

Prox-in-a-Box

4-Door Proximity Access Control System

**Visonic Ltd**

Installation Guide

1. INTRODUCTION

Prox-in-a-Box (PIAB) is a stand-alone Access Control System. The system is easy to install and program, and lends itself to many access control applications. It does not require a PC for programming or use. One PIAB control unit can control up to four doors and may be shared by 3,000 users. For larger installations, the PIAB control unit can be networked with three identical units to control up to 16 doors.

PIAB proximity readers enable easy access, while eliminating the need to remember passwords or PIN codes.

PIAB records and logs every action. For example, when a cardholder presents an access card to the reader, PIAB logs the exact time, date, and door used. This information can be exported to a printer or PC, using the RS232 serial output provided.

PIAB is easily installed and programmed by a security system professional. It uses standard backup batteries, typical of burglar alarm systems, to maintain the system operation in the event of a power loss.

Each control unit can be connected to up to four proximity readers and doors. Up to four control units can be connected in a daisy chain, enabling up to 16 doors to be protected.

A PIAB-KIT is supplied with the following components:

- PIAB Control Unit installed in a metal cabinet
- TRM-1 Programming Terminal
- Two RDR-2 Proximity Readers (Additional readers can be purchased separately.)
- Transformer 16.5 VAC, 50 VA
- CRD-25 pack of 25 Proximity Access Cards
- Programming and Installation guides
- Screwdriver

PIAB-1 is an add-on system that includes:

- PIAB Control Unit installed in a metal cabinet
- Transformer 16.5 VAC, 50 VA
- Programming and Installation guides

Up to three PIAB-1 control units can be networked to an existing PIAB-KIT to form an access control system for up to 16 doors.

2. SPECIFICATIONS

Power input: 14-16V AC, 50 VA

Current consumption: 3A Max.

Power Output Voltage: 10.3 - 12VDC

Backup Battery: 12V/7AH (two batteries required by UL)

Operating temperature: 0 50 32 122

PIAB-1 CONTROL UNIT

Memory capacity: 3000 access cards, 1000 events per controller

Inputs (x 4 doors):

- Request-to-exit, supervised
- Door position, supervised
- 2 programmable inputs, supervised

Outputs:

- 4 lock relays, NO/NC dry contact, 8A / 30V AC or DC
- 2 auxiliary relays, NO/NC dry contact, 8A / 30V AC or DC
- 4 Power outputs 12V DC / 0.5 A max. each

Cable (RS-485 network between PIAB-1 control units):

4-conductor cable (two twisted pairs)
4000 ft maximum distance between endpoint controllers

Dimensions (L x W x D): 459 x 382 x 102 mm
(18 x 15 x 4 in)

Weight: 4.5 kg (10 lb)

Color: White

TRM-1 PROGRAMMING TERMINAL

Display: Backlit 2-line LCD screen

Cable (to PIAB control unit) maximum length:

4-conductor cable
22 AWG up to 60 m (200 ft)
18 AWG up to 100 m (320 ft)

Dimensions (L x W x D): 159 x 112 x 30 mm
(6 1/4 x 4 3/8 x 1 3/8 in)

Weight: 253 g (8.9 oz)

Color: White

RDR-2 EXTERNAL PROXIMITY READER

Format: 26-bit Wiegand serial communication

Current Drain: Nominal 50mA, Max. 70mA @12VDC

Indicators: Tri-color LED (green, red, and amber)

Minimum distance between readers: 60 cm (2 ft)

Operating temperature: -20 50 -4 122

Dimensions (L x W x D): 116 x 70 x 16.8 mm
(4 1/2 x 2 3/8 x 5/8 in)

Weight: 121.5 g (4.3 oz)

Cable (to PIAB control unit) maximum length:

6-conductor cable
22 AWG up to 60 m (200 ft)
18 AWG up to 100 m (320 ft)

Color: Dark gray

RDM-2 MULLION PROXIMITY READER (OPTIONAL)

Read Range: 40 - 80 mm (1 - 3 in.)

Dimensions (L x W x D): 94 x 43 x 16 mm
(3 23/32 x 1 23/32 x 5/8 in)

Weight: 105g (3.7 oz.)

(All other specifications are identical to RDR-2 specifications)

CRD-1SL ISO STANDARD SLOTTED PROXIMITY CARD

Card ID: One of a trillion different combinations

Dimensions (L x W x D): 85 x 54 x 1 mm
(3 5/16 x 2 1/8 x 1/32 in)

Weight: 2.5 g (0.1 oz)

Color: White

CRD-25SL: Package of twenty-five CRD-1SL proximity cards

CRD-25: Package of twenty-five CRD-1 non-slotted proximity cards (optional)

Compliance with standards: Complies with Part 15 of the FCC Rules and RSS-210 of Industry and Science Canada.

Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

3. PROX-IN-A-BOX COMPONENTS

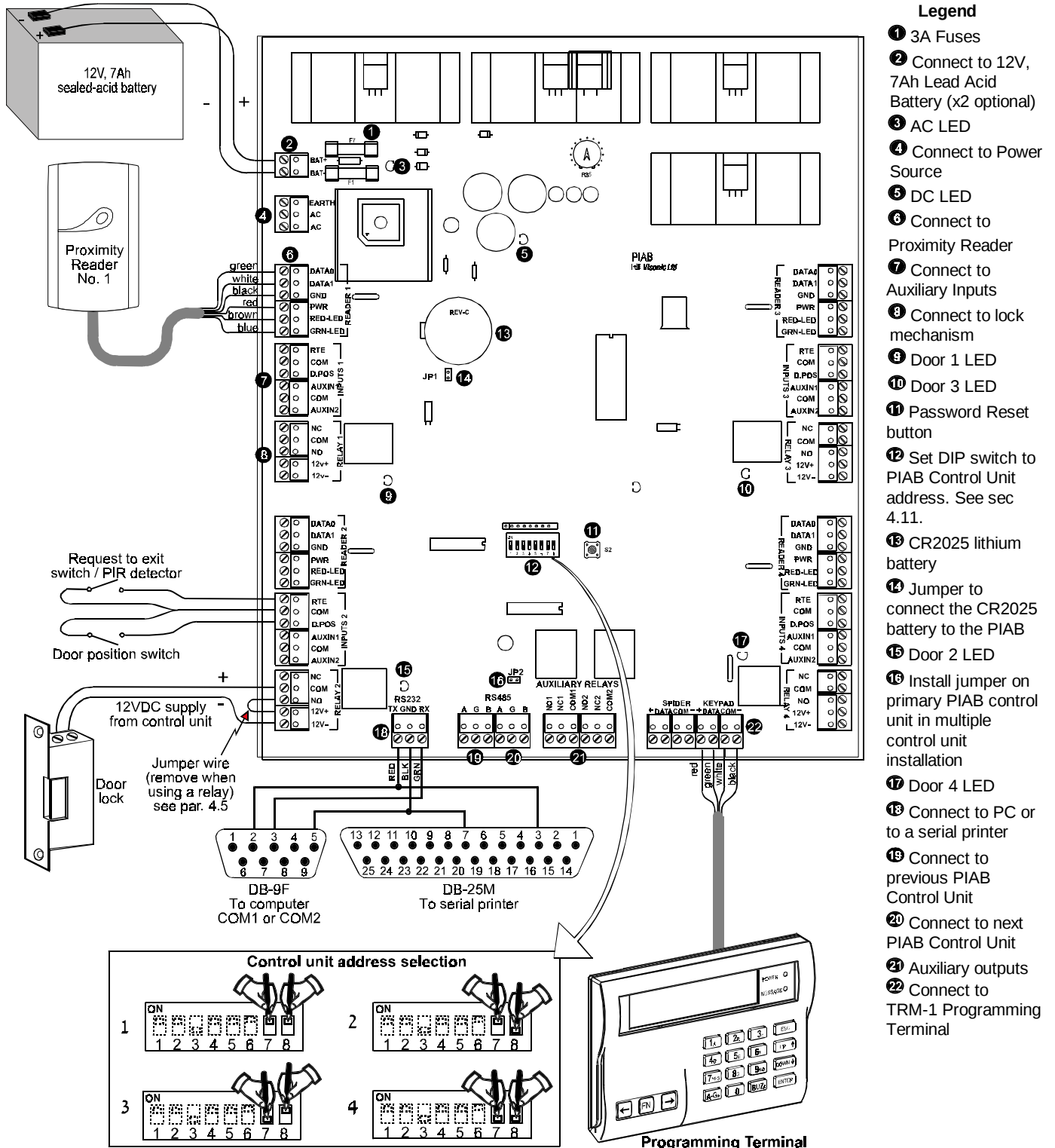
3.1 Prox-in-a-Box Control Unit

The PIAB control unit houses the circuit board containing the connections to the proximity readers, programming terminals, and external relays.

The control unit also has a real time clock with a 3V lithium battery to keep date, time and the event log, even during a power outage.

PIAB comes equipped with two low-voltage 3A fuses that protect the control unit in case of power surges.

Important! The JP1 jumper to the onboard lithium battery should be removed when PIAB is not in use to prevent the battery from running down.



3.2 RDR-2 Proximity Reader

PIAB-KIT is equipped with RDR-2 proximity readers that should be installed at the desired access points. Additional proximity readers can be purchased separately.

Proximity access cards are used as keys to open these doors. When in the presence of an RDR-2, the access card emits a coded RF signal that is read by the proximity reader. The proximity reader then forwards this signal to the PIAB control unit. The control unit verifies that

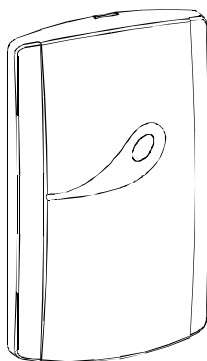
the card is valid and makes the decision as to whether it should energize an output relay that releases the lock. All activity involving the proximity readers is recorded and logged.

3.3 CRD-1 Access Card

The controller is programmed to open specified doors at specified times and on specified days, when a valid CRD-1 access card is presented.

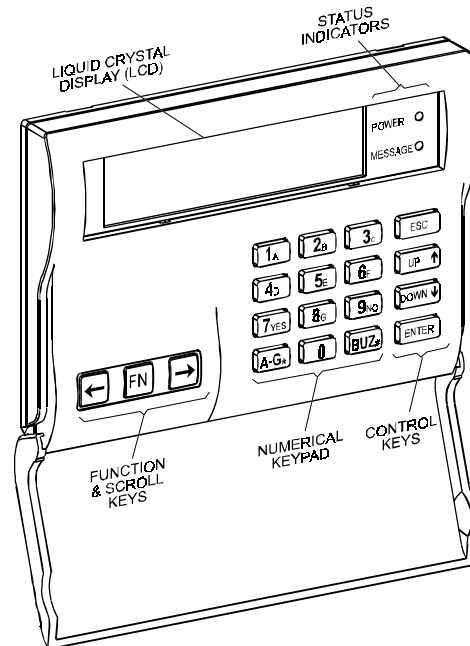
Up to 3000 access cards can be stored in memory.

In case of loss or theft of an access card, the card's data can be easily deleted using the TRM-1 programming terminal.



3.4 TRM-1 Programming Terminal

The TRM-1 programming terminal, shown here, enables you to set up PIAB by programming access cards, locks and other parameters of the system. All programming is done at the TRM-1.



4. INSTALLING PROX-IN-A-BOX

Installing PIAB consists of ten easy steps:

Step 1: Installation planning.

Step 2: Mounting PIAB components in selected locations.

Step 3: Installing and connecting door locks.

Step 4: Installing auxiliary inputs, such as door control sensors and equipment.

Step 5: Connecting to a printer/computer (optional).

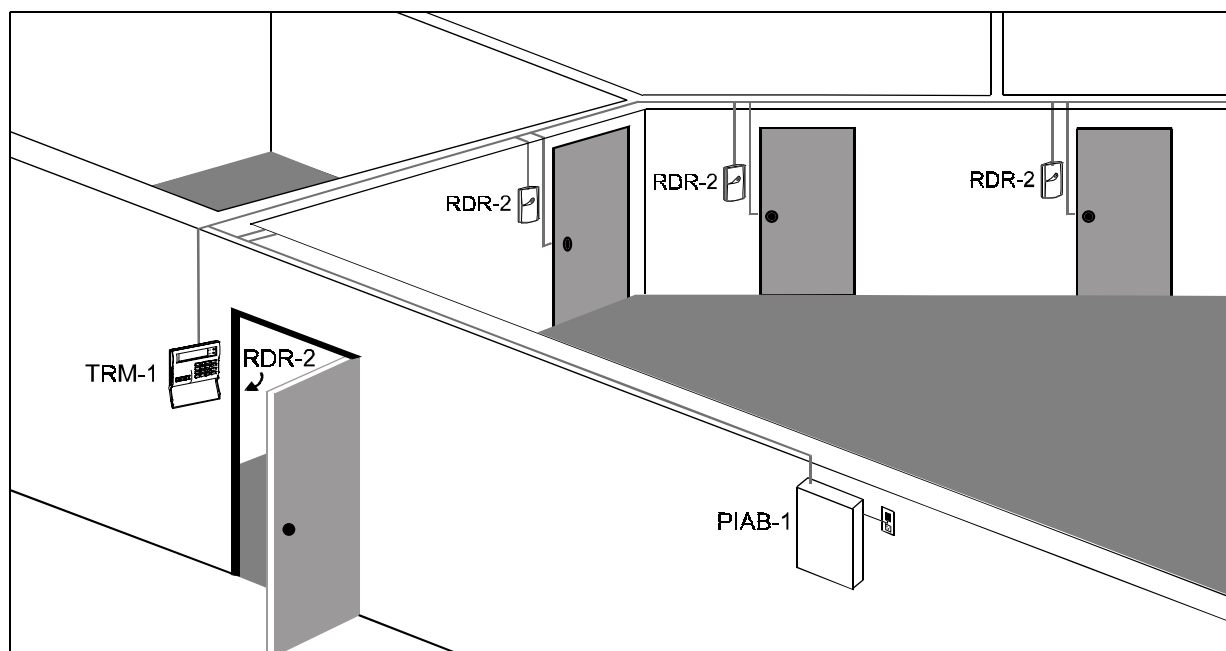
Step 6: Connecting to the TRM-1 programming terminal and the RDR-2 proximity readers.

Step 7: Networking PIAB control units and setting the control unit address.

Step 8: Connecting auxiliary relay outputs.

Step 9: Connecting to AC power.

Step 10: Programming the PIAB system.



STEP 1: INSTALLATION PLANNING

4.1 Installation Planning

Installation planning involves mapping out the locations of the PIAB control unit(s), TRM-1 programming terminal, and RDR-2 external readers.

Up to four PIAB control units can be networked, enabling control of up to 16 doors. If you are installing more than one PIAB control unit, try to plan the location of each unit so that the control units can easily be networked.

Note: Refer to Section 2. Specifications, for wiring distance limits.

Typically, the PIAB control unit cabinet is installed near the door(s) that are controlled by PIAB. The cabinet can be located in a nearby utility closet, for example, or in another appropriate location. When planning the system layout, keep in mind that the TRM-1 programming terminal should be located within easy walking distance of reader No. 1.

Each PIAB control unit must be installed within easy access of a wall outlet to enable connection to the AC transformer.

Important! Ensure that the wall outlet to which the PIAB control unit is to be connected is NOT controlled by a wall switch.

4.1.1 Choosing a Lock Mechanism

PIAB provides 12V DC / 0.5 A power for lock mechanisms and accessories, such as Request-to-Exit (RTE) PIRs. This means that no external power supply is needed. The maximum draw for each lock must not exceed 12V DC / 0.5 A.

UL has investigated the PIAB with the H.E.S. 1000 series, and H.E.S. 5000 series door strike.

In non certified installations, any 24 V (AC or DC) powered lock can be used, provided that a separate power supply source is installed.

Electrical wiring is based upon the type of door lock mechanism used. There are many types of locks on the market today, including those that require electrical power to remain locked, and those that require electrical power to unlock.

The three most common lock types are:

- **Fail-secure door strike:** Requires electrical power to unlock the door. When power is not supplied to the door lock, for example; if the power line is cut, or if there is a power failure, the door remains closed and secured.
- **Fail-safe door strike:** Requires electrical power to remain locked. When power is not supplied to the door lock, the door unlocks, allowing egress.
- **Magnetic door lock:** Requires electrical power to remain locked. When power is not supplied, the door unlocks. A magnetic door lock contains a very strong electromagnet that is energized when it has power. Because of its design, it is inherently fail safe.

Important! When choosing a lock mechanism, always verify and adhere to codes and requirements defined by the Authorities Having Jurisdiction (AHJ). For example, adhere to codes of the local fire department and others, if the unit is configured for fail secure operation.

STEP 2: MOUNTING

4.2 Mounting the PIAB Control Unit

Mount the PIAB control unit inside the secured area. The control unit may be mounted near the programming terminal to enable easy access when setting up the initial password.

Note: The TRM-1 programming terminal should be located near the proximity reader No. 1 (the primary reader).

To mount the control unit:

1. Use the PIAB control unit metal box as a mounting template to drill holes for hanging screws and access to cables. PIAB is installed on the wall using four screws.
2. Install the upper two screws.
3. Hang the control unit box on the two screws and mark the positions of the lower screw holes.
4. Install the lower two screws.
5. Pull all cables through the access hole into the control unit box.
6. The TRM-1 should be connected to the PIAB controller using a 4-conductor cable. The cable length should be
22 AWG up to 60 m (200 ft)
18 AWG up to 100 m (320 ft)

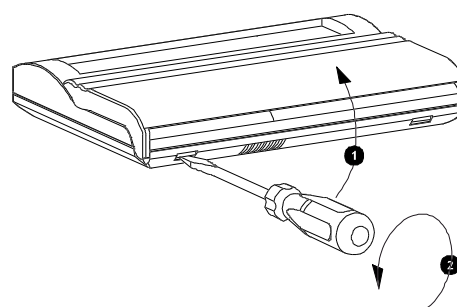
4.3 Mounting the TRM-1 Programming Terminal

Mount the TRM-1 programming terminal on the secure side of the door near reader No. 1, and if possible, close to the primary PIAB control unit as well. Since reader No.1 (the primary reader) is used together with the TRM-1 to add or delete access cards the reader and the TRM-1 should be located in close proximity to one another.

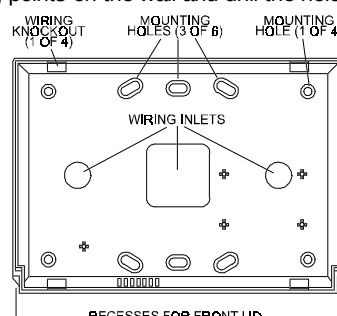
To mount the programming terminal:

1. Shut the front lid of the keypad to protect the keys.
2. Insert a small screwdriver blade into one of the four slots near the corners of the case. Swing the handle up and turn the screwdriver slightly to separate the two parts of the case at that corner. Then similarly separate the other corner on the same side of the case. Raise the free side of the base diagonally and

pull the base out.



3. The base has mounting and wiring holes. Use it as a template to mark the drilling points on the wall and drill the holes.



Note: Be sure to place the base so that the two recesses are at the bottom.

4. Pass the existing wiring through one of the wiring inlets and attach the base to the wall using four screws.

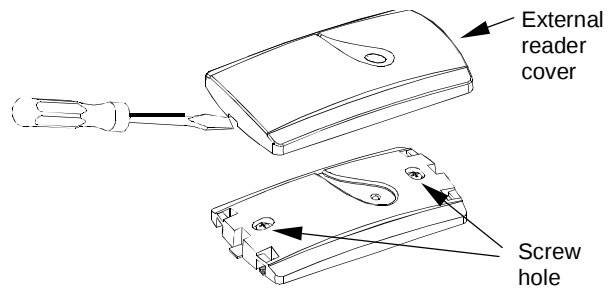
4.4 Mounting the RDR-2 Proximity Reader

Mount the proximity reader outside the door on the wall or door frame. The primary proximity reader should be mounted near the TRM-1 programming terminal. The RDR-2 comes with a 1m (3 ft) wire lead.

To mount the proximity reader:

1. Insert a screwdriver into the recess at the bottom or top of the case, and separate the cover from the reader.
2. Place the base on the installation surface, mark two screw holes, drill the holes, and insert plastic anchors, if necessary.
3. Fasten the base to the mounting surface, using two screws.
4. with the reader. This enables the LED to be visible.

Note: When installing more than one RDR-2, the distance between the readers should be at least 60 cm (2 ft.), to ensure proper operation. For ease of installation, it is possible to install the reader to a single gang box.



Note: Do not install the RDR-2 on a metal surface or a metal door frame, since this decreases the read range significantly. If you have to install the reader on a metal surface, use a spacer so that the reader will be at least 1 cm (3/8 in.) away from the metal. You may use RDR-BACK which is an optionally available spacer made specifically for this purpose.

STEP 3: INSTALLING AND CONNECTING DOOR LOCKS

4.5 Installing and Connecting Door Locks

After the door lock mechanism is installed on each door, it can be connected to PIAB.

Each door section on the PIAB has five terminal blocks associated with it:

- N.C.
- COMMON
- N.O.
- Power +12 V
- 12 V

The lock section also includes 12V power connectors. The 12V power connections provide power to the lock with a current limit of 500mA. The control unit supplies power from a backup battery when AC power is interrupted.

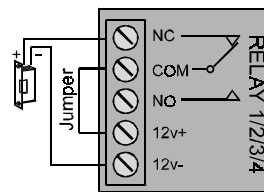
Electromagnetic locks that continuously draw more than 500mA should use the dry contact ONLY, and not be connected to the internal power supply. The same holds true for any other device that does NOT operate at 12V DC.

To connect the door locks:

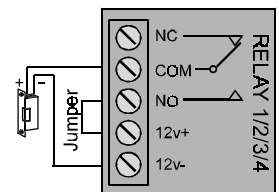
1. Install the lock mechanism hardware on the door according to the instructions provided by the manufacturer.
2. Connect the EMS or EML cables to the EMS section on the connector blocks for the appropriate door. For example, if the control unit is configured for one door, connect it to the upper left side of the PIAB control unit labeled Door-1.

The following diagram shows the various connections:

Connection of 12VDC door locks whose current is less than 500mA

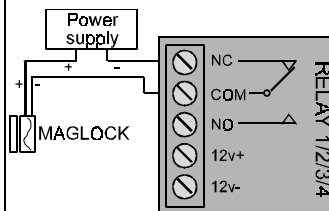


Connection of door lock that **Opens** the door when 12VDC is **not supplied** (Fail-safe door strike).

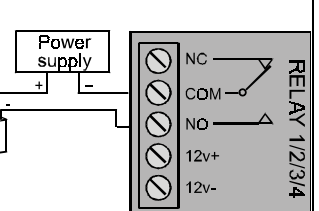


Connection of door lock that **opens** the door when 12VDC is **supplied** (Fail-secure door strike).

Connection of NON-12VDC door locks or door locks whose current is more than 500mA



Connection of door lock that **opens** the door when power is **not supplied** (Magnetic lock - MAGLOCK).



Connection of door lock that **opens** the door when power is **supplied**.

STEP 4: INSTALLING AUXILIARY INPUTS

4.6 Installing Auxiliary Inputs

Depending upon the lock mechanism chosen, additional equipment may be required, including, for example:

- Request-to-Exit (RTE) device.
- Door position sensor.

RTE devices are required in conjunction with electromagnetic locks, for example, to enable to exit from locked areas.

Different RTE devices are available, including:

- RTE motion detectors.
- Buttons labeled, for example, PUSH TO EXIT.

- Electronic crash bars, such as those found on fire exit doors.

Important! When choosing an RTE device, always adhere to AHJ codes and requirements. For UL listed installations, the RTE needs to be connected to a UL listed device.

The door position sensor is a normal door contact used by the PIAB to monitor the position of the door. In high security applications, the door position sensor plays an important role in the access control environment, since it enables PIAB to monitor the following events:

- Door ajar, meaning the door was opened by usual means, but has been left open too long (for example, propped open).
- Forced entry, meaning the door was forcibly opened.

Note: All PIAB inputs, such as RTE, Door Position, Aux 1 and Aux 2, are EOL supervised, and can be programmed for normally open or normally closed operation.

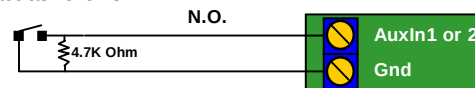
PIAB enables you to select two additional auxiliary inputs per door. The following auxiliary input functions are available:

No.	Function	Description
0	DISABLED	Input is disabled.
1	LATCH POS	Input is connected to a micro-switch that detects the status of the latch within the door strike.
2	TAMPER	Input is connected to an auxiliary tamper switch installed on the control unit and/or reader.
3	EXT SYSTEM	External system input signal.
4	DURESS	Input indicating a duress situation.
5	CALL	Input is connected to an external CALL button.
6	ALARM	External signal indicating an alarm condition.
7	ALLOW ENTRY	Input signal signifying that a button was pressed from the inside to permit entry. The appropriate lock relay activates and unlocks the door.
8	OPEN DOORS	All doors are unlocked. Used in an emergency situation (*)

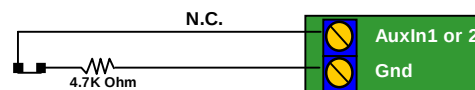
* By triggering an auxiliary input, the security supervisor may open all the doors at once, in case of emergency. The PIAB allows any auxiliary input to be set-up to function as an input that is triggered to open all the doors. If this auxiliary input receives a short trigger, the doors will stay open for the period defined in the Global setup. If the input is held triggered for a long time, the doors will stay open as long as this input is active + the time period defined in the Global setup.

To connect auxiliary inputs:

1. Connect each auxiliary input, as needed. All inputs share a common ground. Connect the switch between the ground and input. The input can be programmed for normally open or normally closed operation.
2. For a Normally Open (N.O.) auxiliary input, connect the input contact as follows:

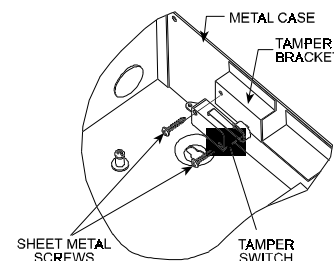


3. For a Normally Closed (N.C.) auxiliary input, connect the input contact as follows:



4.6.1 Tamper Switch

For UL listed installations it is necessary to protect the controller with a tamper switch. The tamper switch is factory installed to AUXIN1 and COM of input lock #3 of each controller.



In order to program the tamper switch into the system refer to section **4.5 Locks** in the programming manual.

In order to show tamper events on the TRM-1 display, you need to set TAMPER as a displayed event. Refer to section **4.3 Defining Event Types** in the programming manual.

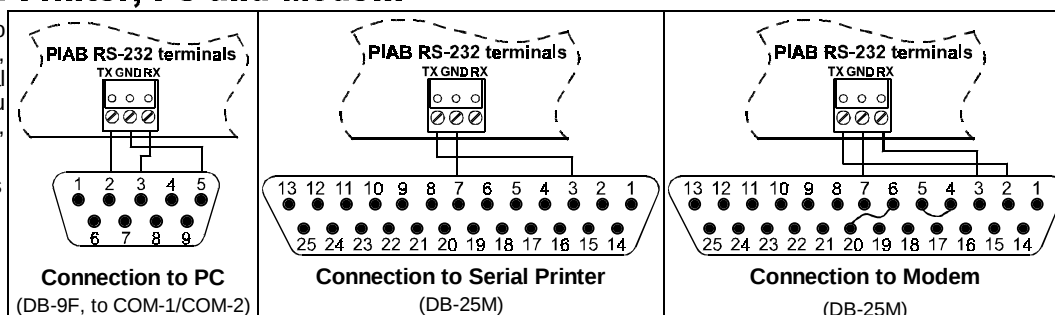
STEP 5: CONNECTING TO A PRINTER, PC and MODEM

4.7 Connecting to a Printer, PC and Modem

PIAB can be connected to printer, PC and modem, depending upon organizational requirements. This enables you to print or monitor system events, Setup Cardholder data.

Connect the RS-232 terminals as shown.

For printing to a PC HyperTerminal, refer to the programming guide, sec. 5.2.4.



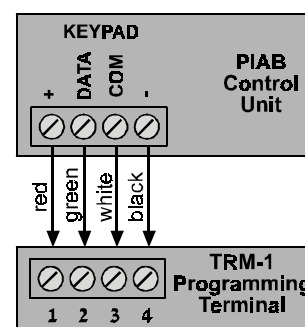
STEP 6: CONNECTING TRM-1 AND RDR-2

4.8 Connecting TRM-1

Each TRM-1 programming terminal is connected to the control unit via a four wire cable.

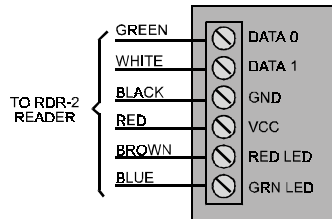
To connect the programming terminal:

- Connect a four conductor wire from TRM-1 to PIAB, as follows:



4.9 Connecting RDR-2

Each RDR-2 proximity reader is connected to the control unit via a six-wire cable. The standard cable is color-coded. Use a cable with the same colors to avoid mistakes in connection.



To connect the proximity reader:

- Connect each proximity reader to the proximity reader sections on the connector blocks. See the diagram above for color-coding.

STEP 7: NETWORKING PIAB CONTROL UNITS

4.10 Networking the PIAB Control Units

The PIAB control unit can be used as a single unit in conjunction with one TRM-1 programming terminal and 1 to 4 RDR-2 readers that control 1 to 4 doors. For larger installations, the PIAB system can be expanded to include up to three additional PIAB control units, enabling control of up to 16 doors.

When more than one PIAB control unit is used in a system, all control units must be interconnected using an RS-485 communication bus. The maximum distance between endpoint controllers is 4000 ft as follows:

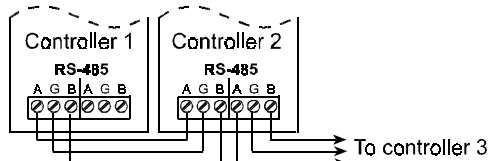


Distances between PIAB controllers

Note: Use shielded cable with twin twisted pairs to connect the PIAB controllers to form a network. You may use a cable containing AWG 22 or AWG 18 wires. The cable shielding should be connected to chassis ground which in turn has to be connected to earth ground such as a cold water pipe.

To connect the control units:

1. Connect the control units, as follows:



2. In a multi-control unit installation, **install jumper JP2** on the primary control unit, Control Unit 1.

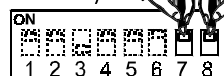
4.11 Setting the Control Unit Address

The DIP switch block on the PIAB control unit contains eight DIP switches. The two switches marked 7-8 are used to set the control unit address (controller number 1, 2 3 or 4). In a system that includes only one controller, the controller is defined as controller number 1.

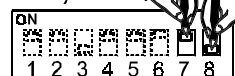
Set the Control Unit Address:

Set the DIP switches, as follows:

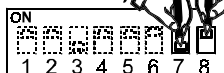
Controller 1
(doors 1-4)



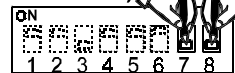
Controller 2
(doors 5-8)



Controller 3
(doors 9-12/C)



Controller 4
(doors 13/D-16/G)



4.12 Special Installer Functions

The PIAB system has a few special functions, which should not be accessible to the user. These functions allow the installer to initialize the system to a known state before starting to set up user data.

The installer functions are:

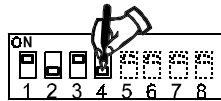
- Clear key database.
- Set/reset holidays table.
-

All these functions involve setting the DIP switches to a certain position as described below.

Clear Keys Database:

It is recommended to clear the key database before starting to program user keys for the first time. This operation should be performed from controller #1. To clear the keys database follow these steps:

- Record the current DIP switch position.
- Change the 4 leftmost (1-4) switches to show:



- Enter password with access level 1 and log into the system.
- In **1. ADD/DELETE KEYS** menu select **3. DELETE** screen.
- In **3. DELETE** menu select **TYPE KEY** screen.
- Type in 9999 as key number and press **Enter**.
- / 7)
- followed by another **Enter** to confirm.
-
- Restore DIP switches to original positions.

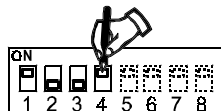
Set/Reset Holiday Table:

The system has a 20-year calendar and a base year (beginning year of calendar). Although the regular user can make changes to the current year only, the following procedure allows the installer to work with the full 20-year calendar.

Setting the holiday table means selecting holiday types 1, 2, 3 or 4. Resetting the holiday table means selecting holiday type "0" (no holidays).

To set or reset the holiday table, use controller #1 and proceed as follows:

- Record the current DIP switch position.
- Change the 4 leftmost (1-4) switches to show:



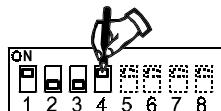
- Enter password with access level 1 and log into the system.
- In **3. PGM SYSTEM** menu select **6. HOLIDAY** screen.
- Type year to set/reset holidays (20-year table) and press **Enter**.
- Change calendar as needed (enter holiday type) and press **Enter**.
- Repeat for any other year.
- Restore DIP switches to original positions.

Set Base Year of Holiday Table:

This features allows to change the base year of 20-year calendar.

From controller #1, follow these steps to set a new base year:

- Record the current DIP switch position.
- Change the 4 leftmost (1-4) switches to show:



- Enter password with access level 1 and log into the system.
- In **3. PGM SYSTEM** menu select **8. GLOBAL** screen.
- In **8. GLOBAL** menu select **BASE YEAR** screen.
- Type a 4-digit base year and press **Enter**.
- Restore DIP switches to original positions.

STEP 8: CONNECTING AUXILIARY RELAY OUTPUTS

4.13 Connecting Auxiliary Relay Outputs

PIAB is set up to enable selected event types to trigger an action via an output relay. Two user-defined auxiliary relays can be set up for each PIAB control unit. In larger installations, the PIAB control units may be networked to enable up to eight user-defined auxiliary outputs to be programmed.

These auxiliary relays are provided in addition to the predefined lock relays and are driven by event types. Each event type can be programmed to output to a selected relay.

An auxiliary relay can be connected to an alarm or buzzer, for example, to alert the person on duty that something is wrong, and that the event printout should be viewed for more information.

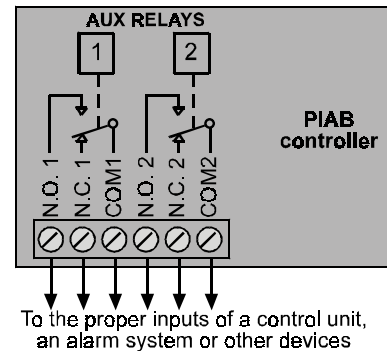
When programming PIAB, each of the event types listed in this section can be set to output to:

- Auxiliary relay #1.
- Auxiliary relay #2.
- Both auxiliary relays.
- Neither auxiliary relay.

Note: Please refer to Programming Manual, section 4.3 for the Event Type Table.

Connecting the auxiliary relay to external devices:

- Connect to control panel or other external devices using a dry contact relay, as follows:



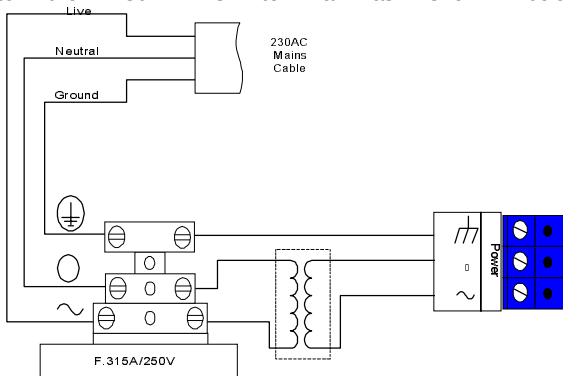
STEP 9: CONNECTING TO AC POWER

4.14 Connecting the Power Source

After the PIAB components have been connected, the power source must be connected.

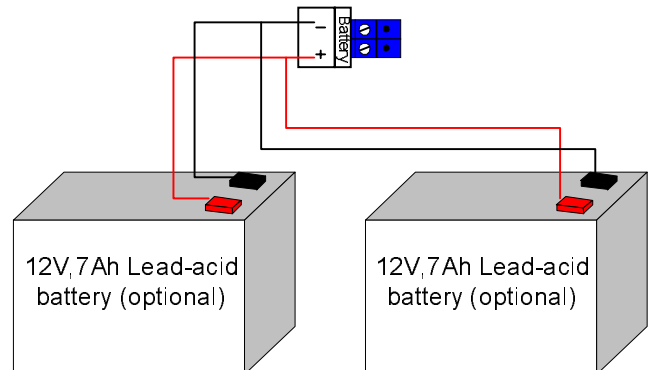
To connect the power source:

1. Using the supplied transformer, connect the 16.5V AC wire to the terminal labeled AC. The amber LEDs on the PIAB PCB should illuminate.
2. **In North America** -in transformer (120 VAC input / 16.5 V AC output) supplied with the PIAB-KIT. Connect the 16.5 V AC from the secondary side of the transformer to the AC input of the PIAB controller.
3. **In other markets** -KIT is supplied with a transformer mounted inside the metal cabinet. Connect a 16AWG wire from the terminal labeled Earth to a good earth ground, such as a 3 m (10 ft) ground rod, or a cold water ground. Keep the wire run as short as possible, avoiding sharp bends in the wire. Connect the power from the mains to the 230V AC terminal as shown below.



4. Connect the backup battery to the terminal block connectors labeled Bat + -.

Note: UL has investigated the PIAB with a Yuasa NP-712 battery. For UL listed installations which require 4 hour back-up time, it is required to connect two 7 AH batteries in parallel.



Important! Observe polarity when connecting the battery.

- Connect RED to +.
- Connects BLACK to -.

5. Install jumper JP1 to connect the lithium backup battery.
6. In multiple control unit installations, install jumper JP2 on the first PIAB control unit.
7. Look at the TRM-1 programming terminal. Check that the red POWER LED is illuminated and the LCD is functioning.

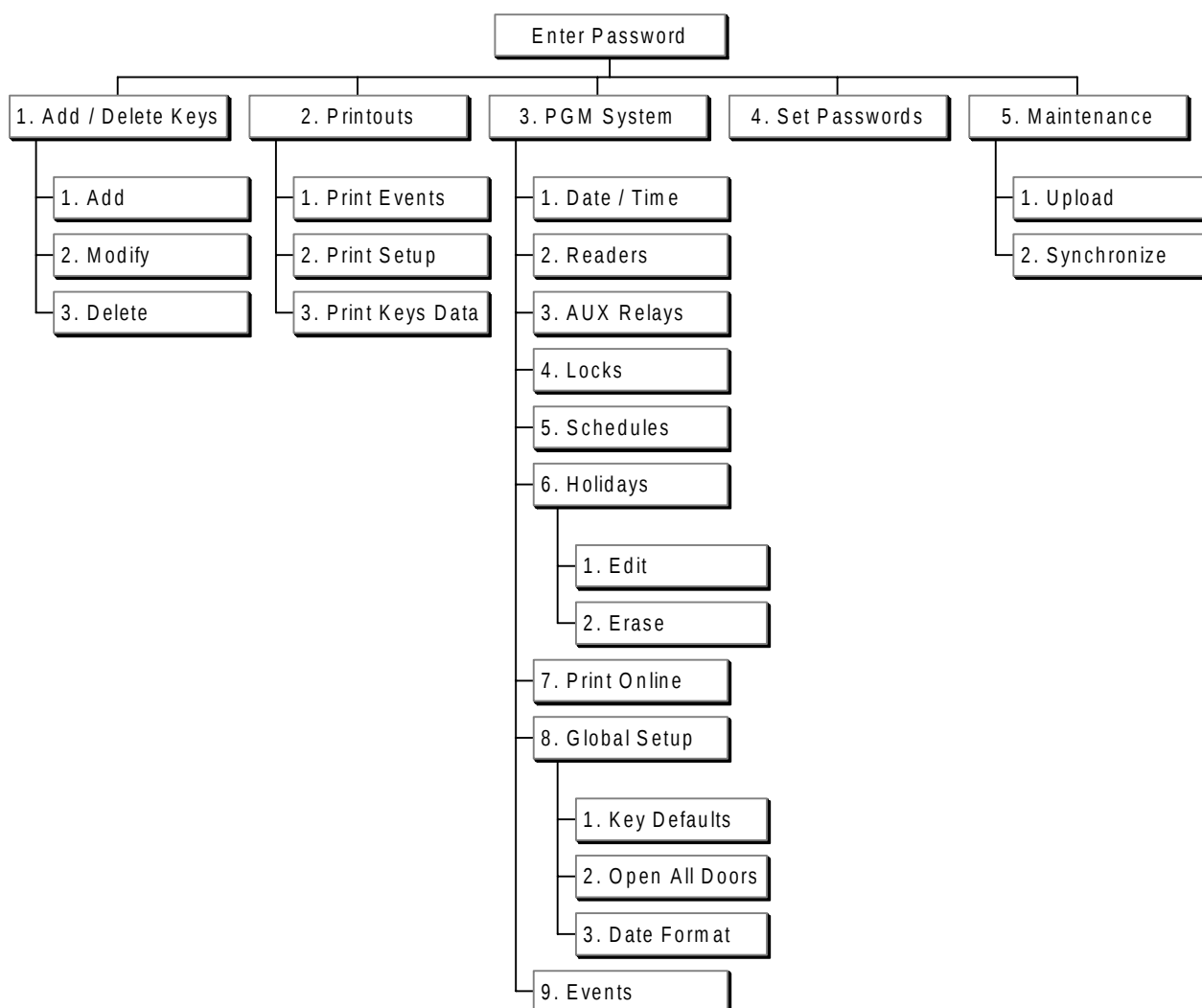
STEP 10: PROGRAMMING THE PIAB SYSTEM

4.15 Programming the PIAB System

After PIAB has been connected to a power source, you can program the PIAB system using the TRM-1 programming terminal. For example, you can set passwords, program access cards, set schedules, and so on.

PIAB provides menus that enable you to access different programming options. The illustration below shows the programming menu with the different menu options.

Refer to the *PIAB Programming Guide* for detailed programming instructions.



5. MAINTENANCE

5.1 Jumpers

The PIAB control unit printed circuit board contains two jumpers.

JP1: Connects the lithium coin backup battery to maintain date/time during power failures.

JP2: In multi-control unit networks, the jumper is installed on the first PIAB control unit.

5.2 Replacing Components

Components such as batteries and fuses can be replaced, when required. The lithium battery should be replaced while there is electrical current so that the time display remains unaffected.

To replace a fuse:

1. Carefully extract the fuse from PIAB control unit printed circuit board.
2. Gently insert a replacement 3A fuse.

To replace the lithium battery:

1. Ensure that the PIAB control unit is turned on and is receiving electrical current.

2. Carefully bend back the clip that holds the battery in place.

3. Pry out the battery using a sharp object such as a small screwdriver, paper clip or pen tip.

4. Insert a CR2025 3V lithium battery.

To replace the printed circuit board:

1. Disconnect the AC or DC power connection from the printed circuit board (PCB).
2. Label each terminal block to enable accurate installation of the replacement PCB.
3. Pull the blue terminal blocks off the PIAB board.
4. Remove the screws that hold the PCB in place.
5. Carefully lift off the PCB.
6. Insert the replacement PCB and screw into place.
7. Re-connect the terminal blocks, as described in this guide per your markings.
8. Install jumper JP1 on new board.
9. Connect the power source, as described in Step 9.
10. Reset time and date.

WARRANTY

Visonic Ltd. and/or its subsidiaries and its affiliates ("the Manufacturer") warrants its products hereinafter referred to as "the Product" or "Products" to be in conformance with its own plans and specifications and to be free of defects in materials and workmanship under normal use and service for a period of twelve months from the date of shipment by the Manufacturer. The Manufacturer's obligations shall be limited within the warranty period, at its option, to repair or replace the product or any part thereof. The Manufacturer shall not be responsible for dismantling and/or reinstallation charges. To exercise the warranty the product must be returned to the Manufacturer freight prepaid and insured.

This warranty does not apply in the following cases: improper installation, misuse, failure to follow installation and operating instructions, alteration, abuse, accident or tampering, and repair by anyone other than the Manufacturer.

This warranty is exclusive and expressly in lieu of all other warranties, obligations or liabilities, whether written, oral, express or implied, including any warranty of merchantability or fitness for a particular purpose, or otherwise. In no case shall the Manufacturer be liable to anyone for any consequential or incidental damages for breach of this warranty or any other warranties whatsoever, as aforesaid.

This warranty shall not be modified, varied or extended, and the Manufacturer does not authorize any person to act on its behalf in the modification, variation or extension of this warranty. This warranty shall apply to the Product only. All products, accessories or attachments of others used in conjunction with the Product, including batteries, shall be covered solely by their own warranty, if any. The Manufacturer shall not be liable for any damage or loss whatsoever, whether directly, indirectly, incidentally, consequentially or otherwise, caused by the malfunction of the Product due to products, accessories, or attachments of others, including batteries, used in conjunction with the Products.

The Manufacturer does not represent that its Product may not be compromised and/or circumvented, or that the Product will prevent any death, personal and/or bodily injury and/or damage to property resulting from burglary, robbery, fire or otherwise, or that the Product will in all cases provide adequate warning or protection. User understands that a properly installed and maintained alarm may only reduce the risk of events such as burglary, robbery, and fire without warning, but it is not insurance or a guarantee that such will not occur or that there will be no death, personal damage and/or damage to property as a result.

The Manufacturer shall have no liability for any death, personal and/or bodily injury and/or damage to property or other loss whether direct, indirect, incidental, consequential or otherwise, based on a claim that the Product failed to function. However, if the Manufacturer is held liable, whether directly or indirectly, for any loss or damage arising under this limited warranty or otherwise, regardless of cause or origin, the Manufacturer's maximum liability shall not in any case exceed the purchase price of the Product, which shall be fixed as liquidated damages and not as a penalty, and shall be the complete and exclusive remedy against the Manufacturer.

Warning: The user should follow the installation and operation instructions and among other things test the Product and the whole system at least once a week. For various reasons, including, but not limited to, changes in environmental conditions, electric or electronic disruptions and tampering, the Product may not perform as expected. The user is advised to take all necessary precautions for his /her safety and the protection of his/her property.

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