	Adjust the duration of the leakage test	5 seconds *to* 28,800 seconds *(5 second increments)*
Audio Option	Turn on or off the audible beep to indicate the completion of a test.	Enable *or* Disable
Result Hold Time	Adjust the time that test results are displayed on screen after the completion of a test sequence	1 second *to* 90 seconds *(1 second increments)*
Battery Options	Adjust the power-saving battery time out function, which powers the unit off when left idle in battery mode.	1 minute *to* 60 minutes *(1 minute increments)*
Bluetooth Config	Select whether to enable or disable the security PIN for establishing a Bluetooth connection between your TnP Prime and your tablet.	Enable *or* Disable
	Select whether to formally disconnect the Bluetooth connection when the connection between your tablet and your TnP Prime is interrupted.	Enable *or* Disable
LEDS Options	Select whether to use the Battery LEDs to display the battery charge	Enable *or* Disable
	Set the LED Display Mode of the Status LEDs	TnT Status *or* Mains Detect *or* LEDs Off
	Select whether the Status LEDs should flash to indicate a test is in progress	Enable *or* Disable
	Select whether to use the LEDs to indicate a PASS (green) or FAIL (red) result after a test	Enable *or* Disable

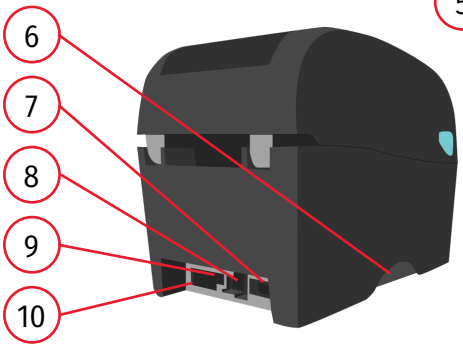
Label Options	Select whether to enable the printer to print labels at the completion of each test	Enable *or* Disable
	Choose which label set (if you are using more than one) to use. If in doubt, select **Label1**.	Label0 *[Blank]*, Label1 *[Default]* to Label9
	Select whether to use Custom Due Dates when testing. If disabled, the TnP Prime will set the due date using the 'Test Frequency' setting and the current date to calculate the due date.	Enable *or* Disable
	Set the darkness of the printer. Changing this setting from the default setting may impact print quality.	0 [lighter] *to* 30 [darker] *(3 unit increments)*
	Disable the printer from spooling on startup. Spooling makes the printer eject blank tags to calibrate the tag position, though we find this is rarely necessary.	Yes [Disable] *or* Cancel [Enable]
	Use label check when printing tags.	Enable *or* Disable
Barcode Options	Set the number of digits used when generating a barcode Keep in mind that reducing the number of digits may limit the number of unique barcodes available to you.	2 digits to 7 digits
	Set the starting barcode number Your barcodes will increment from this number	ESC or SET *[Requires keyboard or other input device]*
	Set whether barcodes should use leading zeros. For example, your first barcode with leading zeros would be "000001", and without leading zeros it would be "1"	Enable *or* Disable
	Search all sites on barcode search	Enable *or* Disable
	Show advanced search methods on records	Enable *or* Disable
Set Date / Time	Set the date and time of the internal clock.	DD/MM/YYYY, HH:MM *[Requires keyboard or other input device]*

Wavecom Thermal Transfer Printer

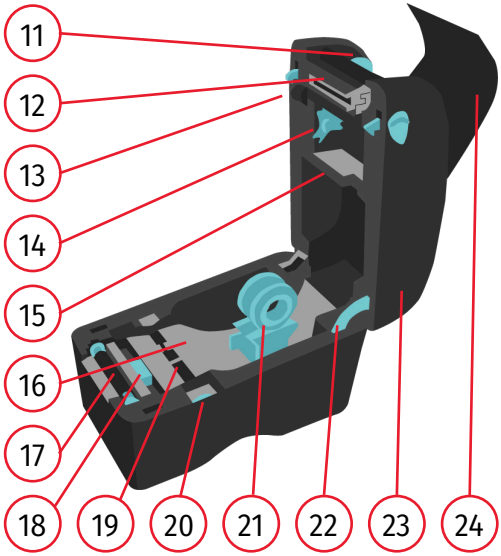
Your TnP Prime comes with an integrated Thermal Transfer Printer - the TT040-50. The TnP Prime printer is ready and fully set up to use out of the box. We can also provide logo artwork for fully customised tags.



1. LED Indicator
2. Media view window
3. Feed Button
4. Label Exit Chute
5. Top Cover Release Lever



6. SD Card Slot
7. RS-232C Interface
8. USB Interface
9. Power Socket
10. Power Switch

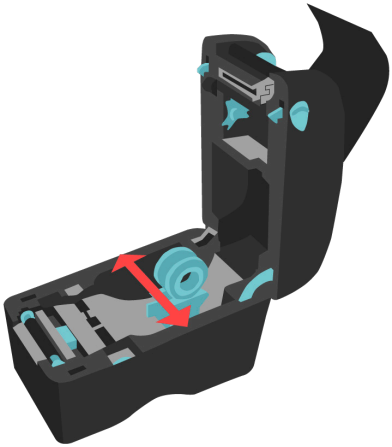


11. Ribbon Rewind Hub
12. Print Head
13. Ribbon Rewind Gear
14. Ribbon Supply Hub
15. Gap Sensor (Receiver)
16. Gap Sensor (Transmitter)
17. Platen Roller
18. Black Mark Sensor
19. Media Guide
20. Media Guide Adjuster Knob
21. Media Holders
22. Top Cover Hinge
23. Top Cover
24. Ribbon Access Cover

Loading Tags

Loading media into the TT-040-50 Printer is quick and easy.

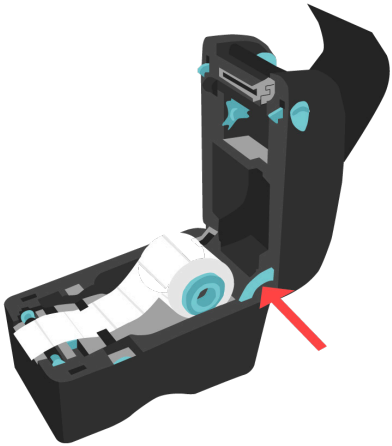
To begin, open the printer top cover by pulling the tabs located on each side towards the front of the printer, and then lift the top cover to the maximum open angle.



1. Separate the Label Holders by gently pulling them in opposite directions

2. Insert the media between the label holders as shown

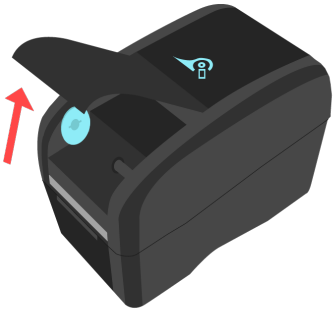
3. Using the Media Guide Adjuster Knob, adjust the Media Guide until it is flush but not tight against the media.



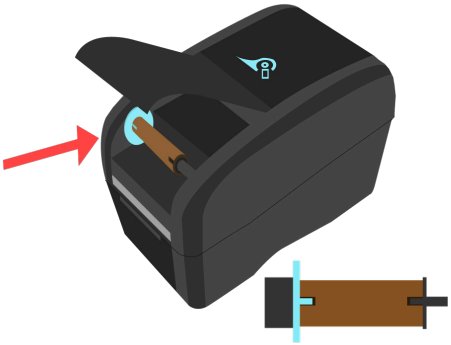
4. To shut the printer, push the support hinge in, then gently shut the printer, ensuring it latches shut. Press the Feed button on the printer before printing, to ensure the tag is printed correctly.

Loading Ribbons

To begin, open the printer top cover by pulling the tabs located on each side towards the front of the printer, and then lift the top cover to the maximum open angle. You will also need to remove the old ribbon (which will be spooled under the top cover shown in step 1) before loading a new ribbon. To remove this ribbon, simply hold the ribbon roll and move it to the right (away from the blue gear).

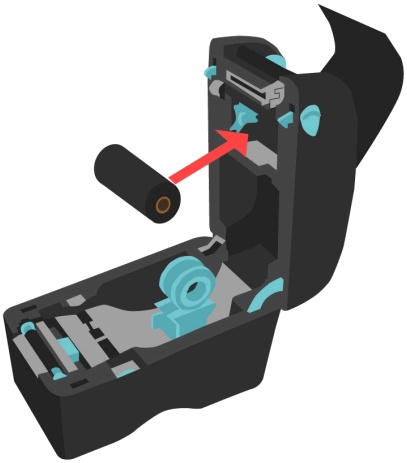


1. Open the top cover of your Printer

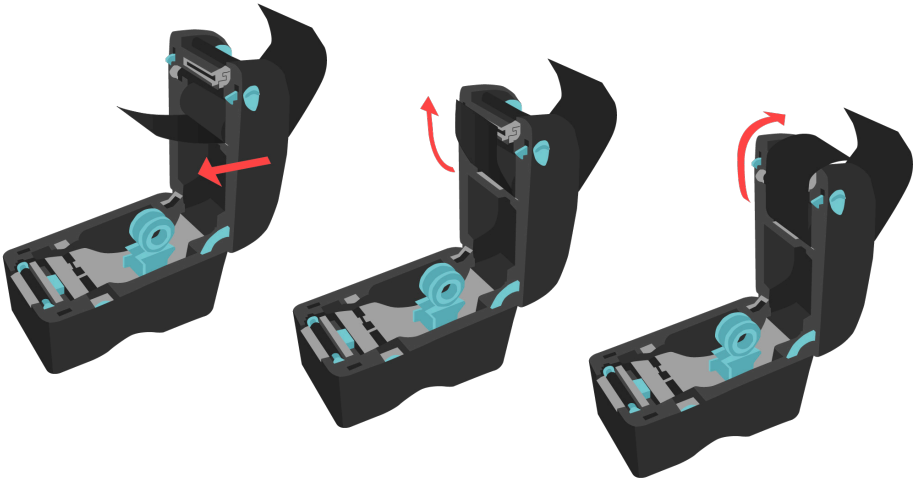


2. Insert an empty core between the gear and the axle - ensure the notches align as shown

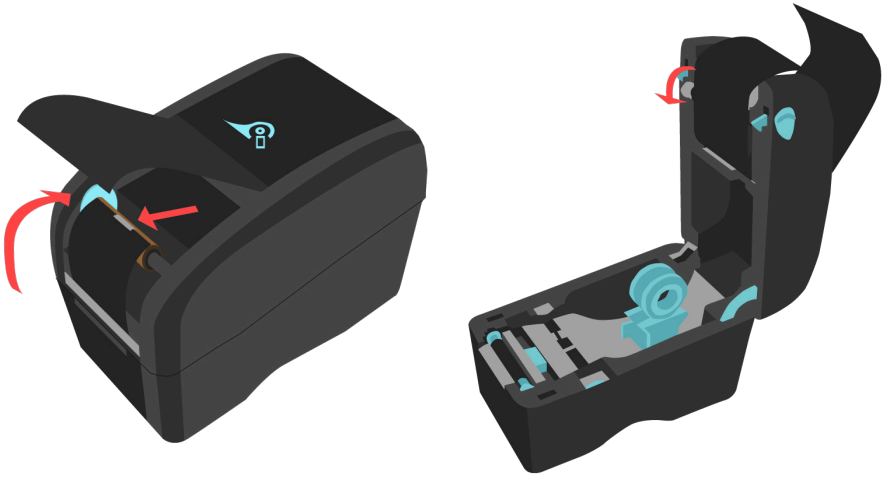
3. Open the printer and get the thermal transfer ribbon ready.
   Ensure the ribbon unwinds from underneath as shown in Step 5



4. Push the ribbon into the right axle (black), then align the notches on the left and insert the ribbon onto the gear (blue)



5. Gently pull the ribbon out, up and over the print head, around to the empty core.



6. Attach the ribbon to the empty roll using a piece of tape - try to attach the ribbon as straight as possible.

7. Use the ribbon rewind gear to tighten the ribbon against the print head, then close the printer.

LED and Button Functions

This printer has one button and one three-colour LED indicator. By indicating the LED with different colour and pressing the button, printer can feed labels, pause the printing job, select and calibrate the media sensor, print printer self-test report, reset printer to defaults (initialization). Please refer to the button operation below for different functions.

LED Colour	Description
Solid Green	This indicates that the power is on and the device is ready to use.
Flashing Green	This indicates that the system is downloading data from PC to memory or the printer is paused.
Amber	This indicates that the system is clearing data from printer.
Solid Red	This illuminates printer head open, cutter error.
Flashing Red	This indicates a printing error, such as head open, paper empty, paper jam or memory error etc.

Regular Button Function

Feed labels

When the printer is ready, press the button to feed one label to the beginning of next label.

Pause the printing job

When the printer is printing, press the button to pause a printing job. When the printer is paused, the LED will be green flashing. Press the button again to continue the printing job.

Default Printer Parameters

Parameter	Default setting	Parameter	Default setting
Speed	76.2 mm/sec (3 ips) (300DPI)	**Tear Mode**	On
Density	8	**Peel off Mode**	Off
Sensor Type	Gap sensor	**Cutter Mode**	Off
Label Dimensions	2” (50.8 mm) x 2” (50.8 mm)	**Serial Port Settings**	9600 bps, none parity, 8 data bits, 1 stop bit
Gap Setting	0.12” (3.0 mm)	**Code Page**	850
Print Direction	0	**Country Code**	001
Reference Point	0,0 (top left corner)	**Clear Flash Memory**	No
Offset	0	**IP Address**	DHCP

Power on Utilities

There are six power-on utilities to set up and test printer hardware.

1. Turn off the power switch.
2. Hold the Feed button then turn on the power switch.
3. The printer LED will cycle through the following options. Release the button when the LED reaches the relevant utility.

LED Colour (In Order)	Function
Amber Solid	None
Red 5 Flashes	Gap/Black Mark Sensor Calibration **Note: Please select Gap Sensor or Black Mark Sensor type (see below) prior to calibrating the sensor.** Release the Feed button to calibrate the Gap/Black Mark Sensor. The Gap/Black Mark Sensor should be calibrated when you first use your printer, when you change your label stock, and if you re-initialise your printer.
Amber 5 Flashes	Gap/Black Mark Sensor Calibration, Self Test and Enter Dump Mode **Note: Please select Gap Sensor or Black Mark Sensor type (see below) prior to calibrating the sensor.** While calibrating the gap/black mark sensor, printer will measure the label length, print the internal configuration (self-test) on label and then enter the dump mode. To calibrate gap or black mark sensor depends on the sensor setting in the last print job. The printer will calibrate the sensor and measure the label length and then print the internal settings. The printer will enter dump mode after printing printer configuration. In the dump mode, all characters will be printed in 2 columns as following. The left side characters are received from your system and right side data are the corresponding hexadecimal value of the characters. It allows users or engineers to verify and debug the program. Dump mode requires 2" wide paper width. To exit Dump Mode, turn off the printer and turn it back on again. Press the FEED button to return to the previous menu.
Green 5 Flashes	Printer Initialisation. Printer initialization is used to clear DRAM and restore printer settings to defaults. Printer initialization is activated by the following procedures. See table below for printer default values.
Green/Amber 5 Flashes	Set Black Mark Sensor as Media Sensor & calibrate the Black Mark Sensor.
Red/Amber 5 Flashes	Set Gap Sensor as Media Sensor & calibrate the Gap Sensor.
Green Solid	Skip AUTO.BAS

Troubleshooting

The following guide lists the most common problems that may be encountered when operating this bar code printer. If the printer still does not function after all suggested solutions have been invoked, please contact the Customer Service Department of your purchased reseller or distributor for assistance.

LED Status / Colour	Printer Status	Possible Cause	Troubleshooting Procedure
OFF	No response	No power	1. Turn on the power switch. 2. Check if the green LED is lit on power supply. If it is not lit on, power supply is broken. 3. Check both power connections from the power cord to the power supply and from the power supply to the printer power jack if they are connected securely.
Solid Green	ON	The printer is ready to use	No action necessary.
Flashing Green	Pause	The printer is paused	Press the FEED button to resume printing.
Flashing Red	Error	The out of labels or the printer setting is not correct	1. **Out of labels** - Load a roll of label and follow the instructions in loading the media then press the FEED button to resume for printing. 2. **Printer setting is not correct** - Initialise the printer. See previous page for instructions.

Print Problems

Problem	Possible Cause	Troubleshoot Procedure
Not Printing	Check if interface cable is connected to the interface connector.	Reconnect cable to interface.
	The serial port cable pin configuration is not pin to pin connected.	Please replace the cable with pin to pin connected.
	The serial port setting is not consistent between host and printer.	Please reset the serial port setting.
	The port specified in the Windows driver is not correct.	Select the correct printer port in the driver.
	The Ethernet IP, subnet mask, gateway is not configured properly.	Configure the IP, subnet mask and gateway.
No print on the labels	Labels loaded not correctly.	Reload the media, taking care to follow the instructions to ensure the media is loaded correctly.
Continuous feeding labels	Printer settings are incorrect	Initialise the printer to return the printer settings to their default values.
Material Jam	Gap/black mark sensor sensitivity is not set properly	Calibrate the gap/black mark sensor.
	Make sure label size is set properly.	Set label size exactly as installed paper in the labelling software or program.
	Labels may be stuck inside the printer mechanism near the sensor area.	Remove the stuck label
Poor Print Quality	Top cover is not closed properly.	Close the top cover completely and make sure the right side and left side levers are latched properly.
	Wrong power supply is connected	Check if 24V DC output is supplied by the power supply.
	Check if supply is loaded correctly.	Reload the supply.
	Check if dust or adhesives are accumulated on the print head.	Clean the print head.
	Check if print density is set properly.	Adjust the print density and print speed.
	Check print head test pattern if head element is damaged.	Run printer self-test and check the print head test pattern if there is dot missing in the pattern.

Maintenance

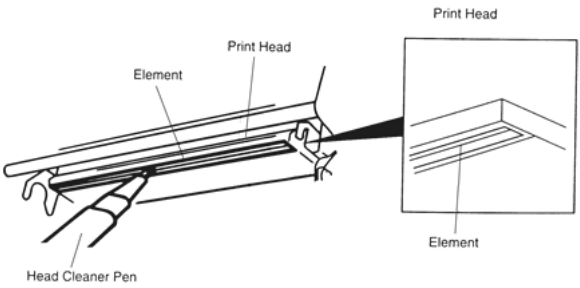
This section explains the methods to clean and maintain your printer.

Do not touch printer head by hand. If you touch it accidentally, please use 100% Ethanol to clean it. DO NOT use medical alcohol, which may damage the printer head.

Regularly clean the print head and supply sensors when changing media to keep optimal performance and extend printer life.

You will need the following items to clean the printer.

- Cotton swab (Head cleaner pen)
- Lint-free cloth
- Vacuum / Blower brush
- 100% ethanol

Printer Part	Method	Recommended Maintenance Interval
Print Head	1. Always turn off the printer before cleaning the print head. 2. Allow the print head to cool for a minimum of one minute. 3. Use a cotton swab and 100% ethanol to clean the print head surface.	Clean the print head when changing a new label roll
		
Platen Roller	1. Turn the power off. 2. Rotate the platen roller and wipe it thoroughly with 100% ethanol and a cotton swab, or lint-free cloth.	Clean the platen roller when changing a new label roll
Tear Bar/Peel Bar	Use the lint-free cloth with 100% ethanol to wipe it.	As needed
Sensor	Compressed air or vacuum	Monthly
Exterior	Wipe it with water-dampened cloth	As needed
Interior	Brush or vacuum	As needed

Wavecom Tags, Ribbons, & Accessories

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

Wavecom Printable 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 onto, ensuring easy and accurate scanning. This ensures that your barcode scanner can read the barcode.

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 Tags (500 Tags per Roll)	Part no: WCM-TAG-(W, R, BL, G, O, Y, BR) *eg. WCM-TAG-W*
UV Tags (400 Tags per Roll)	Part no: WCM-UV-TAG-(W, R, BL, G, O, Y, BR) *eg. WCM-UV-TAG-W*

Wavecom Printing Ribbon

In support of the Wavecom Tags we offer two grades of ribbons for printing electrical test tags. Our standard ribbon (WCM-Ribbon) is recommended for locations where the printed tag is not exposed to harsh outdoor conditions, such as offices and factories.

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. 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	Part no: WCM-RIBBON
UV Ribbon	Part no: WCM-UV-RIBBON

Laminated Overlays

In locations where a tag is exposed to harsh chemicals or extreme environments a printed tag may need additional protection to ensure it is readable when the appliance needs to be retested. In these instances, clear film overlays 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 down it stays stuck. This allows you to use your standard Wavecom tags in harsh environments where a standard tag would not normally be suitable.

To use our laminated overlays, the clear laminate is placed over the printed tag before removing it from the backing paper. The combined tag and overlay is then removed from the backing paper and applied to the appliance as normal.

Order information:

Clear Laminated Overlays (1000 per Roll)	**WCM-TAG-ALL-Clear-LAM**

Testing Accessories

1000mm Earth Braid	**WCM-TnT-ES-X**
3-Phase Adaptor (20A 5pin & 32A 5pin)	**WCM-3PH-MADP**
Probe Kit	**WCM-Probe-Kit**
Isolation Transformer for RCD testing	**WCM-ISOT**
IEC-C13 to Figure 8 Adapter	**WCM-8-ADPT**
IEC-C13 to Cloverleaf Adapter	**WCM-CLOVER-ADPT**
AS/NZS 3760 Log Book	WCM-LOG-BOOK
RCD Testing Log Book	**WCM-RCD-LOG-BOOK**
Tag Remover Device	**WCM-KUTTER**

Disclaimer – E&OE

All specifications may be subject to be change by Wavecom Instruments 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. It is strongly recommended that the Purchaser check Local, State and National Regulatory Standards that may be applicable in your region.

Tester Serial Number

WinPATS Android App
Discount Coupon
(Valid for one use only)

Purchase Information

Date of Purchase

Sold By

The TnP Prime is proudly designed and manufactured in Australia.

Wavecom Instruments Pty. Ltd.

257 Grange Road, Findon,
South Australia, Australia 5023

service@wavecom.com.au

(+61) 08 8243 3500
(+64) 0800 164 888

www.wavecom.com.au

www.winpats.app

SOUTH AUSTRALIA