

SINUS NETWORKS

Ipari Ethernet – gyakorlati alkalmazások és érdekesességek

Industrial device reliability

Certification

- CE/FCC
- **UL60950-1**
- EN50155
- **EN50121-4**
- EN62368-1
- IEC-61850-3
- **EN61000-6-2**
- EN61000-6-4
- NEMA TS2

Redundant Ring

- μ -Ring
- ITU-TG.8032
- 802.1d STP
- **802.1w RSTP**
- 802.1s MSTP

EMS Industrial Grade

- EN 61000-4-2 ESD
- **EN 61000-4-3 RS**
- EN 61000-4-4 EFT
- **EN 61000-4-5 Surge**
- EN 61000-4-6 CS



Temperature

- Wide Temperature Models Available

Rugged Mechanical

- **Vibration** IEC 600068-2-6
- **Free Fall** IEC 600068-2-32
- **Shock** IEC 600068-2-27

High MTBF & 5 Years Warranty

- Industrial Grade Component
- Fanless



Industrial Grade Products

Linkeasy Industrial Switch

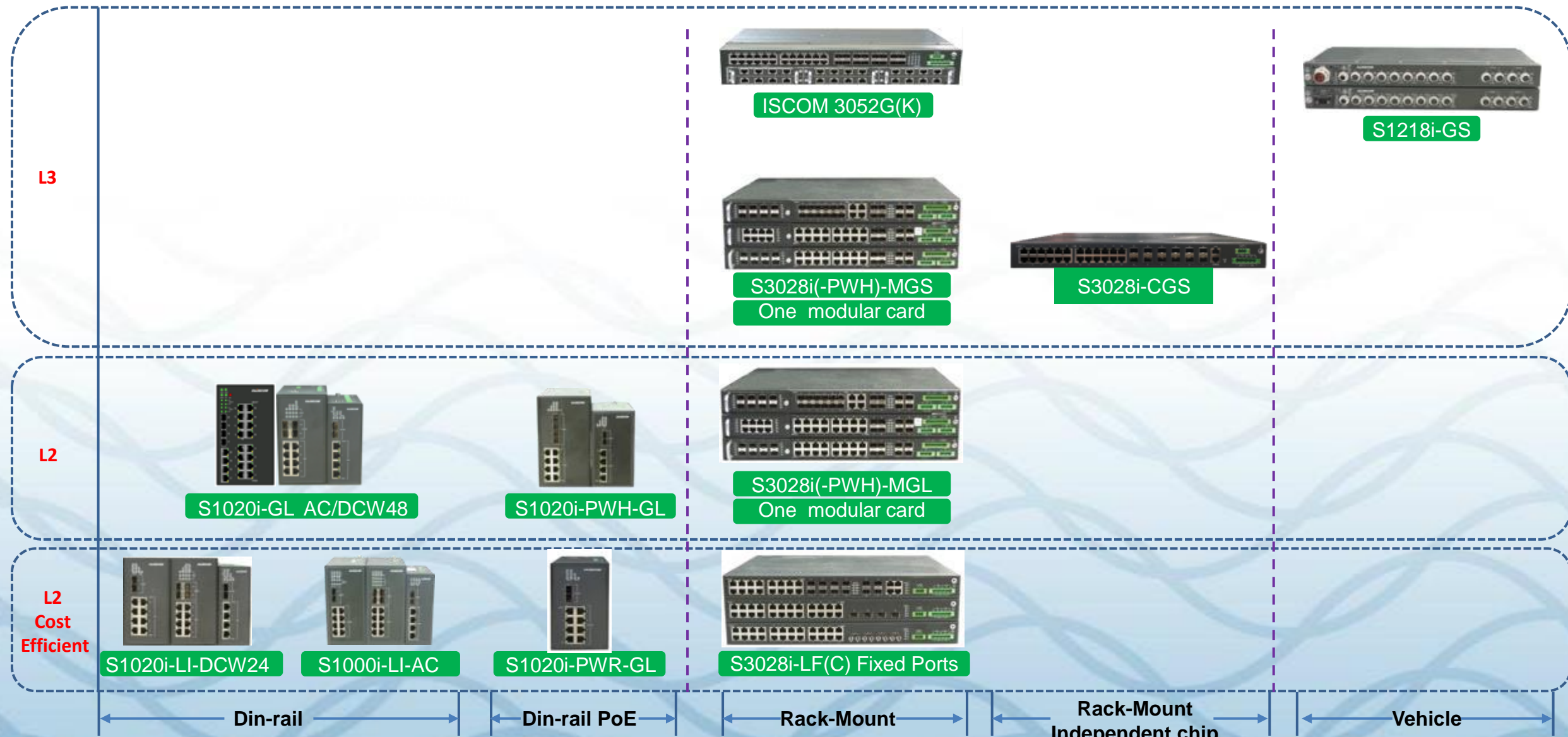


RAISECOM

www.raise.com

Industrial Grade Products

Industrial Switches Overview





Industrial Grade Products

Product Categories

Cellular Router



Switch / Converter



Serial to Fiber Converter



PoE Series

- Switch / Converter / Extender / Injector / Splitter



IEC 61850-3 Switch



Management Software
SmartView™ & SmartConfig™



SyncE Switch



EN 50155 Switch



L3 / L2 Rackmount Switch



M12 EN50155 Cellular Router

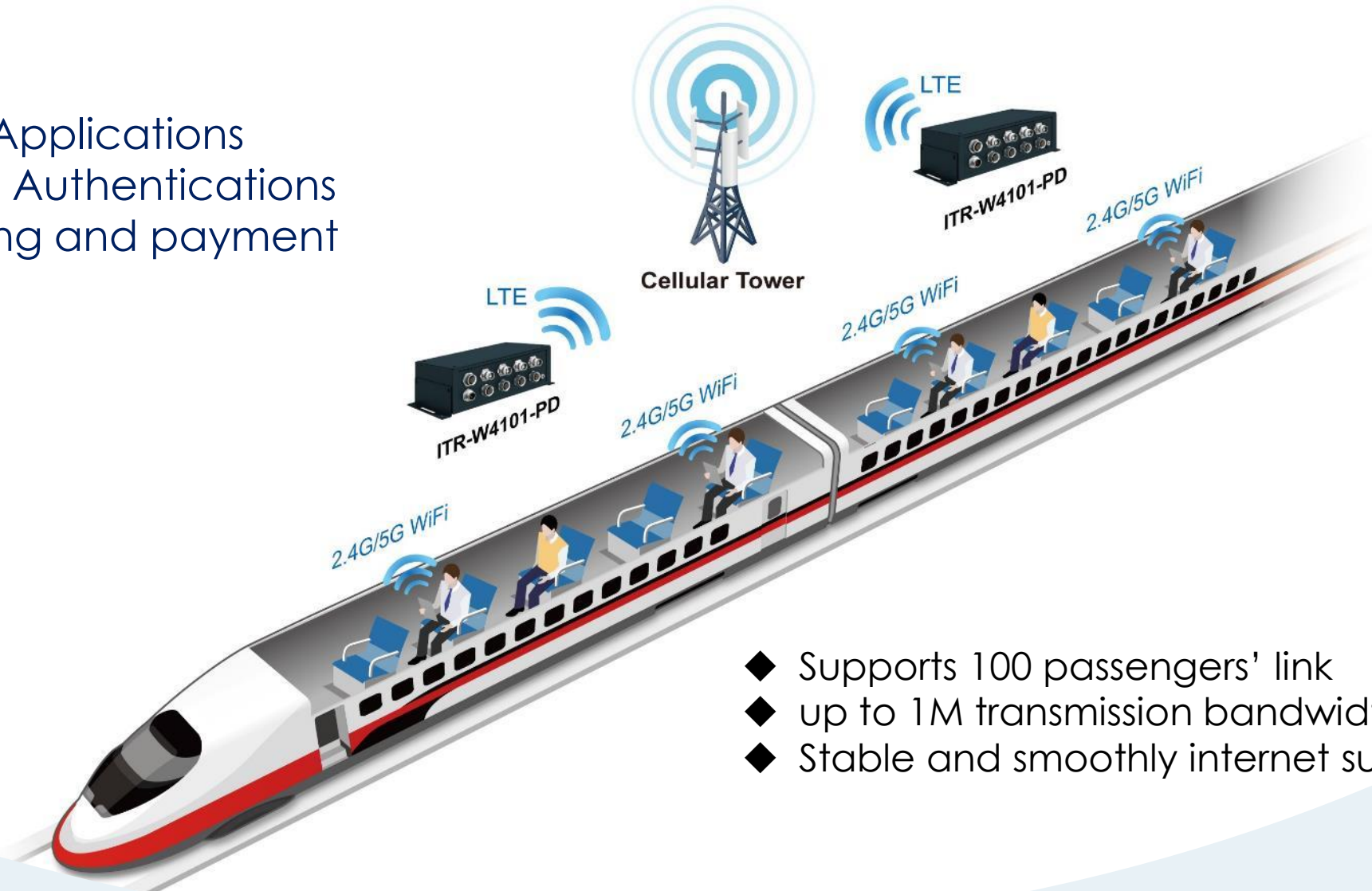


ITR-W4101-PD

- up to 100 Link Capacity per Carriage
- up to 1M transmission rate per passenger
- Supports Multiple SSID and invisible SSID for crew only
- Supports 802.1Q VLAN, QoS, OpenVPN, IPsec security
- Cat6(300/50)/Cat12(600/150) solutions are available, 2CA support
- 5G module will be available
- Dual modem could do load balance and bandwidth aggregation
- Supports 2 Gigabit LAN ports M12 connector
- Supports 5GHz/2.4GHz MIMO WLAN
- Triple redundant power input support 24~110VDC & PoE PD
- EN50155 and EN45545-2 certified

Train Passenger WiFi Solutions

- Internet/Web Applications
- Portal Server & Authentications
- On-board selling and payment



- ◆ Supports 100 passengers' link
- ◆ up to 1M transmission bandwidth
- ◆ Stable and smoothly internet surfing

ITP series M12, IP67/IP54 EN50155 Switches



ITP-2204GTM, ITP-2204GTM-16PH

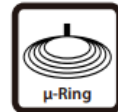


ITP-1204GTM, ITP-1204GTM-12PH



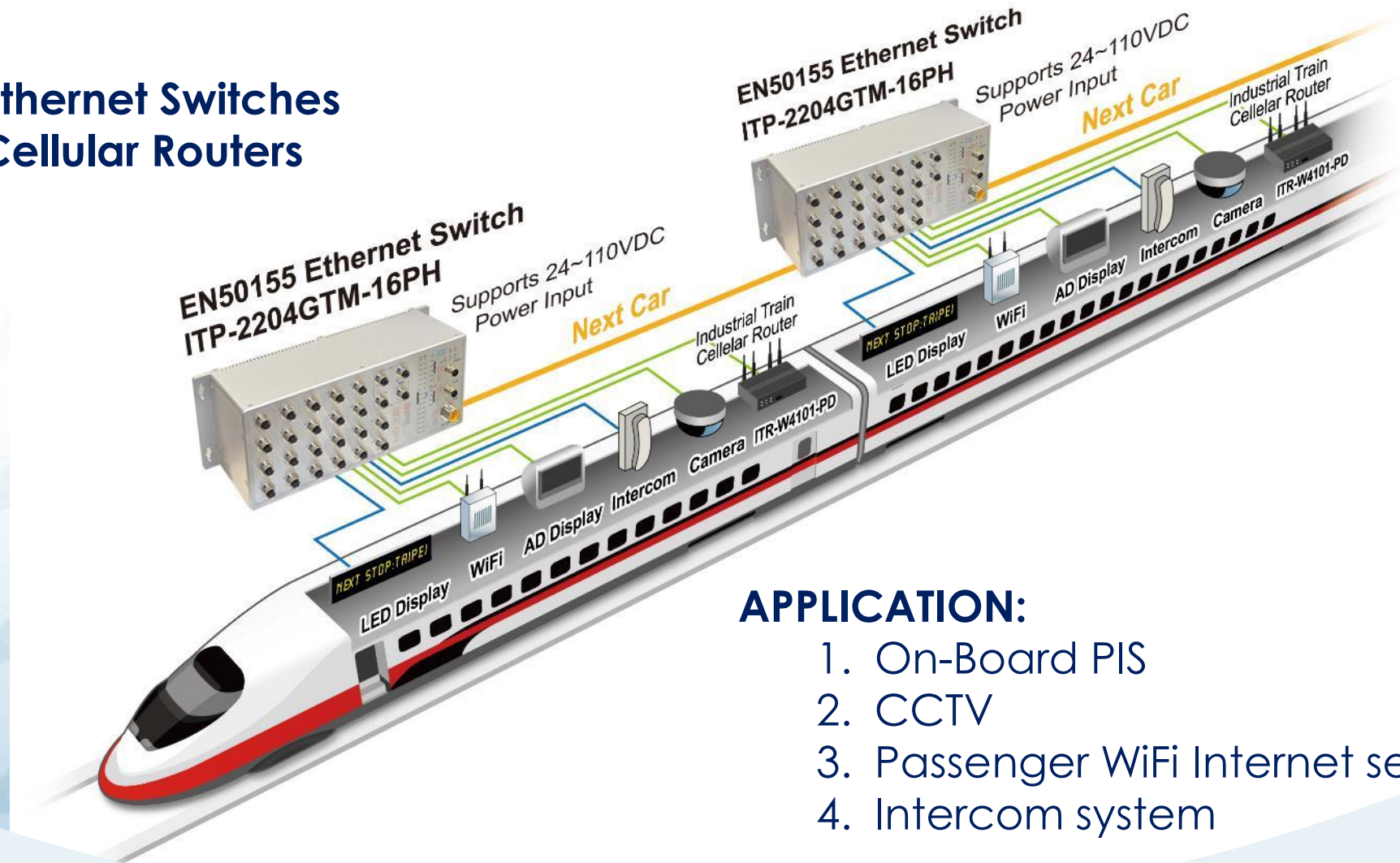
ITP-802GTM, ITP-802GTM-8PH

- 10/16/26x port Gigabit or 10/100Mbps portfolio
- Supports max. 18x PoE ports
- 4-port or up to 8-port Gbps X-code
- Supports hardware bypass tech. for failover
- Dual power input 24~110VDC or 110/220VAC for non-PoE models
- Supports IEC 61375-2-3/5 TTDP, EN50155, EN45545-2, IP67/IP54 rating



EN50155 Train Networking Solutions

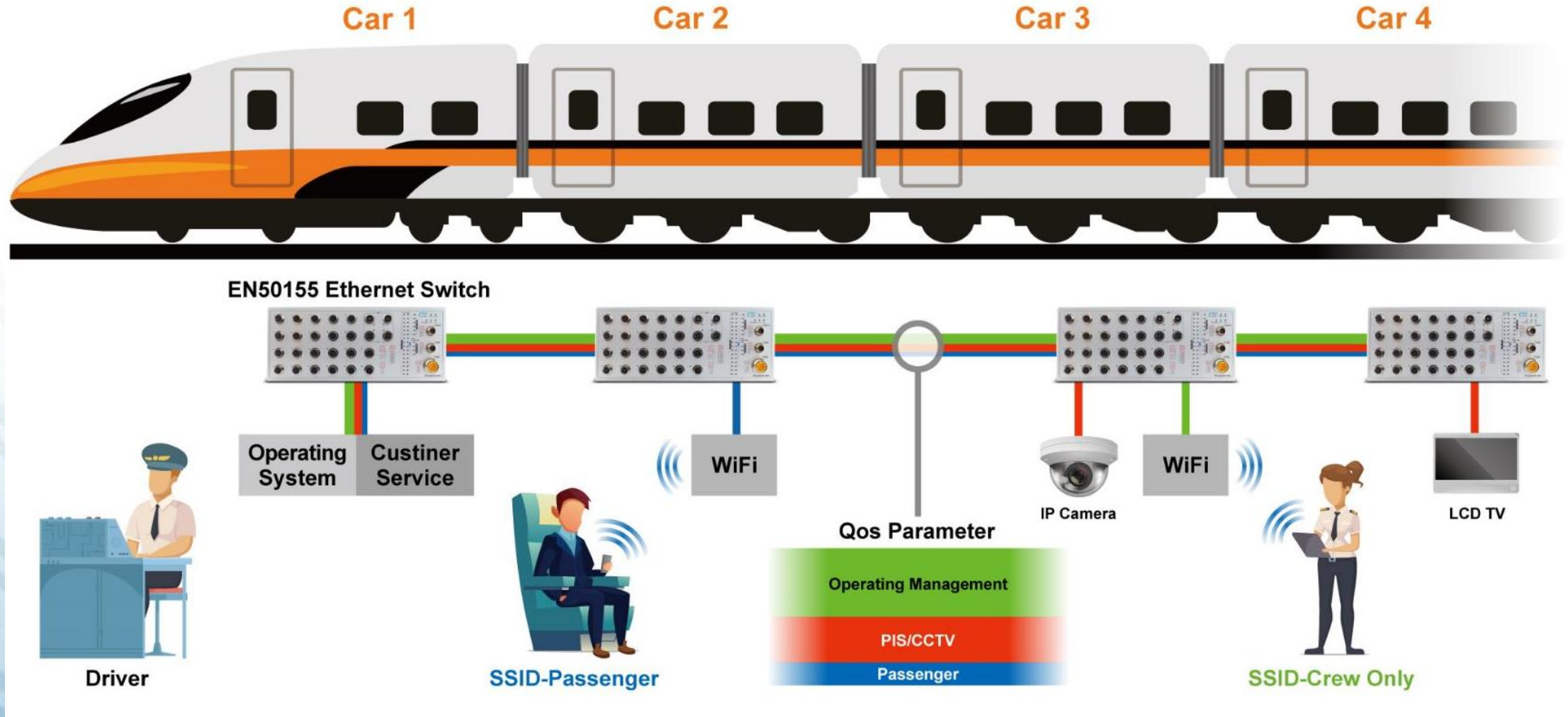
- Train M12 Ethernet Switches
- Train M12 Cellular Routers



APPLICATION:

1. On-Board PIS
2. CCTV
3. Passenger WiFi Internet service
4. Intercom system

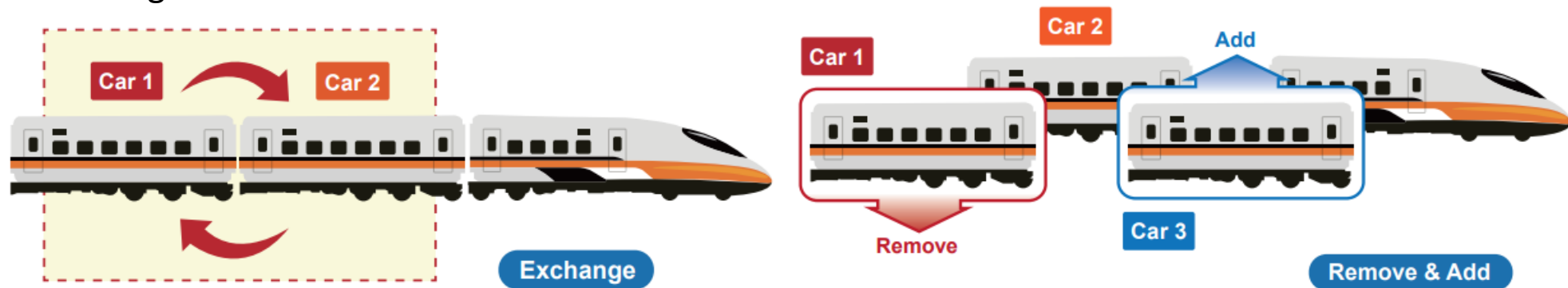
QoS Application



Supports TTDP and Hardware Bypass Technologies

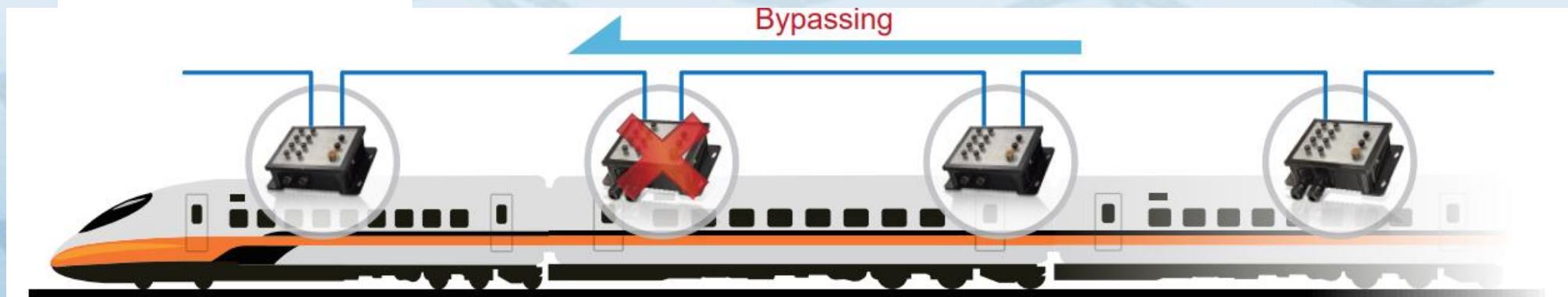
TTDP (Train Topology Discovery Protocol)

Train Topology Discovery Protocol train networks have to deal with a dynamically changing topology, as rail cars are connected/disconnected to the train. TTDP identifies the order of the ETBN in a train backbone to ensure automatic IP address configuration.



Resilient Bypass

ITP Series with a bypass relay (two copper port) to mitigate a failure on either power or other error particularly in daisy chain or linear topology networks.



OTHER INTERESTING FEATURES

Easy to Use & Flexible “μ-Ring”

u-Ring Configuration Auto-refresh Refresh

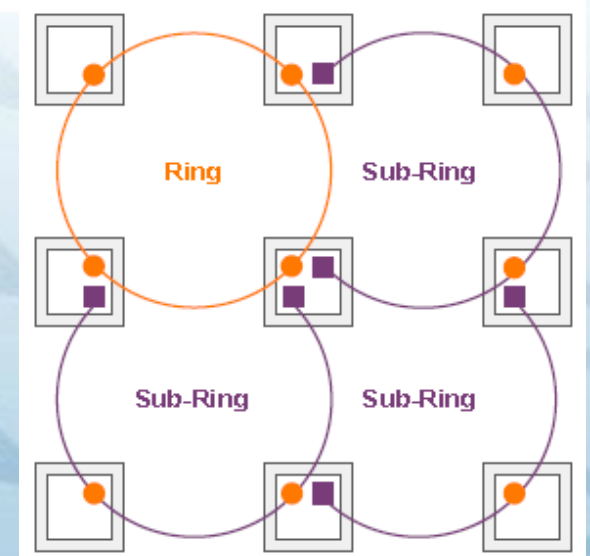
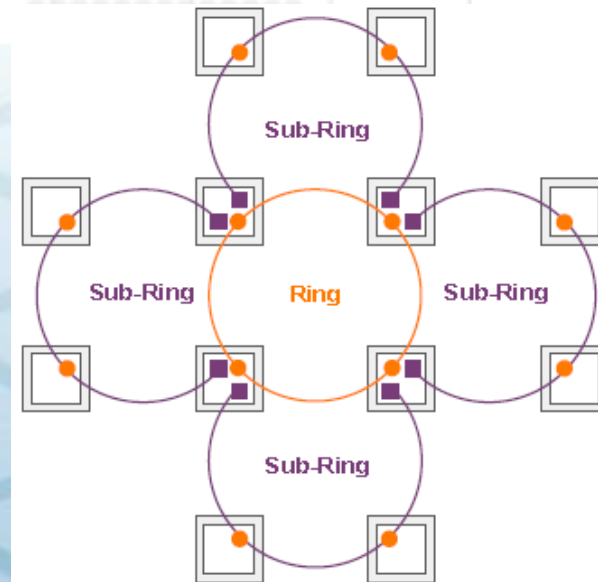
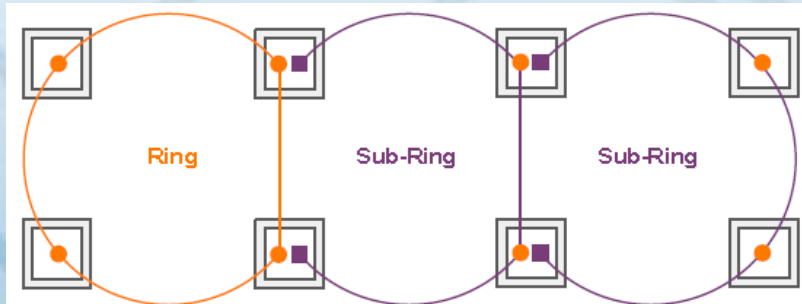
Delete	Instance	Type	Master	East		West	
				Port	Edge	Port	Edge
Delete	1	u-Ring	<input type="checkbox"/>	1		2	
Delete	2	u-Ring	<input type="checkbox"/>	4		3	
Delete	3	u-Ring	<input type="checkbox"/>	10 (Fiber2)		11 (Fiber3)	
Delete	4	Sub-Ring	<input type="checkbox"/>	6			
Delete	5	u-Chain	<input type="checkbox"/>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

Add New Instance

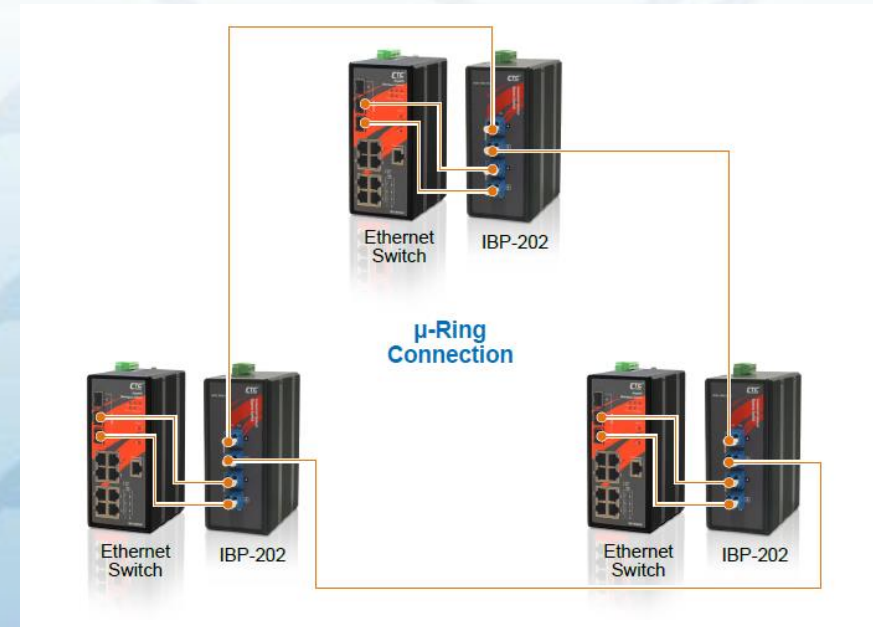
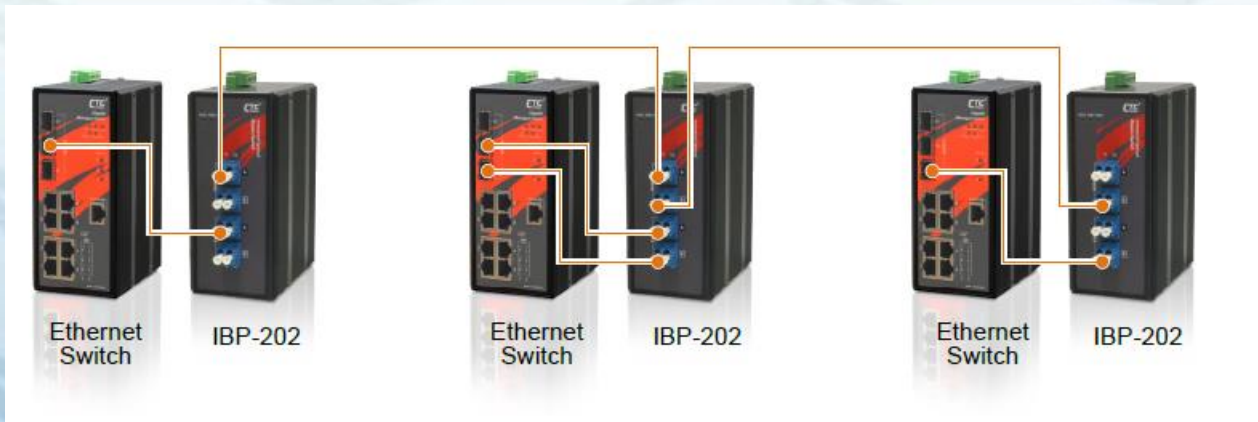
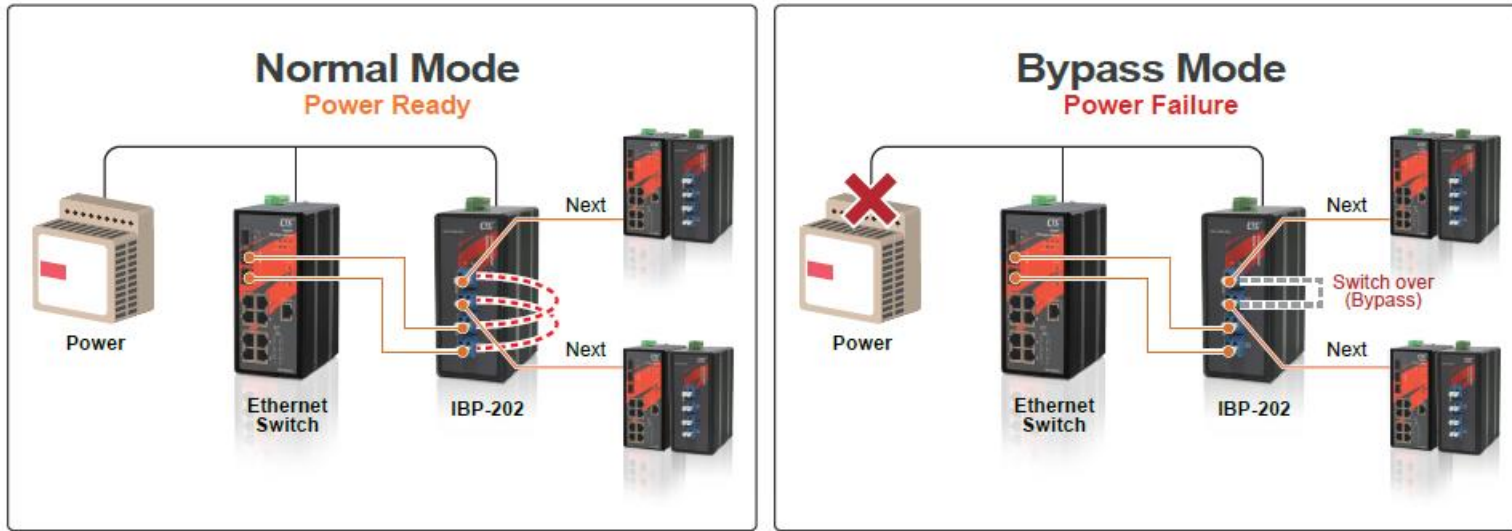
Save Reset

Ring Configuration Type

- u-Ring
- Sub-Ring
- ▲ u-Chain



Industrial Optical Bypass switch





- Supports **Sync Ethernet & IEEE1588 PTP v2**, Timing accuracy of <20ns
- Utilizes a DPLL & TCXO for accurate clock recovery.
- **2.25K VDC Hi-pot isolation** protection for Ethernet ports and power
- **4KV surge protection** for UTP and fiber ports
- UL60950-1, EN60950-1, CE, FCC, EN50121-4, EN61000-6-2, EN61000-6-4 certified

Supports 5 operating mode

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



Negative
Voltage



μ-Ring



IEEE 1588v2



SyncE

Serial to Fiber Converters

- 3-in-1 RS232/422/485
- Auto baudrate detection
- up to 12Mbps for PROFIBUS series ,
- Dual fiber for redundant
- **Modbus, PROFIBUS** protocol transparent
- **2.5KV isolation protection**



SINUS NETWORKS

Köszönjük a figyelmet!