

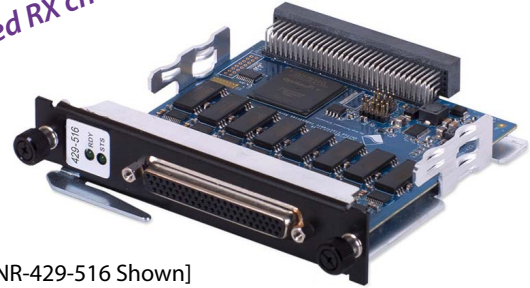
DNA/DNR/DNF-429-516

24-channel ARINC 429 Interface

- DNA-429-516 for use in "Cubes", DNF-429-516 for FLATRACK and DNR-429-516 for use in RACKtangle™ chassis
- Fully HW and SW compatible with DNx-429-516 boards
- 16 ARINC 429 RX or TX plus 8 dedicated RX channels
- High (100 kHz) or low (12.5 kHz) speed selectable by channel
- Hardware Label filtering and TX scheduler
- Includes support for ARINC-615 protocol
- 350 Vrms Isolation (in 8 groups of 3-channels)
- Guardian Series Diagnostics:
 - On-board 429 RXs allow read-back of TX channel

10-Year
Availability
Guarantee

New release adds 8
dedicated RX channels!



[DNR-429-516 Shown]

General Description

The DNA/DNR/DNF-429-516 are ARINC 429 communications interfaces for UEI's popular "Cube" / RACKtangle / FLATRACK I/O chassis respectively. The DNx-429-516 offers 16 TX/RX channels and 8 dedicated RX channels. The 8 dedicated RX channels are a new feature and are available on all 429-516 boards. The TX drivers on the TX/RX channels can be disabled on a channel-by-channel basis. To use a TX/RX channel as RX simply disable the TX driver on that channel.

The board is fully compatible with the earlier DNx-429-516-024 board and software written for the DNx-429-516-024" version will work without issue on the new board. The new board simply adds 8 dedicated RX channels to the connector that were previously labelled as RSVD on earlier versions of the DNx-429-516.

All boards are fully compliant with the ARINC 429 spec and support both high speed (100 kHz) and low speed (12.5 kHz) operation. The channel speed is software selectable on a channel by channel basis. The channel speed can be set to frequencies other than 100 and 12.5 kHz to support legacy devices that "push" the ARINC 429 standard.

Data integrity, even when all channels are set in high speed mode is assured with the use of 256 word FIFOs on all channels, and in both directions. The board is part of UEI's Guardian series and provides a diagnostic, on-board ARINC-429 receiver connected to each transmit channel. This allows the application to confirm the correct information has been written to the ARINC-429 bus.

Channels may be set to transmit asynchronously or based on a hardware controlled scheduler. Each channel supports a transmission table that allows up to 256 unique schedules. Transmission schedule resolution is 100 microseconds. There is also a TX mode where a label is transmitted only upon receipt of data from a pre-programmed label. Asynchronous (non-scheduled) data may be sent with three priorities. High priority data is sent immediately upon completion of the current transmission, regardless of scheduled messages. Data sent with standard priority is transmitted during times when no scheduled data is being sent. Finally, the lowest priority is data streamed from a 256 word FIFO which is sent when no scheduled, high or standard priority data is being transmitted.

The DNx-429-516 series provides a host of helpful filtering capabilities. The board may be set to only return data from specific labels. Data from up to 255 labels may be read or the board can be set to read data from all labels. A "new data only" filter compares the received label data to the most recent previous reading and only returns data if something has changed. Data may also be filtered based on the SDI bits.

Software for the DNx-429-516 is included with the board. The UEIDAQ Framework provides a comprehensive, easy to use API supporting all popular Windows programming languages. Factory written and supported drivers are also included for Linux and are available for other popular real-time operating systems including QNX and VxWorks. Finally, the UEIDAQ Framework supplies complete support for those creating applications in all popular data acquisition and control

Technical Specifications:

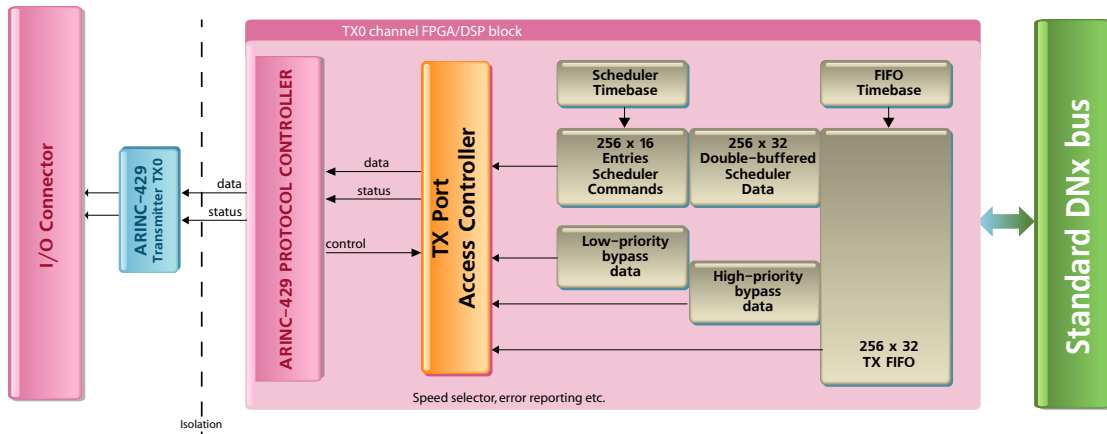
Channel Configurations	
Number of channels	16 TX or RX and 8 dedicated RX channels
ARINC Compliance	Fully compliant with ARINC 429
Total RX loads	20 per channel, 128 maximum per board
Transmit Specifications	
Standard Data rate	100 kHz or 12.5 kHz selectable per channel
Custom data rates	10 kHz to 200 kHz for special applications
FIFO size (TX or RX)	256 words
Transmit modes	Scheduled or asynchronous. TX outputs may be disabled allowing a channel to be used as a Input.
TX Scheduler specifications	
timing resolution	100 microseconds
table size	Schedule up to 256 labels per channel
Minor/Major Frames	16 Minor frames with double buffering of data array
Asynchronous TX modes	
High priority	transmit immediately upon completion of current transmission regardless of schedule
Standard priority	transmit when no scheduled data
FIFO based	transmit when no scheduled, standard or high priority data is being sent
Receive Specifications	
Standard Data rate	100 kHz or 12.5 kHz selectable per port
Custom data rates	10 kHz to 200 kHz for special applications
FIFO size	up to 256 32-bit words, user selectable
Receive filter size	1 to 255 Labels or disabled
SDI filter	enabled or disabled
New data only filter	enabled or disabled by label or globally
Parity checking	enabled or disabled
Date/Time stamping	enabled or disabled by label or globally
General Specifications	
Isolation	350 Vrms. Isolation provided in channel pairs. Channels 0-1, 2-3,...14-15 share a common ground
Operating temperature	tested -40 °C to +85 °C
Vibration IEC 60068-2-6 IEC 60068-2-64	5 g, 10-500 Hz, sinusoidal 5 g (rms), 10-500 Hz, broad-band random
Shock IEC 60068-2-27	50 g, 3 ms half sine, 18 shocks @ 6 orientations 30 g, 11 ms half sine, 18 shocks @ 6 orientations
Humidity	0 to 95%, non-condensing
MTBF	470,000
Power consumption	7 Watt, maximum

packages, including LabVIEW, MATLAB/Simulink, as well as any application which supports ActiveX or OPC servers.

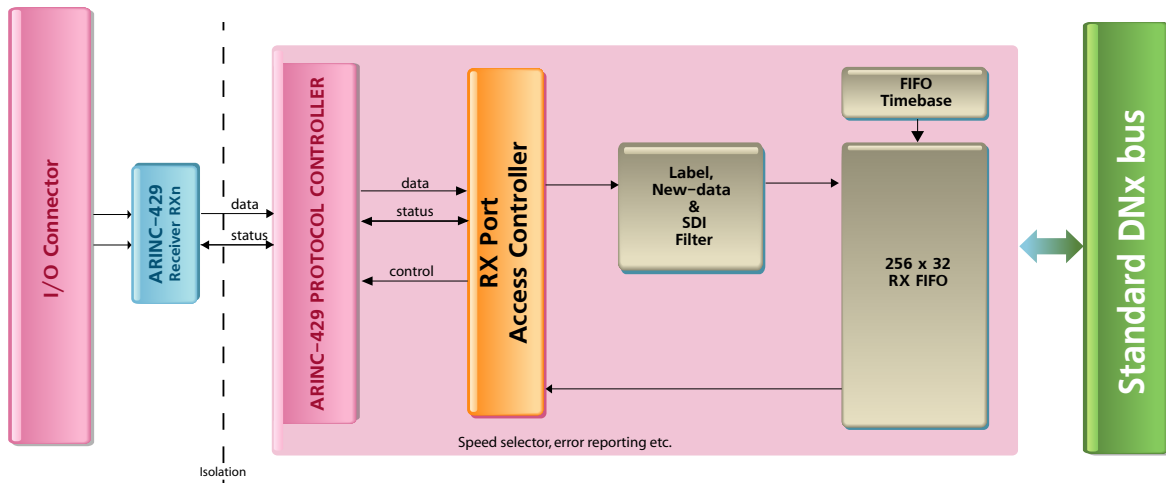
The DNx-429-516 board is also fully supported by UEI's popular UEIPAC series chassis.

Block Diagram (TX Single channel*)

*On channels 0-15 the TX drivers and RX receivers are connected in parallel on the board (they share the same I/O pins on the board connector). To use these channels as RX channels, simply disable the TX transmitters.

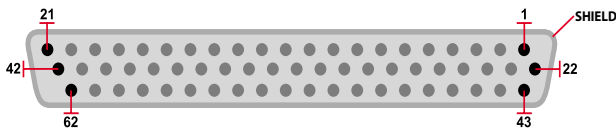


Block Diagram (RX Single channel*)



Pinout Diagram:

(I/O Connectors are female 62-pin "D" type)



Pin	Signal	Pin	Signal	Pin	Signal
1	TX/RX-0-B	22	TX/RX-0-A	43	TX/RX-1-A
2	RX-16-B	23	RX-16-A	44	TX/RX-1-B
3	GND CH2/3/17	24	GND CH0/1/16	45	TX/RX-3-A
4	TX/RX-2-B	25	TX/RX-2-A	46	TX/RX-3-B
5	RX-17-B	26	RX-17-A	47	TX/RX-4-A
6	TX/RX-5-B	27	TX/RX-5-A	48	TX/RX-4-B
7	RX-18-B	28	RX-18-A	49	GND CH 4/5/18
8	TX/RX-6-B	29	TX/RX-6-A	50	GND CH 6/7/19
9	TX/RX-7-B	30	TX/RX-7-A	51	RX-19-A
10	TX/RX-8-B	31	TX/RX-8-A	52	RX-19-B
11	TX/RX-9-B	32	TX/RX-9-A	53	GND CH 8/9/20
12	RX-20-B	33	RX-20-A	54	GND CH 10/11/21
13	TX/RX-10-B	34	TX/RX-10-A	55	TX/RX-11-A
14	RX-21-B	35	RX-21-A	56	TX/RX-11-B
15	TX/RX-12-B	36	TX/RX-12-A	57	TX/RX-13-A
16	RX-22-B	37	RX-22-A	58	TX/RX-13-B
17	GND CH 14/15/23	38	GND CH 12/13/22	59	TX/RX-14-A
18	TX/RX-15-B	39	TX/RX-15-A	60	TX/RX-14-B
19	RX-23-B	40	RX-23-A	61	rsvd
20	rsvd	41	rsvd	62	rsvd
21	rsvd	42	rsvd		

Isolation boundaries

Ordering Guide

Part Number	Description
DNA/DNR/DNF-429-516	ARINC 429 Interface with 16 TX/RX and 8 dedicated RX channels (order DNA- for "Cubes", DNR- for RACKtangle, DNF- for FLATRACK I/O chassis)
DNA-STP-62	62 connection screw terminal panel
DNA-CBL-62	62 conductor, 3 foot shielded round cable