LATCHING FIBER OPTIC NxM MATRIX SWITCH

Non-blocking Multistage Architecture

OVERVIEW

sercalo's latching fiber optic NxM switches are based on strictly non-blocking bidirectional architecture. The underlying MEMS technology permits to obtain low insertion loss combined with high crosstalk between channels. The switch communicates over a UART interface with TTL or RS-232 voltage levels and over a secondary SMBus/I^2C or USB interface.

sercalo's highly reliable switching mechanism uses integrated micro-mirrors that can be moved in or out of the optical path by electrostatic actuation. The latching mechanism offers the best repeatability and long term stability. The component is designed to conform to Telcordia 1221 reliability standards. The miniature package withstands rugged environments and is well suited for direct mounting on printed circuit boards.

FEATURES

- *Non-blocking*
- *Fast switching time*
- *Highest repeatability*
- *Reliable*
- *UART, I^2C/SMBus and USB interfaces*
- *Custom networks available on request*
- *Evaluation board with Ethernet interface available on request*

APPLICATIONS

- *Optical reconfiguration*
- *Optical network protection/restoration*
- *Instrumentation*
- *Test and measurement*

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DESCRIPTION

sercalo's latching fiber optic NxM switches are based on a strictly non-blocking bidirectional architecture. Light from port A is routed to port B; an optional array of 1x1 switches independently enables or disables the channels of port A. A microcontroller supervises the routing configuration and communicates through an UART interface with TTL (option A) or RS-232 (option B) voltage levels and over a secondary SMBus/I^{2}C (option I) or USB (option U) interface. User can choose the factory preset and change this configuration whenever needed. An evaluation board with Ethernet interface is available on request.

TECHNICAL SPECIFICATIONS

	Unit	Min	Typ	Max
Optic				
Wavelength Range[1]	nm	1240		1640
Insertion Loss (8x8 and 4x8)[2]	dB		1.5	2.5
Insertion Loss (4x4)[2]	dB		1.2	2.0
Crosstalk[3]	dB	50	75	
Return loss	dB	40	55	
Switching Time, power saving enabled	ms		5	10
Switching Time, power saving disabled	ms		2	10
Repeatability[4]	dB			0.01
Polarisation Dependent Loss	dB		0.07	0.2
Durability	cycles		No wear out	
Electric				
Supply Voltage (Vdd)	V	4.75	5	5.25
Power Consumption	mW			150
UART speed	baud	9600		115200
UART Logic Level 0 (option A)	V		0	0.3
UART Logic Level 1 (option A)	V	3.0	5	
UART Mark voltage (option B)	V	-30		0.8
UART Space voltage (option B)	V	2.4		30
SMBus/I^{2}C bus speed	kbps			400
Reset inactive voltage	V	2.4	5	
Reset active voltage[5]	V		0	0.9
Reset pulse duration	µs	15		
Package				
Operation Temperature	°C	-5		70
Storage Temperature	°C	-40		70
Pigtail length	cm	50		100
Dimensions	mm		95 x 127 x 14.5	

[1]range for multimode: 600 – 1700 nm; [2]value @ 25 °C, without connectors;
[3]for single mode fiber and angled connectors. For multimode fiber RL > 35 dB;
[4]for constant temperature and polarisation; [5]through onboard pull-up resistor

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ORDERING INFORMATION

| SL | A | I | 8x8 | - | 9 | N | 05-FC/APC |

UART voltage levels preset:
A=TTL
B = RS-232

Secondary interface preset:
U = USB
I = SMBus/I²C

Network:
8x8
4x4
...

Enable switches
- = none
O = on/off switch on all lines of port A

Fiber type:
9 = SMF28
9PM = Panda
50 = MM 50
62 = MM 62

Fiber sleeve type:
N = loose tube 0.9mm
B = bare fiber 0.25mm
C = Kevlar cable

Optional Connectors:
05=50 cm
FC, SC, ST, LC, E2000 connectors
PC or APC

| AB1 | Adapter board (RS-232, USB) |

| EB | Evaluation board (Ethernet) |

CONNECTOR PINOUT

Pin number	Description	
	With option SMBus/I²C	*With option USB*
1	Ground (GND)	Ground (GND)
2	Supply voltage (V_DD)	Supply voltage (V_DD)
3	Reserved[5]	Reserved[5]
4	UART TX data	UART TX data
5	Reserved[5]	Reserved[5]
6	UART RX data	UART RX data
7	System reset (/RST)	System reset (/RST)
8	SMBus/I²C SDA	USB D+
9	SMBus/I²C SCL	USB D-
10	Ground (GND)	Ground (GND)

[5]Let reserved pins unconnected.

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FUNCTIONAL BLOC DIAGRAM

Figure 1 – SL8x8 (view from pin side)

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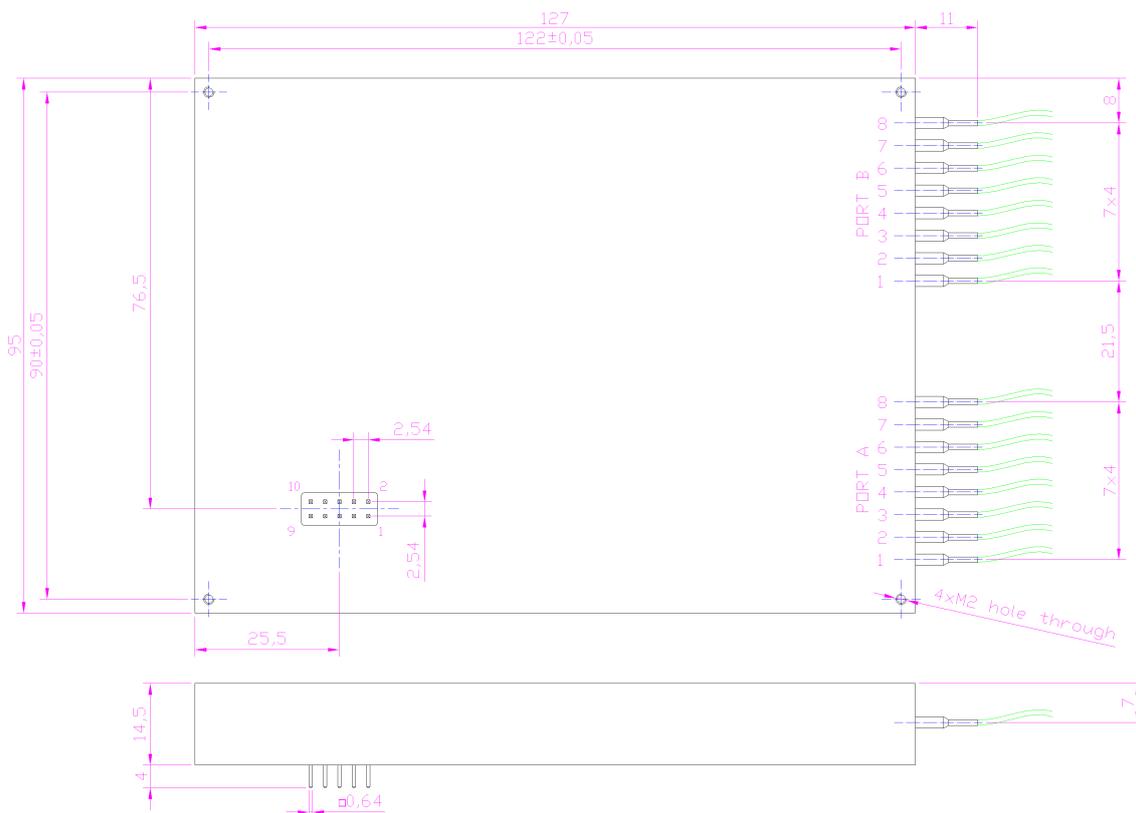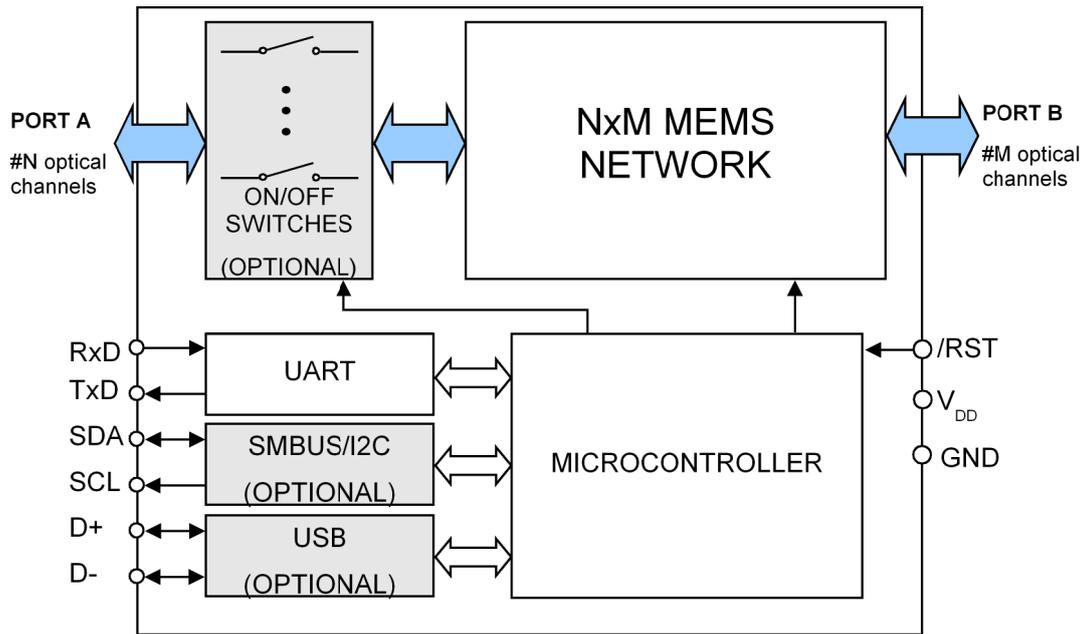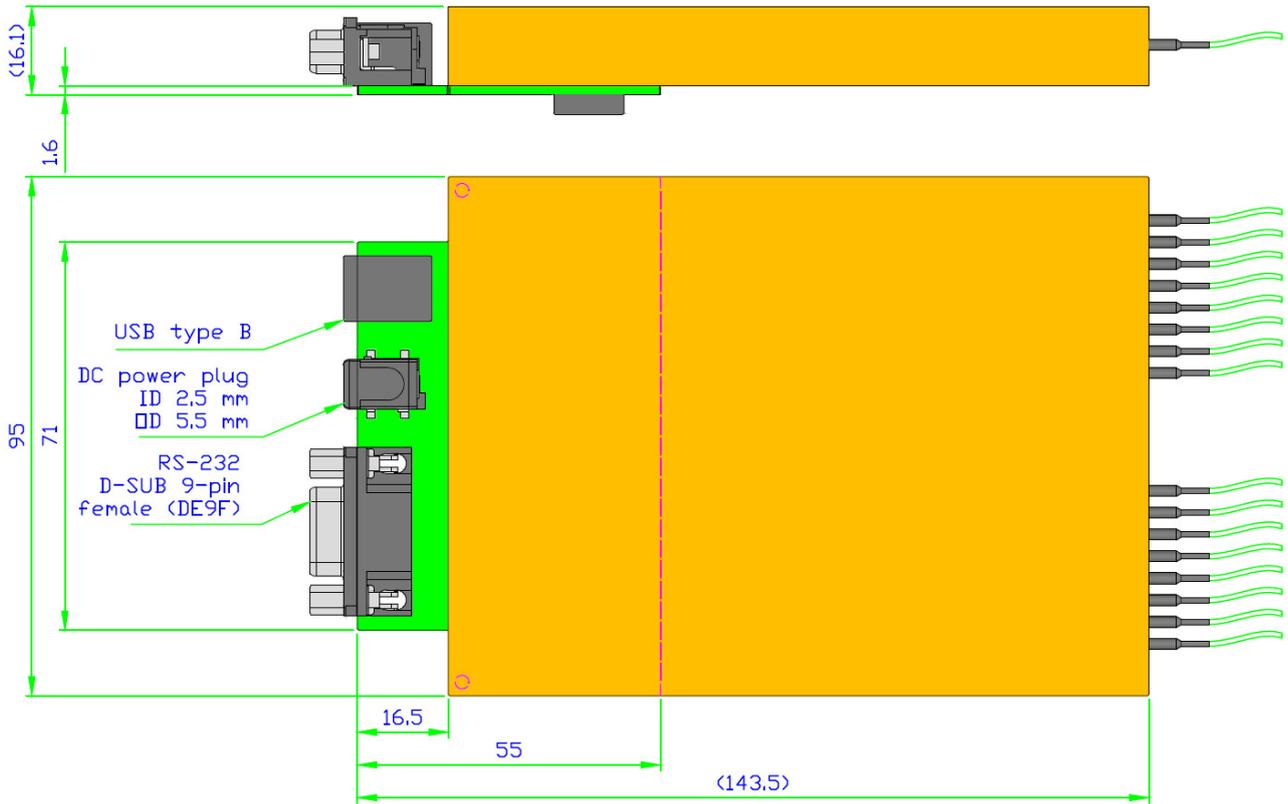*Figure 2 – SL4x8 (view from pin side)*

Figure 3 – SL4x4 (view from pin side)

Figure 4 – Adapter board (optional)