GainStar Accessories

The GainStar accessories are plug-in devices common to all GainStar Nodes, Amplifiers, Mini Nodes and Line Extenders. They are typically field-installed in accordance with system design. The accessories specified in this document are listed below.

Figure 1. GainStar Accessories

Forward Cable Equalizer

Forward Linear Equalizer

Forward Inverse Equalizer

Reverse Cable Equalizer

Signal Director

Pad (Attenuator)

AC Power Shunt

3-State Switch Jumper

Forward Cable Equalizers

Forward cable equalizers produce a tilted frequency response opposite of that produced by coaxial cables. They are normally used during station balancing to counteract the tilt produced by coaxial cables, to achieve the desired output tilt. An equalizer's "dB value" indicates the amount of tilt (in dB) that the equalizer produces from 54 MHz to rated upper frequency. The rated upper frequency (862 MHz, or 1 GHz) and rated EQ range are marked on the side of each equalizer. A PAD with the same value (in dB) is selected when a certain EQ value is needed.

Table 1. Forward Cable Equalizers - 1000 MHz (yellow cover) *(used in Amplifier and Line Extenders only)*

EQ Value (dB)	Part Number	Typical Insertion Loss (dB) at Various Frequencies (MHz)								
		54	77	86	550	600	650	750	870	1000
0	4034453	0.6	0.6	0.6	0.2	0.2	0.2	0.2	0.2	0.3
1		1.6	1.6	1.6	0.7	0.7	0.6	0.5	0.5	0.6
2		2.6	2.3	2.2	1.2	1.1	1.0	0.9	0.9	0.8
3		3.6	3.5	3.5	1.6	1.5	1.4	1.2	1.0	0.9
4		4.6	4.5	4.4	2.0	1.9	1.8	1.5	1.2	0.9
5	4034454	5.9	5.8	5.7	2.7	2.6	2.3	2.0	1.5	0.9
6		6.8	6.7	6.7	3.1	2.9	2.6	2.2	1.6	0.9
7		7.8	7.7	7.6	3.6	3.3	2.9	2.4	1.7	0.9
8		8.8	8.7	8.6	4.0	3.7	3.2	2.6	1.8	0.9
9		9.8	9.6	9.5	4.3	4.0	3.5	2.8	1.9	0.9
10	4034455	10.7	10.5	10.4	4.7	4.3	3.9	3.1	2.1	1.0
11		11.7	11.5	11.4	5.0	4.6	4.1	3.2	2.1	1.0
12		12.7	12.4	12.3	5.3	4.8	4.3	3.4	2.2	1.0
13		13.6	13.3	13.2	5.5	5.0	4.5	3.5	2.2	1.0
14		14.6	14.2	14.0	5.8	5.2	4.6	3.5	2.2	1.0

Forward Cable Equalizers, continued

Table 2. Forward Cable Equalizers - 862 MHz (yellow cover) *(used in Amplifier and Line Extenders only)*

EQ Value (dB)	Part Number	Typical Insertion Loss (dB) at Various Frequencies (MHz)							
		54	77	86	550	600	650	750	862
0	4034450	0.4	0.4	0.5	0.2	0.2	0.1	0.1	0.3
1		1.4	1.4	1.4	0.6	0.5	0.5	0.4	0.4
2		2.4	2.4	2.3	0.9	0.9	0.8	0.6	0.5
3		3.4	3.3	3.3	1.3	1.2	1.1	0.8	0.5
4		4.4	4.3	4.3	1.6	1.5	1.3	1.0	0.5
5	4034451	5.8	5.6	5.6	1.8	1.6	1.3	0.9	0.5
6		6.8	6.6	6.5	2.0	1.7	1.4	0.9	0.5
7		7.7	7.5	7.4	2.3	2.0	1.6	1.0	0.5
8		8.7	8.4	8.3	2.5	2.2	1.7	1.0	0.5
9		9.6	9.4	9.2	2.7	2.3	1.8	1.1	0.8
10	4034452	10.6	10.3	10.2	3.6	3.1	2.6	1.7	0.8
11		11.5	11.2	11.1	3.7	3.3	2.7	1.7	0.8
12		12.5	12.1	12.0	4.0	3.5	2.8	1.7	0.8
13		13.5	13.1	12.9	4.2	3.6	3.0	1.9	0.8
14		14.4	13.9	13.7	4.4	3.7	3.1	1.9	0.8

Forward Linear Equalizers

Forward linear equalizers produce linear tilt. A linear equalizer should be used in the plug-in input or output equalizer location if a node output tilt does not have the desired station output tilt. The rated upper frequency (862 MHz, or 1000 MHz), and rated EQ range are marked on the side of each equalizer. A PAD with the same value (in dB) is selected when a certain EQ value is needed.

Table 3. Forward Linear Equalizers – 1000 MHz (blue cover) *(used in Node and Mini Node only)*

EQ Value (dB)	Part Number	Typical Insertion Loss (dB) at Various Frequencies (MHz)								
		54	77	86	550	600	650	750	870	1000
0	4034459	0.6	0.6	0.6	0.3	0.3	0.2	0.2	0.2	0.4
1		1.6	1.6	1.6	0.8	0.8	0.7	0.7	0.6	0.8
2		2.6	2.6	2.6	1.4	1.3	1.2	1.1	1.0	1.0
3		3.6	3.6	3.5	1.9	1.8	1.7	1.5	1.3	1.0
4		4.6	4.5	4.5	2.4	2.3	2.2	2.0	1.8	1.2
5	4034460	5.8	5.8	5.7	2.9	2.7	2.5	2.1	1.6	1.0
6		6.8	6.7	6.7	3.4	3.0	2.8	2.4	1.7	1.0
7		7.8	7.7	7.7	3.8	3.5	3.2	2.6	1.9	1.0
8		8.8	8.7	8.6	4.2	3.9	3.5	2.9	2.0	1.0
9		9.8	9.6	9.5	4.6	4.2	3.8	3.1	2.0	1.0
10	4034461	10.8	10.7	10.6	5.8	5.4	4.9	4.0	2.8	1.0
11		11.8	11.7	11.6	6.1	5.7	5.2	4.2	2.8	1.0
12		12.8	12.6	12.5	6.5	6.0	5.5	4.3	2.9	1.0
13		13.8	13.6	13.5	6.9	6.3	5.7	4.4	2.9	1.0
14		14.7	14.5	14.4	7.2	6.7	6.0	4.5	3.0	1.0

Table 4. Forward Linear Equalizers - 862 MHz (blue cover) *(used in Node and Mini Node only)*

EQ Value (dB)	Part Number	Typical Insertion Loss (dB) at Various Frequencies (MHz)							
		54	77	86	550	600	650	750	862
0	4034456	0.5	0.5	0.5	0.2	0.2	0.1	0.1	0.3
1		1.5	1.5	1.4	0.7	0.6	0.5	0.4	0.6
2		2.5	2.4	2.4	1.1	1.0	0.9	0.8	0.7
3		3.4	3.4	3.3	1.6	1.4	1.3	1.0	0.7
4		4.4	4.4	4.3	2.0	1.8	1.6	1.2	0.7
5	4034457	5.8	5.8	5.7	2.8	2.7	2.3	1.7	1.0
6		6.8	6.7	6.7	3.3	3.0	2.7	1.9	1.0
7		7.8	7.7	7.6	3.8	3.4	3.1	2.1	1.0
8		8.8	8.7	8.6	4.2	3.8	3.3	2.3	1.0
9		9.8	9.6	9.6	4.5	4.1	3.5	2.5	1.0
10	4034458	10.8	10.6	10.5	5.0	4.5	3.8	2.6	1.0
11		11.8	11.6	11.5	5.3	4.8	4.1	2.7	1.0
12		12.7	12.5	12.4	5.6	5.0	4.3	2.8	1.0
13		13.7	13.5	13.3	5.9	5.3	4.5	2.9	1.0
14		14.7	14.4	14.2	6.2	5.5	4.7	3.0	1.0

Forward Inverse Equalizers

Forward inverse equalizers produce cable equivalent tilt. An inverse equalizer is normally used in place of a forward input equalizer during station balancing when an amplifier is short spaced, to achieve the desired output tilt. An inverse equalizer's "dB value" indicates the amount of tilt (in dB) that would produce similar tilt (loss differential from low to high frequency). The rated lower frequency (54 MHz, or 87 MHz), and the rated EQ range are marked on the side of each equalizer. A PAD with the same value (in dB) is selected when a certain EQ value is needed.

Table 5. Inverse Equalizers 54 - 1000 MHz (yellow cover)

EQ Value (dB)	Part Number	Typical Insertion Loss (dB) at Various Frequencies (MHz)								
		54	77	86	550	600	650	750	862	1000
0	4035729	0.03	0.06	0.05	0.24	0.27	0.30	0.34	0.39	0.49
1		0.53	0.64	0.65	1.01	1.06	1.10	1.22	1.37	1.60
2		0.63	0.88	0.93	1.67	1.73	1.79	1.95	2.16	2.54
3		0.58	0.92	1.05	2.48	2.57	2.65	2.88	3.16	3.65
4		0.52	0.88	0.98	3.04	3.16	3.26	3.54	3.91	4.51
5	4035730	0.57	0.97	1.12	3.89	4.04	4.20	4.53	4.97	5.68
6		0.53	0.93	1.05	4.49	4.69	4.88	5.31	5.87	6.71
7		0.49	0.88	1.01	5.03	5.29	5.52	6.05	6.67	7.62
8		0.46	0.84	0.96	5.67	5.96	6.24	6.86	7.60	8.74
9		0.42	0.78	0.90	6.27	6.64	6.97	7.69	8.51	9.72
10	4035731	0.60	1.10	1.27	7.44	7.80	8.12	8.89	9.75	10.93
11		0.58	1.08	1.26	7.87	8.29	8.67	9.53	10.50	11.85
12		0.55	1.02	1.17	8.24	8.70	9.12	10.04	11.06	12.38
13		0.53	1.00	1.14	8.59	9.12	9.59	10.69	11.90	13.54
14		0.51	0.96	1.12	8.90	9.52	10.08	11.32	12.74	14.68

Table 6. Inverse Equalizers 87 - 1000 MHz (yellow cover)

EQ Value (dB)	Part Number	Typical Insertion Loss (dB) at Various Frequencies (MHz)						
		86	550	600	650	750	862	1000
0	4035732	0.05	0.22	0.24	0.27	0.30	0.35	0.43
1		0.37	0.94	0.99	1.03	1.15	1.28	1.56
2		0.42	1.56	1.63	1.70	1.87	2.10	2.49
3		0.38	2.31	2.41	2.50	2.70	3.01	3.54
4		0.33	2.82	2.94	3.07	3.36	3.80	4.48
5	4035733	0.25	3.43	3.60	3.75	4.11	4.59	5.38
6		0.24	3.97	4.19	4.38	4.84	5.43	6.33
7		0.22	4.42	4.71	4.96	5.55	6.23	7.25
8		0.21	4.93	5.26	5.56	6.24	7.05	8.22
9		0.20	5.40	5.81	6.18	6.97	7.89	9.15
10	4035734	0.68	7.36	7.73	8.07	8.79	9.61	10.72
11		0.63	7.83	8.28	8.68	9.49	10.42	11.68
12		0.60	8.21	8.73	9.21	10.15	11.18	12.49
13		0.58	8.59	9.18	9.73	10.86	12.09	13.69
14		0.56	8.78	9.45	10.08	11.42	12.88	14.85

Reverse Cable Equalizers

Reverse cable equalizers produce a tilted frequency response opposite of that produced by coaxial cables. They are normally used during station balancing to counteract the tilt produced by coaxial cables to achieve desired tilt. An equalizer's "dB value" indicates the amount of tilt (in dB at rated high frequency) the equalizer is designed to offset. The rated high frequency (42 MHz, or 65 MHz) and rated EQ range are marked on the side of each equalizer. A PAD with the same value (in dB) is selected when a certain EQ value is needed.

Table 7. Reverse Equalizers - 42 MHz

EQ Value (dB)	Part Number	Typical Insertion Loss (dB) at Various Frequencies (MHz)		
		5	40	42
0	4034465	0.7	0.5	0.5
1		1.7	0.6	0.6
2		2.6	0.7	0.7
3		3.6	0.8	0.7
4		4.5	0.9	0.8
5		5.5	1.0	0.9
6	4034466	6.7	1.0	1.0
7		7.6	1.0	1.0
8		8.6	1.1	1.0
9		9.5	1.2	1.0
10		10.4	1.2	1.0

Table 8. Reverse Equalizers - 65 MHz

EQ Value (dB)	Part Number	Typical Insertion Loss (dB) at Various Frequencies (MHz)	
		5	65
0	4034462	0.8	0.6
1		1.8	0.7
2		2.8	0.8
3		3.8	0.9
4		4.8	1.0
5		5.7	1.0
6	4034463	6.7	0.6
7		7.7	0.6
8		8.6	0.6
9		9.6	0.6
10		10.6	0.7

Signal Directors

The signal director is used as a 2-way splitter to feed the signal into both “Main” and “Aux” ports, or as a jumper to route all signals to a selected port (Main port).

Table 9. Signal Directors (yellow cover)

Type	Part Number	Aux/ Thru Leg	Typical Insertion Loss (dB) at Various Frequencies (MHz)								
			52	70	86	550	600	650	750	870	1002
Jumper	4034468	-	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.7
2-way splitter		Aux 1	3.2	3.2	3.2	3.4	3.5	3.5	3.6	3.7	3.8
		Aux 2	3.2	3.2	3.2	3.4	3.5	3.5	3.6	3.7	3.8

Pads (attenuators)

Plug-in pads produce flat (even) loss across the forward and reverse frequency spectrums. Pads are used during station balancing to adjust signal levels as needed. The (dB) loss produced is equal to the pad value printed on the top of the pad. The pads listed below are rated for operation to 1 GHz. The Pad with “75 Ω” printed on the top will work as a 75 Ohm terminator.

Table 10. Pads (attenuators)

Pad Value (dB)	Part Number
0	4036021
1	4036022
2	4036023
3	4036024
4	4036025
5	4036026
6	4036027
7	4036028
8	4036029
9	4036030
10	4036031
11	4036032
12	4036033
13	4036034
14	4036035
15	4036036
16	4036037
17	4036038
18	4036039
19	4036040
20	4036041
75Ω Terminator	4036140

AC Power Shunt

To set the power direction, the AC power shunt is installed in the ports through which AC power passes. The red shunt is used to indicate the power input port, and the black shunt is used to indicate the output ports to deliver power to the next stage.

Table 11. AC Power Shunt

Type	Part Number
Black	4034476
Red	4034477

3-State Switch Jumper

The 3–State Switch Jumper is used in nodes and amplifiers only.

Table 12. 3-State Switch Jumper

Type	Part Number
GainStar 3 - State Switch Jumper	4034473

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1-800-722-2009 or 678-277-1120
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