Model SC2000, SCX2000, SCM, Series Modules

- Configurable Switch Control Platform
- DC – 40 GHz
- 25 – 1200 W

Features:

- Customizable to meet your needs
- Global support and service

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AR RF/Microwave Instrumentation
160 Schoolhouse Rd
Souderton, PA 18964
215.723.8181
info@arworld.us
www.arworld.us
ISO 9001:2015 Certified
ISO 17025:2017 Accredited

The SC switch control platform is designed for a multitude of switching applications in RF systems. Each of the main chassis is equipped with five (5), rear-facing, user-configurable slots. Individual slots or groups of slots can be populated with a variety of SCM series RF switch modules. *NOTE: Pre-configured platforms for many EMC radiated systems can be found in the separate SCP2000 specification.*

The Model SC2000 can be fiber-optically combined with up to seven (7) model SCX2000 expansion units. The model SCX2000 is mechanically identical to the model SC2000, but does not contain a control panel. Instead, control is provided by the connected model SC2000.

All of these switch controller systems can be controlled either manually, using the provided color LCD touch display, or remotely, using any of the four provided remote ports (USB, GPIB, RS-232, and Ethernet).

System interlock capability is provided by sensing switch closures on three independent inputs. Three separate user definable configurations are provided for times when interlock switch closures are not sensed.

A user defined "safe" configuration is also provided for use during signal re-routing in order to assure cold switching of any attached amplifiers and loads. In addition to the three interlock configurations and single "safe" configuration, eight (8) user configurations can be saved and recalled for ease of use in complex systems.

A positive 24 VDC signal along with four (4) open drain outputs, and four (4) digital outputs (TTL) are supplied for applications such as external switch/relay control.

The export classification for this equipment is EAR99.

SC2000
RF switch control platform base unit. Can be controlled manually via front panel touch display or via four (4) provided remote ports. The SC2000 has five (5) user configurable module slots on the rear panel.

SCX2000
RF switch control platform sub-unit. Does not have a control panel or remote control ports; must be connected to a Model SC2000 for local or remote control. The SCX2000 has five (5) user-configurable module slots on the rear panel.

Specifications

Parameter	Value	Unit
Rated Voltage	100 – 240	VAC
Rated Frequency	50 – 60	Hz
Rated Power	100 max	VA
Dimensions (W x D x H)	48.26 x 13.34 x 44.77	cm
	19.0 x 5.25 x 17.625	in
Weight SC2000 (without modules)	~4.1	kg
	9	lb
Weight SCX2000 (without modules)	~3.9	kg
	8.5	lb

Interfaces

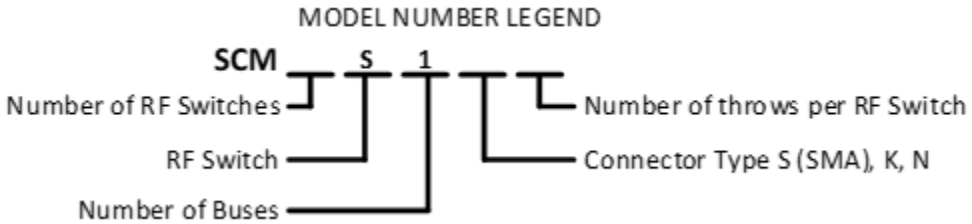
Front Panel		SC2000	SCX2000	
Display/Control Panel	for manual operation	1	-	480 x 272 pixel, resistive touch, LED backlight
Rear Panel				
USB	for remote control	1	-	Test and Measurement Class; Full Speed (12 Mbps); Type-B Connector
GPIB (IEEE-488)	for remote control	1	-	24-pin, Female Connector
RS-232	for remote control	1	-	9-pin, Subminiature D, Female Connector
Ethernet	for remote control	1	-	TCP/IP, 10 Mbps, RJ-45 Connector
Fiber-Optic Serial	connection of base unit with extension units	1	1	Separate Tx & Rx, SMA Connectors, 500 kbps
Interlock Connector		1	1	15-pin, Subminiature D, Female Connector
	safety interlocks	3	-	Active low, Internal 1k pull-up to +5 VDC
	open drain outputs	4	4	800 mA current sinking each*
	digital outputs	4	4	TTL
	voltage supply (use with open drain outputs)	1	1	+24 VDC, 1.5 A max. (internally fused)
	ground return (use with open drain outputs)	2	2	
Export Classification				EAR99

*Open drains 3 and 4 have internal 10K Ohm pull-ups to 3.3V.

Module Slots			Unit
Number of module slots	5 on rear of unit		
Number of control buses for modules	5		
Dimensions (W x H x D)			
Single module slot	slot 3	3.68 x 8.84 x 30.23	cm
		1.45 x 3.48 x 11.90	in
Double-width module slot	slots 1, 2, 4, 5	7.42 x 8.84 x 30.23	cm
		2.92 x 3.48 x 11.90	in

Module Specifications

Model	Connectors	Frequency Range	Description	Buses	Slots
SCM1S1S2	SMA (f)	DC – 18 GHz	RF switch module 1x SPDT coaxial switch	1	single
SCM1S1K2	K (f)	DC – 40 GHz			
SCM1S1N2	N (f)	DC – 12 GHz			
SCM2S1S2	SMA (f)	DC – 18 GHz	RF switch module 2x SPDT coaxial switch	1	single
SCM2S1K2	K (f)	DC – 40 GHz			
SCM2S1N2	N (f)	DC – 12 GHz			double
SCM4S1S2	SMA (f)	DC – 18 GHz	RF switch module 4x SPDT coaxial switch	1	double
SCM4S1K2	K (f)	DC – 40 GHz			
SCM1S1S4	SMA (f)	DC – 18 GHz	RF switch module 1x SP4T coaxial switch	1	double
SCM1S1K4	K (f)	DC – 40 GHz			
SCM1S1N4	N (f)	DC – 12 GHz			
SCM2S1S4	SMA (f)	DC – 18 GHz	RF switch module 2x SP4T coaxial switch	1	double
SCM2S1K4	K (f)	DC – 40 GHz			
SCM1S1S6	SMA (f)	DC – 18 GHz	RF switch module 1x SP6T coaxial switch	1	double
SCM1S1K6	K (f)	DC – 40 GHz			
SCM1S1N6	N (f)	DC – 12 GHz			
SCM2S1S6	SMA (f)	DC – 18 GHz	RF switch module 2x SP6T coaxial switch	1	double
SCM2S1K6	K (f)	DC – 40 GHz			



RF Switch Module Specifications

Parameter	SCM1S1S2	SCM1S1K2	SCM1S1N2	Unit
Switch Type	1x SPDT coaxial switch			
Connector Type	SMA (f)	K (f)	N (f)	
Impedance	50	50	50	Ohm
Frequency Range	DC – 18	DC – 40	DC – 12	GHz
Switching time (nominal)	< 35	< 15	< 50	ms
Number of switching cycles	1 million	1 million	1 million	
Current consumption	max. 150 (+24 VDC)	max. 200 (+24 VDC)	max. 135 (+24 VDC)	mA
Dimensions (W x H x D)	3.68 x 11.63 x 30.23	3.68 x 11.63 x 30.23	3.68 x 11.63 x 30.23	cm
	1.45 x 4.58 x 11.90	1.45 x 4.58 x 11.90	1.45 x 4.58 x 11.90	in
Slot position	1, 2, 3, 4, or 5	1, 2, 3, 4, or 5	1, 2, 3, 4, or 5	
Weight	~ 0.23	~ 0.23	~ 0.41	kg
	0.5	0.5	0.9	lb

Parameter	SCM2S1S2	SCM2S1K2	SCM2S1N2	Unit
Switch Type	2x SPDT coaxial switch			
Connector Type	SMA (f)	K (f)	N (f)	
Impedance	50	50	50	Ohm
Frequency Range	DC – 18	DC – 40	DC – 12	GHz
Switching time (nominal)	< 35	< 15	< 50	ms
Number of switching cycles	1 million	1 million	1 million	
Current consumption	max. 150 (+24 VDC)	max. 400 (+24 VDC)	max. 270 (+24 VDC)	mA
Dimensions (W x H x D)	3.68 x 11.63 x 30.23	3.68 x 11.63 x 30.23	7.42 x 11.63 x 30.23	cm
	1.45 x 4.58 x 11.90	1.45 x 4.58 x 11.90	2.92 x 4.58 x 11.90	in
Slot position	1, 2, 3, 4, or 5	1, 2, 3, 4, or 5	1, 2, 4, or 5	
Weight	~ 0.27	~ 0.27	~ 0.41	kg
	0.6	0.6	0.9	lb

Parameter	SCM4S1S2	SCM4S1K2	Unit
Switch Type	4x SPDT coaxial switch		
Connector Type	SMA (f)	K (f)	
Impedance	50	50	Ohm
Frequency Range	DC – 18	DC – 40	GHz
Switching time (nominal)	< 35	< 15	ms
Number of switching cycles	1 million	1 million	
Current consumption	max. 150 (+24 VDC)	max. 800 (+24 VDC)	mA
Dimensions (W x H x D)	7.42 x 11.63 x 30.23	7.42 x 11.63 x 30.23	cm
	2.92 x 4.58 x 11.90	2.92 x 4.58 x 11.90	in
Slot position	1, 2, 4, or 5	1, 2, 4, or 5	
Weight	~ 0.41	~ 0.41	kg
	0.9	0.9	lb

Parameter	SCM1S1S4	SCM1S1K4	SCM1S1N4	Unit
Switch Type	1x SP4T coaxial switch			
Connector Type	SMA (f)	K (f)	N (f)	
Impedance	50	50	50	Ohm
Frequency Range	DC – 18	DC – 40	DC – 12	GHz
Switching time (nominal)	< 35	< 15	< 50	ms
Number of switching cycles	1 million	1 million	1 million	
Current consumption	max. 155 (+24 VDC)	max. 130 (+24 VDC)	max. 235 (+24 VDC)	mA
Dimensions (W x H x D)	7.42 x 11.63 x 30.23	7.42 x 11.63 x 30.23	7.42 x 11.63 x 30.23	cm
	2.92 x 4.58 x 11.90	2.92 x 4.58 x 11.90	2.92 x 4.58 x 11.90	in
Slot position	1, 2, 4, or 5	1, 2, 4, or 5	1, 2, 3, or 4	
Weight	~ 0.36	~ 0.36	~ 0.68	kg
	0.8	0.8	1.5	lb

Parameter	SCM2S1S4	SCM2S1K4	Unit
Switch Type	2x SP4T coaxial switch		
Connector Type	SMA (f)	K (f)	
Impedance	50	50	Ohm
Frequency Range	DC – 18	DC – 40	GHz
Switching time (nominal)	< 35	< 15	ms
Number of switching cycles	1 million	1 million	
Current consumption	max. 310 (+24 VDC)	max. 260 (+24 VDC)	mA
Dimensions (W x H x D)	7.42 x 11.63 x 30.23	7.42 x 11.63 x 30.23	cm
	2.92 x 4.58 x 11.90	2.92 x 4.58 x 11.90	in
Slot position	1, 2, 4, or 5	1, 2, 4, or 5	
Weight	~ 0.54	~ 0.54	kg
	1.2	1.2	lb

Parameter	SCM1S1S6	SCM1S1K6	SCM1S1N6	Unit
Switch Type	1x SP6T coaxial switch			
Connector Type	SMA (f)	K (f)	N (f)	
Impedance	50	50	50	Ohm
Frequency Range	DC – 18	DC – 40	DC – 12	GHz
Switching time (nominal)	< 35	< 15	< 50	ms
Number of switching cycles	1 million	1 million	1 million	
Current consumption	max. 155 (+24 VDC)	max. 130 (+24 VDC)	max. 235 (+24 VDC)	mA
Dimensions (W x H x D)	7.42 x 11.63 x 30.23	7.42 x 11.63 x 30.23	7.42 x 11.63 x 30.23	cm
	2.92 x 4.58 x 11.90	2.92 x 4.58 x 11.90	2.92 x 4.58 x 11.90	in
Slot position	1, 2, 4, or 5	1, 2, 4, or 5	1, 2, 3, or 4	
Weight	~ 0.36	~ 0.36	~ 0.73	kg
	0.8	0.8	1.6	lb

Parameter	SCM2S1S6	SCM2S1K6	Unit
Switch Type	2x SP6T coaxial switch		
Connector Type	SMA (f)	K (f)	
Impedance	50	50	Ohm
Frequency Range	DC – 18	DC – 40	GHz
Switching time (nominal)	< 35	< 15	ms
Number of switching cycles	1 million	1 million	
Current consumption	max. 310 (+24 VDC)	max. 260 (+24 VDC)	mA
Dimensions (W x H x D)	7.42 x 11.63 x 30.23	7.42 x 11.63 x 30.23	cm
	2.92 x 4.58 x 11.90	2.92 x 4.58 x 11.90	in
Slot position	1, 2, 4, or 5	1, 2, 4, or 5	
Weight	~ 0.54	~ 0.54	kg
	1.2	1.2	lb

RF Switch Nominal Power Handling and Maximum Insertion Loss

Frequency Range	Notes	K		SMA		N	
DC – 0.1 GHz	VSWR 1.1:1	400 W	0.20 dB	450 W	0.30 dB	1200 W	0.25 dB
DC – 0.5 GHz		200 W	0.20 dB	275 W	0.30 dB	600 W	0.25 dB
0.5 – 1 GHz		150 W	0.20 dB	200 W	0.30 dB	450 W	0.25 dB
1 GHz – 4 GHz		75 W	0.20 dB	100 W	0.30 dB	250 W	0.25 dB
4 GHz – 8 GHz		55 W	0.40 dB	75 W	0.35 dB	175 W	0.40 dB
8 GHz – 12 GHz		45 W	0.40 dB	55 W	0.40 dB	150 W	0.60 dB
12 GHz – 18 GHz		35 W	0.50 dB	50 W	0.50 dB	-	-
18 GHz – 40 GHz		25 W	1.00 dB	-	-	-	-

RF Switch Power Derating

VSWR	% of Power Handling
1.5:1	94
2.0:1	88
2.5:1	83
3.0:1	78
3.5:1	73
4.0:1	70