

General

The solid-state G2S48 analog switching module is offered for applications demanding high performance analog IF switching. The non-blocking full fanout switching module is available in a number of configurations. The switching array is a "fixed" size and can be used as a building block for larger switching systems by cascading modules together. Each output port has an associated expander port allowing the module to be expanded to additional equipment.

It provides a very cost effective switching solution. It's available in the sizes shown in the table on page 4 as standard configurations. The size of the array is determined by the model number. Additional configurations are also available on special order.

The switching array is non-blocking with full fanout allowing the user to connect any given input to one, many, or up to all outputs at any given time. No input loading or impedance mis-matches are presented to the user due to the architecture of the switching array, and the use of high performance power splitters and amplifiers.

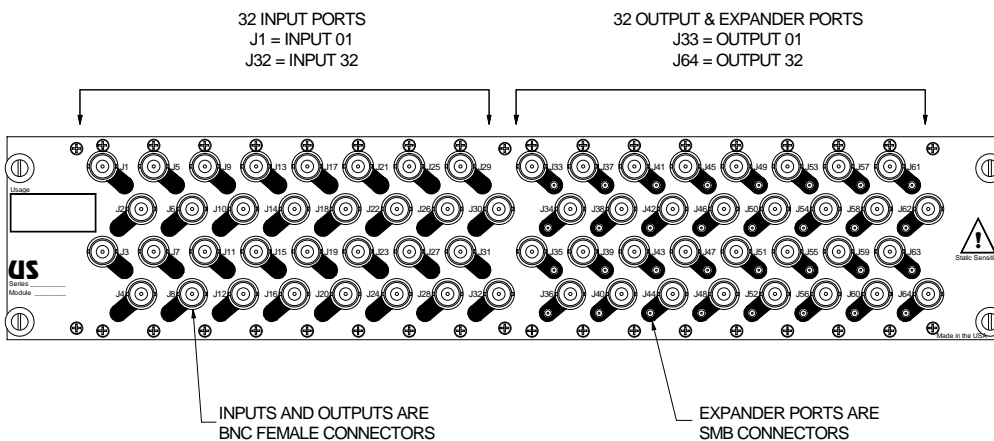
The suffix of the model number can specify some unique features or additional performance specifications (consult the factory). For control and DC power, the module must be installed into any G2 type mainframe controller, which must be configured with the -207 or -D207 power supply configuration.

Applications

- Airborne surveillance systems
- Communication installations
- Uplink and downlink IF routing
- Satellite control centers
- Ground station IF signal routing

Features

- Includes Output expansion ports (SMB)
- Solid-state GaAs switching elements
- Wide 20MHz to 250MHz bandpass (min)
- BNC signal connectors standard, TNC or SMA optional
- Hot-Swap module technology
- Designed for low level, low noise IF applications
- Full fanout, non-blocking design
- Unity gain, high isolation signal path

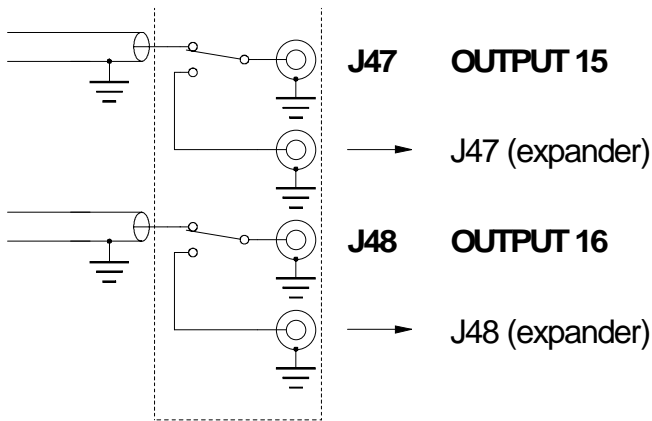


Construction

The diagram on page 1 shows the rear physical configuration of the G2S48 module. Three sides 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 for low level, low noise signals. The module also provides aluminum slides for additional grounding to the host mainframe.

The module contains all solid-state components for extreme reliability, suitable for critical applications. Internally, an embedded CPU controls the switching operations of the array and the "looping" ports (for expansion).

The looping expander port associated with each output port (adjacent SMB connector) provides a unity gain output for expanding the array to additional equipment or other modules. If a given output port (BNC) isn't connected to an input of the module, the BNC is automatically connected to the SMB connector. See the simplified diagram below.



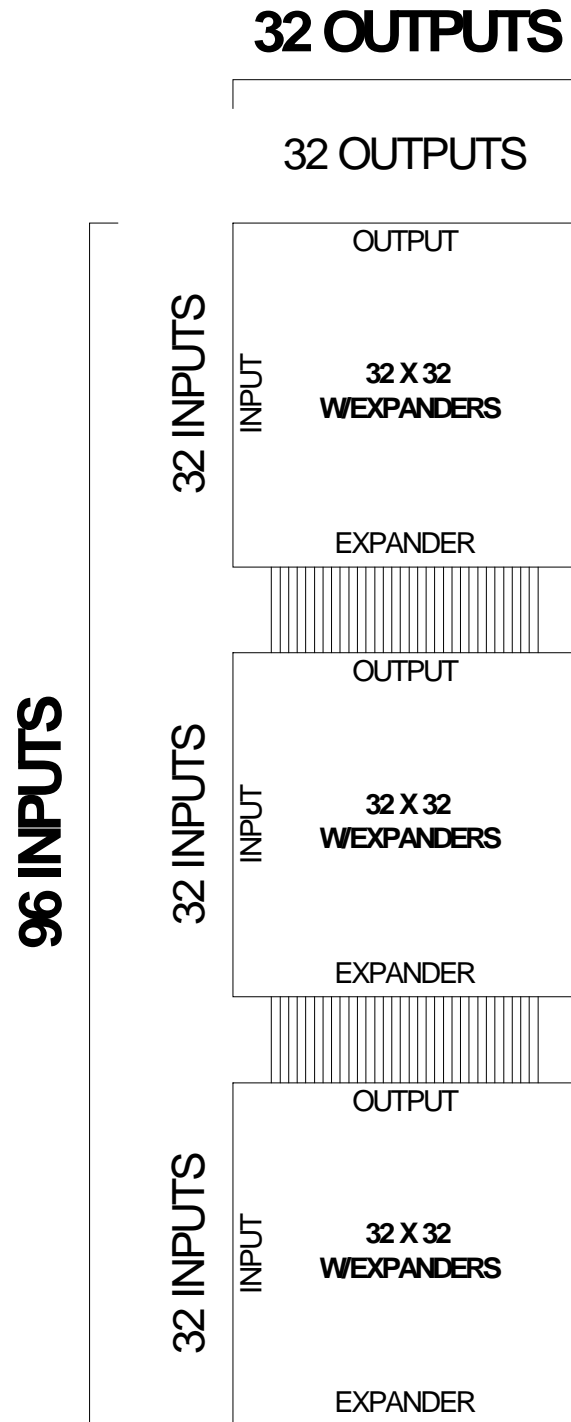
Example Module Usage

Many high-performance IF applications can be served by the G2S48 switching module. The module provides a complete switching array, or can be used as a versatile building block for constructing even larger switching arrays up to 256x32. An example 96x32 system is shown in the next column.

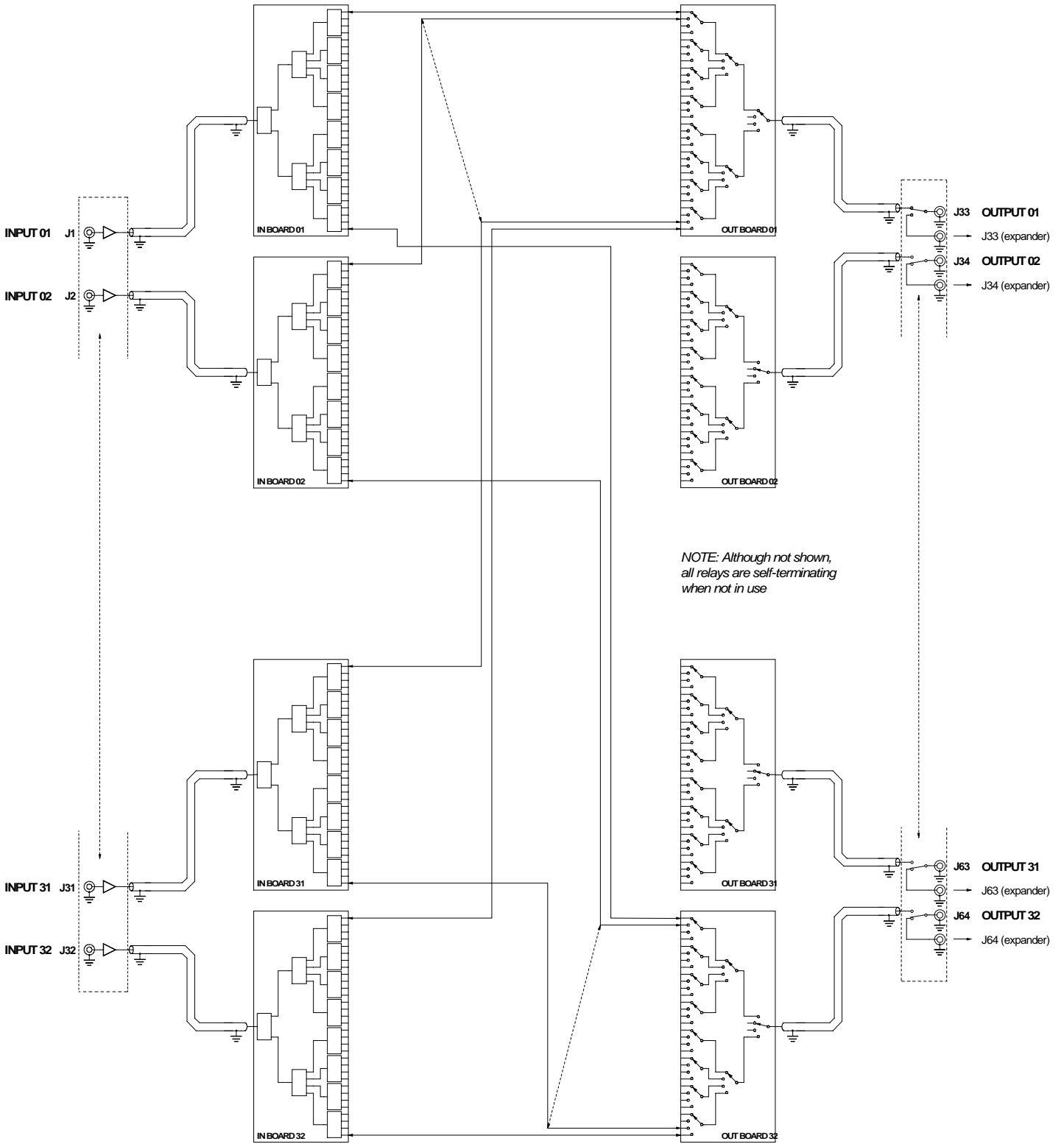
There is no limit to the number of modules that can be cascaded together, though some minor performance degradation (loss, noise figure and IP3) does occur on larger configurations.

Universal Switching Corporation builds systems utilizing this and other modules to meet customer applications. Many other possibilities can be realized when coupling multiple modules together. Interconnection cabling can be provided by the factory using high performance coaxial cabling insuring the best possible performance.

Block Diagram of a 96x32 System Using Multiple G2S48 Modules



Simplified Signal Diagram



Configurations

50 ohm input, 50 ohm output versions

- G2S48-3216-2016 input, 16 output 4 slots
- G2S48-4024-2016 input, 24 output 4 slots
- G2S48-4832-2016 input, 32 output 4 slots
- G2S48-6432-2016 input, 48 output 6 slots
- G2S48-4016-2024 input, 16 output 4 slots
- G2S48-4824-2024 input, 24 output 4 slots
- G2S48-5632-2024 input, 32 output 4 slots
- G2S48-7248-2024 input, 48 output 6 slots
- G2S48-4816-2032 input, 16 output 4 slots
- G2S48-5624-2032 input, 24 output 4 slots
- G2S48-6432-2032 input, 32 output 4 slots
- G2S48-8048-2032 input, 48 output 6 slots

50 ohm input, 75 ohm output versions

- G2S48-3216-2716 input, 16 output 4 slots
- G2S48-4024-2716 input, 24 output 4 slots
- G2S48-4832-2716 input, 32 output 4 slots
- G2S48-6432-2716 input, 48 output 6 slots
- G2S48-4016-2724 input, 16 output 4 slots
- G2S48-4824-2724 input, 24 output 4 slots
- G2S48-5632-2724 input, 32 output 4 slots
- G2S48-7248-2724 input, 48 output 6 slots
- G2S48-4816-2732 input, 16 output 4 slots
- G2S48-5624-2732 input, 24 output 4 slots
- G2S48-6432-2732 input, 32 output 4 slots
- G2S48-8048-2732 input, 48 output 6 slots

75 ohm input, 75 ohm output versions

- G2S48-3216-27716 input, 16 output 4 slots
- G2S48-4024-27716 input, 24 output 4 slots
- G2S48-4832-27716 input, 32 output 4 slots
- G2S48-6432-27716 input, 48 output 6 slots
- G2S48-4016-27724 input, 16 output 4 slots
- G2S48-4824-27724 input, 24 output 4 slots
- G2S48-5632-27724 input, 32 output 4 slots
- G2S48-7248-27724 input, 48 output 6 slots
- G2S48-4816-27732 input, 16 output 4 slots
- G2S48-5624-27732 input, 24 output 4 slots
- G2S48-6432-27732 input, 32 output 4 slots
- G2S48-8048-27732 input, 48 output 6 slots

NOTE: Add a "T" suffix for TNC connectors or "S" for SMA, though neither is recommended due to the high density of the signal I/O pattern.

Signal Specifications

- Switching elementsSolid-State GaAs
- Number of inputsSee configuration table
- Number of outputsSee configurations table
- Expander portsIncluded (automatic) - output only
- Type of arrayNon-blocking, unity gain, full fanout
- Signal typeSingle-ended, AC coupled
- Signal connectorBNC standard*, TNC or SMA optional
- Frequency range20MHz - 250MHz (min)
- Impedance50 ohm (75 ohm optional)
- Crosstalk isolation>60dB @ 70MHz
- Input VSWR<1.5 : 1
- 1dB compression0dBm (typical)
- Noise figure<10dB typical (config dependent)
- Third order intercept>20dBm typical (config dependent)
- Switching speed<250uS (plus control time)
- Output looping port~0.40dB loss

* 75 ohm BNC connectors are used on 75 ohm versions

General Specifications

- Module size4 or 6 slot height
- Control typeG2 compatible
- SparingHot-Swappable
- ConstructionShielded aluminum case
- DC power-207 configuration
+5V (digital), +7/-5V (analog)
- Weight<6.5lbs (32x32)
- Operating temp0 to +70C
- Non-operating temp-20 to +85C
- Humidity0 to 95% (NC @ +25C)
- MTBF>110,500 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.