



NoiseTech Microwaves Ltd.

Product Technical Specifications of 10 MHz to 6GHz Dual-SPDT Switch Matrix
(P/N SW00160)
Rev. 1 – June 12, 2019

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2. General

NoiseTech Microwave Ltd. (NoiseTech) has developed a switch matrix to reduce uncertainty in noise-parameter measurements. The switch (SW) matrix consists of two independent USB-driven SPDT switches.

On-board memory stores the manual, technical specifications and can be used to store other information.

The switch can be used for other (non-noise-parameter measurement) applications where wideband USB-controlled switches are needed.

The SW00160 frequency range is optimized for most commercial applications, such as WiFi, WiMax, LTE, 3G, 4G, 5G, Bluetooth wireless standards.

Fig. 1: SW00160 Switch Matrix

3. Specifications

3.1 Physical specifications

Parameter	Specification	Note	Comment
Housing/Enclosure Dimensions			Excluding connectors.
Width	4cm		
Length	8cm		
Height	2.5cm		
RF connectors	Two RF connectors	Fig. 1	- SMA standard, N-type available

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Non-RF connectors	USB 2.0 connector		Communication with host computer
	USB A connector		Noise-source interface
Total weight	125 g typ.		

3.2 Electrical performance at 25C

3.2.1 RF

Parameter	Specification	Ref	Comment
Reflection coefficient	10 dB min		All RF inputs/outputs
Insertion loss	1 dB max		
Isolation (thru each switch)	20 dB max		
Isolation between switches	40 dB max		
Bandwidth	0.01GHz to 6GHz		
Turn ON/OFF time	1 ms max		
Input P1dB	33 dBm min		
Self-generated interference	-100 dBm max		Integrated over any 10MHz band

3.2.2 Digital

Parameter	Specification	Note	Comment
Communication protocol	USB 2.0		Connection thru micro-B USB
On-board RAM	192kB min.		
FLASH memory	5 MB min.		
Maximum COM Baud Rate	115.2 kbps typ		

3.2.3 Power supply

Parameter	Specification	Ref	Comment
Power supply voltage (typ)	5V		Supplied by host computer
Power supply voltage (min)	4.75V		Supplied by host computer
Power supply voltage (max)	5.25V		Supplied by host computer
Current consumption	55mA max from 5V supply 100 mA max from 5V supply		Supplied by host computer. -Noise Source not connected -Noise source connected

3.2.4 Environmental

Parameter	Specification	Ref	Comment
Ambient temperature	0°C to 40°C Not specified		
Operating			
Storage			
Operating relative humidity	20% to 80% non-condensing		
Storage relative humidity	20% to 80% non-condensing		
Shock resistance	Not specified		
Vibration resistance	Not specified		
ESD	2kV HBM		
EMC	Not specified		

3.2.5 Regulatory

Parameter	Specification	Ref	Comment
FCC part 15 ICES-3	Compliant		

3.3 Interface specifications

3.3.1 RF interface

Description below are as related to noise-parameter measurement system with NoiseTech's IG0160C.

Connector (VNA port 1 side): Field-replaceable female (SMA, 3.5mm, N-type)

Pin	Name	Description
Inner	V1	RF input port 50Ω (nominal)

Connector (Noise source side): Field-replaceable female (SMA, 3.5mm, N-type)

Pin	Name	Description
Inner	N1	RF input port 50Ω (nominal)

Connector (IG input side): Field-replaceable female (SMA, 3.5mm, N-type)

Pin	Name	Description
Inner	C1	RF input port 50Ω (nominal)

Connector (VNA port 2 side): Field-replaceable male (SMA, 3.5mm, N-type)

Pin	Name	Description
Inner	V2	RF input port 50Ω (nominal)

Connector (Noise power meter side): Field-replaceable female (SMA, 3.5mm, N-type)

Pin	Name	Description
Inner	N2	RF input port 50Ω (nominal)

Connector (IG or DUT output side): Field-replaceable female (SMA, 3.5mm, N-type)

Pin	Name	Description
Inner	C2	RF input port 50Ω (nominal)

3.3.2 Non-RF interface

Connector: micro-B USB receptacle

Pin	Name	Specification	Description
1	Vbus	Power supply to SW00160	Power supply
2	D-	USB 2.0 compatible data line	USB 2.0 differential pair
3	D+	USB 2.0 compatible data line	
4	NC		NC
5	GND	Ground	Ground

Connector: USB-A

Pin	Name	Specification	Note	Description
1	Vbus	Same as pin 1 on micro-B USB Output current: 50 mA max		Output
2	D+	Noise source control V _{OL} =0.4Vmax V _{OH} =3.0Vmin		Output from IG0160C
3	D-	Noise source temperature output (0V to 3V) Internal 10k pull up to 3.3V.		Input to SW00160.
4	GND	Ground		

4. Revision notes