

USER MANUAL

VEGAS-429

DATA DIODE

PART NUMBER:
NW-429-DD-VS01



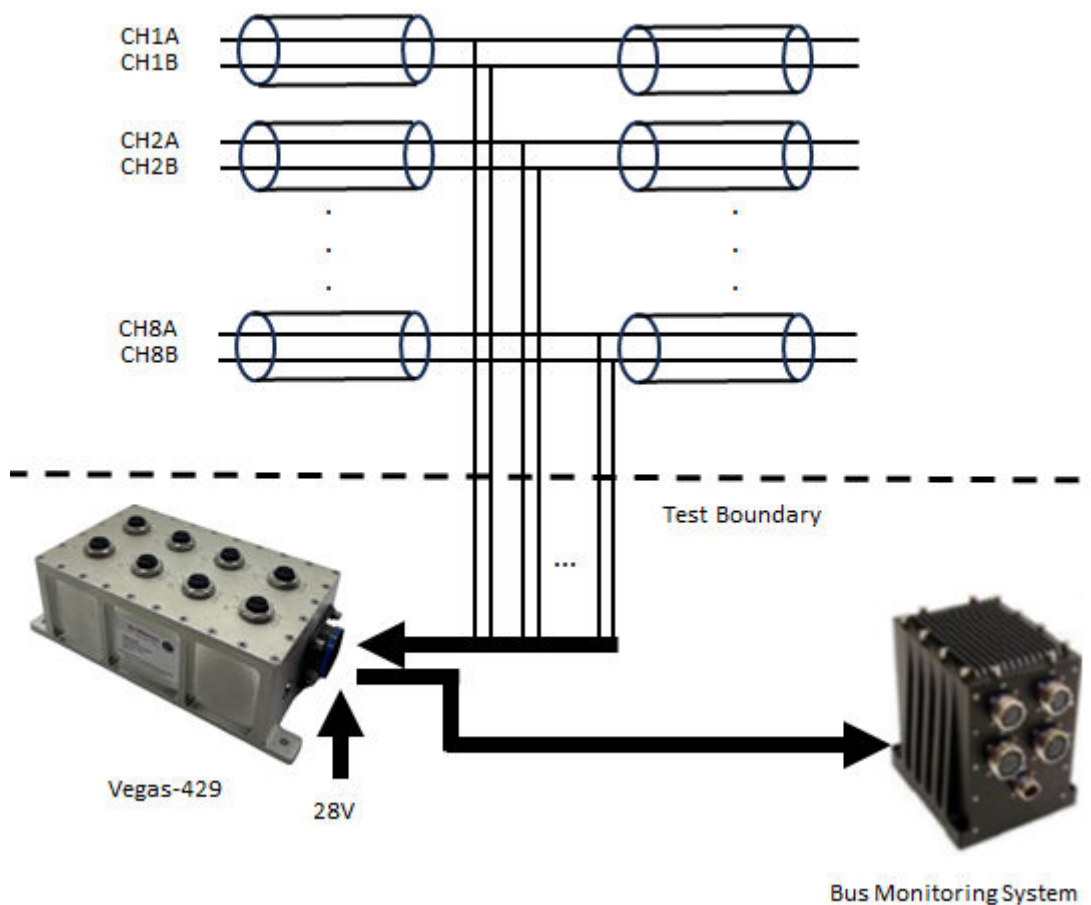
NuWaves RF Solutions
132 Edison Drive
Middletown, Ohio 45044
Tel: 513-360-0800
www.nuwaves.com
sales@nuwaves.com

1 VEGAS-429 OVERVIEW

The Vegas-429 data diode provides security when accessing ARINC 429 data busses. Offered in a ruggedized chassis, the module is ready for both lab and in-flight use. Acting as a physical firewall between the ARINC 429 avionics bus and LRUs, this controlled data flow offers true risk mitigation to the aircraft's avionics bus. Serving not only the data diode function, Vegas-429 users also benefit from the modules ability to recondition signals on the data bus thus protecting the data against signal transients, while also benefiting from increased signal range (up to an additional 200ft of ARINC 429 cabling).

To assist users of the Vegas-429 product, interface cable part number CYB-CBL-03-B is available as a purchase option.

Figure 1 Typical Application



VEGAS-429 PERFORMANCE HIGHLIGHTS

Performance highlights of the Vegas-429 module are outlined in Table 1.

Table 1: Vegas-429 Performance Highlights

Design Characteristic	Benefit
Current	80 mA
Input Voltage	28 VDC
Design Simplicity	No loadable firmware or software, single chip solution
Propagation Delay	Low input to output latency (800 ns)
Ruggedized Design	Tested to an array of MIL-STD-810G, MIL-STD-704F, and MIL-STD-461G tests
Transient Signal Protection	Protects against voltage transients while also reconditioning data signals
Extended Range	Offers extended range of up to 200 ft of ARINC 429 cabling
Data Diode	Protects avionics bus from malicious attack through physical hardware

2 VEGAS-429 FUNCTIONAL DESCRIPTION

The Vegas-429 physically hardwires ARINC 429 transceivers to maintain one-way data flow. LRUs can therefore only receive commands and messages, and any attempt at a response is blocked from entering the rest of the data bus system. All erroneous or malicious messages originating in a compromised LRU are halted at the Vegas-429 module.

No software or firmware is present in the Vegas-429 module.

An illuminated LED (color red) signifies power supplied to the module is appropriate.

INTERFACE DEFINITIONS

The connector pin-out definitions for the module's connector are provided in Table 2. In a typical installation, the Vegas-429 module is mated to a ARINC 429 data bus and power supply via an interface cable. Figure 2 shows the connector pin numbers, as viewed from the front of the module.

Table 2: Vegas-429 Pin-Out Definitions

Pin Number	Pin Name	I/O	Description
1	CH 2 A High	I	ARINC 429 High Channel 2 (IN) A
2	N/C		N/C
3	CH 5 A High	I	ARINC 429 High Channel 5 (IN) A
4, 21	+28 VDC	I	DC Supply Voltage, +28 Volts.
5, 6	GROUND	I	DC Supply Voltage, Return
7	CH 6 A Low	O	ARINC 429 Low Channel 6 (OUT) A
8	CH 7 A High	I	ARINC 429 High Channel 7 (IN) A
9	CH 7 A Low	O	ARINC 429 Low Channel 7 (OUT) A
10	CH 7 B Low	O	ARINC 429 Low Channel 7 (OUT) B
11	CH 3 B Low	O	ARINC 429 Low Channel 3 (OUT) B
12	CH 3 B High	I	ARINC 429 High Channel 3 (IN) B
13	CH 4 B Low	O	ARINC 429 Low Channel 4 (OUT) B
14	CH 4 B High	I	ARINC 429 High Channel 4 (IN) B
15	CH 4 A High	I	ARINC 429 High Channel 4 (IN) A
16	CH 8 A High	I	ARINC 429 High Channel 8 (IN) B
17	CH 8 A High	I	ARINC 429 High Channel 8 (IN) A
18	CH 2 A High	I	ARINC 429 High Channel 2 (IN) B

19	CH 2 B Low	O	ARINC 429 Low Channel 2 (OUT) A
20	CH 5 B High	I	ARINC 429 High Channel 5 (IN) B
22	CH 5 A Low	O	ARINC 429 Low Channel 5 (OUT) A
23	CH 6 B Low	O	ARINC 429 Low Channel 6 (OUT) B
24	CH 7 B High	I	ARINC 429 High Channel 7 (IN) B
25	CH 3 A Low	O	ARINC 429 Low Channel 3 (OUT) A
26	CH 3 A High	I	ARINC 429 High Channel 3 (IN) A
27	CH 4 A Low	O	ARINC 429 Low Channel 4 (OUT) A
28	CH 8 B Low	O	ARINC 429 Low Channel 8 (OUT) B
29	CH 8 A Low	O	ARINC 429 Low Channel 8 (OUT) A
30	CH 2 B Low	O	ARINC 429 Low Channel 2 (OUT) B
31	CH 6 A High	I	ARINC 429 High Channel 6 (IN) (OUT) A
32	CH 5 B Low	O	ARINC 429 Low Channel 5 (OUT) B
33	CH 1 A Low	O	ARINC 429 Low Channel 1 (OUT) A
34	CH 1 B Low	O	ARINC 429 Low Channel 1 (OUT) B
35	CH 1 B High	I	ARINC 429 High Channel 1 (IN) B
36	CH 6 B High	I	ARINC 429 High Channel 6 (IN) B
37	CH 1 A High	I	ARINC 429 High Channel 1 (IN) A

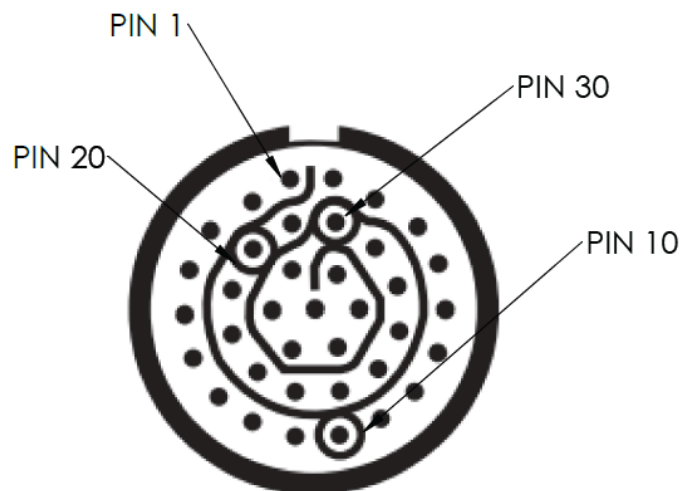


Figure 2: Vegas-429 Connector Pin-Out

INTERFACE CABLE (PURCHASE OPTION)

The 36" shielded interface cable is comprised of a 37 pin D38999 connector on one end, and thirty four Banana Plugs on the opposite end. This cable provides input power to the Vegas-429 module and allows interfacing with the ARINC 429 data bus. Figure 3 shows NuWaves part number CYB-CBL-03-B.

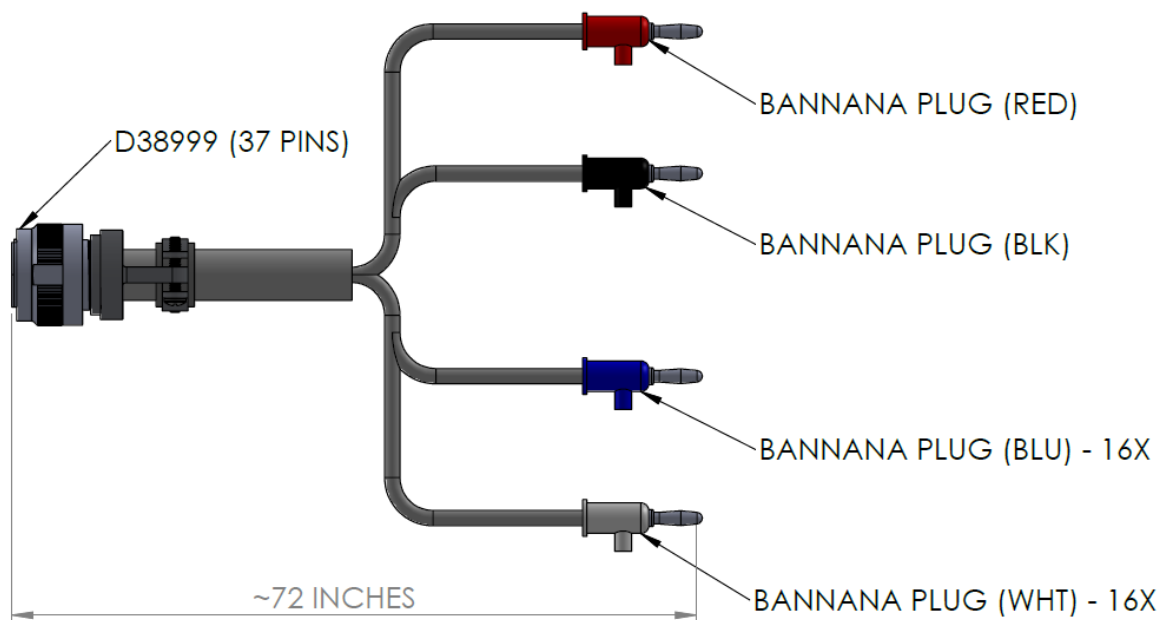


Figure 3: CYB-CBL-03-B Vegas-429 Interface Cable

3 MECHANICAL

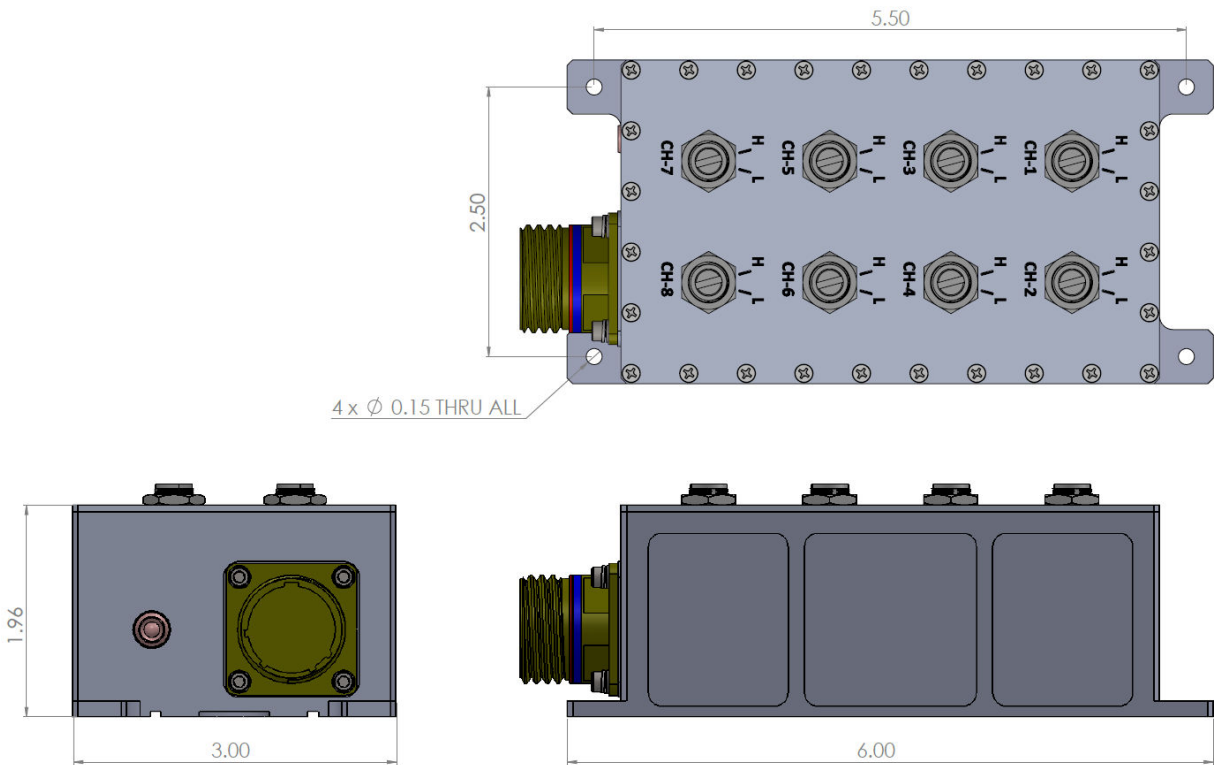


Figure 4: Vegas-429 Mechanical Outline

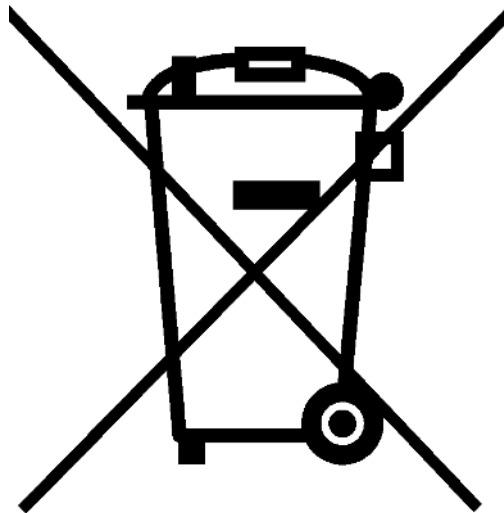
Table 3: Vegas-429 Mechanical Specifications

Parameter	Specification
Interface Connector	D38999/20WD35PN
Dimensions (LxWxH)	6.00" x 3.00" x 1.96"
Weight	0.94 lbs

4 PRODUCT DISPOSAL – END-OF-LIFE

Safety is a guiding principle of NuWaves RF Solutions. We ensure safe production and operation of our products, as well as end-of-life disposal. Improper disposal can adversely affect the environment, wildlife and human health. Please follow these guidelines when disposing of a NuWaves product:

- Do not remove the cover or any hardware
- Do not remove components from the circuit card assembly
- Do not incinerate
- Do not crush or shred
- Do not dispose of as unsorted municipal waste
- Do not export e-waste outside of the original destination country for recycling
- Utilize an e-Steward or ISO14001 certified e-waste recycler
- Consider export controls during recycler selection
- If a NuWaves product is incorporated into a larger system or sub-system, ensure that these guidelines are followed at system end-of-life



5 GETTING HELP - APPLICATIONS ENGINEERING

NuWaves RF Solutions offers technical support for basic configuration help and troubleshooting, Monday through Friday, 8 a.m. to 5 p.m. Eastern Time.

Technical Assistance and Application Engineering:

Email: sales@nuwaves.com

Phone: (513) 360 - 0800

NuWaves Home Page: <https://www.nuwaves.com/>

Product Warranty:

https://nuwaves.com//srv/htdocs/wp-content/uploads/NuWaves_Warranty_Repair-1.pdf

GENERAL INFORMATION

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