BITSTREAM®

Leader in time synchronization and data transmission solutions

Ethernet Switch
Hyperion - 105.2

Designed and built to work continuously under extreme conditions.

Solid

Robust

Easy to use

Safe

Hyperion-105.2 - *ideal for industry*

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

- ✓ Standard secondary surge protection on RJ-45 ports, ITU-T K.44 4kV 10/700us (for transmission path only)
- ✓ ITU-T G.8032 compliant ring operation with < 20ms reconfiguration , up to 64 rings simultaneously
- ✓ The following IEEE1588 v.2-based Precision Time Synchronization (PTPv.2) profiles are available as standard: 1588 default, G.8265.1 and G.8275.1
- ✓ Save Energy with Energy Efficient Ethernet 'EEE' Technology
- ✓ Radius - centralized authentication
- ✓ Support for PROFINET Conformance Class A protocol
- ✓ Ethernet OAM support (Link OAM and Service OAM)
- ✓ Optional I/O functions: interface 1x optoisolated digital input, 2x NO/NC relay outputs
- ✓ Optional 2x 1-Wire interface for temperature and humidity measurement and for communication with MOD-EXT module
- ✓ Access security SNMPv3, HTTPS, SSH
- ✓ Operating temperature from -40 to +85°C
- ✓ IP-40 metal housing
- ✓ Redundant DC power supply

Optional features

- ✓ **PoE ÷ PoE++/High PoE (802.3bt)** support up to 90W per UTP port (max. 240W on all ports), **PoE Watchdog**.

Features within the license

- ✓ Extension in **IEEE 1588-2008v.2 (PTPv2)** protocol for **power** profiles; synchronization for real-time power applications according to **IEEE C37.238-2011, C37.238-2017** standards**; IEC61850-9-3**

Features of Hyperion-105.2

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 devices, in addition, we provide a guarantee of reliable operation in temperatures of -40° to +85°C with the conditions met.

Pew

Hyperion-105 series switches are equipped with two power connectors. This guarantees continuous operation of the device and reduces the likelihood of transmission interruptions by connecting two power sources. On the other hand, we have installed ITU-T K.44 4kV 10/700us surge protectors on RJ45 ports as a standard for safety.

Easy to use

We designed the user interface to be as user-friendly as possible for the network administrator and installer. From the first moment you will intuitively find the settings to configure, despite the very many functionalities. You can configure the switch through a secure interface, preparing configuration files in advance and updating, for example, on a large group of devices simultaneously. Access, of course, is through a secure https connection, centralized RADIUS authentication.

Just what you need

You choose from among the many versions of the device, which we have created in response to the demand of our customers. Available from 4x to 8x electrical ports, with a 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 4x SFP ports, where you can install any SFP module with 100/1000 Mbps transfer, or even 2.5Gbps. This flexibility and 2.5G transfer allows you to think calmly 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 allows you to easily 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

When creating our devices, we could not forget about the need for connection protection. Hyperion-105 series switches are equipped with protocols compliant with the ITU-T G.8032 standard, enabling operation with transmission path redundancy with a reconfiguration time of less than 20ms In addition, the device implements the standard protocols of STP, RSTP, MSTP and Chain protection enabling protection through the already existing network.

Strong

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

Technical specifications

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-105.2-5 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 only in transmission path, 4kV, 10/700us compliant: Resistibility tests for telecommunication equipment exposed to overvoltages and overcurrents - Basic Recommendation

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,
- ✓ NTP server/client
- ✓ IEEE1588 PTPv2 (only available in version 105.2)
- ✓ MIB-II, Ethernet-Like MIB
- ✓ PROFINET Conformance Class
- ✓ Radius centralized password management
- ✓ 1-wire

Supported standards, recommendations and directives EMC, safety*

PN-EN 55035:2017-09	Electromagnetic compatibility of multimedia devices	Resistance requirements
PN-EN 55032:2015-09	Electromagnetic compatibility of multimedia devices	Emission requirements.
PN-EN IEC 62368-1:2020-11	Audio/visual, information technology and telecommunications equipment	Part 1: Safety requirements
PN-EN 55011:2016	Industrial, scientific and medical equipment	Radio frequency disturbance characteristics - Permissible levels and methods of measurement.
PN-EN 60825-1:2014-11	Safety of laser equipment Part 1: Equipment classification and requirements.	
EMC 2014/30/EU	Electromagnetic Compatibility Directive.	
LVD 2014/35/EU	Low Voltage Directive.	
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 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 2/4x 100/1000/2500Mbps SFP (100Mbps speed on Optical Interface works only with optical SFP cartridges)
- ✓ QoS: Support for 8 physical queues, Weighted Round Robin algorithm and Strict Priority queuing. Priority settings based on: PCP priorities
- ✓ 802.1p, DSCP/ToS, priority settings on ports, port number-based priority configuration capabilities
- ✓ TCP/UDP
- ✓ VLANS: 4096 VLAN entries, 802.1Q, 802.1QinQ, private VLANs, VLAN translation.
- ✓ Bandwidth control: filtering for incoming traffic of Broadcast, Multicast, Unknown DA or all packets, outgoing traffic filtering for packets of all 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, IEEE802.1ab LLDP, LLDP-MED
- ✓ Syslog - cooperation 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 only in transmission path, 4kV, 10/700us
- ✓ 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 - authentication, authorization and accounting functions - AAA
- ✓ 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)

Network synchronization

- ✓ NTP protocol in server/client mode and SNTP
- ✓ Precision time synchronization profiles based on IEEE1588 v.2 (PTPv.2): 1588 default, G.8265.1 and G.8275.1 in the following modes
  - ✓ Transparent clock (TC): peer to peer, end to end with one step, two step;
    - Time error typically 50ns
  - ✓ Boundary clock (BC);
    - Time error for BC (Boundary clock) typically < 200ns

MTBF

- ✓ Time: 649,000 hrs.
- ✓ Standard: Telecordia , SR-332

Management

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

Optional IO module

Output interface

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

Input interface

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

Optional IO1W module:

- ✓ 2x 1-Wire interface:
  - ✓ Transmission speed 0 - 16.3 kbit/sec.
  - ✓ Range ≤ 100m
  - ✓ Connector: screw; 8x pin

Dedicated input for MOD-EXT module or T/H sensor.

Physical characteristics

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

Environmental requirements for operation

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

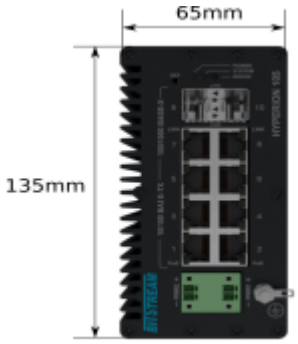
Power supply

- ✓ DC redundant power supply, 20-60V DC, isolated
- ✓ Two screw power inputs, redundant power supply
- ✓ PoE÷HiPoE function requires a power supply in the range of 45-57V DC

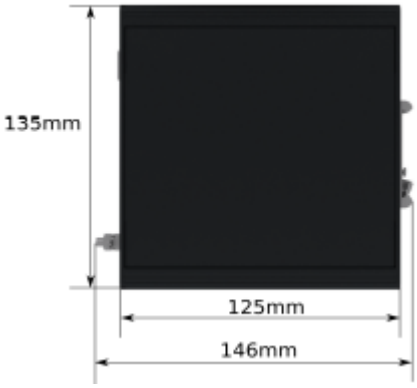
PoE power supply

- ✓ Compliant 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
- ✓ Hyperion-105.2-5 version available (IEEE802.3at) PoE++ up to 90W

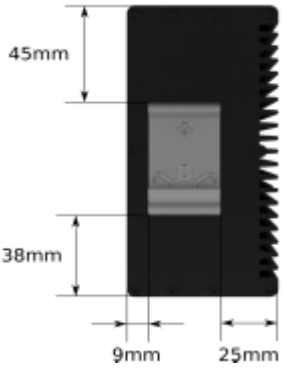
Mechanical drawing



View - front



View - side



View – rear

Product code

HYPERION-105.2-Y-(IO)-(Z)-K-U

Hyperion-105.2	Y	(IO)	(Z)	K	U
Available versions					
8xRJ45(10/100M) + 2xSFP (100M/1G/2.5G)	1				
4xRJ45(10/100M) + 2xSFP(100M/1G/2.5G) + 2xSFP(100M/1G)	3				
4xRJ45(10/100 /1000 M) + 2xSFP(100M/1G/2.5G) + 2xSFP(100M/1G)	5				
Additional interfaces					
standard version		-			
1x digital input, 2 x relay outputs		IO			
2x 1-wire interface dedicated to MOD-EXT module or T/H sensors		IO1W			
PoE option					
no PoE			-		
4x PoE++ (802.3at) PSE			S4P2[3]		
4x High PoE (802.3bt) PSE.			S4P2b[2]		
8x High PoE (802.3bt) PSE.			S8P2b		
Surge protection					
4kV 10/700µs ITU K.44 on RJ 45 ports				K[4]	
Power supply					
Redundant power in the range of 20 to 60V DC, isolated Operation of the PoE function requires power in the range of 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[1]

Legend

1 - for the PoE version, the maximum power available on all RJ45 ports is 240W
2 - option not available in Hyperion-105.2-1 version
3 - option available only in Hyperion-105.2- 5
4 - ITU K.44 protection only in the transmission path

Example designations

HYPERION-105.2-1-S8P2b-K-77p

Hyperion 105.2 with 8xRJ45(10/100M) interface with HIGH PoE up to 90W + 2xSFP (100M/1G/2.5G), but the total power on all PoE ports can not exceed 240W, standard built-in secondary 4kV 10/700µs ITU K.44 surge protection on RJ45 ports only in the transmission path , standard support for precision time synchronization profiles based on IEEE1588 v.2 (PTPv.2): 1588 default, G.8265.1 and G.8275.1, 20-60V DC redundant power supply (for PoE++ 55-57V)

HYPERION-105.2-1-K-77p

Hyperion 105.2 with 8xRJ45(10/100M) + 2xSFP (100M/1G/2.5G) interface, standard with secondary 4kV 10/700µs ITU K.44 surge protection on RJ45 ports in the transmission path only, standard support for precision time synchronization profiles based on IEEE1588 v.2 (PTPv.2): 1588 default, G.8265.1 and G.8275.1, 20-60V DC redundant power supply.

License to extend the capabilities of the Hyperion-105.2 switch

1. **PTP SYNCHRONIZATION LICENSE with POWER PROFILE - a** license that extends in the IEEE1588 PTPv2 protocol with POWER PROFILE - IEEEC37.238-2011, IEEEC37.238-2017 and IEC61850-9-3 for precise time synchronization for use in the power industry, among other applications.

Additional accessories

Designation	Transmission speed	Wavelength	Fiber optic type	Distance	Insert type	WDM	Connector type	Operating temperature	Comments
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	---	RJ-45	-40~85°C	---
BTE-GB-P3RT	1000 Mbps				Copper	---	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 arranged vertically.								
Sensor T/H-2/5/10	Temperature and humidity measurement, cable length up to 2/5/10 meters								
MOD-EXT-6I2O3V	External module to extend digital input interfaces and digital outputs with voltage measurement inputs, operating temperature: -40~ +70°C, power supply 9-60V DC **(NOTE - only for HYPERION-105-Y-IO1W version)**								

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 designations: W - plug-in; S - standalone; R - for DIN rail.


BitStream Sp. z o.o.

Mełgiewska St. 7/9

20-209 Lublin, Poland

Vat: 946-250-85-88

Tel. +48 81743 86 43

Fax +48 442 02 98

info@bitstream.pl

www.bitstream.pl/en