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sales@simbol.ca 1-866-396-6248

Simbol Test Systems is the one-stop shop for all your fiber optic test equipment and measurement needs. As we are exclusively focused on e-commerce and international distribution of photonic products since 2000, our customers rely on the **AssetRelay** catalog to find our stock listings of thousands of used and refurbished popular test equipment. They know they can get repair, customization and calibration services from our laboratory for their own fiber optic instruments from all renowned brand manufacturers.

If you wish to buy optical equipment or get it repaired, don't hesitate to contact either our used sales division www.assetrelay.com or our distribution and repair service group at www.simbol.ca.

If you need repairs, trust the Simbol Test Systems expertise

With more than 25 years of expertise in repairing OSA, Tunable Lasers, Wavemeters, Laser drivers and controllers, Power meters, Optical Switches and many more, the quality of our services is renowned amongst the service centers community and highly appreciated by our partners and customers. We developed custom software allowing us to perform automatic calibration tests and write up to date results in Ando (Yokogawa) the Optical Spectrum Analyzer calibration tables. We developed many calibration procedures with custom software allowing fast testing of attenuators, switches, wavemeters and TLS. In fact, Simbol is the most experienced repair center for HP, Agilent and Keysight large Tunable Laser modules. Don't settle for a two-page summary assessment to trust that the optical equipment you send out for repair or calibration is operating properly; our report contains the complete table of all results, confirming it has **really** been tested. A report from other labs with little data reflects a not completely calibrated unit. So be careful of other sellers saying their equipment is "tested good", "powered on, self-tested", "pulled from a working environment".

If you need to buy a machine, trust AssetRelay

All equipment sold by AssetRelay is serviced by Simbol Test Systems and will go through a series of tests to ensure it meets or exceeds the manufacturer's published specifications. But if stated otherwise, all equipment is shipped with a comprehensive calibration/test report showing all tests performed and passed. A dated calibration sticker is affixed on the machine. When you choose AssetRelay, you can be confident that we actually test everything we sell so you know it will work when it gets to your workplace. If you are an international buyer (we are based in Canada), we manage most documents needed so your equipment gets through the border of your country swiftly. We have been doing this for over 25 years and know that proper customs documents are needed.

Traceability: Instrumentation used during this calibration is traceable to N.I.S.T (National Institute of Standards and Technology) or C.N.R.C. (Canadian National Research Council.

Benchtop/Rackmount Programmable Switches

SB/SC/SCG Series

The JDS Uniphase SB, SC, and SCG series of Benchtop/Rackmount Programmable Switches can be controlled using the front panel keys and a numeric pad or via GPIB and serial RS232 interface. The SCG series ganged input switches allow a single switch instrument to replace multiple switch elements while maintaining low loss. In this series of switches, the inputs are ganged together in a particular sequence and are thus able to offer three different modes of operation (D, E, and F configurations).

The SB and SC series switches are available in four basic configurations, namely C, D, E, and F. The C configuration is a single common input model. The D configuration provides simultaneous connection of a bank of input fibers to output fibers. The E configuration allows any input to be connected to any output while other inputs/outputs are aligned to subsequent/adjacent channels. The switch is non-blocking in this mode and other inputs/outputs are aligned. The F configuration enables one of the inputs to be aligned with an output in a blocking sense, with a result in reduction of available output channels. A low-loss MxN blocking switch is the result.

Operation of these switches is based upon JDS Uniphase's proven expanded beam lens technology, which utilizes a precision stepper-motor to align optical channels. The use of collimating lenses minimizes insertion loss and improves repeatability and performance. Internal temperature control of the switching mechanism ensures excellent operational stability.

Both single-mode and multimode versions of the SB, SC, and SCG series switches are available. The series features the high level of performance required for multi-unit testing in research and development and in manufacturing environments. The compact, portable SB switch and the standard rack-mount enclosure SC and SCG switches are highly suited for applications in telecommunications, manufacturing, and test environments.

JDS Uniphase's SB and SC switches are known in the fiberoptic industry for their low insertion loss and excellent repeatability. In addition to the many standard options available, we also customize switches in this series to meet your specific application need.

Key Features & Benefits

SB and SC Switches

SB switches can accommodate up to 48 channels

SC switches can accommodate up to 180 channels

SB and SC series switches offer up to four input channels

Low insertion loss, 0.4 dB typical

Excellent repeatability, 0.003 dB typical

High return loss, > 65 dB typical

GPIB and RS232 remote control

Complies to CE requirements plus UL3101-1 and CAN/CSA-C22.2 No. 1010.1

SCG Switches

Offer up to 45 input channels and 90 output channels

Mass input reconfiguration possible

Low insertion loss, 0.5 dB typical for D configuration

High return loss, > 65 dB typical

Excellent repeatability, 0.005 dB typical

Replaces multiple switch elements with one switch instrument

Complies to CE requirements plus UL3101-1 and CAN/CSA-C22.2 No. 1010.1

Applications

Fiberoptic component testing and measurement

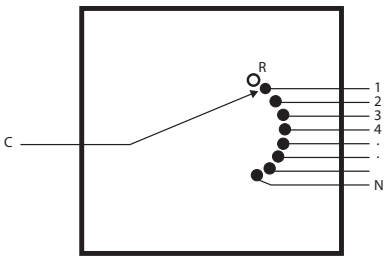
System testing

Research and development

Mass reconfiguration of large numbers of inputs/outputs with SCG series (D configuration)

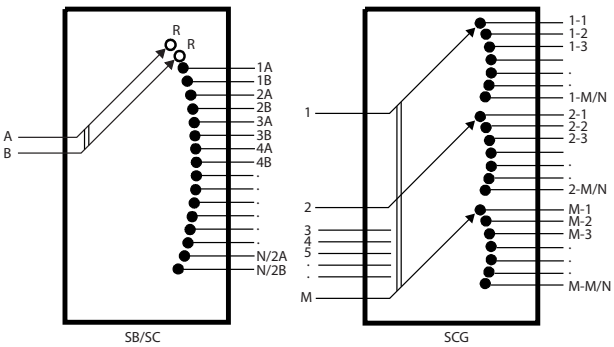
Connection of multiple wavelength sources to any one of a number of devices with SCG series (F configuration)

Configurations



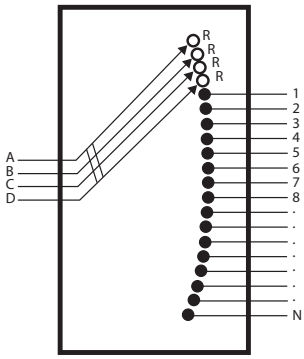
C Configuration
(SB and SC)

The 1xN configuration allows a single common input to be switched to any of the outputs.



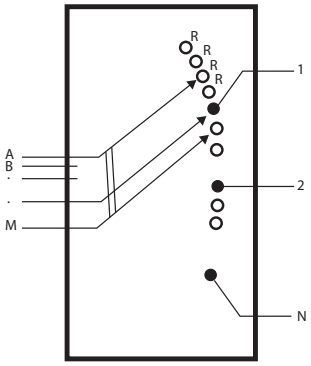
D Configuration
(SB/SC/SCG)

The MxN configuration allows for mass reconfiguration of optical paths. It provides simultaneous connections of a bank of inputs to outputs.



E Configuration
(SB/SC/SCG)

The MxN configuration aligns any input with any output, while other inputs are aligned to adjacent outputs.



F Configuration
(SB/SC/SCG)

The MxN configuration allows any one of a bank of inputs to connect with any output with no other connections occurring.

Specifications

PARAMETER[1] (SB SWITCHES)	SINGLE COMMON		MULTIPLE COMMON			
	C Configuration		D Configuration		E and F Configurations	
	Typical	**Maximum**	**Typical**	**Maximum**	**Typical**	**Maximum**
Insertion loss						
SM (3 and 4 input models)	0.4 dB	0.7 dB	0.4 dB (0.5 dB)	0.7 dB (1.0 dB)	0.5 dB (0.7 dB)	1.0 dB (1.5 dB)
MM (3 and 4 input models)	0.4 dB	0.7 dB	0.4 dB (0.5 dB)	0.7 dB (1.0 dB)	0.5 dB (0.7 dB)	1.0 dB (1.5 dB)
Return loss[2] SM standard/analog	≥ 65 dB	60/65 dB	≥ 65 dB	60/65 dB[3]	≥ 65 dB	60 dB
MM[4] standard/analog	25/35 dB	20/30 dB	25/35 dB[3]	20/30 dB[3]	> 25 dB	20 dB
Polarization dependent loss SM	0.02 dB	0.05 dB	0.02 dB	0.05 dB	0.03 dB	0.07 dB
Insertion loss stability[5]	± 0.03 dB	± 0.05 dB	± 0.03 dB	± 0.05 dB	± 0.03 dB	± 0.05 dB
Repeatability sequential switching	± 0.003 dB	± 0.005 dB	± 0.005 dB	± 0.01 dB	± 0.005 dB	± 0.01 dB
random switching	± 0.01 dB	± 0.025 dB	± 0.02 dB	± 0.04 dB	± 0.02 dB	± 0.04 dB
Crosstalk (maximum) SM	- 80 dB					
Maximum input power (optical)	300 mW					
Lifetime	> 80 million cycles					
Switching time one channel	300 ms					
each additional channel	12 ms					
Power supply	100-240 V, 50-60 Hz					
Power consumption	100 VA maximum					
Control	local and remote via GPIB and serial RS232 interfaces					
Drivers for external switch modules	four open collector drivers with maximum 100 mA sink current					
Dimensions W x H x D	21.2 x 8.9 x 35.5 cm					
with rack-mount kit (optional)[6]	48.3 x 8.9 x 35.5 cm					
Weight	3.75 kg					
Operation temperature	0 to 55 °C					
Storage temperature	- 40 to 70 °C					
Humidity	maximum 95 % RH from 0 to 55 °C non-condensing					

1. Excluding connectors. All optical measurements taken after temperature has been stabilized for one hour, at ambient (room) conditions.
2. Return loss specification based on 1 m pigtail length.
3. Analog version available on one and two input SB model switches (C and D configurations).
4. Values shown for 62.5 µm diameter maximum fiber core.
5. Drift of any channel relative to reference channel at ± 3 °C deviation of ambient temperature over a seven-day period.
6. ED000899-A-00 standard rack-mount kit, ED000899-A-01 Japan rack-mount kit. Requires two kits to mount two units side-by-side.

Specifications

PARAMETER[1] (SC AND SCG SWITCHES)	SINGLE COMMON		MULTIPLE COMMON			
	C Configuration (SC model only)		D Configuration		E and F Configurations	
	Typical	**Maximum**	**Typical**	**Maximum**	**Typical**	**Maximum**
Insertion loss						
SM (SC with 3 and 4 inputs and SCG models)	0.4 dB	0.7 dB	0.4 dB (0.5 dB)	0.7 dB (1.0 dB)	0.5 dB (0.7 dB)	1.0 dB (1.5 dB)
MM (SC with 3 and 4 inputs and SCG models)	0.4 dB	0.7 dB	0.4 dB (0.5 dB)	0.7 dB (1.0 dB)	0.5 dB (0.7 dB)	1.0 dB (1.5 dB)
Return loss[2] SM standard/analog	≥ 65 dB	60/65 dB	≥ 65 dB	60/65 dB[3]	≥ 65 dB	60 dB
MM[4] standard/analog	25/35 dB	20/30 dB	25/35 dB[3]	20/30 dB[3]	> 25 dB	20 dB
Polarization dependent loss SM	0.02 dB	0.05 dB	0.02 dB	0.05 dB	0.03 dB	0.07 dB
Insertion loss stability[5]	± 0.03 dB	± 0.05 dB	± 0.03 dB	± 0.05 dB	± 0.03 dB	± 0.05 dB
Repeatability sequential switching	± 0.003 dB	± 0.005 dB	± 0.005 dB	± 0.01 dB	± 0.005 dB	± 0.01 dB
random switching	± 0.01 dB	± 0.025 dB	± 0.02 dB	± 0.04 dB	± 0.02 dB	± 0.04 dB
Crosstalk (maximum) SM	- 80 dB					
Maximum input power (optical)	300 mW					
Lifetime	> 80 million cycles (> 10 million cycles on SCG)					
Switching time						
one channel (SCG model)	300 ms (420 ms)					
each additional channel (SCG model)	12 ms (20 ms)					
Power supply	100-240 V, 50-60 Hz					
Power consumption	100 VA maximum					
Control	local and remote via GPIB and serial RS232 interfaces					
Drivers for external switch modules	four open collector drivers with maximum 100 mA sink current					
Dimensions W x H x D						
single (double height[6])	48 x 13 x 37 cm (48 x 26.6 x 37 cm) excluding handles					
Weight single (double height[6])	9 kg (14 kg)					
Operation temperature	0 to 55 °C					
Storage temperature	- 40 to 70 °C					
Humidity	maximum 95 % RH from 0 to 55 °C non-condensing					

1. Excluding connectors. All optical measurements taken after temperature has been stabilized for one hour, at ambient (room) conditions.
2. Return loss specification based on 1 m pigtail length.
3. Analog version available on one and two input SC model switches (C and D configurations).
4. Values shown for 62.5 µm diameter maximum fiber core.
5. Drift of any channel relative to reference channel at ± 3 °C deviation of ambient temperature over a seven-day period.
6. Applies to SC model only.

Configurations

The following table lists the current configurations that are supported for the SC switch. The configurations available for the SB switch are shaded brown. For information regarding other configurations, contact your JDS Uniphase representative.

SB/SC Switch Configuration

C	D			E			F			
1xN	2xN	3xN	4xN	2xN	3xN	4xN	2xN	3xN	4xN	
4	4	6	8	4	4	4	4	4	4	
6	6	12	16	6	6	6	6	6	6	
8	8	18	24	8	8	8	8	8	8	
12	12	24	32	12	12	12	12	12	10	2U BENCHTOP
16	16	36	40	16	16	16	16	14	12	
20	20	42	64	20	20	20	20	20	16	
26	26	60	80	26	26	26	26	26	20	3U CHASSIS
32	32	72	104	32	32	32	32	32	26	6U CHASSIS
38	38	84	128	38	38	38	38	38	32	
44	44	108	152	44	44	44	44	44	36	
48	52	126	180	52	52	52	52	52	40	
52	60	144		60	60	60	60			
60	68	168		68	68	68	68			
68	76	180		76	76	76	74			
76	84			84	84	84	80			
84	90			90	90	90				
90	100			100	100	100				
100	110			110	110	110				
110	120			120	120	120				
120	140									
130	160									
142	180									
154										
166										
180										

SB switch configurations

The following table lists configurations on the SCG switch. For information regarding other configurations, contact your JDS Uniphase representative.

SCG Switch Configuration

D Configuration							E Configuration	F Configuration			
6 x N	10 x N	16 x N	20 x N	26 x N	34 x N	45 x N	Up to 45x45, or 6x84	6 x N	8 x N	11 x N	13 x N
6	10	16	20	26	34	45	Contact JDSU for	6	6	6	6
12	20	32	40	52	68	90	testing requirements	8	8	7	
24	30	48	60	78				10	10		
36	50	64	80					12			
48	70	80						14			
60	90										
72											
90											

Configuration Restrictions

D: Up to 45x90 such that 'number of outputs' [N] is divisible by 'number of inputs' [M]

E: Up to 45 inputs [M] and up to 84 outputs [N], such that M + N is not more than 90

F: Up to 13 inputs [M] and up to 14 outputs [N], such that M x (N+1) is not more than 93

Ordering Information

Sample Order: SB2E10141+27XF000SP

SB ☐☐☐☐☐☐☐ +2 ☐☐☐☐☐☐☐☐☐☐

code	input port type[1]
1	Bulkheads on front
3	Pigtails on front
4	Pigtails on back

code	output port type[1]
1	Bulkheads on front
3	Pigtails on front
4	Pigtails on back

code	return loss
X	Standard
A	Analog
B	Bidirectional, standard RL[2]
C	Bidirectional analog RL[2]

code	connector type
FP	FC/PC (bulkhead maximum 20)
FA	FC/APC (bulkhead maximum 20)
SC	SC/PC (bulkhead maximum 24)
SU	SC/APC (bulkhead maximum 24)
SP	ST/PC (bulkhead maximum 20)
NC	No connector

code	number of input channels
1C	1 input channel, C config.
2D	2 input channels, D config.
2E	2 input channels, E config.
2F	2 input channels, F config.
3D	3 input channels, D config.
3E	3 input channels, E config.
3F	3 input channels, F config.
4D	4 input channels, D config.
4E	4 input channels, E config.
4F	4 input channels, F config.

code	number of output channels
001	1 output channel
.	.
020	20 output channels
.	.
024	24 output channels
.	.
048	48 output channels

code	fiber type (µm)
7	9/125
1	50/125
2	62.5/125
4	100/140

code	cable length (3mm diameter)
001	1 m
003	3 m
005	5 m
009	9 m
000	Not applicable (bulkheads only)

code	wavelength range (nm)
F	1270-1670
Q	850-1350 (MM only)
B	750-940 (MM only)

1. Bulkheads and pigtails can not be mixed in the same panel unless custom ordered.
2. For reverse direction, use bidirectional.

If the configurations available do not meet your performance requirements, please contact our global sales and customer service team to discuss the potential for specialized solutions.

Ordering Information

Sample Order: SC2D30043+22XB009FP

SC ☐ ☐ ☐ ☐ ☐ ☐ ☐ +2 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

code	input port type[1]
1	Bulkheads on front
2	Bulkheads on back
3	Pigtails on front
4	Pigtails on back

code	output port type[1]
1	Bulkheads on front
2	Bulkheads on back
3	Pigtails on front
4	Pigtails on back

code	return loss
X	Standard
A	Analog
B	Bidirectional, standard RL[3]
C	Bidirectional, analog RL[3]

code	cable length (3 mm diameter)
001	1 m
003	3 m
005	5 m
009	9 m
000	Not applicable (bulkheads only)

code	number of input channels
1C	1 input channel, C config.
2D	2 input channels, D config.
2E	2 input channels, E config.
2F	2 input channels, F config.
3D	3 input channels, D config.
3E	3 input channels, E config.
3F	3 input channels, F config.
4D	4 input channels, D config.
4E	4 input channels, E config.
4F	4 input channels, F config.

code	number of output channels[2]
001	1 output channel
.	.
084	84 output channels
.	.
180	180 output channels

code	wavelength range (nm)
F	1270-1670
Q	850-1350 (MM only)
B	750-940 (MM only)

code	fiber type (µm)
7	9/125
1	50/125
2	62.5/125
4	100/140

code	connector type (3u/6u)
FP	FC/PC (bulkheads maximum 60/120)
FA	FC/APC (bulkheads maximum 60/120)
SC	SC/PC (bulkheads maximum 60/120)
SU	SC/APC (bulkheads maximum 60/120)
SP	ST/PC (bulkheads maximum 60/120)
NC	No connector

1. Bulkheads and pigtails can not be mixed in the same panel unless custom ordered.
2. Single height: 84 output channel maximum. Double height: 180 output channel maximum.
3. For reverse direction, use bidirectional.

If the configurations available do not meet your performance requirements, please contact our global sales and customer service team to discuss the potential for specialized solutions.

Ordering Information

Sample Order: SCG06D20241+27XF000FP

SCG ☐☐☐☐☐☐☐☐ **+2** ☐☐☐☐☐☐☐☐

code	number of input channels
05	5 input channels
.	.
08	8 input channels
.	.
16	16 input channels
.	.
45	45 input channels

code	configuration
D	D configuration
E	E configuration
F	F configuration

code	input port type[1]
1	Bulkheads on front[2]
2	Bulkheads on back[2]
3	Pigtails on front
4	Pigtails on back

code	output port type[1]
1	Bulkheads on front[2]
2	Bulkheads on back[2]
3	Pigtails on front
4	Pigtails on back

code	number of output channels
005	5 output channels
.	.
048	48 output channels
.	.
072	72 output channels
.	.
090	90 output channels

code	fiber type (µm)
7	9/125
1	50/125
2	62.5/125
4	100/140

code	return loss
X	Standard
B	Bidirectional, standard RL[3]

code	wavelength range (nm)
F	1270-1670
Q	850-1350 (MM only)
B	750-940 (MM only)

code	cable length (3mm diameter)
001	1 m
003	3 m
005	5 m
009	9 m
000	Not applicable (bulkheads only)

code	connector type (bulkhead maximum)
FP	FC/HPC (maximum 60)
FA	FC/APC (maximum 60)
SC	SC/HPC (maximum 60)
SU	SC/APC (maximum 60)
SP	ST/HPC (maximum 60)
NC	No connector

1. The inputs and outputs must exit on opposite sides. (For example, if inputs exit from the front, then the outputs must exit from the rear.)
2. For exact layout of bulkheads and labeling, contact JDS Uniphase.
3. For reverse direction, use bidirectional

Indicate your requirements by selecting one option from each configuration table. Print the corresponding codes in the available boxes to form your part number.

If the configurations available do not meet your performance requirements, please contact our global sales and customer service team to discuss the potential for specialized solutions.

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