

# TAG-IN-A-BAG™

Single door RF/ID Proximity Access Control Unit

Installation and Programming

## 1. INTRODUCTION

The TIAB (Tag-in-a-Bag™) is a versatile weather-resistant proximity access control unit (fig. 1), designed to limit access to restricted areas, while permitting authorized people to enter. This product is the best in its class - using state-of-the-art proximity (non-contact) RF/ID technology. It was designed to serve your customers' needs, while making installation and use simple and easy.

The TIAB control unit includes a keypad with an internal proximity reader and a display that provide full access control operation.

The TIAB control unit can be programmed to offer one of two security levels for opening the door:

- Level 1 (default): Valid tag only.
- Level 2: Valid tag and PIN (Personal Identification Number) code.

The TIAB control unit transmits 125 kHz RF signal. A valid proximity tag (fig. 3), presented to the control unit or to the optional external reader (fig. 2), transmits a coded RF signal back to the TIAB control unit, causing it to energize an output relay. The optional external reader is designed for installations in which an additional reader is required. It is connected to the TIAB control unit via 4 wires.

The TIAB control unit is installed adjacent to the secured door's frame. It is connected to the door's EMS (Electro-Magnetic Strike) or magnetic lock and operates by either a 12V DC or AC power supply. The TIAB control unit includes internal non-volatile memory, unaffected by power failure. The internal memory stores data of up to 250 tags and PIN codes (used for security level 2 only). Each PIN is composed of 4 digits.

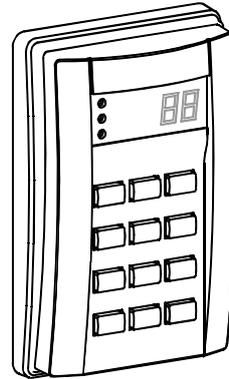


Figure 1. TIAB Keypad

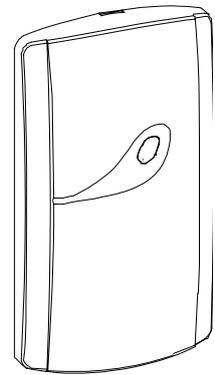


Figure 2. RDR-1B External Reader

The proximity tags (fig. 3) are totally sealed and do not require any maintenance.

The tags are powered from the RF signal transmitted from the TIAB control unit.

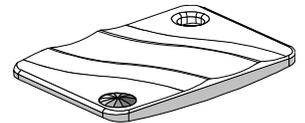


Figure 3. TAG-1 Key

In a case of loss or theft of a tag, the tag data can be easily deleted from the TIAB control unit memory list.

The standard TIAB package includes 10 user tags. Additional tags are available.

## 2. SPECIFICATIONS

**Power input:** 12-16V DC or 9-12V AC

**Max. Current Consumption:** 200 mA (excluding EMS current).

**Operating temperature:** -20°C to 50°C (-4°F to 122°F).

### TIAB CONTROL UNIT

**Display:** 2 x 7 segments and 3 LEDs.

**Buttons:** 12 (numeric keypad).

**Memory capacity:** 250 tag codes.

**Tag reading range:** 50 - 100 mm (2 -4 in.)

**Internal tag reader frequency:** 125 kHz.

**Tag codes possibilities:** 10<sup>12</sup> possible combinations.

### Inputs:

- Request-to-exit (N.O.), dry contact
- Door position (N.C.), dry contact

### Outputs:

- Lock relay N.O. / N.C. dry contact, 10A / 28V AC or DC
- Door ajar / door held open (open collector output), 100 mA max.
- Panic (open collector output), 100 mA max.
- Auxiliary (open collector output), 100 mA max.
- Forced Entry (open collector output), 100 mA max.
- Tamper (N.C. dry contact). Tamper switch is designed to detects attempts to open the unit, or remove it from the wall.

**NOTE:** The total currents of all active open collector outputs should not exceed 200 mA.

**Size (H x W x D):** 122 x 82 x 31 mm (4-13/16 x 3-1/2 x 1-1/4 in.)

**Weight:** 170 g (6 oz) without the rubber gasket

**Color:** Metallic brown

### TAG-1 PROXIMITY TAG

**Size (L x W x D):** 53 x 35 x 7 mm (2-1/8 x 1 3/8 x 9/32 in.)

**Weight:** 5.5 g (0.2 oz).

**Color:** Black

**TAG-10:** Package of ten TAG-1 proximity tags

### RDR-1B EXTERNAL READER (optional)

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

**Tag reading range, tag reader frequency and tag codes possibilities:** identical to Control Unit specification.

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

**Weight:** 121.5 g (4.3 oz)

**Cable (to TIAB control unit) maximum length:** 10 m (32 ft.)

**TIAB-to-TIAB, RDR-1B-to-TIAB and RDR-1B-to-RDR-1B Minimum Distance:** 60 cm (2 ft.).

**Color:** Dark gray

**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. MOUNTING

- A. Remove the case closure screw.
- B. Insert a screwdriver in the bottom recess of the base, and use it to separate the base from the keypad assembly.
- C. Place the base on the installation surface, mark the drilling points, drill the holes and insert plastic anchors, if necessary.
- D. Fit the base into the rubber gasket and use the 3 mounting screws to attach the base and gasket to the selected surface

**CAUTION!** If you are installing several TIAB units or TIAB with RDR-1B, locate units at least 60 cm (2 ft) apart.

**Attention!** The Tamper switch is activated when the TIAB control unit's front cover is removed or when the base is forcibly pulled from the mounting surface, which causes tamper switch tab to break (see figure 4). It is therefore especially important to firmly attach this tab to the wall with a long screw.

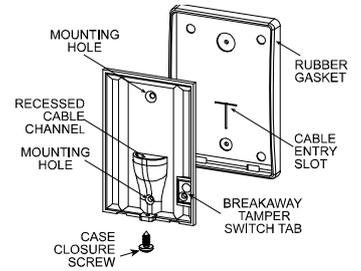


Figure 4. Base and Rear Gasket

**IMPORTANT!** Do not install the RDR-1B 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 designed specifically for this purpose.

### 4. WIRING INSTRUCTIONS FOR ACCESS CONTROL

#### 4.1 Wiring Gauges and Routing

Use # 20 AWG or larger for connections between relay and door strike or other switching devices. All other connections can be made with # 22 AWG or larger. Route the wires through the slot in the rubber sealing gasket (see figure 4) and the recessed entry channel in the TIAB control unit base. Verify that there is no contact between uninsulated wires and the printed circuit board.

#### 4.2 Wiring Instructions

The connections to the TIAB terminal block are shown in fig. 5.

- A. Connect one lead of the door strike to one of the hardware (door strike) power supply terminals. Connect the other lead of the door strike to terminal No. 10 (N.O.) of the TIAB.
 

**Note:** If you are using a magnetic door lock, connect one of the leads to one of the hardware power supply terminals. Connect the other lead to terminal No. 11 (N.C.) of the TIAB.
- B. Connect the other power supply terminal to terminal 12 (COM).
- C. Connect the TIAB power supply leads between terminals 8 (+) and 9 (-). When using DC power supply, verify proper polarity. When using AC power supply, disregard polarity.
- D. Connect the optional remote **Request-To-Exit** push-button (N.O.) or PIR motion detector contacts (N.O.) across terminals 3 and 2.

**Note:** For the external reader wiring and mounting instructions, refer to the external reader installation instructions.

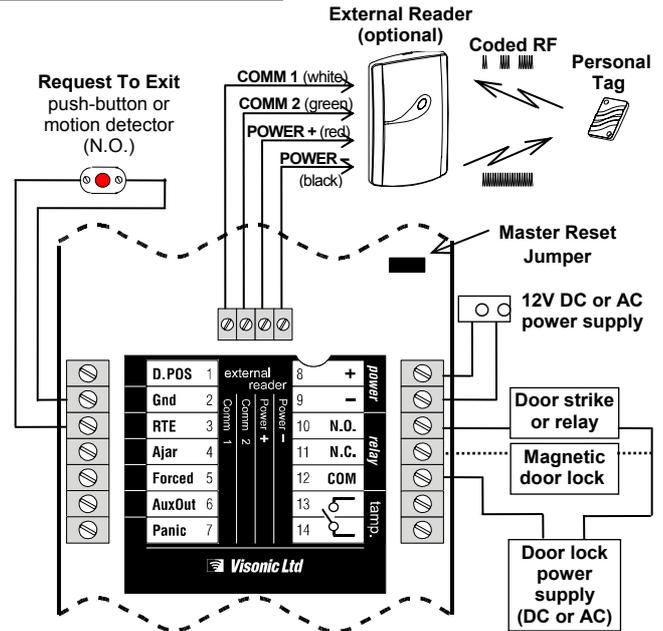


Figure 5. Wiring Diagram for Access Control

### 5. WIRING FOR INTEGRATION WITH AN ALARM SYSTEM

The integration with an alarm system is shown in figure 6.

- A. Perform steps A to D in section 4.2.
- B. Connect the **Panic** output (terminal 7), the **AuxOut** output (terminal 6), the **Door Ajar** output (terminal 4) and the **Forced Entry** output (terminal 5) to the appropriate zone of the alarm system, or to any other indicating device (relay, LED, buzzer, etc.). All these outputs are of the open collector type (see figure 7).
- C. Connect the Ground (terminal 2) to the alarm system ground terminal.
- D. Connect the Tamper terminals (13 & 14) to a 24-hour zone of the alarm system.
- E. Connect the optional Door Position detector (N.C. magnetic switch), between terminals 1 and 2.

**Caution!**

When operating the TIAB control unit by AC power, disregard polarity, but note that external buzzers (which are connected to the **AuxOut** or **Panic** outputs) require a separate DC power supply, as shown in figure 8.

Table 1 - TIAB Control Unit Terminal Assignments

Terminal	Description	Terminal	Description
1	Door Position input	8	power supply
2	Ground output	9	- V power supply
3	Request-To-Exit input	10	Output relay N.O.
4	Door Ajar output	11	Output relay N.C.
5	Forced Entry output	12	Output relay COM
6	Auxiliary output	13	Tamper Switch
7	Panic output	14	Tamper Switch

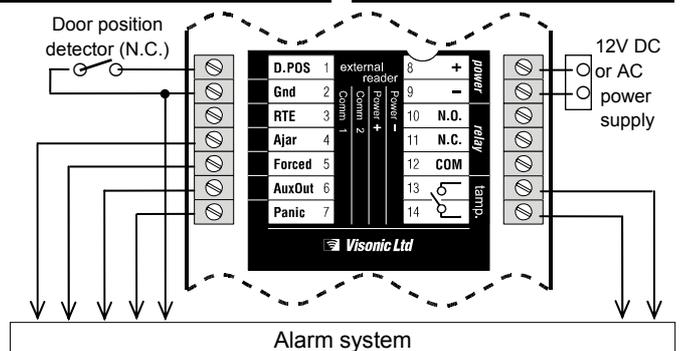


Figure 6. Wiring Diagram for Integration with an Alarm System

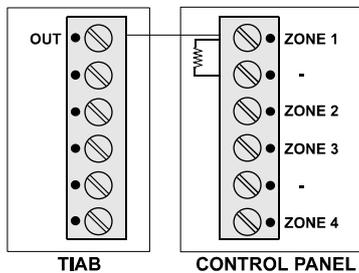


Figure 7 - "Open collector" Output Connection to an Alarm System

**Notes:**

1. The TIAB and the Control Panel must have a common ground.
2. The Control Panel must be a common negative panel - the common / shared terminals between zones are 0V (-).

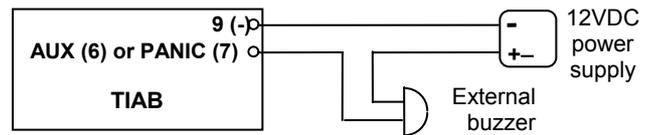


Figure 8 - External Buzzer Connections to AuxOut or Panic Output When TIAB is Powered by AC Power Supply

## 6. PROGRAMMING

### 6.1 General Description

The TIAB control unit recognizes a single 4-digit master code which is used for all programming modes. This code accompanies a tag which is defined as the master tag.

**When first powering-up the Tag-in-a-Bag™ system:**

If the display blinks "00" and the green LED flashes, present a tag close to the keypad. When the display shows "Cd", enter a 4-digit PIN code and press "#". This defines the presented tag as a Master-tag, used for programming. Then proceed to program the system (Section 6.3).

Reprogramming can be done as many times as necessary, but for security reasons it is restricted to the master tag holder.

**Important:**

1. The person in charge must have an updated list which includes up to 250 tags holders names and the PIN code assigned to each of the tags. The table attached to the TIAB User Guide may be used.
2. The master tag should be used for programming only and must be kept in a safe place!

An existing code must be deleted first if a new code is to be saved in the same memory address.

**Note:** The TIAB control unit reverts to normal mode after a 30 second non-activity timeout, or if "\*" is pressed.

While waiting for the programmer's selection, the internal buzzer continuously sounds short beeps.

### 6.2 Master Tag Programming



**Important!** The TIAB control unit does NOT operate unless a valid master tag and master code have been programmed.

- Remove the Master Reset Jumper (fig. 5). The TIAB buzzer will start beeping.
- Once the buzzer stops beeping, re-install the jumper and, within 10 seconds, key in the master code "8422" followed by "#". As a result, the TIAB control unit will go into the ADD mode (blinking green LED) and will display the master code memory address - flashing "00".
- Place the tag, assigned as the master tag, within range of the keypad. The buzzer will beep twice and the display will show "Cd" (Code).
- Key in the desired master PIN code (4 digits) and then press "#". The programming of the master tag code is completed and the unit returns to normal position.

### 6.3 Entering/Quitting the Programming Mode

**Note:** For programming, the master tag and PIN code are always required, regardless of security level setting.

**Entering the Programming Mode**

Hold the master tag near the TIAB for at least 10 seconds. After the yellow LED blinks and the buzzer sounds, key the master tag's 4-digit PIN code. "Pr" (Programming) will blink in the display.



### Quitting the Programming Mode

Press "\*" to exit any of the programming mode options into the main programming mode. Press "\*" again to quit the main programming mode and revert to normal operation.

### TIAB's Programming Modes Description

Mode	Mode Name	Functions	Indicator
1	ADD (tags)	Adding user tag	Green
2	REVIEW (codes)	Viewing users codes	Red
3	DELETE (tags)	Deleting user tags	Yellow
4	SETUP	Modifying system parameters	All LEDs

### 6.4 Adding User Tags

Security level 1: "Pr" mode → 1 [tag icon] → #

Security level 2: "Pr" mode → 1 [tag icon] → PIN code → #

For detailed description, refer to the user's guide, section 3.1.

### 6.5 Reviewing User Tags

"Pr" mode → 2

For detailed description, refer to the user's guide section 3.2.

### 6.6 Deleting an Existing User Tag

"Pr" mode → 3 [tag icon] → # → #

or

"Pr" mode → 3 → TAG Address → # → # → #

For detailed description, refer to the user's guide section 3.3.

**Note:** Deleting information in address 000 invalidates the master tag. For re-programming the master tag, refer to section 6.2.

### 6.7 Setup Mode

Setup mode enables to determine how the TIAB reacts in various situations. In programming mode ("Pr" is displayed) press "4" to select the functions setup mode. All the 3 LED's continuously blink and the display is blank. In this state, the installer can select one of seven functions to modify the setup, as detailed in the function setup table.

**Programming steps in the SETUP mode:**

"Pr" mode → 4 → Function 1-7 → # → New value → #

- Press the number that corresponds to the desired function (1-7).
- The TIAB control unit displays the two letters corresponding to the function (see functions setup table).
- Press "#" to enter the functions selection mode.
- The TIAB control unit displays the current value for the selected function.
- To accept the existing value, press "#". To return to the function setup selection, press "\*". To change the existing value, enter the new value followed by pressing "#".

**Table 2 - Function Setup Table**

Func.	Description	Enter	Default	Display
1	Door unlock duration or toggle mode (see note 3).	01-98 sec. 99 = toggle mode	05 sec.	
2	Door Position input. Set Door Ajar alarm timeout of opened door to 01-99 seconds or disable (00) - see note 6.	01-99 seconds 00 = disable door input	00	
3	Auxiliary Output. (see notes 1, 6 and table 3).	0 - 7	0	
4	Ambush Digit - Fifth digit entered after PIN code for signaling a duress situation. (see notes 2, 6)	0-9 00 = disable	00	
5	Security Level (see notes 4, 5) 1 = No PIN code required. 2 = PIN code is required.	1 or 2	1	
6	Buzzer feedback control. 0= No buzzer feedback. 1= Buzzer beeps when button is pressed.	0 or 1	1	
7	Buzzer's Indication that the door is left open. 0 = No buzzer operation. 1 = Buzzer beeps if door is left open longer than defined in function 2.	0 or 1	0	

**Notes:**

1. If the Auxiliary output is enabled, it operates for all tags.
2. Ambush Digit is applicable for security level 2: Ambush Digit is the fifth digit added to the user PIN code. If the user is forced to enter under threat, pressing the Ambush digit after the last digit of the PIN code activates the Panic output.

3. In the Toggle mode, presenting a valid tag/code turns the output on and presenting it again turns the output off.
4. When selecting security level 1 (no PIN code required) it is still possible to enter a PIN code for each tag, during programming. However, in normal operation the TIAB will not prompt the user for the PIN code.
5. Selecting security level 1 does not affect the master tag. The master tag always requires a PIN code.
6. Disabling a function by 00, will show -- on the display.

**IMPORTANT! If you are not using a door position detection switch, be sure to set "dP" to "00" and "Ob" to 0. This will prevent a continuous "Door Ajar" alert.**

**Table 3 - Auxiliary Output Modes**

Setting	Auxiliary Output Description
0	Disabled.
1	Triggered for 1 second.
2	Toggled (latch/unlatch).
3	Operated together with relay timer (function 1), but stays on for 5 seconds more. If toggle mode has been selected (function 1 - see table 2), the auxiliary output does not change state each time the relay is toggled.
4	Latches when a valid tag is presented and resets by pressing "*".
5	Turns on for 10 seconds, by pressing any button.
6	Triggered after 3 consecutive invalid keys are presented or 3 consecutive invalid PINs are entered. The output is triggered once a second for 10 minutes and may be reset only by entering a user code no sooner than 30 seconds after being tripped.
7	Turned on by pressing "1" and "3" simultaneously.

## 7. SYSTEM NORMAL OPERATION AND FUNCTIONAL TEST

### 7.1 Normal Operation

Normal operation is the mode in which the door lock is opened when a valid tag is presented to the reader (in security level 2, followed by valid user PIN).

The TIAB control unit can use the internal reader or an optional external reader to read proximity tags.

Pressing "\*" and "#" simultaneously activates the Panic output for 5 seconds. In this case, the buzzer does not beep.

The LEDs functions in normal operation are summarized in the next table.

**LEDs functions in normal operation**

LED	Function
GREEN	Indicates that the door is opened.
RED	Indicates that an invalid tag was presented or an invalid PIN was entered.
YELLOW	Remains lit to indicate that the power is on. In security level 2, blinks after a tag is accepted, to prompt the user for PIN.

### Time Out

A delay of more than 5 seconds, between presenting a tag and starting to key user PIN code, or between any two digits, cancels the operation.

If you enter three consecutive wrong codes, the TIAB control unit will be disabled for 30 seconds and the buzzer will beep rapidly.

### 7.2 System Functional Test

- Supply power to the TIAB control unit and verify that the yellow LED lights steadily, to indicate that the power is ON.
- Enter the TEST mode (see section 4 of user's guide) and verify proper function of the TIAB keypad, display and buzzer.

#### For security level 1 only

- Present a valid tag at a distance of 50 - 100 mm (2 - 4 in.) from the keypad (or external reader) and verify that all the functions are performed as programmed. Verify also that when the door is opened the green LED is illuminated.
- Verify that when an invalid tag is presented the buzzer sounds and the red LED illuminates.

#### For security level 2 only

- Present valid tag at distance of 50 - 100 mm (2 - 4 in.) from the keypad (or external reader).
- Verify that the yellow LED light starts blinking after tag presentation, to prompt the user to enter PIN code.
- Enter the user code followed by the ambush digit. The PANIC output should be activated, if ambush option is enabled.
- Verify that when presenting an invalid tag, entering an invalid code, or both, the red LED illuminates and the buzzer sounds.

#### For both security levels

- Verify that all the user tags enable the opening of the door.
- Verify that pressing "\*" and "#" simultaneously activates the panic output for 5 seconds.

This device complies with the essential requirements and provisions of Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio and telecommunications terminal equipment.



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