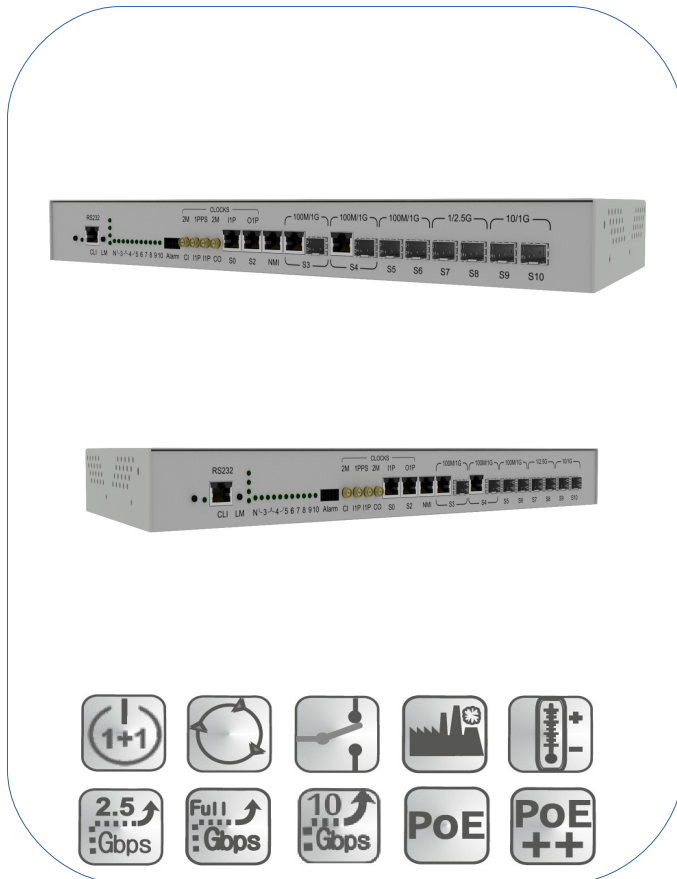


HYPERION-403



8-port Managed Industrial Ethernet Switch 2x 10Gb, 2x 2.5Gb and 4x 1Gb

- Industrial Ethernet switch with 2x 10/1 Gbps SFP+, 2x SFP 100/1000M/2.5Gbps, 4x SFP 100/1000Mbps, Combo 2x RJ-45 UTP 10/100/1000Mbit/s
- 'ITU-T **G.8032**' Ethernet ring support, up to **20ms** protection and recovery switching
- IEEE 1588-2008v.2 (**PTPv2**): precise time synchronization, hardware support for timestamping; precise time synchronization for real-time applications
- Hardware support for **Synchronous Ethernet**
- Dedicated clock inputs and outputs for synchronization purpose
- Relay outputs for alarm watchdog function
- Energy efficiency with the Energy Efficient Ethernet "EEE" technology support
- **Radius** centralized password management
- Optional built-in **RFC2544** and **Y.1564** performance tests
- Ethernet OAM (Link and Service OAM) support
- Security: **SNMPv3**, **HTTPS**, **SSH** management
- Operating temperatures: -40 to +70°C
- IP-30, mounted in standard 19" rack 1U high
- Redundant power supply **230V AC** and **48V DC**

Description of the device

Transmission

Hyperion-403 is managed industrial Ethernet Switch equipped with 2x 10Gbps SFP+ , 2x 100/1000M/2.5Gbps SFP, 4x 100/1000Mbps SFP. Two 1Gbps SFP ports can be replaced by 10/100/1000 RJ-45 combo ports. The switch is modern and non-blocking advanced architecture with optional built-in performance test features like RFC 2544, Y.1564 and test loops.

Connection redundancy

The **HYPERION-403** switch supports Ethernet Ring Protection Switching technology compatible with the ITU-T **G.8032** standard, which facilitates transmission path redundancy with reconfiguration times under 20ms and support for up to **64 rings**. Moreover, the device supports the standard protection protocols:

- RSTP (Rapid Spanning Tree Protocol) – IEEE802.1D-2004 compatible with legacy

Spanning Tree and IEEE 802.1w

- STP (Spanning Tree Protocol) – IEEE 802.1d
- MSTP (Multiple Spanning Tree Protocol – IEEE 802.1s (802.1q), where each MSTP instance can comprise one or more VLAN networks.

Network Performance

HYPERION-403 supports **IEEE 1588v.2** Precision Time Protocol to provide precise time synchronization for applications with restrictive real-time requirements. Ethernet transmission channel may be set as transparent or divided into independent transmission channels through the

HYPERION-403

virtual VLAN mechanism. Device supports advanced Ethernet interface features like links aggregation (*static or LACP*), programmable rate limiting and port priority setting as well as jumbo frames. Moreover, apart from standard SFP 1.25Gbit/s modules, HYPERION-403 switches offer support for optic modules up to **10Gbit/s SFP+**.

VLAN, Q-in-Q

The available Ethernet data stream channel can be divided into independent datalinks using the virtual VLAN network mechanisms (802.1Q and 802.1ad) or remain transparent for the device. Device supports advanced Ethernet interface features like *VLAN stacking (QinQ, IEEE802.1ad)*, private VLANs.

OAM

The device supports Ethernet OAM functionality (Link OAM and Service OAM) by providing advanced operating monitoring and control mechanisms (remote loopbacks, continuity checks using CFM messages, performance monitoring measurements such as frame loss ratio, frame delay and frame delay variation and collection of Ethernet statistics from remote devices).

QoS

The **HYPERION-403** switch is fitted with a number of QoS mechanisms. The devices support eight traffic classes, transmission priorities for individual frames can be assigned on the basis of port priorities, MAC addresses, VLAN IDs, DSCP/ToS values or TCP/UDP port numbers. The available bandwidth can be adjusted for input and output for both the

respective ports and individual queues (priorities).

Management

Embedded **HTTPs** server, **SSH** server and **SNMPv3** agent allow free configuration of the device performance by standard Web browser and continuous monitoring from any management platforms equipped with SNMP client. In addition SSH and SNMPv3 provide secure communication with remote devices using encrypted messages. Remote software update is supported to allow further functionality improving.

Environmental requirements

The switch was designed to operate in temperatures ranging from **-40 to 70° C**. The durable IP-30 casing protects the device even in severe working conditions. The redundant power supply ensures uninterrupted operation during power outages or if one of the power sources becomes damaged.

HYPERION-403 supports the Energy Efficient Ethernet technology (in accordance with IEEE 802.3az), which provides a considerable power consumption reduction by adapting the power intake on the RJ45 port based on the cable length and puts the electric port in sleep mode when no active device is connected cable length.

Applications

Hyperion-403 switch can be used to provide reliable connections between Base Station Controllers, **SCADA** system and network controllers, to create **IP CCTV** monitoring systems, to provide communication for wind farms, to monitor environmental parameters in harsh environment, to realize smart grid applications and in many others industrial applications.

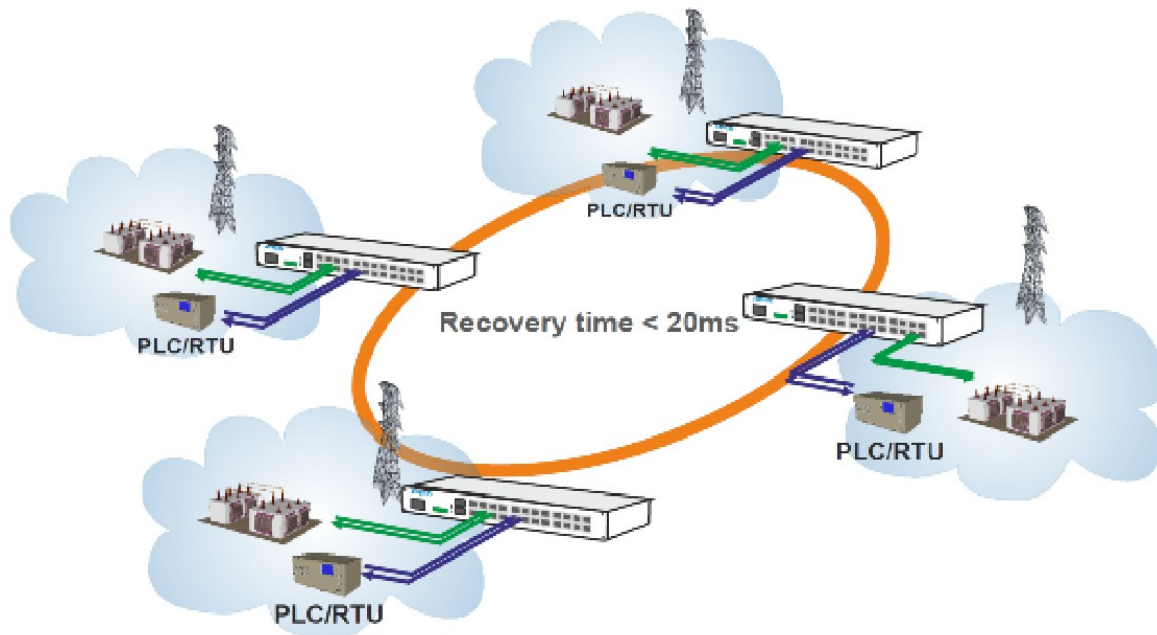


Figure 1. The sample application, illustrating the connection of peripheral systems to measure the detectors or measuring environmental parameters in power stations unattended

Technical specifications

Supported transmission standards

- IEEE 802.3 10Base-T Ethernet
- IEEE 802.3u 100Base-TX Fast Ethernet
- IEEE 802.3u 100Base-FX Fast Ethernet Fiber
- IEEE 802.3ab 1000Base-T
- IEEE 802.3z Gigabit Fiber
- IEEE 802.3x Flow Control and Back-pressure
- IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
- IEEE 802.30ah Link OAM
- IEEE 802.1p Class of Service (CoS)
- IEEE 802.1Q VLAN
- IEEE 802.1ad QinQ
- IEEE 802.1D - Spanning Tree Protocol (STP)
- IEEE 802.1w-2004 - Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.1s - Multiple Spanning Tree Protocol (MSTP)

- IEEE 802.3ad Link Aggregation Protocol (LACP)
- IEEE 802.1x Port Based Network Access Protocol
- IEEE 802.3az EEE

Supported protocols

- IGMP v1,v2,v3, MLD v1, v2, GMRP, GVRP,
- SNMP v1/v2c/v3, DHCP Client,
- NTP, SMTP, RMON,
- NAS, 802.1X,
- HTTP, HTTPS, Telnet, SSH v2, Syslog,
- STP, RSTP, MSTP
- EtherNet/IP, SNMP Inform, LLDP,
- IEEE1588 PTP v2, Ipv6, NTP Client,
- Synchronous Ethernet
- MIB-II, Ethernet-Like MIB
- Radius centralized password management

Supported standards, recommendations and directives EMC Security*

- PN-EN 55011:2012 - Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement
- PN-EN 55022:2010/AC:2011 - Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement
- PN-EN 55024:2011/A1:2015-08 - Electromagnetic compatibility (EMC) - Information technology equipment immunity characteristics - Limits and methods of measurement
- PN-EN 60950-1:2007/A2:2014-05- Information technology equipment-Safety- Part 1: General requirements
- EMC 2004/108/WE - Electromagnetic Compatibility Directive
- LVD 2006/95/WE - Low Voltage Directive
- PN-EN 60825-1:2014-11 - Safety of laser products Part 1: Equipment classification and requirements

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- IEC 61000-4-2 Electromagnetic compatibility (EMC)- Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test
- IEC 61000-4-3 Electromagnetic compatibility (EMC)- Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test
- IEC 61000-4-4 Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test
- IEC 61000-4-5 Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test
- IEC 61000-4-6 Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields
- IEC 61000-4-8 Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test
- IEC 61000-4-11 Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests
- IEC 61000-4-12 Electromagnetic compatibility (EMC) – Part 4-12: Testing and measurement techniques – Ring wave immunity test
- IEC 61000-4-29 Electromagnetic compatibility (EMC) – Part 4-29: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests

list of supported standards may vary with the development of the device

Ethernet interface

- **Ethernet:** 2x 10/1 Gbps SFP+, 2x SFP 100/1000M/2.5Gbps, 4x SFP 100/1000Mbps - Combo 2x RJ-45 UTP 10/100/1000Mbit/s
- **QoS:** Weighted Round Robin, Strict Priority. PCP 802.1p, DSCP/ToS,
- **VLAN:** 4096, 802.1Q, 802.1QinQ, VLAN translation, private VLAN
- **Bitrate control:** filtering for incoming Broadcast, Multicast, Unknown DA traffic or all packets, filtering for outgoing traffic for all packet types, bitrate limiting
- **IGMP snooping** V1/V2/V3, IGMP Filtering/Throttling, IGMP query, IGMP proxy reporting, MLD snooping V1/V2
- **RMON**, MIB II, Port mirroring, Event syslog, DNS, NTP, IEEE802.1ab LLDP
- **Port Mirroring:** Monitoring traffic on selected ports
- **IEEE 802.3az:** Energy Efficient Ethernet
- **Port Trunk:** IEEE 802.3ad LACP
- **MAC address table:** up to 8192 entries
- **Security** : HTTP/HTTPS, SSL/SSH monitoring optical connection parameters for violations
- **Network redundancy:**
 - ITU-T G.8032 Ethernet Ring (**ERPS**)
 - IEEE 802.1D Spanning Tree (**STP**)
 - IEEE 802.1D-2005 Rapid Spanning Tree

Protocol (**RSTP**)

- IEEE 802.1s Multiple Spanning Tree

Protocol (**MSTP**)

Environment Operating

- Operating temperature: -40 to 80°C with DC
- Operating temperature: -40 to 50°C with AC
- Operating humidity (non condensing): 5%-95%
- Location type: class C as per PN-EN 60870-2-2 - covered location
- IP-30 protection rating

Power supply

- Power supply 36-220VDC
- Power supply: 90-250VAC (50W)
- Two power supply inputs, redundant

Management

- SNMP v1/v2c/v3
- Console (using USB port)
- HTTP/HTTPS protocol and web browser as a management application
- SSH v2
- Radius centralized password management

Physical design

- Dimensions [434x184x43] mm
- Weight 2,5 kg
- 1U, standard 19"

- IP 30 rated metal enclosure
- 5 years

Warranty

Mechanical drawing

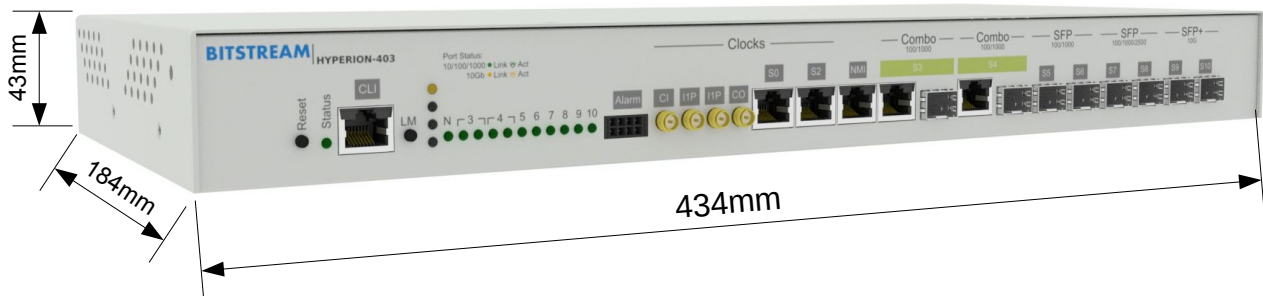


Figure 2. Side view with dimensions

Code

HYPERION-403-X-U

Versions:

- 1 – SFP+ 2x 10/1G + 2 x SFP (100M/1G/2.5G) + 4 x SFP (100M/1G) + 2x RJ45(10M/100M/1G) COMBO
- 2 – SFP+ 2x 10/1G + 2 x SFP (100M/1G/2.5G) + 4 x SFP (100M/1G) + 2x RJ45(10M/100M/1G) COMBO + Synchronization I/O : 1PPS, Sync Clock
- 3 – SFP+ 2x 10/1G + 2 x SFP (100M/1G/2.5G) + 4 x SFP (100M/1G) + 2x RJ45(10M/100M/1G) COMBO + RFC.2544 and Y.1564 test capability
- 4 – SFP+ 2x 10/1G + 2 x SFP (100M/1G/2.5G) + 4 x SFP (100M/1G) + 2x RJ45(10M/100M/1G) COMBO + Synchronization I/O : 1PPS, Sync Clock + RFC.2544 and Y.1564 test capability

Power supply:

- 71p - redundant power 36-72V DC, 230V AC/220V DC
- 77p - redundant power 36-72V DC

Examples of code:

HYPERION-403-1-71p

HYPERION-403 – 2x SFP+ 10/1G, 2x SFP (100M/1G/2.5G), 4x SFP (100M/1G), 2x RJ45 (10M/100M/1G) COMBO, 36-72VDC and 230VAC/220VDC

ORDERING:

- **BTPP-85192-SRC** 10G, 850nm, MM, 300m, SFP, LC, 0~70°C, SFP+
- **BTPP-31192-LRC** 10G, 1310nm, SM, 10km, SFP, LC, 0~70°C, SFP+
- **BTPP-31192-L2C** 10G, 1310nm, SM, 20km, SFP, LC, 0~70°C, SFP+
- **BTPP-55192-ERC** 10G, 1550nm, SM, 40km, SFP, LC, 0~70°C, SFP+
- **BTPP-55192-ZRC** 10G, 1550nm, SM, 80m, SFP, LC, 0~70°C, SFP+

- **BTPB-8524-S5TD** 1.25G, 850nm, MM, 550m, SFP, LC, -40~85°C, (support 100M)
- **BTPB-3124-L2TD** 1.25G, 1310nm, MM/SM, 2/20km, SFP, LC, -40~85°C, (support 100M)
- **BTPB-3124-L4TD** 1.25G, 1310nm, SM, 40km, SFP, LC, -40~85°C, (support 100M)
- **BTPB-5524-L4TD** 1.25G, 1550nm, SM, 40km, SFP, LC, -40~85°C, (support 100M)
- **BTPB-5524-L8TD** 1.25G, 1550nm, SM, 80km, SFP, LC, -40~85°C, (support 100M)
- **BTPB-5524-12TD** 1.25G, 1550nm, SM, 120km, SFP, LC, -40~85°C, (support 100M)

- **BTP-3131-L2TD** 1.25G-3.125G, 1310nm, SM, 20km, SFP, LC, -40~85°C
- **BTP-3131-L4TD** 1.25G-3.125G, 1550nm, SM, 40km, SFP, LC, -40~85°C
- **BTP-3131-L8TD** 1.25G-3.125G, 1550nm, SM, 80km, SFP, LC, -40~85°C
- **BTP-3131-L12TD** 1.25G-3.125G, 1550nm, SM, 120km, SFP, LC, -40~85°C

- **BTPB-3524L-L2TD** 1.25G, 1310/1550nm, SM, 20km, SFP, WDM, LC, -40~85°C, (support 100M)
- **BTPB-5324L-L2TD** 1.25G, 1550/1310nm, SM, 20km, SFP, WDM, LC, -40~85°C, (support 100M)
- **BTPB-3524S-L2TD** 1.25G, 1310/1550nm, SM, 20km, SFP, WDM, SC, -40~85°C, (support 100M)
- **BTPB-5324S-L2TD** 1.25G, 1550/1310nm, SM, 20km, SFP, WDM, SC, -40~85°C, (support 100M)

- **BTPB-3524L-L4TD** 1.25G, 1310/1550nm, SM, 40km, SFP, WDM, LC, -40~85°C, (support 100M)
- **BTPB-5324L-L4TD** 1.25G, 1550/1310nm, SM, 40km, SFP, WDM, LC, -40~85°C, (support 100M)
- **BTPB-3524S-L4TD** 1.25G, 1310/1550nm, SM, 40km, SFP, WDM, SC, -40~85°C, (support 100M)
- **BTPB-5324S-L4TD** 1.25G, 1550/1310nm, SM, 40km, SFP, WDM, SC, -40~85°C, (support 100M)

- **BTPB-3531L-L2TD** 1.25G- 3.125G, 1310/1550nm, SM, 20km, SFP, WDM, LC, -40~85°C
- **BTPB-5331L-L2TD** 1.25G- 3.125G, 1550/1310nm, SM, 20km, SFP, WDM, LC, -40~85°C
- **BTPB-3531S-L2TD** 1.25G- 3.125G, 1310/1550nm, SM, 20km, SFP, WDM, SC, -40~85°C
- **BTPB-5331S-L2TD** 1.25G- 3.125G, 1550/1310nm, SM, 20km, SFP, WDM, SC, -40~85°C

- **BTPB-3531L-L4TD** 1.25G- 3.125G, 1310/1550nm, SM, 40km, SFP, WDM, LC, -40~85°C
- **BTPB-5331L-L4TD** 1.25G- 3.125G, 1550/1310nm, SM, 40km, SFP, WDM, LC, -40~85°C
- **BTPB-3531S-L4TD** 1.25G- 3.125G, 1310/1550nm, SM, 40km, SFP, WDM, SC, -40~85°C
- **BTPB-5331S-L4TD** 1.25G- 3.125G, 1550/1310nm, SM, 40km, SFP, WDM, SC, -40~85°C

- **BTP-8503-02TD** 155M, 850nm, MM, 2km, SFP, LC, -40~85°C
- **BTP-3103-L2TD** 155M, 1310nm, MM/SM, 2/20km, SFP, LC, -40~85°C
- **BTP-3103-L4TD** 155M, 1310nm, SM, 40km, SFP, LC, -40~85°C
- **BTP-5503-L8TD** 155M, 1310nm, SM, 80km, SFP, LC, -40~85°C
- **BTP-5503-12TD** 155M, 1310nm, SM, 120km, SFP, LC, -40~85°C

- **BTPB-3503L-L2TD** 155M, 1310/1550nm, SM, 20km, SFP, WDM, LC, -40~85°C
- **BTPB-5303L-L2TD** 155M, 1550/1310nm, SM, 20km, SFP, WDM, LC, -40~85°C
- **BTPB-3503S-L2TD** 155M, 1310/1550nm, SM, 20km, SFP, WDM, SC, -40~85°C
- **BTPB-5303S-L2TD** 155M, 1550/1310nm, SM, 20km, SFP, WDM, SC, -40~85°C

- **BTPB-3503L-L4CD** 155M, 1310/1550nm, SM, 40km, SFP, WDM, LC, -40~85°C
- **BTPB-5303L-L4CD** 155M, 1550/1310nm, SM, 40km, SFP, WDM, LC, -40~85°C
- **BTPB-3503S-L4CD** 155M, 1310/1550nm, SM, 40km, SFP, WDM, SC, -40~85°C
- **BTPB-5303S-L4CD** 155M, 1550/1310nm, SM, 40km, SFP, WDM, SC, -40~85°C

- **BTE-GB-P1RT** 10/100/1000M, 100m(UTP-5), Copper SFP, RJ-45, -40~85°C
- **BTE-GB-P3RT** 1000M, 100m(UTP-5), Copper SFP, RJ-45, -40~85°C

- **ZAS-ANYMUX-03** Power supply 85±264VAC, 120±370VDC / 48-56VDC; 40W for -25+60°C, 24W for -60+70°C