

Piezo Multiplexer

for MultiSpec Spectrometer System

The multiplexer module MUX-FSM which is based on piezo technology allows measurements on up to 8 channels. Fast switching time, low intensity reduction, a very good reproducibility and a high lifetime are the characteristics of this unit. The MUX-FSM is a

recommended accessory for the modular MultiSpec instrument family of fast and simultaneous readout spectrometer systems. The standardized SMA connectors at the front side allow the easy use of fiber optics with all types of probes and cells.



MultiSpec System with Piezo Multiplexer

- **fast switching time – down to milliseconds**
- **low insertion loss**
- **high optical isolation**
- **no additional wavelength dependency**
- **available for NIR and UV/VIS**
- **compact and robust**
- **long lifetime – no maintenance required**

Advantages

The MUX-FSM is ideally suited to combine up to 8 measurement points with only one spectrometer. Therefore, the end-user derives a cost benefit, and is able to directly compare different optical channels using only one measuring device.

The unit is based on a unique principal of fiber surface coupling. The major advantage of this principal is the wavelength independence of the switch due to the fact that no optical components inside the switch are necessary. So the unit can be used from UV up to the NIR region. The high accuracy of positioning of the piezoelectric actuators guarantees a light transmission of more than 80%. Fiber switches with optical components, like lenses or prisms, will always result in a wavelength - dependent limitation.

General

The multiplexer unit works with piezoelectric elements providing short switching times down to 5ms. Multimode fibers with a core diameter up to 660µm are used. The typical insertion losses are less than 1.4dB.

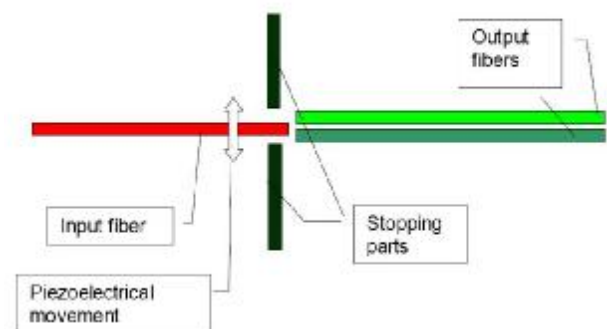
The switch is connected to a PC (RS-232 serial port interface) and controlled by the MultiSpec Pro software package. The system is very compact in a 19inch industrial casing.

4 versions are available:

- MUX-FSM1x3 with 3 channels
- MUX-FSM1x4 with 4 channels
- MUX-FSM1x6 with 6 channels
- MUX-FSM1x9 with 9 channels

Working Principle – Piezo Effect

An applied voltage to a piezoelectrical material can cause a change of the dimensions of the material, thereby generating a motion.



Technical Data

Optical Characteristics

Insertion loss: typ. 1.0 dB
Cross talk: typ. -60 dB
Repeatability: typ. 0.02 AU
(1000cycles over 20 h)
Insertion loss stability: 20 x 10⁵ cycles
Optical Connectors: SMA

Technical Characteristics

Switching time: typ. 50 ms (min. 7ms)
Lifetime: 10⁹ cycles
PC Interface: RS 232
Operating temperature: 0°C to 60°C
Storage temperature: -40°C to 80°C
Humidity: 55% RH
19" Housing: 380x448x132,5 [mm]
(LxWxH)

Electrical Characteristics

Operating Voltage: 100..240 V DC
Power consumption: ca. 300 mA



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