



**BITSTREAM**<sup>®</sup>  
Leader in time synchronization and data transmission solutions



## Ethernet Switch Hyperion - 105

*Designed and built to work continuously  
under extreme conditions.*



Solid



Robust



Easy to use



Safe

# Hyperion-105 - *ideal for industry*



Industrial switch with 8/4x RJ45 10/100Mbps or 4x RJ45 10/100/1000Mbps and 2/3/4x SFP 100M/1000M/2.5Gbps (2x SFP ports)

- ✓ PoE÷High PoE (option) support up to 90W per port, up to 240W per device, Watchdog PoE
- ✓ Standard secondary surge protection on RJ-45 ports, ITU-T K.44 4kV 10/700us (only for trunk line on Hyperion-105.x-4 and Hyperion-105.x-5)
- ✓ Ring support '**ITU-T G.8032**' reconfiguration < 20ms
- ✓ Feature: **PTPv2** 'IEEE1588v2' (available in version 105.2 only),
- ✓ Energy Saving with **Energy Efficient Ethernet 'EEE'** Technology
- ✓ **Radius** - centralized authentication
- ✓ PROFINET Conformance Class A protocol support
- ✓ Support for Ethernet OAM (Link OAM and Service OAM)
- ✓ Optional I/O functions: interface 1x optoisolated digital input, 2x NO/NC relay outputs
- ✓ Access security SNMPv3, HTTPS, SSH
- ✓ Additional optional safety mechanisms
- ✓ Operating temperature from -40 to +85°C
- ✓ Metal enclosure IP-40
- ✓ Redundant DC power supply

# Hyperion-105 features



## Solid

Hyperion-105 switch is designed to meet the operation in extreme environmental conditions. We have made a device that meets the environmental standards for data transmission equipment, in addition, we provide a guarantee of reliable operation in temperatures of -40° to +85°C with met...



## Safe

Hyperion-105 series switches are equipped with two power connectors. This guarantees continuous operation of the device and reduces probability of transmission interruptions thanks to connection of two power sources. For safety reasons, we have installed surge protections ITU-T K.44 4kV 10/700us on RJ45 ports.



## Easy to use

We designed the user interface to be as user-friendly as possible for the network administrator and installer. From the very first moment you will intuitively find the settings to configure, despite of many functionalities. You can configure the switch through a secure interface, prepare the configuration files in advance and update e.g. a large group of devices at the same time. Access is of course done via a secure https connection, centralized RADIUS authentication.



## Just what you need

You choose from among the many versions of the device that we have created in response to the demand of our customers. Available from 4x to 8x electrical ports, with bandwidth of 4 ports 10/100/1000 Mb/s, or 4x/8x 10/100 Mb/s. In addition, we have equipped the switches with 2x or 3/4x SFP ports, where you can install any SFP module with 100/1000 Mbps transfer rate, or even 2.5Gbps. This flexibility and 2.5G transfer allows you to easily think about building large networks as well as their free expansion in the future.



## Safe

Security features such as https, SNMPv3, SSH allow you to configure and control access for your application. The implemented storm control mechanism will avoid unwanted traffic and network congestion.



## With a platform for communication

Bitstream switches can be managed through the BTNet platform. This environment makes it easy to build your network topology in a logical way. After a short configuration, you can manage your network and the third-party devices implemented into it from anywhere in the world.



## Providing protection

While creating our devices, we could not forget about the necessity of connection protection. Switches of Hyperion-105 series are equipped with protocols compliant with ITU-T G.8032 standard, enabling operation with redundancy of transmission path with reconfiguration time less than 20ms. Moreover, the device realizes standard protocols of STP, RSTP, MSTP and Chain protocols enabling protection through already existing network.



## Strong

The switches can deliver up to 240W to external devices. On the electrical ports, the maximum power you can deliver to a single device is 90W in 802.3af/at/bt modes, plus the switch's WatchDog PoE feature will monitor the status of devices for you.

## Technical specification

### Supported transmission standards:

- ✓ IEEE 802.3u 100Base-TX Fast Ethernet
- ✓ IEEE 802.3 10Base-T 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 802.1p Class of Service (CoS)
- ✓ IEEE 802.1Q VLAN
- ✓ IEEE 802.1ad QinQ
- ✓ IEEE 802.1D- Spanning Tree Protocol (STP)
- ✓ IEEE 802.1D-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
- ✓ IEEE 802.3af/at type 1/2 - power per port 30W maximum on all ports 240W
- ✓ IEEE 802.3at PoE++ - power per port 90W (Option available on Hyperion-105.x-4 and Hyperion-105.x-5 only), maximum on all ports 240W
- ✓ IEEE 802.3bt High PoE - power per port 90W maximum on all ports 240W
- ✓ ITU K.44 - Built-in secondary overvoltage protection on RJ-45, 4kV, 10/700us compliant: Resistibility tests for telecommunication equipment exposed to overvoltages and overcurrents - Basic Recommendation  
NOTE: in Hyperion-105.x-4 and Hyperion-105.x-5 versions, protection only in transmission path

### Supported protocols

- ✓ IPv4, IPv6, ARP, ICMP, TCP, UDP, DNS
- ✓ IGMP v1, v2, v3, MLD v1, v2, GMRP, GVRP,
- ✓ SNMP v1/v2c/v3, DHCP Client,
- ✓ NTP, SMTP, RMON,
- ✓ HTTP, HTTPS, Telnet, SSH v2, Syslog,
- ✓ EtherNet/IP, SNMP Inform, LLDP,
- ✓ IEEE1588 PTPv2 (only 105.2 is standardized)
- ✓ MIB-II, Ethernet-Like MIB
- ✓ PROFINET Conformance Class
- ✓ Radius centralized password management



## Supported standards, recommendations and directives EMC, safety\*

<b>PN-EN 55035:2017-09</b>	Electromagnetic compatibility for multimedia equipment	Resistance requirements
<b>PN-EN 55032:2015-09</b>	Electromagnetic compatibility for multimedia equipment	Emission Requirements.
<b>PN-EN IEC 62368-1:2020-11</b>	Audio/visual, information technology and telecommunications equipment	Part 1: Safety requirements
<b>PN-EN 55011:2016</b>	Industrial, scientific and medical equipment	Radio frequency disturbance characteristics - Limits and methods of measurement.
<b>PN-EN 60825-1:2014-11</b>	Laser equipment safety Part 1: Equipment classification and requirements.	
<b>EMC 2014/30/EU</b>	Electromagnetic Compatibility Directive.	
<b>LVD 2014/35/EU</b>	Low Voltage Directive.	
<b>IEC 61000-4-2</b>	Electromagnetic Compatibility (EMC)	Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test
<b>IEC 61000-4-3</b>	Electromagnetic Compatibility (EMC)	Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test
<b>IEC 61000-4-4</b>	Electromagnetic Compatibility (EMC)	Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test
<b>IEC 61000-4-5</b>	Electromagnetic Compatibility (EMC)	Part 4-5: Testing and measurement techniques - Surge immunity test
<b>IEC 61000-4-6</b>	Electromagnetic Compatibility (EMC)	Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields
<b>IEC 61000-4-8</b>	Electromagnetic Compatibility (EMC)	Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test
<b>IEC 61000-4-11</b>	Electromagnetic Compatibility (EMC)	Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity test

\* - The scope and list of supported standards may change as the device evolves

## Ethernet Interfaces

- ✓ Ethernet Connectors: 8/4x 10/100 Mbps RJ45 or 4x 10/100/1000 Mbps RJ45 and 2/3/4x 100/1000/2500Mbps SFP (100Mbps speed on Optical Interface only works with optical SFP cartridges)
- ✓ QoS: Support for 8 physical queues, Weighted Round Robin algorithm and Strict Priority queueing. Priority settings based on: PCP priorities
- ✓ 802.1p, DSCP/ToS, port priority settings, port number-based prioritization capabilities
- ✓ TCP/UDP
- ✓ VLAN: 4096 VLAN entries, 802.1Q, 802.1QinQ, private VLAN, VLAN translation
- ✓ Bandwidth control: incoming traffic filtering for Broadcast, Multicast, Unknown DA or all packets, outgoing traffic filtering for all packet types, bandwidth limiting
- ✓ IGMP snooping V1/V2/V3, IGMP Filtering/ Throttling, IGMP query, IGMP proxy reporting, MLD snooping V1/V2
- ✓ RMON, MIB II, Port mirroring, DNS, NTP, IEEE802.1ab LLDP, LLDP-MED
- ✓ Syslog - interact with the syslog server,
- ✓ Port Mirroring: Monitoring traffic on selected ports
- ✓ IEEE 802.3az: Energy Efficient Ethernet, 4 power saving modes
- ✓ ITU K.44 - Standard built-in secondary surge protection on RJ45 ports, 4kV, 10/700us  
NOTE: in Hyperion-105.x-4 and Hyperion-105.x-5 versions, protection only in transmission path
- ✓ Port Trunk: IEEE 802.3ad LACP or static aggregation
- ✓ MAC address table: up to 8192 entries

- ✓ IEEE 802.1x Port Based Network Access Protocol, EAP, TACACS+, RADIUS - AAA authentication, authorization and accounting functions
- ✓ Security: HTTP/HTTPS, SSL/SSH,
- ✓ Network Redundancy:
  - ✓ ITU-T G.8032 Ethernet Ring (ERPS) <20ms
  - ✓ IEEE 802.1D Spanning Tree (STP)
  - ✓ IEEE 802.1D-2005 Rapid Spanning Tree Protocol (RSTP)
  - ✓ IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)

## Management

- ✓ SNMP v1/2c/3, SSH, TELNET
- ✓ HTTP/HTTPS protocol - management via web browser
- ✓ "Privilege level" - configuration privilege level - read/write, configured independently for multiple users

## Optional outputs

- ✓ Number of outputs - 2
- ✓ Type of outputs - NO/NC relay
- ✓ Maximum switching current - 0.5A 60VDC with resistive load
- ✓ Connector: screw

## Optional inputs

- ✓ Number of inputs - 1
- ✓ Input type - digital, potential free, optoisolated
- ✓ Connector: screw

## Physical characteristics

- ✓ Dimensions: 135x124x65mm
- ✓ Weight: 0.90kg
- ✓ Can be mounted on TH35 DIN rail
- ✓ Metal enclosure IP-40

## Environmental requirements

- ✓ Operating temperature: -40 to +85°C with a minimum airflow of 0.4m/s
- ✓ Operating temperature: -40 to +70°C with a minimum airflow of 0.0m/s
- ✓ Operating time at maximum temperature of +85°C is up to 16 hours
- ✓ Standard ambient humidity during operation: 0 to 95 % (non-condensing),
- ✓ Location type: class C according to EN 60870-2-2 - sheltered locations
- ✓ Degree of protection according to IP-40

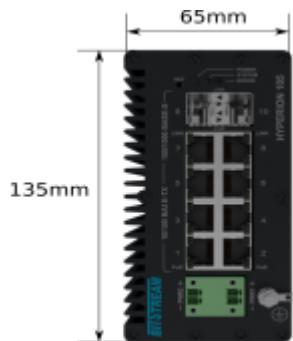
## Power supply

- ✓ Redundant DC power supply, 6 to 60V DC /1-0.15A (no PoE, not isolated)
- ✓ Redundant DC power supply, 20-60V DC (range available only with PoE), isolated
- ✓ Two screw power inputs, redundant power supply
- ✓ **Note: For power systems with earthed "+" is dedicated version with 77p**
- ✓ PoE÷HiPoE function requires power supply in the range 45-57V DC

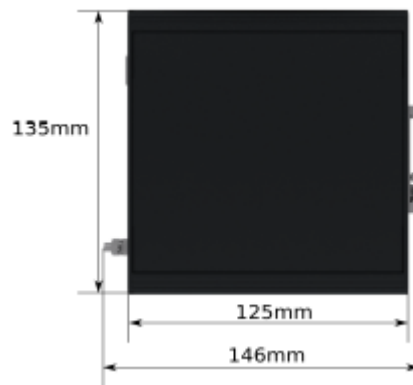
## PoE power supply

- ✓ Complies with IEEE802.3af, IEEE802.3at, IEEE802.3bt
- ✓ Power available per port up to 90W
- ✓ For 55VDC power supply, the maximum total PoE power is 240W

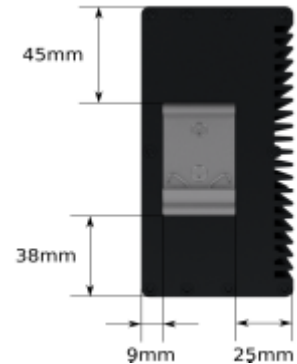
## Mechanical drawing



Front view



View - Side



View - rear

**HYPERION-105(.X)-Y-(IO)-(Z)-K-U**

Hyperion-105	(.X)	Y	(IO)	(Z)	K	U
standard version	-					
version dedicated for substations	2					
<b>Available versions</b>						
8xRJ45(10/100M) + 2xSFP (100M/1G/2.5G)		1				
4xRJ45(10/100M) + 2xSFP(100M/1G/2.5G) + 2xSFP(100M/1G)		3				
8xRJ45(10/100M) + 2xSFP(100M/1G/2.5G) + 1xSFP(100M/1G)		4				
4xRJ45(10/100 /1000 M) + 2xSFP(100M/1G/2.5G) + 2xSFP(100M/1G)		5				
<b>Additional interfaces</b>						
standard version			-			
1x digital input, 2 x relay outputs			IO			
<b>PoE option</b>						
no PoE				-		
4x PoE+ (802.3at) PSE				S4P <sup>4</sup>		
8x PoE+ (802.3at) PSE				S8P		
4x PoE++ (802.3at) PSE				S4P2 <sup>5</sup>		
8x PoE++ (802.3at) PSE				S8P2 <sup>6</sup>		
4x High PoE (802.3bt) PSE				S4P2b <sup>4</sup>		
8x High PoE (802.3bt) PSE				S8P2b		
<b>Surge protection</b>						
4kV 10/700µs ITU K.44 on RJ 45 ports					K <sup>7</sup>	
<b>Power supply</b>						
Redundant power supply from 9 to 60V DC for non-PoE versions not isolated						88p <sup>3</sup>
Redundant power supply in range 20 to 60V DC for PoE version, isolated PoE function requires power supply in range 45 to 57V DC						
PoE+ 802.3at (up to 30W) 52 to 57V PoE++ 802.3at (up to 60W) 55 to 57V High PoE 802.3bt (up to 90W) 55 to 57V						77p <sup>1,2</sup>

**Legend**

- 1 - for PoE version the maximum power available on all RJ45 ports is 240W
- 2 - 77p power supply version comes only with PoE
- 3 - version not available for Hyperion-105.2 devices dedicated to power substations
- 4 - option not available in Hyperion-105.x-1 and Hyperion-105.x-4 versions
- 5 - option available only in Hyperion-105.x -4
- 6 - option available only in Hyperion-105.x-5 version
- 7 - for Hyperion-105.x-4 and Hyperion-105.x-5 versions, ITU K.44 protection only in transmission path

**NOTE: For power systems with grounded "+", version 77p is dedicated**

**Example designations****HYPERION-105-1-S8P2b-K-77p**

Hyperion 105 standard version with interface 8xRJ45(10/100M) PoE++ up to 60W + 2xSFP (100M/1G/2.5G), but total power on all PoE ports cannot exceed 240W, standard built-in secondary surge protection 4kV 10/700µs ITU K.44 on RJ45 ports, redundant power supply 20-60V DC (for PoE++ 55-57V)

**HYPERION-105-1-K-88p**

Hyperion 105 in standard version with 8xRJ45(10/100M) + 2xSFP (100M/1G/2.5G) interface, PTPv2 IEEE 1588:2008 function and equipped with secondary 4kV 10/700µs ITU K.44 surge protection on RJ45 ports only in transmission path, 9-60V DC redundant power supply



## Additional accessories

Designation	Transmission speed	Wavelength	Fiber optic cable type	Distance	Insert type	WDM	Connector type	Operating temperature	Notes
BTP-8524-S5TD	1.25 Gbps	850 nm	MM	550 m	SFP	---	LC	-40~85°C	
BTP-3124-L2TD	1.25 Gbps	1310 nm	MM/SM	2/20 km	SFP	---	LC	-40~85°C	
BTP-3124-L4TD	1.25 Gbps	1310 nm	SM	40 km	SFP	---	LC	-40~85°C	
BTP-5524-L8TD	1.25 Gbps	1550 nm	SM	80 km	SFP	---	LC	-40~85°C	
BTP-314G-L2TD	1.25 - 4.25 GB/s	1310nm	SM	20 km	DDM	---	LC	-40~85°C	2.5 Gbps support
BTP-314G-L4TD	1.25 - 4.25 GB/s	1310nm	SM	40 km	DDM	---	LC	-40~85°C	2.5 Gbps support
BTP-8503-02TD	155 Mbps	850 nm	MM	2 km	SFP	---	LC	-40~85°C	---
BTP-3103-L2TD	155 Mbps	1310 nm	MM/SM	2/20 km	SFP	---	LC	-40~85°C	---
BTPB-3503L-L2TD	155 Mbps	1310/1550 nm	SM	20 km	SFP	YES	LC	-40~85°C	---
BTPB-5303L-L2TD	155 Mbps	1550/1310 nm	SM	20 km	SFP	YES	LC	-40~85°C	---
BTPB-3503S-L4TD	155 Mbps	1310/1550 nm	SM	40 km	SFP	YES	SC	-40~85°C	---
BTPB-5303S-L4TD	155 Mbps	1550/1310 nm	SM	40 km	SFP	YES	SC	-40~85°C	---
BTE-GB-P1RT	10/100/1000 Mbps				Copper SFP	---	RJ-45	-40~85°C	---
BTE-GB-P3RT	1000 Mbps				Copper SFP	---	RJ-45	-40~85°C	---
LT-19-TS-35-02	DIN rail in 19" enclosure for rack mounting. Dimensions: 19" x 3U x 202-302mm (adjustable depth). Weight: 2.5kg. 7pcs Hyperion-105 devices in the 6-60V power supply version arranged vertically.								

## List of proposed power supplies for BITSTREAM devices

Designation of the power supply	Output voltage range	Nominal output power	Number of ports with PoE (15W)	Number of ports with PoE+ (30W)	Number of ports with PoE++ (60W)	Number of ports with PoE++ (90W)	Operating temperature C-standard T-industrial	NOTES
	DC	W						
ZAS-24-25-W-T	24 V	25	0	0	0	0	-30°C ~ +70°C	No PoE support
ZAS-48-25-W-T	48 V	25	1	0	0	0	-30°C ~ +70°C	No PoE support
ZAS-24-40-R-T	24 V	40	0	0	0	0	-20°C ~ +70°C	No PoE support
ZAS-48V56-40-R-T	48 - 56 V	40	2	1	0	0	-20°C ~ +70°C	PoE support
ZAS-48V56-60-R-T	48 - 56 V	60	3	1	0	0	-20°C ~ +70°C	PoE support
ZAS-48V55-120-R-T	48 - 55 V	120	6	3	1	1	-20°C ~ +70°C	PoE support

Legend of symbols: W - plug-in; S - standalone; R - for DIN rail



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