



# ***Reliable*** **Industrial Ethernet Networks**

- EMC Certified for Industrial Standards
- SmartView™ for central management
- SmartConfig™ for convenient configuration tool
- Flexible u-Ring Redundancy Cabling
- IEEE 1588 PTP v2 Precision Time Protocol
- Rugged & Fanless Design with Wide Operating Temperature
- Cable diagnostic
- Green Ethernet
- 5 Years Warranty



Industrial network switches, designed and manufactured by CTC Union, deliver high performance and reliable solutions in fields such as automation, railway transmission, power substation and so on. The products have passed strict tests and are certified to UL60950-1 safety standards, railway traffic EN50121-4 & EN50155 and EN61000-6-2 & EN61000-6-4 standards. With wide operating temperatures, IP30 rugged housings, and redundant wide range power inputs features, CTC Union's industrial networking devices are able to provide uninterrupted and stable services for mission-critical projects especially carried out in harsh environments. SmartView™ centralized management, friendly and flexible u-Ring redundancy and real-time alarm notifications make CTC Union's industrial networking devices even more resilient in connecting your network. To demonstrate confidence in our products, we offer a 5-Year warranty on industrial networking products to our customers.

## ■ Reliability Elements



## ■ Key Certifications



To reduce risks of electric shocks, fire, energy related hazards, heat related hazards, mechanical hazards, radiation, and chemical hazards for operator, layman or service personnel.



For trackside and railway applications.



For Heavy Industrial Environment application.



For traffic control.



For rolling stock, vehicle and moving machine applications.



For power substation applications.

## ■ Brief Comparison between general CE & EN50121-4

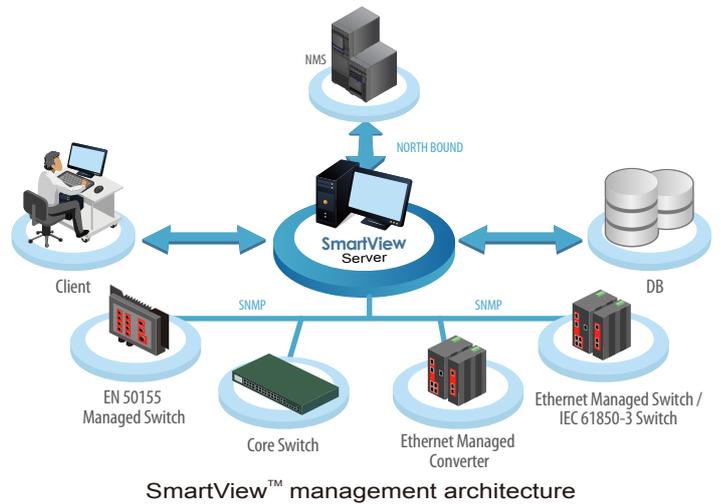
	CE Compliant	EN50121-4 Compliant (Trackside)
Surge		
Signal L-E	1kV	2kV
Signal L-L	<b>N/A</b>	<b>2kV</b>
DC Power L-E	<b>0.5kV</b>	<b>2kV</b>
DC Power L-L	<b>0.5kV</b>	<b>2kV</b>
ESD (Contact)	4kV	6kV
Radio frequency magnetic field	10V/m	20V/m
EFT (fast transient)	0.5kV Criteria B*	2kV Criteria A*
Power magnetic field	10 A/meter	<b>300 A/meter</b>
Pulse magnetic field	<b>N/A</b>	<b>300 A/meter</b>

\* Criteria A: During the test storage devices shall maintain normal operation both in read/write and in stand-by conditions.

\* Criteria B: During and after the test failures which can be recovered by read and write retries are permissible (temporary delay in processing caused by this process is acceptable).

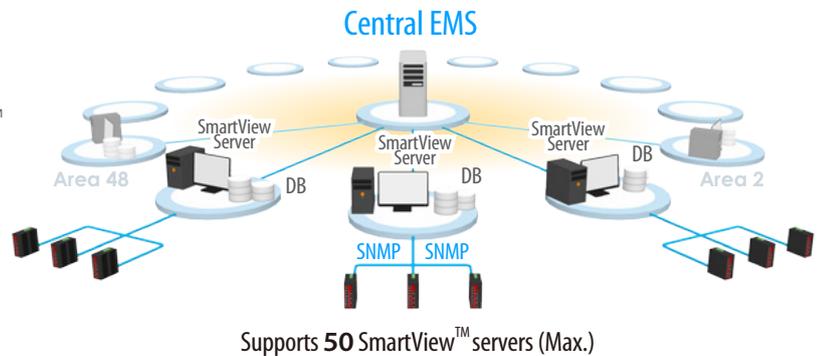
## ■ SmartView™ for central management

- Visual representations
- Fault , Configuration, Accounting, Performance and Security monitoring and management.
- Alarm trap and event log management
- **Long term event storage (upto 1 year)**



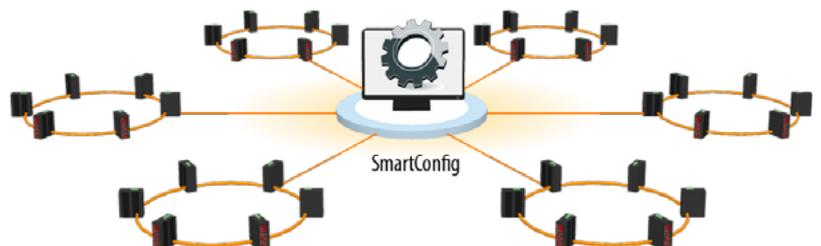
## ■ Central EMS

- Allow central management of up to 50 SmartView™ servers
- Allow up to **25,000 devices** management
- Hierarchical Network Management Architecture
- Easy & rapid expansion of SmartView™ EMS



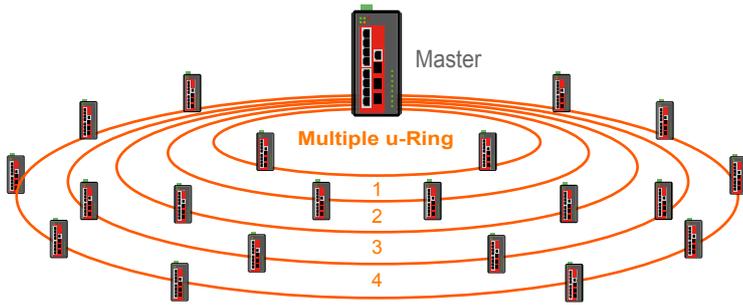
## ■ SmartConfig™ for quick & easy mass configuration

- A convenient configuration tool
- Multiple device auto discovery
- IP Address Assignment
- Group configuration, access
- Group firmware upgrade
- Export/Import Configuration



## ■ **μ-Ring Network Redundancy**

The u-Ring is a proprietary redundancy protocol developed by CTC Union that supports flexible ring topologies.



- Up to 5 rings
- Up to 250 devices in a ring
- 3 u-Ring types (u-Ring, u-Chain, Sub-Ring) for difference application
- Recovery time < 10ms
- User Friendly configuration GUI

### u-Ring configuration

Delete	Instance	Type	Master	East		West	
				Port	Edge	Port	Edge
Delete	1	u-Ring	<input type="checkbox"/>	1		2	
Delete	2	u-Ring	<input type="checkbox"/>	4		3	
Delete	3	u-Ring	<input type="checkbox"/>	10 (Fiber2)		11 (Fiber3)	
Delete	4	Sub-Ring	<input type="checkbox"/>	6			
Delete	5	u-Chain	<input type="checkbox"/>	5	<input type="checkbox"/>	9 (Fiber1)	<input type="checkbox"/>

User-Friendly Configuration Web Interface

## ■ **Supports Standard ITU G.8032 ERPS, MSTP, RSTP, STP for Network Redundancy**



Other than the proprietary u-Ring redundancy protocol, standard ring redundancy protocols such as ITU G.8032 ERPS, STP, RSTP and MSTP are also supported. Among standard redundancy protocols, G.8032 ERPS, achieves the fastest recovery time (<50ms) than others.

## ■ **5-Year Warranty and Long MTBF**



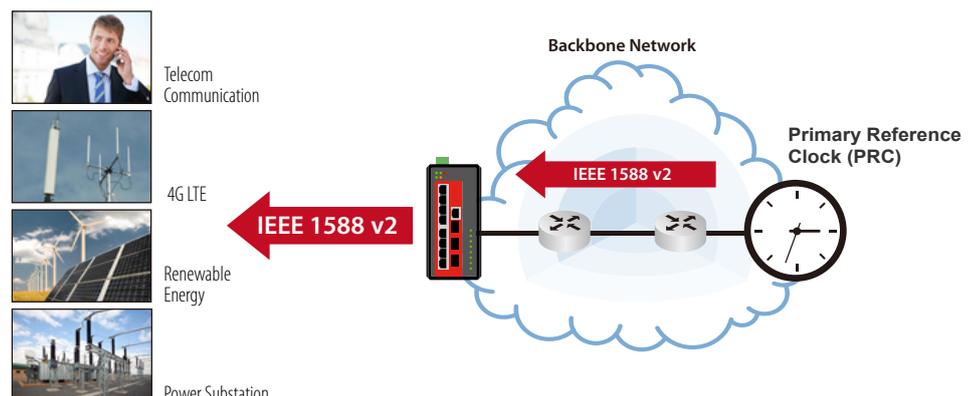
- Specially-chosen parts such as industrial-grade IC, PCB, capacitor, transformers, screws and specially-installed method for heat-sink
- High MTBF and Long life parts
- Rigorous standards in our lab and various strict quality checks in factory
- Fan-less

## ■ **IEEE1588 PTP v2**

Ethernet equipment has become a widely accepted commodity as it replaces traditional and expensive legacy technology. The multitude of nodes needed to be synchronized as precisely as possible over the network are ever increasing. IEEE1588 PTP V2 is a packet based network protocol that carries time stamps in Ethernet format. The applications requiring this technology fall within the major markets for smart grids and telecommunication networks.

Supports 5 operating mode :

- Ordinary-Boundary
- Peer to Peer Transparent Clock
- End to End Transparent Clock
- Master
- Slave



## ■ Rugged & Fanless Design with Wide Operating Temperature

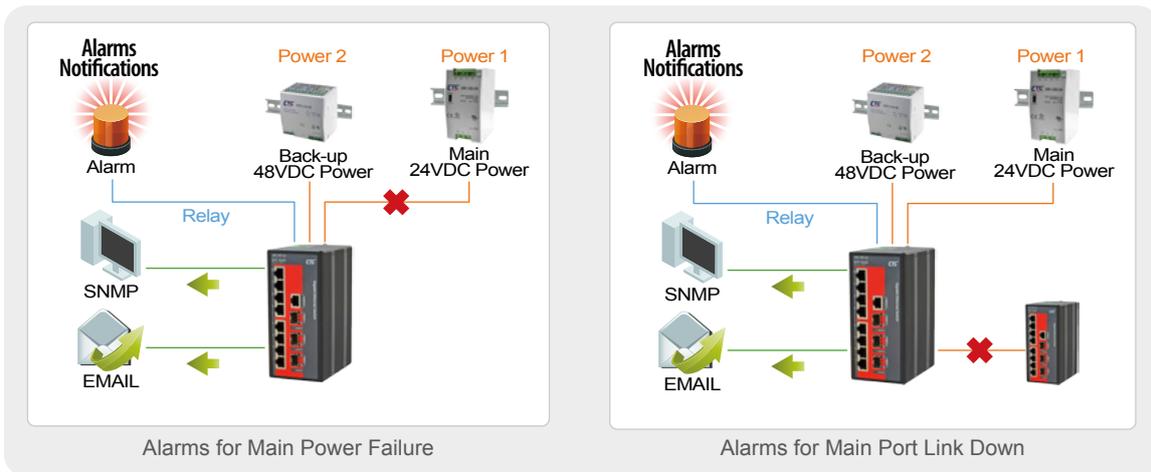


- Fan-less
- Rugged housing
- Wide temperature (-40°C~75°C)

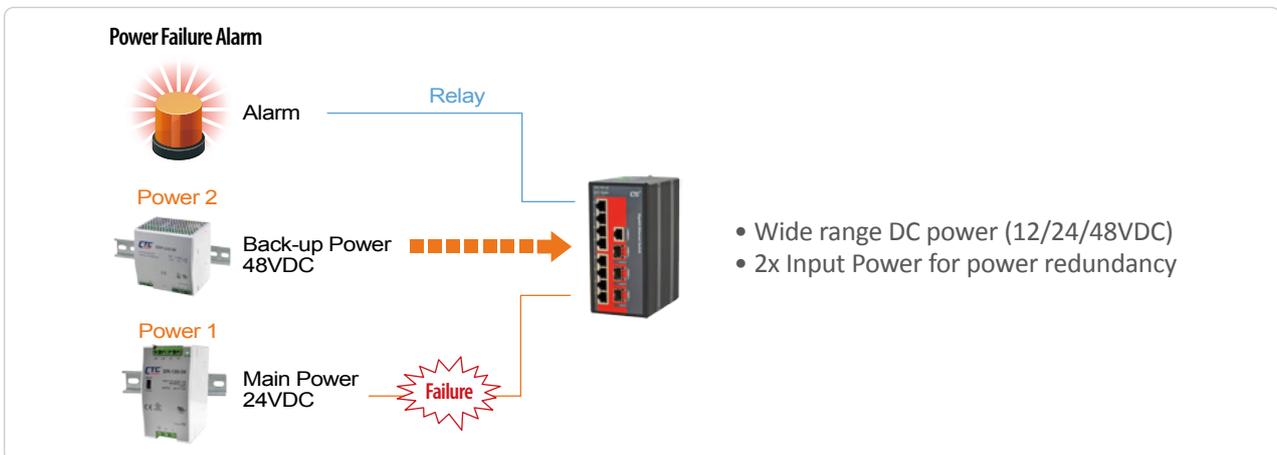
Suitable for harsh environments like railways, roadside, factory, warehouse, dock, parking lot, electrical poles,..

## ■ Diverse & Immediate Alarm Notifications

- Send an warning Email
- Alarm relay
- Selected alarm events (power failure, link up & down, PoE status trap, Authentication, Warm Start, Cold Start...)
- SNMP trap
- LED indicator



## ■ Redundant & Wide Range Power Inputs



## ■ IEEE 802.3az Green Power

Reduce power consumption in following case for saving power:

- Ports in idle state
- Output power dependent on cable length
- During periods of low data activity



## ■ Cable Diagnostics

- The feature is useful to troubleshoot Ethernet cabling problems especially for Ethernet cables buried or hidden underground.
- The diagnostic results reveal cable states (shorts or open connections), the length of cable and distances to the faults.

