

# Next-Generation Fault-Tolerant I/O

Modular × Redundant × Hot-swappable

## ► Redundant I/O System



RIO-9830



R-9000 I/O Series



Power, Communication & I/O  
Modules Fully Redundant Design



Full support for Modbus TCP,  
EtherCAT, Ethernet/IP, and other  
mainstream protocols

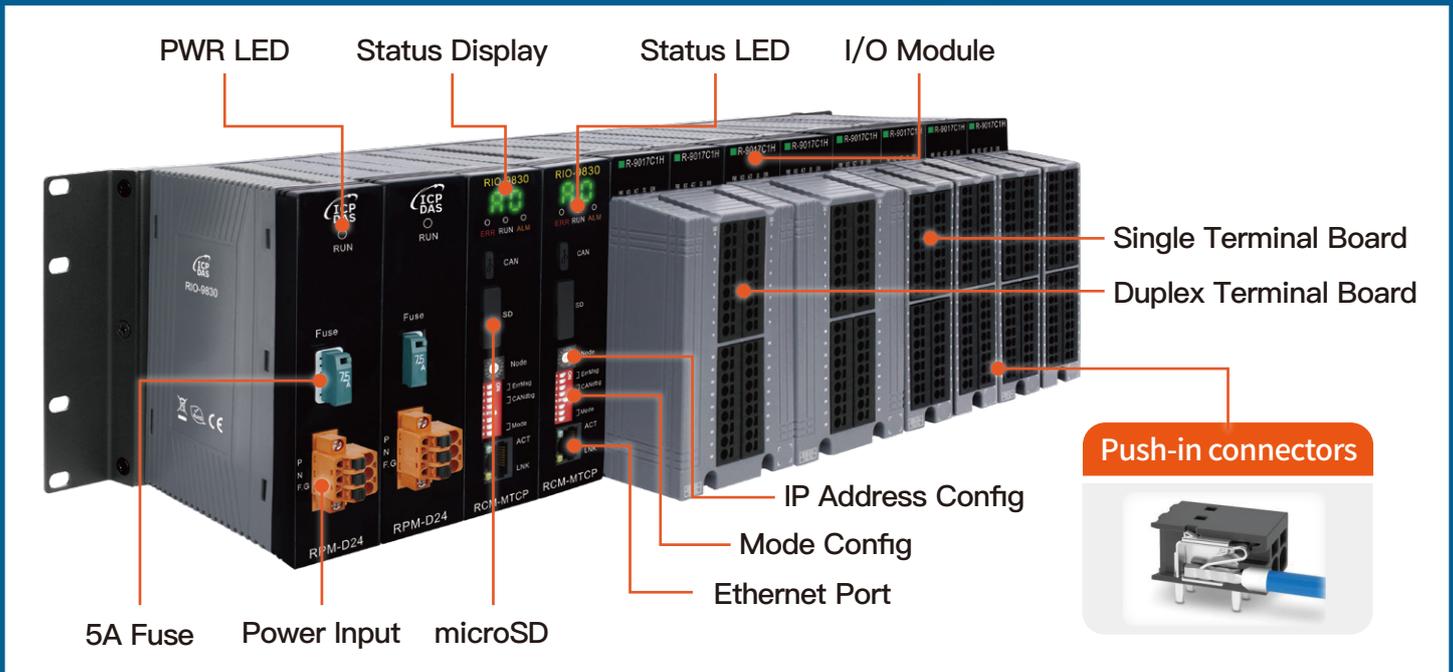


Hot-swappable modules for  
uninterrupted operation



Built-in memory card and RTC  
event log for complete operational  
monitoring

# Flexible, Efficient & Stable — The Best Choice for Monitoring Systems



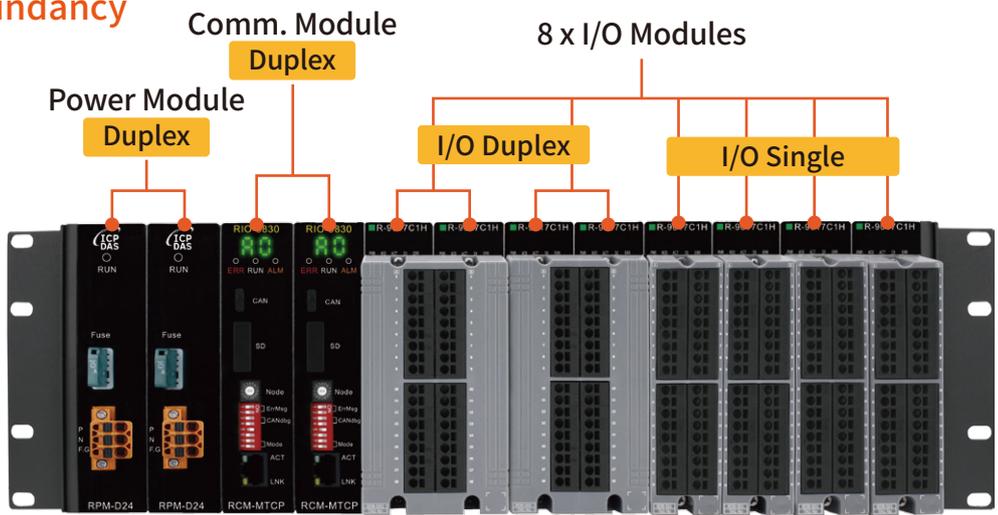
The RIO-98x0 series is a modular, hot-swappable remote I/O solution built for high reliability and scalability. It supports dual power and communication modules, up to eight I/O modules, and mainstream protocols including Modbus TCP, EtherCAT, and Ethernet/IP. It features an integrated event log, a microSD slot, and supports analog, digital, and HART signals for seamless monitoring, real-time diagnostics, and maximum uptime, making it the ideal choice for demanding automation environments.

## Redundant Architecture × Hot-swappable × High-speed Communication

### ◆ End-to-end System Redundancy

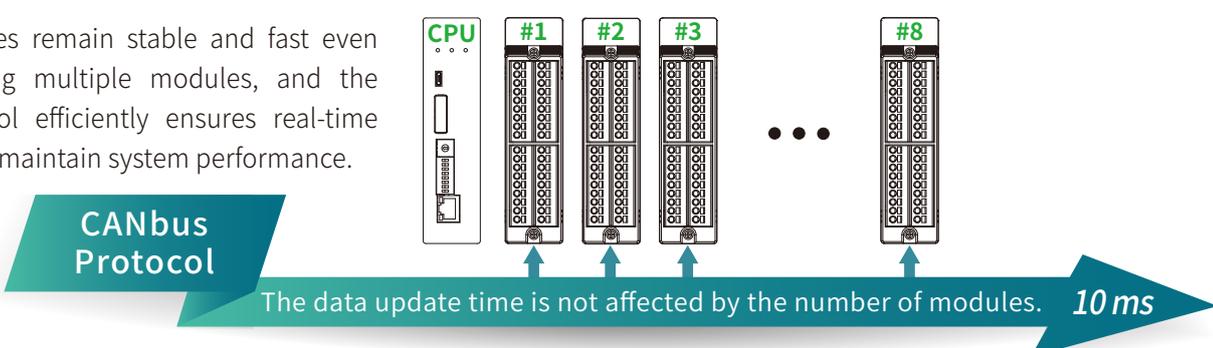
From power and communication to I/O modules, the RIO-98x0 series ensures comprehensive redundancy.

In the event of a failure, seamless failover mechanisms maintain real-time data transmission and prevent any system downtime.



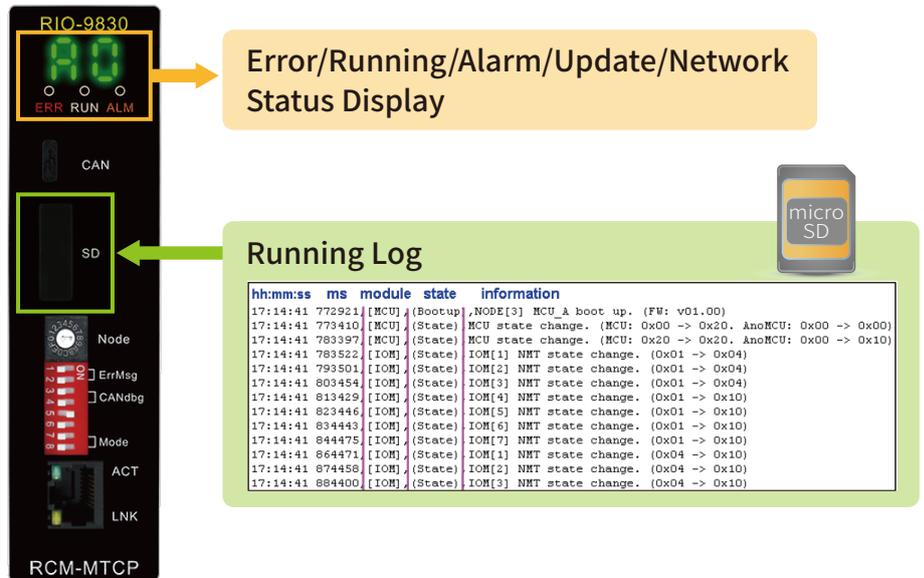
### ◆ Optimize I/O data update efficiency

I/O data updates remain stable and fast even when expanding multiple modules, and the CANbus protocol efficiently ensures real-time transmission to maintain system performance.



## ◆ Intelligent log tracking to capture every anomaly

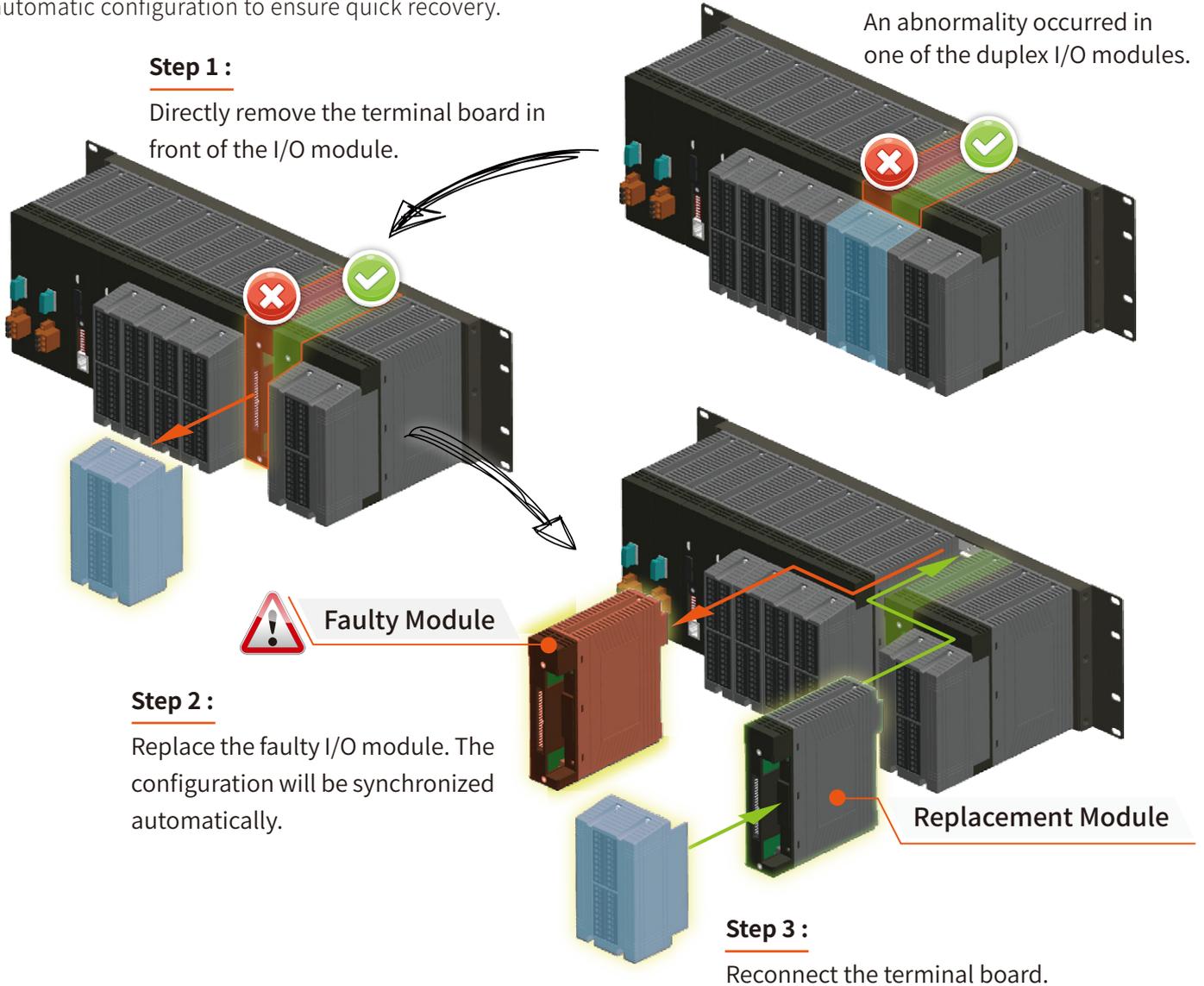
The communication module has a built-in display to show real-time status and a microSD card to automatically record running information, including errors, alarms, updates, and network status, for easy data analysis and fault diagnosis.



## ◆ Hot-swappable replacement for uninterrupted maintenance

The RIO-98x0 allows direct module replacement without powering down or manual reconfiguration. Faulty I/O modules can be hot-swapped, with automatic configuration to ensure quick recovery.

### ▶ How to Replace a Duplex I/O Module



## ◆ Hardware Configuration & Parameter Settings

Free and user-friendly utility tools simplify remote setup, parameter adjustment, and I/O module synchronization, reducing setup time while enabling real-time monitoring and diagnostics.



## ◆ Fan Module with Thermal Management

The AFAN-04 is a hot-swappable fan module equipped with four fans to keep the RIO system cool and stable in high-temperature and long-duration operation.

**AFAN-04**

## ◆ One-Stop Redundant Architecture ensures Uninterrupted Core Stability

Seamlessly combining RPS power supplies, RPAC controllers, and RIO I/O modules, this unified system delivers uninterrupted connectivity and rock-solid operational continuity—ensuring every second of runtime counts in high-stakes environments.

**RPAC Redundant Controller**  
Precise Control & Intelligent Switching



**AVEVA™  
Edge  
SCADA**



**Redundant I/O System**  
Ensure Uninterrupted I/O  
while Replacing the Faulty  
Module

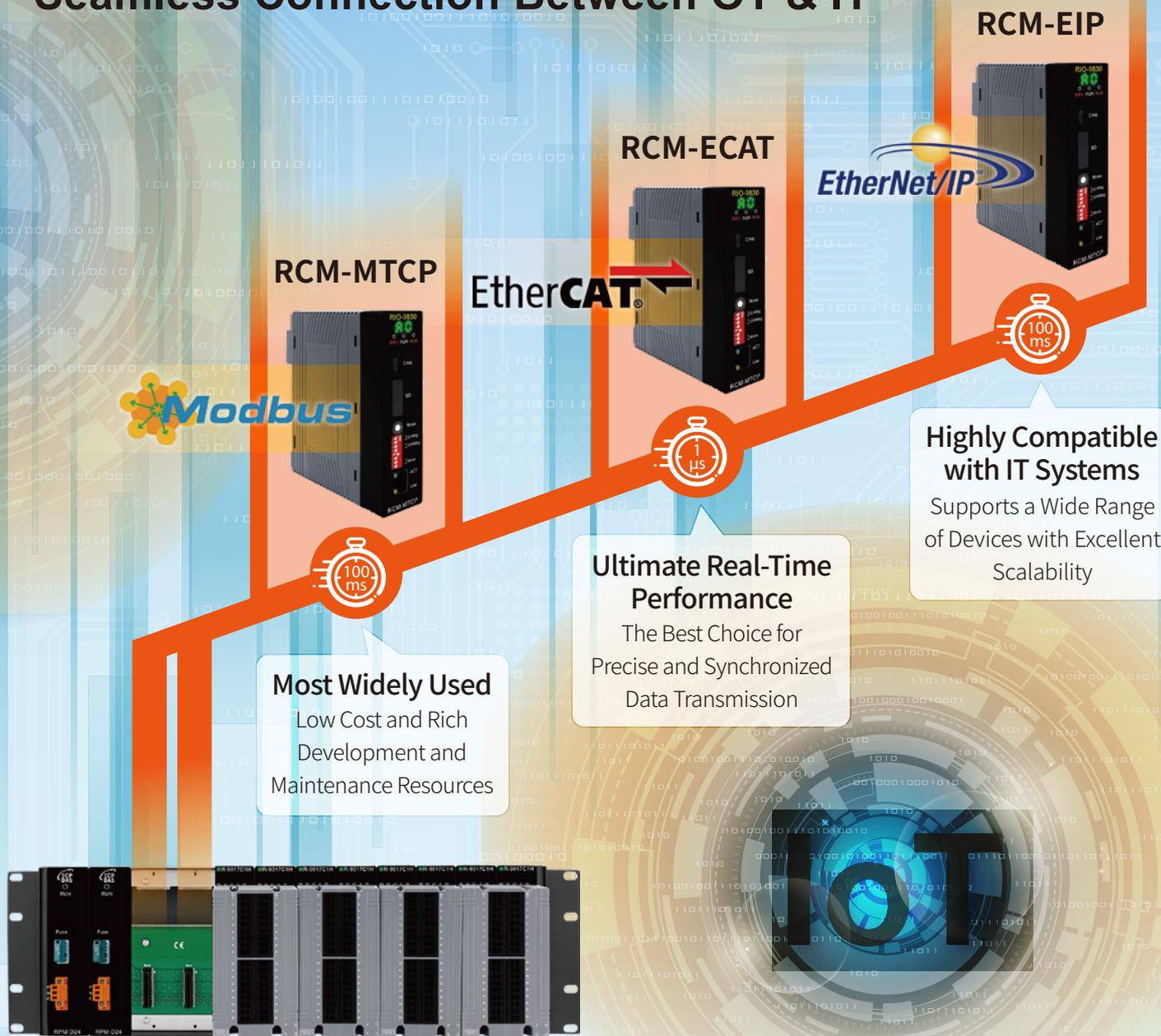


**RPS Redundant  
Power Supply**  
Ensures Uninterrupted  
Power Supply



# Breaking Integration Barriers

## Seamless Connection Between OT & IT



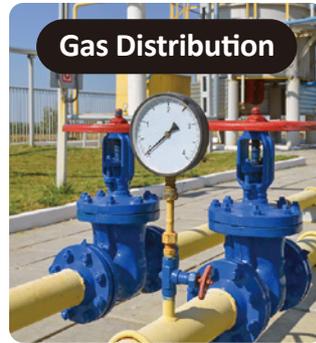
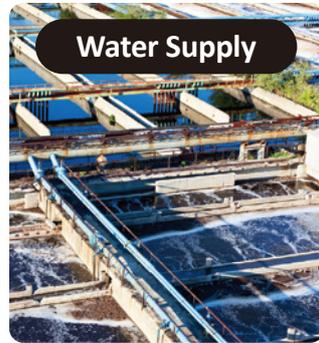
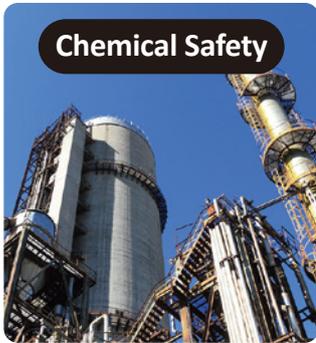
The RIO-98x0 series supports Modbus TCP, EtherNet/IP, and EtherCAT, providing fast, stable communication between different automation platforms. Its multi-protocol compatibility integrates production equipment from various industrial areas into an industrial network environment.

Designed for scalable connectivity, the system supports real-time control, high-speed data transmission, and intelligent system optimization—making it ideal for modern, upgrade-ready factory automation.

Protocol	Modbus TCP	EtherNet/IP	EtherCAT
Transmission Interface	Ethernet	Ethernet (TCP/UDP)	Ethernet (Proprietary)
Real-Time	-	Soft Real-time	Hard Real-time
Synchronization Precision	-	ms	ns
Topology	Line, Star, Tree		Line, Star, Tree, Ring

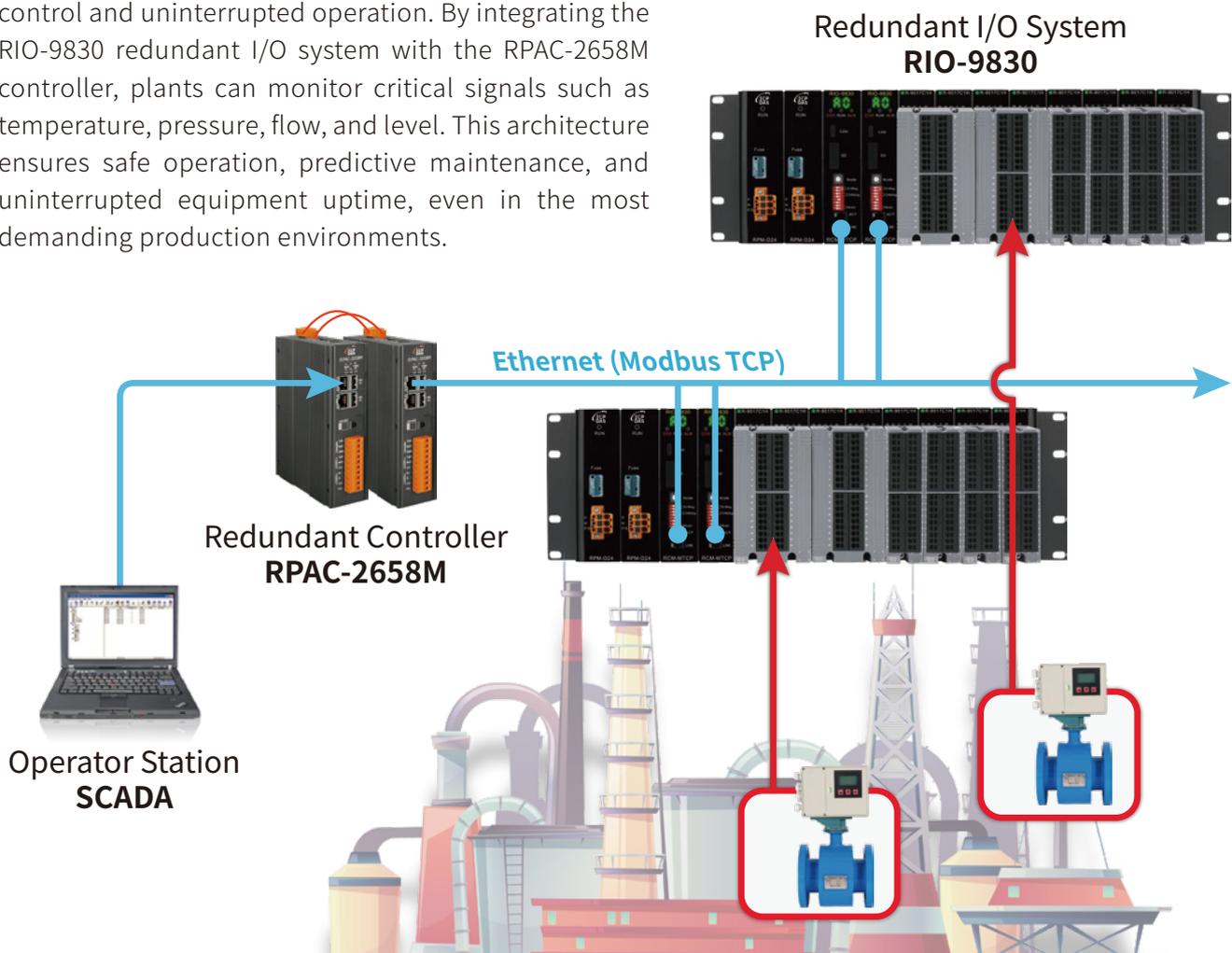
# Applications & Solutions

Engineered for critical system reliability, the RIO-98x0 series is ideal for complex process engineering where performance, safety, and uptime are non-negotiable. By preventing costly downtime and operational risks, it's a trusted solution across high-stakes industries—including chemical and pharmaceutical manufacturing, oil and gas, food processing, and new energy systems.



## ⚙️ Continuous Production Monitoring in Chemical Plants

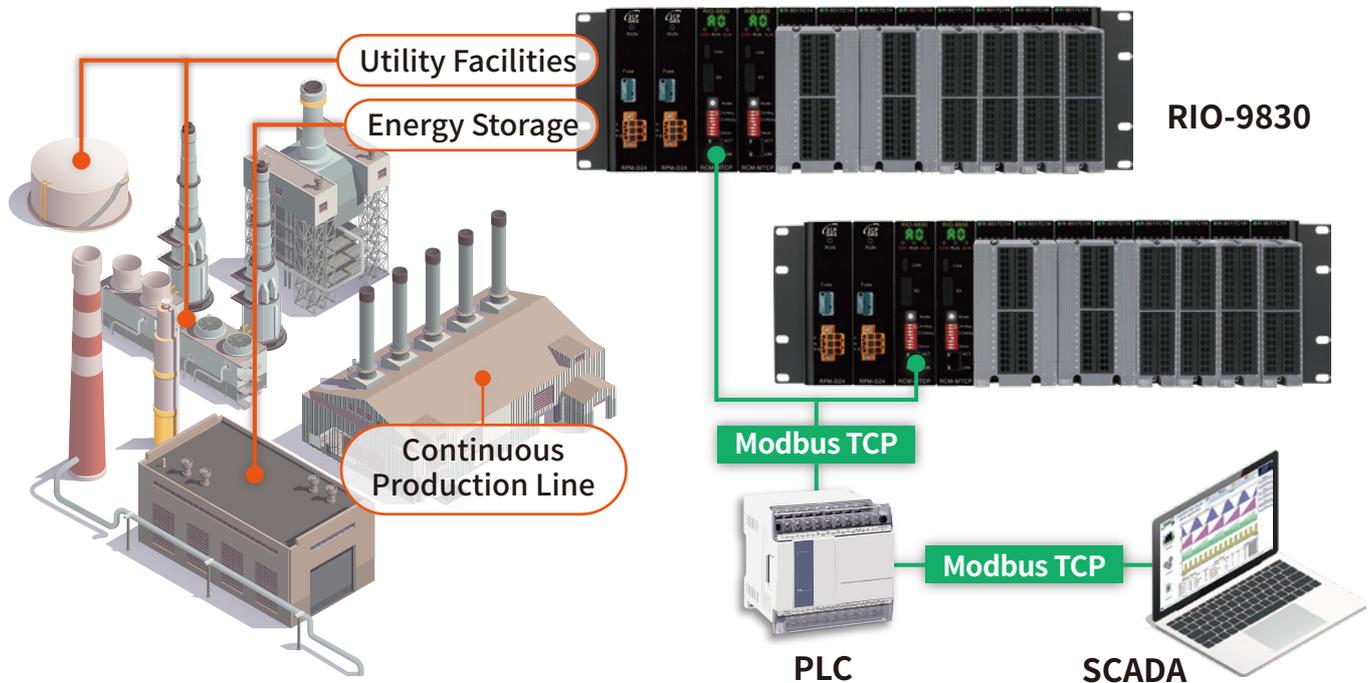
Utility systems in chemical plants require precise control and uninterrupted operation. By integrating the RIO-9830 redundant I/O system with the RPAC-2658M controller, plants can monitor critical signals such as temperature, pressure, flow, and level. This architecture ensures safe operation, predictive maintenance, and uninterrupted equipment uptime, even in the most demanding production environments.



## :: Automation Production Lines in Large Factories

Modern production lines rely on hundreds of I/O points to keep operations running smoothly. The RIO-9830 redundant I/O system with Modbus TCP integration, enables seamless monitoring and control—even in large, sensor-dense environments. Each critical I/O point is supported by a redundant module, ensuring uninterrupted performance in the event of hardware failure.

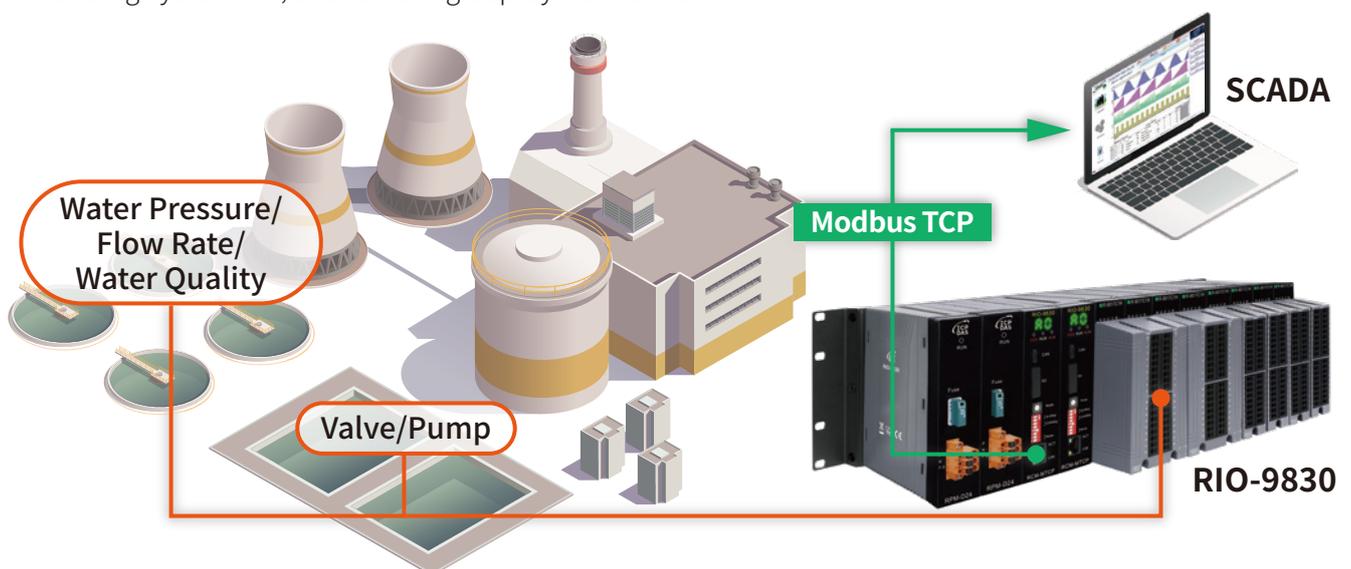
By significantly reducing downtime and improving system availability, this architecture maintains productivity on every shift.



## :: Smart Water Supply Monitoring and Remote Management

The RIO-9830 I/O system provides intelligent, real-time monitoring and control for urban water supply networks. By integrating pressure and flow sensors with remote valve and pump management, it ensures precise water distribution and stable system performance.

The system's built-in redundancy prevents equipment failure, and active alerts enable timely maintenance. The RIO-9830 supports Modbus TCP for easy system integration, reducing downtime, extending system life, and lowering deployment costs.



# Selection Guide



## RPM Series

Power Module

## RCM Series

Communication Module

## RIO-9000 Series

I/O System

System Module	RIO-9830	RIO-9840 <small>▶ Available soon</small>	RIO-9850 <small>▶ Available soon</small>
I/O Slots	8 (Support 4 sets of duplex I/O)		
Power Module	RPM-D24		
Voltage Input/Consumption	24 VDC ±10%/0.24 W (0.01 A @ 24 VDC)		
Short Circuit	Yes (Fuse, 5A)		
Hot-swap/Duplex	Yes		
Comm. Module	RCM-MTCP	RCM-ECAT <small>▶ Available soon</small>	RCM-EIP <small>▶ Available soon</small>
Ports	1 x 10/100 BASE-TX	2 x 10/100 BASE-TX	
Protocols	Modbus TCP (Server)	EtherCAT	Ethernet/IP
Hot-swap/Duplex	Yes		
Status Display	7-segment Display (Exception Code), Micro SD (Abnormal Records), LED (PWR, ERR, COMM)		



## R-9000 Series

I/O Module



## RDB Series

Terminal Board

Model	Description	Single	Duplex
R-9040	32-channel isolated digital input module	RDB-S08	RDB-D08
R-9041	32-channel isolated digital output module	RDB-S05	RDB-D05
R-9017C1H	8-channel isolated current input module with HART master support	RDB-S09	RDB-D09
R-9017C2H	16-channel current input module with HART master support	RDB-S01	RDB-D01
R-9015	12-channel RTD input module	RDB-S03	RDB-D03
R-9019	16-channel thermocouple input module	RDB-S02	RDB-D02
R-9028V1	8-channel isolated voltage output module	RDB-S09	RDB-D09
R-9028CH	8-channel isolated current output module with HART master interface	RDB-S09	RDB-D09
R-9084	8-channel isolated high-speed pulse input module	RDB-S09	RDB-D09

