

PATHWORX™
870MHz
Trunk-Bridger Amplifier Specification

The requirements for the delivery of advanced services have made scalability and ease of maintenance critical in HFC architectures. ADC Amplifiers have been designed to provide a level of maintainability and a future migration path that is unequaled in the industry today. These amplifiers provide unparalleled reliability, scalability, and superior RF performance for the low cost delivery of video, data, and voice.

ADC's Pathworx™ family of Network Amplifiers provides the flexibility to grow with the changing performance needs of today's HFC architectures. The amplifiers have been designed to provide superior distortion performance and greater bandwidth to meet the growing requirements of advanced networks.

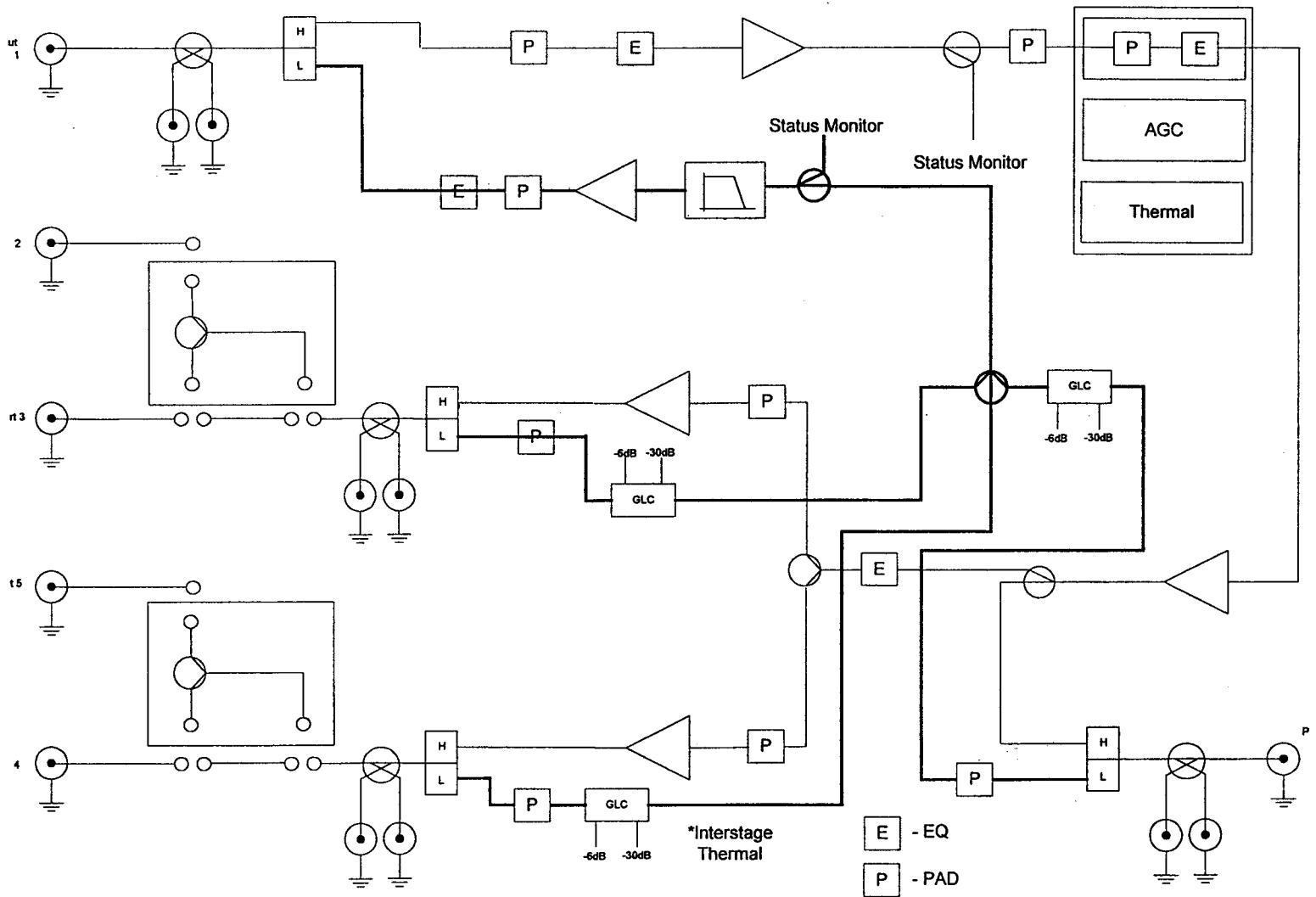
The Pathworx™ Trunk-Bridger Amplifier is one of several ADC amplifiers designed with these requirements in mind. The Trunk-Bridger is ideal for supporting new build, rebuild, and upgrade scenarios where Trunk and multiple Feeder level outputs are needed. With one low and up to four high level outputs, the Trunk-Bridger can provide the flexibility needed to address multiple architectural requirements.

ADC's "From the Ground Up" approach to amplifier features and functionality translates into amplifiers with features and performance found nowhere in the industry today:

Features

- 870MHz forward bandwidth for increased bandwidth requirements
- High efficiency power supply capable of supporting 60 or 90 volt AC applications
- Bridger legs are internally splittable to provide up to 4 high level outputs
- Available Reverse Amplifier with thermal compensation for steady reverse operation
- Optional low cost "Local Status Monitoring" module which provides amplifier status information (voltage and RF levels) up to 400 feet away without opening the amplifier housing
- Common fixed value accessories (pads and equalizers) for all Pathworx™ Network Amplifiers and Line Extenders
- 15 amp power passing
- Superior module control through a software interface
- Standard 6 port housing
 - High Grade 360 aluminum
 - Optional 90° access ports for pedestal applications
- Gate level control by leg for Ingress Isolation
- Remote Status Monitoring and Control support
- Reversible module for upgrade flexibility
- Fiber upgradeability
- Optional surge suppressor
- External test points for ease of Maintenance

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Station Performance*

Forward

Passband	52.5-870 MHz
Full Gain (Trunk/Bridger, min)	37 dB/45 dB
Frequency Response - Trunk	± 0.5 dB (max), ± 0.3 dB (typ)
Frequency Response – Bridger	± 0.7 dB (max), ± 0.5 dB (typ)
Return Loss (max)	16 dB
AC Current Carrying Capacity	15 Amps
Test Points	-20 dB ± 1.0 dB
Slope & Gain Control Range	± 4 dB
Hum Modulation (5-10 MHz) typ.	60 dB @12Amps, 60 dB @15 Amps
Hum Modulation (11-750 MHz) typ.	70 dB @12Amps, 65 dB @15 Amps
Hum Modulation (751-870 MHz) typ.	60 dB @ 12Amps, 65 dB @ 15 Amps

Reverse

Passband	5-42 MHz
Full Gain (min, all ports)	18 dB
Frequency Response (all ports)	± 0.5 dB
Thermal Control Range	± 1.0 dB
Return Loss (max, all ports)	16 dB
Test Points	-20 dB ± 0.75 dB

Station Performance

	Manual	Manual w/ 12.5dB I/S Tilt 52.5-750MHz	Thermal w/ 12.5dB I/S Tilt 52.5-750MHz	Auto w/ 12.5dB I/S Tilt 52.5-750MHz
Operational Gain (Trunk/Bridger) dB 870 MHz	37/45	36/44	31/39	30/38
Noise Figure @ 55 MHz	6.7	7.7	9.1	9.1
Noise Figure @ 550 MHz	7.7	7.9	8.1	8.1
Noise Figure @ 750 MHz	8.4	8.6	8.6	8.6
Noise Figure @ 850 MHz	9.1	9.2	9.3	9.3

All specifications referenced to 20°C (68°F) unless otherwise noted.

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Distortion Performance

78 NTSC Channels w/ 198 MHz Digital
Video Reference 78 Channels

12.5dB total tilt 52.5 – 750 MHz

Output Levels

	Trunk	Bridger
55.25 MHz	26.0 dBmV	35.0 dBmV
547.25 MHz	35.0 dBmV	44.0 dBmV

Digital Reference 198 MHz Bandwidth (33 – 6 MHz Segments)

Output Levels -6dB from video carrier level

	Trunk	Bridger
552 MHz	29.0 dBmV	38.0 dBmV
750 MHz	32.5 dBmV	41.5 dBmV

	Manual	Manual w/ 9dB I/S Tilt 52.5-552MHz	Thermal w/ 9dB I/S Tilt 52.5-552MHz	Auto w/ 9dB I/S Tilt 52.5-552MHz
CTB (Trunk) ¹ -dBc	87.4	81.7	80.3	80.3
CTB (Bridger) ¹ -dBc	71.8	71.1	69.6	69.6
CSO (Trunk) ¹ -dBc	88.1	82.1	74.4	74.4
CSO (Bridger) ¹ -dBc	79.9	82.2	73.5	73.5
XMOD (Trunk) ¹ -dBc	83.4	81.6	72.4	72.4
XMOD (Bridger) ¹ -dBc	68.2	67.8	66.4	66.4

94 NTSC Channels w/ 222 MHz Digital
Video Reference 94 Channels

14 dB total tilt 52.5 – 870 MHz

Output Levels

	Trunk	Bridger
55.25 MHz	26.0 dBmV	35.0 dBmV
643.25 MHz	37.0 dBmV	46.0 dBmV

Digital Reference 222 MHz Bandwidth (37 – 6 MHz Segments)

Output Levels -6dB from video carrier level

	Trunk	Bridger
648 MHz	31.0 dBmV	40.0 dBmV
870 MHz	34.0 dBmV	43.0 dBmV

	Manual	Manual w/11dB I/S Tilt 52.5-650MHz	Thermal w/ 11 dB I/S Tilt 52.5-650MHz	Auto w/ 11dB I/S Tilt 52.5-650MHz
CTB (Trunk) ¹ -dBc	73.9	72.9	75.2	75.2
CTB (Bridger) ¹ -dBc	64.6	64.4	63.7	63.7
CSO (Trunk) ¹ -dBc	74.1	71.2	69.6	69.6
CSO (Bridger) ¹ -dBc	74.2	73.3	69.0	69.0
XMOD (Trunk) ¹ -dBc	73.1	71.9	69.9	69.9
XMOD (Bridger) ¹ -dBc	61.0	60.0	58.3	58.3

¹Typical. Maximum is not to exceed typical by more than 2dB.

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Reverse – 6 NTSC Channels

Reference Output Level (all ports) dBmV	35 dBmV Flat
Reference Tilt	0 dB
Operational Gain (all ports) dB	18
Noise Figure @ 10 MHz dB ²	12.8
Noise Figure @ 42 MHz dB ²	11.6
CTB –dBc ¹	90
CSO –dBc ¹	74
XMOD –dBc ¹	84

Group Delay

Forward		Reverse	
Freq (MHz)	ns @ 3.58 MHz	Freq (MHz)	ns @ 1.5 MHz
55.25	30 typ.	5	50 typ.
61.25	9.5 typ.	10	6 typ.
67.25	5.5 typ.	35	8 typ.
>77.25	3 typ.	40	27 typ.

¹Typical. Maximum is not to exceed typical by more than 2dB.

²Typical. Maximum is not to exceed typical by more than 1 dB. Includes 1 dB loss for Reverse EQ.

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Powering Requirements

AC Voltage

Configuration		90	85	80	75	70	65	60	55	50	45	40
Manual	AC Current (A)	0.94	0.98	1.02	1.07	1.12	1.16	1.22	1.31	1.39	1.48	1.59
	Power (VA)	84.6	83.3	81.6	80.3	78.4	75.4	73.2	72.1	69.5	66.6	63.6
Manual w/ Reverse	AC Current (A)	0.97	1.00	1.04	1.10	1.15	1.19	1.25	1.34	1.42	1.51	1.63
	Power (VA)	87.3	85.0	83.2	82.5	80.5	77.4	75.0	73.7	71.0	68.0	65.2
Thermal	AC Current (A)	0.95	0.99	1.03	1.08	1.13	1.18	1.23	1.33	1.41	1.50	1.61
	Power (VA)	85.5	84.2	82.4	81.0	79.1	76.7	73.8	73.2	70.5	67.5	64.4
Thermal w/ Reverse	AC Current (A)	0.98	1.02	1.06	1.12	1.17	1.22	1.28	1.37	1.45	1.54	1.66
	Power (VA)	88.2	86.7	84.8	84.0	81.9	79.3	76.8	75.4	72.5	69.3	66.4
Auto	AC Current (A)	0.99	1.03	1.07	1.13	1.18	1.24	1.30	1.39	1.47	1.57	1.68
	Power (VA)	89.1	87.6	85.6	84.8	82.6	80.6	78.0	76.5	73.5	70.7	67.2
Auto w/ Reverse	AC Current (A)	1.03	1.07	1.11	1.18	1.23	1.30	1.37	1.45	1.53	1.64	1.75
	Power (VA)	92.7	91.0	88.8	88.5	86.1	84.5	82.2	79.8	76.5	73.8	70.0

Dimensions

Length – 18.1

Width – 12.65

Height – 6.20

Weight – Fully loaded station – 25.25lbs.

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Ordering Information

Housings (1 per Station):

<u>Model Number</u>	<u>Description</u>
HNA-1-U	6-Port Network Amplifier Housing, Uncoated
HNA-1-C	6-Port Network Amplifier Housing, Coated
HNA-2-U	6-Port Network Amplifier Housing with 90° Access Ports, Uncoated
HNA-2-C	6-Port Network Amplifier Housing with 90° Access Ports, Coated

Amplifier Modules:

<u>Model Number</u>	<u>Description</u>
NA84-01	Network Amplifier, Trunk Bridger, 870 MHz, 42/52.5 MHz Split
NA84-02	Network Amplifier, High Gain Bridger, 870 MHz, 42/52.5 MHz Split

Forward Accessories:

<u>Model Number</u>	<u>Description</u>	<u>Quantity</u>
IPAD-XX.X	Fixed Attenuators (XX.X is value eg. 3.5dB=IPAD-035, 0.5 dB steps from 0-20 dB and Termination available)	4
EQ50750-XXX	Fixed Equalizer, 750 MHz (XXX=value in dB Tilt, e.g 11 dB=EQ50750-110, 1 dB steps from 0-23dB)	1 ¹
EQ50870-XXX	Fixed Equalizer, 870 MHz (XXX=value in dB Tilt, e.g 13 dB=EQ50870-130, 1 dB steps from 0-22 dB)	1 ²
CE50870-XXX	Cable Simulator (negative value equalizers) for 750 MHz and 870 MHz systems (XXX=value in dB Tilt to 870 MHz, e.g. -12 dB=CE50870-012, 1 dB steps from -12 to -1)	1 ³

Thermal/EQs

T750-125	750 MHz Thermal/EQ, 12.5 dB Tilt	14
T870-115	870 MHz Thermal/EQ, 11.5 dB Tilt	15
T870-140	870 MHz Thermal/EQ, 14.0 dB Tilt	16

AGC Kits

AGC-445-NA-750	750 MHz AGC Kit for Network Amplifier, Single Pilot, 445.25 MHz	17
AGC-445-NA-870	870 MHz AGC Kit for Network Amplifier, Single Pilot, 445.25 MHz	18

¹ 2 are required for Manual Operation

² 2 are required for Manual Operation

³ Use either EQ or CE for Input Equalizer

⁴ Thermal/EQ is not required for Manual or AGC Operation

⁵ Thermal/EQ is not required for Manual or AGC Operation

⁶ Thermal/EQ is not required for Manual or AGC Operation

⁷ AGC Kit is not required for Manual or Thermal Operation

⁸ AGC Kit is not required for Manual or Thermal Operation

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Reverse Accessories:

<u>Model Number</u>	<u>Description</u>	<u>Quantity</u>
HG42RA	42 MHz High Gain Reverse Amplifier w/Thermal Compensation (18 dB Station Gain)	1
IPAD-XX.X	Fixed Attenuators (XX.X is value eg. 3.5dB=IPAD-035, 0.5 dB steps from 0-20 dB and Termination available)	4
EQ542-XX	Fixed Equalizer, 42 MHz (XXX is value in dB Tilt e.g 5 dB=EQ542-05, 1dB steps from 0 to 12dB)	1

Optional Accessories:

<u>Model Number</u>	<u>Description</u>
SC-01	Surge Suppressor
BS-3	Bridger Splitter
BC-8	Bridger Coupler, 8 dB
BC-12	Bridger Coupler, 12 dB
RSM-01	Remote Status Monitoring Module
LSM-01	2.4 GHz Wireless Local Status Monitoring Kit