

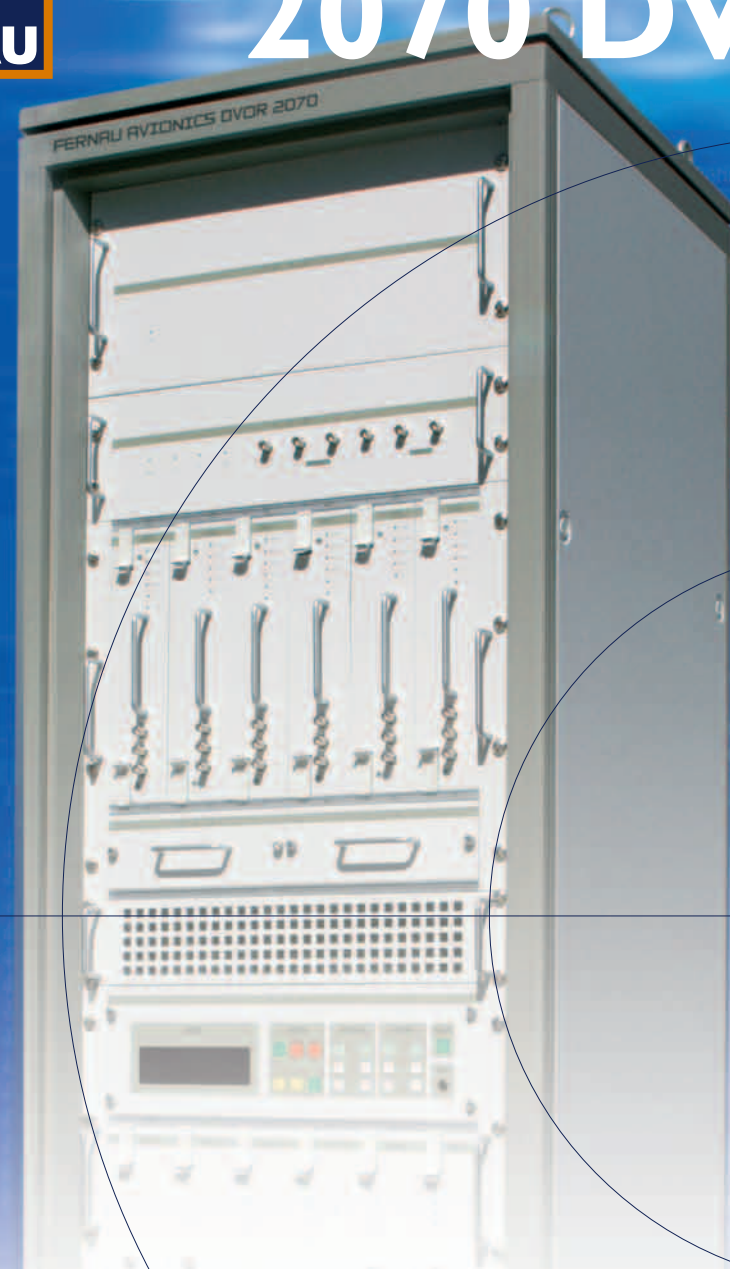


2070 DVOR

DVOR Technical Specification

RF Signal Output	
Output Power	100 W (50 to 100 W adjustable in steps of 1 W)
Frequency Band	108.00 MHz to 117.975 MHz
Channel Pattern	50 kHz
Carrier Frequency Stability	± 0.002%
Antenna System	1 + 48 Alford loops
Polarization	Horizontal
Bearing Accuracy	Typically ± 0.5° maximum error (for all elevation angles from 0° to > 40°)
Reference Phase Modulation	
Frequency	30 Hz ± 0.01%
Reference Phase Shift	0 - 359.9° programmable in steps of 0.1°
Carrier Phase Stability	< ± 0.5° referred to reference generator
Variable Phase Modulation	
Subcarrier Frequency	9960 Hz ± 0.02%
Mean Depth of Modulation by Subcarrier	28% to 32% (adjustable)
Frequency of Modulation	30Hz ± 0.01%
Deviation Ratio	16 ± 1
Voice Modulation (AM)	
Frequency Range	300 to 3000 Hz
Modulation Depth	Recommended 10% (adjustable 0 to 15%)
Noise Due to Signal Communication	Negligible
Identification	
Modulation Tone	1020 Hz ± 50 Hz
Modulation Depth	Recommended 10% (adjustable 0-10% in steps of 1%)
Code	International Morse up to three letters
Keying Speed	7 words per minute (adjustable)
Repetition Rate	6 words per minute (adjustable)
DME Keying	Facility provided for interfacing with co-located DME or TACAN

Monitoring Alarm Conditions	
Monitor Configuration	Dual with one or two monitor dipoles voting AND / OR
Change in Transmitted Bearing Information	Warning and alarm limits adjustable in 0.1° steps to a maximum of ± 1°
Depth of Modulation of Subcarrier and 30 Hz AM	Alarm limit <25% Warning limits adjustable from 25% to 32%
Code Failure	Continuous or absent tone
Failure of Antennas	Alarm for failure of two diametrically opposite antennas
Failure of Monitor	Integral alarm
Carrier Power	Alarm if power <45 watts
Monitor Signal Processing	Through microcontrollers. Programmable alarm limits as above.
Alarm Delay	Programmable from 1 to 90 seconds
Monitor Calibration Control	Available through BITE and PC
Performance Monitoring	Status data on system elements can be displayed through remote PC and RMM software.
Fault Diagnosis	Down to LRU level through fault bits
Power Supply Status	Mains and BCPS status displayed as OK / NOT OK
Input Power	
Primary Supply	230/110 VAC, 50/60 Hz
Power Consumption	900 VA (typical) excluding battery charging 1200 VA (typical) including battery charging
Secondary Supply DC	22 V to 28 V DC, nominal 24 V
Standby Battery	Maintenance free 24 V
Environmental Conditions	
Indoor Equipment	0°C to +50°C
Relative Humidity	Up to 95% (0 to 35°)
Outdoor Equipment	-50°C to +70°C 160 km/h (100 mph) wind velocity
Hail/Ice	Up to 1 cm diameter without damage to antenna radome
EMC	
Compliant with EMC Directive 89/336/EEC	



Fernau Avionics is proud to present the new Fernau 2070, the most modern, technically advanced DVOR on the market today.

The 2070 is a completely new design based on Digital Signal Processing (DSP) technology to improve reliability and reduce both initial and through life costs. Configured as a dual system in one cabinet, the 2070 is very simple to operate and employs the same local status indicator system as used in the 2020 DME. This is backed up by an easy to read LCD on the front panel which provides a comprehensive status readout for the DVOR. The 2070 also has a fully featured Windows remote maintenance and monitoring (RMM) system for ease of setting up, maintaining and diagnostics.

The 2070 DVOR is designed to integrate with other Fernau products such as the 2020 DME, or the 2010 TACAN to provide a VORTAC capability.

Founded in 1970, Fernau Avionics has become one of the world's leading suppliers of ground based air navigation systems. We design and manufacture the 2010 TACAN, 2020 DME, 2030 DF and the recently introduced Personal Locator Beacon, the 2100. Fernau can supply either fixed or mobile versions of all its nav aids in both stand alone configurations through to large turn-key systems.

There is no doubt that the 2070 DVOR firmly places Fernau as the provider of the most sophisticated nav aids in the market today.

The World's Most Advanced DVOR

- Modern cost effective design
- DSP technology
- High Reliability
- LCD local status display
- Fully featured Windows RMM
- Compatible with 2020 DME and 2010 Tacan

The Company reserves the right to change specifications without notice.
Publication date: October 2004

Reliability

The new 2070 DVOR benefits from the experience gained with the firmly established, successful and highly dependable 2020 DME. The 2070 utilises DSP technology to increase reliability.

The 2070 is a totally modular dual system with BITE on all LRU's. Fully featured Windows based remote maintenance and monitoring (RMM) makes monitoring, maintenance and diagnosis highly user friendly as well as time efficient and cost effective.



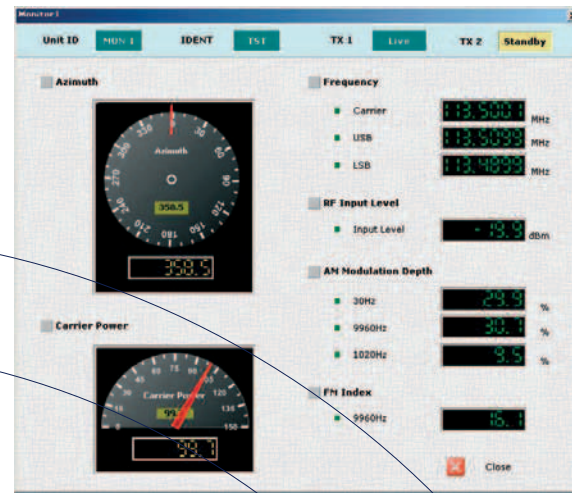
Flexibility

Designed to fully integrate with Fernau's other products, in particular the 2010 TACAN and 2020 DME to create VORTAC and VOR / DME configurations with minimal effort, the Fernau 2070 retains interoperability with all other major systems without loss of functionality or features.

Fernau is able to supply the 2070 DVOR in a range of proven shelters and with standard or bespoke counterpoise to meet all requirements and withstand the harshest of weather conditions.

The modular concept provides keyed modules which plug in from the front of the DVOR cabinet for ease of access.

The Fernau 2070 may be used in stand alone or in co-located situations.



Remote Maintenance and Monitoring (RMM)

The Fernau 2070 DVOR provides the same remote maintenance and monitoring features and benefits that users of other Fernau equipment have enthused about for many years. A typical system will have an outstation close to the DVOR and a Master Station at the Air Traffic Control Centre. Data may be viewed on local and/or remote PCs and can be transmitted to other PCs as required, including to Fernau's offices in the UK to assist with rapid and accurate diagnostics.

Any maintenance or repair may be planned for convenience using the history logging facility and LRU status screen which identifies the module requiring attention.

The RMM provides as standard:

- Fault diagnostics to LRU level
- Remote display of operating parameters
- Test function monitoring
- Event logging
- Trend analysis
- Field monitor self-test facility

The display screens provide a wealth of valuable information and options for configuration, including, but not limited to:

- Operating parameters
- Overall system status
- LRU status
- Alarm limits
- Diagnostics
- Test amplifier status

The system is continually monitored via the built in test equipment (BITE) and an alarm is triggered in the event of system transfer or module failure. The DVOR can remain operational whilst a module is replaced, minimising time off air.

Fernau provides full details of recommended local spares, as well as depot spares for identified service parts. With planned maintenance the unit downtime is kept at an absolute minimum.

By extending the interval between routine flight-checks there are significant savings to be made in life cycle costs.

Full training and ongoing support, if required, are provided as part of the Fernau package. Extended warranties may be purchased, and future obsolescence can be addressed as part of a maintenance agreement, so peace of mind is assured.

Typically a repair takes less than fifteen minutes.



Remote Control

It is possible to fully control the 2070 DVOR from a remote location. Alternatively, full control is also available at the equipment rack using the RMM PC.

Control functions include:

- Power Level
- 9960 Hz Modulation Level
- Alarm Limits
- Ident
- On / Off
- Changeover

The need to visit the site may therefore be minimised with confidence that the system is fully monitored and controlled.



DVOR Antenna

Fernau has intelligently engineered a 48 side-band antenna array, with a single carrier antenna, to optimise performance and reduce cost compared with less efficient, greater cost, higher number arrays. Lightning protection and other options are available on request and may be tailored to customer requirements.

Counterpoise

The counterpoise forms a major structural part of any installation and Fernau is able to offer a range of standard sizes for rapid delivery, or may design specific structures for extreme weather conditions or unusual locations. Typically the counterpoise will consist of a hot dip galvanised metal support structure with galvanised steel wire lattice, designed to withstand wind speeds up to 160km/h, with a standard option to reinforce to 280km/h.



Fernau is also able to provide detailed foundation designs and a variety of elevations to meet site requirements. A ground mount counterpoise is also a standard option.

Installation and Commissioning

Fernau has extensive experience around the world of installation supervision and commissioning encompassing remote as well as more traditional, hospitable locations. Fernau personnel excel at planning and delivering installations with optimal designs for any given site.

Logistic Support

Fernau's headquarters are based in Luton, England. From this site all products are supplied and supported, including the new 2070 DVOR. It is from this location, also, that training, commissioning, installation supervision, spares and repairs will be managed. Fernau can provide in-territory training and help customers to set up local logistics support facilities.