IDEAL NETWORKS

NaviTEK NT (Plus & Pro)

CONTENTS

Introduction

NaviTEK NT is a network tester for troubleshooting and maintenance of active and passive copper and fiber networks. It performs a range of tests to determine as much information as possible about the network and port to which it is connected.

The principle of operation of NaviTEK NT is that it automatically configures itself to match the characteristics of the connected port, whether it is an un-terminated cable, a live copper switch port or a live fiber switch port, and runs tests appropriate to that configuration. These tests are designed to give information about the port, such as the switch MAC address and identification, as well as to confirm that the port has been properly configured and is capable of reaching a number of strategic targets in the local network and the Internet. The user may customize the tests if required.

Because the suite of tests runs and saves the results automatically, it is a simple task for the user to move from port to port, fully testing and saving the results from each one. All that is required is to plug the tester into the port socket and press the Autotest button.

Once all of the required network ports have been tested, the saved reports can be uploaded either using a USB memory key to a PC or via Wi-Fi to a Smartphone, for transfer to client databases or to colleagues for further analysis.

This manual describes NaviTEK NT Pro, and all references to "NaviTEK NT" shall be taken to mean NaviTEK NT Pro. NaviTEK NT Pro includes provision for testing optical fiber networks as well as copper-based Ethernet networks, and 802.1x security log-in.

NaviTEK NT Plus includes provision for testing copper-based Ethernet networks only and no 802.1x support.

The basic version of NaviTEK NT is described in a separate user manual.

⚠️ **Safety Information**

When using NaviTEK NT, always take basic safety precautions to reduce the risk of fire, electric shock and injury to persons. These include the following:

- When connecting to the port, special care must be taken as high voltages may be present and there may be a danger of electrocution.
- Avoid using the tester during an electrical storm - there is a remote risk of electric shock by lightning.
- Use only the mains electricity adaptor supplied with your NaviTEK NT.

**DO NOT CONNECT ANY TELECOMMUNICATIONS NETWORK
TO ANY OF THE TESTER'S PORTS**

Power and Maintenance

NaviTEK NT can be powered from:

- A rechargeable power module,
- Directly from power connected to the DC inlet built in to the power module.
- An optional non-rechargeable battery pack

Power Module Management

⚠️ The power module must be fully charged before you use it for the first time

A fully charged power module will support up to five hours of heavy, continuous use. For maximum life of the power module it is recommended to discharge it fully and then recharge it fully at least once a month. The power module is not user-serviceable. When it has reached the end of its life, please contact your local IDEAL representative for service.

Power Module Recharging
The power module can be fully recharged in three hours with the NaviTEK NT switched ON or OFF. To recharge the power module, connect the supplied power adaptor to the DC inlet. For convenience the power module may be removed from, or left attached to, the unit for charging. The Power LED next to the DC inlet glows green to show that the battery is being charged, and flashes green to show that it is not being charged. The power module charge state is indicated at FULL, 2/3, 1/3 and EMPTY by the graphical power meter shown in the display's information bar at the top of its LCD display.

Switching ON and OFF
To switch ON the tester, press the ON/OFF button. A splash screen showing the IDEAL logo and model identity is shown on the display. The home screen is then shown on the display and NaviTEK NT automatically searches for a network to test.

To switch OFF, press and hold the Power button for approximately 1/2 second, a shutdown message is displayed on the screen. The currently stored setup is saved. If the unit does not switch OFF within five seconds of pressing the Power button, please see *Master Reset*. Always switch OFF the unit before removing the power module.

Caution
        Do NOT remove the power module when the tester is switched on.

Power Saving

Power saving preferences are selected from SETUP / SYSTEM / PREF. Auto Off can be Disabled (unit remains ON indefinitely), or set to switch the unit OFF after three, 10 or 30 minutes of inactivity. The backlight can be set to Always On, or to dim to 50% brightness after three minutes of inactivity. Note that when mains power is connected the display is always on full brightness and the unit remains ON indefinitely.

Master Reset

In the unlikely event of a system lock-up which prevents the unit from being switched OFF, it may be necessary to perform a master reset. This will not delete any stored data.

1. Remove the power module to access a small aperture in the NaviTEK NT.

2. Insert a paper clip into the reset hole and press the internal reset switch.

3. Replace the power module.

Replaceable insert – RJ-45 socket

To replace a damaged or worn RJ-45 socket insert proceed as follows:

Equipment required: Kit, IDEAL part number 150058 – includes Tool x1 and Replacement Insert x10.
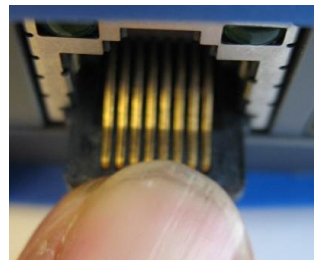
1. Switch the NaviTEK NT off.

2. Remove cables.

3. Carefully push the tool STRAIGHT into the socket. BE CAREFUL - DO NOT MOVE THE TOOL VERTICALLY!

4. Keeping the tool STRAIGHT firmly pull the insert out from the socket.

5. Using fingers replace a new insert STRAIGHT into the socket and secure in place by firmly pushing
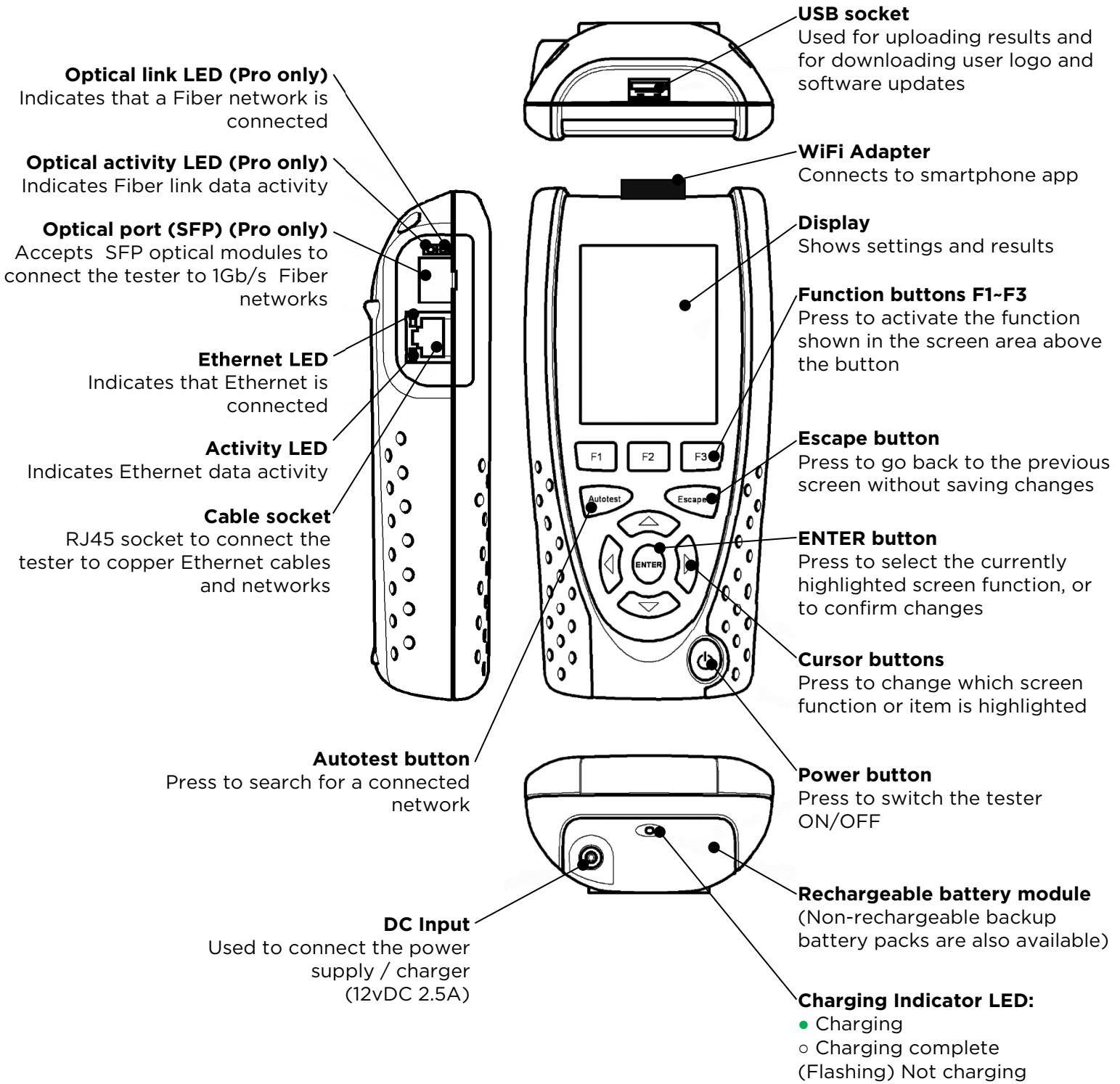

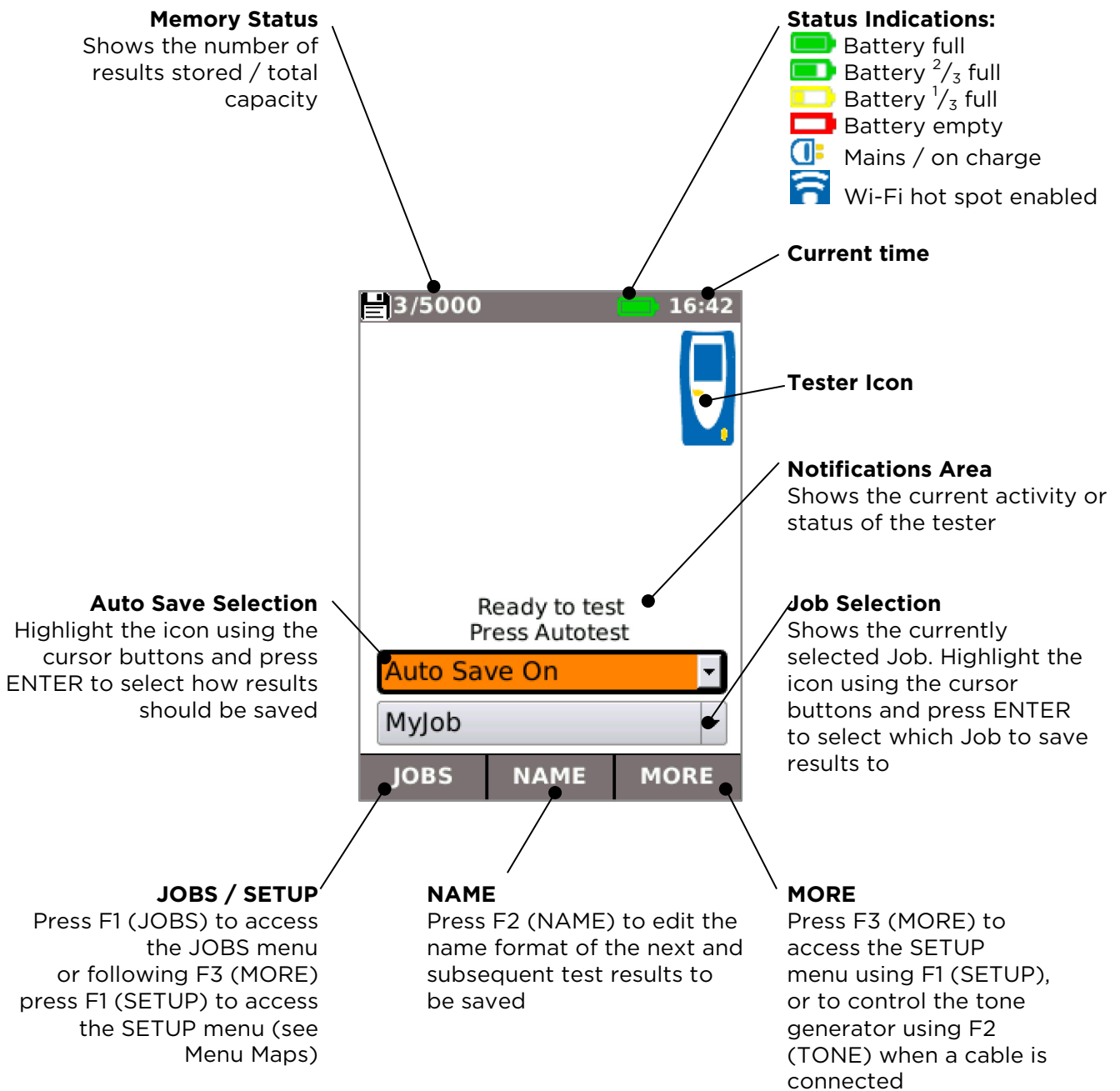
3.   4.   5.

Tester Layout

Optical link LED (Pro only)
Indicates that a Fiber network is connected

Optical activity LED (Pro only)
Indicates Fiber link data activity

Optical port (SFP) (Pro only)
Accepts SFP optical modules to connect the tester to 1Gb/s Fiber networks

Ethernet LED
Indicates that Ethernet is connected

Activity LED
Indicates Ethernet data activity

Cable socket
RJ45 socket to connect the tester to copper Ethernet cables and networks

Autotest button
Press to search for a connected network

DC Input
Used to connect the power supply / charger
(12vDC 2.5A)

USB socket
Used for uploading results and for downloading user logo and software updates

WiFi Adapter
Connects to smartphone app

Display
Shows settings and results

Function buttons F1~F3
Press to activate the function shown in the screen area above the button

Escape button
Press to go back to the previous screen without saving changes

ENTER button
Press to select the currently highlighted screen function, or to confirm changes

Cursor buttons
Press to change which screen function or item is highlighted

Power button
Press to switch the tester ON/OFF

Rechargeable battery module
(Non-rechargeable backup battery packs are also available)

Charging Indicator LED:
● Charging
○ Charging complete
(Flashing) Not charging

HOME Screen

- The HOME screen is displayed following start-up.
- To refresh the HOME screen and update the display of the current connection status, press Autotest.
- To display more information about an item on the HOME screen, use the Cursor buttons to move the orange highlight to the required item on the screen, then press ENTER.
- To return to the HOME screen from any other screen, press Escape repeatedly until the HOME screen appears.

Memory Status
Shows the number of results stored / total capacity

Status Indications:
Battery full
Battery $^2/_3$ full
Battery $^1/_3$ full
Battery empty
Mains / on charge
Wi-Fi hot spot enabled

Current time

```
3/5000              16:42



              Ready to test
              Press Autotest
              Auto Save On
              MyJob

         JOBS   NAME   MORE
```

Tester Icon

Notifications Area
Shows the current activity or status of the tester

Auto Save Selection
Highlight the icon using the cursor buttons and press ENTER to select how results should be saved

Job Selection
Shows the currently selected Job. Highlight the icon using the cursor buttons and press ENTER to select which Job to save results to

JOBS / SETUP
Press F1 (JOBS) to access the JOBS menu or following F3 (MORE) press F1 (SETUP) to access the SETUP menu (see Menu Maps)

NAME
Press F2 (NAME) to edit the name format of the next and subsequent test results to be saved

MORE
Press F3 (MORE) to access the SETUP menu using F1 (SETUP), or to control the tone generator using F2 (TONE) when a cable is connected

HOME Screen (with network cable connected)

When the tester is connected to an un-terminated cable greater than ~3m (10ft) long, Autotest displays a graphical illustration of the cable, using the colour scheme set in SETUP/TESTS/WIREMAP, showing the cable length and any faults by pair.

Overall Cable Length

Good Pair Indication

Short Circuit Pair Indication
Indicates a short circuit at the far end of the cable

Pair Lengths
Indicates the lengths of the individual cable pairs

Open Circuit Pair Indication
Indicates an open circuit at the near end of the cable

TONE
Press F3 (MORE), then F2 (TONE) to generate a tone on the cable for tracing using a compatible Tone Amplifier Probe (available separately)

HOME Screen (with unknown network connected)

If the tester is accidentally connected to any type of network carrying voltages, for example a telephone or ISDN network, the HOME screen displays an alarm and details of the voltages. No further testing is possible until the voltages have been removed.

Indication of network type

Indication of overall voltage

Indication of pin voltages:
1,2,3,4
5,6,7,8

HOME Screen (with network cable connected to Active Remote)

When the tester is connected to a cable that is terminated with an Active Remote, Autotest runs an advanced Wiremap test that can detect split pairs and faults by pin. The HOME screen displays a bar indicating the progress of the test. Select this bar and press ENTER to display the Wiremap result screen. When the test is complete the result is saved (depending on the Auto Save setting).

Overall Cable Length

Active Remote ID number

Result saved indication
Indicates the name of the last saved result

Test Status:
- Ready to test
- Test in progress
- Test Passed
- Test Failed

Wiremap test bar
Indicates progress and final test result (Green = PASS, Red = FAIL)
Highlight the bar using the cursor keys then press ENTER to display the Wiremap screen

Test Result

Active Remote pin numbers

Overall cable length

Pair Lengths
Indicates the lengths of the individual cable pairs

Tester pin numbers
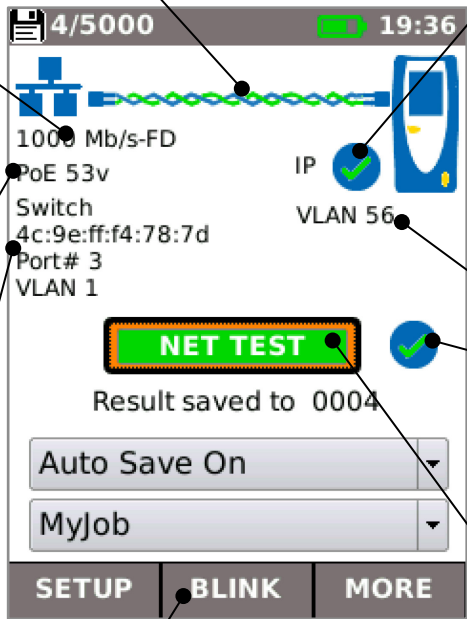
RUN
Press F1 (RUN) to re-run the Wiremap test without saving a result

FAULT
Press F2(FAULT) to display a list of faults found

SETUP
Press F3(SETUP) to set the Wiremap parameters according to the type of cable tested

HOME Screen (with live copper network connected)

When the tester is connected to a live copper-based network, Autotest detects the partner Ethernet device at the far end of the cable and automatically tests the network connection and displays information about it.

Copper network connection

Port rate and duplex
Select then press ENTER to display the Statistics, VLAN and Port screens

Power over Ethernet status
Select then press ENTER to display the PoE test screen

MAC and ID of switch port and port VLAN setting
Select then press ENTER to display details of the nearest switch, reported by CDP, LLDP or EDP (if supported by the switch)

BLINK
Press F3 (MORE) then F2 (BLINK) to flash the switch LED to assist in port identification

Tester IP Status:
- ⟳ IP address assignment in progress
- ✅ Dynamic (DHCP) IP address assigned
- ⊖ Static IP address assigned
- ❌ IP address assignment failed
Select then press ENTER to display the IP screen

Tester VLAN ID
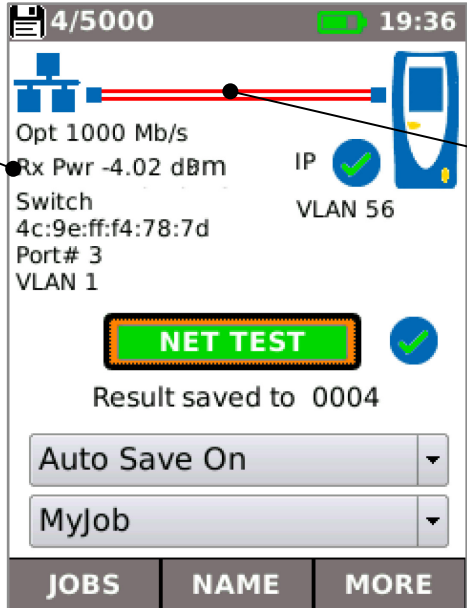
NET TEST Status:
- ⊖ Ready to test
- ⟳ Test in progress
- ✅ Test Passed
- ❌ Test Failed

NET TEST test bar
Indicates progress and final test result (Green = PASS, Red = FAIL)
Select then press ENTER to display the NET TEST screen in detail

Screen display:
4/5000   19:36
1000 Mb/s-FD
PoE 53v
Switch
4c:9e:ff:f4:78:7d
Port# 3
VLAN 1
IP ✅
VLAN 56
NET TEST ✅
Result saved to 0004
Auto Save On
MyJob
SETUP | BLINK | MORE

HOME Screen (with live fiber network connected - Pro only)

When the Pro tester is connected to a live 1Gb/s fiber network, Autotest automatically detects the partner Ethernet device at the far end of the fiber. (There is no need to select copper or fiber mode manually.) With the exception of power, the tests and information shown on the HOME screen are as for copper.

Received Optical Power
Select then press ENTER to display the Optical screen which gives details about the SFP fitted and the transmitted and received optical power

Fiber network connection

Screen display:
4/5000   19:36
Opt 1000 Mb/s
Rx Pwr -4.02 dBm
Switch
4c:9e:ff:f4:78:7d
Port# 3
VLAN 1
IP ✅
VLAN 56
NET TEST ✅
Result saved to 0004
Auto Save On
MyJob
JOBS | NAME | MORE

NET TEST and Netscan

When an Ethernet link is established, or Autotest is pressed while a link is up, a NET TEST is run automatically. This test consists of a series of Ping tests to multiple strategic targets in the network, a Trace Route to a set destination, and a scan of all the hosts in the local network. To display the NET TEST screen, select the test bar in the HOME screen and press ENTER.

Individual test result

DNS Ping results
The Secondary DNS is only tested if the Primary DNS Ping fails . Select and press ENTER to display full details

Gateway Ping result
The Gateway is the route from the local network to the Internet. Select and press ENTER to display full details

Internet Ping result
If this test passes, the tested port has access to the Internet. Select and press ENTER to display full details

Trace Route result
Select and press ENTER to display a list of all the hops passed en route to the Internet destination

Network map
Each tested network element is shown by an icon that is highlighted when the test result is selected

Overall Test Result:
Not tested
Test in progress
Test Passed
Test Failed

SETUP
Press F3 (SETUP) to access the NET TEST setup screen

Netscan result
Select and press ENTER to display the Netscan screen

Host list
A list of all the hosts detected in the local network

Netscan test result

Number of hosts found
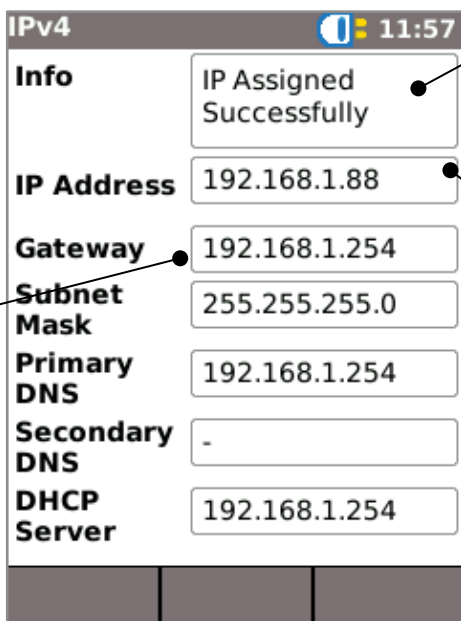
IPv6 / IPv4
Press F1 to display IPv6 hosts or IPv4 hosts

MAC / IP
Press F2 to display the MAC address or IP address for each host listed

IP details screen

In the HOME screen, select the IP icon then press ENTER to display the IP screen.

This screen shows detail of the IP status and address of the tester and the IP addresses of the network elements that are tested by the NET TEST.

Info
Indicates whether an IP address has been assigned to the tester, by DHCP or statically

IP Address
Tester IP address

Network IP addresses
IP addresses of the various network elements

Statistics, Port and VLAN scan

When an Ethernet link is established, select the Port Rate / Duplex field in the HOME screen and press ENTER to display detailed information about the connection and the network.

Traffic graph
Shows the percentage of the port rate utilised over time. Connect the tester to a mirror port or test port on the switch to monitor traffic in a particular network span
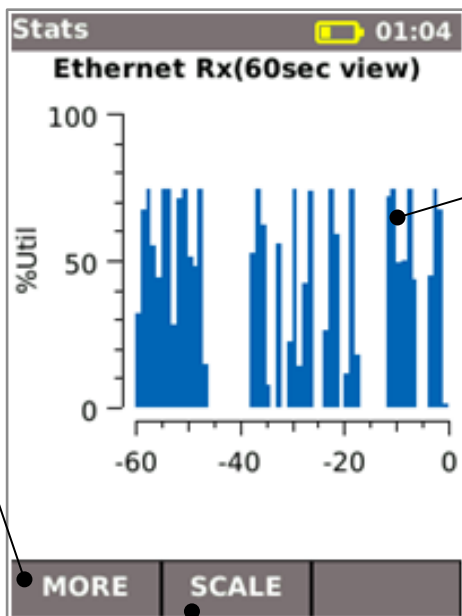
MORE
Press F1 (MORE) to display the next screen

SCALE
Press F2 (SCALE) to adjust the time scale

Port data
Shows information about the connection and the partner port

Bandwidth
Shows the peak traffic bandwidth

VLANs
Lists the VLANs with ID detected in the network traffic

MORE
Press F1 (MORE) to display the next screen

VLAN ID
The current VLAN setting of the tester

MORE
Press F1 (MORE) to display the next screen

Change VLAN
Select a VLAN from the list of network VLANs detected. Press ENTER to set the chosen VLAN as the current tester VLAN setting, then press F2 (APPLY)

Power over Ethernet

When an Ethernet link is established, Autotest automatically tests the port for the presence of PoE and measures the available power by applying a minimum load. Select the PoE field in the HOME screen and press ENTER to display the PoE screen.

Test result

Test type
Select PoE or PoE+ in the test setup screen

Test Status

Pair
PoE may be presented on pairs 12-36, 45-78 or both

Test Data
Shows the voltage, current under load and power supplied by the port

RUN
Press F1 (RUN) to re-run the PoE test without saving a result

SETUP
Press F3 (SETUP) to access the PoE test setup screen

Port Discovery information

When an Ethernet link is established, Autotest automatically scans the partner port for Link Layer Discovery Protocol (LLDP), Cisco Discovery Protocol (CDP) and Extreme Discovery Protocol (EDP) messages when the switch is able to send discovery messages. These messages may contain various details about the switch and the port connected, depending on how they are configured. Select the switch / port details field in the HOME screen and press ENTER to display the port discovery details screen.

In non-standard network configurations it is sometimes possible for Discovery Protocol messages to arrive from devices other than the directly connected switch.

In this case, the tester attempts to resolve which are the messages from the correct device.

If this is not possible, the tester reports that multiple devices have been discovered.

Menu Maps
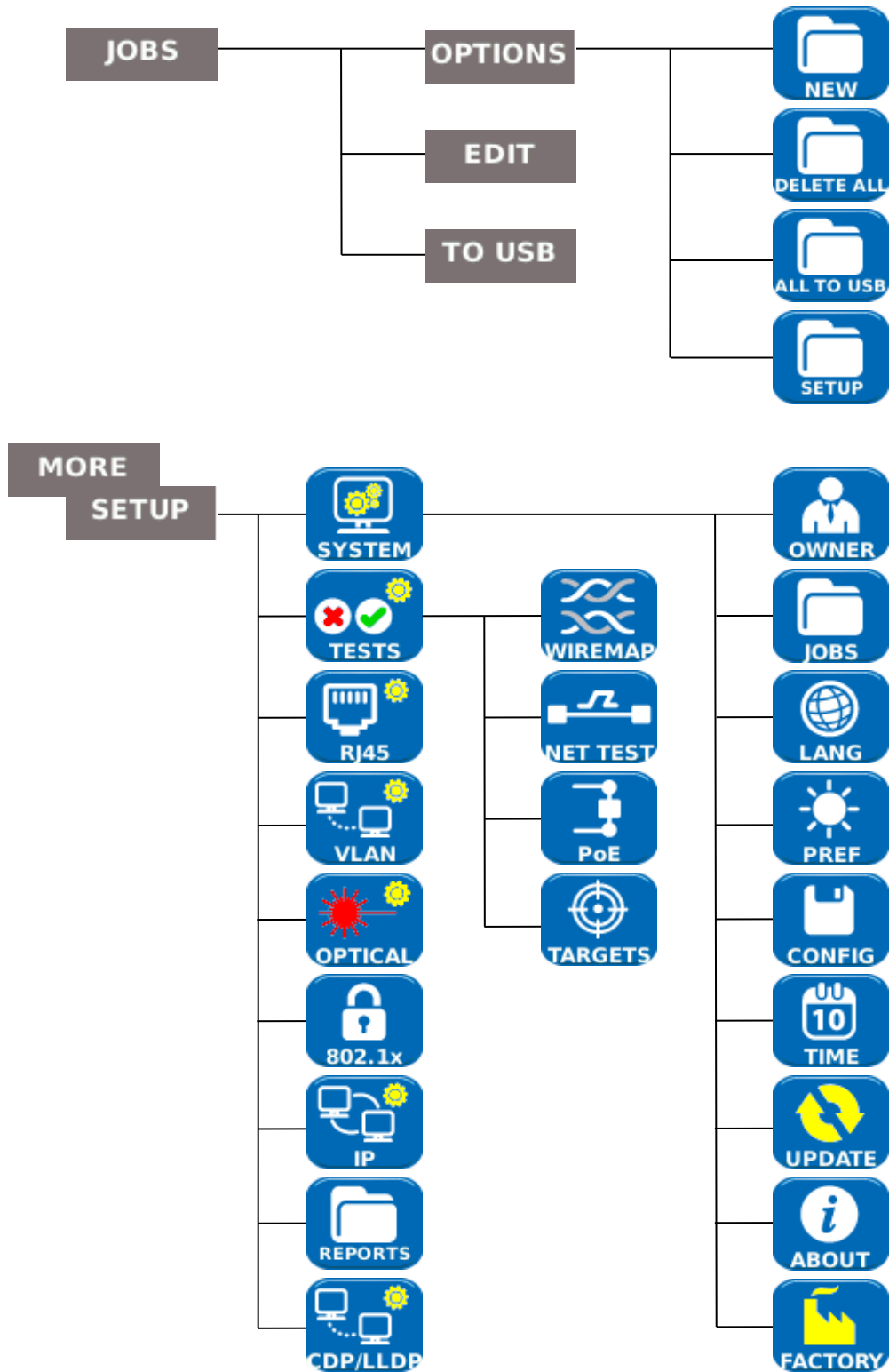
Setup

Select SYSTEM to access the system setup:

Enter details of the test engineer and company information and logo (see Reports) for inclusion in the reports

Access the JOBS menu

Set the menu language

Set preferences for auto off, backlight, length units, date and time format

Export or import setup information

Set the date and time for inclusion in the reports

Update the software. All settings and results will be lost. Save data to USB or smartphone first.

View details about the system information of the tester

Reset to factory defaults. All settings and results will be lost. Save data to USB or smartphone first.

Select TESTS to access the tests setup:

Set the details of the Wiremap test:
- Cable Type
    - 2/4 Pairs
    - 568A/568B colour scheme
- Shield Type
    - UTP - Shield must not be connected for test to pass
    - STP - Shield must be connected for test to pass
    - UTP / STP - Test can pass if shield is connected or disconnected
- Custom NVP. To achieve accurate length measurements, set the NVP to match the cable type

Set the details of the NET TEST:
- Primary / Secondary DNS and Gateway
    - Disabled - The target is not tested as part of the NET TEST
    - Auto - IP address of target is assigned by DHCP
    - Manual - IP address of target is assigned manually or picked from the Targets list by selecting
- Target
    - Disabled - The Internet target is not tested as part of the NET TEST
    - IP Address - Enter a numerical IP address for the Internet target or pick from the Targets list by selecting
    - URL - Enter a URL for the Internet target or pick from the Targets list by selecting
- Ping Setup
    - Count - Number of Ping attempts
    - Pause - Interval between Ping attempts

- o Length - Number of bytes in the Ping packet
- TRoute Setup
  - o TRoute - Include or omit the Trace Route test from the NET TEST
  - o Max Hops - The number of hops that can be detected before the test fails to reach the destination target
  - o Timeout - the timeout before the test fails to reach the destination target
  - o Name Lookup - When ticked, the name of each hop is included in the test result. Note that selecting this option causes the test time to be longer
- IPv4 Netscan setup
  - o Netscan - Disable Netscan from inclusion in the NET TEST or select Local or Custom network
  - o IP Addr - Set Custom network sub-net
  - o Scan range - Select a small scan range (Class C) for fast test time or a larger scan range (Class B) for a wider search
  - o Subnet Mask - Select the subnet required

Set the details of the Power over Ethernet test:
- Type
  - o PoE - Applies a load to draw current up to the maximum allowed for PoE
  - o PoE+ - Applies a load to draw current up to the maximum allowed for PoE+
  - o None - PoE test disabled
- Min PoE power (W)
  - o Enter the minimum power in watts for the PoE test to pass
- Min PoE+ power (W)
  - o Enter the minimum power in watts for the PoE+ test to pass

User Set up a list of targets to be used in the NET TEST, using IPv4 or IPv6 addresses or URLs

Select RJ45 to set the parameters for the RJ45 copper port including Auto Negotiation, Speed, Mode, Min Rx frame size, MDI and MAC address.

Select VLAN to set the VLAN ID and Priority of the tester if required

Select OPTICAL to view information about the SFP fitted. The SFP types that follow are supported. The use of other SFP types is possible but correct operation is not guaranteed.

Type	Manufacturer	Part No	Speed	Fiber type	Wavelength	Connector Type
SX	Avago	AFBR-5705PZ	1Gb/s	Multimode	850nm	LC Duplex
SX	Apac	LM28-C3S-TI-N-DD	1Gb/s	Multimode	850nm	LC Duplex
LX	Avago	AFCT-5705PZ	1Gb/s	Singlemode	1310nm	LC Duplex
LX	Apac	LS38-C3S-TC-N-DD	1Gb/s	Singlemode	1310nm	LC Duplex
ZX	Apac	LS48-C3U-TC-N-DD	1Gb/s	Singlemode	1550nm	LC Duplex

Select 802.1x to set the tester to use 802.1x security protocol if required

Select IP to set up the IP behaviour of the tester including IP type, address, Netmask, Gateway and DNS if required.

Select REPORTS to set the parameters to be used for the reports:
- Format
  - PDF & CSV - the reports contain both PDF and CSV files
  - PDF - the reports contain only a PDF file
  - CSV - the reports contain only a CSV file
- Size
  - Summary - the reports contain only a summary table listing the overall result of each test
  - Brief - the reports contain a summary table and a single page result for each test
  - Full - the reports contain a summary table and full details of each test
- Results
  - All- every test made is included in the reports
  - Pass - only tests that have passed are included in the reports
  - Fail - only tests that have failed are included in the reports
- SSID - The identity of the Wi-Fi hot spot set up by the tester for report transfer to smartphones (factory set)
- Wi-Fi Password - If required, edit the default password (ideal001606) used by the IDEAL Anyware^{TM} app to access the tester.
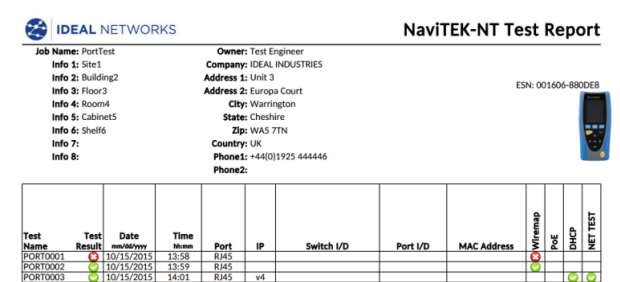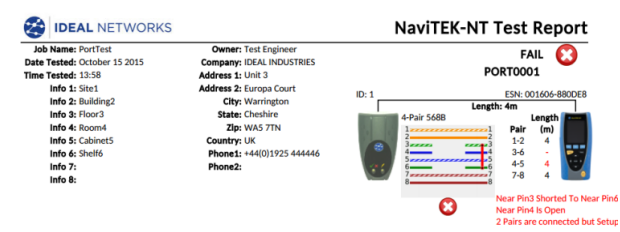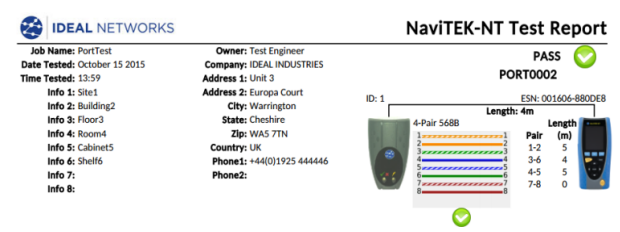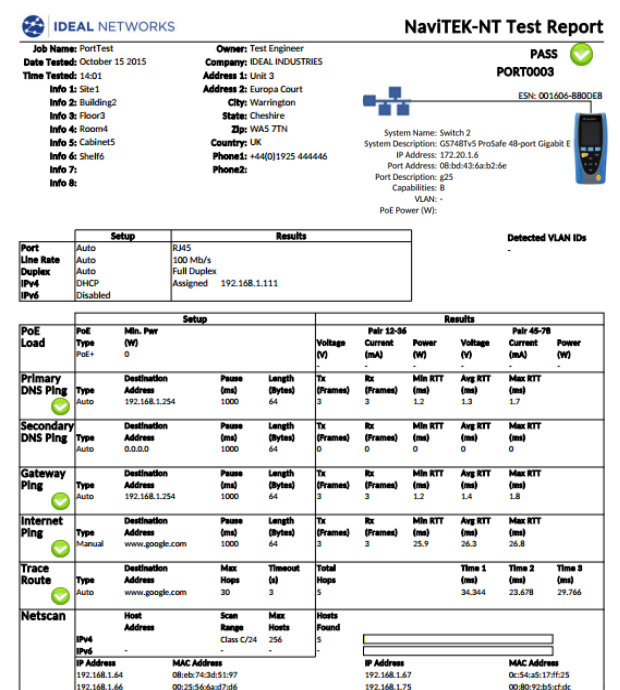
Select CDP,LLDP,EDP to enable the various types of Discovery Prococol supported by the tester

Reports

Reports are very important because they are documented proof that the ports have been tested. To select the required report style press F3 (MORE) then F1 (SETUP) in the HOME screen, then select REPORTS. Alternatively, the setup screen can be accessed by JOBS / OPTIONS / SETUP.

The example 4-page Brief report below shows the results of tests on 3 ports:

Page 1

This is the summary of all the tests.

(To include your own logo in the PDF reports, select SETUP / SYSTEM / OWNER / F1 (LOGO). Insert a USB memory key containing an image named logo.png with maximum size of 250 x 160 pixels.)

Page 2

This is the Brief report for PORT0001.

It shows that this port failed the Wiremap test.

(Note the Job and Owner details)

Page 3

This is the Brief report for PORT0002.

It shows that this port passed the Wiremap test.

(Note the tester serial number)

Page 4

This is the Brief report for PORT0003.

It shows that this port passed the NET TEST

Details of the setup and results of the port connection and the Discovery information from the port are shown

Details of the ping tests are shown

Details of the Trace Route test are shown

A list of all the hosts found by the Netscan test is shown, with a bar indicating how much of the available address space is used

Generating and Uploading Reports

1. Reports can be generated and exported to a USB key.

To generate a report to USB:

- Insert a USB key into the NaviTEK NT USB port.

- From the home screen press F1 (JOBS). The display will show the Job List screen.

- Scroll down to select the required Job

- To generate a report for a single result, press ENTER to display the Results list, select the required result, press ENTER, then TO USB (F3).

- To generate a report for a single Job select the required Job then press TO USB (F3).

- To generate a report for all Jobs, press OPTIONS (F2) then select ALL TO USB.

    The dialogue 'Result saved to USB' appears. Reports are now saved on the USB key in the selected format(s).

2. Reports can be generated and downloaded to a smartphone (only when no tests are running).

To enable Wi-Fi for results transfer:

- Insert Wi-Fi dongle into the NaviTEK NT USB port.

- From the home screen press F1 (JOBS).

- The display will show the Job List screen. Wi-Fi connectivity is indicated by the top bar on the NaviTEK NT screen changing from grey to blue:

Now the NaviTEK NT is ready for results transfer wirelessly.

Note

To minimise battery consumption the Wi-Fi connectivity is only enabled for 5 minutes following power up and whenever the user is in the JOB screen.

To download results to an Android™ smartphone:

- Download and open IDEAL AnyWARE™ App from the Google Play™ Store.
- Search and connect to NaviTEK NT. The SSID will be of the form "IDEALN-XXXXXX". This can be viewed on the NaviTEK NT under the SETUP / REPORTS screen.
- You will be prompted for the NaviTEK NT Wi-Fi password if it has been changed from the default value.
- Once connected the App will display a list of JOBs on the NaviTEK NT. These can be selected and downloaded to the smartphone.
- Once results are on the smartphone they can then be transferred using email or other share mechanisms.

To download results to an iPhone®:

- Download and open IDEAL AnyWARE™ App from iTunes®.
- Search and connect to NaviTEK NT. The SSID will be of the form "IDEALN-XXXXXX". This can be viewed on the NaviTEK NT under the SETUP / REPORTS screen.
- You will be prompted for the NaviTEK NT Wi-Fi password if it has been changed from the default value.
- Once connected the App will display a list of JOBs on the NaviTEK NT. These can be selected and downloaded to the smartphone.
- Once results are on the iPhone® they can then be transferred using email or other share mechanisms.

Apple is a trademark of Apple Inc., registered in the U.S. and other countries.

Android is a trademark of Google Inc.

Specifications - NaviTEK NT Pro

Connectors

Test Ports
RJ45
Used for - Cable Test
- Ethernet Test
Connector type - Lifejack with user-replaceable contacts

Optical
Used for - Ethernet Test
Connector type - SFP socket

System Ports
USB
Used for   - Software Update
- Results transfer
- 802.1x certificate transfer
- Import/export of config
- WiFi Adapter
Class - Host
Connector type - A
USB type – 1.1

Power
Used for – Battery charging
- Mains powering via adaptor
Connector type – 2.5mm pin power jack
Polarity – Centre pin positive
Voltage – 12v
Current – 2 A
Location – Bottom of optional power module
(Not present in standard alkaline battery pack)

Controls

ON/OFF
Push button
Used for – Power ON/OFF
Function Keys
F1 to F3
Used for – Screen-defined functions
Navigation Keys
Cursor and ENTER
Used for – User interface navigation
Escape
Used for – Return to previous menu
Autotest
Used for – Launch of automatic test function
Reset
Push button
Used for – Escape from exceptional lockup condition

Displays

Screen
LCD
Used for – Display of setup functions and results
Location – Front
Size – 2.8 inch diagonal
Type – QVGA Colour
Pixels – 240 x 320

LEDs
Charger LED
Used for – Indication of charging status
Colour – Green
Location – Bottom of standard power module
(Not present in optional alkaline battery pack)
RJ45 Link LED
Use– ON indicates link UP
Colour - Green
RJ45 Activity LED
Use – Flashing indicates link activity
Colour - Green
Optical Link LED
Use – ON indicates Optical link UP
Colour - Green
Optical Activity LED
Use – Flashing indicates Optical link activity
Colour – Green

Ports

_RJ45_
Setup
Auto Negotiation – Enabled
- Disabled
Speed – 10Mb/s
- 100Mb/s
- 1Gbps
Mode – Full Duplex
- Half Duplex
MDI - AUTO
- MDI
- MDIX

Min Rx Size – 19:99 bytes
MAC – Factory set
VLAN – Enabled / Disabled
- VLAN ID – 0 to 4094
- VLAN Priority – 0 to 7

Ports (continued)

RJ45

Setup

802.1x	- Enabled / Disabled	
	- EAP Method	
		EAP-MD5
		EAP-MSCHAPV2
		EAP-GTC
	EAP-TLS	
	EAP-PEAP/MD5	
		EAP-PEAP/MSCHAPV2
		EAP-PEAP/GTC
		EAP-PEAP/TLS
		EAP-TTLS/MD5
		EAP-TTLS/MSCHAPV2
		EAP-TTL/GTC
		EAP-TTLS/TLS

- Username
- Password
- Certificate
- Import password
- Root/CA certificate

Results

Link pulse polarity – Normal or Inverted
Link pulse height – Normal or Low

Tests

Ethernet Mode	- Ping4
	- Ping6
	- Trace Route4
	- Trace Route6
	- Hub Blink
	- Netscan
	- Loopback
	- Auto (Ping DNS/Gateway/Internet, Trace Route, Netscan)
Cable Mode	- Wiremap
	- Tone Generator
	- Auto (Wiremap)

Service Detection

Detected Services	- PoE (802.3af/at. Not Cisco pre-standard)
	- ISDN S
	- PBX
	- Unknown

Optical

Supported SFPs

The following SFP types are supported. Use of other types of SFP is possible but correct operation is not guaranteed.

SFP Type SX

Manufacturer Part # - Avago AFBR-5705Z / Apac LM28-C3S-TI-N-DD
Speed – 1Gbps
Fibre Type – Multimode
Wavelength – 850nm
Connector Type - LC Duplex

Ports (continued)

Optical

SFP Type LX

Manufacturer Part # - Avago AFCT-5705Z
Speed – 1Gbps
Fibre Type – Singlemode
Wavelength – 1310nm
Connector Type - LC Duplex

SFP Type ZX

Manufacturer Part # - Apac LS48-C3U-TC-N-DD
Speed – 1Gbps
Fibre Type – Singlemode
Wavelength – 1550nm
Connector Type - LC Duplex

Setup

Speed - 1Gb/s
Min Rx Size – 19:99
MAC – Factory set
VLAN – Enabled / Disabled
  - VLAN ID – 0 to 4094
  - VLAN Priority – 0 to 7
802.1x - Enabled / Disabled
  - EAP Method
    EAP-MD5
    EAP-MSCHAPV2
    EAP-GTC
    EAP-TLS
    EAP-PEAP/MD5
      EAP-PEAP/MSCHAPV2
      EAP-PEAP/GTC
      EAP-PEAP/TLS
      EAP-TTLS/MD5
      EAP-TTLS/MSCHAPV2
      EAP-TTL/GTC
      EAP-TTLS/TLS
  - Username
  - Password
  - Certificate
  - Import password
  - Root/CA certificate

Tests

Optical - Tx Power dBm (using a specified SFP)
  - Rx Power dBm (using a specified SFP)

Ethernet Mode - Ping4
  - Trace Route4
  - Hub Blink
  - Netscan
  - NET TEST (Ping, Trace Route, Netscan)

Cable Tests

Wiremap
Setup

Cable Type   – 2 Pair
                          - 4 Pair 568A
                          - 4 Pair 568B

Colour Scheme   -

NVP – Fixed 72%
         - Custom 59% - 89%

Termination Type
None - Open
Active Remote - #1 - #12

Tests (No Termination)
Faults   – Open circuit by pair
               - Short circuit by pin
Length of pair   – Metres / Feet (Set in System Setup)
               - Range 3-100m / 10-330ft

Tests (Active Remote Termination)
I/D – Remote #
Indications on Remote   – Voltage Warning (>±10volts on any pins)
                             - Pass/Fail
Faults   – Open circuit by pin
               - Short circuit by pin
               - Crossed pairs
               - Split pairs
               - Bridged shorts
               - Remote shorts
Length of pair   – Metres / Feet (Set in System Setup)
               - Range 3-100m / 10-330ft

Tone Generator
Setup

No of Tones – 3
Wire I/D   – Tone applied to one of 8 pins relative to the other 7
               - Tone applied across one of 4 pairs

Test

Audible tone detected using compatible tone probe

Ethernet Tests

IPv4
　　Setup
　　　　Addressing - DHCP
　　　　　　　　- Static
　　　　Numerical - Address
　　　　　　　　- Netmask
　　　　　　　　- Gateway
　　　　　　　　- DNS1
　　　　　　　　- DNS2
IPv6
　　Setup
　　　　IPv6 Enable- Enabled
　　　　　　　　- Disabled
　　　　Addressing - Stateful (DHCPv6)
　　　　　　　　- Stateless
　　　　　　　　- Static
　　　　Numerical - 128bit HEX IP address
　　　　Network Prefix - 64 bit
　　　　　　　　- 128 bit

Pingv4
　　Setup
　　　　Target　　　　　- Numerical address
　　　　　　　　　　　- URL (Store up to 10)
　　　　Count　　　　　- 1 to 999999
　　　　Pause　　　　　- 1 to 5 Sec
　　　　Length　　　　　- 8 to 1000 bytes.
　　Results
　　　　Info　　　　　- READY
　　　　　　　　　　　- IN PROGRESS
　　　　　　　　　　　- PASSED
　　　　　　　　　　　- NO RESPONSE
　　　　　　　　　　　- UNKNOWN HOST
　　　Tx Count - 1 to 999999
　　　Rx Count - 1 to 999999
　　　Delay(ms) - Minimum
　　　　　　　- Average
　　　　　　　- Maximum

Trace Routev4
　　Setup
　　　　Target　　　　　- Numerical address
　　　　　　　　　　　- URL
　　　Max Hops - 2 to 100
　　　Timeout - 2 to 30 sec
　　　Type　　　　　- ICMP
　　　　　　　　　　　- UDP
　　Results
　　　　Info　　　　　- READY
　　　　　　　　　　　- IN PROGRESS
　　　　　　　　　　　- PASSED
　　　　　　　　　　　- NO RESPONSE
　　　　　　　　　　　- UNKNOWN HOST
　　　Hop　　　　　- Numerical address
　　　Delay(ms) - t1
　　　　　　　- t2
　　　　　　　- t3

Ethernet Tests (continued)

Netscan

Setup

Netscan - Local
- Custom
- Disabled
IP Address - IPv4 address
Scan Range   - 0 (class C /24)
- 1 (class C /20)
- 2 (class B /16)

Results

- List of IPv4 hosts
- List of IPv6 hosts

Blink

Test

Sequence - Off/10/Off/100/Off/1000 Mb/s (RJ-45)
- Off/On (Optical)

Statistics

_IP_

Results

IPv4

- info: listening, assigned, DHCP failed
- DHCP or Static
- IPv4 Address
- IPv4 Netmask
- IPv4 Gateway
- IPv4 DNS1
- IPv4 DNS2

IPv6

- Enabled or Disabled
- info: listening, assigned, DHCP failed
- Stateful (DHCPv6) or Stateless or Static
- IPv6 Address
- IPv6 Network Prefix, 64 bit or 128 bit
- IPv6 Link Address
- IPv6 DNS

Statistics (continued)

            Discovery   - LLDP/CDP/EDP
- Protocol
- MAC address
- Hostname / address
- Port Name
- Max 10 hosts

VLAN
            Detection   - 1 Level VLAN ID
- Rx

LINK
            Results
                  PORT   - PoE Voltage 0 – 60V
- PoE Pairs 12/36 or 45/78
- Speed, Duplex
- MDI / MDIX
- Signal Level
- Polarity
                  PARTNER   *– 10M-HD*
- 10M-FD
- 100M-HD
- 100M-FD
- 1000M-HD
- 1000M-FD

Statistics (continued)

    LINK
        Results
            ERRORS   *- Collisions*
                              - FCS Errors
                              - Undersize
                              - Oversize
                              - Jabbers
                              - Bad Length

    Traffic Utilisation
        Bargraph
            Direction   *- Rx*
            Format   *- Percentage of Link rate*
                              - Peak value
            Time Interval- 1 min
                              - 10 min
                              - 60 min

Storage

    Configurations
        Internal storage
            Number of configurations – 2 (Current & Factory settings)
        Export/Import
            Port   – USB
            Format   - xml
    Certificates
        802.1x
            Max number - 10
    Results
        Internal storage
            Max Number of Jobs (Projects) - 50
            Max Number of result sets per Job – 5000 depending on tests
            performed
            Max total number of result sets - Up to 5000 depending on tests
            performed.
        Export
            Port – USB
                - Wi-Fi
            Format – PDF
                  - CSV (summary only)

System

    Setup
        Owner
            Details   – Name
                             - Company
                             - Address
                             - Phone

Setup
Preferences

Language	– English
	- French
	- German
	- Spanish
	- Italian
	- Portuguese
	- Chinese
Auto off	- Disabled
	- 3 mins
	- 10 mins
	- 30 mins
Backlight	- Always On
	- Dims to 50% after 3 mins
Length Units	- Meters
	- Feet
Date Format	- dd/mm/yy
	- mm/dd/yy
Time Format	- 12 hour
	- 24 hour

Software update

Upgrade	- Via USB

General

Date/Time
Internal Clock

Used for – Timestamping results
Autonomy – Up to 1 day with battery removed

Power
Battery

Supported Types	- Standard power module (4 x AA NiMH cells)
	- Alkaline battery pack with 4 AA cells
Autonomy	- Up to 5 hours (power module only)
Recharge time	– 3 hours (Power module only)
Battery level Indication	- Full
	- 2/3
	- 1/3
	- Empty

Physical
Dimensions

Length	- 175mm
Width	- 80mm
Depth	- 40mm

Weight

Unit	- 0.22kg
Batteries	– 0.18kg

General (continued)

Environmental

Temperature

Operating – 0°C to 40°C

Storage – -20°C to 70°C

Relative Humidity

Min 5%

Max 90% non-condensing

Approvals

EMC

EN 55022:2006 / A1:2007

EN55024:1998 / A1:2001 / A2:2003

Safety

IEC 60950-1:2005+A1:2009/EN 60950-1:2006+A1:2010

Glossary, abbreviations and acronyms

Term	Description
10M-HD	10 Mb/s Half Duplex
10M-FD	10 Mb/s Full Duplex
100M-HD	100 Mb/s Half Duplex
100M-FD	100 Mb/s Full Duplex
1000M-HD	1000 Mb/s Half Duplex
1000M-FD	1000 Mb/s Full Duplex
Broadcast	Communication from single sender to all connected receivers
CSV	Comma Separated Value file format
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name System
IP	Internet Protocol
IPv4	Internet Protocol version 4
Static	IP address assigned manually by the operator
Dynamic	IP address assigned automatically using DHCP
IPv6	Internet Protocol version 6
Stateful	IP address assigned automatically using DHCPv6
Stateless	IP address assigned automatically using ICMPv6
Static	IP address assigned manually by the operator
LAN	Local Area Network
MAC	Media Access Control
MDI	Medium Dependent Interface
MDIX	Medium Dependent Interface Crossover
NVP	Nominal Velocity of Propagation of signals in a cable, expressed as a percentage of the speed of light in a vacuum. Can be determined using cable manufacturers' data or experimentally using a known cable length.
PDF	Portable Document Format
PoE	Power over Ethernet
PoE+	Power over Ethernet which exceeds the IEEE 802.3af limit of 12.95 watts
RJ45	Registered Jack standard for a modular connector using 8 conductors
Rx	Receive
SFP	Small Form-factor Pluggable
SSID	Service Set Identifier
STP	Shielded Twisted Pair
Tx	Transmit
URL	Uniform Resource Locator
USB	Universal Serial Bus
UTP	Unshielded Twisted Pair
Wi-Fi	Wireless Network