

2020 DME
Technical Specification

Single or dual systems. Power output configurations from less than 100 W to 1 kW full band.

Transmitter		
Power Output	100 watt to 1 kW versions	
Frequency	962 MHz - 1213 MHz	
Frequency Stability	± 0.001%	
Channels	252 (X and Y)	
RF Pulse Spectrum, Spurious Outputs and Harmonics	ICAO Annex 10	
Pulse Rise and Fall Time	2.5 µs ± 0.5 µs	
Pulse Duration	3.5 µs ± 0.5 µs	
Pulse Pair Spacing	X channel - 12 µs ± 0.25 Y channel - 30 µs ± 0.25	
Ident	ICAO Annex 10	
Ident Rate	1350 ± 25 pp/s	
Pulse Repetition Rate	700 - 5400 pp/s	
System Reply Delay	X channel - 35 to 51 µs Y channel - 48 to 57 µs Microprocessor control ± 0.025 µs	
Reply Delay Time Stability	Input Signal	Delay Variation
	-10 to -81 dBm	± 0.5 µs
	-81 to -91 dBm	± 0.8 µs
Receiver		
Frequency	1025 MHz to 1150 MHz (1 MHz channels)	
Sensitivity	-91 dBm for 70% reply efficiency (-93 dBm typical)	
Adjacent Channel and IF Frequency Rejection	83 dB minimum	
Spurious Rejection	75 dB min for spurious frequencies	
Receiver Decodes (N) Mode	X channel 12 ± 1 µs Y channel 36 ± 1 µs	
Aircraft Handling Capacity	200 interrogators	
Environmental		
Temperature	Operating: -10°C to +55°C Storage: -30°C to +60°C	
Humidity	0% to 95% RH over temperature range (non condensing)	
Reliability	MTBO better than 15,000 hours for a dual system MTTR 15 minutes (typical)	
EMC		
	Compliant with EMC Directive 89/336/EEC	
Monitor		
Interrogation Signal Generator	Centre frequency f _o to f _o ± 900 KHz in 100 KHz steps	
Monitored Parameters		
Primary	The following parameters cause the system to shut down or transfer if out of tolerance: • Reply delay • Transmitter pulse spacing	
Secondary (Upgradeable to Primary)	The following parameters register a warning if out of tolerance: • Frequency • Reply efficiency • Output power • Reply rate • Ident	
Displayed Parameters on Local and Remote PCs	• Reply delay • Transmitter peak power • Transmitter pulse pair spacing • Transmitter pulse count • Receiver reply efficiency • Monitor interrogation pulse count • Monitor interrogation pulse pair spacing • LRU/PCB status • Trend analysis • Diagnostic displays • Data logging/performance history	
General		
Status Indication	Full local and remote indication	
System Monitoring (BITE)	Complete system monitoring by microprocessors including status output for each LRU	
Remote/Local Control Interface	IBM compatible PC for local and remote operation	
Power Supply	AC - 115 / 230 VAC ± 10% 45/60 Hz DC - 24 / 28 VDC	
Power Consumption	210 watts (nom) for 100 W 310 watts (nom) for 1 kW	
Dimensions		
Cabinet (dual)	600 mm wide 600 mm deep 1920 mm high	
Weight	215 kg (dual) 205 kg (single)	

The Company reserves the right to change specifications without notice.

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FERNAU

2020 DME

State of the Art

The 2020 DME is a solid state system which can operate on its own or in conjunction with nav aids such as MLS, ILS, CVOR, DVOR, and NDB. The advanced features of the 2020 DME are made possible by the extensive use of programmable logic devices, and the equipment meets or exceeds all requirements of ICAO Annex 10.

Reliability

Fernau's 2020 DME is produced to the highest standards of reliability. Use of the latest technology and the most reliable components has enabled the system to obtain an MTBO in excess of 15,000 hours.

Flexibility

The 2020 is offered in a variety of configurations including single transponder with dual monitoring. Transportable and mobile alternatives are also available.

Fernau Avionics has for many years been at the forefront in the design and manufacture of distance measuring equipment with systems operational worldwide. The 2020 DME meets increasing demands for greater reliability, performance, and control.

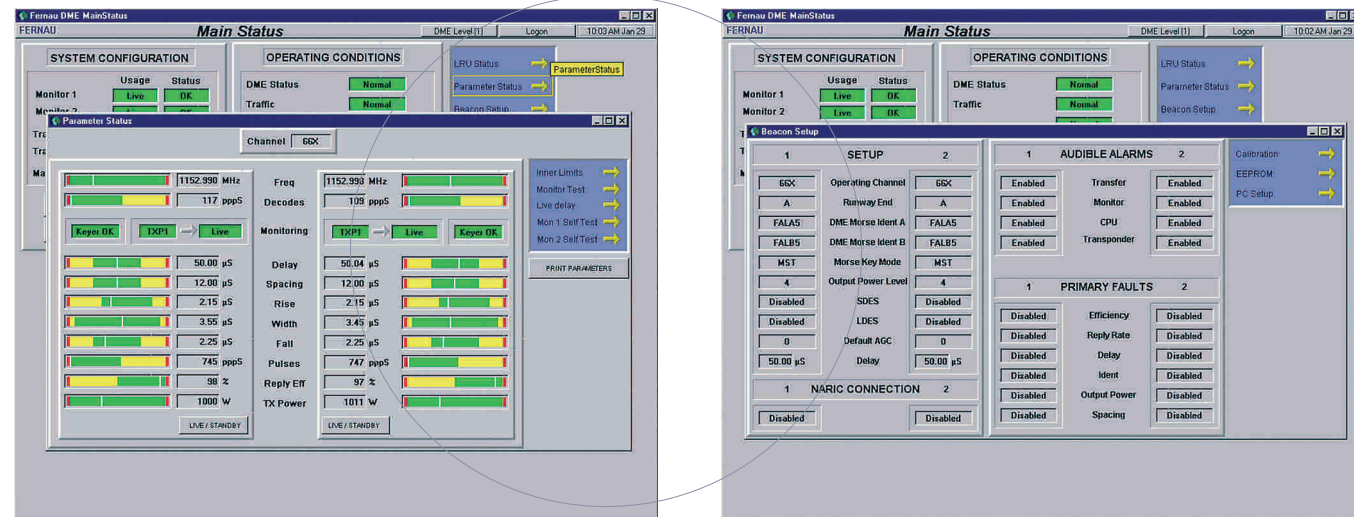
Active Transmitter Control

Pulse shape and spectrum are controlled by a feedback control loop which keeps them within permissible limits in all operating conditions and provides self correction wherever possible.

Remote Maintenance and Monitoring (RMM)

The 2020 DME has a powerful integrated monitoring and maintenance system which can be displayed on a local or remote PC or both. The RMM system's display screens show operating parameters, overall system status, LRU status, alarm limits, diagnostics and test, amplifier status, transmitter control status, and other information (full details can be supplied on request). The LRU status

screen indicates which module is faulty, while the history logging facility allows maintenance engineers to judge the optimum time for repair. Each monitor checks that the system performs in accordance with ICAO Annex 10 and is able to change certain system parameters to allow in-depth analysis and testing of the DME from a remote location using the RMM system.

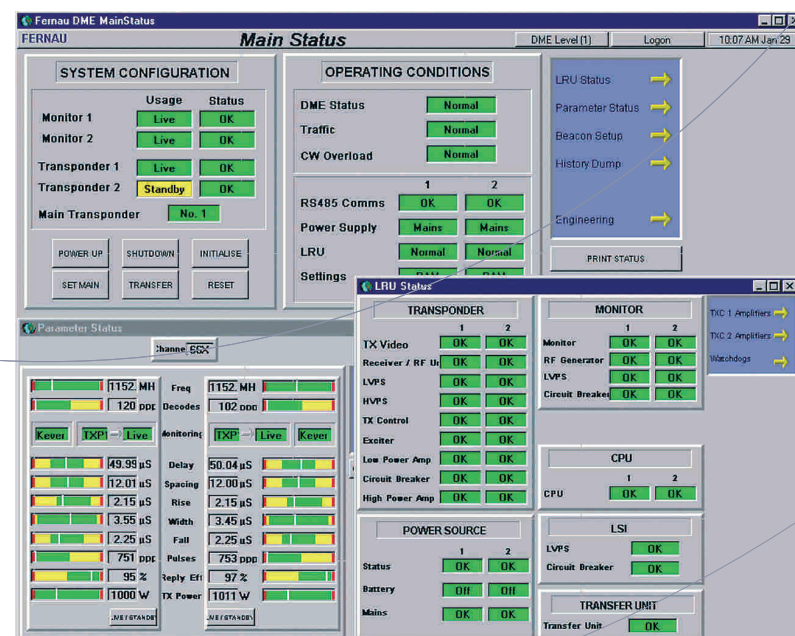


RMM Features

- ◆ Fully Windows 2000 / XP compatible.
- ◆ Centralised RMM option.
- ◆ Up to 50 sites monitored from a central RMM station.
- ◆ User password protection.
- ◆ History logging for all sites.
- ◆ Full RMM diagnostics for each site.
- ◆ Dial-up/leased line.
- ◆ Fibre optic connection option.

Remote Control

Full control of the DME can be performed from a remote location either by the RMM PC or the Remote Control and Status Indicator. The RMM system also provides for control of power, ident, presettable alarm limits, monitor test functions, routine tests, and printouts.



Maintenance

All modules are plug-in and are accessed from the front of the 2020 cabinet, and LRUs are keyed to prevent a module being inserted incorrectly. By using the RMM system for fault indication, a typical repair takes less than fifteen minutes.

The BITE system continually monitors the DME and gives an alarm indication in the event of module failure, system transfer, or shutdown. The 2020 allows "hot replacement" of modules enabling the system to remain operational while a module is being replaced.



Antenna

The 2020 DME operates with all standard omnidirectional, unidirectional, and bidirectional antennas. Each antenna type will handle an input power in excess of 1000 watts at standard DME pulse duty cycle and will operate over its entire frequency range with an input VSWR at 50 ohms of less than 2.0:1.

The 2020 does not require a non standard, high gain antenna. Fernau offers a standard solution with an 8 dB gain omnidirectional antenna with dual coupler outputs for high integrity performance. All antennas are lightweight, rugged, and fully waterproof and come with a range of mounting adaptors to suit all sites. Obstacle lights and lightning rods are available as optional extras.



Logistic Support

As with all Fernau systems, the 2020 DME is supplied and supported from Fernau's headquarters near London. Services include site survey, installation, system commissioning, training, spares, and repairs.