Abstract

This paper presents the evolution of Aircraft Data Networks (ADN)’s. It describes various Avionics data network protocols based on the Avionics systems architecture. The paper describes the evolution from a simple point-to-point protocol presented in ARINC 429 to a shared data bus protocol presented in ARINC 629. Finally, the new Data network based on AFDX (Avionics Full-duplex Ethernet) is discussed. AFDX is a new standard based on Ethernet technology and able to handle today’s requirements. A brief comparison between the three different protocols is presented. The comparison shows that AFDX provides better performance and flexibility without losing the compliance with safety, redundancy and reliability of Avionics requirements.

References

The Evolution of Aircraft Data Networks

- AIRLINES ELECTRONIC ENGINEERING COMMITTEE, "ARINC SPECIFICATION 429 PART 1-17", PUBLISHED: May 17, 2004
- AIRLINES ELECTRONIC ENGINEERING COMMITTEE, "ARINC SPECIFICATION 429P3-18", PUBLISHED: OCTOBER 12, 2001
- Janusz Zalewski, Dawid Trawczyński, Janusz Sosnowski, Andrew Kornecki, Marek Nieznećek, "SAFETY ISSUES IN AVIONICS AND AUTOMOTIVE DATABUSES"
- Alban Gabillon, Laurent Gallon, "Availability of ARINC 629 Avionic Data Bus", IUT de Mont de Marsan, Université de Pau LIUPPA/CSySEC
- AFDX / ARINC 664 Tutorial (1500-049), Condor Engineering, Inc. Santa Barbara, CA 93101, May 2005, ver: 3
- AIRLINES ELECTRONIC ENGINEERING COMMITTEE, "ARINC SPECIFICATION 664P7", PUBLISHED: June 27, 2005

Index Terms
Computer Science
Networks

Keywords
AFDX; ARINC429; ARINC629; ARINC664.