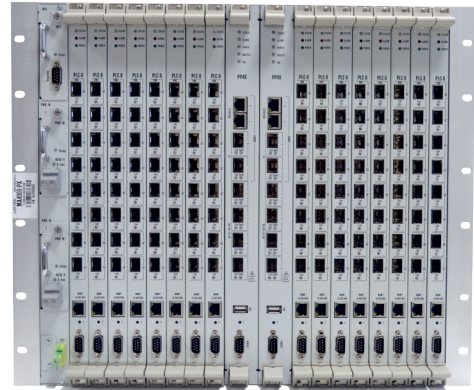


- Modular device, design: 19" 9U Eurorack
- 2 Switches (Uplink Controllers) with Hot Standby 1:1
- Up to 16 GPON modules (to 128 GPON ports)
- Up to 8192 ONT per node
- Switching Capacity: 680 Gbps
- Low power consumption
- 2 separate power supply



Multi-service access and the aggregation node MA4000-PX allows to construct access networks based on GPON technology. OLT usage allows an operator to construct scalable, failsafe "last mile" networks, ensuring high safety requirements in either urban or rural areas. OLT controls customer stations, traffic switching and transport network access.

A core element of the MA4000-PX is a scalable Ethernet L2+ switch (PP4X) that interacts with optical interface access modules PLC8 to connect customer devices via GPON technology.

Modules are installed in a standard 19" 9U Eurocase. The 9U case has two slots available to install PP4X switch circuit control modules and 16 slots for linear PLC8 modules (GPON). A single system can have one or two PP4X central switch control modules. Installation of two modules improves the fault-tolerance due to switch redundancy and improves the bandwidth capacity of the system due to the distribution of data streams between modules via stacking.

Module interaction works through 10Gbit/s interfaces.

TYPE OF MODULES

- PP4X: switching and control module
- PLC8: 8 x GPON 2,5Gbps interface modules
- Interface module quantity: up to 16
- Bus type and performance: 34x10GBASE-KX (XAUI), 680Gbps

MANAGEMENT

- Single management interface via CLI, WEB, SNMP, Telnet
- Data configuration of all modules

SPECIFICATIONS

Modules	to 16 PLC8 Modules to 2 PP4X Uplink Controllers
Number of inputs supply	2
Input power supply voltage	36..72V
Max power for full chassis	833W
Max power for empty chassis	35W
Max power for PP4X Uplink Controller Card	70W
Max power for PLC8 Line Card without SFP	30W
Max power for PLC8 Line Card with SFP	40W
Max power of fan panel	18W
Weight of full chassis	25 kg
Dimensions (HxWxD)	480x400x350 mm
Ambient Operating Temperature, Humidity	-10° to +45° C, up to 80%, non-condensing

STANDARD COMPLIANCE

- IEEE 802.3i 10BASE-T Ethernet
- IEEE 802.3u 100BASE-T Fast Ethernet
- IEEE 802.3ab 1000BASE-T Gigabit Ethernet
- IEEE 802.3z Fiber Gigabit Ethernet
- ANSI/IEEE 802.3 NWay auto-negotiation
- IEEE 802.3x Full Duplex and flow control
- IEEE 802.3ad Link aggregation
- IEEE 802.1p Protocol for Traffic Prioritization
- IEEE 802.1Q Virtual LANs
- IEEE 802.1ad Provider Bridges (QinQ)
- IEEE 802.1v VLAN Classification by Protocol and Port
- IEEE 802.3ac VLAN tagging
- IEEE 802.1d MAC bridges
- IEEE 802.1w Rapid Reconfiguration of Spanning Tree
- IEEE 802.1s Multiple Spanning Trees
- IEEE 802.1x Port Based Network Access Control
- ITU-T G.988 GPON
- ITU-T G.984x GPON

FEATURES AND BENEFITS

- MAC address learning/aging
- MAC-address-table limit
- Handling unknown MAC-address
- Handling broadcasting traffic
- Support to 1024 multicast groups
- Double tagging (Q-in-Q), IEEE 802.1ad
- IGMP Proxy
- IGMP Snooping
- IGMP fast leave
- Static Routing
- VLAN 1 port-isolation
- Port isolation, port isolation within a single VLAN
- Static (LAG) and dynamic (LACP) network interface aggregation, incl. interfaces that belong to different PP4X modules

UPLINK CONTROLLER PP4X

The central switching module is one of platform's core elements. It carries out control and diagnostic tasks for the peripheral, switching and traffic aggregation modules.

Installation of two modules improves fault-tolerance due to switch redundancy and the system's bandwidth capacity due to distribution of data streams between modules via stacking.

Module interaction is realized via two 10 Gbps interfaces. Modules are working in split and redundancy mode communicating via two internal 10 Gbps interfaces.

CPU

- Marvell Mv78x00, architecture ARMv5TE
- CPU's frequency 1000MHz
- 2 core
- DDR2 SDRAM 512 MB 800 MHz RAM
- 2 GB NAND Flash

INTERFACES

- USB interface (compatible with USB 2.0 specification)
- SATA II interface (SSD support)

Interfaces

- External connections:
 - 4x10GBase-X(SFP+)/1000Base-X (SFP)
 - 2x (10/100/1000Base-T/1000Base-X (SFP))
- Central switch module connection:
 - 16x 10G XAUI (10GBASE-KX4)
- Optical transceivers: 1G SFP, 10G SFP+ (Copper Direct Attach connection support)
- Console port: RS-232

SWITCH

- Ethernet switch: Marvell Packet Processor
- Switch performance: 480 Gbps
- MAC address table: 32k records
- VLAN support: up to 4,000 according to 802.1Q
- Quality of Service (QoS)
- 8 prioritized output queues for each port
- Port quantity: 24 ports, up to 10Gbps per port

Port modes

- Duplex/half-duplex mode, 10/100/1000Mbps for electric ports
- Duplex mode, 1/10Gbps for optical ports

Control and Monitoring

- Interaction with external control and monitoring systems via Telnet, SSH, SNMP protocols
- Collection of crash information from interface modules and the device itself, generation of crash and informational messages for monitoring systems
- Device temperature control, ventilation system management
- Software update management for all device modules

PLC8 GPON interface module

The PLC8 module is designed to provide GPON network broadband connection with a data transfer rate of up to 2.5 Gbit/s downlink. This module is designed for 'last mile' operation and allows to connect up to 512 terminal devices (ONTs). The RSSI function support allows to identify the power of received optical signals from each ONT and measure optical line status parameters.

Network interfaces

- Central switch module connection:
 - 2x10G XAUI (10GBASE-KX4)
- PON:
 - 8 ports 2.5/1.25 Gbps GPON (SFP)

Port modes

- Duplex/half-duplex mode, 10/100/1000Mbps for electric ports
- Duplex mode, 1/10Gbps for optical ports

CPU

- Marvell, architecture ARMv5TE
- Frequency 800MHz
- 1 core
- DDR2 SDRAM 256 MB 320 MHz RAM
- 2x32 MB SPI Flash

SWITCH

- Ethernet switch - Marvell Packet Processor
- 128 Gbps switch capacity
- MAC addresses - 16K
- 4K active VLAN, IEEE802.1Q, double tagging (Q-in-Q)
- QoS

MANAGEMENT

- CLI, SNMP
- Eltex.EMS (Eltex Management System)

INTERFACES

- Connection with switch module
 - 2x10G XAUI (10GBASE-KX4)

GPON¹

- 8 x GPON ports (SFP)
- 9/125 μm single-mode fiber (SMF)
- Up to 1:64 splitting ratio
- Received Signal Strength Indication (RSSI)
- Support DDM (show parametrs in CLI)
 - Digital RSSI
 - Module Temperature
 - Supply Voltage
 - Laser Bias Current
 - Tx Optical Power Output

Class B+:

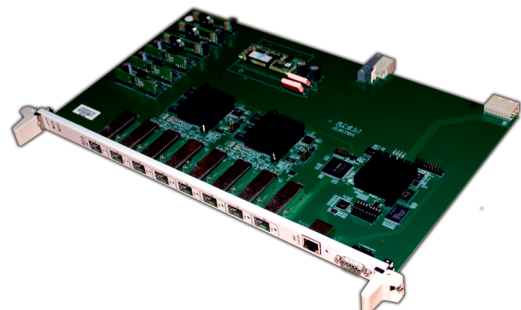
- Standard ITU-T G.984.2, FSAN Class B+, SFF-8472
- Max link distance – 20 km
- Transmitter: 1490nm DFB Laser
 - Data Rate: 2488Mbps
 - Average Launch Power +1,5..+5 dBm
 - Spectral Line Width-20 dB 1.0 nm
- Receiver: 1310nm APD/TIA Detector/Amplifier
 - Data Rate: 1244Mbps
 - Receiver Sensitivity -28 dBm
 - Receiver Optical Overload -8 dBm

Class C+:

- Standard ITU-T G.984.2, FSAN Class C+, SFF-8472
- Max link distance – 60 km
- Transmitter: 1490nm DFB Laser
 - Data Rate: 2488Mbps
 - Average Launch Power +3..+7 dBm
 - Spectral Line Width-20 dB 1.0 nm
- Receiver: 1310nm APD/TIA Detector/Amplifier
 - Data Rate: 1244Mbps
 - Receiver Sensitivity -32 dBm
 - Receiver Optical Overload -2 dBm
 - Receiver Burst Mode Dynamic Range 20 dB



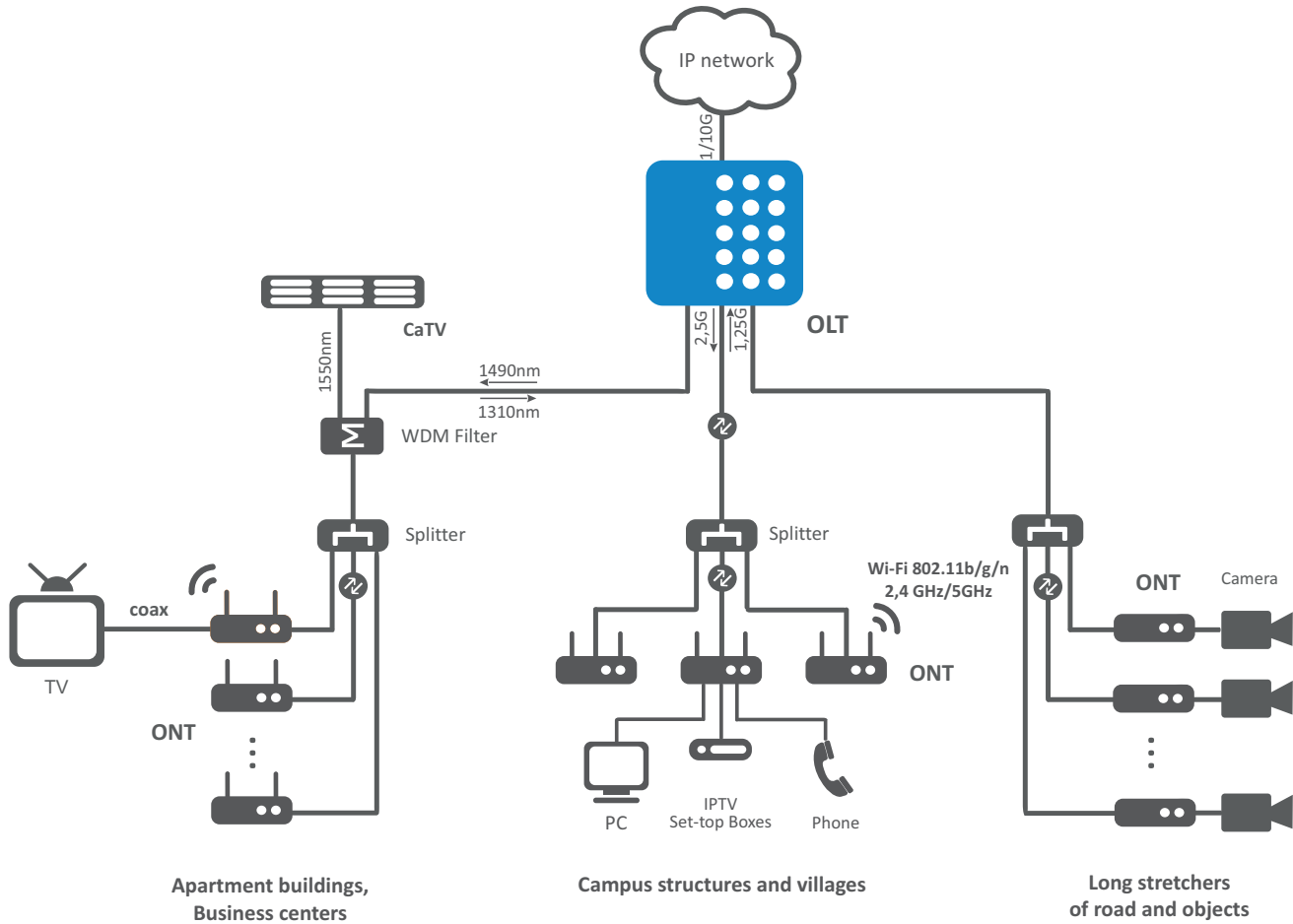
Uplink Controller Card PP4X



GPON Line Card PLC8

¹You can choose this option when ordering

SCHEME OF USING



ORDERING INFORMATION

Name	Description	Picture
MA4000-PX chassis	Frame of switching unit OLT MA4000-PX	
PP4X	PP4X Uplink Controller Card, 4x 10/100/1000Base-T ports , 4x 10GBase-R (SFP+) ports, L2+	
PLC8	PLC8 Line Card, 8x GPON SFP ports, RSSI	
Software		
EMS-MA4000	Eltex.EMS managment system option EMS-MA4000 for managment of network equipment Eltex. Per 1 MA4000	

¹You can choose this option when ordering

About Eltex

For more than twenty years major Russian company Eltex Enterprise, Ltd been designing and manufacturing a wide range of telecommunications and networking equipment: GPON devices, Ethernet-switches, Service Routers, Wireless, VoIP-gateways, Softswitch & IMS, Set-top Boxes and much more.

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