

HOSTILE FIRE INDICATOR TYPE 740

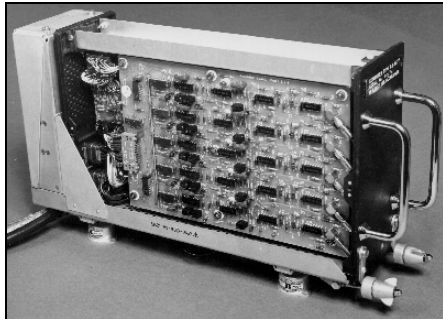
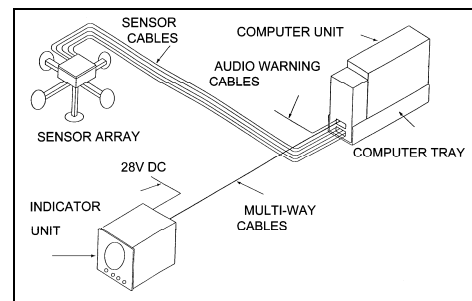
The Hostile Fire Indicator Type 740 is a device which gives a warning to the pilot of a rotary wing aircraft that they are under small arms fire and indicates the general direction from which that fire originated.

The design of the equipment is based upon the detection of the shockwave front generated by a supersonic projectile. The system calculates the set of bullet velocity vectors which thus shows the direction of the source of the possible hostile fire. On receipt of an indication the pilot would normally be able to take avoiding action and minimise the danger of a subsequent direct hit, the exact pilot action being dependent on the operational conditions prevailing.

The system consists of three basic units as shown in the interconnection diagram below.

The Sensor Array

This unit consists of five sealed piezo-electric plate transducers mounted at the ends of five mutually orthogonal tubes. Four are in the horizontal plane and the fifth mounted in the perpendicular axis to the other four. The transducers and support arms are mounted via anti-vibration mounts to a junction box from which five coaxial leads carry the transducer signals to the computer unit.



The Computer Unit

In this unit, which is housed in a 3/8 ATR short case, the transducer signals are pre-processed and converted into a logic signal format by a five channel amplifier and then processed by logic circuitry which determines the occurrence and spatial orientation of a valid shock wave front and computes the possible sources of hostile fire which could have produced the shock wave. This information is visually displayed to the pilot on the Indicator Unit described below. The occurrence of a detected shock wave is also indicated to the pilot by an audio warning signal injected into the intercom system of the helicopter. The audio warning signal is in the form of a 300Hz square wave tone of 1 second duration.

The Indicator Unit

This unit is housed in a standard 4ATI case situated in the aircraft instrument panel. A red disc on the front of the unit is divided into eight, 45 degree segments, each one of which may be individually illuminated. In the event of hostile fire, 4 contiguous segments are illuminated for 5 seconds producing a 180° arc which indicates the possible locations (relative to the helicopter axes) of the source of fire. In certain cases, where an unambiguous indication cannot be given, the full (360°) display is illuminated.



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APPLICATIONS

Although the standard unit is designed for rotary wing aircraft, there is a more compact unit for attachment to ground-based vehicles. The Vehicle Hostile Fire Indicator (VHFI) may be attached to VIP cars or armoured personnel carriers.

The VHFI system comprises the same basic units, however the sensor array is more compact and there may be multiple arrays fitted to vehicles with protruding parts e.g. turrets.

SPECIFICATION

Basic Units

Unit	Weight	Dimensions
Sensor Array	1.097 kilograms	305mm x 305mm x 195mm
Computer Unit (including tray and cables)	3.95 kilograms	94mm x 41mm x 228mm
Indicator Unit	1.25 kilograms	106mm x 106mm x 124.5mm

Characteristics

Power Supplies	DC 28V \pm 5V, (22v emergency conditions)
Power Consumption	30watts + 35watts display illuminated (display illuminated)
Sensitivity	Responsive to supersonic projectiles with miss distances of up to 20m
Calibration	By means of special purpose Test equipment
Display	180° Floating sector, illuminated for 5 seconds.
Audio warning	300Hz square wave duration 1 second.
Self Test	B.I.T.E. from amplifier inputs onwards is provided
Temperature	Flight Conditions + 50°C to - 10°C Ground Conditions (non functioning) + 70°C to -40°C

The indicator unit houses the following controls :

Power ON/OFF switch

RESET (Switch)	Cancels the current display and readies the system for new input
RESET (Switch)	Initiates an internal automatic test sequence producing an easy to follow sequence of displays lasting approximately 10 seconds. If the sequence of displays is completed then the system has undergone a thorough self testing procedure successfully.