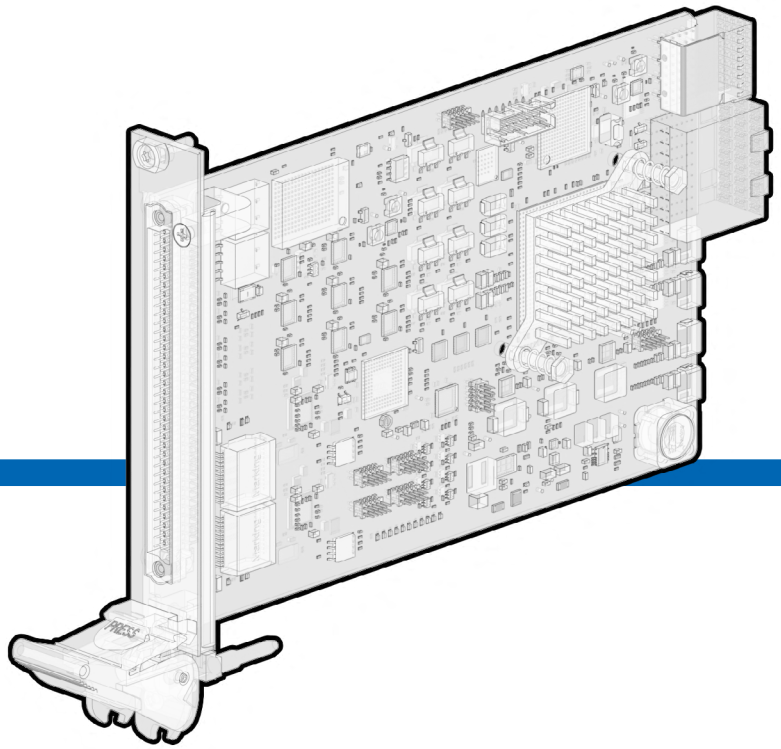
Datasheet



DE149900

PXIe Multiprotocol Communication Module

DEICO

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1. Description

DE149900 PXIe Multiprotocol Communication Module is a Gen3 x4 PXIe module which has single channel dual redundant MIL-STD-1553 interface, 8-channel RS-232/RS-422/RS-485 serial interface, 2-channel 2.5 Gb/s ethernet interface, 7-channel open/GND discrete outputs, 1-channel 28 V/GND discrete input, 8-channel 28 V/GND discrete outputs and 1-channel external trigger input/output.

1.1. Key Features

- PCIe Gen3 x4 communication interface
- Single-channel, dual-redundant MIL-STD-1553 (transformer-coupled) interface
- 8-channel programmable RS-232/RS-422/RS-485 interfaces
- 2-channel 2.5 Gb/s Ethernet interfaces
- 7-channel open/GND discrete outputs
- 1-channel 28 V/GND discrete input
- 8-channel 28 V/open discrete outputs
- 1-channel external trigger input/output
- Optional conformal coating available

DE149900 is compatible with

- MIL-STD-810H Method 501.7 Procedure II,
- MIL-STD-810H Method 502.7 Procedure II,
- MIL-STD-648D Appendix J,
- MIL-STD-810H Method 516.8 Procedure II,
- MIL-STD-810H Method 514.8 Procedure I Category 4,
- MIL-STD-810H Method 514.8 Procedure I Category 10,
- MIL-STD-810H Method 514.8 Procedure I Category 8,
- MIL-STD-810H Method 514.8 Procedure I Category 11,
- MIL-STD-331C,
- MIL-STD-461F

standards.

Typical Applications

- Lab usage
- Modular test systems
- Automated Test Equipment (ATE)
- Rugged test equipment

2. Hardware Overview

2.1. Functional Block Diagram

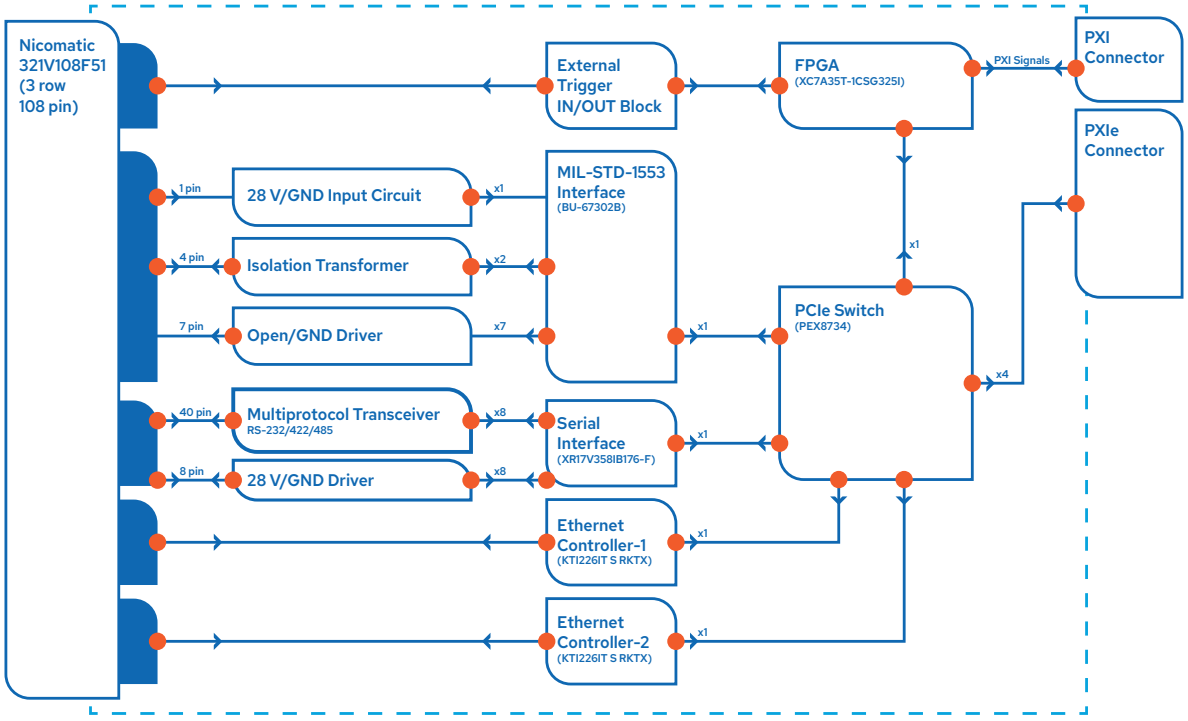


Figure 1: Block Diagram of DE149900 PXIe Multiprotocol Communication Module

2.2. Hardware Specifications

2.2.1. Electrical Specifications

Table 1: Board Electrical Specifications

Specification	Min	Typ	Max	Notes
PCIe Bandwidth	–	4 GB/s	–	Gen3 x4
Supply Current	–	@12 V, 0.6 A @3.3 V, 0.3 A @5 Vaux, 0.06 A	@12 V, 2 A @3.3 V, 2.5 A @5 Vaux, 0.1 A	–

2.2.2. MIL-STD-1553 Interface

Table 2: MIL-STD-1553 Interface Specifications

Specification	Min	Typ	Max	Notes
Number of Channel	–	1	–	Dual redundant (Bus A, Bus B)
Signal Coupling	–	Transformed coupled	–	–
ESD Protection	–	±15 kV	–	–

2.2.3. Serial Interface

Table 3: Serial Interface Specifications

Specification	Min	Typ	Max	Notes
Number of Channel	–	8	–	–
Interface	–	RS-232/RS-422/RS-485 programmable	–	–
Data Rate	–	RS-232: 500 kb/s RS-422/RS-485: 20 Mb/s	–	–
Duplex	–	Half/full programmable	–	–
Termination	–	RS-232: 5 kΩ RS-422/RS-485: 120 Ω programmable	–	–
ESD Protection	–	±30 kV	–	–

2.2.4. Ethernet Interface

Table 4: Ethernet Interface Specifications

Specification	Min	Typ	Max	Notes
Number of Channel	–	2	–	–
Data Rate	–	–	2.5 Gb/s	–
ESD Protection	–	±12 kV	–	–

2.2.5. Discrete Interface

Table 5: Discrete Interface Specifications

Specification	Min	Typ	Max	Notes
Number of Channel	–	28 V/GND input: 1 28 V/GND output: 8 Open/GND output: 7	–	–
VIH	14.4 V	–	31.2 V	–
VIL	-12.7 V	–	8.8 V	–
VOH	27.9 V	28 V	28.3 V	–
VOL	–	–	–	Open
Open/GND Output Current	–	–	700 mA	–
28 V/GND Output Current*	–	–	480 mA	Total current for all channel is 480 mA. Each channel can source 480 mA.
ESD Protection	–	±15 kV	–	–

Caution

When all channels are active, the 480 mA limit shall not be exceeded.

**If DISCRETE_VCC is enabled with hardware option, the limit current depends on the source current which the user applied.*

2.2.6. External Trigger IN/OUT

Table 6: External Trigger IN/OUT Specifications

Specification	Min	Typ	Max	Notes
VIH	1.8 V	–	–	–
VIL	–	–	1.1 V	–
Vout	0 V	–	5.5 V	–
ESD Protection	–	±8 kV	–	–
Input/Output Impedance	–	50 Ω	–	–
Output Current	-100 mA	–	100 mA	–

2.2.7. Environmental Specifications

Table 7: Environmental Specifications

Specification	Condition	Value
Operating Humidity	Relative, non-condensing	10% - 95%
Storage Humidity	Relative, non-condensing	5% - 95%
Operating Temperature	–	-20 °C - +44 °C
Storage Temperature	–	-30 °C – +60 °C

3. Software Overview

This device is PXI Express compatible.

4. Signal Connections

4.1. Connector Pinout

Note

The Nicomatic 322S108H01 is recommended as the mating connector.

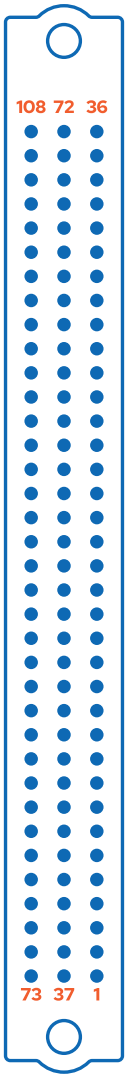


Figure 2: DE149900 PXIe Multiprotocol Communication Module Connector

Table 8: Connector Pin Assignments

Pin	Description	Pin	Description	Pin	Description
1	ETH1_B_P	37	ETH1_A_P	73	EGND
2	ETH1_B_N	38	ETH1_A_N	74	EGND
3	ETH1_D_P	39	ETH1_C_P	75	EGND
4	ETH1_D_N	40	ETH1_C_N	76	EGND
5	EGND	41	EGND	77	EGND
6	EGND	42	EGND	78	EGND
7	EGND	43	EGND	79	EGND
8	ETH2_B_P	44	ETH2_A_P	80	EGND
9	ETH2_B_N	45	ETH2_A_N	81	EGND
10	ETH2_D_P	46	ETH2_C_P	82	EGND
11	ETH2_D_N	47	ETH2_C_N	83	EGND
12	EGND	48	EGND	84	EGND
13	P0_RS485_RX_P P0_RS232_RX	49	P1_RS485_RX_P P1_RS232_RX	85	P2_RS485_RX_P P2_RS232_RX
14	P0_RS485_RX_N	50	P1_RS485_RX_N	86	P2_RS485_RX_N
15	P0_RS485_TX_P P0_RS232_TX	51	P1_RS485_TX_P P1_RS232_TX	87	P2_RS485_TX_P P2_RS232_TX
16	P0_RS485_TX_N	52	P1_RS485_TX_N	88	P2_RS485_TX_N
17	GND	53	GND	89	GND
18	P3_RS485_RX_P P3_RS232_RX	54	P4_RS485_RX_P P4_RS232_RX	90	P5_RS485_RX_P P5_RS232_RX
19	P3_RS485_RX_N	55	P4_RS485_RX_N	91	P5_RS485_RX_N
20	P3_RS485_TX_P P3_RS232_TX	56	P4_RS485_TX_P P4_RS232_TX	92	P5_RS485_TX_P P5_RS232_TX
21	P3_RS485_TX_N	57	P4_RS485_TX_N	93	P5_RS485_TX_N
22	GND	58	GND	94	GND
23	P6_RS485_RX_P P6_RS232_RX	59	P7_RS485_RX_P P7_RS232_RX	95	BU_28V/GND_IN
24	P6_RS485_RX_N	60	P7_RS485_RX_N	96	BU_OPEN/GND_OUT1
25	P6_RS485_TX_P P6_RS232_TX	61	P7_RS485_TX_P P7_RS232_TX	97	BU_OPEN/GND_OUT2
26	P6_RS485_TX_N	62	P7_RS485_TX_N	98	BU_OPEN/GND_OUT3
27	GND	63	GND	99	BU_OPEN/GND_OUT4
28	ML_28/GND_OUT1	64	ML_28/GND_OUT2	100	BU_OPEN/GND_OUT5
29	ML_28/GND_OUT3	65	ML_28/GND_OUT4	101	BU_OPEN/GND_OUT6
30	ML_28/GND_OUT5	66	ML_28/GND_OUT6	102	BU_OPEN/GND_OUT7
31	ML_28/GND_OUT7	67	ML_28/GND_OUT8	103	DISCRETE_VCC* (not implemented)
32	RSV	68	RSV	104	DISCRETE_VCC* (not implemented)
33	1553_BUSA_N	69	GND	105	GND
34	1553_BUSA_P	70	GND	106	EXT_TRIG_IO
35	1553_BUSB_N	71	GND	107	GND
36	1553_BUSB_P	72	GND	108	RSV

** VCC of discrete I/Os is an internal 28 V by default. It can be changed to external DISCRETE_VCC by changing optional hardware if necessary.*

4.2. Discrete Interface Control Connections

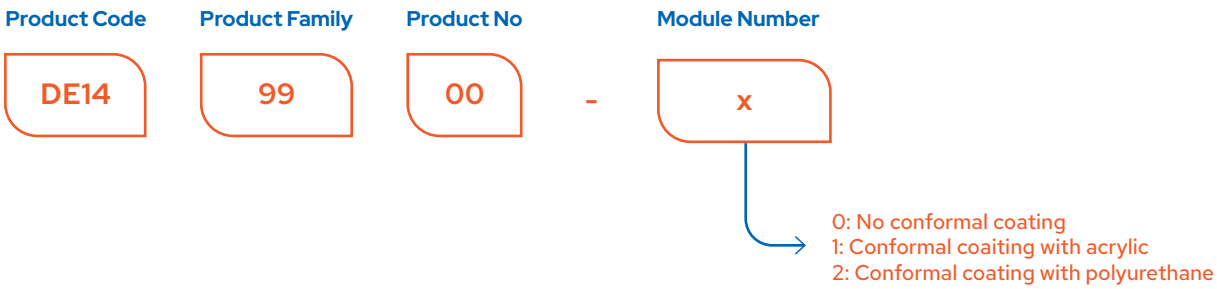
Table 9: Discrete Interface Control Connections

Channel	Control Device	Pin	Logic	Notes
ML_28/GND_OUT1	XR17V358IB176-F	MPIO8	H –> 28 V L –> Open	Set pins as output
ML_28/GND_OUT2		MPIO9		
ML_28/GND_OUT3		MPIO10		
ML_28/GND_OUT4		MPIO11		
ML_28/GND_OUT5		MPIO12		
ML_28/GND_OUT6		MPIO13		
ML_28/GND_OUT7		MPIO14		
ML_28/GND_OUT8		MPIO15		
BU_28V/GND_IN	BU-67302B0C0R-202	DISC_IO_0	28 V –> H GND –> L	Set pin as input
BU_OPEN/GND_OUT1		DISC_IO_1	H –> GND L –> Open	Set pins as output
BU_OPEN/GND_OUT2		DISC_IO_2		
BU_OPEN/GND_OUT3		DISC_IO_3		
BU_OPEN/GND_OUT4		DISC_IO_4		
BU_OPEN/GND_OUT5		DISC_IO_5		
BU_OPEN/GND_OUT6		DISC_IO_6		
BU_OPEN/GND_OUT7		DISC_IO_7		

5. Ordering Information

Table 10: Ordering Information Table

Product Code	Description
DE149900-0	PXIe Multiprotocol Communication Module
DE149900-1	PXIe Multiprotocol Communication Module Conf ACR
DE149900-2	PXIe Multiprotocol Communication Module Conf PU



6. Safety Guidelines



The DE149900 shall not be operated in any manner not specified in this document. Misuse of the product may result in a hazard. Safety protection features may be compromised if the product is damaged. In the event of damage, the product shall be returned for repair.

7. Compatibility Guidelines

This product has been tested and found to comply with the applicable regulatory requirements and limits for electromagnetic compatibility (EMC). These requirements and limits are intended to provide reasonable protection against harmful interference when the product is operated within the specified electromagnetic environment.

This product is intended for use in industrial locations. However, harmful interference may occur in certain installations if the product is connected to peripheral devices or test objects, or if it is used in residential or commercial areas. To minimize interference with radio and television reception and to prevent unacceptable performance degradation, the product shall be installed and operated in strict accordance with the instructions specified in the product documentation.

Any changes or modifications to the product not expressly approved by DEICO may void the user's authority to operate the equipment under local regulatory rules.



To ensure the specified EMC performance, the product shall be operated only with shielded cables and accessories.



To ensure the specified EMC performance, the length of any cable attached to the front connectors shall not exceed 3 m (10 ft.).