

NET5400T Series Video Encoders

H.264 BASED NETWORK VIDEO ENCODERS WITH VIDEO ANALYTICS

Product Features

- Pelco Analytics Included at No Charge
- Analytic Alarm Triggers
- PTZ from Web GUI, Including Presets and Patterns
- SNMP Support in Web GUI
- OSD On/Off from Web GUI
- Simplified User and Group Management Page in Web GUI
- Open Standards-Based Architecture
- H.264 Baseline, Main, or High Profile Compression
- Dual-Stream at up to 4CIF, 30/25 Images per Second (ips) per Stream
- Integrated Coaxitron® and Pelco D PTZ Protocols
- Power over Ethernet (PoE) Models (Compliant with IEEE 802.3af or IEEE 802.3at)
- 1-, 2-, and 4-Channel Models



The **NET5400T Series** is a high performance, single- to multi-channel video encoder that integrates analog cameras and positioning systems into an IP video surveillance system. The **NET5400T Series** encoders deliver crystal clear images while drastically reducing the network bandwidth and storage requirements for IP video surveillance applications.

Uncompromised Performance and Image Quality

The **NET5400T Series** encoders are capable of compressing a single video input into two streams, each up to 4CIF (704 x 480 for NTSC and 704 x 576 for PAL) and 30/25 ips. With individually configurable streams, each channel of the **NET5400T Series** encoder can be configured to meet differing bandwidth, resolution, and frame rate requirements.

The high profile H.264 compression option delivers outstanding picture quality at a drastically lower bandwidth. While H.264 compression provides significant bit-rate savings over JPEG and MPEG-4 compression schemes, high profile H.264 enables sophisticated tools that further reduce bit-rate while also improving picture quality under certain scene conditions. The **NET5400T Series** encoders provide baseline, main, and high profile H.264 compression to optimize the cost of deploying IP video surveillance while improving image quality.

Powerful Intelligence at the Edge

The **NET5400T Series** encoders are enabled for video intelligence at the edge. With a dedicated analytics processing unit per channel, each input can be independently configured to run multiple algorithms to analyze frames of video in real time. Once configured, object and activity

detection algorithms can interpret activity in the field of view and trigger an alarm when unwanted activity is detected, thus making the surveillance operator significantly more effective and efficient. The ability to run analytic behaviors at the edge reduces network bandwidth requirements in transmitting video to a central server. In addition, edge-based analytics also allow for more graceful scalability as centralized servers can introduce bottlenecks. Pelco is constantly updating the available analytics libraries; contact a Pelco representative for the latest available algorithms.

Integration for Installation Flexibility

The **NET5400T Series** is available in a choice of 1-, 2-, or 4-channel form factors. The 1- and 2-channel models support PoE, minimizing the amount of wiring needed. The 1- and 2-channel models also support looping video output, allowing simple connections to other analog components at the edge.

The dual network ports allow for daisy-chaining the units to reduce the number of expensive network switch ports that would normally need to be consumed by each encoder.

The optional wall mounts and rack mount provide convenient installation of the 1- to 4-channel models. The RK5200 rack mount also provides built-in cooling and an integrated, redundant power supply to safeguard all encoder operations.

Integrated audio inputs for each video input can capture audio from various sources and associate it with the video. One alarm for each video input and one relay output for the encoder allows for I/O communication with external components.



by **Schneider Electric**

International Standards
Organization Registered Firm;
ISO 9001 Quality System



C4646 / REVISED 8-26-11

Built-in Analytics

The **Pelco® Analytics Suite** and **ObjectVideo® (OV) Analytics Suites** enhance the flexibility and performance of the NET5400T Series video encoder. Models are preloaded and configured for the **Pelco Analytics Suite**. Eight Pelco behaviors are preloaded and included as standard features. Pelco behaviors can be configured and enabled using a standard Web browser. The encoder is capable of running up to three behaviors simultaneously for each associated camera. No additional licensing or license activation is required. Some models are also available preloaded with **OV Analytics Suites**.

NET5400T Series models provide full access to the entire Pelco Analytics library for each channel. Up to three behaviors can be run simultaneously per input. The **Pelco Analytics Suite** is easy to configure for alarm notification when used with Endura®. **OV Analytics Suites** offers rule configurations and alarm notifications that are compatible with **OV Ready™** systems.

Note: Available processing power is determined by the settings for compression standards, resolution, image rate, bit rate, and analytic configuration.

Web Interface

The **NET5400T Series** uses a standard Web browser for powerful remote setup and administration. Live video streams can be viewed from an intuitive Web interface, and on-screen displays can be accessed directly from the Web browser for additional camera configuration. A simplified user and group management page makes user setup even easier.

Pelco Analytics Suite

The Pelco Analytics Suite is configured with an Endura system, which enables the behaviors to automatically detect and trigger alarms when specific activity is detected. Multiple Pelco analytics can be scheduled to work during a certain time or condition. For example, during the day, a camera can be configured with Object Counting to count the number of people that enter a lobby door. At the same time, Camera Sabotage and Directional Motion can also be running to detect any attempt at tampering with the camera or someone moving in the wrong direction. Further, profiles can be created and scheduled such that the behaviors on any given camera are changed throughout the day or as a result of an alarm or event trigger. The Pelco Analytics Suite includes the following behaviors:

- **Abandoned Object:** Detects objects placed in a defined zone and triggers an alarm if the object remains in the zone longer than the user-defined time allows. An airport terminal is a typical installation for this behavior. Abandoned Object can also detect objects left behind at an ATM, signaling possible card skimming.
- **Adaptive Motion:** Detects and tracks objects that enter a scene and then triggers an alarm when the objects enter a defined zone. Adaptive Motion is primarily used in outdoor environments with light traffic to reduce the number of false alarms caused by environmental changes.
- **Camera Sabotage:** Detects contrast changes in the camera's field of view. If the lens is obstructed with spray paint, a cloth, or covered with a lens cap, the behavior triggers an alarm. It also triggers an alarm if there is any unauthorized movement of the camera.

- **Directional Motion:** Generates an alarm in a high traffic area when a person or object moves in the wrong direction, alerting operators to a safety or security threat. Typical installations for this behavior include an airport gate or tunnel where cameras can detect objects moving in the opposite direction of the normal flow of traffic.
- **Loitering Detection:** Identifies when people or vehicles remain in a defined zone longer than the user-defined time allows. This behavior is effective in real-time notification of suspicious behavior around ATMs, stairwells, and school grounds.
- **Object Counting:** Counts the number of objects that cross a tripwire or enter a defined zone. This behavior can improve business intelligence and operations by counting the number of people at a store entrance or exit. It can also monitor foot traffic inside a store to gauge areas of interest.
- **Object Removal:** Triggers an alarm if an object is removed from a defined zone. This behavior is ideal for detecting the removal of high value objects, such as a painting from a wall or a statue from a pedestal.
- **Stopped Vehicle:** Detects vehicles stopped near a sensitive area longer than the user-defined time allows. This behavior is ideal for airport curbside drop-offs, parking enforcement, suspicious parking, traffic lane breakdowns, and vehicles waiting at gates.

ObjectVideo (OV) Analytics Suites

ObjectVideo Analytics Suites are preloaded on selected **NET5400T Series** video encoders and require an OV Ready system to configure the behaviors for alarm notification.

OV Security Suite

The OV Security Suite is easy to use and includes Tripwire Detection, Inside Area Detection, and Camera Tamper Detection behaviors.

- Tripwire Detection identifies objects that cross a user-defined line drawn within the camera's field of view.
- Inside Area Detection identifies objects entering, appearing, or moving within a user-defined area.
- Camera Tamper Detection identifies significant contrast changes in the camera's field of view; for example, if the lens is obstructed by spray paint, a cloth, or a lens cap.

OV Security Suite Plus

The OV Security Suite Plus includes the behaviors of the OV Security Suite, plus Multi-Line Tripwire Detection, Loitering Detection, and Leave Behind Detection behaviors.

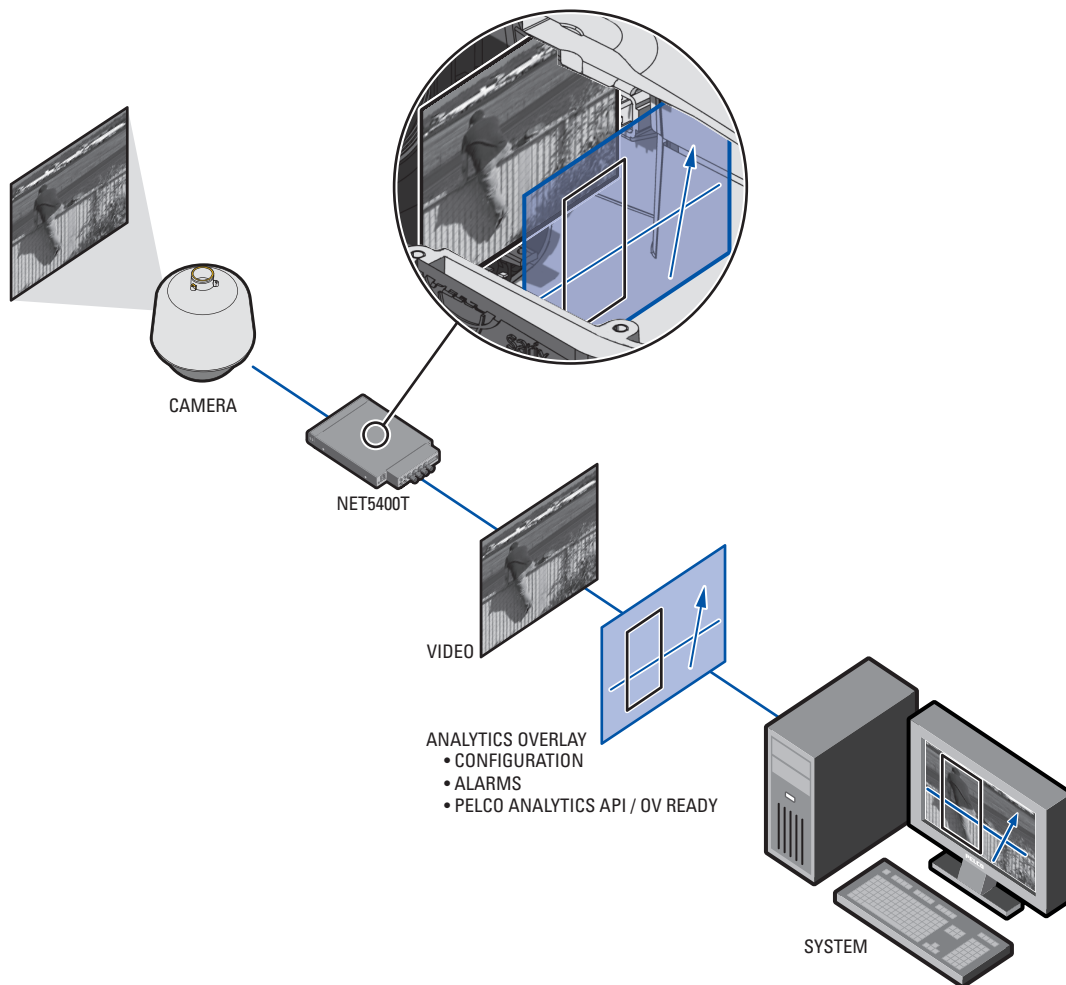
- Multi-Line Tripwire Detection identifies objects that cross two defined lines and generates an event based on defined parameters, including directionality. Defined parameters for this behavior include direction, sequential order, and time between crossing each tripwire.
- Loitering Detection identifies when people or vehicles remain within a defined area beyond a specified period of time. This behavior is effective for real-time notification of suspicious behavior around ATMs, stairwells, and school grounds.
- Leave Behind Detection detects objects placed in a defined zone and triggers an alarm if the object remains in the zone longer than the user defined time allows.

TECHNICAL SPECIFICATIONS

OV Event Counting Suite

The OV Event Counting Suite uses advanced object calibration and additional features for schedules, parameters, and multiple rules. The suite includes behaviors for Tripwire Counting, Enters/Exits Counting, Loiter Counting, Occupancy Sensing, and Dwell-Time Monitoring.

- Tripwire Counting counts people or objects that cross a user-defined line.
- Enters/Exits Counting calculates the number of people that enter and exit an area without using a tripwire.
- Loiter Counting is useful in analyzing how frequently people stop in front of a product, display, or other area of interest. This feature is also useful in assessing promotion effectiveness and product interest.
- Occupancy Sensing counts people and generates a new value every time the occupancy level changes. Since each occupancy output is time-stamped, the data can be used to determine average occupancy levels or to correlate data to point-of-sale or other business scenarios.
- Dwell-Time Monitoring rules can be set up to record the length of time between when an object enters and then exits an area. Along with queue size information, wait times can also be assessed. This behavior can be used to evaluate consumer interaction for a point-of-sale display or digital advertisement.



IMPORTANT NOTE. PLEASE READ. The network implementation is shown as a general representation only and is not intended to show a detailed network topology. Your actual network will differ, requiring changes or perhaps additional network equipment to accommodate the system as illustrated. Please contact your local Pelco representative to discuss your specific requirements.

TECHNICAL SPECIFICATIONS

SYSTEM

Operating System	Linux®
User Interface	Integrated Web browser, requires Microsoft® Internet Explorer® 8 or later; supported video management system (VMS) user interfaces
Media Player*	Pelco Media Player or QuickTime® 7.6.5 for Windows® XP, Windows Vista, or QuickTime 7.6.4 for Mac® OS X 1.4

*A media player is required to view video from a Web browser. Video from any camera associated with the NET5400T Series can be viewed from any Endura viewing station, such as the VCD5202 or WS5200 software.

VIDEO/AUDIO

Analog Video Standards	NTSC/PAL	
Compression Standards	MJPEG and H.264 Baseline, Main, and High profiles	
Video Streams	3 independently configurable per video channel; up to 2 unicast streams; unlimited multicast streams	
Analog Video Resolutions	NTSC	PAL
	4CIF	704 x 480 704 x 576
	2CIF	704 x 240 704 x 288
	CIF	352 x 240 352 x 288
Frame Rates	1, 2, 3, 4, 5, 6, 7.5, 8, 10, 12, 12.5, 15, 24, 25, 30 (varies with stream configurations)	
Video Inputs	1, 2, or 4 BNC inputs; 1 Vp-p; Hi-Z/75 ohms impedance	
Looping Outputs	On 1- and 2-channel models only	
Audio Encoding	G.711	
Audio Bit-Rate	64 kbps	
Audio Input	Line-in, 3.5 mm connector	
Audio Output	Line-out on 1- and 2-channel models only	

ANALYTICS

Required Systems for Pelco Analytics Suite Open API	Pelco analytics streaming information communicate through Pelco's API Guide for Video Analytics version 0.55.30 (or later), available at Pelco.com/IP .
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NETWORK

Interface	2, Ethernet RJ-45 ports (100/1000Base-T)
Protocols	TCP/IP, UDP/IP (Unicast, Multicast IGMP), UPnP, DNS, DHCP, RTP, RTSP, NTP, IPv4, SNMP v2c/v3, QoS, HTTP, HTTPS, LDAP (client), SSH, SSL, SMTP, FTP, and 802.1x (EAP)

AUXILIARY INTERFACES

Alarm Inputs	1 alarm input per camera input, configurable (supervised/unsupervised); 5.0 VDC 10 kohms
Relay Outputs	1 relay; 30 VDC, 1 A; uses 3 of 16 pins on terminal block connector
PTZ Interface	Coaxitron or RS-422
PTZ Protocols	Pelco D, Coaxitron

FRONT PANEL INDICATORS

Power	Blue Pelco badge
Status	Green, amber, red (based on diagnostics)
Ethernet Port 1	Green, amber, red
Ethernet Port 2	Green, amber, red
Video Inputs	Green, red, off

TECHNICAL SPECIFICATIONS

POWER

Power Input	
1-Channel	PoE (IEEE 802.3af 2003), 12 VDC or 24 VAC ±10%; power supply sold separately
2-Channel	PoE+ (IEEE 802.3at), 12 VDC or 24 VAC ±10%; power supply sold separately
4-Channel	12 VDC ±10%; power supply sold separately
Power Supply	
1- and 2-Channel Units	4-pin connection to external power supply or PoE
4-Channel Units	4-pin connection to external power supply

ENVIRONMENTAL

Operating Temperature	
1- and 2-Channel Units	0° to 45°C (32° to 113°F)
4-Channel Units	5° to 35°C (41° to 95°F)
Storage Temperature	−40° to 65°C (−40° to 149°F)
Operating Humidity	20% to 80%, noncondensing
Max. Humidity Gradient	10% per hour
Operating Altitude	−16 to 3,048 m (−50 to 10,000 ft)
Operating Vibration	0.25 G at 3 Hz to 200 Hz at a sweep rate of 0.5 octave/minute

Note: The temperature at the unit air intake can be significantly higher than room temperature. Temperature is affected by rack configuration, floor layout, air conditioning strategy, and other issues. To prevent unit damage, make sure the temperature at the air intake of the unit is continuously within the operating temperature range.

PHYSICAL

Construction	Sheet metal
Finish	Gray metallic with black end caps, black matte finish
Dimensions	26.5 x 16.4 x 2.7 cm (10.43" D x 6.55" W x 1.08" H)
Mounting	
Desktop	Rubber feet provided
Wall or Rack	Optional mounting accessories required
Unit Weight	0.9 kg (2.0 lb)
Shipping Weight	2.3 kg (5.0 lb)

TECHNICAL SPECIFICATIONS

MODELS

Use the following table to create a model number to specify your NET5400T Series encoder. For example, the model number for a 2-channel encoder with the OV Security Suite is NET5402T-OS.

Note: Order power supply separately. See *Optional Accessories* below for available models.

Model	Description
NET540xT	1-, 2-, or 4-channel H.264 encoder with built-in Pelco Standard Suite
NET540xT-OS	1-, 2-, or 4-channel H.264 encoder with built-in OV Security Suite
NET540xT-OSP	1-, 2-, or 4-channel H.264 encoder with built-in OV Security Suite Plus
NET540x-T-OCF	1-, 2-, or 4-channel H.264 encoder with built-in OV Event Counting Suite

OPTIONAL ACCESSORIES

WM5200-4U Wall mount for single unit (no power supply)

Use the following table to create a model number to specify your power supply and regional power cord. For example, the model number for a single-module power supply with a European Union regional power cord is NET5400PS-EU.

Note: Power cords are not included for units shipped to China.

Model	Description	Country Code
RK5200PS-5U	Rack mount with redundant power supply for 12 units	AR = Argentina AU = Australia
NET5400PS	Single-module power supply (12 VDC, 5 A, 60 W)	CN = China EU = European Union UK = United Kingdom US = United States

CERTIFICATIONS

- CE, Class A
- FCC, Class A
- UL/cUL Listed
- C-Tick
- CCC
- KCC

STANDARDS/ORGANIZATIONS

- Pelco is a member of the MPEG-4 Industry Forum.
- Pelco is a member of the Universal Plug and Play (UPnP) Forum.
- Pelco is a member of the Universal Serial Bus (USB) Implementers Forum.
- Pelco is a contributor to the International Standards for Organization/Electrotechnical Commission (ISO/IEC) Joint Technical Committee 1 (JTC1), "Information Technology," Subcommittee 29, Working Group 11.
- Compliant with ISO/IEC 14496 standard (also known as MPEG-4).
- Compliant with International Telecommunication Union (ITU) Recommendation G.711, "Pulse Code Modulations (PCM) of Voice Frequencies."

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