



NEXSYS® Component Technology

ARINC 429 MULTI-BIT BINARY DECODER



PRODUCT DESCRIPTION

The ARINC 429 MULTI-BIT DECODER from Applied Avionics can provide a full binary decode for up to three bits from a single ARINC 429 data label. The 2 X 4 decoder (see *Figure 1: Block Diagram*) option is available in an 8-pin package (expandable to 12-pin) while the 3 X 8 decoder (see *Figure 2: Block Diagram*) is a 12-pin device. The polarity of the decoded outputs is selectable (one selection for all decoded results).

The ARINC converter circuitry inside the ARINC 429 MULTI-BIT DECODER includes an internal Health Monitor that can provide a “fail” indication if power to the decoder is lost or upon loss of valid ARINC data input. The Health Monitor has a range of watchdog timings requiring a valid ARINC label to be received within a specified time interval. If specified, the Health Monitor can be selected as a decoder input.

Figure 1: Block Diagram, 2 X 4 Decoder

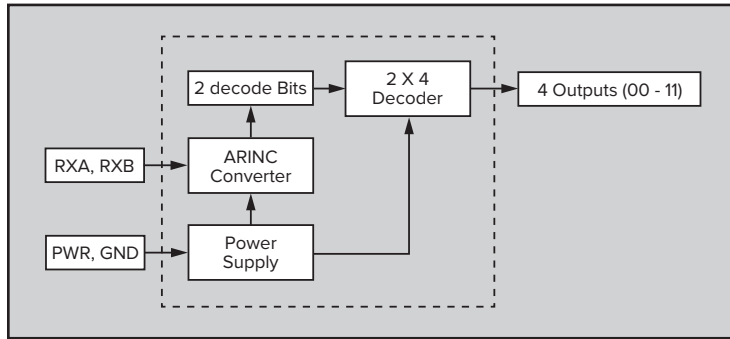
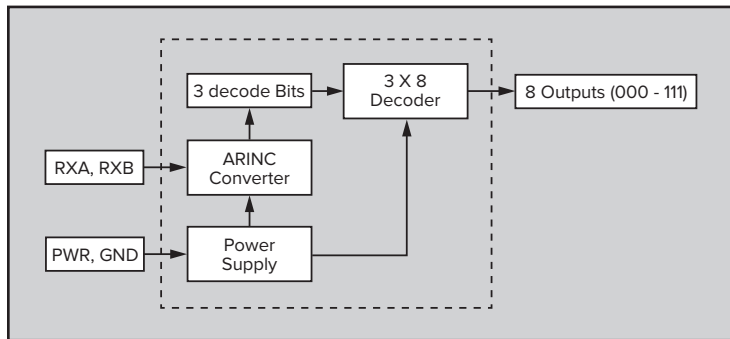


Figure 2: Block Diagram, 3 X 8 Decoder



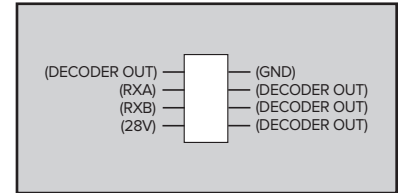
This device is part of our NEXSYS Component Technology and is configurable inside of a VIVISUN switch/annunciator or a NEXSYS Module. When used in a VIVISUN switch/annunciator, the compact size of the decoder allows for the inclusion of additional NEXSYS components or electro-mechanical switch poles.

The ARINC 429 MULTI-BIT DECODER is designed, tested and qualified to applicable military standards. The ARINC 429 MULTI-BIT DECODER also meets the environmental requirements of DO-160.

CONFIGURATIONS

2 X 4 Decoder

Two specified ARINC data bits are input to the 2 X 4 decoder producing four binary results on four separate output pins. Output polarity for the decoded bits can be specified as Open = True or Ground = True.

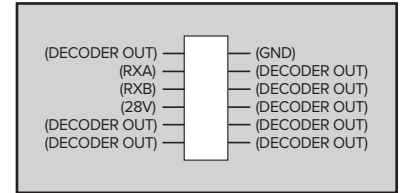


Additional Options (not shown in *Figure 1: Block Diagram*):

- Within the same 8-pin package, repurpose decoder answer “00,” “11” or both with discrete bits, including the internal Health Monitor.
- By increasing to a 12-pin package, all four decoder answers can remain accessible and two additional discrete outputs can be added, including the internal Health Monitor.

3 X 8 Decoder

Three specified ARINC data bits are input to the 3 X 8 decoder producing eight binary results on eight separate output pins. Output polarity for the decoded bits can be specified as Open = True or Ground = True.



Additional Options (not shown in *Figure 2: Block Diagram*):

- Within the same 12-pin package, repurpose decoder answer “000,” “111” or both with discrete bits, including the internal Health Monitor.

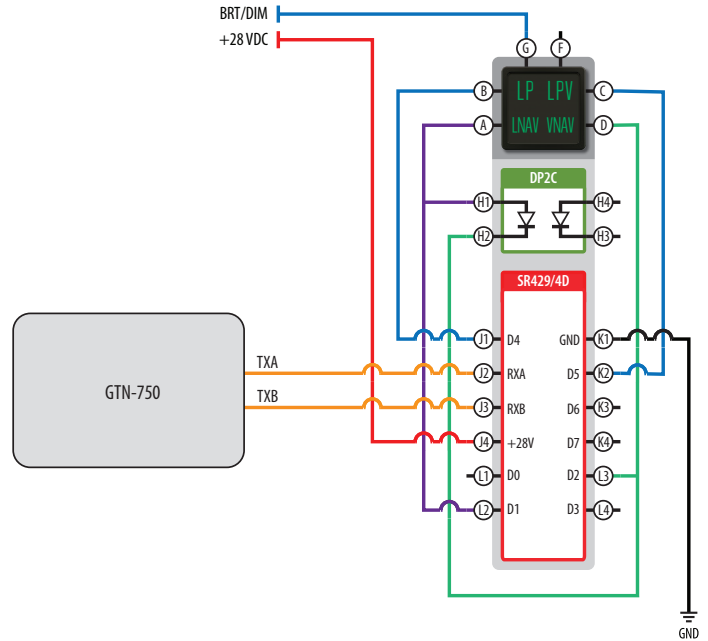
PARAMETRIC TABLE

Description	Parameters	
Operating Parameters		
Operating Voltage (Max./Nom./ Min.)	+32 VDC /+28 VDC/+18 VDC	
Power Supply Input Current	8 mA maximum	
Reset From Power Loss	5 second minimum @ +25°C	
Hold Up On Power Loss	200 ms minimum	
ARINC 429 inputs	Per ARINC 429 specification	
Low Level Output Voltage @ 0.5 A (VOL)	+0.4 VDC typical, +0.6 VDC maximum	
High Level Output Voltage (VOH)	Open Drain +32 VDC maximum pull-up allowed	
Output Load Capacity		
	Per Output	Total All Outputs
Resistive / Inductive	0.5 A maximum	1.5 A maximum
Temperature		
Operating	-55°C to +85°C	
Non-operating	-55°C to +125°C	
Reliability MIL-HDBK-217F, Notice 2		
Airborne Inhabited Cargo (AIC) at +40°C Continuous Operation	MTBF = 103,012 Hrs.	

APPLICATION EXAMPLE

Ex. 1: WAAS Approach

Display of LP/LPV/LNAV and VNAV indications obtained from WAAS Approach type data to bring Garmin GTN level of service annunciation into compliance with FAA Circular, AC 20-138B. This solution uses our NEXSYS ARINC 429 Multibit Decoder and a NEXSYS Diode Pack component inside a VIVISUN High Capacity annunciator housing. Once the ARINC 429 data is received, the annunciator decodes bits 17, 18 and 19 to correspond with the correct level of service.



For more information:

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