



INNOVATIVE ELECTRONICS

# AE2000

Omni directional FM/TV Antenna

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INSTRUCTION MANUAL

## INTRODUCTION

The GME AE2000 three element broadband clover leaf TV/FM antenna has been designed specifically for marine and mobile land use.

The unique broad band clover leaf element design ensures good balanced reception of all TV channels (ABC, commercials and SBS) whether on VHF (bands 1 and 3) or UHF (bands 4 and 5). In addition, the AE2000 picks up FM radio signals which may be fed to your boat or vehicle's stereo system. The AE2000 is also fully digital TV ready.

Unlike conventional TV antennas, the AE2000 is non-directional, so it will continue to give good reception if your boat changes course or swings at anchor. For land use, there is no requirement to swing the antenna for best results at each new site or when changing between stations lying in different directions.

The AE2000 has a built in amplifier which combines the latest field effect and bipolar transistor technology. This gives minimum noise (snow) on weak signals and also avoids patterning interference etc., due to overload caused by strong signals from nearby transmitters.

The amplifier is protected against damage from static, supply surges or accidental reverse polarity.

The antenna and amplifier are mounted in a weatherproof plastic radome. This is UV stabilised to resist deterioration due to prolonged exposure to sunlight. All screws and bolts are high grade stainless steel to prevent corrosion in the harsh marine environment. A 10 metre length of high quality white coaxial cable carries 12 V DC to power the built-in amplifier and feeds TV and FM radio signals from the antenna to the required location in the boat or vehicle.

## SPECIFICATIONS

<b>Antenna Type:</b>	3 element clover leaf.	<b>Current Consumption:</b>	35 mA typical.
<b>Frequency Range:</b>	VHF TV bands 1 & 3 - 40 MHz to 220 MHz. UHF TV bands 4 & 5 - 470 MHz to 860 MHz. FM radio band - 88 MHz to 108 MHz.	<b>Connector:</b>	Standard 'F' type external or coaxial clamp internal.
<b>Polarisation:</b>	Horizontal.	<b>Downlead:</b>	10 metres white 75 Ohms coaxial cable type RG59B/U with fitted weatherproof 'F' connector.
<b>Pick Up Pattern:</b>	Omni directional.	<b>Radome:</b>	White polypropylene UV stabilised plastic, 460 mm dia, 100 mm high.
<b>Amplifier:</b>	FET and bipolar.	<b>Mounting:</b>	Accepts 1" (25 mm) standard dia. tube (450 mm alloy mast and base supplied).
<b>Gain:</b>	20 dB + or - 2 dB.		
<b>Noise Figure:</b>	2 dB.		
<b>Output Impedance:</b>	75 Ohms.		
<b>Supply Voltage:</b>	10.5 - 14.5V DC negative ground, reverse polarity and surge protected.		

## PARTS LIST

Locate and familiarise yourself with all parts making up the AE2000 system listed below

1 x Instruction leaflet.	1 x 25 mm (1") dia. x 450 mm (18") long aluminium support tube.
1 x Antenna dome assembly.	2 x Slope adjusting wedge spacers.
1 x 10 metre length white coaxial downlead with fitted waterproof 'F' connector.	1 x Cable tie.
1 x Coaxial connector, screw on solderless 'F' type.	3 x M5 x 40 mm stainless steel Phillips head bolts.
1 x DC power injector assembly.	4 x 1/4 inch x 16 mm stainless steel grub screws.
2 x Moulded bases to accept 25 mm (1") tube.	1 x Allen key for grub screws.

## GENERAL CONSIDERATIONS

Very careful consideration should be given to the best mounting position for the AE2000. Television signals rapidly fall in strength once the line of sight distance is exceeded, so to give the best reception range, the AE2000 should be mounted as high as possible. This would normally be above the flybridge on motor cruisers or at spreader or masthead height on cruising yachts.

Many modern vessels have a targa arch which is an ideal location for GPS, radar and TV antennas. If the AE2000 is to be mounted on an arch or similar elevated flat surface, the 450 mm mast, second moulded base and slope adjusting spacers supplied can be utilised.

If the methods described above are not practical, an alternative might be to mount the AE2000 on a 3-4 metre 25 mm (1") diameter alloy or stainless tube from the vessels stern.

The AE2000 provides two alternative methods for connection of the coaxial cable downlead. The cable can be protected and kept out of sight by running it inside the mounting tube. A screw and clamp type connection is

provided inside the dome for this purpose. Alternatively, the weatherproof 'F' connector fitted to the downlead supplied can be screwed to the outlet on the underside of the AE2000 and the cable routed external to the mounting tube.

If you choose to run the cable up the inside of the support tube, the fitted waterproof connector must be cut off and the co-axial cable connected to the amplifier PCB as in diagram 1 and 2.

The hand assembly connector (supplied) is to be fitted to the pre-trimmed end of the coaxial cable (as in diagram 3) and screwed into the AE2000 power injector (also supplied).

A 1.5 metre long, white coaxial lead is provided to connect from the AE2000 DC Injector to the TV Receiver's Antenna Socket.

If you wish to use the AE2000 for FM Radio reception, you may purchase a GME accessory kit (part number SPL001).

## ASSEMBLY & CONNECTION

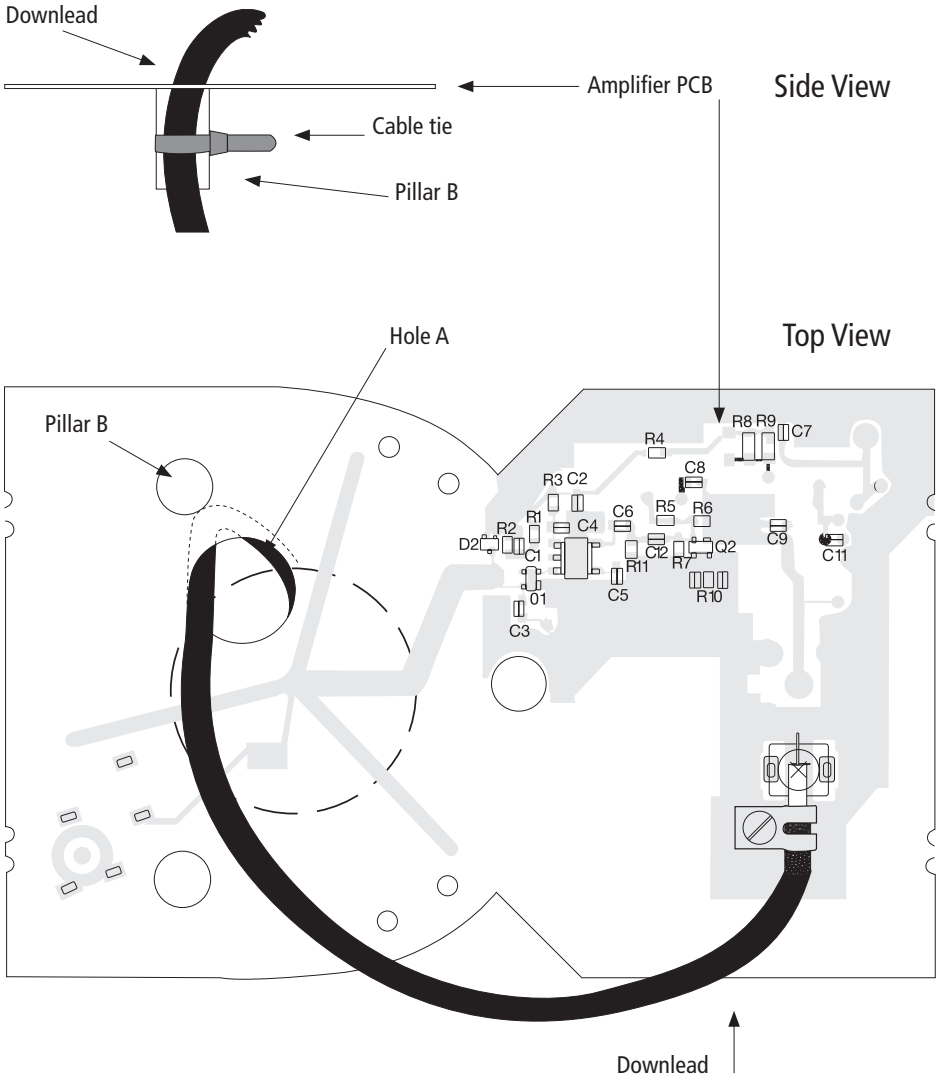
When the antenna's location has been decided and mechanical arrangements to support it have been made, final assembly and connection of the download can be commenced.

- 1 Select one of the moulded bases and use the 3 M5 X 40 mm stainless bolts to attach it to the underside of the dome. Note that the nuts are captive within the dome assembly.
- 2 Insert 2 grub screws into the threaded bushes in the base and tighten a few turns to hold them in place.
- 3 If the download is to be run inside the support tube, follow steps 8 - 12 below.
- 4 If the download is to be run externally, screw the waterproof 'F' connector on the cable supplied to the outlet below the dome. Use a small 12 mm spanner to gently tighten the sleeve which secures the connector to the outlet. Caution, do not overtighten.
- 5 Mount the antenna on its support tube and lock firmly in place by tightening the 2 grub screws in the base using the 3 mm Allen key supplied.
- 6 Secure the download in place using cable ties or similar. Caution, do not allow the full weight of cable to be carried by the 'F' connector either during or after installation.
- 7 As the down lead has been installed with the waterproof 'F' connector at the top, it will be necessary to fit the second connector supplied at the injector end. Instructions for fitting this connector are given in Diagram 3. Note that the spare 'F' connector provided is not waterproof and should only be used where protected from the weather.
- 8 To run the download inside the support tube, it is necessary to open up the dome assembly. To do this, first undo 6 Philips head screws and washers which are located in recesses on the underside of the dome. Then use 2 thin bladed screw drivers to gently prise the 12 clip over portions at the circumference of the dome lid outwards and upwards over the lip in the dome base, until the two parts can be separated.
- 9 Cut the waterproof connector off the coaxial, run this end up the tube and connect to the PCB saddle as in diagram 1 and 2. Take care to avoid any whiskers of wire from the cable shielding braid which could short circuit the connections. Support the weight of the coaxial by securing with the cable tie supplied. The cable should be run to the location of the T.V. receiver via the shortest route possible. Any excess cable may be trimmed off then fit the 'F' connector (supplied) to this end of the coaxial for connection to the AE2000 Power Injector (supplied).
- 10 Clip the dome lid and base back together ensuring that the tall spigot in the base locates inside the hollow spigot in the lid. Replace and tighten the 6 Philips head screws and washers which hold the base and lid together.
- 11 Mount the antenna on its tube and secure in place by tightening the 2 grub screws using the Allen key provided.
- 12 If further cable is added, this must be the same type as supplied (75 Ohms RG 59 B/U) and a good quality barrel (in line) 'F' connector, obtainable from electronic hobby stores, should be used to make the join. This connector will probably require sealing to avoid moisture ingress and corrosion.  
  
The short co-axial flylead with 'F' connector on one end and PAL type plug on the other should be installed between the 'to television' outlet on the injector and the TV receivers antenna socket.
- 13 The amplifier in the antenna dome is powered by the boat or vehicles 12 V DC supply injected into the download by the AE2000 injector unit. Connect 12 V from the boat or vehicle electrical system to the red/black wire from the injector, red to positive (+) and black to negative (-). Current consumption is 30-40 mA and this will run down batteries if left connected for very long periods without charging. The antenna system will not work if the polarity is incorrect. A 500 mA fuse in the injector's red wire protects against short circuits in the download system.

- 14 If required, the AE2000 TV antenna system may be powered from the 240V mains supply by using GME Kingray plug pack and injector model PSK06F obtainable from your GME dealer.

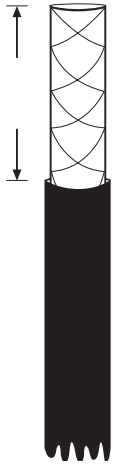
## Diagram 1

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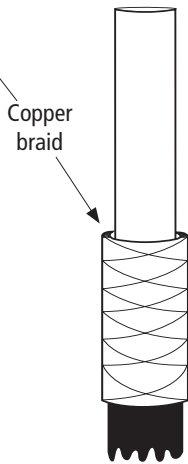


## Diagram 2

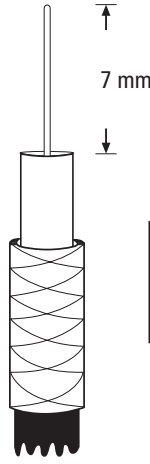
1 Cut back outer plastic cover.



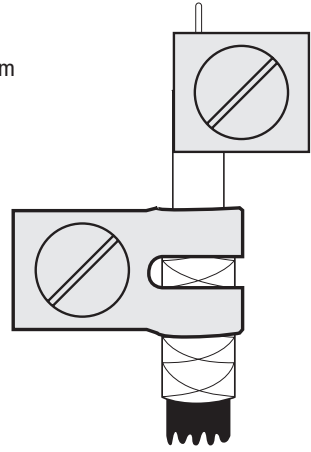
2 Fold braid back over outer cover.



3 Remove plastic from inner wire.

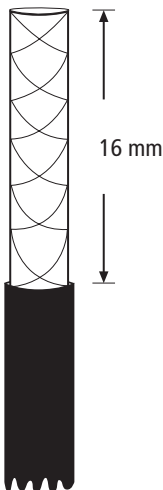


4 Clamp wire and braid in position

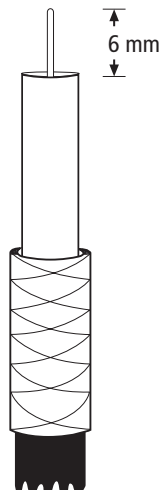


## Diagram 3

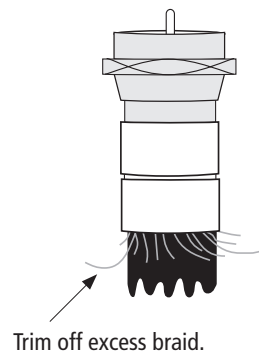
1 Cut back plastic cover.



2 Fold braid back and remove plastic from inner wire.



3 Insert prepared cable into connectors body and screw in as far as possible.



# STANDARD COMMUNICATIONS CONTRACT WARRANTY

## I. STATUTORY WARRANTIES

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- 1.1 The Trade Practices Act Part V, Division 2A and other legislation imply conditions, warranties and other obligations on us to consumers that cannot be excluded, restricted or modified. Those provisions apply to the extent required by law.
- 1.2 We exclude all other conditions, warranties and obligations which would otherwise be implied concerning the activities covered by this agreement.
  - 1.3 We limit our liability where we are allowed to do so. Examples of where we are allowed to limit liability are -
    - (a) you acquire goods from us for re-supply;
    - (b) the goods or services we supply are not of a kind ordinarily acquired for personal, domestic or household use or consumption.
  - 1.4 Where we are allowed to limit our liability, to the extent permitted by law, our sole liability for breach of a condition, warranty or other obligation implied by law is limited -
    - (a) in the case of goods we supply, to any one of the following as we decide -
      - (i) the replacement of the goods or the supply of equivalent goods;
      - (ii) the repair of the goods;
      - (iii) the payment of the cost of repairing the goods or of acquiring equivalent goods;
      - (iv) the payment of the cost of having the goods repaired; or
    - (b) in the case of services we supply, to any one of the following as we decide -
      - (i) the supplying of the services again;
      - (ii) the payment of the cost of having the services supplied again.
- 2.3 We warrant our other repairs to be free from defects in materials and workmanship for three months from the date of the original repair. During this period and as our sole liability to you for the repair, we agree to repair or replace (at our option) repaired goods which we are satisfied are defective.
- 2.4 We warrant that we will perform services with reasonable care and skill and agree to investigate any complaint made in good faith that we have performed services unsatisfactorily. If we are satisfied that the complaint is justified, and as our sole liability to you under this warranty, we agree to supply those services again at no extra charge to you.
- 2.5 If you want warranty service under this clause you must give us an original or copy of the sales invoice from the transaction or some other evidence showing details of the transaction.

## 3. OTHER LIMITATIONS

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- 3.1 You may not rely on any representation, warranty or other provision by or for us which is not covered by clause [ 1 ] or repeated in this agreement in clear terms.
- 3.2 We are not liable (nor are our employees, contractors and agents) for any damage, economic loss or loss of profits whether direct, indirect, general, special or consequential -
  - (a) arising out of any breach of any implied or express term, condition or warranty; or
  - (b) suffered as a result of our negligence (or that of our employees, contractors or agents) apart from liability as set out in the previous two clauses.
- 3.3 The liability of a party under this agreement (whether arising in contract, tort or by statute) is to be reduced by the same proportion as represents the proportion of the loss or damage caused or contributed to by the other party, its contractors or agents.

## 2. ADDITIONAL WARRANTIES

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- 2.1 The warranties in this clause are in addition to the statutory warranties referred to in the previous clause.
- 2.2 We warrant our goods to be free from defects in materials and workmanship for one year from the date of original sale (or another period we agree to in writing). During this period and as our sole liability to you under this warranty, we agree to, at our option, either repair or replace goods which we are satisfied are defective. We warrant replacement parts for the remainder of the period of warranty for the goods into which they are incorporated.

## GME AFTER SALES SERVICE

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Your GME AE2000 is especially designed for the environment encountered in land and marine installations. The use of all solid state circuitry, careful design and rigorous testing, result in high reliability. Should failure occur however, GME maintain a fully equipped service facility and spare parts stock to meet the customer's requirements long after expiry of the warranty period.



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