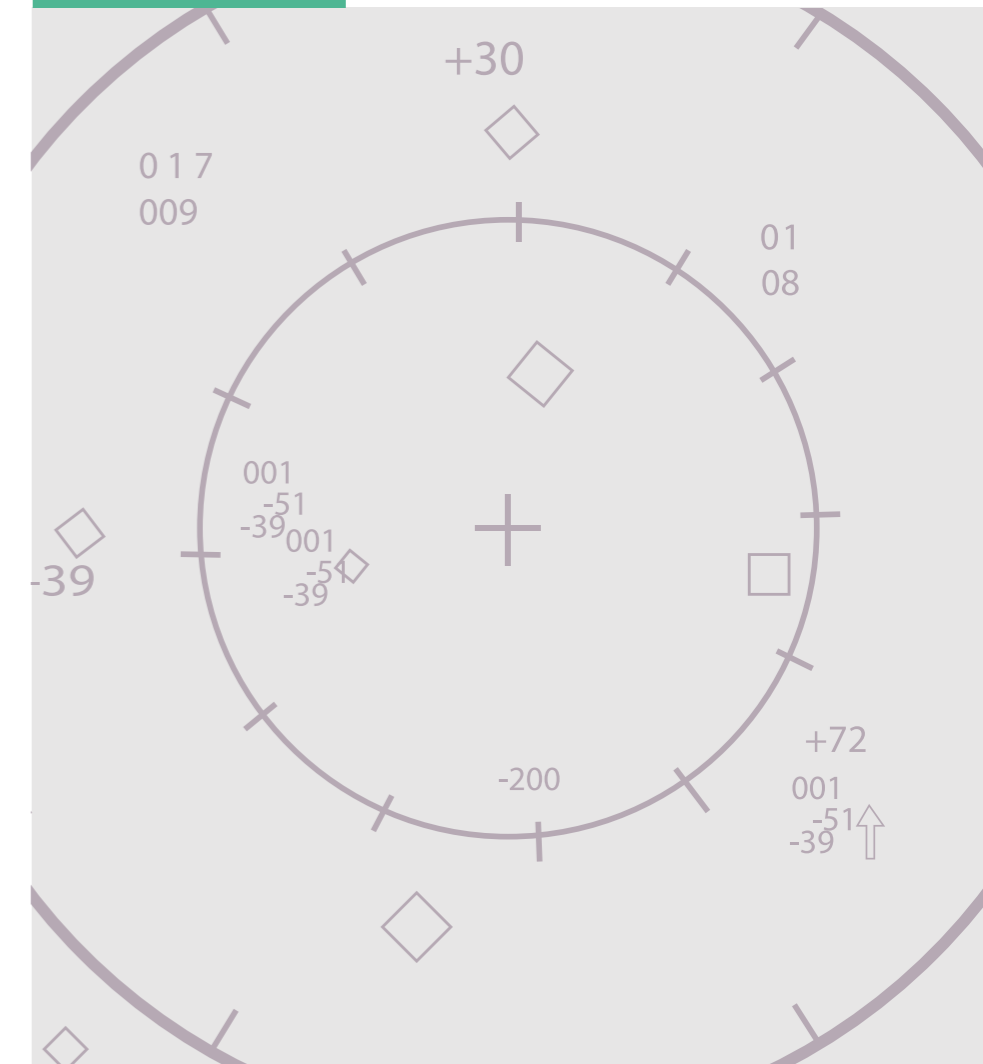


ESEN



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TRAFFIC AND TERRAIN COLLISION AVOIDANCE SYSTEM (ECAS)



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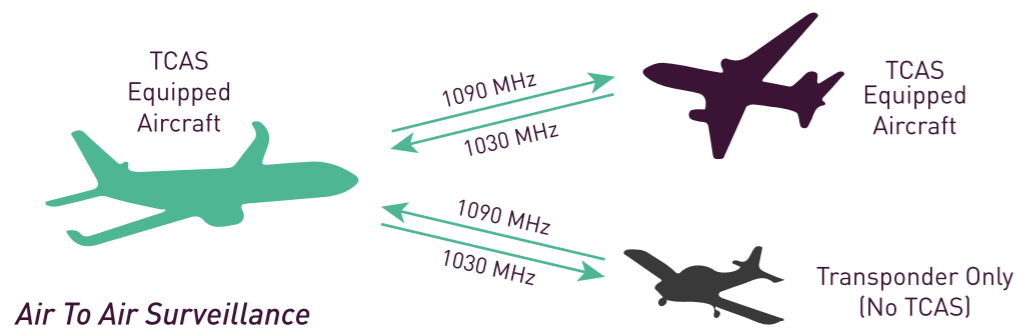
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TRAFFIC AND TERRAIN COLLISION AVOIDANCE SYSTEM (ECAS)

ECAS-Traffic and Terrain Collision Avoidance System combines TCAS II version 7.1 with Terrain Awareness Warning System (TAWS) Class A functionality to form an integrated system in a single line replaceable unit (LRU). ECAS is developed for both fixed and rotary wing aircraft platforms. ECAS Processor Unit is packed in a rugged sealed chassis with 5 MCU size compliant to ARINC 600 standard, hence it is suitable for the most demanding environmental conditions for both civil and military aircraft installations.

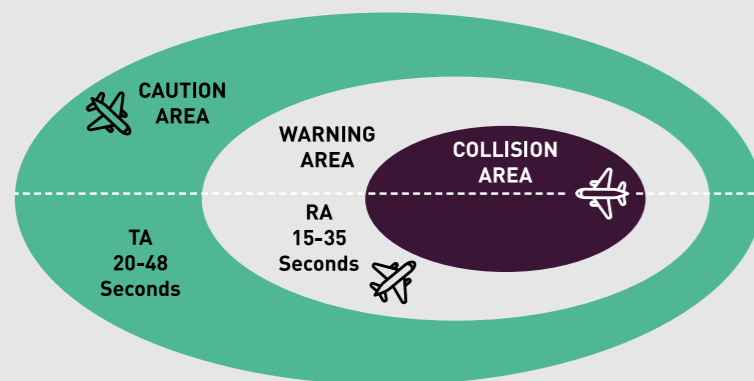
TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM (TCAS II)

- Preventing mid-air collisions or near collisions between aircraft
- Mandated by ICAO for all commercial turbine-powered transport aircraft worldwide having more than 19 passenger seats or having a maximum take-off weight above 5700 kg
- Interrogation of ICAO compliant transponders
- Intruder tracking in range, altitude and bearing
- Generation of Traffic Advisory (TA) for potential threats
- Generation of Resolution Advisory (RA) for threats
- Generation of recommended escape maneuvers, in the vertical dimension to either increase or maintain the existing vertical separation between intruder aircraft and own aircraft
- Air-to-Air Coordination



TCAS II

A traffic advisory annunciation indicates a potential maneuver may be required. TCAS generates resolution advisories in order to prevent mid-air or near collisions. Collision Avoidance Logic latest standard Change 7.1, mandatory in Europe for all aircrafts.



TERRAIN AWARENESS WARNING SYSTEM (TAWS)

TAWS provides unique performance-based algorithms that consider aircraft status (Aircraft position, altitude (MSL / AGL), airspeed, vertical velocity, phase of flight, performance data, flaps and gear configuration, groundspeed, ground track angle, radio altitude, attitude) for its Terrain Advisories. TAWS aeronautical database supports worldwide terrain elevation, obstacle, airport and runway data. Latest TAWS standard DO-367 MOPS for Terrain Awareness and Warning Systems (TAWS) Airborne Equipment is incorporated.



Class A TAWS system as defined in DO-367 and TSO-151C provides aural warnings and cautions for Ground Proximity Warning - GPWS functionality including;

- Mode 1: Excessive rate of descent with respect to terrain
- Mode 2: Excessive closure rate to terrain
- Mode 3: Negative climb (sink) rate or accumulated altitude loss before acquiring, 700 feet terrain clearance after takeoff or missed approach
- Mode 4: Flight into terrain when not in landing configuration
- Mode 5: Excessive downward deviation from an ILS glideslope
- Mode 6: Altitude callouts

Provides aural warnings and cautions for TSO-151C enhanced TAWS functionality including:

- Forward Looking Terrain Avoidance (FLTA)
- Premature Descent Approach (PDA)
- Terrain / Obstacle Image (ARINC 708)

STANDARDS

- Software Considerations in Airborne Systems and Equipment Certification, (RTCA/DO-178C DAL- B&C)
- Design Assurance Guidance for Airborne Electronic Hardware, (RTCA/DO-254)
- Certification Considerations for Highly-Integrated or Complex Aircraft Systems, (SAE ARP-4754)
- Integrated Surveillance System, (ARINC 768-2)

ADDITIONAL STANDARDS FOR TCAS

- TCAS Airborne equipment, TCAS II with Hybrid Surveillance, (TSO-C119e)
- Minimum Operational Performance Standards for TCAS II, (RTCA/DO-185B Change-2)
- Traffic Computer TCAS and ADS-B functionality, (ARINC 735B - 1)

ADDITIONAL STANDARDS FOR TAWS

- Minimum Performance Standards - Terrain Awareness and Warning System (TAWS) Airborne Equipment, (RTCA/DO-367)
- Terrain Awareness and Warning System, (TSO-C151d)
- Terrain Awareness and Warning System, (ARINC 762)
- TAWS Database (DO-200B, DO-201A, ARINC-424, DTED, DOF standards) Containing worldwide elevation map, obstacles, airports, runways