8 x 8 Butler Matrix
8401-8 Series

Description

The 8401-8 Series Butler matrix is a high performance 8x8 Butler matrix, covering several frequency bands from 0.5 to 7.25 GHz. It can transfer the signal reciprocally from any of 8 input ports to any of 8 output ports, with high phase accuracy, amplitude balance, low insertion loss, and high port-to-port isolation.

Features

- Compact, modular microstrip design and construction
- Good channel condition number

Applications

- WiFi, WiMAX, 4G/5G LTE Testing, Link Simulation
- MIMOTesting
- Multipath Simulation and Performance Evaluation
- Antenna Array Beam-forming
- Interferometer System Simulation and Testing

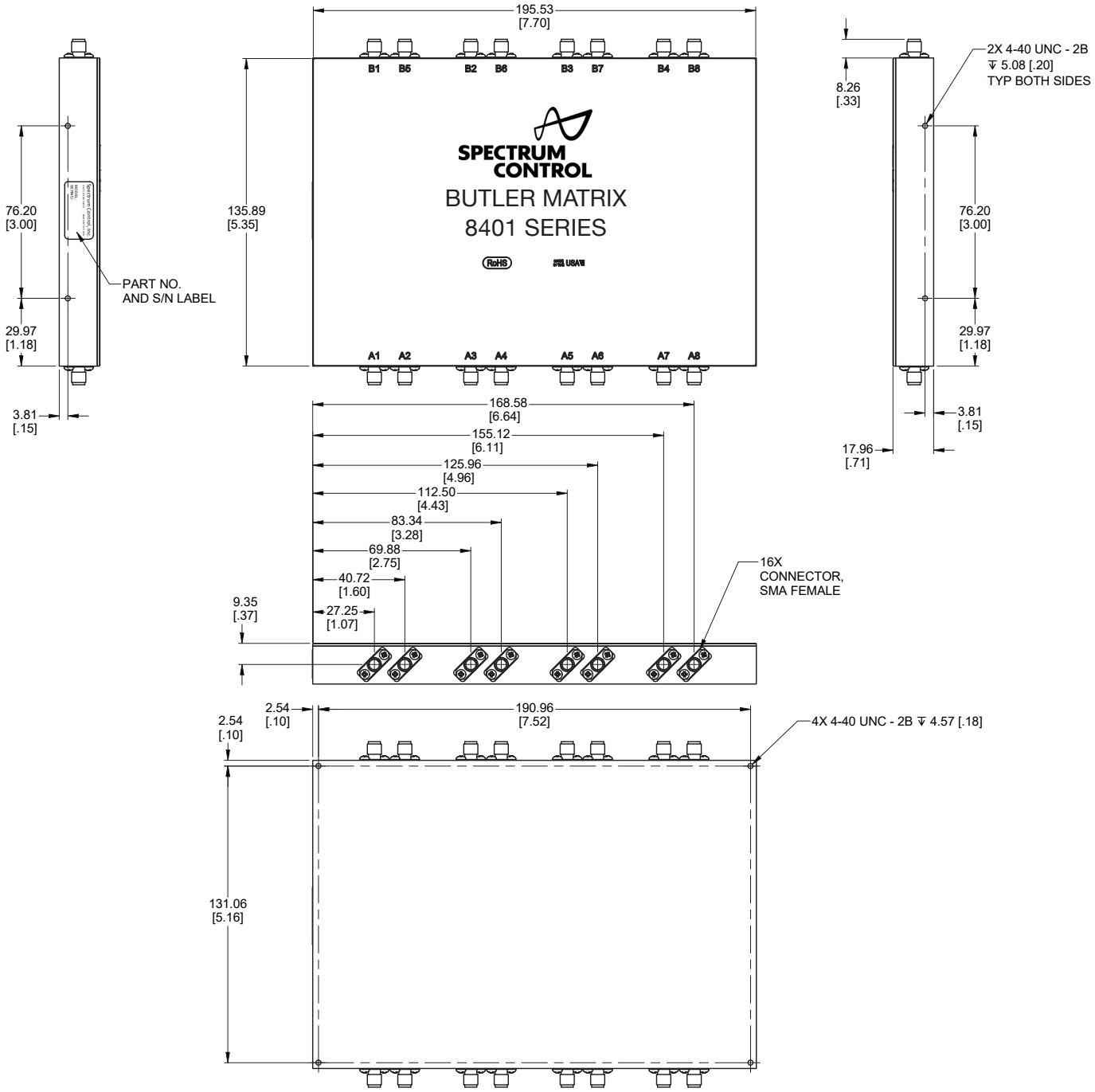
Part Number	Fmin (GHz)	Fmin (GHz)	Insertion Loss (dB)	VSWR	Output Phase Accuracy	RF Input Power (dBm)	Isolation (dB)
8401-8-4	0.6	4.0	14 typ / 16 max	1.9:1 typ 2.1:1 max	±22.5° max at 3 GHz	37	15 typ / 10max
8401-8-6 (Preliminary)	0.5	2.0	10 typ / 13 max	1.5:1 max	±20° max at 5 GHz	37	20 typ / 17 max
	2.0	6.0	11 typ / 16 max	2.2:1 max			17 typ / 12 max
8401-8E	2.4	7.25	13.5 typ / 16 max	1.8:1 typ 2.2:1 max	±20° max at 6.5 GHz	37	20 typ / 12 max

Impedance	50 Ohms
Connectors	SMA (F) all ports
Weight	~565 gms
Temperature Range, Operating	-20° to +70°C

Model 8401-8-4

Mechanical Outline

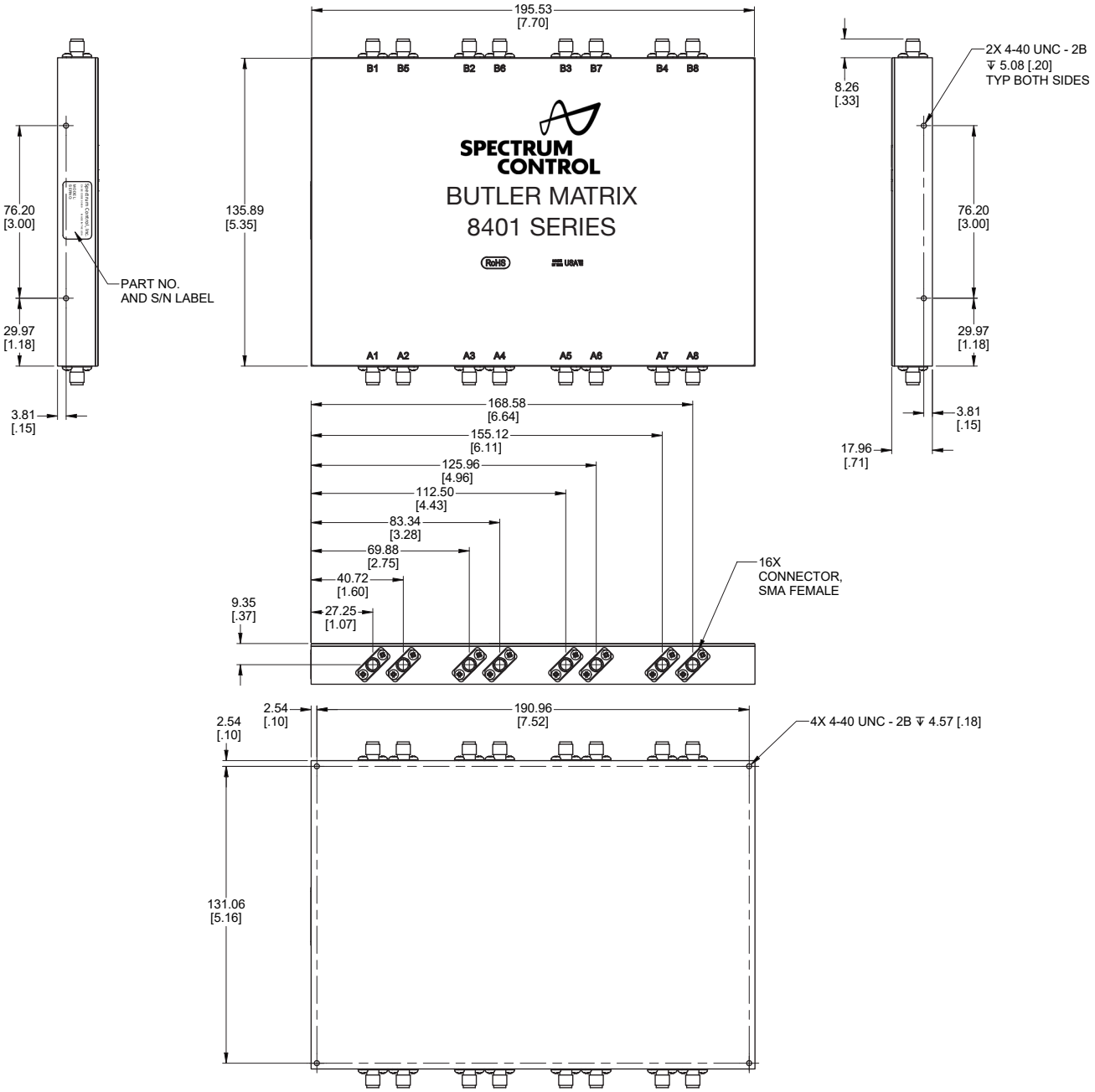
Note: Dimensions are given in mm [inches]



Model 8401-8-6

Mechanical Outline (Preliminary)

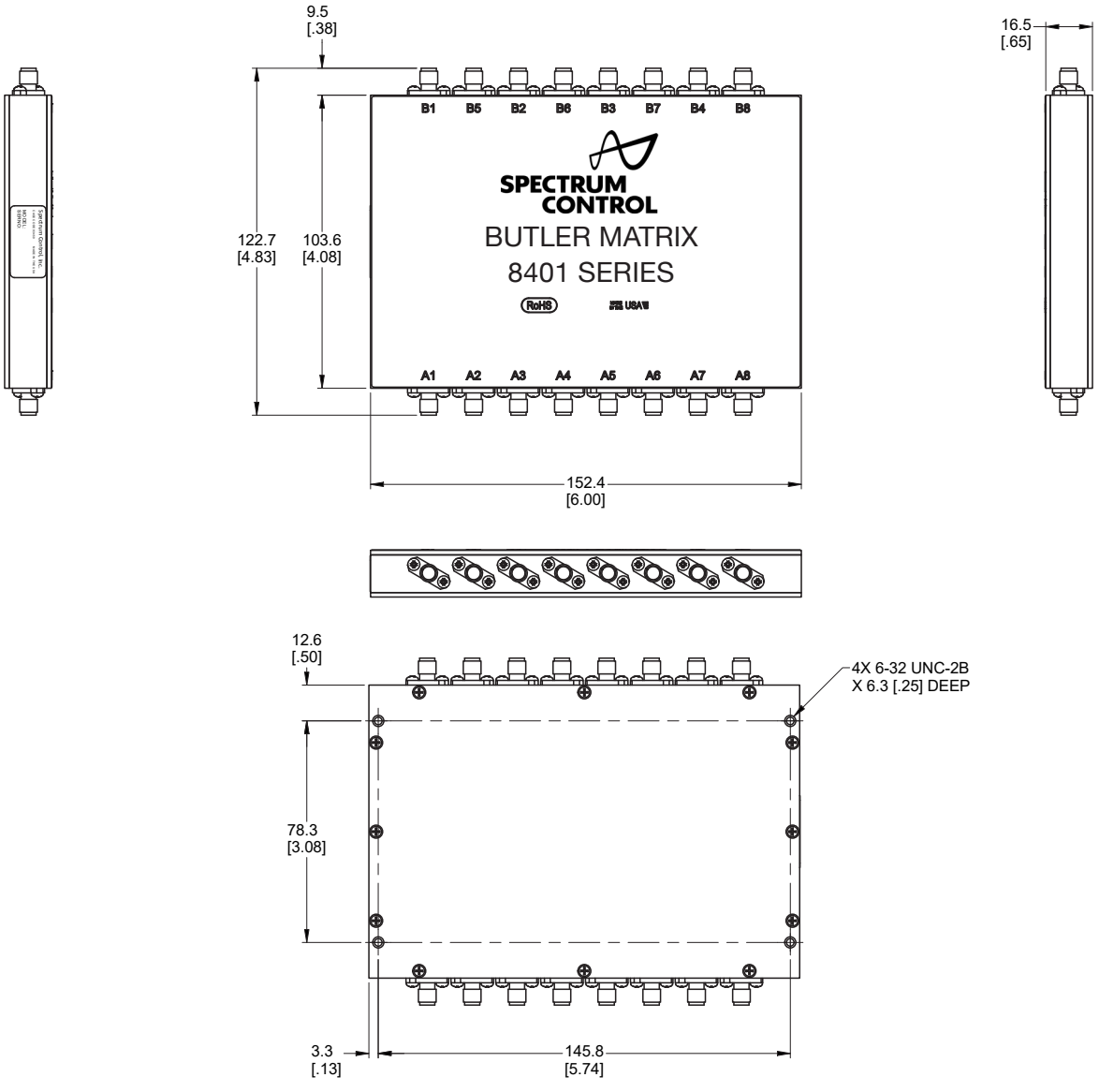
Note: Dimensions are given in mm [inches]



Model 8401-8E

Mechanical Outline

Note: Dimensions are given in mm [inches]



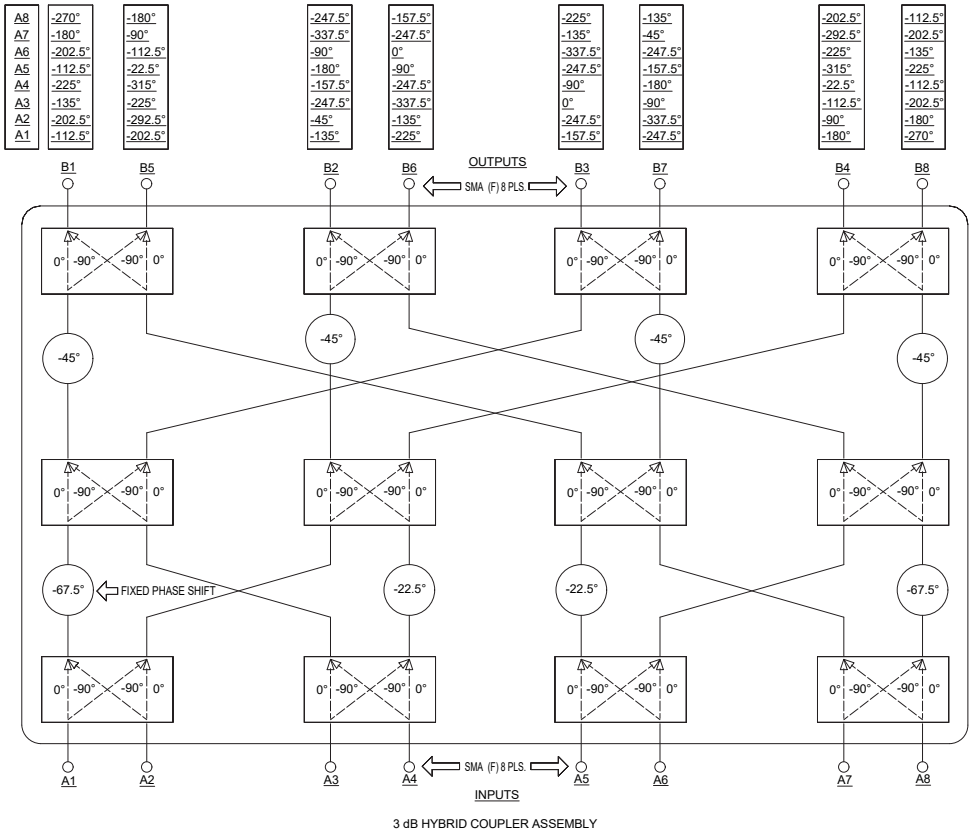
SPECTRUM CONTROL

8 x 8 Butler Matrix
8401-8 Series

Models 8401-8-4, 8401-8-6, 8401-8E

Functional Block Diagram

Note: Dimensions are given in mm [inches]



3 dB HYBRID COUPLER ASSEMBLY

1. Relative Phase Values indicated are measured at the frequency listed in the “Output Phase Accuracy” column in the table, relative to a 0° path.
2. Phase values will vary with frequency and are dependent on the RF path.

Ref Port Designation	S16P Port in SNP file
A1	1
A2	2
A3	3
A4	4
A5	5
A6	6
A7	7
A8	8
B1	9
B2	11
B3	13
B4	15
B5	10
B6	12
B7	14
B8	16

SPECTRUM CONTROL