

W4MS-NKU is an reflective 4-Port Matrix Switch module Powered by Ideal Switch® technology from Menlo Microsystems.

W4MS-NKU provides 9W CW power handling, low insertion loss and high linearity from DC to 20 GHz and is powered and controlled through USB type-C connector and external connectors include 2.92mm-vertical launch connector for all RF port.

W4MS-NKU is ideal solution for RF signal routing in wireless infrastructure and wireless applications.



■ Features

- DC to 20 GHz frequency range
- 9W CW power handling
- Low insertion loss : 2.9 dB @ 20 GHz
- High linearity, IIP3 > 95 dBm
- High Reliability > 3 billion Switching Operations
- ESD rating : 2kV HBM between RF port and GND

■ Applications

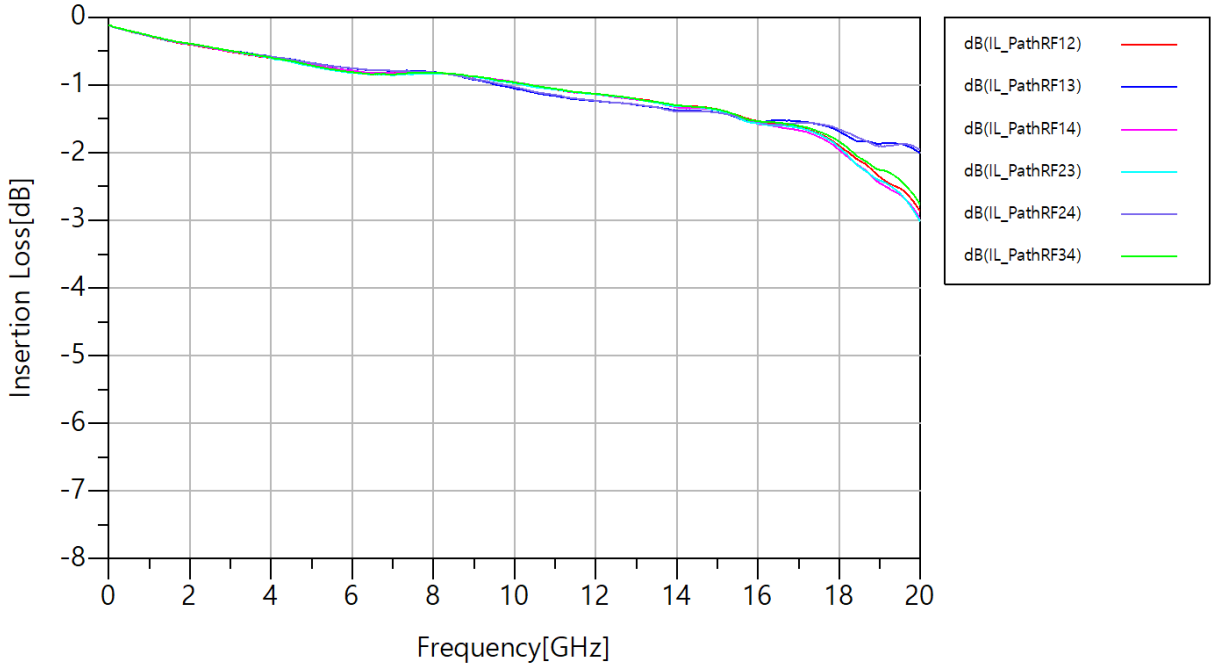
- Test & Measurement
- High Power RF Front-ends
- Antenna Tuning and Beam Steering
- 5G Wireless Communication
- RF signal routing

Electrical Specifications

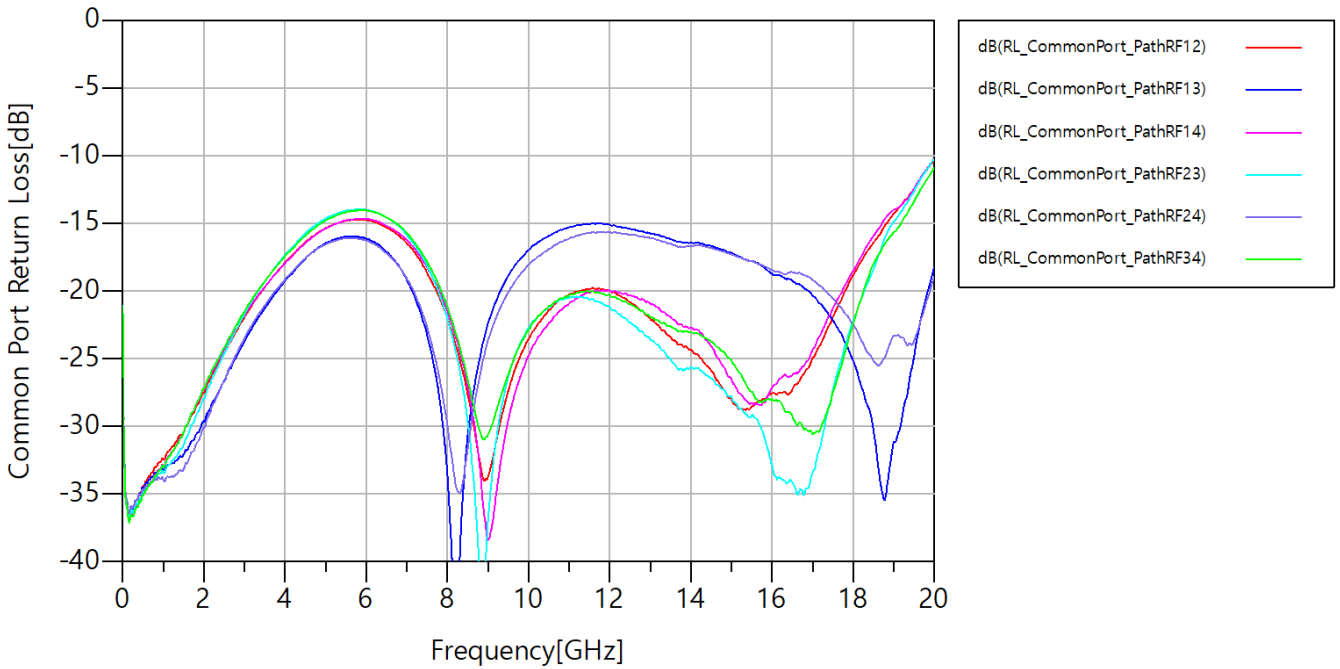
| Parameter | Condition | Min | Typ | Max | Unit |
|---------------------------|---|-------------------|--------------------|-----|-------|
| Operation Frequency | | DC | | 20 | GHz |
| Insertion loss | @ 10 GHz, All RF port terminated | | 1.0 | | dB |
| | @ 20 GHz, All RF port terminated | | 2.9 | | |
| Return loss (common port) | @ 10 GHz, All RF port terminated | | 14 | | dB |
| | @ 20 GHz, All RF port terminated | | 10 | | |
| Return loss (active port) | @ 10 GHz, All RF port terminated | | 14 | | dB |
| | @ 20 GHz, All RF port terminated | | 10 | | |
| Isolation | @ 10 GHz, All RF port terminated | | 27 | | dB |
| | @ 20 GHz, All RF port terminated | | 17 | | |
| CW Input Power @ 6 GHz | Measured at +85°C | | | 9 | W |
| Input IP3 | Measured at +25°C | | 95 | | dBm |
| Switching Time | COM port control time @Window10 | | 200 | | us |
| On/Off Operations | Measured at 5 kHz cycling rate, measured at +25°C | 3x10 ⁹ | 30x10 ⁹ | | Cycle |
| Hot Switch Restrictions | DC | -0.5 | | 0.5 | V |
| | RF | - | | 15 | dBm |
| Current consumption | USB type-C | | 85 | | mA |
| Power Supply | USB type-C | | 5 | | V |
| Baud Rate | USB COM port | | 115200 | | bps |
| RF Connectors | 2.92mm-female | | | | |
| ESD HBM | RF port | | 2 | | kV |
| | USB port | | 16 | | |
| Operating Temperature | | -40 | | 85 | °C |

■ Typical Performance Data

< Insertion Loss >

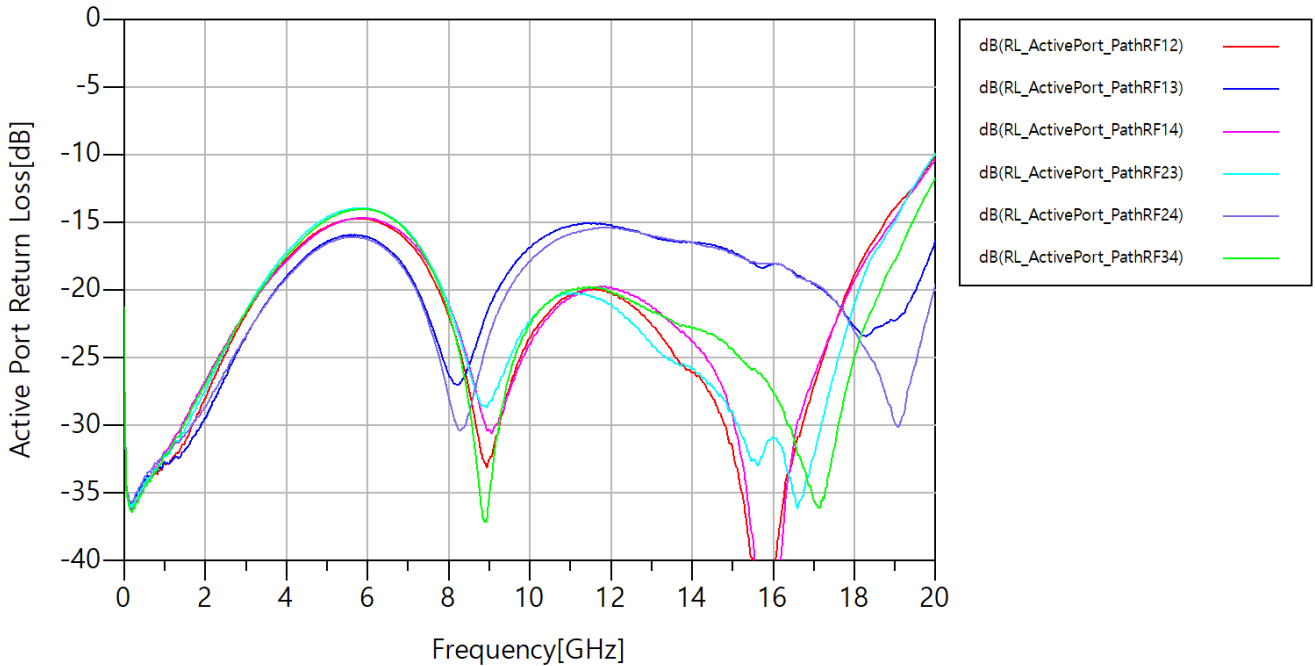


< Common Port Return Loss >

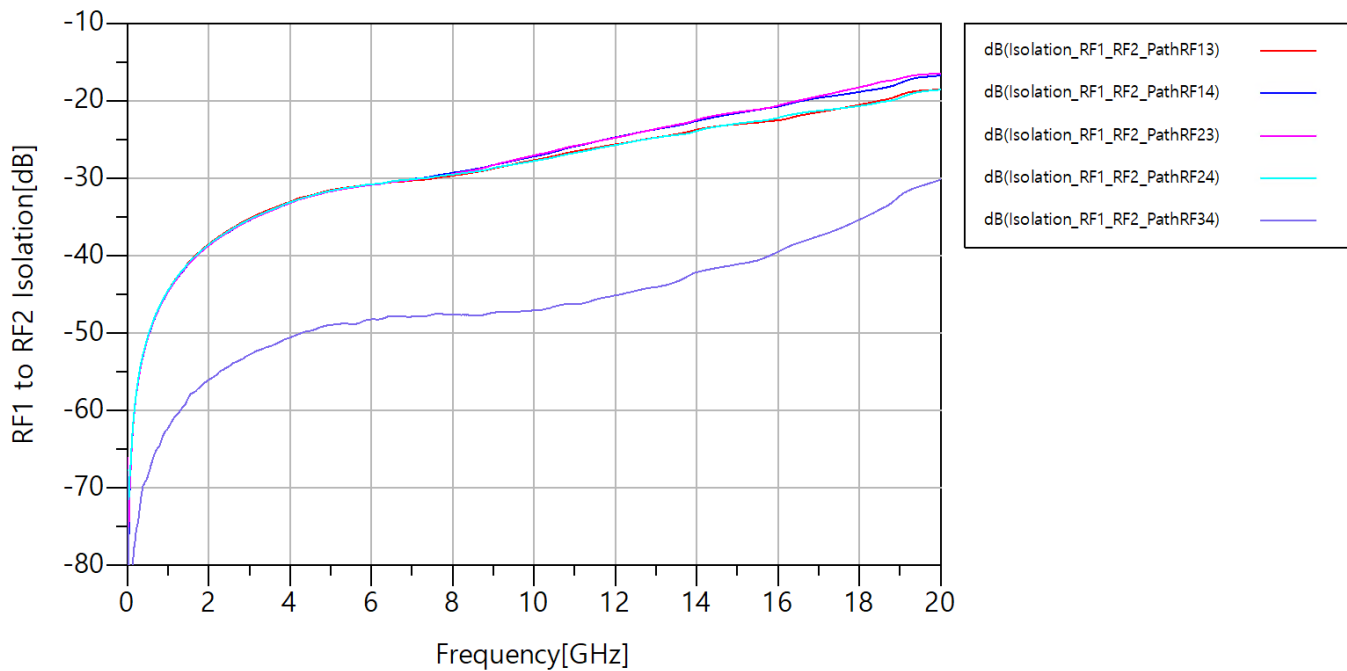


■ **Typical Performance Data**

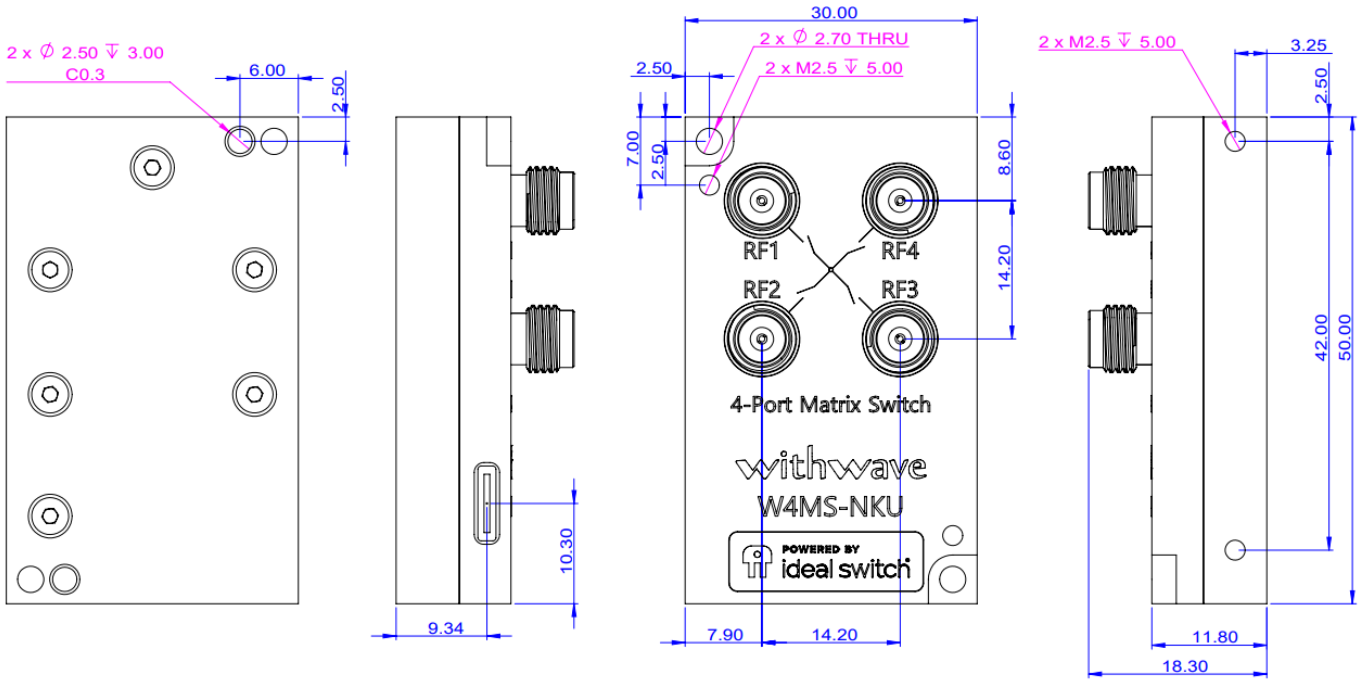
< Active Port Return Loss >



< RF1 to RF2 Isolation @ PathRFx >



■ Dimension



Control Description

| Command Format | COM port configuration |
|---|---|
| All commands must end with a semicolon. All commands are capitalized only. Port number should be 2-digit decimal. | Baud Rate :115200 Data bits : 8 Parity : None Stop bits : 1 Flow Type :None |

Command Specification

| Index | Command | Description | Return | Example |
|-------|---------|--|--|---------|
| 1 | *IDN?; | Query product information | Product PN, Manufacturer , W4MS-NKU, Withwave SW version, Serial number co, Ltd., V1.0, SN0001 | |
| 2 | RESET; | Reset the product | RESET; | RESET; |
| 3 | Pxy; | Switching to RFx to RFy Port number(xy) should be 2-digit decimal | Pxy; | P12; |
| 4 | OFF; | All off state | OFF; | OFF; |

Error Code

| Index | Return | Description |
|-------|--------|--------------------|
| 1 | E1; | Semicolon missing |
| 2 | E2; | Incorrect commands |

■ **Revision History**

| Revision | Date | Changes |
|----------|------------|--|
| Ver 1.0 | 2023-05-31 | Initial work |
| Ver 1.1 | 2023-08-16 | Add hot switch restrictions, modify some electrical specifications |