Xtra Long Life 100 million cycles

USB RF-SPDT Switch
USB-1SPDT-A18XL

50Ω   DC to 18GHz

The Big Deal

- Capable of 100 million cycles
- Wide frequency (DC to 18GHz)
- High power, 10W
- SPDT electromechanical, absorptive, RF switch (Isolation 85 dB typ.)
- USB HID device, includes control software with a GUI and an API DLL com object compatible with 32/64 Bit operating systems

Case Style: LM1580

Installation CD with Software included

Product Overview

Mini Circuits' USB-1SPDT-A18XL is a general purpose USB controlled RF switch box containing an electro-mechanical SPDT, absorptive, failsafe RF switch constructed in break-before-make configuration and powered by +24V$_{DC}$ with a switching time of 25 mSec typical. The RF switch can be set remotely using the supplied GUI program, or programmed by the user using the included API DLL com object. The RF switch operates over a wide frequency band from DC to 18GHz has low insertion loss (0.2 dB typical) and high isolation (85dB typical) making it perfectly suitable for a wide variety of RF applications.

The USB-1SPDT-A18XL is constructed in a plastic case (size of 4.26" X 6.08" X 2.25") with 3 SMA(F) connectors (IN, J1, J2), a 2.1mm DC socket, and a USB type B port. The model is supplied along with a CD containing a graphical user interface program featuring an API DLL com object. Also included is a 2.7ft. USB cable, and a power adapter suitable for both US and EU systems. Longer USB cables are available as additional options.

Key Features

Feature	Advantages
USB HID (Human Interface Device)	Plug-and-Play (no need to install a driver for the device).
RF SPDT Electromechanical switch	Wideband (DC to 18GHz) with low insertion loss (0.2 dB typ.), very high isolation (85dB typ.), and high power rating (10W cold switching).
24V$_{DC}$ Operating voltage	The USB-1SPDT-A18XL requires 24V/500mA to power the RF switches, supplied from the included power adapter.
32/64 Bit operating systems	Compatible with Windows® and Linux® operating systems using 32 and 64 bit architecture.
Software CD, USB cable and 24V$_{DC}$ Power adapter included	A CD containing a programing manual for Linux® and Windows® operating systems (32 and 64 bit systems) and a Windows® GUI program containing an API DLL com object is included with the USB-1SPDT-A18XL. A 2.7ft. USB cable and a power adapter with both US and EU connectors are also included.

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USB RF-SPDT Switch

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Features

- Capable of 100 million cycles
- DC to 18GHz SPDT absorptive failsafe RF switch in break-before-make configuration
- Electromechanical switching (Isolation 85 dB typ.)
- High power handling, 10W
- Greatly simplifies complex switching and timing setups
- Easy installation and operation
- Compatible with 32/64-bit Windows® or Linux® operating systems, as well as LabVIEW®, Delphi®, C++, C#, Visual Basic®, and .NET software [1]
- Friendly Windows® Graphical User Interface
- Mounting bracket (Optional)
- protected by US Patents 5,272,458; 6,414,577; 6,650,210; 7,633,361 and 7,843,289
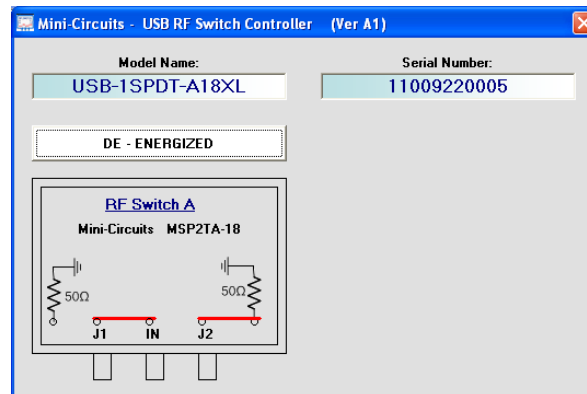
Applications

- Lab
- Test equipment
- Control systems

Installation CD with Software included

USB-1SPDT-A18XL

Order P/N	Description	Price	Qty.
USB-1SPDT-A18XL	**USB RF SPDT Switch**	**$385.00 ea.**	**(1-9)**
RFSW-CD	Software CD	Included	1
USB-CBL-AB-3+	2.7ft. USB cable	Included	1
AC/DC-24	AC/DC 24V_{DC} Adapter	Included	1
BKT-301-01+	**Bracket accessory [2]**	**$14.95 ea.**	**(+1)**

Mini-Circuits RF Switch Control Program for USB RF Switch

Note 1: Windows and Visual Basic are registered trademarks of Microsoft Corporation. Linux is a registered trademark of Linus Torvalds. LabVIEW is a registered trademark of National Instruments Corp. Delphi is a registered trademark of Codegear LLC. Neither Mini-Circuits nor the Mini-Circuits USB-1SPDT-A18XL Switch are affiliated with or endorsed by the owners of the above referenced trademarks.
Note 2: Bracket ordered separately.

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Electrical Specifications

Parameter	Port	Conditions	Min.	Typ.	Max.	Units
Rated Voltage	24V$_{DC}$ IN	provided via external power adapter	23	24	25	V
	USB Port	–	–	–	5	–
Rated Current	24V$_{DC}$ IN	Energized	–	205	260	mA
		De-Energized	–	15	25	
	USB Port	Energized	–	50	75	
		De-Energized		50	75	
Switching Time	RF Ports	–	–	25	–	mS
Life (per switch)		@ 100 mW (hot switching)	10	–	–	million switching cycles
		@ 1 W (hot switching)	–	3	–	
RF Power (cold switching) [3]		–	–	–	10	W
RF Power (hot switching) [3]			–	–	1	
VSWR		DC to 1 GHz	–	1.05	1.10	:1
		1 GHz to 8 GHz	–	1.20	1.30	
		8 GHz to 12 GHz	–	1.2	1.35	
		12 GHz to 18 GHz	–	1.25	1.40	
Insertion Loss		DC to 1 GHz	–	0.1	0.15	dB
		1 GHz to 8 GHz	–	0.15	0.30	
		8 GHz to 12 GHz	–	0.25	0.40	
		12 GHz to 18 GHz	–	0.30	0.5	
Isolation		DC to 1 GHz	85	100	–	dB
		1 GHz to 8 GHz	75	90	–	
		8 GHz to 12 GHz	70	80	–	
		12 GHz to 18 GHz	60	66	–	

Note 3: Power handling is specified with RF applied to the IN port and output load connected to either J1 or J2 of the respective switch.

Mini-Circuits®
ISO 9001 ISO 14001 AS 9100 CERTIFIED

Electrical Specifications (Continued)

Minimum System Requirements

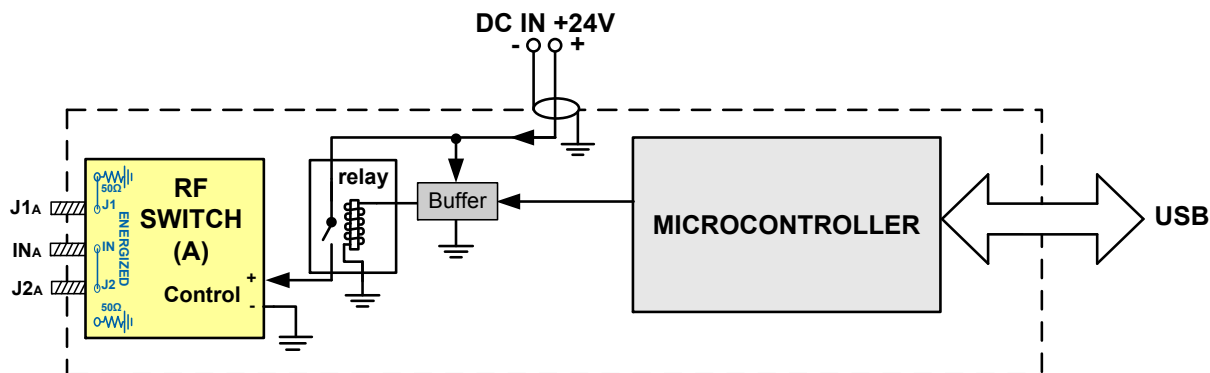| Parameter	Requirements
Interface	USB HID
Host operating system	**32 Bit operating system:** Windows 98®, Windows XP®, Windows Vista®, Windows 7® **64 Bit operating system:** Windows Vista®, Windows 7® **Linux® support:** 32/64 Bit operating system
Hardware	Pentium® II or better

Absolute Maximum Ratings

Parameter	Ratings
Operating Temperature	0°C to 45°C
Storage Temperature	-15°C to 45°C
DC Voltage max.	26V
RF power (at IN port)*	10W
RF power (at J1 and J2)*	1W

Permanent damage may occur if any of these limits are exceeded.
*See page 3 for hot switching life. Exceeding the limits noted will result in reduced life

Connections

24V$_{DC}$ IN	(2.1mm center positive DC Socket)
RF Switch A (J1, IN, J2)	(SMA female)
USB	(USB type B receptacle)

Block Diagram

Accessories Included

USB Cable: USB type A plug to USB type B plug

• MCL P/N: USB-CBL-AB-3+ (2.7ft.)

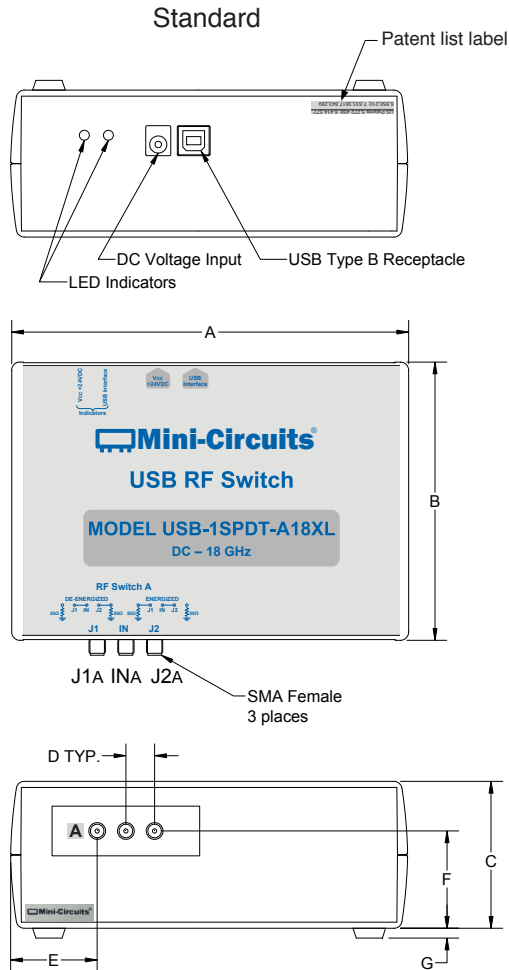**AC/DC 24V$_{DC}$ Power Adaptor with US and EU two pin power connectors**
(I_{max}=0.83A, Operating Temp. 0°C to +40°C)
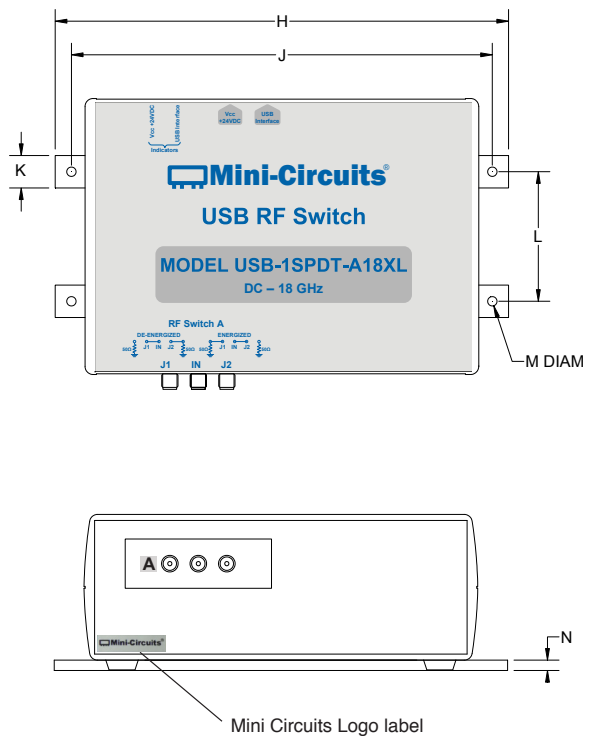
• MCL P/N: AC/DC-24

Outline Drawing: LM1580

Standard

Patent list label

DC Voltage Input

USB Type B Receptacle

LED Indicators

J1A INA J2A

SMA Female
3 places

D TYP.

With bracket accessory
Bracket ordered separately. For bracket ordering information see
Accessories information table on page 7.

M DIAM

Mini Circuits Logo label

Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	WT. GRAMS
6.08	**4.26**	**2.25**	**.440**	**1.32**	**1.49**	**.15**	**7.00**	**6.500**	**.50**	**2.000**	**.144**	**.160**	450
154.4	108.2	57.2	11.18	33.6	37.8	3.8	177.8	165.1	12.7	50.8	3.66	4.06	

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. **2.** Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. **3.** The parts covered by this specification sheet are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp.

USB RF SPDT Switch

Ordering Information

Model Number	Description	Quantity Min. No. of Units	Price $ Ea.
USB-1SPDT-A18XL	**USB RF SPDT Switch**	**1-9**	**385.00**
USB-CBL-AB-3+	2.7 ft. USB Cable	1	Included
RFSW-CD	Installation CD	1	
AC/DC-24	AC/DC 24V_{DC} power adapter with US and EU two pin power connectors	1	

Accessories Information

Model Number	Description	Quantity Min. No. of Units	Price $ Ea.
AC/DC-24	AC/DC 24V_{DC} power adapter with US and EU two pin power connectors	1	19.95
USB-CBL-AB-3+	2.7 ft. USB Cable	1	7.95
USB-CBL-AB-7+	6.8 ft. USB Cable	1	9.95
USB-CBL-AB-11+	11 ft. USB Cable	1	11.95
BKT-301-01+	Bracket	1	14.95