

Fiber optical multiplexer 8xE1 G.703 2048 kbps with built-in 4-port 100 Mbps Ethernet switch

- Connection of Gigabit Ethernet LANs + 8x E1 G.703 2048 kbps lines through a fiber optical link
- Built-in 4-port Gigabit Ethernet switch with QoS and VLAN (802.1q and 802.1QinQ) support
- Possibility of limiting bandwidth of the Ethernet ports („leaky bucket“)
- Various optical interfaces
- Maintenance and management: WWW, Telnet, SNMP, RS232 serial console
- Optional 1+1 fiber path protection and power supply redundancy
- Local and remote loopback test for E1 channels
- G.826 performance statistics for E1 and optical interfaces
- Optional relay port
- Optional dedicated signal port for dry-contact alarms
- Optional redundant power supply AC module
- Power range 12 do 36V DC or 36-60V DC



Description of the device

Functionality

MEGAFOX multiplexer combines eight ITU-T G.703 compliant standard electrical E1 2048 kbps lines plus 10/100/1000Mbit/s Ethernet signal (100 Mbit/s maximum Ethernet data stream throughput) into an optical data stream for transport over fiber optic. Several transmitter options are available (multimode, single-mode (up to 100km), WDM, version with SFP module). For transmission reliability device, can be optionally equipped with two optical interfaces to provide 1+1 optical path redundancy. Each of the E1 signals is transmitted independently, so that each channel can be set to a different clock source.

Device is equipped with built-in four port Gigabit Ethernet switch. Ethernet transmission channel may be set as transparent or divided into independent transmission

channels through the virtual VLAN mechanism. Up to 64 independent VLANs are supported. **MEGAFOX** supports advanced Ethernet interface features like VLAN stacking (QinQ, IEEE802.1ad), jumbo frame size (10K bytes), programmable rate limiting and port priority setting (depending on default port priority, VLAN priority, IP DSCP/TOS field or MAC destination/source address).

Environmental requirements

MEGAFOX multiplexer is powered from DC voltage from 12 to 60V power supply or from an external adapter in case of AC voltage. Total power consumption does not exceed 10W. Device can be optionally equipped with second power supply module to provide power redundancy for failsafe operation. The switch is designed for operation in the temperature range of +5 to + 45°C

A standard application is presented in the drawing below.

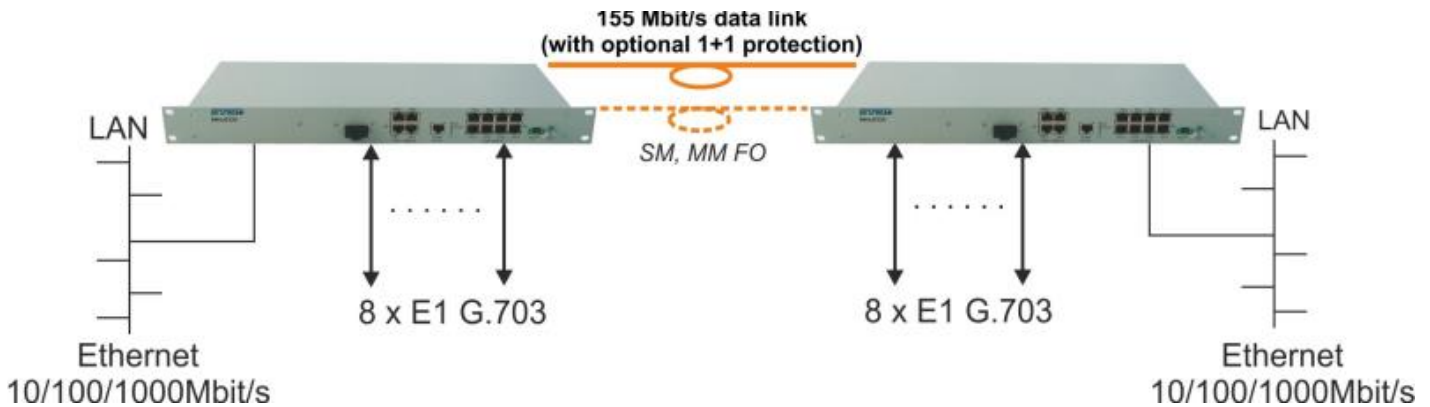


Fig. 1. Example application.

Management

Embedded **HTTP** server, **TELNET** server and **SNMP** agent allows free configuration of the device performance by standard Web browser and continuous monitoring from any management platforms equipped with SNMP client. In addition, built-in SMTP service daemon allows to notify the operator in case of system failure. Device management is

carried out using dedicated Ethernet port. Remote software update is supported to allow further functionality improving. **MEGAFOX** provides wide range of diagnostic options, including: local and remote E1 loops, E1 and Ethernet transmission statistics, ES, SES, UAS thresholds according to G.826.

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 802.3x Flow Control and Back-pressure
- IEEE 802.1p Class of Service (CoS)
- IEEE 802.1Q VLAN
- IEEE 802.1ad QinQ

Supported protocols

- SNMP, SNTP, SMTP, Syslog
- WWW, TELNET, RS232 console
- Function „autocrossover” MDI/MDIX
- Full/half duplex
- Flow control function
- Support mechanisms QoS

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
- 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

Optical port

- 155Mbps transmission speed
- Optional 1+1 optical path redundancy
- SC/PC connectors
- SM, MM, WDM, 1310nm, 1550nm, 665nm (POF)
- Fiber type 9/125um, 62,5 / 125um, 980/1000um
- Ranges depending on the type of optical port
15km, 50km, 120km (1550nm), 20km WDM, 40km WDM, 60km WDM, 100km WDM, 300m (POF)
- Device also available with slots version SFP

Local Ethernet ports

- 10/100/1000 Mbit/s transmission speed
- Flow control function
- Autocrossover function "MDI, MDI-X
- QoS, VLAN (IEEE 802.1q, QinQ) mechanisms support
- Connection state signaling
- 4x RJ-45 connector

Local E1 interface 2048kbit/s

- 2048 kbps ± 50 ppm binary throughput
- *Framed* and unframed (G.703/G.704) compliance
- 120 Ohm E1 impedance
- Line code HDB-3
- Types of connector: RJ-45

Management

- SNMP, Telnet
- HTTP protocol and web browser as a management application
- SMTP -send e-mail message in case of failure
- By dedicated Ethernet port
- Through the RS232 console (RJ45, 9600,N,8,1) – preliminary configuration
- Implementation of G.826 for E1 and optical interfaces
- Optional relay port
- Optional dedicated signal port for dry-contact alarms

Dimension

- Housing 483x170x44 mm
- Weight to 1,7kg

Environmental requirements

- Operating temperatures: +5° do +45°C

Power supply

- Supply voltage range 36 to 60V DC
- Up to 10W power consumption
- Optional redundant power supply AC module (additional 230V AC power connector)
- Optional power supply 12 to 36V DC

Code

MEGAFOX-S-(X)-(P)-UUU

Power supply:

Without symbol – basic version
36 ÷ 60V DC

6 – version 12-36VDC

61p – Redundant power supply
12-36V DC, 230V AC

71p – Redundant power supply
36-60V DC, 230V AC

Protection Option:

Without symbol - without protection
P - in the protection version

Optional field, only if WDM is chosen in the preceding field:

1 – 1310/1550 nm for version WS/MM/WL or 1550/1570 nm for version WLL

2 – 1550/1310 nm for version WS/MM/WL or 1570/1550 nm for version WLL

Interface types:

- **SFP** - interface via the SFP module
- Built only a single interface speeds of 100 Mbps with SC/PC:
 - S** – 1310 nm SM/MM – range 15/5 km
 - M** – 1310 nm SM – range 50 km
 - L** – 1550 nm SM – range 100 km
- Interface WDM (necessary additional field (x) in an assay for the transceiver)
 - WS** – 1310/1550 and 1550/1310 nm SM/MM – range 20/2 km
 - WM** – 1310/1550 and 1550/1310nm SM – range 40 km
 - WL** – 1310/1550 and 1550/1310 nm SM – range 60 km
 - WLL** – 1550/1570 and 1570/1550nm SM – range 100 km

NOTE - The given ranges are indicative dependent on the actual parameters of fiber

Examples of code:

MEGAFOX-L-71p – MEGAFOX multiplexer, 1550nm SM interface with 100km range, redundant power supply 10-36V DC and 230V AC

Additional accessories:

- **BTP-8503-02CD** 155M, 850nm, MM, 2km, SFP, LC, 0~70°C
- **BTP-3103-L2CD** 155M, 1310nm, MM/SM, 2/20km, SFP, LC, 0~70°C
- **BTP-3103-L4CD** 155M, 1310nm, SM, 40km, SFP, LC, 0~70°C
- **BTP-5503-L8CD** 155M, 1310nm, SM, 80km, SFP, LC, 0~70°C
- **BTP-5503-12CD** 155M, 1310nm, SM, 120km, SFP, LC, 0~70°C

- **BTPB-3503L-L2CD** 155M, 1310/1550nm, SM, 20km, SFP, WDM, LC, 0~70°C
- **BTPB-5303L-L2CD** 155M, 1550/1310nm, SM, 20km, SFP, WDM, LC, 0~70°C
- **BTPB-3503S-L2CD** 155M, 1310/1550nm, SM, 20km, SFP, WDM, SC, 0~70°C
- **BTPB-5303S-L2CD** 155M, 1550/1310nm, SM, 20km, SFP, WDM, SC, 0~70°C
- **BTPB-3503L-L4CD** 155M, 1310/1550nm, SM, 40km, SFP, WDM, LC, 0~70°C
- **BTPB-5303L-L4CD** 155M, 1550/1310nm, SM, 40km, SFP, WDM, LC, 0~70°C
- **BTPB-3503S-L4CD** 155M, 1310/1550nm, SM, 40km, SFP, WDM, SC, 0~70°C
- **BTPB-5303S-L4CD** 155M, 1550/1310nm, SM, 40km, SFP, WDM, SC, 0~70°C

- **ZAS-ANYMUX-01** External Power supply 230V AC(DC) / 48V DC 0,5A, 0+50°C
- **ZAS-ANYMUX-03** External Power supply 230VAC, 220VDC / 48VDC, 30W, -20+70°C, DIN rail mounting