Universal Switching Corporation

Specification Sheet VXI-RMR410-001

Quad Section 1x10 SMA Type DC-18GHz
VXIbus Switching Module
Model VXI-RMR410

December 1998

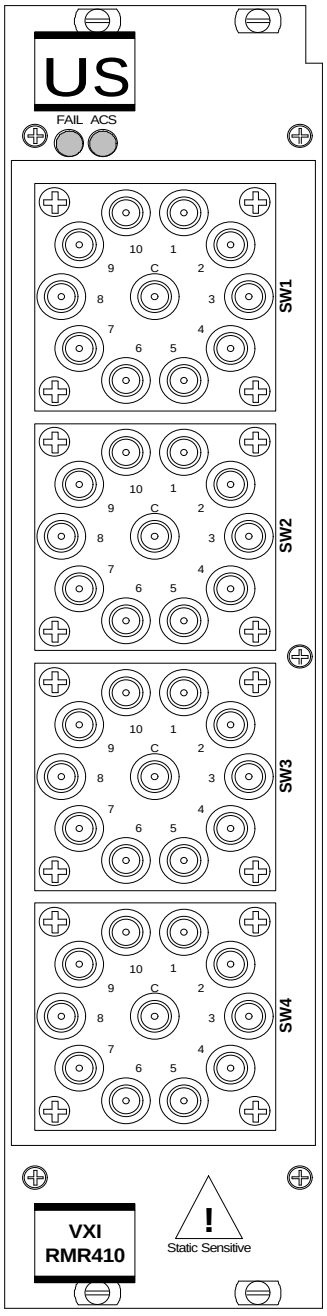
General

The relay-based VXI-RMR410 coaxial microwave switching module provides a flexible high density configuration for many applications. It contains multiple 18GHz relay sections for use in ATE stations, communication sites or other demanding applications requiring compact high performance microwave switching.

It provides up to four 1x10 individual relay sections within a single C2 sized VXI module. Each relay element is individually shielded from each other and the internal control/status circuitry. A unique control driver method reduces the amount of power the module requires from the host VXI mainframe, reducing cooling requirements and increasing reliability.

Ultra-high reliability relay elements (>1,000,000 operations) are coupled with control and status circuitry. Sections can be field replaced without special tools since each section is connectorized.

The number of sections included is determined by the model number. A reduced configuration can be further populated while in the field. Additional configurations are available on special order.



Applications

- Antenna routing
- ATE systems
- Communication installations
- Switching high speed ECL/PECL data
- Satellite control centers
- Ground station IF signal routing

Features

- Fast register-based control
- High reliability relay elements
- DC to 18GHz bandpass (min)
- High performance stainless steel SMA signal connectors
- Field replaceable plug-in relay elements
- Rugged aluminum shielded C2 sized enclosure
- Built-in control and status circuitry
- Individually shielded sections
- LabVIEW drivers included

Configurations

- VXI-RMR410-001 . . . .Single 1x10
- VXI-RMR410-002 . . . .Dual 1x10
- VXI-RMR410-003 . . . .Triple 1x10
- VXI-RMR410-004 . . . .Quad 1x10

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Construction

The diagram below shows the overall physical configuration of the VXI-RMR410 module. The top and bottom of the module contains venting slots for flow through cooling for proper operation in extreme temperature environments. The rugged aluminum enclosure provides a shielded environment internally for low noise signals. The module also provides aluminum slides for additional grounding for host VXI mainframes that provide conductive module slides.

Easily accessible during installation, the module has both the Logical Address and IRQ/function DIP-switches located on the side of the module (detailed below). Also located on the side is a set of status LED to indicate various module functions during troubleshooting.

The module faceplate provides two additional status LED's. A red LED is labeled ERR to indicate error conditions, and a blue LED illuminates when the module is addressed by the VXI slot 0 controller.

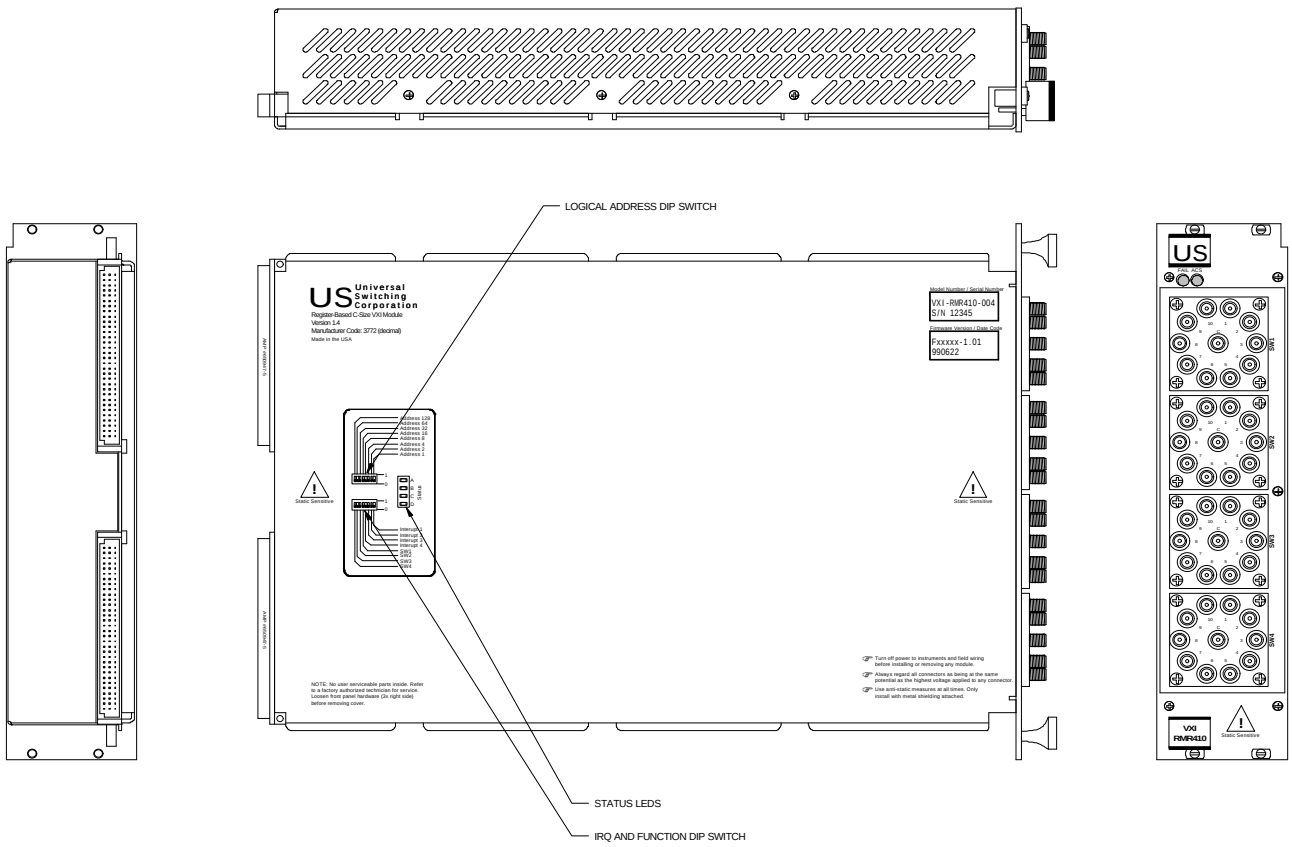
Module control is register based providing fast easy control of the module's functions. LabVIEW drivers can be provided to simplify the control of the module.

Example Module Usage

Many different applications can be served by the VXI-RMR72 VXI switch module. The module provides a versatile building block for both 1xN type switching and XY matrix switching, or both.

Universal Switching Corporation builds systems utilizing this and other modules to meet customer applications. The diagram on page 3 illustrates how the four individual sections can be cascaded to provide a larger configuration.

The example shows a 37x1 bidirectional array allowing the selection of one signal of 37 to be routed to the single output. Many other possibilities can be realized when coupled with other VXI switching modules too. Interconnection cabling can be provided by the factory using high performance 30GHz semi-flex cabling insuring the best possible performance.



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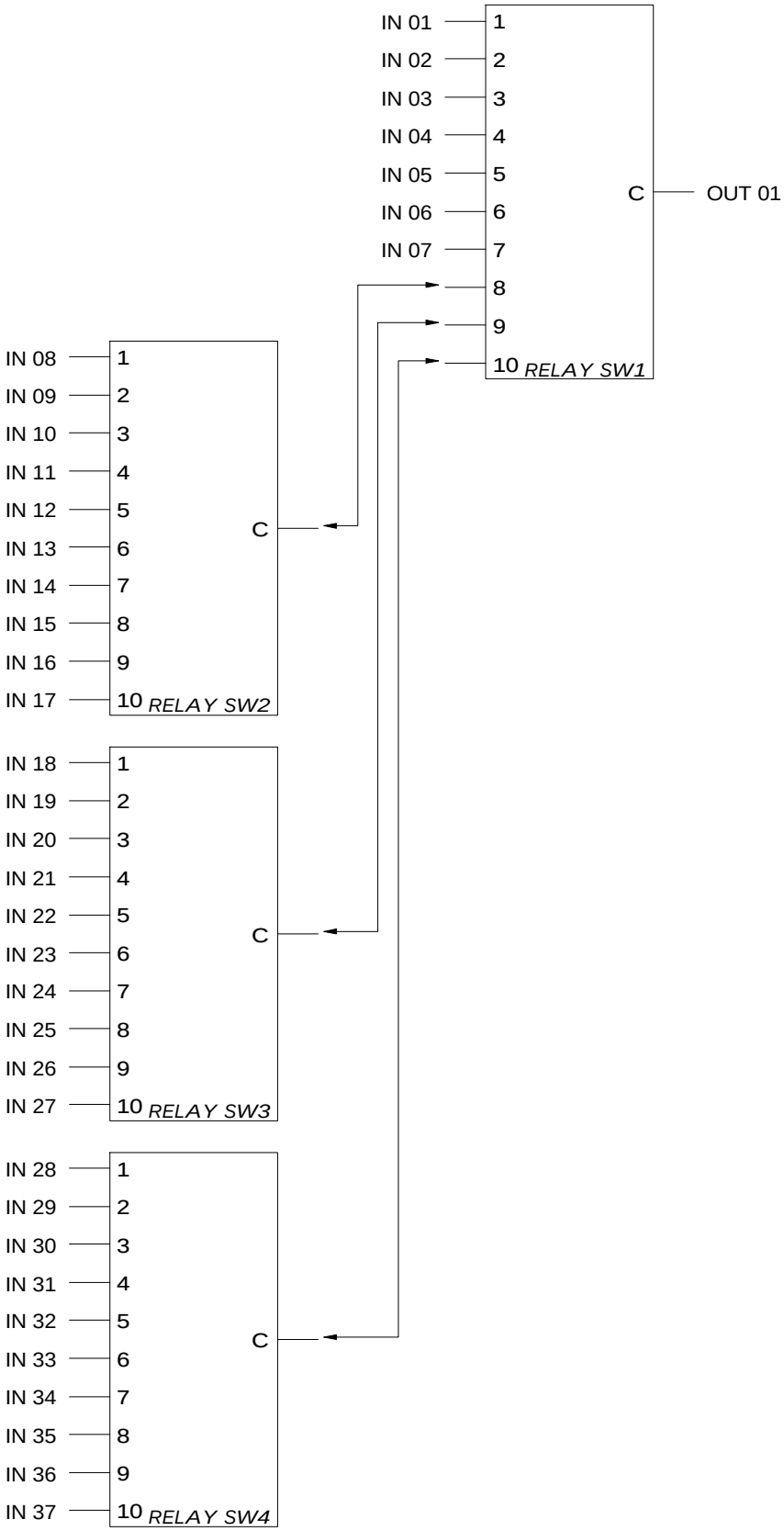
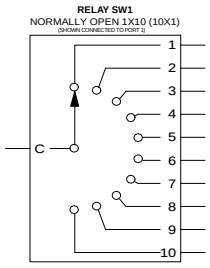
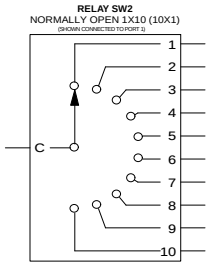
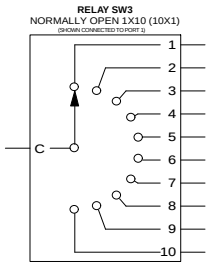
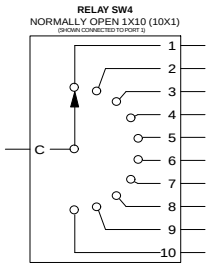
37x1 Switching Array Diagram











Signal Specifications

Switching elements . . . . . .Relay-based
Operating mode . . . . . .Normally Open
Configuration . . . . . .One 1x10, up to Four 1x10
Signal type . . . . . .Analog, bi-directional
Signal connector . . . . . .Stainless steel female SMA
Frequency range . . . . . .DC - 18GHz (min)
Impedance . . . . . .50 ohm
Insertion loss . . . . . .<0.30dB @ 4GHz
<0.35dB @ 8GHz
<0.40dB @ 12GHz
<0.50dB @ 18GHz
Repeatability . . . . . .<0.10dB max
Crosstalk isolation (min) . . .>75dB @ 4GHz
>70dB @ 8GHz
>65dB @ 12GHz
>60dB @ 18GHz
VSWR . . . . . .<1.2 : 1 @ 4GHz
<1.3 : 1 @ 8GHz
<1.4 : 1 @ 12GHz
<1.5 : 1 @ 18GHz
Maximum power . . . . . .100 watts @ 2.5GHz
40 watts @ 18GHz
Switching speed . . . . . .<50mS (plus control time)

General Specifications

Module size . . . . . .Quad (C2)
Control type . . . . . .Register based (V1.4)
Sparing . . . . . .Field replaceable elements
Construction . . . . . .Shielded aluminum case
Mating SMA torque . . . . . .8 inch pounds MAX
DC power . . . . . .+5V @ 1A plus 125mA/closure
+12V @ 310mA (50mS duration)
Weight . . . . . .<3lbs
Operating temp . . . . . .0 to +70C
Non-operating temp . . . . .-20 to +85C
Humidity . . . . . .0 to 95% (NC @ +25C)
Contact life . . . . . .>1,000,000 operations (per port)
MTBF . . . . . .>75,000 hours
(per MIL-HDBK-217F, N1
ground benign @ +25C)

Universal Switching's policy is one of continuous development, and consequently the company reserves the right to vary from the descriptions and specifications shown in this publication.

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