MEINBERG
The Synchronization Experts.

IMS-PSX201

Product Highlights



- IEEE 1588-compliant IMS LANTIME module for PTPv2 infrastructure
- 1 Gigabit connectivity for copper and fiber-optic 100/1000BASE Ethernet networks
- Two discrete physical interfaces allowing a single module to serve two separate subnets with different PTP instances
- Ease of configuration through Web Interface of host IMS LANTIME unit

High PTP Performance for Modern Networks

The IMS-PSX201 module for Meinberg's IMS family of modular time servers is a powerful multifunction network timing module that provides PTP (IEEE 1588), Synchronous Ethernet, and NTP services designed for 1 Gigabit Ethernet networks.

With full support for IEEE 1588-2008 and an extensive range of PTPv2 profiles, the IMS-PSX201 is flawlessly adaptable to any PTP application, operable as a powerful PTP grandmaster drawing accurate time directly from an authoritative source such as GNSS (in conjunction with a suitable GNSS-synchronized reference clock), or as a boundary clock for re-distributing time with minimal offsets to downstream devices and for enabling interoperability between discrete PTP networks.

With two discrete network interfaces, the IMS-PSX201 provides not only full Parallel Redundancy Protocol support (PRP, IEC 62439-3:2016) for NTP and PTP traffic, but also the ability to implement PTPv2 boundary clock functionality in a single IMS LANTIME module.

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Network Connectivity

The IMS-PSX201 features two discrete Gigabit (1000BASE) physical interfaces that allow the module to be connected to two separate subnets and operate as separate clocks with separate configurations in both.

Please note that the IMS-PSX201 is specified for operation with fiber-optic and copper SFP transceivers. It is not compatible with SFP+ or above transceivers.

IEEE 1588 PTP Support

PTP Versions	PTPv2 (IEEE 1588-2008)
IEEE 1588-2008 Profiles	- Default E2E IEEE1588-2008 Profile - Default P2P IEEE1588-2008 Profile - Power IEEE C37.238-2011 (including profile extensions) - Power IEEE C37.238-2017 (including profile extensions) - Utility IEC 61850-9-3 (including profile extensions) - Telecom ITU-T G.8265.1 (including profile extensions) - Telecom ITU-T G.8275.1 (including profile extensions) - Telecom ITU-T G.8275.2 (including profile extensions) - DOCSIS 3.1 (including profile extensions) - SMPTE ST 2059-2 (including profile extensions) - AES67 Media - IEEE 802.1AS (including profile extensions)
Packet Transmission Modes	Two-Step mode, One-Step mode
Clock Modes	- Multicast Master - Unicast Master - Multicast Slave - Unicast Slave - Multicast Auto (automated mode selection based on IEEE1588 Best Master Clock Algorithm) - Multicast + Unicast Master (messages sent to both multicast address and defined unicast addresses) - Hybrid Mode (Sync & Announce messages sent to multicast address, Delay Request & Delay Response messages sent as unicast)
Monitoring Features	PTP Management Messages

PTP Performance Level Options

The IMS-PSX201 features scalable licensing for the IEEE 1588 implementation on each of the two PTP-capable network interfaces. The license governs the maximum number of unicast clients and the maximum number of delay request messages per second.

Please reach out to your Meinberg Sales Representative or Authorized Meinberg Distributor for more information:

Performance Level	Max. Unicast Clients	Max. Delay Req./s (Multicast/Hybrid Mode)
PL-A	8	1024
PL-B	256	32768
PL-C	512	65536
PL-D	1024	131072
PL-E	2048	262144

NTP Support

The IMS-PSX201 also features an integrated software-level NTP server that allows clients with network access to the IMS-PSX201 to be synchronized via the NTP protocol.

This is a separate NTP server to that of the host IMS system and requires a network path from the NTP client to one of the dedicated network interfaces of the IMS-PSX201.

This provides security advantages, with the NTP clients having no direct access to the underlying IMS system via the IMS-PSX201 module. It also provides additional performance capacity of 15,000 NTP requests per second in addition to the capacity of the IMS CPU module, allowing NTP traffic to be offloaded from the IMS-CPU module to the IMS-PSX201.

Synchronous Ethernet Support

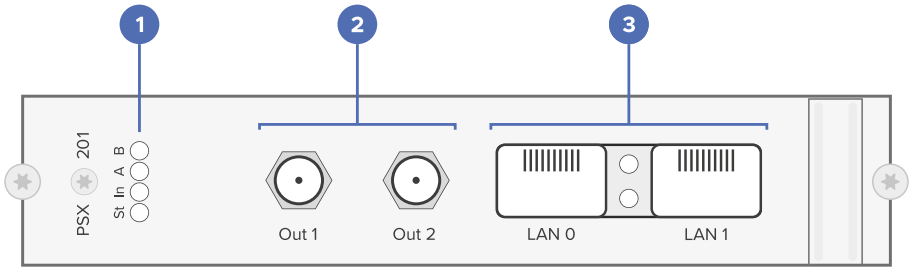
The IMS-PSX201 provides physical-layer Synchronous Ethernet (SyncE) support in accordance with ITU-T Rec. G8261, ITU-T Rec. G8262, and ITU-T Rec. G8264.

This includes support for Synchronization Status Messages, including communication of clock source quality level definitions in accordance with ITU-T G.781 (Options I and II), in both Slave and Master mode, including support for:

- mandating a minimum quality level for external SyncE timeTransmitters,
- overriding quality-level-based selection, assuming a fixed and configurable quality level for external timeTransmitter frequency signals and setting a fixed quality level for each physical interface of the IMS-PSX201,
- setting a local priority value as a tiebreaker when multiple physical interfaces are of comparable quality.

Note: The IMS-PSX201 only supports Synchronous Ethernet via a fiber-optic link.

Connectors

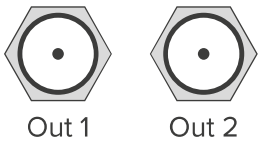


1 LED Status Indicators

"St" LED Module Initialization and NTP Service Status	"In" LED Network Connectivity Status	"A" LED Status of First PTP Instance on LAN0	"B" LED Status of Second PTP Instance on LAN1
Indicates the initialization state of the module and connection with the IMS system, and indicates the status of the onboard NTP service thereafter.	Indicates network link and configuration states of network interfaces.	Indicates status of PTP stack on physical interface LAN0 (first instance).	Indicates status of PTP stack on physical interface LAN1 (second instance).

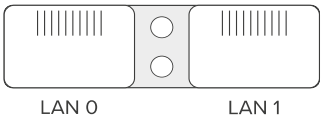
2 Signal Outputs

Connector Type	Subminiature Version A (SMA)
Output Signals	10 MHz (from the IMS-PSX201) 2048 kHz (from the receiver) PPS (from the receiver)
Signal Level	TTL



3 Network Interfaces

Connector Type	SFP
Link Speed	1 Gbit (1000BASE)
IP Protocols	- IPv4 (DHCP or static) - IPv6 (DHCPv6, SLAAC/Router Advertisement, Static)
VLAN Support (IEEE 802.1q)	- VLAN tagging & filtering - IEEE 802.1Q Class of Service prioritization
Other Quality of Service Features	Differentiated Services Code Point specification for PTP traffic



IMS System Compatibility

Compatible Base Chassis Types	M500, M1000, M1000S, M2000S, M3000, M3000S, M4000
Compatible Slots	MRI (Multi-Reference Interface), ESI (Extended Standard Interface), I/O
LTOS Requirements	Requires LTOS Version 7.10.014 for full feature support

Tested SFP Transceivers

The SFP transceivers listed below have been successfully tested and confirmed by Meinberg to be fully compatible with the IMS-PSX201. Other transceivers may also work but have not yet been tested for compatibility.

Type	Mode	Connector Type	Max. Connection Length
BlueOptics BO05C856S5DIN*	Fiber-optic, multi-mode (1000BASE-SX)	Duplex LC	100 m / 328 ft
Avago AFBR-5710PZ	Fiber-optic, multi-mode (1000BASE-SX)	Duplex LC	100 m / 328 ft
Finisar FTLF8524P3BNL	Fiber-optic, multi-mode (1000BASE-SX)	Duplex LC	100 m / 328 ft
Cisco GLC-SX-MMD	Fiber-optic, multi-mode (1000BASE-SX)	Duplex LC	100 m / 328 ft
Avago AFCT-5710PZ	Fiber-optic single-mode (1000BASE-LX)	Duplex LC	10,000 m (32808 ft)
Finisar FTLF1318P3BTL	Fiber-optic single-mode (1000BASE-LX)	Duplex LC	10,000 m (32808 ft)
FS SFP-GB-GE-T*	Copper (100/1000BASE-T)	RJ45	100 m / 328 ft
Avago ABCU-5740RZ	Copper (100/1000BASE-T)	RJ45	100 m / 328 ft
Finisar FCLF8521P2BTL	Copper (100/1000BASE-T)	RJ45	100 m / 328 ft

* These transceivers can be purchased directly from Meinberg as accessories. See "**Accessory Order Codes**" for more information.

Other Technical Specifications

Board Type	Eurocard format, Meinberg IMS interface based on EN IEC 60603-2 connector
Operating Voltage	5 V
Power Consumption	6 W to 10 W
Current Draw	1.2 A to 2.0 A
Recommended Operating Temperature	0 °C to 50 °C (32 °F to 122 °F)
Recommended Storage Temperature	-20 °C to 70 °C (-4 °F to 158 °F)
Recommended Relative Humidity	Max. 95 % at 40 °C (104 °F), non-condensing

Support & Compliance

Technical Support	Free lifetime support via telephone and email, including firmware updates.
Warranty	Three-year warranty, extendable upon request
Firmware Updates	Firmware is field-upgradeable; updates can be installed directly from the unit or via a remote network connection. Software updates are provided free of charge for the lifetime of your Meinberg product.
RoHS Compliance	The product is fully RoHS-compliant.
WEEE Status	The purchase of this product is considered to be a “B2B” transaction (non-household product) for the purposes of the European Union Waste of Electrical and Electronic Equipment Directive; the product falls under Category 6, “Small IT and Telecommunications Equipment”. For disposal, it must be returned to the manufacturer to ensure WEEE compliance. Any transportation expenses for returning this product (at end-of-life) must be covered by the end user, while Meinberg will cover the costs for the waste disposal itself.

Accessory Order Codes

The following accessories can be purchased directly from Meinberg alongside your product.

SFP Transceivers

Transceiver	Order Code
BlueOptics BO05C856S5DIN Multi-Mode Fiber-Optic Transceiver	00261897
FS SFP-GB-GE-T Copper Transceiver	00262416