Owner's Manual

1818

PC Programmable Multi-Door Access Controller

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P/N 1818-065 REV H, 4/02

Use this manual with the following models only.

All 1818 Series with circuit board 1842-010 Rev D or higher.

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Section 4 – Operating Instructions

Section 5 – Maintenance and Trouble Shooting

IMPORTANT NOTICE

FCC - UNITED STATES

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

FCC Registration Number: **DUF6VT-12874-OT-T**

DOC - CANADA

The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The Department does not guarantee the equipment will operate to the users satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable means of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure, for their own protection, that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

DOC Registration Number: **1736 4528 A**

Notice:

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the sum of the load numbers of all the devices does not exceed 100.

Notice:

DoorKing does not provide a power transformer on units sold into Canada. Use only transformers that are CSA listed to power the telephone entry system. 1802, 1803, 1808, 1810, 1814, 1815, 1818 and all "P" series systems require a 16.5-volt, 20 VA transformer. The models 1816 and 1817 require a 16.5-volt, 40 VA transformer. The model 1812 requires a 24-volt, 20 VA transformer.

Listing:

This product has been tested to and found to be in compliance with the U.L 294 Safety Standard by Intertek Testing Services NA Inc. (a Nationally Recognized Testing Laboratory) and is ETL listed.

IMPORTANT INFORMATION

- Prior to beginning the installation of the access control system, we suggest that you become familiar with the instructions, illustrations, and wiring guidelines in this manual. This will help insure that you installation is performed in an efficient and professional manner.
- The proper installation of the access controller is an extremely important and integral part of the overall access control system. Check all local building ordinances and building codes prior to installing this system. Be sure your installation is in compliance with local codes.
- When used to control a door or pedestrian gate, try to locate the access controller as near as possible to the entry point. The unit should be mounted on a rigid wall to prevent excessive shock and vibration from closing doors or gates. Continuous vibration and shock from slamming doors or spring-loaded pedestrian gates will damage the circuit board. **Under no circumstances should the unit be mounted directly to a moving door or gate**.
- **ADA mounting requirements for door control.** The mounting of the access control device (card reader, keypad, etc.) shall be in such a way that it is readily usable by a person sitting in a wheelchair with an approximate eye level of 45 inches and shall comply with the following requirements:
    1. If the clear floor space allows only forward approach to the device, the maximum high forward reach allowed is 48 inches above grade to the top of a keypad.
    2. If the high forward reach to the system is over an obstruction of greater than 20 inches but less than 25 inches, the maximum high forward reach allowed is 44 inches above grade to the top of a keypad.
    3. If the clear floor space allows parallel approach by a person in a wheelchair, the maximum high side reach shall be 54 inches above grade to the top of a keypad.
    4. If the high side reach is over an obstruction of 24 inches or less, the maximum high side reach allowed is 46 inches above grade to the top of a keypad.
- **When used to control a vehicular gate with an automatic gate operator, the access control device (card reader, keypad, etc.) must be mounted a minimum of ten (10) feet away from the gate and gate operator, or in such a way that a person cannot operate the device and/or touch the gate or gate operator at the same time**.
- Be sure that access control devices are installed so that they are not directly in the traffic lane. Gooseneck mounting post and kiosks work well for these type systems. When planning where to locate the access device, take into consideration traffic lane layouts, turn around lanes for rejected access, conduit runs, power availability, etc.
- This access system controller contains a number of static sensitive components that can be damaged or destroyed by static discharges during installation or use. Discharge any static prior to removing the circuit board by touching a proper ground device.
- **Instruct the end user to read and follow these instructions. Instruct the end user to never let children play with or operate any access control device. This Owner's Manual is the property of the end user and must be left with them when installation is complete**.

FEATURES

- Can provide service for up to 3000 system users and can store up to 8000 card, transmitter or digital PIN codes when ordered with 3000 MemPLUS chip set.
- System can be programmed via modem or RS-232 interface with the Remote Account Manager for Windows software included with the unit. Programming via RS-232 requires an additional cable that is not included with the unit (P/N 1818-040).
- Transaction buffer stores the last 8000 events and has its own backup power source to retain memory during power outages.
- 31-security levels total (security level 00 always denies entry, security level 01 always admits entry), with 29 programmable security levels, each with four time zones allows you to control and restrict user access as needed.
- Two internal relays allow the system to control two entry points.
- System can be expanded to control up to 16 entry points. Tracker expansion boards are required (one for each additional entry point) and are not included with the system. Tracker boards also provide output for door ajar and forced entry alarms.
- Optional elevator control board(s) can control up to four elevators with each elevator serving up to 64 floors.
- System will interface with selected models of DKS DoorKing vehicular gate operators to provide gate operator information and data (requires a Tracker board for each gate operator that is to send data to the system).

SECTION 1 - INSTALLATION

If you are going to use a telephone line with this controller, order it at least two weeks prior to the planned installation date. This will assure that a phone line is available when the unit is installed. The telephone company will require the following information from you:

Type:	Touch Tone, Loop Start
Ringer Equivalence:	0.0 A
Jack Type:	RJ11C
FCC Registration (US):	DUF6VT-12874-OT-T
DOC (Canada):	1736 4528 A
Electrical Listing:	Complies with U.L. 294 - ETL Listed

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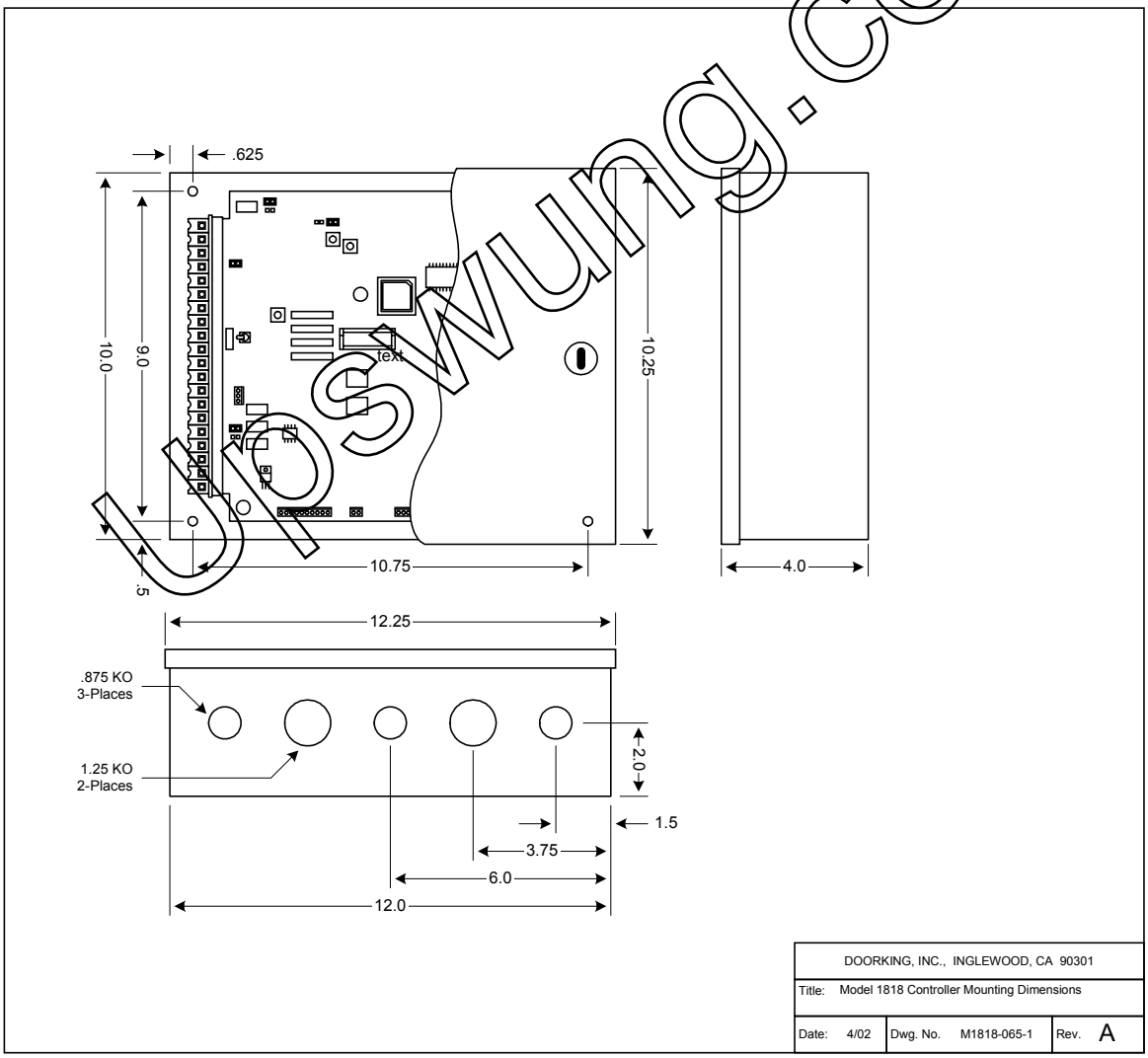
1.1 Installation Guidelines

1. Open the cabinet of the access controller and disconnect the keypad ribbon cable from the main circuit board.
2. Remove the 6-32 x 1/2 round head screws from the right side of the circuit board.
3. Remove the circuit board by gently pulling it out of the main terminal edge connector. **CAUTION** - the circuit board contains static sensitive components. Discharge any static electricity from your hands by touching a proper ground device before removing the circuit board. Place the circuit board where it will not be damaged.
4. Mount the access controller cabinet using 8-32 screws. The access controller has four 8-32 blind pems installed in each corner. See page 10.
5. Route wiring into the cabinet. Do not apply any power at this time.
6. Clean out the cabinet. Be sure that all dirt, metal and/or wood debris is removed from the cabinet and that the terminal strip edge connector is clean and free of any loose particles.
7. Re-install the circuit board into the cabinet by gently pushing the circuit board terminals into the edge connector. **CAUTION** - the circuit board contains static sensitive components. Discharge any static electricity from your hands by touching a proper ground device before removing the circuit board.
8. Secure the circuit board to the cabinet using the screws removed in step 2.
9. Plug the keypad ribbon cable into the circuit board. The cable points to the left.

WARNING! If this access control system is used to control a vehicular gate with an automatic gate operator, the access control device must be mounted a minimum of ten (10) feet away from the gate and gate operator, or in such a way that a person cannot operate the access control device and touch the gate or gate operator at the same time.

1.1.1 Mount Information

If used to control a door or pedestrian gate, try to locate the access controller as near as possible to the entry point. The unit should be mounted on a rigid wall to prevent excessive shock and vibration from closing doors or gates. Continuous vibration and shock from slamming doors or spring-loaded pedestrian gates will damage the circuit board. **Under no circumstances should the unit be mounted directly to a moving door or gate.**



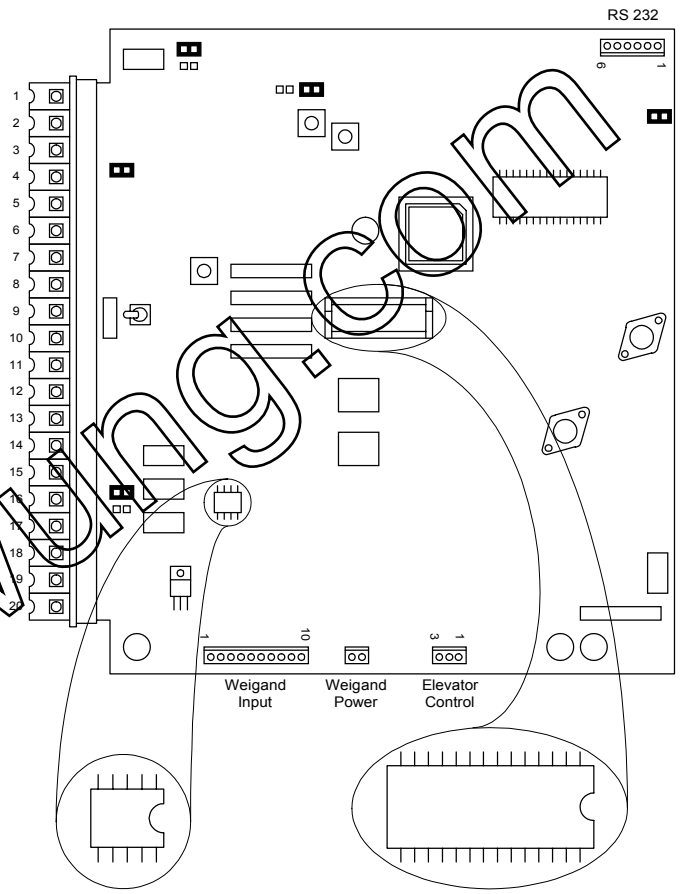
1.2 Memory Chip Installation

The access controller is shipped with two memory chips packaged in a separate box inside the shipping container. The memory chips must be installed for the system to operate.

CAUTION!! Do not install the memory chips with power to the system turned on. Attempting to install the memory chips with power on will irrevocably damage the chips.

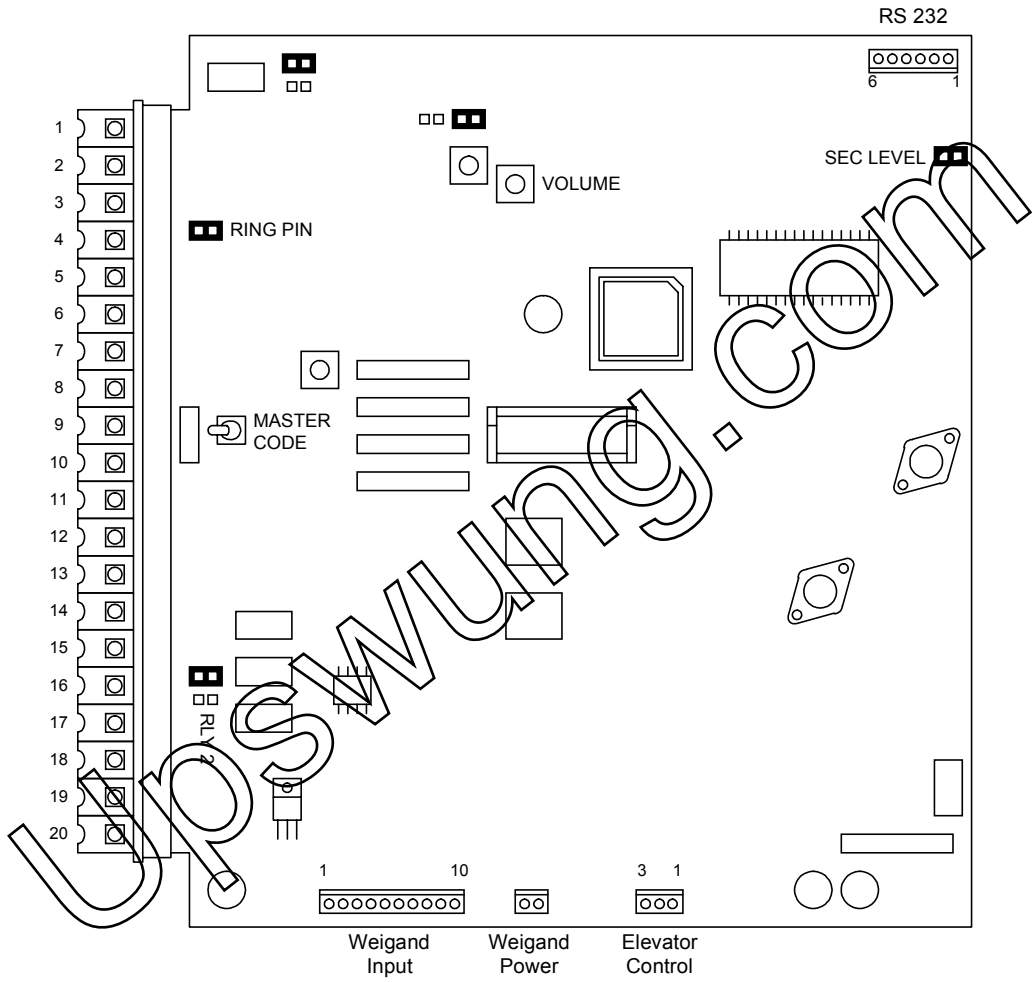
CAUTION!! The memory chips are a static sensitive component. Discharge any static electricity from your hands by touching a proper ground device before removing the control board. Handle the memory chips with care.

1. The large memory chip socket is colored black and is located in the center of the circuit board. Be sure that the handle is in the un-locked position (pointing up). Be sure that power to the telephone entry system is off.
2. Carefully insert the memory chip into the socket. The small half circular indentation on the chip must be to the right. CAUTION: Installing the memory chip backwards will cause permanent damage to the chip. Be sure that the memory chip is seated correctly in the socket.
3. Move the lever on the chip socket to the locked position (down).
4. Install the small memory chip in the socket located at the bottom of the circuit board. The small circular indentation on the chip must be to the right. CAUTION: Installing the memory chip backwards will cause permanent damage to the chip. Be sure that the memory chip is seated correctly in the socket. If it is necessary to remove this chip, use a small bladed flat blade screwdriver to carefully pry the chip from the socket. Take extra caution to be sure to not bend the pins on the chip.



1.3 Circuit Board Terminal Identification

1842-010 Board Settings and Terminal Locations



DOORKING, INC., INGLEWOOD, CA 90301		
Title: 1842-010 Control Board Settings and Terminal Locations		
Date: 4/02	Dwg. No. M1818-065-2	Rev. A

1.3.1 Main Terminal Description

TERMINAL	DESCRIPTION
1	Phone Line Connection – 800 ft. maximum with 24 AWG wire; 1600 ft. maximum with 22 AWG wire.
2	Phone Line Connection – 800 ft. maximum with 24 AWG wire; 1600 ft. maximum with 22 AWG wire.
3	Earth Ground Only.
4	Switch Input. A closure between terminals 4 and 6 will cause the designated relay(s) to activate for the programmed strike time. The Postal Switch is connected here.
5	Not Used.
6	Common for switch input, speaker and battery negative.
7	Speaker Output.
8	Not Used.
9	Not Used.
10	Not Used.
11	Not Used.
12	Not Used.
13	Relay 2 Common – 30 Volt, 3 Amp maximum.
14	Relay 2 Contact (set for normally open or normally closed by the relay contact shorting bar on the circuit board) – 30 Volt, 3 Amp maximum.
15	Relay 1 Common – 30 Volt, 3 Amp maximum.
16	Relay 1 Normally Closed – 30 Volt, 3 Amp maximum.
17	Relay 1 Normally Open – 30 Volt, 3 Amp maximum.
18	Back-up Battery POSITIVE (connect negative to terminal 6).
19	16 VAC Input Power – 20 VA. 100 ft. maximum with 18 AWG wire; 200 ft. maximum with 16 AWG wire.
20	16 VAC Input Power – 20 VA. 100 ft. maximum with 18 AWG wire; 200 ft. maximum with 16 AWG wire.

Do not run high voltage (115 V) power lines and communication lines in the same conduit. These should be in separate conduits at least six (6) inches apart. **Be sure that all phone line wiring is twisted and completely isolated from ground**.

Use only the supplied 16.5 VAC (or U.L. listed equivalent) to power the entry system. **Do not power any other devices (electric strikes, magnetic locks, lights, etc.) from this transformer**. Do not run 16 VAC entry system power lines over 200 feet. It is advisable to keep these wires as short as possible. **Use 18 AWG wire for wire runs up to 100 feet, and 16 AWG wire for wire runs up to 200 feet**. Install a low voltage surge suppresser (DoorKing p/n 1878-010 or equivalent) to help protect the entry system from power surges. Relay 1 contacts are located on the main terminal strip (15, 16, 17). Relay 2 contacts are located on the main terminal strip (13, 14) and are set for N.O or N.C. operation by the relay 2 shorting bar.

A 12 volt .8 amp hour gel-cell battery (DoorKing p/n 1801-008) can be installed in the system to provide stand-by power in the event of a power outage. Connect the positive (RED) lead to terminal 18; connect the negative (BLACK) lead to terminal 6.

1.3.2 Data (Weigand) Input Terminals

TERMINAL	DESCRIPTION	
10	+12 VDC POWER	Weigand devices connected to these terminals will activate RELAY 1 when a valid code is received by the device.
9	COMMON	
8	DATA 1	
7	DATA 0	
6	+12 VDC POWER	Weigand devices connected to these terminals will activate RELAY 2 when a valid code is received by the device.
5	COMMON	
4	DATA 1	
3	DATA 0	
2	16 VAC Light Power	Used for light power only.
1	16 VAC Light Power	

These terminals are used to input data from external weigand devices such as card readers, keypads, RF receivers, etc. These terminals are also used to input data from 2351-010 tracker expansion boards when they are used to expand the system.

The 16 VAC available on weigand terminals 1 and 2 (not the two weigand power terminals) is used for lights only. For example, a weigand card reader may have lights built into the housing that will require 16 VAC power for the lights to illuminate. Do not power any other devices (electric strikes, magnetic locks, etc.) from this power source.

Maximum wire run for weigand data is 500 feet. Use Belden 9418 (4-conductor) or Belden 9931 (6-conductor) wire or equivalent. Do not use twisted pair with weigand format. Float the shield at the weigand device. Do not connect the shield to the weigand device common.

If 2351-010 tracker expansion boards are being used with this system, refer to the Installation and Wiring manual (P/N 2351-065) that came with the 2351-010 tracker expansion boards.

1.3.3 Weigand Power Terminals

TERMINAL	DESCRIPTION
1	16 VAC, 20 VA Weigand Input Power. 100 ft. maximum with 18 AWG wire; 200 ft. maximum with 16 AWG wire.
2	16 VAC, 20 VA Weigand Input Power. 100 ft. maximum with 18 AWG wire; 200 ft. maximum with 16 AWG wire.

16 VAC, 20 VA power must be supplied to these power terminals; otherwise RS232 communication and all weigand devices will fail to operate. Do not power any other devices (electric strikes, magnetic locks, lights, etc.) from this transformer. Do not run 16 VAC weigand power lines over 200 feet. Use only U.L. listed 600 volt insulated wire for RS232 / weigand power wiring. It is advisable to keep these wires as short as possible. Use 18 AWG wire for wire runs up to 100 feet, and 16 AWG wire for wire runs up to 200 feet. Install a low voltage surge suppresser (DoorKing p/n 1878-010 or equivalent) to help protect the circuit board from power surges.

1.3.4 Elevator Control Terminals

TERMINAL	DESCRIPTION
1	DATA 1 – to elevator control board terminal 20.
2	DATA 0 – to elevator control board terminal 21.
3	COMMON – to elevator control board terminal 22.

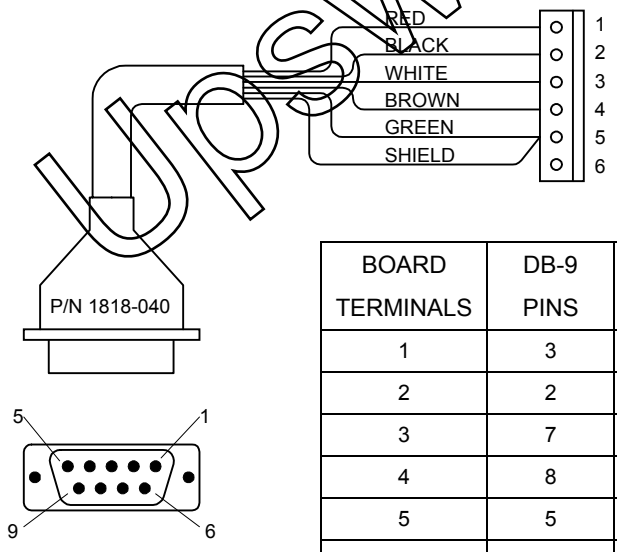
The elevator control terminals are used when the 2348-010 elevator control board is connected to the system to enable elevator control. Do not connect any other devices to these terminals.

Maximum wire run for elevator control data is 500 feet using Belden 9418 (4-conductor) or Belden 9931 (6-conductor) or equivalent. Do not use twisted pair with this format. Float the shield at the elevator control board. Do not connect the shield to the elevator board common.

If elevator control boards (2348-010) are being used with this system, refer to the Elevator Control Installation and Wiring manual (P/N 2348-065) that came with the elevator control boards, for detailed information on wiring these boards to the PC programmable telephone entry system.

1.3.5 RS-232 Terminal

The PC programmable access control system may be programmed using the RS-232 serial communication terminal. This terminal allows a direct connection to a computer using a standard DB-9 serial connector on one end, and loose wires on the other that connect to the RS-232 terminals on the board. You can order a 6-foot cable from DoorKing (P/N 1818-040), or make your own using the wiring scheme shown below. A cross reference is also provided for a DB-25 connector.



BOARD TERMINALS	DB-9 PINS	DB-25 PINS	FUNCTION
1	3	2	Transmit Data
2	2	3	Receive Data
3	7	4	Request to Send
4	8	5	Clear to Send
5	5	7	Signal Ground - Shell
6			Not Used

1.4 Circuit Board Adjustments

1.4.1 Speaker Volume

1. Locate the speaker volume adjustment.
2. Adjust the speaker volume potentiometer for adequate sound. To increase the volume rotate the potentiometer clockwise, to decrease the volume rotate the potentiometer counter clockwise.

1.4.2 Master Code Switch

1. The master code switch is left in the off position for normal operation. Turn the master code switch on when setting the system master code. See programming instructions to set the system master code. If the master code switch is turned on and a new master code is not entered, the system will sound a long tone after approximately 30 seconds. This tone will continue every 30 seconds until a new master code is entered, or until the switch is turned off.

1.4.3 Ring Pin

1. The ring pin is labeled RING on the control board. This shorting pin must be installed to allow the system to answer any calls placed to it. If remote programming or remote relay operation is to be used, the shorting pin must be installed. Removing the shorting pin will cause the system to never answer any call placed to it.

1.4.4 Relay 2 Contact Pin

1. This shorting pin sets the contacts on relay number two to be set to either Normally Open (NO) or Normally Closed (NC). **The pin is set to NO from the factory**.

1.4.5 Security Level Pin

1. When the SEC LEVEL pin is in place, the circuit board has full feature capability. This includes relay hold times, security levels, and elevator control functions. When the SEC LEVEL pin is removed, the circuit board will act the same as a REV C board.

Note: The CLK SENS and FEEDBACK adjustments are not used in the 1818 system and do not need to be adjusted.

SECTION 2 – WIRING

Prior to installing wiring to the access control system, we suggest that you become familiar with the instructions, illustrations, and wiring guidelines in this manual. This will help insure that you installation is performed in an efficient and professional manner.

The wiring of the access controller panel is an extremely important and integral part of the overall access control system. Use proper wire for the communication line, power wires, and be sure that the system is properly grounded. Check all local building ordinances and building codes prior to installing this system. Be sure your installation is in compliance with local codes.

Use only the supplied transformers (or U.L. listed equivalent) to power the access control system (16.5 VAC, 20 VA) and any weigand input devices (16.5 VAC, 20 VA). Do not power any other devices (electric strikes, magnetic locks, etc.) from these power transformers. For wire runs up to 100 feet, use 18 AWG, 600 volt insulated wire. For wire runs up to 200 feet, use 16 AWG, 600 volt insulated wire. Power wires are susceptible to noise and hum pickup; therefore it is preferable that you keep power wire runs as short as possible.

This access control system contains a number of static sensitive components that can be damaged or destroyed by static discharges during installation or use. Discharge any static prior to removing the circuit board from the lobby panel by touching a proper ground device.

Proper grounding of this system is a requirement. The use of surge suppressers can significantly reduce the chance of component failure because of static charges or surges. To be effective, ground connections should be made with a minimum 12 AWG, 600 volt insulated wire to a ground point within 10 feet of the telephone entry system. The ground point must be at an electrical panel, a metallic cold water pipe that runs in the earth, or a stainless steel grounding rod driven at least ten (10) feet into the soil.

Be sure that you use proper wire that has an insulation rated for an underground environment. All wires should be placed in conduits. Proper pre-planning can greatly ease the installation and wiring of this system. Always check with the local building code to determine the type of wire required in your municipality.

IMPORTANT: The wiring information provided in this manual provides information for a two door/gate access system. If Tracker expansion boards are being used with this system, refer to the Tracker Installation and Wiring manual (P/N 2351-065) that came with the Tracker expansion boards, for detailed information on wiring Tracker boards to the access control system.

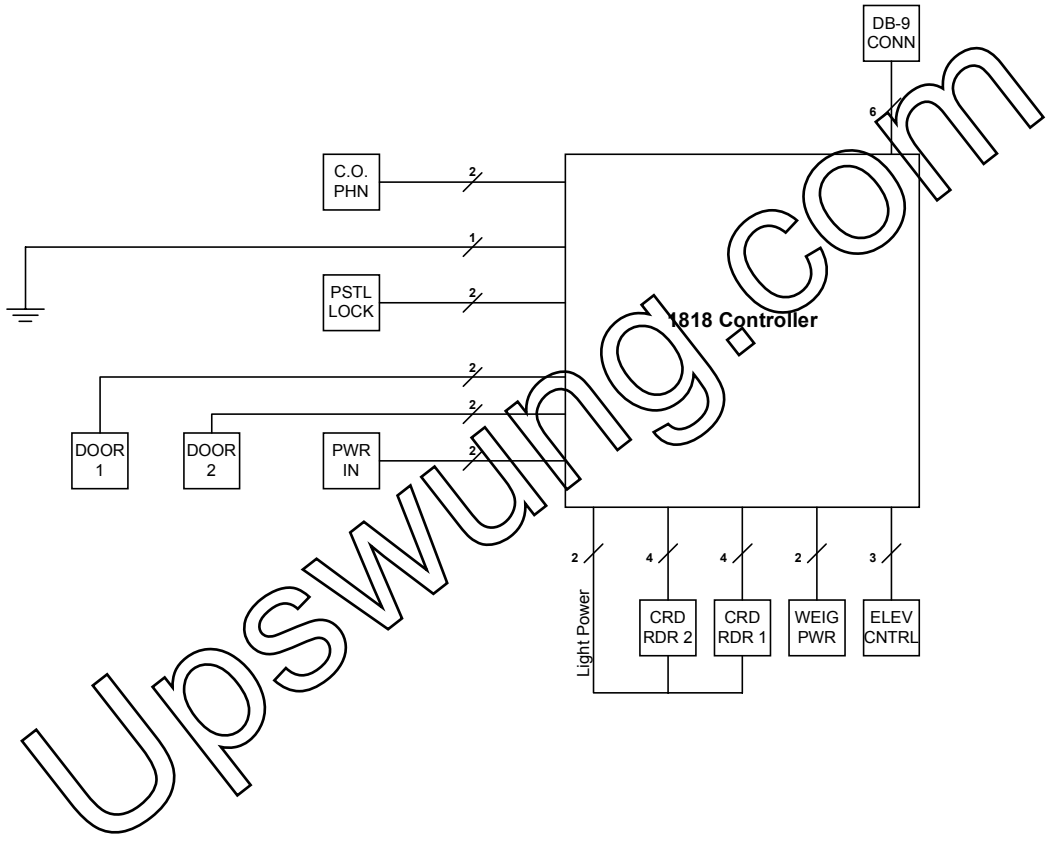
If Elevator Control is used with this system, refer to the Elevator Control Installation and Wiring manual (P/N 2348-065) for detailed information on wiring the elevator control boards to this system and to the elevator push button control panel.

WARNING! If this access control system is used to control a vehicular gate with an automatic gate operator, the access control device(s) must be mounted a minimum of ten (10) feet away from the gate and gate operator, or in such a way that a person cannot operate the access control device and touch the gate or gate operator at the same time.

2.1 Block Diagram – 1 or 2 Door System

Use the block diagram below when using the 1818 access controller to control entry through 1 or 2 doors/gates. The numbers indicate the number of conductors required in the wire run to the specific component.

1818 Controller Block Diagram
1 or 2 Door System



NOTES: Card Readers are wired using Belden 9418 or equivalent.
If card readers are lighted, use Belden 9931 (6-conductor).
Power supplies use minimum 18 GA. Wire.
Ground circuit board.
Controller main terminals 15-16-17 = System Relay 1.
Controller main terminals 13-14 = System Relay 2.
DB-9 connection - use DoorKing P/N 1818-040.
Power for door strikes or magnetic locks is not provided by the system. It must be provided by an external power source. See detail wiring diagram.

DOORKING, INC., INGLEWOOD, CA 90301		
Title: Model 1818 Controller Block Diagram 1 or 2 Door System		
Date: 4/02	Dwg. No. M1818-065-3	Rev. A