

Test Systems

This section of our catalog showcases some standard JFW test systems. However, we understand that everyone's system requirements are unique. For this reason, we can design a system to suit your individual applications without charging you costly NRE's. Through the integration of attenuators, switches, power dividers, and various other components, our systems are designed with the specific needs of your system in mind. JFW also has the capability of sending and receiving RS-232/GPIB/Ethernet commands that are formatted to meet your specific command format requirements.

Please, contact JFW (sales@jfwindustries.com or 1-877-887-4JFW) with your specific requirements. Let JFW's outstanding customer service and quality test systems make your life less stressful.

Typical JFW Systems



- *Matrix switches*
- *Programmable assemblies*
- *Switch assemblies*
- *Manual attenuator assemblies*
- *Power divider assemblies*



Available System Features

- *No NRE's for custom system designs*
- *GPIB, RS-232, TTL, Parallel, or Ethernet control*
- *Custom command formats*
- *Frequency ranges from DC-18 GHz*
- *50 Ohm and 75 Ohm impedance*
- *Keypad for manual control*
- *19", 23", or 24" rack sizes*
- *Bench top designs*
- *Blocking, Non-blocking matrix configurations*
- *Latching and non-latching designs*
- *Electro-mechanical and solid state switches*
- *Electro-mechanical and solid state attenuators*
- *Power Dividers, Couplers and other RF components*
- *Various RF connector options*



Test Systems

Model Number Index

Programmable Attenuators with GPIB/RS-232/Ethernet Control

Model Number	Impedance	Control	Attenuation	Frequency Range	Page
50PA-046	50 Ohms	GPIB	0-127dB x 1dB	800-2400 MHz	1-3
50PA-179	50 Ohms	GPIB	0-85dB x 1dB	DC-3000MHz	1-3
50PA-186	50 Ohms	RS-232	0-85dB x 1dB	DC-3000MHz	1-4
75PA-024	75 Ohms	GPIB	0-95.5dB x 0.5dB	50-860 MHz	1-3
75PA-035	75 Ohms	Ethernet	0-63.5dB x 0.5dB	DC-1000 MHz	1-4

Switches with GPIB/RS-232 Control

Model Number	Impedance	Control	Configuration	Frequency Range	Page
50SA-085	50 Ohms	RS-232	1P80T	DC-300 MHz	1-5
75SA-025	75 Ohms	GPIB	1P8T	DC-1000 MHz	1-6

Switch Assemblies with GPIB Control

Model Number	Impedance	Control	Configuration	Frequency Range	Page
50SA-086	50 Ohms	GPIB	Eight 1P2T and two 1P6T	DC-8.5 GHz	1-7
50SA-094	50 Ohms	GPIB	3P6T	DC-18 GHz	1-8

Matrix Switches with GPIB/RS-232 Control

Model Number	Impedance	Control	Configuration	Frequency Range	Page
50MS-104	50 Ohms	RS-232	8 x 8 non-blocking matrix	800-2000 MHz	1-10
50MS-141	50 Ohms	GPIB	4 x 8 blocking matrix	DC-6000 MHz	1-9

Attenuator Assembly with Ethernet Control

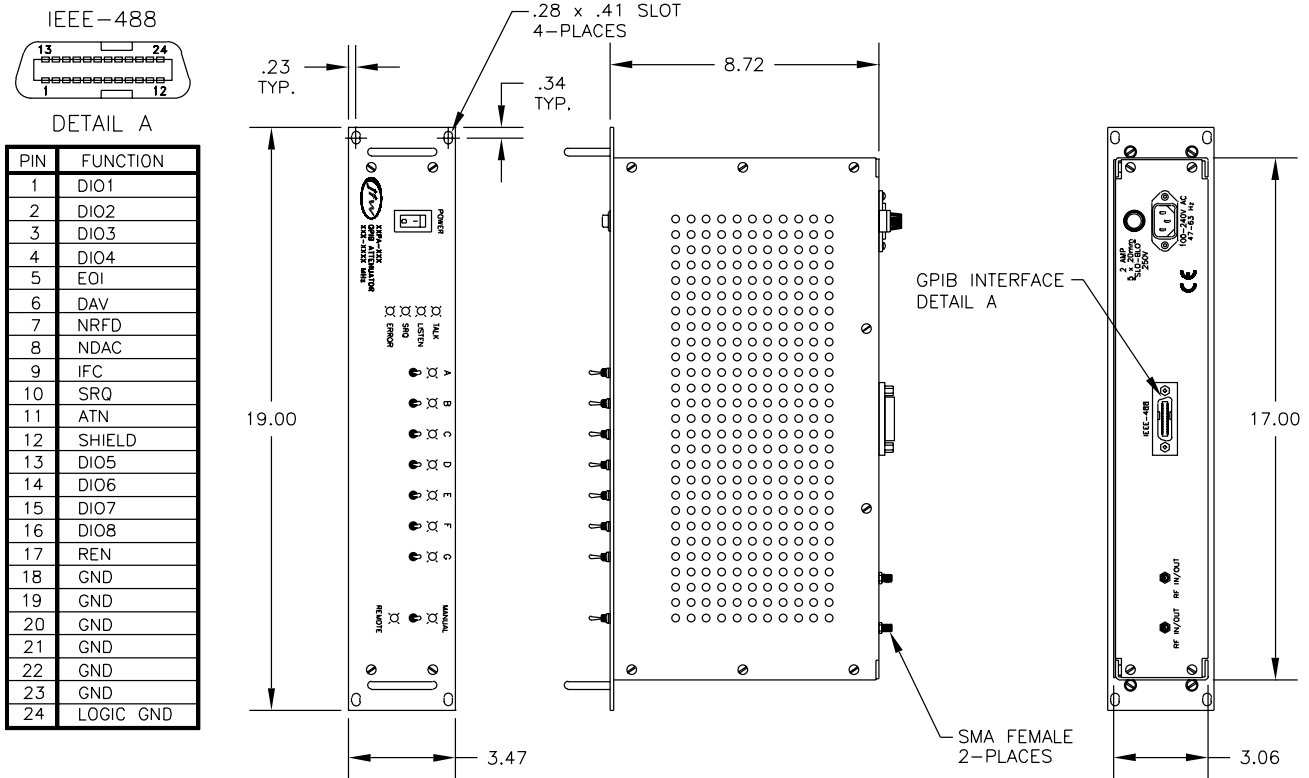
Model Number	Impedance	Control	Configuration	Frequency Range	Page
50PA-152	50 Ohms	Ethernet	4 x 16 non-blocking matrix with 64 attenuators	800-2100 MHz	1-11

GPIB Programmable Attenuators

Model	Frequency Range	Attenuation Range/Steps	Attenuation Accuracy	Insertion Loss	RF Input Power
50PA-179	DC-3000 MHz	0-85 dB / 1, 2, 4, 8, 10, 20 and 40 dB	+/- .3 dB or .5% DC-500 MHz +/- .4 dB or 1% 500-1000 MHz +/- .5 dB or 1% 1000-2000 MHz +/- .6 dB or 1.5% 2000-3000 MHz	2.75 dB nominal DC-1000 MHz 3.75 dB nominal 1000-2000 MHz 4.75 dB nominal 2000-3000 MHz	1 Watt average
50PA-046	800-2400 MHz	0-127 dB / 1, 2, 4, 8, 16, 32 and 64 dB	+/- .3 dB or 2%	3 dB nominal 800-1000 MHz 5.5 dB nominal 1000-2400 MHz	+20 dBm operating +24 dBm (1 dB compression)
75PA-024	50-860 MHz	0-95.5 dB / .5, 1, 2, 4, 8, 16, 32 and 32 dB	.5, 1 and 2 dB +/- .2 dB 4 and 8 dB +/- .3 dB 16, 32 and 32 dB +/- .4 dB accumulated error +/- .5 dB or 1%	4 dB nominal	+15 dBm

Model	Impedance	Switching Speed	Operating Temperature	VSWR	AC Supply	RF Connectors
50PA-179	50 Ohms	6 milliseconds	0° C to +50° C	1.5:1 maximum	85-264 VAC @ 47-63 Hz	BNC, N or SMA female
50PA-046	50 Ohms	20 microseconds	0° C to +50° C	1.5:1 maximum	85-264 VAC @ 47-63 Hz	SMA female
75PA-024	75 Ohms	20 microseconds	0° C to +50° C	1.5:1 maximum	85-264 VAC @ 47-63 Hz	F, BNC or N female

If these models do not meet your specification requirements, please contact our engineering department (jfwengr@jfwindustries.com). JFW can incorporate any of our programmable attenuators to be remotely controlled similarly to the models on this page.



ACTUAL FRONT AND REAR PANELS MAY VARY. CONTACT FACTORY FOR DETAILS.

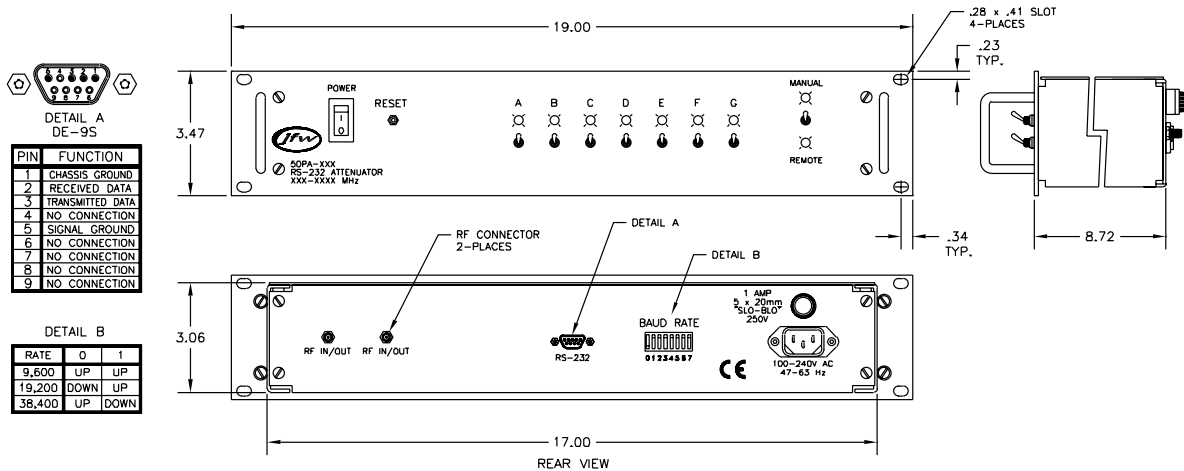
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Ethernet/RS-232 Programmable Attenuators

Model	Frequency Range	Attenuation Range/Steps	Attenuation Accuracy	Insertion Loss	RF Input Power
75PA-035	DC-1000 MHz	0-63.5 dB / .5, 1, 2, 4, 8, 16 and 32 dB	+/- .3 dB or 1% DC-500 MHz +/- .4 dB or 2% 500-1000 MHz	3 dB maximum	1 Watt average
50PA-186	DC-3000 MHz	0-85 dB / 1, 2, 4, 8, 10, 20 and 40 dB	+/- .3 dB or .5% DC-500 MHz +/- .4 dB or 1% 500-1000 MHz +/- .5 dB or 1% 1000-2000 MHz +/- .6 dB or 1.5% 2000-3000 MHz	2.75 dB nominal DC-1000 MHz 3.75 dB nominal 1000-2000 MHz 4.75 dB nominal 2000-3000 MHz	1 Watt average

Model	Impedance	Switching Speed	Operating Temperature	VSWR	AC Supply	RF Connectors
75PA-035	75 Ohms	6 milliseconds	0° C to +50° C	1.5:1 maximum	85-264 VAC @ 47-63 Hz	BNC or F female
50PA-186	50 Ohms	6 milliseconds	0° C to +50° C	1.5:1 maximum	85-264 VAC @ 47-63 Hz	BNC, N or SMA female

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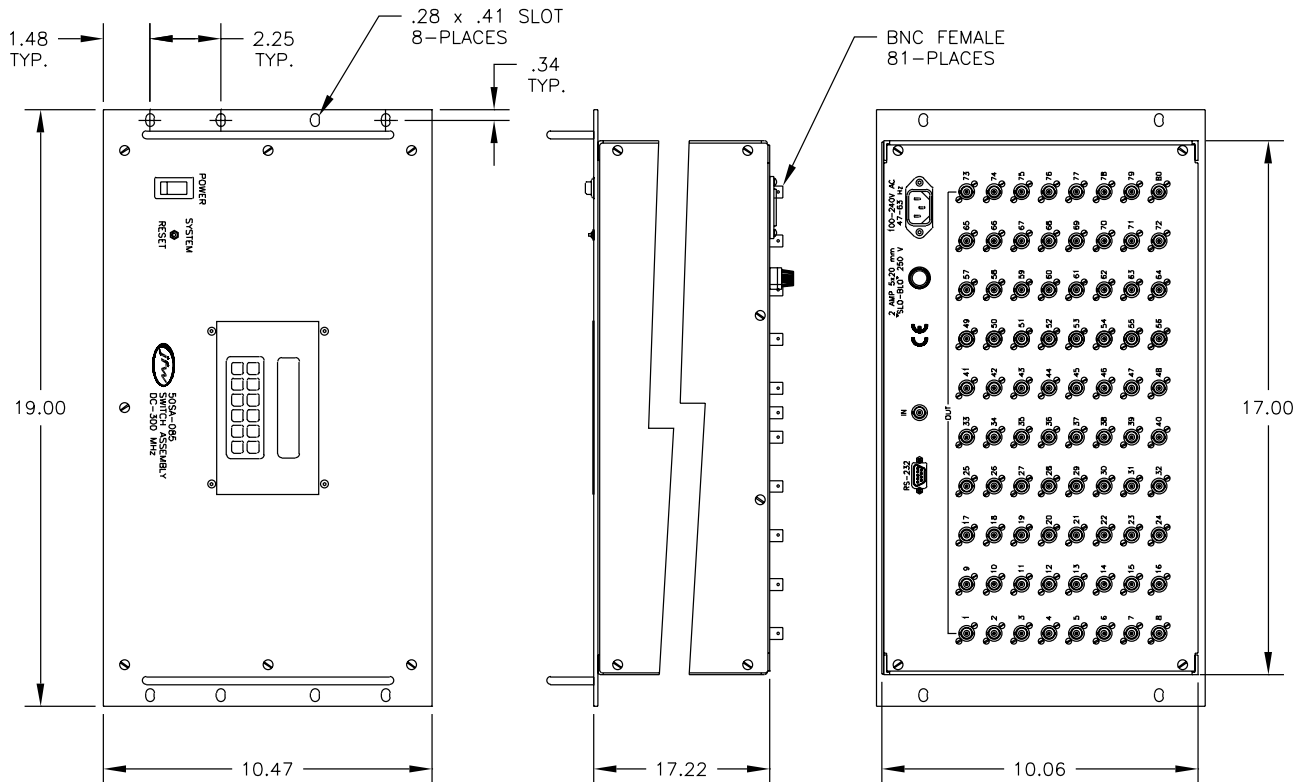
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RS-232 Switch

Model	Configuration	Control	Baud Rate	Impedance	Frequency Range
50SA-085	1P80T electro-mechanical switch	RS-232	9600	50 Ohms	DC-300 MHz

VSWR	Insertion Loss	Isolation	Input Power	Switching Speed	AC Supply	RF Connectors	Operating Temperature
1.4:1 maximum	1 dB maximum	60 dB minimum	1 Watt average	10 milliseconds	85-264 VAC @ 47-63 Hz	BNC female	0° C to +70° C

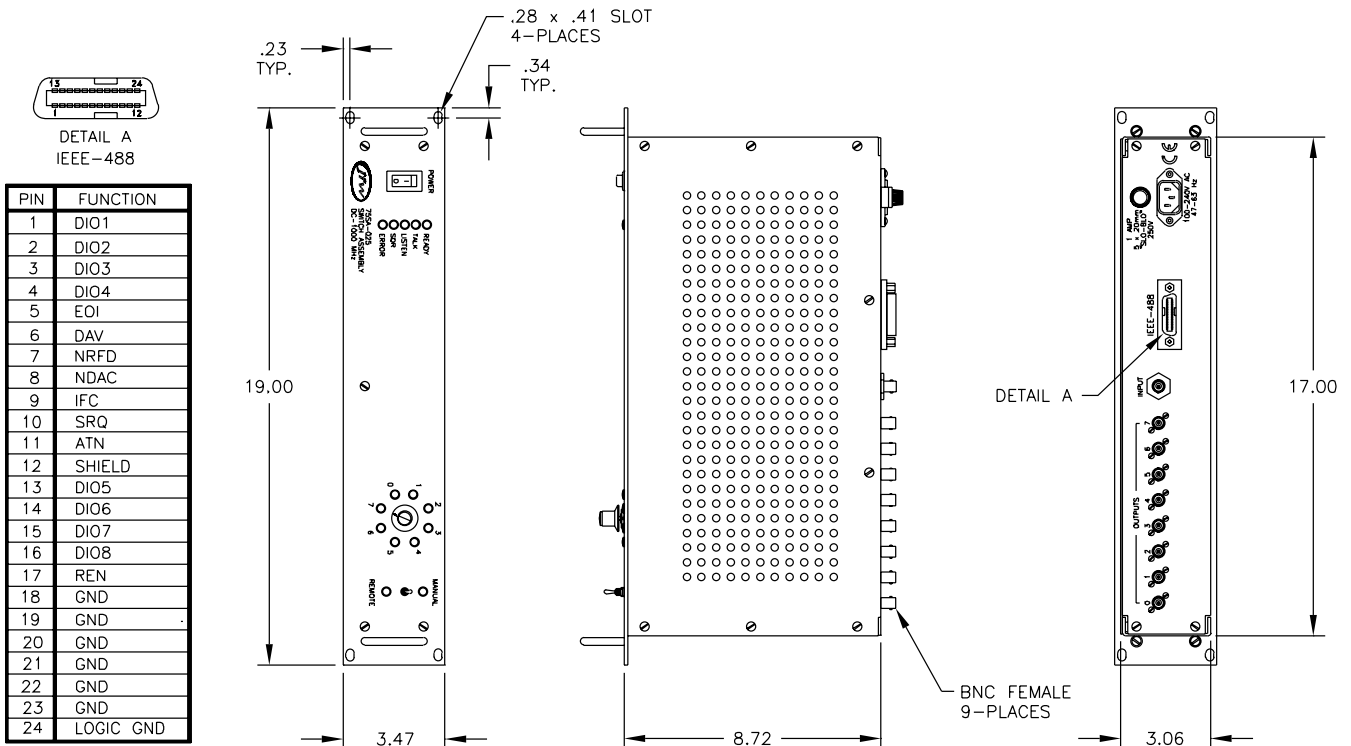


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GPIB Switch

Model	Configuration	Control	Impedance	Frequency Range
75SA-025	1P8T failsafe, self-terminating electro-mechanical switch	GPIB	75 Ohms	DC-1000 MHz

VSWR	Insertion Loss	Isolation	Input Power	Switching Speed	AC Supply	RF Connectors	Operating Temperature
1.5:1 maximum	1 dB maximum	60 dB minimum DC-500 MHz 55 dB minimum 500-1000 MHz	+24 dBm	10 milliseconds	85-264 VAC @ 47-63 Hz	BNC or F female	0° C to +70° C

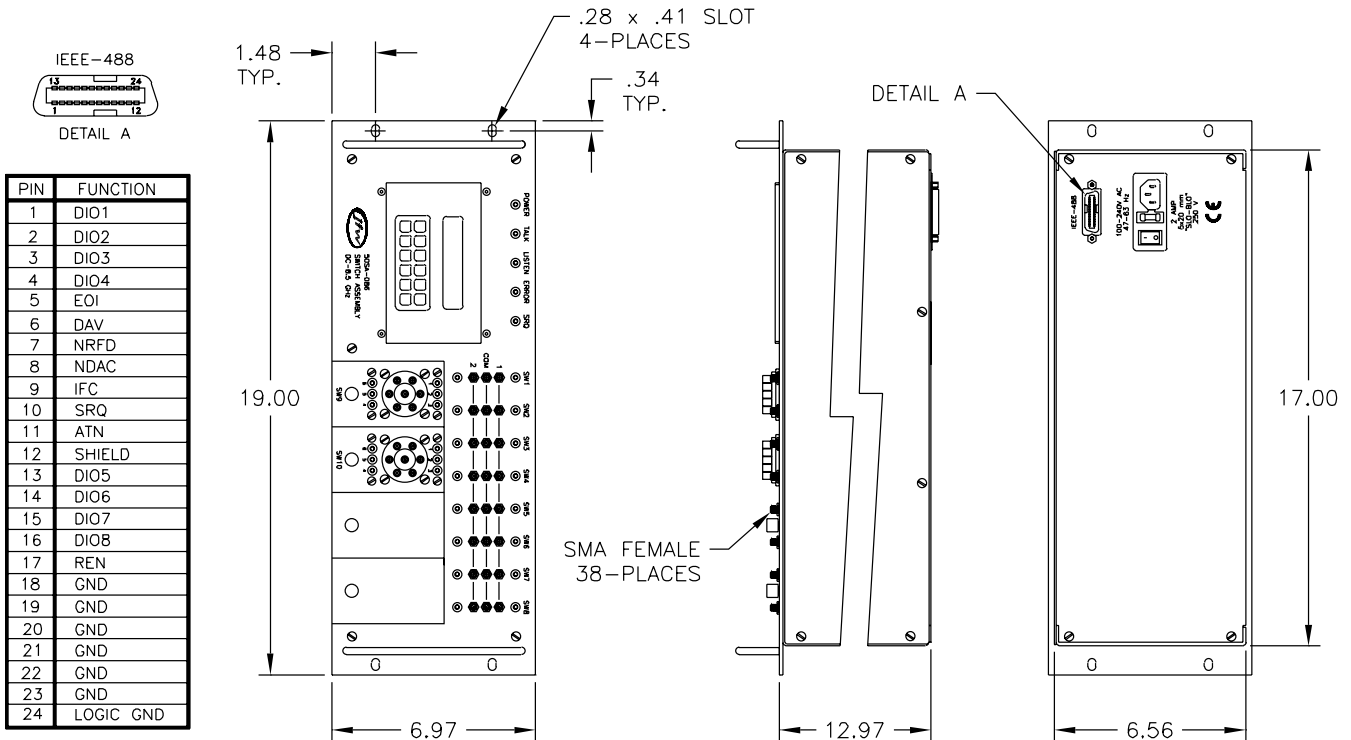


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GPIB Switch Assembly

Model	Configuration	Control	Impedance	Frequency Range
50SA-086	Eight individual 1P2T electro-mechanical switches and Two individual 1P6T electro-mechanical switches	GPIB	50 Ohms	DC-8.5 GHz

VSWR	Insertion Loss	Isolation	Input Power	Switching Speed	AC Supply	RF Connectors	Operating Temperature
1.6:1 maximum	.75 dB maximum (1P2T) .75 dB maximum (1P6T)	60 dB minimum (1P2T) 60 dB minimum (1P6T)	25 Watts	20 milliseconds	85-264 VAC @ 47-63 Hz	SMA female	0° C to +70° C

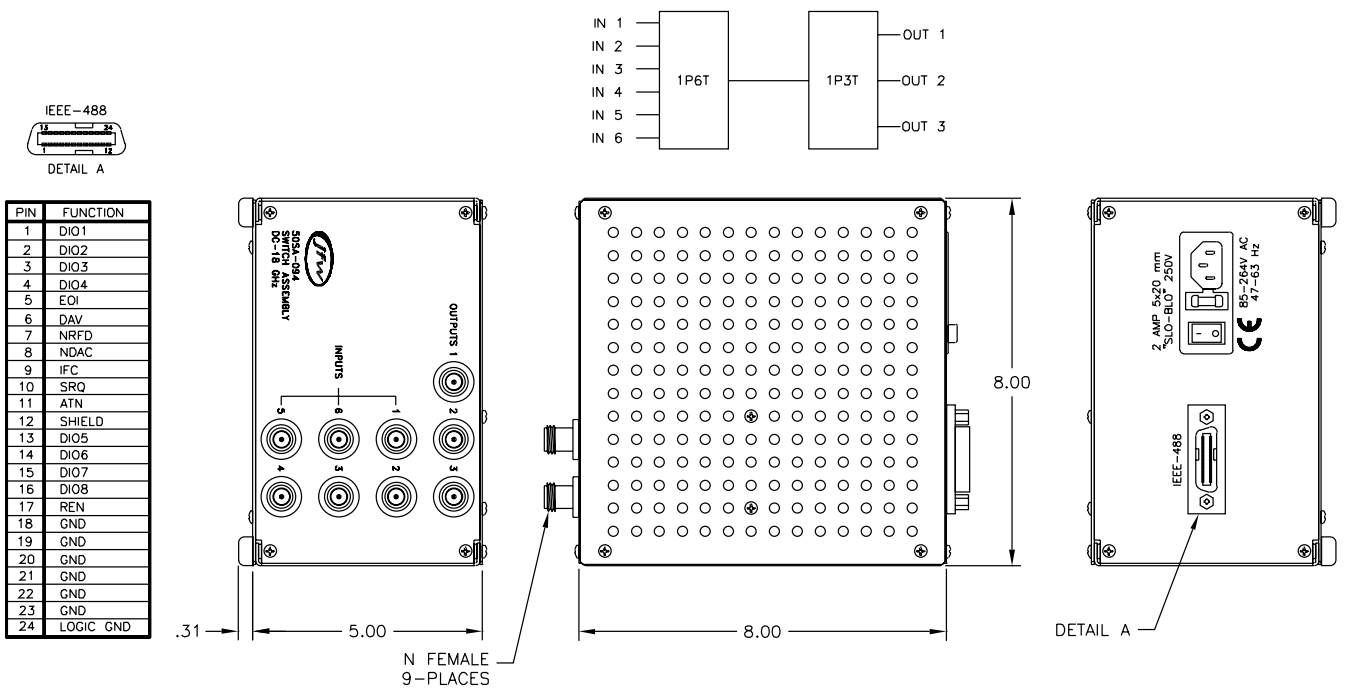


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GPIB Switch Assembly

Model	Configuration	Control	Impedance	Frequency Range	Switching Speed	AC Supply	RF Connectors
50SA-094	1P3T and 1P6T electro-mechanical switches with common ports cabled together (3P6T). See block diagram below.	GPIB	50 Ohms	DC-18 GHz	25 milliseconds	85-264 VAC @ 47-63 Hz	N female

VSWR	Insertion Loss	Isolation	Input Power	Operating Temperature
1.5:1 maximum DC-4 GHz 1.8:1 maximum 4-8 GHz 2:1 maximum 8-18 GHz	1.5 dB maximum DC-4 GHz 2 dB maximum 4-8 GHz 2.8 dB maximum 8-18 GHz	70 dB minimum DC-4 GHz 65 dB minimum 4-8 GHz 60 dB minimum 8-18 GHz	50 Watts average DC-4 GHz 35 Watts average 4-8 GHz 10 Watts average 8-18 GHz	0° C to +70° C

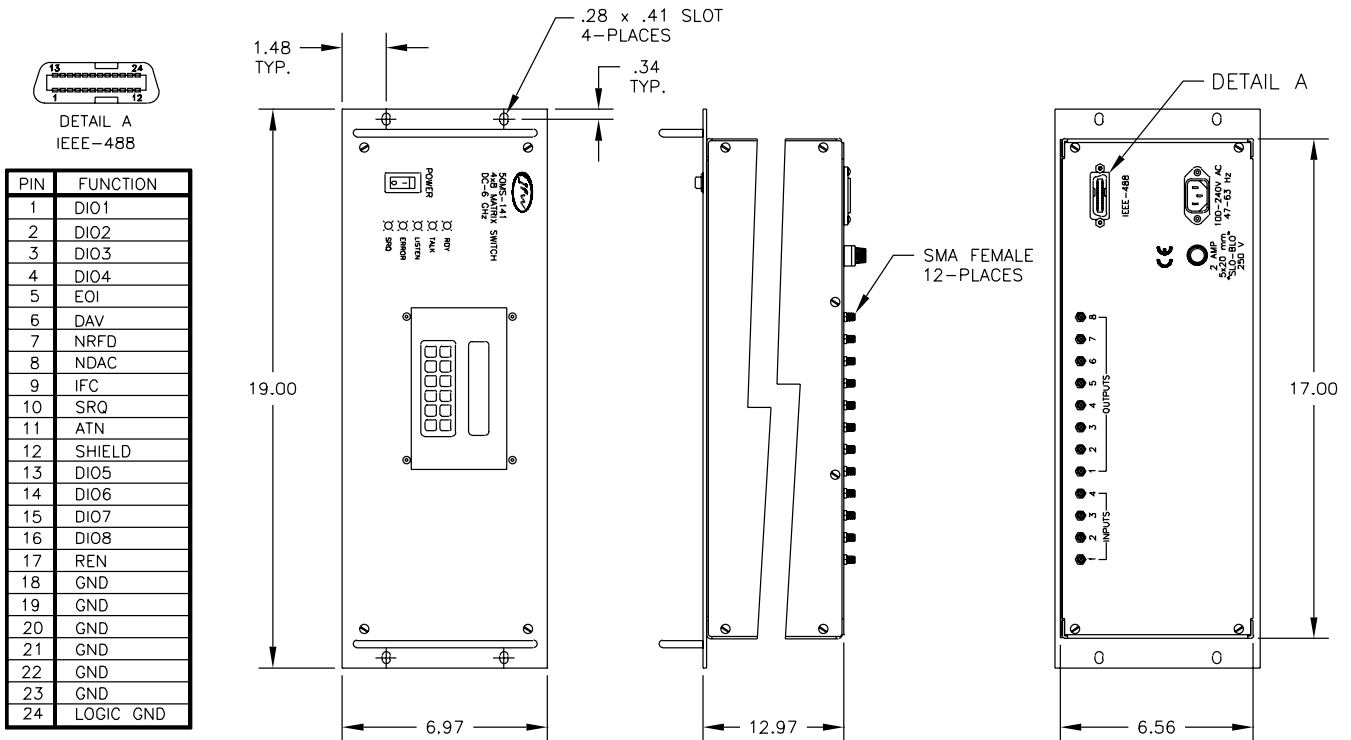


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GPIB Matrix Switch

Model	Configuration	Control	Impedance	Frequency Range	VSWR
50MS-141	4 x 8 electro-mechanical blocking matrix Any single input port to any single output port (Up to 4 simultaneous active paths)	GPIB	50 Ohms	DC-6 GHz	1.5:1 maximum

Insertion Loss	Isolation	Input Power	Switching Speed	AC Supply	RF Connectors	Operating Temperature
1 dB maximum DC-2.5 GHz 2 dB maximum 2.5-6 GHz	70 dB minimum DC-4 GHz 65 dB minimum 4-6 GHz	1 Watt average	20 milliseconds	85-264 VAC @ 47-63 Hz	SMA female	0° C to +70° C

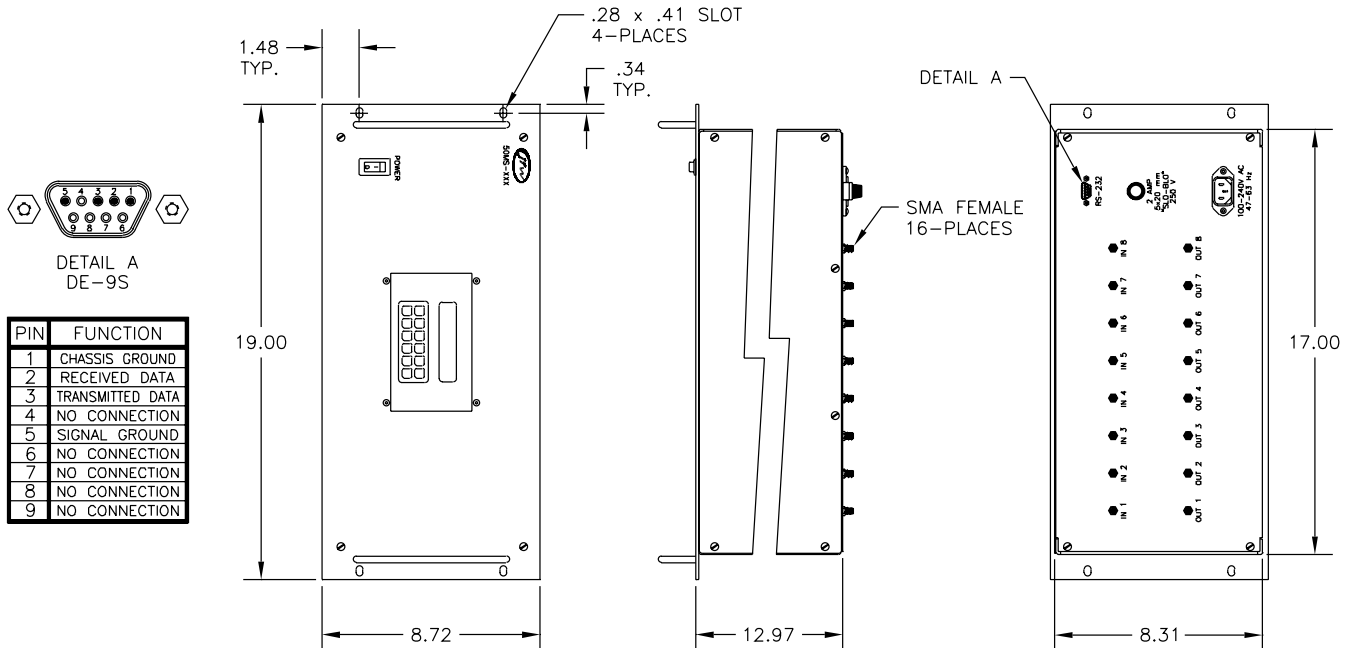
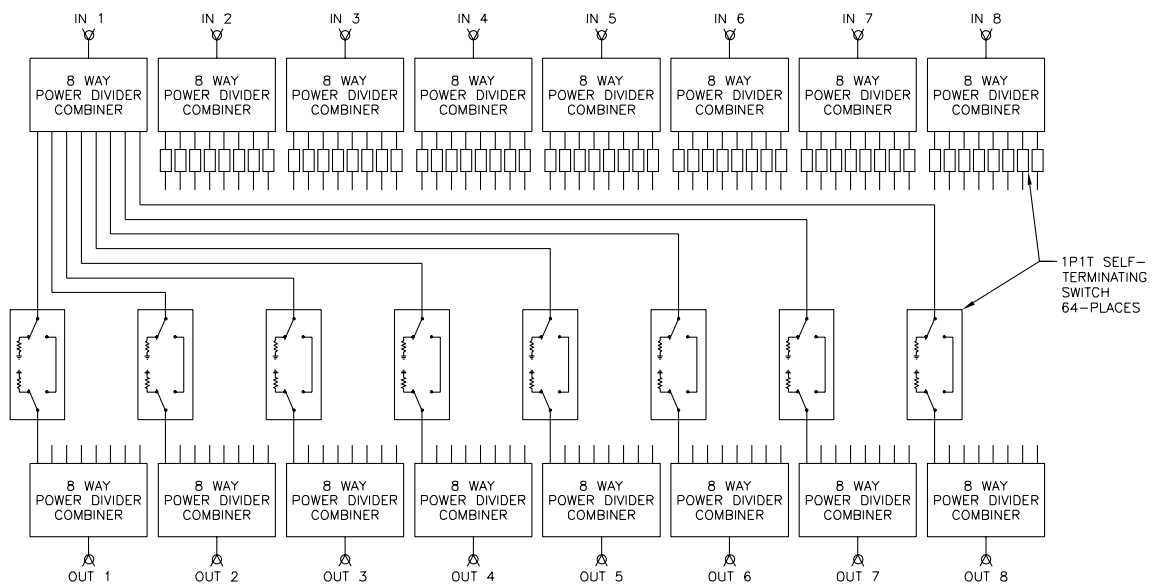


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RS-232 Matrix Switch

Model	Configuration	Control	Impedance	Frequency Range	VSWR	RF Connectors
50MS-104	8 x 8 solid-state non-blocking matrix Any input port to multiple output ports Any output port to multiple input ports (Up to 64 simultaneous active paths)	RS-232	50 Ohms	800-2000 MHz	1.6:1 maximum	SMA Female

Insertion Loss	Isolation (input port to output port)	Isolation (output port to output port)	Input Power	Switching Speed	AC Supply	Operating Temperature
20 dB nominal @ 800 MHz 22 dB nominal @ 2000 MHz	65 dB minimum (path turned off)	40 dB minimum when switched to common input port	+20 dBm average +27 dBm (no damage)	100 microseconds	85-264 VAC @ 47-63 Hz	0° C to +70° C



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