



SignalOn[®] Series

D3.1/CCAP™
Compliant

1.2 GHz

Return Path Amplifier

INSTALLATION & OPERATION MANUAL

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About This Manual

The SignalOn Return Path Amplifier covered in this user manual is part of the SignalOn family of plug-in modules. The Return Path Amplifier provides gain amplification with low distortion and low noise for a broadband communications system return path (5 MHz to 200 MHz).

The SignalOn system uses a modular design that allows for high isolation combining, splitting, amplification, redundant switching, and status monitoring of the headend signals in a broadband communications system. The SignalOn system provides strong cable management, EMI shielding, and ease of use, all of which facilitate reconfiguration and enhance performance within a dynamic headend environment.

Admonishments

Important safety admonishments are used throughout this manual to warn of possible hazards to persons or equipment. An admonishment identifies a possible hazard and then explains what may happen if the hazard is not avoided. The admonishments — in the form of Dangers, Warnings, and Cautions — must be followed at all times. These warnings are flagged by use of the triangular alert icon (seen below), and are listed in descending order of severity of injury or damage and likelihood of occurrence.



Danger: *Danger is used to indicate the presence of a hazard that **will** cause severe personal injury, death, or substantial property damage if the hazard is not avoided.*



Warning: *Warning is used to indicate the presence of a hazard that **can** cause severe personal injury, death, or substantial property damage if the hazard is not avoided.*



Caution: *Caution is used to indicate the presence of a hazard that **will** or **can** cause minor personal injury or property damage if the hazard is not avoided.*

General Safety Precautions

The following general admonishment applies to all the procedures in this manual.



Warning: *To avoid electric shock or severe burns, be careful when working near power supplies. The Return Path Amplifier operates on –48 VDC office power or 100–240 VAC.*

Certification

The SignalOn active products have been tested and found to comply with the following requirements:

- UL 1419
- CE
- CISPR-22
- EN 60950 (Safety)

Standards

The following listing is a bibliography of applicable ANSI and Bellcore documents:

TR-EOP 000063	Bellcore Technical Reference for environmental testing, EMI, mechanical shock and vibration, storage temperature, humidity, electrical grounding, etc.
TR-TSY 000332	Bellcore Technical Reference for predicting reliability.

MIL-STD-202	Military Standard for Thermal Shock Requirements.
FCC Part 15 and 76	Federal Communication Commission
CFR 47	Code of Federal Regulations

GENERAL

1. General

This user manual describes the features, functions, and installation procedures for the SignalOn Return Path Amplifier, chassis, power supply, and adapter kit.

1.1. Return Path Amplifier

The Return Path Amplifier provides gain amplification with low distortion and low noise for a broadband communications system return path (5 MHz to 200 MHz).

The SignalOn Return Path Amplifier is available in the following variations:

- Amplifier module with 22 dB fixed gain (F Connectors)
- Amplifier module with 22 dB fixed gain (BNC Connectors)

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PRODUCT DESCRIPTION

2. Product Description

This section provides physical, functional, and technical descriptions of the SignalOn Return Path Amplifier, four-position horizontal chassis, 100–240 VAC power supply, and –48 VDC power supply.

2.1. Physical Description

2.1.1. Return Path Amplifier

The SignalOn Return Path Amplifier is constructed of aluminum sheet metal with nickel plating. The amplifier has two sets of BNC-type or F-type RF connectors (depending on model ordered): Monitor Port Before Amp (MON IN) and Monitor Port After Amp (MON OUT) located in the front of the module, and RF IN and RF OUT, located at the rear.

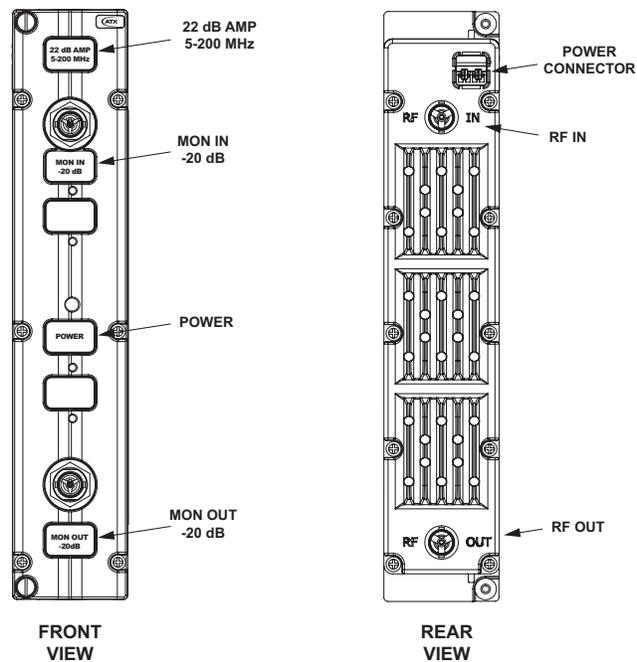


Figure #1: SignalOn Return Path Amplifier

2.2. Functional Description

2.2.1. Return Path Amplifier

The SignalOn Return Path Amplifier is designed to be a gain amplifier, and is intended for MSO and other providers requiring signal amplification in the broadband communications system return path (5 to 200 MHz) with low distortion and low noise.

Figure 2 is a schematic diagram for the Return Path Amplifier. This diagram is shown on the top cover of the module.

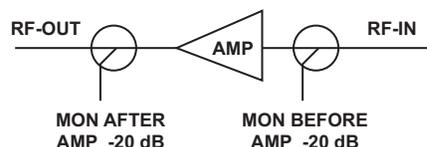


Figure #2: Return Path Amplifier Schematic Diagram

2.3. Technical Description

Forward Path Amplifier	20 dB FORWARD AMPLIFIER	30 dB FORWARD AMPLIFIER	30 dB FORWARD AMPLIFIER
BANDWIDTH	50-1002 MHz	50-1002 MHz	50-1218 MHz
MINIMUM RF INPUT⁽¹⁾	+20 dBmV per Channel	+10 dBmV per Channel	+10 dBmV per Channel
MINIMUM FULL GAIN	20 dB	30 dB	30 dB
GAIN FLATNESS	+/- 0.4 dB from 50-870 MHz +/- 0.5 dB from 870-1000 MHz	+/- 0.45 dB from 50-870 MHz +/- 0.65 dB from 870-1000 MHz	+/- 0.45 dB from 50-870 MHz +/- 0.65 dB from 870-1218 MHz
RETURN LOSS, INPUT & OUTPUT PORTS	-19 dB from 50-870 MHz -16.5 dB from 870-1000 MHz	-18 dB from 50-870 MHz -15 dB from 870-1000 MHz	-16 dB from 50-1218 MHz
NOISE FIGURE	7.3 dB from 50-870 MHz 7.6 dB from 870-1000 MHz	5.7 dB from 50-870 MHz 6.2 dB from 870-1000 MHz	6.2 dB from 50-870 MHz 6.7 dB from 870-1218 MHz
GAIN/TILT ADJUSTMENT RANGE	10 +/- 1 dB @ 50 MHz in 0.5 dB Steps	10 +/- 1 dB @ 50 MHz in 0.5 dB Steps	10 +/- 1 dB @ 50 MHz in 0.5 dB Steps
CTB/CSO⁽²⁾	-73/-81 dB		
MONITOR PORTS	-20 +/-1 dB Test Point for both RF Input and RF Output		
OPERATING VOLTAGE/POWER DISSIPATION	24 VDC +/- 5%, 17W (max)		
POWER CONNECTOR	Gold-on-Gold, Slide-on Contacts		
THERMAL SHOCK	Meets MIL-STD-202 Method 107		
OFFICE VIBRATION	Meets GR-63-Core Section 5.4.2		
MECHANICAL SHOCK	Meets MIL-STD-202 Method 213		
ACCELERATED AGING	Meets MIL-STD-202 Method 108		
CERTIFICATIONS	FCC Class A, U/L, NEBS Level 3		

NOTES:

(1) Analog channel input level, regardless of channel load.

(2) Measured with 110 channel loading and optimum RF input level at full gain and no tilt. Specifications are typical worst-case numbers across the given frequency range, unless otherwise noted.

Table #1: Specifications

OPERATING INSTRUCTIONS

3. Operating Instructions

There are no specific operating instructions for the SignalOn Return Path Amplifier. Once the amplifier is installed, it will perform its designated RF signal management function without further attention. As detailed below, the amplifier includes convenient Monitor (MON) ports where test equipment can be connected to the system as necessary.

3.1. Monitor Test Ports

Two 20 dB monitor test ports are standard on the Return Path Amplifier, one before RF amplification and one after.

3.2. Reverse Path

SignalOn modules can balance the reverse path combined signals and provide the balanced power from the reverse path receivers to signal processing equipment (e.g., cable data modems, HDTs, etc.). (See example in Figure 3.)

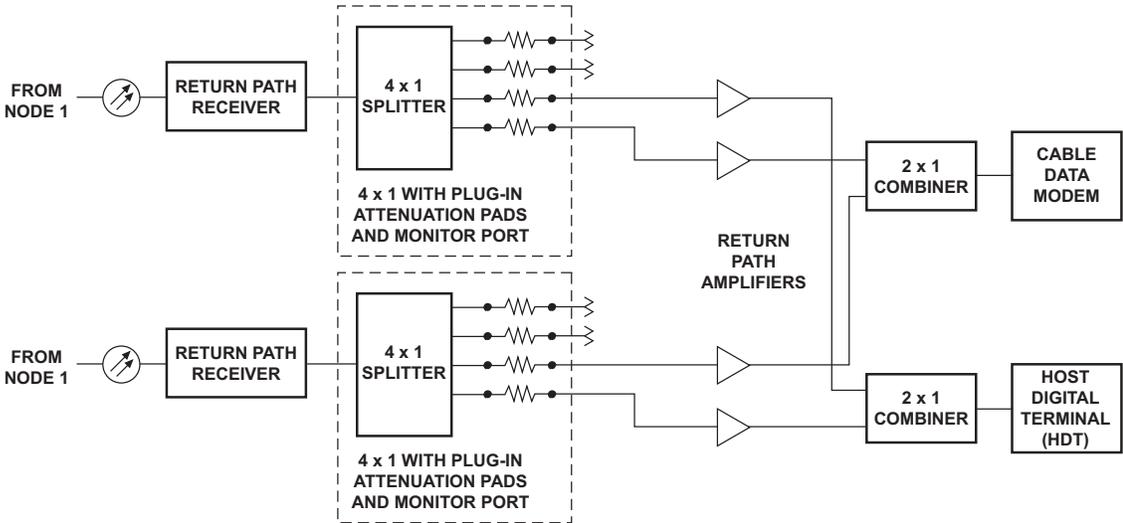


Figure #3: Reverse Path Example

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MAINTENANCE

4. Maintenance

The only maintenance feature included for the Return Path Amplifier is the ability to remove and replace the unit.



Warning: *Do not attempt to open or remove the cover of the SignalOn Return Path Amplifier. No maintenance should be attempted on this unit, as injury may occur. Remove and replace the defective unit.*

4.1. Preventative Maintenance

No user maintenance is required on this unit.

NOTE: There are no customer serviceable parts in the SignalOn Return Path Amplifier. Return all failed units to ATX Networks for service or repair.

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SERVICE & SUPPORT

5. Service & Support

5.1. Contact ATX Networks

Please contact ATX Technical Support for assistance with any ATX products. Please contact ATX to obtain a valid RMA number for any ATX products that require service and are in or out-of-warranty before returning a failed module to ATX.

TECHNICAL SUPPORT

Tel: 289.204.7800 – press 1
Toll-Free: 866.YOUR.ATX (866.968.7289) USA & Canada only
Email: support@atx.com

SALES ASSISTANCE

Tel: 289.204.7800 – press 2
Toll-Free: 866.YOUR.ATX (866.968.7289) USA & Canada only
Email: insidesales@atx.com

FOR HELP WITH AN EXISTING ORDER

Tel: 289.204.7800 – press 3
Toll-Free: 866.YOUR.ATX (866.968.7289) USA & Canada only
Email: orders@atx.com
Web: www.atx.com

5.2. Warranty Information

All of ATX Networks' products have a 1-year warranty that covers manufacturer's defects or failures.

5.3. Safety

IMPORTANT! FOR YOUR PROTECTION, PLEASE READ THE FOLLOWING:

WATER AND MOISTURE: Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

POWER SOURCES: The device should be connected to a power supply only of the type described in the operating instructions or as marked on the device.

GROUNDING OR POLARIZATION: Precautions should be taken so that the grounding or polarization means of the device is not defeated.

POWER CORD PROTECTION: Power supply cords should be routed so that they are not likely to be pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the device.

SERVICING: The user should not attempt to service the device beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

FUSING: If your device is equipped with a fused receptacle, replace only with the same type fuse. Refer to replacement text on the unit for correct fuse type.



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