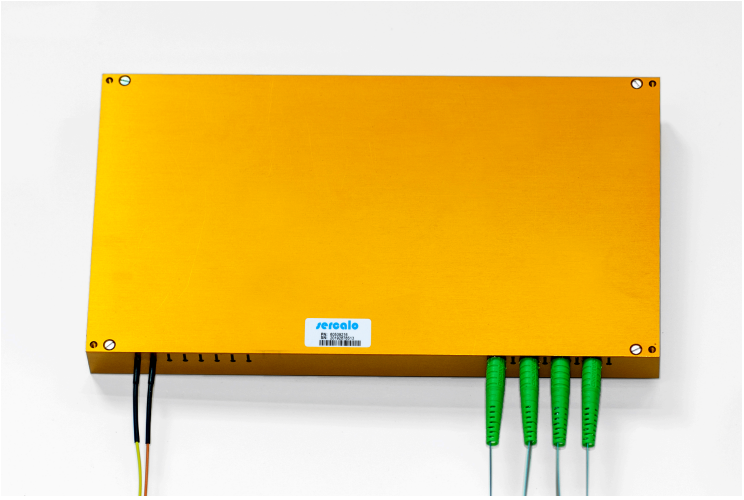

FIBER OPTIC scBU NxM SWITCH

non-blocking or tree architecture

OVERVIEW

sercalo's fiber optic scBU NxM switches are bidirectional opto-mechanical switches based on coaxial design where a matrix of MEMS mirrors redirects light from N inputs to M outputs. The optical networks can be based on a strictly non-blocking matrix (from 4x4 up to 16x16 ports) or on a tree structure (up to 2x540 ports). The underlying MEMS technology results in low insertion loss and low crosstalk between channels while keeping a constant switching performance over life.

The miniature package withstands rugged environments and is well suited for direct mounting on printed circuit boards.

The underlying MEMS technology results in low insertion loss and low crosstalk between channels while keeping a constant switching performance over life. The hermetically sealed MEMS and the laser welded collimators guarantee broad temperature range and superior long term stability. The part is designed to conform to Telcordia 1221 reliability standards. No epoxy is present in the optical path.

FEATURES

- Fast switching time
- Low insertion loss
- Up to 16x16 or 2x540 optical ports
- UART, I²C/SMBus and USB interfaces
- Custom networks available on request
- RoHS compliant

APPLICATIONS

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

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ORDERING INFORMATION

scBU	16x16	-	9	N	-	05	FP

Switch type:
scBU
1250–1670 nm

Network:
4x4, 8x8, 16x16 (matrix) or from 1x2 up to 2x540 (tree)

Fiber type
9 = SMF28ULTRA
9PM = PANDA
Other fiber types and wavelengths upon request

Fiber sleeve type:
B = 250 um bare fibers
R = 8-fibers or 12-fibers ribbon with 250 mm acrylate coating
N = 900 mm sleeve

Pigtail length
Expressed in decimeters
e.g.:
05 = 50 cm
100 = 100 cm

Connectors type:
none = no connectors
FP = FC-PC
FA = FC-APC narrow key
LP = LC-PC
SA = SC-APC
SP = SC-PC

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DESCRIPTION

sercalo's scBU fiber optic switches are based on a strictly non-blocking bidirectional architecture. An additional status where the channels are disconnected is available. The switch is non latching: at power-off it breaks the optical connection and routing of ports is not defined. The component is bidirectional, i.e. the common port can be used as input or output of the light signal.

TECHNICAL SPECIFICATIONS for Single mode fiber

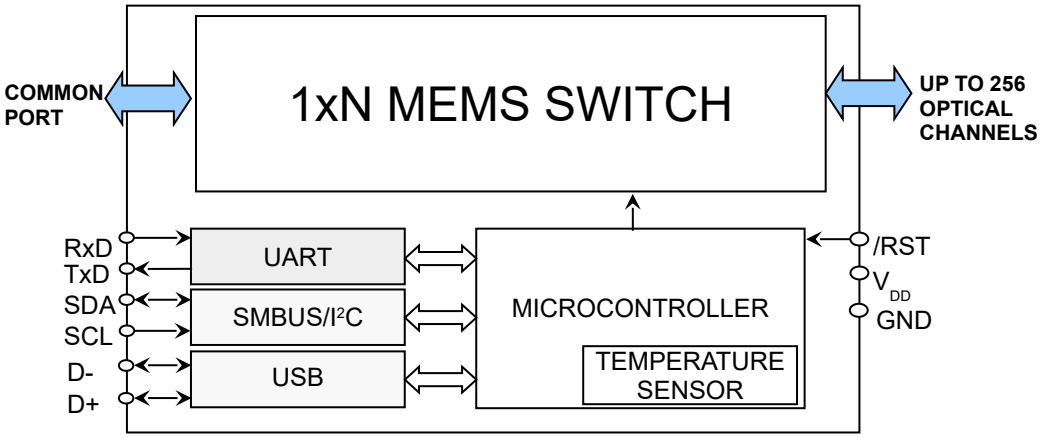
		Unit	*Min*	*Typ*	*Max*
Optical Specifications					
Wavelength range[1]		nm	1250		1670
Insertion loss (matrix)[2]	4x4	dB		0.8	2.0
	up to 16x16	dB		1.6	3.0
Insertion loss (tree)[2]	1x4	dB		0.4	1.0
	1x16	dB		0.8	1.5
	1x36	dB		1.0	2.0
Crosstalk		dB	50	60	
Polarisation dependent loss		dB		0.10	0.18
Return loss		dB	50	55	
Wavelength dep. loss (one band)		dB			0.2
Wavelength dep. loss (1250-1650 nm)		dB		0.5	1.0
Temperature dependent loss		dB			0.2
Maximum optical power level[3]		mW			500
Switching time		ms		5	10
Cycle Rate		Hz		1	20
Repeatability[4]		dB			0.01
Durability		cycles	No wear out		
Electrical Specifications					
Supply voltage		V	4.75	5	5.25
Power consumption, normal mode		mW			150
Power consumption, standby		mW		40	
UART speed		baud	9600		115200
SMBus/I²C bus speed		kbps			400
Logic level low		V		0	0.6
Logic level high		V	2.4	5	
Reset inactive voltage[5]		V	2.4	5	
Reset active voltage		V		0	0.9
Reset pulse duration		ms	15		
Package					
Operation temperature		°C	-10		70
Storage temperature		°C	-40		85
Operation humidity (non condensing)		% r.h.	0		95
Pigtail length		cm	50		
Dimensions 4x4 up to 8x8		mm	100 x 180 x 16		
Dimensions 16x16		mm	185 x 180 x 16		
RoHS Compliance			2015/863/EU (no exceptions)		

[1] Insertion loss is optimized for one band. If the switch is operated over all four bands add 0.5 dB to IL. Band is selectable over software between 1310, 1550 nm and 1625 nm. [2] Values at 1550nm or 1310nm at 25 °C, without connectors. [3] It is recommended to turn off the laser during switch transients when switching optical power above 100 mW. [4] For constant temperature and polarization. [5] Through onboard pull-up resistor.

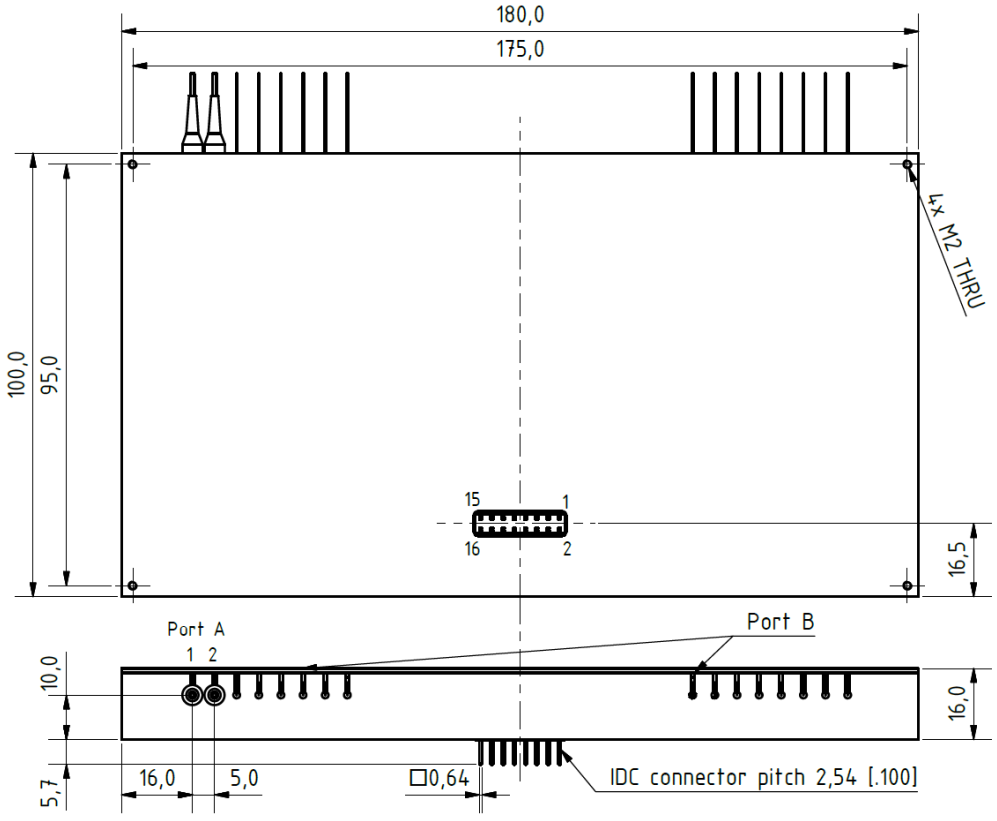
CONNECTOR PINOUT

Pin number	Description	Pin number	Description
1	Ground (GND)	9	Supply voltage (V_{DD})
2	SMBus/I²C SCL	10	Ground (GND)
3	SMBus/I²C SDA	11	Reserved
4	System reset (/RST)	12	USB D-
5	UART RX data	13	Reserved
6	Reserved	14	USB D+
7	UART TX data	15	Reserved
8	Reserved	16	Reserved

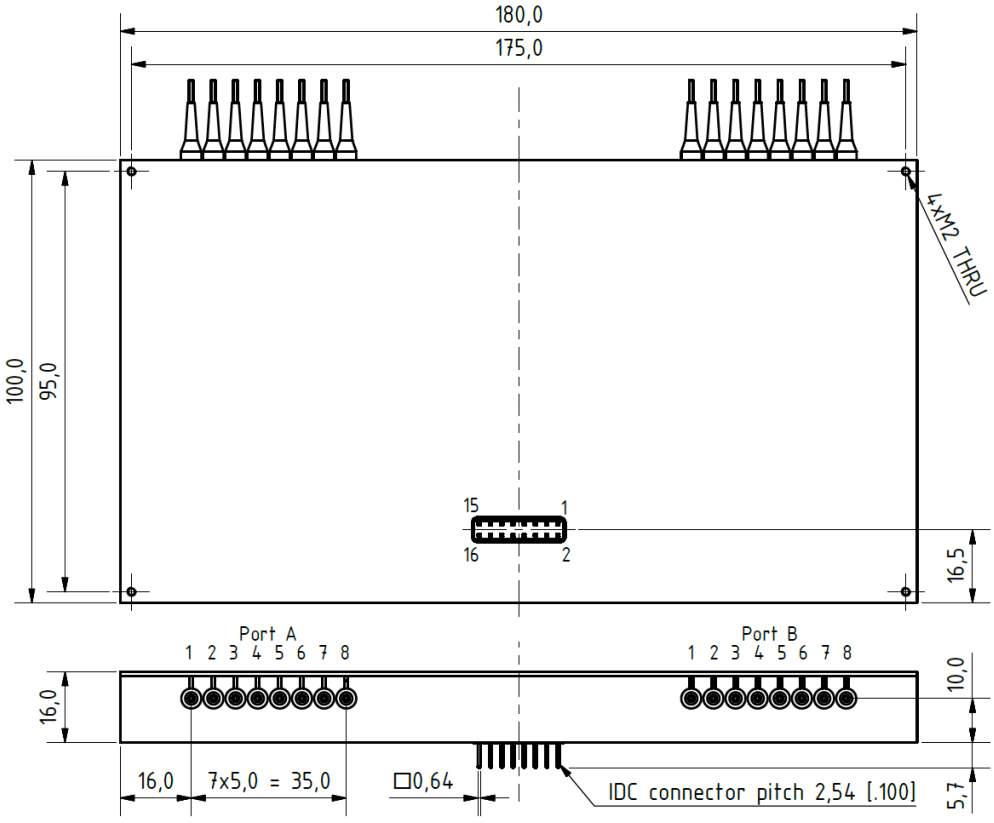
FUNCTIONAL BLOC DIAGRAM



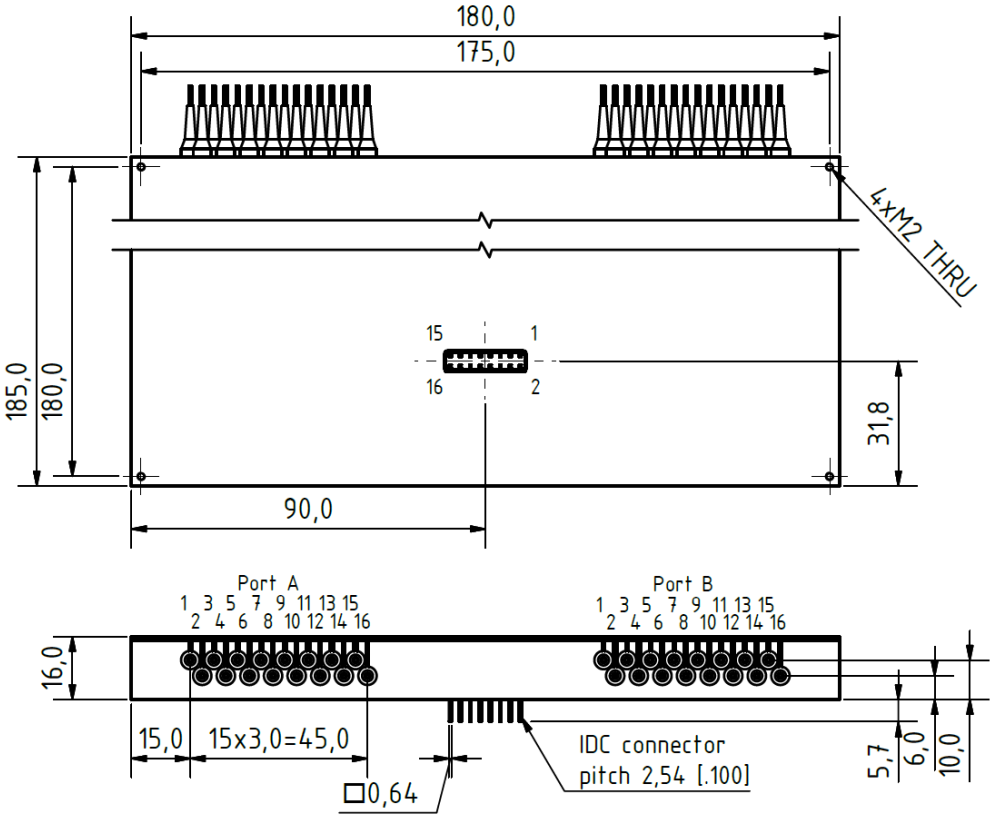
DIMENSIONS scBU 1xN / 2xN (IN MILLIMETERS)



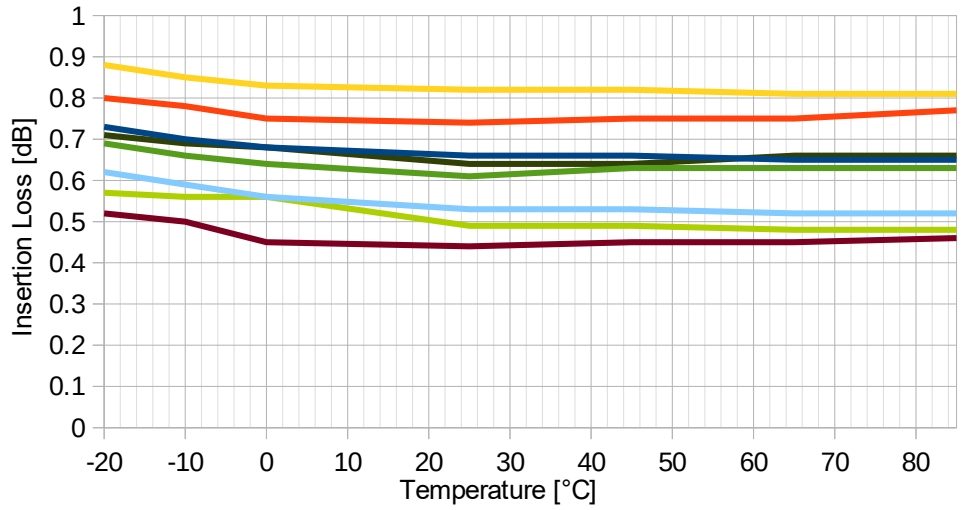
DIMENSIONS scBU 4x4 / 8x8 (IN MILLIMETERS)



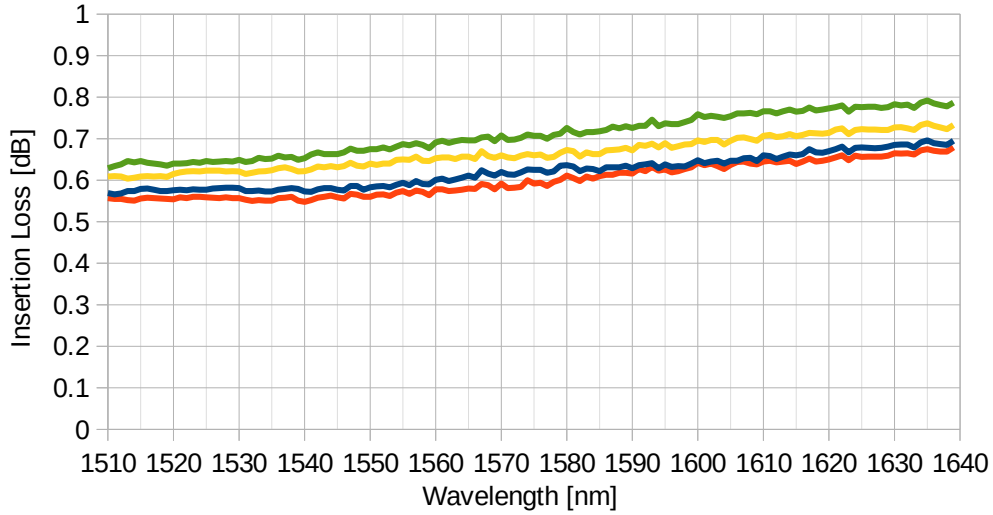
DIMENSIONS scBU 16x16 (IN MILLIMETERS)



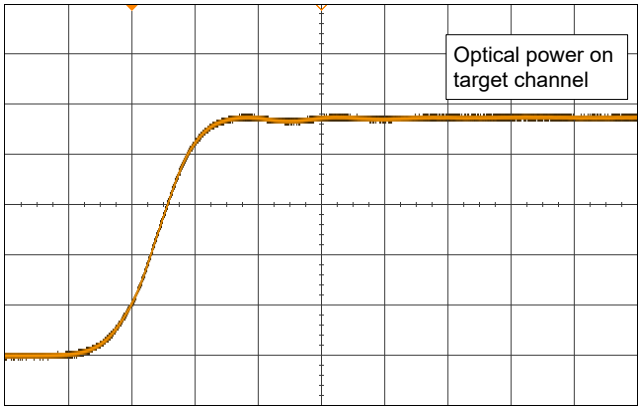
INSERTION LOSS vs. TEMPERATURE (scBU 1x8)



WAVELENGTH DEPENDENT LOSS (scBU 1x4)

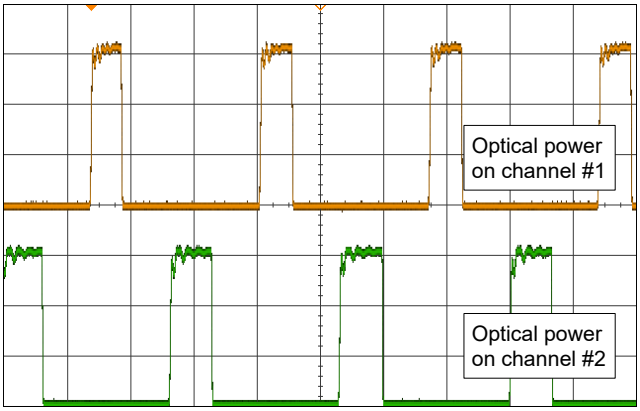


OPTICAL RESPONSE TIME



500 us/div

CONTINUOUS SWITCH OPERATION



10 ms/div

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