The NIO200 Product Line

A Novel, Affordable ISA100 Wireless Connectivity Solution
Nexcom

- Founded 1992
- HQ Taipei, Taiwan
- 2015 Revenue US$174M
- Employees 904
## Nexcom

<table>
<thead>
<tr>
<th>IAS</th>
<th>IDS</th>
<th>MCS</th>
<th>IoT</th>
<th>ISP</th>
<th>NCS</th>
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<td><strong>Intelligent Digital Security</strong></td>
<td><strong>Mobile Computing Solutions</strong></td>
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### Nexcom Products

- **Nexcom iAutomation**
- **Nexcom Industrial Wireless and Firewall Solutions**
- **Nexcom Intelligent System Services**
- **Nexcom IoT Automation Solutions**
- **Nexcom Mobile Computing Solutions**
- **Nexcom Intelligent Digital Security**
- **Nexcom Internet of Things**
- **Nexcom Interactive Signage Platform**
- **Nexcom Network & Communication Solutions**
  - Network Security
  - Storage
  - Switch
  - SDN & NFV
  - Industrial Security
NIO200 Product Line Overview

♦ Family of ISA100 Wireless compliant infrastructure products augmented with state-of-the-art EZ Mesh Wi-Fi backbone technology

♦ Comprehensive solution that provides

- Scalable system and security management of ISA100 Wireless compliant field instruments
- Robust connectivity to applications residing on the plant network
- Cost effective, wide geographic coverage via EZ Mesh Wi-Fi backbone connectivity
The NIO200 Product Family

**NIO200IAG – All-in1-Gateway**
- ISA100 Wireless compliant System/Security Manager, Gateway and Backbone Router
- Manages an ISA100 Wireless subnet composed of field instruments arranged in a multi-hop wireless mesh configuration
- EZ Mesh Wi-Fi Backbone infrastructure connectivity to the control room + perfect triple play infrastructure video surveillance

**NIO210IDG – Distributed Gateway**
- ISA100 Wireless compliant System/Security Manager, Gateway and Backbone Router
- Manages multiple ISA100 Wireless subnets federated by NIO200IWR Backbone Routers
- Allows for distributed network topologies that maximize geographic
- EZ Mesh Wi-Fi Backbone infrastructure connectivity + perfect triple play infrastructure video surveillance

**NIO200IWR – Backbone Router**
- ISA100 Wireless compliant, cost-effective Backbone Router
- Provides wireless and wired backbone connectivity to ISA100 Wireless compliant field instruments
- EZ Mesh Wi-Fi Backbone infrastructure connectivity + perfect triple play infrastructure video surveillance
Advantage of NEXCOM NIO200 Solution

Scalable Mesh infrastructure
- Distributed WSN topology
- Scalable Wi-Fi backbone infrastructure to reserve for future expansion
- Supports multiple subnets managed by the same Gateway
- Dual Radio Wi-Fi Mesh with better reliability

Robust & Secure
- High throughput backbone based on IEEE 802.11an
- High RF power in Wi-Fi Mesh connectivity
- High immunity (IEC 61000-4-2,3,4,5 Level-4) to against Surge, ESD,..
- CID2, ATEX hazardous certificate

High C/P value solution
- High scalability lowers CAPEX and ensures swift ROI
- Reduced TCO (Total Cost of Ownership)
  - Wired backbone (including Fiber deployment) is costly in cabling & limited in scale expansion
  - Flexible Wi-Fi Mesh backbone reduces overall cost
Solution Highlights

- Supports distributed network topologies
- Supports multiple subnets managed by the same Gateway
- EZ Mesh Wi-Fi enabled backbone
- CID2, ATEX, EN61000-4-2,3,4,5 Certified
- Power redundancy (PoE/DC)

- Cost-effective, extended geographic coverage
- High scalability lowers CAPEX and ensures swift ROI
- Reliable, robust wireless backbone infrastructure reduces installation and maintenance costs.
- Allows for installation in hazardous areas
- Ease of installation
ISA100 Wireless mandates that all entities support native IPv6 addressability and connectivity

- Internet backbones are transitioning to native IPv6 connectivity
- Infrastructure devices are IPv6 ready
- Support for standards based IPv4 encapsulation of IPv6 payloads
NIO200 Deployment Topology

**Connectivity Layer**
- Standalone Gateway:
  - Wi-Fi Mesh AP/Mesh Gateway
  - System and Security Manager
  - Gateway Process

**Field Devices Layer**
- IWSN Backbone Router
- IWSN Backbone Router
- IWSN Backbone Router
- FD: Field Device, & IWSN Adapter

**Process Measurement and Control**

**Plant controller & management**

**Industrial Wi-Fi Mesh**
- IWSN to Wi-Fi Gateway
- Outdoor IP67
- C1D2 & ATEX certified

**Industrial WSN Mesh**
- ISA100 Wireless
  - ISA100 Wireless Adaptor

**FD: Field Device, & IWSN Adapter**
Traditional Process Monitoring Field Instruments

- Data model primarily based on periodically published low volume data with high frequency reporting rates
- Low latency guaranteed data traffic flows
- Alerting data models supported
- ISA100 Wireless compliant – WCI certified instruments

Pressure
Temperature
Flow
More Novel Monitoring Field Instruments

- Higher data volumes – published periodically with lower frequency rates
- Alerting data models supported
- Gracefully co-exist with traditional monitoring instruments
- ISA100 Wireless compliant – WCI certified instruments

Steam trap monitoring
Corrosion
Condition Monitoring
Safety
EZ Mesh
Trusted Wi-Fi Backbone

- Multi-Path Bridge
- Self-forming
- Self-healing
- Flexible Installation
- Con-Current Dual Link
Main Feature of EZ Mesh Wi-Fi

**Lossless Mesh bridge**
- Best path connection
- Lossless bridge for ISA100 Wireless, Modbus protocol, management data and video streaming.

**Flexible installation**
- Self-forming & self-healing for optimized Wi-Fi backbone infrastructure
- 4+ hop @ 30Mbps Mesh network

**Rugged design**
- Extended operating temperature: -40 ~ +65°C
- Anti-explosive: CID2, ATEX
- Power redundancy (PoE/DC input)
- High RF power, long distance

**Management**
- Web management & SNMP
- Central Managed by nCare
Stability - Ping: Over 96hrs

Mesh AP-1

Mesh AP-2

Mesh AP-3

Mesh AP-4

Mesh AP-5

Server PC

Stability over 4-Day endurance verification
Self-healing Performance

Self-Healing time: 1.1 sec

Best path Mesh connection
Mesh coverage and performance

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<th>Hops</th>
<th>Throughput</th>
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<td>1 hops-Throughput</td>
<td>125.495Mbps</td>
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<tr>
<td>2 hops-Throughput</td>
<td>48.52Mbps</td>
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<tr>
<td>3 hops-Throughput</td>
<td>44.86Mbps</td>
</tr>
<tr>
<td>4 hops-Throughput</td>
<td>33.2Mbps</td>
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### EZ Mesh Hopping Performance

![Throughput graph](image_url)

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Mobile Mesh for larger scale IP camera surveillance

Robust, Secure & Cost-effective Remote Field Surveillance Solution
Thank You!