

HA-400

Advanced headend amplifier System

MCR-H/E 's Advanced Headend Amplifier system **HA-400** has been designed for modern cable headends and fiber-to-coax hubs. Headend laser transmitter drivers or signal power boosters are just a few of its possible applications. It includes from one to up to 4 amplifiers in a 1RU chassis that fits into a 19" rack. Various amplifiers can be mixed in a single frame and may include amplifiers for return as well as for forward paths with different gains.



Wide variety of plug-in attenuators and equalizers is available that can be used to change gain and slope of the frequency response of these amplifiers and gives the operator the ability to adjust them to fit their particular applications.

The amplifiers are powered with two built-in power supplies connected in redundant configuration, which are easily accessible from the front of the chassis. Each of these power supplies is capable of supporting the full load of four amplifiers. In the unlikely event of a single power supply's failure it can be replaced without interrupting service, which increases the system's reliability.



Alarm circuitry is provided that constantly monitors powering of each amplifier, output of each power supply and temperature inside the chassis. The monitoring signal is transmitted through the DB-15 connector at the back of the chassis. Front panel LEDs give the operator an ability to visually monitor status of the amplifiers, cooling fans

(on/off) and power supplies. The chassis and amplifier housings are designed for optimum heat dissipation that greatly increases their overall reliability.

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Product Features

- Excellent input and output return losses: guaranteed minimum 20 dB (50-870 MHz) with typical values as high as 24 to 26 dB, which helps maintain proper matching between these amplifiers and other equipment connected to them;
- High output signal level, excellent frequency response and distortion characteristics which improves quality of signal at the headend;
- Plug-in attenuator and equalizers at the input and output, which gives the operator capability to achieve required set of parameters for a particular application;
- Low noise figure;
- Optional Test ports available;
- Highest density in the industry with up to 4 amplifiers in 1RU 19" chassis for space savings inside the hub or a headend.

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Technical Specifications

Forward Path

Amplifier Model	Band width	Gain Nom. ¹	Flat-ness	In/Out Return Loss ⁵	Recom. Output Level	CTB ⁵	CSO ⁵	Xmod ⁵	Noise Fig.	Technology
	MHz	dB	max, ± dB	min, dB	dBmV	-dBc	-dBc	-dBc	max, dB	
HAF-19.870	50-870	19.5	0.5	22	30 -to- 48	86 ⁴	77 ⁴	85 ⁴	4	PD GaAs ³
	870-1000 ²		0.5	20						
HAF-24.870	50-870	24	0.5	20	30 -to- 48	86 ⁴	77 ⁴	84 ⁴	7	PD GaAs ³
	870-1000 ²		0.5	18						
HAF-27.870	50-870	27	0.5	20	30 -to- 48	86 ⁴	75 ⁴	84 ⁴	7	PD GaAs ³
	870-1000 ²		0.7	16						

Return Path

Amplifier Model	Band width	Gain Nom. ¹	Flat-ness	In/Out Return Loss ⁵	Recom. Output Level	CTB ⁵	CSO ⁵	Xmod ⁵	Noise Fig.	Technology
	MHz	dB	max, ± dB	min, dB	dBmV	-dBc	-dBc	-dBc	max, dB	
HAR-27.65	5.0 - 65	27	0.2	22	30 -to- 50	90 ⁷	82 ⁷	80 ⁷	4	PP Si ⁶
HAR-23.70	5.0 - 65	23	0.2	22	30 -to- 50	92 ⁷	82 ⁷	89 ⁷	5	PP Si ⁶

- ¹ - Standard values are shown; other values of gain are available
- ² - Extended range
- ³ - Power Doubler, Gallium Arsenide
- ⁴ - Based on 132 channels with output level of +33 dBmV per channel flat
- ⁵ - Worst case shown, typical numbers are 3-to-5 dB better
- ⁶ - Push-Pull, Silicone
- ⁷ - Based on 7 channels with output level of +40 dBmV per channel flat

Specifications are subject to change without notice