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System 46T

RF/Microwave Switch System Data Sheet

32-channel, Terminated



KEITHLEY
A Tektronix Company

Terminated Switching Solutions

If your application requires a terminated configuration, the System 46T will meet your needs. This compact switching system leverages the same design technology of our standard unterminated System 46. This terminated version can accommodate up to eight terminated SPDT coaxial microwave relays and four terminated multi-pole coaxial microwave relays.

Maximum Flexibility

In addition to the terminated configurations, the System 46T also has provisions to accommodate up to four transfer switches (DPDT) as well as frequency ranges up to 26.5GHz. Other options include adding unterminated multi-throw and SPDT switches. Please review the Ordering Information section for allowable configurations.

Simple Operation

The S46T switch system's 32 control channels can be operated via the IEEE-488 interface bus with a minimal set of instructions. This small instruction set ensures the system can be set up and running quickly. Front panel LEDs indicate the status of all relay contacts continuously to allow the user to monitor system operation easily.

Excellent Microwave Switching Performance

Keithley's experience and partnerships with leading manufacturers in the microwave relay industry allow Keithley to offer the lowest insertion loss, VSWR, and crosstalk performance specifications available. Low-loss, semi-flexible RF cables are available as accessories to maximize signal integrity.

Maximum System Up-Time and Enhanced System Performance

The S46T controller automatically counts relay contact closures to allow equipment maintenance personnel to assess when the relays are nearing the end of their mechanical life. In this way, preventive maintenance can be performed in a timely way during scheduled shutdowns, avoiding unplanned shutdowns and the resulting loss of production time.

In addition to counting contact closures, the S46T has a portion of its memory available to store S-parameters or calibration constants for each relay contact or each pathway. If a specific performance parameter is critical, such as Voltage Standing Wave Ratio (VSWR) or insertion loss, the parameter can be stored in memory for use in trend analysis between scheduled maintenance shutdowns. Stored parameters can also be used for compensation to enhance accuracy during RF measurements.

KEY FEATURES

- Compact RF/microwave switching system only 2U high
- Built-in contact closure counter to monitor switch cycles
- Standard configuration allows up to 32 channels of switching
- Simple control with built-in GPIB/IEEE-488 interface bus
- Channel characterization data storage
- Terminated switching configurations
- Frequency ranges up to 26.5GHzz

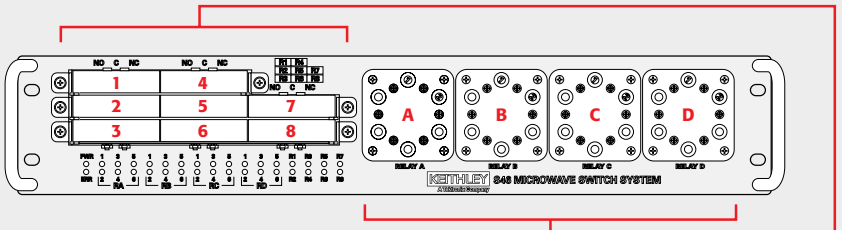
APPLICATIONS

- Cellular and cordless phones
- Specialized mobile radios
- Base stations
- Specialized antenna systems
- RF components, including RFICs
- Wireless peripherals, including Bluetooth devices
- Broadband wireless transceivers
- High speed digital communications, including SONET speeds 3Gbps and 10Gbps

Tektronix®

System 46T RF/Microwave Switch System

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SP4T or SP6T Relay Locations

SPDT Relay Locations

S46T- [ ] - [A] [B] [C] [D] [1] [2] [3] [4] [5] [6] [7] [8]

Frequency Range

Must be specified.

Enter:
18 = DC–18GHz
26 = DC–26.5GHz

All four positions must be listed.

Enter:
0 = None
A = Terminated, SP4T
B = Terminated, SP6T
C = Unterminated, SPDT (2)
4 = Unterminated, SP4T
6 = Unterminated, SP6T
X = Transfer Switch, DPDT

All eight positions must be listed.

Enter:
0 = None
T = Terminated, SPDT
U = Unterminated, SPDT

ORDERING INFORMATION

Specifying Standard S46T Model Numbers

ACCESSORIES SUPPLIED

Power cord, instruction manual, and rack mount kit

Example 1: Model Number S46T-18-0A0X-00TT0000

Includes: DC–18GHz frequency range, terminated SP4T in position B, transfer switch in position D, terminated SPDTs in positions 3 and 4.

Example 2: Model Number S46T-26-ABC4-UU00TTTT

Includes: DC–26.5GHz frequency range, terminated SP4T in position A, terminated SP6T in position B, two unterminated SPDTs in position C, and unterminated SP4T in position D. Unterminated SPDTs in positions 1 and 2, terminated SPDTs in positions 5, 6, 7, and 8.

Terminated Relay Specifications

Frequency Range	DC–18 GHz	DC–26.5 GHz
CONNECTOR TYPE	SMA	SMA
IMPEDANCE	50Ω	50Ω
CONTACT LIFE: SPDT	2×10^6	2×10^6
SP4T, SP6T	2×10^6	2×10^6
VSWR (max.)	DC–3 GHz: 1.20 3–8 GHz: 1.30 8–12.4 GHz: 1.40 12.4–18 GHz: 1.50	DC–3 GHz: 1.20 3–8 GHz: 1.30 8–12.4 GHz: 1.40 12.4–18 GHz: 1.50 18–26.5 GHz: 1.80
INSERTION LOSS (max.) dB	DC–3 GHz: 0.2 3–8 GHz: 0.3 8–12.4 GHz: 0.4 12.4–18 GHz: 0.5	DC–3 GHz: 0.2 3–8 GHz: 0.3 8–12.4 GHz: 0.4 12.4–18 GHz: 0.5 18–26.5 GHz: 0.7
ISOLATION (min.) dB	DC–3 GHz: 80 3–8 GHz: 70 8–12.4 GHz: 60 12.4–18 GHz: 60	DC–3 GHz: 80 3–8 GHz: 70 8–12.4 GHz: 60 12.4–18 GHz: 60 18–26.5 GHz: 50
ACTUATION TIME (max.) ms SPDT	10	10
SP4T, SP6T	15	15

Transfer Switch Specifications

Frequency Range	DC–18 GHz	DC–26.5 GHz
CONNECTOR TYPE	SMA	SMA 2.9
IMPEDANCE	50Ω	50Ω
CONTACT LIFE	2.5×10^6	2.5×10^6
VSWR (max.)	DC–3 GHz: 1.20 3–8 GHz: 1.30 8–12.4 GHz: 1.40 12.4–18 GHz: 1.50	DC–3 GHz: 1.20 3–8 GHz: 1.30 8–12.4 GHz: 1.40 12.4–18 GHz: 1.50 18–26.5 GHz: 1.70
INSERTION LOSS (max.) dB	DC–3 GHz: 0.2 3–8 GHz: 0.3 8–12.4 GHz: 0.4 12.4–18 GHz: 0.5	DC–3 GHz: 0.2 3–8 GHz: 0.3 8–12.4 GHz: 0.4 12.4–18 GHz: 0.5 18–26.5 GHz: 0.7
ISOLATION (min.) dB	DC–3 GHz: 80 3–8 GHz: 70 8–12.4 GHz: 60 12.4–18 GHz: 60	DC–3 GHz: 80 3–8 GHz: 70 8–12.4 GHz: 60 12.4–18 GHz: 60 18–26.5 GHz: 50
ACTUATION TIME (max.) ms	15	15

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ACCESSORIES AVAILABLE

CABLES, ADAPTERS, TOOLS

7007-1	Shielded GPIB Cable, 1m (3.3 ft.)
7007-2	Shielded GPIB Cable, 2m (6.6 ft.)
7712-SMA-1	SMA Cable, male to male, 1m (3.3 ft.)
CA-404-B	SMA Cable, male to male, RG188 cable, 2m (6.5 ft).
KPCI-488LPA	IEEE-488 Interface/Controller for the PCI Bus
KUSB-488B	IEEE-488 USB-to-GPIB Interface Adapter
S46-SMA-0.5	DC-18GHz, Low Loss, Semi-Flex SMA-SMA Cable Assembly, 0.152m (6 in.)
S46-SMA-1	DC-18GHz, Low Loss, Semi-Flex SMA-SMA Cable Assembly, 0.305m (12 in.)
S46-SMA-1.7	DC-18GHz, Low Loss, Semi-Flex SMA-SMA Cable Assembly, 0.518m (20.4 in.)
S46-SMA26-0.5	DC-26.5GHz, Low Loss, Semi-Flex SMA-SMA Cable Assembly, 0.152m (6 in.)
S46-SMA26-1	DC-26.5GHz, Low Loss, Semi-Flex SMA-SMA Cable Assembly, 0.305m (12 in.)
S46-SMA26-1.7	DC-26.5GHz, Low Loss, Semi-Flex SMA-SMA Cable Assembly, 0.518m (20.4 in.)
TL-24	SMA Cable Torque Wrench

SWITCH KITS

S46T-MSPDT-KIT	Quantity 2, 18GHz Unterminated SPDT Relays, Mounting Plate, and Control Cable Assembly (Note: Kit applicable only for relay A-D mounting locations)
S46T-SPDT-KIT	18GHz Unterminated SPDT Relay, Spacer Block, and Control Cable Assembly
S46T-SPDT-KIT-T	18 GHz Terminated SPDT Relay and Control Cable Assembly
S46T-SP4T-KIT	18GHz Unterminated SP4T Relay, Mounting Plate, and Control Cable Assembly
S46T-SP4T-KIT-T	18GHz Terminated SP4T Relay, Mounting Plate, and Control Cable Assembly
S46T-SP6T-KIT	18GHz Unterminated SP6T Relay, Mounting Plate, and Control Cable Assembly
S46T-SP6T-KIT-T	18 GHz Terminated SP6T Relay, Mounting Plate, and Control Cable Assembly
S46T-XFR-KIT	18GHz Transfer Switch, Mounting Plate, and Control Cable Assembly
S46T-SPDT-KIT-26	26.5GHz Unterminated SPDT Relay, Spacer Block, and Control Cable Assembly
S46T-SPDT-KIT-26T	26.5GHz Terminated SPDT Relay and Control Cable Assembly
S46T-MSPDT-KIT-26	Quantity 2, 26.5GHz Unterminated SPDT Relays, Mounting Plate, and Control Cable Assembly (Note: Kit applicable only for relay A-D mounting locations)
S46T-SP4T-KIT-26	26.5GHz Unterminated SP4T Relay, Mounting Plate, and Control Cable Assembly
S46T-SP4T-KIT-26T	26.5GHz Terminated SP4T Relay and Control Cable Assembly
S46T-SP6T-KIT-26	26.5GHz Unterminated SP6T Relay, Mounting Plate, and Control Cable Assembly
S46T-SP6T-KIT-26T	26.5GHz Terminated SP6T Relay and Control Cable Assembly
S46T-XFR-KIT-26	26.5GHz Transfer Switch, Mounting Plate, and Control Cable Assembly

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