NEX-G
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NEX-G AUTOMATION LLP

AI-PPE MONITORING SMART CAMERA

Portable Real-Time PPE Safety Compliance & Edge Vision System

DOCUMENT	**Product User Manual**
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PRODUCT CATEGORY	**AI Vision Safety / Real-Time PPE Compliance**

Installation **Configuration** **Operation** **Integration** **Maintenance**

Contents

1. Product Overview
2. Safety & Portable Setup Guidelines
3. Technical Specifications
4. System Flow & Edge Processing
5. Email Snapshots & RTSP Streaming
6. Control & Mobile Configuration
7. Portable Industrial Stand Assembly
8. Key Strategic Advantages
9. Deployment Zones
10. Troubleshooting Matrix
11. Frequently Asked Questions
12. Support & Service Contact

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1. Product Overview

The **Nex-G AI-PPE Monitoring Smart Camera** is a 100% portable, edge-processing computer vision unit designed to enforce PPE compliance across dynamic industrial job sites. Operating entirely offline without persistent cloud dependencies, the camera continuously detects safety helmets and reflective vests in real time, triggering immediate localized voice reminders via an onboard speaker while automatically emailing time-stamped visual proof of non-compliance events to safety management.

Core Capability Highlights:

- Onboard Edge Machine Learning Engine (Zero persistent internet needed for local AI).
- Real-time detection of mandatory helmets and high-visibility reflective vests.
- Automatic email dispatch of non-compliance photo evidence snapshots to supervisors.
- Dual RTSP streaming over Wi-Fi/Ethernet for seamless integration into VMS & CCTV networks.

2. Safety & Portable Operating Guidelines

> **Rapid Deployment Safety:** When placing the camera on its portable industrial stand at entry gates or temporary zones, ensure the base clamp is weighted or anchored to prevent tipping from wind or heavy machinery vibrations.

- **Power Supply:** Connect to a stabilized 12V DC power source. Check cable integrity during site relocations.
- **Optical Field of View:** Position the camera 2.5m to 4m high aimed at entry bottlenecks for optimal face, helmet, and vest vision recognition.
- **Enclosure Protection:** The compact IP54 aluminum housing guards against dust and splash water. Ensure gland seals are tight.

3. Technical Specifications

Parameter	Specification Details	Notes
AI Vision Engine	Onboard Edge Neural Network	1080p Full HD offline local processing
PPE Detection Scope	Helmets & Reflective Vests	Expandable to masks, goggles & safety gloves
Acoustic Audio Warning	Integrated Voice Speaker	Localized spoken compliance reminders
Notification System	Automated Email Snapshots	Time-stamped visual proof sent to supervisors
Video Connectivity	Ethernet & Wi-Fi (RTSP Stream)	Integrates with existing CCTV / VMS platforms
Configuration Interface	Android Mobile App via Bluetooth	Language, email recipient & sensitivity setup
Supported Languages	English, Hindi, Kannada, etc.	Configurable spoken audio profiles
Operating Power	12V DC System Compatibility	Low power consumption suitable for site packs
Enclosure Rating	IP54 Compact Rugged Casing	Dust and splash-resistant industrial housing
Deployment Stand	Adjustable Industrial Stand Kit	Included for < 5-minute standalone setup
Operating Temperature	−10°C to +50°C	Industrial operating temperature rating

4. Detection & Safety Flow

Sequence from personnel entry to localized voice warning and supervisor email alert:

01. Worker Enters
Personnel walk into monitored entry or work zone.

02. Edge AI Check
Local vision engine verifies helmet & vest presence.

03. Voice Reminder
Speaker announces spoken alert if gear is missing.

04. Email Proof
Time-stamped photo snapshot emailed to HSE.

5. Android Configuration Ecosystem

Set up parameters wirelessly using the Android companion configuration application:

App Configuration	Operational Function
Email Recipient Mapping	Enter target HSE supervisor email addresses for instant dispatch of non-compliance photo proof.
Language & Voice Selection	Choose spoken audio alerts in English, Hindi, Kannada, or regional dialects to suit site workforce.
Model Sensitivity Tuning	Adjust AI confidence thresholds to prevent false alerts caused by high lighting glare or worker hoodies.
Network & RTSP Stream Setup	Configure Wi-Fi credentials and retrieve target RTSP URLs to pipe video into central VMS dashboards.

6. Strategic System Advantages

< 5-Minute Rapid Setup
Standalone industrial stand allows immediate setup at shifting construction phases.

Edge-Processed Privacy
Keeps primary video loops offline, processing AI locally for low latency and data security.

Automated HSE Auditing
Replaces manual safety gate checking with automated visual logs and audit photo trails.

RTSP Stream Compatibility
Easily streams live 1080p feeds into existing factory security control room systems.

7. Frequently Asked Questions (FAQ)

- **What PPE can the camera detect?** Standard setup detects helmets and reflective vests; expandable to masks & gloves.
- **Does the system require cloud connection for AI?** No, all computer vision processing runs locally on the edge hardware.
- **How are supervisors notified of violations?** The camera emails time-stamped photo snapshots directly to configured addresses.
- **How is the unit powered?** Runs on standard 12V DC input, compatible with portable power packs.

8. Troubleshooting Guide

Symptom	Possible Cause	Recommended Action
Camera fails to detect helmets/vests	Lens dirty or lighting too low	Clean camera lens with lens cloth. Verify artificial lighting at entry gate if working night shifts.
Email snapshots not sending	Wi-Fi/Ethernet network disconnected	Verify camera Wi-Fi or Ethernet connection and re-check SMTP email credentials in Android App.
Voice reminder volume too low	Volume setting restricted	Open Android App via Bluetooth and increase speaker volume setting for noisy plant environments.
RTSP stream buffering in VMS	High Wi-Fi interference	Switch to wired RJ45 Ethernet connection or lower RTSP bit-rate in network settings.

9. Maintenance & Care

- Wipe the camera lens daily using a microfiber cloth to prevent dust and oil film buildup.
- Regularly inspect the industrial stand clamps and height locking pins when relocating across job sites.
- Ensure the 12V DC power connector and gland seals remain tightly secured to maintain IP54 ingress protection.
- Store uninstalled camera units in a protective carry case between −10°C and +50°C.

10. Support and Service Contact

For technical support, custom AI model training, Android APK files, or site trial queries, contact Nex-G Automation LLP:

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