



Mil-Std-1553 Products NHI-1500 Series +15V Dual Transceivers

Features/Applications:

- Very Low Standby Power
- Low Thermal Resistance
- Totally Isolated Channels
- Short Circuit Proof
- Superior Noise Performance
- Screened to Mil-PRF-38534

Description:

The NHI +15V dual transceivers are available in 1.900" x .780", 36 pin plug-in and flatpack packages.

Each receiver converts the 1553 bus bi-phase data to complementary RX and RX_L TTL digital outputs for use by the manchester decoder. The device provides independent receiver enables for each channel. Devices are available with receiver outputs normally HIGH or LOW during standby mode for compatibility with industry standard decoders.

The transmitters will output bi-phase manchester to the coupling transformer when the TX and TX_L inputs are driven by complementary TTL digital data. The device provides an independent transmitter inhibit TXINH for each channel.

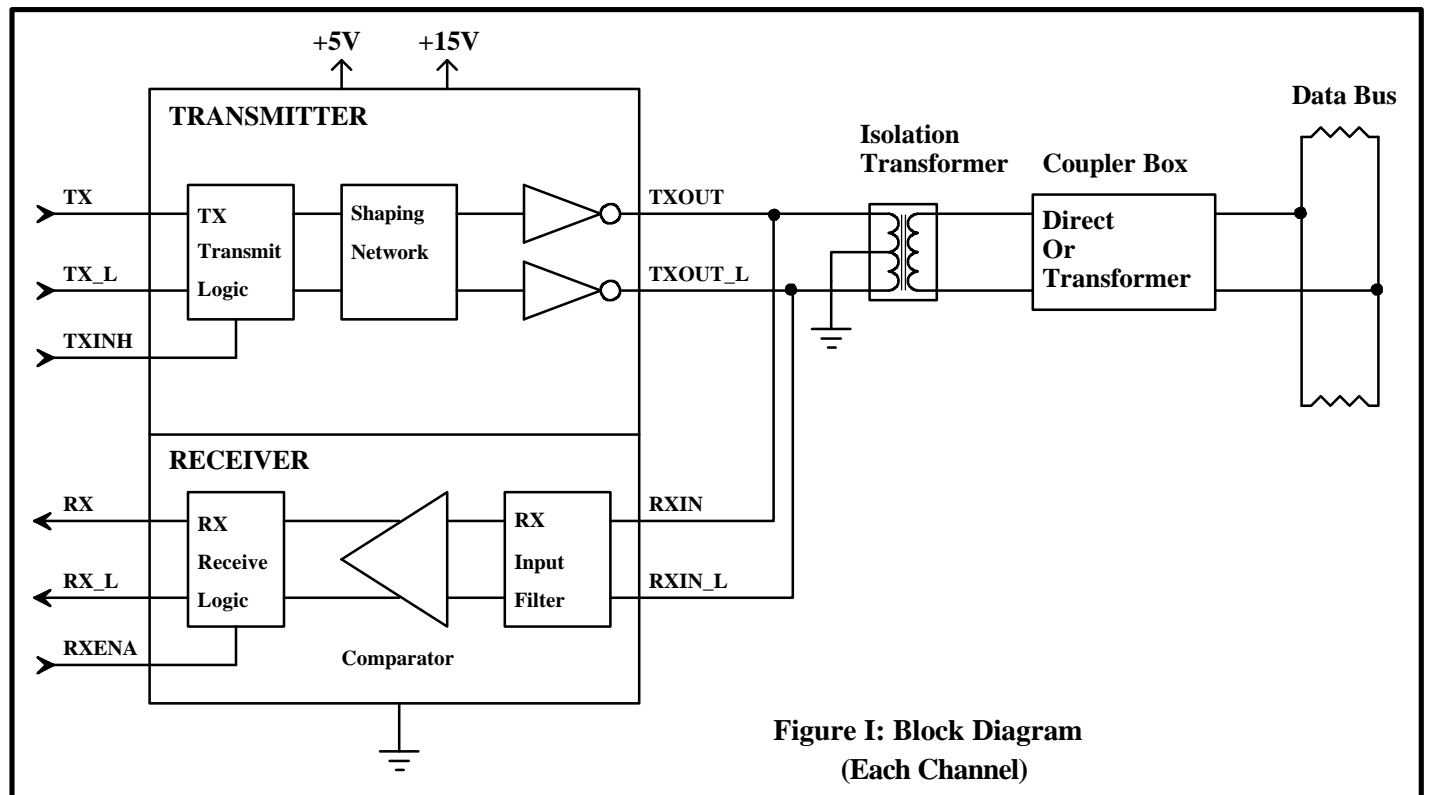


Figure I: Block Diagram
(Each Channel)

NHI-1500 Series

TABLE I: Electrical Specifications

Parameter	Condition	Symbol	Min	Typ	Max	Units
POWER SUPPLY REQUIREMENTS		V _{cc}	4.7		5.5	V
		+V	14.25		15.75	V
V_{cc} SUPPLY CURRENT	V _{cc} =5.0V, +V=15.0V, total hybrid	I _{cc}			50	mA
+V SUPPLY CURRENT	V _{cc} =5.0V, +V=15.0V, each channel, not transmitting	+I			25	mA
	V _{cc} =5.0V, +V=15.0V, One channel @ 100% duty cycle	+I _{100%}			210	mA
POWER DISSIPATION	V _{cc} =5.0V, +V=15.0V, Transmit one channel @ 100% duty cycle	P _d			0.96	W
OPERATING TEMPERATURES	Junction	T _j	-55		160	°C
	Case	T _c	-55		125	°C
	Storage	T _s	-65		150	°C
THERMAL IMPEDANCE	Junction to Case	θ _{jc}			8.8	°C/W
LOGIC I/O						
RXENA_A, TXA, TXA_L, TXINH_A, RXENA_B, TXB, TXB_L, TXINH_B	V _{cc} = 5.5V, Vil= 0.0V	I _{il}			-0.8	mA
	V _{cc} = 4.5V, Vih= 2.7V	I _{ih}			40	uA
RXA, RXA_L, RXB, RXB_L	V _{cc} = 5.5V, Iol= -8 mA	V _{ol}			0.5	V
	V _{cc} = 4.5V, Ioh= 400 uA	V _{oh}	2.5			V
RECEIVER						
Input Resistance	1 MHz sine wave	R _{in}	7			k Ω
Input Capacitance	1 MHz sine wave	C _{in}			5	pF
Common Mode Rejection Ratio		CMRR	40			dB
Threshold Voltage	Differential	V _{th}	0.56		1.0	V _{pp}
Input Level	Differential	V _{in}	40			V _{pp}
Receiver Delay	Zero Crossing on bus to RX or RX_L	t _{RD}			400	nS
TRANSMITTER						
Output Voltage	Across 35 W load TXVOC = +V = 12.0V	V _{OUT}	6		9	V _{pp}
Rise/Fall Time	10% to 90% of peak to peak output	t _R , t _F	100	150	300	nS
Transmitter Delay	TX or TX_L edge to bus zero crossing	t _{TD}			250	nS
Output Dynamic Offset Voltage	Across 35 W load	V _{dyn}	-90		90	mV
Output Noise	Differential	V _{npp}			10	mV _{pp}
Output Resistance	Differential, not transmitting	R _{out}	10			kΩ

NHI-1500 Series

36 Pin Package Functions

Pin#	Function	Pin#	Function
1	TXOUT_A	36	TXA_L
2	TXOUT_A_L	35	TXA
3	GND_A	34	TXINH_A
4	NC	33	+5V_A
5	RXA	32	NC / -15V_A
6	RXENA_A	31	GND_A
7	GND_A	30	RXIN_A_L
8	RXA_L	29	RXIN_A
9	NC	28	+15V_A
10	TXOUT_B	27	TXB_L
11	TXOUT_B_L	26	TXB
12	GND_B	25	TXINH_B
13	NC	24	+5V_B
14	RXB	23	NC / -15V_B
15	RXENA_B	22	GND_B
16	GND_B	21	RXIN_B_L
17	RXB_L	20	RXIN_B
18	NC	19	+15V_B

Transformer Requirements:

The NHI-1500 requires a transformer with a turns ratio of 1.40:1.00 for Direct Coupling, and a turns ratio of 2.00:1.00 for Transformer Coupling, and a turns ratio of 2.00:1.00 for Transformer Coupling to the Mil-Std-1553 Bus. Please contact Beta Transformer (www.bttc-beta.com) for a recommended transformer. The center tap on the transceiver side of the isolation transformer must be grounded.

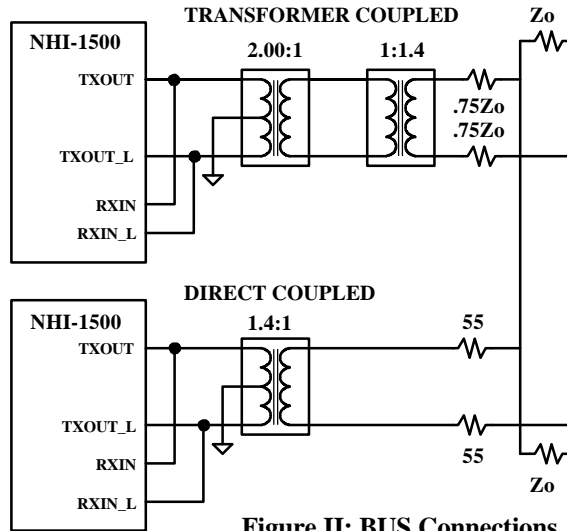
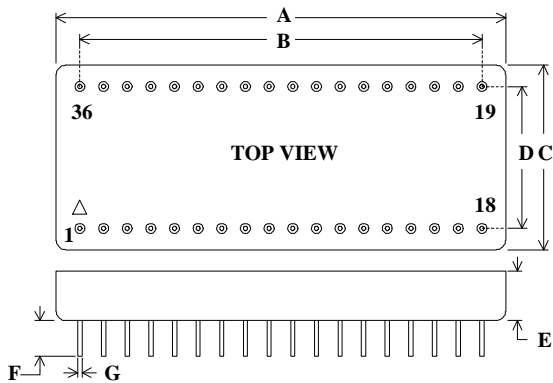
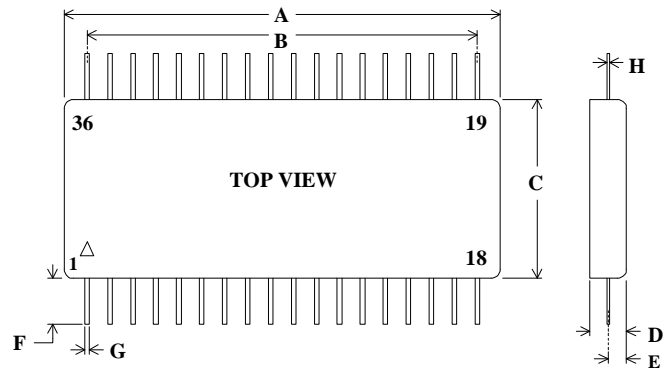


Figure II: BUS Connections



36 Pin Plug-In Package Detail

DIM	TYP (inches)	TOL (+/- inches)
A	1.900 SQ	0.010
B	17 EQ SP @	0.100 = 1.700
C	0.780	0.010
D	0.600	0.010
E	0.185	0.010
F	0.250	MIN
G	0.018	0.002

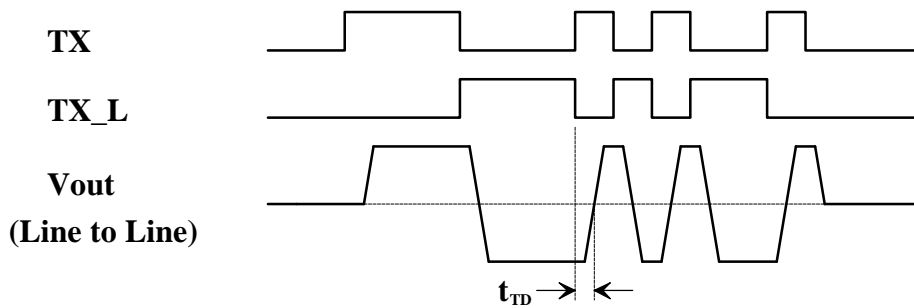


36 Pin Flatpack Package Detail

DIM	TYP (inches)	TOL (+/- inches)
A	1.900 SQ	0.010
B	17 EQ SP @	0.100 = 1.700
C	0.780	0.010
D	0.185	0.012
E	0.080	0.010
F	0.500	MIN
G	0.018	0.002
H	0.010	0.002

NHI-1500 Series

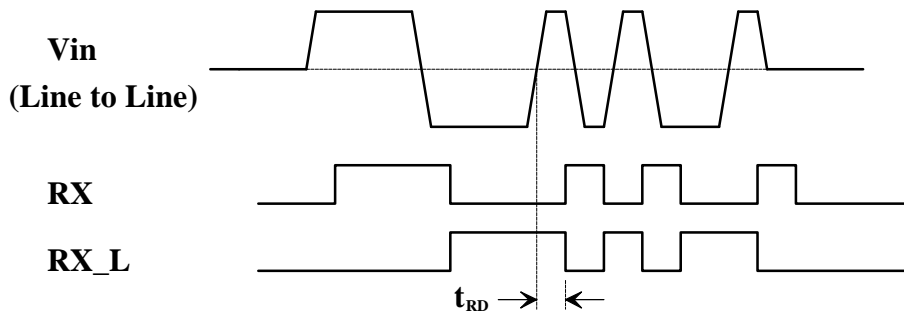
Transmit Waveforms



Transmitter Operation:

A high level input on TXINH will inhibit the transmitter outputs. If the TX & TX_L transmitter inputs are both high or both low, the transmitter is also inhibited.

Receive Waveforms



Receiver Operation:

A low level input on RXENA will disable the receiver outputs RX & RX_L regardless of bus activity.

The receiver output compatibility may be specified as logic 0 or logic 1 when in standby mode.

** See Ordering Information

Ordering Information:

NHI-1500 FP / 883

Reliability Grade

883 = Fully Compliant with Mil-Std-883

M = Military, -55 to +125 °C

Blank = Industrial, -40 to +85 °C

Package Style

Blank = Plug-In

FP = Flatpack

GW = NHI Standard Gull Wing Lead Formed Surface Mount Flatpack

Decoder Compatibility

00 = RX & RX_L, Standby = Logic 0

01 = RX & RX_L, Standby = Logic 1

** SMD Listing: DESC Drawing# 5962-87579 for NHI-1500

DESC Drawing# 5962-89447 for NHI-1501

See QML-38534 for NHI's Manufacturer Qualification Under Mil-PRF-38534



DATA DEVICE CORPORATION
REGISTERED TO:
ISO 9001:2008, AS9100C:2009-01
EN9100:2009, JIS Q9100:2009
FILE NO. 10001296 ASH09



The first choice for more than 50 years—DDC

DDC is the world leader in the design and manufacture of high reliability data interface products, motion control, and solid-state power controllers for aerospace, defense, and industrial automation.

Inside the U.S. - Call Toll-Free 1-800-DDC-5757

Headquarters and Main Plant

105 Wilbur Place, Bohemia, NY 11716-2426
Tel: (631) 567-5600 Fax: (631) 567-7358
Toll-Free, Customer Service: 1-800-DDC-5757

Web site: www.ddc-web.com



Data Device Corporation

Outside the U.S. - Call 1-631-567-5700

United Kingdom: DDC U.K., LTD

Mill Reef House, 9-14 Cheap Street, Newbury,
Berkshire RG14 5DD, England
Tel: +44 1635 811140 Fax: +44 1635 32264

France: DDC Electronique

10 Rue Carle-Herbert
92400 Courbevoie France
Tel: +33-1-41-16-3424 Fax: +33-1-41-16-3425

Germany: DDC Elektronik GmbH

Triebstrasse 3, D-80993 München, Germany
Tel: +49 (0) 89-15 00 12-11
Fax: +49 (0) 89-15 00 12-22

Japan: DDC Electronics K.K.

Dai-ichi Magami Bldg, 8F, 1-5, Koraku 1-chome,
Bunkyo-ku, Tokyo 112-0004, Japan
Tel: 81-3-3814-7688 Fax: 81-3-3814-7689
Web site: www.ddcjapan.co.jp

Asia: Data Device Corporation - RO Registered in Singapore

Blk-327 Hougang Ave 5 #05-164
Singapore 530327
Tel: +65 6489 4801