



The GEC-Marconi Defence Systems Electronic Systems Division (ESD) series of Missile Approach Warners has been specifically designed to detect approaching missiles and trigger the release of decoys and flares at the optimum point for decoying effectiveness.

## MISSILE APPROACH WARNER

The application of Pulsed Doppler radar to the detection of approaching missiles provides the aircraft Defensive Aids System with the all important advantage over passive missile warning systems of missile detection range and accurate time to impact information. This allows decoys and flares to be released when and where they have maximum decoying effectiveness. This conserves expendables while maximising survivability.

- ***Provides effective detection for counter-measure protection from surface and air launched missiles***
- ***Flight tested***
- ***Low false alarm rate and high probability of detection***
- ***Automatic counter-measure dispensing at optimum range and time***
- ***High system operational reliability and low mean time to repair***
- ***Comprehensive BITE***

**Electronic Systems Division**

[A Division of GEC-Marconi Defence Systems]

The Electronic Systems Division Missile Approach Warner (MAW) has been developed to meet the demanding requirements of providing protection for low flying attack aircraft from surface and air-launched infra-red seeking missiles. Working in conjunction with an on-board flare dispensing system, the pulsed Doppler MAW radar detects the approaching missile at sufficient range from the aircraft for an automatically dispensed flare to decoy the missile harmlessly away. The operational performance parameters were chosen, only after extensive studies and modelling of the missile/aircraft/flare, attack and countermeasure engagement geometry.

### Operation

The ESD MAW has been designed for automatic operation, either with a countermeasures dispensing system or integrated with a complete aircraft Defensive Aids System.

The operating crew controls are therefore limited to Power On/Off and

Built-In-Test (BIT) monitoring. All BIT monitoring and module level diagnostics are handled by the Signal Processing Unit (SPU) and defective units displayed to the maintenance crew by magnetic indicators.

### Design Features

- Hardware and software processing provides discrimination and rejection of interfering ground radar clutter returns.
- Novel antenna design and sidelobe suppression techniques permit the PVS2000 to detect missiles at a wide range of approach speeds including the slower missiles at sub-clutter approach velocities below the aircraft ground speed.
- Low power and ECCM features protect the PVS2000 from both signal intercept and hostile jamming.
- The high resolution pulsed Doppler radar and processing techniques ensure high probability of detecting the smallest missile targets whilst maintaining a very low false alarm rate.
- The PVS2000 has a multi-channel operating capability. Not only does this improve its ECCM performance, but it allows aircraft to fly in close formation without degradation from mutual interference.
- The PVS2000 lightweight construction enables it to be fitted to most aircraft types, internally, in a pod, or pylons.



## **PVS2000** **MISSILE APPROACH WARNER**





As the capability of missiles increases and the number of variants grows, so does the challenge to the MAW designer to produce ever better detection performance and to protect our aircrews. GEC-Marconi Defence Systems and ESD have accepted that challenge. Advanced Missile Detection System (AMIDS) is designed to meet the next generation of missile protection requirements where missiles are faster, smaller and must be detected at longer ranges from all directions in order that the newer countermeasures can be effective.



## AMIDS

### ADVANCED MISSILE DETECTION SYSTEM

**AMIDS is based on the proven pulsed Doppler radar design of the earlier PVS2000. The use of up to four antennas with wide angular coverage and a solid state transmitter enables multiple missile attacks to be detected at longer ranges and greater spatial coverage than earlier generation systems.**

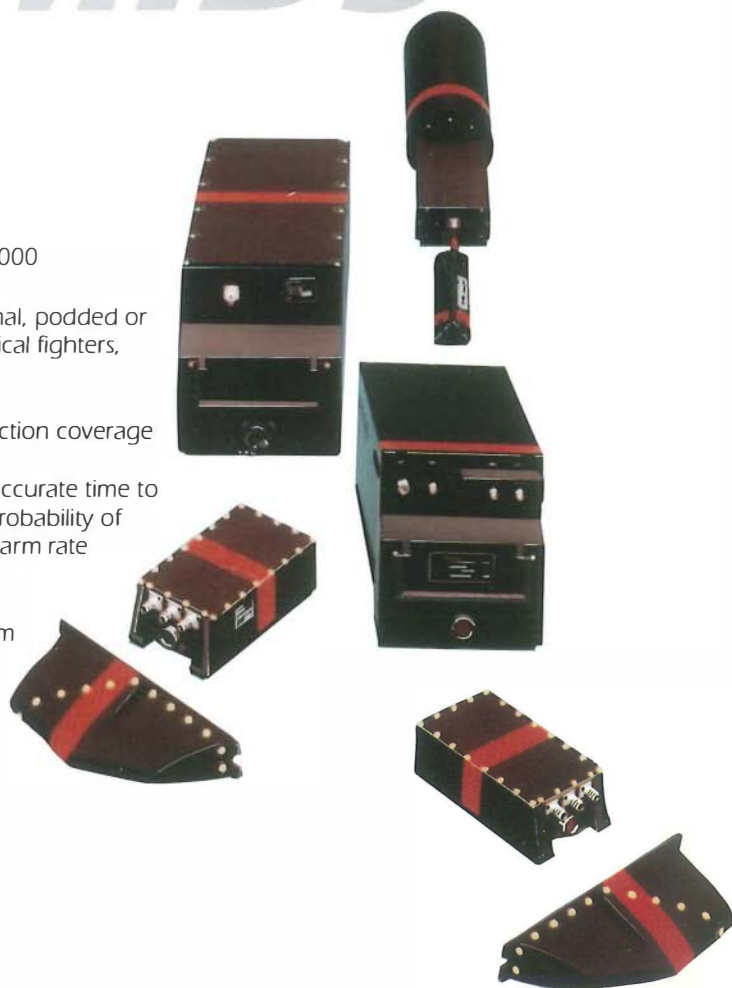
#### Operation

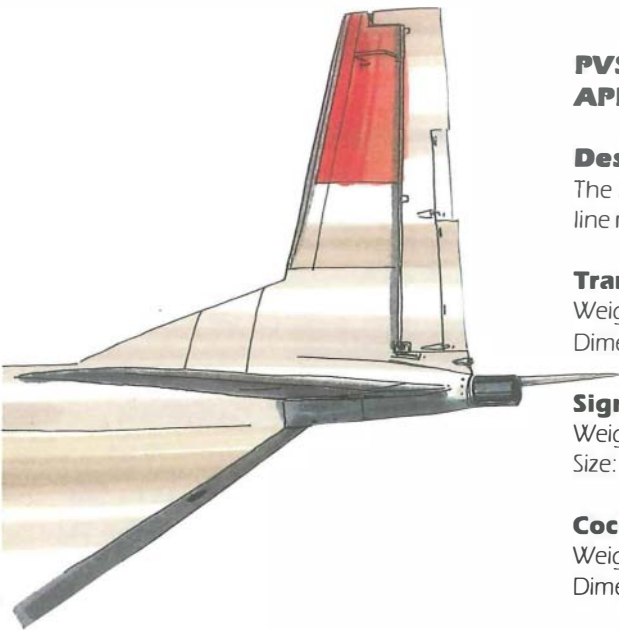
AMIDS is designed for stand-alone operation to operate automatically either with a countermeasures dispensing system or integrated with a complete Defensive Aids System.

#### Configuration

AMIDS may be configured for internal aircraft installation or alternatively in external pods or aircraft weapons pylons. Its basic configuration is a single main processor LRI and up to four antennas.

- Selected for Eurofighter 2000
- Variants suitable for internal, podded or pylon installations on tactical fighters, helicopters or transports
- Widespread angular detection coverage
- Multiple range gates for accurate time to impact prediction, high probability of detection and low false alarm rate
- Stand-alone or integrated with Defensive Aids System
- Highly reliable detection performance against current and predicted high velocity missiles
- Low altitude detection performance maintained of slower missiles with sub-clutter velocities





## **PVS2000 MAW - MISSILE APPROACH WARNER**

### **Description**

The PVS2000 MAW comprises five flight line replaceable units.

### **Transmit/Receive Unit (TRU)**

Weight: 5.5kg  
Dimensions: 250mm diameter x 156mm

### **Signal Processing Unit (SPU)**

Weight: 7.0kg  
Size: ½ ATR short

### **Cockpit Control Unit (optional)**

Weight: 1.0kg  
Dimensions: 38mm x 146mm x 75mm

### **Main Antenna/Radome**

Weight: 0.7kg  
Dimensions: 110mm diameter x 260mm

### **Auxiliary Antenna**

Weight: 0.25kg  
Dimensions: 150mm x 100mm x 50mm

### **Status**

The ESD PVS2000 MAW is in production for fitment to the RAF Harrier GR7 following a comprehensive development and qualification programme which included extensive flight testing and detection of live-fired operational missiles under representative combat conditions.



## **AMIDS - ADVANCED MISSILE DETECTION SYSTEM**

### **Description**

### **Processor LRI**

Weight: 18.0kg  
Dimensions: 480mm x 160mm x 190mm

### **Antennas**

Weight: 2.0kg (each)

Enhanced configuration may include the following options:

### **Transmitter LRI**

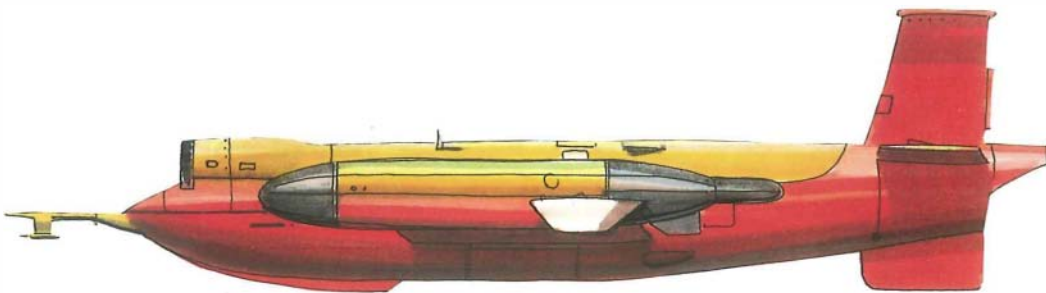
Weight: 13.0kg  
Dimensions: 380mm x 160mm x 190mm

### **Low Noise Amplifiers**

Weight: 2.0kg (each)

### **Status**

Electronic Systems Divisions' Advanced Missile Detection System has been selected for full scale development as part of the GEC-Marconi Defence Systems led EuroDass equipment for Eurofighter2000. It will form an important integral part of this advanced aircraft defensive aids suite, providing vital protection against hostile missiles well into the next century.



## **GEC - Marconi** Defence Systems

The information contained herein is the property of GEC-Marconi Limited and is supplied without liability for errors or omissions. No part may be reproduced or used except as authorised by contract or other written permission. The copyright and the foregoing restriction on reproduction and use extends to all media in which the information may be embodied.  
Publication No. ESD 028/10.93

## **Electronic Systems** Division

Browns Lane, The Airport, Portsmouth, Hampshire PO3 5PH  
Tel: (0705) 664966 Fax: (0705) 672934 Telex: 869442 MARDEF G

USA GEC-Marconi, 1111 Jefferson Davis Highway, Arlington  
VA 22202, USA Tel: (703) 553 5582 Fax: (703) 553 0274

©GEC-Marconi Limited 1993. All rights reserved.