

RCE 2000



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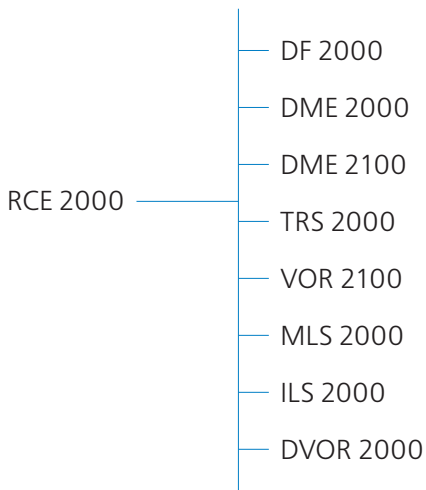
Remote Control Equipment

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Purpose

The remote control equipment (RCE) RCE 2000 is intended for remote control and monitoring of ground navigation and communication equipment state: DF 2000 automatic direction finder, DVOR 2000 azimuthal doppler radio beacon, DME 2000 distance-measuring radio beacon, TRS 2000 automated receiving and transmitting centre, ILS 2000 instrumental landing system, MLS 2000 microwave landing system, DME 2100 landing system long-range radio beacon, and VOR 2100 course all-direction radio beacon.



Function

The function of the RCE 2000 is based on the organization of uninterrupted data exchange by means of software and hardware solutions to provide efficient state control and monitoring of the devices. Data exchange with the devices is realized in real time mode via separate physical communication lines.

RCE Composition

The RCE consists of: remote control rack and a set of connection cables. All the devices are mounted inside the 19" rack.

Control

Control of the RCE and the equipment under monitoring can be exercise control using the touch manipulator of the keyboard or with the sensor screen of the monitor by means of a screen graphic interface. All the equipment have a similar graphic interface and their own windows of control and monitoring.

The parameters and the state of the equipment under monitoring are displayed in graphic mode on the colour monitor. Changes in the state or the parameters are accompanied by appropriate light and sound signalization.

The RCE 2000 provides access to the information about the state of the equipment under monitoring via the local network Ethernet using TCP/IP protocol, or via the ATN network in accordance with CCITT X.25 protocol if necessary.

Monitoring and Back-Up

Built-in test equipment (BITE) provides uninterrupted automatic monitoring (testing) of the efficiency of RCE equipment and the state of the communication line. The test results are displayed on the monitor.

All the main devices of the RCE, including the workstation, the monitor, the keyboard, the modems, and the power supply sources are backed up. When necessary, automatic switching takes place from the main equipment to the back-up equipment or from the main communication line to the reserve communication line. In the process of operation, the state of the equipment of the devices are recorded as well as the actions of the service staff during the last 30 days.

Design and Electronic Components

The rack and the modules design has been developed according to the IEC 297 Standard (Euromechanics). Unified modules and devices are used in the RCE 2000 equipment. Modern electronic components and surface mounting technology are utilized.

Power Supply

The RCE power supply are provided from the main and the reserve network 220 V, 50Hz. The RCE operates in uninterrupted 24-hour mode. The RCE can operate from UPS within 30 minutes.

Main Technical Specifications of RCE 2000

Number of devices under monitoring, up to	8
Length of the physical communication line between the RCE equipment and the airfield equipment under monitoring, up to	10 km
Type of physical communication line between the RCE and airfield equipment under monitoring	two 4-wire physical communication lines (main and back-up)
Data transfer reliability	10^{-9}
Number of communication channels with AATC system:	
· via RS-232 interface	2
· via RS-485 interface	2
Distance between RCE and ATCAS, up to:	
· via RS-232 interface	15 m
· via RS-485 interface	1200 m
Dimensions	
RCE Rack (width×height×depth)	600×1600×800 mm
Power Supply	
Main network	220 (+10%; -15%) V, 50 Hz
Power consumption, at most	600 W
Operational time from UPS, at least	30 minutes
Operating Conditions	
Environment temperature	5 °C to 40 °C
Relative humidity (at temperature under +25 °C), at most	98%
Reliability	
MTBF, at least	50 000 hours
Life cycle	15 years