Channel Multiplexer | sm041

Applications

- Installations requiring hundreds or thousands of sensors.
- Expanded fiber connections offer options for sensor redundancy.
- Cable management for various sensor network topologies.

Features

- Expands 4 parallel channels to 8 or 16 sub-channels to accommodate hundreds of static or dynamic sensors.
- ENLIGHT Sensing Analysis Software makes integration easy.
- Solid state optical switch technology, with no moving parts, is tested to trillions of cycles.
- Switch and coupler based multiplexers can be cascaded to achieve up to 64 fiber connections.

Deployment

- Civil structures (bridges, dams, tunnels, mines, buildings).
- Energy (wind turbines, pipelines, nuclear reactors, solar panel farms).
- Oil & gas (well reservoir management, platform structural health, pipeline condition).
- Aerospace vehicles (airframes, composite structures, wind tunnels, dynamic tests).
- Marine vessels (hull, mast, rudder, deck, cargo containers).
- Transportation (railways, trains, roadways, specialty vehicles, cranes).
- Homeland security (perimeter intrusion, heat detection, security gate monitoring).
- Medical devices (probes, catheters).

Description

The sm041 Sensor Multiplexer is a compact, field proven, industrial grade multiplexer module that conveniently and economically adds measurement channels and fiber connections to an interrogator core. The switch-type sm041 multiplexer is based upon the latest generation of solid state optical switches that redirect the optical path without moving parts. These switches feature low insertion loss, fast response time, high extinction ratio, and extremely high reliability and repeatability. The coupler-type sm041 multiplexer is based upon a network of fused wide band fiber optic couplers and share a common optical spectrum simultaneously among multiple output ports. Both versions are designed to meet the most demanding requirements of continuous operation without wear-out, longevity without fail, and live operation under vibration and shock.

sm041 Channel Multiplexer

Micron Optics ENLIGHT Sensing Analysis Software is included with Micron Optics sensing interrogator systems and provides a single suite of tools for data acquisition, computation, and analysis of optical sensor networks. ENLIGHT combines the useful features of traditional sensor software with the specific tools needed to optimize optical properties during the design, implementation, and operations phases of an optical sensor system. Tables, graphs, and additional data visualization features make ENLIGHT easy to use. Learn more about ENLIGHT at http://www.micronoptics.com/sensing_software.php.

Specifications	sm041-008	sm041-016	sm041-408	sm041-416
Optical Properties				
Number of Optical Channels	4 In / 8 Out	4 In / 16 Out	4 In / 8 Out	4 In / 16 Out
Multiplexer Type	Coupler	Coupler	Switch	Switch
Wavelength Range	Same as Host Instrument			
Scan Frequency [1]	0.25 Hz to 2KHz			
Insertion Loss (2-way)	8 dB	16 dB	3 dB	4 dB
Optical Connectors	FC/APC			
Data Processing Capabilities				
LabVIEW™ Source Code	Included with host instrument			
ENLIGHT^{PRO} Compatibility	Yes			
Mechanical, Environmental, Electrical Properties				
Dimensions; Weight	114 mm x 234 mm x 132 mm; 1.4 kg (3 lbs.)			
Operating Temperature	0 to 50°C			
Input Voltage	n/a		Powered via DIN connector from host instrument	
Interfaces	n/a		Ethernet via host instrument	

Notes:

1. Effective scan frequency values scale with host instrument's scan frequency.

Examples: The sm041-416 uses four 1x4 optical switches. Therefore, the effective maximum scan frequency of the host device would be divided by 4.

A host instrument with a 1 kHz scan frequency coupled with a sm041-416 will in effect present a maximum scan frequency of 250 Hz.

A host instrument with 1 Hz scan frequency coupled with the sm041-416 will in effect present a maximum scan frequency of 0.25 Hz.

sm041-008 (8-Channel Coupler Extension)

Contains four 1x2 couplers to accommodate connection of up to two fibers to each optical input channel from Micron Optics sm125 and sm130 Optical Sensor Interrogators. All fibers are scanned simultaneously. This type of configuration provides no net gain of wavelength range or sensor capacity; it is solely intended to provide more fiber connection flexibility.

sm041-016 (16-Channel Coupler Extension)

Contains four 1x4 couplers to accommodate connection of up to four fibers to each optical input channel from Micron Optics sm125 and sm130 Optical Sensor Interrogators. All fibers are scanned simultaneously. This type of configuration provides no net gain of wavelength range or sensor capacity; it is solely intended to provide more fiber connection flexibility.

sm041-408 (8-Channel Switch Extension)

Expands optical channel I/O from Micron Optics sm125 and sm130 Optical Sensor Interrogators to 8 channels for sensor arrays. Product pricing includes all necessary optical jumpers, custom cable connection to sm125 and sm130 for power and communication.

sm041-416 (16-Channel Switch Extension)

Expands optical channel I/O from Micron Optics sm125 and sm130 Optical Sensor Interrogators to16 channels for sensor arrays. Product pricing includes all necessary optical jumpers, custom cable connection to sm125 and sm130 for power and communication.

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