

General

The relay-based G2R22 coaxial microwave switching module provides a flexible configuration for many applications. It provides up to ten individual relay sections within a single module, using only two module slots. Each relay element is individually shielded from each other and internal control circuitry.

Ultra-high reliability relay elements (>1,000,000 operations per port) are coupled with control and status circuitry. Sections can be field replaced without removing the module since each relay section is connectorized (-65 versions only). Simply remove the four screws that retain a specific section, slide out until the connector is visible and remove the attached cable. The module also features hot-swap control technology for easy maintenance.

A unique power saving control circuit reduces DC power and cooling requirements for the module and increases overall reliability.

The number of and type 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.

The suffix of the model number can specify some unique features or additional performance specifications (see note). For control and DC power, the module must be installed into any G2 type mainframe controller. The mainframe must have either the -100, -D100, -600 or -D600 power supply configuration. Optionally, a -200 or -D200 suffix may be used if the -2x suffix is specified.

Applications

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

Features

- High reliability relay elements
- DC to 18GHz bandpass (min)
- Flexible configuration expandable in field
- High performance stainless steel SMA signal connectors
- Hot-Swap module technology
- Plug-in relay elements
- Rugged aluminum shielded enclosure
- Built-in control and status circuitry
- Individually shielded sections

Configurations

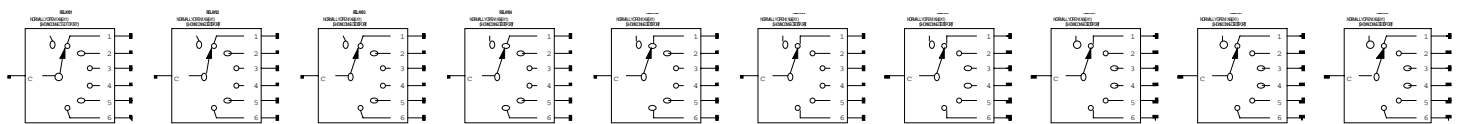
- | | | |
|------------------|-----------------------|---------|
| ■ G2R22-11X6-6x |One 1x6 relay | 2 slots |
| ■ G2R22-21X6-6x |Two 1x6 relays | 2 slots |
| ■ G2R22-31X6-6x |Three 1x6 relays | 2 slots |
| ■ G2R22-41X6-6x |Four 1x6 relays | 2 slots |
| ■ G2R22-51X6-6x |Five 1x6 relays | 2 slots |
| ■ G2R22-61X6-6x |Six 1x6 relays | 2 slots |
| ■ G2R22-71X6-6x |Seven 1x6 relays | 2 slots |
| ■ G2R22-81X6-6x |Eight 1x6 relays | 2 slots |
| ■ G2R22-91X6-6x |Nine 1x6 relays | 2 slots |
| ■ G2R22-101X6-6x |Ten 1x6 relays | 2 slots |

NOTE-1: With the suffix definition -60, the user must remove the module from a mainframe to replace or add an individual section. With the -65 suffix, an individual section can be replaced without removing the module.

NOTE-2: Specifying the -2x suffix (in place of the -6x suffix) will allow the module to be powered in a -200 or -D200 mainframe.



Model G2R22-101X6-65



Example Module Usage

Many different applications can be solved by utilizing the G2R22 relay 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 photo below shows the G2R22 module in the top of an 8RU mainframe (G2S1600CE) with other types of modules to solve a complex application involving microwave signals, differential ECL, and high speed LVDS signals. below illustrates an example configuration (bottom of page 3).

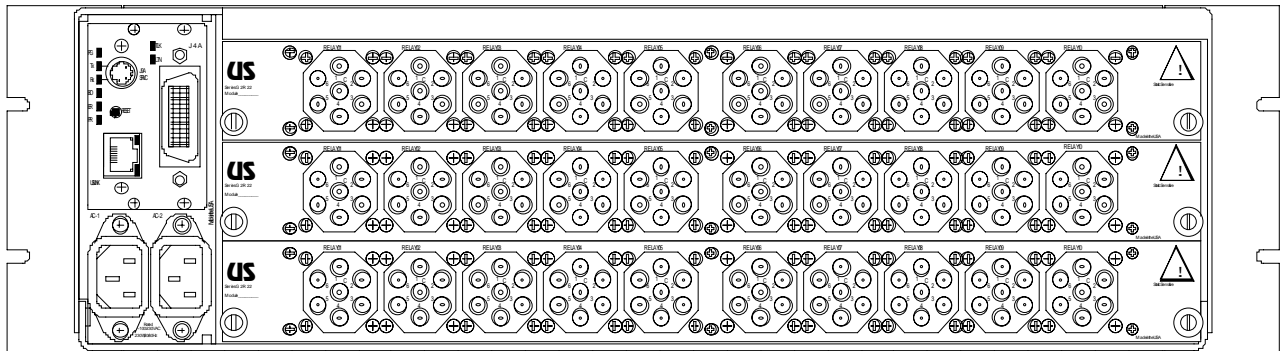
This example clearly shows how easy it is to solve these difficult requirements with the Series G2. Combining many different capabilities within one cost effective solution lowering maintenance, support and eliminating the need for in-house

custom designed equipment. Customized versions of this module and others are available upon request including cabling to complete a specific configuration.

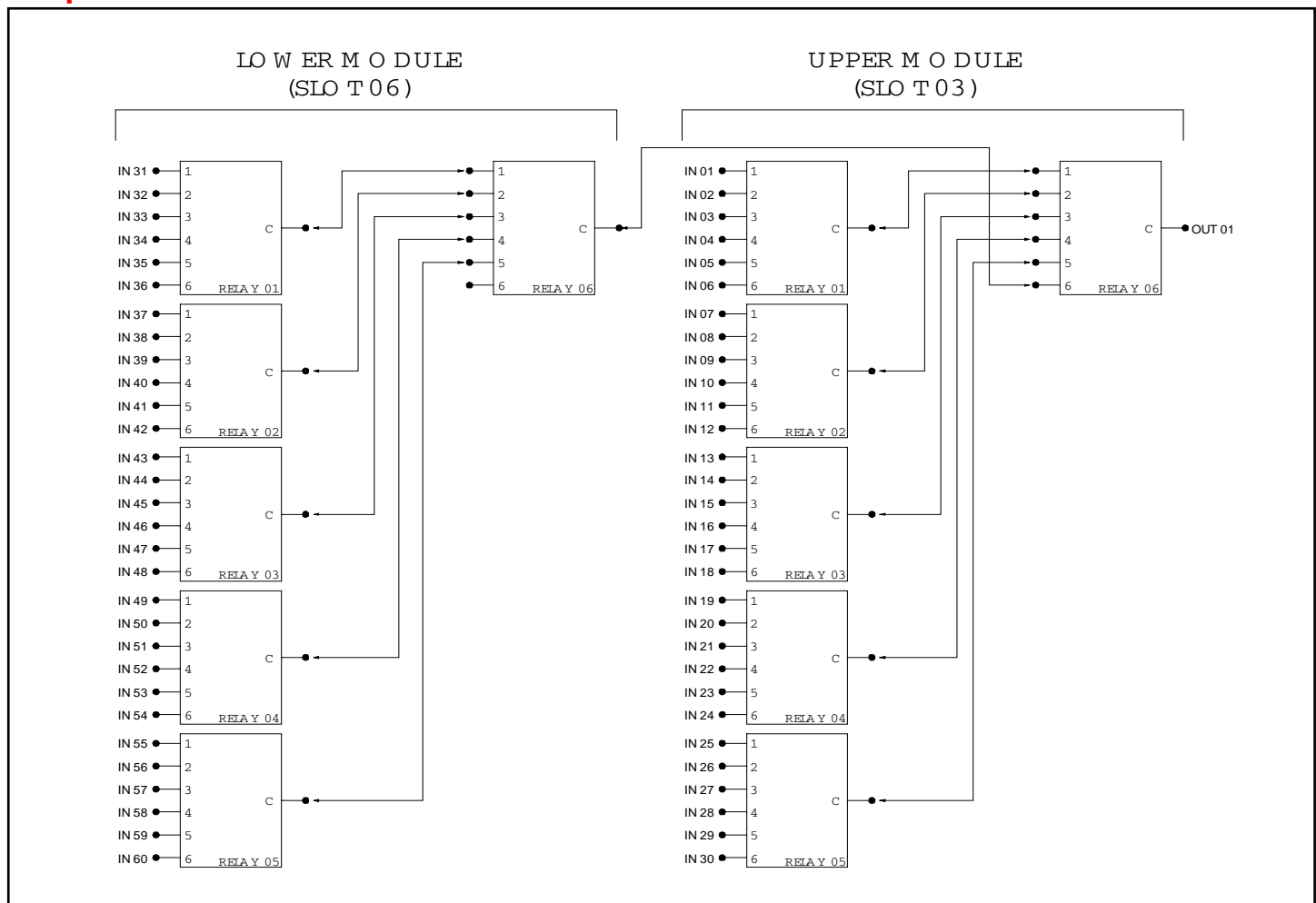
Control firmware is factory configured to simplify programming by using standard control protocol across the product line. Also, built-in firmware provides relay maintenance counters that provide the user with the ability to monitor the number of actuations (closures) on a specific port. This is useful to project end-of-life for relay element replacement prior to actual failure. Reduced configurations may be additionally populated while in the field. LabVIEW drivers can be provided at no charge at the time an order is place.

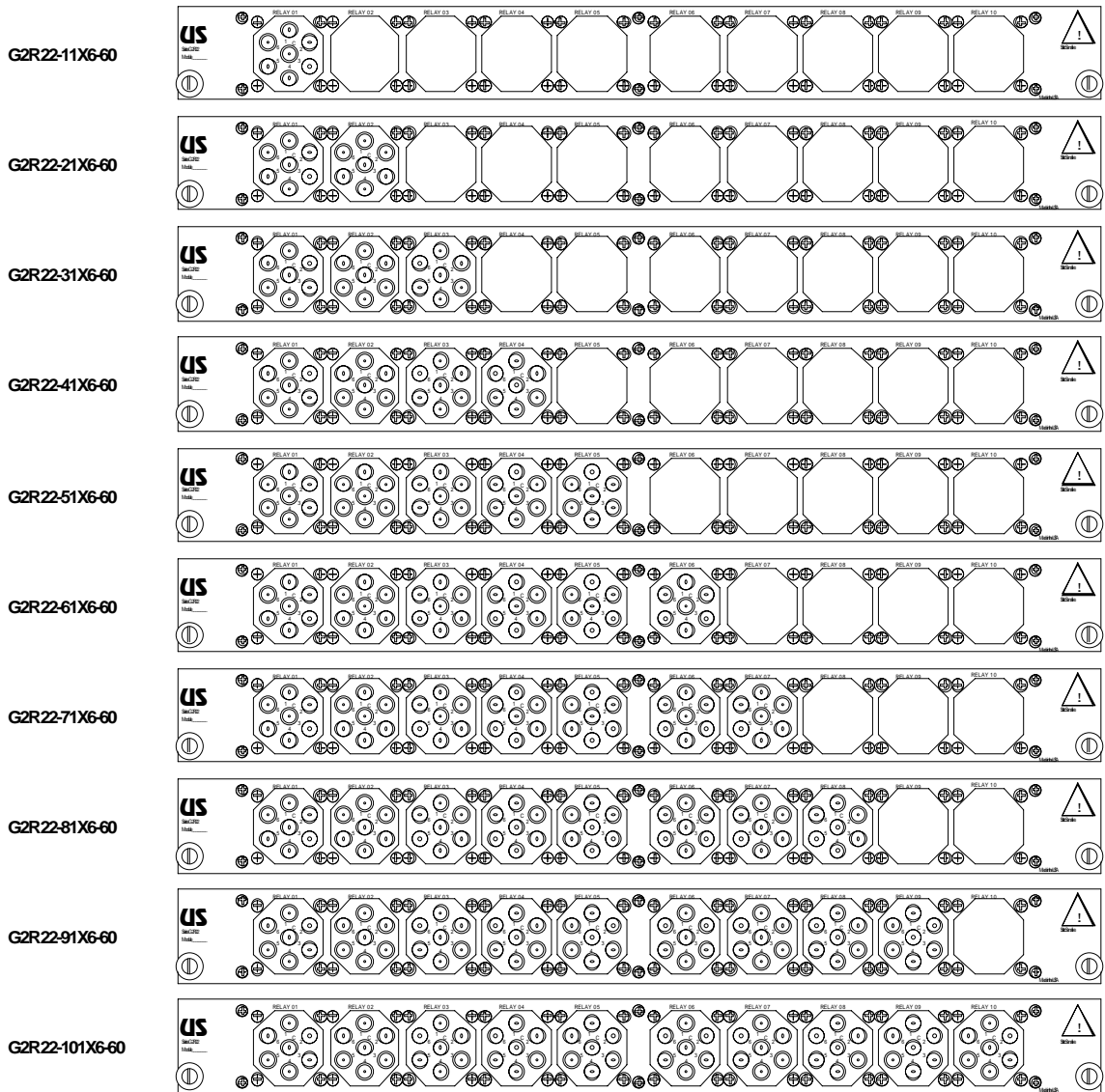


Rear view of a unit with thirty 1x6 relays in a 3RU package (with GPIB interface)



Simplified 60x1 Schematic





Signal Specifications

Switching elementsRelay-based
 Operating modeNormally open (no terminations)
 Ports per relay section . . .Six (1x6)
 Number of sectionsOne to ten (see above diagram)
 Signal typeAnalog, bi-directional
 Signal connectorStainless steel female SMA
 Frequency rangeDC - 18GHz, 26GHz available
 Impedance50 ohm
 Insertion loss<0.30dB @ 4GHz
 <0.35dB @ 8GHz
 <0.40dB @ 12GHz
 <0.50dB @ 18GHz
 Repeatability<0.05dB 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 power100 watts @ 2.5GHz
 40 watts @ 18GHz
 Switching speed<50mS (plus control time)

General Specifications

Module size2 slot height
 Control typeG2 compatible
 SparingHot-Swappable
 ConstructionShielded aluminum case
 Mating SMA torque8 inch pounds MAX
 DC power-100 or -600 configuration
 +5V (digital), +15V (analog)
 (or -200, -D200 by special order)
 Weight<5lbs (ten section)
 Operating temp0 to +70C
 Non-operating temp-20 to +85C
 Humidity0 to 95% (NC @ +25C)
 Contact life>1,000,000 operations (per port)
 MTBF>125,500 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.

