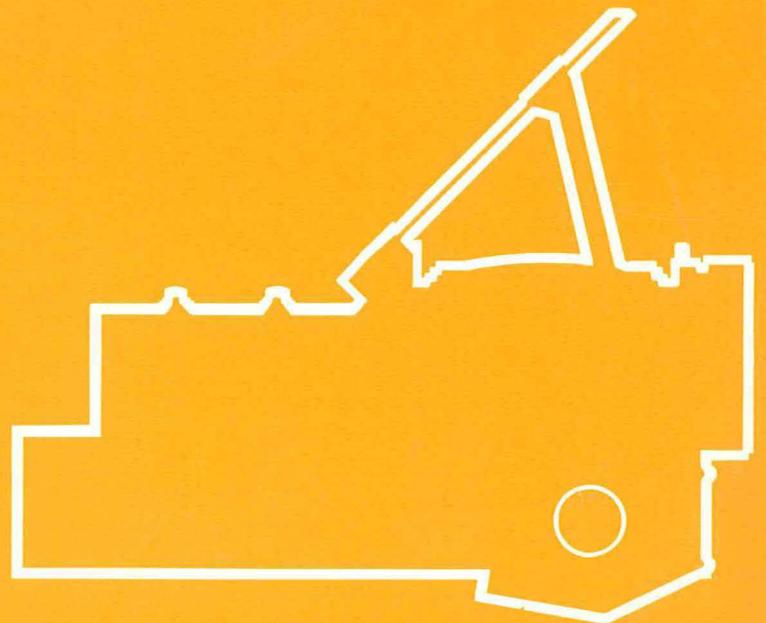


FERRANTI

ISIS D-282

***Weapon Aiming System
for Tactical Aircraft***



ISIS D-282 weapon aiming system for tactical aircraft

This lead computing, gyro stabilised optical sighting system has the following features.

- PROVEN IN-SERVICE RELIABILITY – AT LEAST 1000 HOURS BETWEEN OVERHAULS.
- EXCEPTIONALLY LOW MAINTENANCE COSTS
- BUILT-IN GROWTH CAPABILITY.

The system comprises four units

- SIGHT HEAD TYPE D-82
- PILOT'S CONTROL UNIT TYPE D-82
- VERTICAL REFERENCE GYRO INTERFACE UNIT TYPE D-82
- AIRSPEED UNIT TYPE D-82.

The heart of the system is an unique two axis eddy current controlled gyro which is specifically designed for weapon aiming.

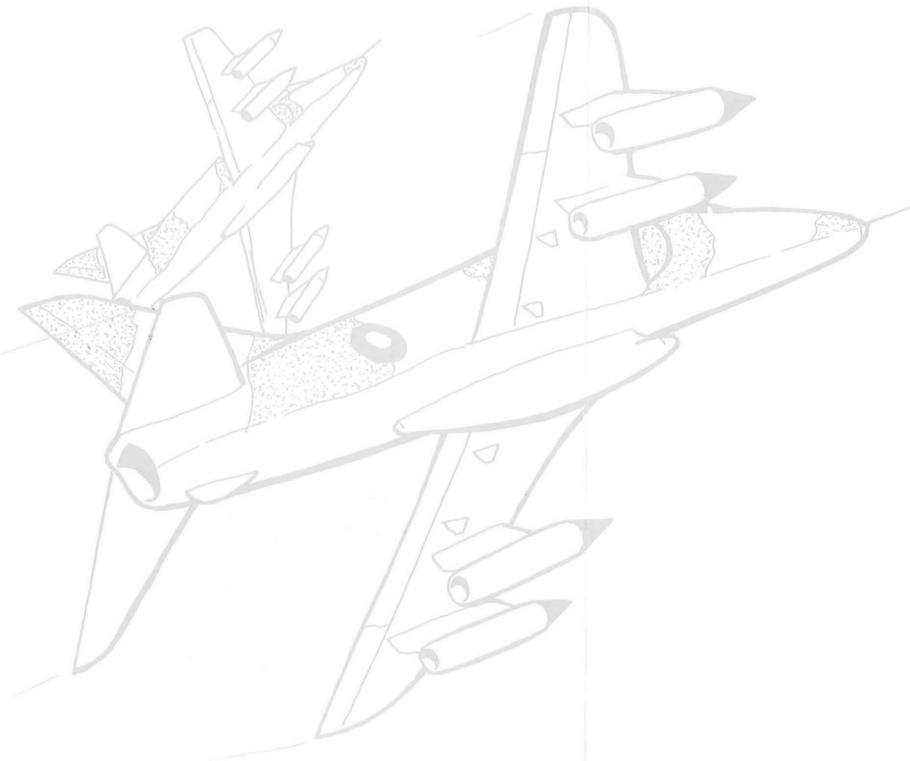
The gyro, which is incorporated in the sight head, performs two functions simultaneously, it measures the aircraft rate of turn and generates the required aim off angle with respect to relative speed and range between the aircraft and target.

In all modes of operation, the gyro controlled reticle aiming mark is roll-stabilised so that tracking time on the target may be reduced to less than three seconds.

AIR TO AIR GUNS

Three air to air ranges are selectable on the aircraft throttle handle. The pilot selects the range appropriate to his type of attack and fires when the target angular size is correct relative to his known gyro reticle angular size. The normal range settings are 1000 feet, 1500 feet and 2000 feet but these ranges may be changed by the ground crew to any other range (from 600 to 2500 feet) to meet tactical requirements.

A fixed reticle, in the form of a cross, is also incorporated in the sight head. The fixed cross indicates the gun line for a particular predetermined range. The fixed cross on or gyro reticle may be used together to successfully track a manoeuvring target.



MISSILES

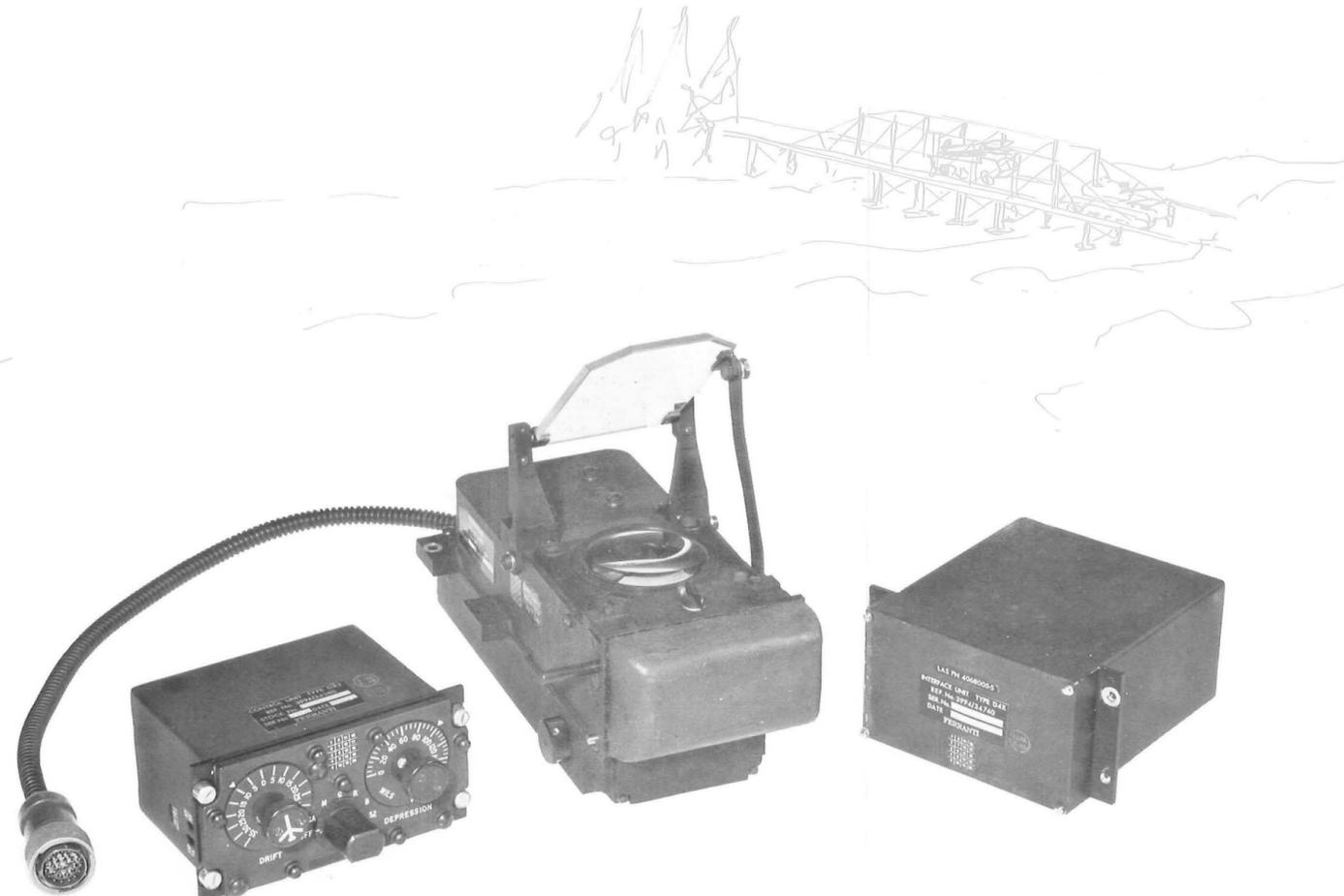
The gyro reticle or the fixed cross may be used to provide a zero sight line for the aiming of guided missiles, air to air.

AIR TO SURFACE

It is accepted that in ideal conditions all that is required for air to surface attack is a fixed cross. The accuracy of delivery depends on maintaining airspeed, dive angle and releasing at the correct range and in still air at a stationary target.

When such ideal conditions do not exist, the ISIS D-282 system is required. Changes in air speed, though not important in gun firing, do affect the accuracy of delivery of rockets and bombs. Therefore an Airspeed Unit Type 82 monitors the aircraft speed and modifies the depression setting of the roll-stabilised reticle aiming mark.

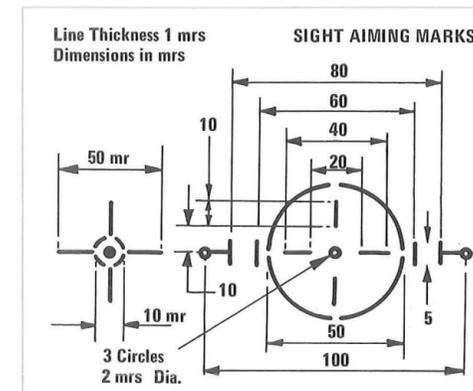
Any small changes in dive angle are sensed by the ISIS gyro and the aiming mark is corrected.



CROSSWIND

Crosswinds are sensed by the gyro as relative target motion and so the aiming mark is proportionally offset.

If the crosswind is known, or easily estimated, the pilot may offset the gyro aiming mark by adjustment of the DRIFT (crosswind) control on the C.U. Type 82. The system automatically 'scales' this pilot correction dependant on the weapon mode selected on the C.U. Type 82.



ROLL STABILISATION

The gyro reticle is roll-stabilised by the system accepting roll inputs from an aircraft vertical reference gyro and modifying the two-axis gyro eddy current control. An Interface Unit, RGI Type 82 is incorporated in the system for this purpose. This facility greatly enhances the handling of the weapon aiming system, especially in air to surface attack.

RETICLE PATTERNS

The gyro reticle pattern is designed to assist the pilot in estimating target angular size by being arranged in multiples of 20 milliradians angular dimension.

The fixed reticle, is in the form of a cross, the axes of which are 10 mrs. in angle.

Both reticles are illuminated by a quartz-iodine lamp filament where brilliance is controlled by a built-in dimmer unit on the sight head. A standby lamp filament is incorporated and is so designed as to permit rapid changeover without need to adjust the brilliance of the reticles.

CAMERA RECORDER

The enable assessment of the pilot's tracking performance, the sight head is designed to accept a camera whereby both the outside view and both sight reticles are simultaneously photographed.

The camera replaces the crash pad on the sight head, but the camera circuits are not integrated with the ISIS system.

OPTIONS

The ISIS D-282 is designed to integrate with either radar or laser range sensors, if available in the aircraft.

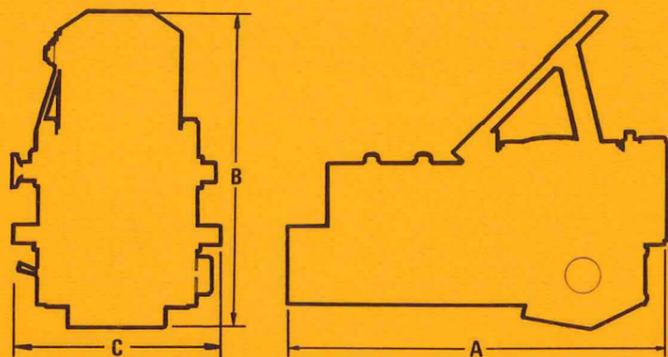
POWER SUPPLIES

The standard ISIS D-282 is designed to operate for 115 V single phase 400 Hz ac supply with a consumption of 30 VA but is capable of operating from 200 V and from either single or three phase supplies. 28 V dc 5 amps is also required for the system.

INSTALLATION

SIGHTHEAD TYPE D-82

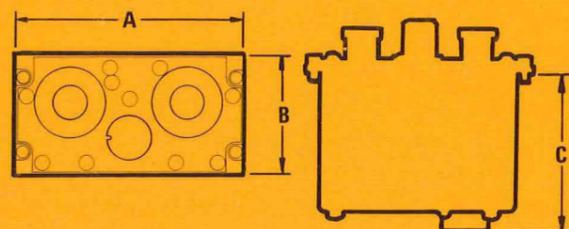
Weight: 8.62 lb (3.9 kg)



	A	B	C
mm	242.3	194	132.1
inches	9.54	7.65	5.20

CONTROL UNIT TYPE D-82

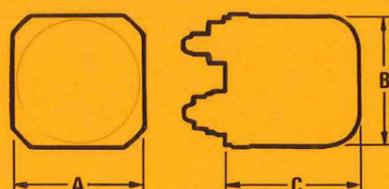
Weight: 3.0 lb (1.63 kg)



	A	B	C
mm	146.05	76.20	103.1
inches	5.750	3.00	4.06

AIRSPEED UNIT TYPE D-82

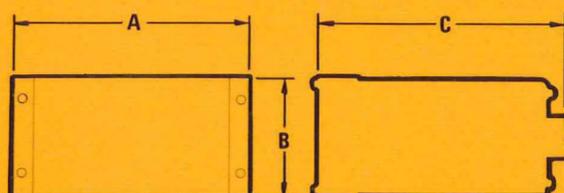
Weight: 2.2 lb (1 kg)



	A	B	C
mm	82.8	82.8	83.3
inches	3.26	3.26	3.28

GYRO INTERFACE UNIT TYPE D-82

Weight: 3.6 lb (1.36 kg)



	A	B	C
mm	151.13	72.9	158.7
inches	5.950	2.87	6.25

FERRANTI IN SCOTLAND

Over 5,300 of the Company's labour force are now employed by the Scottish Group of factories — forming Scotland's largest electronics complex.

The Scottish Division was initially established in 1943 for the manufacture of the gyro gunsight, designed by the Royal Aircraft Establishment, Farnborough. Since that time over 50 thousand weapon aiming systems based on the GGS have been produced.

The Electronics Systems Department of the Scottish division has also developed and produced a wide range of airborne search and tracking radars. The latest addition to the weapon aiming capability of the Department is the development of a fully stabilised laser range finder. This sensor is capable of being integrated with the ISIS series of weapon aiming systems.

The Sighting System Group of the Electronics Systems Department is responsible for the design, development and production of the GGS and ISIS series. Over 25 types of fighter and strike aircraft in 30 countries are currently using products of the Sighting Systems Group including such aircraft as HSA Hunter, BAC Lightning, BAC Strikemaster, Northrop NF5A, MDC A4S Skyhawk, Aeromacchi MB 326, Hindustan HF24 Marut, and SAAB 1050.

FERRANTI

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