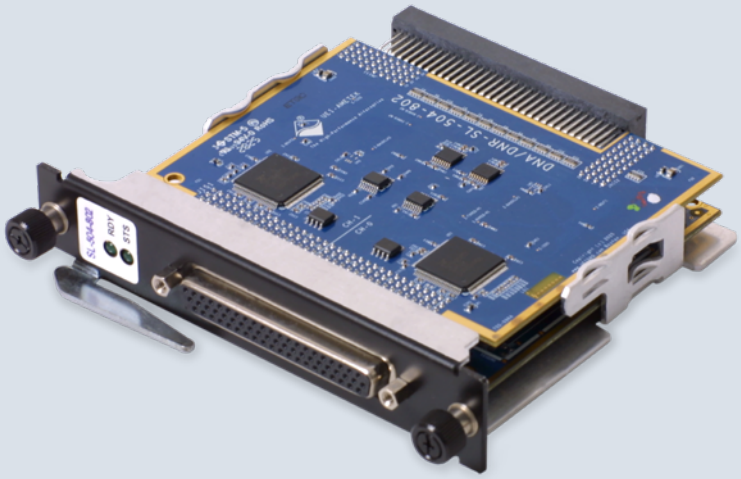
United Electronic Industries / AMETEK

DNx-SL-504-802

2-Port SDLC / HDLC Serial Interface

- **DNA/DNR/DNF-SL-504-802 for use in Cube, RACKtangle® and FLATRACK™ I/O chassis**
- **2 independently configurable ports with programmable termination**
- **Each port software-configurable as RS-232 or RS-485/422/423**
- **Maximum speed of physical layer 230 kBaud for RS-232 and 4 Mbaud for RS-485/422**
- **HDLC/SDLC protocol support**
- **TX/RX Synchronization signal on each channel**
- **350 V port-to-port isolation; 15 kV ESD**
- **Fully compatible with SL-504 software API and signaling**



GENERAL DESCRIPTION

The DNA/DNR/DNF-SL-504-802 are 2-port serial communications interfaces for Cube/RACKtangle/FLATRACK I/O chassis respectively. Each port is independently configurable as RS-232, RS-485, RS-422/423. Each port is fully isolated from the other three ports as well as from the Cube or RACKtangle chassis. The board is an ideal interface to a wide variety of serial based data acquisition and control interfaces as well as general purpose serial I/O.

The DNx-SL-504-802 is based on the Zilog Z16C32 serial controller chip and supports HDLC and SDLC protocols. The HDLC/SDLC interface provides full access to the serial frames. User code can then determine how to handle retry or protocol corrections. The RS-485/422 implementation provides transmit and receive data, synch and clock interfaces. The maximum transfer rate in RS-485/422 and RS-232 modes are 4 MBaud and 230 kBaud respectively.

The following section provides a bit more detail on the various modes supported and how they are implemented and accessed.

HDLC

a. Frame data programming—i.e. address and control fields as well as flow control and sequence numbering are at the user discretion—no layer 3 protocol support

b. Frame size for up to 4096 bytes (0x7E flags—data—0x7E flag)

c. Received frames can be filtered by address and/or broadcast address

d. Transmit frames can have FCS field with CRC16 or CRC32 populated automatically (CRC type is selectable), receive frames are checked against received CRC

e. Frame statistics is accumulated and available (number of success/failures/ aborted/received/transmitted frames, overruns/underruns)

f. No flow control implemented

g. Preamble length and preamble is selectable: 16, 32 or 64 bits; all zeroes, all flags, interleaved 1 and 0s or all 1s

h. On underrun sends 7/15 bit abort code, optionally CRC and flag to close the frame normally

i. An idle mode transmitter can stream continuous flags, 0/1s, marks/spaces or alternate them

j. Frame size is always a multiple of 8-bit bytes

INTERFACE MODES:

a. RS-232, RS-485, RS-422/423 w/termination

b. Encoding: NRZ and inverted, NRZI mark or space, biphase mark or space, biphase-level or differential

c. Synchronous modes (in synchronous both data and clock lines are used)

d. Baud rate: RS-232 up to 230k, balanced up to 4Mbit/s

e. Use automatically/ignore/CTS and DCD lines

f. Receive/transmit clocks can be recovered from DPLL or taken from RxC or TxC line (proper encoding mode must be used).

The DNA/DNR-SL-504-802 is compatible with RS-422 point to point or RS-485 network applications. The ports are based on the advanced drivers and provide a wide variety of I/O configurations.

Software is included, providing a comprehensive, yet easy-to-use API that supports all popular operating systems, including Windows, Linux, and most real-time operating systems—such as QNX, VXworks, and more. Additionally, the UEIDAQ Framework—an even higher level driver—supplies complete support for those creating applications in many popular Windows programming languages, as well as data acquisition software packages such as LabVIEW and MATLAB/Simulink.

The board is compatible wirth SL-504 software, signaling and pinout, except for the number of channels. Pins for Channels 0 and 3 are not connected.

TECHNICAL SPECIFICATIONS

Port Specifications	
Number ports	2, independently configurable
UART type	Zilog Z16C32
Interface types	RS-232, RS-422/423, RS-485
Protocols	HDLC, SDLC
FIFOs	32byte, input and output (per port)
Baud rate generator	DPLL
RS-232 specifications	
RS-232 Synchronous	230 kBaud
RS-232 Signals	Tx, TxCLK Out, Rx, RxCLK In, CTS, Sync, DCD
RS-485/422 specifications	
RS-485/422 Synchronous	4 MBaud
RS-485/422 Signals	Tx+, Tx-, TxCLK+, TxCLK-, RX+, RX-, RxCLK+, RxCLK- CTS+. CTS-, DCD+, DCD-
General Specifications	
Isolation	350 V port to port
ESD protection	15 kV
Power Consumption	2-5W (RS-485 mode with max current drive)
Operating Temperature	Tested -40 to +75 °C
Operating Humidity	0–5%, non-condensing
Vibration	
(IEC 60068-2-6)	5 g, 10–500 Hz, 5 g, sinusoidal
(IEC 60068-2-64)	5 g (rms), 10-500 Hz, broad-band random
Shock	
(IEC 60068-2-27)	100 g, 3 ms half sine, 18 shocks @ 6 orientations
	30 g, 11 ms half sine, 18 shocks @ 6 orientations
MTBF	350,000 hours
Altitude	120,000 FT

BLOCK DIAGRAM

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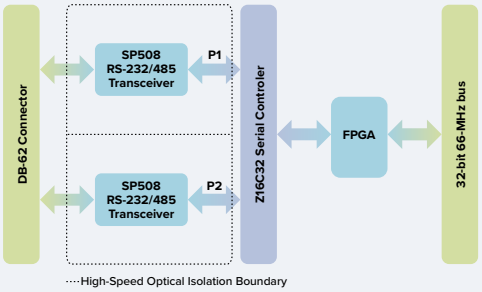
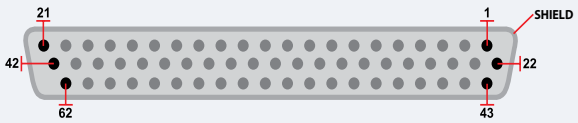


CONNECTION DIAGRAM



Notes:

1. No user connections to the Reserved pins are allowed.

Pin #	Signal	Pin #	Signal	Pin #	Signal	Pin #	Signal	Pin #	Signal	Pin #	Signal	Pin #	Signal
1	RESERVED01	10	TxD(b)-1	19	N/C	28	RxC(a)-1	37	CTS(a)-2	46	RESERVED11	55	GND-CH2
2	N/C	11	RESERVED33	20	N/C	29	TxC(a)-1	38	N/C	47	N/C	56	DCD(a)-2
3	N/C	12	TxC(b)-2	21	N/C	30	RxD(a)-1	39	N/C	48	RESERVED17	57	CTS(b)-2
4	N/C	13	DCD(b)-2	22	N/C	31	TxD(a)-1	40	N/C	49	DCD(b)-1	58	RESERVED49
5	N/C	14	RxD(b)-2	23	N/C	32	CTS(b)-1	41	N/C	50	DCD(a)-1	59	DCD(b)-3
6	GND-CH1	15	TxD(b)-2	24	N/C	33	TxC(a)-2	42	N/C	51	GND-CH1	60	RESERVED55
7	RxC(b)-1	16	N/C	25	N/C	34	GND-CH2	43	N/C	52	CTS(a)-1	61	N/C
8	TxC(b)-1	17	N/C	26	N/C	35	RxD(a)-2	44	N/C	53	RxC(a)-2	62	N/C
9	RxD(b)-1	18	N/C	27	N/C	36	TxD(a)-2	45	N/C	54	RxC(b)-2		

CONNECTION OPTIONS

Part Number	Description
DNA-STP-62	Break-out panel that breaks each serial port out to screw terminals
DNA-CBL-62	62 conductor cable connects directly to OEM equipment or to the DNA-STP-62 screw terminal panel
DNx-SL-504-802	2-Port SDLC / HDLC Synchronous Serial Interface board
Extended Warranty	Option to purchase UEI's extended 10 year warranty is available