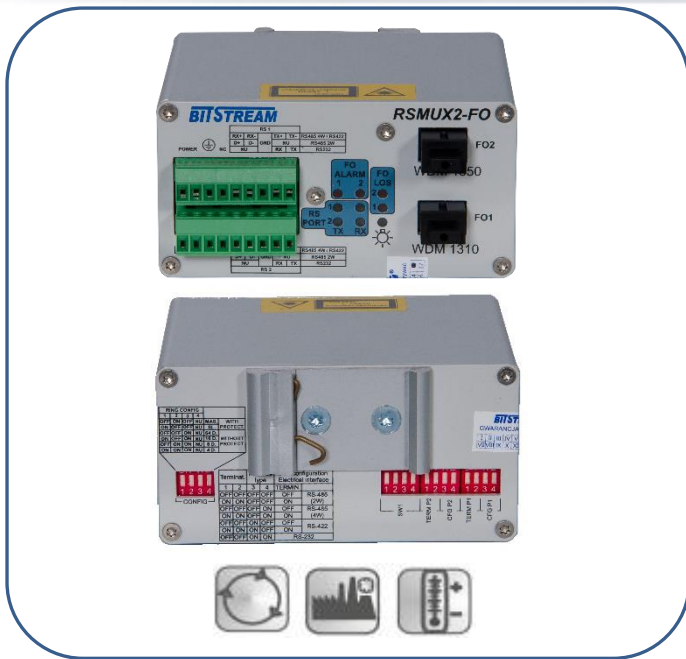


## RSMUX2-FO



## RSMUX2-FO - Optical multiplexer of 4x RS232/422/485 serial interfaces

- Multiplexer of 4x RS232/422/485 interfaces over fiber links, RJ-45 or two with screw connection
- The device has one or two optical interfaces
- Available configurations: POINT-POINT, RING, BUS
- The configuration of the device through DIP-switch
- Transmission speed up to 2Mbps for RS-485, to 230.4kbps for RS-232
- Dual OC alarm contact (only for versions with screw connection)
- Supply voltage range 9÷18V (12V), 18÷36V (24V), 36÷75V (48V) DC, depending on the version of the device

### Description of the device

#### Functionality

**RSMUX2-FO** is a multiplexer of four RS232/422/485 streams into fiber. Multiplexer allows connection of RS232/422/485 serial interfaces over fiber links with the maximum distance of 100km and provides complete isolation between devices and resistance to disturbance occurring along transmission path. Depending on the specific versions, device can be connected using multi-mode or single-mode fiber. WDM and SFP versions also available. In basic version device is equipped with one fiber optic interface, version with two optical interfaces is also available.

Devices with two optical interfaces can be connected to create point to point protection connection, or ring protection connection. Optimized protection algorithm allows for detecting any faults of the connection and its restoration after removing the fault.

**RSMUX2-FO** also performs the function of **converting any signals** involving the exchange, for example, RS-232 to RS-485 or RS-422, which is realized by means of two devices working in pair.

**Slow mode** - this feature allows you to significantly increase the range for MM fiber, up to 10km, but at the expense of maximum RS data rate.

The converter also works with devices from security systems BS-MC-5X. **RSMUX2-FO** provides fully

transparent RS data stream transmission, independent of such parameters like bitrate, number of data bits, stop bits and parity. Each serial interface is sampled with a frequency of 20Mhz, which allows on data throughput of the RS to 230.4 Kbps (RS-232) and 2Mbps (RS-485/RS-422) with +/-60ns pulse time distortion. RS485 ports can be set up for 2-wire or 4-wire. Depending on the version of the device, multiplexer can work in point to point (with optical path protection), bus and ring topologies. Parameters of serial interfaces can be configured through DIP switches.

In addition, each RS interface has two independent LEDs indicating the activity on receiver and transmitter lines, which simplifies the process of installation, commissioning and maintenance.

#### The protection of connection

The device is available in two versions, with one or two optical interfaces. In the case of two optical interfaces, devices can create connections with protection for the fiber optic links. However, when building a ring using only one optical interface (it cannot be a WDM version) we have no redundancy. Fiber ports can be implemented by the built-in optical interfaces (single or dual fiber) or by SFP. In the ring topology, it is possible to simultaneously connect up to 64 devices.

Example of such application is presented on the drawing below.

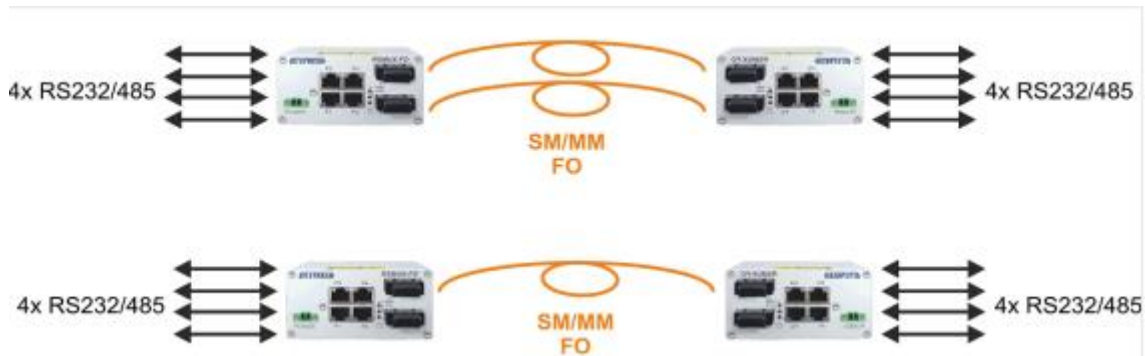


Fig 1. One of the possible usages is control and environment monitoring for data centers

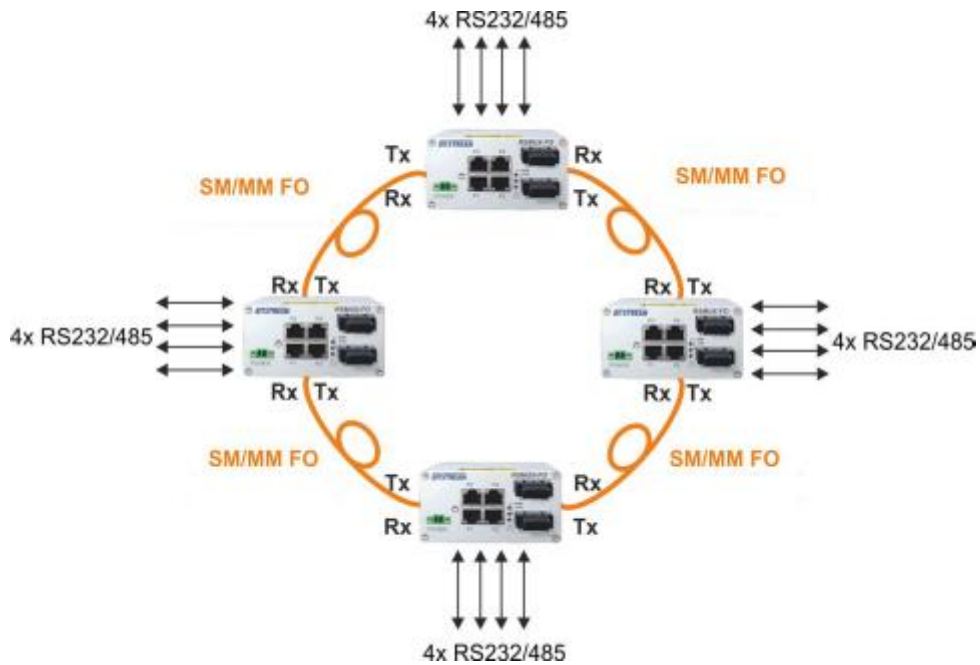


Fig.2 Example of the devices working in the ring topology without protection (for the version which have one optical interface)

## Management

Management is done through the built-in **dip-switches**, which are used to configure the type of RS interfaces and work mode.

## Technical specifications

## Supported transmission standards

- EIA-232
- EIA-422
- EIA-485

## Supported protocols

- Profibus
- Modbus

## Supported standards, recommendations and directives EMC Security\*:

- 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

### RS interface

- 4x RS-232/422/485, RJ45 or 2x screw connection (cable 1.5mm<sup>2</sup>)
- RS-232 - transmission speed 0-230.4kbps
- RS-422/485 - transmission speed 0-2Mbps

### Optical interface

- One or two optical interfaces:
- SM, MM, WDM, CWDM, DWDM
- Fiber type: 9/125um, 50/125um, 62.5/125um
- Connector: SC/PC or SFP
- Ranges depending on the type of optical port

### Physical design

- Dimensions: 103x84x53mm
- Weight: 0.5 kg
- DIN rail mounting

### Management

- DIP-SWITCHES

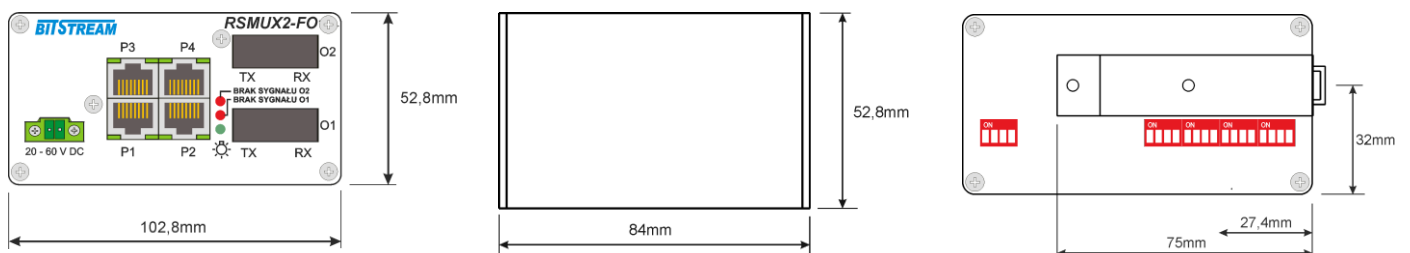
### Power supply

- Supply voltage range:
  - 9 ÷ 18V DC (12V)
  - 18 ÷ 36V DC (24V)
  - 36 ÷ 75V DC (48V)
- Power Consumption: up to 4W
- galvanic isolation of power supply
- Galvanically isolated input
- Power connector - terminal block, angular screw on the wire to 1.5 mm<sup>2</sup>

### Environmental requirements:

- IP 30 rated metal enclosure
- Operating temperature: +5 to +40°C
- Operating humidity (non-condensing): 5%-95%
- Location Type: Class C according to PN-EN 60870-2-2 - sheltered locations

### Mechanical drawing



Code

RSMUX2-FO-(S)-(X)-(P)-(Z)-(B)-(T)-(U)

**Power supply:**

2 – 9-18V DC  
3 – 18-36V DC  
4 – 36-60V DC

**Working temperature:**

**Without symbol** – range 0° to +50°C  
T – range -40° to +75°C

Support **Bi- Phase** interface

**Without symbol** – standard version  
B – Support **Bi-Phase** interface

**Type of serial interface connectors:**

**Without symbol** – version with four RJ45 connectors  
Z – version with two screw connectors

**Funkcja protekcji:**

**Without symbol** – without protection  
P – version with protection

**Optional for WDM for Wx**

- 1 – final only - 1310/1550nm WS/MM/WL or 1550/1570nm WLL
- 2 – final only - 1550/1310nm WS/MM/WL or 1570/1570nm WLL
- 3 – P only- 1310/1550 and 1550/1310nm WS/MM/WL or 1550/1570 and 1570/1550nm WLL

**Interface type:**

- **SFP** – interface SFP
- **S** – 1310nm SM/MM – range 15/5 km\*
- **M** – 1310nm SM – range 50 km
- **L** – 1550nm SM – range 100 km

**Interface WDM for X**

- **WS** – 1310/1550 and 1550/1310 nm SM/MM – range 20/5 km\*
- **WM** – 1310/1550 and 1550/1310nm SM – range 40 km
- **WL** – 1310/1550 nad 1550/1310 nm SM – range 60 km
- **WLL** – 1550/1570 and 1570/1550nm SM – range 100 km

\* - Range for MM fiber orientation is dependent on the actual parameters of the fiber. The range can go up to 10km using SLOW-MODE function.

### Examples of code:

**RSMUX2-FO-SFP-Z-B-T-4** RSMUX2-FO 1x FO SFP module, with two screw terminals, with Bi-Phase interface, operating temperature from -40°C to +70°C, power supply 36-60V DC

### Additional accessories:

- **ZAS-ANYMUX-01** – power adapter 230V AC(DC) / 48V DC 0,5A, 0+50°C
- **ZAS-ANYMUX-03** – power adapter 85÷264VAC, 120÷370VDC / 48-56VDC; 40W dla -25+60C, 24W dla -60+70C, 2x PoE; Mounted on a DIN TH35 bus, 0.5kg.; 40\*90\*100mm
  
- **BTP-8503-02TD** 155M, 850nm, MM, 2km, SFP, LC, -40~85°C
- **BTP-3103-L2TD** 155M, 1310nm, MM/SM, 2/20km, SFP, LC, -40~85°C
- **BTP-3103-L4TD** 155M, 1310nm, SM, 40km, SFP, LC, -40~85°C
- **BTP-5503-L8TD** 155M, 1310nm, SM, 80km, SFP, LC, -40~85°C
- **BTP-5503-12TD** 155M, 1310nm, SM, 120km, SFP, LC, -40~85°C
- **BTPB-3503L-L2TD** 155M, 1310/1550nm, SM, 20km, SFP, WDM, LC, -40~85°C
- **BTPB-5303L-L2TD** 155M, 1550/1310nm, SM, 20km, SFP, WDM, LC, -40~85°C
- **BTPB-3503S-L2TD** 155M, 1310/1550nm, SM, 20km, SFP, WDM, SC, -40~85°C
- **BTPB-5303S-L2TD** 155M, 1550/1310nm, SM, 20km, SFP, WDM, SC, -40~85°C
- **BTPB-3503L-L4TD** 155M, 1310/1550nm, SM, 40km, SFP, WDM, LC, -40~85°C
- **BTPB-5303L-L4TD** 155M, 1550/1310nm, SM, 40km, SFP, WDM, LC, -40~85°C
- **BTPB-3503S-L4TD** 155M, 1310/1550nm, SM, 40km, SFP, WDM, SC, -40~85°C
- **BTPB-5303S-L4TD** 155M, 1550/1310nm, SM, 40km, SFP, WDM, SC, -40~85°C
  
- **LT-19-01** mounting rail for four RSMUX2 devices in the 19"/2U rack