



indra

AIR TRAFFIC MANAGEMENT/CNS

DISTANCE MEASURING EQUIPMENT

Supplying ATM systems around the world for more than 30 years

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Indra DME

The Indra DME is the result of extensive Indra's expertise in radio navigation aids that combines efficient operation and accurate distance measurement with an intuitive user friendly interface. It is a solid state system developed with state-of-the-art technology achieving high reliability. Its modular design in conjunction with its powerful BITE system allows fast failure location and minimum repair time. The main and most advanced characteristics of the Indra DME is its high reliability.

The Indra DME is available in two options, single, and dual DME configuration, both employing the use of high quality electronic components. The Indra DME equipment has a modern and modular design which performs continuous monitoring of the main system parameters, including pulse pair spacing, transmission power, reply efficiency, receiver sensitivity and pulse shape. This provides high reliability and fast failure location, as well as the ability to anticipate critical parameter degradation. With all these features the equipments operational availability is maximized.

Main characteristics

- Modular design
- Solid state components
- Multiple interfaces (Ethernet, RS232, RS485)
- FPGA logic and embedded PC
- Friendly and intuitive user interface
- Easy and fast installation
- Multiple configurations
- Standard and flexible RMM architecture
- High level BITE

Built in test

The BITE (Built In Test) system reduces the requirement for routine maintenance to an absolute minimum. The BITE systems fault location facility enables dramatically reduced repair times to be achieved.

In order to achieve this aim critical parameters of the system are constantly checked, giving the possibility to predict the degradation of the systems characteristics and minimizing the maintenance task. The results of the BITE process are available both remotely, at the Remote Monitoring and Maintenance panel (RMM), and locally.

Maintenance and reliability

Indra DME offers high reliability that is reflected in its high MTBF and low MTTR, resulting in minimum maintenance. Thanks to its integrated test system is possible to perform easy and fast maintenance procedures.

RMM

The Indra DME equipment can be integrated with a versatile and robust software architecture that allows control and supervision to be performed locally or remotely, with several security levels.

The software architecture is based on standard protocols which provide intuitive and simple operation.

DISTANCE MEASURING EQUIPMENT



The result of Indra's expertise in radio navigation is a new distance measuring equipment highly reliable and low cost

Introduction

The Indra DME is the ultimate choice in Distance Measuring Equipment combining quality with exceptional value for money. The equipment employs state-of-the-art technology ensuring high reliability in order to meet the demands of both civil and military requirements.

Integrity, reliability and maintainability are fundamental to the design concept of this system.

The equipment has been tested under the most demanding environmental conditions, ensuring equipment operation in any environment.

The Indra DME is an easy to use system requiring minimal maintenance, that meets or exceeds all requirements of ICAO annex 10, volume I edition 6, and EUROCAE ED-57, this enables interoperability with all currently available radio navigation aids on the market.

Characteristics

TRANSMITTER CHARACTERISTICS

Output power	100 W or 1 kW
Frequency	960 MHz to 1215 MHz
Frequency stability	± 1 ppm
Channels	252 (X & Y)
Pulse RF spectrum (analysis of 500kHz)	
En-route	47 dB @ 0.8 MHz 65 dB @ 2 MHz
Terminal	37 dB @ 0.8 MHz 55 dB @ 2 MHz
Spurious (10 Hz to 1,8 GHz) Harmonics	< -40 dBm/KHz < -10 dBm (EIRP) < +20 dBm (Cabinet connector)
Rise time	2.5 ± 0.25 µs
Fall time	2.5 ± 0.5 µs
Pulse duration	3.5 ± 0.5 µs
Pulse pair spacing	± 0.1 µs nominal
Identity signal	ICAO Annex 10, FAA-E-2996
Identity rate	1350 ± 10 pp/s
Pulse repetition rate	700 a 6000 pp/s
Reply delay	X: 35 a 80 µs Y: 45 a 80 µs Step: 0.05 µs
Reply delay stability	-5 to -81 dBm -81 to -95 dBm

RECEIVER CHARACTERISTICS

Frequency	960 MHz to 1210 MHz
Sensitivity (70% reply efficiency)	-95 dBm
Adjacent channel rejection	≥ 85 dB
Image frequency rejection	≥ 75 dB
Intermediate frequency rejection	≥ 85 dB
Spurious rejection	≥ 80 dB
Receiver decodes	Nominal ± 1 µs
Receiver rejects	Nominal ± 2 µs
Aircraft handling capacity	300 Interrog.

ENVIRONMENTAL

Temperature:	
Indoor equipment	-20°C to +60°C
Outdoor equipment	-50°C to +70°C
Storage	-40°C to +85°C
Humidity:	
Indoor	95% (≤ 35°C) 90% (35°C to 50°C) 60% (> 50°C)
Regulations	CE marking



Characteristics

MONITOR

Number of monitors	4
Alarms (Configurable between primary and secondary)	Reply delay Pulse pair spacing Reply efficiency Reply rate Radiated power Transmitted power Receiver frequency Transmitter frequency Ident Sensitivity
Local and remote shown parameters	All monitored parameters. Alarms Detailed status information

GENERAL

Status indication	Local/remote
BITE	Configurable
Remote/local control	PC/laptop
Interface	Ethernet, RS-232, RS485
Reliability	MTBF \geq 10.000 h MTBO \geq 18.000 h MTTR 15 min. (typical)



ISO 9001:2000



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