CHENZHU

SPE/APL-Ethernet Field Switch

High-Speed · Ex-Safe · Process-Ready

One Network, Digital First

Field Communication Evolution for Process Industries

The Challenge	APL Advantage
Unplanned downtime from reactive maintenance • Frequent equipment failures • Latency in instrument status data • Massive data underutilized	**10Mbit/s** **From Reactive to Predictive** • Unlock rich instrument data • AI-Driven Predictive Maintenance • Future-ready IIoT foundation
High cabling complexity & total cost • Traditional point-to-point wiring across plant areas • Extensive cable tray installation & cross-region cabling • High material, installation & maintenance costs	 **Single Pair Ethernet** • Two-wire connection to the field devices • Eliminates cross-region wiring & cable trays • Significantly reduces material, installation & maintenance costs  **Intrinsic Safe & Power over Data Line** • Ex ia spur ports • Simultaneous signal transmission and power feeding • 2-wire intrinsically safe ethernet (2-WISE)

Single Pair Ethernet (SPE)
Describes the transmission of Ethernet via only one pair of copper wires. Provides the necessary infrastructure for the Industrial Internet of Things (IIoT). With SPE, Ethernet can communicate from the cloud to the field level in a space- and cost-efficient way for the first time.

Advanced Physical Layer (APL)
Physical layer based on 10BASE-T1L according to IEEE Std802.3-2022 with additional optional features like intrinsic safety, power over 2 wires.

IEEE 802.3cg-2019
IEEE Standard for Ethernet – Amendment 5: Physical Layer Specifications and Management Parameters for 10 Mb/s Operation and Associated Power Delivery over a Single Balanced Pair of Conductors

IEC TS 60079-47:2021
Explosive atmospheres – Part 47: Equipment protection by 2-wire intrinsically safe ethernet concept (2-WISE)

IEC TS 63444:2023
Industrial networks – Ethernet-APL port profile specification

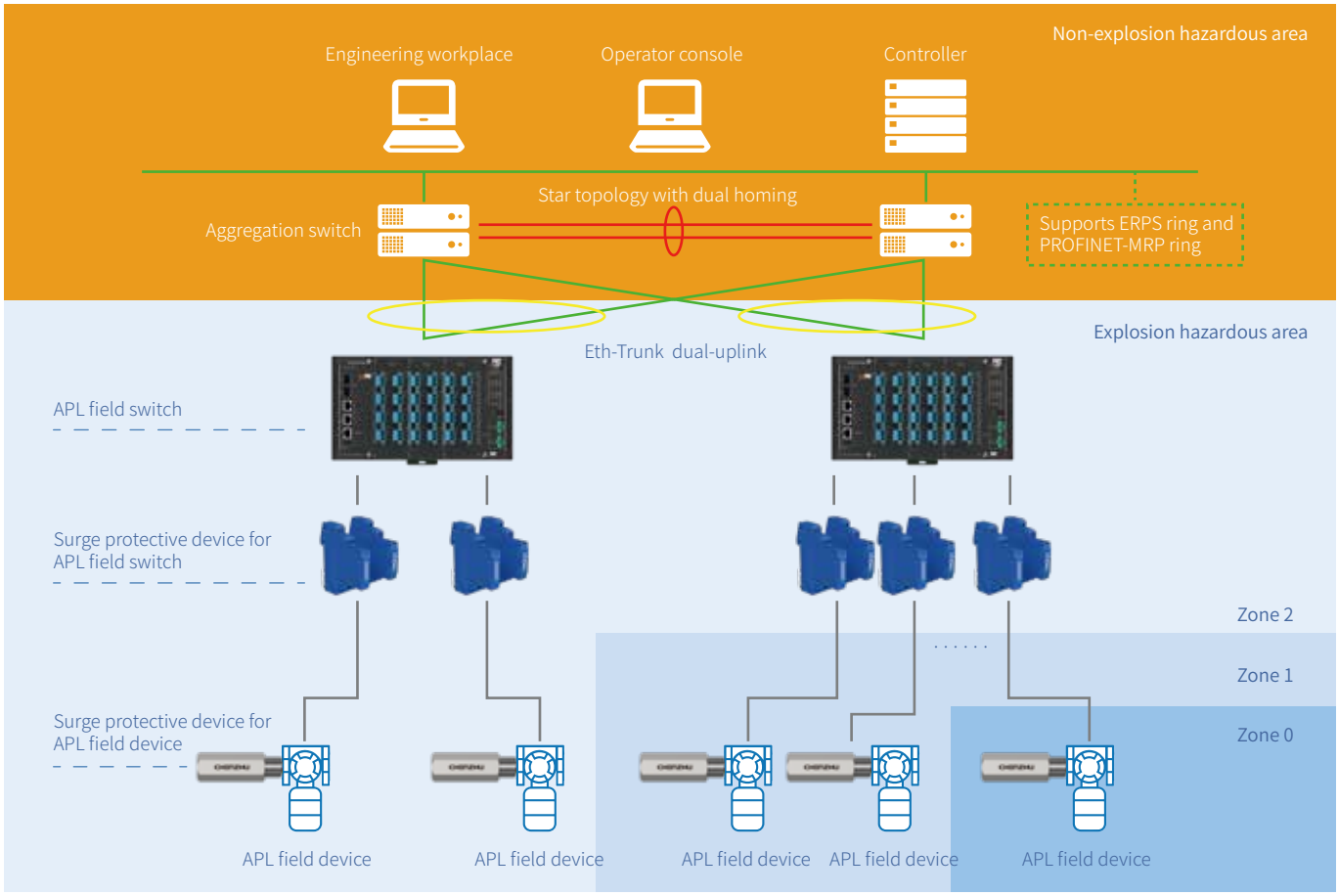
FULLY NETWORKED SAFETY SOLUTIONS

Intrinsic Safety
Surge Protection
Signal Isolation
Functional Safety

High-Speed Networking Technology

Open Protocol，Accelerating customers' digital transformation

Topology



SPE/APL-Ethernet Field Switch GSNX-801EX

- Approval for use in Zone 2, Ex e & Ex ia
- Ex ia spur ports
- Support up to 24 spur ports
- Redundant power inputs 20–60 VDC
- Integrated diagnostics (fault & status)

Optic Transceivers

OGSM01880
SFP, 0.55km, 1Gbit/s, Multimode optical modules , LC

OGSC10DD0
SFP, 10km, 1Gbit/s, Single-mode optical modules, LC

SFP-GE-ER-I
SFP, 40km, 1Gbit/s, Single-mode optical modules, LC

SFP-10G-LR-I
SFP+, 10km, 10Gbit/s, Single-mode optical modules, LC

APL Surge Protective Device

T-24-APL

- Protect spur ports
- Pluggable protection module
- High discharge capacity, In 10 kA, Iimp 2.5 kA
- Intrinsic Safety Ex ia

CZLBX-48-APL

- Protect APL field devices
- High discharge capacity, In 10 kA, Iimp 2.5 kA
- Multiple explosion protection types：Ex d、Ex ia for gas and dust、Ex t

SPE/APL-Ethernet Field Switch

GSNX-801EX

4 uplink Interfaces: 2 Electrical Interfaces、2 Optical Interfaces、24 Spur ports (2-WISE、SPAA)

GSNX-801EX provides 10BASE-T1L downlink and GE/10GE uplink ports, connecting industrial Ethernet to field devices with power supply.

· Installation in safe areas or integrated into an ex e enclosure for zone 2 hazardous area
· 4 uplink interfaces: 2× 10/100/1000M electrical interfaces and 2× GE/10GE optical interfaces
· 24 downlink interfaces: ex ia, communication to APL field devices in zone 0/1/2
· Redundant power supply
· Support PROFINET, EtherNet/IP, HART-IP, OPC UA, NIICA, Modbus TCP, and more
· Complies with iec 62443-4-2 SL2 security level
· Support web-based network management system
· Din rail or wall mounting

IECEx	CE	ethernet-apl™ advanced physical layer	SL2
Pending	Certified	Pending	IEC 62443-4-2

Features

Zone 2 Approved

Support installation in the control room or the field. 2-WISE
Ex ec [ia Ga] IIC
[Ex ia Da] IIIC

Independent Core R&D

Self-designed explosion isolation circuit,
independent control over explosion safety performance

Network Redundancy Protection

- Industry-standard ERPS ring protection with sub-ms convergence, PROFINET-MRP ring protection
- Eth-Trunk dual-uplink for fast failover

Intelligent O&M

- Port diagnostics with diagnostic DO output
- Webmaster for lightweight O&M – SPE switches managed via aggregation switch, no dedicated network manager required
- IP assignment based on tag numbers for quick field device replacement

Galvanic Isolation between Spur Ports

Port-to-port electrical isolation prevents single-point faults from propagating. Eliminates crosstalk for robust, reliable communication and enhanced system availability.

Suitable for Harsh Industrial Environments

Wide-temperature, high-humidity operation; shock and vibration resistant. PCB with G3 conformal coating for long-term stability in demanding conditions.

Network Security

- Port-to-port data isolation protects instruments from cross-port interference
- ACL whitelist filters out unauthorized packets
- Broadcast suppression safeguards the switch

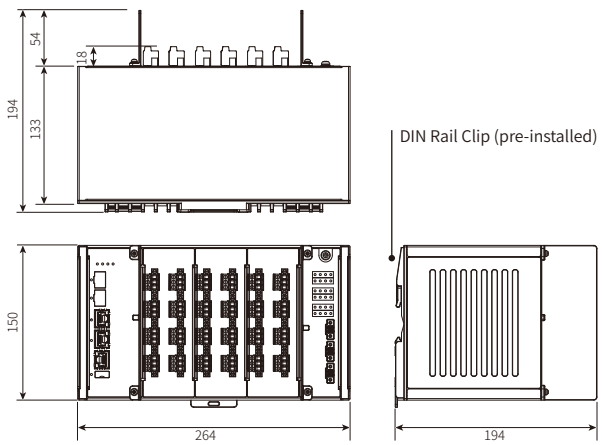
Integrated Ex Turnkey Solution

- Packaged certified solution, pre-assembled with field switches, SPDs, and terminal blocks and more.
- On-site commissioning reduced to external wiring – significantly shortening engineering and debugging cycles.

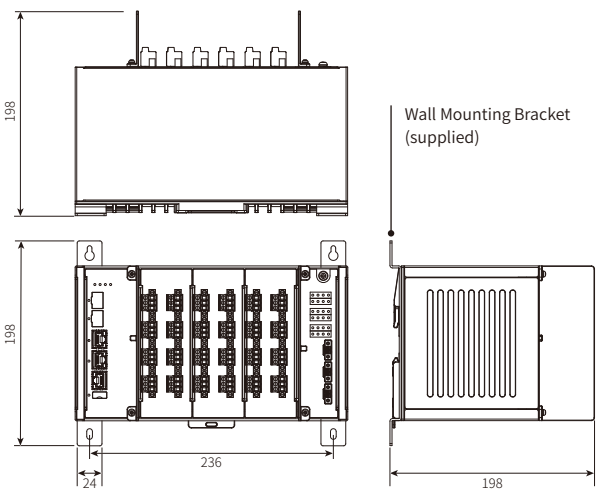
Specifications

General Specifications	
Dimension(W x D x H) [mm]	Physical dimensions: 264mm*133mm*150mm
Ambient temperature	-40°C ~ +70°C
Storage temperature	-40°C ~ +85°C
Degree of protection	IP20
Power Supply	External DC
Redundant Power Supply	Dual-input power supply, PWR1+PWR2
Rated voltage [V]	24V DC or 48V DC
Maximum working voltage range [V]	20 - 60V DC
Maximum working current range [A]	2.3 - 0.83A
Power consumption	50W(Max、with optical modules)
Spur / Supply	1500 V AC
Spur / Spur	500V AC
Downlink Interface	
Interface type	Single pair ethernet SPE, APL, Spur, 1Vpp
Number of ports	24
Port classification	SPAA
Transfer rate	10MBit/s fullduplex
Rated power	0.54W
Uplink Interface 1	
Interface type	Ethernet electrical interfaces, 10/100/1000MBase-T, RJ45
Number of ports	2
Uplink Interface 2	
Interface type	Optic Transceivers, SFP+/SFP, 10G/1G
Number of ports	2
Ex and International Certifications	
Ex marking	Ex ec [ia Ga] IIC T4 Gc [Ex ia Da] IIIC
Certifications	IECEx, CE

Dimensions



DIN Rail Mounting Dimensions (mm)



Wall Mounting Dimensions (mm)

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