Increasing safety and efficiency in today's congested airspace

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With air traffic expected to double in the next 20 years, airlines want to be sure they have the best safety equipment onboard to prevent potential mid-air collisions or near misses in ever more congested skies. Honeywell's SmartTraffic® CAS 100 Traffic Surveillance System combines industry leading technology, enhanced capability, and superior performance to mitigate the risk of a potential mid-air collision by addressing key safety hazards and providing a clear course of action when a danger is presented.

Honeywell is a pioneer in TCAS development with over 50 years of design and support experience and over 300 million logged departures since 1991. The SmartTraffic CAS 100 system not only implements necessary safety logic, it improves situational awareness and safety in high density airspace through a more intuitive and informative display of traffic. It is the only TCAS solution available with Hybrid Surveillance technology that uses ADS-B technology to reduce 1090 frequency congestion.

Advanced features of the SmartTraffic system also reduce operating costs for airlines through improved system reliability and system flexibility. Software-based upgrades reduce future maintenance costs by enabling operators to easily upgrade their systems to the latest ADS-B requirements without changing hardware.

Airspace Awareness

By actively tracking up to 60 aircraft at distances up to 100 nmi and passively tracking up to 400 aircraft at distance greater than 120 nmi, the system uses the latest in processing technology and ADS-B functionality to provide a variety of aircraft surveillance and identification functions. At the heart of the system is the advanced TPA-100 Traffic Computer processor that was developed to meet the needs of future surveillance and ADS-B initiatives, including Airborne Traffic Situational Awareness applications.

Current ADS-B In applications include*:

- In-Trail Procedures (Oceanic)
- Enhanced Traffic Situational Awareness (Surface)
- Enhanced Traffic Situational Awareness (Airborne)
- Enhanced Visual Separation on Approach (VSA)

Future applications include:

- Cockpit Display of Traffic Information Assisted Visual Separation (CAVS)
- Cockpit Display of Traffic Information Assisted Pilot Procedure (CAPP)
- Flight Interval Management for Airports with and without Closely Spaced Parallel Runways (FIM)
- Surface Indications and Alerting (SURF IA)

*Available on selected aircraft

ADS-B INITIATIVE COMPATIBLE

USES ADS-B TECHNOLOGY TO REDUCE 1090 FREQUENCY CONGESTION

IMPROVES SITUATIONAL AWARENESS AND SAFETY THROUGH INTUITIVE DISPLAY OF TRAFFIC

60 × ACTIVELY TRACKS UP TO 60 AIRCRAFT UP TO 100 NML

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The SmartTraffic® Family

The SmartTraffic CAS 100 System offers three models of commercial TCAS. Known as the TPA-100 TCAS processor family, this next generation product has sufficient processing capacity to incorporate future ADS-B IN functionality. The TPA-100 A/ B/ C, are available in both 6 MCU and 4 MCU ARINC configurations.

TPA-100A – Was introduced as a direct replacement for the TPA-81A. In most cases, the TPA-100A can be upgraded to the TPA-100B or TPA-100C with a simple on-wing software update.

TPA-100B – An interchangeable replacement for the TPA-81A. The TPA-100B is Change 7.1 compliant and offers RTCA/DO-300 hybrid surveillance functionality. Change 7.1 was mandated for operation in EU airspace by December 2015 and Hong Kong by January 2017. The TPA-100B is field loadable at the aircraft.

TPA-100C – Traffic Computer with SmartTraffic™ has all the functionality of a TPA-100B and provides the following selectable SmartTraffic™ ADS-B IN functions:

- AIRB/VSA – enhanced airborne situational awareness and visual separation on approach

- SURF – enhanced situational awareness on or near the airport surface

- Oceanic In Trail Procedure (ITP)

- Long range active (without ADS-B) TCAS surveillance (up to 120 NMI)

- RTCA/DO-317A Compliant ADS-B IN functionality with range up to 250 NMI

- Easy Maintenance and Event Data Access

- ANT 81A - TCAS Antenna

Honeywell is now developing the TPA100D Next Generation Traffic Computer which will deliver enhanced functionality and even greater levels of safety and efficiency. This functionality will include Cockpit Display of Traffic Information (CDTI) Assisted Visual Separation (CAVS). CAVS is an enhancement of basic ATSA-Airborne and Visual Separation on Approach functions to enable increased use of Visual Separation (VS) procedures (and therefore smaller separation minima on approach) during marginal visual conditions.

System Overview

The SmartTraffic CAS 100 System comprised of the TPA-100 enhanced ACAS/TCAS Traffic Processor unit, the Enhanced Mode S Transponders, directional antennas, a control panel and a choice of optional displays provides the following operations for commercial aircraft:

- Automatic Dependent Surveillance Broadcast (ADS-B) Extended Squitter capabilities, including

- Flight ID, velocity, and GPS position

- 120+ nm ADS-B passive surveillance range

- 100 nm active interrogation range

- Hybrid surveillance

- TCAS Change 7.1 compliance

- ADS-B In Airborne Traffic Situational Awareness (ATSA / ATSAW)

- Oceanic In Trail Procedure (ITP)

- Visual Separation on Approach (VSA)

- Airborne Situational Awareness (AIRB)

- Meets all current regulatory requirements, ARINC characteristics, and ICAO Standards & Recommended Practices (SARPS)

- Flexible design for emerging user requirements and new technology upgrades.

ARINC 735B-COMPATIBLE

PROVIDES INDUSTRY STANDARD INTERFACE FOR ARINC 735B COMPATIBLE TCAS II FUNCTIONALITY

Component Specifications and Transponder Integration

TPA-100 Traffic Computer
Form Factor 4 MCU / 6 MCU
Weight (6MCU) 13.5 lb. / 7.73 kg
28VDC or 115 VAC, 50W
nominal / 200W max
TSO 119C
RTCA -DO178B
RTCA -DO185B (Change 7.1)
ICAO ANNEX 10 SARPS
RTCA -DO-300 (Hybrid Surveillance)
RTCA - DO-160G

ANT-81A Antenna directional antenna
Height 1.00 in. (2.54 cm)
Width 6.25 in. (15.88 cm)
Length 11.00 in. (27.94 cm)
Weight 2.0 lb. (.9 kg)
TSO C118 and C119A

TPA 100 can be integrated with:
Air Transport: TRA-67A / TRA-100B
B&GA: KXP 2290 Primus Apex /
XS -858B Primus Epic
Bendix King: MST 67A / MST 100B

IVA-81D TA/VSI
Height 3.18 in. (8.08 cm)
Width 3.18 in. (8.08 cm)
Length 8.65 in. (21.97 cm)
Weight 2.75 lb. (1.25 kg)
28VAC, 115VAC,
400Hz operating power
TSO C119, C8c

CTA-100A ATC/TCAS Control Panel
Single or dual transponder plus
TCAS versions available
Multiple color and lighting options
Size 2.25 in. x 5.75 in.
Weight 1.8 lbs. (.82 kg)
Mounting Standard DZUS
Environmental Characteristics
DO-160B/DO160D

CAS 100 key features

- Passive Surveillance - provides over 200 nautical mile visibility of other aircraft by receiving and processing ADS-B squitter information to determine their identity, position and velocity.

- Hybrid Surveillance – incorporates algorithms to enable the use of intruder data received using passive surveillance. This provides greater intruder situational awareness and reduces the active interrogation rate by using position information received passively via ADS-B. Honeywell is the only TCAS solution that offers Hybrid Surveillance, a critical component to future air traffic modernization efforts. Hybrid Surveillance, utilizing ADS-B technology, reduces 1090 MHz frequency congestion by reducing the TCAS interrogation rate, freeing up 1090 bandwidth for future ADS-B applications. Additionally, hybrid surveillance is more robust at longer ranges. Together, these features enable greater safety.

HYBRID SURVEILLANCE PROVIDES GREATER INTRUDER SITUATIONAL AWARENESS

Cost Effective Operation

Honeywell understands how important new technology and safety is to our airline operators; the SmartTraffic CAS 100 System was designed to reduce operating costs today, and in the future, in addition to increasing cockpit and route efficiency.

ADS-B technology with Hybrid Surveillance enables greater route efficiency, which lowers fuel burn and reduces maintenance costs. Future ADS-B features and functionality will be available through simple software updates which reduces future maintenance costs and total aircraft downtime. The SmartTraffic CAS 100 System is offered as a single part number, reducing the necessary spares costs.

The SmartTraffic® CAS 100 System is available on these platforms:

- Airbus – A320 series (A318, A319, A320, A321), A330, A340
- AW-139
- Boeing - B737, B777
- Dassault F5X
- Embraer E2
- Gulfstream G600
- SuperPuma

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