

# THE MAGIC OF TWINS



# HIGHLIGHTING FEATURES AND APPLICATIONS

## **NX-ERA SERIES**

### **ADVANCED AUTOMATION SYSTEM**

- Aggregates DCS' typical elements
- Integration with most traditional SCADA systems
- Used for control systems in small, medium and high-end applications

---

### **STATE – OF – THE – ART PROGRAMMABLE CONTROLLER**

- Wide variety of CPUs and I/O modules
- Redundancy of CPUs, power supply and communication modules
- Power supply, monitoring, control field networks

---

### **NX-ERA Premium PLC is suitable for Applications like:**

OIL & GAS / MACHINERY / AGROINDUSTRY / POWER / WATER & WASTEWATER  
FOOD & BEVERAGES / BUILDING AUTOMATION / TRANSPORTATION / DISTRIBUTED PROCESS.



# APPLICATION CASES

---



- High processing capacity
- Hot standby mode **Redundancy**
- **Hot swapping**
- 22 racks with remotes and I/O units
- Network redundancy Industrial switches interconnected in a ring architecture
- Tunnel's electrical, ventilation and safety system



- **Digital transformation** and adaptation
- Connectivity, security and high productivity of **Industry 4.0.**
- Collecting data, activating and adjusting field instruments
- Important increase in the **quality of the manufactured product** and greater safety control
- Control of different systems: Ante-transshipment systems, Pressure control  
Product recipes preparation, production line and filling safety, as well as the  
line cleaning system (PIG)



# APPLICATION CASES



## Sugar Factory

- Technologies that assist in the optimization of their processes.
- High processing speed – 6ns for basic instruction.
- Large data storage Capability.
- Web Server support.
- NX5001 remote PROFIBUS Module, HMI for local control.

## Plastic Injection Machine

- Supports accurate temperature control.
- Accurate modeling tool operation.
- With high processing speed.
- Increase in production with accuracy.



## Water Treatment Plant

- Reduce Physical losses, operational and input costs.
- Improve the quality of the water.
- Optimize Power consumption.

## Energy Efficiency Application

- Reduce Physical losses, operational and input costs.
- Improve the quality of the water.
- Optimize Power consumption.



PERFORMANCE

# CPU PORTFOLIO NX-ERA SERIES

## XM PRO

**Compact and affordable with necessary features.**

CPU with DI, DO, AI, AO, HSC, PTO / RS-485 & Ethernet / Indigenous LD Programming



Application Done - Bandsaw / Drilling & Tapping / Hydraulic / Presses / Leak Testing

I/O →

80

## Xpress



**Compact form factor, with world class features.**

CPU with DI, DO, AI, AO, HSC, PTO / Industrial Ethernet. USB, RS-485 / Future ready with Industry 4.0 Exp. by CAN 1/0\$ / Codesys Programming.

Application Done - Boiler / Automation / Batching / AHU / D Humidifier

128

## Jet



**General Purpose Automation with High reliability and Connectivity**

Modular and scalable / High Performance at affordable price / High on Industrial Ethernet Codesys Programming.

Remote I/O extra

Application Done - Water Treatment / Continuous Furnace Line Automation (plywood mfg.) Sulphuric Acid Process plant

256

512

## NX-ERA CPU

3003  
3004  
3005  
3008  
3010  
3020  
3030

## Premium



**NX-ERA Premium PLC - Advanced Automation**

High Reliability, Availability Redundancy & Hot Swap / Modular & Scalable Deterministic Communication / Codesys Programming.

Remote I/O extra

Application Done - Data Center Chiller Plant / Singeing Plant Textile / Rope Dyeing Denim

1024

2048

# HIGHLIGHT FEATURES

## NX-ERA SERIES

### INDUSTRY 4.0

OPC UA / MQTT  
VPN / FTP / Docker  
Cyber Security

### PERFORMANCE

ARM 64-bits 1GHz  
3x Ethernets  
1000 PID loops in <2ms



### FLEXIBLE

PROFINET / ETHERNET/IP  
MODBUS / CANOpen  
USB for Wifi and 3G/4G

### SMART

Web Server / 1MB Retentive  
32MB Program / Memory



**CODESYS**

### MASTERTOOL

USER Friendly software,  
online changes and  
offline simulation  
Based on

### SCALABLE

The NX-ERA Family covers small  
to large applications



## High Light Features

- **CE**- European directives
- **UL**- NRAQ category  
(UL61010-1 and UL61010-2-201)
- **DNV-GL**- Type Approval  
Category for Marine  
applications
- **EAC**- TR004/TR020  
Russian directives

## UNIQUE FEATURE

- Innovative design features and superior finishing, using materials such as : aluminium plastics LCD
- LCD in CPU allows direct and easy access to critical information
- System state, Redundancy state, Serial activities, Forcing of variables.



### ELECTRONIC TAG ON DISPLAY

- Built-in compact graphical LCD display in each module.
- Tags and description of all I/O points accessible directly from the PLC, in real time



# SMART FUNCTIONS

---

## EASY PLUG SYSTEM – EPS

Practical insertion & extraction mechanism for I/O terminal blocks using a lever on the front of the modules

## BATTERY FREE OPERATION

No battery / Eco-friendly / Data retention of 20 years  
RTC time backup (up to 15 days)



### ON-BOARD FULL DOCUMENTATION

Password management to protect access to the project or controller



### IP PROTECTION AND LOGIN PASSWORD

Low consumption and no moving parts (cooling fans)





# MAIN FEATURES

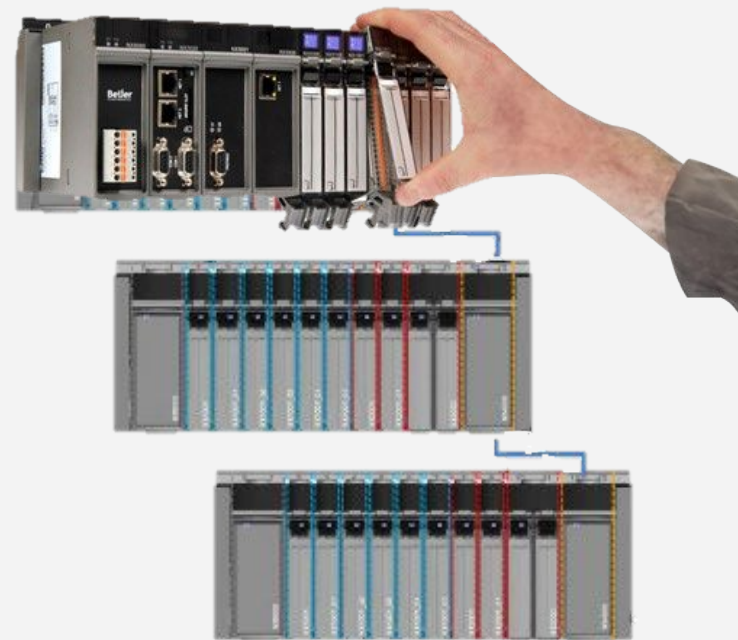
## HOT-SWAPPING

### MAIN FEATURES – I/O SYSTEM

- **Hot-swapping of any module**
- Up to 320 I/Os in one rack
- Supports bus interruptions triggered by digital inputs events
- Expansion of up to 24 remote racks using bus coupler modules and power supply modules
- Optional redundancy if using two bus coupler modules
- Special functions: counters, period measurement and pulse capture.

### FEATURE

- Up to 25 racks (1 local + 24 remote racks)
- Based on deterministic Ethernet technology (100 Mbps)
- 100m of distance between racks (cable) or longer using fibre optic converters

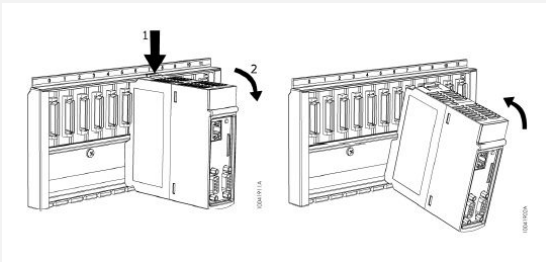


# HOT SWAPPING

## HOT-SWAPPING

### FULL HOT-SWAP SUPPORT

- Easy insertion and extraction system without stopping the application (no need for screws or tools)



## CONFORMAL COATING

### PROTECTION AGAINST HAZARDOUS SUBSTANCES IN INDUSTRIAL ENVIRONMENTS

- Many industrial environments have hazardous substances on the air for printed circuit boards such as chemical components, air and moisture.
- In the conformal coating process a thin layer of nonconductive material is applied to protect against corrosion, extreme temperatures, sea air, humidity, among others.

# MAIN CPUs

---

## MAIN FEATURES – CPUs

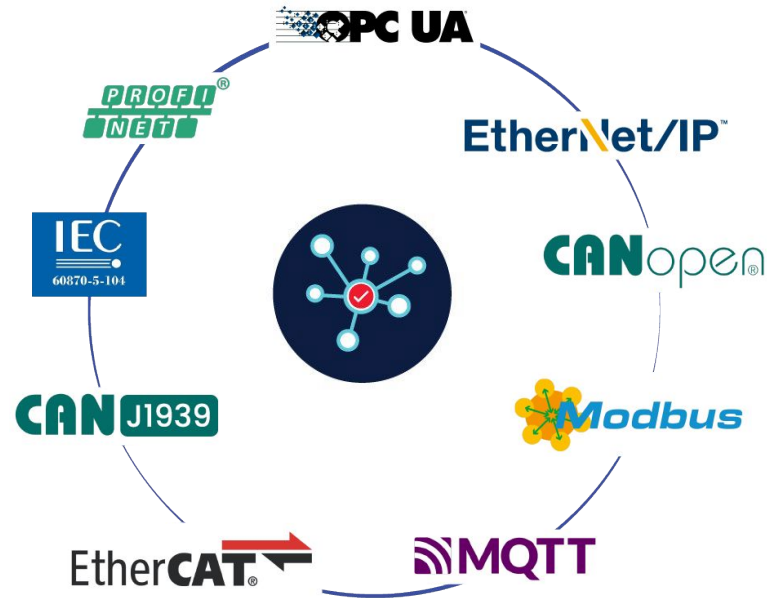
- 1GHz ARM 64 -bit or PowerPC 32-bit processor
- Up to 2 serial interfaces (RS-232 and RS-485/RS-422)
- Up to 3 Ethernet interfaces 10/100/1000 Mbps
- CAN interfaces (NX3008)
- Various communication protocols
- On-board HTTP server for diagnostics
- Web page development for user applications (NX3005 and NX3008)
- SNTP : RTC Clock Synchronisation.
- SOE : Event logging of binary inputs with Time Stamping (NX3030)
- SNMP: Ethernet network management
- Redundancy in half-clusters (NX3030)
- Memory card (NX3008, NX3010, NX3020 and NX3030)



# COMMUNICATION PROTOCOLS

## COMMUNICATION PROTOCOLS

- PROFINET Controller
- PROFIBUS (additional module)
- CANOpen Manager
- CAN J-1939
- MODBUS RTU (master/slave)
- MODBUS TCP (client/server)
- OPC DA (server)
- OPC UA (server, with encryption)
- EtherCAT (master)
- EtherNet/IP (scanner/adaptor)
- IEC 60870-5-104 (server)
- MQTT (client)
- SNMP (client)
- SNMP (server)





# NX-3008 CPU



## COMMUNICATION PROTOCOLS

- 1 GHz 64-bit ARM processor,
- 3 Ethernet interfaces, one of which is Gigabit and two of which can be configured to operate as PROFINET I/O Controller, with support for closing the ring, both with MRP (Media Redundancy Protocol) acting as the ring manager (MRM-Media Redundancy Manager) in PROFINET networks, and with RSTP (Rapid Spanning Tree Protocol) in other protocols
- 1 isolated RS-485 serial interface
- 1 isolated CAN interface
- 1 microSD memory card for storage and mass memory
- 1 USB interface for storage, mass memory, USB-Serial converter, wireless and 4G modem
- Integrated power supply
- On-board HTTP server for diagnostics
- Web page development for user application (Webvisu)
- Extended operating temperature of -20 to 60°C

# NX-3008 – EXTENDED FEATURES

## TECHNICAL FEATURES – NX3008

- Cyber security
  - Through the resources available in the processor, at the application level of the Linux kernel and with resources provided by CODESYS
  - Firewall
- VPN tunnel support (P2P)
- FTP for file transfer
- “Embedded Linux” functionality, allowing the user to develop applications with direct access to CODESYS libraries, Docker, Python, among others.



# NX-3010 MAIN FEATURES



## TECHNICAL FEATURES – NX3010

### MAIN FEATURES

- 32K bytes of Inputs %I and 32 Kbytes of Outputs % Q
- Large memory capacity for user application and data.
- 64K bytes of retentive or persistent memory
- 32 bit high-speed processing
- Floating point unit
- 2 serial ports
- 1 front panel Ethernet interface
- Mini SD card interface • Advanced Diagnostic services.
- System message log
- OPC DA/UA PROFINET, SNMP and Ethernet I/P Protocols.
- Clock synchronism via SNTP.
- Web Server Resources, One touch Diag.
- Real Time Clock (RTC)
- Free of moving parts.

# NX-3020 TECHNICAL FEATURES

## MAIN FEATURES

- 64 Kbytes of Inputs % I and 64 Kbytes of Outputs % Q
- Large memory capacity for user application and user data
- 112 K bytes of retentive or persistent memory
- 32 bit high speed processing
- Floating point unit.
- 2 serial port , 2 front panel Ethernet interface.
- MiniSD Card interface.
- Advanced Diagnostic Services.
- System Message Log.
- Event driven data reporting.
- OPC DA/UA, IEC 60870-5-104, PROFINET EtherCAT ,  
SNMP and EtherNet IP Protocols
- Clock Synchronism via SNTP OR via IEC 60870-5-104.
- Web Server Resources, One Touch Diag.
- Real Time Clock (RTC) Free of moving parts





# NX-3030 CPU



## MAIN FEATURES

- Redundancy mode for High availability applications.
- 96 Kbytes of Inputs % I and 96 Kbytes of Outputs % Q
- Large memory capacity for user application and user data
- 112 K bytes of retentive or persistent memory
- 32 bit high speed processing
- Floating point unit.
- 2 serial port , 2 front panel Ethernet interface.
- MiniSD Card interface.
- Advanced Diagnostic Services.
- System Message Log.
- Event driven data reporting.
- OPC DA/UA, IEC 60870-5-104, PROFINET EtherCAT , SNMP and EtherNet IP Protocols
- Clock Synchronism via SNTP OR via IEC 60870-5-104.
- Web Server Resources, One Touch Diag.
- Real Time Clock (RTC)
- Free of moving parts

# NX3030 CPU – HIGH AVAILABILITY

## NX3030 CPU

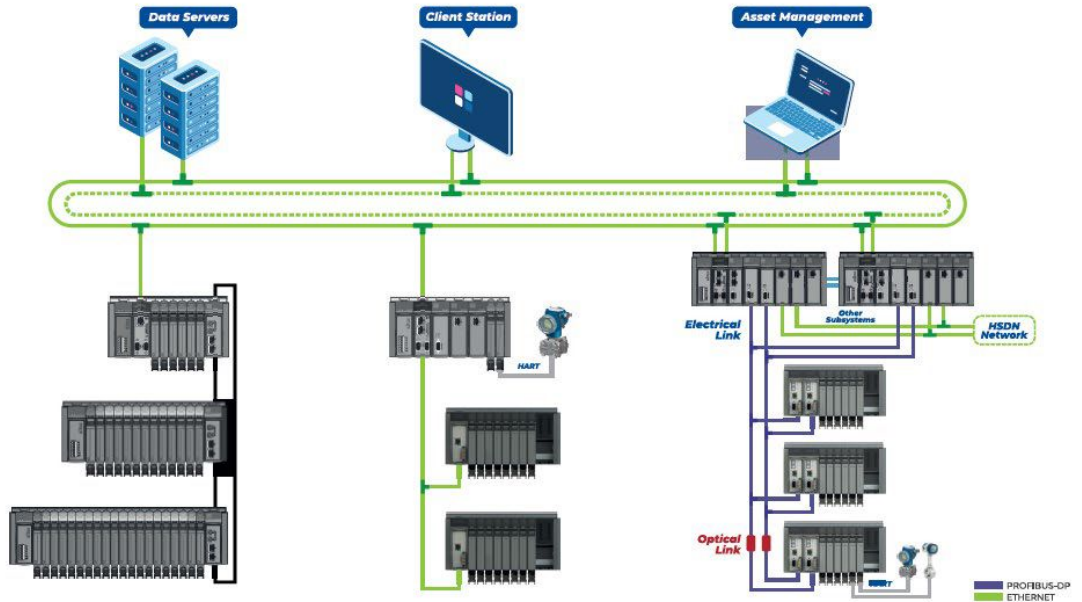
### SOLUTION FOR CRITICAL AND HIGH AVAILABILITY APPLICATIONS

- Redundant CPUs are located in different racks (half clusters)
- In case of failure on the active CPU, the standby CPU switches over automatically (with a an up-to-date data context)
- Easy to set up – no special programming is needed
- Automatic program synchronization and transfer between half clusters
- Support to online changes and I/O expansion without stopping the process
- Critical processes are not affected by simple failure events
- Designed to deliver
  - Increased productivity
  - Minimized process down times
  - Low maintenance and repair times (MTTR)



# REDUNDANT ARCHITECTURE

- Dual Communication Redundancy on Network-Profibus DP
- Control network redundancy on Ethernet
- CPU Redundancy



## CPU

	NX3008	NX3010	NX3020	NX3030
Program Memory	32MB	4MB	6 MB	8 MB
Source-Code Memory	256 MB	40 Mb	80 MB	120 MB
Master PROFIBUS-DP	4	1	4	4
Fieldbus Ethernet Interfaces	3	1	4	8
Redundancy (Fieldbus/Ethernet)	Yes	-	Yes	Yes
Sequence of Events (SOE)	-	-	Yes	Yes
Memory Card Support	Yes	Yes	Yes	Yes
Supported Rack Expansions	Yes	8	24	24
Maximum Number of I/O Modules	128	128	128	128
Hot Swap for I/O	Yes	Yes	Yes	Yes
Redundant CPU + PSU + Sync Module	-	-	-	Yes
Instruction Exec Time	2.1 nsec	6 nsec	6 nsec	6 nsec





**THANK  
YOU!**