PXI-7931

4x8 2-Wire Matrix Module



Introduction

ADLINK's PXI-7931 is a matrix module with 32 cross-point 2-wire relays (DPDT, 2 Form C). The default configuration of the PXI-7931 is a 4-group 2x4 2-wire matrix. With the terminal board, TB-6231-01, users could flexibly choose one of the configurations: one 4x8, two 4x4, one 2x16, two 2x8 and four 2x4. Any contact of the PXI-7931 can connect to other contacts, individually or in combination. The PXI-7931 matrix module simplifies the wiring and makes it easy to change the internal connection path.

The contact position of the relays can be changed either by direct software commands or by following the instructions previously stored in the onboard scan list. The scan list advances upon the trigger from external measurement devices, such as a DMM. The scan list could also advance when the scan-delay timer expires. In the PXI-7931 the PXI trigger functions are supported and software programmable. Multiple modules can therefore be synchronized without additional field wiring.

Features

- **PXI specifications Rev. 2.2 compliant**
- **3U Eurocard form factor, CompactPCI compliant (PICMG 2.0 R3.0)**
- **PICMG 2.1 R2.0 CompactPCI Hot Swap specifications compliant**
- **Configuration determined by terminal board**
- **Up to 32 cross-point DPDT (2 Form C) non-latching relays**
- **Contact rating**
  - **2 A switching, 2 A carrying**
  - **220 VDC, 125 VAC**
- **Onboard 1 k-sample scan list for deterministic scanning**
- **Handshaking signals for external instruments synchronization**
- **Design for safety-critical applications**
- **Hardware emergency shutdown with programmable relay safety status**
- **Watchdog timer from 1 ms to 420 s with programmable relay safety status**
- **8 auxiliary 3.3 V/TTL digital inputs/outputs with 5 V tolerance**
- **Multiple modules synchronization through**
- **PXI trigger bus and star trigger**
- **Versatile matrix configuration with terminal board**
- **Fully software programmable**

Operating Systems

- Windows 7/10 x64/x86

Driver and SDK

- VB/VC++
- LabVIEW

Specifications

Source Wire	Multiplexer
2-wire	One 4x8, Two 4x4, One 2x16, Two 2x8, Four 2x4

Relay Characteristics

- Number of cross points: 32 (2-wire)
- Relay type: DPDT (2 Form C), non-latching
- Switching capacity
  - · Max. switching current: 2 A
  - · Max. switching voltage: 220 VDC, 125 VAC
  - · Max. switching power: 60 W
  - · Max. carrying current: 2 A
- Contact resistance: 100 mΩ max.
- Relay set/reset time
  - · Operate time: 4 ms max.
  - · Release time: 4 ms max.
- Expected life
  - · Mechanical life: 10^8 operations min.
  - · Electrical life : $5x10^5$ operations min. (1 A @ 30 VDC, resistive load)
- Data transfer: programmed I/O

Auxiliary Digital I/O

- Numbers of channel: 8 inputs/outputs
- Compatibility: 3.3 V/TTL (5 V tolerant)

Handshaking Signals

- Programmable polarity
- Logic level: 3.3 V/TTL (5 V tolerant)
- TRG_IN source: AUX1, PXI trigger bus, PXI star trigger input
- S_ADV destination: AUX0, PXI trigger bus

Safety Functions

- Emergency shutdown
  - · Logic level: 3.3 V/TTL (5 V tolerant)
  - · Active: logic low
- Watchdog timer
  - · Base clock available: 10 MHz, fixed
  - · Counter width: 32-bit

General Specifications

- I/O Connector: 62-pin D-sub male
- Operating temperature: 0°C to 55°C
- Storage temperature: -20°C to 70°C
- Relative humidity: 5% to 85% non-condensing
- Power requirements: (when all relays are ON)

Device	+5 V	+3.3 V
PXI-7931	1 A	400 mA

- Dimensions
  160 mm x 100 mm (not including connectors)

Certifications

- EMC/EMI: CE, FCC Class A

Ordering Information

■ **PXI-7931**
4x8 2-Wire Matrix Module

* Failure rate indicates the lower limit of switching capacity of a relay contact at a reliability level of 60%

Pin Assignment

2x4x4 configuration

	22. C8+	
43. C0+	23. C8-	1. R0+
44. C0-	24. C9+	2. R0-
45. C1+	25. C9-	3. R1+
46. C1-	26. C10+	4. R1-
47. C2+	27. C10-	5. R2+
48. C2-	28. C11+	6. R2-
49. C3+	29. C11-	7. R3+
50. C3-	30. C12+	8. R3-
51. C4+	31. C12-	9. R4+
52. C4-	32. C13+	10. R4-
53. C5+	33. C13-	11. R5+
54. C5-	34. C14+	12. R5-
55. C6+	35. C14-	13. R6+
56. C6-	36. C15+	14. R6-
57. C7+	37. C15-	15. R7+
58. C7-	38. N/C	16. R7-
59. N/C	39. N/C	17. N/C
60. AUX3	40. AUX4	18. AUX2/SHDNn
61. AUX6	41. +5Vout	19. AUX5
62. AUX7	42. AUX1/TRG_IN	20. GND
		21. AUX0/S_ADV

Terminal Boards & Cables

■ TB-6231-01

Multiplexer Switch Terminal Board with One 62-Pin D-Sub Female Connector

■ ACL-10262

62-pin D-sub male/female cable, 1 M

(For more information about mating cables, please refer to P4-28.)

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