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## Overview

The PCI3 Communications Adapter functions as the interface between a host computer's RS232 port and one or more Honeywell access control panels connected on an RS485 multi-drop line. The adapter translates the PC's CIDD protocol to the proprietary RS485 protocol.

The PCI3 can be used to replace a PW5K1CVT1 or a PRO22CVT1; however, the PCI3 does not have optical isolation as the others do. This isolation may be useful in some applications.

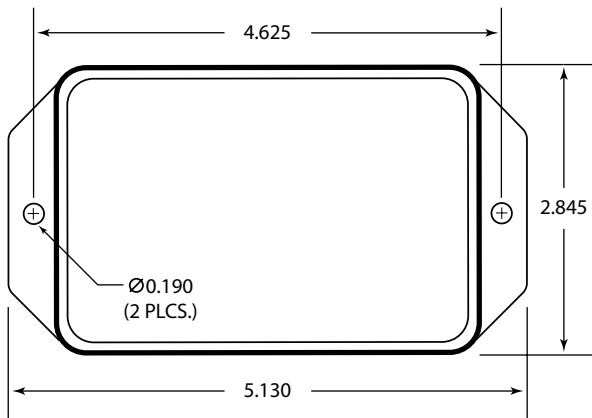
The PCI3 also replaces the N-485-PCI-2, N-485-HUB-2, and N485PCI2L adapters, and it adds the following features:

- Variable communications speed up to 115.2 Kbps on the RS232 port.
- Capacity to add future technology enhancements without legacy limitations.
- Time with “seconds” in true reports.
- Flash upgrades of NS2 and NS2P access control panels.

The PCI3 operates as the arbitrator of the drop line, polling each API for its information, and determining its status. If an API or panel drops out, the PCI notifies the host. If communication to the host is lost, the PCI sends a buffer command to the panels for them to buffer events (when configured with WIN-PAK version 1.17 or higher using the RS232 ACK/NAK option, where DIP switch 5 is in the UP position). Communications with the host can only be detected when the PCI3 is running in the ACK/NAK mode of operation.

When access control system configurations include an Ethernet-to-RS232 conversion product instead of a direct host connection, the PCI's RS232 port operates the same as with a direct connection.

## Installation



### Dimensions (H x W x D)

- 2.845 in. x 5.130 in. x 1.107 in. (7.226 cm x 13.030 cm x 2.812 cm)

### Mounting Holes

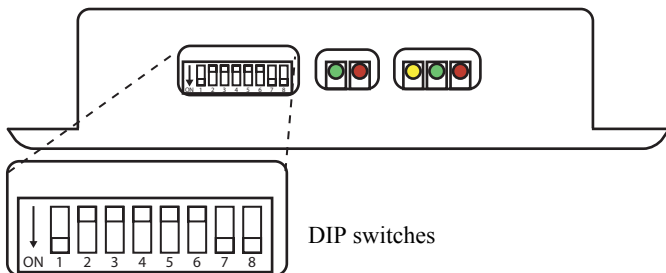
- Distance – 4.625 in. (11.748 cm)
- Diameter – 0.190 in. (0.483 cm)

**Note:** The mounting holes are on the enclosure center line. Allow at least 2" (50.8mm) between connectors and ceiling for wiring clearance.

## Setting the DIP Switches

### Setting the DIP Switches

The PCI3 communications adapter has eight Dual In-line Package (DIP) switches. For the DIP switch setting to be recognized, the PCI3 must be power cycled (except for switch 1). The switches are numbered from left to right, as shown:



Use the following table to set switches 1-5:

Switch	Name	Instruction
1	End of Line (EOL)	<b>Up</b> – (No EOL) PCI3 is NOT wired at either end of the 485 drop line. <b>Down</b> – (EOL) PCI3 is wired at either end of the 485 drop line.
2	NORMAL	<b>Up</b> – Allows normal PCI3 operation. <b>Down</b> – Enables the PCI3 to receive a firmware flash upgrade from the host. In this mode the PCI3 will NOT perform its normal operating function.(Download Mode). When doing a download, Switch 4 should be up.
3	Pass Thru	<b>Up</b> – Configures the PCI3 for operations with the N-1000 Series, PW-2000 series, NS2, and NS2P panels. <b>Down</b> – Configures the PCI3 for operations with the PW-5000, PRO-2200, PW-6000, PW-3000, and Star series panels (Pass Thru Mode).
4	Hub	<b>Up</b> – A direct PCI3 connection to the host PC. <b>Down</b> – Direct PCI3 connection to a dialup modem to operate as a HUB.

5	ACK/ NACK	<b>Up</b> – Enable ACK/NAK protocol when communicating with the host. <b>Down</b> – Disable ACK/NAK protocol when communicating with the host.
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Use the following table to set switches 6-8. Note that baud rates apply to the RS232 port:

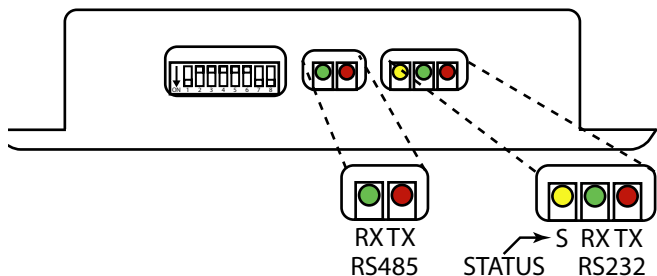
Baud Rate	Switch 6	Switch 7	Switch 8
1200	Down	Down	Down
1200	Down	Down	Up
2400	Down	Up	Down
9600	Down	Up	Up
19200 (Default)	Up	Down	Down
38400	Up	Down	Up
57600	Up	Up	Down
115200	Up	Up	Up

Note that if you are using dial-up/modem connections, a baud rate of 19200 is recommended.

All RS232 communication uses 8 bit data, 1 stop bit, and no parity.

## LED Status Indicators

The following illustration identifies the RS232 and RS485 LEDs on the PCI3:



Use the following to reference LED function and operation:

### RS485 LEDs

- **Green** – data is being received by the PCI3.
- **Red** – data is being transmitted by the PCI3.



## **RS232 LEDs**

- **Green** – Indicates that the PCI3 is receiving data.
- **Red** – Indicates that the PCI3 is transmitting data.
- **Yellow (STATUS LED)** – Indicates the STATUS of the PCI3.

### **DIP switch 3 is UP, PCI3 Operation Mode**

- **Pulses once a second** – the PCI3 is trying to detect the presence of a panel on the RS485 port. It keeps pulsing until it establishes contact with at least one panel. Once communications are running on the RS485 port, the LED is on continuously.
- **On** – the correct baud rate has been detected and both ports are running.
- **Off** – no power.

### **DIP switch 3 is DOWN, Pass Thru Mode**

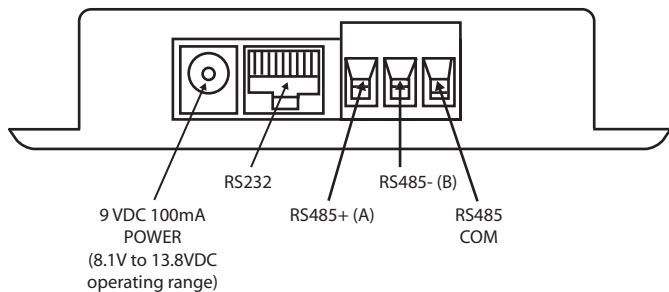
- **Pulses once a second** – 30 seconds of inactivity on both ports.
- **Off** – no panel detected on the 485 port.
- **On** – activity on both communication ports.

## RJ45 Connector Pinouts (RS232)

<b>RJ45</b>	<b>Function</b>
<b>1</b>	N/C
<b>2</b>	Connected to pin 7 in PCI3
<b>3</b>	Circuit common
<b>4</b>	TX out of PCI3
<b>5</b>	RX into PCI3
<b>6</b>	N/C
<b>7</b>	Connected to pin 2 (this is an RTS/CTS loopback function)
<b>8</b>	N/C

## Cable Connections

The figure below identifies the PCI3 cable connections:



## Cable Specifications

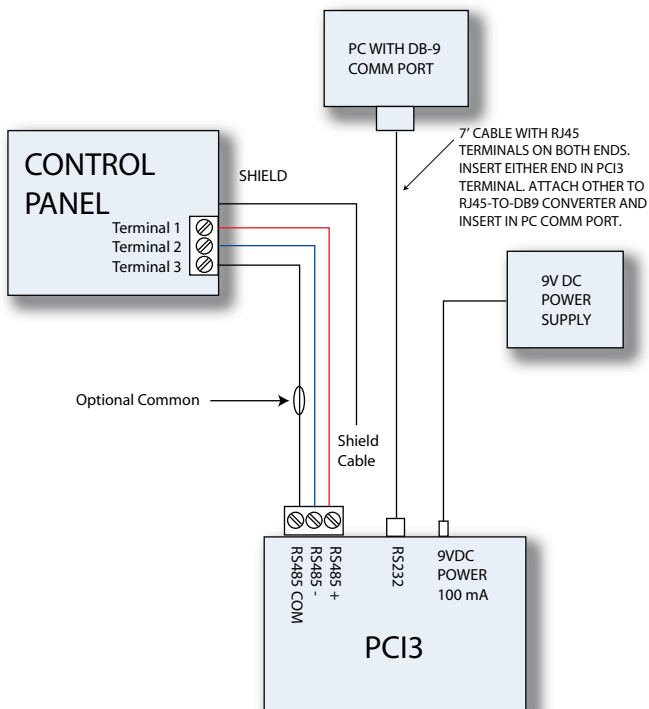
The following table provides the PCI3 adapter cable specifications:

<b>Cable</b>	<b>Description</b>	<b>Length</b>	<b>Part Numbers</b>
RS485 COM, RS485 - , RS485 +	24 AWG, 2 twisted pairs with shield, 120 ohm, 23 pf	Up to 4000 feet	NCP2441-TN
RS232	Use RJ45 to DB9 for PC connection. Use RJ45 to DB25M for modem connection or NLANSRLU1. Use RJ45 to DB25F null modem for LANSRL100 connection.	7 feet  50 feet (max)	PCI3CBLKT CBL50
9 VDC Power	9 VDC, Class 2 with center-positive 2mm connector.	6 feet	PCI3PSKIT
USB to Serial	Optional accessory for USB connection (not included)	16"	USB2SER

An adapter plug kit is included. The kit contains power supply plugs for United States, European Union, United Kingdom, and Australian outlets.

## Typical Wiring Diagrams for Control Panels

Figure 1 Typical Wiring Diagram for a Generic Control Panel with DB9



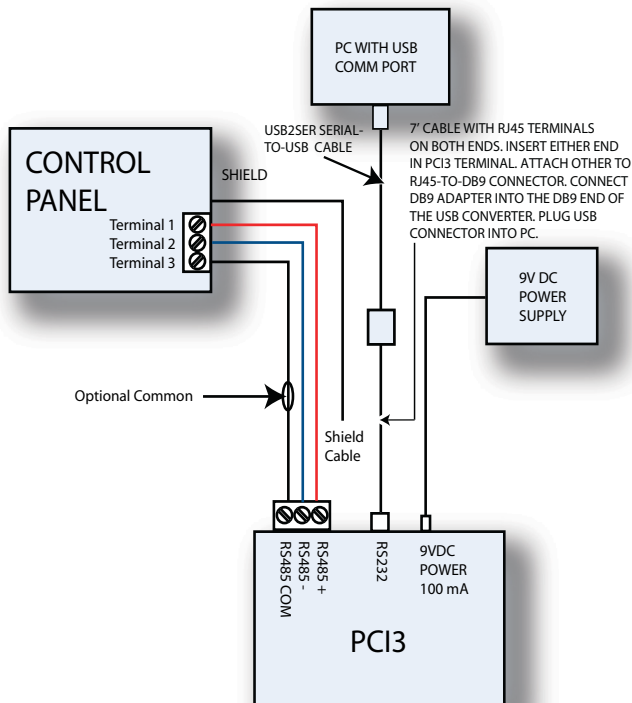
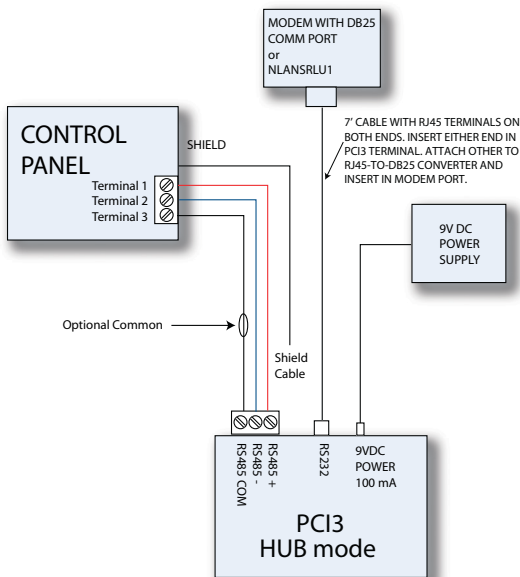
*Figure 2 Typical Wiring Diagram for a Generic Control Panel with USB*

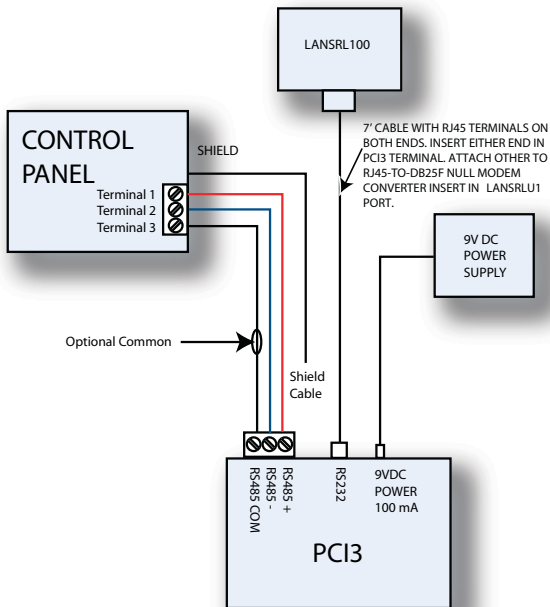
Figure 3 Typical Wiring Diagram for a Generic Control Panel with DB25



**Note:** Refer to appropriate panel installation manual for panel wiring details.

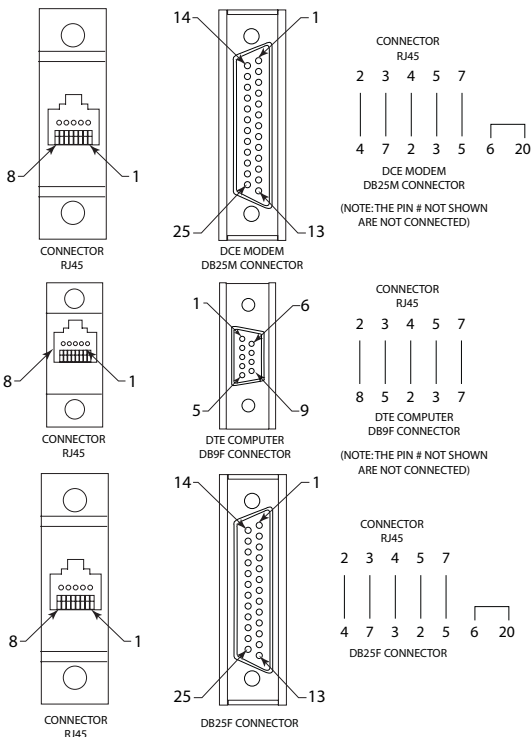


Figure 4 Typical Wiring Diagram for LANSRL100



Control Panel	PCI3 Terminals			
	RS-485 +	RS-485-	Common	Shield Cable
<b>N-1000-III</b>	TB7-2	TB7-3	N/C	TB9-12
<b>N-1000-III-X</b>	TB7-2	TB7-3	N/C	TB9-12
<b>N-1000-IV</b>	TB7-2	TB7-3	N/C	TB9-12
<b>N-1000-IV-X</b>	TB7-2	TB7-3	N/C	TB9-12
<b>PW-2000-III</b>	TB7-2	TB7-3	N/C	TB9-12
<b>PW-2000-III-X</b>	TB7-2	TB7-3	N/C	TB9-12
<b>PW-2000-IV</b>	TB7-2	TB7-3	N/C	TB9-12
<b>PW-2000-IV-X</b>	TB7-2	TB7-3	N/C	TB9-12
<b>PW5K1IC</b>	PORT 1 TR+	PORT 1 TR-	PORT 1 GND	EARTH
<b>PW3K1IC</b>	PORT 1 TR+	PORT 1 TR-	PORT 1 GND	EARTH
<b>PW6K1IC</b>	PORT 1 TR+	PORT 1 TR-	N/C	PORT 1 GND
<b>PRO22IC</b>	PORT 1 TR+	PORT 1 TR-	PORT 1 GND	EARTH
<b>NS2</b>	TB9-1	TB9-2	TB9-3	EARTH
<b>NS2+</b>	TB9-1	TB9-2	TB9-3	EARTH
<b>N-485-API-2</b>	TB1-5	TB1-3	N/C	TB1-12

# Pin Assignments



## PCI3 Power-Up Sequence

1. At power-up the PCI3 starts looking for active panels. It begins trying to communicate with panel address #1 at 38.4K baud.
2. If the panel answers, the PCI3 will look for panel #2, and all other panels, at 38.4K baud. After finding the first panel, it sends a message out of the RS232 port to the host which includes the PCI3 firmware version number. Until it finds the first panel, no RS232 communications are attempted.
3. If the PCI3 does not connect with panel #1 at 38.4K baud, it tries again at 57.6K, then 76.8K, and finally at 115.2K baud.
4. If the PCI3 does not connect with panel #1 at any of those baud rates, it tries the same sequence of baud rates for panel #2. The PCI3 will keep trying to connect with panels until it reaches panel address #31. It then starts over with panel #1.
5. Once it does find a panel that responds, it won't change the baud rate.

## DEBUG Hints

- If the RS485 transmit LED is constantly flickering but no other communication LEDs are active, the PCI3 is searching for a panel and has not found one. If the panels are attached, the RS485 +/- wires are probably crossed.
- Make sure that any modem setup has the Echo feature turned off.
- The default modem string when the PCI3 is configured for a Hub is 'AT E0 V1 &C0 &D0 S0=1 &W0 &W1'. This modem string is sent when power is cycled to the PCI3-Hub or on a disconnect from the host PC.

- If the BAD CRC counter is incrementing every minute or so, it may mean that two or more panels have the same panel address.
- The PCI3 has the RS485 bias resistors always attached. No other communication bias resistors are needed (but can be included).

The PCI3 EOL network is AC-coupled. There is no resistance difference between the RS485 +/- terminals if the PCI3 EOL network is on or off.

## **PCI3 Voltage Test**

- **If no other panels are attached**, the RS485 voltage at the PCI3 is +3.3V for the RS485+ and 0V for the RS485-.  
Note that if the PCI3 is attempting communications, both voltages will be in the 1.5-2.0 VDC range for a typical voltmeter as the signals swing between 3.3V and 0V.
- **If an NS2 or N1000 is connected to the RS485 bus**, the voltages will be higher if they have their bias network connected, up to a maximum reading of 5V.

## FCC Regulations

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The user shall not make any changes or modifications to the equipment unless authorized by the Installation Instructions or User's Manual. Unauthorized changes or modifications could void the user's authority to operate the equipment.



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