DIRECTION FINDING (DF) SYSTEM

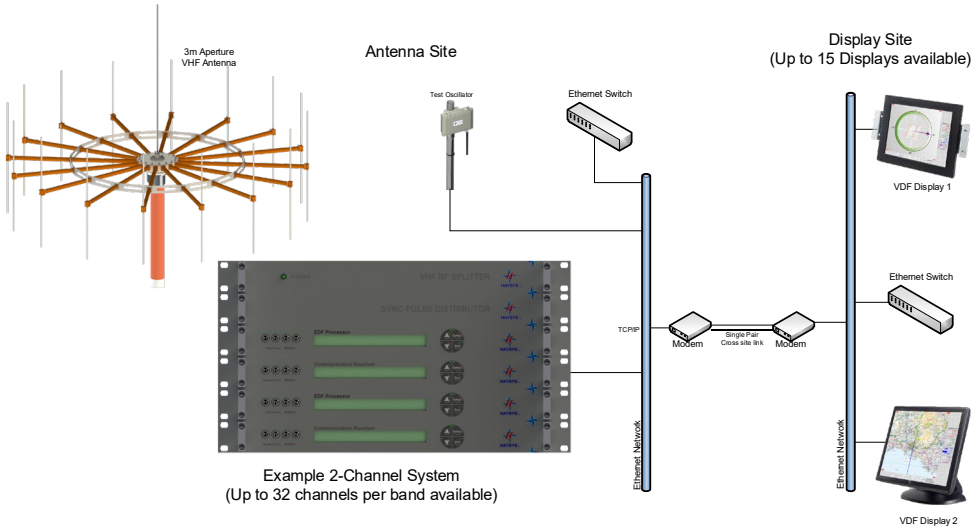

Figure 1 - Installation Diagram

DF ACCURACY

Self-Calibrating, Wide Aperture Antenna providing bearing accuracy of 1° RMS to allow operators precise air traffic direction with minimum effort.

Accurate Air Traffic position fixing can also be determined when used in an Auto-Triangulation configuration.

REMOTE CONFIGURATION

All aspects of the equipment can be remotely configured and interrogated. The EDF, Test Oscillator and the Communications Receiver can be controlled via the same Display position.

FLEXIBLE INSTALLATION

Setup and Installation of all equipment is bespoke. All installations are planned around the specific site requirements.

MODULAR DESIGN

Compact and modular design allows configurable systems setup to suit the customer's requirements. Up to 32 Channels and 15 display positions available per system.

TEST OSCILLATOR

System checking and bearing accuracy can be checked using the configurable Test Oscillator.

The HAYSYS Doppler-based DF system solution incorporates a high degree of functionality in a system that has been designed and integrated into relatively simple system architecture. The core elements of the system use standard interfaces to communicate with each other and provide ease of integration with other systems, such as RADAR displays.

Installation of a typical system is illustrated above in Figure 1. Concurrent frequencies can be monitored using a single antenna and multiple receivers and EDF Processors (up to 32 channels).

The EDF Processor is a 1U high standard 19" sub-rack unit with all connections being made at the rear panel. The EDF Processor is normally installed at the Antenna site with connectivity to the display units being via Ethernet connectivity.

The EDF Processor uses Digital Signal Processing (DSP) algorithms in an embedded processor. These algorithms provide superior signal detection and bearing angle measurement.

The Communication Receiver is controlled by the Display Software and provides the input to the EDF Processor. Communication between paired units is maintained over a DF Site local network. Multiple arrangements and configurations are possible with this modularised system solution.

- Wide Aperture, 16-element Antenna, providing additional resilience to reflections
- Tailored installation to suit customer requirements
- Full monitoring of all aspects of the equipment from remote sites and display terminals
- Continuous monitoring and alarm functions at the display units and equipment
- Full Multi-Channel DF System with channel changes from the Display Terminals
- System based on modularised equipment providing increased flexibility and future proofing.

Communication from the Display Site to the DF Site is achieved via a cross site link. Depending on installation, this link is either a 2/4 wire link or a fibre connection. Other methods of communication are available.

Testing of the EDF is maintained by a dedicated Test Oscillator (TO) and in addition, the system can be configured to be checked each time a tower transmission is made through the Tx bar facility.

The HAYSYS DF system allows the surveillance of multiple frequencies simultaneously (up to 32 frequencies).

HAYSYS

Specifications

ANTENNA SYSTEM

General	Wide-aperture, 16-element dipole array
Bearing Accuracy	<±2° (ICAO Class A) (Site Dependant) Instrument Accuracy <= 1°
Signal Polarisation	Vertical
Operating Band	VHF – 117.975 MHz to 137.000 MHz UHF – 225.000 MHz to 400.000 MHz
Operating Temperature Range	-50°C to +100°C
Cone of Silence	±5° from the vertical axis
Wind speeds	Resists speeds of up to 200 kms/h
Power	Power over Ethernet (PoE)
Control	100Mb/s Ethernet - Standard TCP/IP
Weight	45 Kgs

RECEIVER

Frequency Range	117.975 MHz to 400.000 MHz (others available)
Channel Spacing	8.33kHz and 25 kHz
Operating Temperature Range	0°C to +50°C
Frequency Error	≤± 1 ppm
DF Sensitivity	-123 dBm
Antenna Impedance	50Ω
Display	40 x 2 Character LCD
Display Indicators	Receiver Name, Frequency, Modulation, RSS, Alarms and Activity Indicator
Indicators	Audio Out and Alarm
Size	Standard 1U 19” Rack
Weight	4Kgs

EDF PROCESSOR

Commutation Frequency	500 Hz
Bearing Resolution	0.1º
DF Response time	<4ms
Display	40 x 2 Character LCD
Display Indicators	Channel Name, Bearing, Alarm, Menu
Indicators	Test Oscillator and Alarm
Operating Temperature Range	0°C to +50°C
Size	Standard 1U 19” Rack
Weight	3Kgs

Test Oscillator

VHF Frequency Range	117.975 MHz to 137.000 MHz
UHF Frequency Range	225.000 MHz to 400.000 MHz
Interface	RJ 45 standard, Cat-5 Ethernet
Power Supply	Power Over Ethernet (PoE)

SYSTEM POWER REQUIREMENTS

Power Supply	85-264 VAC, 47-63 Hz
Power	24 Watts per channel

DISPLAY TERMINALS

Up to 15 display units can be networked to a single EDF Processor. This allows for flexible installation and distributed monitoring terminals.

DF CONNECT ANYWHERE©

Control all aspects of multiple systems across networked systems/airports.

SOFTWARE

Dedicated software allows full control over the whole system. Monitoring and configuration can be achieved from the connected display terminals.

CUSTOMIZE

Customer specific applications may require a frequency range, outside the VHF/UHF bands. The receiver can be customized to suit the customer's requirements.

Please contact HAYSYS for more information

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