PROFESSIONAL PROTECTION INCORPORATED®

TECHNICAL SURVEILLANCE COUNTERMEASURES

EQUIPEMENT SPECIFICATIONS
TECHNICAL SURVEILLANCE COUNTERMEASURES

Wire taps. Mimi-cameras. Hidden microphones. Sounds like something out of a spy novel or movie doesn’t it? The fact is, electronic surveillance is real, and organizations rely on competitive intelligence. But you can protect yourself with Technical Surveillance Countermeasures (TSCM), thanks to Professional Protection Incorporated® (PPI®).

Professional Protection Incorporated only employs Research Electronics International’s (REI), made in the USA, TSCM equipment. REI’s equipment is currently the preferred choice of the United States Central Intelligence Agency, United States Secret Service, Federal Bureau of Investigations, United States Department of State, and countless other government agencies to conduct their TSCM programs. A specialist in the design and manufacture of TSCM equipment, REI has been producing high-quality TSCM products since 1983. PPI’s staff of TSCM experts specialize in the operation and deployment of REI’s electronic countermeasures equipment to effectively analyze input from our professional surveillance sweep teams, ensuring the best possible solution for our clients TSCM needs.

At Professional Protection Incorporated, our knowledgeable sweep specialists use the latest TSCM methodologies and technologies to develop our high-quality sweep procedures, and to train/qualify our sweep agents. Our sweep teams are backed up by the most qualified technical support professionals in the business. When your needs warrant the safety of sensitive information, look to PPI to provide a total TSCM solution.

In today’s technology-driven world, information is a highly sought after commodity. That’s why it has become more important to protect your information with TSCM.

TYPES OF COUNTERSURVEILLANCE EQUIPMENT

- Radio Frequency (RF) and Infra Red (IR) Spectrum Analysis – Analyze, classify, identify, and locate transmitted signals.

- RF Broadband Detectors – Locate transmitters by detecting the near-field effects of the electromagnetic transmission.

- Non-Linear Junction Detectors – Detect the presence of hidden electronics regardless of whether they are operational.

- Cable and Line Analyzers – Investigate the integrity of existing wiring in a building, including telephone, LAN, power lines, and security system wiring.

- Acoustic Noise Masking – Provides a countermeasure against undesired audio leakage and eavesdropping.

- Inspection Tools – Line tracing equipment, borescopes, metal detection, Alternating Current (AC) power detection, Ultraviolet marking and detection, multi-meter, X-ray machines, Thermal Vision, Video Camera Lens detection, etc…
As always, we are never satisfied with the status quo. At Professional Protection Incorporated, we’re dedicated to identifying ground breaking technical surveillance countermeasures technologies, developing new sweep procedures, and adding new equipment to our existing capabilities. With the realization that technology is advancing rapidly, we are determined to remain at the forefront of equipment technological advances, providing our past and future customers with peace of mind.
OMNI SPECTRAL CORRELATOR

OSC-5000

U.S. PATENTS: 4,399,566; 5,020,137; 5,241,699
High-Sensitivity Spectrum Analyzer

1. **PHASED LOCKED SUPER HETERODYNE SPECTRUM ANALYZER**
2. **FREQUENCY RANGE:** 10kHz to 3GHz
   (10kHz to 21GHz with optional Microwave Down Converter)
3. **AUTOMATICALLY SELECTED ANTENNA INPUTS.**
4. **SWEEPING IF BANDWIDTHS:** 250kHz, 15kHz, and 6kHz.
5. **FREQUENCY SPANS** can be programmed with single button control
   for rapid recall and automatic searching.

The OSCOR provides user-friendly controls and a high-quality digital
graphic display.

The OSCOR is one of the few Spectrum Analyzers designed
specifically for countersurveillance.

Built-in Suite of Demodulators

**AUDIO DEMODULATORS**

1. FM wideband
2. FM narrowband
3. AM wideband
4. AM narrowband
5. Sub-carrier
6. Single Sideband

**VIDEO FORMATS**

1. NTSC, PAL, SECAM
2. AM or FM demodulation
3. + or - synchronization pulse
4. **IF BANDWIDTHS**
   1. Audio: 250kHz, 15kHz, and 6kHz
   2. Video: 10MHz

**Built-in suite of demodulators and audio oscilloscope view of signals.**

Monitor displays video signals for protection against covert video
transmitters.

Patented Threat Locating System

The Patented Threat Locating System uses sonic ranging and
triangulation to locate the transmitter microphone.

This patented system can only be used if an audio signal can be
demodulated with the OSCOR.

Built-in Antenna Array

1. **ACTIVE WHIP ANTENNA:** 0.5-1505MHz frequency coverage.
2. **DISCONE ANTENNA:** 1500-3000MHz frequency coverage.
3. **LOOP ANTENNA:** 10-500kHz frequency coverage.
4. **INFRARED DETECTOR:** 360°; wavelengths of 850-1070nm
   and modulation from 10kHz-5MHz.
5. **STATUS INDICATORS:** Display the selected antenna.
6. **AC VLF:** (not shown in picture) The AC power cord serves as a
   probe for testing for carrier current type transmitters.
7. **BUILT-IN 20dB PRE-AMP:** Improves receiver sensitivity.

Patented fold-out antenna panel automatically selects the proper
antenna. Pre-amp provides maximum sensitivity for the proper input.
No unreliable cable connections or mismatched antenna inputs.
Automatic Searching, Signal Detection, Spectrum Trace Acquisition, and Storage

1. "LOAD FRIENDLY" mode stores outside ambient signals and traces prior to performing a sweep.
2. TARGET SWEEP AREA SIGNALS are easily differentiated from ambient environment "Friendly Signals" and "Friendly Trace."
3. ALL SIGNALS are dated, classified, and stored for later retrieval and automatic tuning.
4. SIGNAL AND TRACE DATABASES can be stored for later comparison and analysis to determine if any new signals have been introduced into the environment.

Trace Analysis for Rapid Detection of Sophisticated transmitters

1. OPTIMIZED SWEEP TIME FOR FAST ANALYSIS: less than 5 seconds to complete one 1.5GHz pass.
2. FRIENDLY SPECTRUM TRACE provides reference trace for comparisons against sweep location trace.
3. PEAK TRACE MINUS FRIENDLY TRACE quickly shows evidence of analog and digital transmitters including frequency hopping and burst/packet transmitters.
4. TRACES CAN BE COMPARED for RF mapping of transmission sources within a building.
5. DETAILED TRACE DATA IS STORED using 120,000 data points across the Whip High, Discone, and MDC antennas.

Automatic Threat Classification

1. AUTOMATICALLY ANALYZES SIGNALS using a patented sound pattern correlator.
2. CORRELATOR PROCESS is integrated over time to ensure accurate correlation.
3. SIGNAL THREAT LEVEL ESTABLISHED ON A SCALE FROM 1 TO 5 based on the integrated correlation value.
4. DIGITAL SIGNALS, or signals that cannot be demodulated or correlated are flagged based on RSSI increase from Friendly reference.

Built-in Printer for Rapid Hardcopies

Printouts can be generated of:
1. Frequency Spectrum
2. Oscilloscope View
3. Correlation Results
4. Signal Database Listings
5. Frequency Span Listings
6. Threat Location Information
7. System Configuration

The OSCOR provides an automatic solution to rapidly logging and classifying the signals of your environment.

Quick Reference Guide provides a single chart that completely defines the programming process.

Enhanced Trace Analysis provides ability to compare target sweep area traces to friendly traces, to quickly identify evidence of transmitters in the target sweep area (including frequency hopping and burst/packet transmitters). Trace and signal data can be further analyzed or stored on a computer via USB interface, for future comparisons or RF mapping.

For signals that are readily demodulated, the OSCOR easily classifies threatening signals. Signals that are not readily demodulated are flagged for manual inspection.

The patented OSCOR correlator provides signal classification by correlating the demodulated audio of a received signal to the ambient environment.

The built in printer allows you to make quick printouts of suspicious signals, or complete spectrum traces.
PC Interface and Remote Control of the OSCOR

The OSCOR PC interface software provides enhanced analysis capabilities as well as the ability to create permanent signal databases and trace profiles of sweep environments for RF mapping and future comparisons. The software also provides professional report and graph capabilities.

Software ADVANTAGES:
1. STORE, UPLOAD, AND DOWNLOAD signal and trace info.
2. PROGRAM THE OSCOR for automatic operation.
3. IMPROVED CONFIGURABLE USER INTERFACE.
4. SIGNAL CLASSIFICATION using international frequency allocations.
5. CUSTOMIZABLE REPORTS and frequency spectrum graphs.
6. COMPARE AND ANALYZE historical signal and trace data to easily identify new signals detected in the sweep environment.
7. HIGH RESOLUTION FULL-COLOR GRAPHICAL DISPLAY.

Software BENEFITS:
1. REMOTE CONTROL OF OSCOR from PC computer.
2. RAPID THREAT INDICATION using detailed comparison of stored RF spectrum traces.
3. QUICKLY IDENTIFY SOPHISTICATED TRANSMITTERS (frequency hopping & burst/packet) using peak difference trace analysis.

Optional Microwave Downconverters (MDC-900/MDC-2100)

The MDC-900 (3-9GHz) and MDC-2100 (3-21GHz) provide increased frequency range for the OSCOR.

1. COMPLETE SPECTRUM VIEW from 3-21GHz (MDC-2100) using the OSCOR display or OPC software.
2. DIRECT FREQUENCY CONTROL and band selection from OSCOR.
3. INTEGRATED HIGH GAIN LOG PERIODIC ANTENNAS (MDC-2100 contains 3 unique integrated antennas).
4. TRIPOD provides stability for MDC antennas.

TECHNICAL SPECS

MDC-2100 3-21GHz

OPERATION BANDS & FREQUENCY RANGES
Conversion Output Frequency: 5-3005MHz
Frequency Range: 3-21GHz
Band 1: 3-9GHz
Band 2: 9-15GHz
Band 3: 15-21GHz

ANTENNA GAIN (3 ANTENNAS)
3-9GHz: 6.1dB
9-15GHz: 5.3dB
15-21GHz: 8.4dB

MDS (MINIMUM DETECTABLE SIGNAL)
Includes receiver sensitivity, antenna gain, & filtering losses -122dBm

POWER
Input Power: 200 milliamps at 12 volts supplied by OSCOR

MECHANICAL
Weight: 1.1 lbs (0.5 kg)
Dimensions: 11.4 in x 3.1 in x 1.4 in (29 cm x 8 cm x 3.5 cm)

MDC-900 3-9GHz

OPERATION BANDS & FREQUENCY RANGES
Conversion Output Frequency: 5-3005MHz
Frequency Range: 3-9GHz

ANTENNA GAIN
3-9GHz: 6.1dB

MDS (MINIMUM DETECTABLE SIGNAL)
Includes receiver sensitivity, antenna gain, & filtering losses -122dBm

POWER
Input Power: 200 milliamps at 12 volts supplied by OSCOR

MECHANICAL
Weight: 1.1 lbs (0.5 kg)
Dimensions: 11.4 in x 3.1 in x 1.4 in (29 cm x 8 cm x 3.5 cm)
The OSCOR is the only available security product that provides all of the above features in a single portable package.
OSCOR ADVANTAGES

DIGITAL SPECTRUM ANALYZER
DESIGNED SPECIFICALLY FOR COUNTERSURVEILLANCE

AUTOMATICALLY SWITCHED ANTENNA ARRAY
WITH BUILT-IN ARRAY SWITCHING

AUTOMATIC PROGRAMMABILITY
CONTINUOUSLY SCAN, STORES SIGNALS AND TRACES,
AND DETECTS THREAT SIGNALS

ENHANCED TRACE ANALYSIS
DETECTS SOPHISTICATED DEVICES SUCH AS FREQUENCY
HOPPING AND BURST/PACKET TRANSMITTERS

SIGNAL DATABASE
PROVIDES STORAGE AND RECALL OF DETECTED SIGNALS
AND SPECTRUM TRACES

OPC SOFTWARE
REMOTE CONTROL CAPABILITY AND ABILITY TO STORE
SIGNAL AND TRACE PROFILES FOR FUTURE COMPARISON
AND RF MAPPING

AUDIO ANALYSIS MODE
PROVIDES SUITE OF DEMODULATORS

VIDEO DEMODULATOR AND MONITOR
PROVIDES VIEWING OF COVERT VIDEO TRANSMITTERS

ACOUSTIC CORRELATOR
CLASSIFIES THREATENING SIGNALS

BUILT-IN PRINTING
PROVIDES HARD COPY OF SIGNAL ANALYSIS
INFORMATION

MULTIPLE THREAT LOCATING SYSTEMS:
PATENTED SONAR THREAT LOCATING SYSTEM AND
RF LOCATOR PROBE

COMPLETE PACKAGE OF SWEEP EQUIPMENT
FOLDS INTO A DURABLE ATTACHE-STYLED CASE

OSCOR™ OSC-5000
OMNI SPECTRAL CORRELATOR

TECHNICAL SPECS

RF SYSTEM
Receiver: Quad Conversion Super Heterodyne phase locked Spectrum Analyzer
Frequency Coverage: 10kHz - 3GHz
Tuning Resolution: 100Hz
Sensitivity: 0.8µV typical with 15kHz bandwidth (+15dBm Max)
Demodulators: AM, FM Wide, FM Narrow, FM SC, SSB/CW
IF Bandwidths: 250kHz, 15kHz, 6kHz
Antennas: 0 - 20dB at Active Whip, Discone, and VLF-MF input
Dynamic Range: 90dB
Subcarrier Tuning Range: 15-250kHz
Antenna Types:
  - Balanced Loop: 10-500kHz
  - Active Whip: 500kHz - 1500MHz
  - Discone: 1500-3000MHz
  - Infrared Detector: 10kHz - 5MHz, 850-1070nm
  - AC Carrier Current: 10kHz - 5MHz (balanced across power line)

AUDIO SYSTEM
Frequency Response: 50Hz-15kHz
Voiceband Filter: 300-3000Hz; 18dB/octave roll off
AGC Dynamic Range: 60dB
Output Power: 3W at 4Ω
Headphone Output: 0-2V rms
Remote Contact: Normally open (200mA/32V max)
Balanced Auxiliary Input: 0.5V rms nominal @ 600Ω
Reference Audio Input: 1mV-1V rms @ 3.9kΩ
Sonic Correlator: 50Hz-15kHz (frequency independent)
Audio Alarm: 3-level programmable 2-tone ringer
Squelch: Automatic digital or manual control over full display range
Headphones: Low acoustic leakage, 16Ω output limited to 105dB

VIDEO SYSTEM
IF Bandwidth: 10MHz
Independent Control of Formats
  Protocols: NTSC, PAL, SECAM
  Demodulators: AM or FM
  Synchronization Pulse: + or -

SYSTEM INTERFACE
Backlit Display: 128 x 256 Segment Graphics Twisted LCD
Built-in Printer: 192 dpi graphics on 2-inch-wide thermal paper
Rotary Tuning Dial: 128 Pulse/Rev with variable count ratio
USB Interface to PC
Removable Program Key for firmware updates

POWER SYSTEM
AC Input: 105-130VAC/210-260VAC, 50-60Hz, 24W
External DC Input: 12-18VDC, 1A max
Internal Battery: 12V, 2.9Ah; 3-hour operation per charge typical

MECHANICAL
Size (HxWxD): 6.25 x 18.5 x 14.5 in (15.9 cm x 47 cm x 36.8 cm)
Weight: 29 lbs (13.2 kg)
TALAN™
TELEPHONE AND LINE ANALYZER
PATENTS PENDING

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Analyze Digital and Analog Phone Systems and wires for eavesdropping threats.

Combines New Technology into a Suite of Telephone Tests including an Automatic Switching Matrix

The TALAN provides the capability to perform multiple tests to analyze communication lines for eavesdropping devices.

The TALAN includes a built-in automatic switching matrix for testing all pair combinations. For example, if a cable has 8 conductors, there are 28 combinations of pairs to test; the TALAN can automatically test all combinations, storing data for comparison and analysis.

Digital Demodulation

Includes digital decoding capabilities for approximately 80% of the world’s digital phone systems. Demodulation codecs are upgradable as new phone systems become available.

Digital Demodulation confirms that a line on a digital phone system is not passing audio when it should not.

Frequency Domain Reflectometer (FDR)

Similar to a TDR (Time Domain Reflectometer) but based on a different technical approach, the TALAN’s FDR can “shoot” a line for impedance anomalies indicating a tap on the wire.

The FDR also has the ability to plot multiple FDR traces on the same display for comparison of multiple pairs or historical comparison.

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Non-Linear Junction Detection (NLJD) on a Line

The TALAN includes a NLJD test to detect electronics connected to an isolated line.

This is one of the most powerful tests for quickly determining whether or not there are additional electronics attached to a wire.

The example to the right indicates a parallel tap on pair 4:5. Because of the coupling in balanced pairs, any combination with either a 4 or 5 indicates some electronic content, but the electronics are clearly detected on pair 4:5.

Digital Multimeter Tests

The TALAN includes basic multimeter tests such as Voltage, Current, Capacitance, & Resistance.

The automatic switching matrix allows the user to quickly measure and display results for all pair combinations, easily identifying any anomalies.

High Gain Audio Amplifier and Built-in Audio Oscilloscope

The TALAN includes a High Gain Audio Amplifier (20Hz to 20KHz) with up to 80dB of total system gain (voice band).

A DC Bias Voltage Generator (±80VDC) is also provided to power attached electronics.
RF Analysis and Detection

The TALAN includes a Spectrum Analyzer that provides a detailed frequency spectrum display up to 85 MHz. This function also includes a time domain display to show the modulation for AM and FM signals.

The TALAN also includes a Broadband RF Probe to check free space RF energy up to 8GHz, graphing the RF level over time to identify the location of a transmitter.

(Broadband RF levels not shown)

Multi-Test Database System

The TALAN provides the ability to store test data for all testing functions in a database structure. This database provides the ability to organize and store results for future review or comparison.

The display at the right shows the basic database structure keeping track of test data from multiple targets and locations.

Harmonic Locator Probe (HLP)

The TALAN includes a Harmonic Locator Probe (HLP) used for tracing wires.

The Harmonic Locator Probe also acts as a Harmonic Receiver, alerting the user as the tracer approaches electronics connected to a wire. This allows the user to not only trace a wire, but also determine the location of any electronics connected to the wire such as an eavesdropping device.
The TALAN introduces a new state-of-the-art capability to rapidly and reliably detect and locate illicit wire taps on both digital and analog telephone systems.

The TALAN provides a suite of tools in a single piece of equipment to accurately analyze phone lines for taps and other eavesdropping threats.
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**TALAN ADVANTAGES**

**COMPLETE SUITE OF TESTS**
Combines existing testing technology and new technology into single piece of equipment.

**SWITCHING MATRIX**
Automatically tests all pair combinations.

**MULTI-TEST DATABASE SYSTEM**
Manages data for multiple targets and locations.

**DIGITAL MULTIMETER TESTS**
Quickly captures voltage, current, capacitance, and resistance data.

**FDR FREQUENCY DOMAIN REFLECTOMETER**
Detects impedance anomalies such as an eavesdropping tap on a wire.

**LINE NLJD (NON-LINEAR JUNCTION DETECTOR)**
Detects electronics attached to a wire.

**DIGITAL DEMODULATION**
Confirms whether a line (digital or analog) is passing audio.

**HARMONIC LOCATOR PROBE**
Traces wires and indicates location of electronics on the wire.

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### TECHNICAL SPECIFICATIONS

**CONTROL SYSTEM**

- **Primary Computer:** 32bit RISC processor, 520MHz
- **Internal Memory:** 64MB SDRAM (OS), 64MB Flash
- **External Memory:** Compact Flash Type III, USB mass storage

**DIGITAL I/O**

- **Network:** 10/100 Ethernet Controller
- **USB:** USB Host (B type) for connection to PC; USB Device (A type) supports external keyboard, mouse, and USB mass storage drive use

**ANALOG I/O**

- **Headphone Output:** 3.5mm connector
- **Microphone Input:** 3.5mm input

**USER INTERFACE**

- **Hard Keys:** 6 Soft Menu Keys, 5 Button Quadrant Navigation & other dedicated keys
- **Encoder:** High-Resolution Optical Encoder
- **Integrated Touch Screen with Stylus**
- **Test Inputs:**
  - Dual MOD8: Supports 2, 4, 6, & 8 wire Modular Phone Jacks
  - Banana Type: Standard sleeved sockets: Ring, Tip, and Earth
  - SMB RF Input: RF / Antenna Connection to 8 GHz Broadband Detector
  - Expansion Port: Supports communication and measurement for use with future accessories
- **All Inputs Electrically Isolated**

**RF SYSTEM**

- **Spectrum Analyzer:**
  - Dual Conversion, Super-Heterodyne Receiver
  - Frequency Range: 10kHz to 85MHz
  - Sweep Time: 2 Seconds
  - Step Size: 1kHz
  - Bandwidth: 18kHz
  - Sensitivity: -100dBm

- **Broadband Detector:**
  - RF SMB Input: 100kHz to 8GHz
  - Balanced Line Test: 100kHz to 600MHz
  - Sensitivity: -65dBm

**DIGITAL MULTIMETER**

- **Range:** Quick Response Auto-Ranging.
  - AC/DC Volts: 0 to 400VDC, 0 to 250VAC
  - Resistance: 0 to 40 MegOhm
  - Capacitance: 4nF to 400µF

**BIAS GENERATOR**

- Optically Isolated, Direct Digital Control
- Output Ceiling: ±80 VDC
- Modulation: Sine Wave up to 300Hz.

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**AUDI**

- **Audio Bandwidth:** 20Hz - 20kHz
- **Gain:** Up to 80dB total system gain
- **AGC:** Digitally Controlled Automatic Gain
- **Filter:** Analog Voice band filter (300Hz to 3kHz)

**POWER SYSTEM**

- **External Input:** 15VDC @3A
- **Universal Power Supply:** 100-240VAC, 50-60Hz
- **Removable Battery:** Rechargeable Lithium ion, 4-6 hours of run time

**MECHANICAL**

- **Dimensions:** 10.0in x 12.9in x 2.7in (25.4cm x 32.8cm x 6.9cm)
- **Weight with Battery:** 6 lbs (2.7 kg)
- **Case Dimensions:** 13.7cm x 37.8cm x 49.5cm
- **Loaded Case Weight:** 19.0 lbs (7.1kg)
  - 0ºC to +50ºC

**HARMONIC LOCATOR PROBE**

- **Operational Frequency:** 225kHz & 450kHz
- **Antenna Type:** Balanced Loopstick
- **Headphone Audio Output:** 16ohm, 105dB SPL limited
- **Battery:** 9V Alkaline
- **Run-Time:** 10 hours average, 22 hours (headphones)
- **Size:** 17.5in x 1.5in (44.45cm x 3.8cm) stored
  - 63.75in x 1.5in (162cm x 3.8cm) fully extended
- **Weight:** 1lbs (.5kg)

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The ORION is a state-of-the-art Non-Linear Junction Detector which detects hidden electronic devices. A Non-Linear Junction Detector transmits an RF signal and then “listens” for harmonic returns to detect the presence of electronics, regardless of whether the electronic device is radiating, hardwired, or even turned on.

Technical Advancements

1. PATENTED FREQUENCY HOPPING FUNCTIONALITY increases detection reliability by rapidly hopping over a wide frequency band.
2. ADVANCED DIGITAL SIGNAL PROCESSING ALGORITHMS provides up to 18dB increase in detection sensitivity.
3. MANUAL OR AUTOMATIC POWER CONTROL ranges from 14 milliwatts to 1.4 watts.
4. SYNTHESIZED TRANSCEIVER provides frequency stability and agility to automatically search for clean operating frequencies (880–1,005MHz; 902.2–927.8MHz for USA).
5. CIRCULARLY POLARIZED TRANSMIT AND RECEIVE ANTENNA removes risk of missing a threat due to incorrect antenna polarization.
6. AUDIO DEMODULATION includes AM and FM as well as tone identification modes.

Ergonomic Advancements

1. BALANCED, LIGHTWEIGHT DESIGN with integrated transceiver, extension pole, antenna, and display.
2. OPERATIONAL WEIGHT is 3.3 lbs (1.5 kg). Carrying case is slightly larger than a briefcase.
3. ALL TRANSMIT AND RECEIVE SIGNALS are multi-plexed onto a single concealed cable eliminating assembly and tangled cords. Wireless infrared headphones eliminate audio cables.
4. CAMCORDER-STYLE BATTERIES are included with an external charger. (Four batteries; 2.5 hours run time per battery).

The patented technical advancements in the ORION are not paralleled in any other product in the world.

Until the ORION, Non-Linear Junction Detectors were bulky, difficult to use, and difficult to transport.
OPERATIONAL MODES

Search 2 & 3 Mode

Provides evaluation of both 2nd and 3rd Harmonic returns. Strong 2nd Harmonic (red) indicates electronic components while Strong 3rd Harmonic (yellow) indicates corrosive (false) junctions.

• Search CW - continuous wave operation
• Search 2 & 3 - pulsing operation
• Search HOP - Frequency hopping operation (provides increased detection reliability)

ID Mode

Provides detection of non-linear junctions using an audible tone. This mode is optimized for long-range detection of non-linear junctions.

• Produces 1kHz FM modulated tone
• Provides listening of 2nd & 3rd Harmonics

Listen Mode

Provides detection and discrimination of non-linear junctions using demodulation for both 2nd and 3rd Harmonics.

Demodulation:
• AM
• FM
• 20kHz Pulsing Mode

Using the ORION's audible tone to detect a junction takes advantage of the discrimination capability of the human ear.

This mode provides excellent discrimination functions by relying on audio characteristic sounds associated with non-linear junctions or active devices.

Additional Control Functions

Control functions are easily adjusted using the ORION keypad.

• Volume
• Transmit Power
• Frequency Selection
• Signal Processing Gain
• Trip Point Warning Settings

Wireless Headphones

1. Wireless IR headphones eliminate cables that can interfere with search activities.
2. Headphones can be plugged into the main unit or the IR receiver.
3. Volume control is adjusted via the main unit.

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ORION ADVANTAGES

FREQUENCY-HOPPING FUNCTIONALITY INCREASES DETECTION RELIABILITY

REMOTE CONTROL PORT ALLOWS USER TO OPERATE UNIT AT A DISTANCE WITH COMPUTER SOFTWARE

LIGHT WEIGHT BALANCED ERGONOMIC DESIGN FOR EASE OF USE

HIGH TRANSMIT POWER FOR RAPIDLY SEARCHING A LARGE AREA WITH GREATER PENETRATION

MINIMUM SET-UP TIME NO CABLES OR BULKY TRANSCEIVER UNITS TO CARRY

PROGRAMMABLE DIGITAL SIGNAL PROCESSING PROVIDES INCREASED SENSITIVITY

CIRCULARLY POLARIZED ANTENNA REDUCES SEARCH TIME AND IMPROVES RELIABILITY

DUAL HARMONIC WITH DISCRIMINATION ALGORITHMS MINIMIZES FALSE ALARMS

CAMCORDER-STYLE BATTERY WITH LONG RUN TIME AND DUAL QUICK CHARGER

WIRELESS HEADPHONES AND GRAPHIC DISPLAY FOR SIMULTANEOUS AUDIO AND VISUAL INFORMATION

TECHNICAL SPECIFICATIONS

TRANSMITTER

Frequency Bands: 880–1005 MHz in 200 kHz steps. USA: 902.2–927.8 MHz

Transmit Power: 14 milliwatts minimum, 1.4 watts peak (effective radiated power)

Power Control: Manual or auto control with 30 dB range. Pulsed operation limits average output to meet USA FCC requirements

RECEIVER

Frequency Bands: Second Harmonic (1760–2010 MHz) or Third Harmonic (2640–3015 MHz)

Sensitivity: -133 dBm for both harmonics

DSP SW Integration: Programmable between 6 and 18 dB gain in sensitivity performance

Receiver Bandwidth: 3 kHz

MECHANICAL

Extension Lengths: 16–51 in (40.6–129.5 cm)

Case Dimensions: 6.25 in x 14.9 in x 18.5 in (15.9 cm x 37.8 cm x 47.0 cm)

Weight with Battery: 3.3 lbs (1.5 kg)

Weight with Tool Kit: 23.1 lbs (10.5 kg)

TOOL KIT OPTION

• Borescope with built-in light and right-angle viewing for inspection of walls and furniture

• Combination stud finder and metal detector for non-destructive wall evaluation

• RF Wire Tracer and Multi-meter for evaluating miscellaneous wiring

• Rubber-tipped hammer to evaluate the stability of a junction under physical vibration

• Multi-purpose geared screwdriver furnished with small drill bit for use with Borescope

• Miscellaneous Tools: pliers, wire cutters, Leatherman™, inspection mirrors, measuring tape, flashlight, UV light, UV pen, drill bits for walls

RCS-4000 ORION REMOTE CONTROL SOFTWARE OPTION

Allows User to control the ORION from a computer serial port.

• Keeps user at safe distance when using the ORION in hazardous environments

• Provides the ability to “lock” ORION functions and settings

• Can be used for pre-screening of suspicious packages prior to X-Ray

• Available with a heavy-duty tripod and mounting bracket for stabilizing the ORION

• Optional Remote Control Pendant (RCP-4000) also available (does not require computer).

• Provides power for the ORION through the use of a standard 7.2 V ORION Battery or an external DC input from 9–24 volts

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Increased Radiated Power and Receiver Sensitivity provides Superior Detection Range for evaluating dense or thick materials...

The world’s leading Non-Linear Junction Detector is now available in a High Gain, Government Only Model: inspect concrete and other thick objects with ease.

Features

The ORION is the World’s leading Non-Linear Junction Detector (NLJD) for detecting hidden electronic devices.

The unique High Gain antenna design provides increased transmit power efficiency and receiver sensitivity for specialty applications (i.e. evaluating thick or dense objects such as concrete, thick wood, etc.).

- Effective Radiated Power (ERP) is more than double the standard ORION
- Increased transmit efficiency and receiver sensitivity due to high gain antenna
- Patented Digital Signal Processing Algorithms increases sensitivity
- Wide frequency range: 880 - 1005 MHz
- Patented Frequency Hopping functionality
- Lightweight, Balanced, Ergonomic Design: only 3.3lbs (1.5kg), easy to read display on the antenna head
- PC software for remote use or to create customized operational profiles to “lock” certain features for use in hazardous environments

*This device is authorized for use only by agencies, persons, and entities not restricted by US FCC regulations.

*Product specifications and descriptions subject to change without notice.
PC Computer Software

PC COMPUTER SOFTWARE
• Customize transmit frequency bands within operational bandwidth.
• Define and limit available user operational settings once the ORION is disconnected from computer.

OPTIONAL 60 FT. REMOTE CABLE
• Control the ORION remotely via computer.
• Keeps user at a safe distance when using the ORION in hazardous environments.
• Includes 60 ft cable, and a heavy-duty tripod and mounting bracket for stabilizing the ORION during remote use.

Technical Specifications

TRANSMITTER
Frequency Bands: 880–1005MHz in 200kHz or 100kHz steps
Transmit Power: 30 milliwatts minimum to approximately 3 watts Effective Radiated Power (ERP)
Power Control: Manual or auto control with 30 dB range

RECEIVER
Frequency Bands: Second Harmonic (1760–2010MHz) or Third Harmonic (2640–3015MHz)
Sensitivity: -133dBm for Second and Third Harmonics
DSP S/W Integration: Programmable between 6 and 18dB gain in sensitivity performance
Receiver Bandwidth: 3kHz

MECHANICAL
Extension Lengths: 16–51 in (40.6–129.5 cm)
Case Dimensions: 6.25 in x 14.9 in x 18.5 in (15.9 cm x 37.8 cm x 47.0 cm)
Weight with Battery: 3.3 lbs (1.5 kg)
Case Weight: 11.5 lbs (5.2 kg)

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* Product specifications and descriptions subject to change without notice.

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Expand your visual inspection capabilities...
Inspect drop ceilings, behind immovable objects, around corners, or other difficult to reach areas, even in dark situations with the VPC-64 Video Pole Camera.

VPC-64 Features

The VPC-64 provides a small, self contained, easy to use pole camera inspection system. The 24 inch Pole extends to over 6 feet without changing configuration, giving the average user over 10 feet of reach.

- White LED illumination for color inspection in dark areas (i.e. drop ceilings)
- IR LED illuminated black and white camera head available for covert or tactical applications
- Large 6.4 inch (16cm) diagonal, high resolution display, enhanced brightness, color monitor
- No external cables, ready-to-use out of the case
- Collapsed pole, removable camera head, monitor, and batteries fit into a case slightly larger than a standard briefcase
- Extremely portable, lightweight, and easy to use
VPC-64 Technical Specifications

Standard Color Camera Head

**Signal Format:** NTSC  
**Horizontal Resolution:** More than 380 Lines  
**Sensitivity:** 0.5 Lux / F1.2, 1.0 Lux / F2.0 (AGC ON)  
**Illumination:** 4 White LEDs with variable brightness control

Optional IR Illuminated Black & White Camera Head

**Signal Format:** NTSC  
**Horizontal Resolution:** 420 Lines  
**Sensitivity:** 0.0003 Lux / F1.2, 1.0 Lux / F2.0 (AGC ON)  
**Illumination:** 8 Infrared LEDs with variable brightness control

Color LCD Display

**Size:** 6.4 inch (16 cm) diagonal  
**Brightness:** 300 nits  
**Viewing Angles:** +/- 50° horizontal, +/- 40° vertical  
**Display Controls:** color saturation, contrast, and brightness  
**Camera Head Controls:** variable illumination

Rechargeable Power Supply

**Charger and two Ni-MH Battery Packs included**  
**Average Run-Time:** 2.0 Hours  
**Average Charge-time:** 1.8 Hours

Mechanical

**Collapsed length (including Camera Head):** 24.5 inches (62cm)  
**Extended length (including Camera Head):** 6.5 feet (200cm)  
**Weight:** 3.6 lbs (1.6 kg)  
**Case Size:** 18.5 in (47cm) x 6 in (15.3cm) x 14.5 in (36.8cm)  
**Case Weight with VPC-64 and all accessories:** 11.0 lbs (5.0kg)

Inspect hard to reach and inaccessible areas with the portable, quick-to-deploy VPC-64.

*Product specifications and descriptions subject to change without notice.
Detect & locate electronic surveillance devices...
Such as room, phone, and body bug transmitters, up to 12 GHz! The CPM-700 Deluxe responds to RF, carrier current, and infrared transmitters, as well as acoustic leakage.

Professional TSCM Tools in a Portable Sweep Kit

- Detect and locate sophisticated eavesdropping transmitters (digital & analog) including RF (audio, video, data, etc), Infrared, and Carrier Current transmitters.
- Test telephones and miscellaneous wiring for “hot mics,” hookswitch bypass, and “infinity” bugs with the Amplified Audio Auxiliary Input (100dB of gain).
- Evaluate structure bound audio leakage integrity (walls, glass, etc.) and vulnerability against laser listening devices using the active Acoustic Leakage Probe.
- Detect low power transmitters using active probes with built-in pre-amps for increased sensitivity.
- Wide Band Coverage - from 15kHz to 12GHz.

1. PHONES
   Headphone output for silent operation, disconnects internal speaker.
2. AUDIO GAIN
   Controls the audio gain (volume) to the speaker or headphone output.
3. THRESHOLD
   Sets the trip point for the Monitor mode.
4. ALERT LED
   Flashes red when input level exceeds trip point of Monitor mode.
5. INPUT LEVEL
   Bar graph indicates signal strength of Probe or Auxiliary inputs.
6. PULSING SEGMENT
   Indicates alarm trip point in the Monitor mode, activates Alarm and Remote output.
7. PROBE INPUT
   Provides input and power for active probes.
8. FILTER
   Audio filter used to accentuate voice frequencies and remove noise.
9. MODE
   Search or Monitor mode is for performing a sweep. Monitor mode sets the Alarm.
10. ALERT
    Selects either audible Tone alarm or Silent flashing LED output from Monitor mode.
11. STATUS DISPLAY
    Shows unit operating conditions made by button selections.
12. PROBE GAIN
    Adjusts the internal sensitivity of the Detector and Audio systems.

* Product specifications and descriptions subject to change without notice.
CPM-700 DELUXE Accessories

**BROADBAND MICROWAVE PROBE**
- Directional probe detects modern surveillance devices including frequency hopping transmitters up to 12GHz.
- Frequency Response: 2GHz - 12GHz ±3dB
- Antenna Gain: 7dB Nominal
- Sensitivity: -65dBm (1 segment)
- Audible Sensitivity: -70dBm
- Min. Discernible Signal Level (MDSL)

**STANDARD RF PROBE**
- Nearfield Active RF Probe for locating transmitters up to 3GHz.
- Frequency Response: 50kHz - 3GHz ±3dB
- Preamp Gain: 20dB Nominal
- Sensitivity: -62dBm (1 segment)
- Audible Sensitivity: -85dBm MDSL

**RF SNIFER PROBE**
- Probe for use in RF rich environments where the standard probe may be oversaturated.
- Frequency Response: 10MHz - 3GHz
- Preamp Gain: 20dB Nominal
- Sensitivity: -35dBm (8cm from target)
- Audible Sensitivity: -55dBm (8cm from target) MDSL

**VLF CARRIER CURRENT PROBE**
- Frequency Response: 15kHz – 2.5MHz ±3db
- Sensitivity: -38dBm (1 segment)
- Audible Sensitivity: -50dBm MDSL
- Max Input Voltage: 300VAC 50 - 60Hz

**INFRARED PROBE**
- Frequency Response: 10kHz - 5MHz
- Wavelength: 725 - 1150nM
- Viewing Angle: ±40 deg

**ACOUSTIC LEAKAGE PROBE**
- Evaluates structure bound acoustic leakage (walls, windows, etc.)
- Frequency Response: 50Hz - 10kHz (surface dependant)
- Impedance: 47K Ohm

**PATCH CORDS**
- Used to test miscellaneous wiring and to connect the CPM-700 to a tape recorder for recording audio output.

**CIGARETTE LIGHTER ADAPTER**
- Provides 12VDC power from automobile socket.

**HEADPHONE OUTPUT**
- Headphone Output: 5V p-p 220Ω

**RECORD OUTPUT**
- Record Out: 25mV p-p nominal with AGC

**MODULAR PHONE ADAPTER**
- Allows easy access to phone and network wiring to test for transmitting surveillance devices.

**AUDIO AUXILIARY INPUT**
- Input Impedance: 50K Ω
- AGC Dynamic Range: 110dB 3µV - 1V p-p
- Frequency Response: 100Hz - 15kHz ±3dB (filtered 500Hz - 2.5Khz)

**CARRYING CASE**
- Size: 18.5 in x 6 in x 14.5 in (47 cm x 15.3 cm x 36.8 cm)
- Weight: 10.3 lbs (4.7 kg) with all items

**NI MH BATTERIES**
- 2300 mAh (8 qty.): 8 - 12 hours per charge
- Recharge Time: 6 - 8 hours

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**CPM-700 DELUXE**
Provides a wide range of professional countersurveillance tools in an easy-to-use portable kit.
The CPM-700 is available in multiple package configurations depending on user needs.
Contact REI for the package that best meets your needs.

*The effectiveness of any surveillance countermeasure is dependent on the threat level and the user’s ability to properly deploy the appropriate countermeasure. Product specifications and descriptions subject to change without notice.*
CMA-100 Features

- Multi-functional high gain amplifier with selectable audio filters.
- Balanced and Unbalanced high impedance input provides connectivity to suspect wiring.
- Bias voltage adjustable between -15V to +15V DC used to activate devices that are voltage or current sensitive.
- Built-in AC/DC digital voltmeter.
- Automatic Gain Control with 145dB dynamic range (can also be manually selected).

* Product specifications and descriptions subject to change without notice.
**CMA-100 PROFESSIONAL HIGH GAIN AUDIO AMPLIFIER**

**INPUT IMPEDANCE**
- 50K Ω balanced
- Common Mode Rejection: >75dB
- Maximum Usable Input: 31V p-p
- Preamp Auto Attenuator: 0 to -40db (with overload warning LED)

**BIAS CONTROL**
- 0 to +/-14.5VDC, 5mA max
  (Over current protected, Input Impedance is reduced to 3.6K Ω when Bias is active)

**MAXIMUM INPUT VOLTAGE**
- 250 AC/DC
- Leakage Resistance To Case: > 10MΩ

**AUTOMATIC GAIN CONTROL**
- Dynamic Range: 145dB
- Manual Gain Control: 0, 25, 50, 75, 100dB
- Headphone Gain Control: 0-15dB
- Maximum System Gain: 115dB

**DIGITAL VOLTOMETER**
- 3.5 digit, auto zero, auto polarity, +/-199.9V AC or DC

**POWER ON, LOW BATTERY LED**
- Battery: 9V alkaline (5-30 hours typical run time)

**HEADPHONE OUTPUT**
- Line-Out Audio Output: 600Ω

**MECHANICAL**
- Size: 7.3in x 2.75in x 1.75in (185.4mm x 69.8mm x 44.5mm)
- Weight: 12.1 oz (343 g)

**ACOUSTIC LEAKAGE PROBE ALA-100 (Optional)**
- Evaluates structure bound acoustic leakage (walls, windows, etc.)
- Frequency Response: 50Hz - 10kHz
  (surface dependant)
- Impedance: 47K Ohm

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*The effectiveness of any surveillance countermeasure is dependent on the threat level and the user’s ability to properly deploy the appropriate countermeasure. Product specifications and descriptions subject to change without notice.*
TECHNICAL SURVEILLANCE COUNTERMEASURES SERVICES

Professional Protection Incorporated implements the following defensive measures to properly protect sensitive intelligence. The following are unclassified TSCM services offered through the PPI:

**Services include:**
- Technical Threat Analysis
- Radio Frequency Analysis
- Acoustic Analysis
- Thermal Analysis
- Physical Search and Analysis

**Technical Security**

The following is a list of the services that will be provided to protect the variety of sensitive intelligence associated with organizational operations.

- Dignitary Protection
- Fixed-Facility Evaluations
- In-Conference Monitoring
- Preconstruction and Construction Surveys
- Reactionary Surveys

**Dignitary Protection**

- Develop and implement the initial technical security policies for dignitary protection.
- Establish advanced party operations to be conducted 24 to 48 hours prior to arrival of principal at remote site.
- Ensure remote site is technically secure and maintain security until the area can be handed off to primary physical protection team.
- Maintain technical over-watch until principal departs the area.
- Establish and maintain technical security training and liaison between technical operations personnel and physical protection team personnel.

**Fixed-Facility Evaluations**

- Establish the initial technical security of the facility, and develop and implement the technical security program for facility operations.
- Annually evaluate the technical security program for required modifications due to environmental changes and growth in technology.
- Conduct and maintain technical security training program for security personnel and facility personnel.
In-Conference Monitoring
- Establish and implement technical security policies and procedures for sensitive conferences and meetings.
- Conduct live conference monitoring for both local and remote operations.
- Establish and implement technical security training for facility security and executive personnel.

Preconstruction and Construction Surveys
- Establish and implement the technical procedures to validate new building construction is properly supervised to ensure that technical hazards and/or penetrations are not installed or built into a new facility.
- Establish and implement the technical procedures to ensure that technical hazards and or penetrations are not installed or built into existing building.

Reactionary Surveys
- Establish and implement the procedures for proper reporting of suspected penetrations or attempts.
- Establish and implement the training program to help executives understand the important difference between nullification and exploitation.
TECHNICAL SURVEILLANCE COUNTERMEASURES TRAINING COURSE
Professional Protection Incorporated offers experienced instructors with over 80 years of combined Technical Surveillance Countermeasures experience as TSCM practitioners, United States Army Counterintelligence agents, and TSCM instructors. PPI will develop and plan a custom tailored progressive TSCM curriculum specifically designed to meet your needs (beginner or advanced TSCM technician) at your operating facility(ies) and/or operating environment(s). The following are unclassified training courses offered through the Professional Protection Training Institute:

Technical Security Equipment Course
Prerequisite: None

Four (4) day course introduces and familiarizes the technical security specialist with various TSCM equipment operations and capabilities, and basic TSCM security sweep procedures.

Course topics include:
- Purpose, use, and methodology of various TSCM equipment,
- Overview of technical threats,
- Classroom equipment training and hands-on exercises on the operation of the CPM-700 Broadband RF Receiver, ORION NLJD, and OSCOR Spectrum Analyzer,
- Complex transmitters and their detection, and
- TSCM equipment exercises in “live” project rooms.

All course concepts are reinforced with hands-on practical exercises.

Technical Security Countermeasures Course
Prerequisite: Technical Security Equipment Course

Five (5) day course focuses on procedures to conduct a technical security investigation and includes exercise with various threat levels. This course will enhance the skills of the technical security specialist.

Course topics include:
- History & legal issues of TSCM investigations,
- Technical threat overview including the characteristics and detection of sophisticated threats such as digital, spread spectrum, frequency hopping, and burst/packet transmitters,
- Physical search procedures,
- Basic line testing procedures,
- RF trace analysis and RF mapping,
- Advanced equipment procedures, and
- TSCM exercises in “live” project rooms.

All course concepts are reinforced with hands-on practical exercises.
Advanced TSCM Concepts Course
Prerequisite: Technical Security Equipment Course and Technical Security Countermeasures Course

Five (5) day course provides instruction of RF signal analysis and theory.

Course topics include:
- The relevance of Inverse Squares Law, frequency domain, time domain, and modulation schemes,
- In depth RF analysis including carrier, sub carrier, baseband, and microwave analysis,
- RF environment mapping, and
- TSCM use of Oscilloscopes, RF receivers, spectrum analyzers, and harmonic receivers.

All course concepts are reinforced with hands-on practical exercises.

Telephone Security Countermeasures Course
Prerequisite: None

Four (4) day course provides an overview of telephone systems and their inherent security vulnerabilities, as well as methods for the detection of attacks on both analog and digital telephone systems.

Course topics include:
- Telephone system components (analog and digital systems),
- Telephone security threats:
  - Hardware: serial taps, parallel taps, split/re-split, RF, carrier current, etc., and
  - Software: log files, system files, voice mail, forwarding/conferencing, speakerphone activation, etc.
- Test Equipment: volt/ohms meter, TDR (Time Domain Reflectometer), amplifiers, broadband RF detectors, line tracers, etc.

All course concepts are reinforced with hands-on practical exercises using live telephone systems.

Digital Telephone Security Course
Prerequisite: None

Five (5) day course provides in depth instruction on digital telephone system testing and analysis for technical threats, including the operation of the REI TALAN Telephone and Line Analyzer.

Course topics include:
- Telephone system characteristics and vulnerabilities,
- Countermeasure tests:
  - FDR, Frequency Domain Reflectometry,
• Voltage/ohms tests,
• Digital demodulation and audio detection,
• Non-Linear Junction Detection (NLJD) on a line, and
• Historical comparison.
• Digital telephone countermeasure analysis procedures, and
• Other line testing and analysis.

All course concepts are reinforced with hands-on practical exercises using live telephone systems.
SALES CONTACT INFORMATION

Professional Protection Incorporated is an authorized reseller of Research Electronics International countersurveillance equipment, offering the most dependable counter surveillance solutions on the market today. From state-of-the-art electronic detection devices and telephone security equipment, to portable noise generators and anti-bugging mechanisms, PPI provides our clientele with the ability to safeguard their valuable information. It is a very unfortunate reality that in today’s world a prudent proactive covert Technical Surveillance Countermeasures program is a necessary evil to prevent corporate business and government operational secrets from falling into the hands of those who mean harm to the organization and its assets.

Minimizing client risk is essential in today’s business environment. The safety and security of our client’s personnel, property, and information directly impact the client’s daily operations. It is essential to choose a partner to support or augment your security plan; one equipped to anticipate and prepare for all potential situations. By partnering with Professional Protection Incorporated your organization can be fully prepared to handle any potential security threat. For additional documentation, information, and pricing contact the following:

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