NEX-G
ISO 9001:2015

NEX-G AUTOMATION LLP

RFID INVENTORY MANAGEMENT SYSTEM

Automated Bulk Scanning & Real-Time Telemetry Data System

DOCUMENT	**Product User Manual**
DOCUMENT VERSION	**1.0**
ISSUE DATE	**27 October 2026**
PRODUCT CATEGORY	**Industrial RFID Telemetry / Automated Stock Tracking**

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

Contents

1. Product Overview
2. System Operation Guidelines
3. Technical Specifications
4. Architecture & Scan Flow
5. API Data Formatting & HTTP Drops
6. Web Portal & System Control
7. Form-Factor Deployments
8. Key Strategic System Values
9. Deployment Use Cases
10. Troubleshooting Matrix
11. Frequently Asked Questions
12. Support & Service Contact

Head Office: 3, 1st Floor, Hubli-Dharwad Road, Opp. Shiva Temple, Shivagiri, Hubballi, Karnataka 580031
Phone: +91 89045 95334 | Email: sales@nexgautomation.com
Website: www.nexgautomation.com

1. Product Overview

The **Nex-G RFID Inventory Management System** is an IoT-enabled bulk scanning solution engineered to revolutionize asset and stock tracking in warehouses, factories, libraries, healthcare facilities, and logistics hubs. Utilizing Ultra High Frequency (UHF) RFID technology with built-in anti-collision processing, the system captures hundreds of tags simultaneously without direct line-of-sight across ranges up to 6 meters, instantly pushing structured telemetry data via HTTP/HTTPS directly into enterprise ERP and cloud platforms.

Core Hardware & System Capabilities:

- Non-line-of-sight bulk tag scanning reducing manual processing windows by up to 80%.
- Dynamic UHF scan range reaching up to 6 meters depending on tag type and environment.
- Native HTTP / HTTPS API posting for direct cloud infrastructure telemetry synchronization.
- Available in fixed portal architectural nodes and rugged handheld field units.
- Integrated anti-collision algorithm for multi-tag detection in dense storage areas.

2. System Guidelines & Operation

> **RF Environment Notice:** Avoid mounting UHF antenna nodes directly adjacent to large ungrounded metallic surfaces or high-voltage power lines that may induce RF reflections and alter signal coverage.

- **Power Options:** Operate via 12V DC input or Power over Ethernet (PoE) on supported fixed portal models.
- **Network Setup:** Configure Ethernet or Wi-Fi settings via the internal web portal before mounting.
- **Tag Selection:** Use industrial UHF EPC Gen2 / ISO 18000-6C compliant tags for optimal read range and speed.

3. Technical Specifications

Parameter	Specification Details	Notes
RFID Technology	UHF (860–960 MHz) / HF Options	EPC Global Gen2 / ISO 18000-6C compliant
Dynamic Read Range	Up to 6 Meters	Dependent on tag type, antenna gain & environment
Processing Engine	High-Speed Anti-Collision Subsystem	Processes dense multi-tag arrays simultaneously
Network Connectivity	Ethernet (RJ45) / Wi-Fi	Dual integration network modes
Data Protocol Support	Native HTTP / HTTPS REST API	Real-time web API telemetry posting
Data Serialization Format	JSON, CSV, or Raw Hex Tokens	Configurable target software string formats
Form Factor Options	Fixed Portal Node / Rugged Handheld	Overhead portal or mobile field scanner variants
Power Input	12V DC / PoE (Power over Ethernet)	Flexible power deployment options
System Management	Embedded Web-Based Portal	Web UI for IP, server, and filter settings
Operating Temperature	−10°C to +60°C	Industrial temperature rating for plants and hubs

4. Architecture & Scan Flow

Sequence from non-line-of-sight bulk tag capture to cloud database commit:

01. UHF Capture
Tags pass through 6m scan zone without visual line-of-sight.

02. Anti-Collision
Multi-tag engine identifies dense product groups in bulk.

03. Network Post
Structured JSON/CSV pushed via HTTP/HTTPS REST API.

04. Backend Integration
Enterprise ERP/WMS receives validated inventory data.

5. Web Control & API Configuration

The embedded web portal manages network parameters, target endpoints, and RF filters:

Web Portal Function	Operational Capabilities
Server Endpoint Configuration	Map target domain URL routes, port numbers, and authentication headers for HTTPS posting.
Data String Formatting	Customize telemetry payloads into JSON, CSV, or Raw Hex tokens to match target WMS/ERP databases.
Network Pairing Panel	Manage static IP, DHCP, gateway routing, and wireless Wi-Fi pairing parameters.
Anti-Collision RF Tuning	Fine-tune firmware RSSI thresholds and tag query cycles to eliminate duplicate reads in high RF reflection areas.

6. Strategic Solution Advantages

-80% Processing Time
Eliminates manual barcode scanning, slashing warehouse cycle count times by up to 80%.

Non-Line-of-Sight
Reads tags through cardboard boxes, wooden crates, and dense shelf arrays without unpacking.

Seamless ERP Linking
Pipes telemetry via webhooks directly into SAP, Oracle, or custom corporate software layers.

Complete Audit Integrity
Generates tamper-proof digital verification trails for compliance and asset accountability.

7. Frequently Asked Questions (FAQ)

- **What RFID technology is specified?** UHF (Ultra High Frequency 860–960 MHz) with HF options available.
- **What is the maximum read range?** Up to 6 meters depending on antenna configuration and tag type.
- **How does the system post data?** Native HTTP / HTTPS REST API pushing JSON, CSV, or Hex data strings.
- **What form factors are available?** Fixed portal architectural nodes and rugged handheld field scanners.

8. Troubleshooting Guide

Symptom	Possible Cause	Recommended Action
Tags not detected within range	Tag frequency mismatch / RF shielding	Verify tags use EPC Gen2 UHF frequency; ensure metal items are fitted with on-metal RFID tags.
HTTP data post failing to server	Incorrect URL endpoint / network down	Verify target server IP/URL in web portal; check Ethernet/Wi-Fi connection and API key headers.
Duplicate tag reads reported	Continuous scan cycle without filter	Adjust duplicate tag suppression timer in the web portal anti-collision filter settings.
Portal node power LED off	Power supply isolated / PoE disabled	Check 12V DC adapter seating or verify PoE power availability on the switch port.

9. Maintenance & System Care

- Inspect fixed portal antenna mounting brackets periodically to ensure tight structural positioning.
- Keep antenna radomes clean from heavy dust, grease, or moisture accumulation using a dry soft cloth.
- Recharge handheld units using approved charging docks; inspect battery contacts for wear.
- Store uninstalled portal components in a dry location within −10°C to +60°C.

10. Support and Service Contact

For technical support, API documentation, custom software integration, or site surveys, contact Nex-G Automation LLP:

Company Name	Nex-G Automation LLP
Head Office	3, 1st Floor, Hubli-Dharwad Road, Opp. Shiva Temple, Shivagiri, Hubballi, Karnataka 580031
Telephone	+91 89045 95334
Email Support	sales@nexgautomation.com
Official Website	www.nexgautomation.com

— End of Document —