RF Electronics

System Amplifier III
750 MHz with 40/52 MHz Split
High Gain Dual-RC

23036

- For applications where output levelcontrol is not required, the interstage is typically configured with a stand alone Interstage Equalizer (ISEQ).
- For basic output level control in aerial plant applications, a combination Thermal Compensator / ISEQ is available.
- For the most accurate degree of level control in both aerial and underground plant, a combination AGC / ISEQ is the desired option.

DESCRIPTION

The System Amplifier III (SAIII) family of RF amplifiers includes a variety of gain, output and frequency configurations to optimally address the various network architectures being deployed. All SAIII amplifier modules offer 15 amp current carrying capacity, and come pre-configured with diplexers and reverse amplifier for optimum reverse performance.

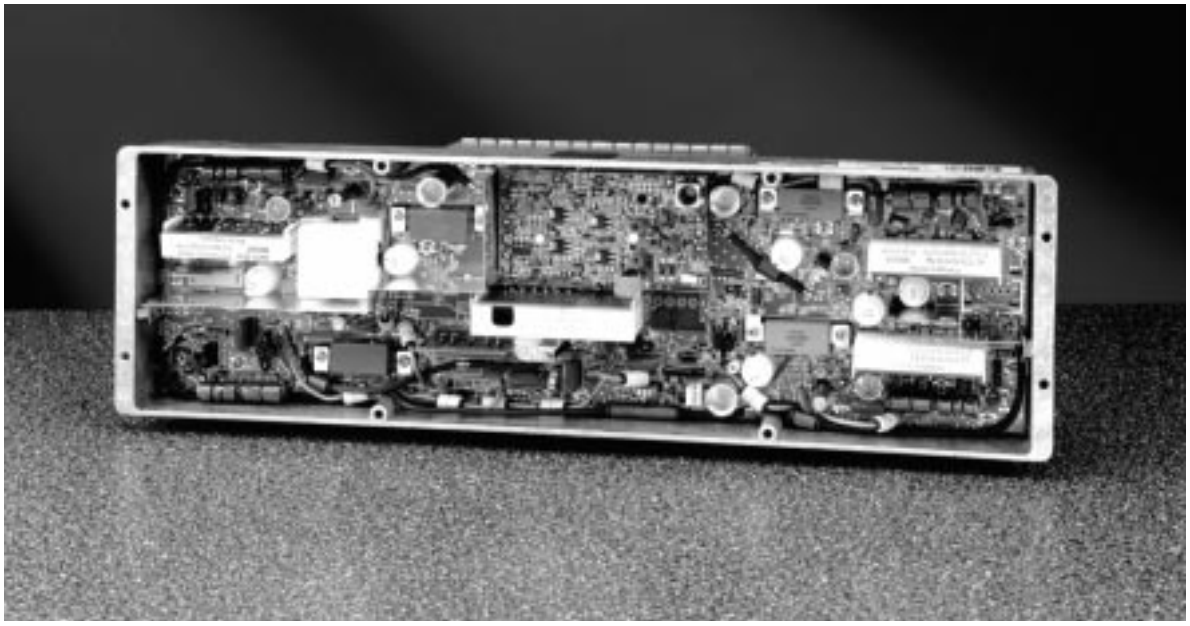
The High Gain Dual - RC (Reverse Conditioning) amplifier module incorporates all of the features of the original SAIII High Gain Dual. Additionally, maximum flexibility in reverse signal path alignment is achieved via the incorporation of individual reverse input testpoints and pads for each of the reverse inputs.

The High Gain Dual - RC amplifier module can be field configured with a variety of standard accessory options to meet specific requirements.

The High Gain Dual - RC provides two high level outputs (bridger level) with the ability to split one of the outputs to feed a third output port.

FEATURES

- 60 and 90 V AC powering capability
- 15 ampere current capacity (steady state) and 25 ampere surge survivability
- Integrated reverse amplifier, with optimized diplex filter group delay for forward and reverse paths
- Individual reverse input testpoints and input pads for both the Main and Aux reverse inputs allow optimum reverse path alignment
- Auxiliary output can be split to feed a third output port, via plug-in directional coupler or splitter
- Integrated, high efficiency, transformerless power supply lowers system operating cost
- Directional Coupler RF testpoints provide optimum accuracy
- Surge Resistant™ Circuitry ensures hybrid protection without fuses or other nuisance failure-causing devices



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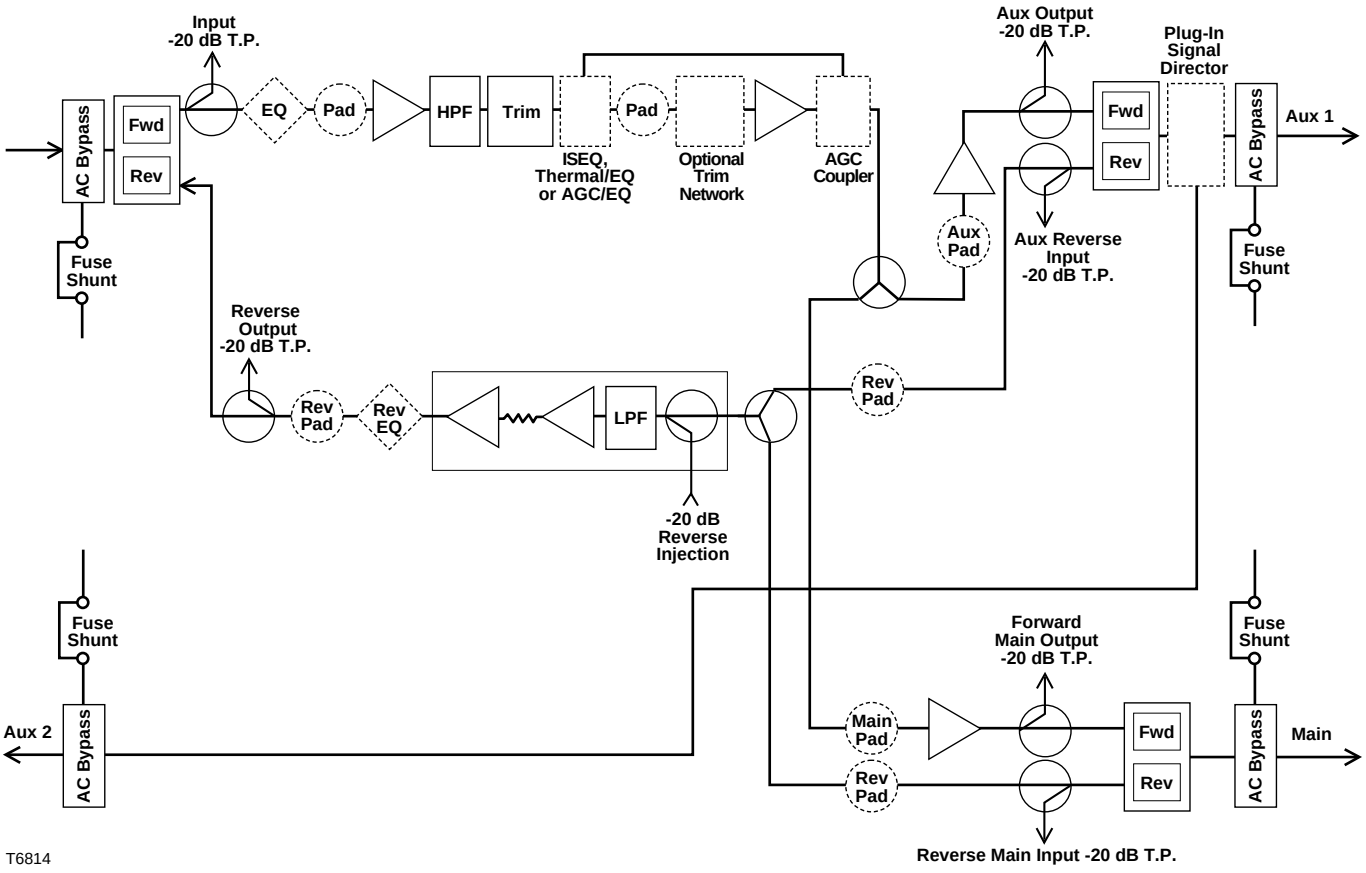
HIGH GAIN DUAL-RC — SYSTEM AMPLIFIER III — 5-40/52-750 MHZ



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HIGH GAIN DUAL-RC — SYSTEM AMPLIFIER III — 5-40/52-750 MHZ

General Station Performance	Units	Forward	Reverse	Notes
Pass Band	MHz	52-750	5-40	
Amplifier Type	—-	PHD	PP	
Full Gain	dB	44.5	See Below	1
Frequency Response	dB	± 0.5	± 0.5	
Auto Slope and Gain Range	dB	± 4	N/A	
Return Loss	dB	16	16	
Max AC Through Current (continuous)	Amps	15	—-	
Max AC Through Current (surge)	Amps	25	—-	
Hum Modulation @ 10 A (over specified frequency range)	dB	66 (55-750 MHz)	60 (5-15 MHz) 70 (16-40 MHz)	
Hum Modulation @ 15 A (over specified frequency range)	dB	56 (55-150 MHz) 59 (151-600 MHz) 55 (601-750 MHz)	50 (5-15 MHz) 58 (16-40 MHz)	
Current Draw @ 24 V DC	Amps	1.27	0.09	
Test Points (± 0.5 dB)	dB	-20	-20	
Reference Output Level - High Frequency Reference Output Level - Low Frequency	dBmV	46 @ 750 MHz 44 @ 550 MHz 36 @ 55 MHz	36 @ 40 MHz 36 @ 40 MHz	
Reference Output Tilt	dB	10	0	2

Forward Station Performance	Units	Manual 9 dB ISEQ	Thermal 9 dB ISEQ	Auto 9 dB ISEQ	Notes
Operational Gain	dB	40	38.5	36.5	1,3
Internal Tilt (± 0.5 dB)	dB	+5.7	+5.2	+6.6	4
Noise Figure @ 54 MHz	dB	7	7.5	8.5	3
Noise Figure @ 750 MHz	dB	9.5	9.5	10	3
78 NTSC Channels (CW)					**5**
Composite Triple Beat	dB	69	69	68	
Cross Modulation	dB	64	64	64	6
Composite Second Order (high side)	dB	66	66	65	

Reverse Station Performance	Units		Notes
Operational Gain	dB	19	7
Internal Tilt (± 0.5 dB)	dB	0	4
Noise Figure	dB	10	7
5 NTSC Channels (CW)			
Composite Triple Beat	dB	90	
Cross Modulation	dB	78	6
Composite Second Order (high side)	dB	81	

Notes:

1. Operational Gain must not exceed 40 dB. For Manual operation use an interstage pad to reduce gain as needed.
2. Reference output tilt is specified as “Cable” tilt (as opposed to “linear” tilt).
3. Forward Gain and Noise Figure measured with 0 dB input EQ, 1 dB input pad, and jumper in Aux Signal Director slot.
4. Down tilt, the effect of cable, is represented by a (-). Up tilt, the effect of equalization, is represented by a (+).
5. 78 CW NTSC channels loaded from 55 to 550 MHz. Activation of digital loading may impact analog performance.
6. X-mod (@ 15.75 kHz) specified using 100% synchronous modulation and frequency selective measurement device.
7. Reverse Gain and Noise Figure for station with 0 dB reverse input pad, 0 dB reverse output EQ, 1 dB output pad and jumper in Aux Signal Director slot.

Unless otherwise noted, the above specifications reflect typical station performance at stated reference levels in the recommended operating configuration(s). Unless otherwise noted, specifications are based on measurements made in accordance with NCTA Recommended Practices for Measurements on Cable Television Systems using standard frequency assignments and are referenced to 68°F (20°C).

HIGH GAIN DUAL-RC — SYSTEM AMPLIFIER III — 5-40/52-750 MHZ

Station Delay Characteristics

Forward (Chrominance to Luminance Delay)		***Reverse*** (Group Delay in 1.5 MHz bandwidth)	
Frequency (MHz)	**Delay (ns)**	**Frequency (MHz)**	**Delay (ns)**
55.25 - 58.83	27	38.5 - 40.0	33
61.25 - 64.83	12	33.5 - 35.0	9
67.25 - 70.83	7	10.0 - 11.5	6
77.25 - 80.83	3	5.0 - 6.5	60

Station Powering Data

System Amplifier III High Gain Dual-RC		**I DC (Amps)**	**AC Voltage**											
			90	**85**	**80**	**75**	**70**	**65**	**60**	**55**	**50**	**45**	**40**	**35**
Manual / Thermal	**AC Current (A)**	1.36	0.55	0.58	0.60	0.63	0.64	0.67	0.69	0.73	0.79	0.87	0.98	1.13
	Power (W)		37.2	37.2	37.0	36.9	36.6	36.6	36.4	36.2	37.7	37.0	36.9	36.9
AGC or Status Monitoring	**AC Current (A)**	1.46	0.58	0.61	0.64	0.66	0.68	0.71	0.74	0.78	0.85	0.94	1.05	1.21
	Power (W)		39.9	39.9	39.9	39.5	39.3	39.1	39.1	39.1	40.2	39.7	39.6	39.7
AGC and Status Monitoring	**AC Current (A)**	1.56	0.61	0.64	0.67	0.69	0.72	0.75	0.78	0.82	0.91	1.00	1.13	1.31
	Power (W)		42.7	42.6	42.5	42.1	42.1	41.8	41.8	41.9	42.6	42.5	42.4	42.5

Data is based on stations configured for 2-way operation. AC currents specified are based on measurements made with typical CATV type ferroresonant power supply (quasi-square wave).

Mechanical Specifications

Housing Dimensions

17.3 in. L x 4.8 in. H x 7.8 in. D

438.3 mm L x 122.4 mm H x 198.7 mm D

Weight

Housing

9 lbs, 9 oz; 4.4 kg

Module

4 lbs, 13 oz; 2.2 kg

Specifications and product availability are subject to change without notice.

HIGH GAIN DUAL-RC — SYSTEM AMPLIFIER III — 5-40/52-750 MHZ

ORDERING INFORMATION

Amplifier Module - 1 required	Part Number
SAIII 750 MHz High Gain Dual - RC with 40/52 MHz split. Module comes configured with reverse amplifier, reverse combiner (on board), diplex filters, and integrated DC power supply. Power supply has 30 V AC undervoltage lockout (40 V lockout is field configurable).	590532
Housing - 1 required (all have 15 amp capacity)	
Uncoated 4 port housing without external test point access	564390
Coated 4 port housing without external test point access	564391
Uncoated 4 port housing with external test point access	545435
Coated 4 port housing with external test point access	545436
Required Accessories	
Plug-in Pads (attenuators) - Available in 0.5 dB steps from 0 to 20 dB. • 4 required for forward (1 input, 1 interstage, 2 output) • 1 required for AGC if applicable • 3 required for reverse (2 input, 1 output)	Order Model PP-* (* denotes pad value), specify value).
Plug-in Forward Input Equalizer, 1 required. Available in 1.5 dB steps from 0 to 28.5 dB at 750 MHz	Order Model EQ750-* (*denotes EQ value), specify value.
Plug-in Reverse Output Equalizer, Variable or Fixed -1 required. Select one of either type:	
• Variable Reverse Equalizers 1.5 to 4.5 dB @ 40 MHz	511075
4.5 to 7.5 dB @ 40 MHz	511295
7.5 to 12.0 dB @ 40 MHz	511298
• Fixed Reverse Equalizers - Available in 1 dB steps from 1 to 12 dB at 40 MHz	Order Model EQ40S-* (* denotes EQ value), specify value.
Interstage Accessories - 1 of the following is required for most applications:	
• 445.25 MHz single pilot AGC with fixed 9 dB interstage equalizer	539578
• Thermal Compensator with 3-9 dB variable interstage equalizer	503100
• 3-9 dB variable interstage equalizer	511380
Plug-In Signal Director for Auxiliary output - 1 required, select one:	
• Jumper	562406
• 2-way Splitter	562414
• DC-8 Directional Coupler	562419
• DC-12 Directional Coupler	562420
Optional Accessories	
230 V AC Crowbar Surge Protector (plug-in)	467351
Plug-in Cable Simulator. Simulates cable losses, creating tilt opposite that of equalizers. Use in place of forward input EQ as needed to maintain proper output tilt in short spaced locations. Available in 1.5 dB steps from 1.5 to 12 dB cable loss at 750 MHz.	Order Model CS750-* (* denotes CS value), specify value.
Related Equipment	
Long Reach Test Probe Adapter	501111
Reverse Injection Probe	276982
Pad Insertion/Removal Tool	548771

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