DME 2000

AZIMUT

Distance Measuring Equipment

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Purpose

The radio beacon of the DME system, in conjunction with onboard equipment, is intended for measuring the slant distance of an aircraft relative to the ground station. The radio beacon is utilized for enroute and terminal navigation of civil aircraft.

Principles of Operation and Signal Format

The DME 2000 radio beacon utilizes the operational principles and the signal format of DME/N equipment in accordance with Appendix 10 to the "Convention on International Civil Aviation (ICAO)". The radio beacon can be used in conjunction with the VOR (DVOR) and with Insrument Landing System (ILS) or independently.

Rack with equipment

The Radio Beacon Composition
The radio beacon consists of a transponder rack, antenna system, a set of connection cables, and the RCE 2000 remote control equipment.

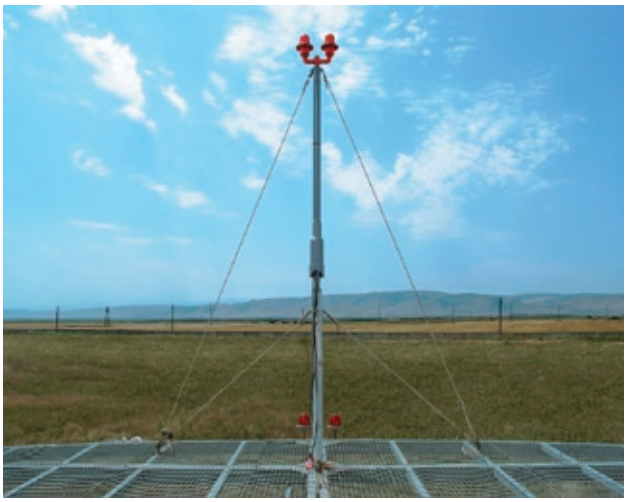
Control
The radio beacon can be controlled using the local control panel or the remote control equipment RCE 2000, which can be located up to 10 km away. Changes in the state of the equipment and the parameters of the radio beacon are notified by light and sound signaling. The RCE 2000 equipment provides access to the information about the radio beacon state and parameters via the local network Ethernet using TCP/IP protocol, or via the ATN network in accordance with CCITT X.25 protocol if necessary.

Monitoring
Built-in test equipment (BITE) provides automatic monitoring of all the the radio beacon main parameters and searches and localization of faults up to Line Replacement Unit (LRU) level. The radio beacon parameters and the state of the equipment are displayed in a graphic mode on the colour display of the remote control equipment. All the changes in the state of the radio beacon and all the actions of the service staff are recordered and are stored in the RCE 2000 equipment within 30 days.

Back-up
To increase reliability, all the main devices in the radio beacon are backed up. The main and the back-up equipment are situated inside the same transponder rack. The normal performance of the main and back-up equipment are monitored during operation. Switch-over to the back-up set is carried out automatically upon a signal from the monitoring device.

Power Supply
The radio beacon power supply is provided from the main and the reserve network 220 V, 50 Hz. The beacon can operate from UPS within 30 minutes.The radio beacon operates in uninterrupted 24-hour mode and does not demand the constant presence of staff.

Design and Electronic Components
The rack and the modules design has been developed according to the IEC 297 Standard (Euromechanics). Unified modules, boards and devices are used in the ADF equipment. Modern electronic components and surface mounting technology are utilized. Two digital signal processors with clock frequency of 300 MHz are used in the receiving and processing channel. Digital processing of incoming signals execute directly on the intermediate frequency (IF).



Main Technical Specifications of the DME 2000

Coverage:	
· in the horizontal plane	360°
· in the vertical plane	40°
· in the range (in conditions of direct visibility), at least	340 km (at the flight altitude of 12 000 m) 240 km (at the flight altitude of 6000 m)
Inaccuracy of range measuring inserted by the radio beacon, at most:	
· during interaction with VOR, DVOR	±150 m
· during interaction with ILS	±75 m
Number of airplanes monitored simultaneously, up to	200
Frequency range	962 MHz to 1213 MHz
Pulse power	1 kW
Pulse form and other parameters	meets ICAO requirements

Control Over Output Parameters

Automatic switching off of failed equipment and switching on of back-up within 3 seconds at the most in case of:	
· delay time change	±0.5 μs
· code interval change	±1.0 μs
· failure of the control device	

Dimensions

Transponder (width×height×depth)	600×2000×600 mm
Antenna (height×diameter)	2.5×0.2 m

Power Supply

Main and reserve network	220 (+10%; −15%) V, 50 Hz
Power consumption, at most	500 W
Operational time from UPS, at least	30 minutes

Operating Conditions

Equipment outside of the container:	
· environment temperature	−50 °C to +50 °C
· precipitation effect (rain intensity), at most	3 mm/min
· wind force effect (wind speed), at most	50 m/s
Equipment inside of the container	−40 °C to +50 °C

Reliability

MTBF, at least	30 000 hours
Life cycle	15 years

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ISO 9001:2000 CERTIFIED

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