

**CSI 2010 Specification for:
FLIR IOI trk-101-P
(Video Analytic Encoder)**

Notes to Specifier:

- 1. This CSI 2010-compliant specification is designed to allow the specifier to specify FLIR or similar products for any type of project. Specifier can easily customize this specification to his/her needs.**
- 2. The specification is not proprietary to FLIR Systems, Inc. Any suitable brand can be specified using this specification.**
- 3. FLIR has placed Text Boxes such as this in bold to alert the specifier of important information. Delete all Text Boxes after editing.**
- 4. FLIR has also placed edit prompts “[]” throughout the specification to prompt the specifier to add or modify information relative to the paragraph at hand. Delete all Edit Prompts “[]” after editing.**
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PART 1 - GENERAL

1.1. Summary

- A. This Specification is for a Video Analytic Encoder (trk-101-P) for installation into a fully operational Digital Video System. This Specification is part of a larger project which may be covered in one or more of the Specification Sections listed below.
- B. Alternatively, if no Related Specification References are listed below, this Specification shall be used to describe the purchase and supply of encoders alone. In such a case, installation of said encoders may or may not be included in the scope of work. See Articles 1.5 and 1.7 below for a descriptive narrative of any applicable installation requirements.

1.2. Section Contents and Related Specification References

- A. This Specification may be part of a larger Security System project. ***[If so, utilize the appropriate specification sections below.]*** Refer to the appropriate CSI 2010 Specification Sections as referenced below: ***[Delete any sections not for coordination to this work.]***
 - 1. 000000 – Procurement and Contracting Requirements (Division 0)
 - 2. 010000 – General Requirements (Division 1)
 - 3. 020000 – Existing Conditions (Division 2)
 - 4. 080000 – Openings (Doors, Door Hardware and other Openings) (Division 8)
 - 5. 101400 – Signage (Division 10)
 - 6. 111200 – Parking Control Equipment (Division 11)
 - 7. 142000 – Elevators (Division 14)
 - 8. 250000 – Integrated Automation Systems (Division 25)
 - 9. 260000 – Electrical (Division 26)
 - 10. 270000 – Communications (Division 27)
 - a. 271000 – Data Communications Network Equipment (including Firewalls, Routers, Codecs, Switches and Access Points)
 - b. 272200 – Data Communications Hardware (including Servers, Storage, Workstations, Printers, etc.)
 - c. 273000 – Voice Communications

11. 280000 – General Security System Specification (Division 28)
 - a. Section 280800 – Commissioning of Electronic Safety and Security
 - b. Section 281000 – Electronic Access Control and Intrusion Detection
 - c. Section 281600 – Intrusion Detection
 - d. Section 281619 – Intrusion Detection Remote Devices and Sensors
 - e. Section 282000 – Electronic Surveillance
 - f. Section 282300 – Video Surveillance
 - g. Section 282313 – Video Surveillance Control and Management Systems
 - h. Section 282316 – Video Surveillance Monitoring and Supervisory Interfaces
 - i. Section 282323 – Video Surveillance Systems Infrastructure
 - j. Section 282329 – Video Surveillance Remote Devices and Sensors

1.3. Drawings and Specifications:

A. Drawings:

1. ***[Include this paragraph if Drawings were included.]*** Drawings delivered with these Specifications show device locations, and may show conduits, details, device schedules and single-line or detailed schematics.
2. ***[Include this paragraph if Drawings were not included.]*** Drawings are not included. See the descriptive narratives in Articles 1.5 and 1.7 below.

B. Specifications: The Specifications describe the Scope of Work including:

1. Section 1 – System Descriptions, all items to be delivered and installed and all services to be performed.
2. Section 2 – Products, describes acceptable products.
3. Section 3 – Execution, describes the standards and practices to be used by the installer for this work.

- 1.4. Project Background and Site Conditions:
 - A. ***[Fill in Project Background and Site Conditions for this work here or delete this paragraph and include the paragraph below if this is part of a complete system.]***
 - B. See Section 282313 – Video Surveillance Control and Management Systems
- 1.5. Product Description:
 - A. Provide a quantity of video analytic encoders as shown on the associated Purchase Order or Bill of Quantities.
- 1.6. Submittals:
 - A. ***[Fill in Submittal Requirements for this work here or delete this paragraph and include the paragraph below if this is part of a complete system.]***
 - B. See Section 013300 – Submittal Procedures
 - C. *IOI trk-101-P Installation Manual*
 - D. *IOI trk-101 and trk-101-P Quick Install Guide*
 - E. *IOI HTML Edition Units User's Guide*
- 1.7. Delivery, Storage and Handling:
 - A. ***[Fill in Submittal Requirements for this work here or delete this paragraph and include the paragraph below if this is part of a complete system.]***
 - B. See Section 016000 – Product Requirements
- 1.8. Quality Assurance:
 - A. ***[Fill in Submittal Requirements for this work here or delete this paragraph and include the paragraph below if this is part of a complete system.]***
 - B. Manufacturer:
 - 1. Minimum 10 years' experience in manufacture and design of IP Video surveillance systems.
 - 2. ISO 9001:2008 certification

- C. Installer:
 - 1. Minimum 5 years' experience in installing IP surveillance systems.
 - 2. All camera installation, configuration and commissioning shall be performed by technicians fully authorized by manufacturer.

- 1.9. Applicable Codes and Standards:
 - A. ***[Fill in Applicable Codes and Standards for this work here or delete this paragraph and include the paragraph below if this is part of a complete system.]***
 - B. Electromagnetic Compatibility: FCC (47 CFR) Part 15 Subpart B, Class A; CE Class A; EN55032:2012; EN55024; CISPR 22: 2009 Class A; VCCI; RCM
 - C. Safety: UL 60950-1:2007; IEC 60950-1:2005 (Ed. 2) + A1:2009 + A2:2013; EN60950-1:2006 (Ed. 2) + A11:2009 + A1: 2010 + A12:2011 + A2:2013; CAN/CSA-22.2 No. 60950-1-07 + A1:2011; cTUVus
 - D. H.264, MPEG-4 SP, MJPEG
 - E. RoHS
 - F. See Section 282313 – Video Surveillance Control and Management Systems

- 1.10. Warranty:
 - A. ***[Fill in specific services for this work here or delete this paragraph and include the paragraph below if this is part of a complete system.]***
 - B. Manufacturer's warranty will cover two years for replacement or repair of defective equipment.

PART 2 - PRODUCTS

2.1. Acceptable Manufacturer and Model:

- A. Acceptable Manufacturers: ***[FLIR IOI and/or name acceptable alternative manufacturers here, or indicate to submit all for review.]***
- B. Models: ***[FLIR IOI model trk-101-P and/or name acceptable alternative models here, or indicate to submit all for review.]***

2.2. General Product Description:

- A. Video Analytic Encoder

2.3. Detailed Product Description:

A. Basic Description:

1. The encoder shall operate either as a stand-alone video analytic encoder or as part of an integrated network configuration. Field software upgrades shall be distributable across the network. There shall be no need for additional hardware or software to perform the video analytics.
2. The encoder shall provide both analog and digital video outputs.
3. The encoder shall be compatible with 3rd party Network Video Management Software (NVMS), FLIR VMS platforms (Latitude/Horizon/Meridian), analog video displays or recording devices.
4. The encoder shall include dry contact input and output.
5. The encoder shall include a web interface for control/configuration.
6. The encoder shall digitally encode images received from an analog camera into a compressed IP video stream and send metadata and events over IP to a VMS.
7. The encoder shall embed analytic metadata in an analog video stream to a Video Management System (VMS) or Digital Video Recorder (DVR), and include detection overlays and on-screen display information on the image.
8. Setup and Configuration:
 - a. Single-handedly install and setup one or more cameras for recording without requiring another person's assistance.
9. The encoder shall provide a high probability of intelligent video detection while maintaining a low false alarm rate.

10. The encoder shall be optimized to assist in detecting camouflaged intruders, slow progression rates (depending on conditions down to 1 foot (30.5 cm) per 5 minutes) and burst maneuvers.
 11. The encoder shall be optimized for non-flat detection; that is, seeing objects in 3D-space and at distances.
- B. The encoder shall enable the following additional functionality:
1. Automatically hand-off tracking from a fixed camera to a PTZ camera when an intrusion is detected by the stationary camera. The handoff enables the PTZ camera to automatically track an intruder.
 2. Continuous PTZ tracking and analytics while camera is moving. Quasar CP-4221-30x PTZ camera must be installed at minimum 6m/20ft. height. All other PTZ cameras must be installed at minimum 4m/13ft. height.
 3. Click-and-track functionality allows operator to select the object to be tracked.
 4. Run analytic rules on each preset and auto-track upon detection.
 5. Store clips of recorded events in the device's internal flash memory and set pre-alarm and post-alarm intervals.
 6. Via the unit's web interface, setup and configure the unit.
 7. Via the unit's web interface, connect to a remote site and monitor/control other connected cameras on the network. It shall possible to view live video, control PTZ cameras, view and modify relay status, and query locally stored clips for playback or for download.
 8. Remotely access any connected unit that is located behind a firewall at a remote site. It shall be possible to transmit MJPEG videos via HTTP and remotely setup and configure a connected unit over the web.
 9. Send an email notification upon the occurrence of events such as detection of any or a specific type or rule, tampering and/or operational event.
 10. Send an email with a snapshot attached. The encoder shall send to a remote site manager an email of an event with an attached snapshot and on-screen display indication of the intruder.
 11. Perform scheduled actions. The unit will perform actions on a specific date or time or on a recurring basis over a defined time period according to a predefined schedule.
 12. Perform automatic responses to a pre-defined triggering event during a defined monitoring period.
 13. Utilize the unit's relay outputs to control external devices.

14. Automatically calibrate and configure scene depth settings, discover people in the scene, and configure human markers for analytics.
15. Support hand-off from an IOI HD fixed camera to a PTZ camera.
16. Support intrusion detection on Quasar PTZ and FLIR TCX DNZ30TL2R camera presets.

2.4. Technical Specifications:

A. Basic Encoder Specifications

1. Digital:
 - a. Full frame rate support (25/30 fps)
 - b. Embedded HTML server for setup/configuration from standard browser
 - c. Ethernet port: RJ45 10/100 Mbps
2. Hybrid/Dual Digital/Analog Video Outputs
 - a. Digital:
 - i. H.264, MPEG-4 SP and MJPEG
 - ii. D1 resolution 720 (H) x 480/576 (V) (NTSC/PAL)
 - iii. User-defined image frame rate from 1 up to 30fps (depending on resolution and codec)
 - iv. User-defined bit rate: Constant bit rate (CBR) 128Kbps to 4Mbps and Variable bit rate (VBR)
 - b. Analog:
 - i. NTSC/PAL
 - ii. 1 BNC 75Ω
 - iii. Composite 1V p-p
 - iv. Includes graphical overlay

B. Electrical

1. Power requirements: 12VDC/24VAC
2. Power consumption: 3.6 Watts DC/6 Watts AC

C. Mechanical

1. Dimensions: 68.5 x 36 x 118mm/2.7 x 1.42 x 4.62" (W x H x D)
2. Mounting: Shelf/Rack/Wall/Stackable

D. Control Inputs and Outputs (I/O)

1. In: Dry contacts
2. Out: Relay out (rated load 0.3A@ 30VDC)
3. RS-485 port for PTZ camera control

E. Memory

1. Includes internal flash memory for SoE event recording

F. Network:

1. IEEE Ethernet 802.3/802.3u (10/100/1000 Mbps)
2. Services and protocols: TCP/IP, UDP/IP, HTTP, SMTP, DHCP, DNS, SNTP
3. Video streaming: RTP/RTSP Unicast/Multicast
4. Alarms and commands: TCP/IP, HTTP
5. Internet Browser: Internet Explorer 8, 9, 10, and 11
6. Operating system: Windows XP, 7, 8, 8.1, and 10

G. Software

1. Integrated web server with capability to setup and control the entire site.
2. Bundled utility program to discover and configure IP, set device properties and user credentials, perform firmware upgrades, set PAL/NTSC mode, reset defaults or reboot the unit.

H. Environmental

1. Ambient operating temperature: 0° to 60°C (32° to 140°F)
2. Ambient operating humidity: 5% to 95% (non-condensing)

I. Certifications

1. Safety: UL 60950-1:2007; IEC 60950-1:2005 (Ed. 2) + A1:2009 + A2:2013; EN60950-1:2006 (Ed. 2) + A11:2009 + A1: 2010 + A12:2011 + A2:2013; CAN/CSA-22.2 No. 60950-1-07 + A1:2011; cTUVus
2. Electromagnetic Interference (EMC): FCC (47 CFR) Part 15 Subpart B, Class A; CE Class A; EN55032:2012; EN55024; CISPR 22: 2009 Class A; VCCI; RCM
3. Environmental: RoHS

J. Rule-Driven Video Analytics

1. Embedded analytics:
 - a. Region Entrance/Intrusion Detection
 - i. Human entrance to the scene or user-defined region in all or a specific direction and filtering of the following attributes:
 - a. Maximum Speed
 - b. Size
 - c. Distance inside region
 - d. Time in region
 - e. Maximum stationary time
 - f. Slow crawlers/small animals detection
 - ii. Vehicle entrance to the scene or user-defined region in all or a specific direction and filtering of the following attributes:
 - a. Maximum Speed
 - b. Size
 - c. Distance inside region
 - d. Time in region
 - e. Maximum stationary time
 - f. Slow crawlers/small animals detection
 - b. Virtual Tripwire Crossover: The encoder shall support the declaration of a real or virtual fence or line threshold (such as the step-way onto a subway), in order to detect motion of persons or objects across the threshold.
 - c. Crossover/Fence Trespassing: The encoder shall support the declaration of a real or virtual fence, such as entering into an exit way at an airport terminal secured boundary in order to detect motion of persons or objects across the threshold. The following attributes shall be filtered:
 - i. Size
 - ii. Maximum Speed
 - iii. Slow crawlers/small animals detection

- d. 3D-Scape Detection Algorithm: The system shall require field measurements of human subjects as well as ground plane measurements in order to define the three-dimensional environment of the video view. This shall include the ability to define vertical surfaces, sloped surfaces and multiple levels in the same video window. The system shall have the ability to detect human targets that are walking, running, crawling or crouching and shall not be limited to vertical targets. The system shall have the ability to define target object minimum size as well as the ability to detect slow-moving targets.
 - e. Unattended Baggage Detection: The encoder shall detect baggage that is not attended by a nearby person whether the baggage is dropped and left, associated with a person who leaves the scene or moves away or whether the baggage is thrown into the field of view of the camera from off-screen. The following attributes shall be filtered:
 - i. Maximum Size
 - ii. Scene Type
 - iii. Time until Alert
 - f. Stopped Vehicle Detection: The encoder shall detect vehicles that have stopped in an area defined to disallow stopped vehicles. Time duration of stoppage shall be adjustable. The following attributes shall be filtered:
 - i. Maximum Size
 - ii. Scene Type
 - iii. Time until Alert
 - g. Object Removal Detection: The encoder shall detect defined objects that are declared for non-removal, such as museum pieces, vehicles, objects, etc., allowing for automatic investigations initiation such as a vehicle leaving an area of a stake-out. The following attributes shall be filtered:
 - i. Size
 - ii. Scene Type
 - iii. Time until Alert
 - h. Loitering: The encoder shall be able to detect a person loitering in an area, whether alone or in a crowd. The following attributes shall be filtered:
 - i. Time in Zone
 - ii. Slow crawlers/small animals detection
 - i. Camera Tampering Detection. The following attributes shall be filtered:
 - i. Video signal loss
 - ii. Bad video signal
 - iii. Low visibility
 - iv. Camera shift
2. The encoder shall allow for automatic responses following pre-defined events.

K. Remote Site Monitoring and Management

1. Bundled utility program that provides web-based monitoring of IOI analytics on any unit running firmware versions 1.5.7 and 2.1.1 or higher.
2. Enables remote camera access from any PC with IE 8, 9, 10 and 11 over Windows 7 and Windows 8, 8.1, and 10.
3. Enables accessing units located behind a firewall at a remote site.
4. For sites up to 25 cameras.
5. Views and manages up to 9 live video displays.
6. Transmits high quality live video and backup local recordings from sites with low-bandwidth.
7. Stores up to 3,800Mb of events.
8. Query, playback and export remote clips stored on the edge.
9. Enables PTZ control.
10. Provides automatic PTZ tracking when clicking on the target or intruder.
11. Enables remote I/O control.
12. Includes single and batch arm/disarm and clear alarm functions.
13. Includes audio alerts for camera operation.
14. Includes role-based user privileges.

L. Required System Elements to Complete a Workable System

1. Digital Video Software or Video System See Section 282313 – Video Surveillance Control and Management Systems

PART 3 - EXECUTION

- 3.1. Examination:
 - A. See Section 282313 – Video Surveillance Control and Management Systems
- 3.2. Installation:
 - A. See Section 282313 – Video Surveillance Control and Management Systems
- 3.3. Preparation:
 - A. See Section 282313 – Video Surveillance Control and Management Systems
- 3.4. Quality Control:
 - A. See Section 282313 – Video Surveillance Control and Management Systems
- 3.5. Testing and Commissioning:
 - A. See Section 282313 – Video Surveillance Control and Management Systems
- 3.6. Handing Over:
 - A. See Section 282313 – Video Surveillance Control and Management Systems

--- End of Specifications ---