

Direction Finding S.A.R.

Incorporating real-time 406 decode



- Multi-beacon DF
- Single compact antenna unit
- High sensitivity receiver
- Fully COSPAS-SARSAT compatible

The Techtest DF system is designed to reduce the time to locate emergency locator beacons. It is compatible with both 121.5MHz swept tone distress beacons and 406MHz COSPAS-SARSAT transmissions on current and future frequencies.

The user is able to monitor four frequencies and detect emergency transmissions. Each transmission is allocated a unique identification which can then be selected for more detailed information.

For 121.5MHz the system can display relative bearing details.

For 406MHz the system will give all the same information as 121.5MHz but in addition will record and decode the COSPAS-SARSAT message, giving details of the distress beacon and if available the GPS beacon location.



The system comprises of three modules

1. Antenna (10-246-1)

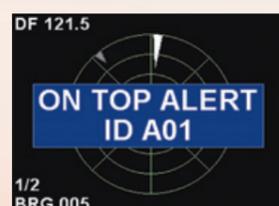
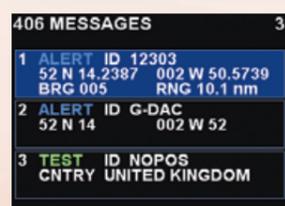
The Antenna is a single compact module comprising a circular array of elements with integral high sensitivity receivers. The array is designed to give optimal angular resolution of the emitters.

2. Control Unit (406-28)

The Control Unit takes the array output and, using a digital processing and advanced beam forming technique, is able to discriminate multiple emitters and direction find on the signals. All the data is processed using intelligent algorithms to reduce system noise and spurious responses.

3. Display (407-3)

Different display options are available and are platform specific. The basic display module is based on the Techtest 407-2 unit. This unit is designed for ease of use featuring mode and scroll controls and a dual function uncluttered graphic LCD display. A secondary display option is available.



Dimensions	Short 3/8 ATR (90x198x322mm)
SAR frequencies	121.5, 243, 156.8, 406 MHz
Training frequencies	4 selectable: 110 to 410 MHz
Sensitivity	2.5µV
DF Accuracy	Better than 5°
Decoder Frequency	406.025 - 406.050 MHz
Message Format	COSPAS-SARSAT C/S.T.001
Supply Volts	18-36V DC MIL-STD 704D

Antenna 10-246-1

Diameter	250mm
Height	Standard 250mm Reduced 180mm
Polarisation	Vertical

Cockpit Controller / Indicator 406-3

Dimensions	146 x 67 x 152mm
LCD Display	56 x 42mm (320 x 420 pixels)
Backlighting	NVIS Green B (MIL-STD 3009)

Environmental	MIL-STD 810F
EMI/EMC	MIL-STD 461 F

Detection

In normal operating mode the DF receiver frequency is switched cyclically between 121.5, 156.8 and 243 MHz. If a signal above the threshold is detected, a 0.3 second snapshot is recorded before continuing. A separate receiver is used to continuously monitor the 406 Sarsat frequency. If a signal is detected then the DF receiver will immediately switch to 406MHz frequency and record a snapshot. In the event of transmitting beacons incorporating a GPS position, the system will display the applicable lat/long co-ordinates.

Direction Finding / Homing

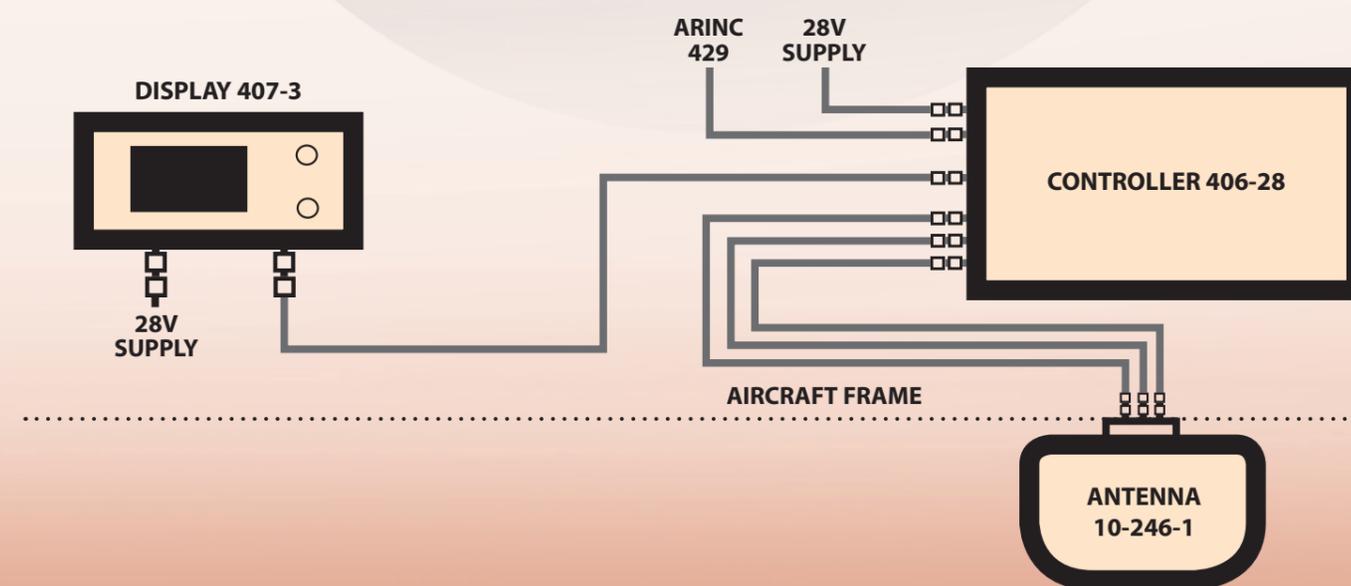
A 360° direction finding facility is provided giving a direction for the aircraft to fly to the transmitting beacon. No other navigation aids are required. If however on board GPS navigation systems are installed in the aircraft, system integration will provide aircrew with both an absolute bearing and distance information to the transmitting beacon. In the Homing mode the system sequentially scans the distress frequencies and provides a visual display of left/right steer information.

Cockpit Controller / Indicator

The controller / indicator is mounted in the cockpit. There are just two controls : a push button mode selector (switching between Decode and DF modes), a rotary click / push selector providing control of menu options. The unit is designed to operate mainly without user input.

The user can select any of three modes:

- i) Left-Right Indicator: To show bearing relative to aircraft heading.
- ii) Map display: Showing relative positions, (or bearings), of all detected emitters, both from DF receiver and 406 Decoder.
- iii) Text Display: Ideal for 406 decoder information. Can also be used to display range and bearing data.





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