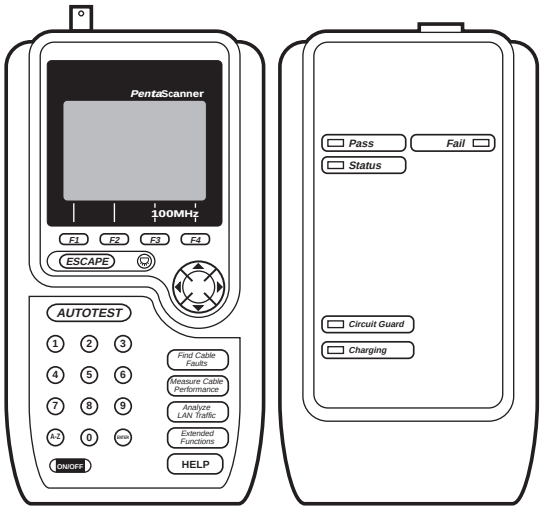
PentaScanner+, Super Injector+, PentaScanner 2-Way+, 2-Way Injector+, and PentaScanner 350 with 2-Way Injector+



The easy way to install, manage, and troubleshoot 100-MHz LANs.

PentaScanner 350

With the BLACK BOX® PentaScanner™ 350, you'll be able to test your Category 5 cabling today and in the future—even if cable requirements change. And the menu-driven system makes it easy to troubleshoot and manage your Category 5 and ISO Class D cabling system.

Performance grading measures and rates the quality of high-performance links by analysing the headroom available for high-speed applications. You can differentiate between marginally passing links to those with up to 70 times better signal-to-noise ratios. So you'll know if cable links need to be rewired or if they're able to support new high-speed applications.

Our 21-second Autotest stores up to 500 Autotest results. And up to 20 user-definable programs determine if cable meets cabling or network-type requirements for 10BASE-T, 4- or 16-Mbps Token Ring, ARCNET, AppleTalk, T1, ISDN—even Fast Ethernet, ATM 51, and ATM 155 Mbps.

Other features of our PentaScanner 350 include:

- Cable Trace and Office Locator to determine a cable's path and destination;
- An extensive cabling library to store and maintain Autotests;
- Flash ROM for quick field updates;
- A rechargeable, replaceable battery for up to eight hours of daily use.

If you own a PentaScanner 2-Way+ and want to upgrade to the PentaScanner 350, all you'll need is the Penta-Scanner Upgrade Kit.

PentaScanner2-Way+

When you're installing Category 5 and ISO Class D LANs, you need a portable, easy-to-use tool that will quickly and accurately certify your work. The PentaScanner 2-Way+ is the solution for installing, managing, and troubleshooting 100-MHz LANs. And now it's TSB-67 compliant for guaranteed accuracy.

With the PentaScanner 2-Way+ you can test both ends of the cable from the same side. No need for swapping devices.

The PentaScanner's Autotest performs a full range of tests. It compares the results of EIA 568B, ISO 11801 and network standards and gives you a pass/fail indication for the network category of your choice. The PentaScanner's one-step Autotest tests all pair combinations to 100 MHz and measures Near-End Crosstalk (NEXT), Attenuation, Resistance, Impedance, Length, and Capacitance.

You get graphic displays of the wire map so you can see the actual pin-outs of your cabling. And on-line help gets you answers fast. You can also program your own test limits and customise your Autotests.

PentaScanner+

The PentaScanner+ differs from the 2-Way+ and 350 in two ways: it does not offer performance grading and it tests only one side of the cable at a time when used with the Super Injector+.

But, if you already own the PentaScanner+ (TS640A-R2), you can upgrade with the 2-Way Injector+ (TS661A-R2) to test both ends of a cable. Then use the free update for your version of the firmware.

Specifications

Attenuation — Frequency range: 0.512 to 100 MHz; Dynamic range: -50 to 0 dB; Accuracy: ±1.5 dB; Resolution: 0.1 dB; Sweep mode: Swept 1 to 100 MHz using 1-MHz steps or fixed points (1.0, 2.0, 4.0, 5.0, 8.0, 10, 16, 20, 25, 31.25, 62.5, and 100 MHz)

Capacitance — 0 to 100,000 pF

Baud Rate — 300 to 38,400 baud

Handshaking — RTS/CTS, X-ON/X-OFF, None

Distance — Twisted pair: 0 to 0 to 915 m; Coax: 0 to 1220 m

Impedance — Range: 40 to 200 ohms; Accuracy: ±5 ohms; Resolution: 2 ohms

Loop Resistance — 0 to 10,000 ohms

NEXT — 0.7 to 100-MHz frequency range

Protocol — Parity: NONE; 8 data bits, 1 stop bit

Test Storage — Up to 500 complete Autotest results can be stored for later retrieval

Noise — Impulse noise: Detects the occurrence of narrow impulse type events exceeding an adjustable threshold of ±0.262, 0.524, 1.0, 2.0, or 2.5 volts. Instantly displays up to 200 impulse noise events per second. Graphically logs and displays impulse events for up to 25 hours. Termination impedance of 200 ohms; Peak-to-peak noise: Measures the peak-to-peak voltage of steady state noise signals. Range is 0 to 3000 mVpp into 100 ohms. Bandwidth is 3 dB from 40 KHz to 30 MHz

Memory — Flash memory allows electronic upgrading in remote locations

Connectors — Measurement: BNC, shielded RJ-45 jack; Serial: (1) DB9 female

Networks Supported — ARCNET, Apple® LocalTalk®, ATM 51 Mbps, ATM 155 Mbps, Cat 3 Link, Cat 4 Link, Cat 5 Link, CDDI, ISDN, ISO Class C, ISO Class D, Multimedia 802.9, TIA TSB-67, Token Ring 4 MHz, Token Ring 16 MHz, TPPMD, TPDDI, T1/E1, 10BASE-T, 100BASE-X, 100VG-AnyLAN; user-defined network types are also supported

User Controls — Elastomeric keypad with tactile feedback, numeric input, dedicated functions, four function keys, cursor pad

Indicators — PentaScanners: 128 x 64 graphic LCD with backlight, 2.25"L x 1.5"W (5.7 x 3.8 cm) display area; 2-Way Injector+: LEDs (Status, Pass, Fail, Battery Charging, Circuit Guard, and audible tones for test status and high-voltage warning)

Operating Temperature — 0 to 50°C

Storage Temperature — -10 to +55° C

Relative Operating Humidity Tolerance — 10 to 90%, noncondensing

Relative Storage Humidity Tolerance — 5 to 95%, noncondensing

Power — PentaScanner: 9.6 volts @1200mA-hr rechargeable battery pack; Battery life: 8 hours' daily operation, 6 hours in continuous Autotest

Size — PentaScanner: 10.2 x 20.3 x 5.5 cm; Injector: 7.6 x 16.5 x 3.3cm

Weight — PentaScanner: 0.8 kg; Injector: 0.3 kg

The complete package

What's included with the PentaScanner+ Kit

- (1) PentaScanner+
- (1) Super Injector+
- (2) Patch Cables
- (2) Mod 8 Adapters
- (1) Serial Cable
- (1) User's Manual
- (1) Power supply
- (1) Rechargeable battery
- (1) Case

The complete package

What's included with the PentaScanner 350 and the PentaScanner 2-Way+

- (1) PentaScanner 350 or (1) PentaScanner 2-Way+; each has a NiCad battery
- (1) 2-Way Injector+ with (1) NiCad battery
- (2) Adapter cables
- (2) Mod 8 adapters
- (1) Serial cable
- (2) AC adapters
- (1) User's manual
- (1) Case

The complete package

What's included with the PentaScanner 350 Upgrade Kit

- (2) PentaScanner 350 patch cables; 3-foot long mini Centronics® male to RJ-45 male
- (1) 4.3 Release notes
- (1) 350 Upgrade Release notes
- (1) 4.3 Software
- (1) 4.3 Utility software

Additional equipment you may need:

- PentaScanner+ Kit (TS640A-R2)
- Adapter Kits: Twinax (TS383) and Unterminated Cable (TS331)
- RJ-45 F-F Couplers: Shielded (TS645) and Unshielded (TS646)
- PentaScanner+ Battery Pack (TS644)

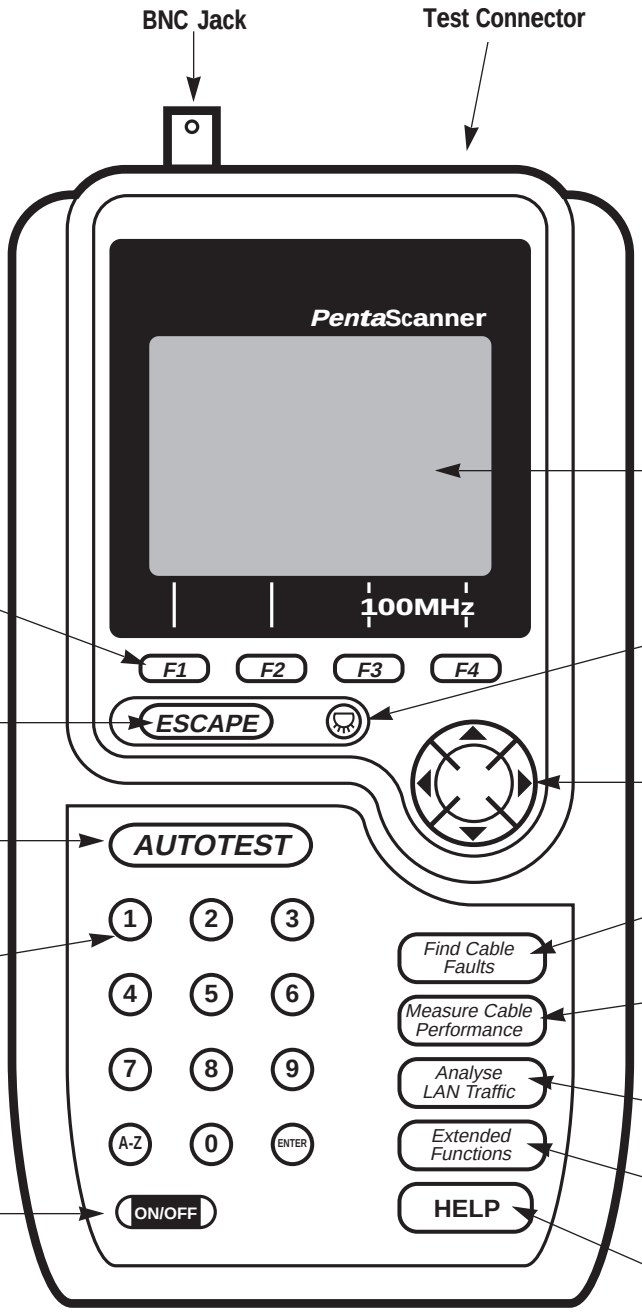
For these and other components...

Call our expert Technical Support Staff for all your Testing needs. They'll help you find the best equipment for your application.

Ordering Information

This information will help you place your order quickly.

PRODUCT NAME	ORDER CODE
PentaScanner+ Kit	TS640A-UK-R2
PentaScanner 350 with 2-Way Injector+	TS680A-UK



Graphical Display

Function Keys
There are 4 basic function keys. Each function depends on which screen is currently displayed.

Escape
Exits the current display or function.

Autotest
Allows user-definable, all-day testing (up to 500 tests).

Alphanumeric Keys
Pressing these keys allows alpha and numeric characters to be entered into the display. In some displays, numeric keys are used for direct-dial menu selections.

On/Off
Powers the Scanner on or off.

Backlight
Press and hold to display version and serial numbers; press and release to backlight the display.

Arrow Keys
Allow navigation within displays.

Find Cable Faults
Locates opens, shorts, split pairs, and miswires.

Measure Cable Performance
Runs individual tests.

Analyse LAN Traffic
Monitors network traffic.

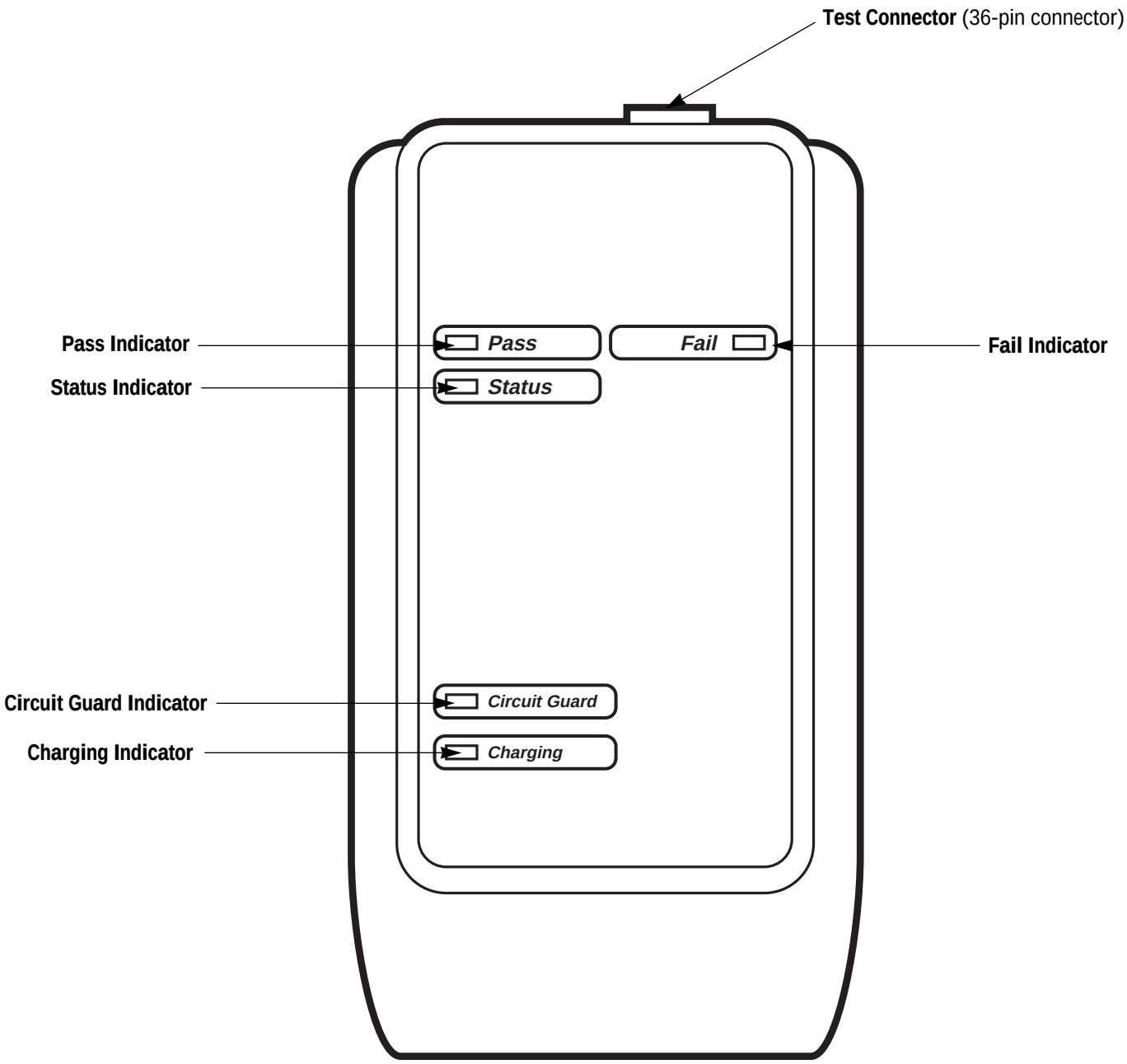
Extended Functions
Customises user preferences, Autotests, and calibration.

Help
Context-sensitive help provides additional information on the current screen when pressed during any function.

DB9 Serial Connector
Allows attachment of a serial communications cable for printing or for updating the Scanner's software.

AC Plug
Permits an AC adapter to be used as a power source and for recharging the battery.

This page gives you a closer look at the 2-Way Injector+. The two charts on the next page describe the Injector's LEDs and when to use the Injector.



2-Way Injector+ LEDs

Indicator	State	Description
Pass	Steady light	Overall Autotest result is PASS.
Fail	Steady light	Overall Autotest result is FAIL.
Status	Steady light	The Injector is powered ON and waiting for communication with the Scanner.
Status	Off	The Injector is powered OFF (or charging battery if AC adapter is attached).
Status	Rapid blink	Executing command or measurement in progress.
Status	Slow blink	Battery is low.
Charging	Steady light	The Injector is inactive, the AC adapter is present, and the battery pack is being charged at the maximum rate.
Charging	Off	The Injector is inactive and the battery or AC adapter is not present; or the Injector is active.
Charging	Blinking (once every 10 seconds)	The Injector is inactive and the AC adapter is present; the battery pack is fully charged and the Injector is in trickle charge mode.
Circuit Guard, Pass, Fail, plus steady tone	Blinking	Overvoltage condition.

Some measurements require the use of the Injector at the far end of the cable. For other measurements, the Injector can be connected, but its use is optional. The Scanner automatically detects the presence of and configures the Injector for the measurement to be performed. The table below outlines when to use the Injector.

Measurement	Injector Required?	Description
Attenuation	Yes	The Injector generates the frequencies and the Scanner measures the signal to determine the signal loss.
Autotest	Yes	The Injector is required for Attenuation, NEXT measurements, Resistance, and Wire Map during Autotest.
Capacitance	No	If connected, the Injector provides an “OPEN” for the duration of the measurement.
Impedance	No	If connected, the Injector provides an “OPEN” for the duration of the measurement.
Length	No	If connected, the Injector provides an “OPEN” for the duration of the measurement.
NEXT—Scanner End	Yes	The Injector provides a 100-ohm termination while the Scanner measures NEXT.
NEXT—Injector End	Yes	The Scanner provides a 100-ohm termination for the duration of the measurement.
Loop Resistance	Yes	If connected, the Injector is used to “SHORT” the wire pair under test and the Scanner measures Loop Resistance. If the Injector is not connected, the Scanner will display “OVR” (Over Range).
Wire Map (Find Cable Faults)	Yes	The Scanner communicates with the Injector across the link under test to determine the wire connection from the Scanner end to the Injector end.
Noise	No	The Injector is not required to measure impulse noise or peak-to-peak noise.

Note that the Injector is not used when testing coaxial cable.