# Miniature
# MS-Series Matrix
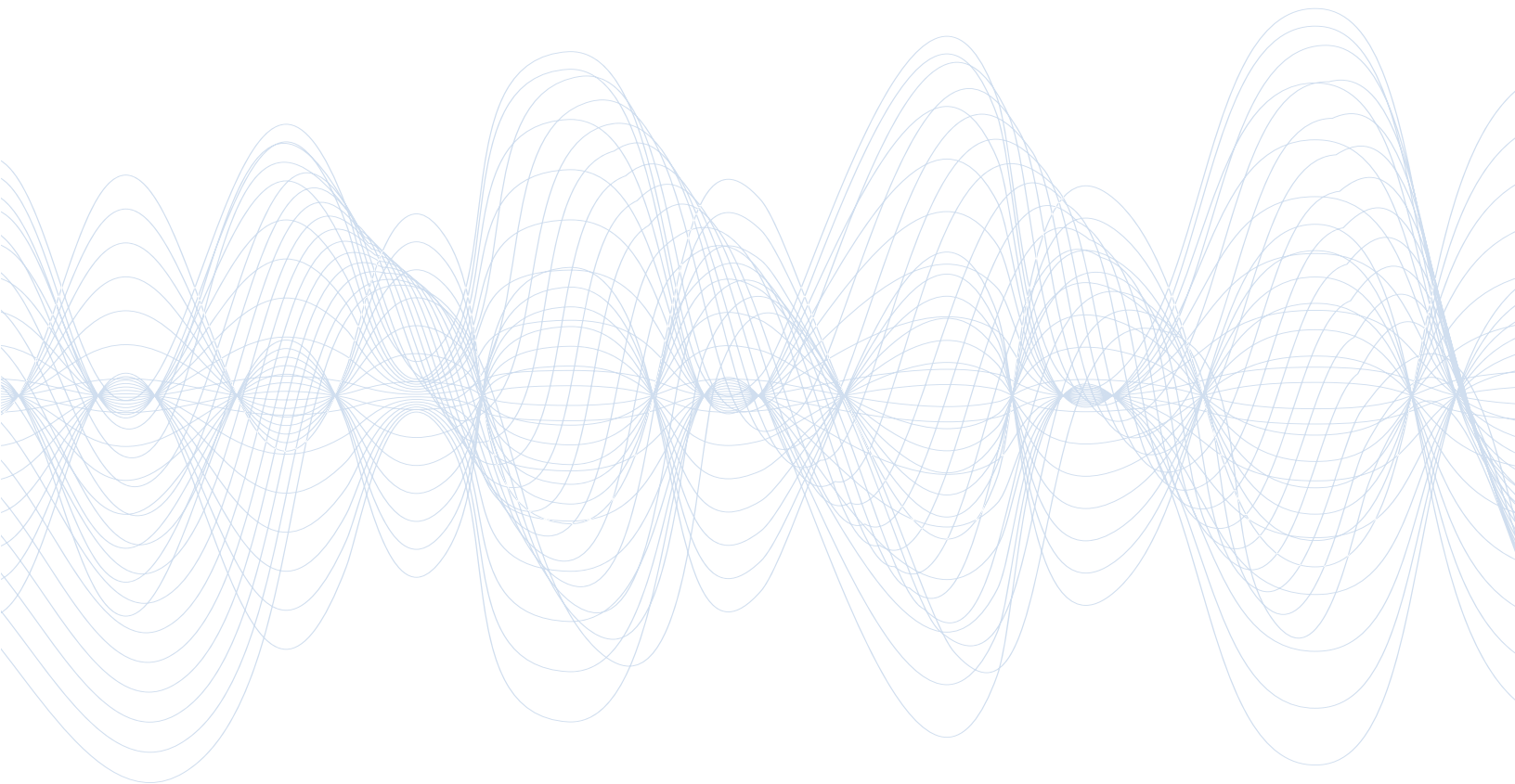
**Dow-Key® Microwave**
CORPORATION

A DOVER COMPANY

## Features

| | |
|---|---|
| **Configuration** | Multiple Switches (bidirectional): SPDT, Terminated SPDT, Terminated SP6T |
| **Operating Frequency** | DC-26.5 GHz |
| **Impedance** | 50-Ohm |
| **Insertion Loss Repeatability** | 0.03 dB (max) |
| **Operating Life** | SPDT: 10 Million Cycles (min) SP6T: 5 Million Cycles (min) |
| **Control Options** | Ethernet (TCP/IP), Embedded Web Server (HTTP) & USB port |

## Application

The Miniature MS-series is an ideal switch solution for Test & Measurement requirements. It is equipped with high performance switches with 0.03 dB insertion loss repeatability across DC to 26.5 GHz, and a minimum of 10 Million Life Cycles for the SPDT and 5 Million Life Cycles for the SP6T.

The miniature sized enclosure can be populated on the front panel with <u>maximum</u> of non-terminated and/or terminated:
- (8) SPDT Switches
- (2) SP6T Switches
- (1) SP6T + (4) SPDT Switches
- (2) SP6T + (1) SPDT Switches
-

The MMS-series requires a 12Vdc / 2.5A power supply and the switches can be controlled remotely via TCP/IP Ethernet and HTTP-Server, which has a built-in "Sequencer" feature that allows the user to program up to ten 500-step sequence programs. It can also be controlled via USB port as a virtual RS-232 serial port.

## Typical Application extending VNA ports

- ➢ *12 INPUTS*
- ➢ *12 OUTPUTS*
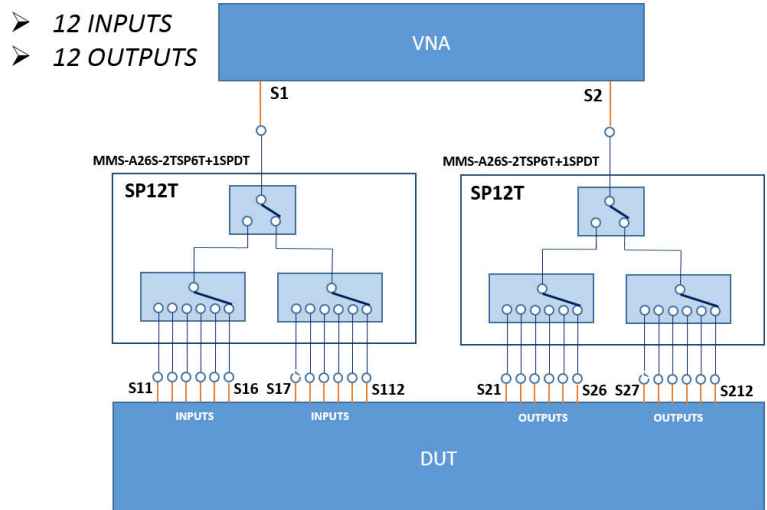


No RF cables are provided with MMS-Series

## Specifications

| I/O port Connector | |
|---|---|
| **DC Connector** | 2.1 mm Center Pos. DC Socket |
| **RF Switch** | SMA |
| **USB** | USB Type A Receptacle |
| **Ethernet** | RJ-45 |
| **Switching Time** | 50 ms (incl. control delay) |
| **Operating Life (min)** | 10,000,000 (cold) |
| **Operating Temperature** | 0°C to +50°C |
| **Storage Temperature** | -20°C to +70°C |
| **Operating Humidity** | 10-80% non-condensing |
| **Dimensions (max)** | 6.29" x 3.30" x 7.05" |
| **Weight** | Varies per part number |

| Remote Control Options | |
|---|---|
| **Ethernet** | TCP/IP, 10/100 BASE-T, manual or DHCP IP address assignment |
| **Embedded Web Server** | HTTP (built-in webpage) Built-in Sequencer Feature with up to ten 500-step sequence programs |
| **USB Port** | Operates as a virtual RS-232 |
| **Commands/Syntax** | Dow-Key SCPI commands |
| Electrical Specifications | |
| **Operating Voltage** | 12 V +/- 5% |
| **Operating Current** | 2.5 A (max) @ 12 Vdc |
| **RF Power** | 2W max. (hot-switching), see chart for cold-switching |

# 0.03 dB Insertion Loss Repeatability

## RF Specifications

| DC-26.5 GHz, Latching, Non-Terminated or Terminated SPDT | | | | |
|---|---|---|---|---|
| Frequency [GHz] | VSWR Max. | Isolation Min. [dB] | Insertion Loss Max. [dB] | CW Power Max. [W] |
| DC-4 | 1.15 | 85 | 0.42 | 30 |
| 4-12.4 | 1.25 | 76 | 0.56 | 20 |
| 12.4-20 | 1.35 | 67 | 0.69 | 16 |
| 20-26.5 | 1.50 | 60 | 0.80 | 13 |

| DC-26.5 GHz, Latching, Terminated SP6T | | | | |
|---|---|---|---|---|
| Frequency [GHz] | VSWR Max. | Isolation Min. [dB] | Insertion Loss Max. [dB] | CW Power Max. [W] |
| DC-4 | 1.20 | 100 | 0.42 | 30 |
| 4-12.4 | 1.35 | 80 | 0.56 | 20 |
| 12.4-20 | 1.45 | 70 | 0.69 | 16 |
| 20-26.5 | 1.70 | 65 | 0.80 | 13 |

## Typical Applications for extending VNA ports
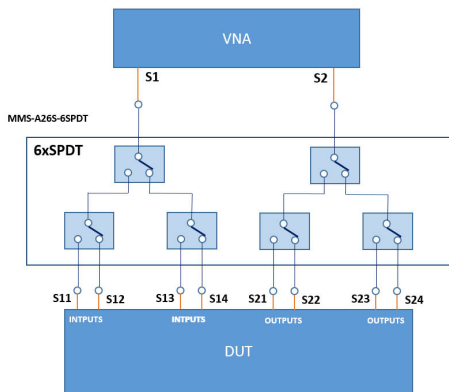


No RF cables are provided with MMS-Series
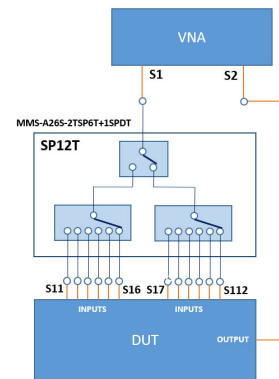
## Part Number Selector

**MMS – A 26 S – 1 TSP6T + 2 SPDT**

| Chassis Size | Frequency | Connector | Quantity [1] | Switch Type | Quantity [1] | Switch Type |
|---|---|---|---|---|---|---|
| A = 6.29" x 3.30" x 7.05" | 26 = DC-26.5 GHz | S = SMA female | 1 = 1 Switch | SPDT = 1X2 | 1 = 1 Switch | SPDT = 1X2 |
| | | | 2 = 2 Switches | TSPDT = Terminated 1X2 | 2 = 2 Switches | TSPDT = Terminated 1X2 |
| | | | 3 = 3 Switches | TSP6T = Terminated 1X6 | 3 = 3 Switches | TSP6T = Terminated 1X6 |
| | | | . . . | | . . . | |
| | | | 8 = 8 Switches | | 8 = 8 Switches | |

[1] Maximum Switches Allowed (terminated and/or non-terminated):
(8) SPDT Switches
(2) SP6T Switches
(1) SP6T + (4) SPDT Switches
(2) SP6T + (1) SPDT Switches