

What is ARINC 429?

[ARINC 429](#) is a standardized data-bus protocol designed specifically for use in aircraft cockpits. Modern aircraft are extremely complex machines and cockpits often contain several different computerized systems. ARINC429 makes it possible for sophisticated avionics systems of different types and from different manufacturers to coexist and work together as a single cohesive unit in the aircraft cockpit setting.

From autopilot systems to navigation computers and GPS systems, from fuel management systems to cabin oxygen and climate controls, there are many different computer systems in the instrument panel and many of these must interface with each other in order to perform their functions.

Like a home or office network, ARINC 429 allows digital components to intercommunicate with each other via a standardized physical interface and data structure. The ARINC standard describes specific universal connections for both power and data. This allows avionics and aircraft designers much more freedom to create new and innovative concepts for aircraft control systems. Furthermore, it allows new technologies in navigation and aircraft management to be easily retro-fitted into existing aircraft. The duties of aircraft maintenance and repair personnel are simplified from this "one size fits all" standardized interface as it removes any guesswork when installing such avionics devices.

ARINC 429 increases the safety of aircraft by reducing pilot workload. The system allows flight information to be used and displayed in many different ways. Airspeed information for example, is required by the autopilot system the flight navigation computer and the fuel management system.

[ARINC429](#) allows this information to be automatically transmitted from the sensor system to these control systems without requiring any input from the pilot. Furthermore the system is also used to monitor flight information to detect dangerous situations and the aircraft may be equipped to automatically respond to emergency situations. The autopilot for example, may be programmed to pitch forward if the aircraft appears to be entering a stall.

Like all aircraft systems, AIRINC 429 is also designed to be as robust and dependable as possible. With this in mind ARINC 429 cabling is shielded 78 ohm twisted-pair to reduce RF signal interference. A 10 volt allowable differential in signal communication allows reliable data transmission even with up to a plus or minus 5 volt over or under volt. This allows the system to continue operation in emergency situations and in the presence of extreme environmental conditions.

Our modern high-capacity high-efficiency airliners and cargo haulers would not be possible without the advanced avionics made possible by the ARINC 429 system .

About the Author

Excalibur Systems' line of products provides support for [MIL-STD-1553](#), ARINC-429 and other military and commercial avionics specifications.

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