FW44L-5V-SM-0905-L/NL

4X4 Mechanical optical switch Module

4X4 Single Mode 1310/1550nm, Latching/Non-latching, 5V, 0.9MM 0.5M Fiber, RS485 communication interface , 135×60×20mm Box Module

The 4x4 mechanical optical switch is an optical path control device that serves to control and switch optical paths. The module maintains the optical path when power is off. It supports four optical signal inputs and can select four signal outputs or vice versa (bidirectional use). The module's control method uses RS485 communication control. It plays a crucial role in optical communication applications. Optical switches are primarily used in optical transmission systems for multi-channel optical monitoring, automatic switching of multiple light sources/detectors in LANs, and dynamic monitoring of multiple points in optical sensing systems. They are also used in optical testing systems for fiber optic, optical component, network, and field engineering cable testing; as well as in the adjustment and alignment of optical components.

Product Features

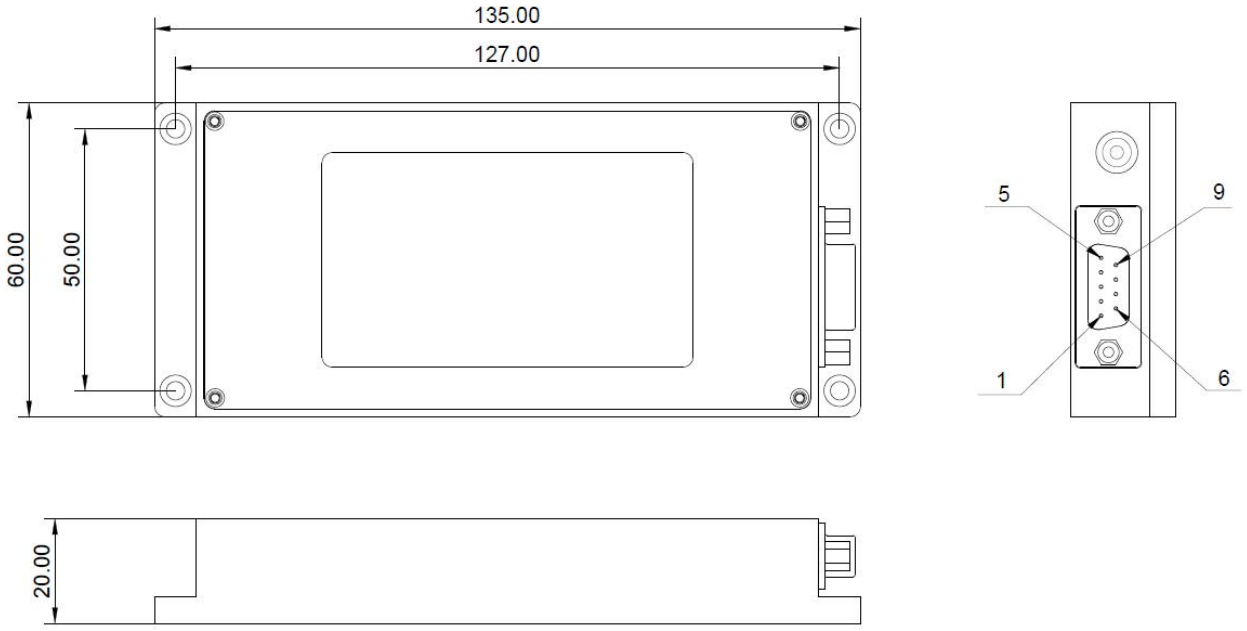
- Low insertion loss, wide wavelength range
- Low channel crosstalk, high stability, and high reliability
- Maintains optical path when power is off
- Internal circuit design with self-diagnostic fault detection
- Simple control method, compact size, easy to integrate into systems

Product Parameters

Parameters	Specifications	Unit
Operating Wavelength	1260~1620nm	nm
Insertion Loss	≤1.4	dB
Wavelength Dependent Loss	≤0.40	dB
Polarization Dependent Loss	≤0.05	dB
Temperature Dependent Loss	≤0.20	dB
Return Loss	≥50	dB
Cross Talk	≥55	dB
Switch Time	≤8	ms
Repeat ability	≤±0.02	dB

Durability	≥10^7	times
Operating Voltage	5	V
Switch Type	Non-Latching/Latching	
Operating Temperature	−20~+70	℃
Storage Temperature	−40~+85	℃
Optical Power	≤500	mw
Dimension	135L×60W×20H	mm

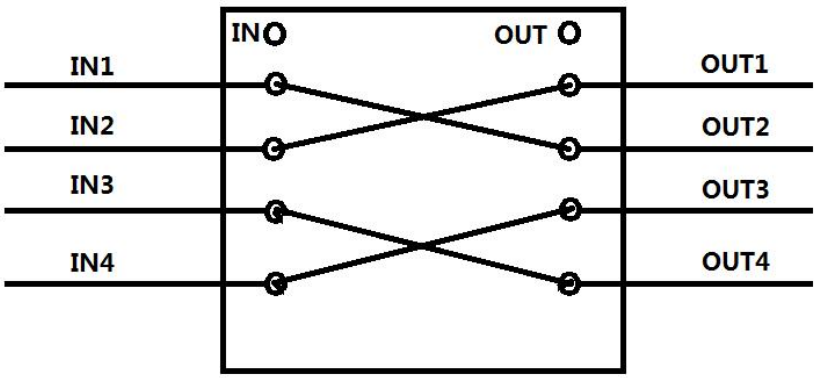
Dimension



Pin definitions

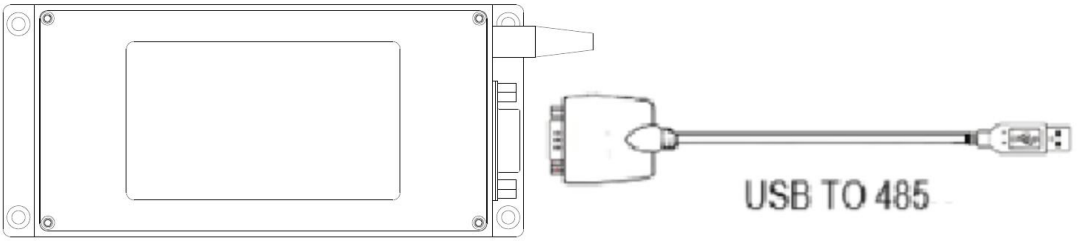
DB9 male connector			
PIN	Type	Name	Function
2	Input	A+	485 communication A+
3	Input	B-	485 communication B-
8	Power	GND	Power supply ground
9	Power	VCC	Positive terminal of the power supply
1,4,5,6,7	NC	NC	/

Optical Path Diagram



Remark: Inputs IN1 to IN4 can be freely switched to outputs OUT1 to OUT4. Two or more input channels cannot be selected simultaneously for the same output channel.

Control schematic



RS-485 control command set

- "_"represents an underscore
- All letters in the communication protocol are uppercase.
- This module can only execute one command at a time. Typically, you need to wait for the program to return a corresponding value before entering the next command.
- In practice, use the less-than symbol "<" as the start marker and the greater-than symbol ">" as the end marker.

Name	Instruction	Description
Set up the optical switch channel	Command:<OSW_OUT_01_02_03_04 >	The command sets the selection of optical switch channels IN1-OUT1, IN2-OUT2, IN3-OUT3, IN4-OUT4. A response of 1 indicates successful setup. If inputs XX and YY exceed the number of channels, a response of 2 is returned. A response of 3 indicates an issue with the optical switch.
	response1:<OSW_OUT_OK> response2:<OSW_OUT_OVERFLOW> response3:<OSW_OUT_FAULT>	

Check optical switch Current channel	Command:<OSW_OUT_?>	The command indicates querying the current channel of the optical switch. A successful query returns a response indicating that the optical path is IN1-OUT1, IN2-OUT2, IN3-OUT3, IN4-OUT4.
	response:<OSW_OUT_01_02_03_04>	
Query optical switch information	Command:<OSW_TYPE_?>	The command indicates querying information about the optical switch, and the response indicates the result.: Module model: OSW-4X4 operating wavelength: 1260~1650nm Fiber optic types: 9/125um Optical fiber protective tubing: 0.9mm Fiber optic cable length: 1m Control interface: RS-485 Connector: FC/APC
	response:<OSW_TYPE_ OSW-4X4_1260~1650_9/125_90_10_R4 >	

Note: The module's serial port baud rate is 9600, data bits are 8, stop bits are 1, and no parity is used. If an incorrect command is sent, the optical switch responds with <OSW_ERROR>

Order Information

Part No.	Specification
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