

# CA-50/550

550MHz High-Gain Distribution Amplifier



## *Installation and Operation Manual*

# CA-50/550

## Product Inspection

Inspect the equipment for shipping damage. Should any damage be discovered, immediately file a claim with the carrier.

## Important Safety Instructions

To insure proper installation and operation, take a moment to read this guide before proceeding with the installation. If you have any questions or comments about the **CA-50/550** High-Gain Distribution Amplifier, please contact your dealer or have him contact the **PICO MACOM** Service Center at (800) 421-6511.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of un-insulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

### WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DO NOT OPEN THE CABINET. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

### CAUTION:

TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

### ATTENTION:

POUR PREVENIR LES CHOCS ELECTRIQUES, NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

- 1. Read Instructions:** All safety and operating instructions should be read before the appliance is operated.
- 2. Retain Instructions:** The safety and operating instructions should be retained for future reference.
- 3. Heed Warnings:** All warnings on the appliance should be adhered to.
- 4. Follow Instructions:** All operating and user instructions should be followed.
- 5. Cleaning:** Unplug this appliance from the wall outlet before cleaning. Use a damp cloth for cleaning. Do not use liquid or aerosol cleansers.
- 6. Do Not Use Attachments:** Use of attachments not recommended by the manufacturer may cause hazards.
- 7. Water and Moisture:** Do not use this product near water—for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool—and the like.

- 8. Accessories:** Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the appliance.

- 9. Ventilation:** This video product should never be placed near or over a radiator or heat register. This video product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to. Any slots or opening in the cabinet are provided for ventilation. To ensure reliable operation of the video product and to protect it from overheating, these openings must not be blocked or covered. Openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface.

- 10. Grounding or Polarization:** This video product is equipped with either a three prong plug for 110 VAC use or a two prong flat blade 220 VAC type plug. Each type is to be inserted only into the type of receptacle for which they specifically designed. **Do not** cut off the round grounding pin in order to be able to fit into a two prong receptacle as this could cause injury and will void the warranty.

# CA-50/550

**11. Power Sources:** This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your appliance dealer or local power company.

**12. Power-cord Protection:** Power-supply cords should be routed so they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.

**13. Lightning:** For added protection for this product during a lightning storm, or when it is left unattended or unused for long periods of time, the unit should be disconnected from power source.

**14. Power Lines:** An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them may be fatal.

**15. Overloading:** Do not overload wall outlets and extension cords as this can result in risk of fire or electric shock.

**16. Object and Liquid Entry:** Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

**17. Servicing:** Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

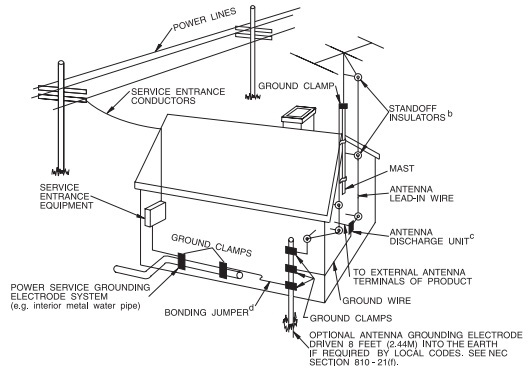
**18. Damage Requiring Service:** Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- a. When the power-supply cord or plug is damaged.
- b. If liquid has been spilled, or objects have fallen into the product.
- c. If the product has been exposed to rain or water.
- d. If the product does not operate normally by following the operating instruction. Adjust only those controls that are covered by the operating instructions. An improper adjustment may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
- e. If the product has been dropped or the cabinet has been damaged.
- f. When the product exhibits a distinct change in performance—this indicates a need for service.

**19. Replacement Parts:** When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original parts. Unauthorized substitutes may result in fire, electric shock or other hazards.

**20. Safety Check:** Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating conditions.

EXAMPLE OF ANTENNA GROUNDING ACCORDING TO NATIONAL ELECTRICAL CODE INSTRUCTIONS CONTAINED IN ARTICLE 810 - "RADIO AND TELEVISION EQUIPMENT"



**21. Outdoor Antenna Grounding:** Before attempting to install this product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges.

- a. Use No.10 AWG (5.3mm) copper, No.8 AWG (8.4mm) aluminum, No.7 AWG (10mm) copper-clad steel or bronze wire or larger, as ground wire.
- b. Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4 feet (1.22m) to 6 feet (1.83m) apart.
- c. Mount antenna discharge unit as close as possible to where lead-in enters house.
- d. A driven rod may be used as the grounding electrode where other types of electrode systems do not exist. Refer to the National Electrical Code, ANSI/NFPA 70-1984 for information.
- e. Use jumper wire not smaller than No.6 AWG (13.3mm) copper or equivalent, when a separate antenna grounding electrode is used.

### NOTE TO THE CATV SYSTEM INSTALLER

THIS REMINDER IS PROVIDED TO CALL THE CATV SYSTEM INSTALLER'S ATTENTION TO ARTICLE 820-22 OF THE NEC THAT PROVIDES GUIDELINES FOR PROPER GROUNDING AND, IN PARTICULAR, SPECIFIES THAT THE CABLE GROUND SHALL BE CONNECTED TO THE GROUNDING SYSTEM OF THE BUILDING, AS CLOSE TO THE POINT OF CABLE ENTRY AS PRACTICAL.

# CA-50/550

## 550MHz High-Gain Distribution Amplifier

- *Wide 54-550MHz frequency range (Channels CATV 2-78, 95-99)*
- *± 0.75dB flatness per 100MHz provides low distortion and excellent frequency response*
- *Employs state-of-the art hybrid push-pull technology for distortion-free audio-video quality*
- *Adjustable slope and gain controls for easy system balancing*
- *Easy-access controls and low-loss (-20dB) test point enable simplified setup and performance monitoring*
- *Built-in lightning and line voltage surge protection protects the unit from damage*
- *Black anodized extruded aluminum heat-sink maximizes heat dissipation for improved reliability and corrosion resistance*



**TRU SPEC**  
**NOM**

# CA-50/550

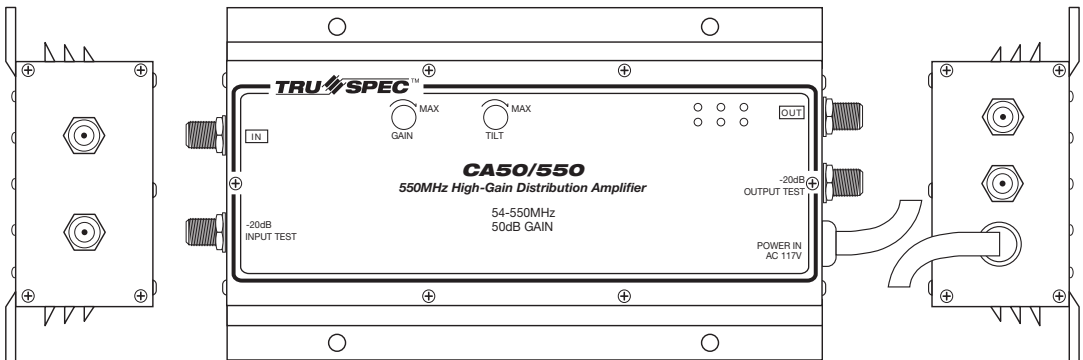
## 550MHz High-Gain Distribution Amplifier

The Pico Macom CA-50/550 is a high quality push-pull wall-mounted distribution amplifier producing signals with extremely low-noise and harmonic distortion. This amplifier is capable of 82 channel operation over the 54-550MHz range, and makes an excellent distribution system

in MDU, CATV, and SMATV systems. Because of its extremely low-noise figure and low distortion, the CA-50/550 is ideally suited for use in larger networks where amplifier cascading is required.

# CA-50/550

550MHz High-Gain Distribution Amplifier



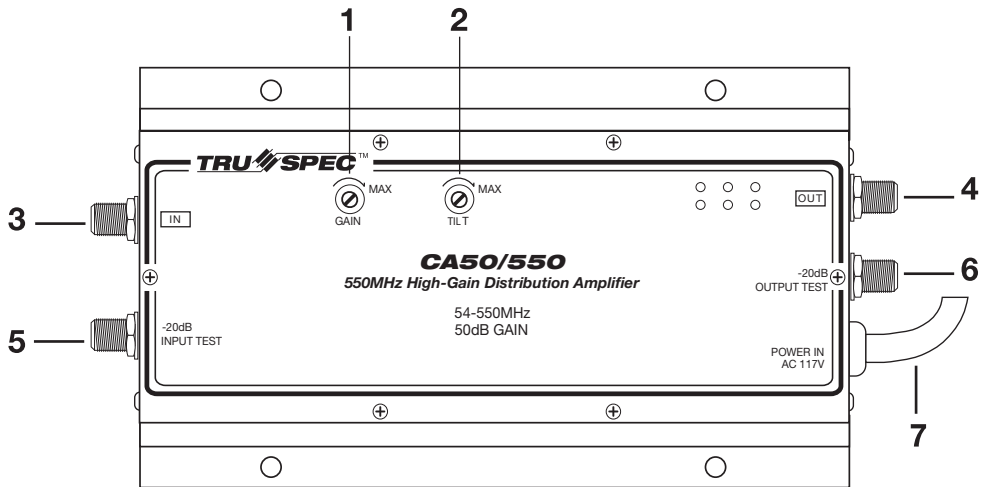
## Specifications

<b>Frequency Range:</b>	54-550 MHz	<b>Input Capability:</b>	83 dB $\mu$ V at Ch. 3 input
<b>Gain:</b>	50 dB min.	<b>Power Requirements:</b>	117 VAC, 60 Hz
<b>Flatness:</b>	$\pm .75$ dB max.	<b>Operating Temperature:</b>	-10° to +50° C
<b>Noise Figure:</b>	6.5 dB	<b>Impedance:</b>	75 Ohm
<b>Gain Control Range:</b>	15 dB	<b>Connectors:</b>	"F" female
<b>Slope Control Range:</b>	12 dB	<b>Indicators – power on:</b>	LED red
<b>Return Loss</b>		<b>Dimensions:</b>	8"(L) x 1 <sup>3</sup> / <sub>4</sub> "(H) x 4 <sup>1</sup> / <sub>2</sub> "(W)
(input/output):	-14 dB	<b>Weight:</b>	1.05 Kg
<b>Test Points:</b>	-20 dB		

## Ordering Information

CA-50/550 - 550MHz High-Gain Distribution Amplifier

# CA-50/550



## Front Panel Controls and Specifications

- Gain Adjust:** Adjust potentiometer for overall amplifier gain level.
- Tilt Adjust:** Adjust potentiometer provides for slope adjustment over entire bandwidth.
- IN:** The input RF signal is connected to this port.
- OUT:** The amplified RF signal is available at this port.
- 20 dB Input Test Monitor:** Input test point is provided to monitor input level to the amplifier.
- 20 dB Output Test Monitor:** Output test point is provided for amplifier set up and monitoring.
- Power cable:** The three-prong type power plug connects to a 120 VAC, 60 Hz electrical outlet.

## Operating Guidelines

Below is a chart showing the proper operation level for the CA-50/550. Please note the listed performance criteria is for SPECIFIC numbers of channels, and must be de-rated accordingly when inserting additional channels.

### Input Levels

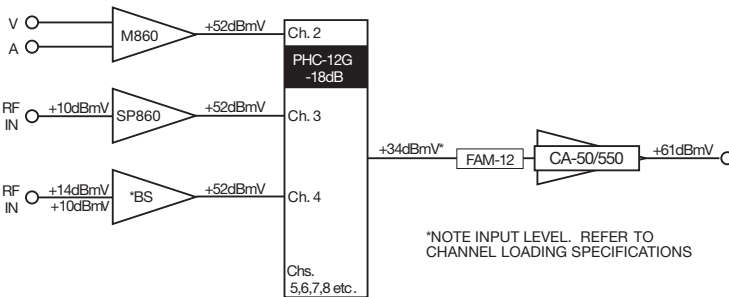
Total # of Channels	Max. Input Level (dBmV)	Max. Output Level (dBmV)
7	11	61
12	3	53
36	-4	46

Also note the amplifier's gain does not change. However, as the number of channels increases from 7 channels, the input level (hence, the output level) must be reduced. Exceeding the input levels listed below will cause intermodulation and picture distortions.

# CA-50/550

## Installation

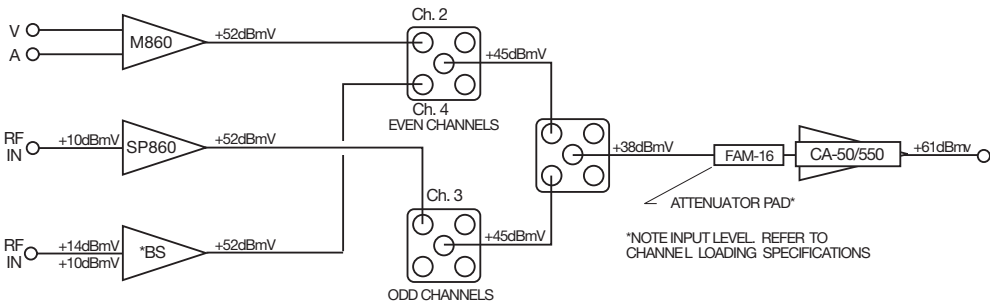
The output levels of the modulators should be the same as the output of the off-air strip amplifiers. The **M860** modulators are usually combined with either the **SP860** signal processor or **LBS/MBS/FMS/UBS** series.



\*NOTE INPUT LEVEL. REFER TO CHANNEL LOADING SPECIFICATIONS

The **PHC-12G** twelve channel and **PHC-24G** twenty-four channel combiners consist of two rows of directional couplers combined by a hybrid splitter. The directional coupler combining provides high isolation (40dB) between the inputs. Normally, the odd channels are combined on one row while even channels are combined on the other row of directional couplers. The combiner loss is 18 dB per channel for the PHC-12G and 21 dB per channel for the PHC-24G. The output of the amplifiers, are connected to the main distribution line.

Another method of combining signals uses three hybrid splitters per headend rack. The odd channels are combined in one splitter, the even-channels in another splitter and the two or more splitters are combined to a single output with a third splitter. Each rack is then combined with a final splitter prior to the **CA-50RK550** post amplifier.



\*NOTE INPUT LEVEL. REFER TO CHANNEL LOADING SPECIFICATIONS

# CA-50/550



## One Year Limited Warranty

Pico Macom warrants to the original purchaser a full 1-year warranty period on all new products. Pico Macom will repair or, at its discretion, replace without cost to the original purchaser, the product which, upon inspection by Pico Macom, appears to be defective or not conforming to the Factory Specifications. Pico Macom will cover the cost of parts, labor, and return freight from factory.

## Warranty Limitations

This warranty excludes coverage of damage or inoperability resulting from (1) use or installation other than in strict accordance with Pico Macom's written instructions, (2) disassembly or repair by someone other than Pico Macom or a Pico Macom authorized repair center, (3) misuse, misapplication or abuse, (4) alteration, (5) lack of reasonable care or (6) wind, ice, snow, rain, lightning, power surges, excessive heat, or any other weather conditions or acts of God. Pico Macom's warranty with respect to third-party proprietary sub-assembly modules and/or private-label products are limited to the duration and terms of third-party vendors' warranty. Pico Macom shall in no event and under no circumstances be liable or responsible for any consequential, indirect, incidental, punitive, direct or special damages based upon breach of warranty, breach of contract, negligence, strict tort liability or otherwise or any other legal theory, arising directly or indirectly from the sale, use, installation or failure of any product acquired by buyer from Pico Macom. This limited warranty extends to the original purchaser and cannot be assigned or transferred to any other party without the prior express written permission of Pico Macom, which permission Pico Macom may withhold for any reason or for no reason at all. Pico Macom reserves the right to modify or discontinue this warranty at Pico Macom's sole discretion without notification. No other warranties are expressed or implied.

## Damage or Shortage Claims

Our shipping staff carefully packs and ships your orders in compliance with common carriers' requirements. Please make note of any obvious damage or shortage on the freight bill or carrier's receipt next to your signature. The carrier's agent must also sign acknowledging the loss. Failure to do so may result in the carrier's refusal to honor the claim. Please open your order immediately upon receipt to check for concealed damage and compare the packing list to the items shipped. If damaged, keep the original shipping cartons for possible inspection by the carrier. You must report claims for loss or damage within 3 days of delivery, while claims for erroneous charges or price corrections must be presented within 30 days of invoice date.

## Returning Shipped Items

To return any shipped items, including those shipped for warranty repairs or credit, call our Customer Service desk to request a Return Merchandise Authorization (RMA) number. Please reference the original invoice number and purchase date, and product serial number (if any). Be certain to mark the RMA number on the package boldly and legibly. Unless we specify a different carrier, please ship your returned items to us via UPS freight prepaid and fully insured. If returned for credit, we will promptly process your request upon receipt of your return order.

## Our Return Policy: Your Satisfaction Guaranteed

Our goal is your complete satisfaction. If for any reason, our products were not quite what you anticipated, simply call your customer service rep and we will be happy to assist you in replacing or returning the order. You may return current, non-discontinued items for full credit for up to 30 days from invoice date. Our requirements are simple: Excepting defective items, the products must be returned in their original packaging and in re-salable condition. Re-certification fees of 10% to 50% of original purchase price may otherwise apply beyond this period or if products are not returned in their original condition. Please contact your customer service rep for more information.