IQ - Series Intelligent Access Control Systems

Installation Manual
33-10036-001
REV: O

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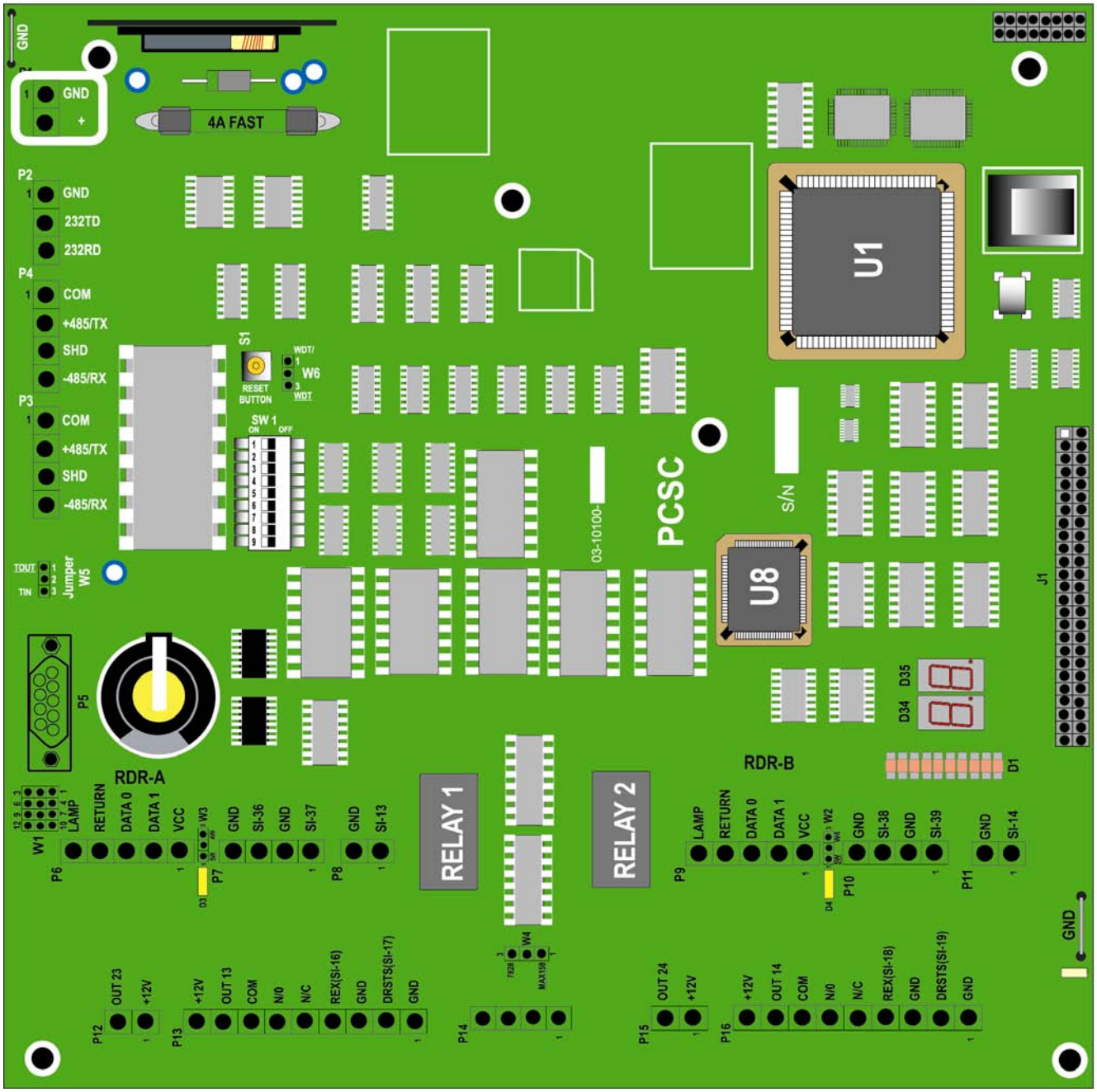
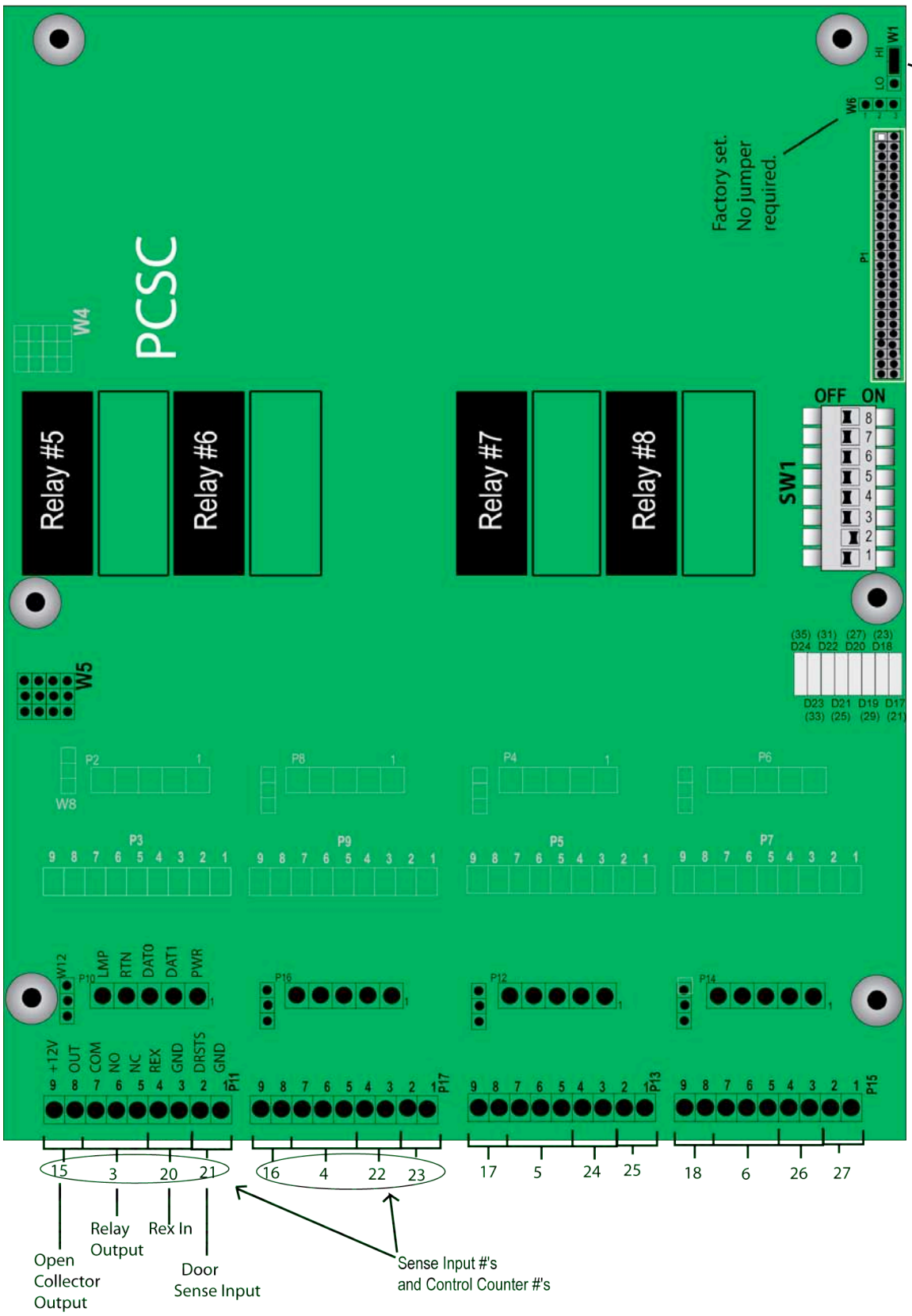
0.1 Board Diagrams

0.1.1 The IQ-200 Printed Circuit Board Wiring Diagram

NOTE: If the panel has a built in LAN connection, it will be designated an IQ-200E.



0.1.2 Four-Door Expansion Board

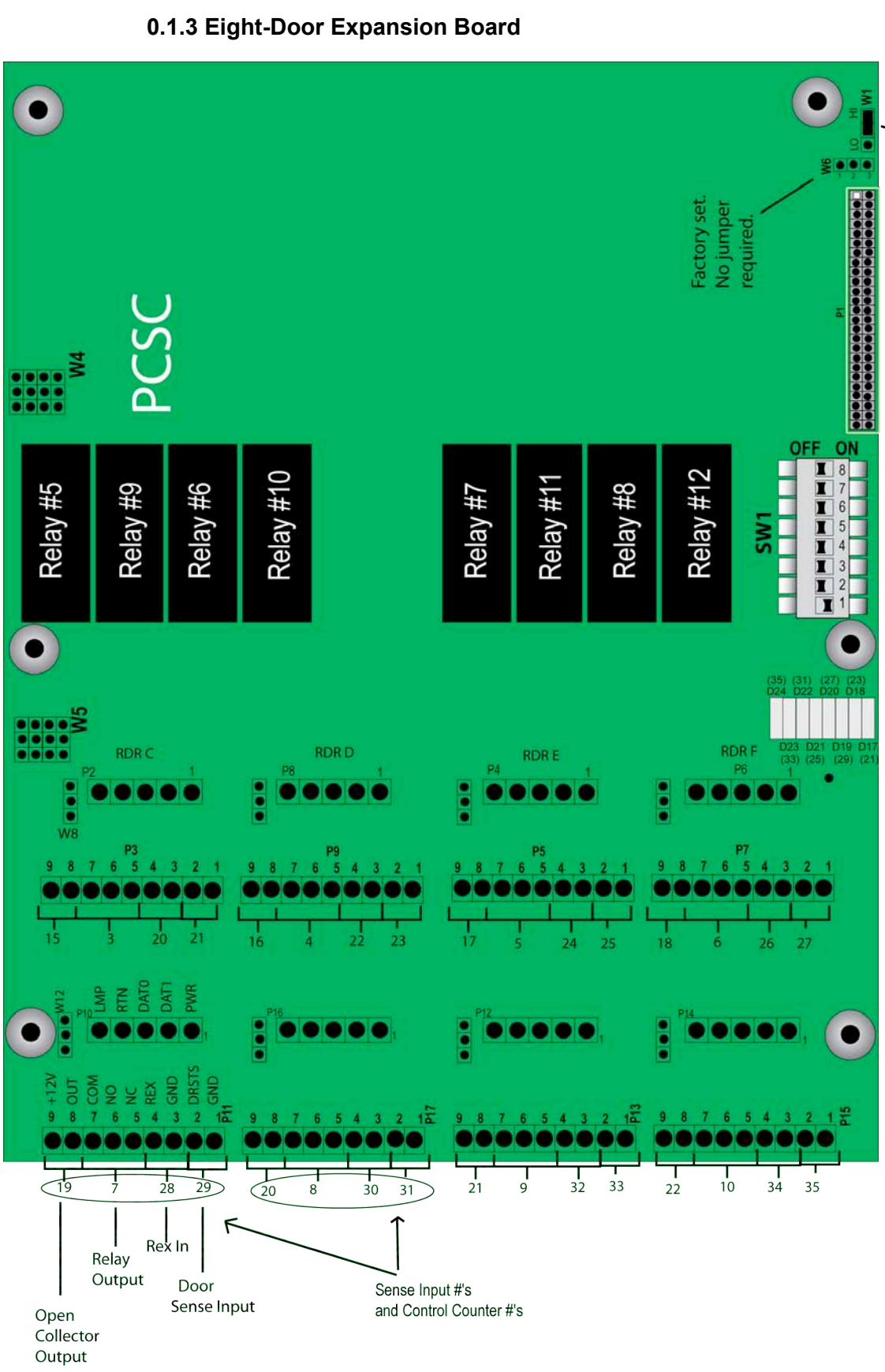


With power removed from the IQ Panel, set DIPswitches 2 and 5 ON, towards the edge of the circuit board. DIPswitch 2 identifies the expansion board as a 4 reader and DIPswitch 5 enables the supervision of the egress inputs. Apply power to the board.

Power to the 4 reader expansion boards is provided from the IQ panel via the 50-pin ribbon cable.

The egress inputs will also need to be identified as supervised in the LiNC-NET software.

0.1.3 Eight-Door Expansion Board

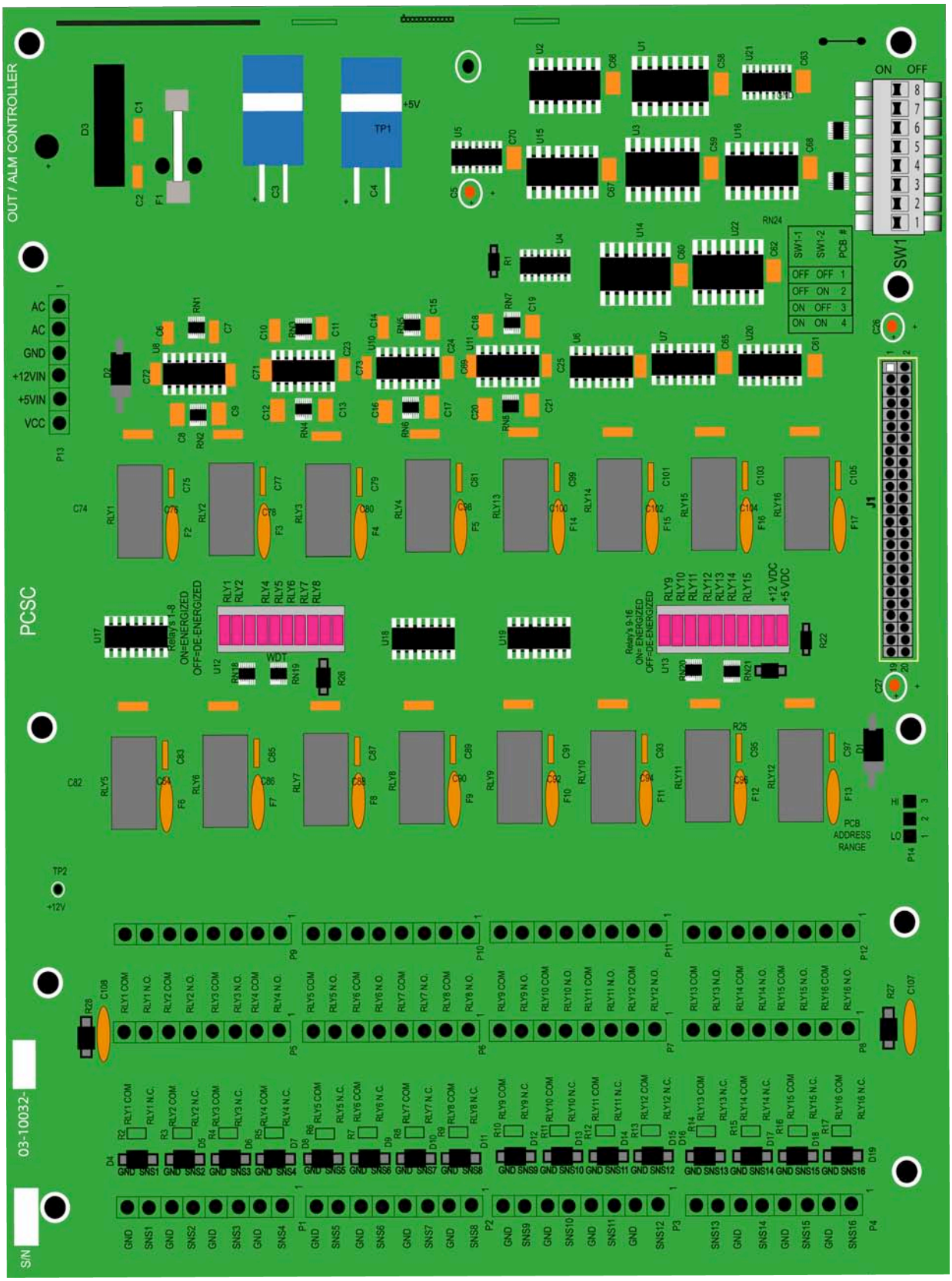


With power removed from the IQ Panel, set DIPswitches 1 and 5 ON, towards the edge of the circuit board. DIPswitch 1 identifies the expansion board as a 8 reader and DIPswitch 5 enables the supervision of the egress inputs. Apply power to the board.

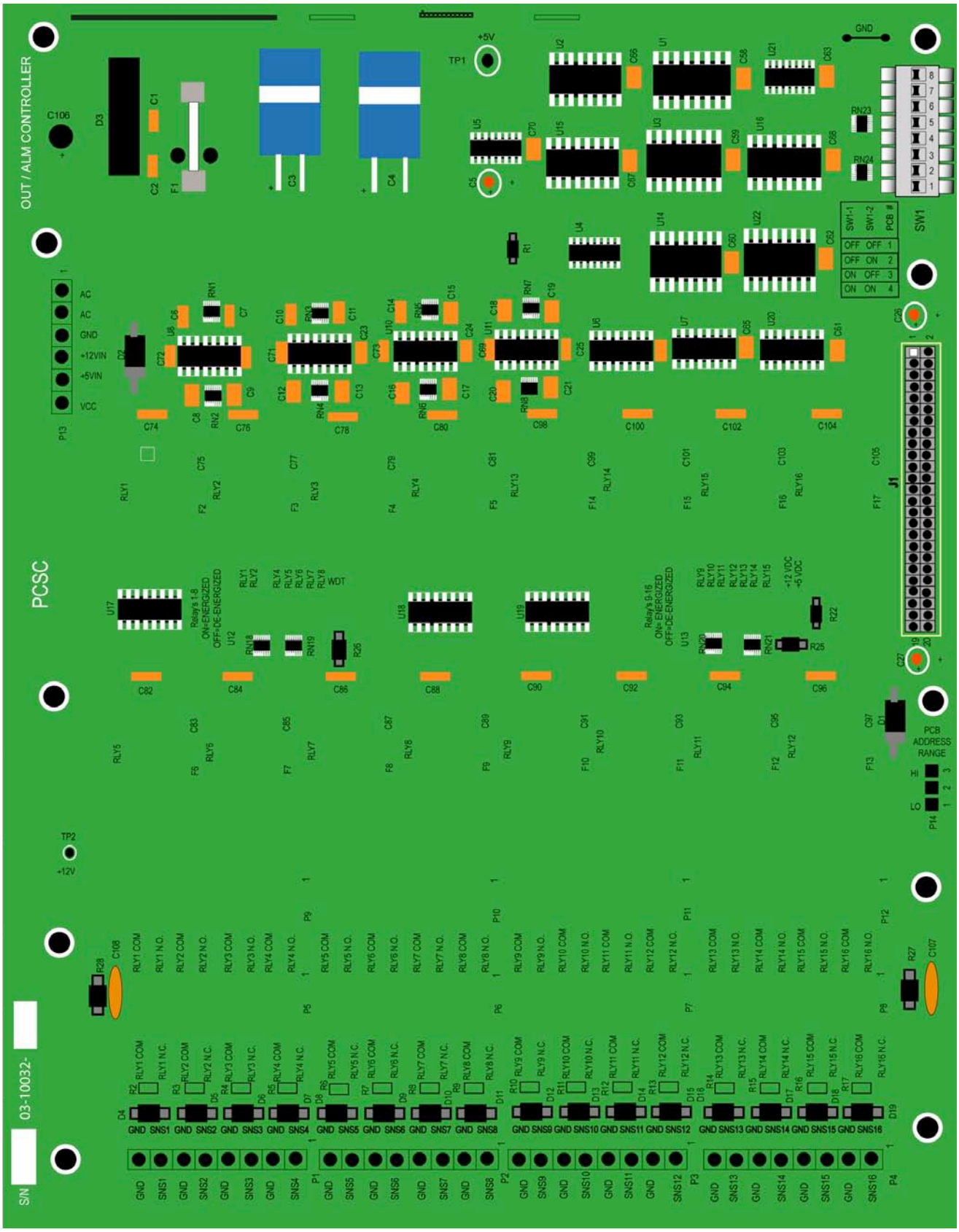
Power to the 8 reader expansion boards is provided from the IQ panel via the 50-pin ribbon cable.

The egress inputs will also need to be identified as supervised in the LiNC-NET software.

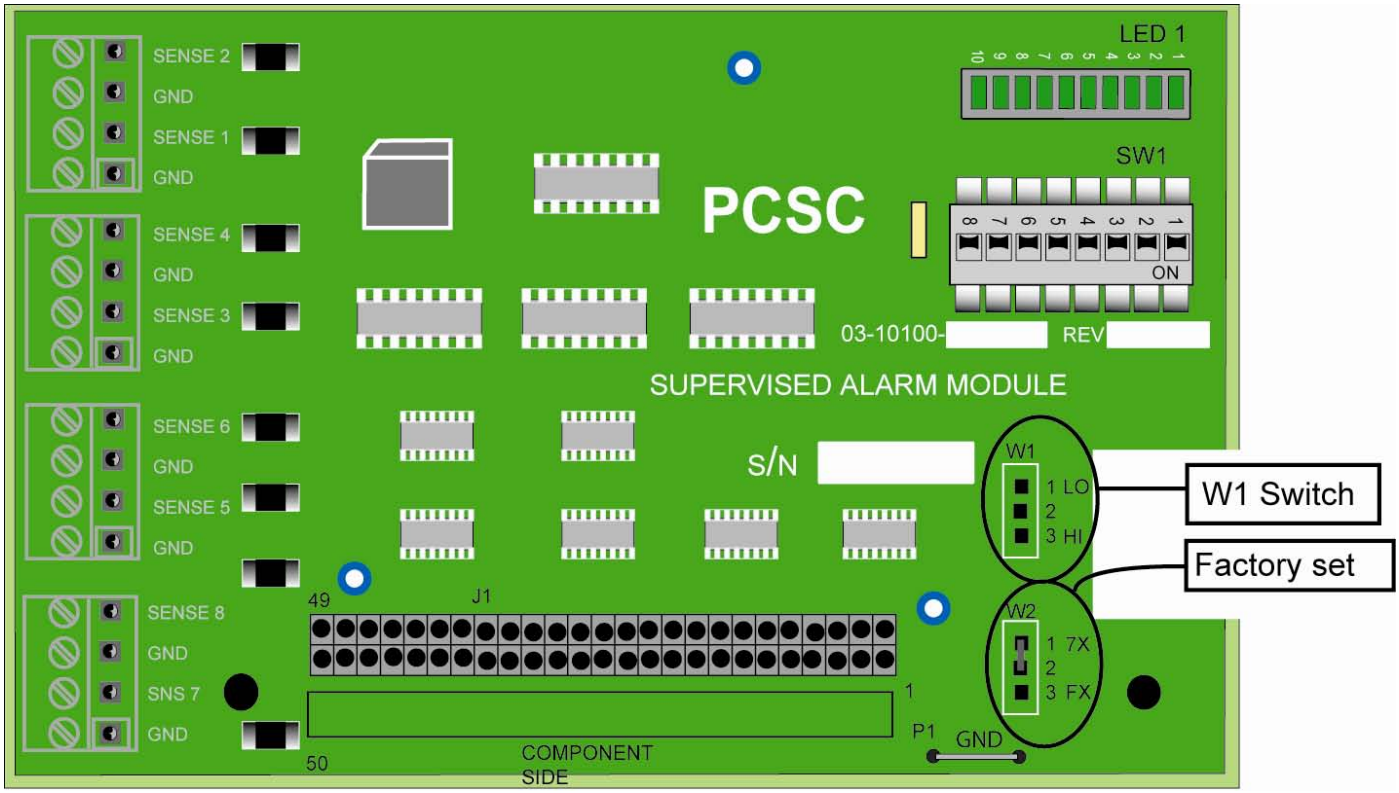
0.1.4 OUT Expansion Board



0.1.5 ALM Expansion Board



0.1.6 SAM Board



0.2 Table of Contents

1.0 Introduction

Welcome to the IQ-200, the newest generation of intelligent access control system from PCSC.

This manual explains IQ-200 installation and connection to a personal computer (PC) and an optional local printer. The IQ Manual is divided up into six steps:

Step 1 - Unpacking the IQ-200

Step 2 - Installing Power

Step 3 - Wiring Your Readers

Step 4 - Reader Connections

Step 5 - Wiring Your Door(s)

Step 6 - Communicating with the IQ-200

Step 7 - Status Lights and Dealing with Communication Errors

Appendix A - IQ-200 Specifications

Appendix B – Configuring the IQ LAN for Version 0124 and above

Before turning on the IQ-200 or the PC, take a moment to read through this manual. It has been designed to allow you to move through the installation process.

NOTE The IQ-200 system is set up at the factory. Do NOT re-initialize the system unless other modules have been added.

The LiNC-NET Network Controller communicates on a multi-point RS485 communication cable (RS-232 and MODEM communication are also available). You must address each IQ-200 with a unique ID number (1-111) in order to communicate to each IQ-200 panel. Numbering the IQ-200s should be in ascending order, but it is not required for operation.

NOTE: To be installed in accordance with NEC 70. Also should be installed in accordance with the Standard for Installation and Classification of Burglar and Holdup Alarm Systems, UL 681.Installation must meet all local, state, and federal regulations and codes for electrical installation. If these codes conflict with the installation methods described in this manual, please call your service representative.

UL LISTINGS The IQ-200 control unit is UL listed to the standard for Access Control System Units, UL 294. The following card readers have been found compatible by UL with the IQ-200: PCSC Models BR-370 and BR-470; HID Models PR-234 and PRK-234; and AWID PR=732, 733.

NOTE: The US Robotics 33.6/56K Sportster modem (Section 7.4) and the LANtronix MSS1-T RS-232 Serial Terminal Server (Section 8.6) have not been evaluated by UL, and is not suitable for UL installations.

2.0 Unpacking the IQ-200

2.1 Unpacking the IQ-200

As you unpack the IQ-200, inspect it for missing items or damage. Contact the dealer for any irregularities. Keep ALL packing material for protection in return shipping.

2.2 Visual Inspection

1. ***Are all of the socketed integrated circuit chips seated in their sockets?***

   Socket ICs U1 and U8 are located in the upper right side of the board in close vicinity to the Header Connector J1, and just above the Door Relay K2 respectively.

2. ***Are the door relays seated and latched into their sockets?***

   The Door Relays K1 and K2 are locked at the bottom center of the board.

3. ***Is the lithium battery seated in its socket?***

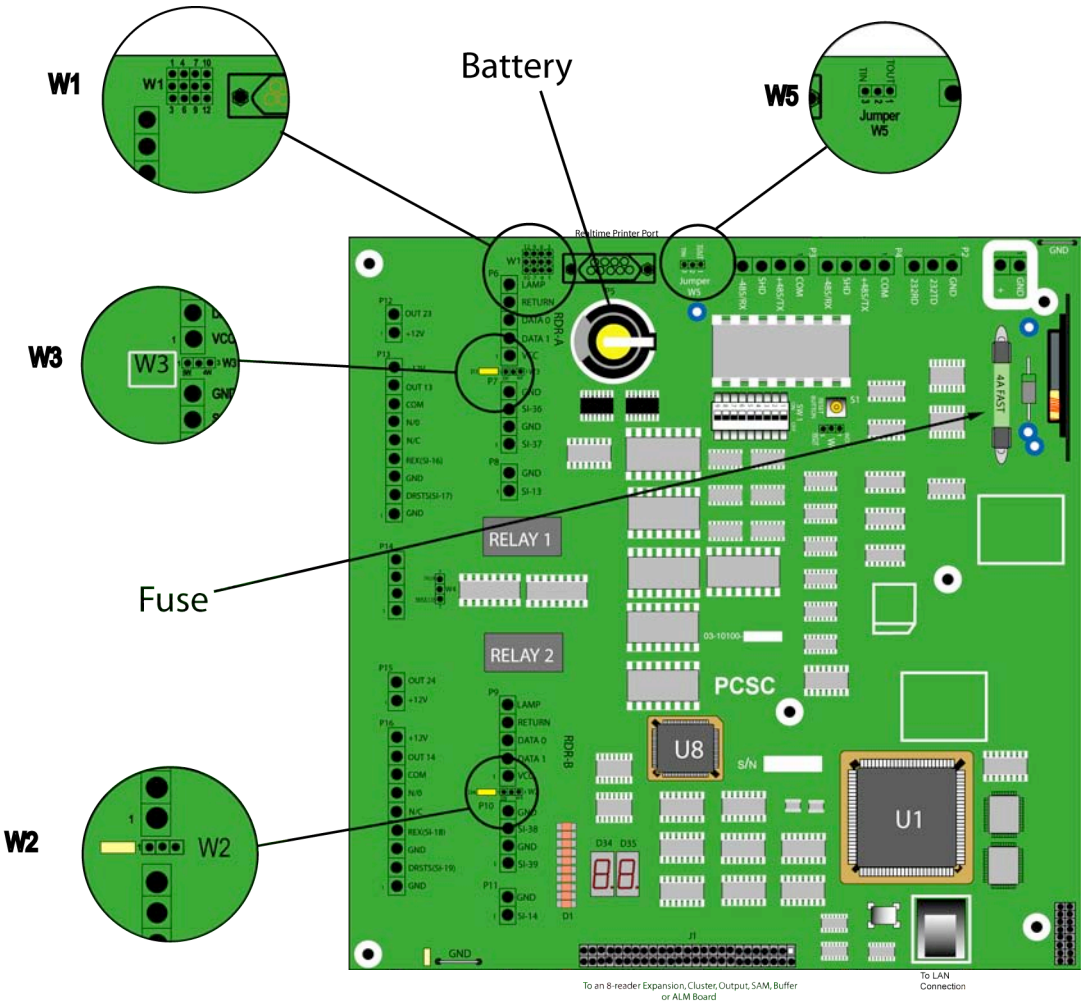
   The lithium battery is located in socket BT1 located in the middle left side of the board next to DB9 Connector P5.

4. ***Are all of the plug-on connectors affixed to their male header connectors?***

   Plugs on connectors are located along the left-hand edge of the board at plug P1-P2-P4-P3-P6-P7-P8-P9-P10-P11. Plugs on connectors are located along the bottom portion of the board at plug P12-P13-P14-P15-P16.

5. ***Is the fuse in place at socket F1 located in the upper left corner of the board?***

   A 4-Amp fast blow (3AG) fuse is required.



Are the jumpers in place at W1, W2, W3, W4, W5 & W6?

- Jumper W1 is located in the UPPER LEFT side of the board and is set for 12 volt-4-wire, 12 volt-5-wire, or 5-volt-5-wire readers.

    1. Across Pins #1 and #2 = 5 Volt Card Reader
    2. Across Pins #2 and #3 = 12 Volt Card Reader
    3. Across Pins #4 and #5, #7 and #8, #10 and #11 = 5-wire Wiegand Data (Data0, Data1) Format
    4. Across Pins #5 and #6, #8 and #9, #11 and #12 = 4-wire PCSC Data Format

- Jumper W2 is located in the LOWER LEFT side of the board between Plug P9 and P10 and is set for 4 or 5 wire readers. (Must be set consistently with Data format set on W1).

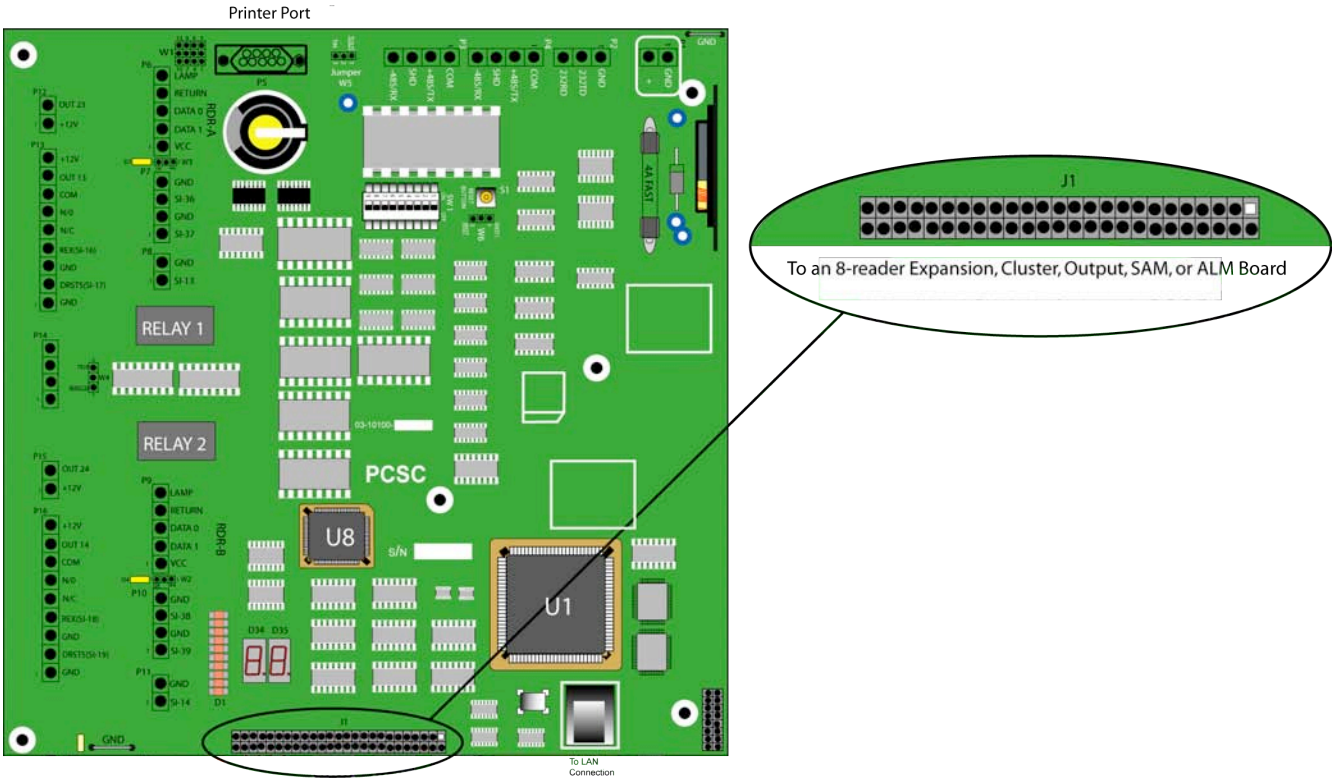
    5. Across Pins #1 and #2 = 5-wire Wiegand Data (Data0, Data1) format
    6. Across Pins #2 and #3 = 4-wire PCSC Data format

- Jumper W3 is located in the UPPER LEFT side of the board between Plug P6 and P7and is set for 4 or 5 wire readers and is used for RS-485 Communication Termination.

    7. Across Pins #1 and #2 = 5-wire Wiegand Data (Data0, Data1) format
    8. Across Pins #2 and #3 = 4-wire PCSC Data format

- Jumper W5 is located in the TOP CENTER of the board next to DB9 connector P6 and is set for RS232 or RS485 communications.

    9. Across Pins #1 and #2 = No Termination (when IQ-200 is not the last panel on the RS-485 channel or it is the last panel in a system where the RS-485 data-line is less than 2000 ft., or when using RS-232/modem connections)
    10. Across Pins #2 and #3 = 120 Ω End of Line termination (when IQ-200 is the last panel on the RS-485 channel where the RS-485 data-line is 2000 ft. or greater)



IQ with Expansion Board

- ***Is the 50-pin Expansion Bus Ribbon Cable connected to the IQ-200 at Plug J1?***

  The RED stripe on the edge of the ribbon cable should be connected to pin #1 of Plug P1.

- ***Is the opposite end of the 50-pin Expansion Buss Ribbon Cable connected to a Peripheral Expansion Board at Plug P1?***

  The possible expansion boards are the new 4-door expansion PCB, 8-door PCB, OUT PCB, ALM PCB, SAM PCBs.

3.0 Installing Power

3.1 Installing Power

Shown below are the 3.0A and 6.0A PCSC power supplies. Both power supplies are shown in enclosures connected to an IQ in a PCSC small enclosure.

3.1.1 Installing Power- 3.0 Amp

See **Figure 1** on page 9.

12VDC power is connected to the circuit board at P1 in the upper left corner. Disconnect power mains from the supply until the wiring is secured.

For installation, refer to the ESD SPS-3.6M2E or SPS-6.5M4 Power Supply installation instructions (P/N: SPS36instructions Rev: 04/15/02).

3.1.2 Installing Power- 6.0 Amp

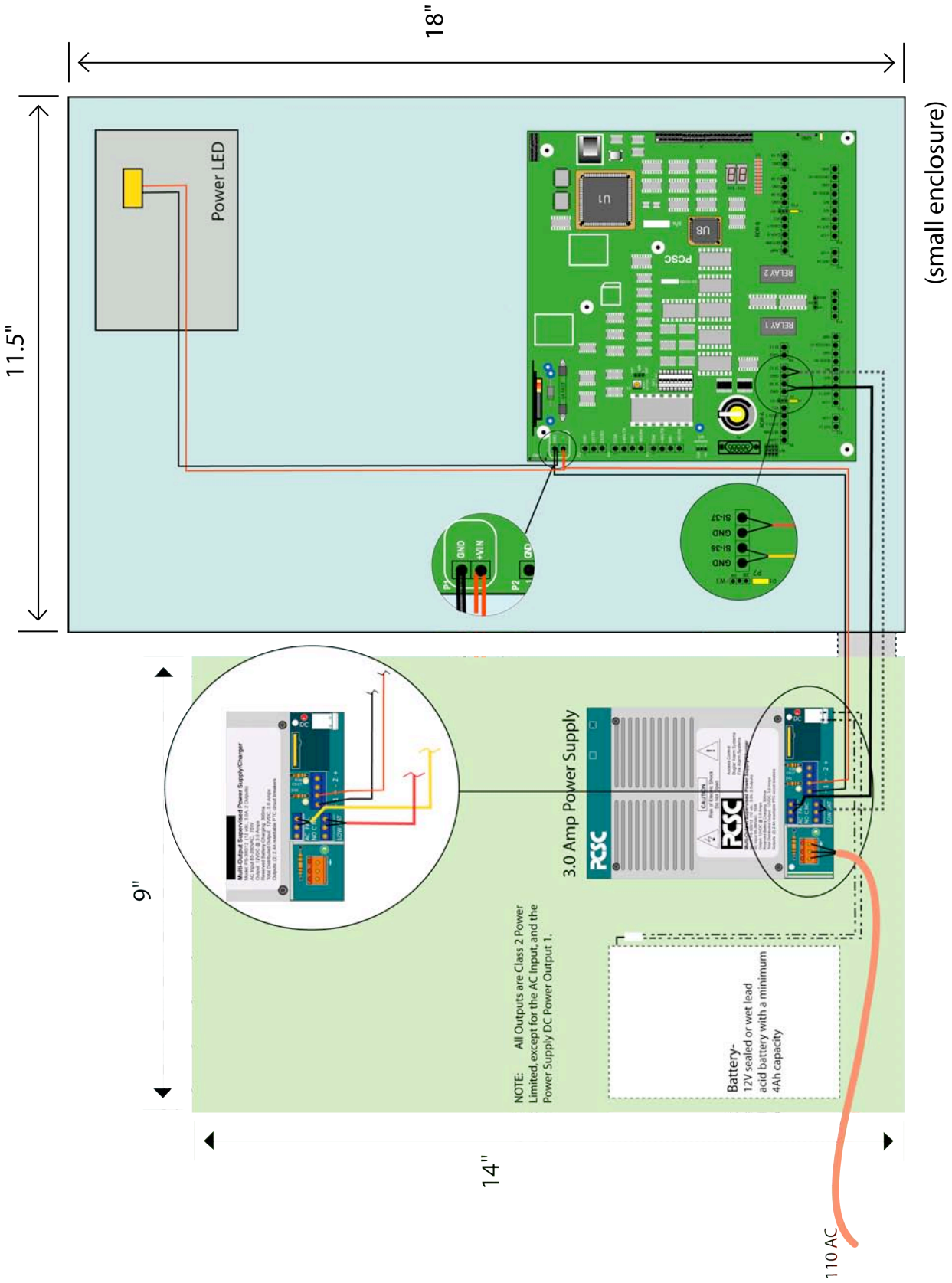
See **Figure 2** on page 10.

12VDC power is connected to the circuit board at P1 in the upper left corner. Disconnect power mains from the supply until the wiring is secured.

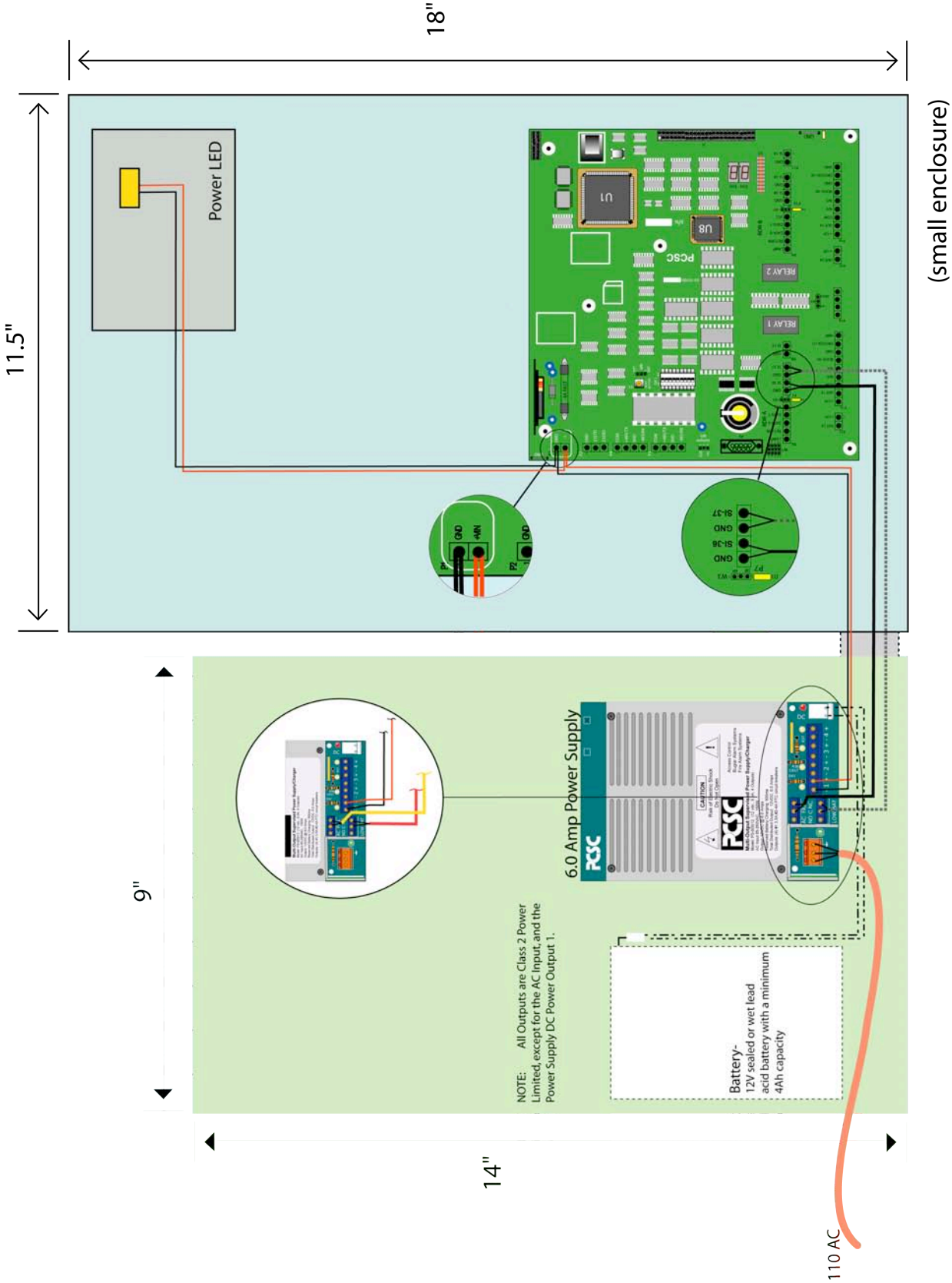
For installation, refer to the ESD SPS-3.6M2E or SPS-6.5M4 Power Supply installation instructions (P/N: SPS36instructions Rev: 04/15/02).

NOTE: Power supply cable connections are non power-limited outputs. For more information, please refer to the power supply installation manual.

3.1.3 Firgure - PCSC 3.0 Amp Power Supply



3.1.4 Figure - PCSC 6.0 Amp Power Supply



3.1.5 Resetting the IQ-200 to Default Values

In the event that the 3-volt lithium battery is removed or loses its electrical charge, the IQ must be reset. Follow the procedures below to restore the controller to the default values.

1. With power on, move all switches at dipswitch SW1 to OFF (as printed on the circuit board).
2. Press the Reset button at S1.
3. The 10-segment LED array (D1) will flash in waterfall effect and then stop. The 7-segment Leeds (D34 and D35) will flash 8.8. and then show a Hexadecimal number dependant on what version of firmware you have in the controller. The input LEDs will start a cascade and then flash when the reset process is complete, all 10 segments of the LED Array (D1) will turn OFF, and the seven segment LEDs will show a single line segment flashing in a circular pattern clockwise.
4. Refer to section 7.3 and begin addressing the IQ-200 by DIP switching the IQ number (1-111).
5. Set the communication protocol by following the instructions in section 7.4 [*Setting MODEM or Direct Connect Configurations*].
6. The system is now set to the default values. Refer to Quick Setup Steps for page references.

4.0 Wiring Your Readers

4.1 Grounding Your Readers

PCSC has designed its products to withstand most inductive voltage spikes without effect. However, some noise found in power supplies and door strikes, in addition to static discharge, may cause the control unit to momentarily shut down, lockup, or in extreme cases, to become damaged. Unexplained lockups and intermittent system behavior are common symptoms of static or noise problems. If cycling power will remedy your problem, carefully follow these instructions:

1. Install MOVs (Metal Oxide Varistors, Siemens S10K30 or the equivalent) at each Door Strike. When installed, they will suppress most problem Door Strikes.

2. Readers should be properly earth-grounded for uninterrupted reads. Please be aware that operation is affected by the amount of static present during certain times of the year.

3. Properly grounding all readers and hardware, in addition to suppressing noise in the peripheral equipment, should allow for many problem free years of use with PCSC products.

4. In addition, PCSC recommends using a separate filtered, electronically regulated output, switchable power supply for door strikes.

5. Before installing the reader, please read the following instructions. *Damage may occur if this is disregarded*.

6. Installation must meet all local, state, and federal regulations and codes for electrical installation. If these codes conflict with the installation methods described in this manual, please call your service representative.

4.2 Properly Routing Your Cables

Do not route data and power cables in the same conduit. Crosstalk and transmission of electrical noise may result. The IQ-200 PCB's will become damaged if the power cable grounds to the data cable.

NOTE: High Voltage and Low Voltage wiring must be routed separately and maintain a minimum spacing of 0.25 inches.

4.3 Grounding the Power and Data Lines

Each cable has a set of drain lines that can be attached on the Host or controller end of the cable to any screws mounted in the optional enclosures. If other non-metallic enclosures are used for controller housing, ensure that an alternative source for earth grounding is available.

4.3.1 Procedure

1. At the Reader side, it is important to be aware of both the static generated from the user end as well as electrical grounding from the data and power cabling. If at all possible, the reader mounting plate should be attached to a grounded junction box or to another source, if the junction box is non-metallic. This alleviates the possible damage caused by static electricity.

   NOTE Leave the drain line taped back and floating at the reader site.

2. If grounding locally is not possible, connect drain wires to provided ESD (Electro Static Discharge) hardware at the Controller side (enclosure) or to earth grounded conduit. As each reader port is progressively farther away from the ESD hardware location (left rear side of the cabinet for IQ-200s), allow for enough drain line to reach the ESD hardware on the controller end of the cable. Allow enough strain relief to avoid touching other circuitry or creating excessive tension.

   NOTE: High Voltage and Low Voltage wiring must be routed separately and maintain a minimum spacing of 0.25 inches.

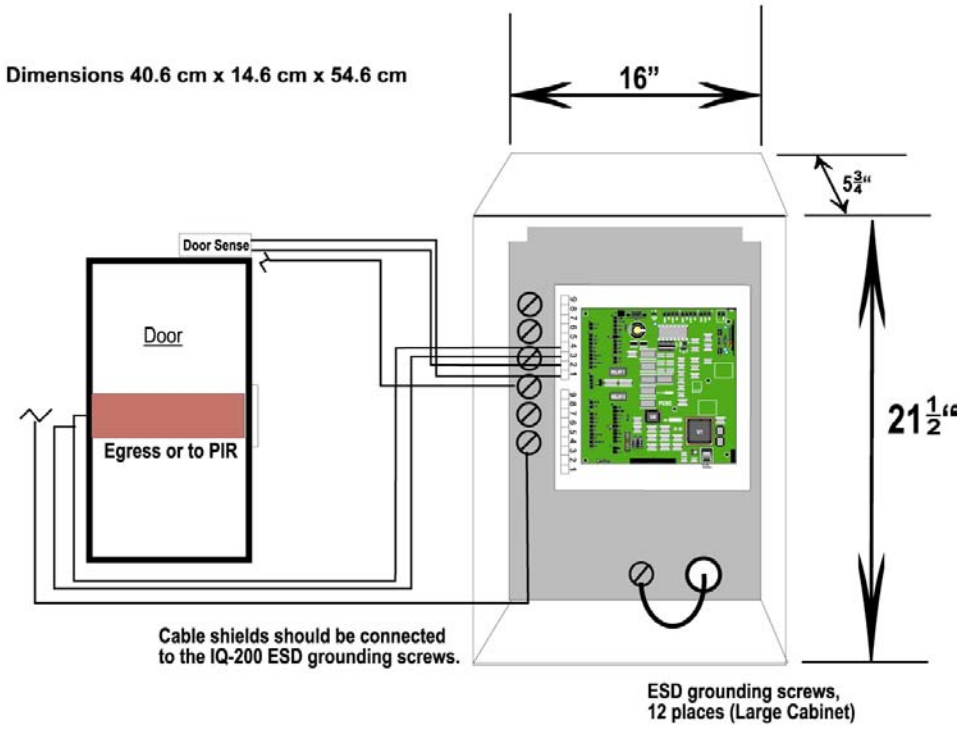
3. On a permanently-connected product, a terminal intended solely for the connection of an equipment grounding conductor shall be capable of securing a conductor of the size suitable for the particular application in accordance with the National Electrical Code, ANSI/NFPA 70-1993.

4. On a permanently-connected product, a wire binding screw intended for the connection of an equipment grounding conductor shall have a green colored head that is hexagonal, slotted, or both. A pressure wire connector intended for connection of such a conductor shall be plainly identified such as by being marked “G” “GR,” “GROUND,” or “GROUNDING,” or the like, or by a marking on a wiring diagram provided on the product. The wire binding screw or pressure wire connector shall be secured to the frame or enclosure of the product and shall be located so that it is unlikely to be removed during service operations such as replacing fuses, resetting manual-reset devices, or the like.

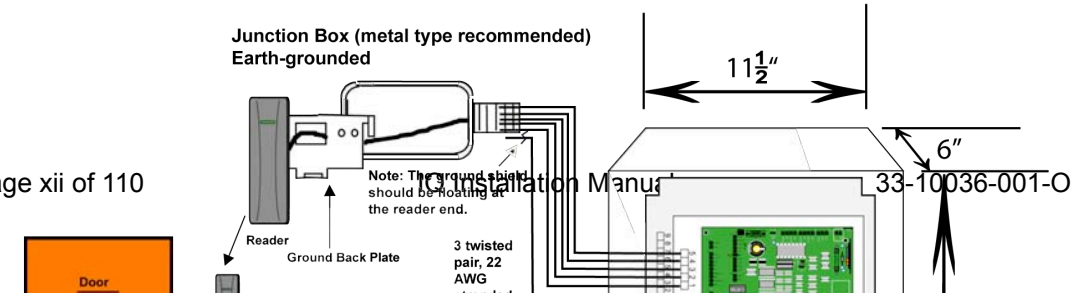
5. If a pressure wire connector intended for grounding is located where it could be mistaken for a neutral conductor of a ground supply, it shall be identified by a marking ²EQUIPMENT GROUND² or with a green color identification, or both.

6. On a permanently-connected product, the surface of an insulated lead intended solely for the connection of an equipment grounding conductor shall be finished in a continuous green color or a continuous green color with one or more yellow stripes, and no other lead shall be so identified

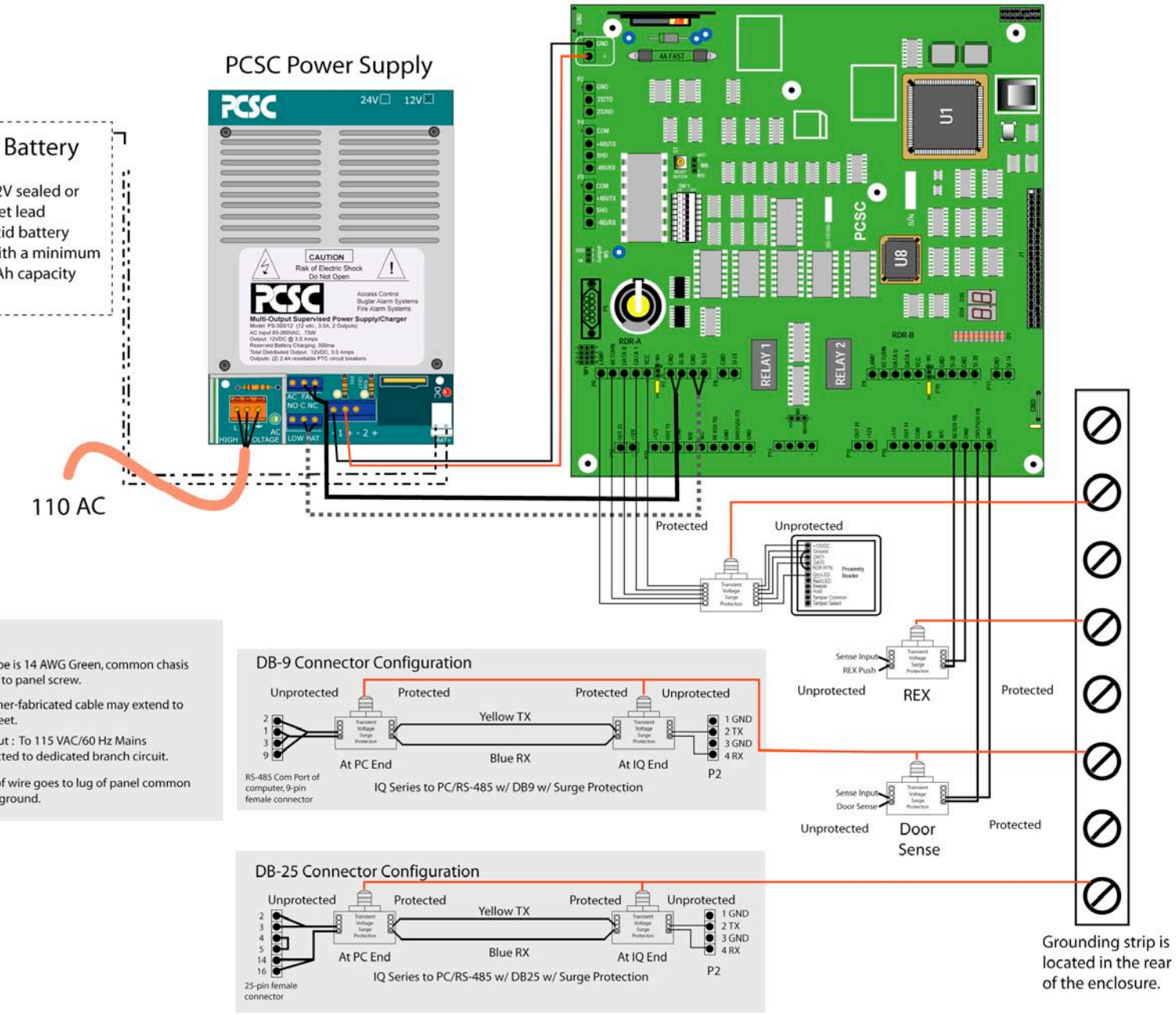
Grounding the Cables- IQ-200 to Door Sense and Egress/PIR



Grounding the Cables- IQ-200 to Door Strike and Reader



4.3.2 Proper Surge Protection for the IQ



4.4 Grounding the Pin Pad or Reader

4.4.1 Procedure

1. Orient the mounting plate so that the protruding ears are on top and facing the back of the reader or PIN Pad. Attach the mounting plate to the junction box using two #6-32 x 3/8” flat head screws. The mounting plate should be earth ground either to a ground junction box or directly to an earth ground source (especially if the junction box is not metal).

2. Connect the cable to the rear of the reader at J1. Secure the shield drain lines to one of the grounding screws in the IQ-200 enclosure.

3. Place mounting holes on the back of the reader over the latches on the mounting plate, and then position the unit so that the cover is flush with the mounting plate.

4. Secure the unit to the mounting plate by inserting the special security fastener through the hole in the bottom of the reader. Tighten it using the security driver.

4.4.2 Grounding the Reader Mullion Mount

The reader may be attached to a glass or door mullion separator (either vertically or horizontally) by using the Mullion Bracket Adapter Kits (04-10170-001 for horizontal mounting, or 04-10171-001 for vertical mounting).

4.4.2.1 Procedure

1. At the IQ end, secure the drain lines to one of the ESD grounding screws in the IQ-200 box. At the reader end, leave the drain line floating. It is recommended that the mullion adapter be affixed to an earth grounded or to the incoming conduit.

2. Mount the reader to the J-box or mullion bracket.

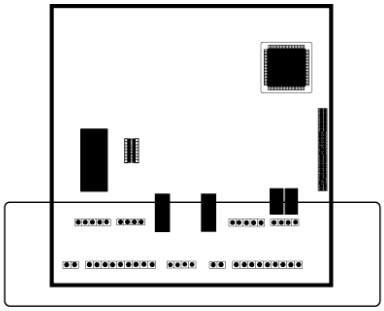
5.0 Reader Connections

5.0.1. Reader Disconnect Resistors

If an external power supply and a reader disconnect feature is required, place a 470 Ohm resistor (not supplied) at the reader.

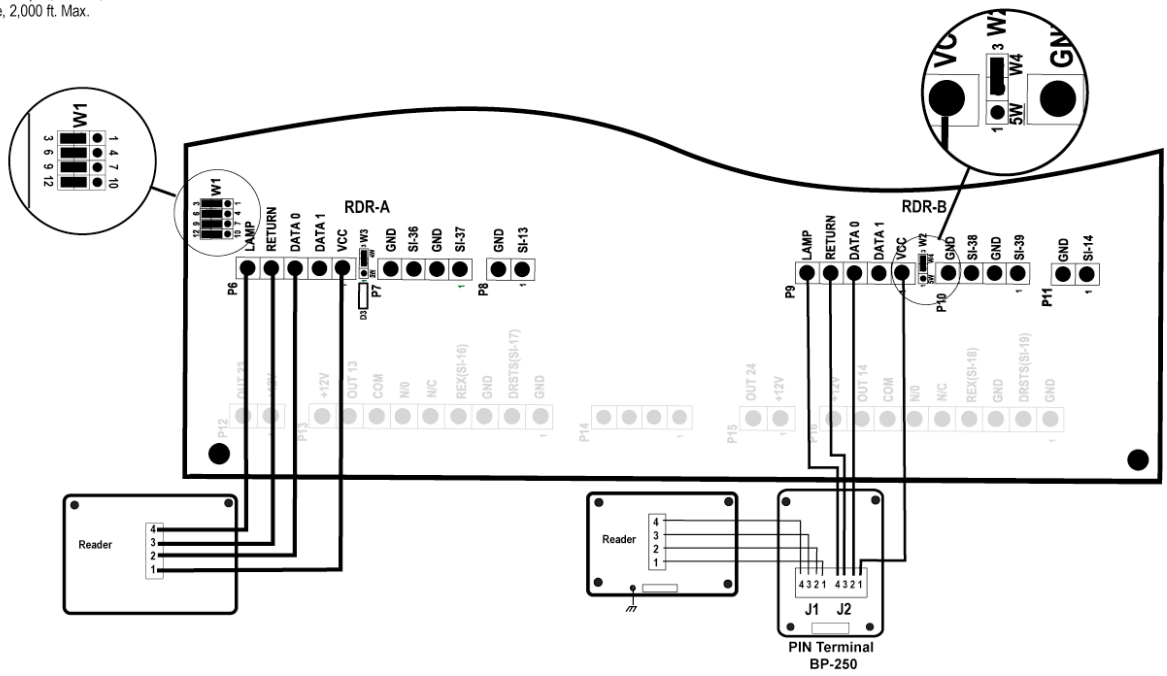
Note: For use in the following diagrams, resistors are shown connected to the boards. However, for best operation, resistors should be placed at the reader.

5.1 Reader Connections: BR-350 Readers: IQ Board

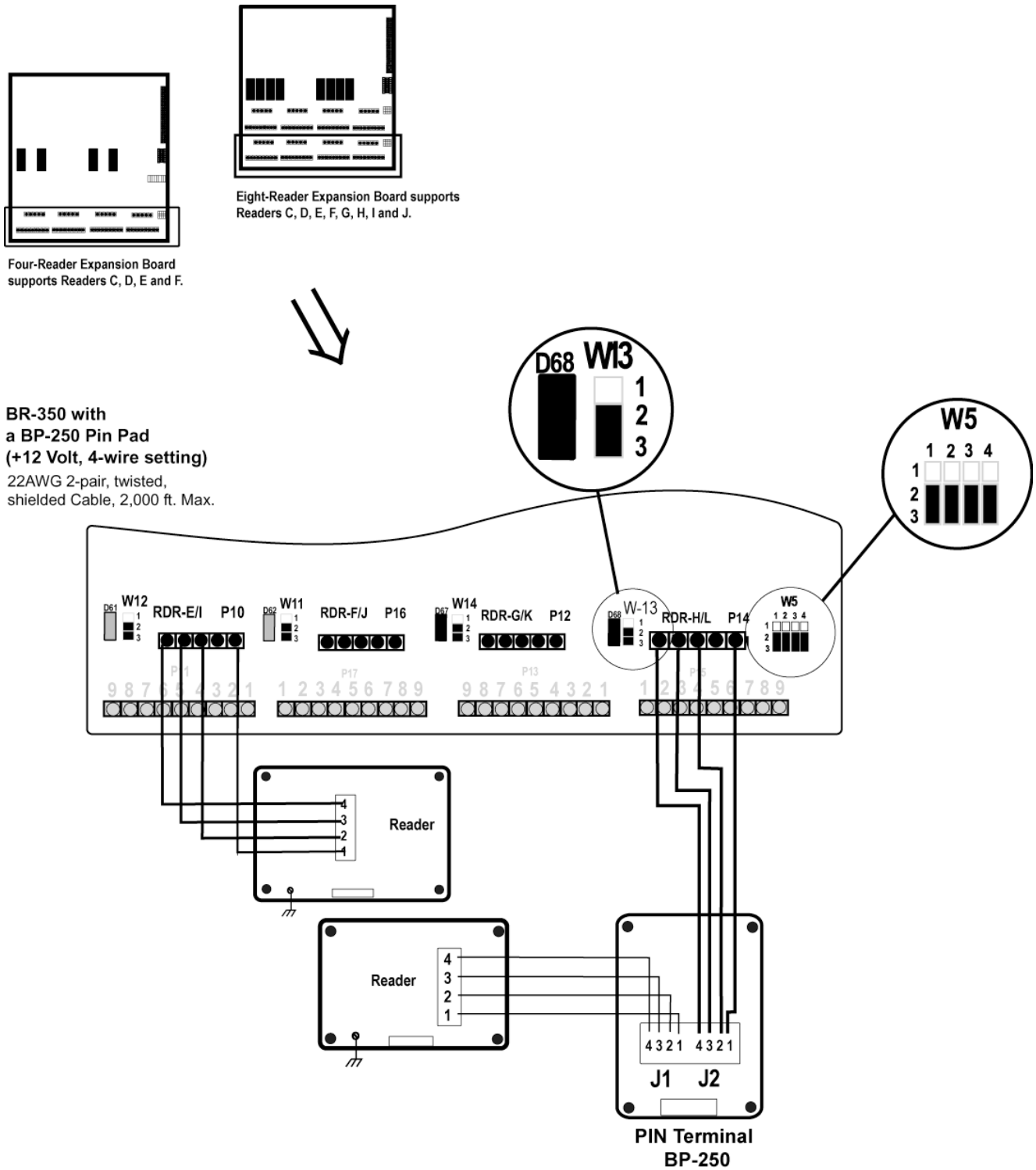


The IQ-400 supports Readers A and B.

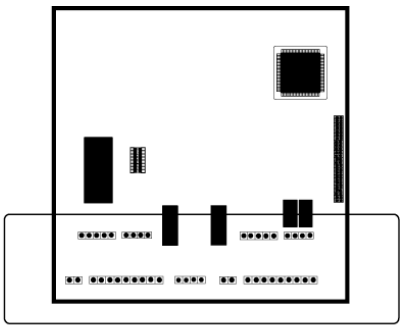
BR-350/450 with
a BP-250 Pin Pad
(+12 Volt, 4 wire setting)
22AWG 2-pair, twisted, shielded
Cable, 2,000 ft. Max.



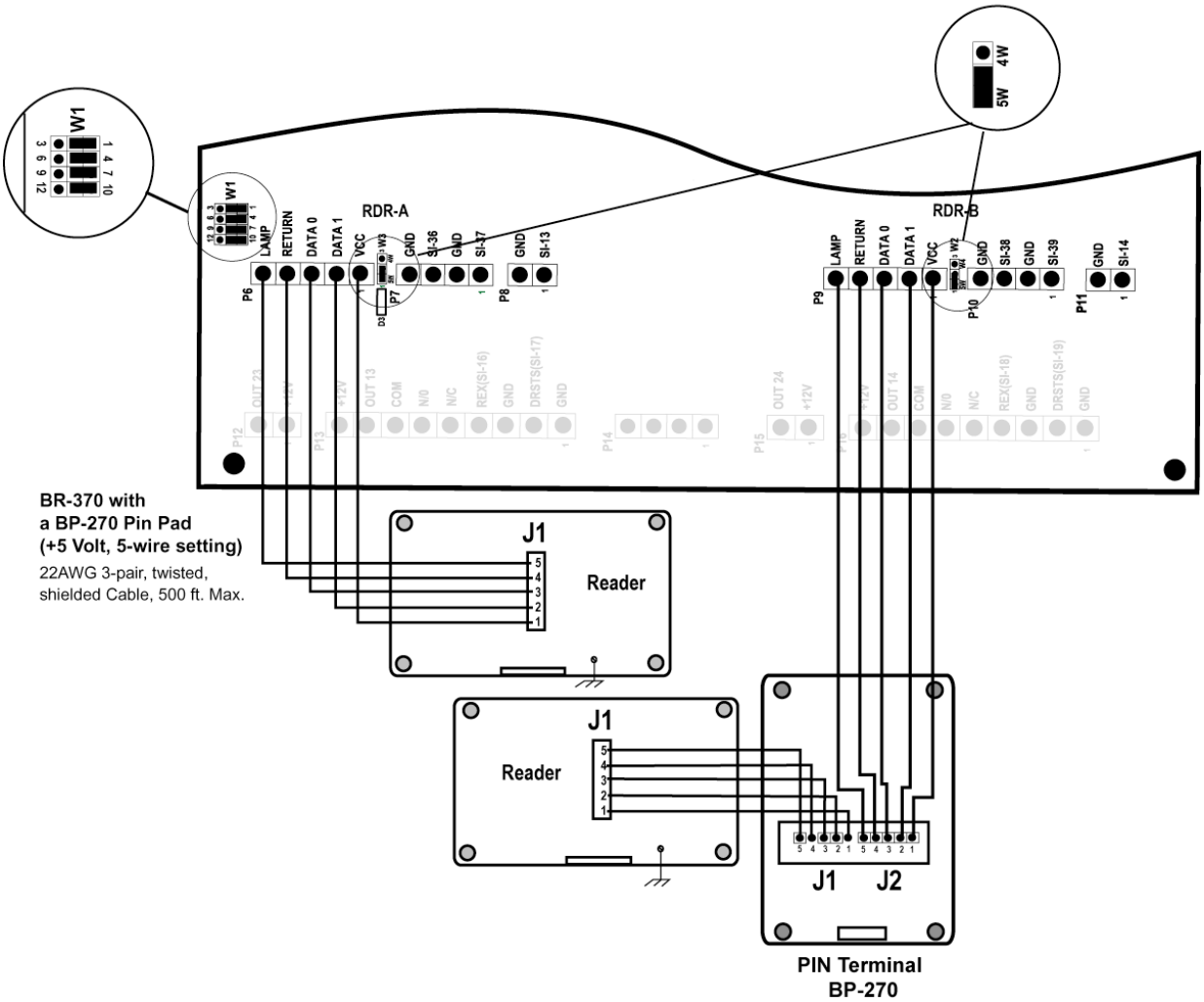
5.2 Reader Connections: BR-350 Readers: Expansion Board

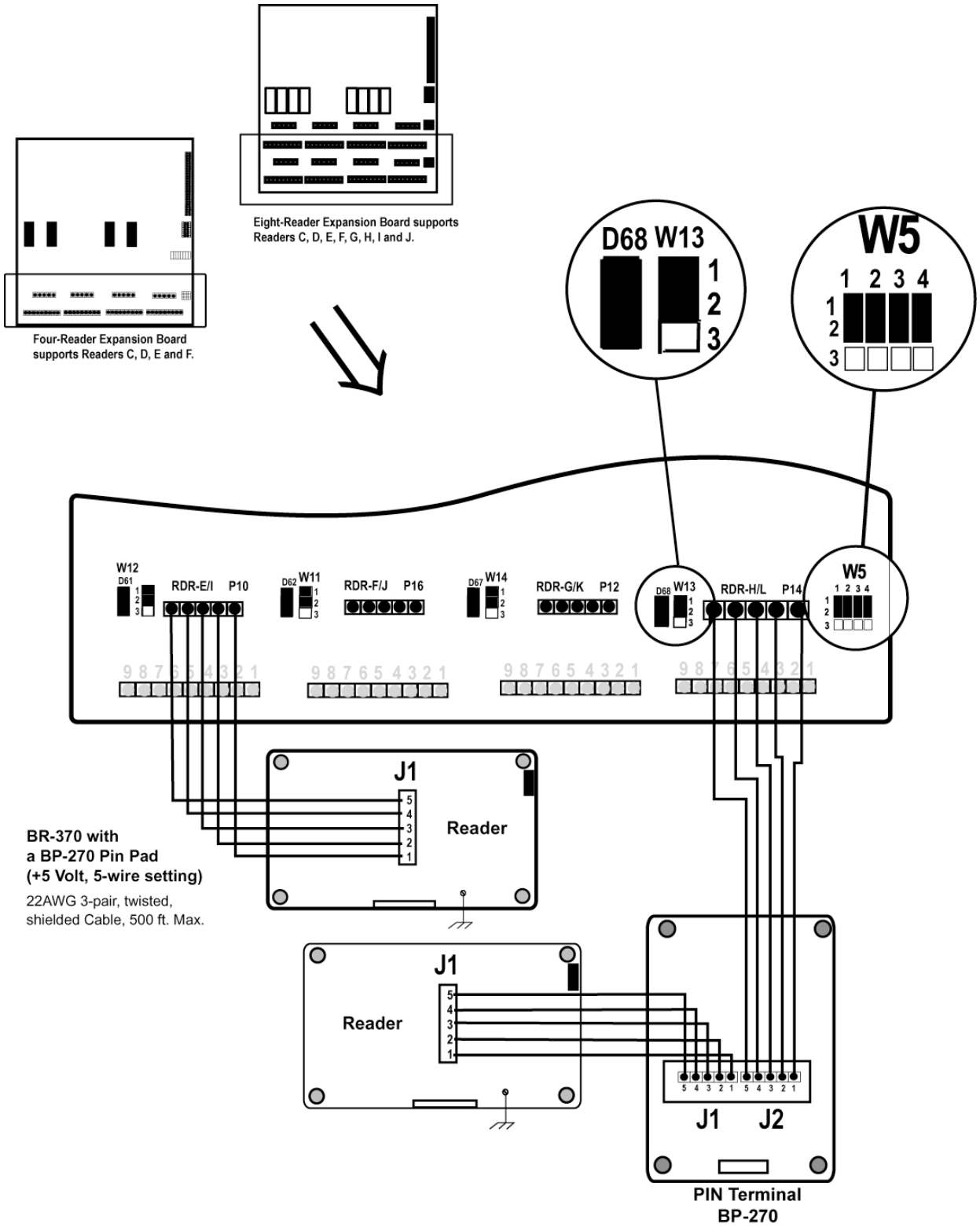


5.3 Reader Connections: BR-370 Readers: IQ Board



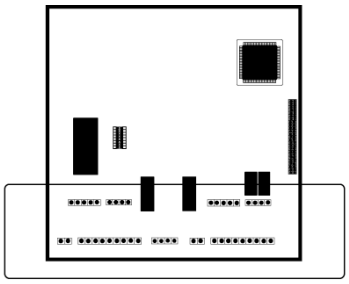
The IQ supports Readers A and B.




Four-Reader Expansion Board supports Readers C, D, E and F.
Eight-Reader Expansion Board supports Readers C, D, E, F, G, H, I and J.
D68 W13
W5
W12
D61
RDR-E/I P10
D62 W11
RDR-F/J P16
D67 W14
RDR-G/K P12
RDR-H/L P14
J1
Reader
BR-370 with
a BP-270 Pin Pad
(+5 Volt, 5-wire setting)
22AWG 3-pair, twisted,
shielded Cable, 500 ft. Max.
J2
PIN Terminal
BP-270

5.4 Reader Connections: BR-370 Readers: Expansion Board

5.5 Reader Connections: PR233 MiniProx / PR-733/732: IQ Board – Option 1



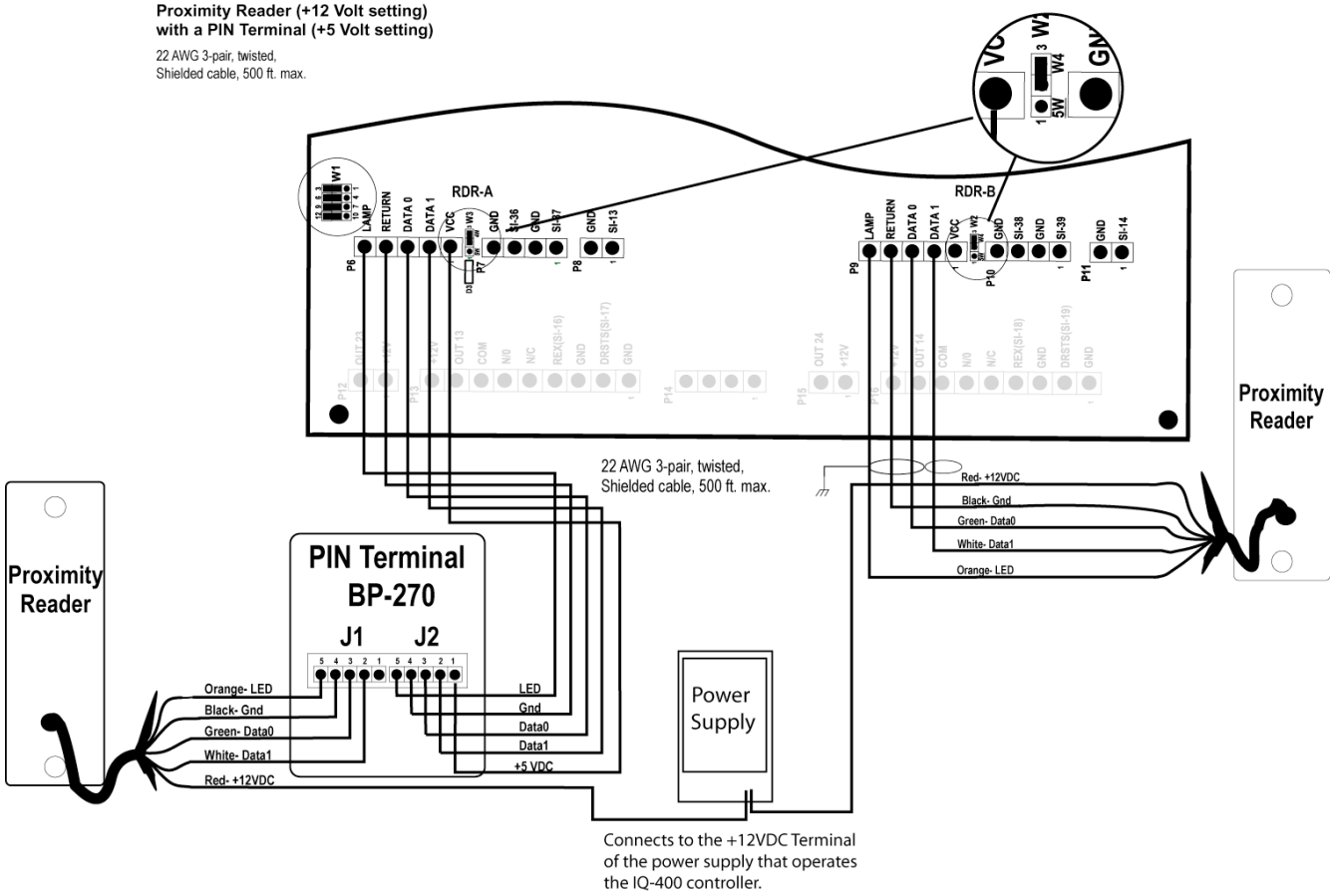
The IQ supports Readers A and B.

Option 1 - +12VDC Operation

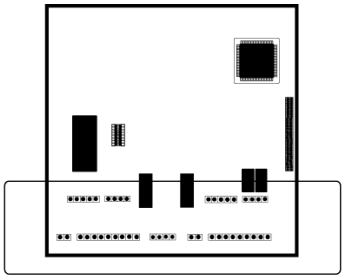
The reader is powered by the +12VDC power supply. If a pin pad is used, it is powered by the IQ-400 module, which is set for +5VDC.

Proximity Reader (+12 Volt setting) with a PIN Terminal (+5 Volt setting)

22 AWG 3-pair, twisted, Shielded cable, 500 ft. max.



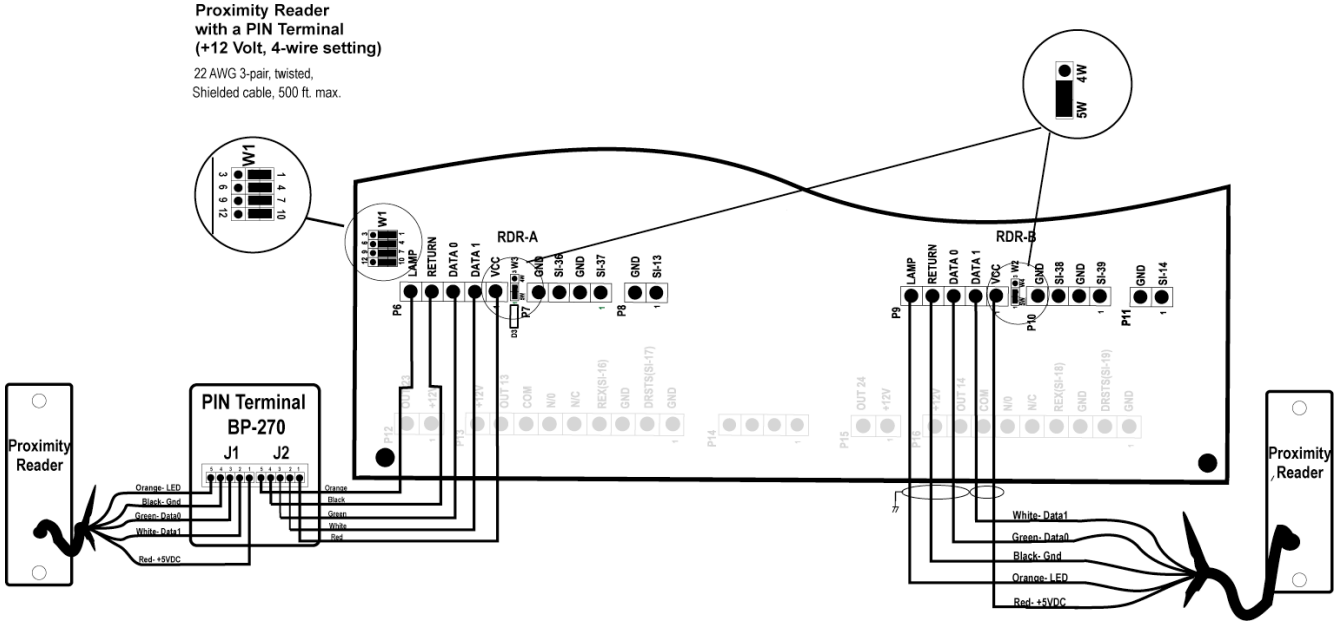
5.5 Reader Connections: PR233 MiniProx / PR-733/732: IQ Board – Option 2



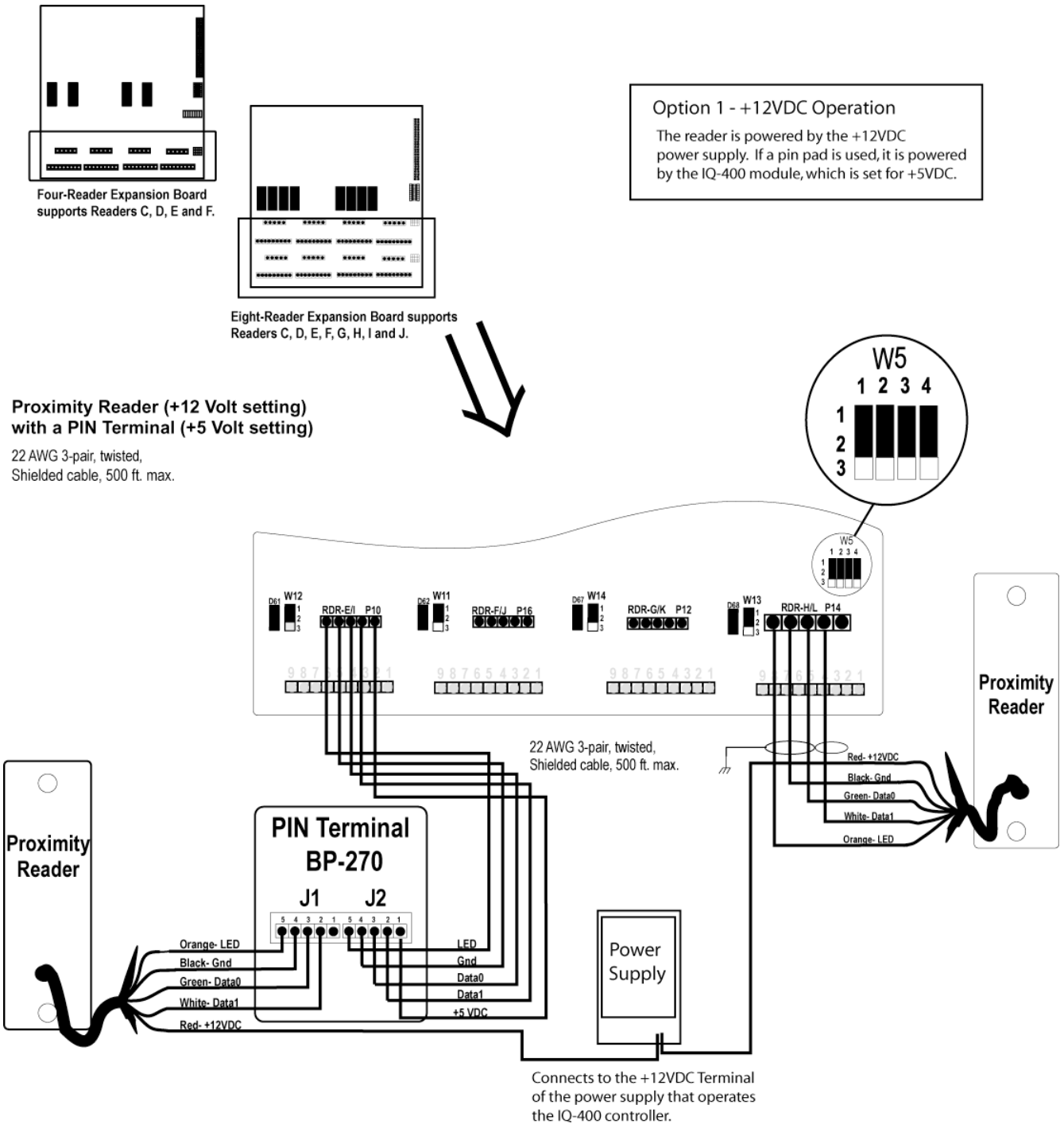
The IQ-400 supports Readers A and B.

Option 2 - +5VDC Operation

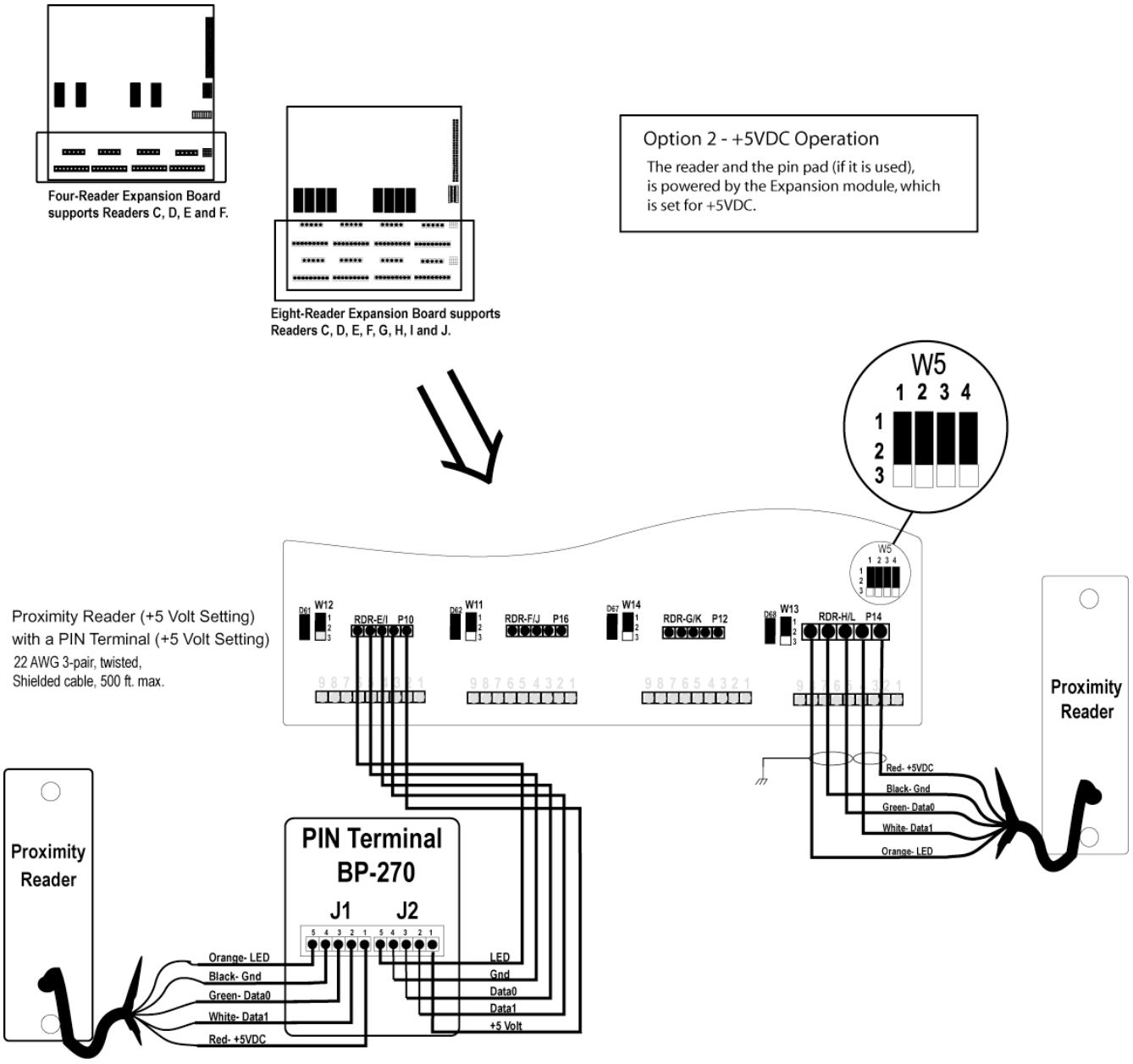
The reader and the pin pad (if it is used), is powered by the IQ-400 module, which is set for +5VDC.



5.6 Reader Connections: PR-233 Miniprox/ PR733/ 732: Expansion Board – Option 1

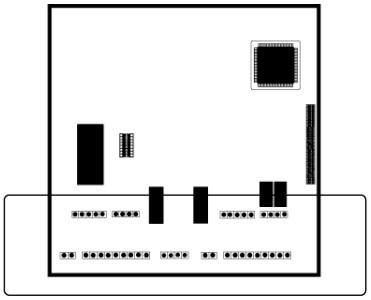


5.6 Reader Connections: PR-233 Miniprox/ PR733/ 732: Expansion Board – Option 2



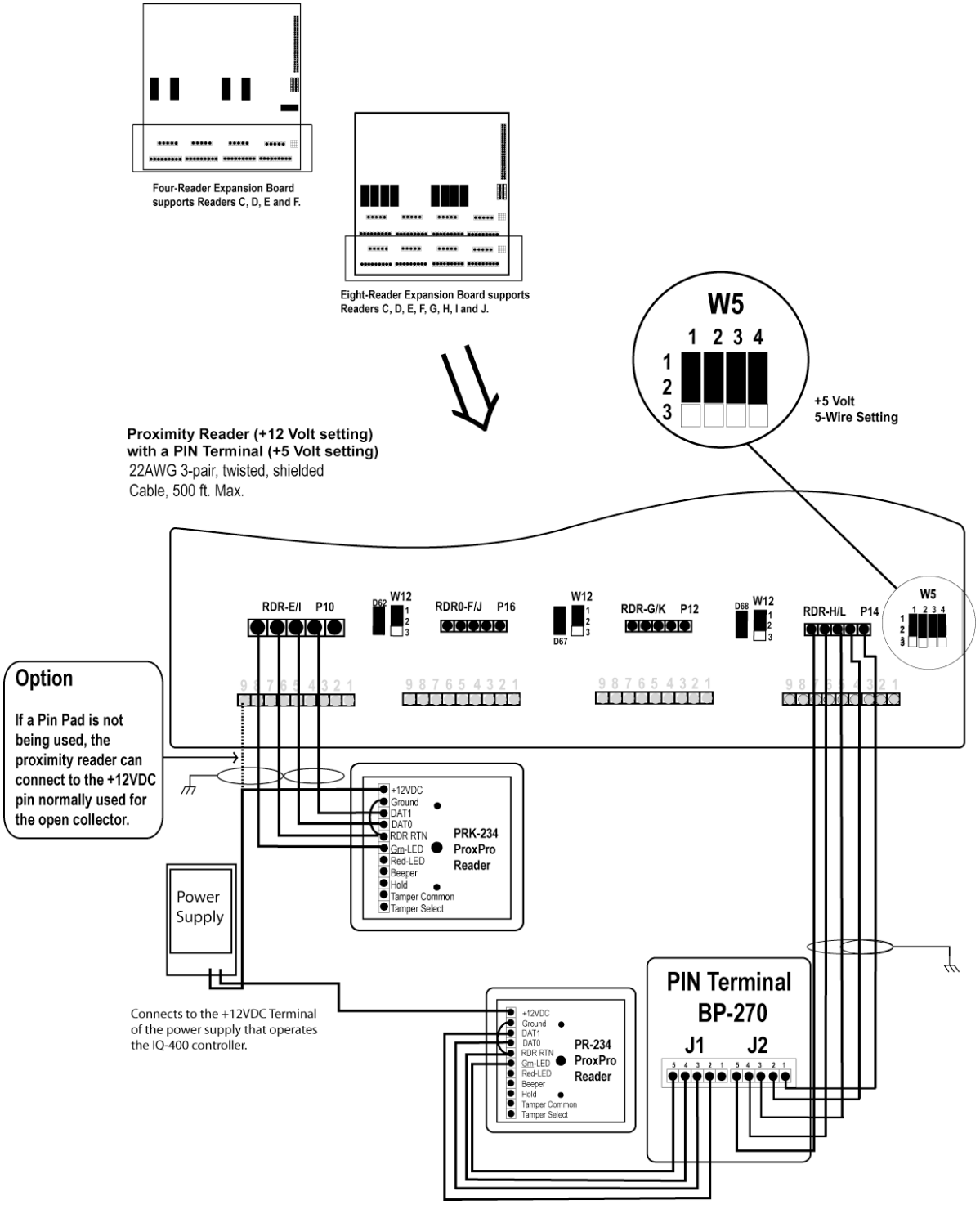
5.7 Reader Connections: PRK-234 ProxPro / PR736/ PRK-736: IQ Board

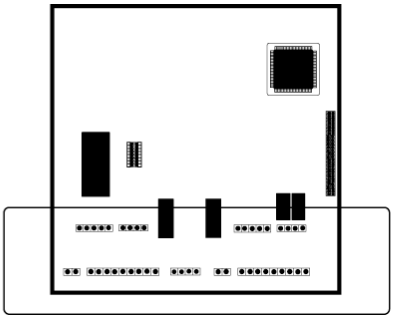
?



The IQ supports Readers A and B.

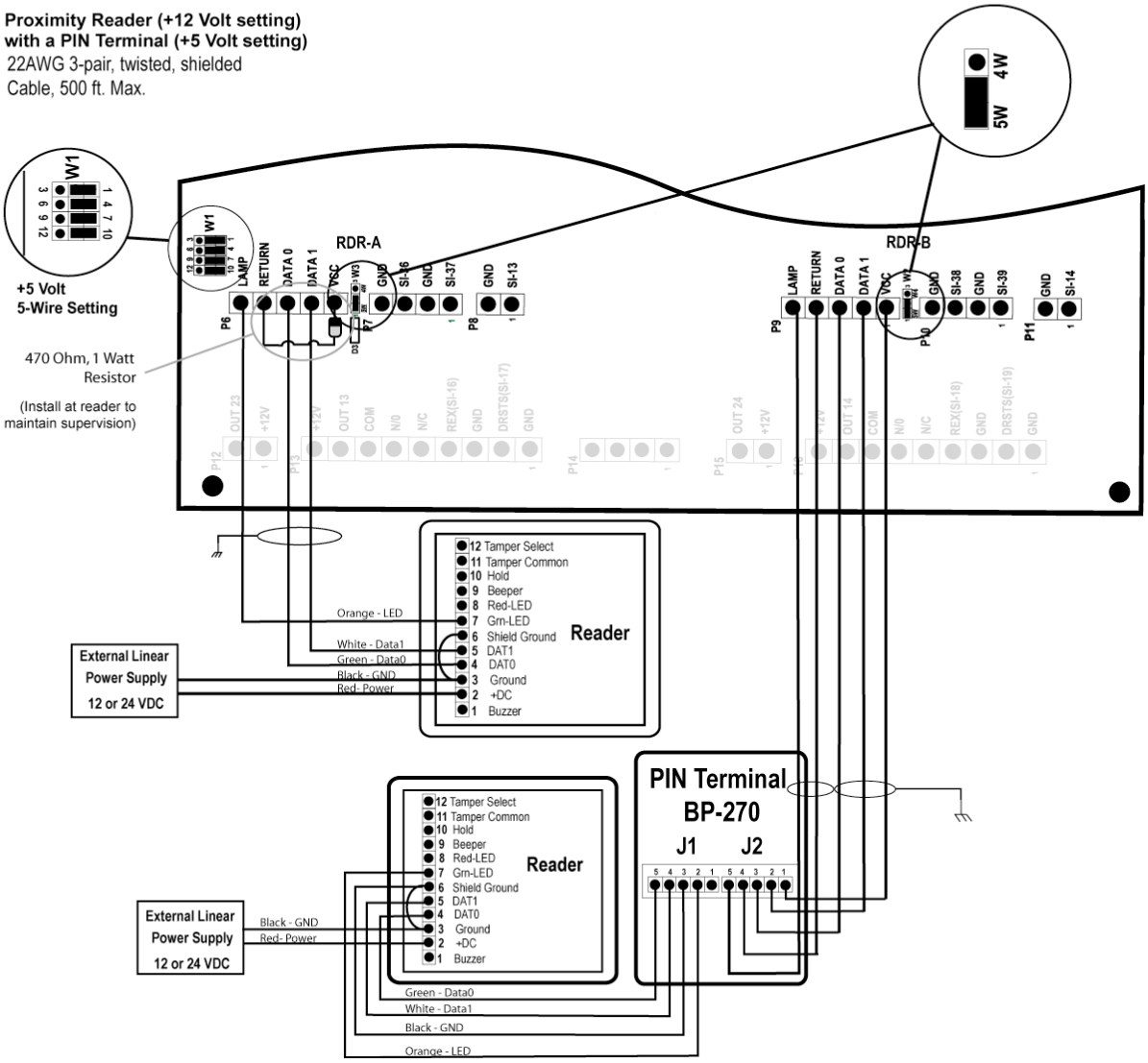
5.8 Reader Connections: PR-234/ PRK-234 ProxPro/ PR736/PRK-736: Expansion Board





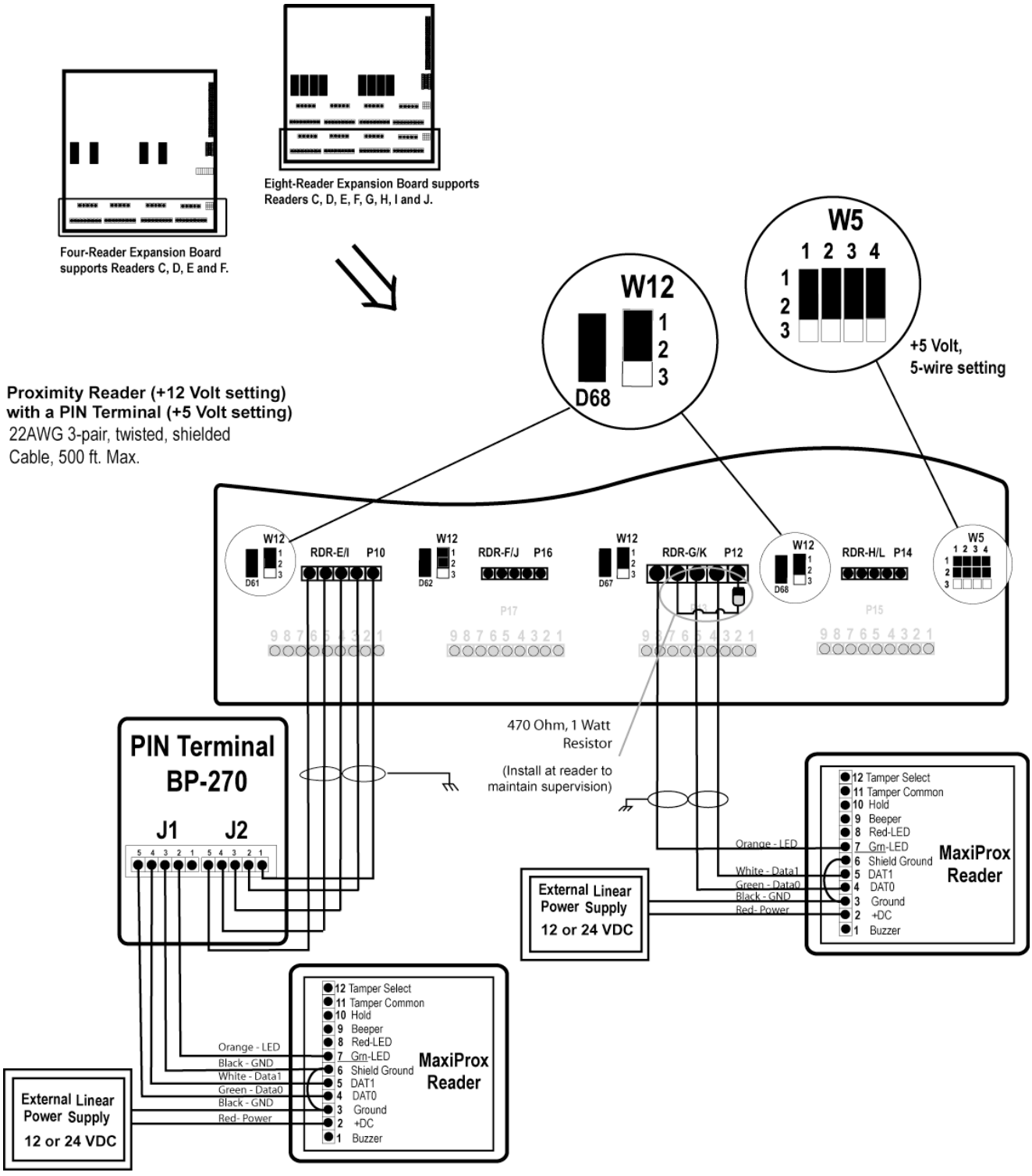
The IQ supports Readers A and B.

Proximity Reader (+12 Volt setting)
with a PIN Terminal (+5 Volt setting)
22AWG 3-pair, twisted, shielded
Cable, 500 ft. Max.

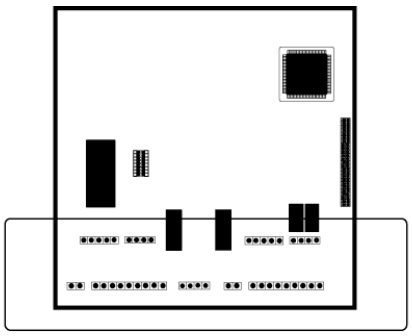


5.9 Reader Connections: PR-235 MaxiProx / PR-735: IQ Board

5.10 Reader Connections: PR-235 MaxiProx/ PR735: Expansion Board

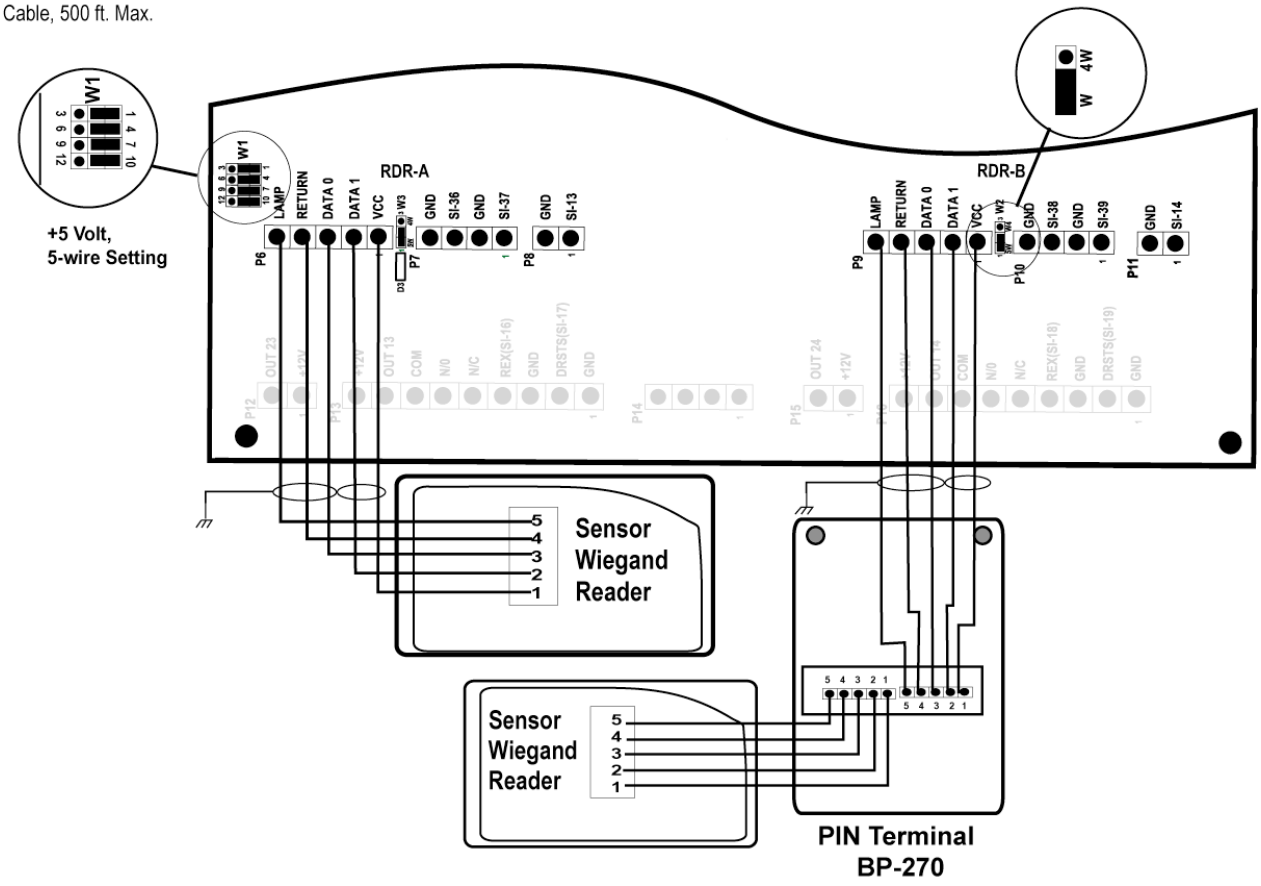


5.11 Reader Connections: Sensor Wiegand: IQ Board

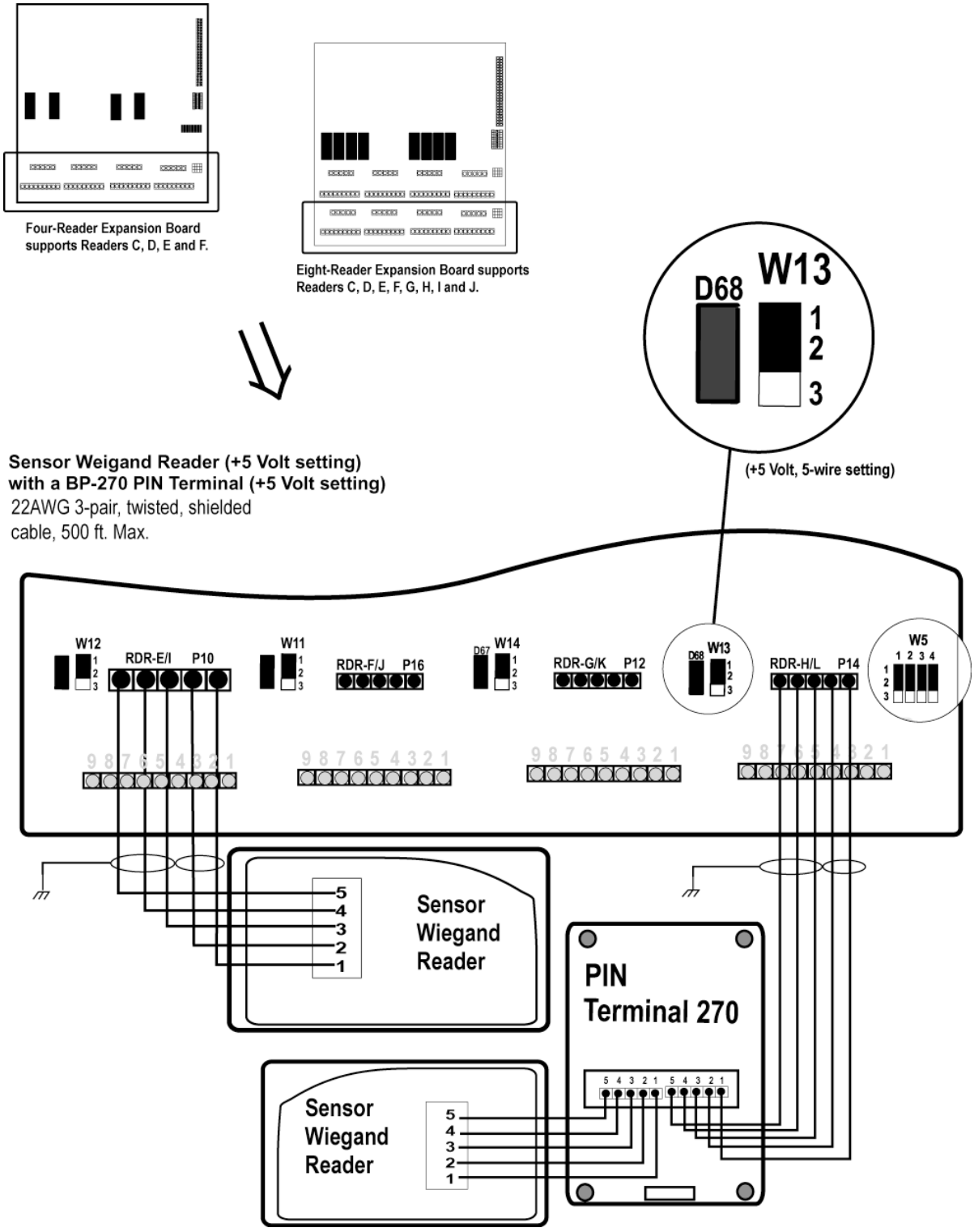


The IQ supports Readers A and B.

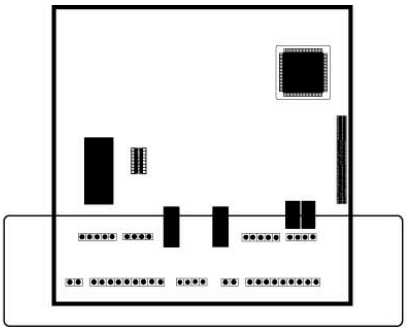
Sensor Weigand Reader (+5 Volt setting)
with a BP-270 PIN Terminal (+5 Volt setting)
22AWG 3-pair, twisted, shielded
Cable, 500 ft. Max.



5.12 Reader Connections: Sensor Wiegand: Expansion Board

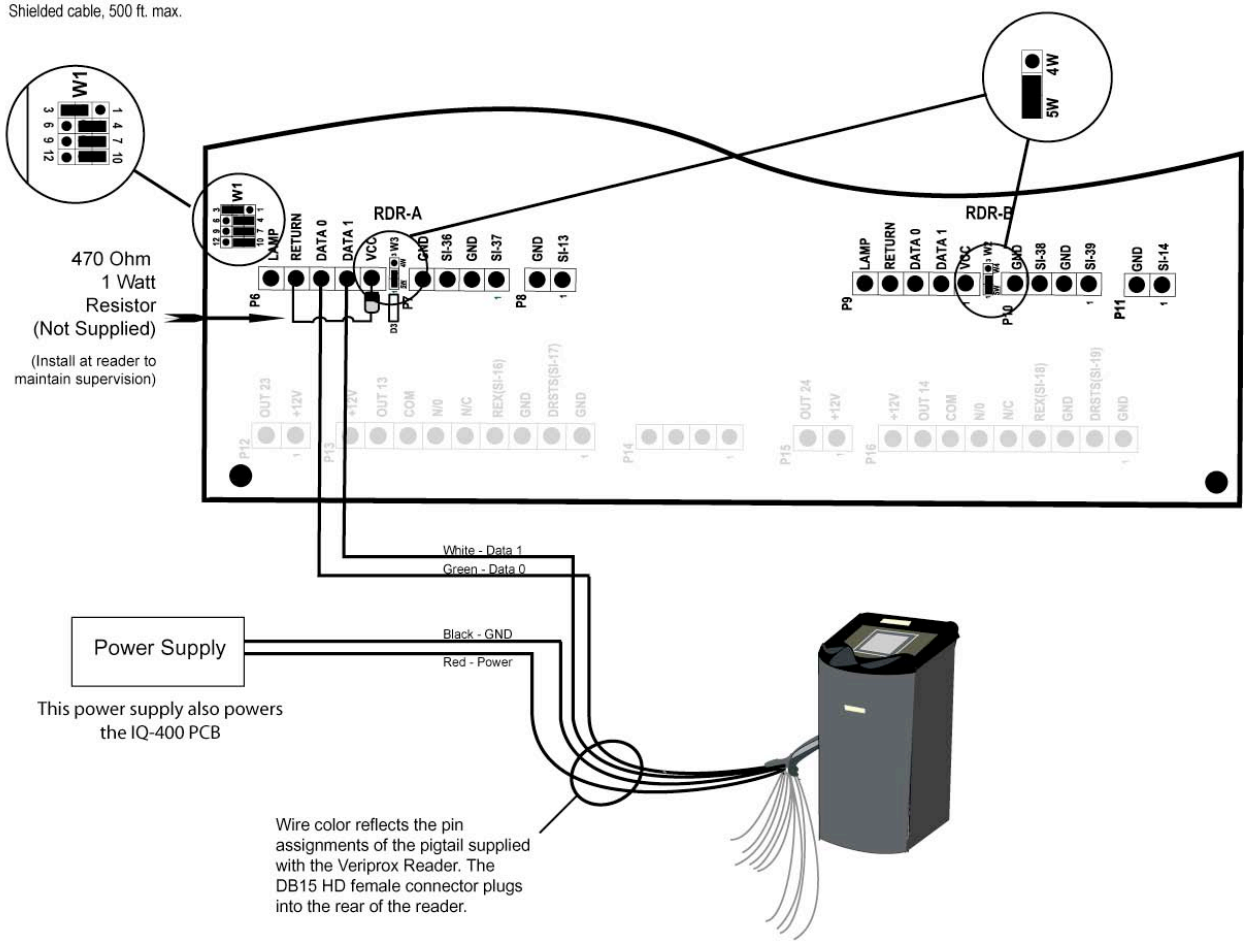


5.13 Reader Connections: VeriProx: IQ Board

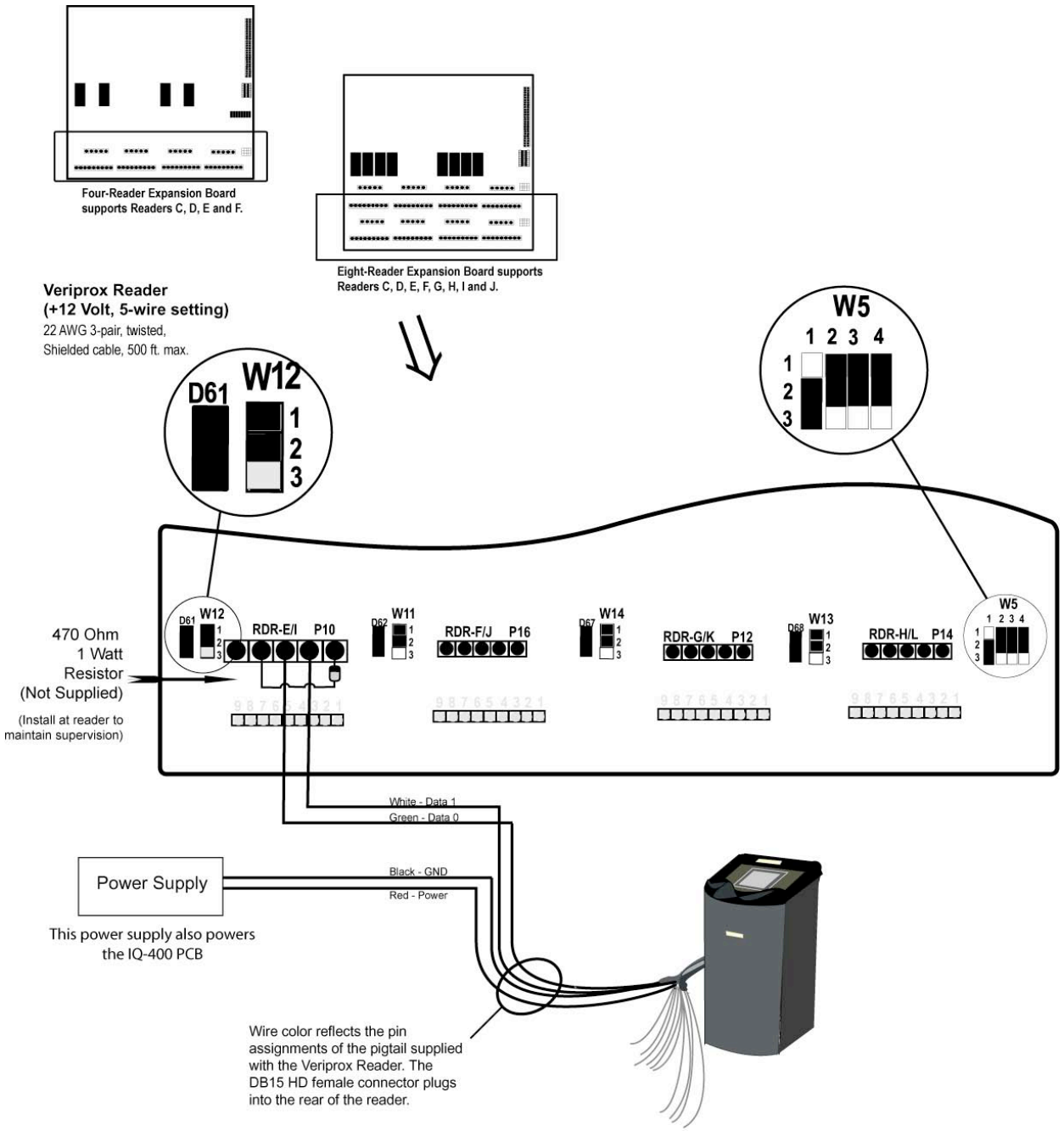


The IQ supports Readers A and B.

Veriprox Reader
(+12 Volt, 5-wire setting)
22 AWG 3-pair, twisted,
Shielded cable, 500 ft. max.



5.14 Reader Connections: VeriProx: Expansion Board



6.0 Wiring the Door(s)

Step 1. When power is interrupted from the IQ-200, the door relay **de-energizes** and continuity (conduction path) exists between the Common (Com.) and Normally Closed (N.C.) relay contacts. Should this loss-of-power situation arise, it must be determined whether the door(s) controlled by the IQ-200 will become unlocked (or a Fail-Safe environment), or locked (or a Fail-Secure environment).

Step 2. Refer to the two types of door hardware below and the circuit conditions that coincide with the state of the locks.

Case A. Door Strike hardware requires continuity to unlock (for strikes that require power to lock, follow the outline given for maglocks). This is provided by a closed circuit condition (Normally Closed [N.C.]).

Case B. Door Strike hardware does NOT require continuity to lock (for strikes that require power to lock, follow the outline given for maglocks). This is provided by an open circuit condition (Normally Open [N.O.]).

Case C. Magnetic lock hardware requires continuity to lock. This is provided by a closed circuit condition (Normally Closed [N.C.]).

Case D. Magnetic lock hardware does NOT require continuity to unlock. This is provided by an open circuit condition (Normally Open [N.O.]).

Step 3. For **Fail-Safe** operation, wire the appropriate door lock hardware to accommodate an **unlocked** condition upon interruption of IQ-200 power. This is implemented by:

- For door strikes, wire between the Common and Normally Closed Door Relay contacts.
- For Magnetic Locks, wire between the Common and Normally Open Door Relay contacts.

For **Fail-Secure** operation, wire the appropriate door lock hardware to accommodate a **locked** condition upon interruption of IQ-200 power. This is implemented by:

- For door strikes, wire between the Common and Normally Open Door Relay contacts.
- For Magnetic Locks, wire between the Common and Normally Closed Door Relay contacts.

NOTE For both conditions (Fail Safe and Fail Secure) it is presumed that Lock Power is battery backed.

Step 4. Next page

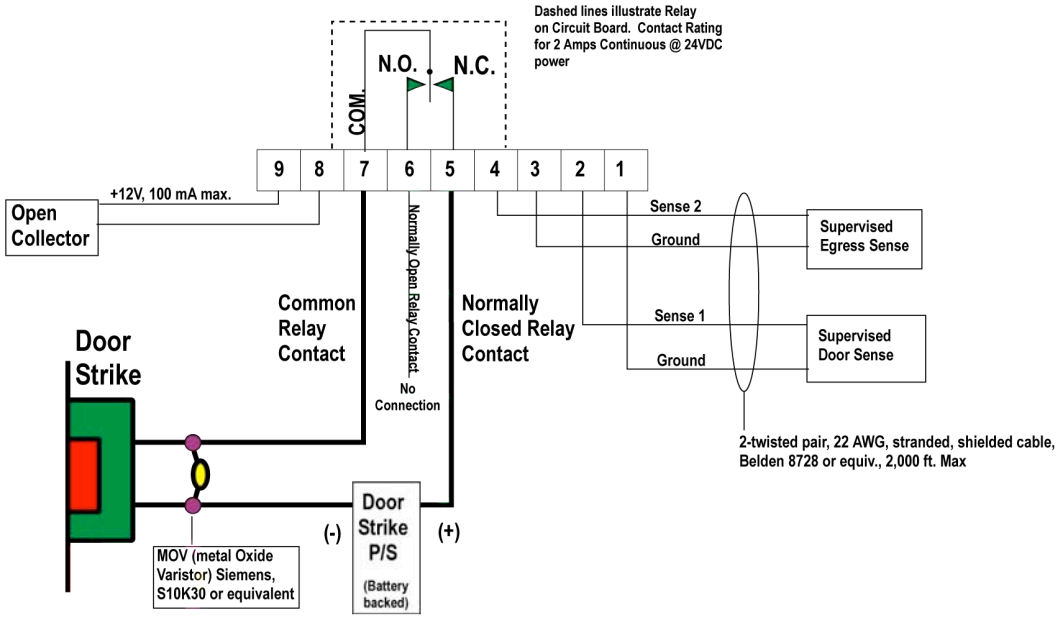
Step 4. Program the quiescent (INACTIVE) state of the door output relay to provide a locked door state. For **Fail-Safe** environments, the quiescent state of the door output relay should be ENERGIZED. For **Fail-Secure** environments, it should be DE-ENERGIZED.

Consult the **LiNC-NET Administrator Manual**'s **Door Overview/Hardware** section for programming information.

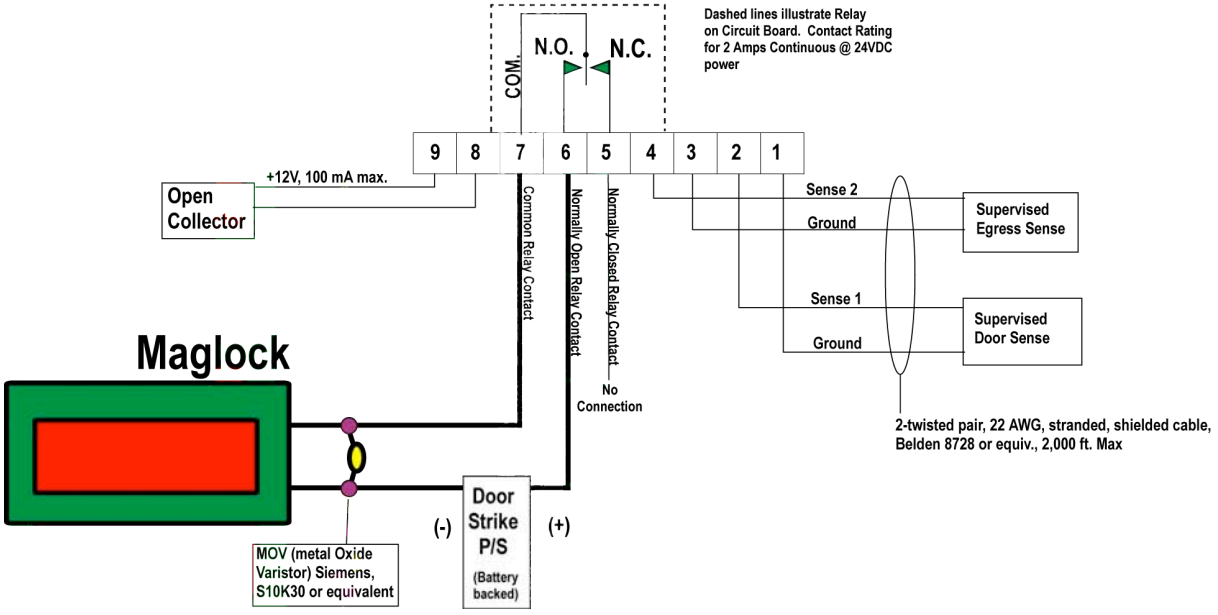
Open Collector Output: Open collector outputs are designed to drive an external relay. This technique can be used to control devices which exceed the relay capacity of those on board the IQ-200. The open collector outputs are capable of 100 mA current @ 12VDC.

6.1 Panel in a Fail-Safe Environment

Example of the IQ-200 with a Doorstrike in a Fail-Safe Environment

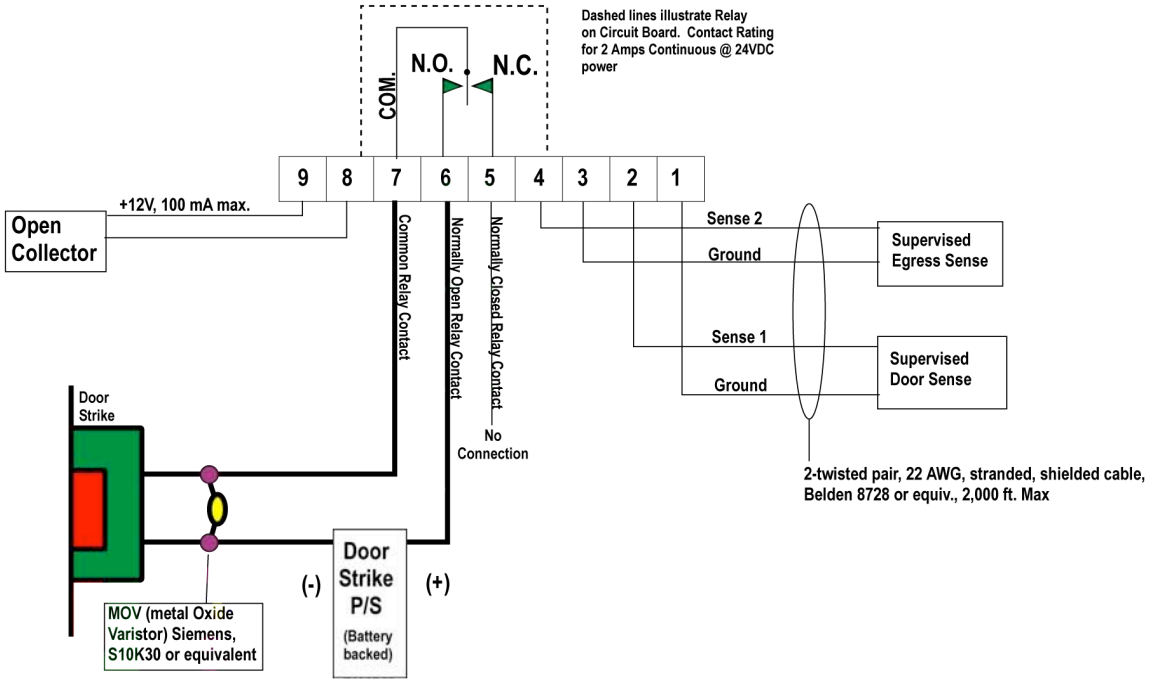


Example of the IQ-200 with a Maglock in a Fail-Safe Environment

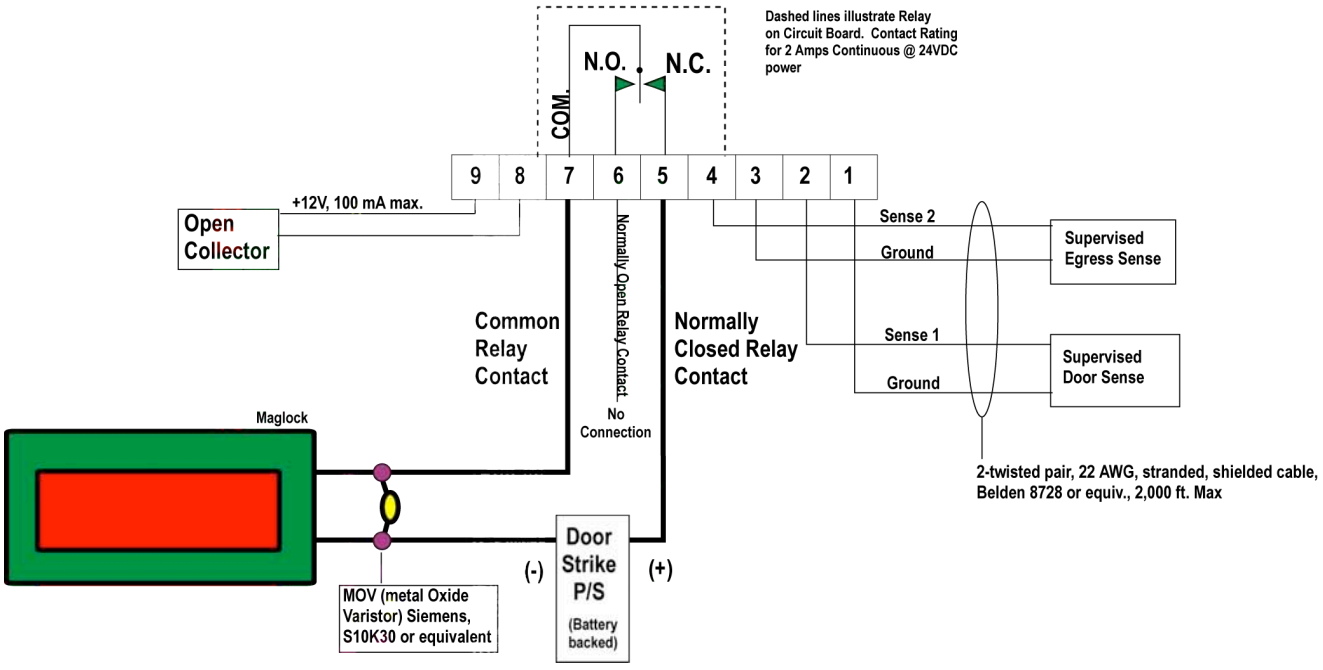


6.2 Panel in a Fail-Secure Environment

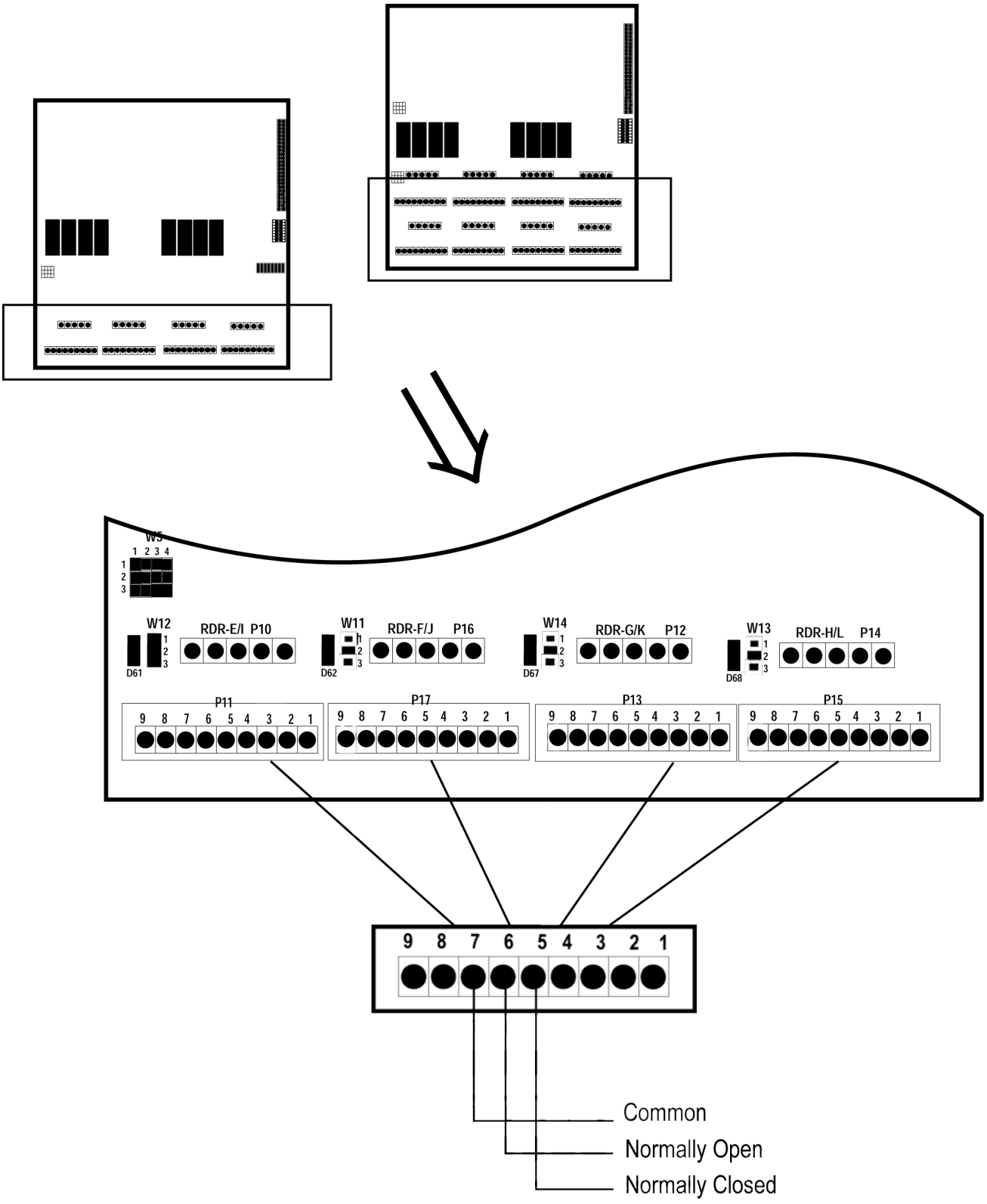
Example of the IQ-200 with a Doorstrike in a Fail-Secure Environment



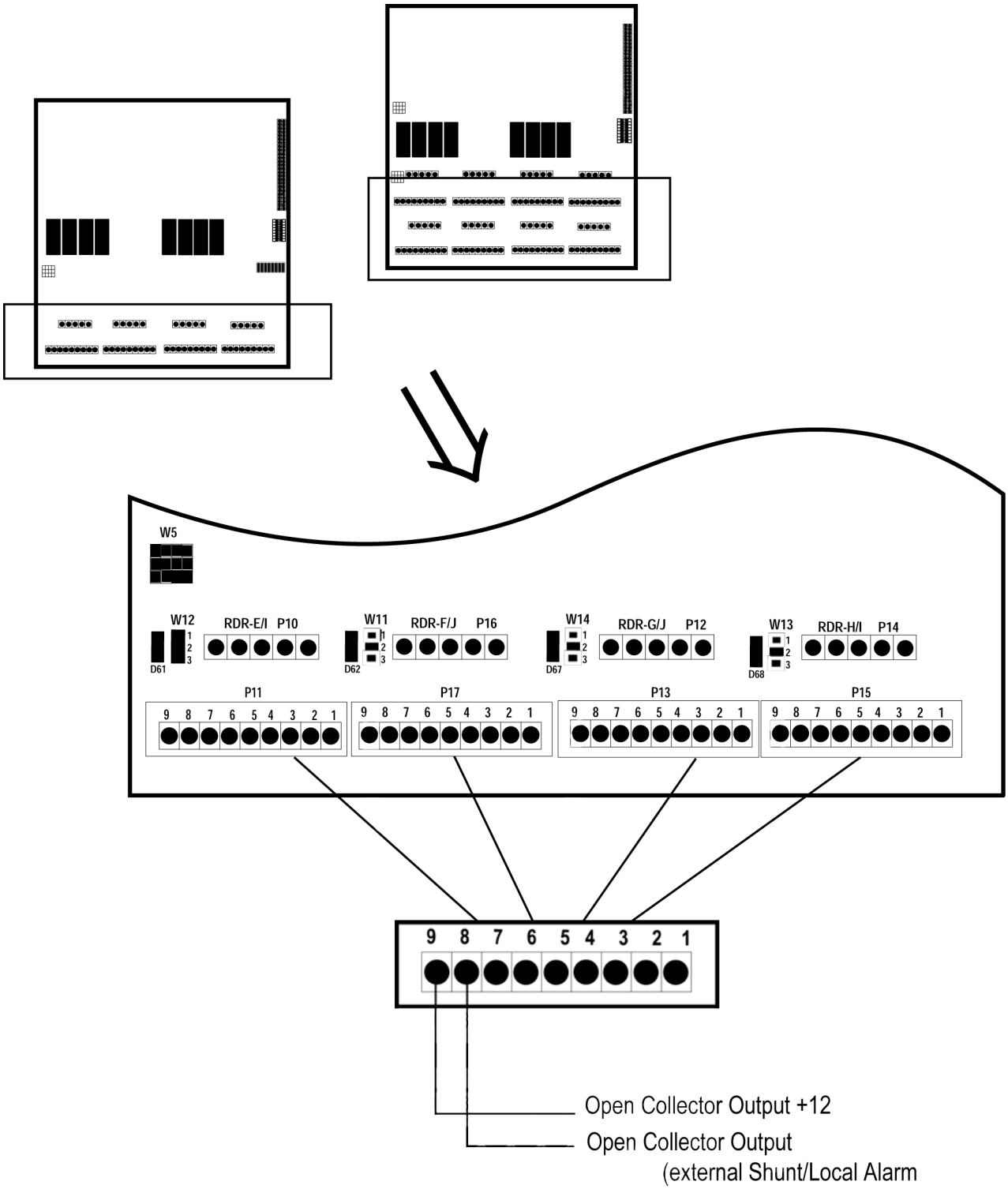
Example of the IQ-200 with a Maglock in a Fail-Secure Environment



6.3 Expansion Board Door Lock/Strike

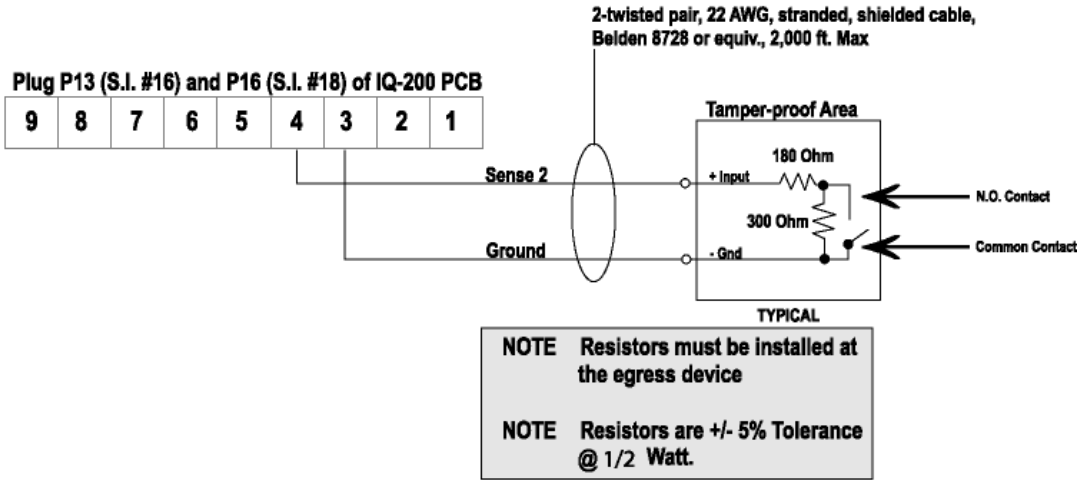


6.4 Expansion Board Open Collector

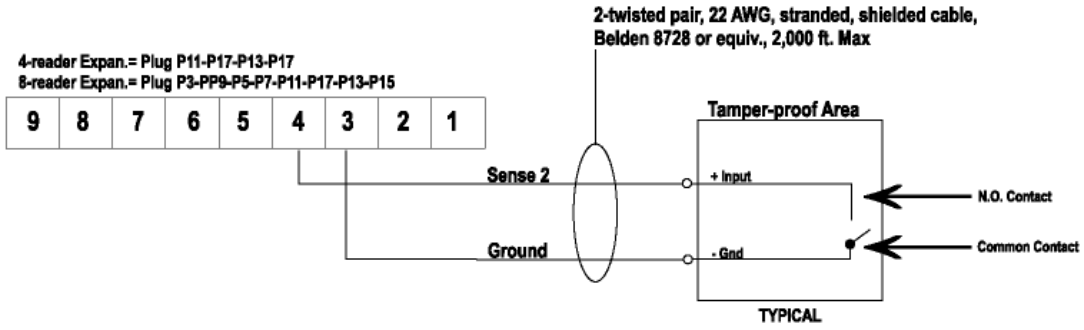


6.5 Egress Sense for IQ-200 and Expansion Boards

Supervised Egress Sense for the IQ-200

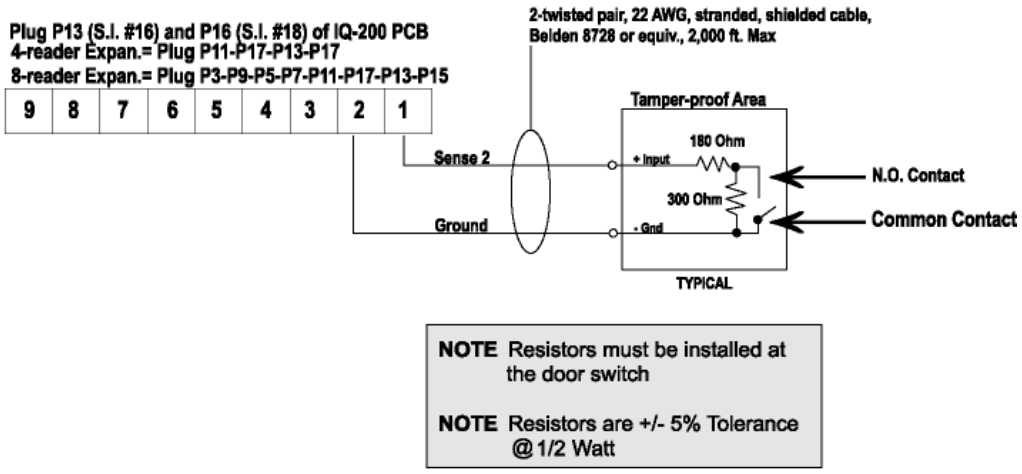


Unsupervised Egress Sense for the 4/8 Reader Expansion Module



6.6 Door Sense for IQ-200 and Expansion Boards

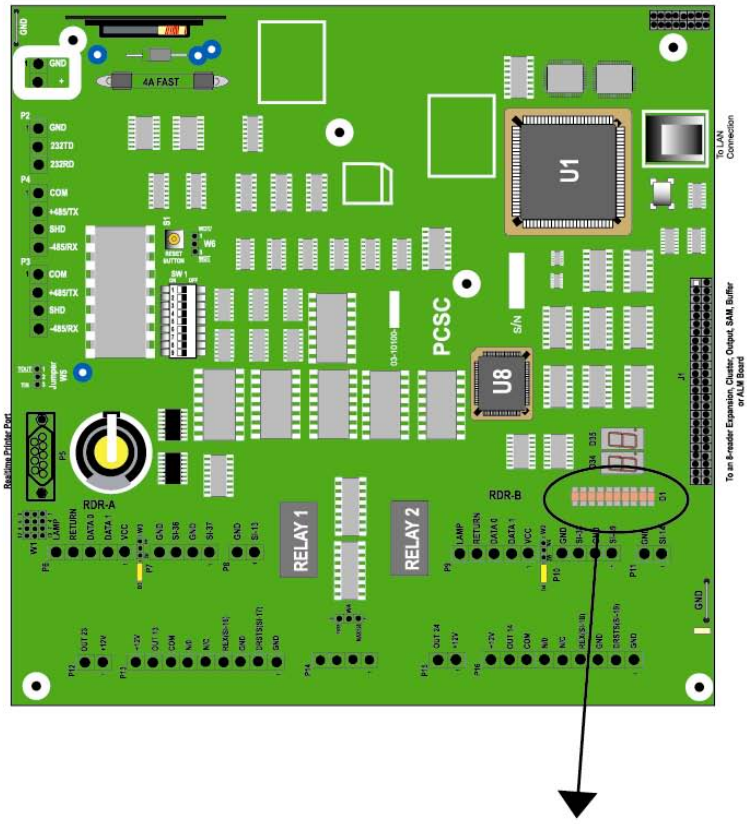
Supervised Door Sense



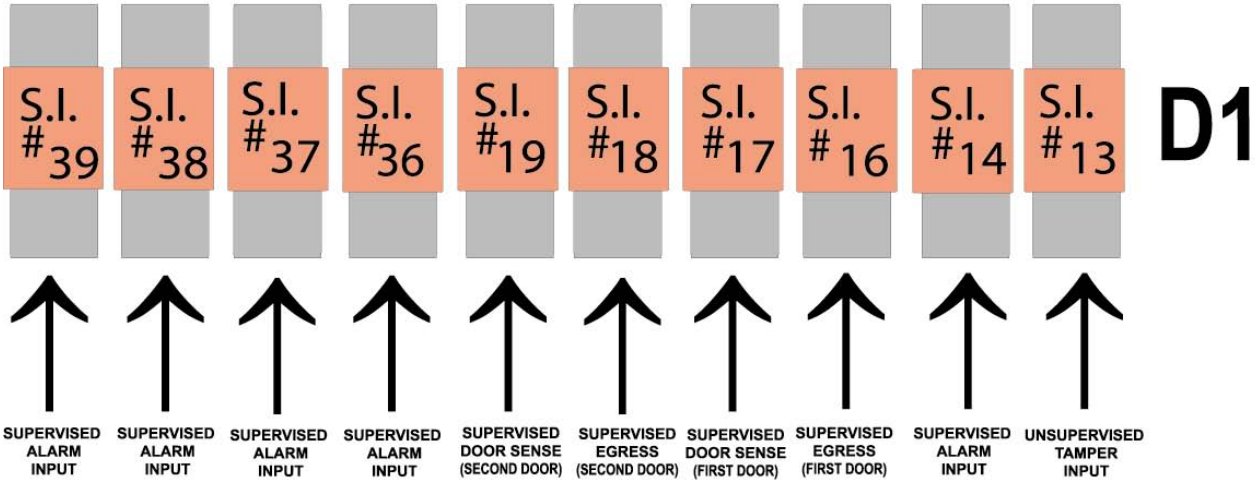
NOTE For UL Installations, the maximum number of alarm signals shall not exceed 1000.

6.6.1 Using the Ten-Segment LED Array

Two LED's, located in the ten-segment array D1, indicate the status of the supervised door circuits. Also the unsupervised tamper, supervised egress inputs, and supervised alarm inputs are annunciated in the LED array as listed below:

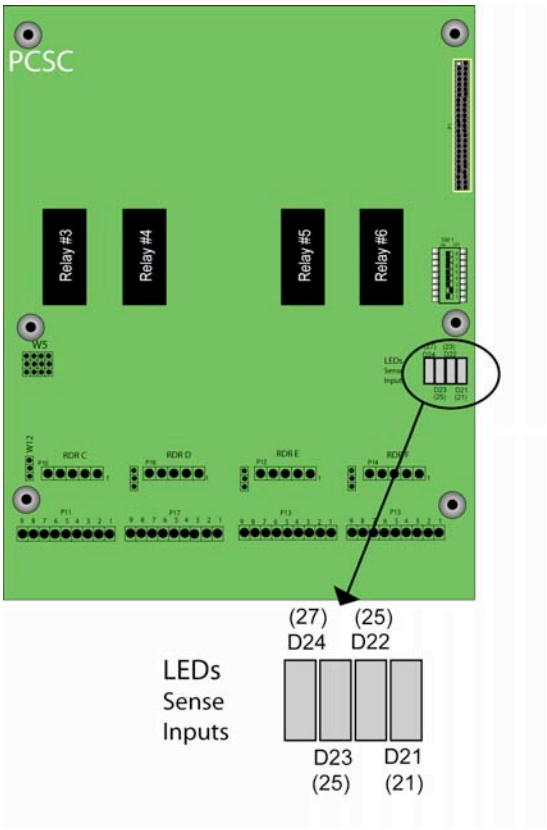


10 Segment LED - IQ-200

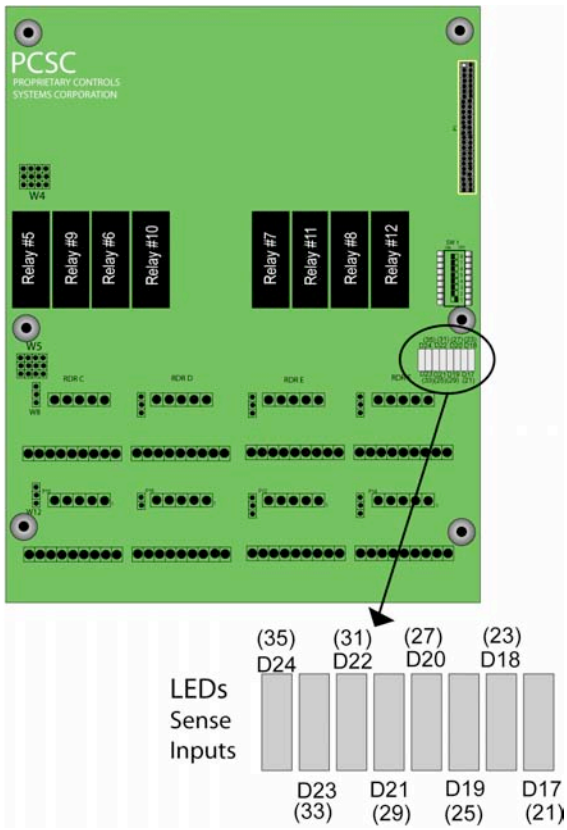


6.6.2 Expansion Board LED Arrays

4-Door Expansion Board (IQ-4)

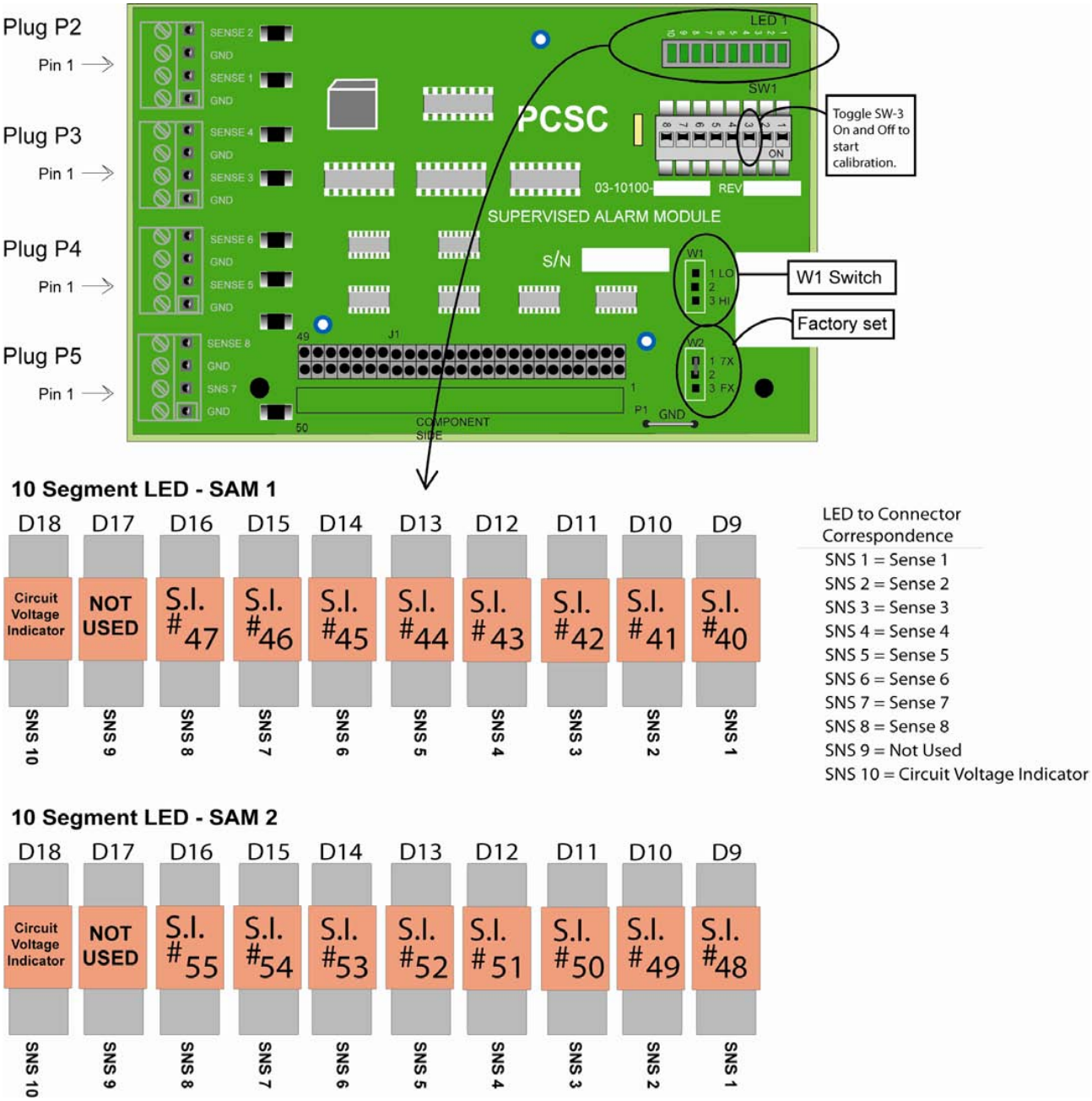


8-Door Expansion Board (IQ-8)



NOTE: Numbers in parentheses are the Sense Input Numbers. The "D" Numbers are the corresponding LED's assigned to reflect the current status of each individual Sense Input.

6.6.3 SAM Board LED Arrays

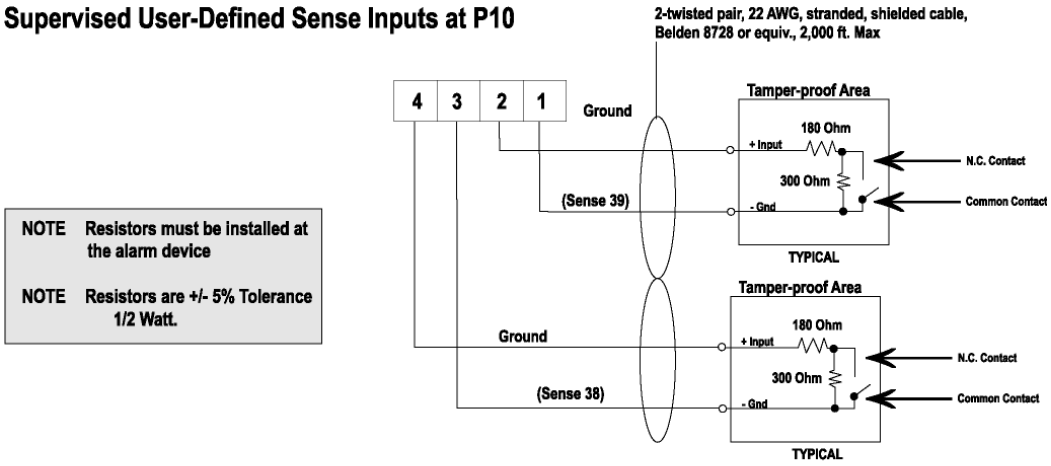


6.6.4 Status Chart For All LED Arrays

OFF	Circuit is normal/secure
ON	Circuit is in an alarm condition
Flashes 2 times per second	Fault condition. Open circuit
Flashes 1 time per second	Fault condition. Short circuit.
Flashes every ½ second	Circuit is NOT calibrated and NOT functional.

6.7 Supervised Sense Inputs for P7, P10 and P11 and Unsupervised Tamper at P8

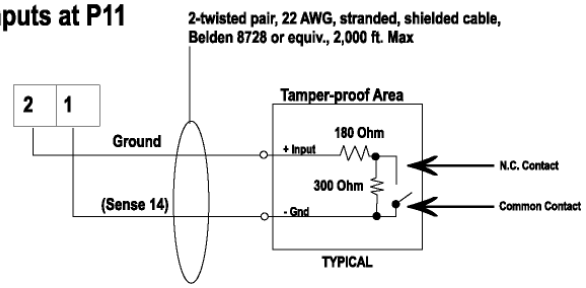
Supervised User-Defined Sense Inputs at P10



NOTE Resistors must be installed at the alarm device

NOTE Resistors are +/- 5% Tolerance 1/2 Watt.

Supervised User-Defined Sense Inputs at P11



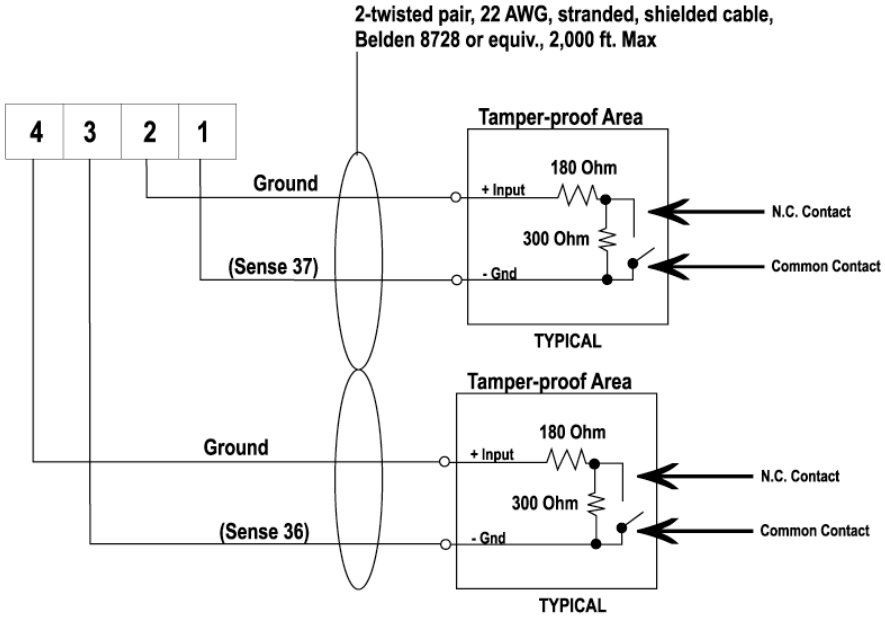
NOTE Resistors must be installed at the alarm devices.

NOTE Resistors are +/- 5% Tolerance @ 1/2 Watt.

Supervised User-Defined Sense Inputs at P7

NOTE Resistors must be installed at the alarm device

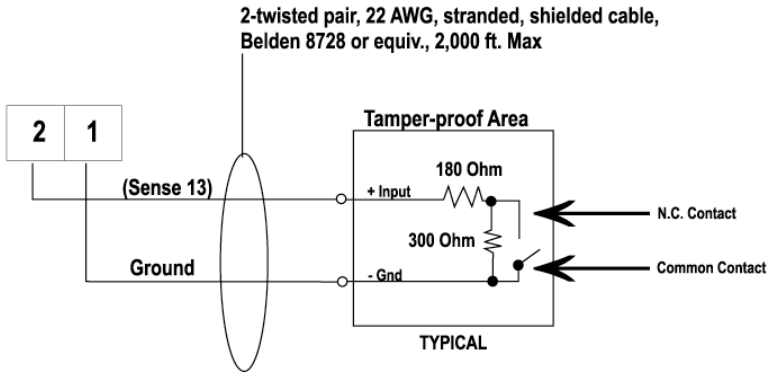
NOTE Resistors are +/- 5% Tolerance @ 1/2 Watt.



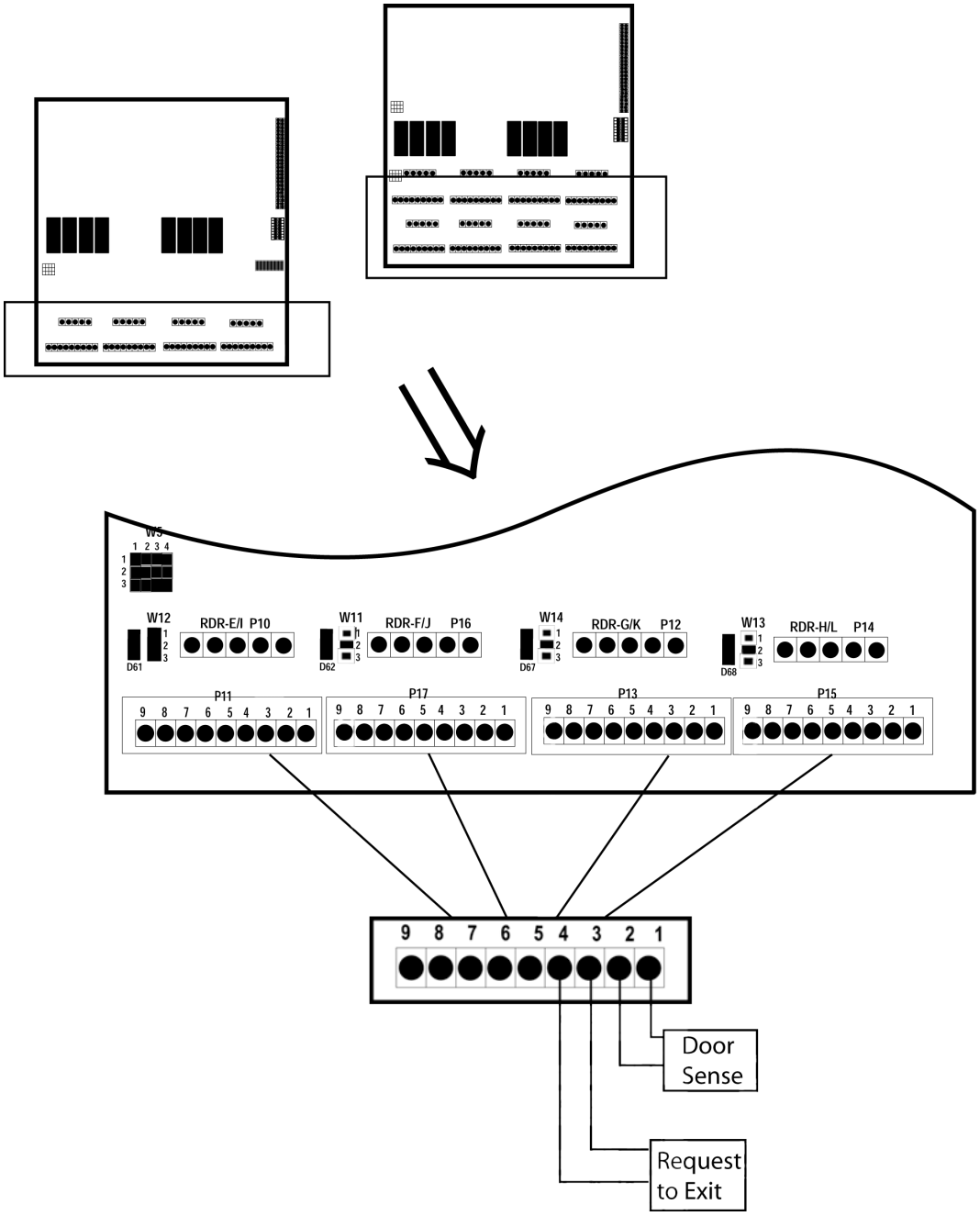
Supervised User-Defined Sense Inputs at P8

NOTE Resistors must be installed at the alarm device

NOTE Resistors are +/- 5% Tolerance @ 1/2 Watt.



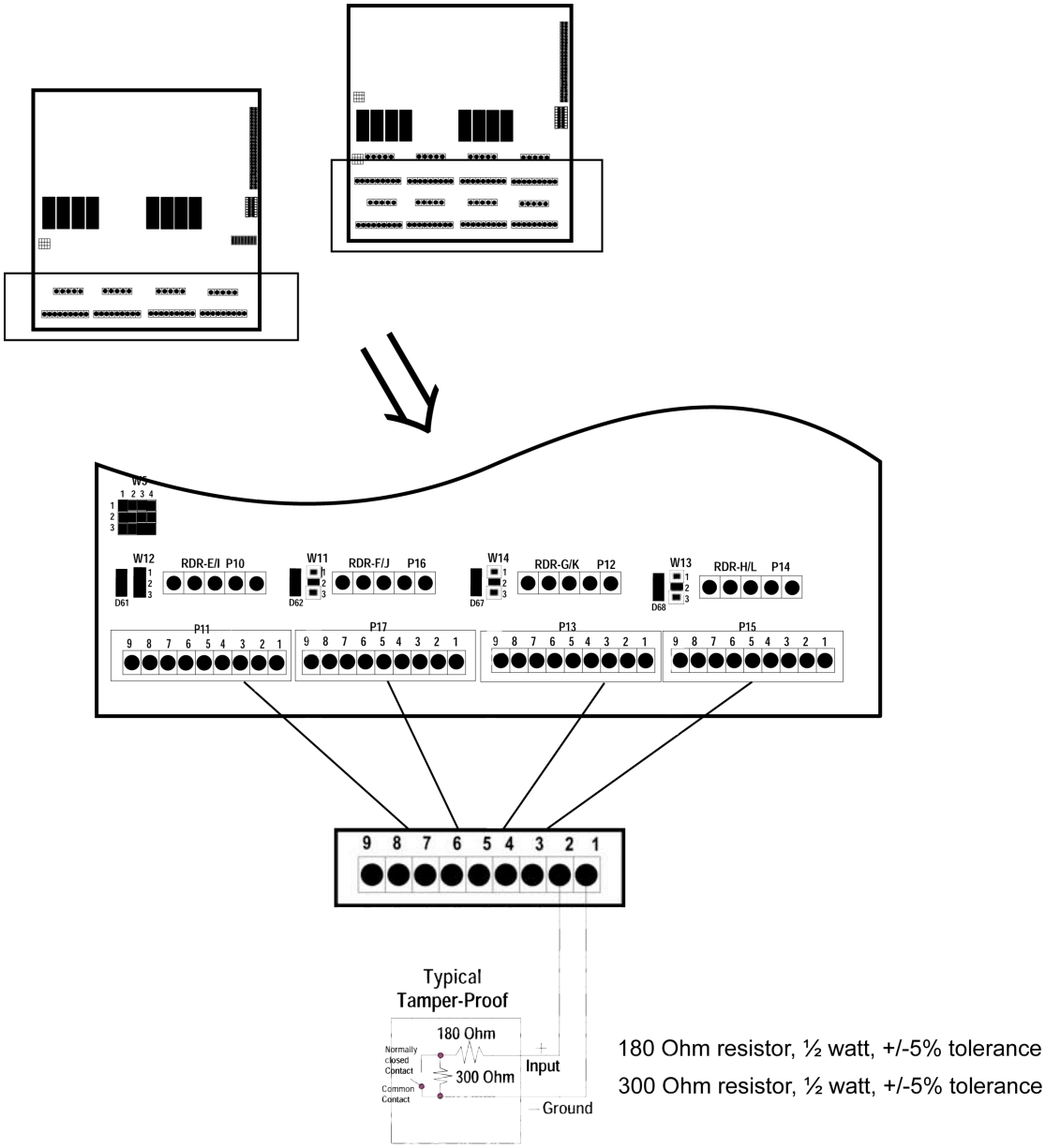
6.8 Expansion Board Supervised Door Senses and Supervised Request-to-Exit Sense Inputs



Install End-of-Line resistors at door switch/egress device (not at the IQ Panel end of the cable).

When door is closed, continuously exists across the common (COM) and normally closed (N.C.) door switch contacts.

6.9 Expansion Board Supervised Door Sense Locations



180 Ohm resistor, ½ watt, +/-5% tolerance

300 Ohm resistor, ½ watt, +/-5% tolerance

Install End-of-Line resistors at door switch/egress device (not at the IQ Panel end of the cable).

When door is closed, continuously exists across the common (COM) and normally closed (N.C.) door switch contacts.

6.10 Installing Noise Suppression Devices

To install either an MOV to suppress noise and avoid problems related to spikes, follow the instructions below and refer to the diagrams on the following pages.

6.10.1 Procedure

The most effective location for a suppression device is at the source; in this case, at the door strike.

1. Remove the strike-locking device and find the wire connector that attaches the lock wires to the lock.

2. Install an MOV (Siemens S10K30 or equivalent) in parallel with the load. The MOV is a non-polarized device and will work with both AC and DC locks.

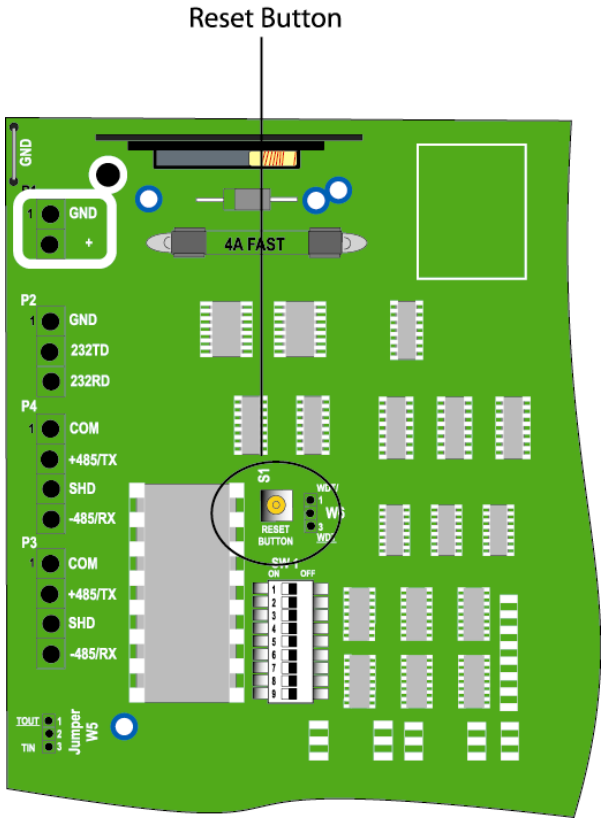
> **NOTE** Use an additional MOV if you experience further noise at the strike.

> **NOTE** For further protection on DC units, a reverse biased diode may be installed (We suggest types 1N4004 to 1N4007 be used) also in parallel with the load.

3. Note the wiring set-up of your particular system. Connections can be made either to the “normally open” (fail secure) contact or to the “normally-closed” (fail-safe) configuration whereby an isolation relay is used and a MOV is added for noise suppression.

7.0 Communicating with the IQ-200

The IQ-200 can communicate over a dialup MODEM, an RS232 or an RS485 serial direct connection or LAN. In a multi-drop IQ-200 configuration, the IQ-200 MUST communicate via RS-485 protocol.



7.1 Reset the IQ Panel

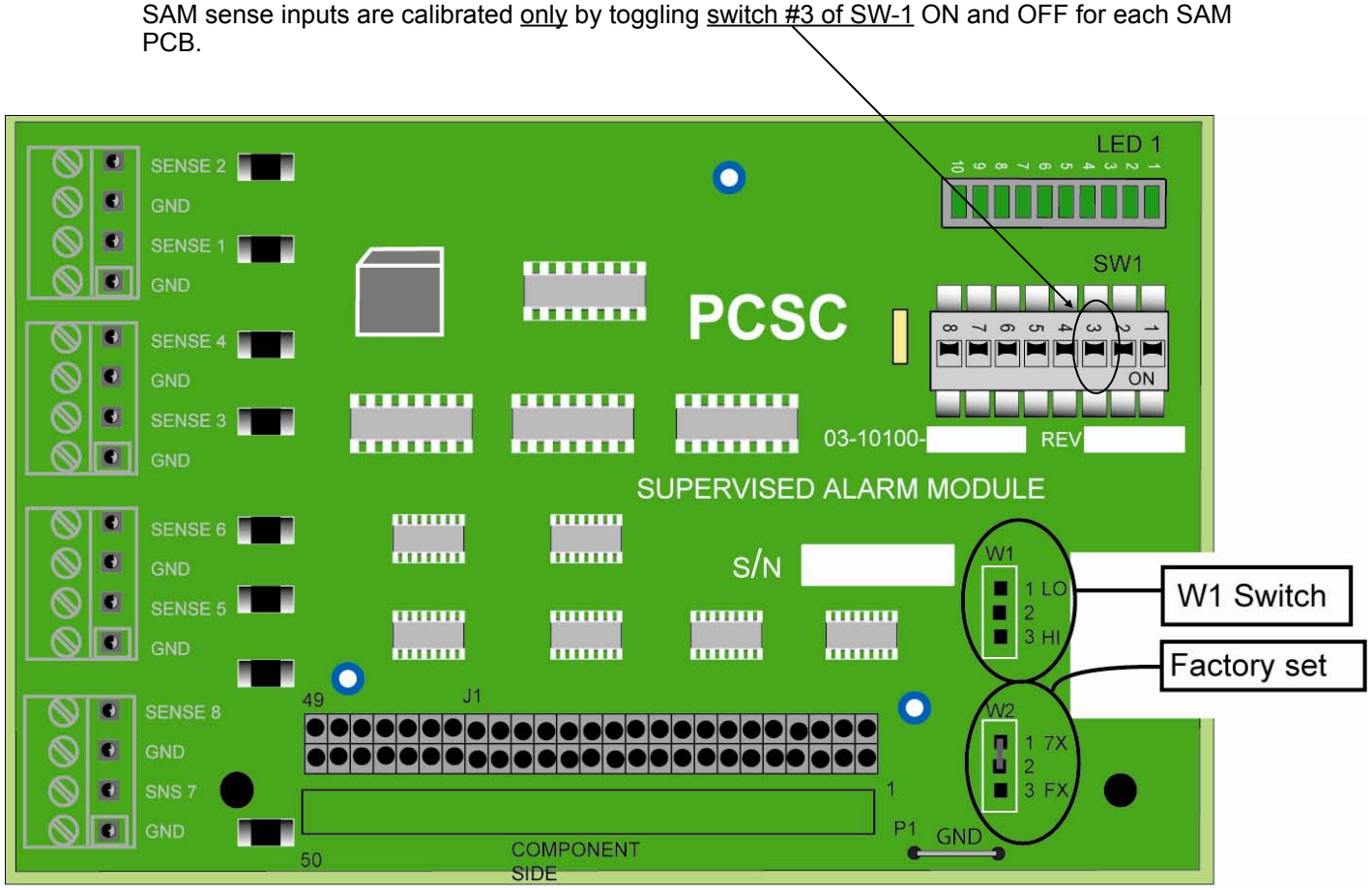
You may elect to install the supervisory resistors at this time or optionally wait until after on-line communication has been established to the LiNC-NET Host PC. Set dipswitches 1-8 (located at SW1) to **OFF** position as it is etched on the IQ-200 PCB. Hit the reset switch at S1. This will calibrate and reset data to default, all ten of the supervised inputs on the IQ-200 PCB and the supervised Door Senses on the 4/8-Door Cluster PCBs.

7.2 Calibrating the IQ Panel

Calibration Scan	Please check the LiNC-NET Calibrations Options page on the LiNC-NET Administrator Manual.

7.2.1 Calibrating the SAM 1 and SAM 2 boards

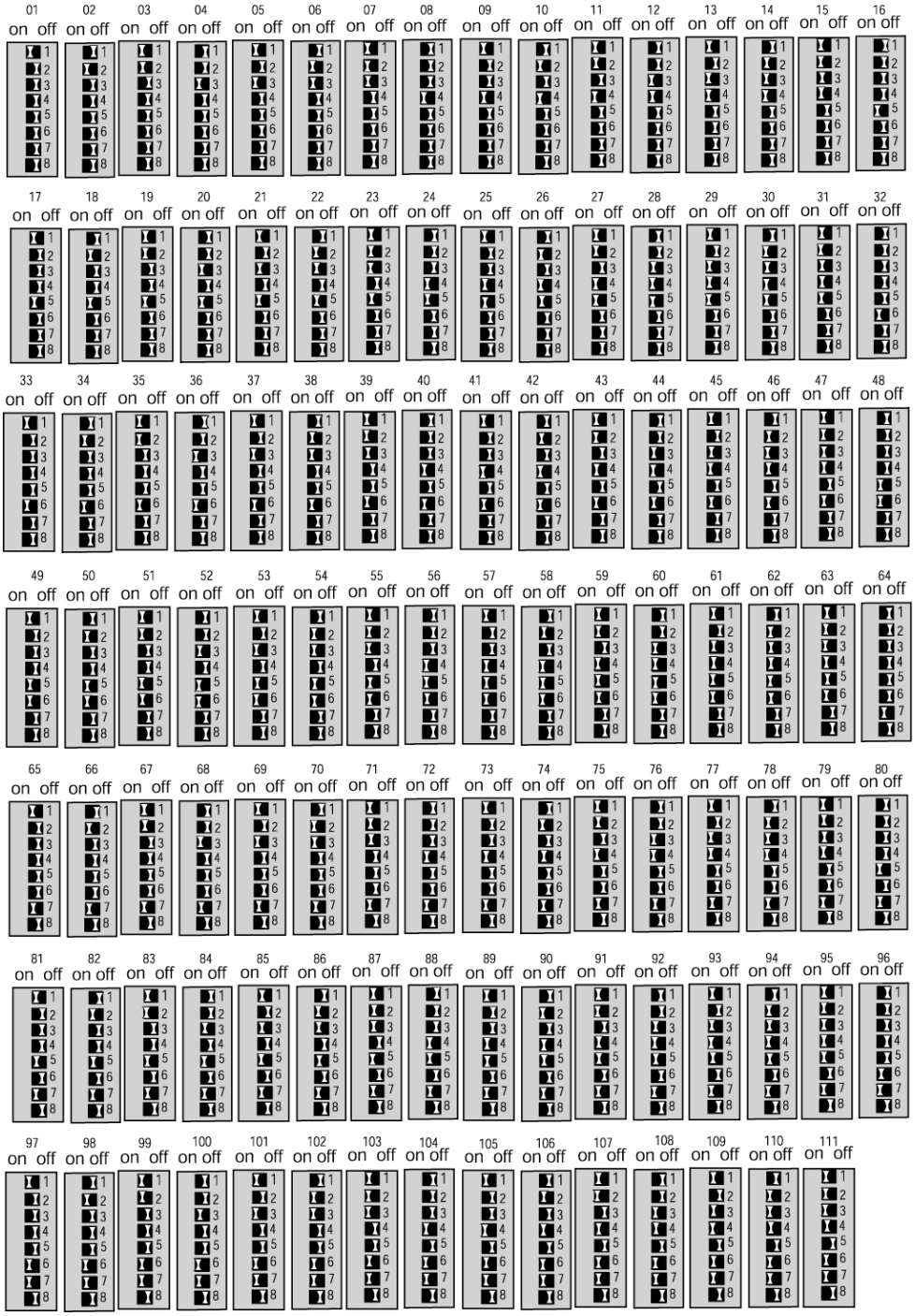
SAM sense inputs are calibrated only by toggling switch #3 of SW-1 ON and OFF for each SAM PCB.



7.3 Addressing Individual IQs through the Dipswitch

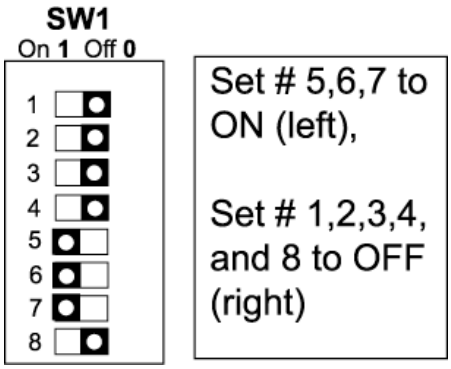
7.3.1 Dipswitching the IQ-200 Address (1-111)

The dipswitch is located at SW1, on the left of the board. There are eight switches. For the binary number one (1), flip the switch to the left. For zero (0), flip the switch to the right. The address in 10+ will be in Hexadecimal format.



7.3.2 Software Addressing the IQ-200 Panel (Panels 112-200) Direct Connect

If a user set up includes more than 111 panels, it is necessary to address the panel through the LiNC-NET software as opposed to the Dipswitch on the panel itself. Every panel from 112 – 200 is manually set to 112, and then given a software address via LiNC-NET.



1. Set SW1 to address 112 on the IQ panel and press the S1 button. The Dipswitch setting is: 5, 6, 7 = ON and 1, 2, 3, 4, 8 =OFF.
2. Open the ConFigUL program and define the following:
    - Connection Type (**Direct Connect** or **LAN**)
    - COM port
    - Baud rate
3. Select the OPEN port button = **Open Port OK**
4. Enter **Panel #1** into the "**current panel number**" field.
5. Select the "**Inquire**" button = **OK**
6. Select the "**Logon**" button = **OK**
7. Enter the desired panel address from **112** – **200** in "New Panel number" window.
8. Select the "**change number**" button = **OK**
9. Select the "**Who's there**" button. The Inquire field will scan for the new panel address. (Who's There=200)
10. Select the "**Logoff**" button = **OK** then select "**Close Port**" and exit.
11. Start LiNC-NET and "**add**" the new panel ID number to your database.

NOTE Switch #8 is used to determine if the IQ-200 communicates via either direct connect or dial-up communications. Switch #8 is only used to determine if the connection is **Direct Connect** or **AutoDial**.

The **ON/OFF** designation is in reference to the labels printed on the IQ-200 PCB. Not the switch itself!

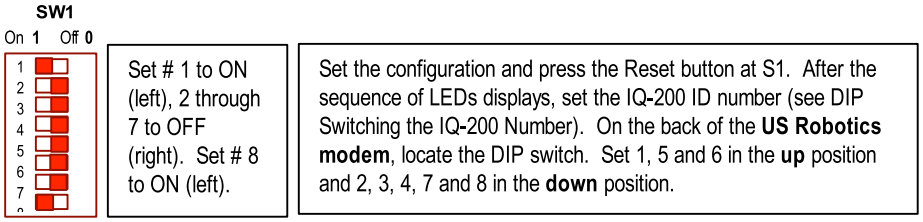
7.4 Setting MODEM or Direct Connect Configurations

PCSC supports the US Robotics 33.6/56K Sportster model for MODEM communication. It is recommended that the MODEM be powered up via an U.P.S. (Uninterruptible Power Supply).

NOTE: The US Robotics 33.6/56K Sportster has not been evaluated by UL, and is not suitable for UL installations.

To set up the IQ for **MODEM** communication, configure the Dipswitch settings at SW1, as follows:

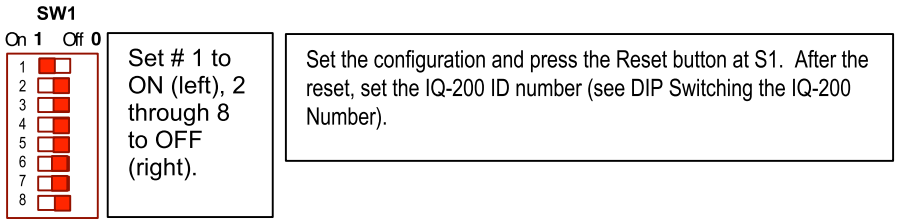
Example: MODEM connection (IQ-200, panel address is #1)



NOTE AT SW1, switch #8 must remain in the ON position (left) for **MODEM** communication.

To set up the IQ for **direct connect** communication (default), configure the Dipswitch settings at SW1, as follows:

Example: Direct connection (IQ-200, Panel address is #1)



NOTE: AT SW1, switch #8 must remain in the OFF position (right) for **Direct Connect** communication.

To communicate from an IQ to the MODEM, two cables must be fabricated: one from the MODEM to the IQ and another for the PC host to the MODEM. See the diagrams under Cable Requirements.

NOTE: The **ON/OFF** designation is in reference to the labels printed on the IQ-200 PCB. Not the switch itself!

7.4.1 Ensuring Proper Configuration of the MODEM

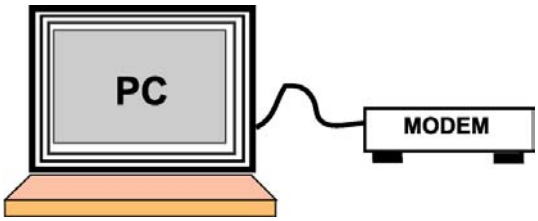
To ensure that the MODEM retains the set configuration, the user should utilize HyperTerminal at the Host PC. The HyperTerminal program will set the configuration in the MODEM for constant uninterrupted use with the IQ-200. In the following procedure, the Init String will be written into the NOVRAM and therefore a power loss to the MODEM ONLY will not result in a continuous loop.

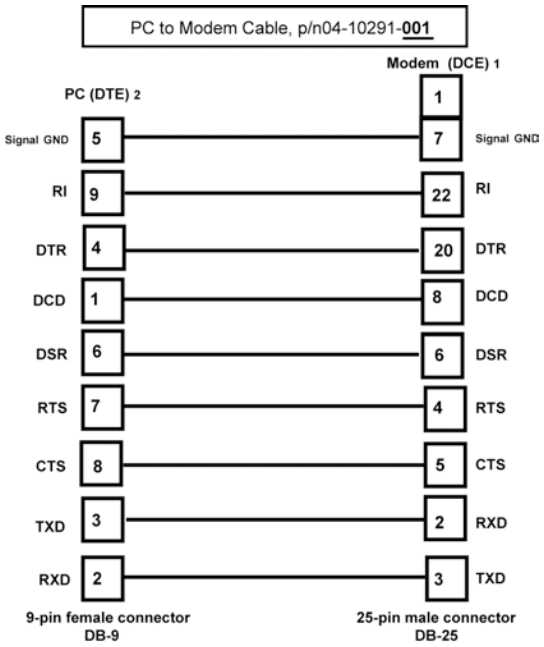
- Set switches 1, 5, 6, and 7 in the U.S Robotics Sportster MODEM (14.4K, 28.8, 33.6, or 56K) to **Up**. All other switches should be **Down**.
- Connect the MODEM to the PC using a standard PC to MODEM cable.
- From the PC (Win95/98/NT) access HyperTerminal by entering the following commands:

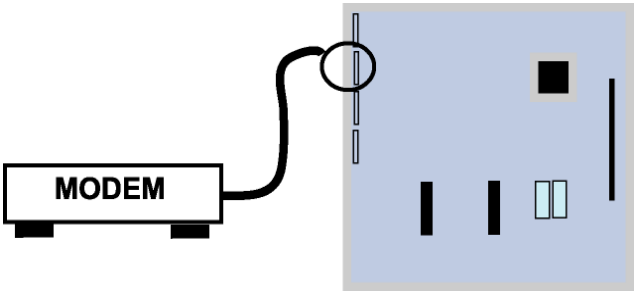
    1. Click on **Start: Programs: Accessories**, and then**, HyperTerminal**. The **Connection Description** dialog box will now appear.
    2. Type in a name for the connection (for example: **MODEM TEST**). Click on a corresponding icon from the list. Click on the **OK** button.
    3. The **Connect To** dialog box will now appear. The proper communications port used to communicate to the external MODEM is now selected within the **Connect Using** field (for example: **COM2**). Click on the **OK** button.
    4. The **COM# Properties** dialog box will now appear. Select **9600** in the bits per second field. Select **8** in the **Data Bits** field, **None** in the **Parity** field, **1** in the **Stop Bits** field, and **Hardware** in the **Flow control** field. Click on the **OK** button. The screen will now clear and the cursor will be at the top left corner of the **HyperTerminal** window. Type **ATV1 E1** and press **Enter**. The MODEM will respond with **OK**.
    5. Type **ATI3** and press **Enter** to display the type of MODEM connected, followed by **OK**.
    6. Type **ATI4** and press **Enter** to display the MODEM's current settings, followed by **OK**.
    7. Type **ATI5** and press **Enter** to display the MODEM's NVRAM settings, including any stored telephone numbers, followed by **OK**.
    8. Type **ATEVQHSØ=1X&DØ** and press **Enter**. The MODEM will respond by changing the **A** in the previous String to a **Ø** (zero).
    9. Type **AT&WØYØ** and press **Enter**. No visual indication will be displayed as the MODEM was configured in the previous step to use **Numeric Result Codes**.
    10. Type **ATZ** and press **Enter**. As in the previous step, no visual indication will be displayed.
    11. Click on **File**, then **Save**, to save the configuration file.
    12. Click on **File**, **Exit**, then **Yes**, to disconnect from the MODEM and exit **HyperTerminal**.
    13. Power down the MODEM and turn switch **1**, **5**, and **6** up. All others should be down. Connect the MODEM to the IQ-200. Perform functional testing.

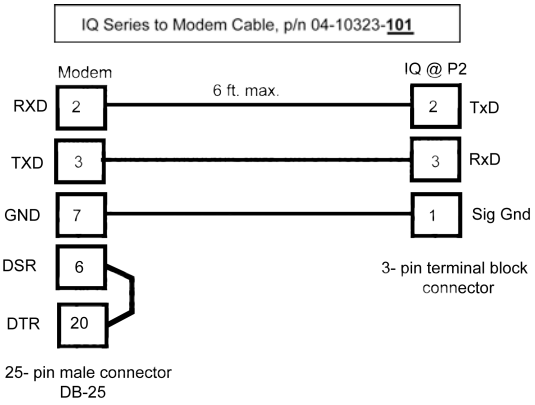
7.4.2 Establishing a Proper Connection with a MODEM Cable

To communicate from an IQ-200 to a MODEM, two cables must be fabricated: one from the MODEM to the IQ and another for the PC host to the MODEM. Cabling should be 22 AWG, 9-conductor, UL2576 and up to 25 feet in length. See the following diagrams:





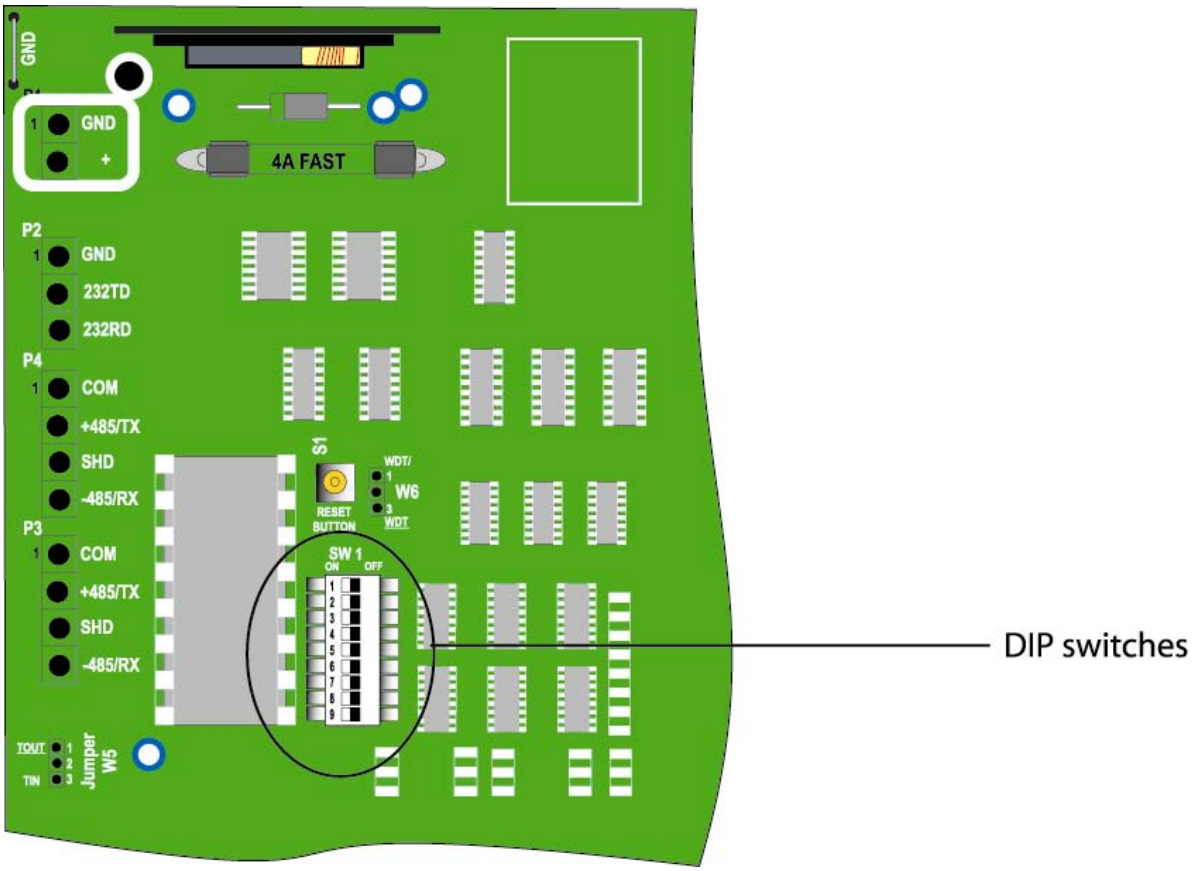




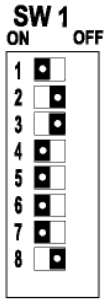
7.5 Changing the Baud Rate

1. Request the IQ off-line in the **Define Panel Online Status** screen in the LiNC-NET software.
2. Change the baud rate in the **Host Computer Setup** menu in the LiNC-NET Software.
3. Log off and back onto the system.
4. Set the switch (SW1) setting for the Baud rate and press the S1 Reset button. (Refer to page 58).
5. Change the SW1 switch setting back to the IQ-200 number.
6. Request the IQ on-line in the Define Micro-LPM status screen in the LiNC-NET software.

NOTE Presently the IQ-200 only supports communication at 9600 BPS.



Setting the Baud Rate for Direct Connect @ 9600 bps

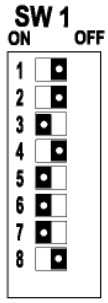


Set switches as illustrated to the left at SW-1 and then push the Reset button S1.

Then place the SW-1in position to represent the Communications Address of the panel (see page 72).

Push the Reset button S1. Panel is now ready to communicate to the LiNC-NET host at the new baud rate.

Setting the Baud Rate for Direct Connect @ 4800 bps

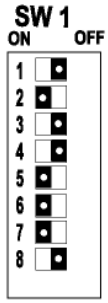


Set switches as illustrated to the left at SW-1 and then push the Reset button S1.

Then place the SW-1in position to represent the Communications Address of the panel (see page 72).

Push the Reset button S1. Panel is now ready to communicate to the LiNC-NET host at the new baud rate.

Setting the Baud Rate for Direct Connect @ 2400 bps

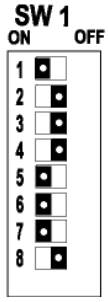


Set switches as illustrated to the left at SW-1 and then push the Reset button S1.

Then place the SW-1in position to represent the Communications Address of the panel (see page 72).

Push the Reset button S1. Panel is now ready to communicate to the LiNC-NET host at the new baud rate.

Setting the Baud Rate for Direct Connect @ 1200 bps



Set switches as illustrated to the left at SW-1 and then push the Reset button S1.

Then place the SW-1in position to represent the Communications Address of the panel (see page 72).

Push the Reset button S1. Panel is now ready to communicate to the LiNC-NET host at the new baud rate.

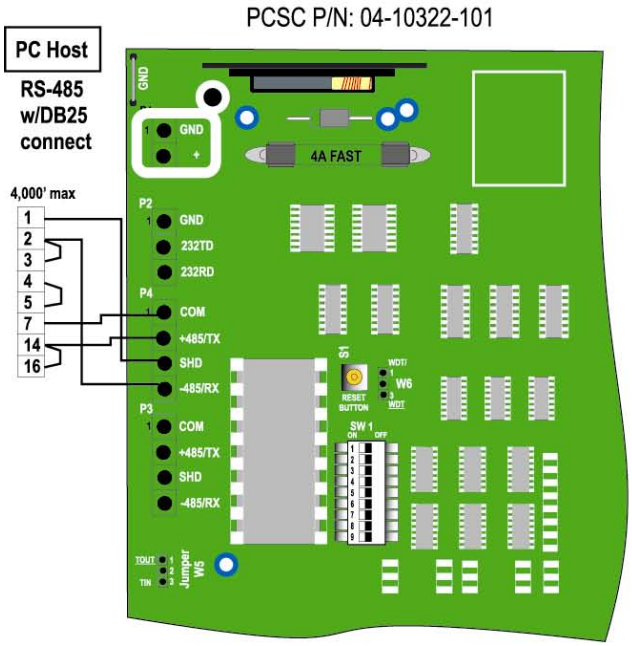
7.6 Direct Connecting with One IQ

The PC Host is connected to the IQ-200 by means of a cable designed for either RS-485 or RS-232 communication. The following diagrams illustrate the RS-485 and RS-232 DB9 or DB25 connector's options available.

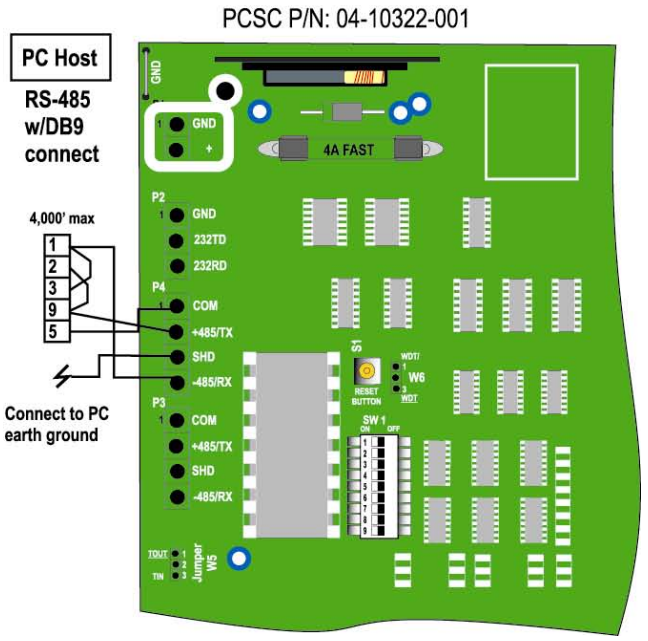
NOTE: For UL 1076 installations, refer to the LiNC-NET Admin Guide.

Wiring Diagram- IQ-200 to PC, RS-485 Connector

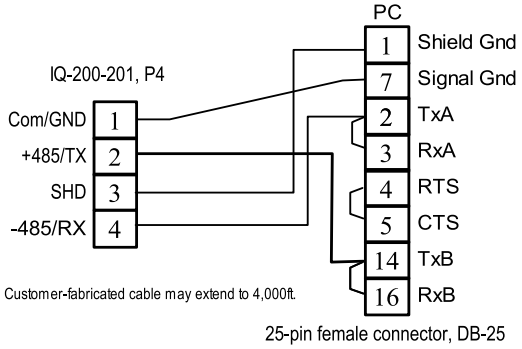
w/ DB25 Connector



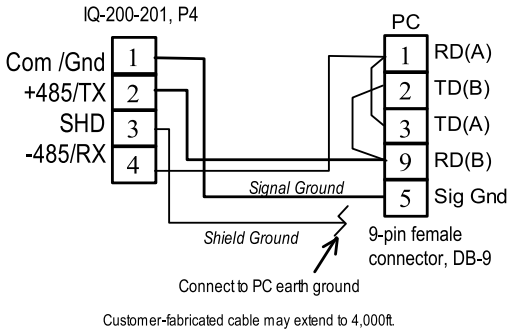
w/ DB9 Connector



IQ-200 to PC, RS-485 w/ DB25 Connector, Optically Isolated, PCSC P/N 04-10322-101

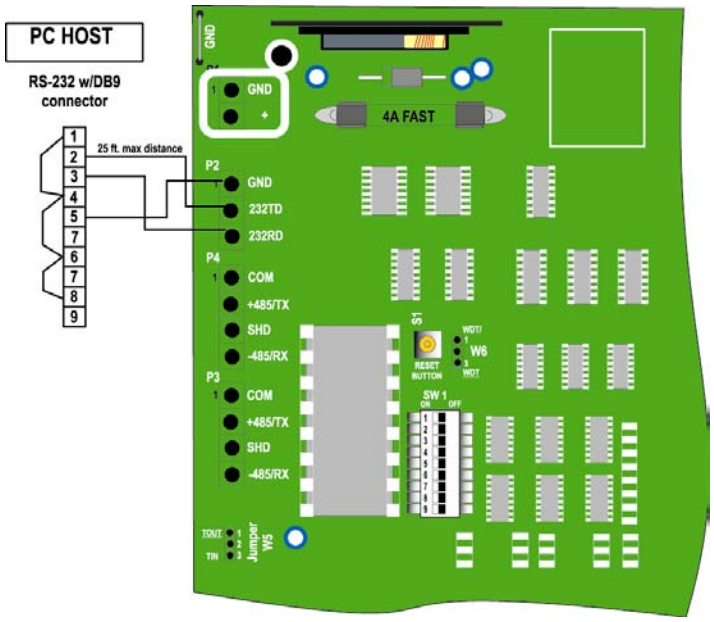


IQ-200 to PC, RS-485 w/ DB9 Connector, Optically Isolated, PCSC P/N 04-10322-001



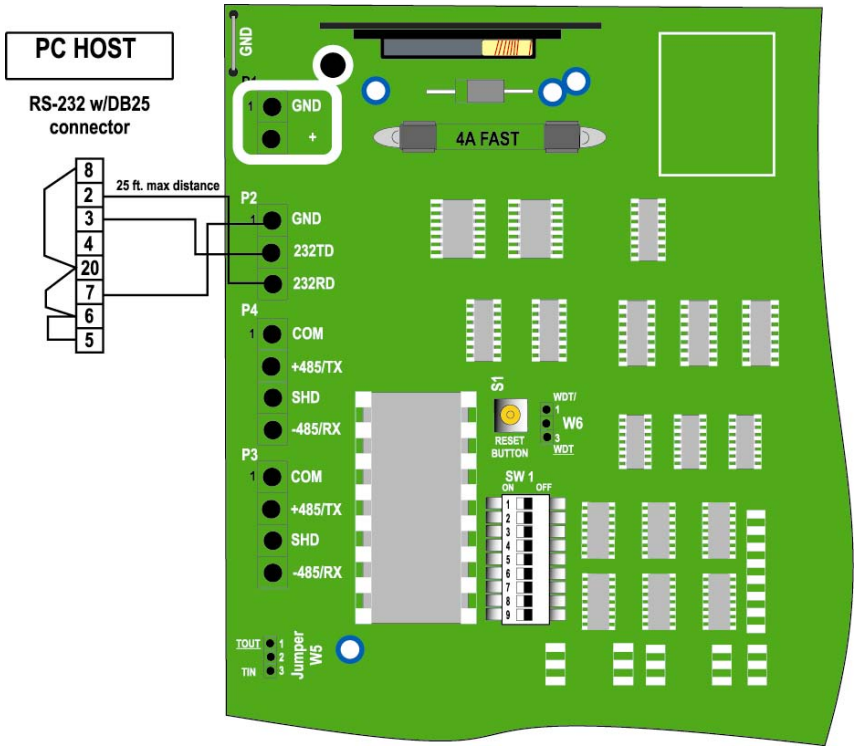
7.6.1 Wiring Diagram- IQ-200 to PC, RS-232 w/DB9 Connector

PCSC P/N: 04-10318-101



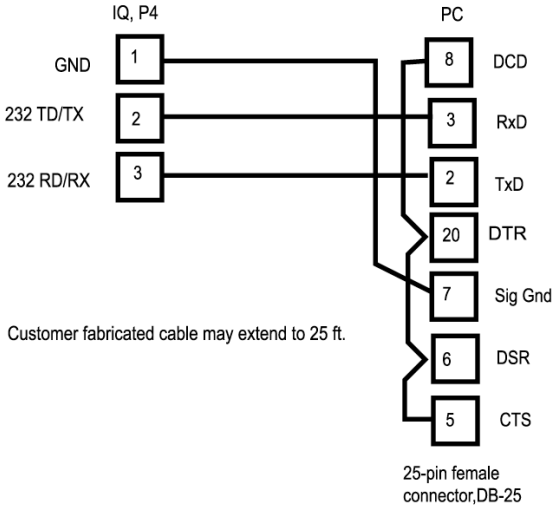
7.6.2 Wiring Diagram – IQ 200 to PC, RS -232 w/ DB25 Connector

PCSC P/N: 04-10318-001

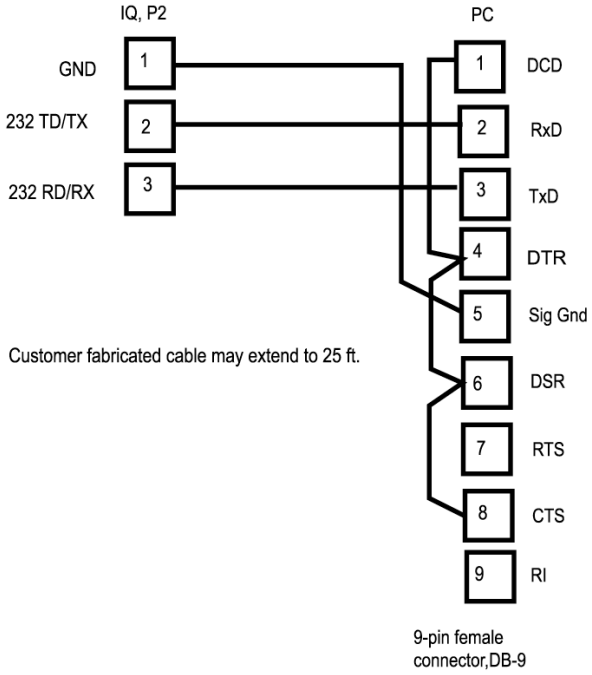


7.7 RS-232 Cable Connections

IQ to PC, Cable RS-232 w/DB25 Connector
PCSC p/n 04-10318-101



IQ to PC Cable RS-232 w/DB9 Connector
PCSC p/n 04-10318-001



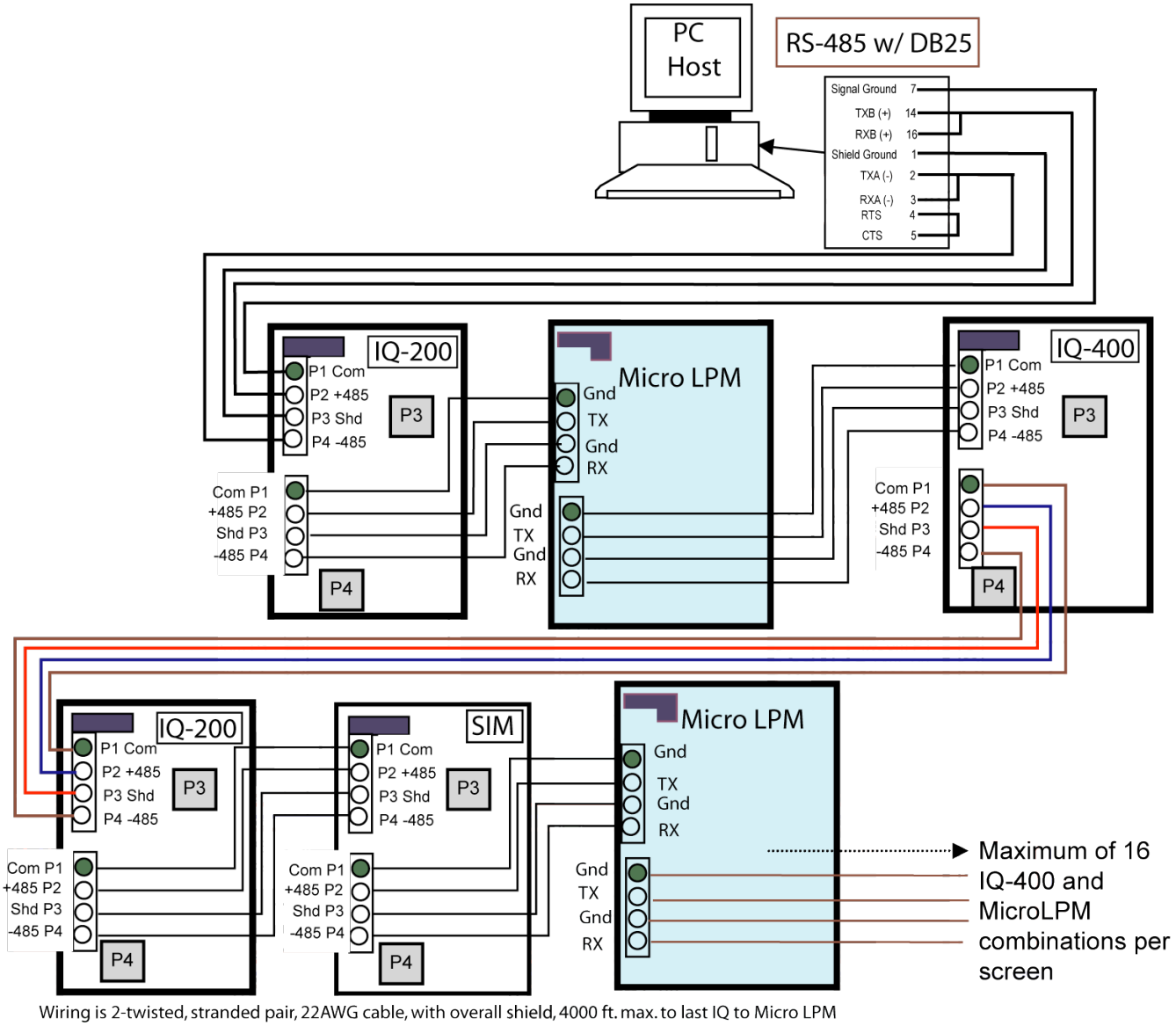
NOTE: For UL 1076 requirements, the RS-232 cable shall not extend beyond 20 ft., and the cable shall stay within the same room.

7.8 Communicating with Multiple IQs (via RS-485)

Once the PC host is connected to one IQ-200, the next IQ-200 can be connected by wiring from P3 from the first IQ to P4 in the next IQ. This format can be repeated in up to 16 IQ-200s. In addition, any combination of MicroLPMs and IQ-200s can be configured up to the 16 total limit on a single RS485 channel. LiNC-NET supports up to 4 channels (total of 64 IQ/MicroLPMs). See the next page for the IQ-200 to MicroLPM wiring connection.

NOTE: For UL 1076 installations, refer to the LiNC-NET Admin Guide.

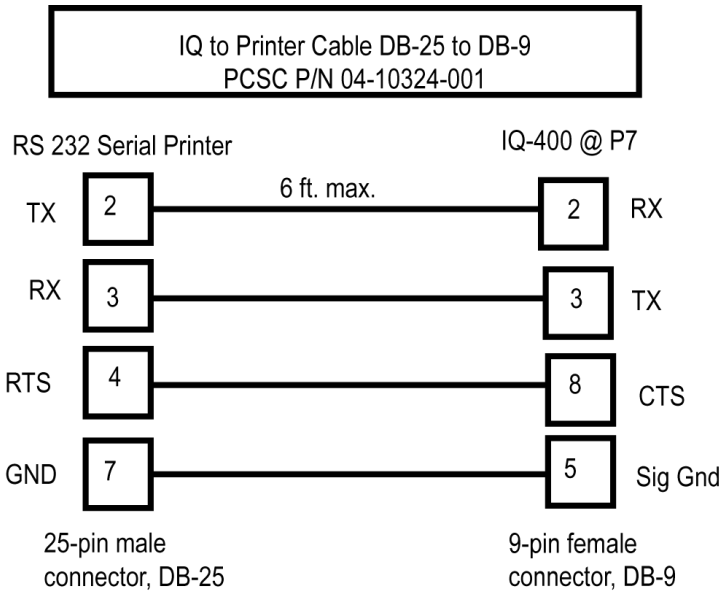
7.8.2 Wiring Diagram of Multiple IQ-200s and MicroLPMs



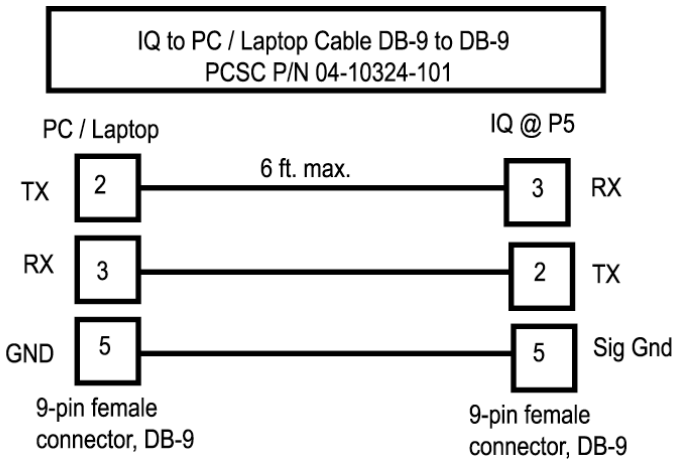
NOTE At the last panel in the loop (if a Micro LPM) install a 120 Ohm 1/2 watt Resistor at Plug P3 between pins 2 and 4. Or (if the last panel is an IQ) set Jumper at W6 across pins 2 and 3. Refer to Micro LPM Installation Manual P/N: 33-10019-001 for more information.

7.9 Real Time Serial Printing with the IQ-200

To print from an IQ-200, a cable must be fabricated: a 9-pin female connector at the IQ-end to either a 9-pin or 25-pin male connector at the printer end. Cabling should be 22 AWG, 2-twisted pair, and up to 6 feet in length. See the following diagrams. The baud rate for the printer is 9600 bits per second at the IQ-200. Connect the IQ end of the cable to P5.



Cable Configuration for Capturing Real Time Transactions to PC in HyperTerminal



7.10 PC Host to IQ Communication Using Fiber Optics (RS-485 Protocol)

PCSC has tested two fiber optics systems for communication between the PC host and the IQ panels. Both were found to be acceptable and compatible with the IQ. It is recommended that other systems available on the market should be equivalent to the specifications inherent in the two products tested. PCSC does not endorse or specify either of these 2 systems. Any communication links beyond the normal wiring of the IQ system is the responsibility of the fiber optics company and the installer. Refer to the installation instructions of the fiber optics system you are using. The information listed below is a general description of how one supplier, American Fibertek, communicates via fiber optics data links, to the PC host and the IQ panel.

7.10.1 Product Description

The MX-485-2 is a remote mountable module that converts two-wire RS-485 data signals into modulated light for coupling into fiber optic cables. The unit transmits and receives high and low logic level data and the HiZ bus state through duplex fiber optic cables. Any EIA RS-485 protocol signals up to 19.2 Kbaud may be transmitted over fiber optics cable by using two 485-2 series units. Designed primarily to be used with inexpensive 50u fiber cable, the 485-2 series may also be used with 62.5u fiber.

7.10.1.1 Connector

The signal and power connector is a seven position detachable terminal block. The connections should be made as shown on the wiring diagram before power is applied. ST optical connectors are standard on the unit.

7.10.1.2 Power Supply

Power required is 12VDC @ 200mA maximum. Internal regulators are included so unregulated 12 volt power may be used. The case of the unit is connected to signal ground.

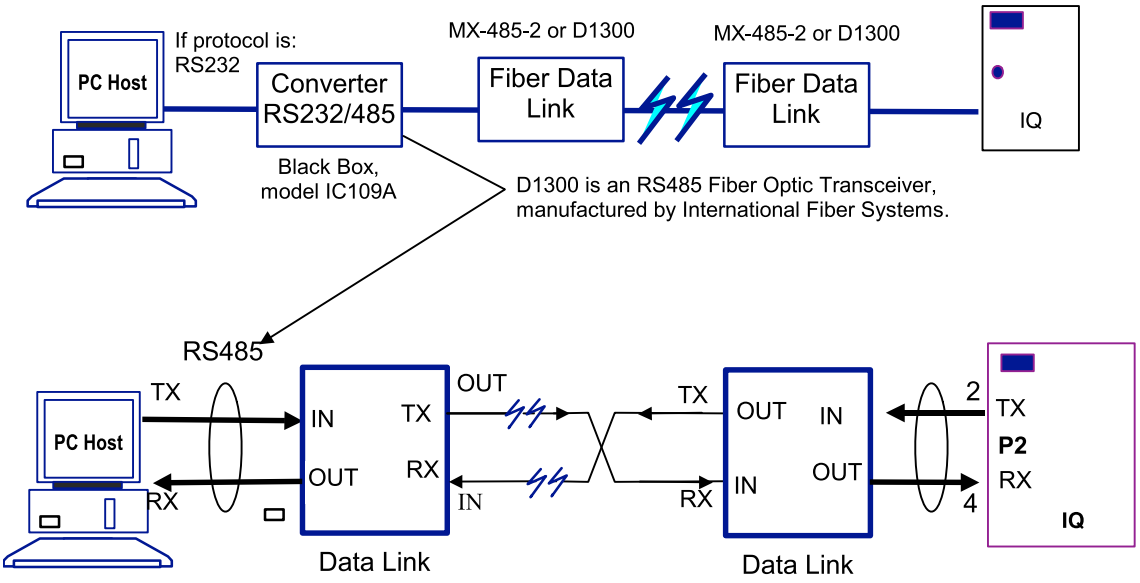
7.10.1.3 Controls and Indicators

There are no controls on the MX-485-2 and three indicators. The ON indicator will glow green when power is applied to the unit. The TX and RX LEDs glow red to show activity on the data wires. The TX LED indicates the fiber modem is transmitting and the RX LED indicates reception of data.

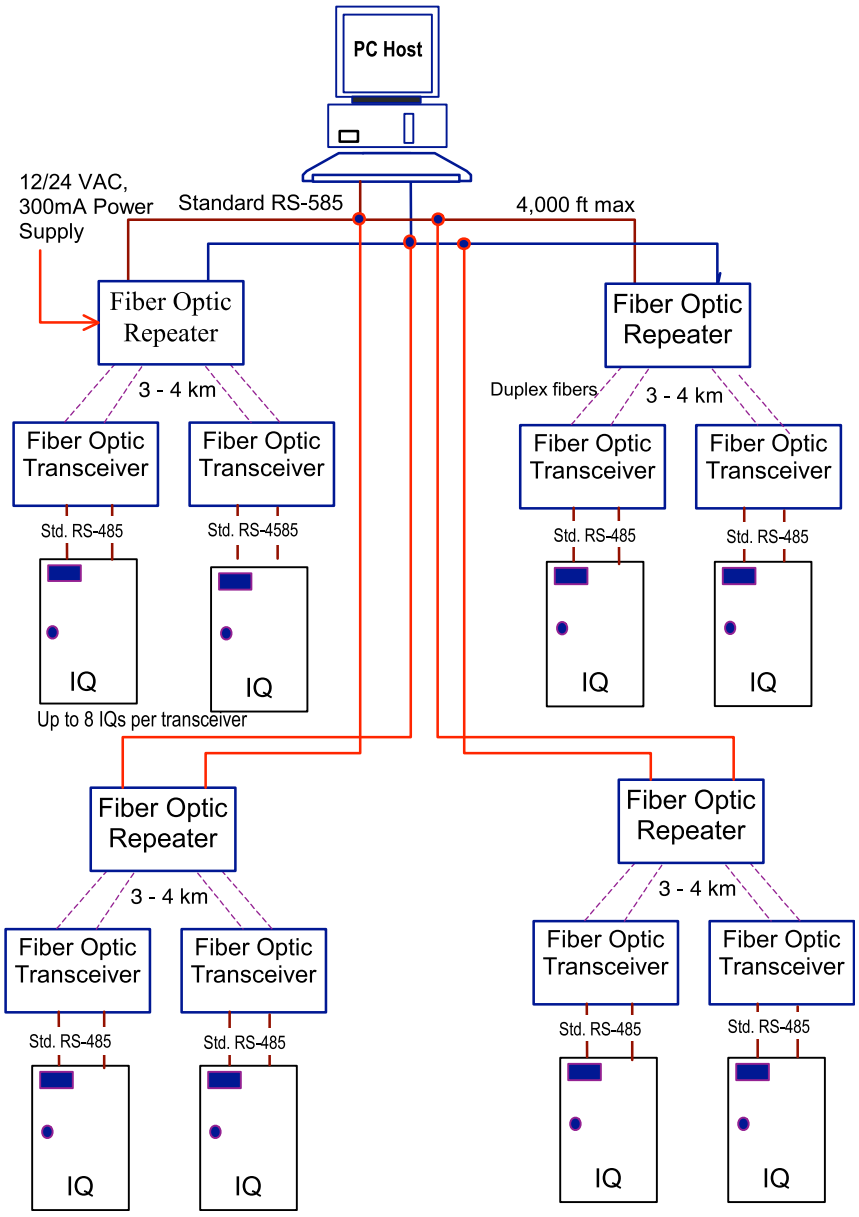
7.10.2 Installation

To install the MX-485-2, it is necessary to mount the unit to a rigid service using #8 hardware in four places. Care should be taken when selecting a mounting location to avoid sharp bends in the connecting cables. Please note minimum bend radii of all fibers being used, to avoid fracturing the fiber optic core.

7.10.2.1 PC Host to IQ using Fiber Optics Converter Modules (RS485 Protocol)



7.10.2.2 PC Host to Multiple IQs Using Fiber Optics Repeater Modules (RS-485 Protocol)



American Fibertek's MX-485-2 can be used as 2-port module (Repeater) and transceiver. D2300 model is required as 2-port star repeater and the D1300 as the transceiver in an IFS system.

NOTE: The MX-485-2 and D1300 have not been evaluated by UL, and is not suitable for UL installations.

7.10.3 Optical Transmission

The 485-2 series has been designed to be a reliable link for the transmission of data over long distances. The loss budget of 15 dB on 16.2u fiber should allow up to 5 kilometers of transmission distance.

The power output specifications are measured with a logic low state on the bus. When the bus is in the high impedance state, the transmission LED is at a very low output level (<-36dBm). Logic levels are encoded using pulse width modulation. If the optical connection is lost, the output bus goes to the HiZ state.

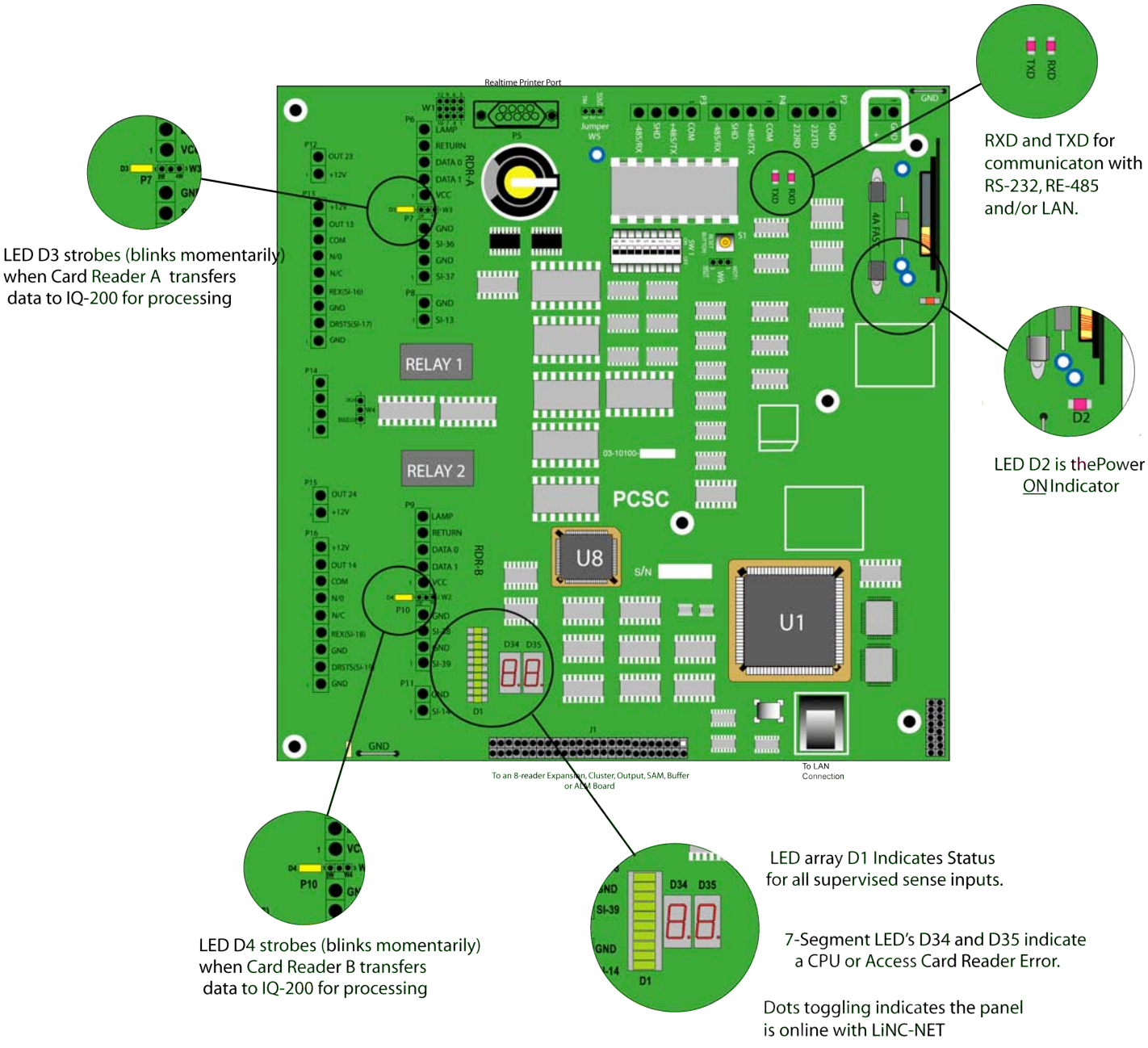
IFS (International Fiber Systems, Inc.) also follows similar specifications in their D1300 and D2300 series of RS-485 (Tri-state) fiber optics transceivers and repeaters. The following diagram illustrates the basic wiring connection using either of the 2 systems. Refer to the installation instructions of the specific supplier for more information.

NOTE: The MX-485-2, D2300 and D1300 have not been evaluated by UL, and is not suitable for UL installations.

8.0 Status Lights and Dealing with Communication Errors

8.1 Status Lights

The IQ-200 circuit board has 15 LEDs. The status of the LED defines a certain activity or phase of IQ-200 functions. Card processing and door sense status is indicated by the LEDs.



8.2 Communication Errors

Message at the PC	What to Do
IQ-200 is not responsive	Verify the following: **1.** The red DC Power Indicator LED (D2) is ON. **2.** Verify that the ID number corresponds to the IQ-200 at the PC. (Check settings of switches at SW1). **3.** Check cabling. (RS232/MODEM/RS485/Terminal Server). **4.** Remove the Battery for 5 minutes. Reinsert battery and reset IQ panel.

8.2.1 LED Fatal Error Display Codes

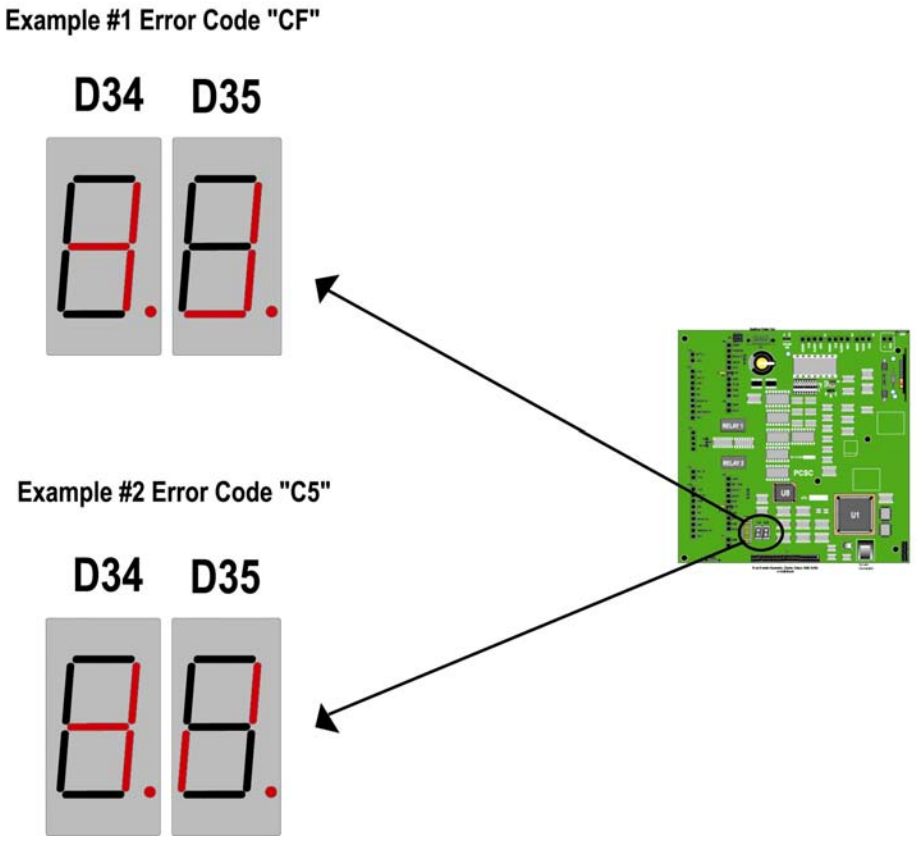
(Please CALL your PCSC representative.)

E1 ROM error detected- Probable PCB failure.
E2 RAM error detected- Probable PCB failure. Verify that the IC at U8 is seated properly.
E4 Packet addressing error- IQ-200 failure
E5 Packet queuing error- IQ-200 failure.
E7 Terminal number configuration error- Readdress IQ-200
ED Database invalid- **RESET** and configure IQ address
EE Stray jump- Probable IQ-200 PCB failure.
EF Execution of int vector- Probable IQ-200 PCB failure.

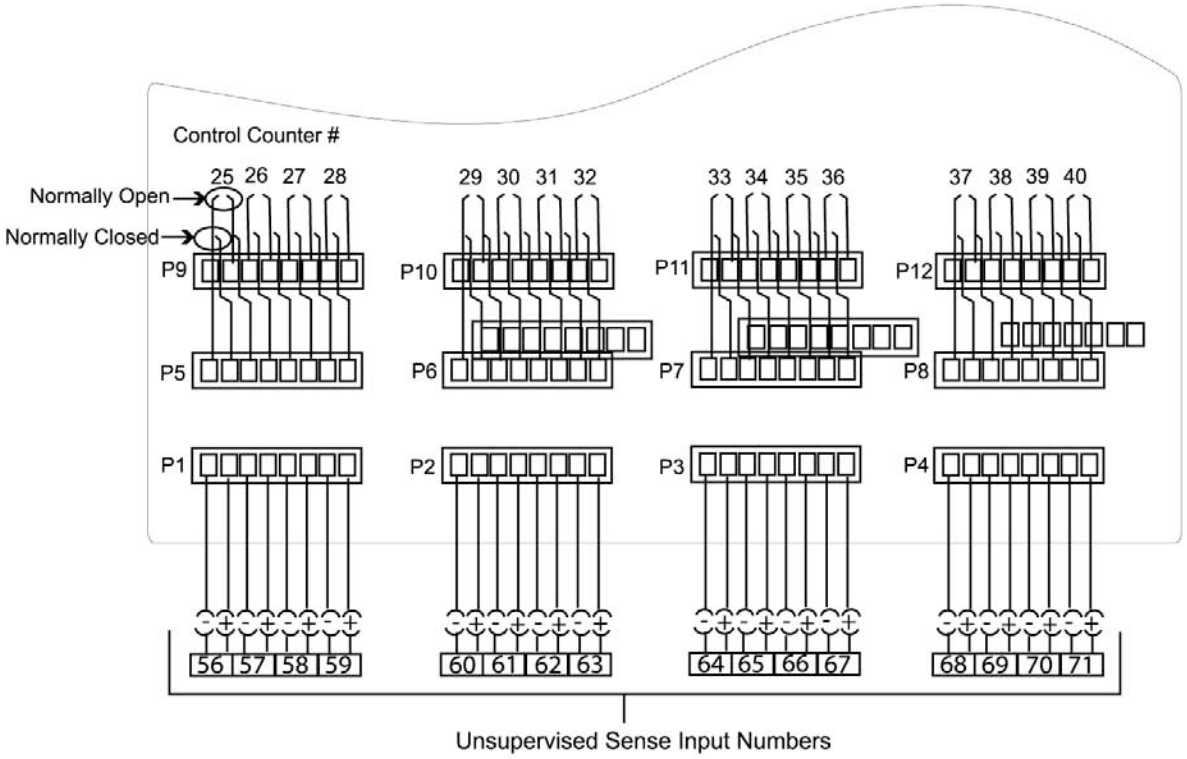
8.2.2 Error Codes

The seven-segment LEDs, D34 and D35, will indicate certain errors that can occur when processing cards. They also can communicate “fatal” errors that could occur. The following chart describes different error codes that are displayed by the seven-segment LEDs:

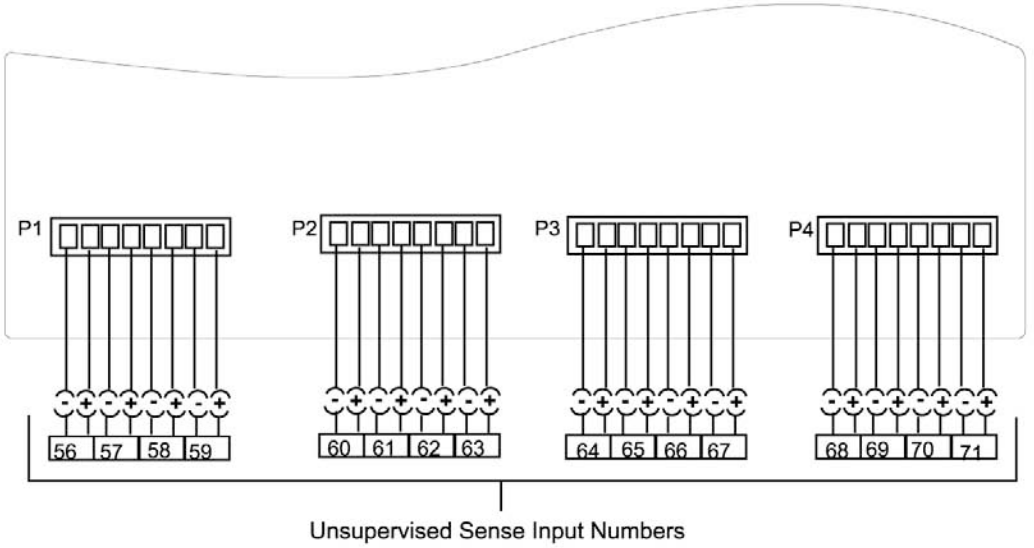
D Warning Error	Display Codes	Possible Problem	What to Do
C0 Card Error:	Parity check fail	Bad Card or dirty reader head	Clean reader head and re-try
C1 Card Error:	LRC check failed	Bad Card or dirty reader head	Clean reader head and re-try
C5 Card Error:	data length mismatch	Check for correct format type	Verify that the correct reader technology is specified
CC Card Error:	data conversion	Check for correct format type	Verify that the correct reader technology is specified
CE Card Error:	end-code not found	Bad card or dirty reader head	Clean reader head and re-try
CF Card Error:	facility code	The site code is invalid for this site	Load correct facility code or check cards
EC Hardware	Configuration error	The IQ is not configured correctly	In LiNC-NET for Windows, select the Panel Setup icon and the Hardware file-tab to verify that the extension adapters are selected for this IQ.



Control Counters and Sense Input Numbers for Output Control PCB P/N 03-10032-201

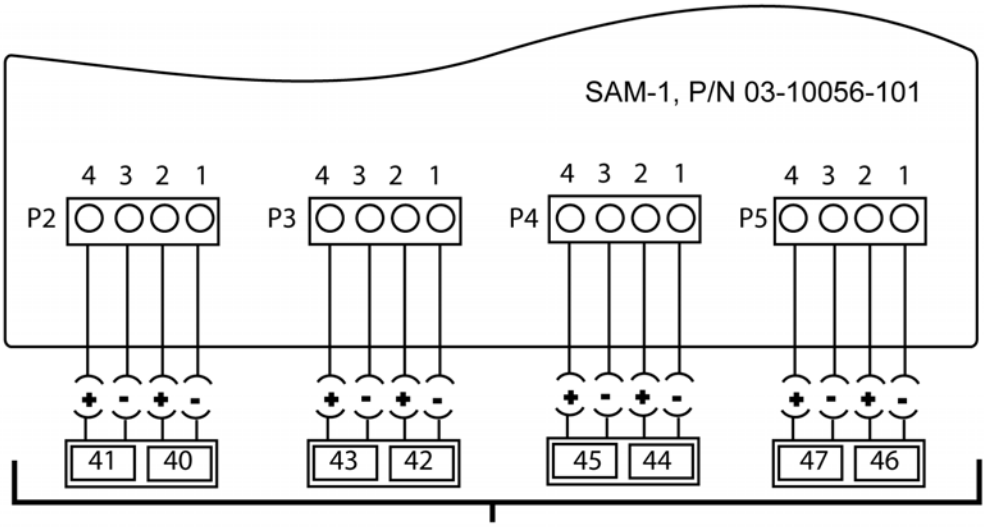


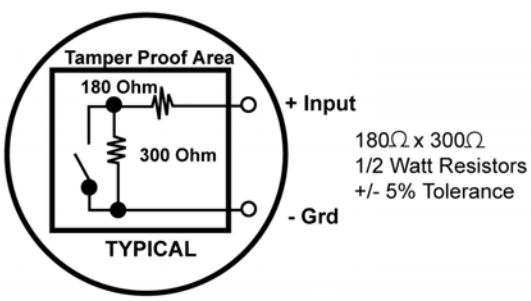
Sense Input Numbers for ALM (ALarm Monitor) PCB P/N 03-10032-301

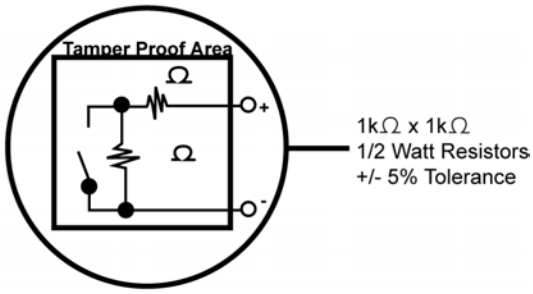


NOTE Addressing of the Output/ALM PCB is done via switch SW-1. All eight switches should be in the OFF (0) position. Also, Jumper P-14 should be across pins #2 and #3 (HI PCB Address Range)

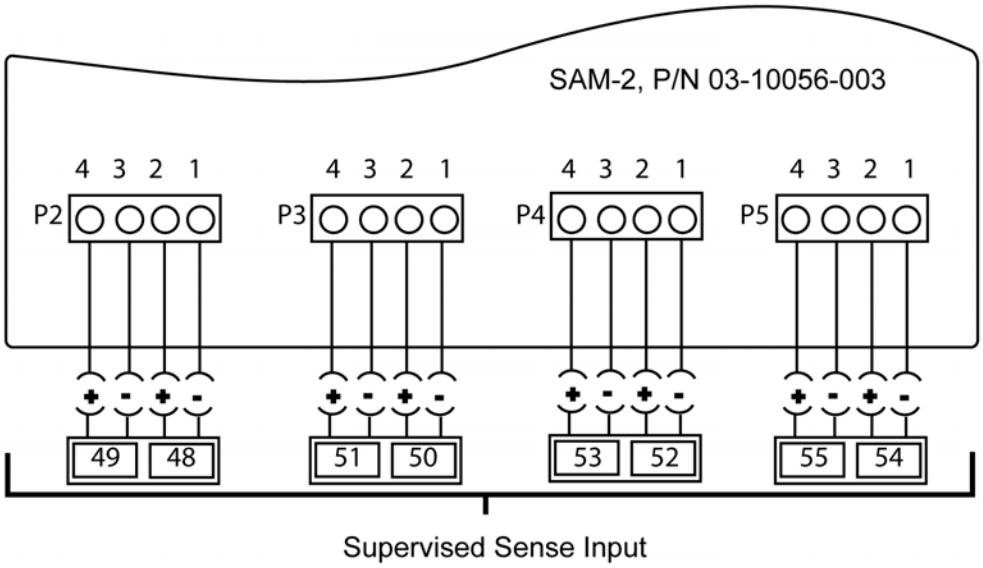
Sense Input Numbers on the Supervised Alarm Module







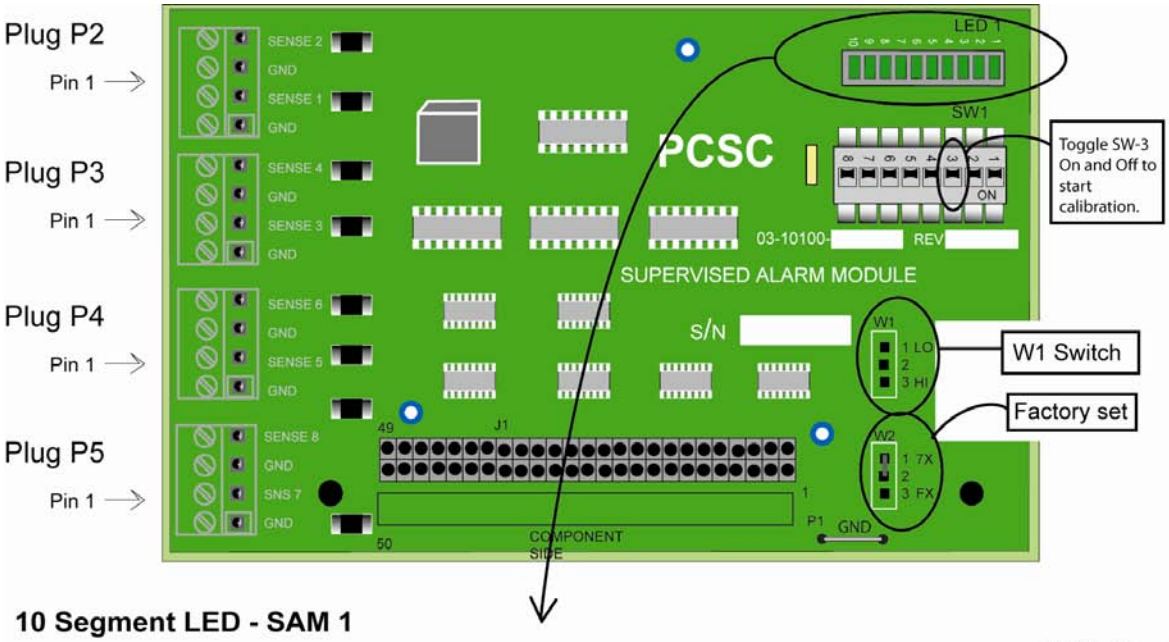
NOTE: Panels SAM 1 and SAM 2 are calibrated by toggling switch #3 at SW1 on each panel.



8.4 Proper Setting of SAM 1 and SAM 2

In a system that uses SAM 1 as a stand-alone, the W1 switch must be set to LOW (Pins 2-3).

In a system that uses both SAM 1 and SAM 2 together, SAM 1 needs to be set to LOW (Pins 2-3) and SAM 2 needs to be set to HIGH (Pins 1-2).



10 Segment LED - SAM 1

D18	D17	D16	D15	D14	D13	D12	D11	D10	D9
Circuit Voltage Indicator	NOT USED	S.I. #47	S.I. #46	S.I. #45	S.I. #44	S.I. #43	S.I. #42	S.I. #41	S.I. #40
SNS 10	SNS 9	SNS 8	SNS 7	SNS 6	SNS 5	SNS 4	SNS 3	SNS 2	SNS 1

LED to Connector Correspondence

SNS 1 = Sense 1
SNS 2 = Sense 2
SNS 3 = Sense 3
SNS 4 = Sense 4
SNS 5 = Sense 5
SNS 6 = Sense 6
SNS 7 = Sense 7
SNS 8 = Sense 8
SNS 9 = Not Used
SNS 10 = Circuit Voltage Indicator

10 Segment LED - SAM 2

D18	D17	D16	D15	D14	D13	D12	D11	D10	D9
Circuit Voltage Indicator	NOT USED	S.I. #55	S.I. #54	S.I. #53	S.I. #52	S.I. #51	S.I. #50	S.I. #49	S.I. #48
SNS 10	SNS 9	SNS 8	SNS 7	SNS 6	SNS 5	SNS 4	SNS 3	SNS 2	SNS 1

8.5 IQ Systems Upgrades and Capacities

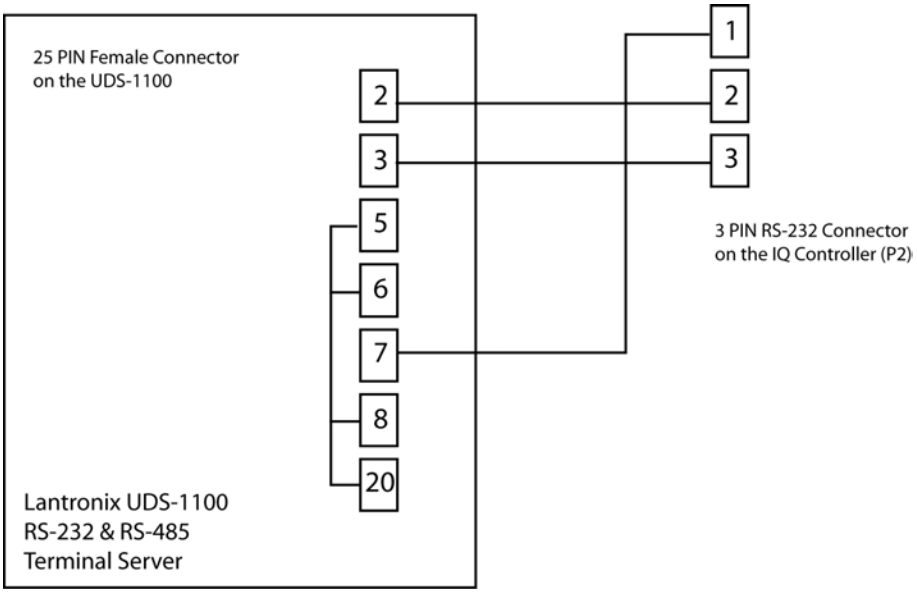
Model	Readers	Supervised Reader Detect	Door Relay Outputs	Auxiliary Relay Outputs	External Shunt/ Local Alarm Transistor Outputs	Auxiliary Transistor Outputs	Supervised Door Sense Inputs	Supervised Egress Sense Inputs	Unsupervised Egress Sense Inputs	Supervised Auxiliary Sense Inputs	Unsupervised Tamper Sense Inputs
Q200	2	2	2	0	2	2	2	2	0	5	1
Q200OUT	2	2	2	16	2	2	2	2	0	5	1
Q200ALM	2	2	2	0	2	2	2	2	0	5	1
Q200SAM	2	2	2	0	2	2	2	2	0	5	1
Q200SAM2	2	2	2	0	2	2	2	2	0	5	1
Q600	6	6	6	0	6	2	6	2	4	5	1
Q600/OUT	6	6	6	16	6	2	6	2	4	5	1
Q600/ALM	6	6	6	0	6	2	6	2	4	5	1

*Form C Dry Contact- Relay comprised of normally open (N.O.), normally closed (N.C.) and common (Com) contacts which are available for connection. Contacts are rated at two amps, 12/24 VDC continuous power.

8.6 RS-232/485 Terminal Servers

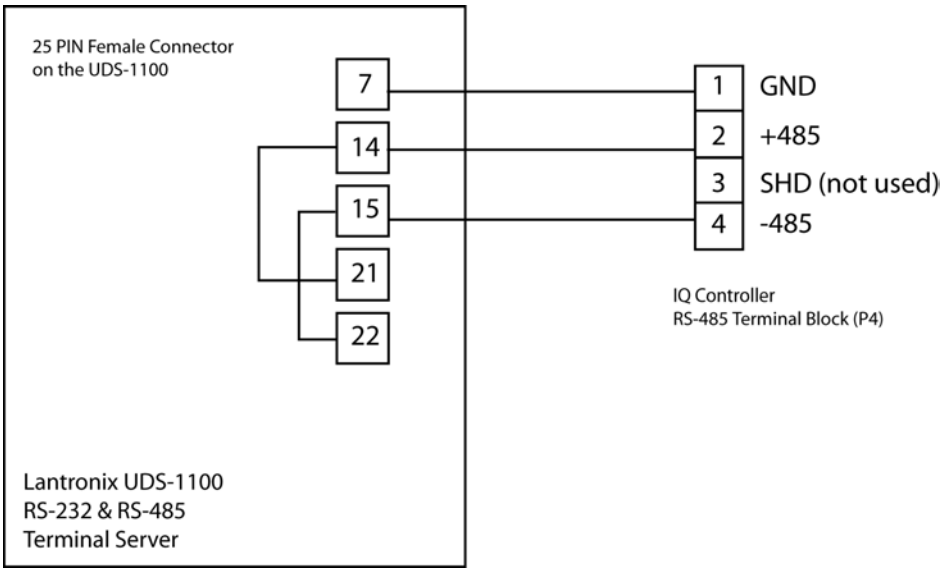
8.6.1 IQ Server Controller to LANtronix UDS-1100 Terminal Server Wiring Diagram for RS-232

The cable between the UDS-1100 and the IQ controller will require a 25 PIN male connector for the terminal server side and flying leads for the IQ controller side.

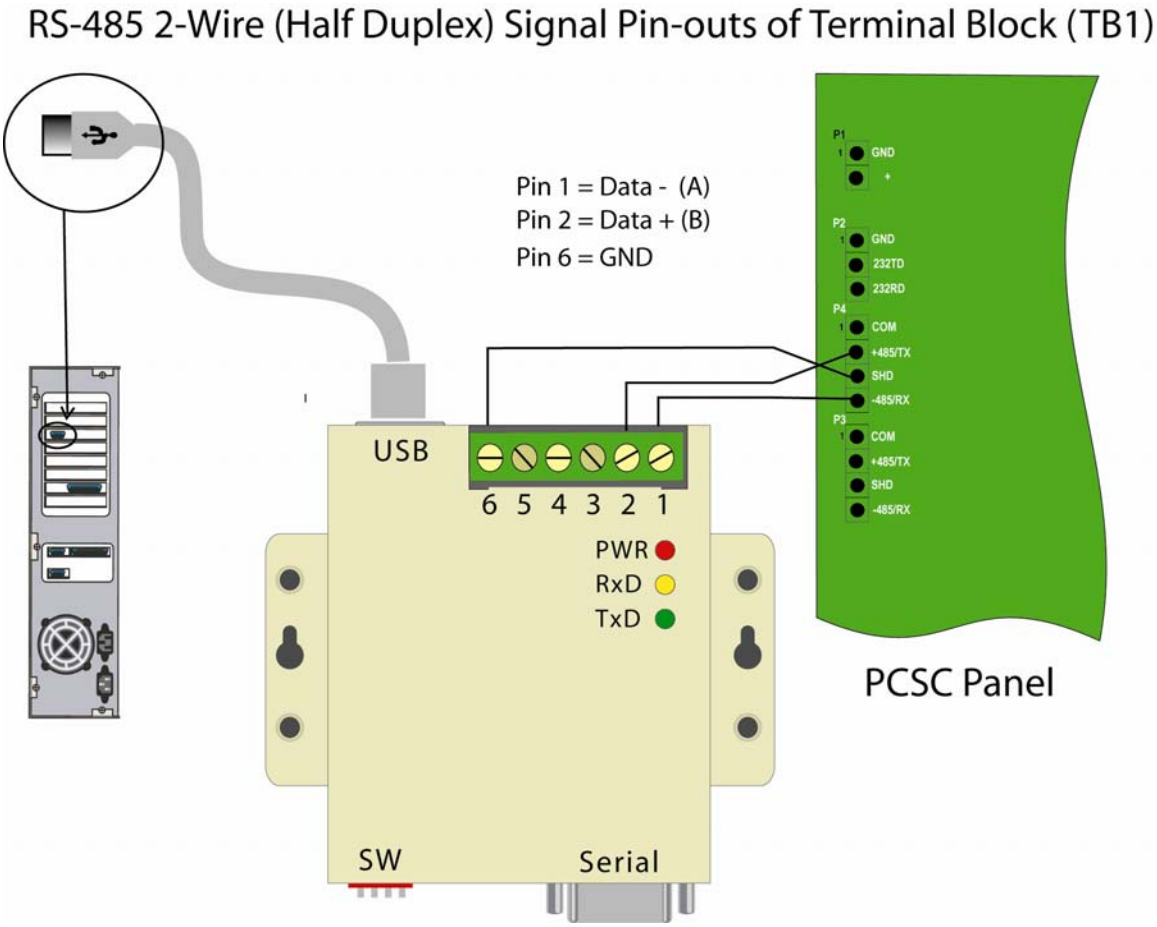


8.6.2 IQ Server Controller to LANtronix UDS-1100 Terminal Server Wiring Diagram for RS-485

The cable between the UDS-1100 and the IQ controller will require a 25 PIN male connector for the terminal server side and flying leads for the IQ controller side.



8.6.3 IQ Server Controller to the EasySync USB Converter



8.7 User Selectable Options

Underlined settings are for LiNC-NET User -Selectable Options.
An asterisk (*) designates the factory preset jumper settings.

XWIA	DCE*	
XWIB	DTE	
W8	A-B	4-wire
	B-C*	2-wire
W15	A-B	RTS/CD enabled
	B-C*	Data enabled (Maximum speed is 64K)
W5	A-B	RTS/CTS* delay (normal)
	B-C*	RTS/CTS/CD delay (CTS inhibited if CD is present when RTS is raised.
		RTS/CTS delay (The time before the RS-485 driver is enabled and CTS is asserted after RTS is asserted. The RS-485 driver is always enabled.)
W9		
	A	30 msec
	B	10 msec
	C*	**0 msec**
	D	ON
W17		When W15 is in the B-C (Data Enabled) position, this is the time the RS-485 driver remains enabled after a low-to-high transition on the DATA line to prevent disabling the driver in the middle of a character.
	A	70 msec
	B	7 msec
	C	2 msec
	D	0.7 msec
	E*	**0.15 msec**
W16		Turnaround delay (When W8 is in the B-C [2 wire] position, this is the time after the driver is disabled and *before* the receiver is enabled.)
	A	0 msec
	B*	**msec**
	C*	msec
	D	5 msec
	E	35 msec

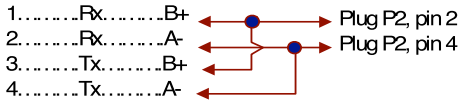
NOTE If the converter is configured Data Enabled (W15, position B-C) and 2-wire (W8, position B-C), then delays from W17 and W16 are cumulative.

S1	**OUT***	**Normal**
	IN	Loopback
S2	**OFF***	**RS-485 Receiver Unterminated**
	ON	RS-485 Terminated

S3 **OFF*** **Line Bias Off**

ON Line Bias On (The Carrier Detect light will come on. Default is +5 volts.)

TB1 4-wire terminal block



W19 (Open) - Not jumpered.

8.8 Point Definitions

8.8.1 Sense Inputs

8.8.1.1 IQ Point Definitions – Sense Inputs

IQ (P/N 03-10100-202)

Designation	Location
S1	P6, Reader a
S2	P9, Reader b

IQ (P/N 03-10100-202)

Designation	Location
S13	P8, Tamper, pin 1, 2
S14	P11, pin 1, 2
S16	P13, pin 3, 4
S17	P13, pin 1, 2
S18	P16, pin 3, 4
S19	P16, pin 1, 2

IQ (P/N 03-10100-202)

Designation	Location
S36	P7, pin 3, 4
S37	P7, pin 1, 2
S38	P10, pin 3, 4
S39	P10, pin 1, 2

IQ SAM/1st SAM Board (P/N 03-10056-201)

Designation	Location
S40	P2, pin 1, 2, pin 1, 3=Gnd
S41	P2, pin 3, 4
S42	P3, pin 1, 2
S43	P3, pin 3, 4
S44	P4, pin 1, 2
S45	P4, pin 3, 4
S46	P5, pin 1, 2
S47	P5, pin 3, 4

IQ SAM/2nd SAM Board (P/N 03-10056-201)

Designation	Location
S48	P2, pin 1, 2, pin 1, 3 = Gnd
S49	P2, pin 3, 4
S50	P3, pin 1, 2
S51	P3, pin 3, 4
S52	P4, pin 1, 2
S53	P4, pin 3, 4
S54	P5, pin 1, 2
S55	P5, pin 3, 4

IQ/OUT/ALM*

Designation	Location
S56	P1, pin 7, 8 pin 1, 3 = Gnd
S57	P1, pin 5, 6
S58	P1, pin 3, 4
S59	P1, pin 1, 2
S60	P2, pin 7, 8
S61	P2, pin 5, 6
S62	P2, pin 3, 4
S63	P2, pin 1, 2
S64	P3, pin 7, 8
S65	P3, pin 5, 6
S66	P3, pin 3, 4
S67	P3, pin 1, 2
S68	P4, pin 7, 8
S69	P4, pin 5, 6
S70	P4, pin 3, 4
S71	P4, pin 1, 2

*Sense inputs 56 through 71 are located on the ALM PCB (P/N 03-10032-101) in an IQ/ALM.

The same sense inputs are also used in the OUTPUT PCB (P/N 03-10032-201) in an IQ/OUT.

8.8.1.2 IQ 4 Point Definitions – Sense Inputs

IQ 4 (P/N 03-10100-202)

Location	Designation
S3	P10, Reader c
S4	P16, Reader d
S5	P12, Reader e
S6	P14, Reader f

IQ 4/Cluster Board (P/N 03-10102-301)

S20 through S27 are located on the IQ 4 PCB.

Designation	Location
S20	P11, pin 3, 4
S21	P11, pin 1, 2
S22	P17, pin 3, 4
S23	P17, pin 1, 2
S24	P13, pin 3, 4
S25	P13, pin 1, 2
S26	P15, pin 3, 4
S27	P15, pin 1, 2

IQ SAM/1st SAM Board (P/N 03-10056-201)

1st SAM PCB is used in:
IQ-200 SAM,
IQ-200 SAM2,
IQ-600 SAM,
IQ-600 SAM2,
IQ-1000 SAM,
IQ-1000 SAM2.

Designation	Location
S40	P2, pin 1, 2, pin 1, 3=Gnd
S41	P2, pin 3, 4
S42	P3, pin 1, 2
S43	P3, pin 3, 4
S44	P4, pin 1, 2
S45	P4, pin 3, 4
S46	P5, pin 1, 2
S47	P5, pin 3, 4

IQ SAM/2nd SAM Board (P/N 03-10056-201)

Designation	Location
S48	P2, pin 1, 2, pin 1, 3 = Gnd
S49	P2, pin 3, 4
S50	P3, pin 1, 2
S51	P3, pin 3, 4
S52	P4, pin 1, 2
S53	P4, pin 3, 4
S54	P5, pin 1, 2
S55	P5, pin 3, 4

IQ/OUT/ALM*

Designation	Location
S56	P1, pin 7, 8 pin 1, 3 = Gnd
S57	P1, pin 5, 6
S58	P1, pin 3, 4
S59	P1, pin 1, 2
S60	P2, pin 7, 8
S61	P2, pin 5, 6
S62	P2, pin 3, 4
S63	P2, pin 1, 2
S64	P3, pin 7, 8
S65	P3, pin 5, 6
S66	P3, pin 3, 4
S67	P3, pin 1, 2
S68	P4, pin 7, 8
S69	P4, pin 5, 6
S70	P4, pin 3, 4
S71	P4, pin 1, 2

*Sense inputs 56 through 71 are located on the ALM PCB (P/N 03-10032-101) in an IQ/ALM.

The same sense inputs are also used in the OUTPUT PCB (P/N 03-10032-201) in an IQ/OUT.

8.8.1.3 IQ 8 Point Definitions – Sense Inputs

IQ 8 (P/N 03-10100-202)

Designation	Location
S3	P2, Reader c
S4	P8, Reader d
S5	P4, Reader e
S6	P6, Reader f
S7	P10, Reader g
S8	P16, Reader h
S9	P12, Reader i
S10	P14, Reader j
S11	Not Used
S12	Not Used

IQ 8 (P/N 03-10201-201)

S20 through S35 are located on the IQ 8 PCB.

Designation	Location
S20	P3, pin 3, 4
S21	P3, pin 1, 2
S22	P9, pin 3, 4
S23	P9, pin 1, 2
S24	P5, pin 3, 4
S25	P5, pin 1, 2
S26	P7, pin 3, 4
S27	P7, pin 1, 2
S28	P11, pin 3, 4
S29	P11, pin 1, 2
S30	P17, pin 3, 4
S31	P17, pin 1, 2
S32	P13, pin 3, 4
S33	P13, pin 1, 2
S34	P15, pin 3, 4
S35	P15, pin 1, 2

IQ SAM/1st SAM Board (P/N 03-10056-201)

1st SAM PCB is used in: IQ-200 SAM, IQ-200 SAM2, IQ-600 SAM, IQ-600 SAM2, IQ-1000 SAM, IQ-1000 SAM2.

Designation	Location
S40	P2, pin 1, 2, pin 1, 3=Gnd
S41	P2, pin 3, 4
S42	P3, pin 1, 2
S43	P3, pin 3, 4
S44	P4, pin 1, 2
S45	P4, pin 3, 4
S46	P5, pin 1, 2
S47	P5, pin 3, 4

IQ SAM/2nd SAM Board (P/N 03-10056-201)

2nd SAM PCB is used in: IQ-200 SAM2, IQ-600 SAM2, IQ-1000 SAM2

Designation	Location
S48	P2, pin 1, 2, pin 1, 3 = Gnd
S49	P2, pin 3, 4
S50	P3, pin 1, 2
S51	P3, pin 3, 4
S52	P4, pin 1, 2
S53	P4, pin 3, 4
S54	P5, pin 1, 2
S55	P5, pin 3, 4

IQ/OUT/ALM*

Designation	Location
S56	P1, pin 7, 8 pin 1, 3 = Gnd
S57	P1, pin 5, 6
S58	P1, pin 3, 4
S59	P1, pin 1, 2
S60	P2, pin 7, 8
S61	P2, pin 5, 6
S62	P2, pin 3, 4
S63	P2, pin 1, 2
S64	P3, pin 7, 8
S65	P3, pin 5, 6
S66	P3, pin 3, 4
S67	P3, pin 1, 2
S68	P4, pin 7, 8
S69	P4, pin 5, 6
S70	P4, pin 3, 4
S71	P4, pin 1, 2

*Sense inputs 56 through 71 are located on the ALM PCB (P/N 03-10032-101) in an IQ/ALM.

The same sense inputs are also used in the OUTPUT PCB (P/N 03-10032-201) in an IQ/OUT.

8.8.2 Outputs

8.8.2.1 IQ Point Definitions – Outputs

IQ

IQ Form C Relay	Connector	Common	Normally Open	Normally Closed	+12VDC Output
01	P13	Pin 7	Pin 6	Pin 5	Pin 9
02	P16	Pin 7	Pin 6	Pin 5	Pin 9

IQ Open Collector	Connector	Common	Normally Open	Normally Closed	+12VDC Output	Open Collector Output
13	P13	Pin 8			Pin 9	Pin 8
14	P16	Pin 8			Pin 9	Pin 8
23	P12	Pin 2			Pin 1	Pin 2
24	P15	Pin 2			Pin 1	Pin 2

IQ-OUT/ALM

IQ OUT/ ALM Form C Relay	Connector	Common	Normally Closed	Connector	Common	Normally Open
25	P5	Pin 8	Pin 7	P9	Pin 8	Pin 7
26	P5	Pin 6	Pin 5	P9	Pin 6	Pin 5
27	P5	Pin 4	Pin 3	P9	Pin 4	Pin 3
28	P5	Pin 2	Pin 1	P9	Pin 2	Pin 1
29	P6	Pin 2	Pin 7	P9	Pin 2	Pin 7
30	P6	Pin 6	Pin 5	P10	Pin 6	Pin 5
31	P6	Pin 6	Pin 3	P10	Pin 6	Pin 3
32	P6	Pin 2	Pin 1	P10	Pin 2	Pin 1
33	P7	Pin 8	Pin 7	P11	Pin 8	Pin 7
34	P7	Pin 6	Pin 5	P11	Pin 6	Pin 5
35	P7	Pin 4	Pin 3	P11	Pin 4	Pin 3
36	P7	Pin 2	Pin 1	P11	Pin 2	Pin 1

8.8.2.2 IQ 4 Point Definitions – Outputs

IQ-4 – Reader Expansion Board

IQ Form C Relay	Connector	Common	Normally Open	Normally Closed	+12VDC Output
03	P11	Pin 7	Pin 6	Pin 5	Pin 9
04	P17	Pin 7	Pin 6	Pin 5	Pin 9
05	P13	Pin 7	Pin 6	Pin 5	Pin 9
06	P15	Pin 7	Pin 6	Pin 5	Pin 9

IQ Open Collector	Connector	Common	Normally Open	Normally Closed	+12VDC Output	Open Collector Output
15	P11	Pin 8			Pin 9	Pin 8
16	P17	Pin 8			Pin 9	Pin 8

IQ-OUT/ALM

IQ OUT/ ALM Form C Relay	Connector	Common	Normally Closed	Connector	Common	Normally Open
25	P5	Pin 8	Pin 7	P9	Pin 8	Pin 7
26	P5	Pin 6	Pin 5	P9	Pin 6	Pin 5
27	P5	Pin 4	Pin 3	P9	Pin 4	Pin 3
28	P5	Pin 2	Pin 1	P9	Pin 2	Pin 1
29	P6	Pin 2	Pin 7	P9	Pin 2	Pin 7
30	P6	Pin 6	Pin 5	P10	Pin 6	Pin 5
31	P6	Pin 6	Pin 3	P10	Pin 6	Pin 3
32	P6	Pin 2	Pin 1	P10	Pin 2	Pin 1
33	P7	Pin 8	Pin 7	P11	Pin 8	Pin 7
34	P7	Pin 6	Pin 5	P11	Pin 6	Pin 5
35	P7	Pin 4	Pin 3	P11	Pin 4	Pin 3
36	P7	Pin 2	Pin 1	P11	Pin 2	Pin 1
37	P8	Pin 8	Pin 7	P12	Pin 8	Pin 7

8.8.2.3 IQ 8 Point Definitions – Outputs

IQ-8 – Reader Expansion Board

IQ Form C Relay	Connector	Common	Normally Open	Normally Closed	+12VDC Output
03	P3	Pin 7	Pin 6	Pin 5	Pin 9
04	P9	Pin 7	Pin 6	Pin 5	Pin 9
05	P5	Pin 7	Pin 6	Pin 5	Pin 9
06	P7	Pin 7	Pin 6	Pin 5	Pin 9
07	P11	Pin 7	Pin 6	Pin 5	Pin 9
08	P17	Pin 7	Pin 6	Pin 5	Pin 9
09	P17	Pin 7	Pin 6	Pin 5	Pin 9
10	P15	Pin 7	Pin 6	Pin 5	Pin 9

IQ Open Collector	Connector	Common	Normally Open	Normally Closed	+12VDC Output	Open Collector Output
15	P3				Pin 9	Pin 8
16	P9				Pin 9	Pin 8
17	P5				Pin 9	Pin 8
18	P7				Pin 9	Pin 8

IQ-OUT/ALM

IQ OUT/ ALM Form C Relay	Connector	Common	Normally Closed	Connector	Common	Normally Open
25	P5	Pin 8	Pin 7	P9	Pin 8	Pin 7
26	P5	Pin 6	Pin 5	P9	Pin 6	Pin 5
27	P5	Pin 4	Pin 3	P9	Pin 4	Pin 3
28	P5	Pin 2	Pin 1	P9	Pin 2	Pin 1
29	P6	Pin 2	Pin 7	P9	Pin 2	Pin 7
30	P6	Pin 6	Pin 5	P10	Pin 6	Pin 5
31	P6	Pin 6	Pin 3	P10	Pin 6	Pin 3
32	P6	Pin 2	Pin 1	P10	Pin 2	Pin 1
33	P7	Pin 8	Pin 7	P11	Pin 8	Pin 7
34	P7	Pin 6	Pin 5	P11	Pin 6	Pin 5
35	P7	Pin 4	Pin 3	P11	Pin 4	Pin 3
36	P7	Pin 2	Pin 1	P11	Pin 2	Pin 1

9.0 Appendix A - IQ-200 Specifications

9.1 IQ-200 Features

2 Auxiliary Powered Outputs (cc# 23, 24)
1 Supervised Tamper Sense Input (S13)
2 Reader Ports:
- -5-wire Wiegand interface
- -4-wire PCSC Proprietary

2 Form C Door Strike Outputs
(2 Amps @ 24 VDC)
(cc# 1 and 2) 2 Amps continuous power @12/24 VDC
2 Door Left Open Outputs (or 2 External Shunt Options) (cc# 13 and 14)
2 Supervised Door Senses (S17, 19)
5 User Defined Sense Inputs (S14, 36, 37, 38, 39)
2 Request to Exit Inputs (S16, 18)
Battery Backed Clock Calendar
Flash RAM 128K standard (up to 256K)
Battery Backed RAM 256K standard (up to 512K)
LEDs for:
- Power, alarm, on-line diagnostics
- Reader Data [Error code, door status]
- Tamper detect (S13)

Electrical Ratings- 160 mA @ +12 Vdc
Type of Communications- RS-232, RS-485, LAN

9.1.1 System Capacities

Cardholder Capacity: 8,000 (20,000 w/Memory Expansion)
Time Periods: 32
Holiday Time Periods: 32
Holiday List: 365 Days
History Transactions: 4,000 regardless of memory size

9.1.2 Electrical Ratings

Power:	12VDC
Draw:	160mA @ 12V
Relay Contacts	2 A @ 24 VDC
Data0/Data1	5 Vdc @ 0 mA for Logic 1 0 Vdc @ 5mA for Logic 0
Card Reader Draw:	100mA @ 12 VDC
Alarm Point Voltage	5.0 Vdc @ 0.0 mA when Sense Input is in Open Circuit Physical State.
& Tamper Voltage	0.0 Vdc @ 5.0 mA when Sense Input is in Short Circuit Physical State.
	1.6 Vdc @ 3.4 mA when Sense Input is in Alarm Physical State.
	0.9 Vdc @ 4.1 mA when Sense Input is in Normal Physical State.

9.1.3 Spare Parts- IQ-200 PCB

Part Number	Description	Designation
81-09009	3V Lithium Battery	BT1
78-01001	4A 250V 1/4 x 1/4, 3AG Fuse	F1
83-02082	5-pin Plug Connector	P6, P9
83-02083	2-pin Plug Connector	P1, P8, P11, P12, P15
83-02084	4-pin Plug Connector	P3, P4, P7, P10, P14
83-02085	3-pin Plug Connector	P2
83-02086	9-pin Plug Connector	P13, P16
79-03022	DPST Relay	K1, K2
83-02007	Jump Connector	For W1 - W5

9.2 IQ 4-Reader Expansion Module

The IQ-200 2-reader system can be expanded to a 6-reader system by installing the 4-Reader Expansion Module. The circuit board (Part # 03-10102-10X) can be mounted below the circuit board in the larger enclosures available from PCSC. Once mounted, the circuit board is connected to the IQ-200 by installing a 50-pin ribbon expansion cable from P1 on the 4-reader module to J1 on the IQ-200.

The 4-Reader Expansion Module allows the user to connect up to 4 additional readers to the IQ-200. Each of the reader interfaces support either a PCSC proprietary reader (4-wire interface), or a Wiegand reader (5-wire interface). The Expansion Module also provides an additional 4 interfaces for each of the readers and the associated doors. These include the following:

- Multilevel door sense inputs (Supervised door sense inputs)
- Reader Present inputs (Reader connected/disconnected)
- Request to Exit inputs (Unsupervised egress inputs)
- Relay contacts for door control outputs (Form C dry contacts rated for 2.0 Amps @ 12/24VDC continuous power)
- Door shunt outputs (Open Collector output rate for +12 VDC @ 100mA)
- Door Shunt/Local Alarm

9.2.1 Electrical Ratings

Power:	12VDC
Draw:	160mA @ 12 VDC
Relay Contacts	2 A @ 24 VDC
Data0/Data1	5 Vdc @ 0 mA for Logic 1 0 Vdc @ 5mA for Logic 0
Card Reader Draw:	100mA @ 12 VDC
Alarm Point Voltage	5.0 Vdc @ 0.0 mA when Sense Input is in Open Circuit Physical State.
& Tamper Voltage	0.0 Vdc @ 5.0 mA when Sense Input is in Short Circuit Physical State.
	1.6 Vdc @ 3.4 mA when Sense Input is in Alarm Physical State.
	0.9 Vdc @ 4.1 mA when Sense Input is in Normal Physical State.

9.2.2 Power Supply

The 4-reader Expansion Module requires +5VDC for all logic. Relays, output drivers, etc. require a +12VDC supply. The +5VDC and +12VDC is provided to the module via the 50-pin expansion cable, which connects plug P1 of the 4-door cluster PCB (P/N 03-10102-10X) to plug J1 of the IQ-200 board, (P/N 03-10100-201).

9.2.3 Door Sense LEDs

4 LEDs located at D21, D22, D23, and D24 indicate the status of the Door circuits. Resistors must be installed at the door contacts, the switches in place, door closed (normal state), and the lines calibrated, in order for the supervised inputs to function. See Step 4 for installation and calibration procedure.

LED Status Chart:

- Sense Input #21 LED is D21
- Sense Input #23 LED is D22
- Sense Input #25 LED is D23
- Sense Input #27 LED is D24

NOTE LEDs D17-D20 are not used in the IQ-600.

OFF	Circuit is in normal/secure state
ON	Circuit is in an alarm condition state
Blinks once every 2 seconds	Fault condition. Open circuit state
Blinks 1 time/second	Fault condition. Short circuit state
Blinks 4 times/second	Circuit is NOT calibrated and NOT in a functional state

9.2.4 Four-Reader Expansion Board- Active LEDs

4 LEDs located at D61, D62, D67, D68 indicate the status of the Reader circuits. When the LED blinks momentarily after a card swipe, the system is processing the card data. The LED is normally off.

Reader LED Status:

- **Reader C LED is D61**
- **Reader D LED is D62**
- **Reader E LED is D67**
- **Reader F LED is D68**

9.2.5 Jumpers

Reader type is selected by the use of jumpers located in between the reader ports at W5 and W11-W14. Refer to each diagram of reader-types on **Step 3** for the proper setting of these jumpers. Four other jumpers, located at W1, W2, W3, and W6, designate chip selection, and are set at the factory. They should not be changed unless directed by technical support.

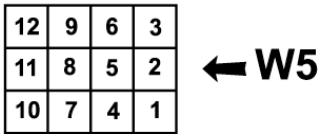
The setting of the four jumpers at W5 (***4W*** or ***5W***) determines how the jumpers next to each reader port is set. Also, when using a 5-wire, 12VDC reader, you can control the voltage at PIN 1, by moving the leftmost jumpers at W5 in conjunction with the reader port jumper setting (see below).

9.2.5.1 Four-Reader Expansion Board- Jumper Selections

There are five jumper units located on the 4-Reader Expansion PCB circuit board. The settings are shown below.

- W1 at Pins 2 and 3 = PCB addressed to High Address Range
- W1 at Pins 1 and 2 = PCB addressed to High Address Range

PIN Designation Chart



- W5 (for Readers **c-f**)
  - At pins 1 and 2, 4 and 5, 7 and 8, 10 and 11= Wiegand 5-Wire 5 volt card readers
  - At pins 2 and 3, 4 and 5, 7 and 8, 10 and 11= Wiegand 5-Wire 12 volt card readers
  - At pins 2 and 3, 5 and 6, 8 and 9, 11 and 12= PCSC 4-Wire 12 volt card readers
- W6 – Reader T/O – No Jumper Required – FACTORY SET
- W11-W14 Reader Data Format
  - At pins 1 and 2 = Wiegand 5-wire (Data 1's and Data 0's) format
  - At pins 2 and 3= PCSC 4-wire (proprietary) format
- SW1 Switch Settings (to configure PCB for doors 3-6)
  - Switch 2 = OFF
  - Switches 1,3,4,5,6,7,8 = ON = 4 Reader PCB
  - Switch 5 = ON to enable Supervision Option of ALL Egress Sense Inputs (#20, 22, 24, 26)
  - Switch 5 = OFF to disable Supervision Option of ALL Egress Sense Inputs (#20, 22, 24, 26)

NOTE: Supervised Egress Option requires IQ+07.010.02 series (or newer) IQ-200 firmware.

9.3 IQ-600 Features (IQ-200 plus 4-Reader Expansion Module)

9.3.1 Two Auxiliary (Powered) Outputs (cc# 23, 24)

6 Reader Ports:
(Wiegand electrical interface for PCSC and OEM card readers) (Readers a-f)
6 Form C Door Strike Outputs (2.0 amps @ 12/24 VDC continuous power)
6 Door Left Open Outputs (or 10 External Shunt Options)
6 Supervised Door Senses (17, 19, 21, 23, 25, 27)
5 Supervised User-Defined (Auxiliary) Sense Inputs (14, 36, 37, 38, 39)
2 Supervised Request to Exit Inputs (16, 18)
4 Unsupervised Request to Exit Inputs (20, 22, 24, 26)
Battery Backed Clock Calendar
Flash RAM 128K standard (up to 256K)
Battery-Backed RAM 256K standard (up to 512K)
LEDs for:
Power, alarm, on-line diagnostics Reader Data [Error code, door status]
Supervised Tamper detect (S13)

9.3.2 System Capacities

Cardholder Capacity:	8,000 (20,000 w/ Memory Expansion)
Time Periods:	32
Holiday Time Periods:	32
Holiday List:	365 Days
History Transactions:	4,000 regardless of memory size
Enclosure Dimensions:	18”H x 11.5”W x 6”D (45.7cm x 29.2cm x 15.2cm)
Weight:	38 lbs. (17.3kg)
Power:	12VDC
Draw:	3 amp @ 12VDC
Temperature:	32°F to 115°F (0°C to 46°C)
Communications:	RS485 standard RS232 standard Dial-up standard Ethernet optional

9.3.3 Electrical Ratings

Power:	12VDC
Draw:	560mA @ 13.65V
Relay Contacts	2 A @ 24 VDC
Data0/Data1	5 Vdc @ 0 mA for Logic 1 0 Vdc @ 5mA for Logic 0
Alarm Point Voltage	5.0 Vdc @ 0.0 mA when Sense Input is in Open Circuit Physical State.
& Tamper Voltage	0.0 Vdc @ 5.0 mA when Sense Input is in Short Circuit Physical State.
	1.6 Vdc @ 3.4 mA when Sense Input is in Alarm Physical State. 0.9 Vdc @ 4.1 mA when Sense Input is in Normal Physical State.

9.3.4 Spare Parts- IQ-4 PCB

Part Number	Description	Designation
83-02082	5-pin Plug Connector	P10, P12, P14, P16
83-02086	9-pin Plug Connector	P11, P13, P15, P17
79-03022	DPST Relay	K5- K8
83-2007	Jump Connector	W1-W3, W5-W6, W11-W14

9.4 IQ 8-Reader Expansion Module

The IQ-200 2-reader system can be expanded to a 10-reader system by installing the 8-Reader Expansion Module. The circuit board can be mounted below the circuit board in the larger enclosures available from PCSC. Once mounted, the circuit board is connected to the IQ-200 by installing a 50-pin ribbon expansion cable from P1 on the 8-reader module to J1 on the IQ-200. The 8-Reader Expansion Module allows the user to connect up to 8 additional readers to the IQ-200. Each of the reader interfaces support either a PCSC proprietary reader (4-wire interface), or a Wiegand reader (5-wire interface). The Expansion Module also provides 8 additional interfaces for each of the readers and the associated doors. These include the following:

- Multilevel door sense inputs (Supervised door sense inputs)
- Reader Present inputs (Reader connected/disconnected)
- Request to Exit inputs (Unsupervised egress inputs)
- Relay contacts for door control outputs (Form C dry contacts rated for 2.0 Amps @ 12/24VDC continuous power)
- Door shunt outputs (Open Collector output rated for +12 VDC @ 100mA)
- Door Shunt/Local Alarm

9.4.1. Electrical Ratings

Power:	12VDC
Draw:	160mA @ 12V
Relay Contacts	2 A @ 24 VDC
Data0/Data1	5 Vdc @ 0 mA for Logic 1 0 Vdc @ 5mA for Logic 0
Card Reader Draw:	100mA @ 12 VDC
Alarm Point Voltage & Tamper Voltage	5.0 Vdc @ 0.0 mA when Sense Input is in Open Circuit Physical State. 0.0 Vdc @ 5.0 mA when Sense Input is in Short Circuit Physical State. 1.6 Vdc @ 3.4 mA when Sense Input is in Alarm Physical State. 0.9 Vdc @ 4.1 mA when Sense Input is in Normal Physical State.

9.4.2 Power Supply

The 8-reader Expansion Module requires +5VDC for all logic. Relays, output drivers, etc. require a +12VDC supply. The +5VDC and +12VDC is provided to the module via the 50-pin expansion cable, which connects plug P1 of the 8-door cluster PCB (P/N 03-10102-001) to plug J1 of the IQ-200 board, (P/N 03-10100-201). The Variable Ambient Test will be for Indoor, 0 to 49 Degrees C, and 85% Relative Humidity @ 30 Degrees C.

9.4.3 Door Sense LEDs

8 LEDs located at D17, D18, D19, D20, D21, D22, D23, and D24 indicate the status of the Door circuits. Resistors must be installed at the door contacts, the switches in place, door closed (normal state), and the lines calibrated, in order for the supervised inputs to function. See Step 6 for installation and calibration procedure.

LED Status Chart:

- Sense Input #21 LED is D17
- Sense Input #23 LED is D18
- Sense Input #25 LED is D19
- Sense Input #27 LED is D20
- Sense Input #29 LED is D21
- Sense Input #31 LED is D22
- Sense Input #33 LED is D23
- Sense Input #35 LED is D24

OFF	Circuit is in normal/secure state
ON	Circuit is in an alarm condition state
Blinks once every 2 seconds	Fault condition. Open circuit state
Blinks 1 time/second	Fault condition. Short circuit state
Blinks 4 times/second	Circuit is NOT calibrated and NOT in a functional state

9.4.4 Eight-Reader Expansion Board- Active LEDs

Eight LEDs located at D49, D50, D55, D56, D61, D62, D67, D68 indicate the status of the Reader circuits. When the LED blinks momentarily after a card swipe, the system is processing the card data. The LED is normally off.

Reader LED Status:

- **Reader C LED is D49**
- **Reader D LED is D50**
- **Reader E LED is D55**
- **Reader F LED is D56**
- **Reader G LED is D61**
- **Reader H LED is D62**
- **Reader I LED is D67**
- **Reader J LED is D68**

9.4.5 Jumpers

Reader type is selected by the use of jumpers located in between the reader ports at W4-W5 and W7-W14. Refer to each diagram of reader-types on pages 17-38 for the proper setting of these jumpers. Four other jumpers, located at W1, W2, W3, and W6, designate chip selection, and are set at the factory. They should not be changed unless directed by technical support.

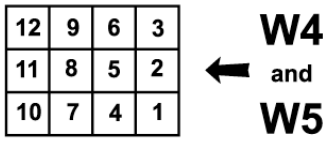
The setting of the jumpers at W4 and W5 (*4W* or *5W*) determines how the jumpers next to each reader port is set. Also, when using a 5-wire, 12VDC reader, you can control the voltage at PIN 1, by moving the #3 jumpers at W4 and W5 in conjunction with the reader port jumper setting.

9.4.5.1 Eight-Reader Expansion Board- Jumper Selections

There are five jumper units located on the 8-Reader expansion PCB circuit board. The settings are shown below.

- W1 at Pins 2 and 3 = PCB addressed to the High Address Range
- W1 at Pins 1 and 2 = PCB addressed to the High Address Range

PIN Designation Chart



- W4 (for Readers **c-f**)
  - At pins 1 and 2, 4 and 5, 7 and 8, 10 and 11= Wiegand 5-Wire 5 volt card readers
  - At pins 2 and 3, 4 and 5, 7 and 8, 10 and 11= Wiegand 5-Wire 12 volt card readers
  - At pins 2 and 3, 5 and 6, 8 and 9, 11 and 12= PCSC 4-Wire 12 volt card readers
- W5 (for Readers **g-j**)
  - At pins 1 and 2, 4 and 5, 7 and 8, 10 and 11= Wiegand 5-Wire 5 volt card readers
  - At pins 2 and 3, 4 and 5, 7 and 8, 11 and 12= Wiegand 5-Wire 12 volt card readers
  - At pins 2 and 3, 5 and 6, 8 and 9, 11 and 12= PCSC 4-Wire 12 volt card readers
- W6 – Reader T/O - No Jumper Required – FACTORY SET
- W11-W14 Reader Data Format
  - At pins 1 and 2 = Wiegand 5-wire (Data 1's and Data 0's) format
  - At pins 2 and 3= PCSC 4-wire (proprietary) format
- SW1 Switch Settings (to configure PCB for doors 3-10)
  - Switch 2 = OFF
  - Switches 1,3,4,5,6,7,8 = ON = 4 Reader PCB
  - Switch 5 = ON to enable Supervision Option of ALL Egress Sense Inputs (#20, 22, 24, 26, 28, 30, 32, 34)
  - Switch 5 = OFF to disable Supervision Option of ALL Egress Sense Inputs (#20, 22, 24, 26, 28, 30, 32, 34)

NOTE: Supervised Egress Option requires IQ+07.010.02 series (or newer) IQ-200 firmware.

9.5 IQ-1000 Features (IQ-200 plus 8-Reader Expansion Module)

2 Auxiliary (Powered) Outputs (cc# 23, 24)
10 Reader Ports:
(Wiegand electrical interface for PCSC and OEM card readers) (readers a-j)
10 Form C Door Strike Outputs (2.0 amps @ 12/24 VDC continuous power)
10 Door Left Open Outputs (or 10 External Shunt Options)
10 Supervised Door Senses (17, 19, 21, 23, 25, 27, 29, 31, 33, 35)
5 Supervised User-Defined (Auxiliary) Sense Inputs (14, 36, 37, 38, 39)
2 Supervised Request to Exit Inputs (16, 18)
8 Unsupervised Request to Exit Inputs (20, 22, 24, 26, 28, 30, 32, 34)
Battery Backed Clock Calendar
Flash RAM 128K standard (up to 256K)
Battery-Backed RAM 256K standard (up to 512K)
LEDs for: Power, alarm, on-line diagnostics Reader Data [Error code, door status]
Supervised Tamper detect (S13)

9.5.1 System Capacities

Cardholder Capacity:	8,000 (20,000 w/ Memory Expansion)
Time Periods:	32
Holiday Time Periods:	32
Holiday List:	365 Days
History Transactions:	4,000 regardless of memory size
Enclosure Dimensions:	18”H x 11.5”W x 6”D (45.7cm x 29.2cm x 15.2cm)
Weight:	38 lbs. (17.3kg)
Power:	12VDC
Draw:	3 amp @ 12VDC
Temperature:	32°F to 115°F (0°C to 46°C)
Communications:	RS485 standard RS232 standard Dial-up standard Ethernet optional

9.5.2 Electrical Ratings

Power:	12VDC
Draw:	820mA @ 13.65V
Relay Contacts	2 A @ 24 VDC
Data0/Data1	5 Vdc @ 0 mA for Logic 1 0 Vdc @ 5mA for Logic 0
Alarm Point Voltage	5.0 Vdc @ 0.0 mA when Sense Input is in Open Circuit Physical State.
& Tamper Voltage	0.0 Vdc @ 5.0 mA when Sense Input is in Short Circuit Physical State.
	1.6 Vdc @ 3.4 mA when Sense Input is in Alarm Physical State.
	0.9 Vdc @ 4.1 mA when Sense Input is in Normal Physical State.

9.5.3 Spare Parts- IQ-8 PCB

Part Number	Description	Designation
83-02082	5-pin Plug Connector	P2, P4, P6, P8, P10, P12, P14, P16
83-02086	9-pin Plug Connector	P3, P5, P7, P9, P11, P13, P15, P17
79-03022	DPST Relay	K1- K16
83-2007	Jump Connector	W1-W14

9.6 OUT PCB Features

16 Form C Door Strike Outputs (2.0 amps @ 12/24 VDC continuous power)
16 Unsupervised Sense Inputs (Alarm points 56-71)

LEDs for: status, +5Vdc, +12Vdc

Supervised Tamper detect (S13)

9.6.1 System Capacities

Enclosure Dimensions:	18”H x 11.5”W x 6”D (45.7cm x 29.2cm x 15.2cm)
Weight:	38 lbs. (17.3kg)
Temperature:	32°F to 115°F (0°C to 46°C)
Communications:	50-pin Ribbon Cable

9.6.2 Electrical Ratings

Sense Inputs	Open Switch	0.0 mA @ 12 VDC
	Closed Switch	1.3 mA @ 0.0 VDC
Power:	12VDC	
Draw:	974mA @ 12V	
Relay Contacts	2 A @ 24 VDC	

9.6.3 Spare Parts- OUT PCB

Part Number	Description	Designation
83-02083	2-pin Plug Connector	P13 (Pins 5-6)
83-02084	4-pin Plug Connector	P1- P12 (two connectors per plug), P13 (Pins 1-4)
79-03022	DPST Relay	K1- K16
83-2007	Jump Connector	P14

9.7 ALM PCB Features

16 Unsupervised Sense Inputs (Alarm points 56-71)

LEDs for: status, +5Vdc, +12Vdc

9.7.1 System Capacities

Enclosure Dimensions: 18”H x 11.5”W x 6”D (45.7cm x 29.2cm x 15.2cm)
Weight: 38 lbs. (17.3kg)
Temperature: 32°F to 115°F (0°C to 46°C)
Communications: 50-pin Ribbon Cable

9.7.2 Electrical Ratings

Sense Inputs Open Switch 0.0 mA @ 13.2 VDC
Closed Switch 1.3 mA @ 0.0 VDC
Power: 12VDC
Draw: 160mA @ 12V

9.7.3 Spare Parts- ALM PCB

Part Number	Description	Designation
83-02083	2-pin Plug Connector	P13 (Pins 5-6)
83-02084	4-pin Plug Connector (Pins 1-4)	P1- P4 (two connectors per plug), P13
83-2007	Jump Connector	P14

9.8 SAM Board

LEDs for: status, +5Vdc, +12Vdc

9.8.1 System Capacities

Enclosure Dimensions:	18”H x 11.5”W x 6”D	(45.7cm x 29.2cm x 15.2cm)
Weight:	38 lbs. (17.3kg)	
Temperature:	32°F to 115°F (0°C to 46°C)	
Communications:	50-pin Ribbon Cable	

9.8.2 Electrical Ratings

Sense Inputs	Open Switch	0.0 mA @ 13.2 VDC
	Closed Switch	1.3 mA @ 0.0 VDC
Power:	12VDC	
Draw:	90mA @ 12V	

9.8.3 Spare Parts- SAM PCB

Part Number	Description	Designation
83-02083	2-pin Plug Connector	P13 (Pins 5-6)
83-02084	4-pin Plug Connector (Pins 1-4)	P1- P4 (two connectors per plug), P13
83-2007	Jump Connector	P14

9.9 Cable Requirements and Maximum Lengths

9.9.1 Communication-

Type of Technology	Type of 22awg Stranded Wire	Maximum Distance	Max. Distance w/PIN Pad (BP-250)
IQ-200	2-pair, twisted, w/ overall shield	To the last IQ-200 (4,000 ft (1,219 m)	

9.9.2 Readers

4-wire PCSC-

Type of Technology	Models	Type of 22awg Stranded Wire	Maximum Distance	Max. Distance w/PIN Pad (BP-250)
ProTech	BR-350	2-pair, twisted, w/ overall shield	2000 ft. (667 m)	2000 ft. (667 m)

5-wire Wiegand-

Type of Technology	Models	Type of 22awg Stranded Wire	Maximum Distance	Max. Distance w/PIN Pad (Bp-270)
ProTech	BR-370	3-pair, twisted, w/ overall shield	500 ft. (192 m)	500 ft. (192 m)
Proximity	All models	3-pair, twisted, w/ overall shield	500 ft. (192 m)	500 ft. (192 m)
Biometric	All models	3-pair, twisted, w/ overall shield	500 ft. (192 m)	500 ft (192 m)
Bar Code	All models	3-pair, twisted, w/ overall shield	500 ft. (192 m)	500 ft (192 m)
Vehicle ID	VR-670	3-pair, twisted, w/ overall shield	500 ft. (192 m)	500 ft (192 m)

2-pair twisted and shielded cable recommended brands are:
Belden 8728 Olympic 3030 Alpha 2404 or 2212

3-pair twisted and shielded cable recommended brands are:
Belden 8777 Alpha 6010C WPW D431

NOTE All data communications cables must reside in a separate electrical conduit. Absolutely NO high voltage or AC power cables allowed within data conduits.

9.10 Tool Requirements

Cable Connection Tool

On the IQ-200 circuit board, a standard screwdriver is required for securing cabling connections.

9.11 Controller Specifications

Microprocessor

The IQ-200 Controller is based on a 80C188EB microprocessor, operating at 16 MHz. The 80C188EB is a 16-bit processor (internal operation) with an eight-bit data bus. A 20-bit address bus provides a 1M Byte addressing range. Other features include three internal 16-bit timers, interrupt controller (8529 equivalent), multiple programmable chip select decoders with programmable wait states, and two serial communication channels.

LEDs and Dipswitches

Ten discrete LEDs are provided which the microprocessor software can individually control. Eight general-purpose switches are provided for use by the microprocessor software, and are utilized for mode control, configuration setting, ID selection, etc. In addition, a Power ON LED and two “Reader Active” LEDs are provided.

Two Seven-Segment LED Display

Error codes are displayed in Hexadecimal format. Refer to the error code section for listing of codes and their meanings.

Real Time Clock

A real time clock (DS1302) with battery backup is provided for time of day information.

Serial Communication

Two serial communication ports are provided by the IQ-200 controller.

- RS-485: Four wire (twisted pair) interface which is optically isolated from the controller.

  -Provision for installing a termination resistor is provided.

- RS-232: At P5 (RS232 DB9 – MODEM). At P2 (RS232 Direct Connect) – standard RS232 interface. A DB9 connector with AT pinout is provided for an industry standard RS-232 interface.

Power Supply

The IQ-200 controller requires +5VDC *for all logic*. Relays, output drivers, etc. require a +12VDC supply. An on-board dc-dc converter accepts an external voltage source of 10-26VDC, and converts this unregulated source to the required +5VDC. For an input voltage range of 10-15 volts, the “+12VDC” converts this voltage source to the required +12VDC. For more information, please refer to the ESD power supply installation manual.

Battery Back-up Requirements

A 12 AH battery is recommended as a back-up to the power supply, because it is the largest battery that will fit in the enclosure. The battery should be connected to the power supply charger in accordance with the manufacturer’s instructions. The battery should be connected to the power supply charger in accordance with the manufacturer’s instructions. Refer to ESD SPS-3.6M2E, or SPS-6.5M4 Power Supply installation instructions (P/N: SPS36instructions Rev: 04/15/02) for determining battery backup size.

Factory Settings

At the factory the IQ is set as IQ #1, communications as direct connect (RS232/RS485) @ 9600 baud, with 120 Ohm resistor termination disabled (W5 jumper set at 1-2).

9.12 Maintenance Requirements

The following items require testing and/or maintenance to be performed on the SIM at least once a year.

- Fuse Replacement
- PCB Back Up Memory Battery Replacement
- Power Supply Back Battery Replacement.

9.12.1 Fuse Replacement Method:

1. Disconnect all power from board.
2. Carefully remove fuse from board using proper tools.
3. Replace only with same rated fuse or 250 V, 4A 3AG.

WARNING: For Continued Protection Against The Risk Of Fire, Replace Only With Same Type And Rating Of Fuse.

9.12.2 Back-Up Memory Battery Replacement

1. Disconnect all power from board.
2. Remove Battery from PCB
3. Replace only with only the same type battery as specified battery, see Spare Parts Section for battery Part Number.

WARNING: Replacing with the incorrect battery may cause damage the PCB, and void warranty.

9.12.3 Power Supply Back Battery Replacement

1. Check battery condition at least once a year,
2. Replace every 3-5 years with a UL Recognized Sealed Lead Acid batteries, 12 V dc.

10.0 Appendix B – Configuring the IQ-200E

10.1 Configuring the IQ-200E

The following Configuration Instructions are for updating the IQ-200E (PCSC Part #: 03-10108-xxx) TCP/IP Configuration.

NOTE: These instructions can be used for a standard IQ-200 (p/n - 03-10100-202 in conjunction with an IQ LAN (p/n - 03-10108-001). If this combination is used, the panel number in the IQ LAN and the IQ-200 PCB must match.

NOTE: The LANtronix MSS1-T RS-232 Serial Server has not been evaluated by UL, and is not suitable for UL installations.

NOTE: The IQ-LAN (p/n - 03-10108-001) has not been evaluated by UL, and is not suitable for UL installations.

10.1.1 Required Equipment:

1. PC or Notebook computer with a NIC
2. Web Browser (IE 5 or greater or Netscape 5 or greater.)
3. Ethernet Cross Over cable (example: Unicom E5DD-C414-WT-10TR) or attached to a hub
4. IQ-200E – 03-10001-202/E

10.1.2 Required Information:

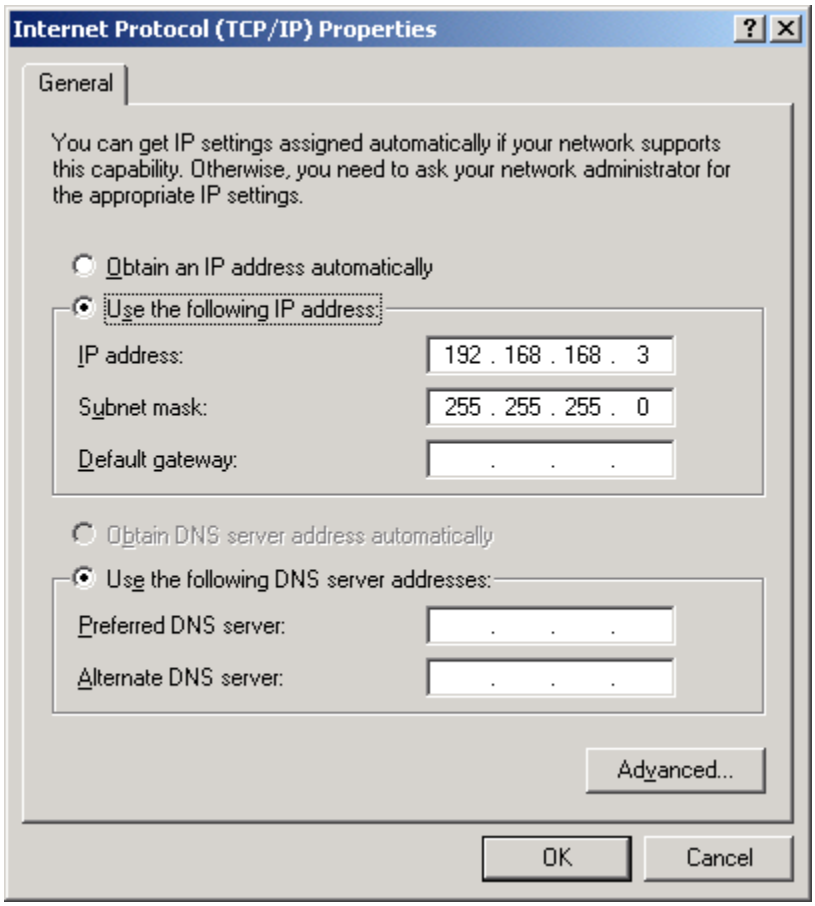
1. LiNC-NET Host IP Address
2. IP Address – This is the unique IP Address for each IQ-200E.
3. Any Gateway information.

10.1.3 Required firmware:

1. IQ-200E panel firmware: ix+xx.xxx.xx or greater

10.2 Configuring your Host Computer

1. Change host IP to be **192.168.168.3** in your computer's TCP/IP settings - This is the default Host IP address that the IQ-200E uses for setup:
    a. Right mouse click on "My Network Places"
    b. Select: **Properties**
    c. Right mouse click on "Local Area Connection"
    d. Highlight **Internet Protocol [TCP/IP]** and Press the **Properties** button.
    e. You will need to verify that you have "Use the following IP address" selected.



    f. Enter **192.168.168.3** for the I.P. address
    g. Enter **255.255.255.0** for the Subnet mask
    h. Press the **OK** button
    i. Reboot the host computer if necessary. Depending on you system you may or may not have to do this.

10.3 Configuring IQ-200E VIA the TCP/IP Configurator

Use a Web Browser to configure and view the IQ-200E Configuration Information (IE 5 or greater, or Netscape 5 or greater). You will need to know the following information, IQ-200E IP address - **192.168.168.32**, Logon Name - **admin**, and Logon Password – **PYMTF**

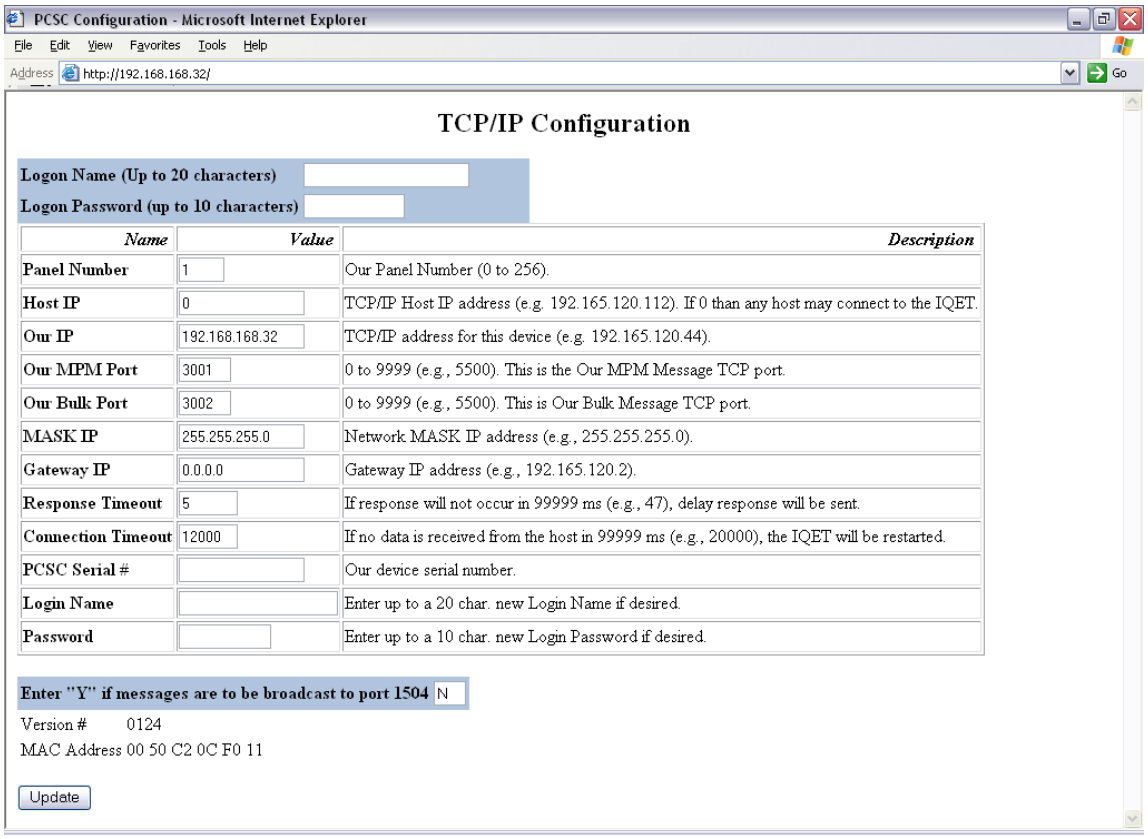
The following steps are for connecting and changing the TCP/IP Configuration.

1. Connect your Cross-Over cable from your host to the IQ-400E.

NOTE: Once you have powered up the IQ-200E and have successfully made a connection to the Host, the panel R45 connectors Green LED will turn ON. You will also see the Yellow LED strobe when it is trying to communicate to the Host.

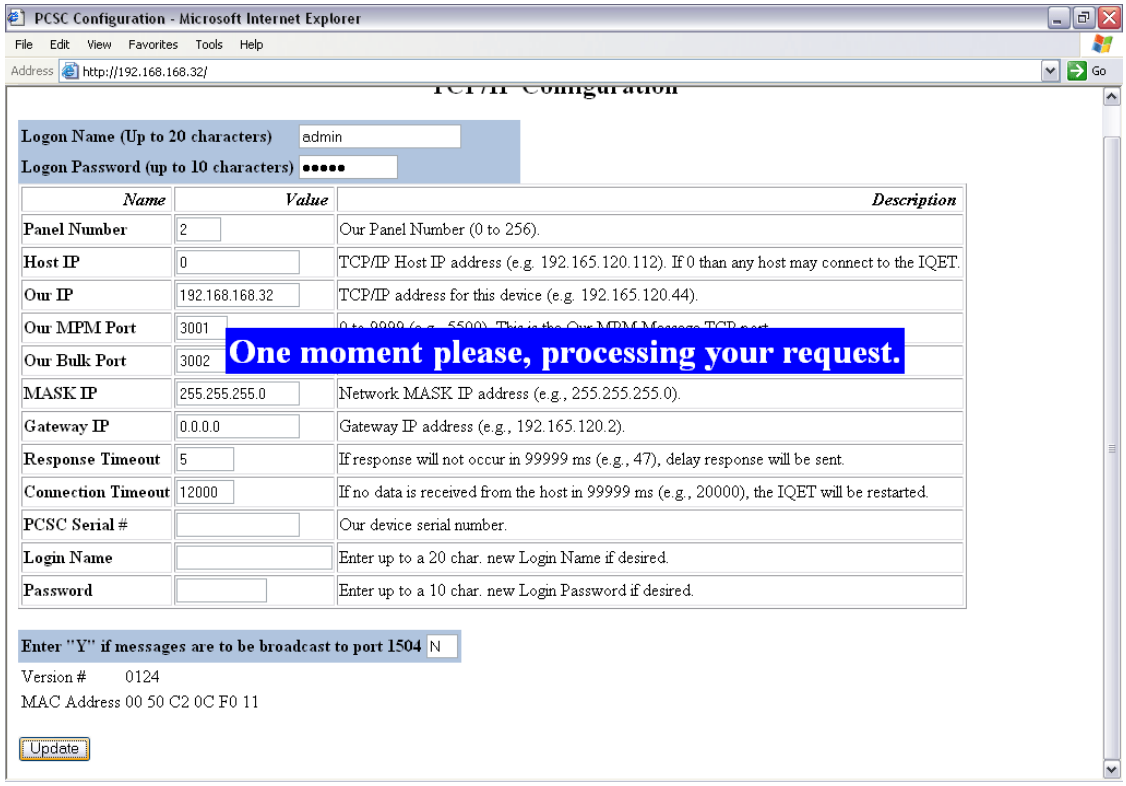
2. Open your Browser (e.g. Internet Explorer, Netscape, etc.)
3. Request the configuration form by entering the following in the “Address” field of the Browser. http://192.168.168.32
4. An html form will appear (figure on next page).

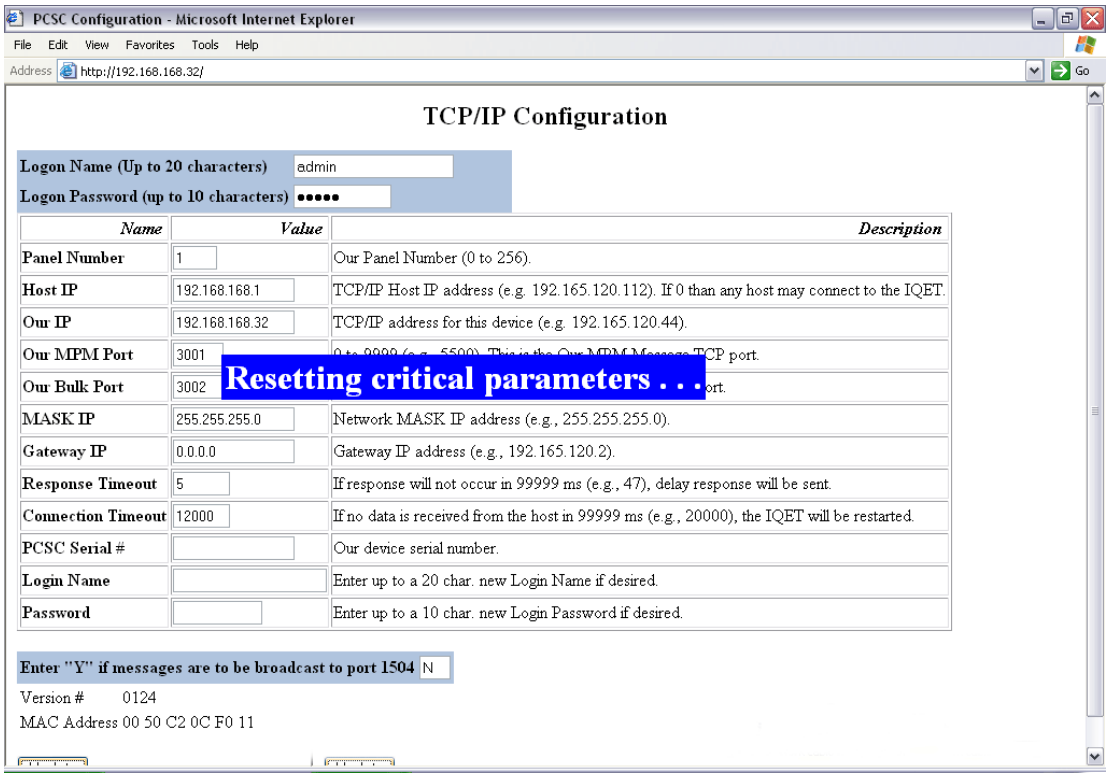
10.3.1 TCP/IP Configuration



5. Change the appropriate values.
    a. **Panel Number** – This must match the IQ-200E panel number.
    b. **Host IP** – This is the LiNC-NET Host IP
    c. **Our IP** - This is the IQ-200E address
6. Enter the Logon Name – **admin**
7. Enter Logon Password – **PYMTF**

8. Click on the **Update** button. The following screen(s) will appear depending on the field you have changed.





9. Close the Browser. You will have to change your Host IP to match the Host IP address just entered in the TIP/IP Configuration
10. Re-open the Browser. Call out the new IQ-200E address. You should now see all of the updated information.

NOTE: Once you have changed the Host IP in the IQ-200E, the host IP must match. If they do not then you will not be able to view the TCP/IP configuration information.

Update IQ panel firmware – Reference IQ-Series Downloader Installation Instructions Technical Bulletin (P/N: 39-10050-001).

NOTE: Updating the firmware will void the UL Listing, and will not be suitable for UL Installations.

10.4 Resetting the IQ-200E

If the IQ-200E panel is accidentally set to an incorrect (and/or unknown) IP address, it is possible to reset the panel to its original default IP address.

1. Power off the IQ-200E board.
2. Reset SW1 DIPswitch to (11101110)
3. Power up the board. The IQ-200E board LED Array will initially show 8.8., then 8.6., then 8.8. once again –board is now reset. The board reset has created the following default values:
    a. Logon is “**admin**”
    b. Password is “**PYMTF**”
    c. “Host IP” is reset to ‘**0**’
    d. “Our IP” is reset to **192.168.168.32**
3. Using your Internet browser, type in the IP address **192.168.168.32**. The IQ LAN module should be in default mode.

NOTE Your computer’s TCP/IP has to be set to the 192.168.168.xxx for proper communication to the panel.

4. See page 104, steps 5 through 8, for proper resetting of the TCP/IP configuration for the board.

NOTE When reset, the LAN module will default to Panel 1 and the default address.

End of Manual
PCSC, Inc.
February 2008