



**Redefining India's Industrial Automation
& Defence Electronics Space, since 1990.**

DYNALOG AUTOMATION SOLUTIONS

With over 30 years of experience in building industrial computing solutions, we are the most reliable partner in solving complex needs of industrial automation and defence electronics customers.

- Industrial Computers
- Industrial Displays
- Ethernet Switches
- Industrial IIOT Solutions
- Automation Controllers & Remote IO's
- Industrial Wireless & Cellular Routers
- Industrial Panel PC's
- Marine / ATEX Certified Computers
- Fanless Embedded Computers
- GPU Computing Systems
- Serial Device Servers
- Industrial Protocol Converters
- Industrial Mobile Computers
- PCI / PCIe Based Cards
- USB Based Products
- KVM & AV Solutions
- Network Security Appliances
- Interface Converters

Strategic Business Units :

- Defence Electronics Solutions
- Industrial Automation Solutions

Dynalog is one of the leading Defence System Integrators, contributing to the Indian Defence forces as Class-I local content supplier for more than 3 decades. It has designed, developed, manufactured & supplied various rugged products to Defence PSUs and DRDO labs for military, naval and airborne applications.

With an in-house infrastructure of Design, Mechanical Fabrication, Integration, Testing and Field Commissioning, Dynalog strongly treads on the path of Make-In-India ambitions.

Dynalog provides qualified deployable Rugged solutions upholding the parameters of quality, reliability, cost and time. Implementing global standards of quality and safety, Dynalog has deployed MIL-STD Rugged Electromechanical solutions, designed, tested and qualified for Harsh Environmental conditions and Rugged Military standards.



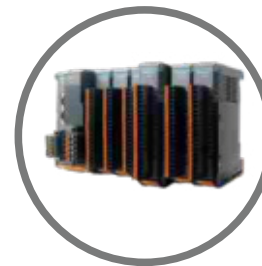
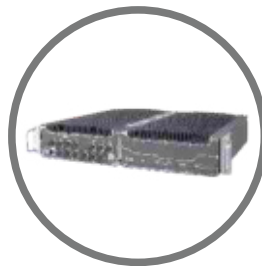
Industrial Automation Business unit is among top 3 suppliers for critical components of any Automation application such as Industrial Ethernet Switches, Communication Gateways, Industrial Computers, HMI, Display, etc. These products meet our client's stringent requirements in almost every aspect and we follow the philosophy of providing functional, reliable, practical, safe & cost-effective integrated solutions.

The company has been one of the few Indian private-sector companies to significantly supply Industrial Automation Products solutions to client base like ISRO, NTPC, DPS, VSSC, NPCIL, PGCIL, State Utilities, IOCL, HPCL, GAIL, BPCL, ONGC, Reliance, Nayara Energy, Oil India, ADANI, ABB, SIEMENS, Yokogawa, EMERSON, L&T, HONEYWELL, Schneider Electric and many more.

Our key success over the year is to be part of prestigious projects in India and deploying our products for Oil & Gas Refinery & Pipelines, SCADA & Surveillance Systems, Ports Automation, Substation Automation, Indian Railways Signalling System, City Surveillance under Smart City programs, Smart Factories Automation, Defence base perimeter surveillance, Toll Management System, Traffic Management System etc.



With vast experience, spirited efforts at Dynalog besides having strong partnerships & reliable products offering from our OEM's like MOXA / ADVANTECH / NEOUSYS / PLANET / ROBUSTEL / InHand etc., as well as trust from our clients in considering our solution as part of their project offering is key to our success.





Defence Electronics Solutions



Capabilities



Design Development
Turnkey Integration
Build-to-Spec



Obsolescence
Management Reverse
Engineering



Rugged
Customized Products
Build-to-Print



Software
Development



Mechanical
Fabrication



Cable
Harnessing

Industrial Automation Solutions

Industrial Computers



Brief Specifications :

- + 19" Rack Mountable Multiple Slot Computers in 2U/ 4U & 6U Height
- + Wall Mount Computers also Available with 6-10 slots
- + Processors like Celeron,i3,i5,i7 & Xeon are available with 3rd/4th/6th/7th/8th/9th/10th generation options.
- + Multiple Slot PC's with combination of PCIe, PCI & even ISA Available.

Application Scenarios:

- + Data Acquisition & SCADA Based Control Systems
- + Smart Machines
- + Control Room Applications
- + High Speed Data Acquisition Systems
- + Building Automation

Brief Specifications :

- + Industrial Grade Monitors In Various Sizes from 7" to 42"
- + Various Touchscreen Options like Resistive, Capacitive etc. Glove Friendly Touchscreen Options Available
- + Video Interface D-SUB (VGA), DVI, HDMI Options available.

Application Scenarios:

- + POS (Point Of Sale) Applications
- + Used along with Industrial Computers in various Applications
- + Control Room Applications
- + Digital Signage Applications

Industrial Display Systems



Industrial Ethernet Switches



Brief Specifications :

- + Layer 2 / Layer 3 Industrial Ethernet Managed Switches
- + Unmanaged Industrial Ethernet Switches
- + Industrial POE Ethernet Switches
- + Industrial Firewall/Router for Secure Network Communication System
- + Certificated Industrial Switches with ATEX/EN50155/ DNV/IEC 61850

Application Scenarios:

- + Any Industrial Networking Applications
- + Smart City Applications
- + Tunnel Monitoring & Control
- + Video Surveillance
- + Network Infrastructure in Oil & Gas Pipeline Monitoring
- + On Board Rail Network Communication System
- + HTMS/ITMS applications

Industrial Automation Solutions

IloT Solutions



Brief Specifications :

- + Arm/X86 platforms, Very Low Power
- + WIFI, LoRa, 4G/LTE IoT Gateway Options
- + Industrial IEEE 802.11a/b/g/n Wireless Inbuilt
- + LTE/3G Cellular Gateway for Remote Configuration/ Monitoring of Serial/Ethernet Devices or Sensors
- + MQTT & Other Protocols Built in

Application Scenarios:

- + IloT Applications for Smart Manufacturing
- + AGV/ASRS Applications
- + Machine Automation/Retrofitting
- + Utility, Energy or Telemetry Solutions
- + ITMS/HTMS Solutions over Cloud
- + Remote Configuration & Monitoring of Field Devices
- + ATM & Renting Machine Monitoring
- + Surveillance with AI

Product Offerings:

- + Data Acquisition Modules available giving Data Outputs in Wireless, Modbus TCP, Modbus RTU or even USB Modules some Support Very High Speed Data Acquisition.
- + Each of the above types have Variations like Analog Input, Digital Input, Timer / Counter, Analog Output, Digital Output, Relay, Pulse
- + All Modules have Input to Output Isolation & some with Channel to Channel Isolation also Available.
- + OPC Technology, Push Technology, MQTT support for IOT Applications.
- + Provides Support for Multiple OT & IT Protocols for Ease of Integration

Application Scenarios:

- + Data Acquisition & SCADA based Control Systems.
- + Smart Factories
- + Solar Power System Monitoring
- + Water & Wastewater Remote Monitoring

Automation Controllers & Remote I/O's



Industrial Panel PC's



Brief Specifications:

- + Wide Range of Panel PC, sizes from 7",10",15",17", 19", 24"
- + Processors like Atom, Celeron, i3, i5, i7 Available
- + Resistive/ Capacitive Touch Screen Options Available
- + DVI/VGA/HDMI Interface Available:
- + Resolution: 640x480/800x600 / 1024x768 / 1280x1024
1366x768 / 1920x1080

Application Scenarios:

- + Data Acquisition & SCADA based Control Systems.
- + Smart Machines, Machine Automation
- + Building Automation, Kiosks
- + Facility Management
- + Building Automation

Industrial Automation Solutions

Industrial Wireless & Cellular Routers



Brief Specifications:

- + Industrial IEEE 802.11a/b/g/n Wireless AP/Bridge/Client Products
- + LTE/3G Cellular Gateway for Remote Configuration/Monitoring of Serial/Ethernet Based Sensors
- + Outdoor Serial Over Wi-Fi Gateway for Seamless Serial Connectivity over Wi-Fi

Application Scenarios :

- + IIoT Applications for Smart Manufacturing
- + AGV/ASRS Applications
- + CNC Machines/Wireless Infrastructure for M2M Communication
- + Crain Automation
- + Telemetry Applications
- + Remote Configuration & Monitoring of Field Devices
- + ATM & Renting Machine Monitoring
- + Wireless Surveillance

Brief Specifications:

- + Panel PCs available from 7" to 26" Display Size
- + Fanless Processors options like Celeron, Atom, i3, i5, i7
- + ECDIS IEC 61174 compliant panels
- + C1D2/ATEX/IEC Ex Zone 2 Certified
- + DNV-GL, LR, ABS, NK, CCS, IEC 60945, and IACS-E10 Certifications available in select models
- + IP54/IP66 Qualified
- + Robust product design that provides reliable operation in Harsh Environments like Marine, Oil & Gas etc.

Application Scenarios :

- + Offshore Oil Drilling Control Systems
- + Marine Bridge System
- + Refinery Scada / DCS System

Marine / ATEX Certified Computers



Fanless Embedded Computers



Brief Specifications:

- + Small Size Computers with Various Mounting Options
- + Fanless Processors like Arm, Celeron, Atom, i3/i5/i7
- + Various Options for IO's Serial, USB, Ethernet etc.
- + Models with ATEX, IEC-61850, EN150555 for Railways, e-Mark Available in Selection.

Application Scenarios:

- + Various IIoT Applications
- + Substation Automation Applications
- + AGV / ASRS Applications
- + BMS Systems
- + Crane Automation
- + Oil & Gas Installations in Remote Areas
- + Remote Configuration & Monitoring of Field Devices
- + Railways & Road Transportation Systems
- + Edge Data Acquisition Systems

Industrial Automation Solutions

GPU Computing Systems



Brief Specifications:

- + Ruggedized GPU-Aided Edge Computing Platform Designed for Modern Machine Learning Applications.
- + Airflow from Intake to Exhaust with Powerful Fans Featuring Smart Fan Control, it allows a 120W GPU
- + Supports NVIDIA GPU Graphics card up to 120W TDP/250W TDP
- + Supports up to 2 NVIDIA Tesla T4/P4 GPU
- + Powerful Expansion Capability Supports PCIe x16 Slot
- + Support IEEE 802.3at PoE+ Gigabit Ethernet

Application Scenarios:

- + Autopilot
- + Autonomous Driving
- + Deep Learning/Virtual Reality
- + Machine Learning
- + Artificial Intelligence
- + Flight Simulator
- + 3D Digital Drawing

Brief Specifications:

- + Connecting Serial RS-232, RS-485 or RS-422 Device over TCP/IP Network
- + 1/2/4/8/16/32 Serial Port over LAN can be made available using Serial to Ethernet Gateway
- + Some Models available with Dual Ethernet for same Network or Redundant Network

Application Scenarios:

- + Automatic Meter Reading / Energy Monitoring System
- + Machine Monitoring
- + Factory Automation
- + LIMS in Pharma, Food & Other Laboratories
- + Telecom Server Console Management
- + Terminal Automation in Oil & Gas

Serial Device Servers



Industrial Protocol Gateways



Brief Specifications:

- + Modbus RTU to Modbus/TCP Gateways available with 1/2/4/8/16 Ports Configuration.
- + Protocols Support like Modbus RTU/TCP, IEC-60870-5-101/103/104, DNP3, IEC-61850, IEC61131 Logic Programming
- + EtherCAT and BACnet Protocol Converters
- + Modbus/PROFINET/EtherNet/IP to PROFIBUS slave gateways
- + Modbus RTU/ASCII-to-PROFIBUS slave gateways

Application Scenarios:

- + Automatic Meter Reading/Energy Monitoring System
- + Machine Monitoring
- + Factory Automation
- + LIMS in Pharma, Food & Other Laboratories
- + Telecom Server Console Management
- + Terminal Automation in Oil & Gas

Industrial Automation Solutions

Industrial Mobile Computers



Product Offerings :

- + 4.3", 5" Rugged PDA's & 7"- 13" Rugged Tablets
- + PDA's Equipped with NFC, 1D/2D Barcode Reader, Fingerprint Scanner and Smart Card Readers
- + Docking Stations, Vehicle Mounts available Optionally
- + Various Certifications like ATEX, e-Mark etc. available
- + Windows or Android OS options available

Application Scenarios:

- + IIOT & Edge Computing
- + Health Care, Retail, Logistics
- + Oil & Gas Installations, Railways
- + Various Marine, Military Applications

Product Offerings :

- + Multi Port RS-232 or RS-422/485 Cards or a Combination of 2/4/8/16 Ports Available
- + Various Data Acquisition Cards Available for AI/AO/DI & DO
- + High Speed DA & C Boards, Very Popular for Research / Analysis

Application Scenarios:

- + Machine Automation
- + AMR Applications where there are Large Number of Meters
- + Automation/Research Various Laboratories
- + Embedded Computer Applications

PCI / PCIe Based Cards



USB Based Products



Product Offerings :

- + Multi Port RS-232 or RS-422/485 cards or a combination of 2/4/8/16 Ports Available
- + Various Data Acquisition Cards Available for AI / AO/DI & DO
- + High Speed DA & C Boards, Very Popular for Research / Analysis

Application Scenarios:

- + Machine Automation
- + AMR Applications where there are Large Number of Meters
- + Automation / Research Various Laboratories
- + Embedded Computer Applications

Industrial Automation Solutions

KVM & AV Solutions



Product Offerings :

- + Various KVM's & Display Extenders Available
- + Improves Ergonomics, Reduces Desktop Clutter
- + Minimizes Heat, Noise and Power Requirements
- + Supports various OS's including Windows or Android

Application Scenarios:

- + Control Room Applications
- + Video Wall Solutions
- + Telecom / Data Centres
- + Multiple Computer Scenarios

Product Offerings :

- + Firewall/NAT/VPN/Router all-in-one
- + Inspects Industrial Protocols with Packet Guard Technology for OT Networks
- + Industrial Intrusion Prevention System (IPS) Device with Hardware Bypass also available
- + Reinforce your Network Infrastructure and also Protect your Critical Assets and Networks

Application Scenarios:

- + Shop Floors on Factory
- + Networks where OT & IT Meet
- + IoT applications
- + Oil & Water Pipeline Monitoring
- + Smart City Applications

Network Security Appliances



Interface Converter



Product Offerings :

- + Various Interface Conversion like Serial/Fiber/Profibus/CANbus/E1/VDSL/SHDSL
- + Serial Side Isolation Protection Available in Select Models
- + Ring and point-to-point Transmission for Fiber Port options
- + Industrial Grade Design, IP30 Protection
- + Operating temperature: -10 to 60°C and -40 to 75°C (Wide operating temperature Models)
- + Multiple Industrial Grade Certificates

Application Scenarios:

- + Factory Automation
- + Applications in Power Sector/Substations
- + Pipeline Monitoring/Oil & Gas Applications
- + HTMS/ITMS Applications

APPLICATION STORY

Deliver your factory Data to IT & OT

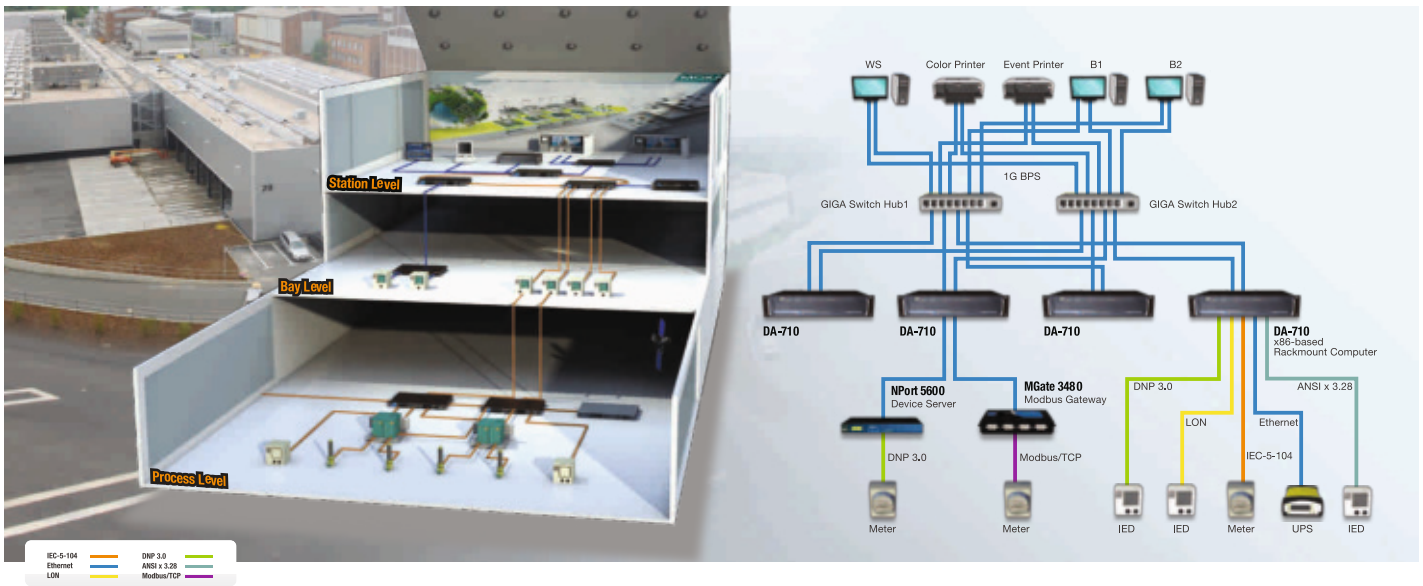
Data is now the new Gold & one needs it to be collected, stored & analysed by various departments, thus needing it to be sent in the Factory network as well as the Office Network. We have Smart I/O which supports the most often-used protocols for retrieving I/O data, such as Modbus/TCP and EtherNet/IP for OT engineers, and SNMP and RESTful API for IT engineers.

With so many field devices connected to the Industrial IoT (Internet of Things), the need to keep all those "things" continuously connected to the Internet has put a premium on networking products that can deliver continuous connectivity without human intervention.



To deploy your I/O data to the cloud easily & effortlessly, you first need to retrieve the I/O data from the Local devices, then convert it to the appropriate protocol. Once all of the data has been prepared for transmission, the final step is to push the data up to your OT(Private Cloud) and/or IT(Public Cloud) platform.

Power Substation Automation



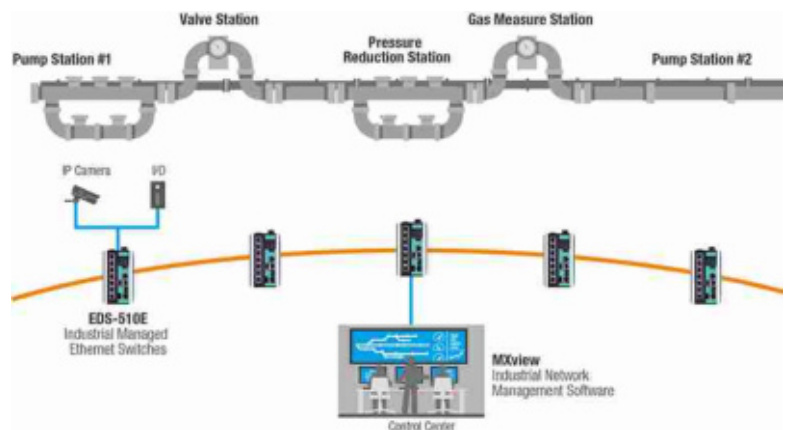
Substations typically have a lot of IED's meters & other devices sending data over multiple protocols including DNP3, IEC-101, IEC-103, & also converted to IEC-104 or IEC-61850. The computers & switches used in the substation now need to be IEC-61850 Compliant.

Dynalog has supplied good number of their Protocol converters, typically the Modbus to IEC-104 or Modbus to IEC-61850 in these types of substations. We also have converters for Serial to Ethernet as well as Modbus RTU to Modbus TCP which are very widely used in all verticals. The IEC-61850 computer DA-820 & that can rapidly perform fine-grained data acquisition and data analysis, reducing front-end workload.

Enhanced Cybersecurity for Oil & Gas Pipeline Monitoring

An oil and gas based company wanted to enhance the security of their pipeline monitoring solution by upgrading their existing serial -based communication Infrastructure to Ethernet-based networks.

Deploying devices with enhanced security features was important to build a secure network. Previously, the company used unmanaged switches at field level to aggregate the data back to the control centre. However, unmanaged switches lack management functions and the security functions required by the industry.

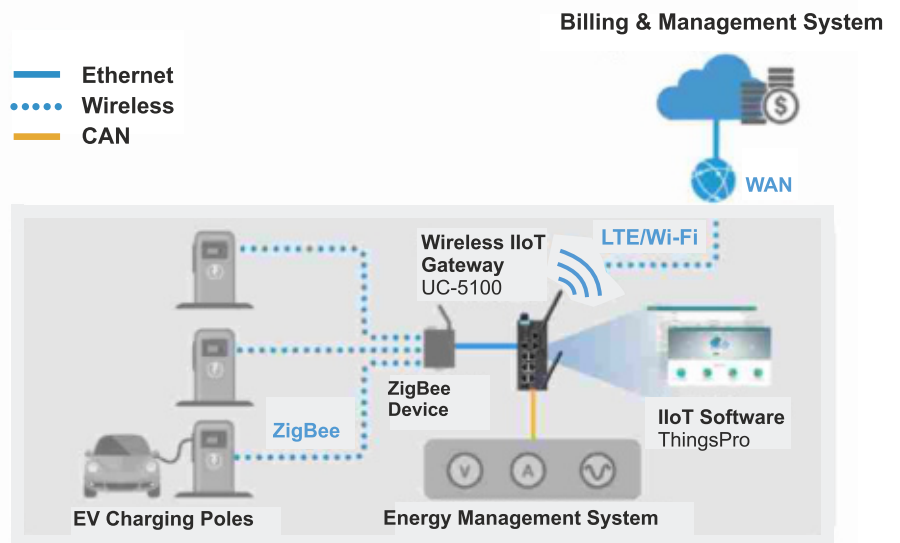


Under these circumstances, it is very difficult for operators to monitor the status of the switches at field sites and build the first layer of security for the network. Therefore, Moxa's recommendation was to upgrade the industrial networks at field sites with industrial managed Ethernet switches because they have enhanced security functions that fully comply with the company's security policy.

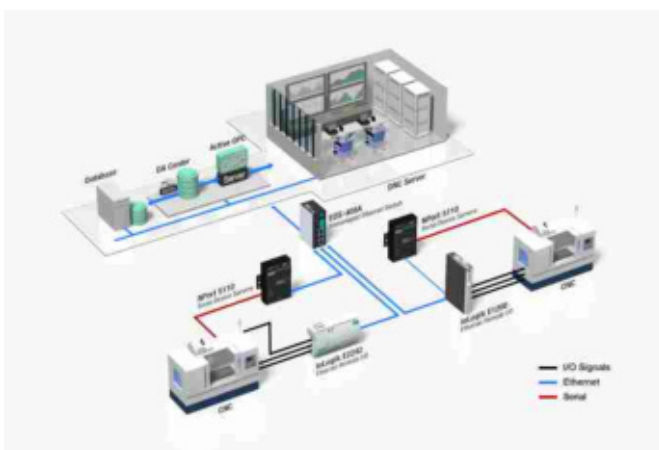
Electric Vehicle Charging Control and Monitoring

Electric Vehicles is an upcoming market. The EV charging Infrastructure consists of multiple charging stations & it requires a large amount of energy when used on a regular basis. These charging stations are remote & unmanned. With more & more charging stations, operators face challenges in maintaining good network connections and centralized management of billing and maintenance.

Our IIOT gateway fills the requirement perfectly with low power architecture, rugged design, it was ideal in the outdoor environments. Our dual SIM Modems give reliable connectivity to the central control station who finally handles the maintenance & billing.



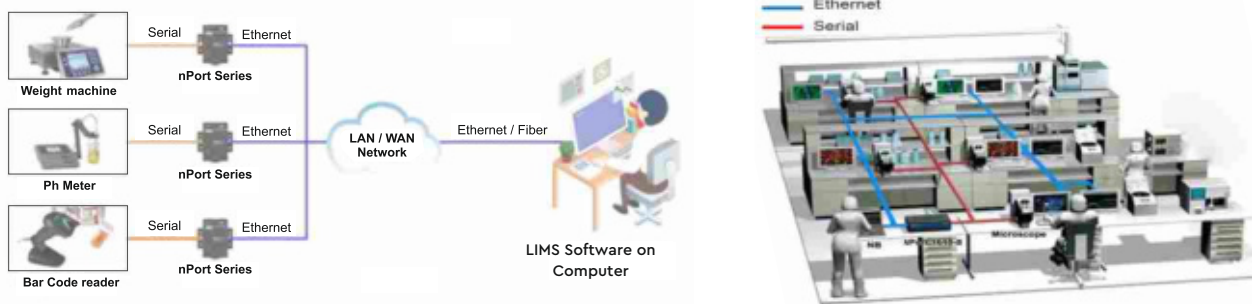
CNC Machine Monitoring



The CNC Machines in a factory needed to be programmed each time a new job was received. Maintenance Engineers had to visit each machine to ensure proper operation and perform routine maintenance tasks. Since every second a CNC machine is idling, off line, or shut down for maintenance translates into lost profits, the factory needed a way to monitor the status of its CNC machines to optimize its manufacturing process.

A Serial to Ethernet converter was connected to each CNC machine in the factory's Ethernet backbone formed by a managed Ethernet switches, there was no manual installation of job, giving maximum output from CNC Machines. Each CNC machine had three different coloured Indicator lights that technicians used to monitor the machine's status and determine specific maintenance tasks. A remote I/O server was used to read these status sending all data in the Control room PC which was a panel PC Optimizing the resources in the shop floor & maximising performance.

Laboratory Information Management System (LIMS)



LIMS is an integral part of any Modern Laboratories in Pharmaceutical company.

The Laboratory Information Management System (LIMS) manages samples, test results and associated data by logging, tracking, recording reports on samples and scientific data in a structured, consistent manner resulting in Accuracy, Efficiency as well as Management of Data.

The laboratory instruments like weight balance, PH meters, chromatographs, Particle Counters etc have a serial/ethernet port for data to be directly read by the computer. Our NPort Series fits perfectly in this scenario & the 1, 2 or 4 port Serial to Ethernet device servers, read the data from these instruments leading to huge savings to the pharma companies. Our installation base of these devices should be more than 5000 servers across India!

Smart Wireless Sends Warehouses Into Smart Territory

Many Automated Materials Handling (AMH) systems have been implemented in factories to increase productivity. AGV systems are a common AMH system used in factory logistics to enhance operational accuracy and efficiency. One of our customers in Asia, who provides logistics services, wanted to deploy AGV systems in warehouses to ensure efficient delivery of goods to their customers.

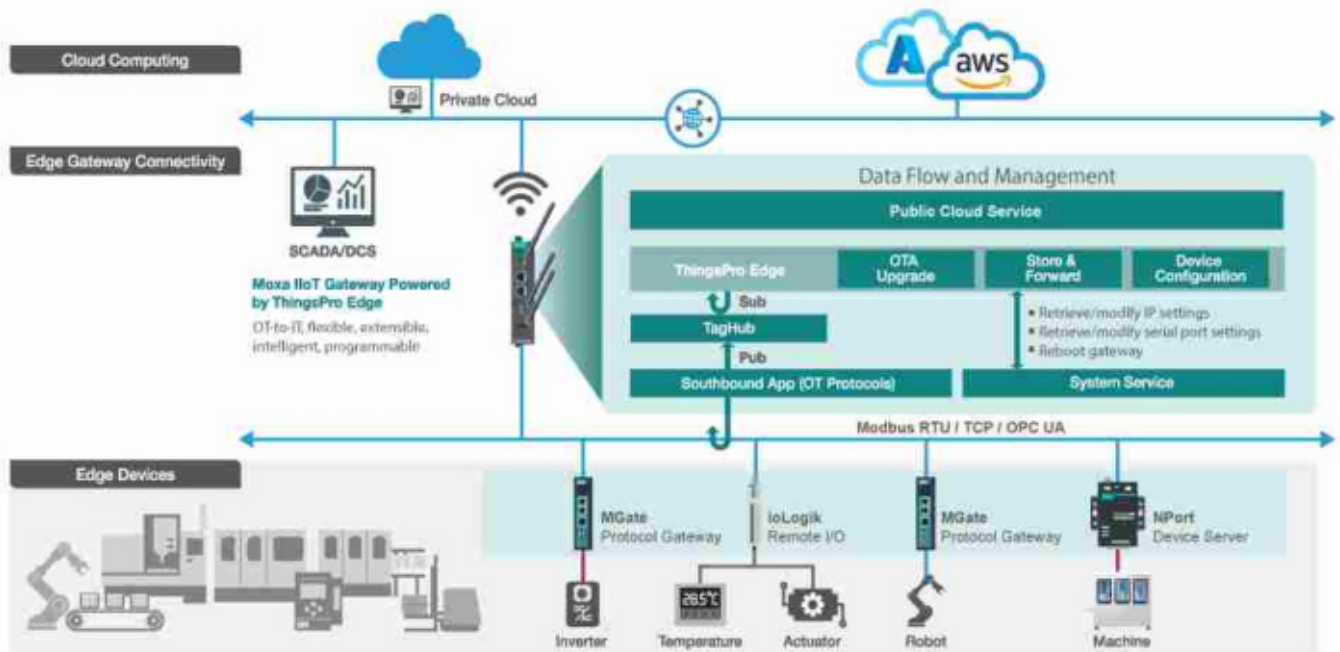
These AGV systems rely on wireless networks to communicate with a control center. Even a single point of failure in the wireless devices has the potential to disrupt wireless connectivity, leading to delays in the delivery of goods and increase in operational costs. To take advantage of AGV systems, the wireless devices must be reliable and rugged enough to provide seamless wireless communication while the AGVs are on the move.



Unlock the Data to Realize Edge-to-cloud Digital Transformation

A component manufacturer in Taiwan is troubled by the lack of transparency in their production process which is causing high lead times and production delays. Other issues include manual monitoring of field data, which means, if an abnormal situation arises, there is not enough information and time to respond or take action. Equipment in the field is controlled by a PLC but the field data, such as temperature, was collected by on-site operators on inspection. The data is not available to the system in real time, affecting the accuracy of the quality control process and leading to many defective products. To solve these issues, the component manufacturer collaborated with Moxa to design an edge-to-cloud solution with real-time alerts to reduce production lead time, increase the transparency of information, and boost overall efficiency. With Moxa's solution, the customer can now easily monitor field data in real time and have a good control over their production process.

They have also been able to realize their smart manufacturing & digital transformation goals. A key challenge in this case was achieving robust and secure data transfer from Operational Technology (OT) devices to IT-based cloud services. Certified by AWS and Azure, Moxa's robust, cloud-ready UC-3100 Arm-based computer is the ideal choice for rapid application development and deployment in the field. Embedded with ThingsPro Edge software, UC-3100 can work as an industrial IoT gateway to simplify the development of data-acquisition solutions for large-scale deployments and transfer the data collected to public clouds such as Azure, AWS and MQTT broker. UC-3100 comes with Moxa Industrial Linux (MIL), a stable Debian distribution that provides a crash-free robust file system and Over-the-air (OTA) software updates. Moxa's edge-to-cloud UC-3100 solution also simplifies connectivity so that customers can be prepared for any network interruption, allowing them to focus on gaining real-time insights into their field devices and transform their business.



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