ELECTRONICS DIVISION

ANV-353

Doppler Velocity Sensor



For decades, the company has been involved in the design, development and production of a large variety of Avionics products for military and commercial aircraft applications.

Several thousand of these products have been supplied for use in different types of military and commercial aircraft for Autonomous Navigation, Radio Navigation, Landing, Communication and Identification.

In particular, the experience gained over many years of design and production of Doppler Systems, has led to achievements such as the significant reduction in size, weight and cost over current systems improving performance, capability and reliability.

The ANV-353 single unit Doppler Velocity Sensor (DVS) is an improved variant of the Doppler Sensor ANV-351, which was originally designed for installation on the Leonardo AW129 anti-tank helicopter and now in current service with the Italian Army.

Making use of the experience gained in the AW129 Program and of new technologies, the ANV-353 incorporates significant advantages in performances, reliability, maintainability and cost effectiveness.

ANV-353 Doppler Velocity Sensors have been installed on the following helicopters: AW109, AW129, AB205, AB212, AB412, CH47, SH3D, HH3F, S-61, ALH, Puma, Mi17, Mi-24, EH101 and NH90 (TTH and NFH).

The above platforms have been delivered to the following worldwide Customers: Italian Army, Italian Air Force, Italian Navy, Italian Military Police (Carabinieri), Italian Police, Italian Coast Guard, Hellenic Navy, Turkish Navy, Malaysian Air Force, Venezuela Navy, Argentina Navy and Army, Peruvian Navy, Brazil Navy, Indian Army, Navy and Air Forces, Algerian Air Force, Malaysian Bomberos (Malaysian fire fighter), South Africa Air Force AW109 LUH. Furthermore, the ANV353 DVS has been selected for the US-101 Helicopter (USA President Helicopters Fleet). .

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DVSs have also been installed on the following fixed wings: P166 for the Italian Maritime Patrols and G222 for the Italian Air Force.

The ANV353 is a fully digital DVS that provides a continuous and accurate three axes velocity measurement for both fixed-and rotary-wing aircraft applications.

It is a single-unit, low power sensor, specifically designed for integrated systems. The applications of DVS ANV-353 are the following:

- Source of velocity vector data for Doppler/Heading Navigation
- Source of velocity vector for approach down to hover and hover for Autopilot
- Source of velocity vector for ASW sonobuoy control
- Source of velocity vector data for weapons aiming during NOE attack for anti-tank helicopter
- Source of velocity vector data for INS/Doppler hybrid navigation
- Source of velocity vector data for INS in-flight alignment using Doppler.

The Doppler Velocity Sensor ANV-353 generates, radiates and detects microwave energy directed to and backscattered from the surface of the earth providing a self-contained velocity measuring capability using Digital Signal Processing (DSP) algorithms.

The ANV-353 architecture grants system flexibility, reduction in volume, weight and power consumption. By means of the aircraft Pitch, Roll and Heading attitude references the ANV-353 DVS computes the earth referenced velocities (Vh, Vd and Vv) and the geographical referenced velocities (Vn, Ve and Vv) to be used by the aircraft navigation computer.

The ANV-353 DVS installed together with the ANV801+ Multifunction Control Display constitute a complete, stand alone Doppler GPS Navigation System.

The ANV-353 can be equipped with dual redundant MILSTD-1553B interface or with two ARINC 429 interfaces (2x Rx and 2x Tx same data). The unit is currently available with 3 different radome colors (Military Green, White Navy, Black).

Other interfaces and radome colors as well can be provided upon request.

TECHNICAL SPECIFICATION

Dimensions (L x W x H)	365mm x 437mm x 60mm
Weight (max)	5.5kg
Velocity range	Vx: -25m/sec to +125m/sec Vy: -50m/sec to +50m/sec Vz: -25m/sec to +25m/sec
Linear acceleration	x: ±1g y: ±1g z: -1g to + 3.5g
Altitude range	.6 to 7000m above sea level
Accuracy (2 SIGMA)	Vx <0.25% Vt+0.1m/sec Vy <0.25% Vt+0.1m/sec Vz <0.25% Vt+0.1m/sec where Vt2 = Vx2 +Vy2 +Vz2
Acquisition/tracking	Fully automatic within 2 sec., no warm up required 3 beam tracking capability, continuous validity/reasonableness checking
Beam geometry	4 beams Janus configuration time shared
RF power	50mW radiated at 13.325GHz (typical)
Modulation	FM/CW optimized for flight envelope
Power	28VDC, 35W max
Environment	MIL-HDBK-5400, Class 1A, MIL-STD 810E
Cooling	Convection, heat sink dissipation

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MM08391 01-17

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