

# AN/ARA-63D

## Receiving-Decoding Group

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**PULSE DECODER**  
**KY-651C/ARA-63**



**RECEIVER CONTROL**  
**C-7949B/ARA-63**



**RADIO RECEIVER**  
**R-1379B/ARA-63**

Receiving-Decoding Group AN/ARA-63D is the airborne portion of AACS and MRAALS all-weather aircraft approach guidance systems. The AN/ARA-63D Group receives coded KU band transmissions on any of 20 selectable channels from ground or carrier based azimuth and elevation transmitters; it decodes the received signals for display on a cross-pointer indicator in the aircraft cockpit.

A centerline display of both elevation and azimuth on the cross-pointer indicator depicts the flight path the pilot must follow to line up accurately with the airport runway or carrier deck. By consecutively scanning through azimuth and elevation, the system provides continuous measurement of the lateral and vertical deviations of the aircraft in space from the optimum approach line. The glide slope is selectable from two to five degrees.

The Receiving-Decoding Group is equipped with self-test (BIT) circuitry that permits the pilot to make an instantaneous check of proper operation of both receiver and decoder. In case of an internal malfunction, an indicator on the faulty unit flags when the BIT control is activated.

Receiving-Decoding Group AN/ARA-63D consists of Radio Receiver R-1379B/ARA-63, Pulse Decoder KY-651C/ARA-63, and Receiver Control C-7949B/ARA-63. The outputs of the group are used to drive a suitable cross-pointer indicator. Operation of the group is controlled by the receiver control.

**RADIO RECEIVER R-1379B/ARA-63** - A well-designed balanced waveguide mixer is used to mix the incoming signal to produce a 150 MHz IF. The LO is a crystal-controlled solid-state unit employing multipliers, amplifiers, and filters which provide excellent rejection of spurious signals. Filters in the detector circuit remove the IF component, so that purely video is passed to the decoder. Sensitivity of the receiver is -72 dBm, with a dynamic range to -10 dBm. High selectivity is provided, with adjacent channel suppression of 25 dB minimum. The BIT module, when activated, monitors the output of the IF amplifier and the mixer crystal voltage. Insufficiency in either of these functions will cause failure indicators on the receiver and decoder to flag. A time totalizing meter on the receiver indicates total time power to the unit has been turned on.

**RECEIVER CONTROL C-7949B/ARA-63** - This unit controls system power, channel selection, and the BIT function. The CHANNEL selector switch selects channels 1 through 20. The BIT PRESS switch is a momentary push button switch that activates the BIT circuitry when pressed.

### FEATURES:

- Meets Environmental requirements of Class II equipment
- All solid state, employing state-of-the-art components
- High Reliability; MTBF 1000 hours
- Signal division between receiver and decoder optimized: all RF functions performed by receiver; all digital functions performed by decoder
- High Sensitivity; -72 dBm
- Wide Dynamic Range; to -10 dBm
- Excellent Selectivity; 25 dB adjacent channel suppression
- Equipped with self-test circuitry
- Minimum Weight. Group weight 12 lbs. (Exclusive of interconnecting cables and waveguides)
- Low Power Consumption