GIOX I/O Board
Installation Guide

The GIOX unit can be used either for elevator control or for large scale general I/O (you cannot perform both functions on the same GIOX unit). It is made up of a motherboard, input modules, and output modules, all mounted to a back plate. The unit can be ordered with a Keri enclosure or be mounted directly to a surface.

The mother board has slots to accept up to 8 modules in any mix of input units and/or output units. An input module has 8 dry-contact inputs; each input is capable of being supervised. An output module has 8 relay outputs.

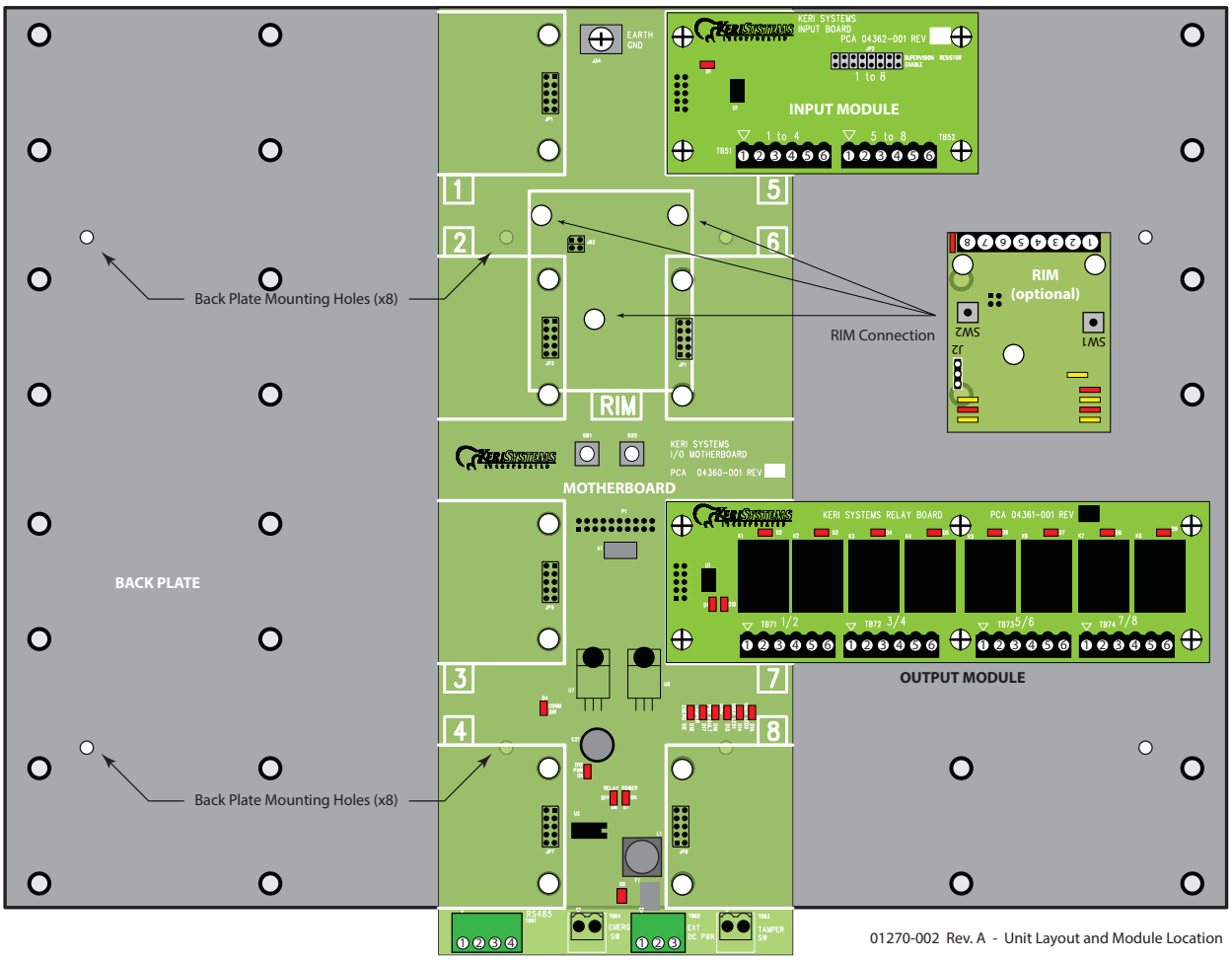
Mercury Powered NXT controllers can accommodate 1 GIOX unit on each Bus. The first GIOX unit must be on Bus 1, the second on Bus 2, up to Bus 4 (with a 4D controller). Elevator Control and general I/O are currently supported on Mercury Powered NXT controllers.

Standard NXT controllers can accommodate up to 4 GIOX units, 1 per Bus, with no restriction on Bus connection order. General I/O is currently supported on Standard NXT controllers; Elevator Control is NOT supported.

If you are using output modules, the GIOX must be powered by a separate, stand alone power supply as the NXT controller, via its RS-485 bus, cannot provide enough power to support a fully energized output module. When an external power supply is used, power via the RS-485 bus is ignored.

1.0 Unit Layout and Module Installation

The GIOX unit comes with the Motherboard already mounted to the Back Plate. Mount Input and Output Modules in a manner that makes your wire routing easy to manage.



01270-002 Rev. A - Unit Layout and Module Location

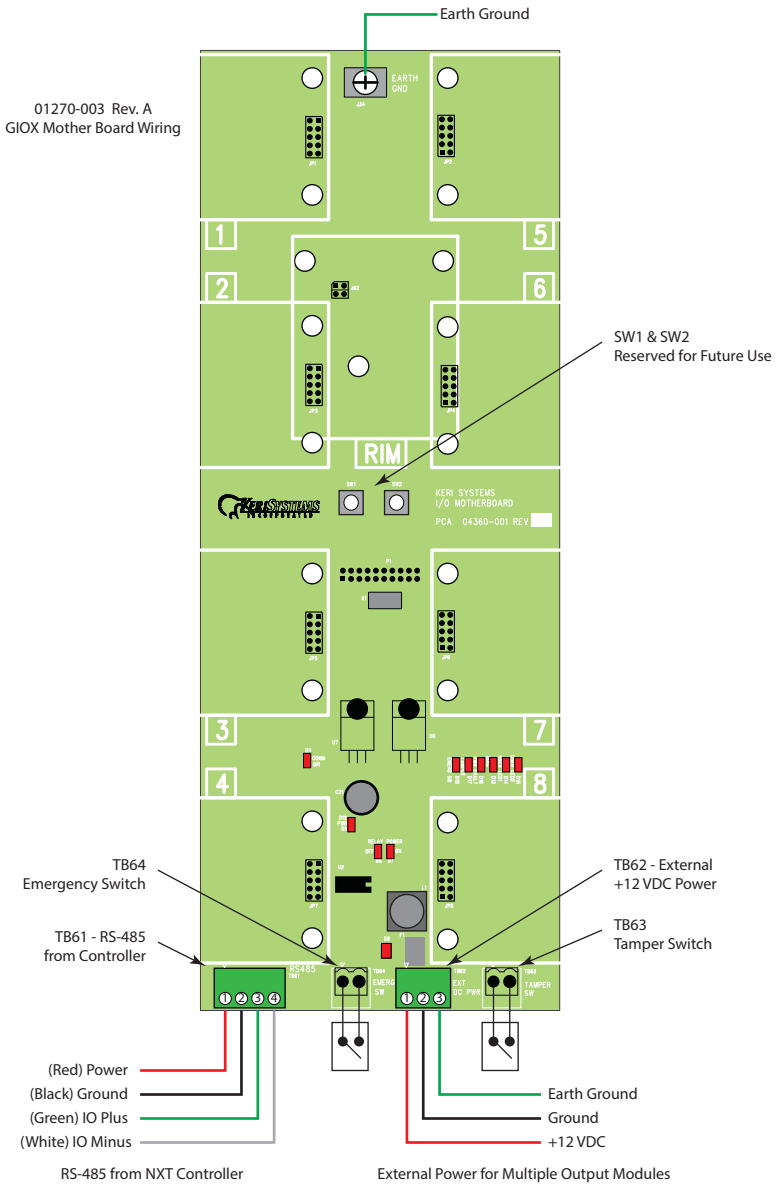
There is a 2x5 header on each Input and Output Module that plugs into a corresponding connector on the Motherboard. There are 8 plug-in locations on the Motherboard. Modules can be placed in any order and in any location on the Motherboard. All Modules are secured using 6-32 screws, supplied with the individual modules.

NOTE: Keri strongly recommends not moving modules between locations once the installation has been done and hardware configuration has been performed in Doors.NET.

The RIM connection is made by aligning its 2x2 header and three stand offs to corresponding locations on the Motherboard, then pressing into place.

2.0 Unit Wiring

2.1 To Motherboard



Applications requiring Output Modules require an external +12 VDC power supply be used, TB62 (remove the power connection from TB61). The Motherboard automatically detects this and turns D16 ON if an Output Module is plugged in and an external supply is not used. When an external power supply is used, power via the RS-485 bus is ignored.

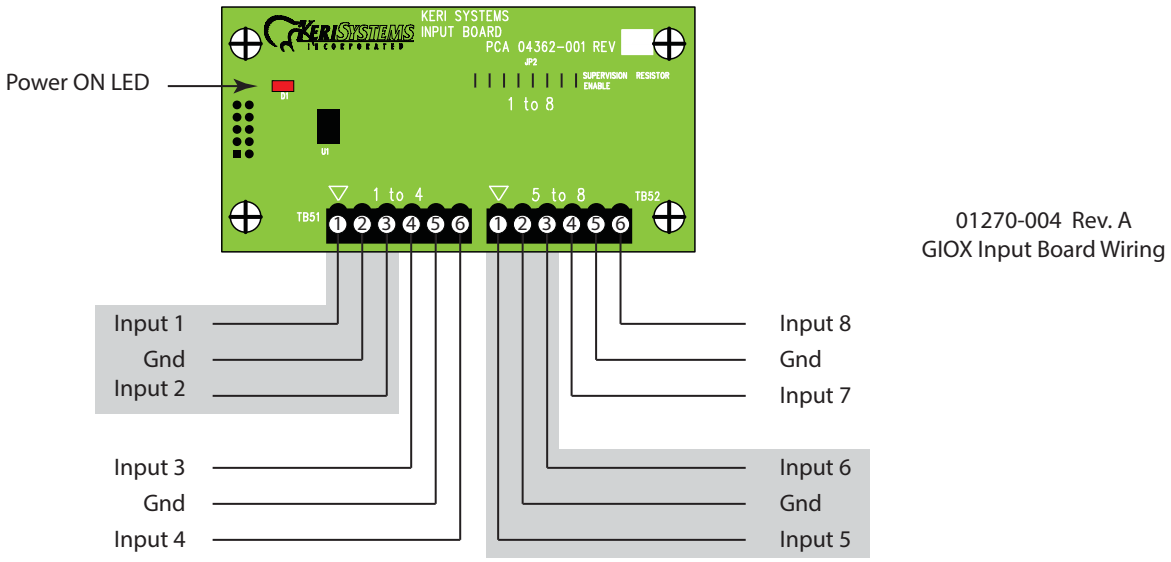
Any number of Input Modules can be installed using the standard power via RS-485 from the NXT controller.

A standard Tamper Switch can be connected to TB63. Attach an optional Tamper Relay Board to TB64 for UL-294/CSA Class 4812 support. These TBs should be jumpered if these options are not used.

Table 1: Motherboard LEDs

LED Number	Purpose
D4	RS-485 Comm
D7	Relay Power ON
D8	Relay Power OFF
D9	Fuse OPEN / Power Reversed
D12	Motherboard Power ON
D13	Diagnostic
D14	Reserved
D15	Reserved
D16	Power Fault
D17	Tamper ON
D18	Emergency Switch ON

2.2 To Input Modules



01270-004 Rev. A
GIOX Input Board Wiring

All inputs are dry-contact inputs.

All inputs are capable of 3-state and 4-state supervision. Please refer to the 3-State and 4-State Supervision Wiring for NXT Controllers application note (p/n 01228-001) for information on using supervision.

Table 2: Input Module LEDs

LED Number	Purpose
D1	Module Power ON

2.3 To Output Modules

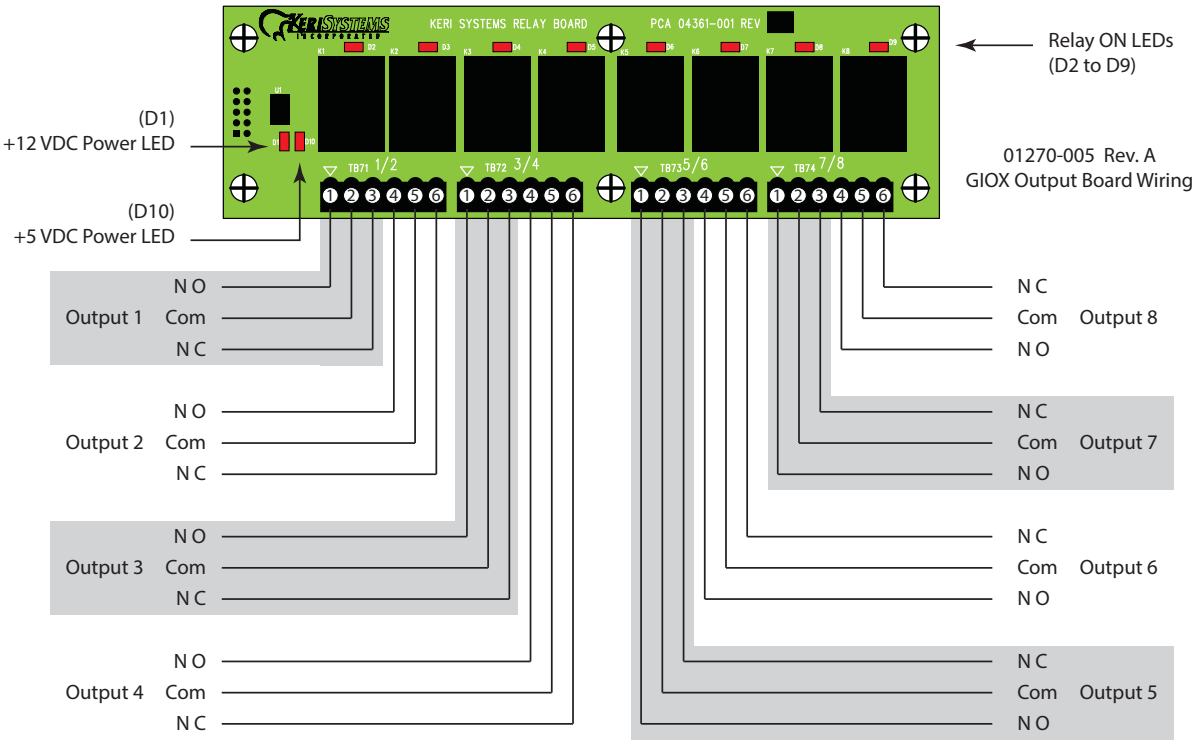
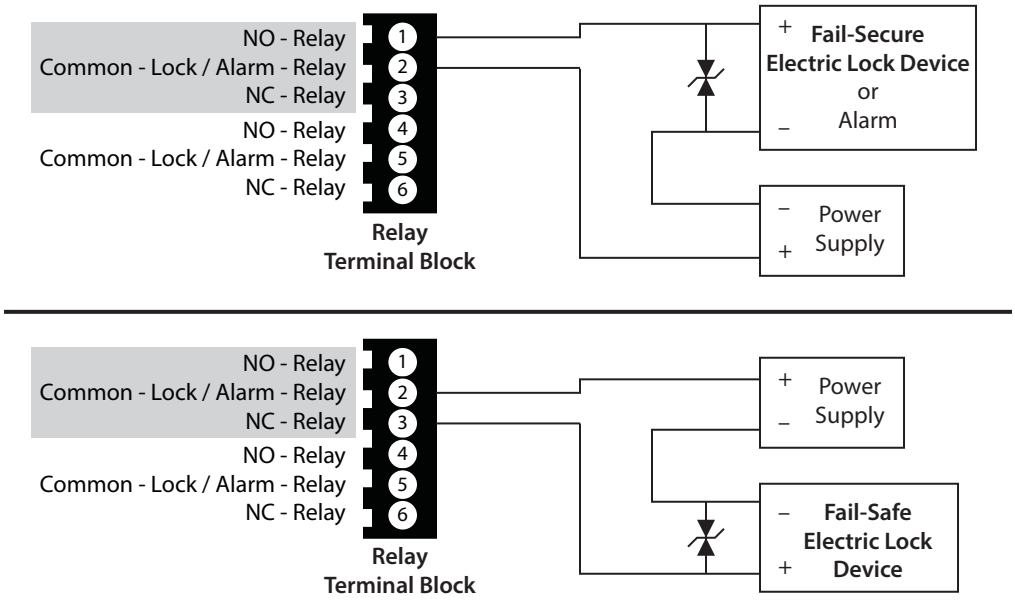


Table 3: Output Module LEDs

LED Number	Purpose	Notes
D1	+12 VDC Power ON	Lit when external power is used
D2	Relay 1 ENERGIZED	
D3	Relay 2 ENERGIZED	
D4	Relay 3 ENERGIZED	
D5	Relay 4 ENERGIZED	
D6	Relay 5 ENERGIZED	
D7	Relay 6 ENERGIZED	
D8	Relay 7 ENERGIZED	
D9	Relay 8 ENERGIZED	
D10	+5 VDC Power ON	Lit when RS-485 bus power is used

2.3.1 Output Protection

Transorbs are provided with the Output Module ship kit. They are used to protect the GIOX unit from voltage spikes induced on the output wiring by absorbing the excess voltage and slowly releasing it back into the circuit. Keri strongly recommends wiring in the transorbs provided with the GIOX ship kit. Refer to the Transorb Wiring Diagram below.



Wiring diagram also applies to second relay on terminal block.

*NOTE: The Transorbs that Keri provides are **non-polar**; they can be installed in either orientation.*

2.3.2 Isolation Relays

For locking devices that may induce heavy voltage spikes – Mag Locks and devices with heavy-duty solenoids such as turnstiles, vehicle gates, and overhead doors – Keri recommends using isolation relays. Keri has an Isolation Relay Kit (p/n IRP-1) for these applications. For detailed information please refer to the IRP-1 Isolation Relay Installation Guide (p/n 01833-001).

3.0 Specifications

3.1 Dimensions

Stand Alone Unit with Back Plate

- 15.45 inches wide by 11.56 inches tall by 2.00 inches deep

Unit in Standard Enclosure

- 17.25 inches wide by 15.25 inches high by 6.75 inches deep (including enclosure cover)

3.2 Power and Current Requirements

Power

- 10 to 14 VDC @ 3.0 A (maximum current draw for a fully loaded GIOX unit)

Current

Mother Board

- 100 mA (Mother Board only)
- 200 mA for attached RIM and Reader

Input Module

- 75 mA per Input Module

Output Module

- 300 mA per Output Module

3.3 Output Relay Contact Rating

- 1 A @ 24 VDC

3.4 Operating Conditions

- 32°F to 150°F (0°C to 60°C) – 0% to 90% relative humidity, non-condensing

3.5 Cable Options

The current demands of the GIOX motherboard, requires the GIOX unit be the only unit on the RS-485 bus line. The total cable run distance should be no more than 500 feet from the controller.

*NOTE: Cable resistance causes a drop in voltage at the end of long cable runs. Ensure the appropriate power and current for your device is available **at the device** at the end of the cable run. Heavier gauge cable reduces this affect.*

NOTE: Keri does not recommend hot-plugging a RIM into a GIOX unit. Remove power from the GIOX prior to connecting this device.

Table 4: RS-485 Cable Options

Connection Type	Total Run Length	Minimum AWG	Shielded, Stranded, Twisted-Pair[a]	CAT-5[b]	Shielded, Stranded, 4-Conductor[c]
			Suggest		Suggest
RS-485 bus from NXT-2D/-4D to GIOX	up to 500 feet	18 - Power 22 - Data	Belden 8723	shielded	Windy City: 414302-S Tappan: 1880AB4M-CM

a. Keri recommends this cable type for best system performance.
The two data lines must be a twisted pair. The power and ground lines are not required to be a twisted pair.
b. Keri's preferred low-cost option. Keri has no suggested vendor for this type of cable.
c. Use care when routing this type of cable as it can make the system more susceptible to EMI.

Table 5: Controller Power, Inputs, and Outputs Cable Requirements

Connection	Total Run Length	# of Conductors	Shielded	Stranded	Twisted Pair	AWG	Belden Equivalent
GIOX stand alone power	250 feet[a]	2	N	Y	n/a	18	8461
earth ground	shortest path[b]	1	N	N	n/a	18	no specific requirement
inputs and outputs[c]	500 feet	2	N	Y	n/a	22	no specific requirement

a. To meet CE and C-tick regulations, the length of the controller power line can be no longer than 3 Meters (9.85 feet).
b. Use the shortest possible path from earth ground point to PCB. Connect the earth ground only to the designated pin on the terminal block. This is important as all transient protection for the unit is made through this earth ground connection. For unit protection, the earth ground connection should always be made first.
c. Values listed are minimums. Individual input and output devices may have more specific requirements.

4.0 Contact Keri Systems

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