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**NEW**  
**TALAN™**  
**Telephone and Line Analyzer**

Research Electronics International is proud to introduce the TALAN – Telephone and Line Analyzer (Patents Pending), offering the most advanced test equipment available for testing digital and analog telephone systems and lines for the presence of telephone taps and other types of telephone surveillance devices.

**Connectivity**

The TALAN has banana jacks for leads with alligator clip connectors for testing without breaking a telephone line connection or for testing other miscellaneous wires. However the most common method of connection is in-line with the phone system using modular connectors. The figure below shows the banana plug inputs as well as the modular connectors, an expansion port, and an RF antenna input.



The Expansion port will be used for future upgrades. The RF Antenna port is used for RF broadband analysis using the 2 provided antennas.

The modular 8 connectors provide for switching between pair combinations for most types of

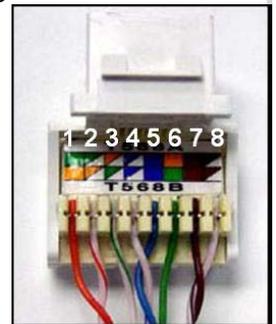


wiring. For example, if a cable has 8 conductors, the typical wiring pair combinations are:  
 4:5 is typically the primary pair.  
 3:6 is the secondary pair  
 1:2 is an auxiliary pair  
 7:8 is an auxiliary pair

However, it is important to note that there are 28 possible combinations to consider and test. For example:

- 1:2, 1:3, 1:4, 1:5, 1:6, 1:7, 1:8
- 2:3, 2:4, 2:5, 2:6, 2:7, 2:8
- 3:4, 3:5, 3:6, 3:7, 3:8
- 4:5, 4:6, 4:7, 4:8
- 5:6, 5:7, 5:8
- 6:7, 6:8
- 7:8

The TALAN internal switching matrix provides for automatic switching and test measurement for all of these possible combinations.



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## First Production OSCOR, Still in Service!

REI makes every effort to design and build equipment that is serviceable and upgradable to maximize equipment value and to ensure the equipment keeps up with ever changing, modern threats. Proof in point, the first production OSCOR (sold to a large corporation) is still in service today, and was recently received back at REI for a battery replacement and checkup. This OSCOR has received several upgrades over the past couple of years, adding capabilities and functionality that weren't originally available, keeping this unit up to spec with today's current production OSCOR. REI strives to build products that can be upgraded, maximizing the value of the equipment throughout the life of the product. REI is pleased to know that the first production OSCOR is still in service today, and being used on a regular basis. It is our intent to build quality and serviceability into the design of our products providing years of operational life and value.

Has your OSCOR been upgraded to the latest hardware, 5.04 firmware key, and software? Contact REI if your OSCOR needs an upgrade, or just needs a checkup.



### cont. TALAN Telephone and Line Analyzer

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The TALAN is a self-contained unit that encompasses several types of measurements into a single piece of equipment. Test data can be saved to a compact flash card or USB thumbdrive for future comparisons and reporting. The TALAN has test equipment type button controls, but also has a Touch Screen user Interface using a PDA stylus. While using the TALAN, the right hand side of the display provides real-time information and configuration of the test in progress.

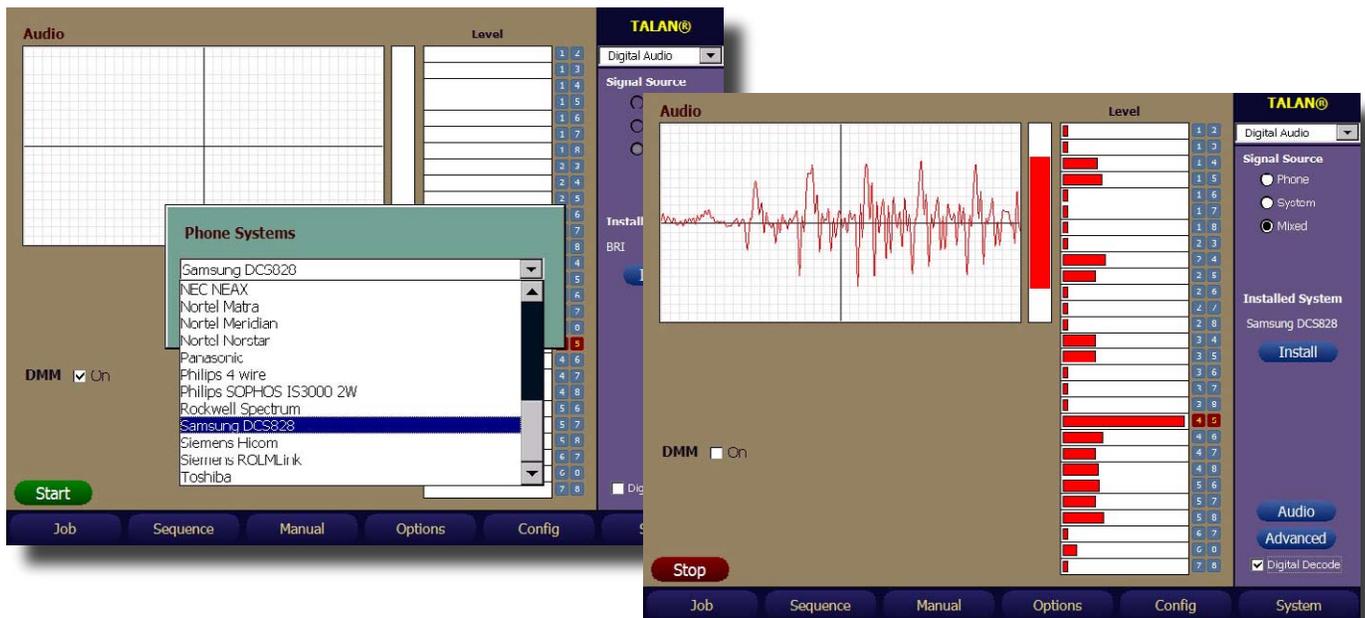


#### TALAN Test Functions

Prior to the TALAN, evaluating telephone lines for taps required several separate pieces of equipment typically designed for telephone fault testing. The TALAN combines several tests into a single piece of equipment, as well as improving and adding new testing capabilities. Some of the available test functions are described below, but there are additional tests which are not documented in this article such as a Spectrum Analysis capability (carrier current signals up to 85MHz), an RF Broadband detector (up to 8GHz), and a New Non-Linear Junction Detector wire tracing function.

#### Digital Audio Demodulation

Prior to the TALAN, it was difficult to verify if a telephone was sending compromising digital audio down the line, but the TALAN provides the ability to demodulate approximately 80% of the world's digital telephone systems. This is accomplished by simply selecting the appropriate digital system from the built in list.



In the screen shot above/right, the TALAN analyzed all pair combinations and indicates that digital audio exists on pair 4:5, the user can then listen to the demodulated audio to confirm that the line is passing audio when it shouldn't. An oscilloscope view of the audio content is also provided.

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### NEWS HEADLINES: Corporate Espionage & Information Theft...

#### "The Science of Spying..."

London's Science Museum  
Harrow Times  
February 10, 2007  
Source: <http://www.harrowtimes.co.uk>  
Article: [http://www.harrowtimes.co.uk/search/display.var.1184759.0.the\\_science\\_of\\_spying.php](http://www.harrowtimes.co.uk/search/display.var.1184759.0.the_science_of_spying.php)

#### "Qatar jails American for industrial espionage"

Middle East online  
February 13, 2007  
Source: [www.middle-east-online.com](http://www.middle-east-online.com)  
Article: <http://www.middle-east-online.com/english/?id=19537>

#### "The Secret's Out!... Corporate Espionage"

Fast Company Weblog  
February 2, 2007  
Source: <http://www.fastcompany.com/homepage/index.html>  
Article: [http://blog.fastcompany.com/archives/2007/02/02/the\\_secrets\\_out.html](http://blog.fastcompany.com/archives/2007/02/02/the_secrets_out.html)

#### "Former Employee Guilty in Conspiracy to Steal, Sell Coca Cola Secrets"

NBC 26 WGBA News  
February 2, 2007  
Source: <http://www.nbc26.com>  
Article: <http://www.nbc26.com/news/business/5531901.html>

#### "Telecom Italia espionage scandal deepens"

The Register  
January 25, 2007  
Source: <http://www.theregister.co.uk>  
Article: [http://www.theregister.co.uk/2007/01/25/telecom\\_italia\\_spy\\_scandal](http://www.theregister.co.uk/2007/01/25/telecom_italia_spy_scandal)

#### "Former Exec Says HP Spied on Dell"

E-Commerce Times  
January 25, 2007  
Source: [www.ecommercetimes.com](http://www.ecommercetimes.com)  
Article: <http://www.ecommercetimes.com/rsstory/55378.html>



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### DMM – Digital Multi-Meter

The DMM test functions provide basic digital multi-meter measurements such as Voltage, Current, Capacitance, & Resistance. As previously described, the TALAN automatically tests all pair combinations for rapid and complete data collection. The screen shot below shows a Samsung digital phone system that uses a 45 volt supply on the main pair of 4:5.

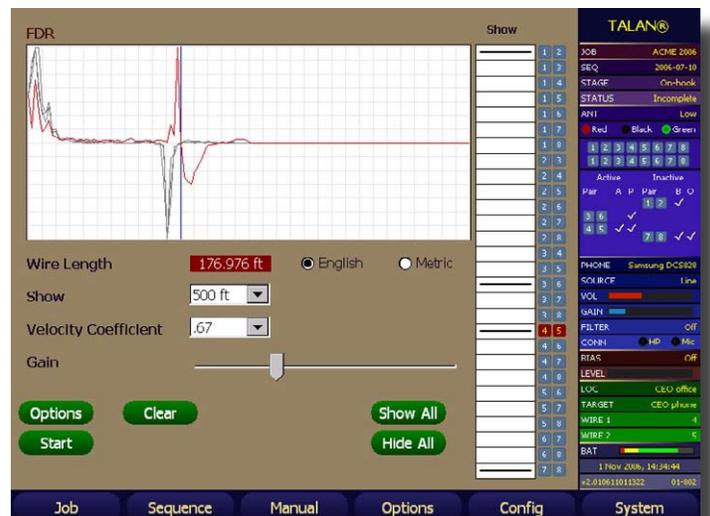


In this example, the resistance and capacitance were not measured because the line was actively connected to the switch. Resistance and Capacitance are only measured on an isolated dry line.

### FDR Frequency Domain Reflectometer

The FDR functions very similar to a TDR, however the FDR function provides results based on a different technical approach. Additionally, the TALAN provides the ability to plot multiple FDR traces on the same display for comparison of multiple pairs. In the example shown below, all pair combinations were automatically tested, however, only the main pairs are displayed. In this example, pair 4:5 are the main pair (shown in red) and are connected to the phone switch, however, pairs 1:2, 3:6, and 7:8 are not connected to the switch. These un-used pairs are terminated at a patch panel before the switch with a slightly shorter cable length.

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### 2007 REI TRAINING CALENDAR

- June 12 - 15  
Technical Security Equip.  
(TSE 101)
  - June 12 - 15  
Telephone Security  
Countermeasures Course  
(TCC 110)
  - June 18 - 22  
Technical Surveillance  
Countermeasures  
(TSCM 201)
  - June 25 - 29  
REI Equipment  
Certification Course  
(ECC 240)
  - July 10 - 13  
Telephone Security  
Countermeasures Course  
(TCC 110)
  - July 16 - 20  
Digital Telephone Security  
Course  
(DTC 210)
  - July 23 - 27  
Digital Telephone Security  
Course  
(DTC 210)
  - August 7 - 10  
Technical Security Equip.  
(TSE 101)
  - August 7 - 10  
Telephone Security  
Countermeasures Course  
(TCC 110)
  - August 13 - 17  
Technical Surveillance  
Countermeasures  
(TSCM 201)
  - August 13 - 17  
Digital Telephone Security  
Course  
(DTC 210)
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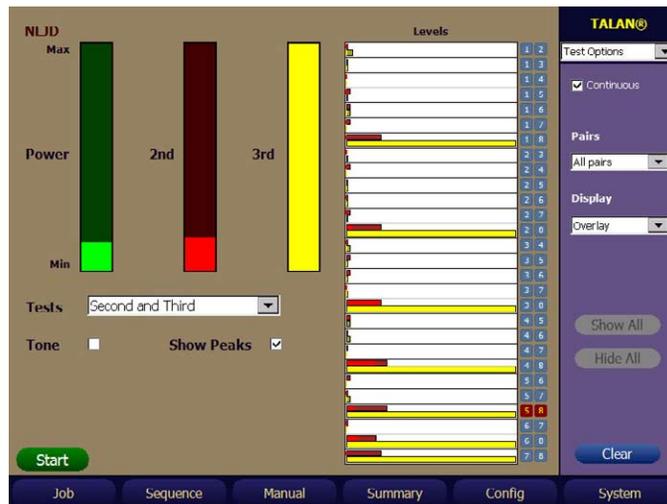
## cont. TALAN Telephone and Line Analyzer

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### NLJD

The Non-Linear Junction Detector function is one of the most powerful tests in the TALAN system, providing the ability to detect electronic devices that are attached to an isolated DRY line. Furthermore, you can easily identify which conductors have the additional electronics, and in most cases you can identify whether it is a series or parallel connection.

In the example on the right, there is a series tap on conductor number 8. Therefore, only combinations that contain conductor 8 will get a response. This is easily shown by reviewing the NLJD response of all the pair combinations. Interestingly, this type of tap produces a strong 3rd harmonic response due to the presences of clamp diodes commonly used in taps for high voltage protection.



From studying these types of responses, it is obvious not only that a tap exists, but also which conductors have been tapped and the type of tap.

The TALAN provides a new state-of-the-art capability to rapidly and reliably detect and locate potential telephone system threats. It accomplishes this using an extensive set of testing functions as well as data management of all recorded testing data. This storage capability provides the opportunity for comparison analysis between different phone extensions or, of the same phone extension at different testing times. It has a user-friendly Graphical User Interface designed to assist the user in quickly and easily navigating through a battery of tests to expose potential telephone security problems. It is lightweight and portable, fitting into a briefcase size carrying case.

Due to high product demand, we are currently quoting delivery of new orders for July 2007.

For more detailed specifications, please visit REI's website at [www.reiusa.net](http://www.reiusa.net).

