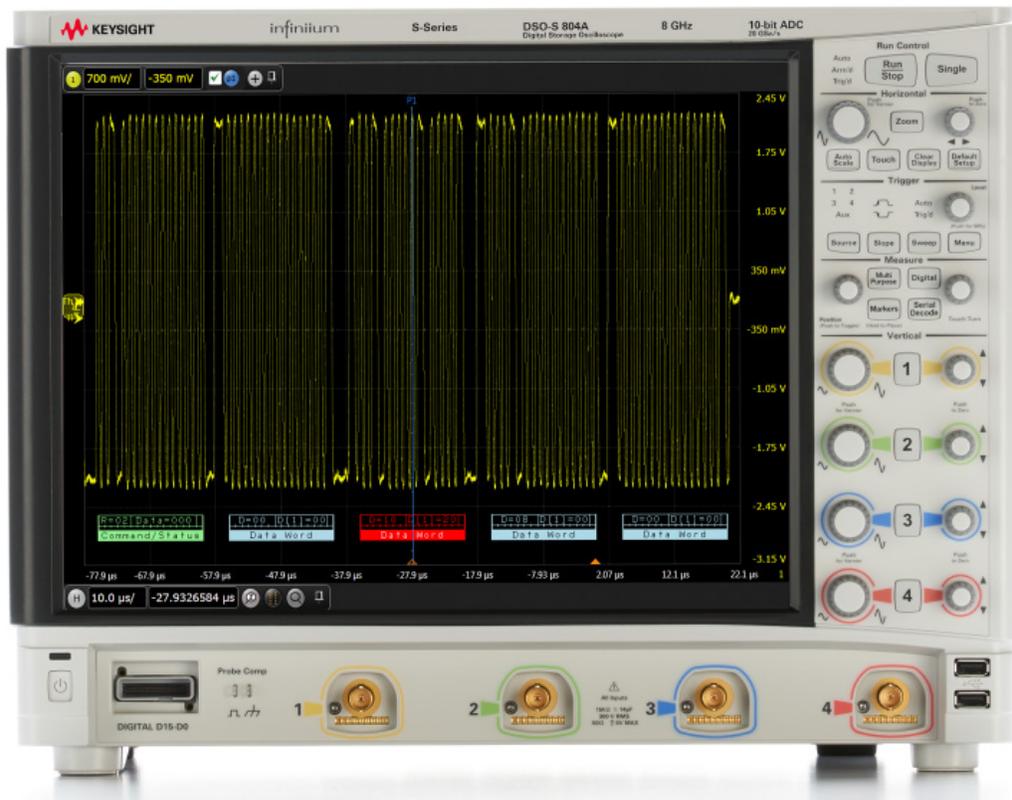


Keysight N8842A

ARINC 429 and MIL-STD-1553 Protocol Triggering and Decode For Infiniium Series Oscilloscopes

Data Sheet



Easily Debug and Test Designs That Include ARINC 429 and MIL-STD-1553 Protocols Using an Infiniium Oscilloscope

The ARINC 429 bus and the MIL-STD-1553 bus are serial buses used in both commercial and military equipment. While primarily used in avionics, these buses are also found in ground vehicles, weapons systems and other equipment. Because of their importance in both industry and defense, error free operation of both the ARINC 429 bus and the MIL-STD-1553 bus is crucial.

Without intelligent oscilloscope serial bus protocol triggering and decode, it can be difficult to debug these buses and validate signal integrity. Traditional methods of debugging serial buses include manual bit counting, which is not only tedious, but prone to critical errors.

Easily debug and test these serial buses through the ARINC 429 and MIL-STD-1553 Protocol Triggering and Decode for Infiniium Oscilloscopes. This application provides an easy to use interface, a breadth of protocol decode options to suit your specific needs, pattern and error search options to find errors faster, and much more.

- Set up your scope to show ARINC 429 or MIL-STD-1553 protocol decode in less than 30 seconds
- Get access to a rich set of integrated protocol-level triggers
- Save time and eliminate errors by viewing packets at the protocol level
- Use time-correlated views to quickly troubleshoot serial protocol problems back to their timing or signal integrity root cause

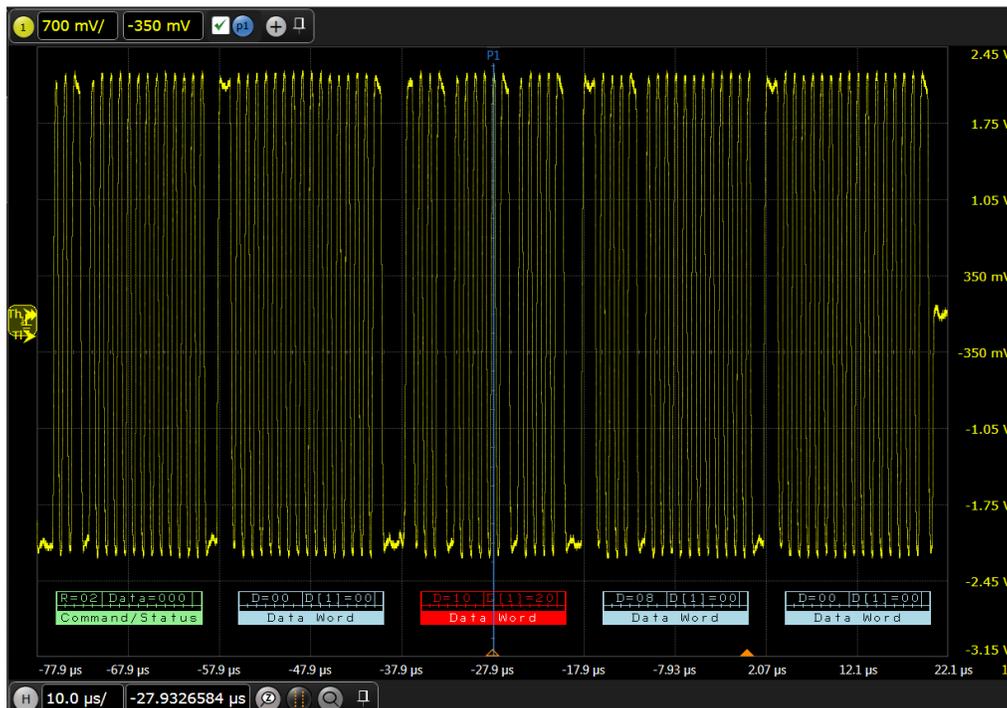


Figure 1. This MIL-STD-1553 signal contains an invalid sync. Errors like this are incredibly difficult to debug without advanced software.

ARINC 429 and MIL-STD-1553 Setup, Protocol Triggering, and Search Capabilities

Get access to a rich set of integrated protocol level triggers. The application includes a suite of configurable protocol level trigger conditions specific to these serial buses. When serial triggering is selected, the application enables special real-time triggering hardware inside the scope. Hardware-based triggering ensures the oscilloscope never misses a trigger event when armed. Hardware-based triggering is available only on Infiniium S-Series oscilloscopes; other Infiniium Series oscilloscopes support software-based triggering. Specific to these buses is support for dual threshold triggering. Without support for ARINC 429 and MIL-STD-1553 specific triggering, an oscilloscope set to standard edge triggering would not provide differentiation between transmitted and received packets, resulting in an inaccurate decode.



Figure 2. Trigger on a variety of conditions and errors.

ARINC 429 and MIL-STD-1553 Protocol Decode

Use an intuitive user interface to read and interpret your results without hassle. Analyze both the waveform and glance through a table of packets in the standard split-screen view or use the full screen to view either the waveform in greater detail or the lister to scroll through the data. Engineers deal with complicated problems all day—using Keysight protocol decode software is not one of them.

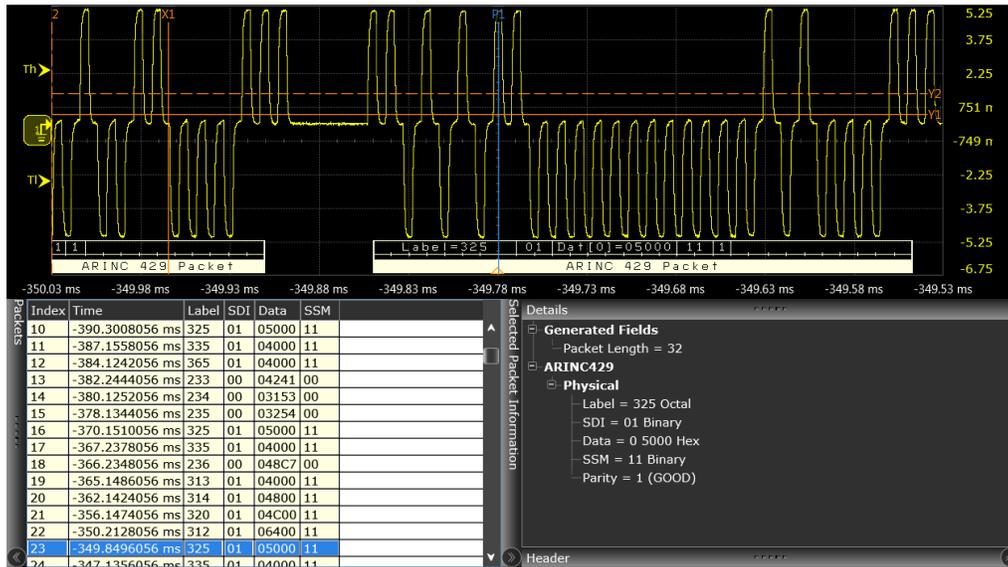


Figure 3. The split-screen view makes interpreting this ARINC 429 signal effortless.

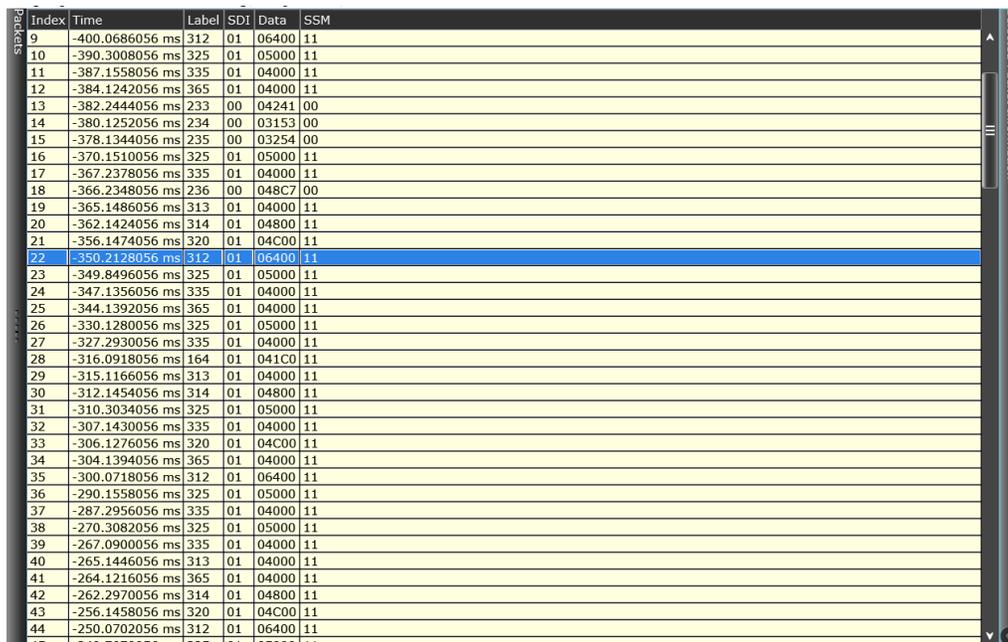


Figure 4. The same ARINC 429 decode is displayed in a convenient lister format.

Spend Less Time Searching and More Time Finding

Easily find errors or specific packets through the pattern search menu. This feature allows you to trigger on a specific search entry or stop when a specific search entry is reached. Customize this feature to trigger on a specific error, any error, or a specific packet data value.

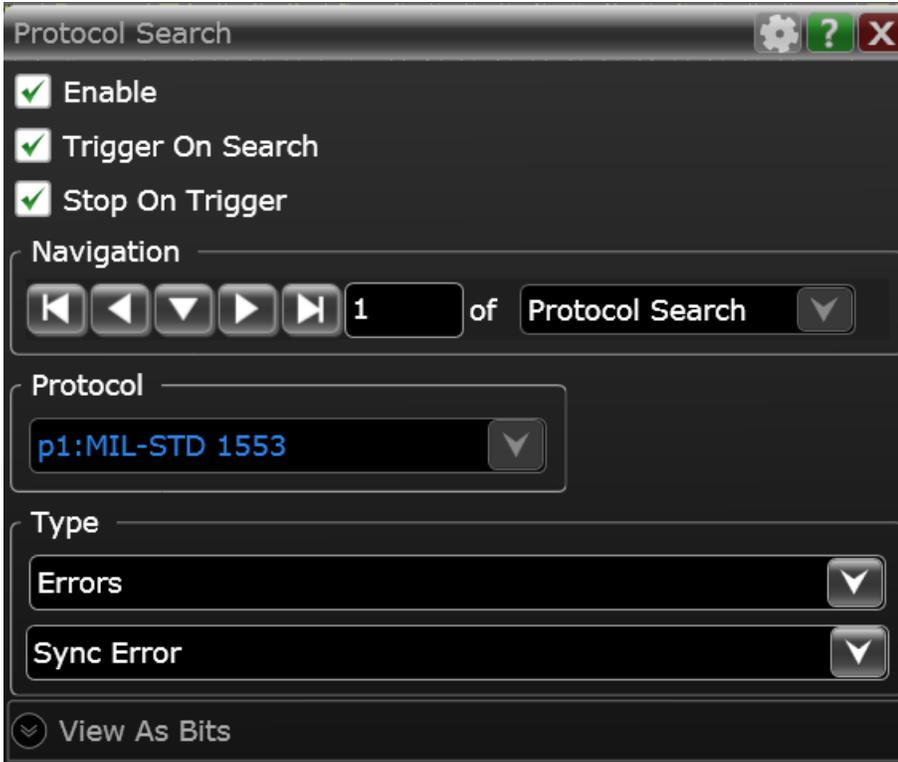


Figure 5. A MIL-STD-1553 signal is set to stop at the occurrence of a sync error.

N8842A Performance Characteristics

ARINC 429 decode configuration options

Options	Description
ARINC 429 input source	Analog channels 1, 2, 3 or 4 Waveform memories
Decoded word format	Label/SSM/data/SDI Label/SSM/data Label/data
Baud rates	High (100 kb/s) Low (12.5 kb/s) User-defined
Signal type	Differential (A-B) Line A (non-inverted) Line B (inverted)
Triggering	ARINC 429 packet – Label, SDI, data, SSM, parity Label range Bits specific – Word start, word stop, all 0 bits, all 1 bits, all bits Errors – Any error, gap error, parity error, word error, word or gap error
Display	Label – Octal SDI – Binary Data – Hex, decimal, binary, ASCII SSM – Binary Errors – Text

MIL-STD-1553 decode configuration options

Options	Description
Protocol	MIL-STD-1553A and MIL-STD-1553B
MIL-STD-1553 input source	Analog channels 1, 2, 3 or 4 Waveform memories
Triggering	Command/status word – RTA, data, parity Data word – Data, parity Specific events – Data word start/stop, command/status word start/stop Errors – Any error, parity error, manchester error, sync error
Display	Remote terminal address (RTA) – Hex Data – Hex, decimal, binary, ASCII

Ordering Information

This application is available in the following license variations

- Fixed to an oscilloscope
- Floating license
 - Server-based license
 - Transportable license
- Installing this software on oscilloscopes purchased before October 2016 requires a recalibration

Application	License type		Infiniium S-Series	Infiniium 9000 Series	Infiniium 90000A Series	Infiniium V-Series	Infiniium Z-Series
ARINC 429 and MIL-STD-1553 protocol	Fixed	Factory-installed	N8842A-1FP	Not available			
		User-installed	N8842A-1FP				
	Floating	Transportable ¹	N8842A-1TP				
		Server-based ²	N5435A-106				

1. The floating or transportable license is moved from oscilloscope to oscilloscope using KLM and can be done online or with USB thumb drive.
2. The server license runs on external PC and can be checked out for 90 days by connecting to the server from the GUI.



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