

Lab No.1: Alambraje assembly and an intrusion detection system (IDS)

First name: _____

Goals:

1. Identify key features for mounting and alambraje devices of a intrusion detection system.
2. Mounting a intrusion detection system.
3. Wire a intrusion detection system.
4. Recognize some of the features of the keyboard control unit.

Theory

An intrusion detection system (IDS) is a combination of components designed to detect and report unauthorized entry or attempted entry of a person or object in the area protected by the system or volume.

The basic components that make up an SDI are:

- Detection devices (initiation)
- Announcing Devices (notification)
- Control Panel
- Control unit
- Communication Device
- Power source

Detection Device

Contact Wireless Door / Window (WS4945)

You must select the correct location for installation. Radio frequency signals may be affected by metal objects such as metal doors and large mirrors. You should avoid such locations as they may affect the proper operation of the device.

The device is marketed with a battery installed (Figure # 1). To activate first necessary to remove a plastic tab in the right direction.

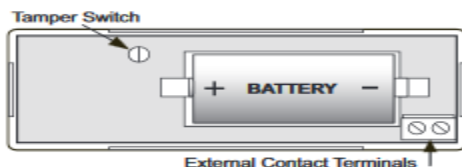


Figure 1

The device must be registered with programming SDI serial number located on the receiver.

To install, remove the cover insert a screwdriver and carefully rotate according to Figure # 2.

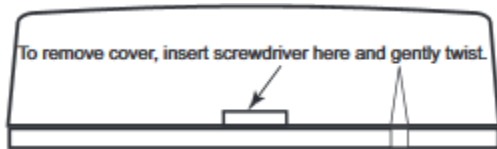


Figure # 2

The receiving device and the magnet must be aligned and separated according to Figure # 3. A symbol like this \triangle indicates the location of the reed switch and magnet correct location.

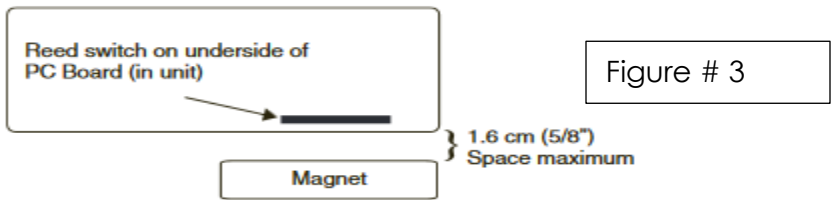


Figure # 3

Magnetic Contact Surface Mount Alambrado (ASD-2032 S)

This is a perimeter-type magnetic sensor normally **open**(Figure # 4).



Figure # 4

Installing a resistor EOL 5600 Ω .

Take into consideration during installation that the magnet must be installed on the moving part of the door or window.

Digital Detector Passive Infra-red (PIR) (LC-100-PI)

The detector uses an optical lens specially designed with a PIR sensor and application specific integrated to eliminate false alarms caused by small animals and pets circuit.

For installation Avoid the following locations: exposed to direct sunlight, exposure to areas subject to rapid temperature changes, areas with air ducts or substantial airflows.

For terminal block connections see figure # 5.

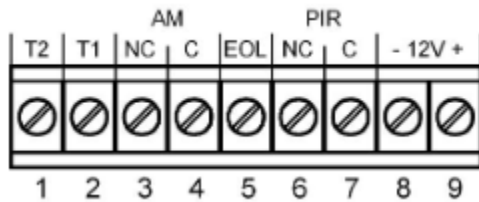


Figure # 5

Terminals 1 and 2 - marked as "T2" and "T1" (TAMPER). If a safety function is required connect these terminals to a normally closed 24 hours in the control unit protective zone. If the front cover is opened detector, it will immediately send an alarm signal to the control unit.

Terminals 3 and 4 -Markados as "NC" and "C" (RELAY). It is relay contact output alarm detector. Connect to a normally closed zone control panel.

Terminal 5 - Marked "EOL". Option EOL. Use this terminal to connect the resistance by configuration "End Of Line" (end line). This terminal allows quick installation of EOL resistor; It is not connected internally to the detector, but provides a convenient attachment point for the connection cable loop area from the control panel to the EOL resistance.

Terminal 6 -Marking as "-" (GND). Connect to the negative voltage output or ground of the control panel.

Terminal 7 -Marking as "+" (+ 12 V). Connect to a positive voltage output of between 8.2 and 16 V DC(Usually in the control panel)


For the adjustment range of the PIR ("SENS") sensor using the potentiometer to adjust the detection range between 68% and 100% (the default is 84%). Turn the knob clockwise to increase the scope, and counterclockwise to reduce it.

Size requirements of the cables. Use cables 22 AWG (0.5 mm) or larger diameter. Use the table below to determine the size (diameter) and length of the cable between the detector and the control panel.

Longitud del	m	200	300	400	800
Diámetro del	mm	.5	.75	1.0	1.5
Longitud del	ft.	656	984	1312	2624
Calibre del cable	AWG	22	20	18	16

Detector settings


Configuración Del Puente Del Contador De Impulsos

	Entorno muy estable Posición 1 Sin mascotas	Situación moderadamente molesta Posición 2 Mascota de hasta 15 kg (33,1 lbs)	Probabilidad relativamente alta de falsas alarmas Posición 3 Mascota de hasta 25 kg (55 lbs)
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Configuración Del Puente De Activación / Desactivación De Led

	1. LED ON	2. LED OFF
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Configuración Del Puente De Inmunidad Contra Mascotas

	Inmunidad a un animal de hasta 15 kg (33,1 lbs)	Inmunidad a un animal de hasta 25 kg (55 lbs)
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Walk Test

After installation, the unit should be thoroughly tested to verify proper operation. You must instruct the end user how to perform a weekly Test. Once set the detector (the bridge pulse count in position 1; the activated LED, any person within the protected zone), generates motion in the entire area to be covered. In the event that the coverage be incomplete, readjust range or relocate the detector. Once you've got the coverage you want, you can disable the alarm LED.

Electronic Siren (SD 15W-ULF)

It is an internal siren dual tone surface mounting. This DESIGNER for intruder alarms and as as an audible signal for fire alarm systems. When powered, it produces a stable audible signal or a howl in correspondence with the alambreaje.

INSTALLATION (Figure # 6)

Installation in accordance to NFPA 70 and 72.

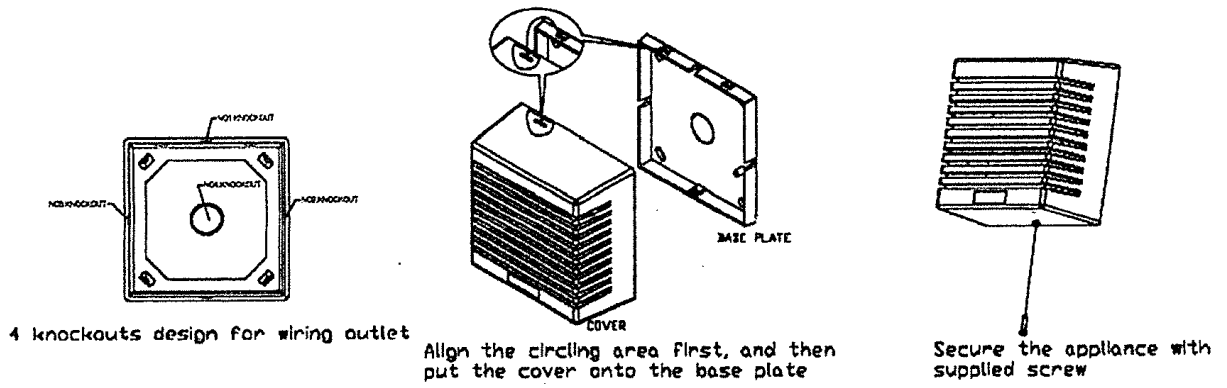


Figure # 6

Alambraje (# Figure 7, # 8)

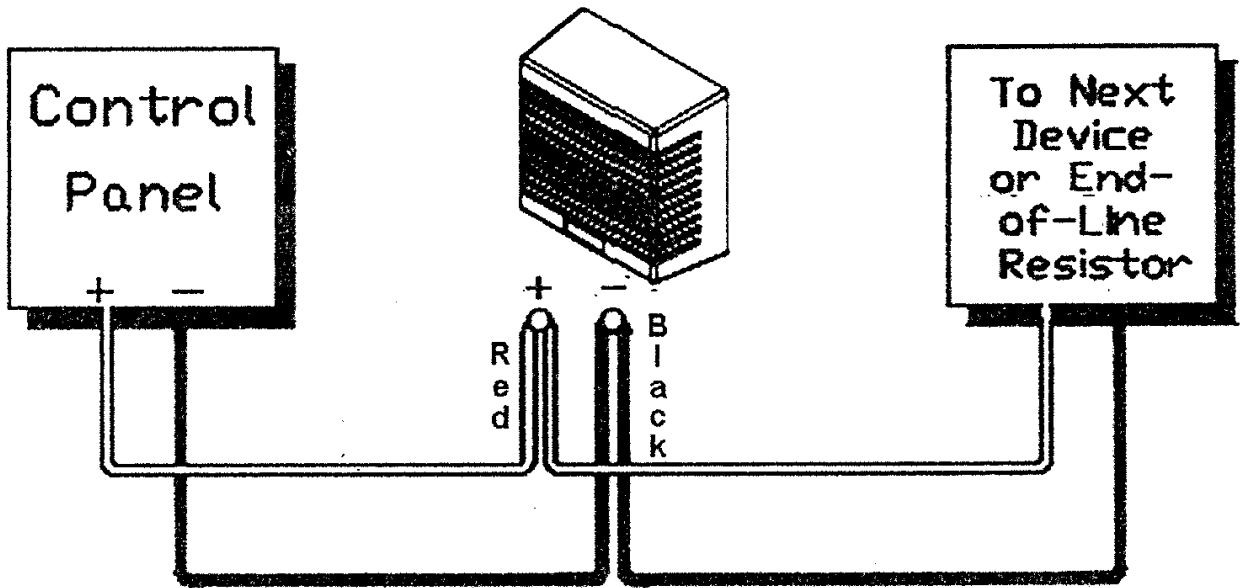


Figure # 7

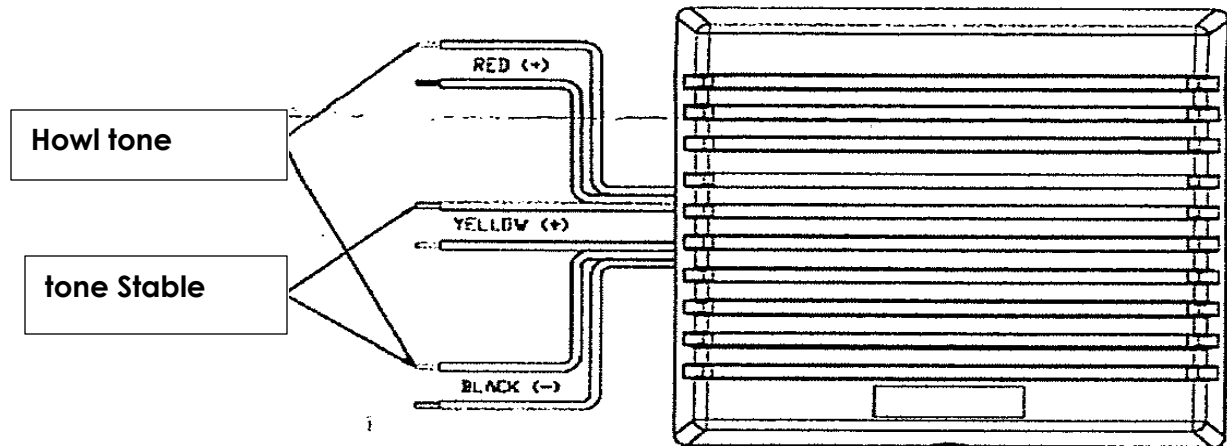


Figure # 8

Wirenuts isolate the cables are not going to use.

Place a 1000 Ω resistor between the terminals of Bell and Bell + - in the control panel if the siren is not used (Figure # 9).

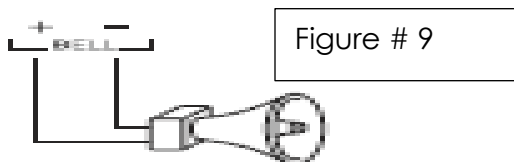


Figure # 9

Maximum distance from alambraje

- 18 AWG - 60 feet
- 16 AWG - 95 feet
- 14 AWG - 153 feet
- 12 AWG - 244 ft

Control unit (RFK5501)

The RFK5501 keyboard is used in security systems containing up to 64 zones. It combines a wireless receiver.

Mounting

The keyboard must be mounted in an accessible place for entry and exit points. After selecting the location, perform the following steps to mount the keypad.

Dismantling Keyboard

1. Insert a flathead screwdriver into the lower slot (First of two)
2. Move the screwdriver into the rear part such as shown in the diagram in Figure # 10. This releases one side of the panel.
3. Repeat steps 1 and 2 in the second slot to completely free the front and allow access to the connections.

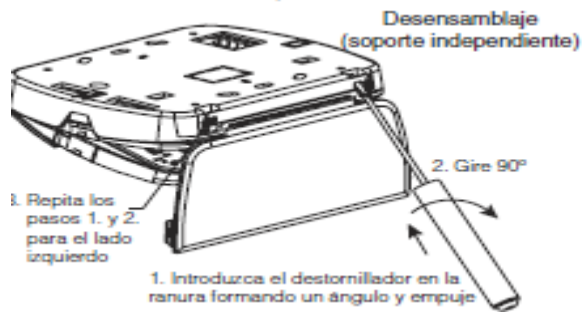


Figure # 10

Mount Keyboard (Figure # 11)

1. Fix the keyboard to the wall using mounting holes. Use the four screws provided unless mounting is done in a single acoplaje box.
2. Place the keyboard on the hooks on the backplate and turn it down to fit.
3. Pass the cable through the wiring groove or outlet perforations. Connect Keybus cables and PGM / Zone keyboard. Switch the violation drilling in violation of the plate.
4. Remove the keyboard hooks. Place the keyboard on the backplate, make sure that the cable is pushed to the wall as possible. Pass the cable inside the keyboard, Certify that the above components are avoided. Close the front assembly, ensuring that no pressure cable down on the keyboard.

NOTE: If it were detected any tension between the whole keyboard front and wiring, open the keyboard, go over the wire and close it again. Repeat these procedures until the keypad is closed properly.

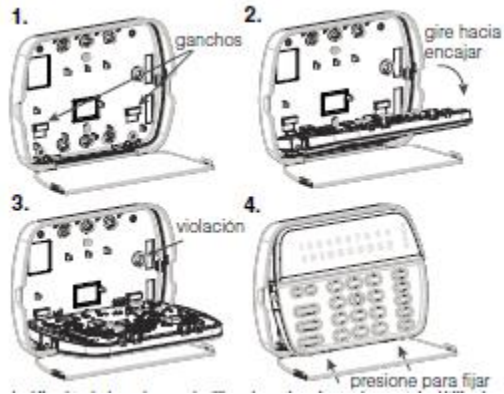


Figure # 11

Cabling

1. Before wiring the unit, ensure that the power (AC transformer and battery) is disconnected from the control panel.
2. Connect the four Keybus wires from the control panel (red, black, yellow and green) to the keypad terminals. See diagram in Figure # 12.

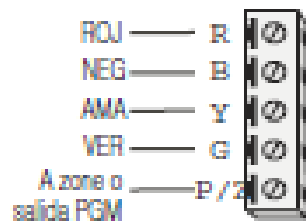


Figure #

3. If will be programmed as an input, you can connect a device (For example, a door contact) to terminal 'P / Z' keyboard. Thus the need for wires back to the control panel for the device is removed. To connect the zone, take a wire from the device to the terminal 'P / Z', and the other cable from the device to the terminal B (black). For powered devices, carry the red wire to terminal R (positive) and the black wire to the terminal B (negative). When using the end of line supervision, connect the zone according to one of the configurations described in the System Installation Manual.
4. If the terminal 'P / Z' is programmed as an output, the output follows the PGM programmed in Section [080]. You can connect a small relay, buzzer or other device powered by DC between terminal positive voltage and the terminal 'P / Z' (the maximum load is 50 mA).

Control Panel (PC1616)

General characteristics

CARACTERÍSTICAS	PC1616
Zonas en la tarjeta	6
Zonas con hilo	16 (1xPC5108)
Zonas inalámbricas	32
Soporte para zonas de teclado	✓
Salidas PGM en la tarjeta	PGM 1 – 50 mA PGM 2 – 300 mA
Expansión PGM	8x50 mA (PC5208) 4x500 mA (PC5204)
Teclados	8
Particiones	2
Códigos de usuario	47 + Código maestro
Memoria de eventos	500 eventos
Transformador necesario	16,5 VCA/40 VA
Batería necesaria	4 Ah/7 Ah/14 Ahr
Salida de campanilla	12 V/700 mA (cont.)

connections

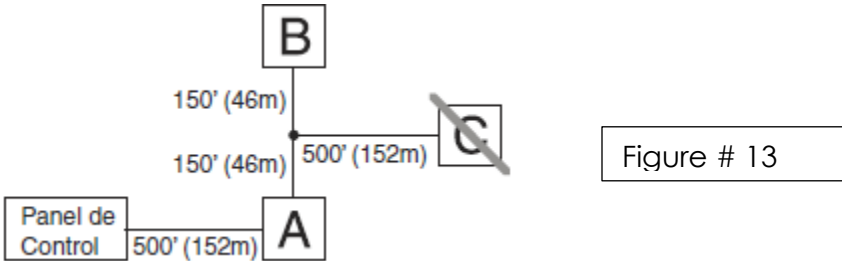
WARNING: Improper connections may result in failure or inappropriate operation of PTC. Certify inspect the cables and connections are correct before energizing.

Connection Control Unit Control Panel

4 KEYBUS terminals in all modules must be connected to the 4 terminals KEYBUS main control panel. Should follow the following recommendations when connecting the control unit:

- Cable 22 AWG minimum, maximum 18 AWG (2 twisted wires preferably)
- DO NOT use shielded cable

- Modules may be connected directly to all main control panel, connected in series or can be derived T, considering that the maximum distance of the control panel until any module should not exceed 305 m.
- should not be used more than 915 m total cable (see figure # 13)



Areas connection

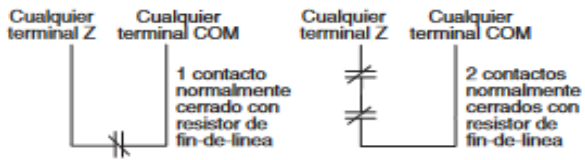
Zones can be connected to normally open or normally closed, End of Line resistor (SEOL) resistor or Double End of Line (DEOL) (see Figure # 14 Note the following recommendations.:

- For UL installations use Sheol or DEOL only.
- 22 AWG wire minimum, maximum 18 AWG
- DO NOT use shielded cable
- The resistance of the wiring extension should not exceed 100 Ω .

See the following table:

Tabla de cableado de la zona de hurto	
AWG Size	Extensión máxima del cable para el resistor de fin de línea (pies/metros)
22	3000/914
20	4900/1493
19	6200/1889
18	7800/2377
Los números están basados en la resistencia máxima del cable de 100 ohmios	

**Circuitos Normalmente Cerrados -
No utilice para instalaciones listadas UL**



Conexión con Resistor de Fin de Línea Simple

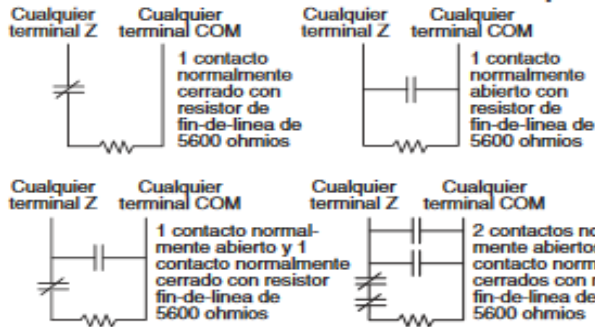
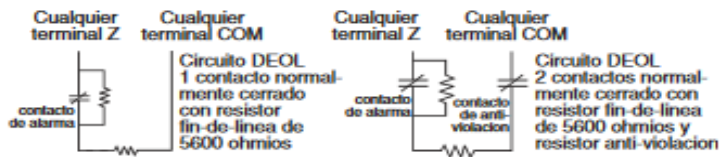


Figure # 14

Conexión con Resistor de Fin de Línea Doble



Connecting the Auxiliary Power

The control panel can provide up to 700 mA of current module, fed detectors, relays, LEDs, etc. If the total current exceeds 700 mA required an additional power supply (eg, PC5200, PC5204) it is necessary. See the list below. The maximum and minimum operating voltages for devices, sensors and modules are 9.5 VCC 14 VCC See the list of supported devices in the reference manual to know the power consumption of individual devices.

Connecting the Telephone Line (Figure # 15)

Phone connection terminals (TIP, Ring, T-1, R-1) to an RJ-31x connector as indicated. Use a 26 AWG wire, at least for the connection. For connecting multiple devices to the telephone line.

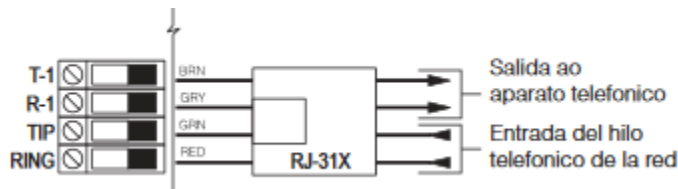


Figure # 15

Installation (Figure # 16)

IMPORTANT:

1. This equipment, PC1616 Alarm Controller must be installed and used within an environment that has a high degree of pollution 2 and overvoltage category II. NON-HAZARDOUS LOCATIONS, indoor only. The equipment is FIXED and PERMANENTLY CONNECTED and is designed to be installed only by maintenance personnel; [Maintenance personnel is defined as the person who has the appropriate technical training and experience necessary to prevent risks to you strain it may be exposed in performing tasks and measures to minimize the risks to this person or others.]
2. It should be connected to the main power supply in accordance with the rules and regulations of local authorities: must be provided appropriate disconnect device as part of the building installation. Where it is not possible to rely on identifying the MAIN POWER NEUTRAL CA, the disconnect device shall disconnect both poles simultaneously (phase and neutral) .The device must turn off the power during operation.

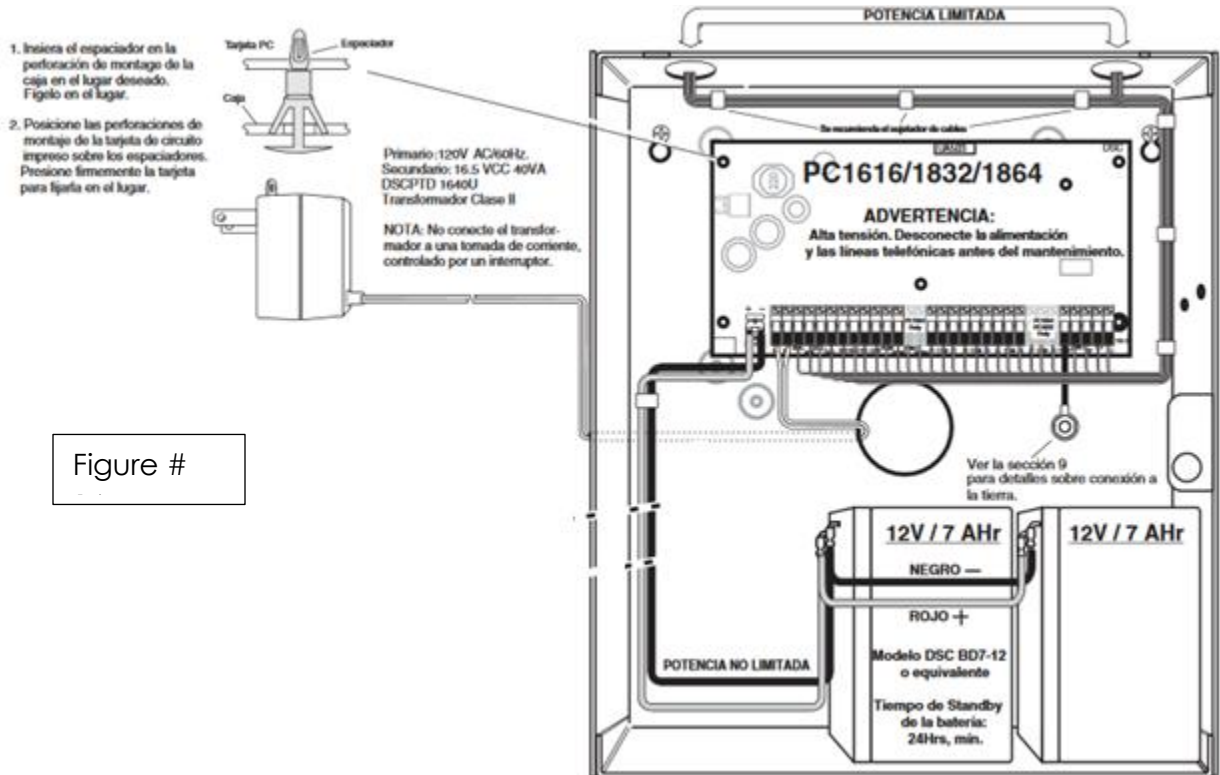


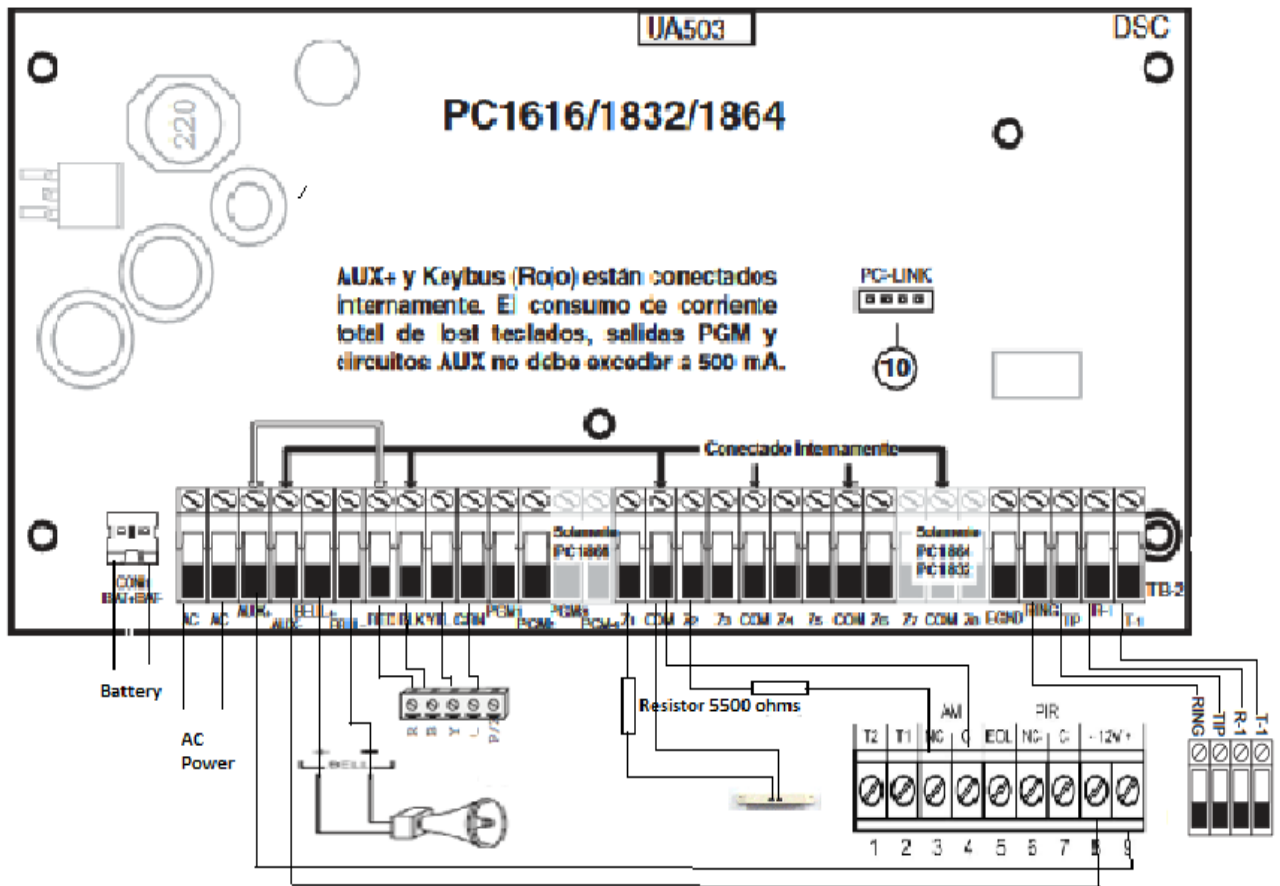
Figure #

3. You must set the computer box to the building structure before operation.
4. internal wiring should be routed so as to prevent:
 - Excessive strain on cable connections and termination;
 - connections terminations with gaps;
 - Damage to the conductor insulation.
5. They should be disposed of used batteries according to regulations

recycling.

operative technique

1. Perform alambraje sensor device according to Figure # 17.
2. Connect the annunciation device
3. Alambraje proceed to the control unit
4. Connect the battery
5. Connect the AC power supply through the transformer.



Keyboard Control Unit (<https://www.youtube.com/watch?v=s8X3J1eP0uE&t=601s>)

- **Status Lights System**

There are four indicator lights to indicate states ready, activated (armed) problem and CA.

Ready light: Indicates that the system is ready to be activated. This off-law any zone is not secured, such as a door or window open. The system can not be activated until the ready light is not on.

Light On: Activated light will illuminate when the system is activated.

Light Problem:The control panel monitors the system and devices and the detection devices, if a trouble condition is detected, the trouble light on and the unit will beep twice every 10 one seconds for the problem is attended. In order to identify the problem press * 2.

Light CA: This light is on while the system is connected to the power source.

Emergency buttons

There are three emergency buttons, which are; fire, panic assistant. To activate these buttons to press for two seconds.

Fire:Activates the siren to signal the occupants of the facility and sends a signal to the monitoring station to indicate that a fire has occurred.

Assistant: Transmits a signal to the monitoring station to indicate a medical emergency has occurred, the keypad will beep 10 times to verify that the signal was transmitted.

Panic: Transmits an immediate monitoring station there is an immediate personal threat signal. It should confirm that these signals are activated by the alarm company.

The company provides a user code that is used to control the system by the user. Factory this code is set to 1234.

Function Buttons

Allow common functions such as enable and disable the system modes permanence and distance, skip (bypass), ring (chime), referral and quick exit.

Stay (Stay):All doors and windows are closed and ready light on. That's important to avoid false alarms if the light is not on press> to see which door or window needs to be closed. To activate the system mode stay (stay) press the button for two seconds, no sound will be issued to avoid inconvenience to those who remain.

Remoteness (Away):Ensure that all doors and windows are closed and the ready light on. If the light is not on press> to see which door or window needs to be closed. To activate the system mode lejania (away) to press the key for two seconds, the keypad will four beeps and light activated lights, the system will allow a delay to the output through a delas scheduled departures areas, the keypad will beep every second to indicate that the system is being activated,

emit three beeps every second in the final 10 minutes of scheduled departure time.

To disable the system in two ways (persistence and lejania) enter the user code (1234).

Bypass (Bypass): Sometimes you want to arm the system with an open window, for example if you want to leave a window on the second floor open for ventilation, but the rest of the system is activated. Na area to derive press * 1 and enter the area to be derived, then press * to exit that mode press #. When the system is activated these areas are ignored. When the system is turned off all the zones will be deactivated bypass mode.

Ring:When activated, notifying someone on the premise that a door or window has been opened, the keypad will emit five beeps rapidly. To activate or deactivate press the button for two seconds.

Reset (Reset): If a fire alarm occurred, fire detectors need to be restored, the user code (1234) is entered and the reset button is pressed for two seconds.

Exit (Exit):It is used to activate an option for a quick exit. When the system is activated, pressing the exit button for two seconds and the system will violate any entry zone output once. This is useful when you want to check the mail or allow the dog in or out.