



indra

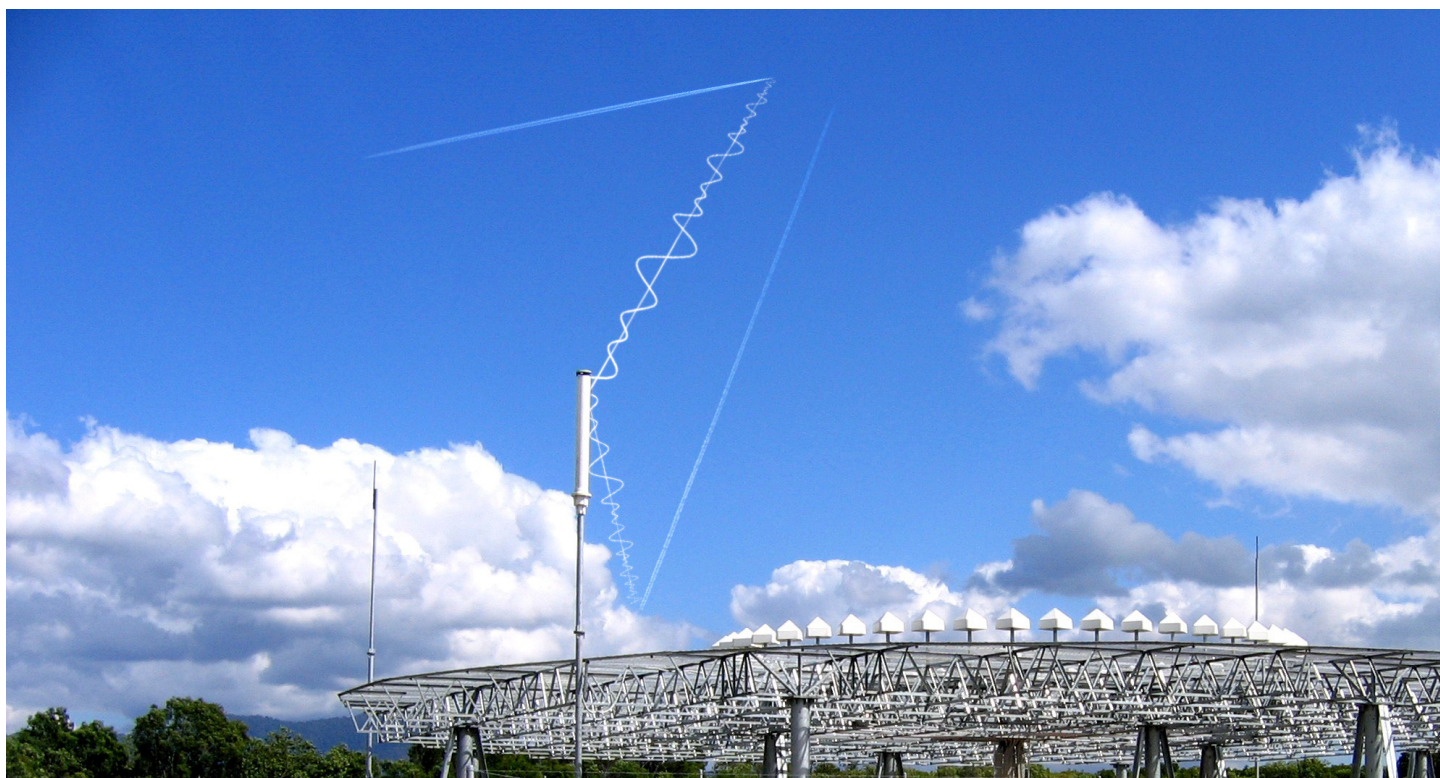
AIR TRAFFIC MANAGEMENT

DISTANCE MEASURING EQUIPMENT

Supplying ATM systems around the world for more than 90 years

indracompany.com

DISTANCE MEASURING EQUIPMENT



DME Antenna

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.

UNIT STATUS		LDB-103 DME					
ON AIR		GENERAL		DETAILED	ALARMS		
MAIN - TXP B				SYSTEM A		SYSTEM B	
MAIN	TXP B	MONITOR		-	-	1	4
TXP A	TXP B	BEACON DELAY		-	-	50.000 us	49.950 us
OFF	ON	PP SPACING		-	-	11.950 us	12.000 us
POWER		EFFICIENCY		-	-	87 %	88 %
AC POWER		TX RATE		-	-	745 PPS	750 PPS
CONTROL		RADIATED POWER		-	-	50.95 dBm	50.68 dBm
MULTIPLE		TX POWER		-	-	51.05 dBm	51.32 dBm
UNIT ALARMS		FREQUENCY ERROR		-	-	1 PPM	2 PPM
TXP A	OK	TXP A ON/OFF	TXP B ON/OFF	CHANGE OVER	SELECT MAIN	ALARM INHIBIT	
TXP B	OK	LCU STATUS		LOCAL MODE	DISABLE BUZZER	LAMP TEST	
BATTERY	OK	OK					
RECYCLE	0						
COMMS	-						
MAINTN	-						

DME LCU Screenshot

System

Configuration	Single or Dual
Standard Compliance	ICAO Annex 10 ICAO Doc 8071, EUROCAE ED-57 RCM & CE Marking
Aircraft Handling Capacity	> 200 Interrogators
Design	Full solid-state and modular
Module Hot Replacement	Yes
Status Indication	Full Local and Remote indication
System Monitoring (BITE)	Complete System & LRU Monitoring based on HW
Remote/Local Control Interface	Ethernet (RS-232 & RS-485)
Environmental Conditions	Operating Temperature: <ul style="list-style-type: none"> -20°C to +60°C for indoor installed parts -50°C to +70°C for outdoor parts Relative Humidity: <ul style="list-style-type: none"> 95% (-20°C to 35°C) 60% (35°C to 60°C) Operating Altitude: 15,000 ft
Reliability	MTBO > 20,000 hours for dual system
Power Consumption	< 350 VA (dual System and hot standby)
Dimensions	One 19" standard rack: 600 mm (Wide) 600 mm (Deep) 1467 mm (High)

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.

Is available in two configurations, single, and dual DME, both employing the use of high quality electronic components.

The equipment has a modern and modular design which performs continuous monitoring of the main system parameters, including reply delay, 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, RS-232, RS-485)
- 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 system (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 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.



DME Equipment

Characteristics

TRANSMITTER CHARACTERISTICS

Peak Power Output	> 100W (terminal DME) > 1KW (en-route DME)
Power Output Control	4 dB (0.25dB steps)
Frequency Range	960 MHz to 1215 MHz
Frequency Stability	± 2 ppm
Channels	252 (126 X and 126 Y)
RF Pulse Spectrum	ICAO Annex 10
Pulse Rise Time	2.5 (-1; +0.25) μs
Pulse Decay Time	2.5 ± 0.5 μs
Pulse Width	3.5 ± 0.5 μs
Pulse Pair Spacing	X Channel: 12 ± 0.1 μs Y Channel: 30 ± 0.1 μs
RF Pulse Spectrum	En-route (1KW): 47 dB @ 0.8 MHz 65 dB @ 2 MHz Terminal (100W): 37 dB @ 0.8 MHz 55 dB @ 2 MHz
CW EIRP	≤ -10 dBm
Squitter Pulses	700 to 850 pp/s (programmable)

RECEIVER CHARACTERISTICS

Frequency Range	1025 to 1150 MHz
Input Maximum Level	Operational: -5 dBm Survival: +20 dBm (in band)
Transponder Sensitivity	-94 dBm
Adjacent Channel Rejection	> 90 dB
Image frequency Rejection	> 75 dB
Other Spurious Rejection	> 85 dB (960 to 1215 MHz)
Decoding	X Channel: 12 ± 1 μs Y Channel: 36 ± 1 μs
TXP Dead Time	Adjustable from: 50 to 150 μs (0.05 μs step)
Short and Long Distance Echo Suppression	Yes (programmable)

MONITOR PERFORMANCES

Configuration	Two or four independent monitors with embedded interrogator
Decision	Configurable: AND / OR
Alarm configuration	Configurable between primary and secondary
Alarm Thresholds	Configurable

POWER SUPPLY CHARACTERISTICS

Configuration	Triple redundancy: Dual PSU; Dual internal AC/DC Dual battery banks
Input Voltage Range	+90 VAC to +276 VAC & Soft Start
Input Frequency	45 Hz to 70 Hz



ISO 9001:2000



indra

Crta Loeches, 9
Torrejón de Ardoz
28850 Madrid (Spain)
T +34 91 627 19 57
F +34 91 627 10 10
infoatm@indracompany.com
www.indracompany.com

Indra reserves the
right to modify these
specifications
without prior notice.

V.3-eng-26-06-2012