- L3/L2 10G Core Switch
- EN50155 Ethernet Switch
- 4G LTE Router/WiFi Gateway
- Industrial PoE Switch
- Industrial PoE Extender

CTC union®

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Smart Transportation Transmission for Railway
- Rolling Stock, Station and Trackside

EN50155　EN50121-4　EN61000-6-2 EN61000-6-4　NEMA TS2　ISO 9001 ISO 14001　c **UL** us

e-Catalog

CTC union | **Smart Transportation Transmission for Railway**
-Rolling Stock, Station and Trackside

www.ctcu.com

Smart Transportation
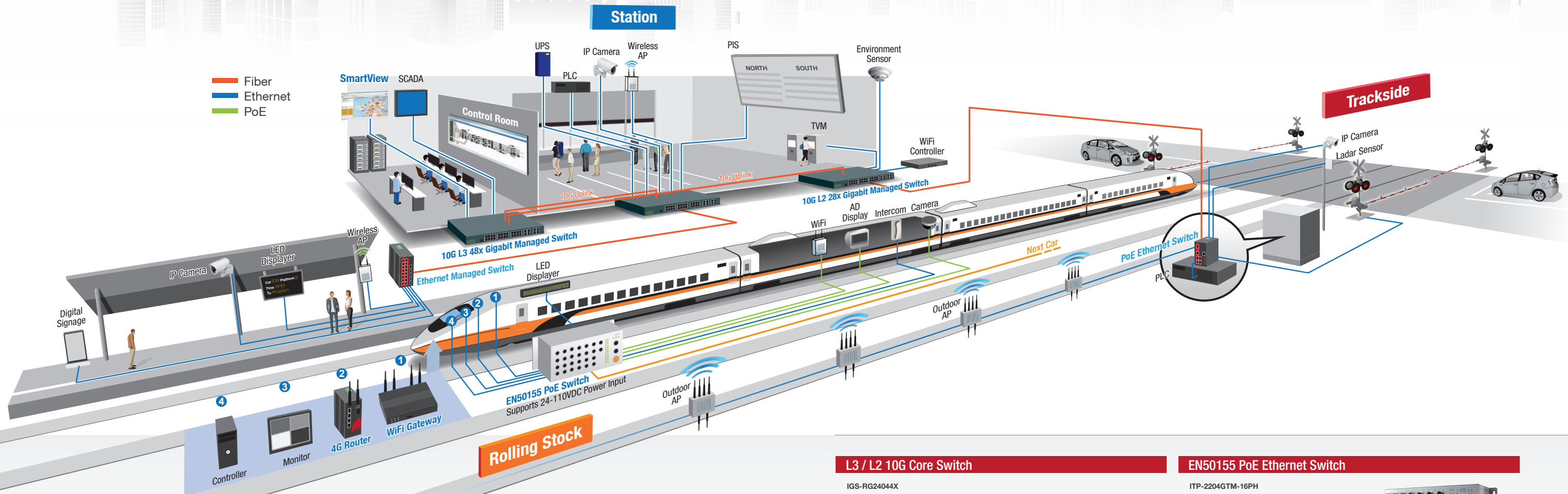Transmission for Railway

Product Key Features

Product Selection

Smart Transportation Transmission for Railway

-Rolling Stock, Station and Trackside

With over 25 years experience as specialists in technologies based on Ethernet and Optical transmissions, CTC Union has now devoted our resources to providing network communications solutions for railway applications with the highest quality, stability, and reliability.

Our railway solutions provide EN50155 certification, wide temperature range, utilize rugged M12 connectors, and use IP-67 casing for rolling stock, trackside, as well as for station and control center.

Station

Trackside

Fiber
Ethernet
PoE

SmartView   SCADA

UPS   IP Camera   Wireless AP   PIS   Environment Sensor

PLC   NORTH   SOUTH

Control Room   TVM   WiFi Controller   IP Camera   Ladar Sensor

10G Uplink   10G Uplink   10G Uplink

10G L2 28x Gigabit Managed Switch

10G L3 48x Gigabit Managed Switch

Ethernet Managed Switch

WiFi   AD Display   Intercom   Camera

Wireless AP   LED Displayer   Next Car   PoE Ethernet Switch

IP Camera   LED Displayer   Outdoor AP   PLC

Digital Signage

EN50155 PoE Switch
Supports 24-110VDC Power Input

Outdoor AP

Controller   Monitor   4G Router   WiFi Gateway

Rolling Stock

Related Products
Please check page 5 & 6 for more details.

Device Management
- Main Functions (FCAPS): Fault / Configuration / Accounting / Performance / Security Management
- Remote access control for efficient configuration
- Traffic / Performance monitoring & management
- Alarm Trap and event log management
- Auto Discovery and Device Viewer
- Allow up to 25 administrators to login
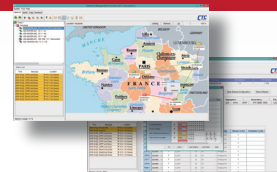
L3 / L2 10G Core Switch

IGS-RG24044X
24x 10/100/1000Base-T(X) +
4x 100/1000Base-X SFP + 4x 1G/2.5G/10G SFP+

ICS-G24S4X
24x 100/1000Base-X SFP with
4x GbE Combo plus 4x 10GbE SFP+

EN50155 PoE Ethernet Switch

ITP-2204GTM-16PH
22x 10/100Base-TX + 4x 10/100/1000Base-T
with 16x PoE+

ITP-1204GTM-12PH
12x 10/100Base-TX + 4x 10/100/1000Base-T
with 12x PoE+

4G LTE Router / WiFi Gateway

ICR-4103
4G LTE + 3x 10/100Base-T(X) Router

ICR-W403
4G LTE, WiFi ac/b/g/n 2T2R Gateway

Managed Ethernet Switch

IFS+402GSM-4PH24
4x 10/100Base-TX + 2x 100/1000Base-X SFP
with 4x PoE++, 60W

IFS-1604SM
16x 10/100/1000Base-T +
4x 100/1000Base-X SFP

Industrial LAN Extender

IEXT224-4PH
Long Reach PoE Extenders
(Phone line and Coaxial cable/up to 1.2km)

Product Key Features

TTDP

TTDP (Train Topology Discovery Protocol) for train inauguration is a process where the network devices can automatically reconfigure for topology changes (i.e., as carriages are swapped). TTDP identifies the order of the Ethernet switches in a train backbone from the head and allows auto-reconfiguration of the other switches in the entire network.

■ Exchange
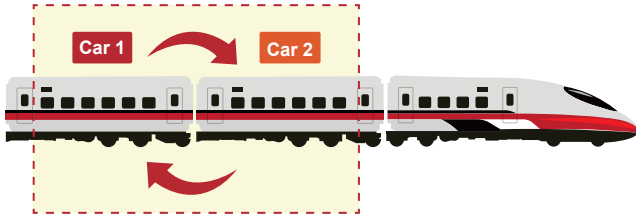
■ Remove & Add
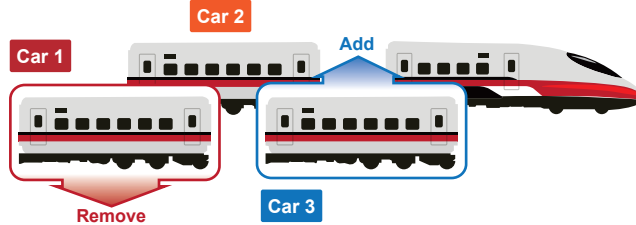
Resilient Bypass

EN50155 compliant products offer two copper interfaces with auto bypass function in the event of sudden power loss, particularly in daisy chain or linear topology networks. When power failure occurs in one of the switches on a train, the bypass relay function can activate, automatically bypassing the internal circuits and maintaining link between neighboring equipment. With this function, secure data transmission from terminals to backbone and higher network availability can be guaranteed.
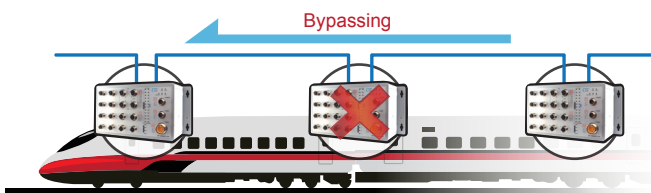

TRDP

Train Real-time Data Protocol (TRDP) is a protocol for communication and control solutions on board of rolling stock. Railway industries created this new protocol with the aim to improve data communication on board of trains.

❶ Gateway WiFi　❷ 4G Router　❸ Monitor　❹ Controller

Supports 24-110VDC Power Input
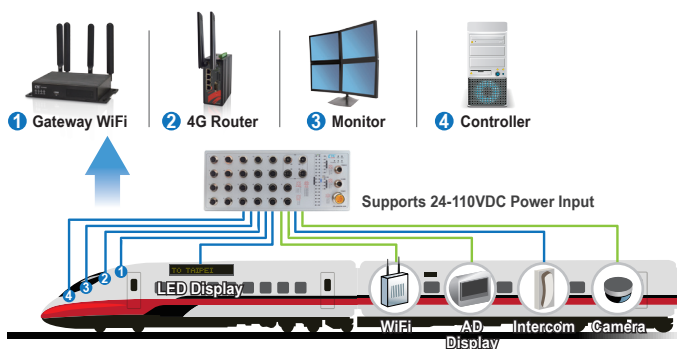
μ-Ring Network Redundancy

The μ-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
- μ-Ring, μ-Chain, Sub-Ring for different applications
- Recovery time < 10ms
- User Friendly configuration GUI

Multiple μ-Ring　Master
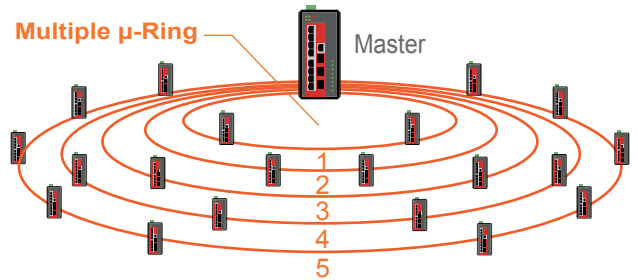
■ Friendly μ-Ring Configuration

Delete	Instance	Type	Master	East		West	
				Port	Edge	Port	Edge
Delete	1	u-Ring ▼	☐	1 ▼		2 ▼	
Delete	2	u-Ring ▼	☐	4 ▼		3 ▼	
Delete	3	u-Ring ▼	☐	10 (Fiber2) ▼		11 (Fiber3) ▼	
Delete	4	Sub-Ring ▼	☐	6 ▼			
Delete	5	u-Chain ▼	☐	5 ▼	☐	9 (Fiber1) ▼	☐

■ μ-Chain topology
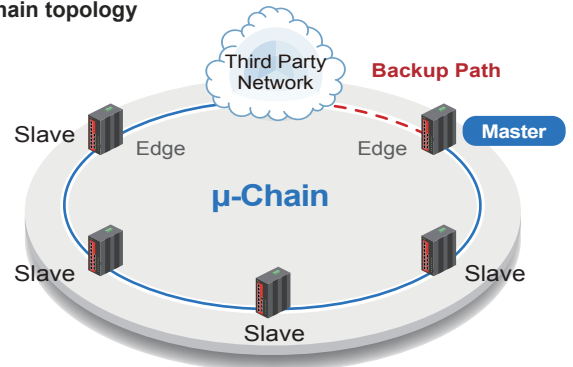
- Benefit: Mix CTC and third party device in a ring topology

■ Sub-Ring topology
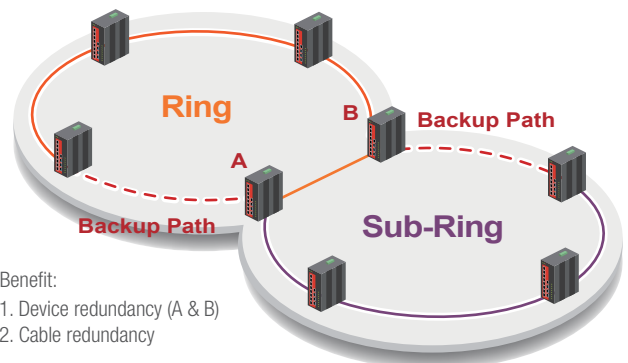
- Benefit:
  1. Device redundancy (A & B)
  2. Cable redundancy

L3 Core Ethernet Switch in TCC Application

■ **Features**

- Supports RIP1 / RIP2
- Supports OSPF v2 / OSPF v3
- Supports VRRP

Traffic Control Center A

Traffic Control Center B

L3 10G Core Switch

L3 10G Core Switch

Station A   Station B   Station C

L2 10G Core Switch
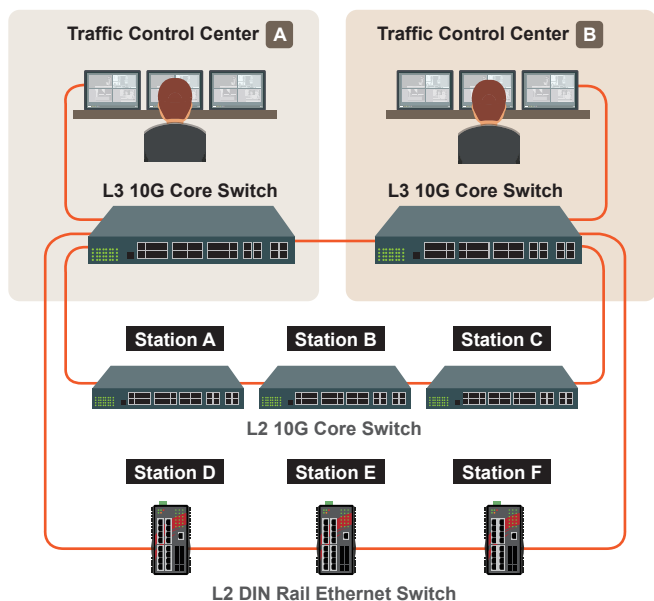
Station D   Station E   Station F

L2 DIN Rail Ethernet Switch

μ-Ring Network Redundancy

c UL us LISTED

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.

**EN61000-6-2
EN61000-6-4**

For Heavy Industrial Environment application.

E13

For car and motorcycle spare parts and security products, noise and emissions, are required to act in accordance with the EU.

NEMA TS2

NEMA TS2 is a standard for traffic control assemblies, such as traffic lights, emergency road condition signs and walk/don't walk signs.

EN50121-4

For trackside and railway applications.

EN50155

For rolling stock, vehicle and moving machine applications.

From Ground to Train

Outdoor wireless AP/ 4G router is the ideal ruggedized wireless solution for railway onboard train-to-ground applications such as CCTV and CBTC communications.

That enable operators to manage carriage-to-carriage and train-to-ground communications with increased efficiency and create attractive onboard multimedia services that give passengers safe and environmentally friendly transportation.

Outdoor AP

4G LTE WiFi Gateway
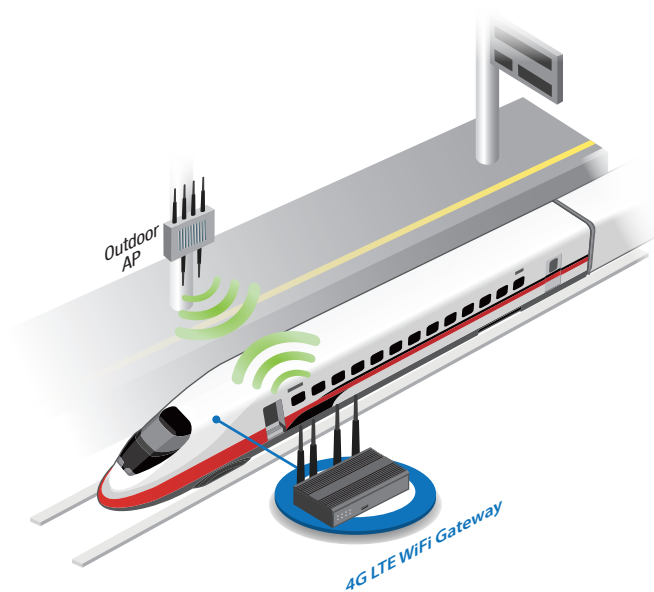
M12 LAN Extender via Coaxial

Some of the old generation train with only exist coaxial cable between the carriages, it is difficult to implement its ETB , the M12 LAN Extender will be a good solution to use its coaxial cable convert to Ethernet communication.

LAN Extender   Coaxial   LAN Extender

Control   Monitor   4G Router   WiFi Gateway
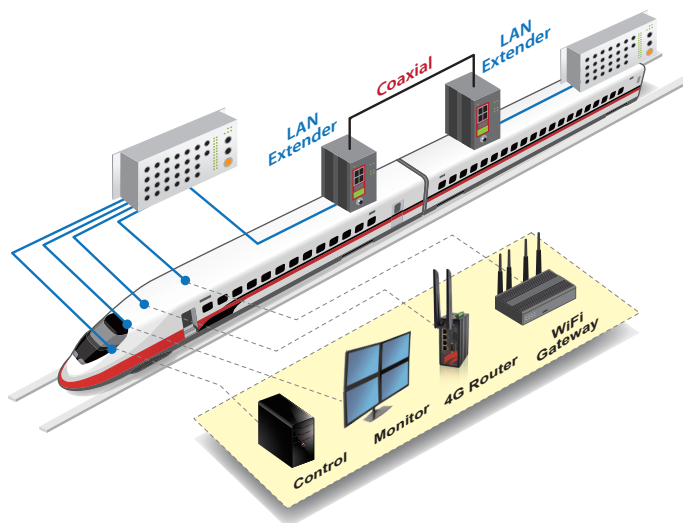
Product Selection

L3 / L2 10G Core Switches (Rackmount)

Model Name	Total Port	GbE Port			10GbE	PoE Port	Redundant Input Power	Certification			
		100/1000 Base–XSFP	100/1000 Base–TRJ45	100/1000Base–X SFP & RJ45	IEEE802.3ae SFP+	IEEE802.3at (budget)		Railway EN50121–4	Safety UL60950–1/ EN60950–1	EN61000–6–2 EN61000–6–4	CE, FCC
ICS–G24S4X	28	20		4 Combo	4		110/220V AC or 24/48, -48V DC	✓	UL60950-1	✓	✓
ICS–G24S2X	26	20		4 Combo	2		110/220V AC or 24/48, -48V DC	✓	UL60950-1	✓	✓
ICS–RG24044X (Layer 3)	32		24	4 SFP	4		110/220V AC or 24/48, -48V DC	✓	✓	✓	✓
ICS–G24044X	32		24	4 SFP	4		110/220V AC or 24/48, -48V DC	✓	✓	✓	✓
ICS–G24044X–24PH	32			4 SFP	4	24 (240W)	48VDC, -48VDC	✓	✓	✓	✓

EN 50155 Ethernet Switches

Model Name	PoE	Managed	IP67	Total Port	M12 UTP Port		Fiber Port	PoE Port	Redundant Input Power	Certification			
					10/100 Base–TX	10/100/1000 Base–T (X or A code)	100/1000 Base–X	IEEE802.3at (budget)		EN50155	Railway EN50121–4	Safety UL60950–1/ EN60950–1	EN61000–6–2 EN61000–6–4 CE, FCC
ITP–2204GTM–16PH	✓	✓	IP64	26	22	4		16 (120W)	24/48/110V DC	✓	✓	EN60950-1	✓
ITP–1204GTM–12PH	✓	✓	IP64	16	12	4		12 (120W)	24/48/110V DC	✓	✓	EN60950-1	✓
ITP–G802SM–8PH24	✓	✓	✓	10		8	2 SFP	8 (180W)	24/48V DC	✓	✓	✓	✓
ITP–G802TM–8PH24	✓	✓	✓	10		10		8 (180W)	24/48V DC	✓	✓	✓	✓
ITP–802GSM–8PH24	✓	✓	✓	10	8		2 SFP	8 (180W)	24/48V DC	✓	✓	✓	✓
ITP–802GTM–8PH24	✓	✓	✓	10	8	2		8 (180W)	24/48V DC	✓	✓	✓	✓
ITP–2204GTM		✓	IP64	26	22	4			24/48/110V DC	✓	✓	EN60950-1	✓
ITP–1204GTM		✓	IP64	16	12	4			24/48/110V DC	✓	✓	EN60950-1	✓
ITP–G802SM		✓	✓	10		8	2 SFP		110/220V AC or 24/48V DC	✓	✓	✓	✓
ITP–G802TM		✓	✓	10		10			110/220V AC or 24/48V DC	✓	✓	✓	✓
ITP–802GSM		✓	✓	10	8		2 SFP		110/220V AC or 24/48V DC	✓	✓	✓	✓
ITP–802GTM		✓	✓	10	8	2			110/220V AC or 24/48V DC	✓	✓	✓	✓
ITP–500		✓		5	5				12/24/48V DC	✓	✓		✓
ITP–800		✓		8	8				12/24/48V DC	✓	✓		✓

4G LTE Router / WiFi Gateway

Model Name	WAN		LAN		Local Port			Certification			
	Cellular Mobile	GPS (Ant.Optional)	WiFi	UTP Ethernet	DI, DO	Serial	Radio	Railway EN50121–4	Safety EN60950–1	EN61000–6–2 EN61000–6–4	CE, FCC
ICR–4103	2G/3G/4G LTE			1x FE (WAN) + 3x FE (LAN)	2x DI, 1x DO	2x RS232 1x RS485	RED EN301	✓	UL60950-1	✓	✓
ICR–W403	2G/3G/4G LTE	1x GNSS	IEEE802.11ac/b/g/n (LAN or WAN)	2x GbE (LAN) + 1x GbE (LAN or WAN)	2x DI, 1x DO	1x RS232		✓	UL60950-1	✓	✓

PoE Extender

Model Name	RJ45 UTP		Long Distance Extended		Redundant Input Power	Certification		
	10/100Base–TX	IEEE802.3at PoE (Power budget)	RJ11 (2 wire)	Coaxial		Railway EN50121–4	EN61000–6–2 EN61000–6–4	CE, FCC
IEXT224–4PH	4	4 (30W)	1	1	48V DC		✓	✓

Smart Transportation Transmission for Railway

Product Key Features

Product Selection

Managed PoE Switches

Model Name	Rackmount	Total Port	RJ45 Port 10/100 Base−TX	RJ45 Port 10/100/1000 Base−T	Fiber Port 100/1000 Base−X	PoE Port IEEE802.3at (budget)	PoE Port IEEE802.3bt (budget)	Redundant Input Power	Railway EN50121−4	NEMA TS2	Safety UL60950−1/ EN60950−1	EN61000−6−2 EN61000−6−4 CE, FCC
IGS−2408SM−24PH	✓	32		24	8 SFP	24 (400W)		48/-48V DC	✓		✓	✓
IGS+402SM−4PH24		6		4	2 SFP	4 (120W)		24/48/-48V DC	✓		✓	✓
IGS−402SM−4PU		6		4	2 SFP		4 (240W)	48/-48V DC	✓		✓	✓
IGS+803SM−8PH24		11		8	3 SFP	8 (180W)		24/48/-48V DC	✓	✓	✓	✓
IGS+803SM−8PH		11		8	3 SFP	8 (240W)		48/-48V DC	✓	✓	✓	✓
IGS−1608SM−8PH		24		16	8 SFP	8 (240W)		48/-48V DC	✓		✓	✓
IFS+402GSM−4PH24		6	4		2 SFP	4 (120W)		24/48/-48V DC	✓		✓	✓
IFS−402GSM−4PU		6	4		2 SFP		4 (240W)	48/-48V DC	✓		✓	✓
IFS+803GSM−8PH24		11	8		3 SFP	8 (180W)		24/48/-48V DC	✓	✓	✓	✓
IFS+803GSM−8PH		11	8		3 SFP	8 (240W)		48/-48V DC	✓	✓	✓	✓
IFS−1608SM−8PH		24	10		8 SFP	8 (240W)		48/-48V DC	✓		✓	✓

Unmanaged PoE Switches

Model Name	Total Port	RJ45 Port 10/100 Base−TX	RJ45 Port 10/100/1000 Base−T	Fiber Port 1000 Base−X	Fiber Port 100/1000 Base−X	PoE Port IEEE802.3at (budget)	PoE Port IEEE802.3bt (budget)	Redundant Input Power	Railway EN50121−4	Safety UL60950−1	EN61000−6−2 EN61000−6−4	CE, FCC
IGS−402S−4PH24	6		4		2 SFP	4 (120W)		24/48V DC	✓	✓	✓	✓
IGS−402S−4PU	6		4		2 SFP		4 (240W)	48V DC	✓		✓	✓
IGS−600−4PH24	6		6			4 (120W)		24/48V DC	✓	✓	✓	✓
IFS−802GS−8PH	10	8		2 SFP		8 (240W)		48V DC	✓		✓	✓
IFS−1602GS−8PH	18	16		2 SFP		8 (240W)		48V DC	✓		✓	✓

Managed Ethernet Switches

Model Name	Rackmount	Total Port	RJ45 Port 10/100 Base−TX	RJ45 Port 10/100/1000 Base−T	Fiber Port 100/1000 Base−X	Redundant Input Power	Railway EN50121−4	NEMA TS2	Safety EN60950−1	Safety UL60950−1	EN61000−6−2 EN61000−6−4	CE, FCC
IGS−S2804TM	✓	28		4	28 SFP	110/220V AC or 24/48/-48 V DC	✓			✓	✓	✓
IGS−R2408SM	✓ (Layer 3)	32		24	8 SFP	110/220V AC or 24/48/-48 V DC	✓		✓	✓	✓	✓
IGS−2408SM	✓	32		24	8 SFP	110/220V AC or 24/48/-48 V DC	✓		✓	✓	✓	✓
IGS+404SM		8		4	4 SFP	12/24/48/-48V DC	✓		✓	✓	✓	✓
IGS+803SM		11		8	3 SFP	12/24/48/-48V DC	✓	✓	✓	✓	✓	✓
IGS−812SM		20		8	12 SFP	12/24/48V DC	✓			✓	✓	✓
IGS−1604SM		20		16	4 SFP	12/24/48V DC	✓			✓	✓	✓
IFS+402GSM		6	4		2 SFP	12/24/48/-48V DC	✓			✓	✓	✓
IFS+803GSM		11	8		3 SFP	12/24/48/-48V DC	✓	✓	✓	✓	✓	✓
IFS−1604GSM		20	6		4 SFP	12/24/48V DC	✓			✓	✓	✓

Unmanaged Ethernet Switches

Model Name	Total Port	RJ45 Port 10/100 Base−TX	RJ45 Port 10/100/1000 Base−T	Fiber Port 100 Base−FX	Fiber Port 1000 Base−X	Fiber Port 100/1000 Base−X	Power Input Redundant	Power Input Single Power	Railway EN50121−4	Safety UL60950−1	EN61000−6−2 EN61000−6−4	CE, FCC
IGS−402S	6		4			2 SFP	12/24/48V DC		✓	✓	✓	✓
IGS−500	5		5					12/24/48V DC	✓		✓	✓
IGS−501S	6		5		1 SFP		12/24/48V DC		✓	✓	✓	✓
IGS−800	8		8					12/24/48V DC	✓		✓	✓
IFS−401F	5	4		1 SC/ST			12/24/48V DC		✓		✓	✓
IFS−500C	5	5						12/24/48V DC	✓		✓	✓
IFS−800	8	8					12/24/48V DC		✓		✓	✓
IFS−802GS	10	8			2 SFP		12/24/48V DC		✓		✓	✓
IFS−1602GS	8	16			2 SFP		12/24/48V DC		✓		✓	✓

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