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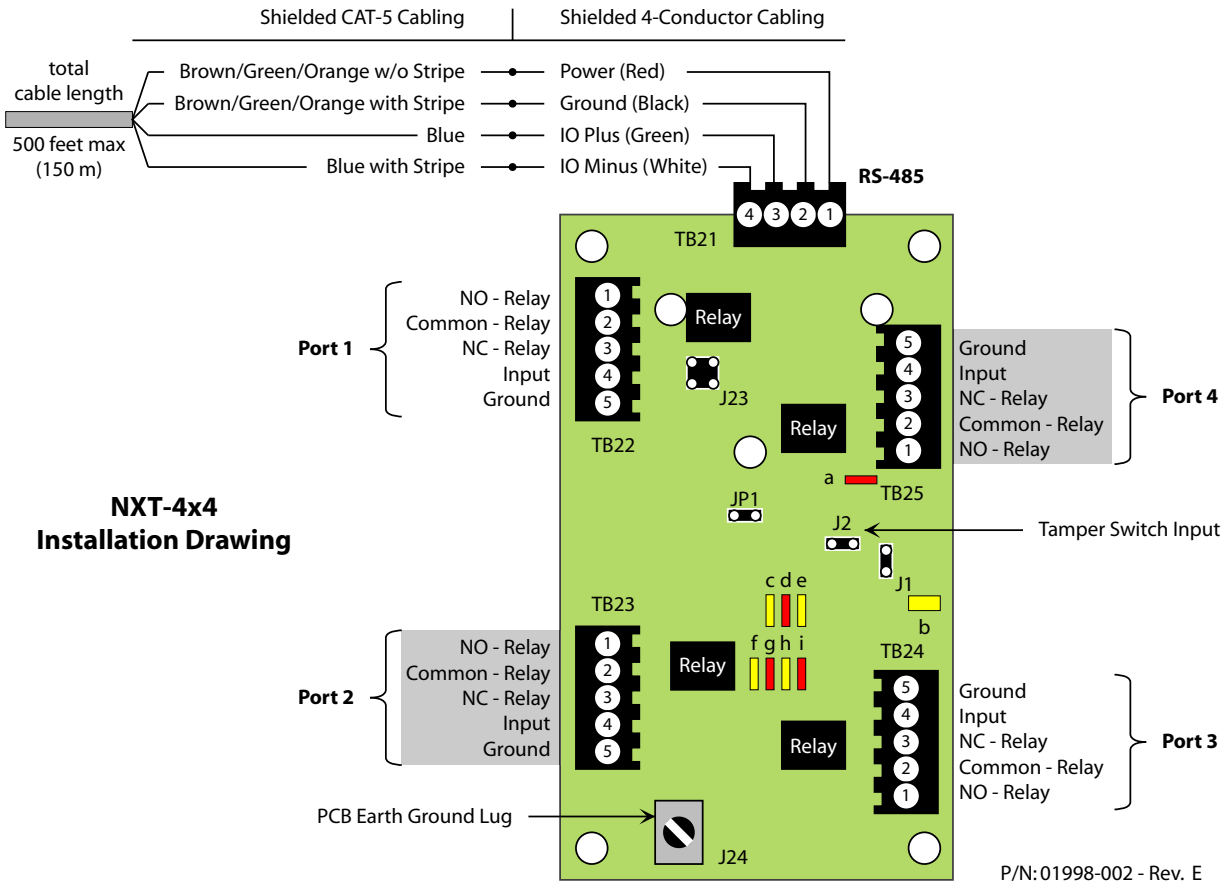
1.0 Wiring and Layout Diagrams

1.1 NXT-4x4 I/O Module



See Table 1 on page 2 for LED definitions.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Table 1: 4x4 LEDs

Power	Purpose	LED		Future Application	Purpose	LED
	indicator	a			undefined	b
Utility	**Purpose**	**LED**		**Relay State**	**Purpose**	**LED**
	RS-485 Tx	c			Bus 1	f
	User 1	d			Bus 2	g
	User 2	e			Bus 3	h
					Bus 4	i

2.0 Specifications

2.1 NXT-4x4 Dimensions

- 4x4 PCB
  - 5.25 inches tall by 3.10 inches wide by 1.00 inches deep, not including wiring connectors
  - 13.33 cm by 7.87 cm by 2.54 cm
- 4x4 Enclosure
  - 8.00 inches tall by 7.00 inches wide by 2.75 inches deep
  - 20.32 cm by 17.78 cm by 6.98 cm

2.2 Power Requirements

- 10 to 14 VDC @ 0.5 A (maximum current draw for a fully loaded NXT-4x4)

2.3 Current Requirements at 12 VDC

- 250 mA max for each NXT-4x4

NOTE: If you are driving an electronic locking device (magnetic lock, door strike, etc.) using the same power supply as the 4x4, ensure the power supply provides enough current to drive every device connected, including an adequate safety margin.

2.4 Relay Contact Rating

- 1 A @ 24 VDC

2.5 Operating Conditions

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

2.6 Cable Options

RS-485 bus runs can daisy-chain together an NXT-4x4 and NXT-Reader on one line. The total cable run distance should be less than 500 feet from the NXT controller for runs with 4x4s and less than 1,000 feet for Reader-only runs.

*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 Reader, RIM, or 4x4 into an NXT controller. Remove power from the controller prior to connecting these devices.

Table 2: Reader and 4x4 Cable Options

Connection Type	Total Run Length	Shielded, Stranded, 2 Twisted-Pair[a]		CAT-5[b]	Shielded, Stranded, 4-Conductor[c]	
		AWG	Suggest		AWG	Suggest
RS-485 bus from NXT-2D/-4D to NXT-4x4 only	up to 500 feet	18 - Data plus 4x4 Power 22 - Data only	Belden 8723	unshielded	18 - Data plus 4x4 Power 22 - Data only	Windy City: 414302-S West Penn: 244 Tappan: 1880AB4M-CM
RS-485 bus from NXT-2D/-4D to NXT-4x4 and NXT Readers	up to 500 feet	18 - Data plus 4x4 Power 22 - Data only	Belden 8723	shielded	18 - Data plus 4x4 Power 22 - Data only	Windy City: 414302-S West Penn: 244 Tappan: 1880AB4M-CM
RS-485 bus from NXT-2D/-4D to NXT Readers only	up to 1,000 feet	22 for Data	Belden 8723	shielded	22 for Data	Windy City: 416303-S West Penn: 241 Tappan: 2280AB4M-CM

a. Keri recommends this cable type for best system performance.
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 3: Controller Power, Inputs, and Outputs Cable Requirements

Connection	Total Run Length	# of Conductors	Shielded	Stranded	Twisted Pair	AWG	Belden Equivalent
controller power	250 feet[a]	2	N	Y	Y	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.

3.0 Contact Keri Systems

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