



IDEAL NETWORKS

PoE PRO



PoE PRO

User Guide

158824.01 (04/2019)

IDEAL INDUSTRIES Networks Ltd.
Stokenchurch HouseF
Oxford Road
Stokenchurch
High Wycombe
Buckinghamshire
HP14 3SX
United Kingdom

© **IDEAL INDUSTRIES Networks Ltd**

The information contained in this document is the property of IDEAL INDUSTRIES Networks Ltd. and is supplied without liability for errors and omissions. No part of this document may be reproduced or used except as authorized by contract or other written permission from IDEAL INDUSTRIES Networks Ltd. The copyright and all restrictions on reproduction and use apply to all media in which this information may be placed. IDEAL INDUSTRIES Networks Ltd. pursues a policy of continual product improvement and reserves the right to alter without notice the specification, design, price or conditions of supply of any product or service. All rights reserved.

English



WARNING!

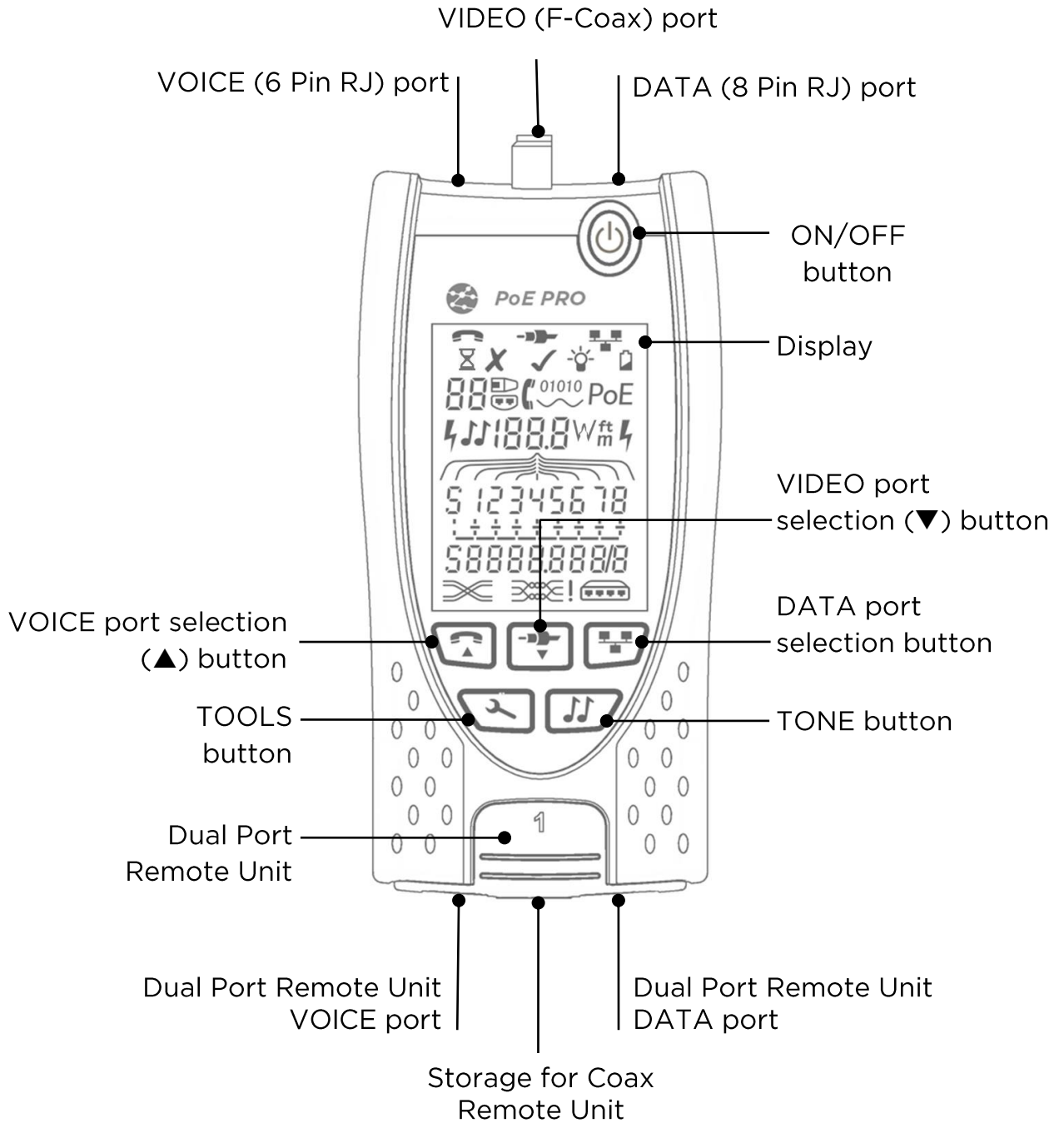
Do not attach to AC power or telecoms cables carrying >60volts. The PoE Pro Tester may be damaged and cause a safety hazard to the user.



CAUTION!

Improperly crimped, damaged or un-crimped plugs can damage the ports on the PoE PRO Tester. Inspect plugs for proper termination and crimping before inserting into the tester. Contacts should always be recessed into the plastic grooves of the plug. Only use 8-Position plugs with the 8-Pin (DATA) port and 6-Position plugs with the 6-Pin (VOICE) port.

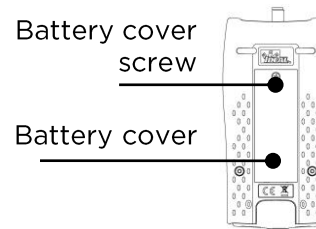
En



POWER

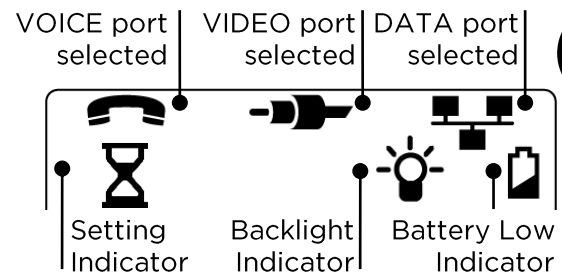
To remove / insert the battery:

- Remove the battery cover screw and the battery cover from the back of the tester.
- Remove / insert the battery, taking care to connect correctly and not to trap the cable.
- Replace the battery cover and screw.



To switch the tester ON:

- Press the ON/OFF button.
 - The display shows the selected port (VOICE, VIDEO or DATA).
 - If the Battery Low Indicator is shown, the battery should be replaced with a new 9V battery.



En

To control the backlight:

- Press the TOOLS button repeatedly until the Backlight Indicator flashes and the backlight timeout (seconds) is shown.
- Press ▼ or ▲ to adjust the backlight timeout.
 - If zero, the display shows ✘. The backlight will not come on.
 - If non-zero, the display shows ✔. The backlight will come on whenever any button is pressed and after the timeout will first be dimmed and then go off to maximise battery life.
- Press the TOOLS button repeatedly until the Setting Indicator disappears.

To switch the tester OFF:

- Press the ON/OFF button.

TERMINATIONS



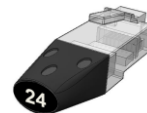
Dual Port Remote Unit
1 (Standard)



Coax Remote Unit
1 (Standard)
1 to 12 (Optional -
158053)



RJ45 Remote Unit
1 to 12 (Optional -
158050)



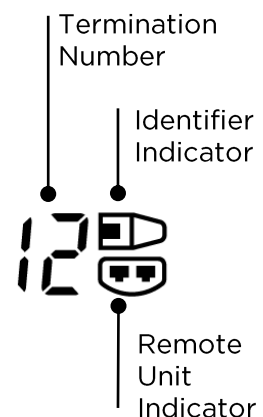
RJ45 Identifier
1 to 24 (Optional -
158051)

The Dual Port Remote Unit can be stored in the bottom end of the Tester, with the jacks either inside for protection or outside for testing patch cables without removing it from the Tester, and provides internal storage for the Coax Remote Unit.


CONNECTIONS

To connect to a cable and to confirm correct connection:

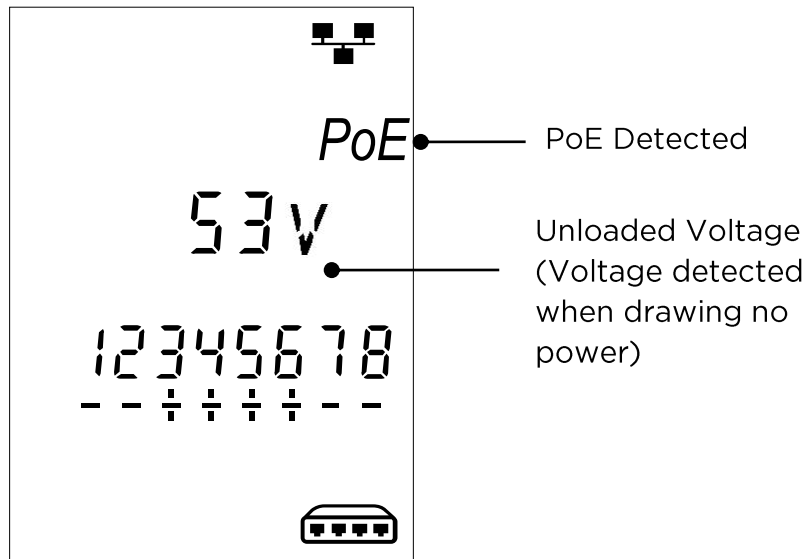
- Use the correct port (VOICE, VIDEO or DATA) according to the cable connector type. (Use VOICE for RJ11, RJ12, RJ14 or RJ25 cables, VIDEO for F 75 Ω Coax or DATA for RJ45).
- Press the corresponding port button (VOICE, VIDEO or DATA).
 - The display shows the selected port.
- Connect one end of the cable to the selected port on the tester and the other end to a Remote Unit for cable identification and testing or to an Identifier for cable identification only.
 - The display shows the type of termination (Remote Unit or Identifier) and its Number to assist identification when a number of different terminations are in use.



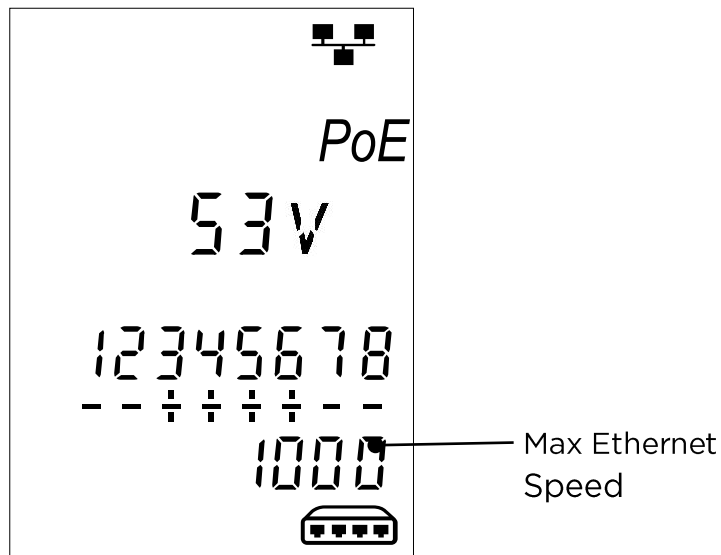
To test PoE:

- Turn on the PoE PRO tester
- Connect the RJ45 port of the tester to the PoE port or cable to be tested.
- Press the Network button 

En

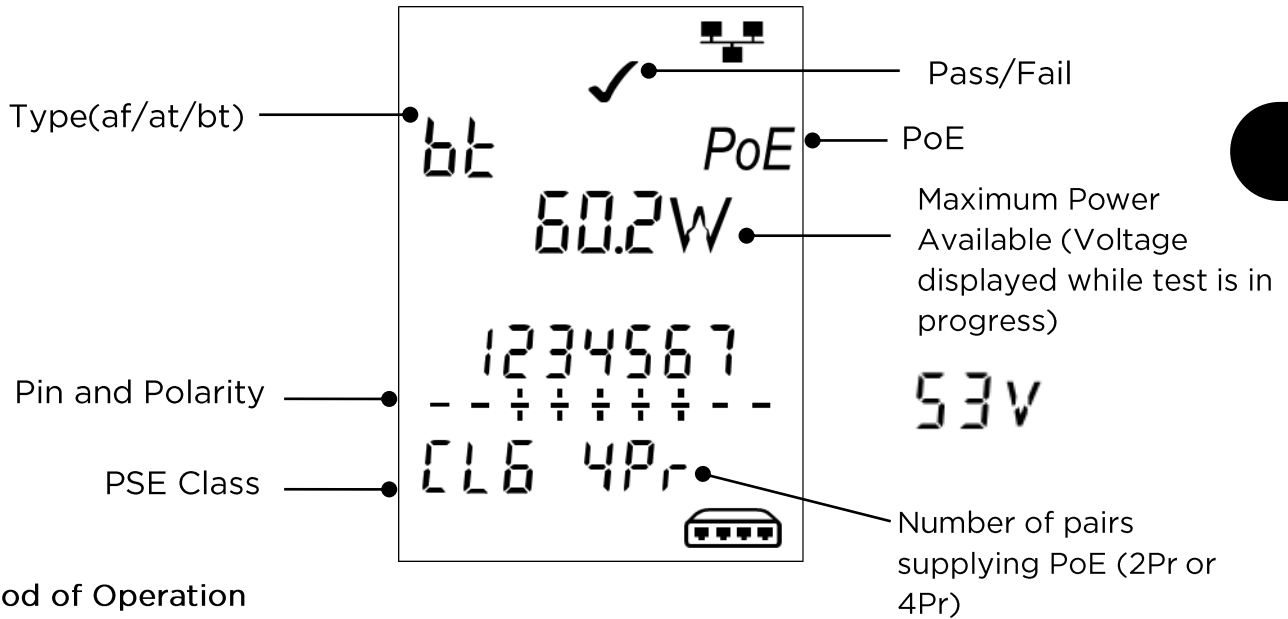


Above screen is displayed when PoE is detected without an ethernet signal (PoE Injector with input from a switch). It will be shown for two seconds



If ethernet is detected, the maximum detected link speed will be shown with the no-load PoE voltage for two seconds.

After PoE detection is confirmed the PoE PRO will begin the test to classify the PSE. This process will take up to 10 seconds.



En

Method of Operation

The PoE PRO operates by detecting "pulses" from a PoE power supply Power Source Equipment (PSE). These pulses advertise the PSE's Class which determines the maximum amount of power it can supply.

The PoE PRO configures itself to the same Class as the PSE, simulating a powered device (PD), and demands the maximum power that should be available for the advertised Class.

The initial test measures the voltage supplied by the PSE with no load. This voltage should be 48V or greater when connected directly to the PSE.

When testing for maximum available power, the PoE PRO will apply a variable load to the cable while measuring the voltage and current delivered by the PSE.

The voltage and current measurements are used to calculate power (watts).

Understanding the Results

Volts

Voltage displayed on the results screen is the "loaded" voltage. It is the voltage measured when the PoE PRO applies a load to the cable, simulating a PoE device (PD).

This voltage may be lower than the unloaded voltage displayed when initially connected.

Watts

Maximum available power is displayed in watts (W). This is the most power the PoE PRO is able to demand from the PoE supply during the test.

Type (af / at / bt /-)

Displays the IEEE 802.3 standard to which the connected PSE is compatible.

af = IEEE 802.3af

af = IEEE 802.3af

bt = IEEE 802.3bt

Class (0 – 8 or “-“)

Displays the advertised Class of the Power Sourcing Equipment (PSE). The class determines the maximum amount of power the PSE can supply.

The PoE PRO will adjust its internal load and attempt to pull the maximum power the advertised Class supports. The chart below cross-references Class to supported power.

A “-” will be displayed when the PSE does not support 802.3af/at/bt negotiation. This is typical of passive mid-span injectors that apply voltage to the line regardless of the connected network device.

Pass / Fail Indication

The test will pass (tick mark) if the power available during the PoE load test is equal to, or greater than the MINIMUM power for PSE Class.

Example: If class 4 is detected the test will PASS if 25.5 W or more watts is delivered. If less than 25.5 W watts is delivered the test will FAIL.

Class	Minimum Supported Power Level at the Output of the PSE
0	15.4 W
1	3.8 W
2	6.5 W
3	13.0 W
4	25.5 W
5	40.0 W
6	51.0 W
7	62.0 W
8	71.0 W

Pairs (2Pr / 4Pr)

Displays whether the PSE is supplying power on 2 or 4 pairs of the connected cable.

2Pr is shown for 802.3af, 802.3at or some non-standard compliant PoE injectors.

4Pr is shown for 802.3bt or some non-standard compliant “HPoE” or “Ultra PoE” injectors.

Pins (1 - 8)

Displays the pins of the RJ45 connector used for PoE and the polarity of each pin.

A “+” below the pin number indicates a positive DC voltage is present.

A “-” below the pin number indicates a negative DC voltage is present.

If a pin is not used the area below the number will be blank.

Mid-span vs End-point

Generally, an “end-point” PSE like a PoE enabled Ethernet switch will use pins 1,2,3 and 6 for PoE.

A “mid-span” injector will generally use pins 4,5,7 and 8 for PoE.

The pin display can be used to determine whether the PSE is a switch or injector, although the IEEE 802.3 standards do not call for this specific pin use.

Extended Power Test:

This feature will attempt to draw up to 90 Watts of power from the PSE and can be activated once a PoE measurement has been made. Activate the Extended Power Test by holding the network button for 3 seconds until a beep is heard. Starting with the power detected during the automatic PoE test, the PoE PRO will increment power demand in approximately 5-watt steps until the either the PSE powers down or 90 watts is reached. Each power step will be displayed for one-half second.

Certain PSEs may be capable of delivering power that exceeds the level defined by the PSE's Class in the IEEE 802.3 PoE standards. The Extended Power Test sets the PoE PRO to a mode that will not communicate a max power limit to the PSE. In this mode the PoE PRO will increase the power load until the PSE shuts down the port or until 90 watts is delivered. Carefully watch the display and note the highest watt value displayed. If the tester resets, the last number displayed is the maximum power the PSE can deliver.

Certain high-power PoE devices do not comply with IEEE 802.3af/at/bt negotiation protocols. The PoE PRO can be used to test in a no negotiation mode where it will operate as simple PoE load and attempt to draw 90 watts regardless of the PSE Class.

CABLE TESTING

To test a cable:

- Connect the cable to the tester and to a suitable Remote Unit as described above.
 - Cable testing runs continuously (except when in TOOLS mode or if voltage is detected). There is no need to start or stop the cable test.

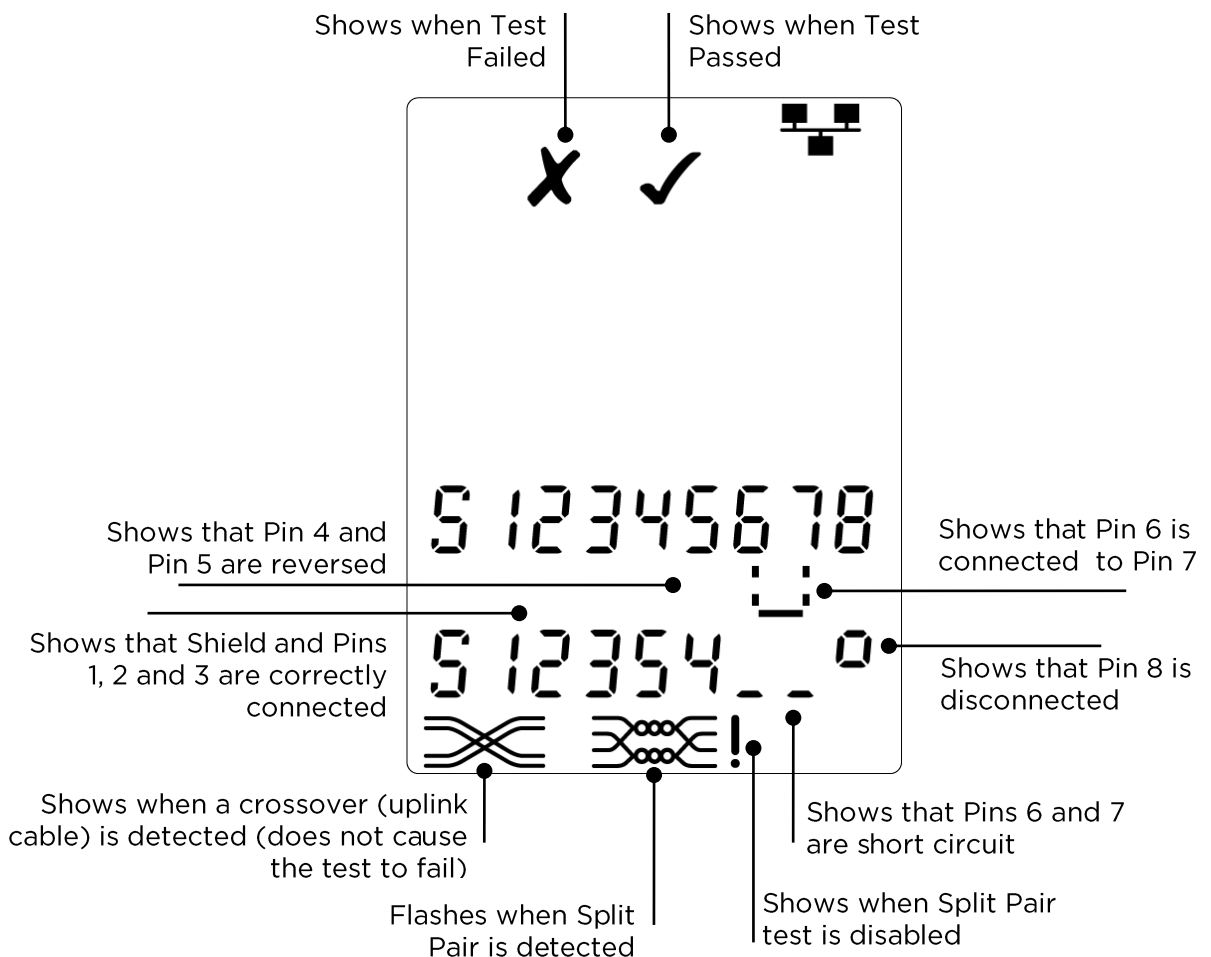
Cable test results are shown using the two rows of numbers in the lower half of the display. The top row of numbers refers to the pins at the near end. The numbers displayed, and S (Shield), depend on the port in use...

VOICE – Pins 1, 2, 3, 4, 5 and 6 are shown

VIDEO – S and Pin 1 are shown

DATA – Pins 1, 2, 3, 4, 5, 6, 7 and 8 are shown. S is shown if the shield is connected.

The lower row of numbers refers to the pins at the far end. The numbers displayed show which pin at the far end is connected to which pin at the near end. Open circuits and short circuits are shown. Multiple short circuits are shown in sequence.



Split Pair test:

! next to the Split Pair symbol shows when the test is disabled.

- When the Split Pair test is enabled, split pairs will cause the test to fail.
- When the Split Pair test is disabled, split pairs will not cause the test to fail.

To disable / enable the Split Pair test:

- Press and hold the port selection button of the currently selected port for 2 seconds to change the setting.
 - The Split Pair test is disabled or enabled.

LENGTH MEASUREMENT

Cable length can be measured using the built-in Time Domain Reflectometer (TDR) with either an open circuit or short circuit or a Remote Unit or Identifier at the far end. Any TDR can only be used to measure the length of cables with uniform Characteristic Impedance. The TDR may not give reliable results on cables that are not correctly twisted or using crocodile clips to connect to the cable.

En

Length can be shown in units of either meters or feet.

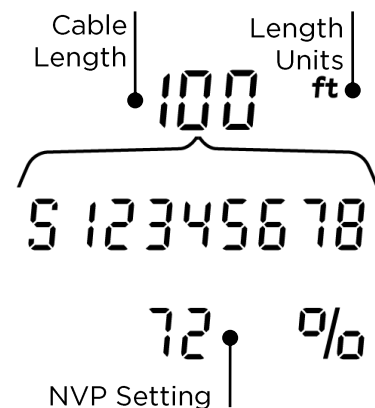
To set the length measurement units:

- Press the TOOLS button repeatedly until either the **m** or **ft** symbol flashes.
- Press ▼ or ▲
 - The length units change between meters and feet.
- Press the TOOLS button repeatedly until the Setting Indicator disappears.

Accurate length measurement relies on correct setting of the Nominal Velocity of Propagation (NVP) for the cable to be tested. This can be determined either from the cable manufacturer's data or by testing a known length of cable of the same type as the cable to be tested.

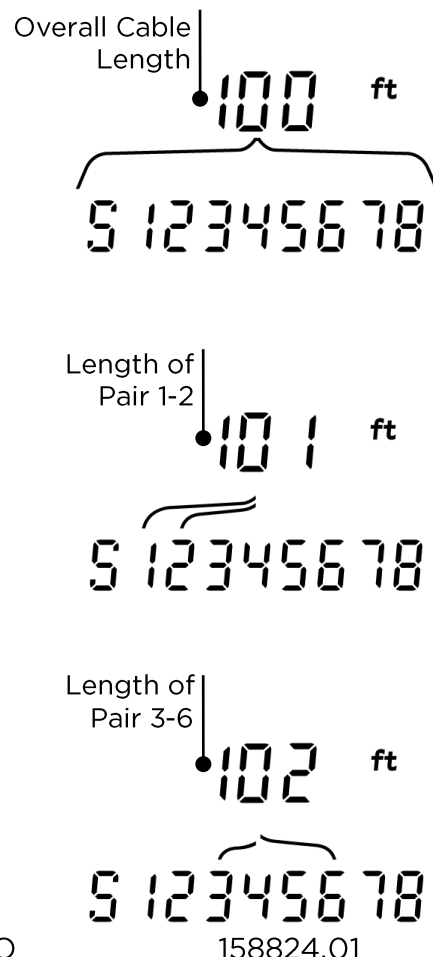
To set the NVP:

- Connect a known length (>15m / 50ft) of cable to the tester (if available).
- Press the TOOLS button repeatedly until the NVP setting flashes.
- Press ▼ or ▲ until either the required NVP or the known cable length is displayed.
- Press the TOOLS button repeatedly until the Setting Indicator disappears.



To measure the cable length:

- Connect the cable to the tester.
 - The display shows the cable length.
- Press the port selection button of the currently selected port.
 - The display changes to show the overall cable length or the length of an individual pair inside the cable.
- Repeat to show the length of each pair or the overall length in turn.
 - By investigating the individual pair lengths, cable faults and distance to fault can be found.
 - The individual pairs are often different lengths and may be longer than the overall cable because of the internal twisted construction.



VOLTAGE MEASUREMENT

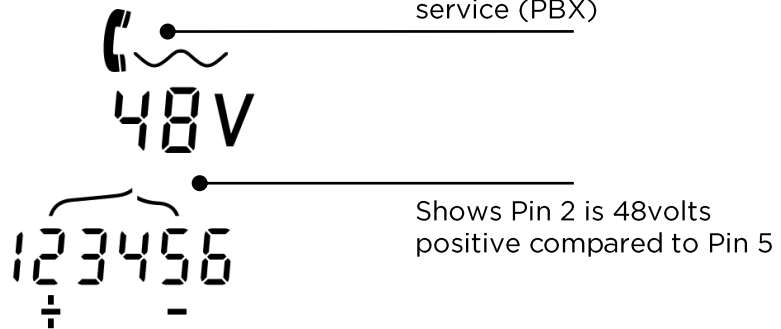
En

If a voltage greater than approximately 2 volts is detected on any pin(s), cable testing and length measurement are not possible. Instead, PoE PRO displays information about the voltage(s) present and the type of service that those voltages indicate, where applicable.

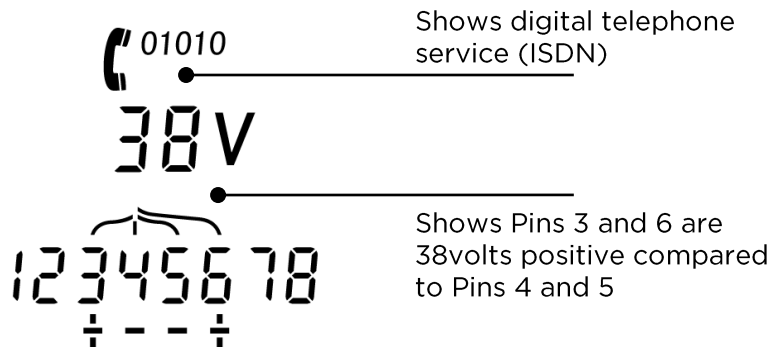
The display shows the detected voltage and the pins on which it is present, together with polarity. Depending on the port and the voltages on the pins, the display also shows the type of service detected on the cable...

Port	Service	Voltage	Pins
VOICE	PBX	>30v.	3-4 or 2-5
DATA	PoE	(See pervious section)	
	PBX	>30v.	4-5
	ISDN	>30v.	3/6 - 4/5

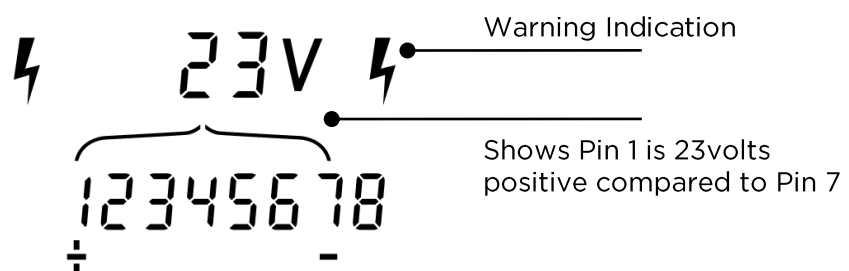
Example 1 - PBX service on VOICE port



Example 2 - ISDN service on DATA port



Example 3 - Unknown service on DATA



tone generation

PoE PRO can be used together with a compatible tone probe (available from IDEAL Networks) to identify and trace cables. PoE PRO can generate various types of tone on various combinations of pins. Choice of tone type and pin connection is best determined by experiment, to achieve the best results with a particular probe type and in a particular cable situation.

To switch on the tone generation:

- Press the TONE button.
 - The currently selected tone type is generated on the currently selected pins of the currently selected port.
 - Tone generation continues until switched off or for a maximum of 144 minutes.

To change the port that the tone is applied to:

- Press the relevant port selection button.
 - The tone is applied to the selected port using the tone type and pin settings that were last used for that port.

To change the pins that the tone is applied to:

- Press the port selection button of the currently selected port.
 - The pins that the tone is applied to change each time the button is pressed.

To change the tone type:

- Press the TONE button.
 - The tone type changes each time the TONE button is pressed.

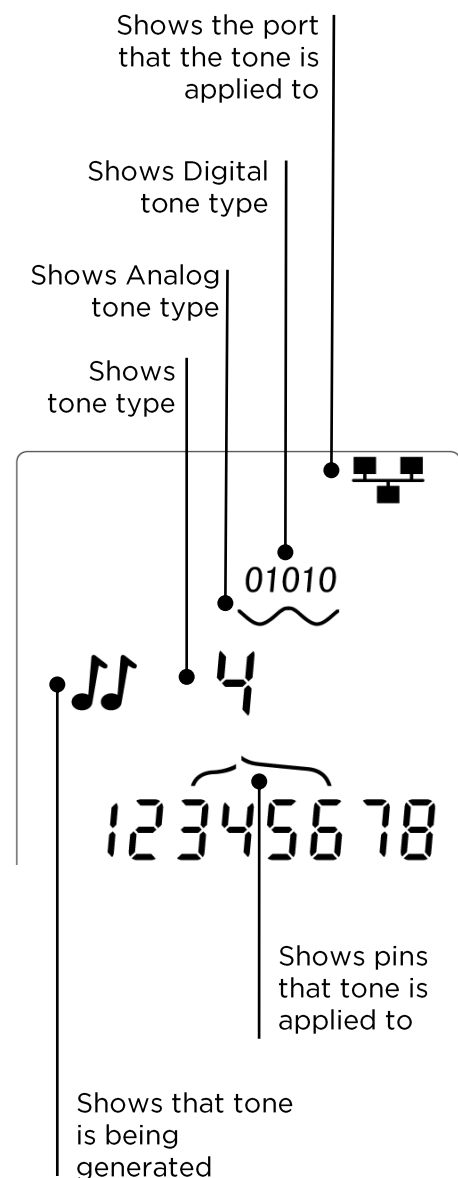
The tone generation can be controlled from the far end of the cable, to assist in confirming that the correct cable has been traced.

To control the tone generation from the far end:

- Briefly apply a short circuit between any two wires of the cable.
 - The sound of the tone changes.

To switch off the tone generation:

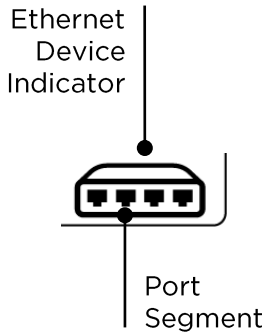
- Press and hold the TONE button.
 - The tone generation stops and normal cable testing is resumed.
- Release the TONE button.



HUB (PORT) BLINK

To assist in confirming correct cabling of Ethernet installations, PoE PRO can generate Ethernet signalling on one end of a cable which causes the port LED of the device connected to the other end to flash.

Hub (port) Blink is only available when the DATA port is selected.








To switch on Hub Blink:

- Press the TOOLS button repeatedly until the Ethernet Device Indicator flashes.
- Press ▼ or ▲
 - The ✓ symbol shows that Hub Blink is switched on.
 - The Port Segment of the Ethernet Device Indicator blinks.
 - Hub blinking continues until switched off or for a maximum of 144 minutes.

To switch off Hub Blink:

- Press the TOOLS button
 - The Ethernet Device Indicator Port Segment stops flashing.
 - Hub Blink stops.

		NVP
		70
	RG59	82
	Cat 3	65
	Cat 5/5e/6/6A	72
	Cat 7	79



IDEAL NETWORKS

IDEAL INDUSTRIES Networks Ltd

Stokenchurch House, Oxford Road, Stokenchurch

High Wycombe, Bucks, HP14 3SX

www.idealnetworks.net