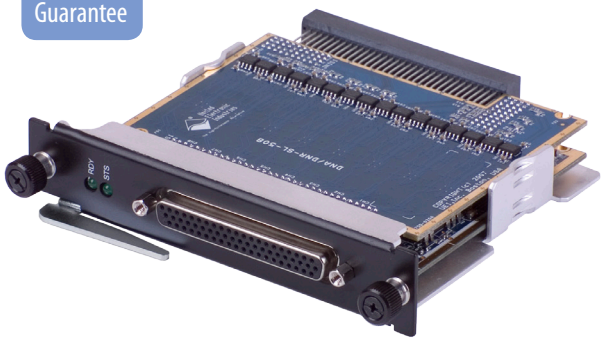
DNA/DNR-CSDB-509

8-Port CSDB & RS-232/485 Serial Communications Interface

- DNA-CSDB-509 for use with "Cube" I/O chassis
- DNR-CSDB-509 for use with RACKtangle™ I/O chassis
- 8 independent ports
- Each port is software-configurable as CSDB, RS-232 or RS-422/485
- Supports both 12.5 kbit/s and 50 kbit/s CSDB rates
- Max speed of 256 kbit/s for RS-232 and 1Mbit/s for RS-422/485
- Completely independent bit rate settings for every port
- 350V isolation between ports, ports and circuitry; 15kV ESD

10-Year Availability Guarantee



General Description

The DNA/DNR-CSDB-509 are 8-port serial communications interfaces for Cube/RACKtangle I/O chassis respectively. The boards offer fully isolated software-configurable CSDB (Commercial Standard Digital Bus), RS-232 or RS-485 interfaces. The board is an ideal interface to serial based avionics as well as general purpose serial I/O.

The DNA/DNR-CSDB-509 support both 12.5 kbaud and 50 kbaud data rates in CSDB mode as well as transfer rates up to 1 Mbaud in RS-485 mode or up to 256 kbaud in RS-232 mode. It also supports communications at 12, 12.5 and 50 kbaud with better than 0.1% data rate accuracy. Baud rates based on integer divisors of 4.125 MHz or 1.8415 MHz are also supported. Based upon an industry standard UART on each port, the board supports both half- and full-duplex modes for RS-422/485 operation.

The DNA/DNR-CSDB-509 are compatible with a wide variety of legacy avionics devices. The board support RS-422 point to point or network applications when used in RS-485 mode and provide 200Ω software-selectable TX and/or RX termination for RS-485 communications. In RS-232 mode, the layer provides TX/RX as well as the standard RTS and CTS hardware hand shaking required by many external serial devices.

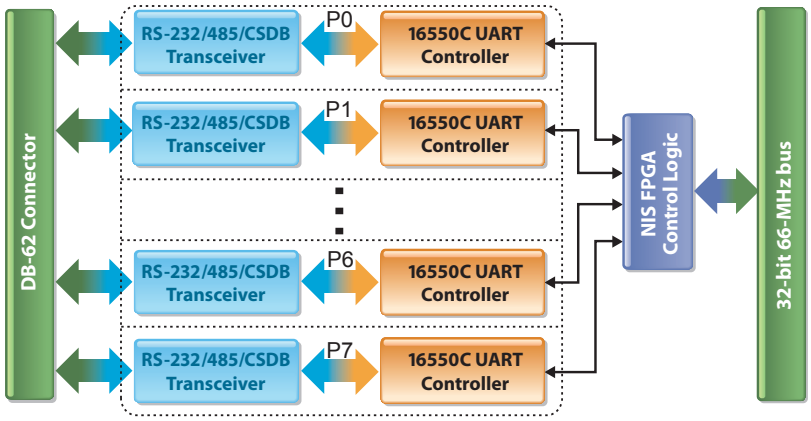
The DNA/DNR-CSDB-509 is supported by the all popular operating systems and programming languages with a powerful, yet easy to use API. Window users may also take advantage of the UEIDAQ Framework which provides an extremely simple and complete software interface for programmers as well as supporting most data acquisition and control applications (e.g. LabVIEW, MATLAB).

All connections to the CSDB-509 are through a 62-pin dSub connector. However the optional DNA-CBL-62 series cable and the DNA-STP-508 breakout board bring out each port to easy-to-use 9-pin dSubs.

Technical Specifications:

General Specifications	
Number ports	8
Serial Interfaces	CSDB, RS-232, RS-422/485, per-port software-configurable
Supported baud rates: CSDB RS-232 RS-422/485	 12.5 kbaud or 50 kbaud Standard rates up to 250 kbaud Standard rates to 1 Mbaud
Supported Baud rates	Integer divisors of 4.124 MHz or 1.8415 Mhz
RS-422/485 Modes:	Half- and full- duplex
Hardware Transceiver	MAX3160E (w/ fail-safe RX termination)
UART Controller	16550C FPGA emulation
UART Base Clock	66 MHz or 24 MHz
FIFO Size	1024 (input and output)
Protection	350 V chan-to-chan isolation; 15 kV ESD protection. Does not meet CSDB 115VAC protection specification
Power Consumption	2-5W (CSDB mode with max current drive)
Operating Temperature	Tested -40 to +85 °C
Operating Humidity	95%, non-condensing
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
MTBF	290,000 hours

Block Diagram

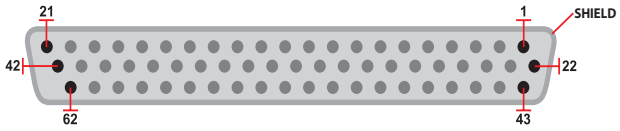


High-Speed Optical Isolation

Options:

Cable	Description
DNA-STP-508	Break-out panel that breaks each serial port out to industry standard pinout 9-pin "D" connectors as well as screw terminals
DNA-CBL-62	62 conductor cable connects directly to OEM equipment or to the DNA-STP-508 interconnection panel

Connection Diagram:



Pin	232 signal	CSDB/ 422/485 signal
1	-	-
2	RTS1	TX1+
3	-	-
4	RX2	RX2+
5	RTS2	TX2+
6	Gnd3	Gnd3
7	RX3	RX3+
8	RTS3	TX3+
9	RX4	RX4+
10	RTS4	TX4+
11	-	-
12	RTS5	TX5+
13	-	-
14	RX6	RX6+
15	RTS6	TX6+
16	Gnd7	Gnd7
17	RX7	RX7+
18	RTS7	TX7+
19	-	-
20	RTS8	TX8+
21	-	-
22	Gnd1	Gnd1
23	TX1	TX1-
24	-	-
25	CTS2	RX2-
26	TX2	TX2-
27	-	-
28	CTS3	RX3-
29	TX3	TX3-
30	CTS4	RX4-
31	TX4	TX4-
32	-	-
33	TX5	TX5-
34	Gnd5	Gnd5
35	CTS6	RX6-
36	TX6	TX6-
37	-	-
38	CTS7	RX7-
39	TX7	TX7-
40	Gnd8	Gnd8
41	TX8	TX8-
42	-	-
43	CTS1	RX1-
44	RX1	RX1+
45	Gnd2	Gnd2
46	-	-
47	-	-
48	-	-
49	-	-
50	-	-
51	Gnd4	Gnd4
52	-	-
53	CTS5	RX5-
54	RX5	RX5+
55	Gnd6	Gnd6
56	-	-
57	-	-
58	-	-
59	-	-
60	-	-
61	CTS8	RX8-
62	RX8	RX8+

GNDn	Isolated ground for the corresponding serial port "n"
TXn/**RX**n	RS-232: Transmit/Receive, port n
RTSn/**CTS**n	RS-232: Request to Send/Clear to Send
TXn+/**TX**n-	CSDB/RS-485/422: Transmit pair, port n
RXn+/**RX**n-	CSDB/RS-485/422: Receive pair, port n
-	no internal connection