PXI-7901

16-CH General-Purpose SPDT Relay Module

Introduction

ADLINK's PXI-7901 is a general-purpose (GP) switch module implementing 16-CH independent single-pole double-throw (SPDT) relays (1 Form C). The PXI-7901 can connect one input to one output and be used as signal switching and routing for measurement systems or ATE. Thanks to its high switching capacity, PXI-7901 can also be used to turn on or turn off devices such as motors, fans, heaters, and lights.

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-7901, 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
- 16-CH SPDT (1 Form C) non-latching relays
- Switching capacity
  - 3 A switching, 3 A carrying
  - 220 V_{DC}, 250 V_{AC}
- 125 operations per second for full settling
- 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
- Fully software programmable

- **Operating Systems**
  - Windows 7/10 x64/x86

- **Driver and SDK**
  - VB/VC++
  - LabVIEW

Specifications

Relay Characteristics

- Number of channels: 16
- Relay type: SPDT (1 Form C), non-latching
- Switching capacity
  - Max. switching current: 3 A
  - Max. switching voltage: 220 V_{DC}, 250 V_{AC}
  - Max. switching power: 50 VA, 60 W
  - Max. carrying current: 3 A
- Contact resistance: 150 mΩ max.
- Relay set/reset time
  - Operate time: 5 ms max.
  - Release time: 5 ms max.
  - Bounce time: 3 ms max.
- Expected life
  - Mechanical life: 10^8 operations min.
  - Electrical life: 10^5 operations min. (0.4 A @ 125 V_{AC}, 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-7901	700 mA	400 mA

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

Certifications

- EMC/EMI: CE, FCC Class A

Ordering Information

- **PXI-7901**
  16-CH General-Purpose SPDT Relay Module

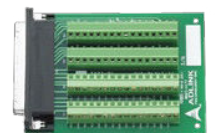 * Failure rate indicates the lower limit of switching capacity of a relay contact at a reliability level of 60%

Terminal Boards & Cables

- **TB-6201-01**
  General-Purpose Switch Terminal Board with one 62-Pin D-Sub Female Connector

- **ACL-10262**
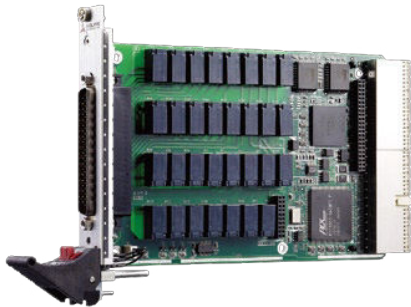 62-pin D-sub male/female cable, 1 M

Terminal board TB-6201-01

Pin Assignment

CN1

	22. COM0	
43. NO0	23. COM1	1. NC0
44. NO1	24. COM2	2. NC1
45. NO2	25. COM3	3. NC2
46. NO3	26. COM4	4. NC3
47. NO4	27. COM5	5. NC4
48. NO5	28. COM6	6. NC5
49. NO6	29. COM7	7. NC6
50. NO7	30. COM8	8. NC7
51. NO8	31. COM9	9. NC8
52. NO	32. COM10	10. NC9
53. NO10	33. COM11	11. NC10
54. NO11	34. COM12	12. NC11
55. NO12	35. COM13	13. NC12
56. NO13	36. COM14	14. NC13
57. NO14	37. COM15	15. NC14
58. NO15	38. N/C	16. NC15
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

PXI-7921
24-CH 2-Wire Multiplexer Module

Introduction

ADLINK's PXI-7921 is a relay multiplexer which consists of 24 2-wire relays (DPDT, 2 Form C). As a multiplexer, the PXI-7921 provides 48x1 1-wire, 24x1 2-wire and 12x1 4-wire configurations. Users could choose one of the configurations by software. The PXI-7921 typically connects one instrument, such as a DMM, a digitizer or a signal source, with many points which need measurement or excitation.

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-7921, 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
- 24-CH DPDT (2 Form C) non-latching relays
- Switching capacity
  - 2 A switching, 2 A carrying
  - 220 V_{DC}, 125 V_{AC}
- 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
- Multiple modules synchronization through PXI trigger bus and star trigger
- Fully software programmable

- **Operating Systems**
  - Windows 7/10 x64/x86

- **Driver and SDK**
  - VB/VC++
  - LabVIEW

Specifications

Source Wire	Multiplexer
1-wire	One 48x1
2-wire	One 24x1, Two 12x1, Four 6x1
4-wire	One 12x1

Relay Characteristics

- Number of channels: 24 (2-wire)
- Relay type: DPDT (2 Form C), non-latching
- Switching capacity
  - Max. switching current: 2 A
  - Max. switching voltage: 220 V_{DC}, 125 V_{AC}
  - 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 V_{DC}, resistive load)
- Data transfer: programmed I/O

Handshaking Signals

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

Safety Functions

- Emergency shutdown
  - Logic level: 3.3 V/TTL (5 V tolerant)
  - Active with 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-7921	1 A	400 mA

Certifications

- EMC/EMI: CE, FCC Class A

Ordering Information

- **PXI-7921**
  24-CH 2-Wire Multiplexer Module

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

Terminal Boards & Cables

- **TB-6221-01**
  Multiplexer Switch Terminal Board with One 62-Pin D-Sub Female Connector

- **ACL-10262**
  62-pin D-sub male/female cable, 1 M

Pin Assignment

CN1

	22. +5Vout	
43. COM2+	23. CH8+	1. CH0+
44. COM2-	24. CH8-	2. CH0-
45. COM3+	25. CH9+	3. CH1+
46. COM3-	26. CH9-	4. CH1-
47. CH18+	27. CH10+	5. CH2+
48. CH18-	28. CH10-	6. CH2-
49. CH19+	29. CH11+	7. CH3+
50. CH19-	30. CH11-	8. CH3-
51. CH20+	31. CH12+	9. CH4+
52. CH20-	32. CH12-	10. CH4-
53. CH21+	33. CH13+	11. CH5+
54. CH21-	34. CH13-	12. CH5-
55. CH22+	35. CH14+	13. COM0+
56. CH22-	36. CH14-	14. COM0-
57. CH23+	37. CH15+	15. COM1+
58. CH23-	38. CH15-	16. COM1-
59. 1WireIoRef	39. CH16+	17. CH6+
60. TRG_IN	40. CH16-	18. CH6-
61. S_ADV	41. CH17+	19. CH7+
62. SHDNn	42. CH17-	20. CH7-
		21. GND

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 V_{DC}, 125 V_{AC}
- 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 V_{DC}, 125 V_{AC}
  - 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 : 5×10^5 operations min. (1 A @ 30 V_{DC}, 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