

KEYSIGHT TECHNOLOGIES (AGILENT HP)

# N1810UL

The Keysight N1810UL is a high-performance, single-pole double-throw (SPDT) coaxial switch designed for RF and microwave signal routing. Utilizing an unterminated latching configuration, it offers exceptional isolation, low insertion loss, and outstanding repeatability up to 50 GHz, making it an ideal choice for automated test and measurement systems.

SPECIFICATIONS

General

|            |                                                                                             |
|------------|---------------------------------------------------------------------------------------------|
| Interfaces | D-sub 9-pin (Option 201) / Solder terminals (Option 202) / 10-pin ribbon cable (Option 203) |
|------------|---------------------------------------------------------------------------------------------|

Physical

|                       |                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------|
| Power Supply          | 5 VDC / 15 VDC / 24 VDC nominal (option dependent)                                                |
| Operating Temperature | -25 to +75 °C °C                                                                                  |
| Dimensions (W×H×D)    | 43.2 mm × 51.1 mm × 12.7 mm (solder terminals) / 43.2 mm × 63.8 mm × 12.7 mm (D-sub connector) mm |
| Weight                | 0.106 kg kg                                                                                       |

## RF Performance

|                                 |                                                 |
|---------------------------------|-------------------------------------------------|
| Frequency Range Option 004      | DC to 4 GHz                                     |
| Frequency Range Option 020      | DC to 20 GHz                                    |
| Frequency Range Option 026      | DC to 26.5 GHz                                  |
| Frequency Range Option 040      | DC to 40 GHz                                    |
| Frequency Range Option 050      | DC to 50 GHz                                    |
| Impedance                       | 50 $\Omega$                                     |
| Insertion Loss (DC to 4 GHz)    | < 0.35 dB (typical 0.15 dB)                     |
| Insertion Loss (4 to 12.4 GHz)  | < 0.45 dB (typical 0.20 dB)                     |
| Insertion Loss (12.4 to 20 GHz) | < 0.55 dB (typical 0.25 dB)                     |
| Insertion Loss (20 to 26.5 GHz) | < 0.70 dB (typical 0.35 dB)                     |
| Insertion Loss (26.5 to 40 GHz) | < 0.90 dB (typical 0.40 dB)                     |
| Insertion Loss (40 to 50 GHz)   | < 1.20 dB (typical 0.50 dB)                     |
| Isolation (DC to 4 GHz)         | > 100 dB (typical 120 dB)                       |
| Isolation (4 to 12.4 GHz)       | > 90 dB (typical 110 dB)                        |
| Isolation (12.4 to 20 GHz)      | > 80 dB (typical 100 dB)                        |
| Isolation (20 to 26.5 GHz)      | > 75 dB (typical 90 dB)                         |
| Isolation (26.5 to 40 GHz)      | > 70 dB (typical 85 dB)                         |
| Isolation (40 to 50 GHz)        | > 60 dB (typical 75 dB)                         |
| SWR (DC to 4 GHz)               | < 1.15                                          |
| SWR (4 to 12.4 GHz)             | < 1.25                                          |
| SWR (12.4 to 20 GHz)            | < 1.30                                          |
| SWR (20 to 26.5 GHz)            | < 1.45                                          |
| SWR (26.5 to 40 GHz)            | < 1.70                                          |
| SWR (40 to 50 GHz)              | < 1.95                                          |
| Insertion Loss Repeatability    | < 0.03 dB max (guaranteed for 5 million cycles) |

## Electrical & Control

|                                           |                                                                |
|-------------------------------------------|----------------------------------------------------------------|
| Actuator Type                             | Latching                                                       |
| Nominal Coil Voltage Options              | 5 VDC (Option 105) / 15 VDC (Option 115) / 24 VDC (Option 124) |
| Coil Operating Voltage Range (Option 105) | 4.5 to 7 VDC                                                   |
| Coil Operating Voltage Range (Option 115) | 12 to 20 VDC                                                   |
| Coil Operating Voltage Range (Option 124) | 20 to 30 VDC                                                   |
| Nominal Coil Current (Option 105)         | 350 mA                                                         |
| Nominal Coil Current (Option 115)         | 120 mA                                                         |
| Nominal Coil Current (Option 124)         | 75 mA                                                          |
| Switching Time                            | < 15 ms                                                        |
| Current Auto-Cutoff                       | Yes (integrated automatic electronic interrupt)                |
| Position Feedback Indicators              | Option-dependent (Option 100), rated for 3 to 30 V, 30 mA max  |

## Mechanical & Physical

|                                    |                                                            |
|------------------------------------|------------------------------------------------------------|
| Switch Configuration               | SPDT (Single Pole Double Throw), Unterminated              |
| RF Connectors (Option 004/020/026) | SMA (female)                                               |
| RF Connectors (Option 040)         | 2.92 mm (female)                                           |
| RF Connectors (Option 050)         | 2.4 mm (female)                                            |
| Control Terminals Option 201       | 9-pin D-sub (male)                                         |
| Control Terminals Option 202       | Solder terminals                                           |
| Control Terminals Option 203       | 10-pin ribbon cable                                        |
| Mechanical Lifetime                | 5,000,000 cycles (guaranteed), 10,000,000 cycles (typical) |

## Environmental

|                             |                                  |
|-----------------------------|----------------------------------|
| Storage Temperature Range   | -55 to +85 °C                    |
| Operating Relative Humidity | 95% RH at 40 °C (non-condensing) |
| Operating Altitude          | 4,600 m (15,000 ft)              |
| Non-Operating Altitude      | 15,300 m (50,000 ft)             |
| Operating Vibration         | 7 g (5 to 2000 Hz)               |
| Non-Operating Vibration     | 20 g (20 to 2000 Hz)             |
| Operating Shock             | 50 g @ 6 ms (half-sine)          |
| Non-Operating Shock         | 500 g @ 0.5 ms (half-sine)       |

## RF Power Handling

|                                                                 |       |
|-----------------------------------------------------------------|-------|
| Cold Switching Power Rating (DC to 4 GHz, Option 004/020/026)   | 100 W |
| Cold Switching Power Rating (4 to 12.4 GHz, Option 004/020/026) | 70 W  |
| Cold Switching Power Rating (12.4 to 20 GHz, Option 020/026)    | 60 W  |
| Cold Switching Power Rating (20 to 26.5 GHz, Option 026)        | 50 W  |
| Cold Switching Power Rating (DC to 4 GHz, Option 040/050)       | 50 W  |
| Cold Switching Power Rating (4 to 12.4 GHz, Option 040/050)     | 40 W  |
| Cold Switching Power Rating (12.4 to 20 GHz, Option 040/050)    | 35 W  |
| Cold Switching Power Rating (20 to 26.5 GHz, Option 040/050)    | 30 W  |
| Cold Switching Power Rating (26.5 to 40 GHz, Option 040/050)    | 25 W  |
| Cold Switching Power Rating (40 to 50 GHz, Option 050)          | 20 W  |

**Position Indicators**

|                                |           |
|--------------------------------|-----------|
| Indicator Supply Voltage Range | 3 to 30 V |
| Indicator Max Sink Current     | 30 mA     |

**RF Characteristics**

|                                   |                                   |
|-----------------------------------|-----------------------------------|
| Hot Switching Power Rating (CW)   | 1 W                               |
| Hot Switching Power Rating (Peak) | 100 W (for 10 μs max pulse width) |

**TECHNOLOGY**

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RF / Microwave Coaxial Switch

**APPLICATIONS**

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Signal routing, automated test equipment (ATE), RF matrix switching

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