ETL Systems
Excelling in RF Engineering

SWITCH
Griffin Module Options

Griffin Redundancy Switch Modules RF, ASI & optical options

Typical redundancy applications:
- Satellite modulator
- LNB / Downconverter
- Modem
- Antenna selection / blockage

ETL's Griffin chassis are designed to give total flexibility in managing RF, ASI & optical signals. Different modules can be fitted dependent on application, which can be switched independently (individual mode) or together (simultaneous mode).

Model GRF-010-XXXX

- **2x1 RF Redundancy switch module**
- **RF level detection** for auto switchover
- **850 - 2450 MHz** operating frequency range
- **DC & 10MHz Pass** on all ports
- **Full range of RF connectors** and impedances

Model GRF-011-XXXX

- **2x1 RF Redundancy switch module**
- **RF level detection** for auto switchover
- **DC - 2450 MHz** operating frequency range
- **DC & 10MHz Pass** on all ports
- **Full range of RF connectors** and impedances

Model GRF-050-XXXX

- **2x1 RF Redundancy switch module**
- **DC - 2450 MHz** operating frequency range
- **Latching** relay switch
- **DC & 10MHz Pass** on all ports
- **Full range of RF connectors** and impedances

Model GRF-087-B7B7

- **2x1 ASI Redundancy switch module**
- **ASI** operating signal type
- **1:3 distribution amplifier** on the output
- **Level detection** for auto switchover
- **Failsafe** relay switch and amplifier by-pass

***RF MODULES FOR GRF-C910-1U CHASSIS ONLY**

Model GRF-200-XXXX*

- **1x2 RF Redundancy SPDT TX module**
- **850 - 2150 MHz** operating frequency range
- **Solid state switch** for fast switchover
- **Full range of RF connectors** and impedances

Model GRF-201-XXXXXX*

- **2x1 RF Redundancy SPDT RX module**
- **850 - 2150 MHz** operating frequency range
- **Solid state switch** for fast switchover
- **Beacon Receiver Ports**
- **Full range of RF connectors** and impedances

Model GRF-202-XXXXXX

- **2x1 Optical Redundancy switch module**
- **1240nm to 1640nm** optical wavelength
- **Latching** relay switch
- **Less than 1.8dB insertion loss**

Model GRF-204-XXXXXX

- **2x2 Optical Redundancy switch module**
- **1240nm to 1640nm** optical wavelength
- **Latching** relay switch
- **Less than 1.8dB insertion loss**

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Switch Module Specifications and operating parameters

Technical Specifications—RF Modules					
Model Numbers			Model GRF-010-XXXX	Model GRF-050-XXXX	Model GRF-011-XXXX
Function			2 x 1 RF Redundancy switch to the output. Switch over based on RF level detection. Manual switch over is also available. Not bidirectional.	2 x 1 RF Redundancy switch to the output. Manual switch.	2 x 1 RF Redundancy switch to the output. Switch over based on RF level detection. Manual switch over is also available. Not bidirectional.
Capacity			2 inputs, 1 output	2 inputs, 1 output	2 inputs, 1 output
Module slots used			1	1	1
RF Connectors			BNC 50, SMA 50Ω, N-type 50Ω		
Frequency			850 to 2450 MHz	DC to 2450 MHz	DC to 2450 MHz
Switch Type			Latching relay switch	Latching relay switch	Latching relay switch
Contact Rating			28 V DC, 250 mA	28 V DC, 250 mA	28 V DC, 250 mA
Switching Cycles			>10E6 (no DC) >10E5 (28 V DC, 250 mA)		
Insertion Loss			2 ± 1 dB Maximum Typical 1 dB, Passive RF Path		
Flatness	Over full band		± 1 dB	± 1 dB	± 1 dB
	Over any 40 MHz		± 0.25 dB	± 0.25 dB	± 0.25 dB
Isolation	Minimum		45 dB	45 dB	45 dB
	Typical		60 dB	60 dB	60 dB
Noise Figure			2 ± 1 dB	2 ± 1 dB	2 ± 1 dB
Input Return Loss	50Ω SMA		14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical
	50Ω N-type		14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical
	50Ω BNC		14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical
	75Ω BNC	2150 MHz	12 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical
		2450 MHz	12 dB minimum, 14 dB typical	12 dB minimum, 14 dB typical	12 dB minimum, 14 dB typical
	75 Ω F -Type	2150 MHz	12 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical
		2450 MHz	12 dB minimum, 14 dB typical	12 dB minimum, 14 dB typical	12 dB minimum, 14 dB typical
Output Return Loss	50Ω SMA		14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical
	50Ω N-type		14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical
	50Ω BNC		14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical
	75Ω BNC		14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical
	75 Ω F-Type		14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical	14 dB minimum, 16 dB typical
Input RF level detection			0 to -50 dBm	N/A	0 to -50 dBm RF Detection from 10-2450MHz
RF ports			DC and 10MHz Pass	DC and 10MHz Pass	DC and 10MHz Pass. 10MHz will register on RF detection
Damage Level			+10 dBm (10mW) max Total RF power, at any RF port	+30 dBm max Total RF power, at any RF port	+10 dBm (10mW) max Total RF power, at any RF port
Spec version			1.2	1.1	1.1

Technical Specifications —ASI Modules	
Model Number	Model GRF-087-B7B7
Function	2 x 1 ASI Redundancy switch to the output with 1:3 distribution amplifier. Switch over based on Carrier Presence. Manual switch over is also available. Not bidirectional
Capacity	2 inputs, 3 outputs
Module slots used	1
RF Connectors	BNC 75Ω
Switch Type	NON Latching and failsafe bypass
Signal Type	ASI/SD-SDI/HD-SDI/3G-SDI
Input Level	300-800 mV
Output Level	>600 mV
Isolation on/off	>50 dB
Switching Cycles	>10E6 (no DC)
Spec version	1.0

Note 1: The specification is subject to regular reviews and will be updated from time to time as part of our continuing product development and improved spec accuracy.
Note 2: Operation beyond the quoted limits stated above may cause instantaneous and permanent damage.
Note 3: Switch functionality is determined by modules in use.

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Switch Module Specifications and operating parameters

Technical Specifications—RF Modules				
Model Numbers			Model GRF-200-XXXX	Model GRF-201-XXXXXX
Function			1 x 2 RF redundancy switch TX module. Unity gain and fast switchover solid state switches.	2 x 1 RF redundancy switch, SPDT RX module. 12dB gain. Solid state switches for fast switch over. 2-way splitter on input ports.
Capacity			1 inputs, 2 output	2 inputs, 1 output
Module slots used			1	1
RF Connectors			BNC 50/75Ω, SMA 50Ω, F 75Ω N-type 50Ω (available as a special option)	
RF Ports			10 MHz & DC blocked	10 MHz & DC blocked
Frequency			850 to 2150 MHz	850 to 2150 MHz
Switch Type			Solid state switch	Solid state switch
Gain			N/A	12dB±0.5
Isolation			30dB	30dB
Flatness	50Ω SMA	Over full band	±0.75	±1
		Over any 36 MHz	±0.25	±0.2
	50Ω N-type	Over full band	±0.75	±1
		Over any 36 MHz	±0.25	±0.2
	50Ω BNC	Over full band	±0.75	±1
		Over any 36 MHz	±0.25	±0.2
	75Ω BNC	Over full band	±1.2	±1.5
		Over any 36 MHz	±0.5	±0.5
	75Ω F-type	Over full band	±1.2	±1.5
		Over any 36 MHz	±0.5	±0.5
Insertion Loss	50Ω SMA		<2dB	N/A
	50Ω N-type		<2dB	
	50Ω BNC		<2dB	
	75Ω BNC		<3dB	
	75Ω F-Type		<3dB	
Input Return Loss	50Ω SMA		16dB typical, 14dB minimum	
	50Ω N-type		16dB typical, 14dB minimum	
	50Ω BNC		14dB typical, 12dB minimum	
	75Ω BNC		14dB typical, 12dB minimum	
	75 Ω F-Type		14dB typical, 10dB minimum	
Output Return Loss	50Ω SMA		16dB typical, 14dB minimum	
	50Ω N-type		16dB typical, 14dB minimum	
	50Ω BNC		14dB typical, 12dB minimum	
	75Ω BNC		10dB typical, 8dB minimum	
	75 Ω F-Type		10dB typical, 8dB minimum	
Switchover Time			<150ns. Drop out time between switching from one path to another.	
Switching Time			<20ms. Time for path to switch from receipt of switch control input at parent chassis.	
Input RF Power			+16dBm	
DC Consumption			3W	
Spec version			1.1	1.1

Technical Specifications—Optical Module		
Model Number	Model GRF-202-XXXXXX	Model GRF-204-XXXXXX
Function	2 x 1 Optical Redundancy switch. Single mode fibre. Latching	2 x 2 Optical Redundancy switch. Single mode fibre. Latching
Optical Wavelength	1240nm to 1640nm	1240nm to 1640nm
Module slots used	1	1
Connectors	SC-APC & FC-APC	SC-APC & FC-APC
Optical Insertion Loss	< 1.8 dB	< 1.8 dB
Optical Return Loss	40dB	40dB
Optical Isolation	Typical 75dB. Minimum 60dB.	Typical 75dB. Minimum 60dB.
Switching Time	Typical 5ms. Minimum 15ms. From receipt of switchover command to parent chassis.	Typical 5ms. Minimum 15ms. From receipt of switchover command to parent chassis.
Monitoring	Optical switch current	Optical switch current
Spec version	1.1	1.0

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