

## Type Specification

The EA7401D is a dual antenna designed for FMCW radar system and also for Surface Movement Radar and space diversity sea surveillance.

The antenna consists of two linear arrays stacked on top of each other. Both arrays have inverse cosec<sup>2</sup> elevation radiation pattern to -40°, providing excellent coverage of sea or airport surface.



Operating at X-band, this antenna uses techniques developed from cellular radio technology to provide a unique combination of RF performance, compact size and low weight.

The antenna provides azimuth resolution of about 0.32°, whilst being able to handle continuous power without loss of performance.

Unlike slotted waveguide antennas, the EA7401D antenna azimuth beam pointing angle is independent of RF frequency, therefore this antenna does not suffer from beam squint with change in frequency, making it ideal for FMCW radar systems. The EA7401D antenna is available with either fixed circular or fixed horizontal polarisation.

| General & Mechanical              |                             | Environmental          |  |
|-----------------------------------|-----------------------------|------------------------|--|
| Type                              | Printed Linear Array        | Operational Wind Speed | 160 km/hr                                    |
| Aperture Size                     | 7.5 m x 0.6 m               | Survival Wind Speed    | 210 km/hr                                    |
| Total weight (incl. turning gear) | 500kg                       | Humidity               | 100%   |
| Overall Height                    | 1.6m (from mounting flange) | Operational temp.      | -30°C to +60°C                               |
| Max Swept radius                  | 3.7 m                       | Protection             | Suitable for salt laden coastal environment. |
| Rotation rate                     | 60 rpm (nominal)            |                        |  |
| Design Life                       | 20 years                    |                        |  |

| Electrical Specification |   |           |
|--------------------------|---|-----------|
| Beam Characteristics     | Inverse Cosec <sup>2</sup> Elevation Pattern down to -40°             |           |
| Operating Frequency      | X-band, 9.0 – 9.5 GHz   |           |
| Gain                     | 35.5dBi @ 9.5 GHz   |           |
| VSWR                     | ≤ 1.4:1 over selected 200MHz band<br>Narrow band tuning also possible |           |
| Polarisation             | Circular  |           |
| ICR                      | ≤ -17dB in Az. and El. Plane  |           |
| Azimuth 3dB Beamwidth    | 0.32° nominal   |           |
| Azimuth Sidelobes        | Within 10°  | Backlobes |
|                          | ≤ -25dB   | ≤ -40dB   |
| Elevation 3dB Beamwidth  | 15° ± 4°  |           |
| Isolation                | 80dB nominal  |           |

| Options at Extra Cost   |
|---|
| Dual encoders; choice of encoders. Various rotation rates, alternative environment specifications, electronic adjustment of antenna rotation speed. |

*Specifications are subject to change as part of Easat's ongoing improvement policy. Customers are advised to confirm specifications prior to contract. Rev2 July 2008*